ClearPass Guest 6.4

User Guide

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ClearPass Guest provides a simple and personalized user interface through which operational staff can quickly and securely manager visitor network access.

Audience

This User Guide is intended for system administrators and people who are installing and configuring ClearPass Guest as their visitor management solution. It describes the installation and configuration process.

Conventions

The following conventions are used throughout this guide to emphasize important concepts:

Table 1: *Typographical Conventions*

Type Style	Description
Italics	This style is used to emphasize important terms and to mark the titles of books.
`System items`	This fixed-width font depicts the following: • Sample screen output • System prompts • Filenames, software devices, and specific commands when mentioned in the text
`Commands`	In the command examples, this bold font depicts text that you must type exactly as shown.
<Arguments>	In the command examples, italicized text within angle brackets represents items that you should replace with information appropriate to your specific situation. For example: `# send <text message>` In this example, you would type "send" at the system prompt exactly as shown, followed by the text of the message you wish to send. Do not type the angle brackets.
`[Optional]`	Command examples enclosed in brackets are optional. Do not type the brackets.
`{Item A | Item B}`	In the command examples, items within curled braces and separated by a vertical bar represent the available choices. Enter only one choice. Do not type the braces or bars.

The following informational icons are used throughout this guide:

Indicates helpful suggestions, pertinent information, and important things to remember.

Indicates a risk of damage to your hardware or loss of data.

Indicates a risk of personal injury or death.

Contacting Support

Main Site	arubanetworks.com
Support Site	support.arubanetworks.com
Airheads Social Forums and Knowledge Base	community.arubanetworks.com
North American Telephone	1-800-943-4526 (Toll Free) 1-408-754-1200
International Telephones	arubanetworks.com/support-services/support-program/contact-support/
Software Licensing Site	licensing.arubanetworks.com
End of Support information	arubanetworks.com/support-services/end-of-life-products/end-of-life-policy/
Wireless Security Incident Response Team (WSIRT)	arubanetworks.com/support-services/security-bulletins/
Support Email Addresses	
Americas and APAC EMEA	support@arubanetworks.com
WSIRT Email Please email details of any security problem found in an Aruba product.	sirt@arubanetworks.com

This chapter explains the terms, concepts, processes, and equipment involved in managing visitor access to a network, and helps you understand how ClearPass Guest can be successfully integrated into your network infrastructure. It is intended for network architects, IT administrators, and security consultants who are planning to deploy visitor access, or who are in the early stages of deploying a visitor access solution.

This chapter includes the following sections:

About ClearPass Guest

ClearPass Guest provides a simple and personalized user interface through which operational staff can quickly and securely manage visitor network access. It gives your non-technical staff controlled access to a dedicated visitor management user database. Through a customizable Web portal, your staff can easily create an account, reset a password, or set an expiry time for visitors. Access permissions to ClearPass Guest functions are controlled through an operator profile that can be integrated with an LDAP server or Active Directory login.

Visitors can be registered at reception and provisioned with an individual guest account that defines their visitor profile and the duration of their visit. The visitor can be given a printed customized receipt with account details, or the receipt can be delivered wirelessly using the integrated SMS services. Companies are also able to pre-generate custom scratch cards, each with a defined network access time, which can then be handed out in a corporate environment or sold in public access scenarios.

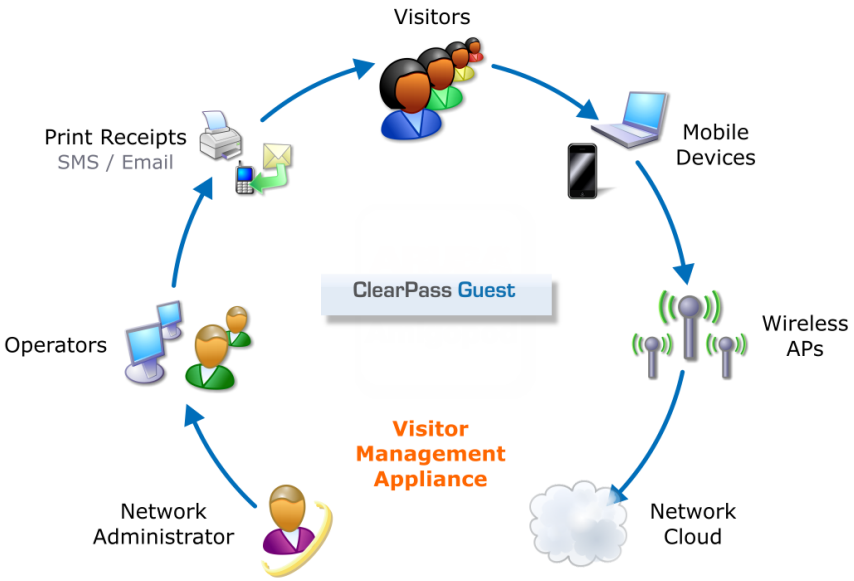
You can use the customization features to define settings that allow your visitors to self-provision their own guest accounts. Visitors register through a branded and customized Web portal, ensuring a streamlined and professional experience. Surveys can also be presented during the self-registration process and the data stored for later analysis and reporting, providing additional insight to your visitors and their network usage.

ClearPass Guest integrates with all leading wireless and NAC solutions through a flexible definition point, ClearPass Policy Manager. This ensures that IT administrators have a standard integration with the network security framework, but gives operational staff the user interface they require.

Visitor Access Scenarios

The following figure shows a high-level representation of a typical visitor access scenario.

Figure 1 *Visitor access using ClearPass Guest*



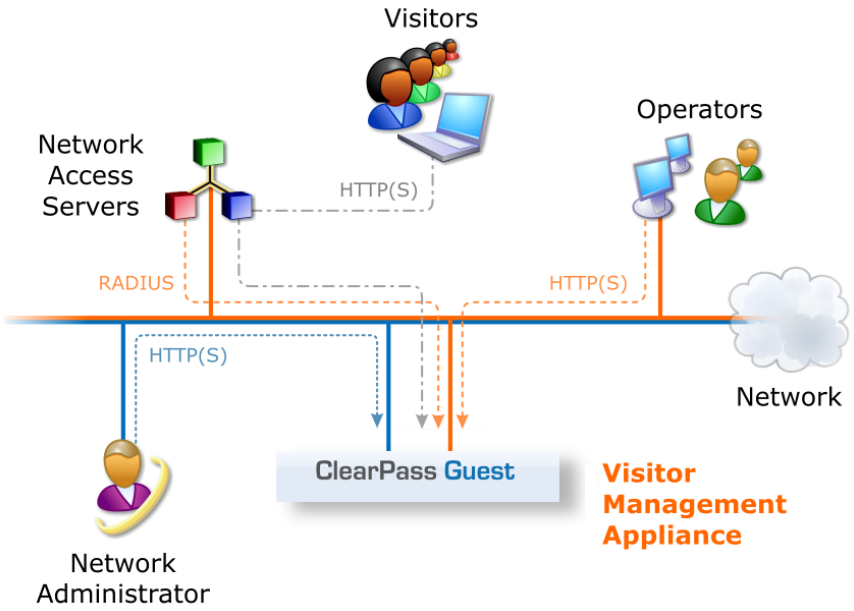
In this scenario, visitors are using their own mobile devices to access a corporate wireless network. Because access to the network is restricted, visitors must first obtain a username and password. A guest account may be provisioned by a corporate operator such as a receptionist, who can then give the visitor a print receipt that shows their username and password for the network.

When visitors use self-registration, as might be the case for a network offering public access, the process is broadly similar but does not require a corporate operator to create the guest account. The username and password for a self-provisioned guest account may be delivered directly to the visitor's Web browser, or sent via SMS or email.

Reference Network Diagram

The following figure shows the network connections and protocols used by ClearPass Guest.

Figure 2 *Reference network diagram for visitor access*

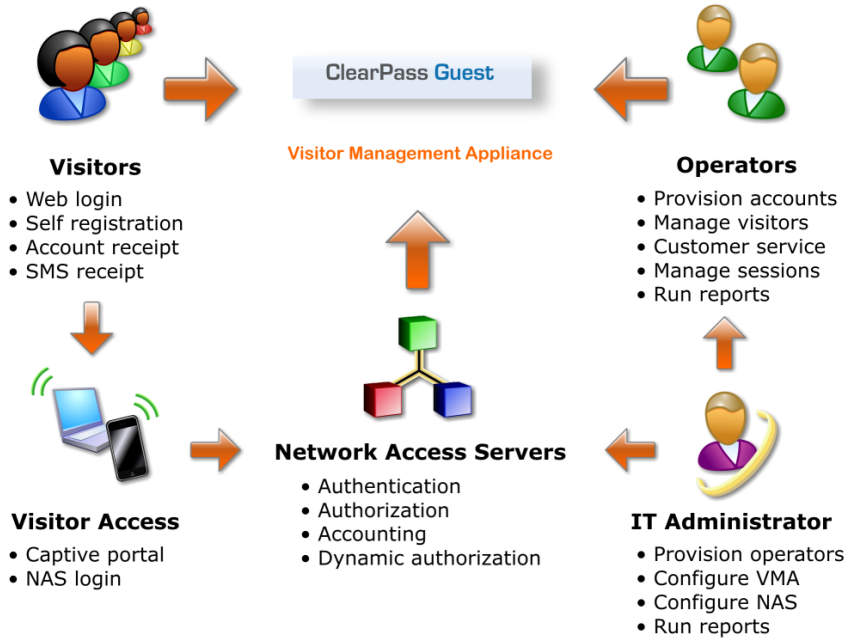


The network administrator, operators, and visitors may use different network interfaces to access the visitor management features. The exact topology of the network and the connections made to it will depend on the type of network access offered to visitors and the geographical layout of the access points.

Key Interactions

The following figure shows the key interactions between ClearPass Guest and the people and other components involved in providing guest access.

Figure 3 *Interactions involved in guest access*



ClearPass Guest is part of your network's core infrastructure and manages guest access to the network.

NAS devices, such as wireless access points and wired switches on the edge of the network, use the RADIUS protocol to ask ClearPass Policy Manager to authenticate the username and password provided by a guest logging in to the network. If authentication is successful, the guest is then authorized to access the network.

Roles are assigned to a guest as part of the context ClearPass Policy Manager uses to apply its policies. RADIUS attributes that define a role's access permissions are contained within Policy Manager's Enforcement Profile. Additional features such as role mapping for ClearPass Guest can be performed in ClearPass Policy Manager.

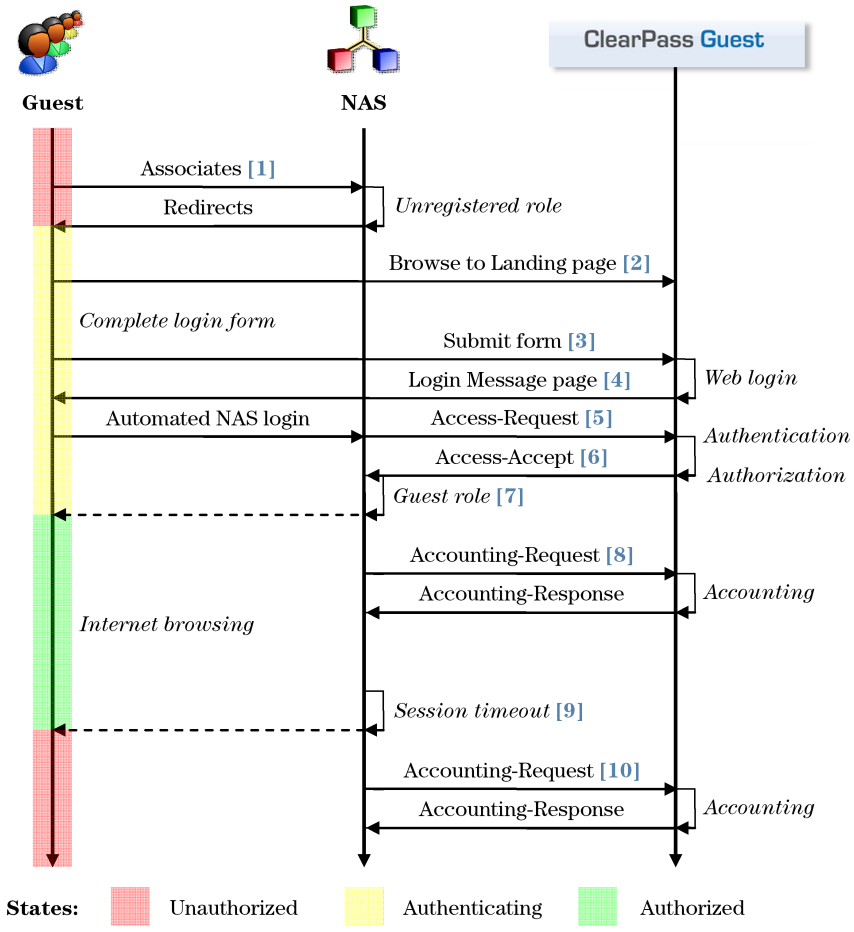
The network usage of authorized guests is monitored by the NAS and reported in summary form to ClearPass Policy Manager using RADIUS accounting, which allows administrators to generate network reports in ClearPass Insight.

AAA Framework

ClearPass Guest is built on the industry standard AAA framework, which consists of authentication, authorization, and accounting components.

The following figure shows how the different components of this framework are employed in a guest access scenario.

Figure 4 *Sequence diagram for network access using AAA*



In the standard AAA framework, network access is provided to a user according to the following process:

- The user connects to the network by associating with a local access point [1].
- A landing page is displayed to the user [2] which allows them to log in to the NAS [3], [4] using the login name and password of their guest account.
- The NAS authenticates the user with the RADIUS protocol [5].
- ClearPass Policy Manager determines whether the user is authorized, and, if so, returns vendor-specific attributes [6] that are used to configure the NAS based on the user's role and other policies [7].
- If the user's access is granted, the NAS permits the guest access to the network based on the settings provided by the ClearPass Policy Manager server.
- The NAS reports details about the user's session to the ClearPass Policy Manager server using RADIUS accounting messages [8].
- After the user's session times out [9], the NAS will return the user to an unauthorized state and finalize the details of the user's session with an accounting update [10].

Key Features

Refer to the table below for a list of key features and a cross-reference to the relevant section of this User Guide.

Table 2: *List of Key features*

Feature	Reference
Visitor Access	
Web server providing content delivery for guests	"Managing Content: Private Files and Public Files" on page 189
Guest self-registration	"Customizing Guest Self-Registration" on page 235
Visitor Management	
Create and manage visitor accounts, individually or in groups	"Using Standard Guest Management Features" on page 38
Manage active RADIUS sessions using RFC 3576 dynamic authorization support	"Active Sessions Management" on page 33
Import and export visitor accounts	"Importing Guest Accounts" on page 52
Create guest self-registration forms	"Creating a Self-Registration Page" on page 241
Configure a self-service portal for guests	"Self-Service Portal Properties" on page 257
Local printer, SMS or email delivery of account receipts	"Editing Guest Receipt Page Properties" on page 248
Visitor Account Features	
Independent activation time, expiration time, and maximum usage time	"Business Logic for Account Creation" on page 198
Define unlimited custom fields	"Customizing Fields" on page 206
Username up to 64 characters	"GuestManager Standard Fields" on page 504
Customization Features	
Create new fields and forms for visitor management	"Customizing Forms and Views" on page 212
Use built-in data validation to implement visitor survey forms	"Form Validation Properties" on page 227
Create print templates for visitor account receipts	"Editing Guest Receipt Page Properties" on page 248

Feature	Reference
Administrative Management Features	
Operators defined and authenticated locally	"Local Operator Authentication" on page 464
Operators authenticated via LDAP	"External Operator Authentication" on page 465
Role based access control for operators	"Operator Profiles" on page 458
Plugin-based application features, automatically updated by ClearPass Policy Manager	"Plugin Manager" on page 444
User Interface Features	
Context-sensitive help with searchable online documentation	"Documentation and User Assistance" on page 29

Visitor Management Terminology

The following table describes the common terms used in ClearPass Guest and this guide.

Table 3: *Common Terms*

Term	Explanation
Accounting	Process of recording summary information about network access by users and devices.
Authentication	Verification of a user's credentials; typically a username and password.
Authorization	Controls the type of access that an authenticated user is permitted to have.
Captive Portal	Implemented by a Network Access Server to restrict network access to authorized users only.
Field	In a user interface or database, a single item of information about a user account.
Form	In a user interface, a collection of editable fields displayed to an operator.
Network Access Server	Device that provides network access to users, such as a wireless access point, network switch, or dial-in terminal server. When a user connects to the NAS device, a RADIUS access request is generated by the NAS.
Operator Profile	Characteristics assigned to a class of operators, such as the permissions granted to those operators.
Operator/Operator Login	User of ClearPass Guest to create guest accounts or perform system configuration.
Print Template	Formatted template used to generate guest account receipts.
Role	Type of access being granted to visitors. You can define multiple roles. Such roles could include employee, guest, team member, or press.

Term	Explanation
Sponsor	Operator
User Database	Database listing the guest accounts in ClearPass Guest.
View	In a user interface, a table displaying data, such as visitor account information, to operators.
Visitor/Guest	Someone who is permitted to access the Internet through your Network Access Server.
Visitor Account	Settings for a visitor stored in the user database, including username, password and other fields.
Web Login/NAS Login	Login page displayed to a guest user.

ClearPass Guest Deployment Process

As part of your preparations for deploying a visitor management solution, you should consider the following areas:

- Management decisions about security policy
- Decisions about the day-to-day operation of visitor management
- Technical decisions related to network provisioning

Operational Concerns

When deploying a visitor management solution, you should consider these operational concerns:

- Who is going to be responsible for managing guest accounts? What privileges will the guest account manager have? Will this person only create guest accounts or will this person also be permitted access to reports?
- Do you want guests to be able to self-provision their own network access? What settings should be applied to self-provisioned visitor accounts?
- How will operator logins be provisioned? Should operators be authenticated against an LDAP server?
- Who will manage reporting of guest access? What are the reports of interest? Are any custom reports needed?

Network Provisioning

ClearPass Guest requires provisioning the following:

- Physical location – rack space, power and cooling requirements; or deployment using virtualization
- Network connectivity – VLAN selection, IP address, and hostname
- Security infrastructure – SSL certificate

Site Preparation Checklist

The following is a checklist of the items that should be considered when setting up ClearPass Guest.

Table 4: *Site Preparation Checklist*

✓	Policy Decision
Security Policy	
	Segregated guest accounts?
	Type of network access?
	Time of day access?
	Bandwidth allocation to guests?
	Prioritization of traffic?
	Different guest roles?
	IP address ranges for operators?
	Enforce access via HTTPS?
Operational Concerns	
	Who will manage guest accounts?
	Guest account self provisioning?
	What privileges will the guest managers have?
	Who will be responsible for printing reports?
Network Management Policy	
	Password format for guest accounts?
	Shared secret format?
	Operator provisioning?
Network Provisioning	
	Physical location?
	Network connectivity?
	Security infrastructure?

Security Policy Considerations

To ensure that your network remains secure, decisions have to be made regarding guest access:

- Do you wish to segregate guest access? Do you want a different VLAN, or different physical network infrastructure to be used by your guests?

- What resources are you going to make available to guests (for example, type of network access; permitted times of day; bandwidth allocation)?
- Will guest access be separated into different roles? If so, what roles are needed?
- How will you prioritize traffic on the network to differentiate quality of service for guest accounts and non-guest accounts?
- What will be the password format for guest accounts? Will you be changing this format on a regular basis?
- What requirements will you place on the shared secret, between NAS and the RADIUS server to ensure network security is not compromised?
- What IP address ranges will operators be using to access the server?
- Should HTTPS be required in order to access the visitor management server?

AirGroup Deployment Process

AirGroup allows users to register their personal mobile devices on the local network and define a group of friends or associates who are allowed to share them. You use ClearPass Guest to define AirGroup administrators and operators. AirGroup administrators can then use ClearPass Guest to register and manage an organization's shared devices and configure access according to username, role, location, or time. AirGroup operators (end users) can use ClearPass Guest to register their personal devices and define the group who can share them.

Table 5 summarizes the steps for configuring Aruba AirGroup functionality in ClearPass Guest. Details for these steps are provided in the relevant sections of this Guide. This table does not include the configuration steps performed in ClearPass Policy Manager or the ArubaOS controller. For complete AirGroup deployment information, refer to the AirGroup sections in the *ArubaOS User Guide* and the ClearPass Policy Manager documentation.

Table 5: *Summary of AirGroup Configuration Steps in ClearPass Guest*

Step	Section in this Guide
Create AirGroup administrators	"Creating a New Operator" on page 464
Create AirGroup operators	
Configure an operator's device limit	"Configuring AirGroup Operator Device Limit" on page 464
Configure an AirGroup controller	"AirGroup Controllers" on page 358
Enable support for dynamic notifications	"Configuring AirGroup Services" on page 361
To authenticate AirGroup users via LDAP: Define the LDAP server Define appropriate translation rules	"External Operator Authentication" on page 465 "LDAP Translation Rules" on page 472
AirGroup administrator: Register devices or groups of devices	"AirGroup Device Registration" on page 66
AirGroup operator: Register personal devices	
(Optional) Configure device registration form with drop-down lists for existing locations and roles	"Customizing AirGroup Registration Forms" on page 209
Set up time-based sharing	"About AirGroup Time-Based Sharing" on page 75

Documentation and User Assistance

This section describes the variety of user assistance available for ClearPass Guest.

User Guide and Online Help

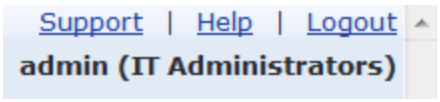
This User Guide provides complete information for all ClearPass Guest features. The following quick links may be useful in getting started.

Table 6: *Quick Links*

For information about...	Refer to...
What visitor management is and how it works	"About ClearPass Guest" on page 19
Using the guest management features	"Using Standard Guest Management Features" on page 38
Role-based access control for operators	"Operator Profiles" on page 458
Setting up LDAP authentication for operators	"External Operator Authentication" on page 465
Guest self-provisioning features	"Self Provisioned Guest Access" on page 32
Dynamic authorization extensions	"RFC 3576 Dynamic Authorization" on page 35
SMS receipts for guest accounts	"SMS Services" on page 296
Email receipts for guest accounts	"Email Receipts and SMTP Services" on page 284
Network administration of the appliance	"Administration" on page 357

Context-Sensitive Help

For more detailed information about the area of the application you are using, click the context-sensitive **Help** link displayed at the top right of the page. This opens a new browser tab showing the relevant section of this User Guide.

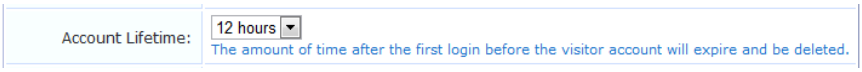


The User Guide may be searched using the **Search** box in the top right corner.

Type in keywords related to your search and click the **Search** button to display a list of matches. The most relevant matches will be displayed first. Words may be excluded from the search by typing a minus sign directly before the word to exclude (for example-exclude). Exact phrase matches may also be searched for by enclosing the phrase in double quotes (for example, “word phrase”).

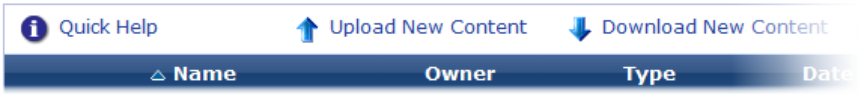
Field Help

The ClearPass Guest user interface has field help built into every form. The field help provides a short summary of the purpose of the field at the point you need it most. In many cases this is sufficient to use the application without further assistance or training.



Quick Help

In list views, click the **Quick Help** tab located at the top left of the list to display additional information about the list you are viewing and the actions that are available within the list.



On some forms and views, the Quick Help icon may also be used to provide additional detail about a field.

If You Need More Assistance

If you encounter a problem using ClearPass Guest, your first step should be to consult the appropriate section in this User Guide.

If you cannot find an answer here, the next step is to contact your reseller. The reseller can usually provide you with the answer or obtain a solution to your problem.

If you still need information, you can refer to the **Contact Support** command available under **Support Services** in the user interface, or see "Contacting Support" on page 18.

Use of Cookies

Cookies are small text files that are placed on a user's computer by Web sites the user visits. They are widely used in order to make Web sites work, or work more efficiently, as well as to provide information to the owners of a site. Session cookies are temporary cookies that last only for the duration of one user session.

When a user registers or logs in via an Aruba captive portal, Aruba uses session cookies solely to remember between clicks who a guest or operator is. Aruba uses this information in a way that does not identify any user-specific information, and does not make any attempt to find out the identities of those using its ClearPass products. Aruba does not associate any data gathered by the cookie with any personally identifiable information (PII) from any source. Aruba uses session cookies only during the user's active session and does not store any permanent cookies on a user's computer. Session cookies are deleted when the user closes his/her Web browser.

The ability to easily create and manage guest accounts is the primary function of ClearPass Guest. The Guest Manager module provides complete control over the user account creation process.

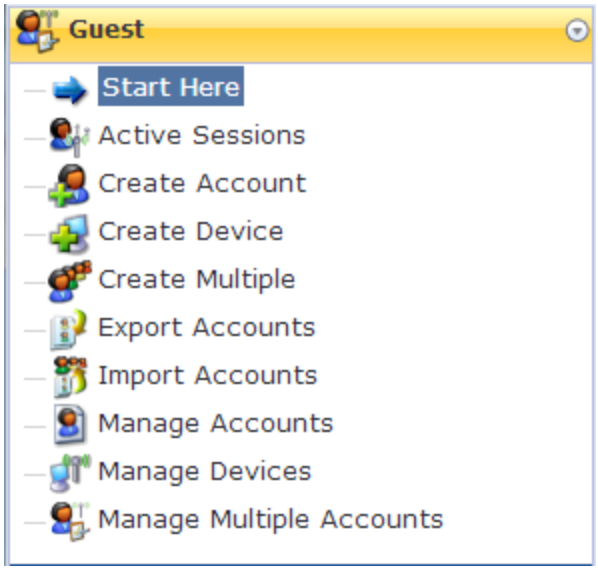
Guest Manager features for managing guest accounts let you:

- View and manage active sessions
- Create single or multiple guest accounts and receipts
- Create new MAC devices
- Bulk edit accounts
- Export a list of accounts
- Import new accounts from a text file
- View guest accounts and edit individual or multiple guest accounts
- View MAC devices and edit individual or multiple devices

Many features can also be customized. For information on customizing Guest Manager settings, forms and views, guest self-registration, and print templates, see "Configuration" on page 187.

Accessing Guest Manager

To access ClearPass Guest's guest management features, click the **Guest** link in the left navigation.



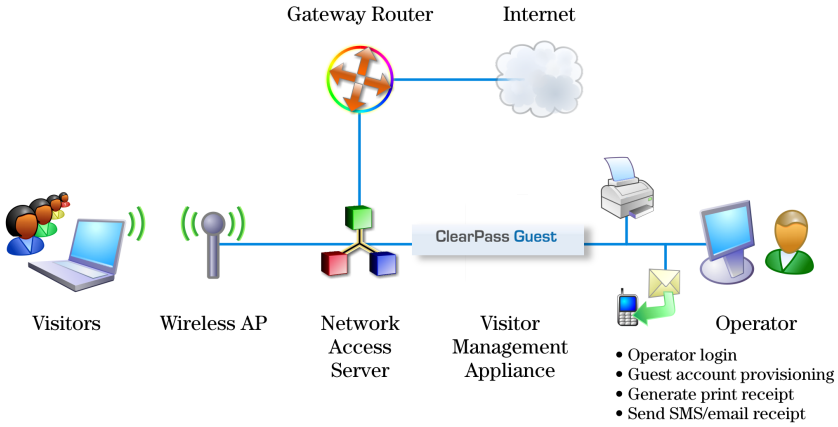
About Guest Management Processes

There are two major ways to manage guest access – either by your operators provisioning guest accounts, or by the guests self-provisioning their own accounts. Both of these processes are described in this chapter.

Sponsored Guest Access

The following figure shows the process of sponsored guest access.

Figure 5 Sponsored guest access with guest created by operator



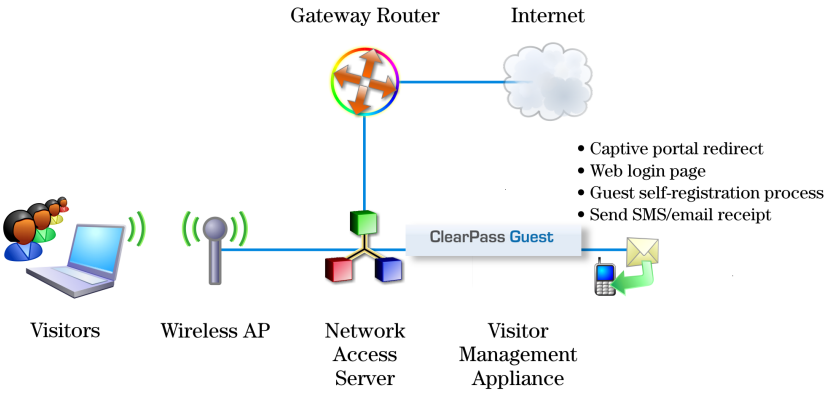
The operator creates the guest accounts and generates a receipt for the account.

The guest logs on to the Network Access Server (NAS) using the credentials provided on her receipt. The NAS authenticates and authorizes the guest's login in ClearPass Guest. After authorization, the guest is able to access the network.

Self Provisioned Guest Access

Self-provisioned access is similar to sponsored guest access, but there is no need for an operator to create the account or to print the receipt. The following figure shows the process of self-provisioned guest access.

Figure 6 Guest access when guest is self-provisioned



The guest logs on to the Network Access Server (NAS), which captures the guest and redirects them to a captive portal login page. From the login page, guests without an account can browse to the guest self-registration page, where the guest creates a new account. At the conclusion of the registration process, the guest is automatically redirected to the NAS to log in.

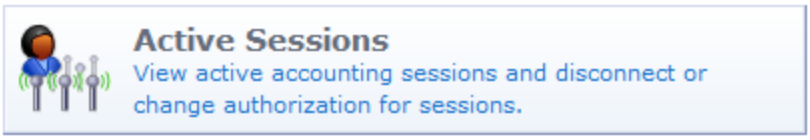
The guest can print or download a receipt, or have the receipt information delivered by SMS or email.

The NAS performs authentication and authorization for the guest in ClearPass Guest. After authorization, the guest is able to access the network.

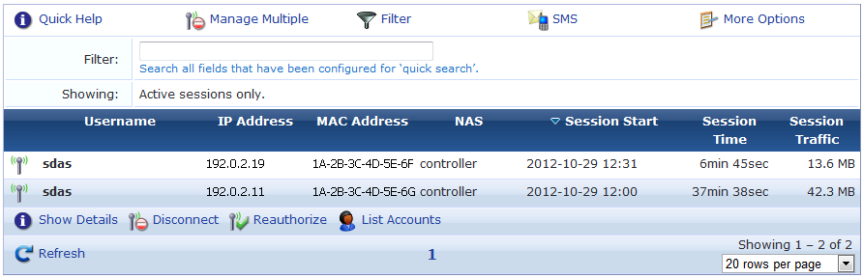
See "Customizing Guest Self-Registration" on page 235 for details on creating and managing self-registration pages.

Active Sessions Management

The RADIUS server maintains a list of active visitor sessions. If your NAS equipment has RFC 3576 support, the RADIUS dynamic authorization extensions allow you to disconnect or modify an active session.



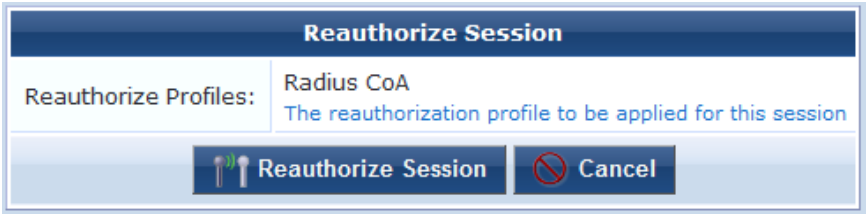
To view and manage active sessions for the RADIUS server, go to **Guest > Active Sessions**. The Active Sessions list opens. You can use this list to modify, disconnect or reauthorize, or send SMS notifications for active visitor sessions; manage multiple sessions; or customize the list to include additional fields.



- To view details for an active session, click the session's row in the list, then click its **Show Details** link. The form expands to include the Session Details view.

Session Details	
Username:	**test**
IP Address:	192.0.2.11
NAS:	controller
NAS IP Address:	192.0.2.3
NAS Port Type:	Wireless-802.11
Calling Station ID:	70DEE2C723B6
Called Station ID:	000B866D1F58
Service Type:	Onboard Service
Session ID:	R0000017f-01-508ef9f4
Session Upload:	707,722 bytes
Session Download:	45,361,239 bytes
Session End:	2012-10-29 14:51
Termination Cause:	Lost-Service

- If the NAS equipment has RFC 3576 support, you can disconnect or dynamically reauthorize active sessions. See "RFC 3576 Dynamic Authorization" on page 35 for more information.
  - To disconnect an active session, click the session's row in the list, then click its **Disconnect** link. A message is displayed to show that the disconnect is in progress and acknowledge when it is complete.
  - To reauthorize a session that was disconnected, click the session's row in the list, then click its **Reauthorize** link. The Reauthorize Session form opens. Click **Reauthorize Session**. A message is displayed to show that the disconnect is in progress and acknowledge when it is complete.



  - To disconnect multiple sessions, click the **Manage Multiple** tab. The form expands to include the Manage Multiple Sessions form. For more information, see "Disconnecting Multiple Active Sessions " on page 37.
- To view and work with the guest accounts associated with a session, click the session's row in the list, then click its **List Accounts** link. The Guest Manager Accounts view opens. See "Managing Single Guest Accounts " on page 55 for more information.
- To display only sessions that meet certain criteria, click the **Filter** tab. For more information, see "Filtering the List of Active Sessions" on page 36.
- To send SMS notifications to visitors, click the **SMS** tab. For more information, see "Sending Multiple SMS Alerts " on page 37.

- To include additional fields in the Active Sessions list, or delete fields from it, click the **More Options** tab. The Customize View Fields page opens. For more information, see "Editing Forms " on page 214.
- You can use the paging control at the bottom of the list to jump forwards or backwards by one page, or to the first or last page of the list. You can also click an individual page number to jump directly to that page.

Session States

A session may be in one of three possible states:

- **Active**—An active session is one for which the RADIUS server has received an accounting start message and has not received a stop message, which indicates that service is being provided by a NAS on behalf of an authorized client.

  While a session is in progress, the NAS sends interim accounting update messages to the RADIUS server. This maintains up-to-date traffic statistics and keeps the session active. The frequency of the accounting update messages is configurable in the RADIUS server.

- **Stale**—If an accounting stop message is never sent for a session—for example, if the visitor does not log out— that session will remain open. After 24 hours without an accounting update indicating session traffic, the session is considered 'stale' and is not counted towards the active sessions limit for a visitor account. To ensure that accounting statistics are correct, you should check the list for stale sessions and close them.
- **Closed**—A session ends when the visitor logs out or if the session is disconnected. When a session is explicitly ended in either of these ways, the NAS sends an accounting stop message to the RADIUS server. This closes the session. No further accounting updates are possible for a closed session.

RFC 3576 Dynamic Authorization

Dynamic authorization describes the ability to make changes to a visitor account's session while it is in progress. This includes disconnecting a session, or updating some aspect of the authorization for the session.

The Active Sessions page provides two dynamic authorization capabilities that apply to currently active sessions:

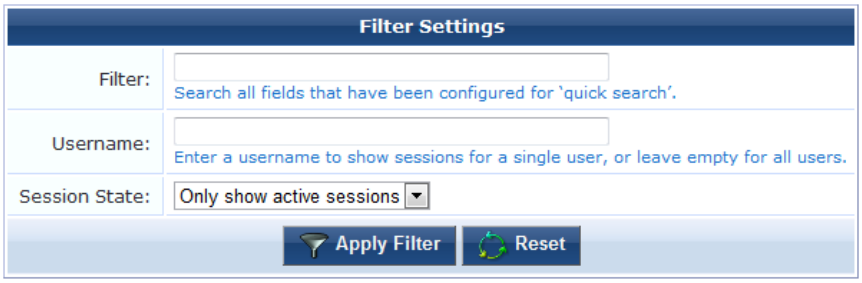
- **Disconnect** causes a Disconnect-Request message to be sent to the NAS for an active session, requesting that the NAS terminate the session immediately. The NAS should respond with a Disconnect-ACK message if the session was terminated or Disconnect-NAK if the session was not terminated.
- **Reauthorize** causes a Disconnect-Request message to be sent to the NAS for an active session. This message will contain a Service-Type attribute with the value 'Authorize Only'. The NAS should respond with a Disconnect-NAK message, and should then reauthorize the session by sending an Access-Request message to the RADIUS server. The RADIUS server's response will contain the current authorization details for the visitor account, which will then update the corresponding properties in the NAS session.

If the NAS does not support RFC 3576, attempts to perform dynamic authorization will time out and result in a 'No response from NAS' error message.

Refer to RFC 3576 for more details about dynamic authorization extensions to the RADIUS protocol.

Filtering the List of Active Sessions

On the **Guest > Active Sessions** list, you can use the **Filter** tab to narrow the search parameters and quickly find all matching sessions:



Enter a username or IP address in the **Filter** field. Additional fields can be included in the search if the "Include values when performing a quick search" option was selected for the field within the view. To control this option, use the **Choose Columns** command link on the **More Options** tab.

You may enter a simple substring to match a portion of the username or any other fields that are configured for search, and you can include the following operators:

Table 7: *Operators supported in filters*

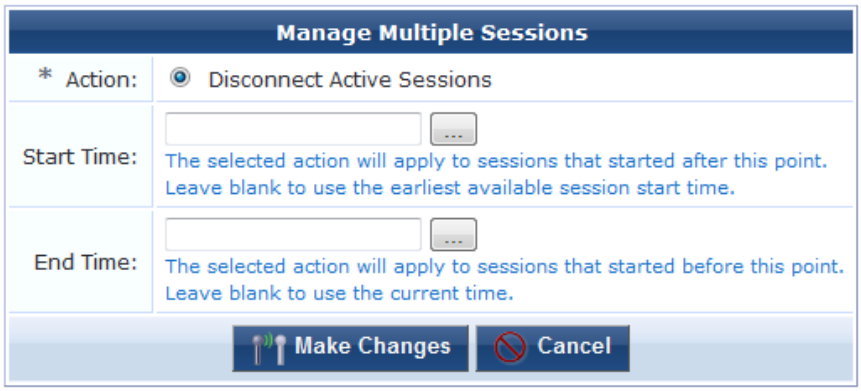
Operator	Meaning	Additional Information
=	is equal to	You may search for multiple values when using the equality (=) or inequality !=) operators. To specify multiple values, list them separated by the pipe character (|). For example, specifying the filter "role_id=2|3, custom_field=Value" restricts the accounts displayed to those with role IDs 2 and 3 (Guest and Employee), and with the field named "custom_field" set to "Value".
!=	is not equal to	
>	is greater than	
>=	is greater than or equal to	
<	is less than	
<=	is less than or equal to	
~	matches the regular expression	
!~	does not match the regular expression	

To restore the default view, click the **Clear Filter** link.

Click the **Apply Filter** button to save your changes and update the view, or click the **Reset** button to remove the filter and return to the default view.

Disconnecting Multiple Active Sessions

To disconnect multiple sessions, click the **Manage Multiple** tab. The Manage Multiple Sessions form opens.



- To close all active sessions, leave the **Start Time** and **End Time** fields empty and click **Make Changes**. All active sessions are closed and are removed from the Active Sessions list.

You can specify sessions in a time range.

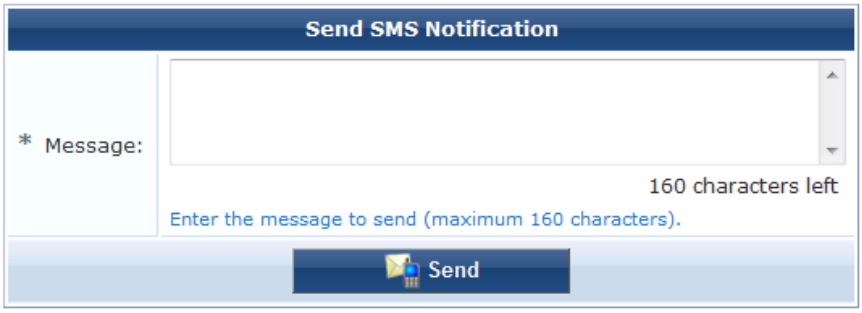
1. To close all sessions that started after a particular time, click the button in the **Start Time** row. The calendar picker opens. Use the calendar to specify the year, month, and day, and click the numbers in the **Time** fields to increment the hours and minutes. All sessions that started after the specified date and time will be disconnected.
2. To close all sessions that started before a particular time, click the button in the **End Time** row. The calendar picker opens. Use the calendar to specify the year, month, and day, and click the numbers in the **Time** fields to increment the hours and minutes. All sessions that started before the specified date and time will be disconnected.
3. Click **Make Changes**. The specified sessions are closed and are removed from the Active Sessions list.

Sending Multiple SMS Alerts

The SMS tab on the Active Sessions page lets you send an SMS alert message to all active sessions that have a valid phone number. An SMS alert during an active session can be used to send a group of visitors information you might want them to have immediately—for example, a special offer that will only be available for an hour, a change in a meeting's schedule or location, or a public safety announcement.

To create an SMS message:

1. Click the **SMS** tab on the Active Sessions page. The Send SMS Notification form opens.



2. Use the filter to specify the group of addresses that should receive the message. See "Filtering the List of Active Sessions" on page 36. Only accounts with valid phone numbers can be sent SMS alerts.
3. Enter the message in the **Message** text box. Messages may contain up to 160 characters.

4. Click **Send**.

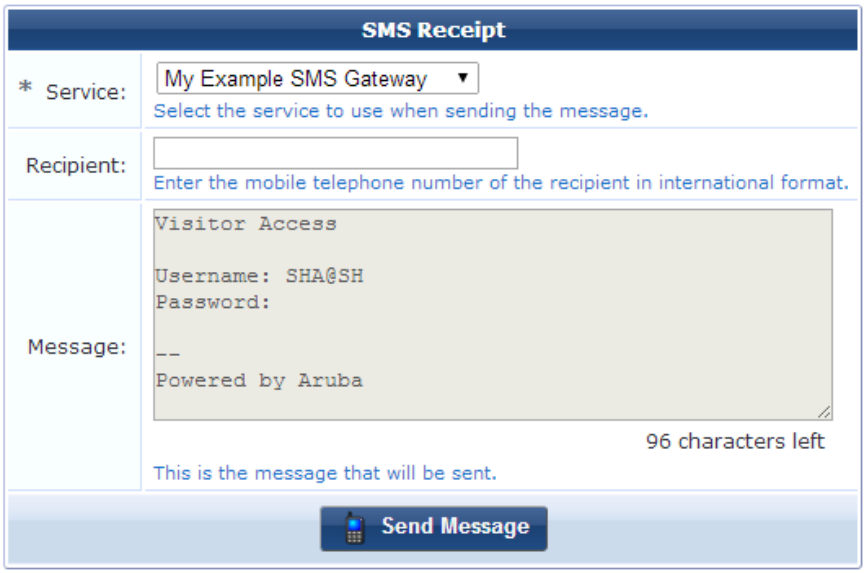
About SMS Guest Account Receipts

You can send SMS receipts for guest accounts that are created using either sponsored guest access or self-provisioned guest access. This is convenient in situations where the visitor may not be physically present to receive a printed receipt.

ClearPass Guest may be configured to automatically send SMS receipts to visitors, or to send receipts only on demand.

To manually send an SMS receipt:

1. Go to the **Guest > Manage Accounts** and click to expand the row of the guest to whom you want to send a receipt.
2. Click **Print** to display the Updated Account Details view, and then click the **Send SMS receipt** link. The SMS Receipt form opens. Use the fields on this form to enter the service to use, the recipient's mobile phone number, and the message text.



When using guest self-registration, SMS Delivery options are available for the receipt page actions; See "Editing Receipt Actions" on page 248 for full details. For more information on SMS services, see "SMS Services" on page 296.

Using Standard Guest Management Features

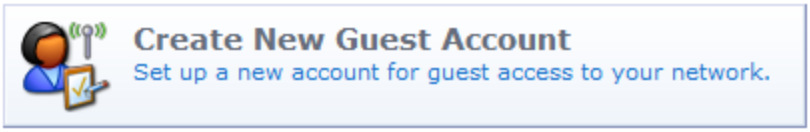
This section describes:

- "Managing Single Guest Accounts " on page 55
- "Managing Multiple Guest Accounts " on page 64
- "Exporting Guest Account Information " on page 50
- "Importing Guest Accounts" on page 52
- "Managing Single Guest Accounts " on page 55
- "Managing Devices " on page 59
- "Managing Multiple Guest Accounts " on page 64

To customize guest self-registration, please see Configuration on page 187.

Creating a Guest Account

To create a new account, go to **Guest > Create Account**, or click the **Create New Guest Account** command link on the Guest Manager page. The Create New Guest Account form opens.



NOTE

The Create New Guest Account form (create_user) can be customized by adding new fields, or modifying or removing the existing fields. See "Customizing Guest Self-Registration" on page 235 for details about the customization process. The default settings for this form are described below.

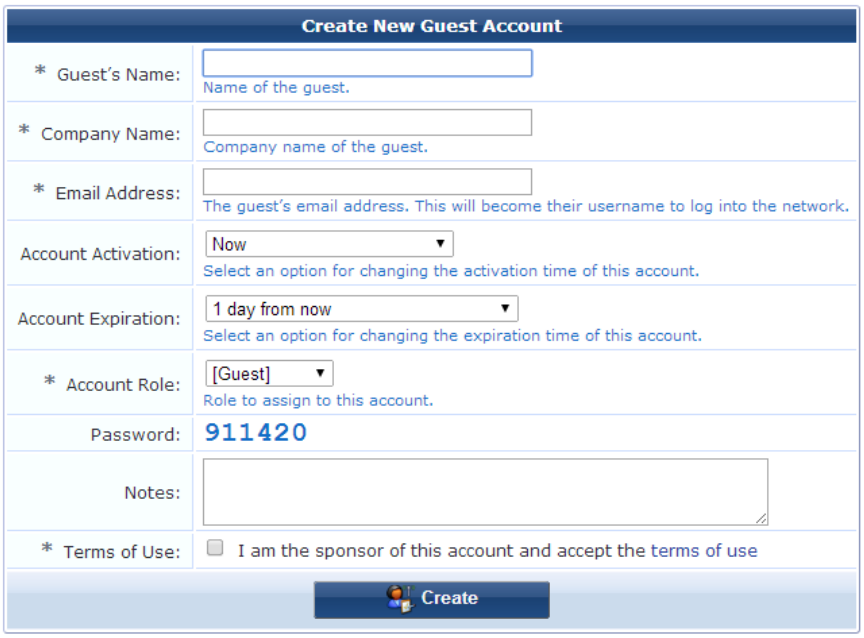


Table 8: *The Create New Guest Account Form*

Field	Description
Guest's Name	(Required) Name of the guest user for this account.
Company Name	(Required) Name of the organization the guest user belongs to.
Email Address	(Required) The guest user's email address. This email address will be the guest's username.
Account Activation	You can select an activation time from this drop-down list. The guest's account cannot be used before the activation time. Options include: • **Now** • **Disable account** • **Tomorrow** • **Next Monday** • **1 hour from now** • **1 day from now** • **1 week from now** • **Activate at specified time...**
Activation Time	If you selected "Activate at specified time", use the calendar picker in this field to specify the date and time. If no selection is made, the account will be enabled immediately.
Account Expiration	You can select an expiration time from this drop-down list. The guest's account cannot be used after the expiration time. Options include: • **Account will not expire** • **Now** • **Tonight** • **Friday night** • **1 hour from now** • **1 day from now** • **1 week from now** • **30 days from now** • **90 days from now** • **180 days from now** • **1 year from now** • **Account expires after...** • **Account expires at specified time...**
Expires After	If you selected "Account expires after", use this drop-down list to specify a length of time. Options include several intervals of hours, days, or weeks.
Expiration Time	If you selected "Account expires at specified time", use the calendar picker in this field to specify the date and time. If no selection is made, the account will not expire.
Account Role	(Required) Specify the type of account the guest should have. Options include: • **Contractor** • **Employee** • **Guest**
Password	A random password is created for each visitor account. This is displayed on this form, but will also be available on the guest account receipt.

Field	Description
Notes	You may enter notes about this guest account.
Terms of Use	(Required) You must select the check box in in this field in order to create the account.
Create	When your entries on the form are complete, click this button to create the guest's account.

Creating a Guest Account Receipt

After you click the Create button on the Create New Guest Account form, the details for that account are displayed.

Account Details	
Guest username:	aliddel@wonderland.org
Guest password:	95539400
Account status:	Active
Account activation:	Monday, 29 October 2012, 01:27 PM
Account expiration:	Account will expire at Tuesday, 30 October 2012, 01:27 PM
Account role:	[Contractor]
Sponsor name:	Wonderland

To print a receipt for the guest, select an appropriate template from the **Open print window using template...** list. A new Web browser window opens and the browser's Print dialog box is displayed.

Click the **Send SMS receipt** link to send a guest account receipt via text message. Use the **SMS Receipt** form to enter the mobile telephone number to which the receipt should be sent.

Sending SMS receipts requires the SMS Services plugin. If the administrator has enabled automatic SMS, and the visitor's phone number was typed into the **Create New Guest Account** form, an SMS message will be sent automatically. A message is displayed on the account receipt page after an SMS message has been sent.

Click the **Send email receipt** link to send an email copy of the guest account receipt. Use the Email Receipt form to enter the email address to which the receipt should be sent. You can also specify the subject line for the email message. If the administrator has enabled automatic email for guest account receipts, and the visitor's email address was typed into the **Create New Guest Account** form, an email receipt will be sent automatically. A message is displayed on the account receipt page after an email has been sent.

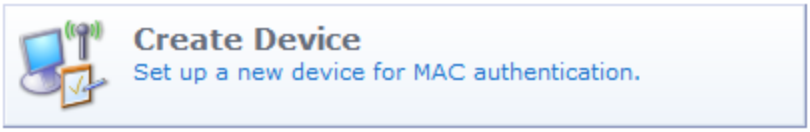
Creating a Device

Device accounts may be created in three ways:

- Manually in ClearPass Guest using the Create New Device form
- During guest self-registration by a MAC parameter passed in the redirect URL, if the process is configured to create a MAC device account
- During guest self-registration by a MAC parameter passed in the redirect URL, creating a parallel account paired with the visitor account

Creating Devices Manually in ClearPass Guest

If you have the MAC address, you can create a new device manually. To create a new device, go to **Guest > Create Device**, or go to **Guest > Manage Devices** and click the **Create** link.



The Create New Device form opens.

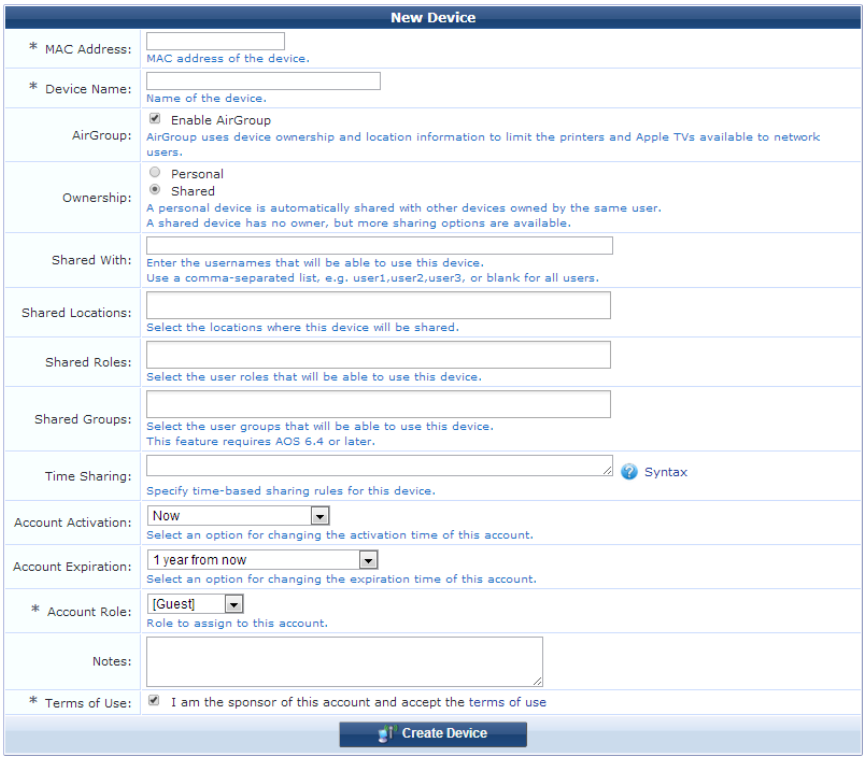


Table 9: *New Device*

Field	Description
MAC Address	(Required) Enter the device's MAC address.
Device Name	(Required) Enter the name for the device. If you need to modify the configuration for expected separator format or case, go to **Administration > Plugin Manager > Manage Plugins** and click the **Configuration** link for the **MAC Authentication Plugin**.
AirGroup	Enables AirGroup for the device. Configuration options are added to the form.
Ownership	Specifies whether device ownership should be personal or shared. Personal devices are automatically shared with the owner's other devices.
Shared With	Usernames of people who can share this device. Enter usernames as a comma-separated list. To make the device available to all users, leave this field blank. Each username may not exceed 64 characters. A maximum of 100 usernames may be entered. The maximum character limit for the list is 1000 characters (including comma separators).

Field	Description
Shared Locations	Locations where the device can be shared. When you type a location name in the Shared Locations field and press the Enter key, the location appears as a "tag" and is created in the system when the form is saved. Each location name may not exceed 64 characters. A maximum of 100 location names may be entered. The maximum character limit for the list is 1000 characters (including comma separators).
Shared Roles	User roles that can share this device. When you type a role name in the Shared Roles field and press the Enter key, the role appears as a "tag" and is created in the system when the form is saved. Each role name may not exceed 64 characters. A maximum of 100 role names may be entered. The maximum character limit for the list is 1000 characters (including comma separators).
Shared Groups	User groups that can share this device. These will be available in the Shared Groups field for users to choose from when they share a device. When you type a name for the group in the Group Names field and press the Enter key, the group appears as a "tag" and is created in the system when the form is saved. Each group name may not exceed 64 characters. A maximum of 32 group names may be entered. The maximum character limit for the list is 320 characters (including comma separators). This feature requires AOS 6.4 or later.
Time Sharing	Time-based sharing rules for this device. For more information, see "About AirGroup Time-Based Sharing" on page 75.
Syntax	Opens the help topic "AirGroup Time-Based Sharing Syntax Examples" on page 71
Account Activation	Options include: Activate the account immediately, at a preset interval of hours or days, at a specified time, or leave the account disabled. If you choose **Activate at a specified time**, the **ActivationTime** row is added to the form. Click the button to open the calendar picker. In the calendar, use the arrows to select the year and month, click the numbers in the **Time** fields to increment the hours and minutes, then click a day to select the date.
Account Expiration	Options include: Never expire, expire at a preset interval of hours or days, or expire at a specified time. • If you choose any time in the future, the **Expire Action** row is added to the form. Indicate the expiration action for the account—either delete, delete and log out, disable, or disable and log out. The action will be applied at the time set in the Account Expiration row. • If you choose **Account expires after**, the **ExpiresAfter** row is added to the form. Choose an interval of hours, days, or weeks. The maximum is two weeks. • If you choose **Account Expires at a specified time**, the **ExpirationTime** row is added to the form. In the calendar picker, use the arrows to select the year and month, click the numbers in the **Time** fields to increment the hours and minutes, then click a day to select the date.
Account Role	Assigns the visitor's role.
Terms of Use	Click the **terms of use** link and read the agreement, then mark the check box to agree to the terms.
Create Device	Commits your changes and creates the device. The Account Details and print options are displayed. For more information, see "Printing Device Details" on page 64.

Creating Devices During Self-Registration - MAC Only

This section describes how to configure a guest self-registration so that it creates a MAC device account. After the guest is registered, future authentication can take place without the need for the guest to enter their credentials. A registration can be converted to create a MAC device instead of standard guest credentials.

This requires a vendor to pass a **MAC** parameter in the redirect URL. ClearPass Guest does not support querying the controller or DHCP servers for the client's MAC based on IP.

To edit the registration form fields, go to **Configuration > Forms and Views**. In the **guest_register** row, click the **Edit Fields** link. The Customize Form Fields page opens. If you do not see mac or mac_auth in the list, click the **Customize fields** link above the list. Click the **Edit** link in the field's row. In the Define Custom Field form, edit the registration form fields:

- Add or enable **mac**
  - UI: **Hidden field**
  - Field Required: checked
  - Validator: **IsValidMacAddress**
- Add or enable **mac_auth**
  - UI: **Hidden field**
- Any other expiration options, role choice, surveys, and so on can be entered as usual.

Figure 7 *Modify fields*

Rank	Field	Type	Label	Description
30	visitor_company	text	Company Name:	Please enter your company name.
40	email	text	Email Address:	Please enter your email address. This will become your username to log into the network.
45	**mac**	text	MAC Address:	MAC address of the device.
47	**mac_auth**	hidden		
50	start_time	datetime	Activation Time:	Scheduled date and time at which to enable the visitor account. If blank, the account will be enabled immediately.
60	**expire_after**	hidden	Expires After:	Amount of time before this visitor account will expire.
65	expire_time	datetime	Expiration Time:	Optional date and time at which the visitor accounts will expire and be deleted. If blank, the account will not expire.

- Edit the receipt form fields:
  - Edit **username** to be a **Hidden field**
  - Edit **password** to be a **Hidden field**
- Adjust any headers or footers as needed.

When the visitor registers, they should be able to still log in via the **Log In** button. The MAC will be passed as their username and password via standard captive portal means.

The account will only be visible on the **List Devices** page.

If the guest logs out and reconnects, they should be immediately logged in without being redirected to the captive portal page.

Creating Devices During Self-Registration - Paired Accounts

Paired accounts is a means to create a standard visitor account with credentials, but to have a MAC account created in parallel that is directly tied to the visitor account. These accounts share the same role, expiration and

other properties.

This requires a vendor passing a **mac** parameter in the redirect URL. ClearPass Guest does not support querying the controller or DHCP servers for the client's MAC based on IP.

To edit the registration form fields, go to **Configuration > Forms and Views**. In the **guest_register** row, click the **Edit Fields** link. The Customize Form Fields page opens. If you do not see mac or mac_auth_pair in the list, click the **Customize fields** link above the list. Click the **Edit** link in the field's row. In the Define Custom Field form, edit the registration form fields:

- Add or enable **mac**
  - UI: **Hidden field**
  - Field Required: optional
  - Validator: **IsValidMacAddress**
- Add or enable **mac_auth_pair**
  - UI: **Hidden field**
  - Initial Value: **-1**
- Any other expiration options, role choice, surveys and so on can be entered as usual.

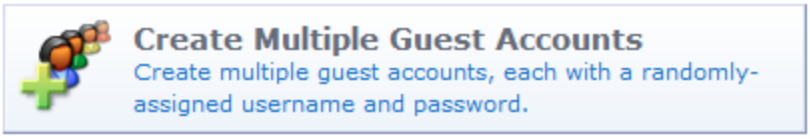
You will see an entry under both **List Accounts** and **List Devices**. Each should have a **View Pair** action that cross-links the two.

If you delete the base account, all of its pairings will also be deleted. If RFC-3576 has been configured, all pairs will be logged out.

Creating Multiple Guest Accounts

The **Create Multiple Guest Accounts** form is used to create a group of visitor accounts.

To create multiple accounts, go to **Guest > Create Multiple**, or click the **Create Multiple Guest Accounts** command link on the **Guest Manager > Start Here** page. The Create Multiple Guest Accounts form opens.



The Create Multiple Guest Accounts form (create_multi) can be customized by adding new fields, or modifying or removing the existing fields. See "Customizing Guest Self-Registration" on page 235 for details about the customization process. The default settings for this form are described below.

Table 10: *The Create New Guest Account Form*

Field	Description
Number of Accounts	(Required) Enter the number of accounts to create.
Account Activation	You can select an activation time from this drop-down list. The guests' accounts cannot be used before the activation time. Options include: • **Now** • **Disable account** • **Tomorrow** • **Next Monday** • **1 hour from now** • **1 day from now** • **1 week from now** • **Activate at specified time...**
Activation Time	If you selected "Activate at specified time", use the calendar picker in this field to specify the date and time. If no selection is made, the account will be enabled immediately.
Account Expiration	You can select an expiration time from this drop-down list. The guests' accounts cannot be used after the expiration time. Options include: • **Account will not expire** • **Now** • **Tonight** • **Friday night** • **1 hour from now** • **1 day from now** • **1 week from now** • **30 days from now** • **90 days from now** • **180 days from now** • **1 year from now** • **Account expires after...** • **Account expires at specified time...**
Expires After	If you selected "Account expires after", use this drop-down list to specify a length of time. Options include several intervals of hours, days, or weeks.
Expiration Time	If you selected "Account expires at specified time", use the calendar picker in this field to specify the date and time. If no selection is made, the account will not expire.
Expire Action	(Required) Specify how the behavior of the expiration. Options include: • **Delete and log out at specified time** • **Delete at specified time** • **Disable and log out at specified time** • **Disable at specified time** Be aware that a logout can only occur if the NAS is RFC-3576 compliant.
Account Role	(Required) Specify the type of account the guest should have. Options include: • **Contractor** • **Employee** • **Guest**

Field	Description
Notes	You may enter notes about this guest account.
Terms of Use	(Required) You must select the check box in in this field in order to create the account.
Create Accounts	When your entries on the form are complete, click this button to create the guests' accounts.

A random username and password will be created for each visitor account. This is not displayed on this form, but will be available on the guest account receipt. The default password length is six characters.

Creating Multiple Guest Account Receipts

After a group of guest accounts has been created, the details for the accounts are displayed.

Account Details

Username	**91972747**
Password	20626907
Role	[Contractor]
Current State	Active
Account Activation	Friday, 26 October 2012, 03:50 PM
Account Expiration	Saturday, 27 October 2012, 03:50 PM

Account Details

Username	**09609879**
Password	97625198
Role	[Contractor]
Current State	Active
Account Activation	Friday, 26 October 2012, 03:50 PM
Account Expiration	Saturday, 27 October 2012, 03:50 PM

Account Details

Username	**41915905**
Password	97695485
Role	[Contractor]
Current State	Active
Account Activation	Friday, 26 October 2012, 03:50 PM
Account Expiration	Saturday, 27 October 2012, 03:50 PM

To print the receipts, select an appropriate template from the **Open print window using template...** drop-down list. A new browser window opens with the **Print** dialog displayed.

To download a copy of the receipt information in CSV format, click the **Save list for scratch cards (CSV file)** link. You will be prompted to either open or save the spreadsheet (CSV) file. The fields available in the CSV file are:

- **Number** – The sequential number of the visitor account, starting at one.
- **Username** – The username for the visitor account.
- **Password** – The password for the visitor account. The default password length is six characters.
- **Role** – The visitor account's role.
- **Activation Time** – The date and time at which the account will be activated, or N/A if there is no activation time.
- **Expiration Time** – The date and time at which the account will expire, or N/A if there is no activation time.
- **Lifetime** – The account lifetime in minutes, or N/A if the account does not have a lifetime specified.
- **Successful** – "Yes" if the account was created successfully, or "No" if there was an error creating the account.

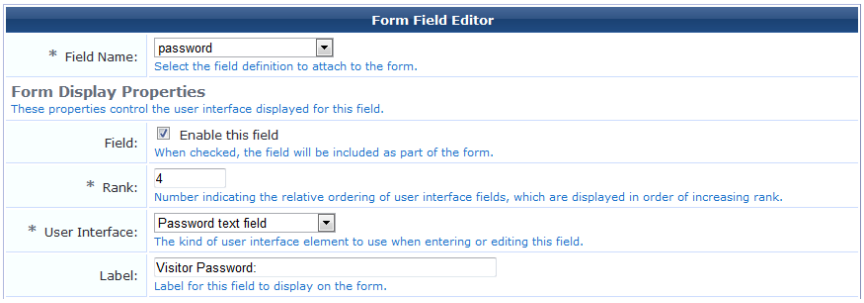
Creating a Single Password for Multiple Accounts

You can create multiple accounts that have the same password. In order to do this, you first customize the Create Multiple Guest Accounts form to include the Password field.

To include the Password field on the Create Multiple Guest Accounts form:

1. Go to **Configuration > Forms & Views**. Click the **create_multi** row, then click its **Edit Fields** link. The Customize Form Fields view opens, showing a list of the fields included in the Create Multiple Guest Accounts form and their descriptions.

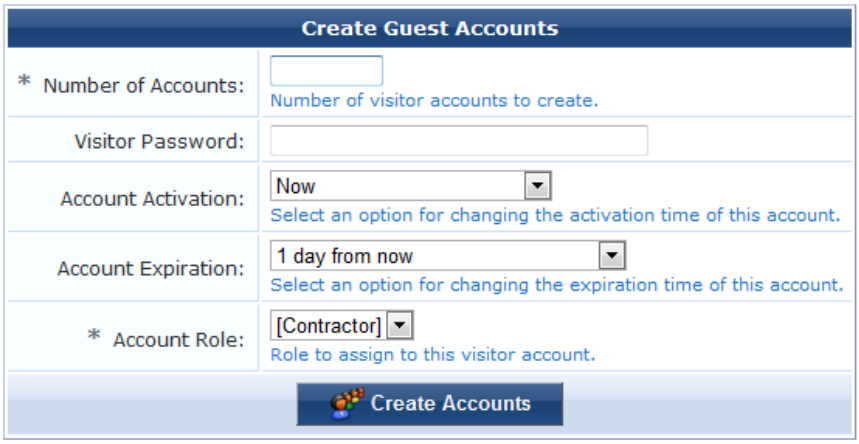
   At this point, the Password field is not listed because the Create Multiple Guest Accounts form (create_multi) has not yet been customized to include it. You will create it for the form in the next step.
2. Click on any field in the list to expand a row, then click the **Insert After** link (you can modify this placement later). The Customize Form Field form opens.
3. In the **Field Name** row, choose **password** from the drop-down list. The form displays configuration options for this field.



4. In the **Field** row, mark the **Enable this field** check box.
5. To adjust the placement of the password field on the Create Multiple Guest Accounts form, you may change the number in the **Rank** field.
6. In the **User Interface** row, choose **Password text field** from the drop-down list. The **Field Required** check box should now be automatically marked, and the **Validator** field should be set to **IsNonEmpty**.
7. Click **Save Changes**. The Customize Form Fields view opens again, and the password field is now included and can be edited.

To create multiple accounts that all use the same password:

1. Go to **Guest > Create Multiple**. The Create Guest Accounts form opens, and includes the Visitor Password field.



2. In the **Number of Accounts** field, enter the number of accounts you wish to create.
3. In the **Visitor Password** field, enter the password that is to be used by all the accounts. The minimum password length is six characters.
4. Complete the other fields with the appropriate information, then click **Create Accounts**. The Finished Creating Guest Accounts view opens. The password and other account details are displayed for each account.

Account Details	
Username	**57744937**
Password	1PW4all
Role	[Contractor]
Current State	Active
Account Activation	Friday, 26 October 2012, 04:18 PM
Account Expiration	Saturday, 27 October 2012, 04:18 PM

Account Details	
Username	**09641588**
Password	1PW4all
Role	[Contractor]
Current State	Active
Account Activation	Friday, 26 October 2012, 04:18 PM
Account Expiration	Saturday, 27 October 2012, 04:18 PM

Account Details	
Username	**60600985**
Password	1PW4all
Role	[Contractor]
Current State	Active
Account Activation	Friday, 26 October 2012, 04:18 PM
Account Expiration	Saturday, 27 October 2012, 04:18 PM

Exporting Guest Account Information

Guest account information may be exported to a file in one of several different formats.

To export a file with the current list of guest accounts, go to **Guest > Export Accounts**, or go to **Guest > Start Here** and click the **Export Guest Accounts** command link. The Export Accounts page opens with three options displayed. Click the appropriate command link to save a list of all guest accounts in comma-separated values (CSV), tab-separated values (TSV), or XML format.

The Export Accounts view (guest_export) may be customized by adding new fields, or by modifying or removing the existing fields. See "Customizing Guest Self-Registration" on page 235 for details about this customization process.

About CSV and TSV Exports

In CSV and TSV format, the following default fields are included in the export:

- **Number** – Sequential number of the guest account in the exported data
- **User ID** – Numeric user ID of the guest account
- **Username** – Username for the guest account
- **Role** – Role for the guest account
- **Activation** – Date and time at which the guest account will be activated, or "N/A" if there is no activation time
- **Expiration** – Date and time at which the guest account will expire, or "N/A" if there is no expiration time
- **Lifetime** – The guest account's lifetime in minutes after login, or 0 if the account lifetime is not set
- **Expire Action** – Number specifying the action to take when the guest account expires (0 through 4)

About XML Exports

The default XML format consists of a **<GuestUsers>** element containing a **<GuestUser>** element for each exported guest account. The numeric ID of the guest account is provided as the "id" attribute of the **<GuestUser>** element. This format is compatible with the ClearPass Policy Manager XML format for guest users.

The values for both standard and custom fields for guest accounts are exported as the contents of an XML tag, where the tag has the same name as the guest account field.

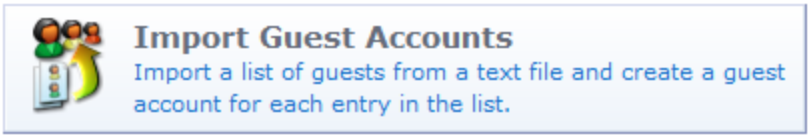
An example XML export is given below:

```
<?xml version="1.0" encoding="UTF-8" standalone="true"?>
<MyContents xmlns="http://www.example.com/myapiDefs/1.0">
     <MyHeader version="6.0" exportTime="Sun, 16 Dec 2012 16:36:03 PST"/>
     <GuestUsers>
          <GuestUser guestType="USER" enabled="true" sponsorName="55480025"
                     expiryTime="2012-12-04 13:39:25" startTime="1969-12-31 16:00:00"
                     password="08654361" name="55480025">
               <GuestUserTags tagValue="Hotspot Services self-provisioned guest account
                     Source IP: 10.11.10.254 MAC: unknown Plan: Free Access x 1 Transaction
                     Amount: $0.00 Invoice Number: P-15 Transaction ID: " tagName="notes"/>
               <GuestUserTags tagValue="2" tagName="[Role ID]"/>
               <GuestUserTags tagValue="1" tagName="do_expire"/>
               <GuestUserTags tagValue="1" tagName="simultaneous_use"/>
```

```
        <GuestUserTags tagValue="ff" tagName="Company Name"/>
        <GuestUserTags tagValue="2012-12-04 12:39:14" tagName="Create Time"/>
        <GuestUserTags tagValue="fff@df" tagName="Email"/>
        <GuestUserTags tagValue="ff" tagName="first_name"/>
        <GuestUserTags tagValue="plan0" tagName="hotspot_plan_id"/>
        <GuestUserTags tagValue="Free Access" tagName="hotspot_plan_name"/>
        <GuestUserTags tagValue="ff" tagName="last_name"/>
        <GuestUserTags tagValue="ff ff" tagName="Visitor Name"/>
        <GuestUserTags tagValue="ff" tagName="zip"/>
</GuestUser>
```

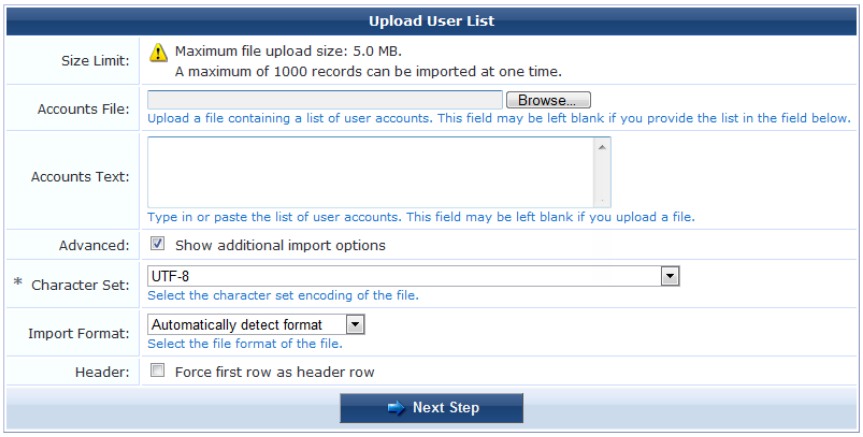
Importing Guest Accounts

Guest accounts may be created from an existing list by uploading the list to ClearPass Guest.



To import a file with the current list of guest accounts, go to **Guest > Import Accounts**, or go to **Guest > Start Here** and click the **Import Guest Accounts** command link. The Import Accounts page opens with the first part of the form displayed, **Upload User List**.

The **Upload User List** form provides you with different options for importing guest account data.



To complete the form, you must either specify a file containing account information, or type or paste in the account information to the Accounts Text area.

Select the **Show additional import options** check box to display the following advanced import options:

- **Character Set**: ClearPass Guest uses the UTF-8 character set encoding internally to store visitor account information. If your accounts file is not encoded in UTF-8, the import may fail or produce unexpected results if non-ASCII characters are used. To avoid this, you should specify what character set encoding you are using.
- **Import format**: The format of the accounts file is automatically detected. You may specify a different encoding type if automatic detection is not suitable for your data. The **Import Format** drop-down list includes the following options:
  - **Automatically detect format** (This default option recognizes guest accounts exported from ClearPass Policy Manager in XML format)
  - **XML**
  - **Comma separated values**

- **Tab separated values**
- **Pipe (|) separated values**
- **Colon (:) separated values**
- **Semicolon (;) separated values**

- Select the **Force first row as header row** check box if your data contains a header row that specifies the field names. This option is only required if the header row is not automatically detected.

Click **Next Step** to upload the account data.

In step 2 of 3, ClearPass Guest determines the format of the uploaded account data and matches the appropriate fields to the data. The first few records in the data are displayed, together with any automatically detected field names.

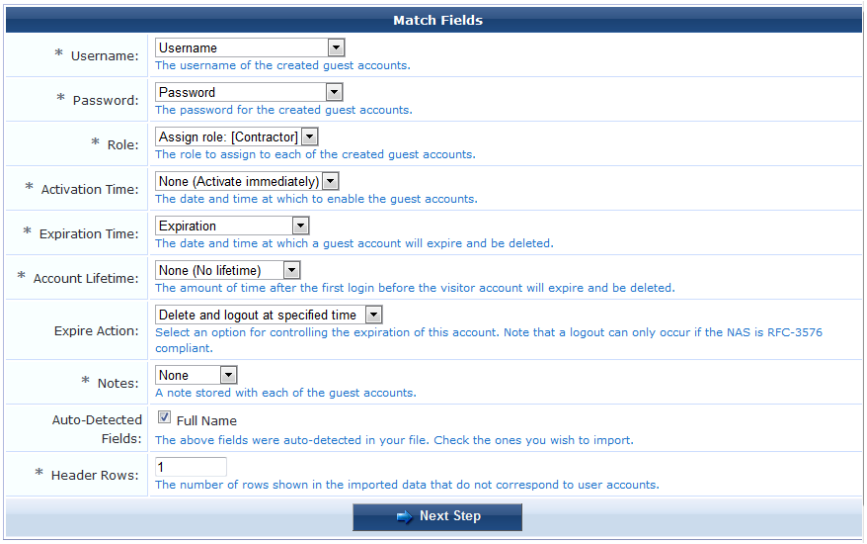
In this example, the following data was used:

```
username,visitor_name,password,expire_time
demo005,Demo five,secret005,2011-06-10 09:00
demo006,Demo six,secret006,2011-06-11 10:00
demo007,Demo seven,secret007,2011-06-12 11:00
demo008,Demo eight,secret008,2011-06-13 12:00
demo009,Demo nine,secret009,2011-06-13 12:00
demo010,Demo ten,secret010,2011-06-13 12:00
demo011,Demo eleven,secret011,2011-06-13 12:00
```

Because this data includes a header row that contains field names, the corresponding fields were automatically detected in the data:

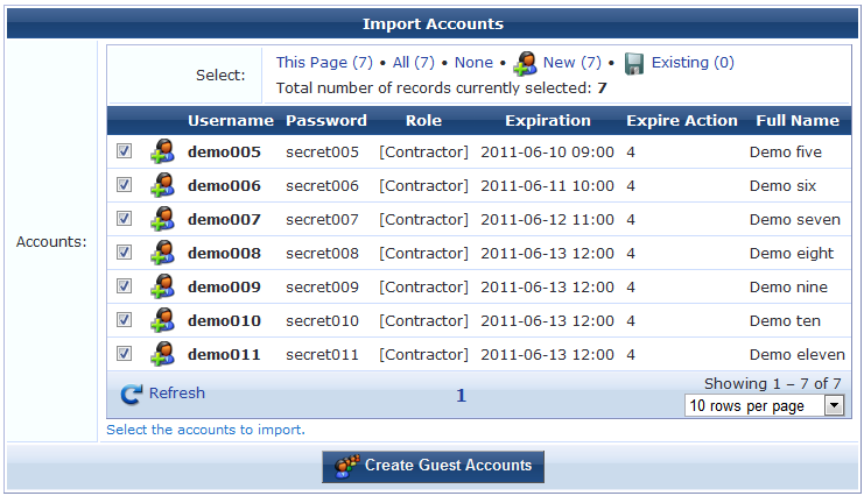
Record	Username	Full Name	Password	Expiration
1	username	visitor_name	password	expire_time
2	demo005	Demo five	secret005	2011-06-10 09:00
3	demo006	Demo six	secret006	2011-06-11 10:00
4	demo007	Demo seven	secret007	2011-06-12 11:00
5	demo008	Demo eight	secret008	2011-06-13 12:00
6	demo009	Demo nine	secret009	2011-06-13 12:00
7	demo010	Demo ten	secret010	2011-06-13 12:00
8	demo011	Demo eleven	secret011	2011-06-13 12:00

Use the **Match Fields** form to identify which guest account fields are present in the imported data. You can also specify the values to be used for fields that are not present in the data.



To complete the **Match Fields** form, make a selection from each of the drop-down lists. Choose a column name to use the values from that column when importing guest accounts, or select one of the other available options to use a fixed value for each imported guest account.

Click the **Next Step** button to preview the final result. Import Step 3 of 3, the Import Accounts form, opens and shows a preview of the import operation. The values of each guest account field are determined, and any conflicts with existing user accounts are shown.



The icon displayed for each user account indicates if it is a new entry ( ) or if an existing user account will be updated ( ).

By default, this form shows ten entries per page. To view additional entries, click the arrow button at the bottom of the form to display the next page, or click the **10 rows per page** drop-down list at the bottom of the form and select the number of entries that should appear on each page.

Click the check box by the account entries you want to create, or click one of the following options to select the desired accounts:

- Click the **This Page** link to select all entries on the current page.
- Click the **All** link to select all entries on all pages
- Click the **None** link to deselect all entries
- Click the **New** link to select all new entries

- Click the **Existing** link to select all existing user accounts in the list.

Click the **Create Accounts** button to finish the import process. The selected items will be created or updated. You can then print new guest account receipts or download a list of the guest accounts. See "Creating Multiple Guest Account Receipts" on page 47 in this chapter for more information.

Managing Single Guest Accounts

Use the Manage Guest Accounts list view to work with individual guest accounts. To open the Manage Guest Accounts list, go to **Guest > Manage Accounts**.

The Manage Guest Accounts list view opens.This view (guest_users) may be customized by adding new fields or modifying or removing the existing fields. See "Customizing Fields" on page 206 for details about this customization process. The default settings for this view are described below.

Username	Role	State	Activation	Expiration
09609879	[Contractor]	Active	40 minutes ago	2012-10-27 15:50
09641588	[Contractor]	Active	12 minutes ago	2012-10-27 16:18
41915905	[Contractor]	Active	40 minutes ago	2012-10-27 15:50
57744937	[Contractor]	Active	12 minutes ago	2012-10-27 16:18
60600985	[Contractor]	Active	12 minutes ago	2012-10-27 16:18
91972747	[Contractor]	Active	40 minutes ago	2012-10-27 15:50
ipod	[Contractor]	Expired	1.1 days ago	**Expired**
sham@a	[Contractor]	Expired	1.2 days ago	**Expired**
tom@a	[Guest]	Expired	N/A	**Expired**

Refresh 1 Showing 1 – 9 of 9 20 rows per page

The **Username**, **Role**, **State**, **Activation**, and **Expiration** columns display information about the visitor accounts that have been created:

- The value in the **Expiration** column is colored red if the account will expire within the next 24 hours. The expiration time is additionally highlighted in **boldface** if the account will expire within the next hour.
- In addition, icons in the **Username** column indicate the account's activation status:
  - —Visitor account is active
  - —Visitor account was created but is not activated yet
  - —Visitor account was disabled by Administrator
  - —Visitor account has expired
  - —Visitor account was deleted

You can use the **Filter** field to narrow the search parameters. You may enter a simple substring to match a portion of the username or any other fields that are configured for search, and you can include the following operators:

Table 11: *Operators supported in filters*

Operator	Meaning	Additional Information
=	is equal to	You may search for multiple values when using the equality (=) or inequality !=) operators. To specify multiple values, list them separated by the pipe character (|). For example, specifying the filter "role_id=2|3, custom_field=Value" restricts the accounts displayed to those with role IDs 2 and 3 (Guest and Employee), and with the field named "custom_field" set to "Value".
!=	is not equal to	
>	is greater than	
>=	is greater than or equal to	
<	is less than	
<=	is less than or equal to	
~	matches the regular expression	
!~	does not match the regular expression	

To restore the default view, click the **Clear Filter** link.

Use the paging control at the bottom of the list to jump forwards or backwards by one page, or to the first or last page of the list. You can also click an individual page number to jump directly to that page.

NOTE

When the list contains numerous user accounts, consider using the Filter field to speed up finding a specific user account.

Use the **Create** tab to create new visitor accounts using the **Create New Guest Account** form. See "Creating a Guest Account " on page 39 for details about this form.

Use the **More Options** tab for additional functions, including import and export of guest accounts and the ability to customize the view.

Click a user account's row to select it. You can then select from one of these actions:

- **Reset password** – Changes the password for a guest account. A new randomly generated password is displayed on the **Reset Password** form. The default password length is six characters.

Click **Update Account** to reset the guest account's password. A new account receipt is displayed, allowing you to print a receipt showing the updated account details.

- **Change expiration** – Changes the expiration time for a guest account.

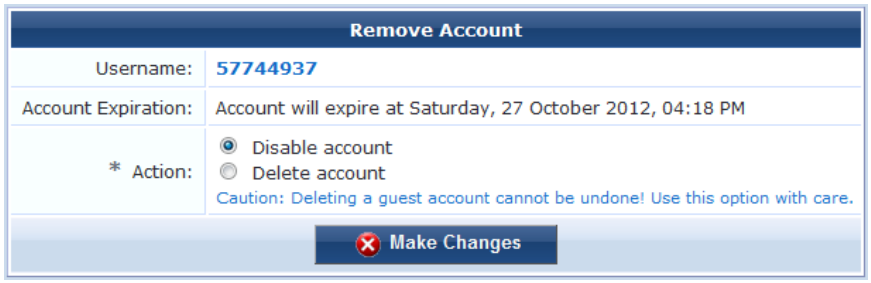
NOTE

This form (change_expiration) can be customized by adding new fields, or modifying or removing the existing fields. See "Customizing Forms and Views" on page 212 for details about this customization process.

Select an option from the drop-down list to change the expiration time of the guest account.

Click **Update Account** to set the new expiration time for the guest account. A new account receipt is displayed, allowing you to print a receipt showing the updated account details.

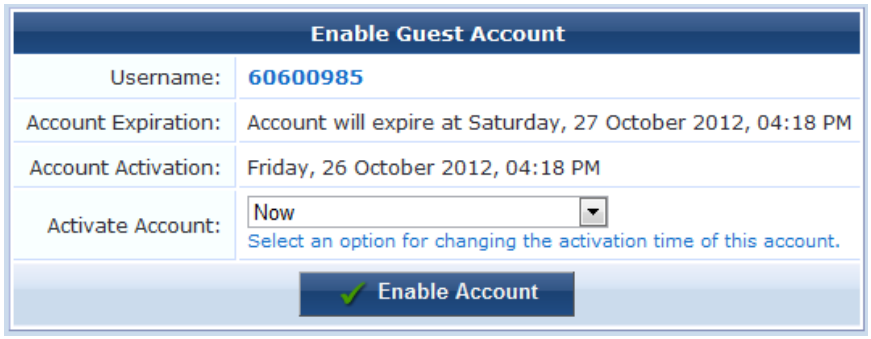
- **Remove** – Disables or deletes a guest account.



Select the appropriate **Action** radio button, and click **Make Changes** to disable or delete the account.

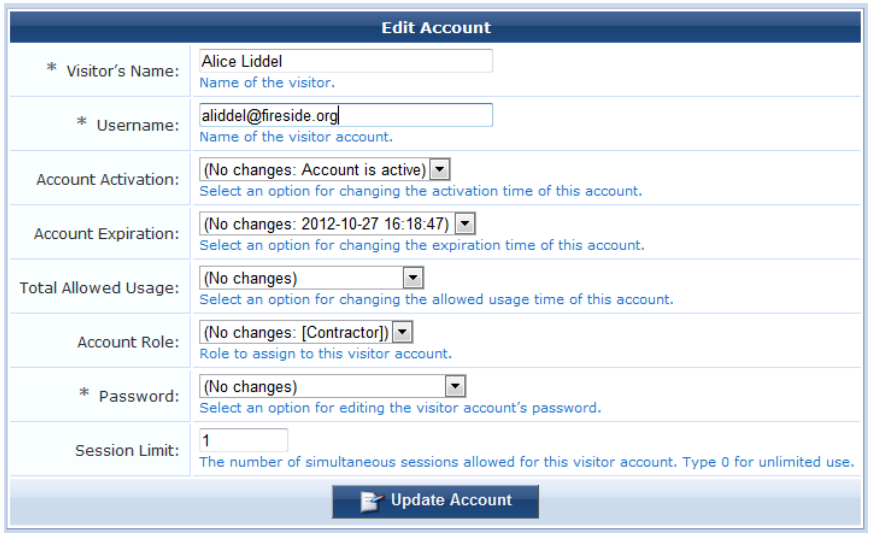
If you wish to have automatic disconnect messages sent when the enabled value changes, you can specify this in the Configuration module. See "Configuring ClearPass Guest Authentication " on page 188.

- **Activate** – Re-enables a disabled guest account, or specifies an activation time for the guest account.



Select an option from the drop-down list to change the activation time of the guest account. To re-enable an account that has been disabled, choose **Now**. Click **Enable Account** to set the new activation time for the guest account. A new account receipt is displayed, allowing you to print a receipt showing the updated account details.

- **Edit** – Changes the properties of a guest account.



NOTE

This form can be customized by adding new fields, or modifying or removing the existing fields. See "Customizing Forms and Views" on page 212 for details about this customization process.

Click **Update Account** to update the properties of the guest account. A new account receipt is displayed, allowing you to print a receipt showing the updated account details.

- **Sessions** – Displays the active sessions for a guest account. See "Active Sessions Management" on page 33 in this chapter for details about managing active sessions.
- **Print** – Displays the guest account's receipt and the delivery options for the receipt. For security reasons, the guest's password is not displayed on this receipt. To recover a forgotten or lost guest account password, use the **Reset password** link.
- **Show Details**—The row expands to display all the properties of the guest's account in a table, including endpoint details. This option is only available to users whose operator profile includes the Show Details privilege.

Username	Role	State	Activation	Expiration
test	[Guest]	Active	2.2 days ago	No expiry

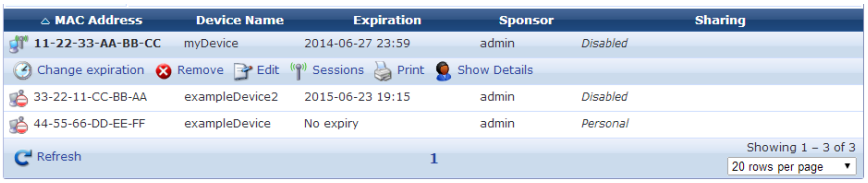
Reset password | Change expiration | Remove | Edit | Sessions | Print | Show Details

Field	Label	Value	Display
id		3001	3001
username	Username:	test	test
create_time	Created:	1405359304	2014-07-14 10:35:04
current_state	Current State:	active	Active
do_expire	Expire Action:	0	0
email	Email Address:	test@a	test@a
enabled	Account Status:	1	Enabled
expired_notify_status	Expired Notification Status:	1	1
expire_postlogin	Account Lifetime:	0	
expire_time	Expiration Time:	0	
notes	Notes:		
remote_addr	Create Address:	10.11.9.215	10.11.9.215
role_id	Account Role:	2	2
role_name	Account Role:	[Guest]	[Guest]
simultaneous_use	Session Limit:	1	1
source	Create Source:	create_user	create_user
sponsor_name	Sponsor's Name:	admin	admin
sponsor_profile		1	1
sponsor_profile_name	Sponsor's Profile:	Super Administrator	Super Administrator
start_time	Activation Time:	1405359315	2014-07-14 10:35
visitor_carrier	Mobile Carrier:		
visitor_company	Company Name:	c	c
visitor_name	Guest's Name:	test	test

Managing Devices

To view the list of current MAC devices, go to **Guest > Manage Devices**.

The Guest Manager Devices page opens.



MAC Address	Device Name	Expiration	Sponsor	Sharing
11-22-33-AA-BB-CC	myDevice	2014-06-27 23:59	admin	*Disabled*
Change expiration | Remove | Edit | Sessions | Print | Show Details				
33-22-11-CC-BB-AA	exampleDevice2	2015-06-23 19:15	admin	*Disabled*
44-55-66-DD-EE-FF	exampleDevice	No expiry	admin	*Personal*

Refresh 1 Showing 1 – 3 of 3 20 rows per page

All devices created by one of methods described in the following section are listed. Options on the form let you change a device's account expiration time; activate, remove, or edit the device; view active sessions or details for the device; or print details, receipts, confirmations, or other information.

The **MAC Address**, **Device Name**, **Expiration**, **Sponsor**, and **Sharing** columns display information about the device accounts that have been created:

- The value in the **Expiration** column is colored red if the device account will expire within the next 24 hours. The expiration time is additionally highlighted in **boldface** if the device account will expire within the next hour.
- In addition, icons in the **MAC Address** column indicate the device account's activation status:
  - —Device account is active
  - —Device account was created but is not activated yet
  - —Device account was disabled by Administrator
  - —Device account has expired
  - —Device account was deleted

You can use the **Filter** field to narrow the search parameters. You may enter a simple substring to match a portion of any fields that are configured for search, and you can include the following operators:

Table 12: *Operators supported in filters*

Operator	Meaning	Additional Information
=	is equal to	You may search for multiple values when using the equality (=) or inequality !=) operators. To specify multiple values, list them separated by the pipe character (|). For example, specifying the filter "role_id=2|3, custom_field=Value" restricts the accounts displayed to those with role IDs 2 and 3 (Guest and Employee), and with the field named "custom_field" set to "Value".
!=	is not equal to	
>	is greater than	
>=	is greater than or equal to	
<	is less than	
<=	is less than or equal to	
~	matches the regular expression	
!~	does not match the regular expression	

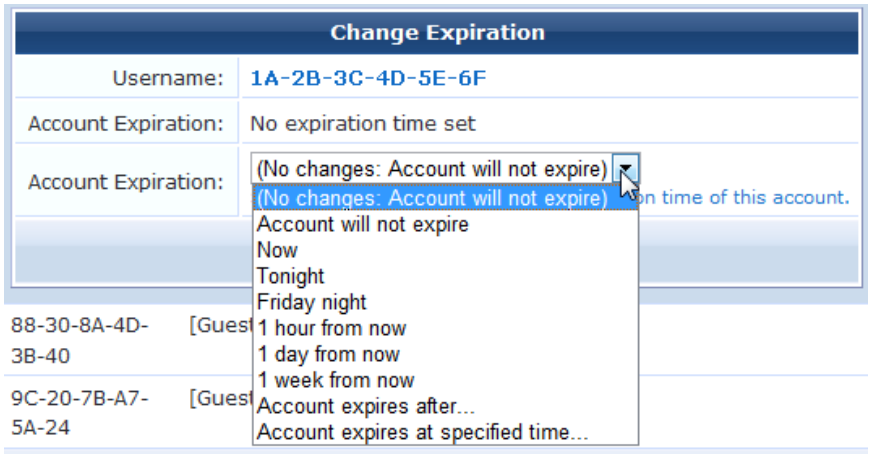
To restore the default view, click the **Clear Filter** link.

Use the paging control at the bottom of the list to jump forwards or backwards by one page, or to the first or last page of the list. You can also click an individual page number to jump directly to that page.

To select a device, click the device you want to work with.

Changing a Device's Expiration Date

To change a device's expiration date, click the device's row in the Guest Manager Devices list, then click its **Change expiration** link. The row expands to include the Change Expiration form.



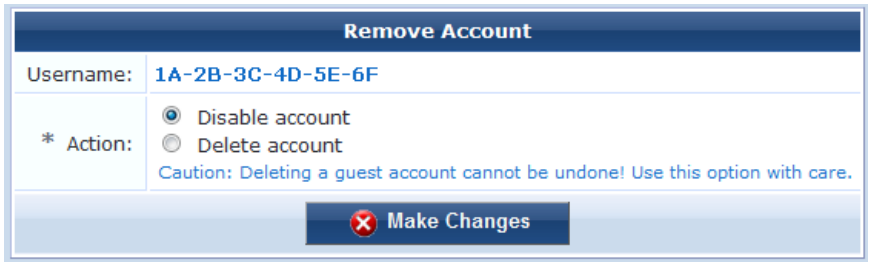
1. In the **Account Expiration** row, choose one of the options in the drop-down list to set an expiration date:
   - If you choose **Account expires after**, the **Expires After** row is added to the form. Choose an interval of hours, days, or weeks from the drop-down list.

- If you choose **Account Expires at a specified time**, the **Expiration Time** row is added to the form. Click the button to open the calendar picker. In the calendar, use the arrows to select the year and month, click the numbers in the **Time** fields to increment the hours and minutes, then click a day to select the date.

2. If you choose any option other than "will not expire" or "now" in the Account Expiration field, the **Expire Action** row is added to the table. Use the drop-down list in this row to specify one of the following actions: delete, delete and log out, disable, or disable and log out.
3. Click **Update Account** to commit your changes.

Disabling and Deleting Devices

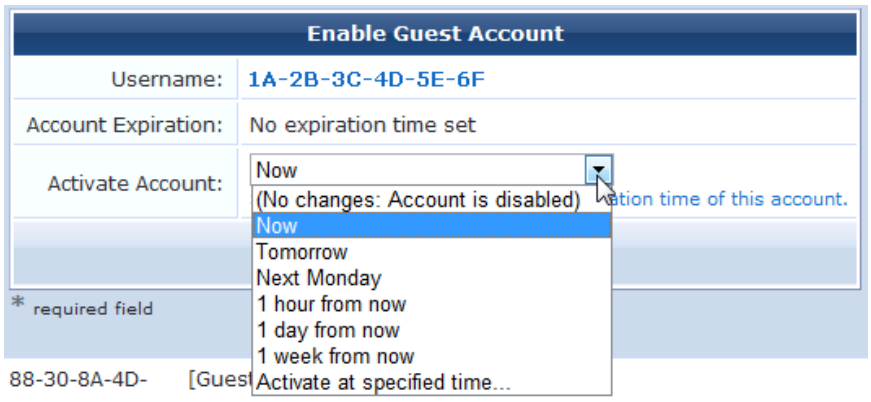
To remove a device's account by disabling or deleting it, click the device's row in the Guest Manager Devices list, then click its **Remove** link. The row expands to include the Remove Account form.



You may choose to either disable or delete the account. If you disable it, it remains in the device list and you may activate it again later. If you delete the account, it is removed from the list permanently.

Activating a Device

To activate a disabled device's account, click the device's row in the Guest Manager Devices list, then click its **Activate** link. The row expands to include the Enable Guest Account form.



1. In the **Activate Account** row, choose one of the options in the drop-down list to specify when to activate the account. You may choose an interval, or you may choose to specify a time.
2. If you choose **Activate at specified time**, the **Activation Time** row is added to the form. Click the button to open the calendar picker. In the calendar, use the arrows to select the year and month, click the numbers in the **Time** fields to increment the hours and minutes, then click a day to select the date.
3. Click **Enable Account** to commit your changes.

Editing a Device

To edit a device's account, click the device's row in the Guest Manager Devices list, then click its **Edit** link. The row expands to include the Edit Device form. You can edit any of the device's properties.

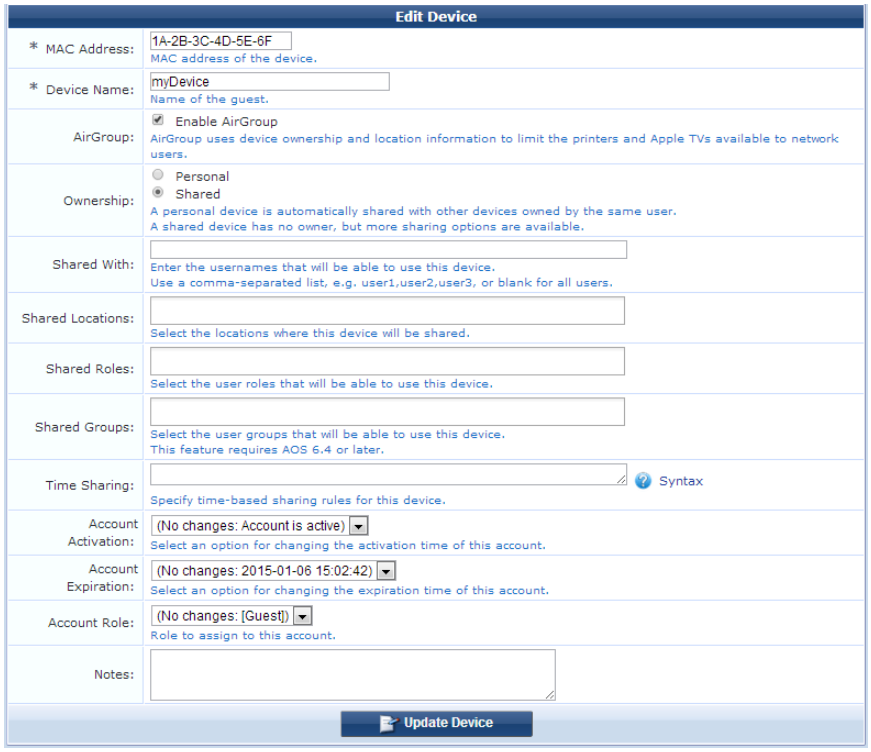


Table 13: *New Device*

Field	Description
MAC Address	The device's MAC address.
Device Name	The name for the device. If you need to modify the configuration for expected separator format or case, go to **Administration > Plugin Manager > Manage Plugins** and click the **Configuration** link for the **MAC Authentication Plugin**.
AirGroup	Enables AirGroup for the device. Configuration options are added to the form.
Ownership	Specifies whether device ownership should be personal or shared. Personal devices are automatically shared with the owner's other devices.
Shared With	Usernames of people who can share this device. Enter usernames as a comma-separated list. To make the device available to all users, leave this field blank. Each username may not exceed 64 characters. A maximum of 100 usernames may be entered. The maximum character limit for the list is 1000 characters (including comma separators).
Shared Locations	Locations where the device can be shared. When you type a location name in the Shared Locations field and press the Enter key, the location appears as a "tag" and is created in the system when the form is saved. Each location name may not exceed 64 characters. A maximum of 100 location names may be entered. The maximum character limit for the list is 1000 characters (including comma separators).
Shared Roles	User roles that can share this device. When you type a role name in the Shared Roles field

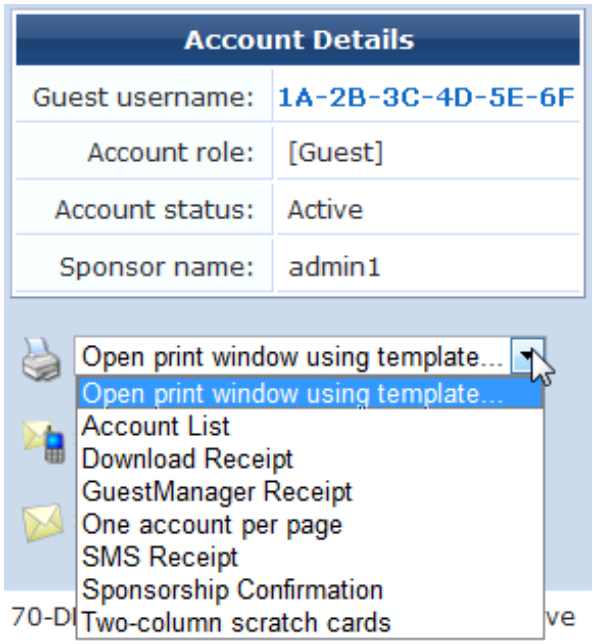
Field	Description
	and press the Enter key, the role appears as a "tag" and is created in the system when the form is saved. Each role name may not exceed 64 characters. A maximum of 100 role names may be entered. The maximum character limit for the list is 1000 characters (including comma separators).
Shared Groups	User groups that can share this device. These will be available in the Shared Groups field for users to choose from when they share a device. When you type a name for the group in the Group Names field and press the Enter key, the group appears as a "tag" and is created in the system when the form is saved. Each group name may not exceed 64 characters. A maximum of 32 group names may be entered. The maximum character limit for the list is 320 characters (including comma separators).
Time Sharing	Time-based sharing rules for this device. For more information, see "About AirGroup Time-Based Sharing" on page 75.
Syntax	Opens the help topic "AirGroup Time-Based Sharing Syntax Examples" on page 71.
Account Activation	Options include: Activate the account immediately, at a preset interval of hours or days, at a specified time, or leave the account disabled. If you choose **Activate at a specified time**, the **ActivationTime** row is added to the form. Click the button to open the calendar picker. In the calendar, use the arrows to select the year and month, click the numbers in the **Time** fields to increment the hours and minutes, then click a day to select the date.
Account Expiration	Options include: Never expire, expire at a preset interval of hours or days, or expire at a specified time. • If you choose any time in the future, the **Expire Action** row is added to the form. Indicate the expiration action for the account—either delete, delete and log out, disable, or disable and log out. The action will be applied at the time set in the Account Expiration row. • If you choose **Account expires after**, the **ExpiresAfter** row is added to the form. Choose an interval of hours, days, or weeks. The maximum is two weeks. • If you choose **Account Expires at a specified time**, the **ExpirationTime** row is added to the form. In the calendar picker, use the arrows to select the year and month, click the numbers in the **Time** fields to increment the hours and minutes, then click a day to select the date.
Account Role	Assigns the visitor's role.
Notes	Optional additional information.
Update Device	Commits your changes and updates the device. The Updated Device Details and print options are displayed.

Viewing Current Sessions for a Device

To view any sessions that are currently active for a device, click the **Sessions** link in the device's row on the Guest Manager Devices form. The Active Sessions list opens. For more information, see "Active Sessions Management" on page 33.

Printing Device Details

To print details, receipts, confirmations, or other information for a device, click the device's row in the Guest Manager Devices list, then click its **Print** link. The row expands to include the Account Details form and a drop-down list of information that can be printed for the device.



Choosing an option in the **Open print window using template** drop-down list opens a print preview window and the printer dialog. Options include account details, receipts in various formats, a session expiration alert, and a sponsorship confirmation notice.

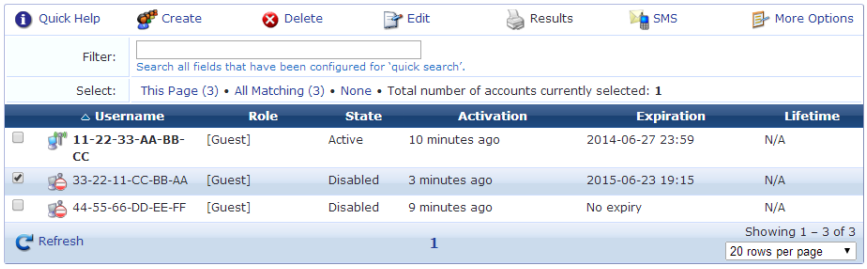
Viewing Device Details

- **Show Details**—The row expands to display all the properties of the device's account in a table. This option is only available to users whose operator profile includes the Show Details privilege.

Managing Multiple Guest Accounts

Use the **Bulk Edit Accounts** list view to work with multiple guest accounts. To open the Bulk Edit Accounts list, go to **Guest > Manage Multiple Accounts**.

This view (guest_multi) may be customized by adding new fields or by modifying or removing the existing fields. See "Customizing Guest Self-Registration" on page 235 for details about this customization process. The default settings for this view are described below.



The **Username**, **Role**, **State**, **Activation**, **Expiration**, and **Lifetime** columns display information about the visitor accounts that have been created:

- The value in the **Expiration** column is colored red if the visitor account will expire within the next 24 hours. The expiration time is additionally highlighted in **boldface** if the visitor account will expire within the next

hour.

- In addition, icons in the **Username** column indicate the account's activation status:
  - —Visitor account is active
  - —Visitor account was created but is not activated yet
  - —Visitor account was disabled by Administrator
  - —Visitor account has expired

You can use the **Filter** field to narrow the search parameters. You may enter a simple substring to match a portion of the username or any other fields that are configured for search, and you can include the following operators:

Table 14: *Operators supported in filters*

Operator	Meaning	Additional Information
=	is equal to	You may search for multiple values when using the equality (=) or inequality !=) operators. To specify multiple values, list them separated by the pipe character (|). For example, specifying the filter "role_id=2|3, custom_field=Value" restricts the accounts displayed to those with role IDs 2 and 3 (Guest and Employee), and with the field named "custom_field" set to "Value".
!=	is not equal to	
>	is greater than	
>=	is greater than or equal to	
<	is less than	
<=	is less than or equal to	
~	matches the regular expression	
!~	does not match the regular expression	

To restore the default view, click the **Clear Filter** link.

Use the paging control at the bottom of the list to jump forwards or backwards by one page, or to the first or last page of the list. You can also click an individual page number to jump directly to that page.

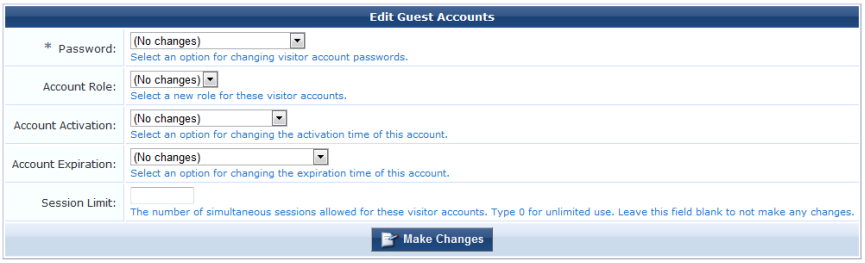
To select guest accounts, click the accounts you want to work with. You may click either the check box or the row to select a visitor account. To select or unselect all visible visitor accounts, click the check box in the header row of the table.

Use the selection row at the top of the table to work with the current set of selected accounts. The number of currently selected accounts is shown. When a filter is in effect, the "All Matching" link can be used to add all pages of the filtered result to the selection.

Use the **Create** tab to create new visitor accounts using the **Create Multiple Guest Accounts** form. See "Managing Multiple Guest Accounts " on page 64 in this chapter for details about this form.

Use the **Delete** tab to delete the visitor accounts that you have selected. This option is not active if there are no visitor accounts selected.

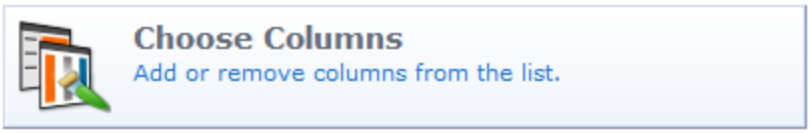
Use the **Edit** tab to make changes to multiple visitor accounts at once. This option is not active if there are no visitor accounts selected.



The Edit Guest Accounts form may be customized by adding new fields, or modifying or removing the existing fields. See "Customizing Guest Self-Registration" on page 235 for details about this customization process. This is the **guest_multi_form** form.

The **Results** tab will be automatically selected after you have made changes to one or more guest accounts. You can create new guest account receipts or download the updated guest account information. See "Creating Multiple Guest Account Receipts" on page 47 in this chapter for more information.

The **More Options** tab includes **the Choose Columns** command link. You can click this link to open the Configuration module's Customize View Fields form, which may be used to customize the Edit Guest Accounts view.



AirGroup Device Registration

AirGroup allows users to register their personal mobile devices on the local network and define a group of friends or associates who are allowed to share them. If AirGroup Services is enabled, AirGroup administrators can provision their organization's shared devices and manage access, and AirGroup operators can register and provision a limited number of their own personal devices for sharing. For complete AirGroup deployment information, refer to the AirGroup sections in the *ArubaOS User Guide* and the ClearPass Policy Manager documentation.

Registering Groups of Devices or Services

This functionality is only available to AirGroup administrators.

To register and manage an organization's shared devices and configure device access, log in as the AirGroup administrator and go to **Guest > Create Device**. The Register Shared Device form opens.

1. In the **Device Name** field, enter the name used to identify the device.
2. In the **Device Type** field, use the drop-down list to select the device type.
3. In the **MAC Address** field, enter the device's MAC address.
4. In the **Shared Locations** field, enter the locations where the device can be shared. To allow the device to be shared with all locations, leave this field blank.

   Each location name may not exceed 64 characters. A maximum of 100 location names may be entered. The maximum character limit for the list is 1000 characters (including comma separators).

   Each location is entered as a tag=value pair describing the MAC address of the access point (AP) closest to the registered device. Use commas to separate the tag=value pairs in the list. Tag=value pair formats are shown in the following table:

Table 15: *Tag=Value Pair Formats*

AP Type	Tag=Value Format
Name-based AP	ap-name=<name>
Group-based AP	ap-group=<group>
FQLN-based AP	fqln=<fqln>

   - AP FQLNs should be configured in the format `<ap name>.<floor>.<building>.<campus>`
   - Floor names should be in the format `floor <number>`
   - The `<ap-name>` should not include periods (.)

   Example:

   ```
   AP105-1.Floor 1.TowerD.Mycompany
   ```

5. In the **Shared With** field, enter the usernames of your organization's staff or students who are allowed to use the device. Use commas to separate usernames in the list.

Each username may not exceed 64 characters. A maximum of 100 usernames may be entered. The maximum character limit for the list is 1000 characters (including comma separators).

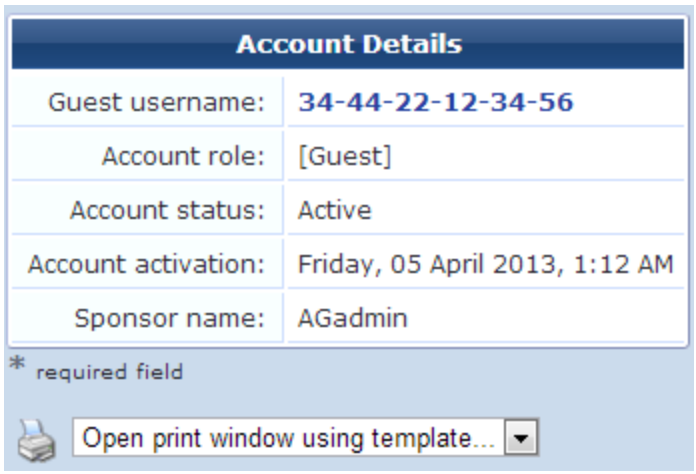
- If the **Share With** field is left blank, this device can be accessed by all devices.
- If users are entered in the **Shared With** field, the device can only be accessed by the specified users.

6. In the **Shared Roles** field, enter the user roles that are allowed to use the device. Use commas to separate the roles in the list.

   Each role name may not exceed 64 characters. A maximum of 100 role names may be entered. The maximum character limit for the list is 1000 characters (including comma separators).

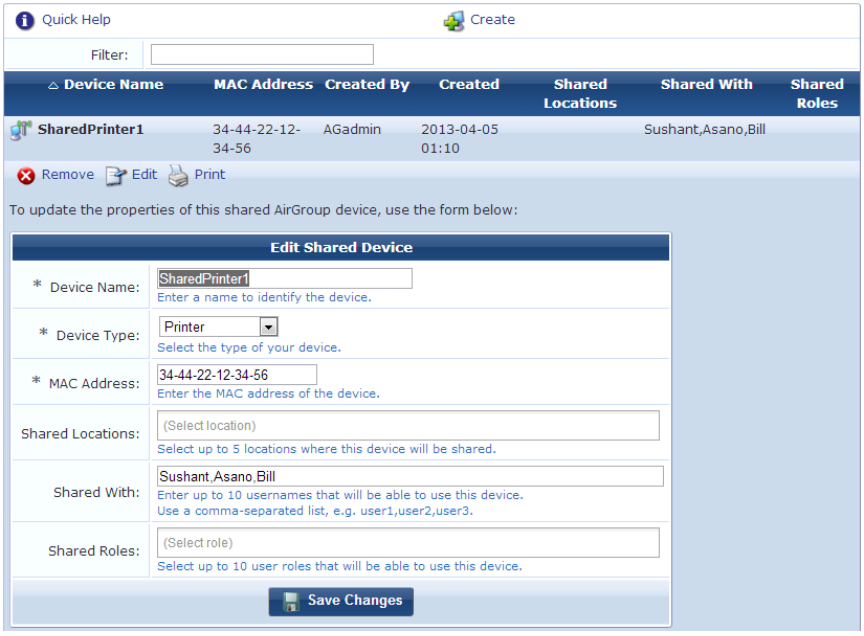
   - To make the device available to all roles, leave this field blank.
   - If roles are entered in the Shared Roles field, the device can only be accessed by users with matching roles.

7. Click **Register Shared Device**. The Finished Creating Guest Account page opens. This page displays Account Details and provides printer options.



To view and edit your organization's shared AirGroup devices:

1. Go to **Guest > List Devices**, or click the **Manage my AirGroup Devices** link on the Create AirGroup Device page. The AirGroup Devices page opens. This page lists all the shared AirGroup devices for the organization. You can remove a device; edit a device's name, MAC address, shared locations, shared-user list, or shared roles; print device details; or add a new device.
2. To work with a device, click the device's row in the list. The form expands to include the **Remove**, **Edit**, and **Print** options.



3. To edit properties of a shared device, click the **Edit** link for the device. The row expands to include the Edit Shared Device form. You can modify the device's name, MAC address, shared locations, group of users, and shared roles.
4. When your edits are complete, click **Save Changes**.

Registering Personal Devices

This functionality is available to AirGroup operators.

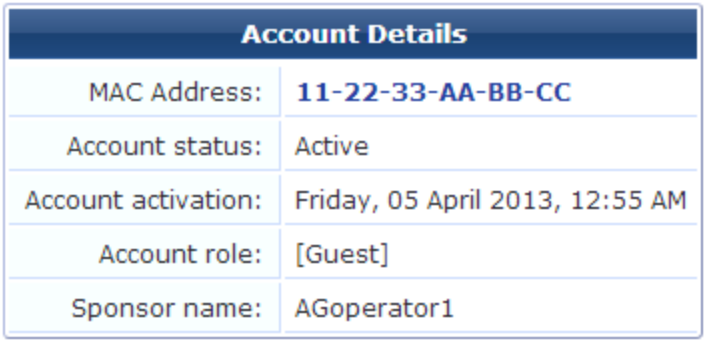
To register your personal devices and define a group who can share them:

1. Log in as the AirGroup operator and go to **Guest > Create Device**. The Register Device form opens.

2. In the **Your Name** field, enter your username for your organization.
3. In the **Device Name** field, enter the name used to identify the device.
4. In the **Device Type** drop-down list, select the device type.
5. In the **MAC Address** field, enter the device's MAC address.
6. In the **Shared With** field, enter the usernames of your friends or colleagues who are allowed to use the device. Use commas to separate usernames in the list. You may enter up to ten usernames.

- If the **Shared With** field is left blank, this device can only be accessed by devices registered by the same operator or with a dot1x username that matches the operator's name.
- If users are entered in the **Shared With** field, the device can be accessed by the device owner and by the specified users.

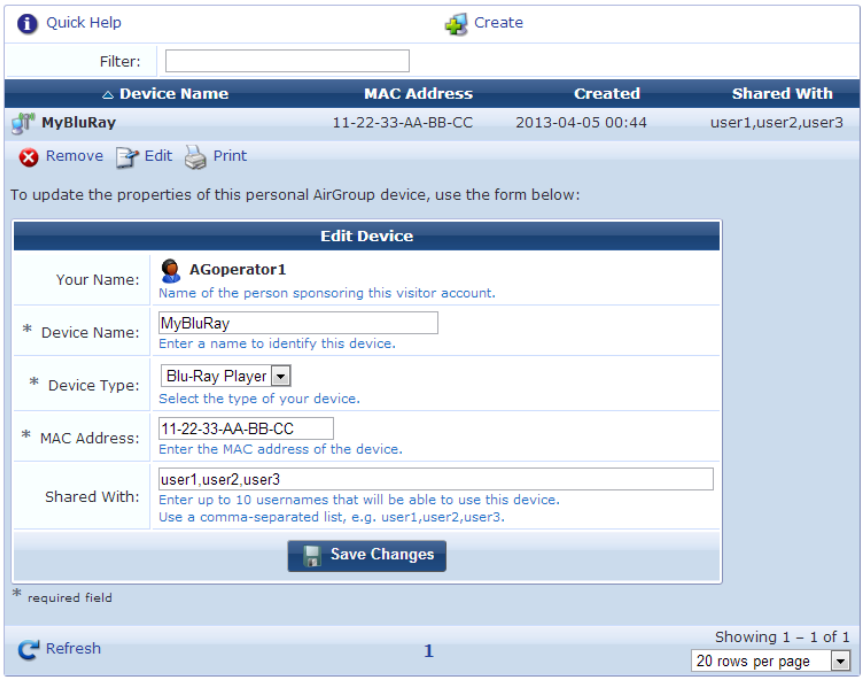
7. Click **Register Device**. The Finished Creating Guest Account page opens. This page displays Account Details and provides printer options.



To view and edit your personal AirGroup devices, go to **Guest > List Devices**, or click the **Manage my AirGroup Devices** link on the Create AirGroup Device page. The List Device page lets you remove a device; edit a device's name, MAC address, or shared-user list; print device details; or add a new device.

To view and edit your personal AirGroup devices:

1. Go to **Guest > List Devices**, or click the **Manage my AirGroup Devices** link on the Create AirGroup Device page. The AirGroup Devices page opens. This page lists all your personal AirGroup devices. You can remove a device; edit a device's name, MAC address, or shared-user list; print device details; or add a new device.
2. To work with a device, click the device's row in the list. The form expands to include the **Remove**, **Edit**, and **Print** options.



3. To edit properties of a device, click the **Edit** link for the device. The row expands to include the Edit Device form. You can modify the device's name, MAC address, and group of users.

4. When your edits are complete, click **Save Changes**.

AirGroup Time-Based Sharing Syntax Examples

This section provides examples and discussions of syntax for time-based sharing policies for AirGroup shared devices.

For information on using time-based sharing for AirGroup, see "About AirGroup Time-Based Sharing" on page 75. For supplemental time-based syntax information, see "Time-Based Syntax Reference" on page 73.

Example:

```
periodic Monday 9am to 10am shared users A, B
```

The device is shared with users A and B, from 9am to 10am every Monday (relative to the server's current time zone). Outside of this time slot, the device is **not** shared (except as otherwise controlled by AOS).

Example:

```
periodic Monday 9:00 to 10:30 shared users A, B
periodic Monday 12:00 to 13:30 shared users A, B
periodic Monday 15:00 to 16:30 shared users C, D
```

The device is shared with users A and B, from 9am to 10:30am and from noon to 1:30pm every Monday (relative to the server's current time zone). From 3pm to 4:30pm, the device is shared with users C and D.

Outside of these two time slots, the device is **not** shared.

With **periodic**, times may be specified either in 24-hour format (**hh:mm**, from **0:00** to **24:00**), or in 12-hour format (**hh:mm** and **am** or **pm**).

Don't specify overlapping time ranges with **periodic** rules; this can lead to unexpected results.

The synonyms **rep**, **repeat** or **repeating** may also be used in place of **period** or **periodic**. All of these terms are treated identically.

Example:

```
default allow
periodic mon 9am to 10am shared users A, B
```

As in the first example, the device is shared with users A and B, from 9am to 10am every Monday. Outside of this time slot, the device **is shared** as specified by the other sharing state fields (shared users, locations, roles and/or groups). This is the meaning of the **default allow** statement.

If **default allow** is not specified, the normal behavior is **default deny**, which is the same as in the first example. Note that with **default deny** in effect, the AirGroup time sharing policy will override any other sharing rules that are specified, for as long as the time sharing policy is in effect.

Two and three-character shortened forms of weekdays are acceptable (e.g. "Mon" or "Mo" can be used for Monday, "Tue" or "Tu" for Tuesday, etc.) Case is not significant in the time sharing policy, so "Mon", "MON", and "mon" are all equivalent ways to specify "Monday".

Example:

```
default deny
not after 01-Feb-2014
periodic mon 9am to 10am shared users A, B
```

The device is shared with users A and B, from 9am to 10am every Monday. The **not after date** sets the end of the time sharing policy. Monday, January 27, 2014 is the last day that this time sharing policy will take effect.

After 10am on this date, the time sharing policy is no longer in effect; any other sharing rules that have been specified will then take effect.

Example:

```
default deny
not before 1/1/14
not after 01-Feb-2014
periodic mon 9am to 10am shared users A, B
```

The device is shared with users A and B, from 9am to 10am every Monday. The **not before date** sets the beginning of the time sharing policy. In this case, Monday, January 6, 2014 is the first day that this time sharing policy will take effect.

Prior to 9am 6 January 2014, the device is not shared (due to the **default deny**).

After 10am on 27 January 2014, the time sharing policy is no longer in effect; any other sharing rules that have been specified will then take effect.

Example:

```
time zone America/Los_Angeles
periodic Monday 9am to 10am shared users A, B
```

The device is shared with users A and B, from 9am to 10am every Monday (relative to the U.S. Pacific time zone). Daylight savings time rules are observed; the time period **9am to 10am** is always relative to that time zone.

Example:

```
periodic mon tue wed thu fri 9am to 10am shared users A, B
```

The device is shared with users A and B, from 9am to 10am every weekday (Monday, Tuesday, Wednesday, Thursday and Friday).

Example:

```
periodic weekdays 9am to 10am shared users A, B
```

weekday or **weekdays** can be used as a synonym for "Monday Tuesday Wednesday Thursday Friday". Similarly, **weekend** or **weekends** can be used as a synonym for "Saturday Sunday".

Example:

```
on Sep 16 9:00 to 13:00 shared location AP-Name=1341-ap01 shared group ABC shared role
SomeRole shared user user02, user03, "user04", 'user05'
```

The device is shared with a single access point named **1341-ap01**, a single group named **ABC**, a single role named **SomeRole**, and 4 users named **user02**,**user03**, **user04**, and **user05**.

Note the quotes are not considered to be part of the user names **user04** and **user05**. (In this case, the quotes are redundant as there is no space or comma that requires quoting.)

No time zone is specified, so the date and time are determined relative to the server's time zone.

No year is specified, so the server's current year is used. In particular, after September 16 of any year, this rule will have no effect until the following year.

Example:

```
default allow
periodic 0:00 to 24:00 shared roles default_role
periodic mon 9am to 5pm shared roles other_role
```

The device is normally shared ("default allow") with a single role named **default_role** ("periodic 0:00 to 24:00 shared roles default_role").

On Monday from 9am to 5pm, the device is shared with a different role named **other_role**.

Note that even though the time ranges overlap, the sharing policies are completely distinct; on Mondays from 9am to 5pm, the role **default_role** will NOT have access to the device, because a different sharing rule

is in effect. (The rule could instead have been written "periodic mon 9am to 5pm shared roles default_role, other_role" if this was the desired result.)

This example shows how to use an overlapping time range: place the most general time range first, with more specific time ranges later. In particular, reversing the order of the **periodic** statements will not work.

Example:

```
default deny
periodic 9:00 to 22:00 shared roles default_role
no periodic thu 9:00 to 17:00
periodic fri 9:00 to 17:00 not shared
```

This example shows how to share a device with a basic policy, and demonstrates two ways to disable sharing for a subset of the time period.

The device will be shared with a single role named **default_role**, from 9:00 to 22:00 each day. ("periodic 9:00 to 22:00 shared roles default_role").

On Thursday, the device is **not** shared between 9:00 and 17:00.

On Friday, the device is **not** shared between 9:00 and 17:00.

Example:

```
default allow
periodic 9:00 to 22:00 shared roles default_role
no periodic thu 9:00 to 17:00
periodic fri 9:00 to 17:00 not shared
```

This example is similar to the previous example; the device is not shared on Thursday and Friday between 9:00 and 17:00.

The difference is after 22:00 and before 9:00: in the previous example, the device is not shared during this time period, whereas with **default allow** the other AirGroup sharing rules will take effect (any shared users, roles, groups or locations that have been defined for the device).

Time-Based Syntax Reference

This reference describes the syntax used for time formats in time-based sharing rules. It supplements the examples for AirGroup time-based sharing by user groups discussed in "AirGroup Time-Based Sharing Syntax Examples" on page 71. For more information on using time-based sharing with AirGroup, see "About AirGroup Time-Based Sharing" on page 75.

The syntax for AirGroup time-based sharing policies supports all the default time-based ACL rules specified in TimeRangeACL. This ACL is a sequence of rules, one per line, according to the following syntax:

- `default allow|deny`

  Specifies the default behavior for unmatched times; this is 'allow' only if no 'periodic' or 'absolute' rules are specified, otherwise it is 'deny'. Use 'default allow' if the remaining rules exclude times, otherwise use 'default deny' if the remaining rules are to include times. This rule may only be used once.

- `[time] zone default|server|...`

  Specifies the time zone to use for matching times and specifying the time of day. If unset, the current time zone setting is used (note that this may vary due to operator and/or profile settings). If the value "default" or "server" is specified, the system's time zone is used. Otherwise, the named time zone is used. This rule may only be used once, and must be before any rules specifying a time interval.

- `[not] period(ic) [day-list] hh:mm to [day] hh:mm`

  Specifies a periodic or daily interval. Recognized days include Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday and 3-letter abbreviations; the tokens "weekends" and "weekdays" may also be

used. Without a day-list, all days of the week are matched. Time may be specified in 12 or 24 hour format, with the special time 24:00 indicating the end of the day.

Example: `periodic monday 8:00 to friday 17:00` matches between 8am and 5pm, Monday through Friday.

Example: `periodic weekdays 8:00 to 17:00` specifies the same thing as the example in the previous line.

Example: `periodic wed 11am to 11pm` matches between 11:00 and 23:00 on a Wednesday.

Example: `periodic weekend 0:00 to 24:00` matches any time on a Saturday or Sunday.

Example: `periodic saturday sunday 0:00 to 24:00` specifies the same thing as the example in the previous line.

The 'not' keyword may be specified to invert the allow/deny decision.

Example: `default allow; not period 23:00 to 6:00` (on 2 separate lines) allows access, except between 11pm and 6am.

Example: `period 6:00 to 23:00` is equivalent to the example in the previous line.

- `not before [date-and-time]`

  Specifies an absolute time before which access will always be rejected.

  Example: `not before 2010-07-01 09:00` matches after 9am on 1 July 2010.

- `not after [date-and-time]`

  Specifies an absolute time after which access will always be rejected.

  Example: `not after 2011-01-01 00:00` matches before midnight on New Year's Day 2011.

- `[not] abs(olute) [start-date-and-time] to [end-date-and-time]`

  Specifies a start and end interval. The date and time is a format recognized by strtotime(). Times between the start and end point are matched. The 'not' keyword may be specified to invert the allow/deny decision.

  Example: `absolute December 25 to December 26` matches all day on Christmas Day each year. (This does not match on December 26 as midnight on this date is the endpoint of the interval.)

A blank time ACL means "all times are allowed".

The following examples give common usage:

- `8:00 to 18:00` - allows access 8am to 6pm, every day, but not outside those times
- `weekdays 9am to 5pm` - allows access 9am to 5pm, Monday through Friday, but not outside those times
- `weekdays 9am to 5pm`
  `weekends 10am to 4pm` - allows access 9am to 5pm, Monday through Friday, with reduced hours on Saturday and Sunday

Annual recurrences may be specified:

- `weekdays 9am to 5pm`
  `not absolute December 25 to December 26` - allows access 9am to 5pm, Monday through Friday, but not on Christmas Day

Less common cases:

- `default allow`
  `not 23:00 to 6:00` - allows access, except between 11pm and 6am daily
- `9:00 to 18:00`
  `not before 2010-02-01` - allows daily access between 9am and 6pm, starting on February 1, 2010

- `time zone Etc/GMT`
  `9:00 to 18:00`
  `not before 2010-02-01` - allows daily access between 9am and 6pm, starting on February 1, 2010, in the GMT time zone (useful if server is in a different time zone)

About AirGroup Time-Based Sharing

This section discusses time-based sharing policies for an AirGroup shared device.

For information on the syntax for time-based sharing policies for a AirGroup shared devices, see "AirGroup Time-Based Sharing Syntax Examples" on page 71

Time-based sharing is used in settings where an organization's shared devices are made available to groups of users according to a regular schedule, and device access is configured by group at the user level–for example:

- A university classroom or laboratory is used by a first-year physics class on Mondays, Wednesdays, and Fridays, by a group of researchers on Tuesdays and Thursdays, and for visiting speakers every other Saturday.
- A convention center has several major exhibitors who each hold an annual event, and who reserve their customary section of the convention center several years in advance.

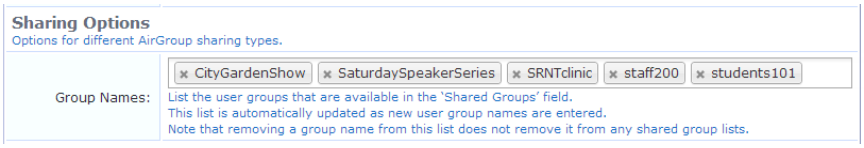
In cases like this, you can enter rules to define the schedule on which shared devices in an area will be available to certain groups. You can also specify times when a device will not be available. This is a time-based sharing policy.

Device association is dynamic: When a shared device is available to a group, any user with that group attribute can access the device. When the user is no longer a member of the group (for example, at the end of the semester), they no longer have access, but the time-based sharing policy remains in effect and new users who are assigned the group attribute can access the shared device.

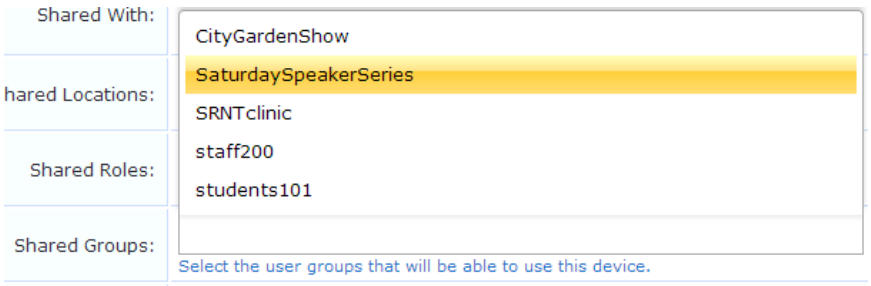
Basics of Time-Based Sharing Setup

When you create a device, enable it for AirGroup Services, and configure it as a shared device, you also have the option to specify time-based sharing (time fencing) for the device.

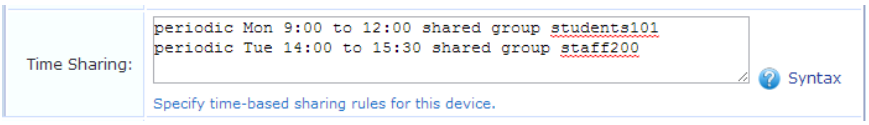
You first use the **Administration > AirGroup Services > Configure** form to create the groups who can share devices. When you type a name for the group in the Group Name field, press the Enter key, and click Save, the group is created in the system and appears as a "tag".



On the **Guest > Create Device** or **Guest > List Devices > Edit** forms, the shared user groups you created are then available for selection when you click in the Shared Groups field. (This feature requires AOS 6.4 or later)



On the same screen, the next step is then to enter the rules for the time-based sharing policy, using the group names you created. For more information, see "AirGroup Time-Based Sharing Syntax Examples" on page 71



MAC Authentication in ClearPass Guest

ClearPass Guest supports a number of options for MAC Authentication and the ability to authenticate devices.

The advanced features described in this section generally require a WLAN capable of MAC authentication with captive portal fallback. Please refer to the Aruba WLAN documentation for setting up the controller appropriately.

To verify that you have the most recent MAC Authentication Plugin installed and enabled before you configure these advanced features, go to **Administration > Plugin Manager** . For information on plugin management, see "Plugin Manager" on page 444.

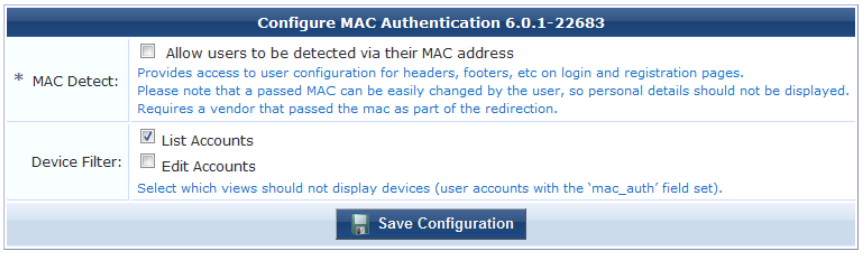
MAC Address Formats

Different vendors format the client MAC address in different ways—for example:

- 112233AABBCC
- 11:22:33:aa:bb:cc
- 11-22-33-AA-BB-CC

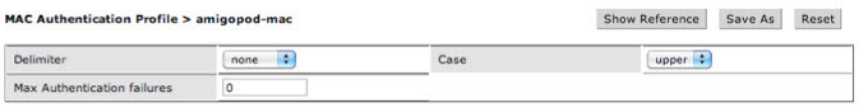
ClearPass Guest supports adjusting the expected format of a MAC address. To configure formatting of separators and case in the address, as well as user detection and device filtering for views, go to **Administration > Plugin Manager** and click the **Configuration** link for the **MAC Authentication** plugin. The MAC Authentication Configuration page opens.

Figure 8 *MAC Authentication Plugin—Configuration*



On the controller, the fields look as follows:

Figure 9 *MAC Authentication Profile*



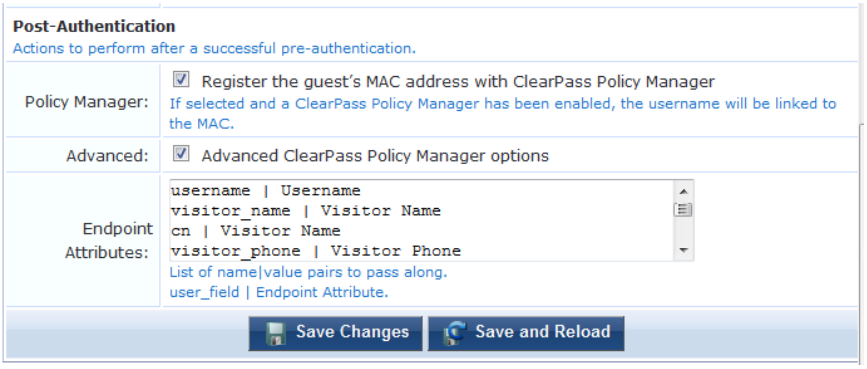
Automatically Registering MAC Devices in ClearPass Policy Manager

If ClearPass Policy Manager is enabled, you can configure a guest MAC address to be automatically registered as an endpoint record in ClearPass Policy Manager when the guest uses a Web login page or a guest self-

registration workflow. This customization option is available if a valid Local or RADIUS pre-authentication check was performed.

To configure auto-registration for an address through a Web login page:

1. Go to **Configuration > Pages > Web Logins**, click the row of the page you wish to configure, then click its **Edit** link. The RADIUS Web Login Editor form opens.
2. Scroll down to the **Post-Authentication** area.



3. In the **Policy Manager** row, mark the check box to register the guest's MAC address with ClearPass Policy Manager. The Advanced row is added to the form.
4. In the **Advanced** row, mark the check box to enable advanced options in ClearPass Policy Manager. The Endpoint Attributes row is added to the form.
5. In the **Endpoint Attributes** row, enter name|value pairs for the user fields and Endpoint Attributes to be passed.
6. Click **Save Changes** to complete this configuration and continue with other tasks, or click **Save and Reload** to proceed to Policy Manager and apply the network settings.

Importing MAC Devices

The standard **Guest > Import Accounts** form supports importing MAC devices. At a minimum the following two columns are required: **mac** and **mac_auth**.

```
mac_auth,mac,notes
1,aa:aa:aa:aa:aa:aa,Device A
1,bb:bb:bb:bb:bb:bb,Device B
1,cc:cc:cc:cc:cc:cc,Device C
```

Any of the other standard fields can be added similar to importing regular guests.

Advanced MAC Features

This section describes some advanced features for MAC authentication.

User Detection on Landing Pages

When **mac** is passed in the redirect URL, the user is detected and a customized message displays on the landing page.

To use this feature:

1. Go to **Administration > Plugin Manager: MAC Authentication: Configuration** and enable **MAC Detect**.
2. Edit the header of your redirect landing page (login or registration) and include the following:

```
<p>{if $guest_receipt.u.visitor_name}
Welcome back to the show, {$guest_receipt.u.visitor_name|htmlspecialchars}!
```

```
{else}
Welcome to the show!
{/if}</p>
```

3. For debugging purposes, include the following to see all the fields available:

```
{dump var=$guest_receipt export=html}
```

Click-Through Login Pages

A click-through login page will present a splash or terms screen to the guest, yet still provide MAC-auth style seamless authentication. Under this scenario, you could have people create an account, with a paired MAC, yet still have them click the terms and conditions on every new connection.

To use this feature:

1. Disable MAC authentication on the controller.
2. Go to **Administration > Plugin Manager: MAC Authentication: Configuration** and enable **MAC Detect**.
3. Create a **Web Login**. Include the following settings:
   - Authentication: **Anonymous**
   - Anonymous User: **_mac** *(_mac is a special secret value)*
   - Pre-Auth Check: **Local**
   - Terms: **Require a Terms and Conditions confirmation**
4. Set the Web login as your landing page and test. Using a registered device the 'Log In' button should be enabled, otherwise it will be disabled.
5. You might also want to add a message so visitors get some direction:

```
<p>{if $guest_receipt.u.username}
{if $guest_receipt.u.visitor_name}
Welcome back, {$guest_receipt.u.visitor_name|htmlspecialchars}!
{else}
Welcome back.
{/if}
  Please accept the terms before proceeding.
{else}
You need to register...
{/if}</p>
```

6. You can hide the login form by having the final line of the header be:

```
{if !$guest_receipt.u.username}<div style="display:none">{/if}
```

and the first line of the footer be:

```
{if !$guest_receipt.u.username}</div>{/if}
```

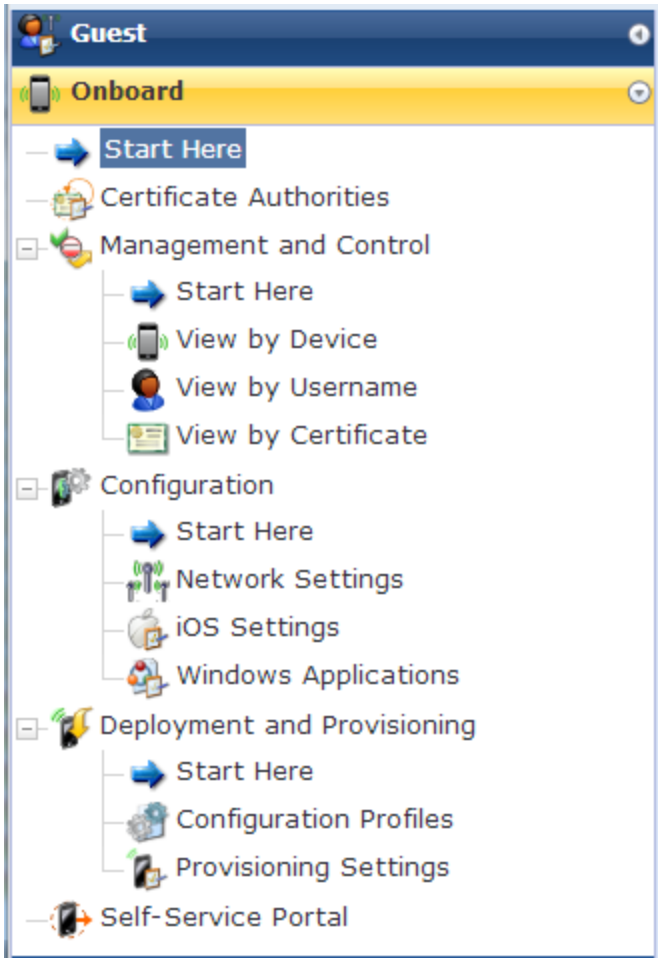
Onboarding is the process of preparing a device for use on an enterprise network by creating the appropriate access credentials and setting up the network connection parameters. ClearPass Onboard automates 802.1X configuration and provisioning for "bring your own device" (BYOD) and IT-managed devices across wired, wireless, and virtual private networks (VPNs).

ClearPass Onboard includes the following key features:

- Automatic configuration of network settings for wired and wireless endpoints
- Provisioning of unique device credentials for BYOD and IT-managed devices
- Support for Windows, Mac OS X, iOS, and Android devices
- Ability to revoke unique credentials on a specific user's device
- ClearPass Profile for identifying device type, manufacturer, and model

Accessing Onboard

To access the device provisioning features of ClearPass Onboard, click the **Onboard** link in the left navigation.



About ClearPass Onboard

ClearPass Onboard automates 802.1X configuration and provisioning for “bring your own device” (BYOD) and IT-managed devices—Windows, Mac OS X, iOS and Android—across wired, wireless, and virtual private networks (VPNs).

ClearPass Onboard includes the following key features:

- Automatic configuration of network settings for wired and wireless endpoints.
- Provisioning of unique device credentials for BYOD and IT-managed devices.
- Support for Windows, Mac OS X, iOS, and Android devices.
- Enables the revocation of unique credentials on a specific user’s device.
- Leverages ClearPass Profile to identify device type, manufacturer, and model.

This section provides the following important information about ClearPass Onboard:

- "Onboard Deployment Checklist " on page 81
- "Onboard Feature List " on page 83
- "Supported Platforms" on page 84
- "Public Key Infrastructure for Onboard" on page 85
- "Revoking Unique Device Credentials" on page 86
- "Network Requirements for Onboard" on page 87

Onboard Deployment Checklist

Table 16 lists planning, configuration, and testing procedures. Use this checklist to complete your Onboard deployment.

Onboard events are stored in the Application Log for seven days by default. After seven days, significant runtime events are listed in the Audit Viewer in ClearPass Policy Manager's Monitoring module. Onboard events that are listed include:

- Changing the CA certificate
- Issuing a new certificate
- Signing a certificate signing request
- Revoking a certificate
- Deleting a certificate
- Importing a trusted certificate
- Uploading a code-signing or other certificate

Table 16: *Onboard Deployment Checklist*

Deployment Step	Reference
Planning and Preparation	
Review the Onboard feature list to identify the major areas of interest for your deployment.	"Onboard Feature List " on page 83
Review the list of platforms supported by Onboard, and identify the platforms of interest for your deployment.	"Supported Platforms" on page 84
Review the Onboard public key infrastructure, and identify any certificate authorities that will be needed during the deployment.	"Public Key Infrastructure for Onboard" on page 85
Review the network requirements and the network architecture diagrams to determine how and where to deploy the Onboard solution.	Refer to the ClearPass Policy Manager documentation, and "Network Architecture for Onboard" on page 89 in this chapter
Configuration	
Configure the hostname and networking properties of the Onboard provisioning server. • DNS is required for SSL. • Ensure that hostname resolution will work for devices being provisioned.	Refer to the ClearPass Policy Manager documentation
Configure SSL certificate for the Onboard provisioning server. A commercial SSL certificate is required to enable secure device provisioning for iOS devices.	Refer to the ClearPass Policy Manager documentation

Deployment Step	Reference
Configure the Onboard certificate authority. • Decide whether to use the Root CA or Intermediate CA mode of operation. Create the certificate for the certificate authority.	"Certificate Authorities " on page 97
Configure device provisioning settings. • Select certificate options for device provisioning. Select which device types should be supported.	"About Configuring Provisioning Settings " on page 169
Configure network settings for device provisioning. • Set network properties. • Upload 802.1X server certificates. Set device-specific networking settings.	"Network Settings " on page 130
Configure networking equipment for non-provisioned devices. • Set authentication for the provisioning SSID, if required. Ensure the captive portal redirects non-provisioned devices to the device provisioning page.	"Network Requirements for Onboard" on page 87
Configure networking equipment to authenticate provisioned devices. • Ensure 802.1X authentication methods and trust settings are configured correctly for all EAP types that are required. Configure OCSP or CRL on the authentication server to check for client certificate validity.	"Network Requirements for Onboard" on page 87
Configure the user interface for device provisioning. • Set display options for iOS devices. • Set user interface options for other Onboard devices. Setup the device provisioning Web login page.	"Configuring the User Interface for Device Provisioning" on page 95
Testing and Verification	
Test device provisioning. • Verify that each type of device can be provisioned successfully. Verify that each type of device can join the provisioned network and is authenticated successfully.	
Test device revocation. • Revoke a device's certificate. • Verify that the device is no longer able to authenticate. Verify that re-provisioning the device fails.	

Onboard Feature List

The following features are available in ClearPass Onboard.

Table 17: *OnboardFeatures*

Feature	Uses
Automatic configuration of network settings for wired and wireless endpoints.	• Configure wired networks using 802.1X • Configure Wi-Fi networks using either 802.1X or pre-shared key (PSK) • Configure trusted server certificates for 802.1X • Configure Windows-specific networking settings • Configure HTTP proxy settings for client devices (Android, OS X only)
Secure provisioning of unique device credentials for BYOD and IT-managed devices.	• Configure EAP-TLS and PEAP-MSCHAPv2 without user interaction • Revoke unique device credentials to prevent network access
Support for Windows, Mac OS X, iOS, and Android devices.	• Leverage ClearPass Profiling to identify device type, manufacturer, and model • Control the user interface displayed during device provisioning
Certificate authority enables the creation and revocation of unique credentials on a specific user's device.	• Root and intermediate CA modes of operation • Supports SCEP enrollment of certificates • Supports CRL generation to list revoked certificates • Supports OCSP responder to query for certificate status • Approve certificate signing request • Reject certificate signing request • Sign certificate from uploaded certificate signing request (CSR) • Issue certificate • Revoke certificate • Display certificates • Export certificate • Renew root certificate
Provision additional settings specific to iOS devices	• Exchange ActiveSync • Passcode policy • VPN settings

Supported Platforms

The platforms supported by ClearPass Onboard and the version requirements for each platform are summarized in the following table.

Table 18: *Platforms Supported by ClearPass Onboard*

Platform	Example Devices	Version Required for Onboard Support	Notes
Apple iOS	iPhone iPad iPod Touch	iOS 4 iOS 5	1, 3
Apple Mac OS X	MacBook Pro MacBook Air	Mac OS X 10.8 “Mountain Lion” Mac OS X 10.7 “Lion”	1
		Mac OS X 10.6 “Snow Leopard” Mac OS X 10.5 “Leopard”	2
Android	Samsung Galaxy S Samsung Galaxy Tab Motorola Droid	Android 2.2 (or higher)	2
Microsoft Windows	Laptop Netbook	Windows XP with Service Pack 3 Windows Vista with Service Pack 3 Windows 7 Windows 8 Windows 8.1	2

Note 1: Uses the “Over-the-air provisioning” method.
Note 2: Uses the “Onboard provisioning” method.
Note 3: Onboard may also be used to provision VPN settings, Exchange ActiveSync settings, and passcode policy on these devices.

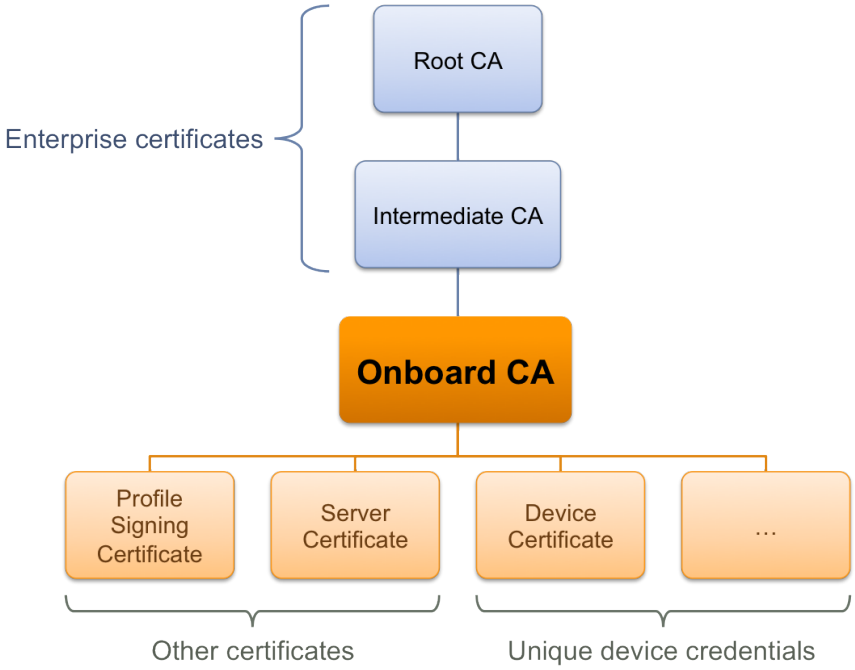
Public Key Infrastructure for Onboard

During the device provisioning process, one or more digital certificates are issued to the device. These are used as the unique credentials for a device. To issue the certificate, ClearPass Onboard must operate as a certificate authority (CA). The following sections explain how the certificate authority works, and which certificates are used in this process.

Certificate Hierarchy

In a public key infrastructure (PKI) system, certificates are related to each other in a tree-like structure.

Figure 10 *Relationship of Certificates in the Onboard Public Key Infrastructure*



The root certificate authority (CA) is typically an enterprise certificate authority, with one or more intermediate CAs used to issue certificates within the enterprise.

Onboardmay operate as a root CA directly, or as an intermediate CA. See "Certificate Authorities " on page 97. For information on setting up certificates when using Onboard in a cluster, see "Certificate Configuration in a Cluster " on page 86.

The Onboard CA issues certificates for several purposes:

- The **Profile Signing Certificate** is used to digitally sign configuration profiles that are sent to iOS devices.
  - The identity information in the profile signing certificate is displayed during device provisioning.
- One or more **Server Certificates** may be issued for various reasons – typically, for an enterprise's authentication server.
  - The identity information in the server certificate may be displayed during network authentication.
- One or more **Device Certificates** may be issued – typically, one or two per provisioned device.
  - The identity information in the device certificate uniquely identifies the device and the user that provisioned the device.

You do not need to manually create the profile signing certificate; it is created when it is needed See "Configuring Provisioning Settings for iOS and OS X" on page 176 to control the contents of this certificate.

You may revoke the profile signing certificate. It will be recreated when it is needed for the next device provisioning attempt.

Certificate Configuration in a Cluster

When you use Onboard in a cluster, you must use one common root certificate authority (CA) to issue all CPPM server certificates for the cluster. This allows the "verified" message in iOS and lets you verify that the CPPM server certificate is valid during EAP-PEAP or EAP-TLS authentication.

In a cluster of CPPM servers, devices can be onboarded through any node or authenticated through any node. Each CPPM server has a different certificate, used for both SSL and RADIUS server identity. In the default configuration, these are self-signed certificates—that is, they are not issued by a root CA. This configuration of multiple self-signed certificates will not work for Onboard: Although a single self-signed certificate can be trusted, multiple self-signed certificates are not.

There are two ways to configure a common root CA to issue all the CPPM server certificates for a cluster:

- Use the Onboard certificate authority. Create a certificate signing request on each CPPM node, sign the certificates using Onboard, and install them in CPPM. You can then onboard devices on any node in the cluster, and can perform secure EAP authentication from a provisioned device to any node in the cluster.
- Use a commercial certificate authority to issue CPPM server certificates. Verify that the same root CA is at the top of the trust chain for every server certificate, and that it is the trusted root certificate for Onboard. Provisioning and authentication will then work across the entire cluster.

Revoking Unique Device Credentials

Because each provisioned device uses unique credentials to access the network, it is possible to disable network access for an individual device. This offers a greater degree of control than traditional user-based authentication — disabling a user's account would impact all devices using those credentials.

To disable network access for a device, revoke the TLS client certificate provisioned to the device. See "Working with Certificates in the List" on page 116.

Revoking access for a device is only possible when using an enterprise network. Personal (PSK) networks do not support this capability.

Revoking Credentials to Prevent Network Access

Revoking a device's certificate will cause the device to be unable to authenticate. It will not prevent it from being re-provisioned. If you wish to deny access to a device, use the **Manage Access** link in the device's row on the **Onboard > Management and Control > View by Device** form.

If the device is provisioned with an EAP-TLS client certificate, revoking the certificate will cause the certificate authority to update the certificate's state. When the certificate is next used for authentication, it will be recognized as a revoked certificate and the device will be denied access.

When using EAP-TLS authentication, you must configure your authentication server to use either OCSP or CRL to check the revocation status of a client certificate. OCSP is recommended as it offers a real-time status update for certificates. If the device is provisioned with PEAP unique device credentials, revoking the certificate will automatically delete the unique username and password associated with the device. When this username is next used for authentication, it will not be recognized as valid and the device will be denied access.

OCSP and CRL are not used when using PEAP unique device credentials. The ClearPass Onboard server automatically updates the status of the username when the device's client certificate is revoked.

Re-Provisioning a Device

Because "bring your own" devices are not under the complete control of the network administrator, it is possible for unexpected configuration changes to occur on a provisioned device.

For example, the user may delete the configuration profile containing the settings for the provisioned network, instruct the device to forget the provisioned network settings, or reset the device to factory defaults and destroy all the configuration on the device.

When these events occur, the user will not be able to access the provisioned network and will need to re-provision their device.

The Onboard server detects a device that is being re-provisioned and prompts the user to take a suitable action (such as connecting to the appropriate network). If this is not possible, the user may choose to restart the provisioning process and re-provision the device.

Re-provisioning a device will reuse an existing TLS client certificate or unique device credentials, if these credentials are still valid.

If the TLS client certificate has expired then the device will be issued a new certificate. This enables re-provisioning to occur on a regular basis.

If the TLS client certificate has been revoked, then the device will not be permitted to re-provision. The revoked certificate must be deleted before the device is able to be provisioned.

Network Requirements for Onboard

To achieve complete functionality, ClearPass Onboard has certain requirements that must be met by the provisioning network and the provisioned network:

- The provisioning network must use a captive portal or other method to redirect a new device to the device provisioning page.
- The provisioning server (Onboard server) must have an SSL certificate that is trusted by devices that will be provisioned. In practice, this means a commercial SSL certificate is required.
- The provisioned network must support EAP-TLS and PEAP-MSCHAPv2 authentication methods.
- The provisioned network must support either OCSP or CRL checks to detect when a device has been revoked and deny access to the network.

Using Same SSID for Provisioning and Provisioned Networks

To configure a single SSID to support both provisioned and non-provisioned devices, use the following guidelines:

- Configure the network to use both PEAP and EAP-TLS authentication methods.
- When a user authenticates via PEAP with their domain credentials, place them into a provisioning role.
- The provisioning role should have limited network access and a captive portal that redirects users to the device provisioning page.
- When a user authenticates via PEAP with unique device credentials, place them into a provisioned role.
- When a user authenticates via EAP-TLS using an Onboard client certificate, place them into a provisioned role.

For provisioned devices, additional authorization steps can be taken after authentication has completed to determine the appropriate provisioned role.

Using Different SSID for Provisioning and Provisioned Networks

To configure dual SSIDs to support provisioned devices on one network, and non-provisioned devices on a separate network, use the following guidelines:

- Configure the provisioning SSID to use PEAP, or another suitable authentication method.
- When a user connects to the provisioning SSID, place them into a provisioning role.
  - The provisioning role should have limited network access and a captive portal that redirects users to the device provisioning page.
- When a user connects to the provisioned SSID, authenticate based on the type of credentials presented.
  - For PEAP authentication with unique device credentials, place them into a provisioned role.
  - For EAP-TLS authentication using an Onboard client certificate, place them into the provisioned role.
  - In all other cases, deny access.

As for the single-SSID case, additional authorization steps may be taken after authentication has completed to determine the appropriate provisioned role.

Configuring Online Certificate Status Protocol

Onboard supports the Online Certificate Status Protocol (OCSP) to provide a real-time check on the validity of a certificate.

To configure OCSP for your network, you will need to provide the URL of an OCSP service to your network equipment. This URL can be constructed by using the relative path mdps_ocsp.php/1.

For example, if the Onboard server's hostname is onboard.example.com, the OCSP URL to use is: http://onboard.example.com/guest/mdps_ocsp.php/1.

OCSP does not require the use of HTTPS and can be configured to use HTTP.

Configuring Certificate Revocation List (CRL)

Onboard supports generating a Certificate Revocation List (CRL) that lists the serial numbers of certificates that have been revoked.

To configure a CRL, you will need to provide its URL to your network equipment. This URL can be constructed by using the relative path mdps_crl.php?id=1.

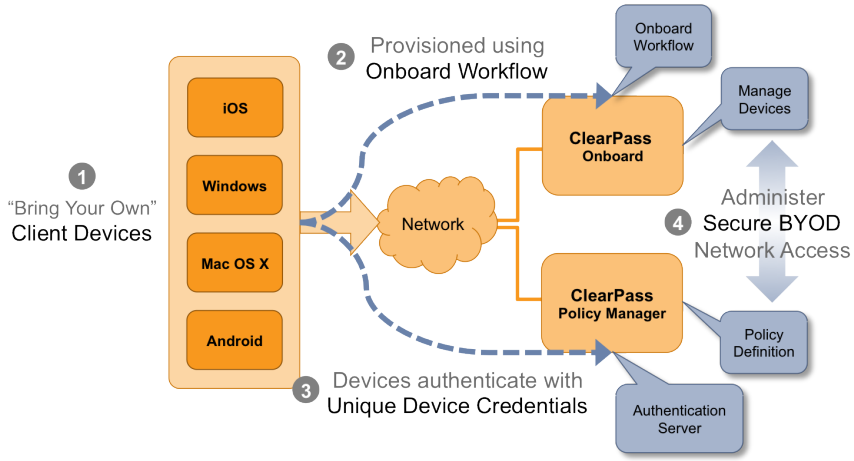
For example, if the Onboard server's hostname is onboard.example.com, the location of the CRL is: http://onboard.example.com/guest/mdps_crl.php?id=1.

A certificate revocation list does not require the use of HTTPS and can be configured to use HTTP.

Network Architecture for Onboard

The high-level network architecture for the Onboard solution is shown in the following figure.

Figure 11 *ClearPass Onboard Network Architecture*

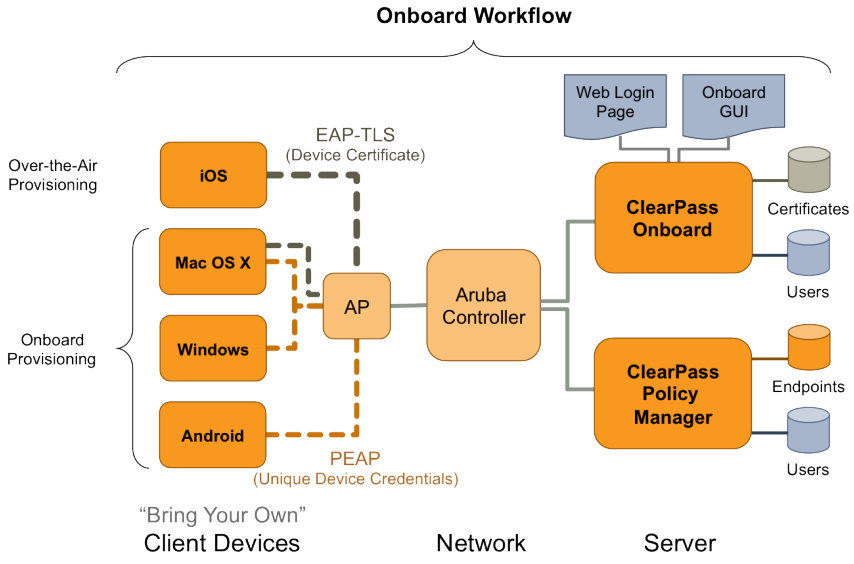


The sequence of events shown in Figure 11 is:

1. Users bring their own device to the enterprise.
2. The ClearPass Onboard workflow is used to provision the user's device securely and with a minimum of user interaction.
3. After it is provisioned, the device re-authenticates to the network using a set of unique device credentials. These credentials uniquely identify the device and user and enable management of provisioned devices.
4. Administrators can configure all aspects of the provisioning workflow – including the devices that have been provisioned, policies to apply to devices and the overall user experience for BYOD.

A more detailed view of the network architecture is shown in Figure 12. This diagram shows different types of client devices using the Onboard workflow to gain access to the network. Some of the components that may be configured by the network administrator are also shown.

Figure 12 *Detailed View of the ClearPass Onboard Network Architecture*



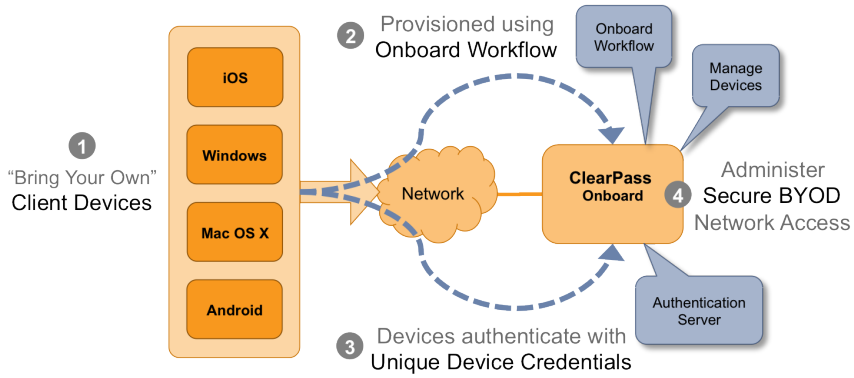
The components shown in Figure 12 are:

1. Users bring different kinds of client device with them. Onboard supports “smart devices” that use the iOS or Android operating systems, such as smartphones and personal tablets. Onboard also supports the most common versions of Windows and Mac OS X operating systems found on desktop computers, laptops and netbooks.
2. The Onboard workflow is used to provision the user’s device securely and with a minimum of user interaction. The provisioning method used depends on the type of device.
   a. Newer versions of Mac OS X (10.7 and later) and iOS devices use the “over-the-air” provisioning method.
   b. Other supported platforms use the “Onboard provisioning” method.
3. After it is provisioned, a client device uses a secure authentication method based on 802.1X and the capabilities best supported by the device.
   a. The unique device credentials issued during provisioning are in the form of an EAP-TLS client certificate for iOS devices and OS X (10.7+) devices.
   b. Other supported devices are also issued a client certificate, but will use the PEAP-MSCHAPv2 authentication method with a unique username and strong password.
4. Administrators can manage all Onboard devices using the certificate issued to that device.

Network Architecture for Onboard when Using ClearPass Guest

ClearPass Guest supports the provisioning, authentication, and management aspects of the complete Onboard solution. Figure 13 shows the high-level network architecture for the Onboard solution when using ClearPass Guest as the provisioning and authentication server.

Figure 13 *ClearPass Onboard Network Architecture when Using ClearPass Guest*



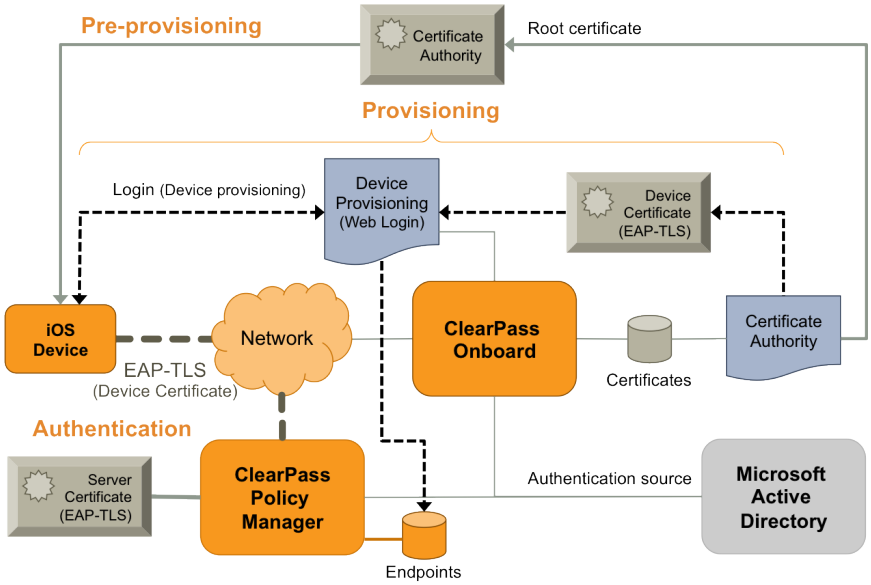
The user experience for device provisioning is the same in Figure 13 and Figure 11, however there are implementation differences between these approaches.

The ClearPass Onboard Process

Devices Supporting Over-the-Air Provisioning

ClearPass Onboard supports secure device provisioning for iOS 4, iOS 5, and recent versions of Mac OS X (10.7 “Lion” and later). These are collectively referred to as “iOS devices”. The Onboard process for iOS devices is shown in Figure 14.

Figure 14 *Onboard Process for iOS Devices*

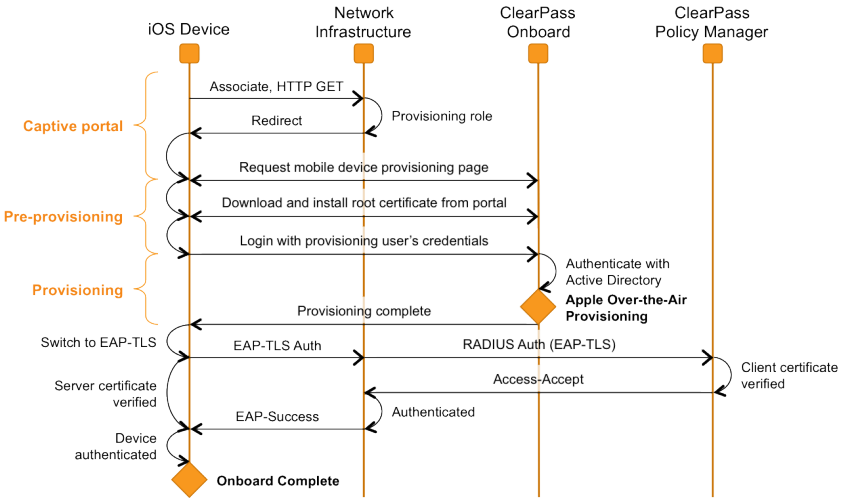


The Onboard process is divided into three stages:

1. **Pre-provisioning**. The enterprise’s root certificate is installed on the iOS device.
2. **Provisioning**. The user is authenticated at the device provisioning page and then provisions their device with the Onboard server. The device is configured with appropriate network settings and a device-specific certificate.
3. **Authentication**. After configuration is complete, the user switches to the secure network and is authenticated using an EAP-TLS client certificate.

A sequence diagram showing the interactions between each component of this workflow is shown in Figure 15.

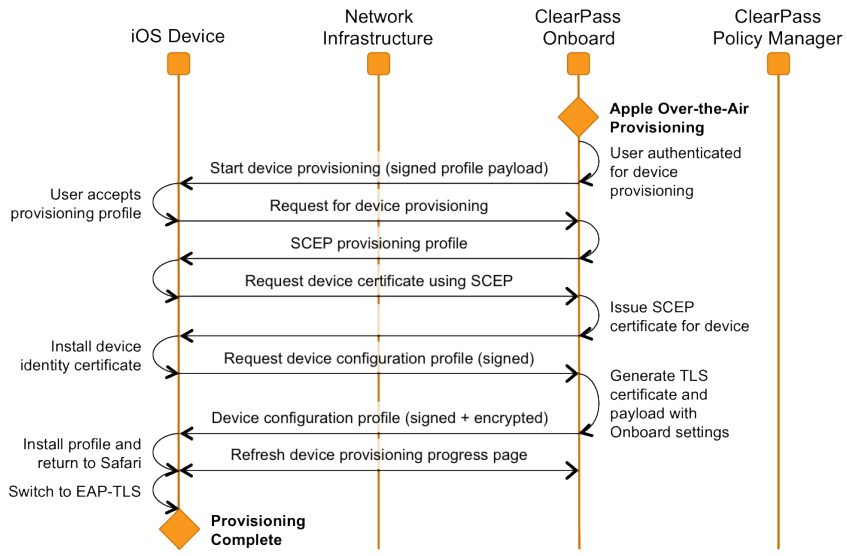
Figure 15 *Sequence Diagram for the Onboard Workflow on iOS Platform*



1. When a BYOD device first joins the provisioning network it does not have a set of unique device credentials. This will trigger the captive portal for that device, which brings the user to the mobile device provisioning page.
2. A link on the mobile device provisioning page prompts the user to install the enterprise's root certificate. Installing the enterprise's root certificate enables the user to establish the authenticity of the provisioning server during device provisioning.
3. The user then authenticates with their provisioning credentials – these are typically the user's enterprise credentials from Active Directory. If the user is authorized to provision a mobile device, the over-the-air provisioning workflow is then triggered (see Figure 16, below).
4. After provisioning has completed, the device switches to EAP-TLS authentication using the newly provisioned client certificate. Mutual authentication is performed (the authentication server verifies the client certificate, and the client verifies the authentication server's certificate).
5. The device is now onboard and is able to securely access the provisioned network.

Over-the-air provisioning is used to securely provision a device and configure it with network settings. Figure 16 shows a sequence diagram that explains the steps involved in this workflow.

Figure 16 *Over-the-Air Provisioning Workflow for iOS Platform*

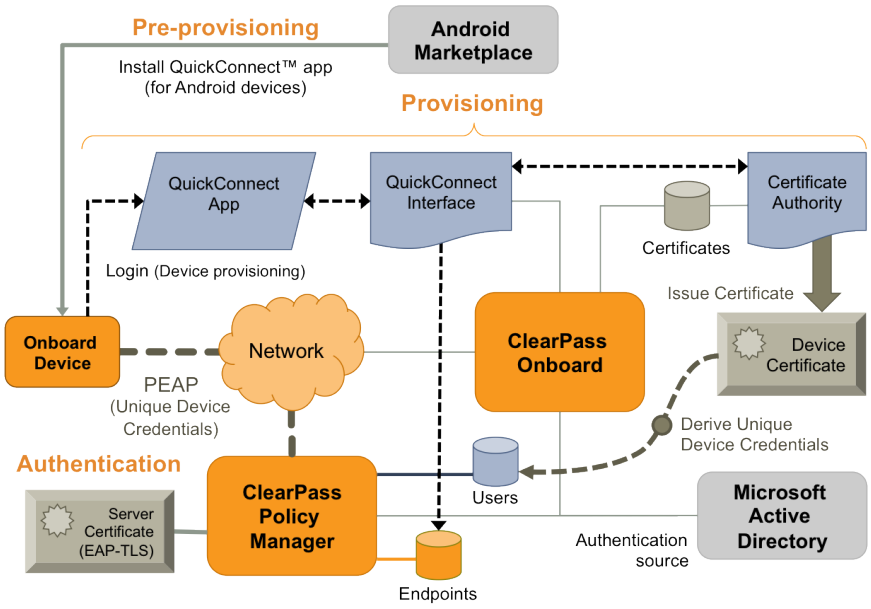


1. The only user interaction required is to accept the provisioning profile. This profile is signed by the Onboard server, so that the user can be assured of its authenticity.
2. An iOS device will have two certificates after over-the-air provisioning is complete:
   a. A Simple Certificate Enrollment Protocol (SCEP) certificate is issued to the device during the provisioning process. This certificate identifies the device uniquely, and is used to encrypt the device configuration profile so that only this device can read its unique settings.
   b. A Transport Layer Security (TLS) client certificate is issued to the device. This certificate identifies the device and the user that provisioned the device. It is used as the device's network identity during EAP-TLS authentication.

Devices Supporting Onboard Provisioning

ClearPass Onboard supports secure device provisioning for Microsoft Windows XP (service pack 3 and later), Microsoft Windows Vista, Microsoft Windows 7, Apple Mac OS X 10.5 and 10.6, and Android devices (smartphones and tablets). These are collectively referred to as "Onboard-capable devices". The Onboard process for these devices is shown in Figure 17.

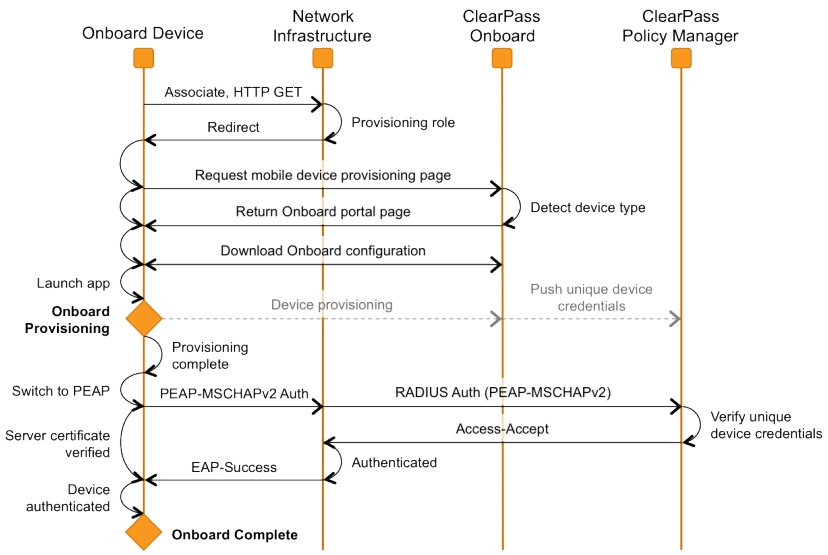
Figure 17 *ClearPass Onboard Process for Onboard-Capable Devices*



The Onboard process is divided into three stages:

1. **Pre-provisioning.** This step is only required for Android devices; the Aruba Networks QuickConnect app must be installed for secure provisioning of the device.
2. **Provisioning.** The device provisioning page detects the device type and downloads or starts the QuickConnect app. The app authenticates the user and then provisions their device with the Onboard server. The device is configured with appropriate network settings and credentials that are unique to the device. See Figure 18 for details.
3. **Authentication**. After configuration is complete, the user switches to the secure network and is authenticated using PEAP-MSCHAPv2 unique device credentials.

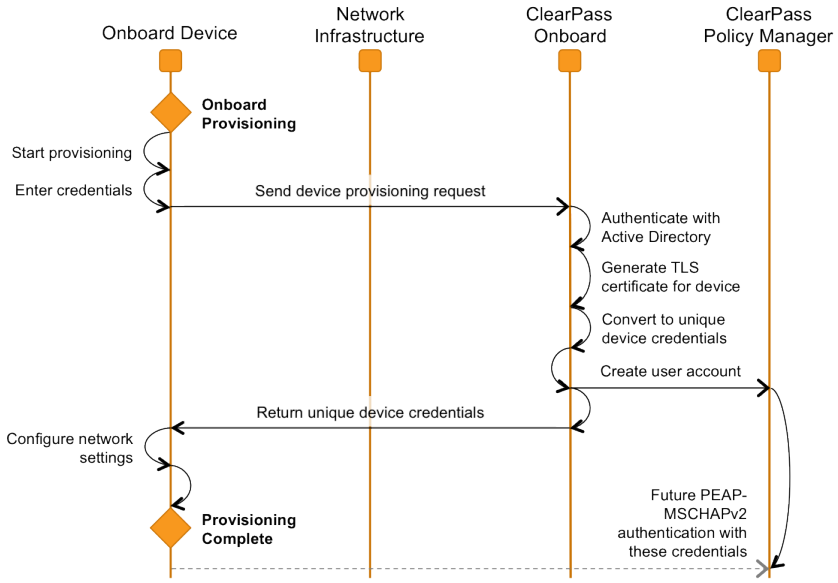
Figure 18 *Sequence Diagram for the Onboard Workflow on Android Platform*



1. When a BYOD device first joins the network it does not have a set of unique device credentials. This will trigger the captive portal for that device, which brings the user to the mobile device provisioning page.
2. The Onboard portal is displayed. The user's device type is detected, and a link is displayed depending on the device type:
   a. For Android devices, the link is to a file containing the Onboard configuration settings; downloading this file will launch the QuickConnect app on the device.
   b. For Windows and Mac, the link is to a executable file appropriate for that operating system that includes both the QuickConnect app and the Onboard configuration settings.
3. The QuickConnect app uses the Onboard provisioning workflow to authenticate the user and provision their device with the Onboard server. The device is configured with appropriate network settings and credentials that are unique to the device.
4. After provisioning has completed, the app switches the device to PEAP authentication using the newly provisioned unique device credentials. Mutual authentication is performed (the authentication server verifies the client's username and password, and the client verifies the authentication server's certificate).
5. The device is now onboard and is able to securely access the network.

The Onboard provisioning workflow is used to securely provision a device and configure it with network settings. Figure 19 shows a sequence diagram that explains the steps involved in this workflow.

Figure 19 *Onboard Provisioning Workflow in the QuickConnect App*



Configuring the User Interface for Device Provisioning

The user interface for device provisioning can be customized in three different ways:

- Customizing the Web login page used for device provisioning.

  All devices will reach the device provisioning Web login page as the first step of the provisioning process. See "Configuring Provisioning Settings for the Web Login Page" on page 174 to make changes to the content or formatting of this page.

- Customizing the properties of the device provisioning profile for iOS and OS X devices.

  After starting the provisioning process, users of iOS and OS X are prompted to accept a configuration profile. See "Configuring Provisioning Settings for iOS and OS X" on page 176 to make changes to the content of this profile.

- Customizing the user interface of the QuickConnect app for Windows, Mac OS X, and Android devices.

  The provisioning process for Windows, Mac OS X, and Android devices uses a separate app, which has a customizable user interface. See "Configuring Options for Onboard Client Devices" on page 184 to make changes to the user interface.

Using the {nwa_mdps_config} Template Function

Certain properties can be extracted from the Onboard configuration and used in the device provisioning page.

To obtain these properties, use the {nwa_mdps_config} Smarty template function. The “name” parameter specifies which property should be returned, as described in Table 19.

Table 19: *Properties Available with the* `(nwa_mdps_config` *Smarty Template Function*

Name	Description
root_cert	URL of the Onboard certificate authority's root certificate. Browsing to this URL will install the root certificate on the device, which is required as part of the pre-provisioning step. Example: `<a href="{nwa_mdps_config name=root_cert}"> Install Onboard root certificate</a>`
wifi_ssid	Name of the wireless network. See "Configuring Basic Network Access Settings " on page 131. Example: Connect to the network named `{nwa_mdps_config name=wifi_ssid}`
organization_name	The organization name. See "Configuring Basic Provisioning Settings" on page 170. Example: `<h2> Welcome to {nwa_mdps_config name=organization_name}</h2>`

Onboard Troubleshooting

If you encounter a problem that is not listed here, refer to the "Onboard Deployment Checklist " on page 81 and check each of the configuration steps listed there.

iOS Device Provisioning Failures

Symptom: Device provisioning fails on iOS with the message "The server certificate for https://... is invalid".

Resolution: When using HTTPS for device provisioning, you **must** obtain a commercial SSL certificate.

Self-signed SSL certificates, and SSL server certificates that have been issued by an untrusted or unknown root certificate authority, will cause iOS device provisioning to fail with the message "The server certificate for ... is invalid".

A workaround for this issue is to install an appropriate root certificate on the iOS device. This root certificate must be the Web server's SSL certificate (if it is a self-signed certificate), or the certificate authority that issued the SSL certificate. This is not recommended for production deployments as it increases the complexity of deployment for users with iOS devices.

Hostname-to-Certificate Match Failures

Symptom: Device provisioning fails with the message "Onboard provisioning cannot be performed at this address. If your were directed here, please contact a network administrator."

This occurs if the hostname used to access CPPM does not match the hostname configured in the CPPM server certificate. These items must match or device provisioning will fail. This error is detected by Onboard and results in the above message.

Resolution: To correct the problem, ensure that the DNS is correctly configured for the server, ensure that the hostname is correctly set, and ensure that the server's certificate contains the correct hostname.

Onboard Interface Not Displayed

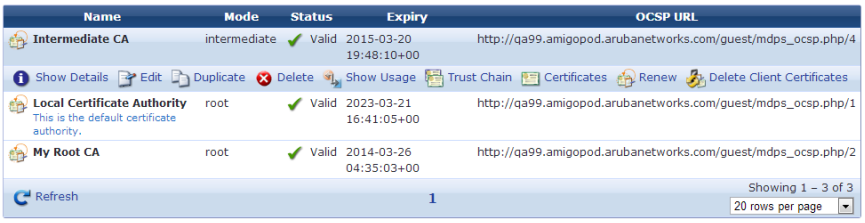
If Onboard is not visible in the ClearPass Guest user interface, verify whether Public Facing Enterprise (PFE) mode is set in ClearPass Policy Manager. If PFE mode is enabled, Onboard is not permitted and Onboard licenses cannot be added. The PFE mode is enabled or disabled in CPPM on the **Mode** tab at **Administration > Server Manager > Server Configuration > Cluster-Wide Parameters**.

Certificate Renewal through OS X Mavericks

OS X Mavericks allows users to renew certificates automatically, and provides a notice and an Update link in the Mavericks Profile fifteen days before a certificate expires. Onboard supports certificate renewal through OS X Mavericks. However, only local certificates can be renewed; ADCS is not supported. Also, certificates that have been revoked cannot be renewed.

Certificate Authorities

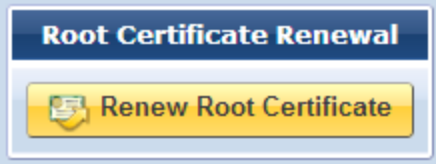
You can create and manage multiple certificate authorities for Onboard. To view and work with the list of certificate authorities and to configure new certificate authorities, go to **Onboard > Certificate Authorities**. The Certificate Authorities list view opens. All certificate authorities that have been set up are included in the list. Information shown for each certificate authority includes its name, mode, status, expiration time, and OCSP URL.



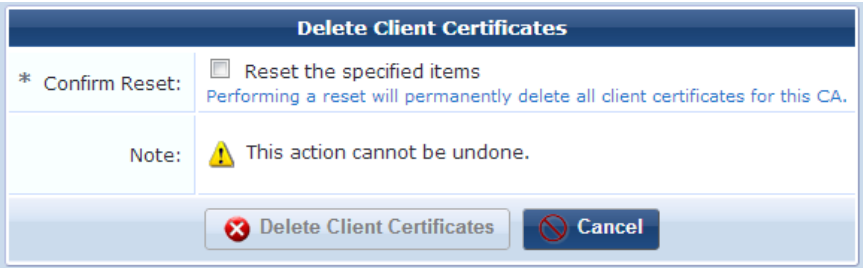
You can click a certificate authority's row in the list for additional options:

- To view details for a certificate authority, click its **Show Details** link. The form expands to show a summary of the settings defined for it, including information for certificate issuing, retention policy, identity, private key, and self-signed certificate.
- To edit any of a certificate authority's attributes and configure certificate issuing options, click its **Edit** link. The Certificate Authority Settings form opens. See "Editing Certificate Authority Settings" on page 101.

- To create a copy of a certificate authority configuration to use as a basis for a new certificate authority, click its **Duplicate** link. The first page of the Certificate Authority Settings form opens with the identity, private key, and self-signed certificate attributes prepopulated and "Copy" appended to the name. You can rename the new certificate authority and edit any of its attributes.
- To delete a certificate authority, you can click its **Delete** link. You will be asked to confirm the deletion before it commits.
- To see if the certificate authority is currently used, click its **Show Usage** link. The form expands to show a list of provisioning sets that use the certificate authority.
- To view the trust chain for the certificate authority, click its **Trust Chain** link. The Certificate Authority Trust Chain page opens. See "The Trust Chain and Uploading Certificates for the CA " on page 128.
- To view a list of certificates associated with the certificate authority, click its **Certificates** link. The Certificate Management page opens. See "Certificate Management (View by Certificate) " on page 115.
- To renew the certificate authority, click its **Renew** link. If it is an intermediate certificate authority, the Intermediate Certificate Renewal page opens, where you can send a certificate signing request; see "Requesting a Certificate for the Certificate Authority" on page 105. If it is a root certificate authority, the row expands to include the **Root Certificate Renewal** option. Click the **Renew Root Certificate** button.



  Renewing the certificate uses the same private key for the root certificate, but reissues the root CA certificate with an updated validity period. This will maintain the validity of all certificates issued by the CA. When you renew a certificate, you should distribute a new copy of the root certificate to all users of that certificate.
- To delete a certificate authority's client certificates, click its **Delete Client Certificates** link. The row expands to include the Delete Client Certificates form. To confirm the deletion, you must mark the **Reset the specified items** check box in the **Confirm Reset** field, and then click the **Delete Client Certificates** button. Doing so will permanently delete all client certificates for the certificate authority. This action cannot be reversed.



- To create a new certificate authority, click the **Create new certificate authority** link in the upper right corner. The initial setup page of the Certificate Authority Settings form opens. See the next section, "Creating a New Certificate Authority" on page 98.

Creating a New Certificate Authority

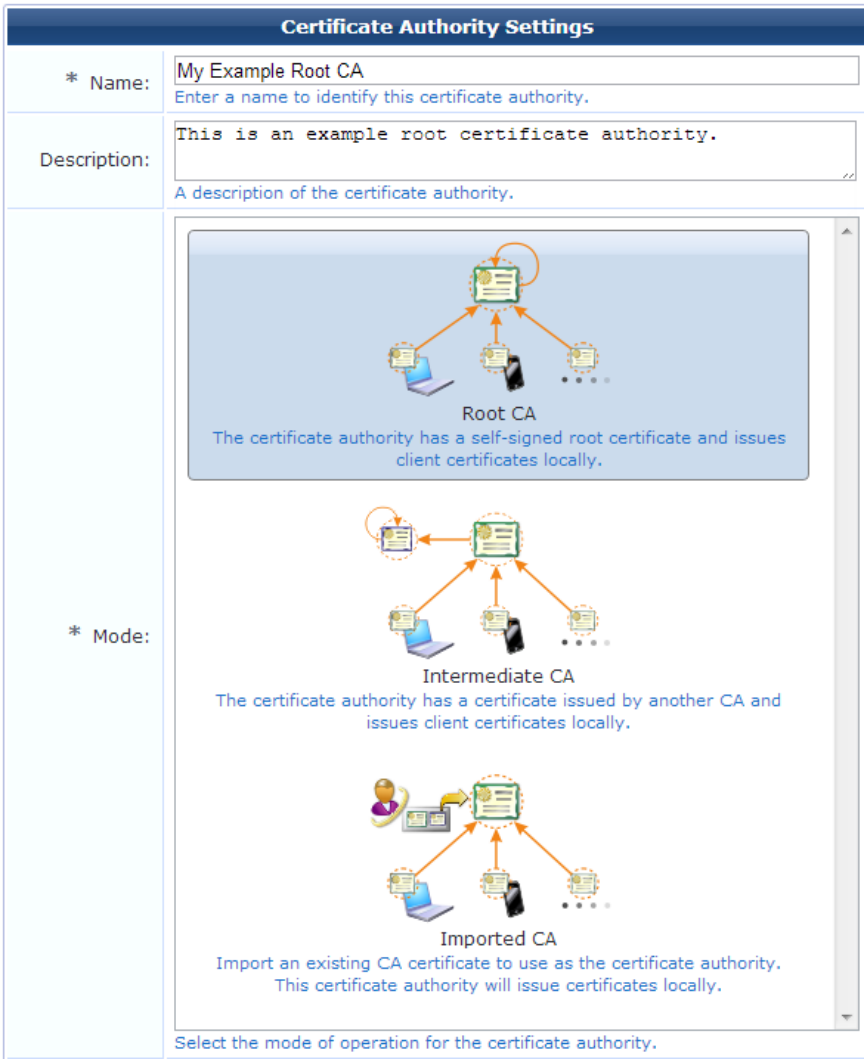
The first page of the Certificate Authority Settings form is used to create the Onboard certificate authority (CA) and to configure some basic properties:

- Give it a name and description
- Specify root CA, intermediate CA, or local CA mode

- Configure the identity, private key, and self-signed certificate attributes

To create an Onboard certificate authority:

1. Go to **Onboard > Certificate Authorities**, and then either click the **Duplicate** link for a certificate authority in the Certificate Authorities list or click the **Create new certificate authority** link. The initial setup page of the Certificate Authority Settings form opens.

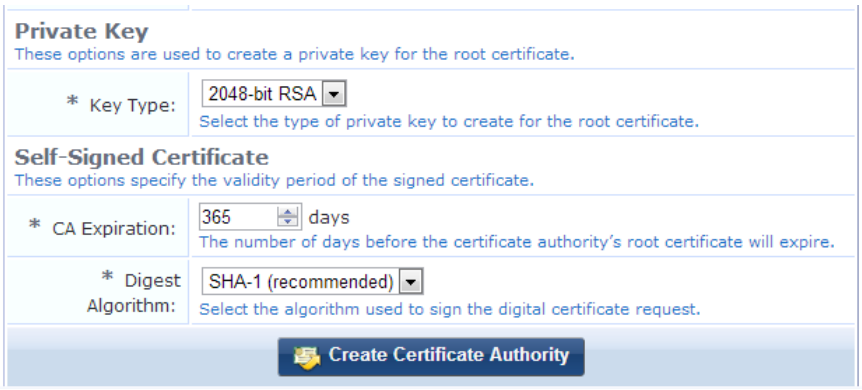


2. In the **Name** field, give the CA a short name that identifies it clearly. Certificate authority names can include spaces. If you are duplicating a CA, the original name has "Copy" appended to it. You may highlight the name and replace it with a new name.
3. In the **Description** field, briefly describe the CA. This description is shown in the Certificate Authorities list.

   The Name and Description fields are used internally to identify this certificate authority for the network administrator. These values are never displayed to the user during device provisioning.
4. The mode is used to set up the mode of operation for the certificate authority. In the **Mode** area, click one of the descriptions to specify the type of certificate authority:
   - **Root CA**—The Onboard certificate authority issues its own root certificate. The certificate authority issues client and server certificates using a local signing certificate, which is an intermediate CA that is subordinate to the root certificate. Use this option when you do not have an existing public-key infrastructure (PKI), or if you want to completely separate the certificates issued for Onboard devices from your existing PKI.

- **Intermediate CA**—The Onboard certificate authority is issued a certificate by an external certificate authority. The Onboard certificate authority issues client and server certificates using this certificate. Use this option when you already have a public-key infrastructure (PKI), and would like to include the certificate issued for Onboard devices in that infrastructure.
- **Imported CA**— If you choose Imported CA, the following fields are removed from the form. If you choose Root or Intermediate, complete the following fields.

5. In the **Identity** area, enter values in the **Country**, **State**, **Locality**, **Organization,** and **Organizational Unit** fields that correspond to your organization. These values form part of the distinguished name for the certificate.
6. Enter a descriptive name for the certificate in the **Common Name** field. This value is used to identify the certificate as the issuer of other certificates, notably the signing certificate.
7. For a root certificate, the Signing Common Name field is included on the form. Enter a descriptive name for the signing certificate in the **Signing Common Name** field. This value is used to identify the signing certificate as the issuer of client and server certificates from this certificate authority. The other identity information in the signing certificate will be the same as for the root certificate.
8. Enter a contact email address in the **Email Address** field. This email address is included in the root and signing certificates, and provides a way for users of the certificate authority to contact your organization.



9. In the **Private Key** area, use the **Key Type** drop-down list to specify the type of private key that should be created for the certificate:

- **1024-bit RSA** (not recommended for a root certificate)
- **2048-bit RSA** (recommended for general use)
- **4096-bit RSA** (higher security)
- **X9.62/SECG curve over a 256-bit prime field**
- **NIST/SECG curve over a 384-bit prime field**

10. In the **Self-Signed Certificate** area, for a root certificate the **CA Expiration** field is included in the form. Use this field to specify the lifetime of the root certificate in days. The default value is 365 days.
11. Use the **Digest Algorithm** drop-down list to specify which hash algorithm should be used to sign the digital certificate request. Options include:
    - **SHA-1**
    - **SHA-224**
    - **SHA-256**
    - **SHA-384**
    - **SHA-512**
12. Click **Create Certificate Authority**.
    - If you selected root mode, the root certificate is included in the Certificate Authorities list.
    - If you selected intermediate mode, the Intermediate Certificate Request page opens with text for the certificate signing request (CSR). You can send the CSR to a certificate authority, who will generate a signed certificate you can install. See "Requesting a Certificate for the Certificate Authority" on page 105.
    - If you selected imported mode, the Certificate Authority Certificate Import form opens, where you can upload the digital certificates and private key to the server. See"Installing a Certificate Authority's Certificate " on page 105.

Editing Certificate Authority Settings

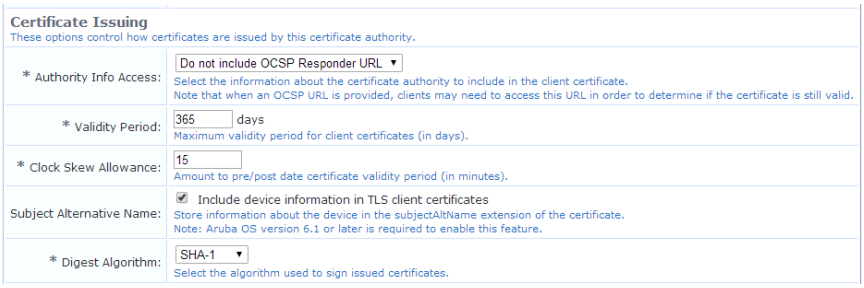
You can edit some properties of a certificate authority after you create it, and configure some attributes that were not included on the setup form.

To edit a certificate authority, go to **Onboard > Certificate Authorities**, click the certificate to expand its row, and click its **Edit** link. The Certificate Authority Settings form opens.

In the basic information area at the top of the form, the Name and Description fields are used internally to identify this certificate authority for the network administrator. These values are never displayed to the user during device provisioning.

Field	Description
Name	Short name that identifies the certificate clearly. Certificate authority names can include spaces.
Description	Briefly describes the CA. This description is shown in the Certificate Authorities list.
Mode	Either Root, Intermediate, or Imported. The certificate's mode cannot be edited after creation.

In the **Certificate Issuing** area:



Authority Info Access	Specify one of the following options to control automatic certificate revocation checks: • **Do not include OCSP responder URL** – The Authority Info Access extension is not included in the client certificate. Certificate revocation checking must be configured manually on the authentication server. This is the default option. • **Include OCSP responder URL** – The Authority Info Access extension is added to the client certificates, with the OCSP responder URL set to a predetermined value. This value is displayed as the "OCSP URL". • **Specify an OCSP responder URL** – The Authority Info Access extension is added to the client certificates, with the OCSP responder URL set to a value defined by the administrator. This value may be specified in the "OCSP URL" field.
Validity Period	Specifies the maximum length of time for which a client certificate issued during device provisioning will remain valid.

Clock Skew Allowance	Adds a small amount of time to the start and end of the client certificate's validity period. This permits a newly issued certificate to be recognized as valid in a network where not all devices are perfectly synchronized.
	
	For example, if the current time is 12:00, and the clock skew allowance is set to the default value of 15 minutes, then the client certificate will be issued with a "not valid before" time of 11:45. In this case, if the authentication server that receives the client certificate has a time of 11:58, it will still recognize the certificate as valid. If the clock skew allowance was set to 0 minutes, then the authentication server would not recognize the certificate as valid until its clock has reached 12:00.
	
	The default of 15 minutes is reasonable. If you expect that all devices on the network will be synchronized then the value may be reduced. A setting of 0 minutes is not recommended as this does not permit any variance in clocks between devices.
	
	When issuing a certificate, the certificate's validity period is determined as follows:
	• The "not valid before" time is set to the current time, less the clock skew allowance.
	• The "not valid after" time is first calculated as the earliest of the following:
	  ▪ The current time, plus the maximum validity period.
	  ▪ The expiration time of the user account for whom the device certificate is being issued.
	• The "not valid after" time is then increased by the clock skew allowance.

Subject Alternative Name	To include additional fields in the TLS client certificate issued for a device, mark the **Include device information in TLS client certificates** check box. These fields are stored in the subject alternative name (subjectAltName) of the certificate. Refer to Table 20 for a list of the fields that are stored in the certificate when this option is enabled. Storing additional device information in the client certificate allows for additional authorization checks to be performed during device authentication.
Digest Algorithm	Algorithm used to sign issued certificates.

If you are using an Aruba controller to perform EAP-TLS authentication using these client certificates, you must have ArubaOS 6.1 or later to enable the **Subject Alternative Name** option and store device information in the subject alternative name.

Table 20: *Device Information Stored in TLS Client Certificates*

Name	Description	OID
Device ICCID	Integrated Circuit Card Identifier (ICCID) number from the Subscriber Identity Module (SIM) card present in the device. This is only available for devices with GSM (cellular network) capability, where a SIM card has been installed.	mdpsDeviceIccid (.4)
Device IMEI	International Mobile Equipment Identity (IMEI) number allocated to this device. This is only available for devices with GSM (cellular network) capability.	mdpsDeviceImei (.3)
Device Serial	Serial number of the device.	mdpsDeviceSerial (.9)
Device Type	Type of device, such as “iOS”, “Android”, etc.	mdpsDeviceType (.1)
Device UDID	Unique device identifier (UDID) for this device. This is typically a 64-bit, 128-bit or 160-bit number represented in hexadecimal (16, 32, or 40 characters, respectively).	mdpsDeviceUdid (.2)
MAC Address	IEEE MAC address of this device. This element may be present multiple times, if a device has more than one MAC address (for example, an Ethernet port and a Wi-Fi adapter).	mdpsMacAddress (.5)
Product Name	Product string identifying the device and often including the hardware version information.	mdpsProductName (.6)
Product Version	String containing the software version number for the device.	mdpsProductVersion (.7)
User Name	String containing the username of the user who provisioned the device.	mdpsUserName (.8)

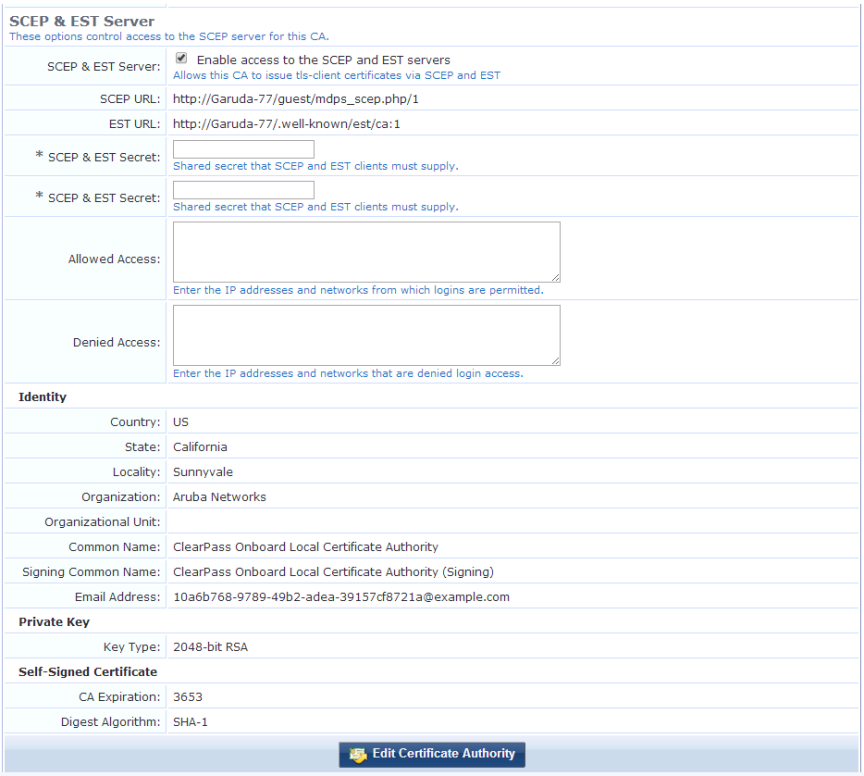
In the **Retention Policy** area:

Field	Description
Minimum Period	Specify values that are appropriate for your organization's retention policy. The default data retention policy specifies a minimum period of 12 weeks and a maximum period of 52 weeks.
Maximum Period	

NOTE

To enable the **Delete Certificate** and **Delete Request** actions in the Certificate Management list view, use a blank value for **Minimum Period**. This is useful for testing and initial deployment.

In the **SCEP & EST Server** area:



Onboard may be used as a CA with third-party products that use Simple Certificate Enrollment Protocol (SCEP) to enroll certificates.

Field	Description
SCEP & EST Server	To enable access to the SCEP and EST servers, select this check box. The form expands to include SCEP and EST server configuration options.
SCEP URL	Shows the SCEP URL for this SCEP server.
EST URL	Shows the EST URL for this SCEP server.
SCEP & EST Secret	Enter the shared secret that SCEP and EST clients must supply.
Allowed Access	Enter the IP addresses and networks from which logins are permitted.
Denied Access	Enter IP addresses and networks that are denied login access.
Identity	The information in these fields cannot be edited after creation.
Private Key	
Self-Signed Certificate	

When you are done, click **Edit Certificate Authority** to complete your changes.

Requesting a Certificate for the Certificate Authority

The Intermediate Certificate Request page displays the certificate signing request for the certificate authority's intermediate certificate.

You can copy the certificate signing request in text format using your Web browser. Use this option when you can paste the request directly into another application to obtain a certificate.

You can click the **Download the current CSR** link to download the certificate signing request as a file. Use this option when you need to provide the certificate signing request as a file to obtain a certificate.

After you have obtained the certificate, click the **Install a signed certificate** link to continue configuring the intermediate certificate authority. See "Installing a Certificate Authority's Certificate " on page 105.

You can also click the **Change CA settings** link to return to the main Certificate Authority Settings form. Use this option to switch to a root CA, or to change the name or properties of the intermediate CA and reissue the certificate signing request.

Installing a Certificate Authority's Certificate

You can import a private key and certificate pair to use for the root certificate or intermediate certificate. The **CA Certificate Import** page may be used to:

- Upload a certificate that has been issued by another certificate authority. This process is required when configuring an intermediate certificate authority.
  - A private key is not required, as the certificate authority has already generated one and used it to create the certificate signing request.
- Upload a certificate and private key to be used as the certificate authority's certificate. This process may be used to configure a root certificate authority.
  - A private key is required, as the certificate authority's existing private key will be replaced.

NOTE

This form may be used multiple times in order to import each of the certificates in the trust chain. Check the message displayed above the form to determine which certificate or type of file must be uploaded next.

To upload a certificate:

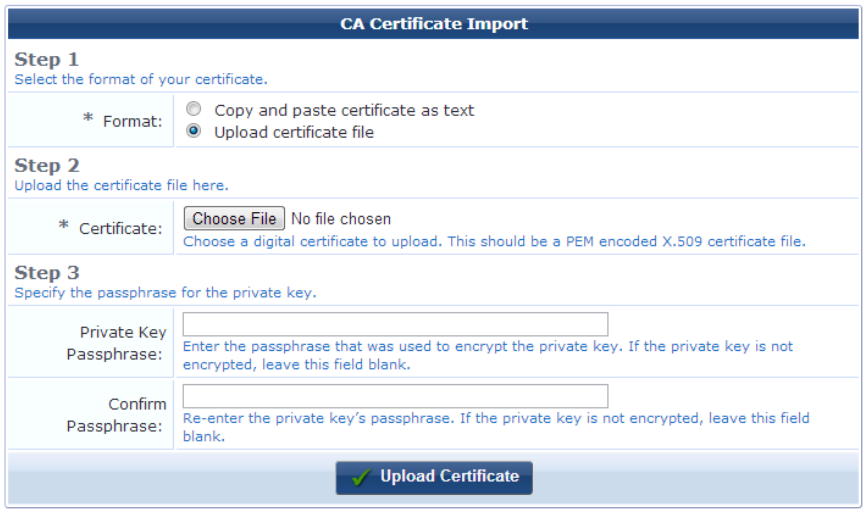
1. On either the **Certificate Management** or **Intermediate Certificate Settings** page, click the **Import Certificate** link above the form. The Step 1 area of the CA Certificate Import form opens.

2. Select one of the radio buttons to either copy and paste the certificate as encoded text or browse to the file to upload. The form expands to include options for that method.
3. If you selected **Copy and paste certificate as text**:
   - To upload a single certificate, copy and paste the certificate into the **Certificate** text field. The text must include the "BEGIN CERTIFICATE" and "END CERTIFICATE" lines. Leave the passphrase fields blank.
   - To upload a certificate and private key, copy and paste the certificate and private key into the **Certificate** text field. The text must include the "BEGIN CERTIFICATE" and "END CERTIFICATE" lines, as well as the "BEGIN RSA PRIVATE KEY" and "END RSA PRIVATE KEY" lines.

4. If you selected **Upload certificate file**, click **Choose File** in the **Certificate** row to browse to the file and select it.
   - To upload a single certificate, choose a certificate file in PEM (base-64 encoded) or binary format (.crt or PKCS#7). Leave the passphrase fields blank.
   - To upload a certificate's private key as a separate file, choose the private key file in PEM (base-64 encoded) format. If the private key has a passphrase, enter it in the **Private Key Passphrase** and

Confirm Passphrase fields. The private key will be automatically matched to its corresponding certificate when uploaded.

- To upload a combined certificate and private key, choose a file in either PEM (base-64 encoded) or PKCS#12 format. If the private key has a passphrase, enter it in the **Private Key Passphrase** and **Confirm Passphrase** fields.

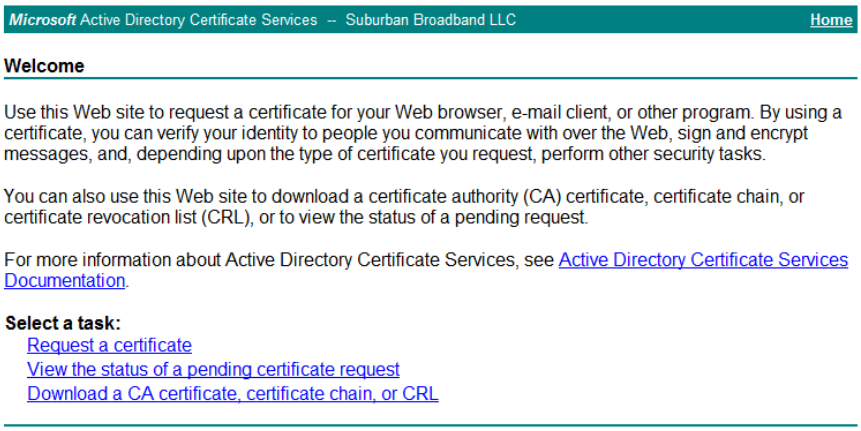


5. Click ✔ **Upload Certificate** to save your changes.

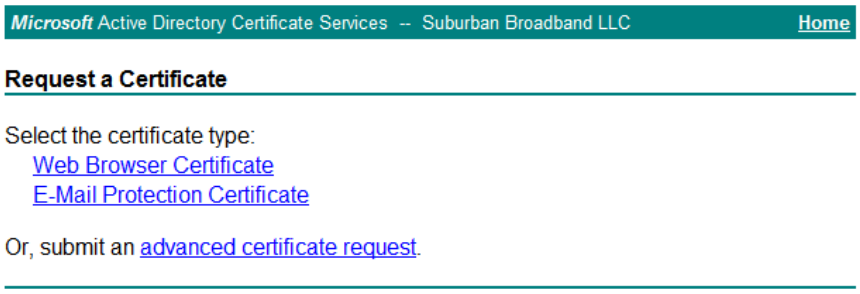
If additional certificates are required, you will remain at the same page. Check the message displayed above the form to determine which certificate or type of file must be uploaded next. When the trust chain is complete, it will be displayed. This completes the initialization of the certificate authority.

Using Microsoft Active Directory Certificate Services

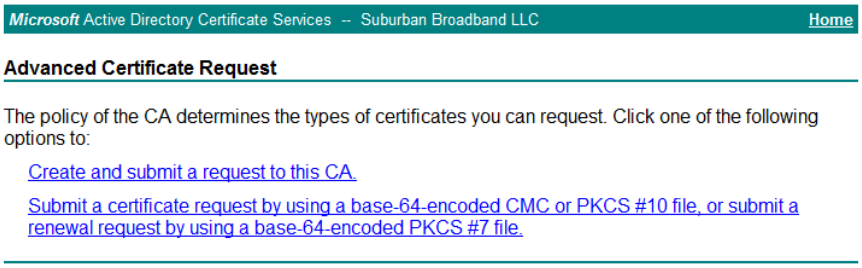
Go to the Microsoft Active Directory Certificate Services Web page. This page is typically found at https://yourdomain/certsrv/. The Welcome page opens.



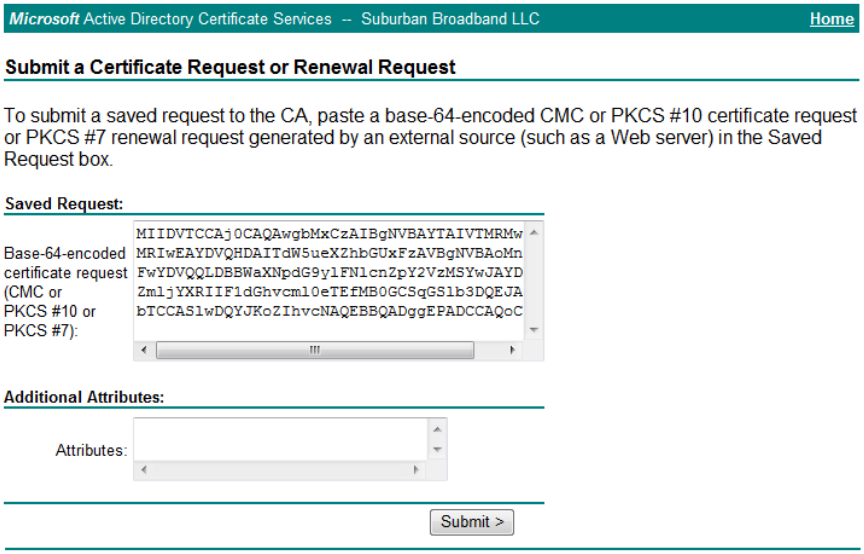
Click the **Request a Certificate** link on this page. The Request a Certificate page opens.



Click the link to submit an **advanced certificate request**. The Advanced Certificate Request page opens.



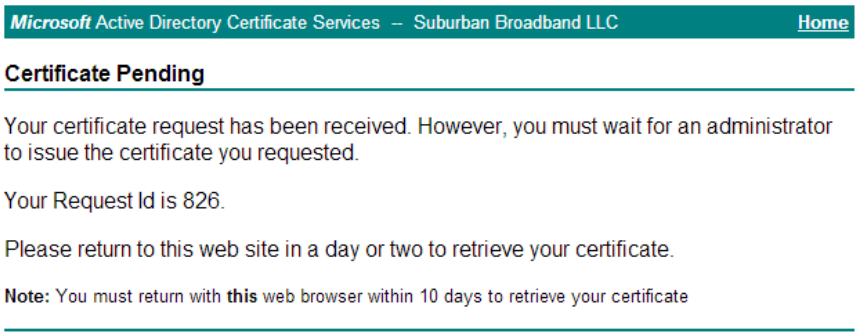
Click the link to submit a request using a **base-64-encoded CMC or PKCS #10** file. The Submit a Certificate Request or Renewal Request page is displayed.



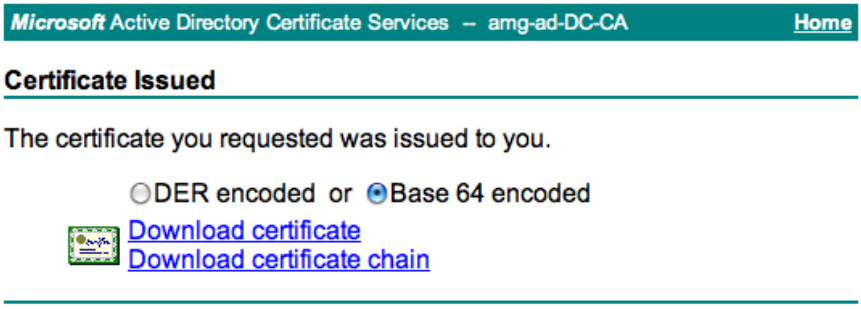
Copy and paste the certificate signing request text into the **Saved Request** text field.

Because this certificate is for a certificate authority, select the “Subordinate Certificate Authority” in the **Certificate Template** drop-down list.

Click the **Submit** button to issue the certificate. Either the Certificate Pending or the Certificate Issued page is displayed.



If the Certificate Pending page is displayed, follow the directions on the page to retrieve the certificate when it is issued.



If the Certificate Issued page is displayed, select the **Base 64 encoded** option and then click the **Download certificate chain** link. A file containing the intermediate certificate and the issuing certificates in the trust chain will be downloaded to your system.

Refer to the instructions in "Installing a Certificate Authority's Certificate " on page 105 for information on uploading the certificate file to Onboard.

Management and Control

The Management and Control section in the Onboard navigation lets you view and manage devices and the users and certificates associated with them, as well as the asset database of corporate devices. To access the device management features, go to **Onboard > Management and Control > Start Here**.

- To view and manage your list of devices, see "Device Management (View by Device) " on page 110
- To view and manage the list of users associated with the devices, see "Device Management (View by Username)" on page 113
- To view, create, and manage digital certificates for devices, servers, and certificate authorities, see "Certificate Management (View by Certificate) " on page 115

Device Management (View by Device)

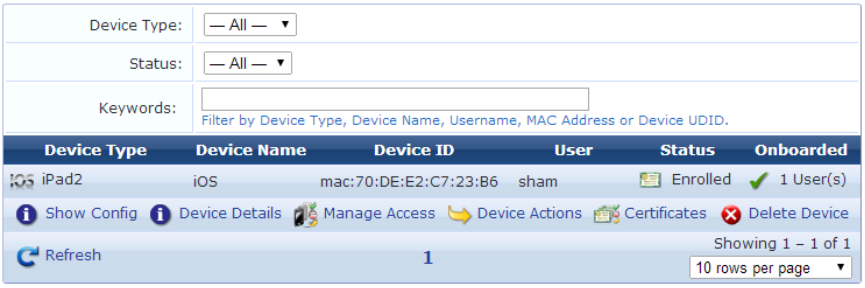
The Device Management (View by Device) page lists all devices and lets you manage the devices' access to the network. For each device, you can allow or deny network access.

To work with the list of device users, see "Device Management (View by Username)" on page 113.

When a device is denied access, its certificates are revoked. For a device that has had its access denied, you can grant access again, allowing it to re-enroll and obtain a new certificate.

To view and filter the list of devices:

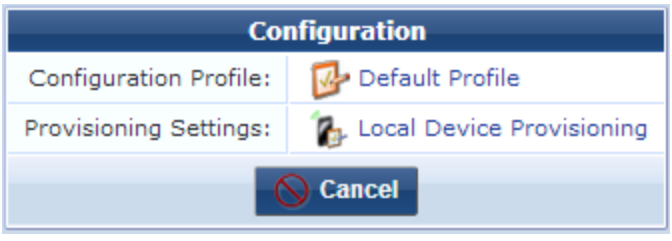
1. Go to **Onboard > Management and Control > View by Device**. The Device Management (View by Device) list view opens. This list displays all currently provisioned devices. Information shown for each device includes its device type, device name (operating system), device ID (MAC address), user, the device's network access status, and whether it is currently onboarded.



2. The **Device Type** filter lets you filter for **All**, **Android**, **iOS**, **OS X**, **Windows**, or **External** device types.
3. The **Status** field lets you filter for **Enrolled**, **Allowed**, or **Denied** status.
4. You can use the **Keywords** field to filter by device type, device name, username, MAC address, or device UDID.

To work with a device:

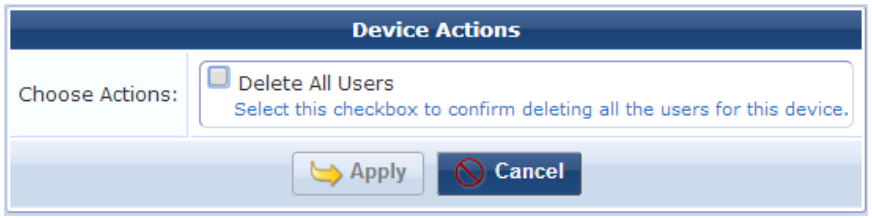
1. Click the device's row in the list to show the available options. Depending on the type of device, the available options might include configuration details, device details, show users, access management, device actions, certificate details, and device deletion.
2. To work with configuration details for a device, click its **Show Config** link. In the Configuration window that opens, you can click the **Default Profile** link to edit the device's configuration profile, or click the **Local Device Provisioning** link to edit the device's provisioning settings. When you change the configuration profile here, all apps that were previously pushed to the device are replaced with the apps in the new configuration profile.



3. To view a summary of the device's details, click the **Device Details** link. The row expands to include the Device Details form.

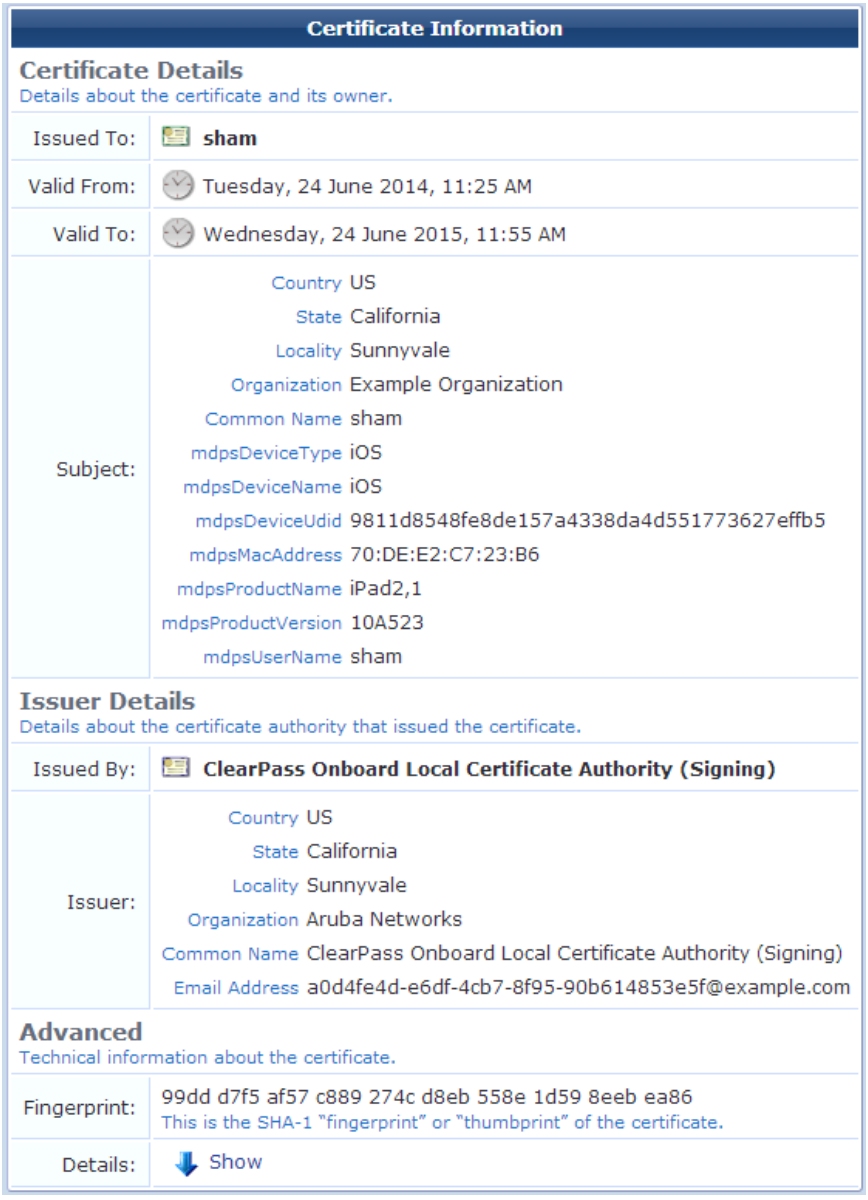
4. To change a device's access status, click its **Manage Access** link. In the **Manage Access** window that opens, use the drop-down list in the **Access** field to select either **Allow access to this device** or **Deny access to this device**. When you select the Deny option, a message advises you that any certificates associated with it will be revoked. The device cannot be re-enrolled as long as access is denied. To re-enroll the device, you must use this field to allow access again.

5. To delete all users, click the device's **Device Actions** link. Select the **Delete All Users** check box, and then click **Apply**.



6. To view certificate details, or to revoke or delete all client certificates for the device, click its **Certificates** link. The form expands to include both the Certificate Information view and the Manage Certificates form.

   The **Certificate Information** view lets you review all details of the certificate:



The **Manage Certificates** form lets you revoke or delete all TLS client certificates issued to the device. Mark the appropriate radio button, and then click **Manage Certificates**.

7. To delete a device, click its **Delete Device** link. You will be asked to confirm the deletion. Deleting the device will also delete all user, certificate, and other data associated with the device. Certificates are deleted according to the Certificate Authority's retention policy. After a device is deleted, it can still access the network and be reprovisioned. To deny network access for the device, use the Manage Access link instead.

Device Management (View by Username)

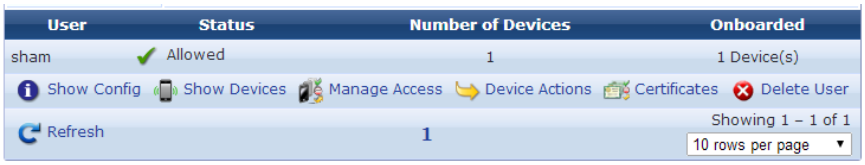
The Device Management (View by Username) page lists all users associated with devices. For each user, you can:

- View and edit default configuration profile and provisioning settings
- View and manage all devices registered to the user
- Allow or deny network access for the user
- Delete all the user's devices
- Revoke or delete all TLS client certificates issued to the user
- Delete the user

To work with the list of devices, see "Device Management (View by Device) " on page 110.

To view and filter the list of users:

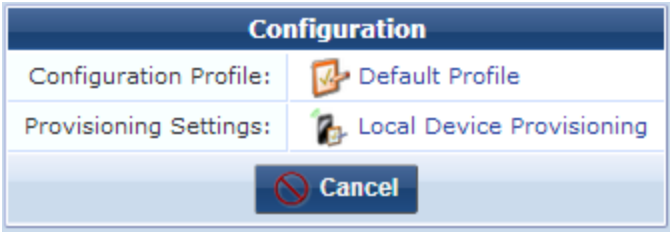
1. Go to **Onboard > Management and Control > View by Username**. The Device Management (View by Username) list view opens. Information shown in this list for each user includes username, network access status, number of devices, and number of onboarded devices.



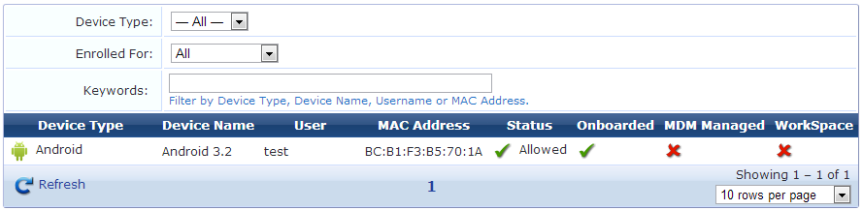
2. You can use the **Keywords** field to filter by username.

To work with a username:

1. Click the user's row in the list to show the available options. These include configuration details, device information, access management, device actions, certificate actions, and user deletion.
2. To work with configuration details for a user, click their **Show Config** link. The row expands to include the Configuration form. You can click the **Default Profile** link to edit the user's device configuration profile, or click the **Local Device Provisioning** link to edit the user's local device provisioning settings.

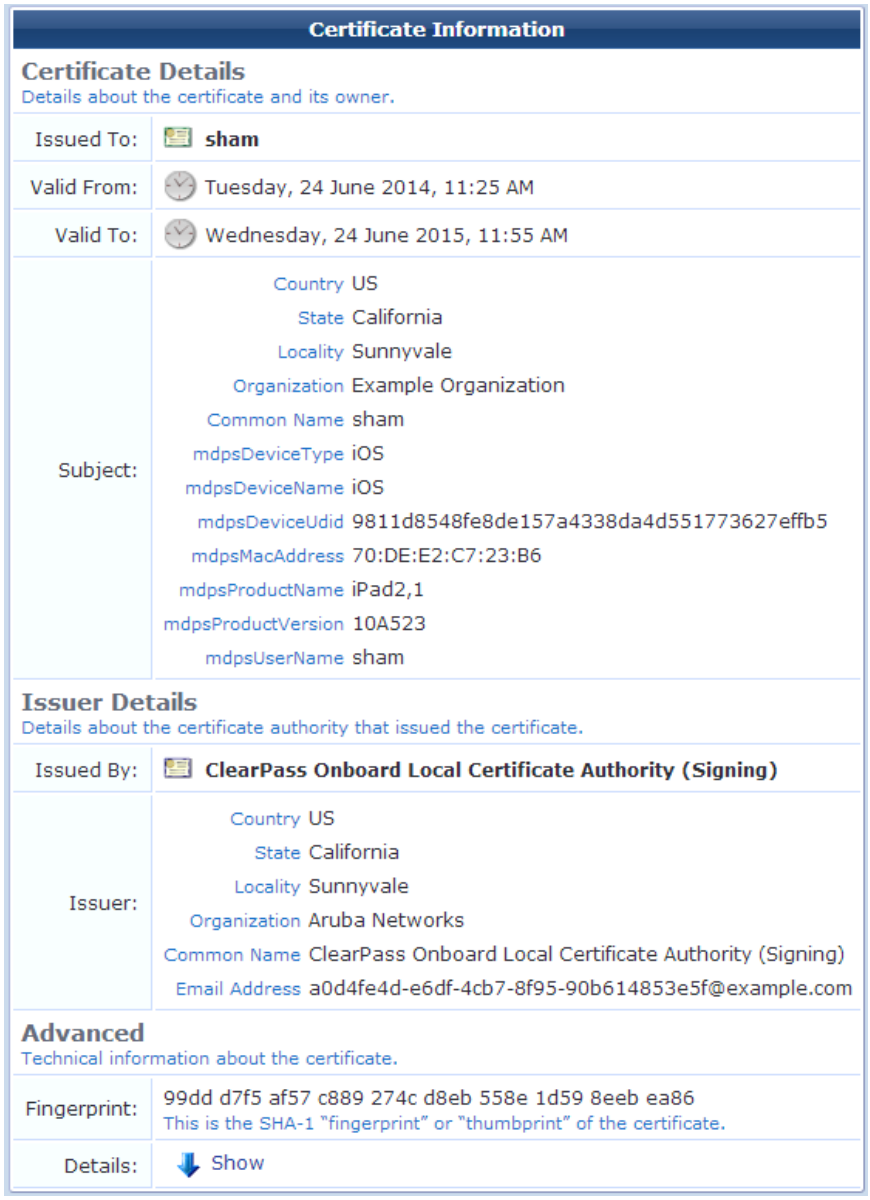


3. To view a list of the user's devices, click the **Device Details** link.



4. To view details of certificates belonging to this user, or to revoke or delete all client certificates issued to the user, click the **Certificates** link. The form expands to include both the Certificate Information view and the Manage Certificates form.

   The **Certificate Information** view lets you review all details of the certificate:

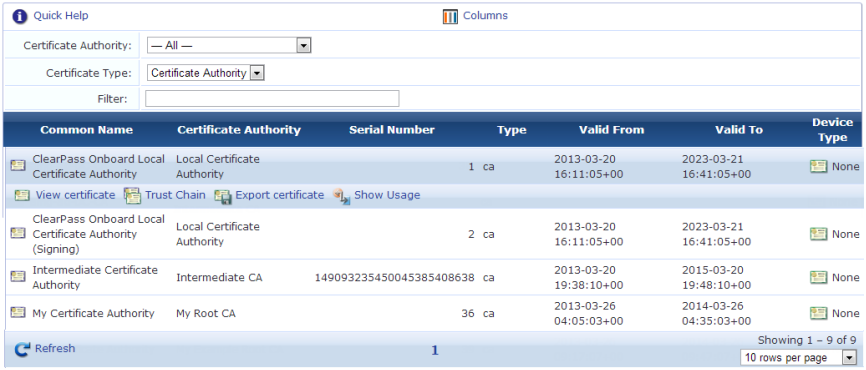


   The **Manage Certificates** form lets you revoke or delete all TLS client certificates issued to the user. Mark the appropriate radio button, and then click **Manage Certificates**.

5. To delete a user, click their **Delete User** link. You will be asked to confirm the deletion. Deleting the user will also delete all devices, TLS client certificates, and other data associated with the user. Certificates are deleted according to the Certificate Authority's retention policy.

Certificate Management (View by Certificate)

To view the list of certificates and work with them, go to **Onboard > Management and Control > View by Certificate**. The Certificate Management list view opens. This list displays all of the certificates and certificate requests in the Onboard system.



Information provided in the Certificate Management list includes common name, certificate authority, serial number (if available), certificate type, validity date range, and device type—iOS, Android, Windows, or None (if not associated with a device type). Table 21 lists the types of certificate that are displayed in this list.

Table 21: *Types of Certificate Supported by Onboard Certificate Management*

	Certificate Type	"Type" Column	Notes
	Root certificate	ca	Self-signed certificate for the certificate authority
	Intermediate certificate	ca	Issued by the root CA or another intermediate CA
	Profile signing certificate	profile-signing	Issued by the certificate authority
	Certificate signing request	tls-client or trusted	The type shown depends on the kind of certificate requested
	Rejected certificate signing request	tls-client or trusted	Certificate request that was rejected due to an administrator decision
	Device certificate	scep-client	Issued to iOS and OS X (10.7+) devices only
	Client certificate	tls-client	Identity certificate issued to a specific user's device
	Server certificate	trusted	Identity certificate issued to a server

	Certificate Type	"Type" Column	Notes
	Code-signing certificate	ca	Used for signing the Windows provisioning application
	Revoked certificate	--	Certificate that has been administratively revoked and is no longer valid
	Expired certificate	--	Certificate that is outside its validity period and is no longer valid

- To create a new certificate, see "Creating a Certificate " on page 123.
- To search for certificates, see "Searching for Certificates in the List " on page 116.
- To work with your certificates, see "Working with Certificates in the List" on page 116.
- To work with certificate signing requests, see "Working with Certificate Signing Requests " on page 119.
- To import a code-signing certificate or profile-signing certificate, see "Importing a Code-Signing Certificate " on page 122.
- To import a trusted certificate, see "Importing a Trusted Certificate " on page 123.

Searching for Certificates in the List

In the Certificate Management list, the **Filter** field can be used to quickly search for a matching certificate. Type a username into this field to quickly locate all certificates matching that username.

The filter is applied to all columns displayed in the list view. To search by another field, such as MAC address, device type, or device serial number, click the **Columns** tab, select the appropriate column(s), and then click the **Save and Reload** button. The list view will refresh to update the results of the filter.

Click the **Clear Filter** link to restore the default view.

Use the paging control at the bottom of the list to jump forwards or backwards by one page, or to the first or last page of the list. You can also click an individual page number to jump directly to that page.

When the list contains many thousands of certificates, consider using the Filter field to speed up finding a specific certificate.

Click the column headers to sort the list view by that column. Click the column header a second time to reverse the direction of the sort.

Working with Certificates in the List

To work with a certificate in the Certificate Management list, click on a certificate to select it. You can then select from one of these actions:

- **View certificate** – Displays the properties of the certificate. Information includes certificate details, issuer details, and the certificate's "fingerprint" or "thumbprint". In the Details row, you can click the Show link to display advanced details, including such things as the version, serial number, signature algorithms, and public key algorithms. SHA 1 and SHA 256 are supported as digest algorithms. Click the **Cancel** button to close the certificate properties.
- **Export certificate** – Displays the Export Certificate form.

Use the **Format** drop-down list to select the format in which the certificate should be exported. The following formats are supported:

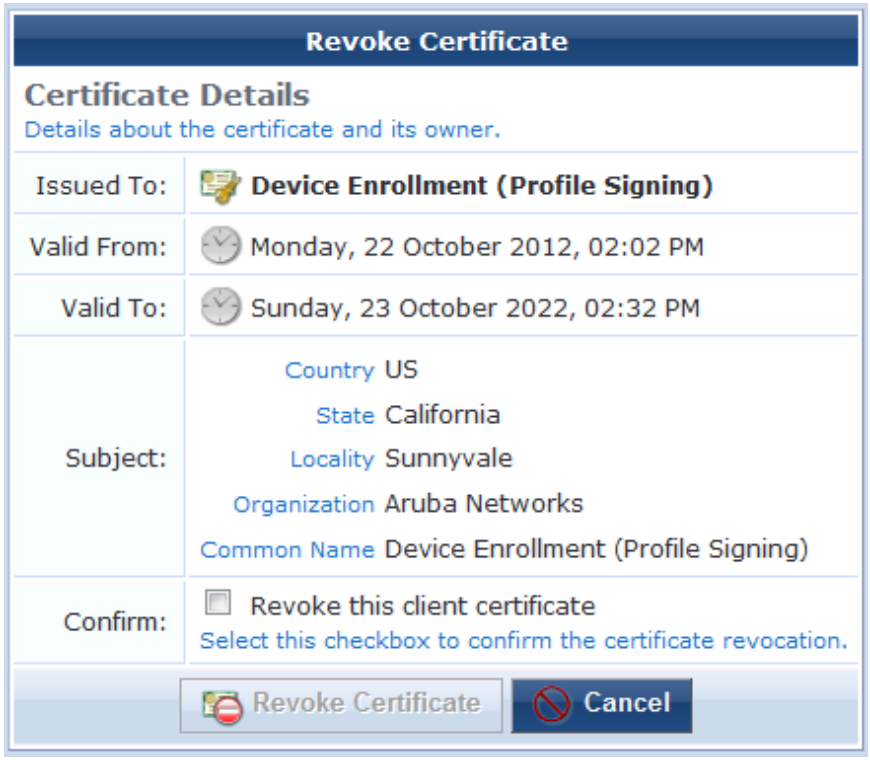
- **PKCS#7 Certificates (.p7b)**—Exports the certificate, and optionally the other certificates forming the trust chain for the certificate, as a PKCS#7 container.
- **Base-64 Encoded (.pem)**—Exports the certificate as a base-64 encoded text file. This is also known as "PEM format". You may optionally include the other certificates forming the trust chain for the certificate.
- **Binary Certificate (.crt)**—Exports the certificate as a binary file. This is also known as "DER format".
- **Open SSL Text Format**—Exports the certificate as a full openssl text-format output, allowing you to view advanced details such as X509v3 extensions. It also includes the certificate in .pem format appended to the .txt file.
- **PKCS#12 Certificate & Key (.p12)**—Exports the certificate and its associated private key, and optionally any other certificates required to establish the trust chain for the certificate, as a PKCS#12 container. This option is only available if the private key for the certificate is available to the server. If you select the PKCS#12 format, you must enter a passphrase to protect the private key stored in the file.

NOTE

To protect against brute-force password attacks and ensure the security of the private key, you should use a strong passphrase – one consisting of several words, mixed upper- and lower-case letters, and punctuation or other symbol characters.

Click the **Export Certificate** button to download the certificate file in the selected format.

- **Revoke certificate**—Displays the Revoke Certificate form.



Mark the **Revoke this client certificate** check box to confirm that the certificate should be revoked, and then click the **Revoke Certificate** button.

After the certificate has been revoked, future checks of the certificate's validity using OCSP or CRL will indicate that the certificate is no longer valid.

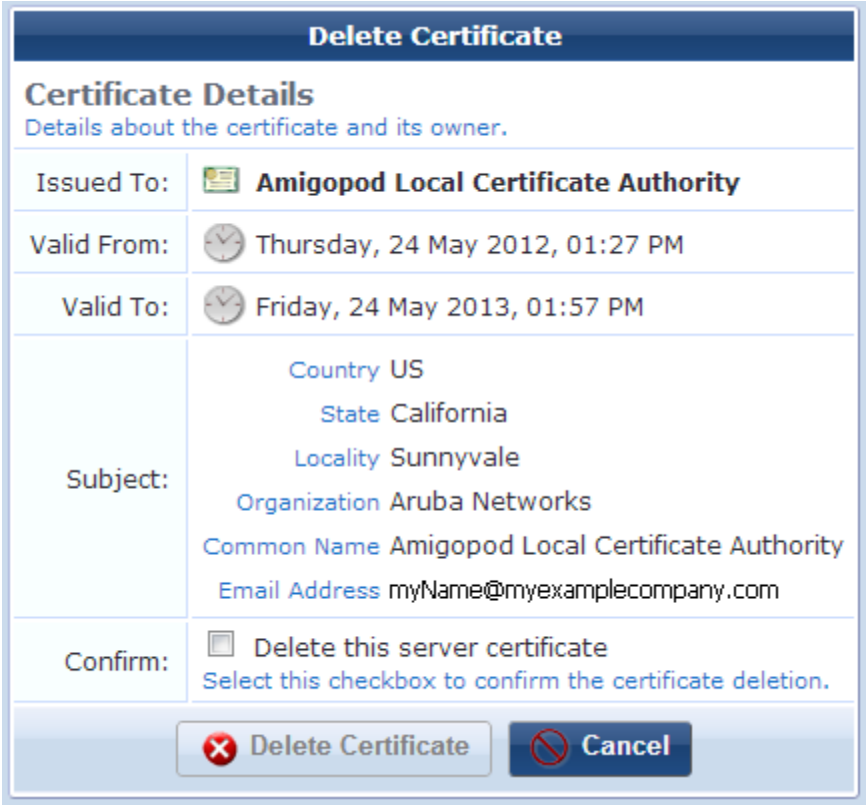
NOTE

Due to the way in which certificate revocation lists work, a certificate cannot be un-revoked. A new certificate must be issued if a certificate is revoked in error.

NOTE

Revoking a device's certificate will cause the device to be unable to authenticate. It will not prevent it from being re-provisioned. If you wish to deny access to a device, use the Manage Access link in the device's row on the **Management and Control > View by Device** form.

- **Delete certificate**—Removes the certificate from the list. Trusted certificates that were imported into Onboard may be deleted at any time after import. For all other certificates, this option is only available if the data retention policy is configured to permit the certificate's deletion.



The Delete Certificate form is displayed. Mark the **Delete this client certificate** check box to confirm the certificate's deletion, and then click the **Delete Certificate** button.

Working with Certificate Signing Requests

Certificate signing requests can be managed through the Certificate Management list view. This allows for server certificates, subordinate certificate authorities, and other client certificates not associated with a device to be issued by the Onboard certificate authority.

Click on a certificate request to select it. You can then select from one of these actions:

- **View request** – Displays the properties of the certificate request. Click the **Cancel** button to close the certificate request properties.
- **Export request** – Displays the Export Certificate Request form.

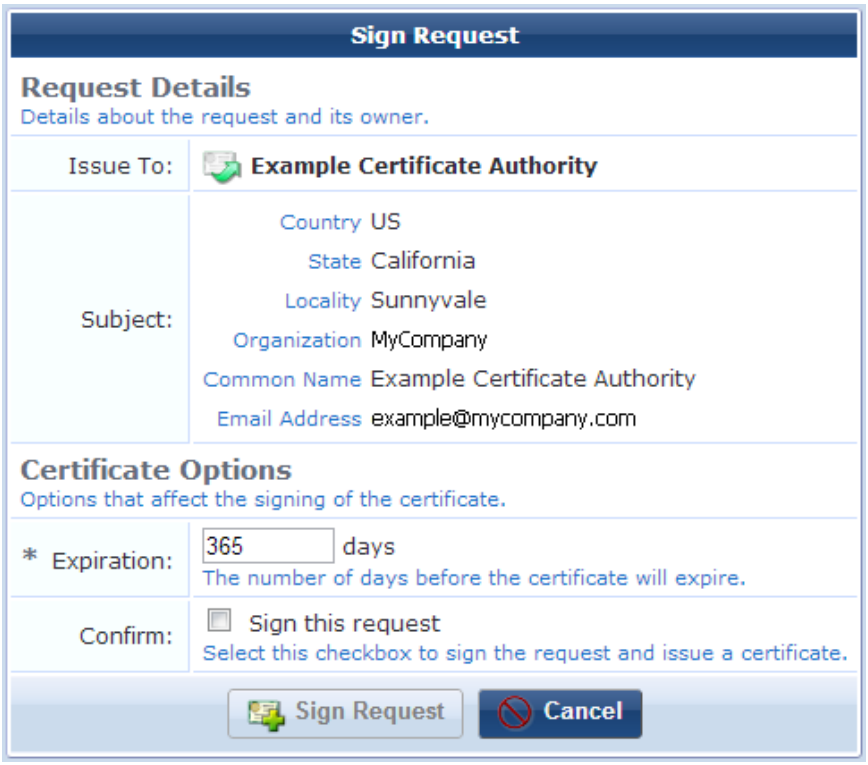
Use the **Format** drop-down list to select the format in which the certificate signing request should be exported. The following formats are supported:

- **PKCS#10 Certificate Request (.p10)** – Exports the certificate signing request in binary format.
- **Base-64 Encoded (.pem)** – Exports the certificate signing request as a base-64 encoded text file. This is also known as "PEM format".

If you choose Base-64 Encoded, the form expands to include the **Trust Chain** row. You can use this option to create and export a certificate bundle that includes the Intermediate CA and Root CA and can be imported in ClearPass Policy Manager as the server certificate (ClearPass Policy Manager does not accept PKCS#7). To include the trust chain in a certificate bundle that can be imported as the server certificate in ClearPass Policy Manager, mark the **Include certificate trust chain** check box, then click the **Export Certificate** button.

Click the **Export Request** button to download the certificate signing request file in the selected format.

- **Sign request** – Displays the Sign Request form. Use this action to approve the request for a certificate and issue the certificate.



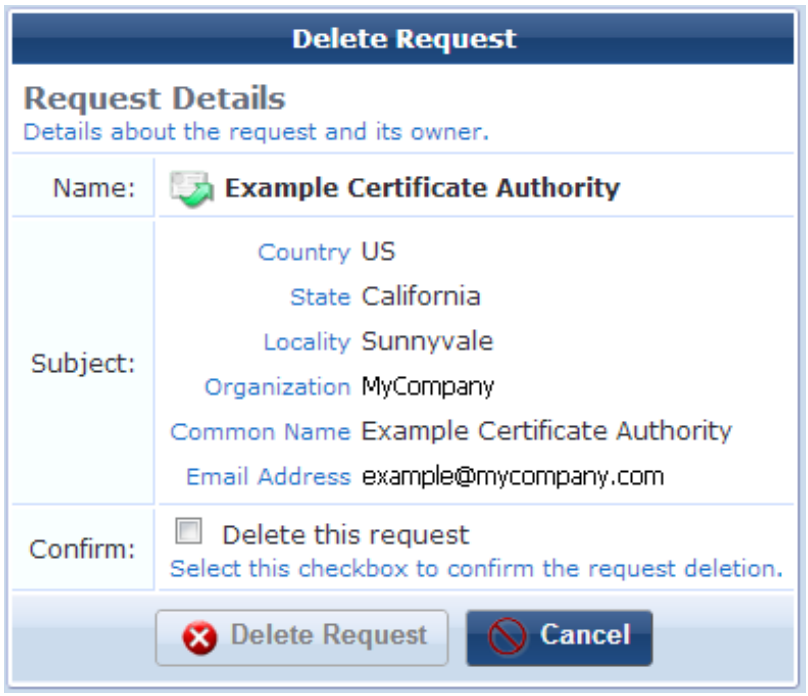
Use the **Expiration** text field to specify how long the issued certificate should remain valid.

Mark the **Sign this request** check box to confirm that the certificate should be issued, and then click the **Sign Request** button. The certificate will be issued and will then replace the certificate signing request in the list view.

- **Reject request** – Displays the Reject Request form. Use this action to reject the request for a certificate. Rejected requests are automatically deleted according to the data retention policy.

Mark the **Reject this request** check box to confirm that the certificate signing request should be rejected, and then click the **Reject Request** button.

- **Delete request** – Removes the certificate signing request from the list. This option is only available if the data retention policy is configured to permit the certificate signing requests's deletion.



The Delete Request form is displayed. Mark the **Delete this request** check box to confirm the certificate signing request's deletion, and then click the **Delete Request** button.

Importing a Code-Signing Certificate

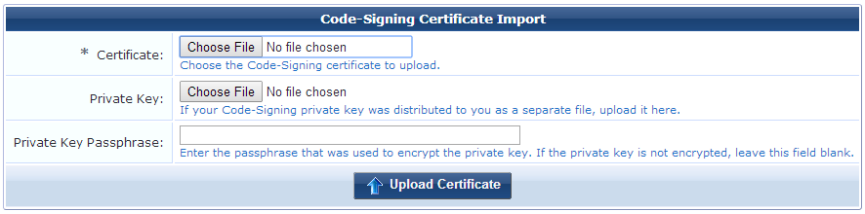
ClearPass Onboard supports importing a code-signing certificate chain and private key for signing the Windows provisioning application. Certificates can be uploaded as PFX, PKCS-12, SPC, or PKCS-7, and can include a chain of certificates. An operator's profile must include the Import Code-Signing Certificate privilege in order to access this feature.

The procedure for importing a profile-signing certificate is the same as that for importing a code-signing certificate. To import a trusted certificate, see "Importing a Trusted Certificate " on page 123.

To import a code-signing certificate:

1. Do one of the following:
   - Go to **Onboard > Management and Control > View by Certificate** and click the **Upload a code-signing certificate** link in the upper-right corner of the page.
   - Go to **Onboard > Deployment and Provisioning > Provisioning Settings**. You can either click the **Create new provisioning settings** link at the top of the page, or click the **Edit** link for a configuration set in the list. In the page that opens, click the **Upload a code-signing certificate** link in the upper-right corner.

   The Code-Signing Certificate Import form opens.



2. In the **Certificate** field, navigate to the code-signing certificate file to upload.
3. If the private key for the code-signing certificate was issued as a separate file, use the **Private Key** field to navigate to the private key file.
4. Click **Upload Certificate**. The certificate chain is displayed.

To use the certificate for code-signing:

1. Go to **Onboard > Deployment and Provisioning > Provisioning Settings > Windows tab**.
2. In the **Windows Provisioning** section, use the **Code-Signing Certificate** drop-down list to select the uploaded certificate.

To create a test certificate:

1. Go to **Onboard > Management and Control > View by Certificate** and click the **Generate a new certificate signing request** link. The Certificate Request Settings form opens.
2. In the **Certificate Type** drop-down list, choose **Code-Signing**.
3. Complete the rest of the form with your information. Mark the **Issue this certificate immediately** check box, then click **Create Certificate Request**.

   The test certificate is displayed in the list on the Certificate Management page, and can be selected on the Provisioning Settings form.

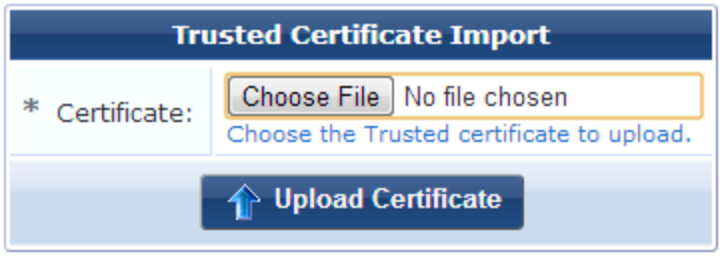
Importing a Trusted Certificate

Onboard's Certificate Management page supports importing trusted certificates. Certificates may be uploaded in PEM format (*.pem).

(To import a code-signing certificate, see "Importing a Code-Signing Certificate " on page 122

To import a trusted certificate:

1. Go to **Onboard > Management and Control > View by Certificate** and click the **Upload a trusted certificate** link in the upper-right corner. The Trusted Certificate Import form opens.

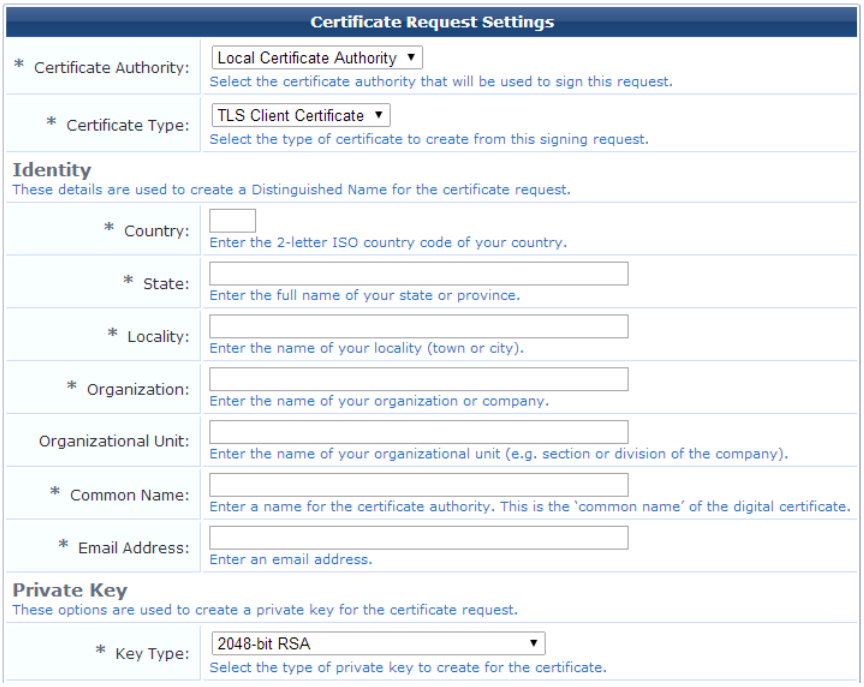


2. Click **Choose File** to browse to the certificate on your system, and then click **Upload Certificate**. A confirmation message is displayed, and the imported certificate is included in the Certificate Management list. You can click the Show Certificate link next to the certificate's name to view the certificate's details.

3. You can use the following additional options in the upper-right corner of the Import Trusted Certificate page:
   - Click the **Upload another trusted certificate** link to upload additional certificates.
   - Click the **Edit <certificate name> trust settings** link to open the Trust tab of the Network Settings form.

Creating a Certificate

To create a new certificate, go to **Onboard > Management and Control > View by Certificate**. The Certificate Management page opens. In the upper-right corner, click the **Generate a new certificate signing request** link. The Certificate Request Settings form opens.



To create a new certificate or certificate signing request:

In the **Certificate Authority** drop-down list, select the certificate authority that will be used to sign the request.

In the **Certificate Type** drop-down list, select the type of certificate you want to create:

- **TLS Client Certificate—**Use this option when the certificate is to be issued to a client, such as a user or a user's device.
  - When this option is selected, the issued certificate's extended key usage property will contain a value of "Client Auth", indicating that the certificate may be used to identify a client.
  - When you create a TLS Client certificate, corresponding entries are created in the **Onboard > Management and Control > View by Device** and **Onboard > Management and Control > View by Username** lists.
- **Trusted Certificate**—Use this option when the certificate is to be issued to a network server, such as a Web server or as the EAP-TLS authentication server.
  - When this option is selected, the issued certificate's extended key usage property will contain a value of "Server Auth", indicating that the certificate may be used to identify a server. Trusted certificates include the id-kp-eapOverLAN extended key usage.
- **Certificate Authority**—Use this option when the certificate is for a subordinate certificate authority.
  - When this option is selected, the issued certificate will contain an extension identifying it as an intermediate certificate authority, and the extended key usage property will contain the three values "Client Auth", "Server Auth" and "OCSP Signing".
- **Code Signing**—Use this option for signing the Windows provisioning application.

Specifying the Identity of the Certificate Subject

In the first part of the Certificate Request Settings form, provide the identity of the person or device for which the certificate is to be issued (the "subject" of the certificate). Together, these fields are collectively known as a distinguished name, or "DN":

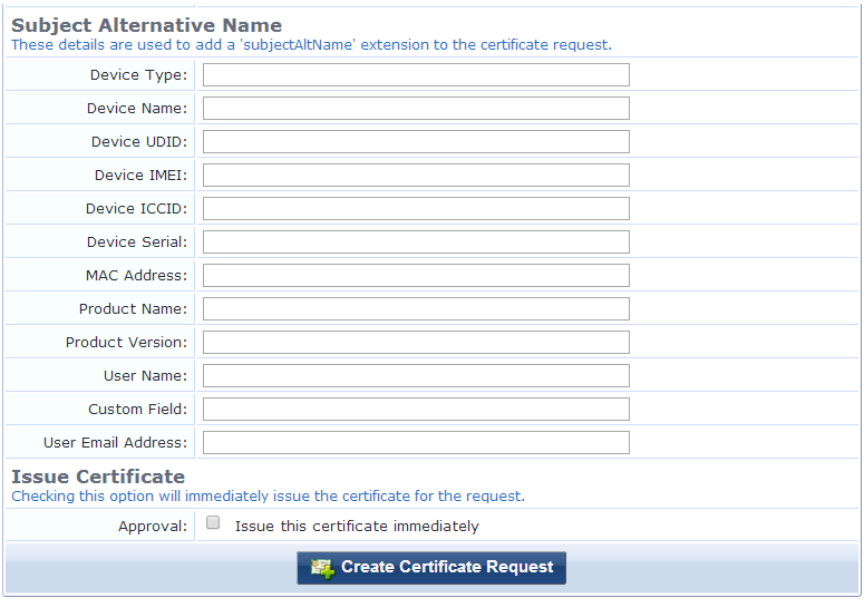
- Country

- State
- Locality
- Organization
- Organizational Unit
- Common Name – this is the primary name used to identify the certificate
- Email Address

The **Key Type** drop-down list specifies the type of private key that should be created for the certificate. You can select one of these options:

- **1024-bit RSA** – lower security
- **2048-bit RSA** – recommended for general use
- **4096-bit RSA** – higher security

Using a private key containing more bits will increase security, but will also increase the processing time required to create the certificate and authenticate the device. The additional processing required will also affect the battery life of a mobile device. It is recommended to use the smallest private key size that is feasible for your organization.



If you have selected **TLS Client** as the certificate type, the Subject Alternative Name section is also shown. The alternative name can be used to specify additional identification details for the certificate's subject. If one or more of these options are provided, the issued certificate will contain a subject AltName extension with the specified values.

Table 22 explains the fields that may be included as part of the subject alternative name.

Table 22: *Subject Alternative Name Fields Supported When Creating a TLS Client Certificate Signing Request*

Name	Description
Device Type	Type of device, such as “iOS”, “Android”, etc.
Device Name	The hostname of the device at the time of enrollment.
Device UDID	Unique device identifier (UDID) for this device. This is typically a 64-bit, 128-bit or 160-bit number represented in hexadecimal (16, 32 or 40 characters, respectively).
Device IMEI	International Mobile Equipment Identity (IMEI) number allocated to this device.
Device ICCID	Integrated Circuit Card Identifier (ICCID) number from the Subscriber Identity Module (SIM) card present in the device.
Device Serial	Serial number of the device.
MAC Address	IEEE MAC address of this device.
Product Name	Product string identifying the device and often including the hardware version information.
Product Version	Software version number for the device.
User Name	Username of the user who provisioned the device.
Custom Field	A custom field to be used as needed.
User Email Address	The email address of the user who provisioned a device.

Issuing the Certificate Request

To create the certificate, when you have completed the other fields on the Certificate Request Settings form, mark the **Issue this certificate immediately** check box.

Click the **Create Certificate Request** button to save your changes.

- If the “Issue this certificate immediately” check box is marked, the certificate will be issued immediately and will be displayed in the Certificate Management list view.
- If the “Issue this certificate immediately” check box is **not** marked, the certificate request will be displayed in the Certificate Management list view. The certificate can then be issued or rejected at a later time.

Requesting a Certificate

From the **Onboard > Management and Control > View by Certificate** page, click the **Upload a certificate signing request** link to access the Certificate Signing Request form.

Providing a Certificate Signing Request in Text Format

If you have a certificate signing request in text format, click the **Copy and paste certificate signing request as text** radio button on the Certificate Signing Request form.

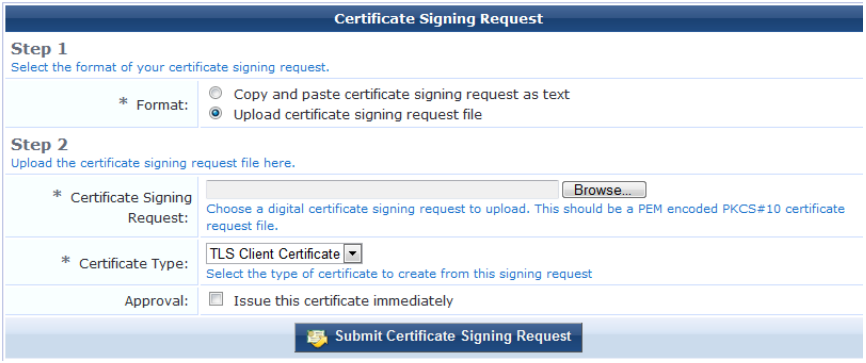
Paste the text into the **Certificate Signing Request** text field. Be sure to include the complete block of text, including the beginning and ending lines.

A complete certificate signing request looks like the following:

```
-----BEGIN CERTIFICATE REQUEST-----
MIIB7DCCAVUCAQAwgasxCzAJBgNVBAYTAlVTMRMwEQYDVQQIEwpDYWxpZm9ybmlh
MRIwEAYDVQQHEwlTdW5ueXZhbGUxFzAVBgNVBAoTDkFDTUUgU3Byb2NrZXRzMRkw
FwYDVQQLExBWaXNpdG9yIFNlcnZpY2VzMR4wHAYDVQQDExVBdXRoZW50aWNhdGlv
biBTZXJ2ZXIxHzAdBgkqhkiG9w0BCQEWEGluZm9AZXhhbXBsZS5jb20wgZ8wDQYJ
KoZIhvcNAQEBBQADgY0AMIGJAoGBALR4wRSH26wlcf3OEPEIh34iXRQIUrnYnDfo
+ZezeB/i4NZUhRvLMvhPW7DcLpiZJ17ILj3aPPUXWDBYYiiuOkmuFX3dG7eKCLMH
Z4E9z1ozK5Znm8cWIj56kg69le7QrAZBYrd5QaBTMxEe0F9CGFsYbFx1viMUMxN6
EJILaCTBAgMBAAGgADANBgkqhkiG9w0BAQUFAAOBgQB8/So9KU5BS3oxjyxftIwF
dWvNP2CNruKyQaba5RQ1ixdHAsPE+3uYIHNvlqqIpSzBlfYkr21S4DdR3SSC3bXy
t4l/fyMuC1cEG/RpPSxdDALpeT8MuoGV1JonKo2BDitOEd4y5SXGmHmDBHrPW2Nd
gthkrtBb/a2WAkNcRfDuiQ==
-----END CERTIFICATE REQUEST-----
```

Providing a Certificate Signing Request File

Alternatively, if you have the certificate signing request as a file, click the **Upload certificate signing request file** radio button.



Use the Certificate Signing Request field to select the appropriate file for upload.

NOTE

The file should be a base-64 encoded (PEM format) PKCS#10 certificate signing request.

Specifying Certificate Properties

On the **Certificate Signing Request** form, select the type of certificate from the **Certificate Type** drop-down list. Choose from one of the following options:

- **TLS Client Certificate** – Use this option when the certificate is to be issued to a client, such as a user or a user's device.
  - When this option is selected, the issued certificate's extended key usage property will contain a value of "Client Auth", indicating that the certificate may be used to identify a client.
- **Trusted Certificate**—Use this option when the certificate is to be issued to a network server, such as a Web server or as the EAP-TLS authentication server.
  - When this option is selected, the issued certificate's extended key usage property will contain a value of "Server Auth", indicating that the certificate may be used to identify a server. Trusted certificates include the id-kp-eapOverLAN extended key usage.
- **Certificate Authority** – Use this option when the certificate is for an subordinate certificate authority.
  - When this option is selected, the issued certificate will contain an extension identifying it as an intermediate certificate authority, and the extended key usage property will contain the three values "Client Auth", "Server Auth" and "OCSP Signing".
- **Code Signing**—Use this option for signing the Windows provisioning application.
- **TLS Server Certificate** – Use this option when the certificate is to be issued to a network server, such as a Web server or as the EAP-TLS authentication server.
  - When this option is selected, the issued certificate's extended key usage property will contain a value of "Server Auth", indicating that the certificate may be used to identify a server.

Mark the **Issue this certificate immediately** check box to automatically issue the certificate.

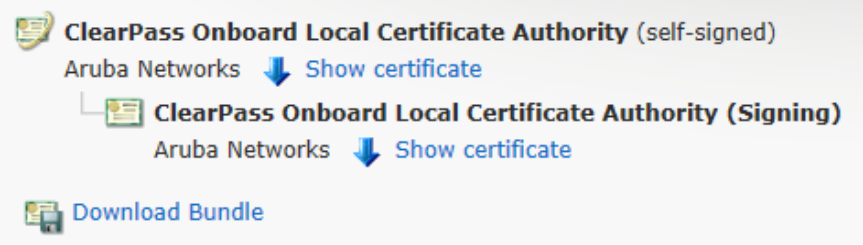
Click the **Submit Certificate Signing Request** button to save your changes.

- If the "Issue this certificate immediately" check box is marked, the certificate will be issued immediately and will be displayed in the Certificate Management list view.
- If the "Issue this certificate immediately" check box is **not** marked, the certificate request will be displayed in the Certificate Management list view. The certificate can then be issued or rejected at a later time.

The Trust Chain and Uploading Certificates for the CA

The Certificate Authority Trust Chain page is used to view the certificate authority's current trust chain, or to upload a new certificate in the trust chain when configuring a certificate authority.

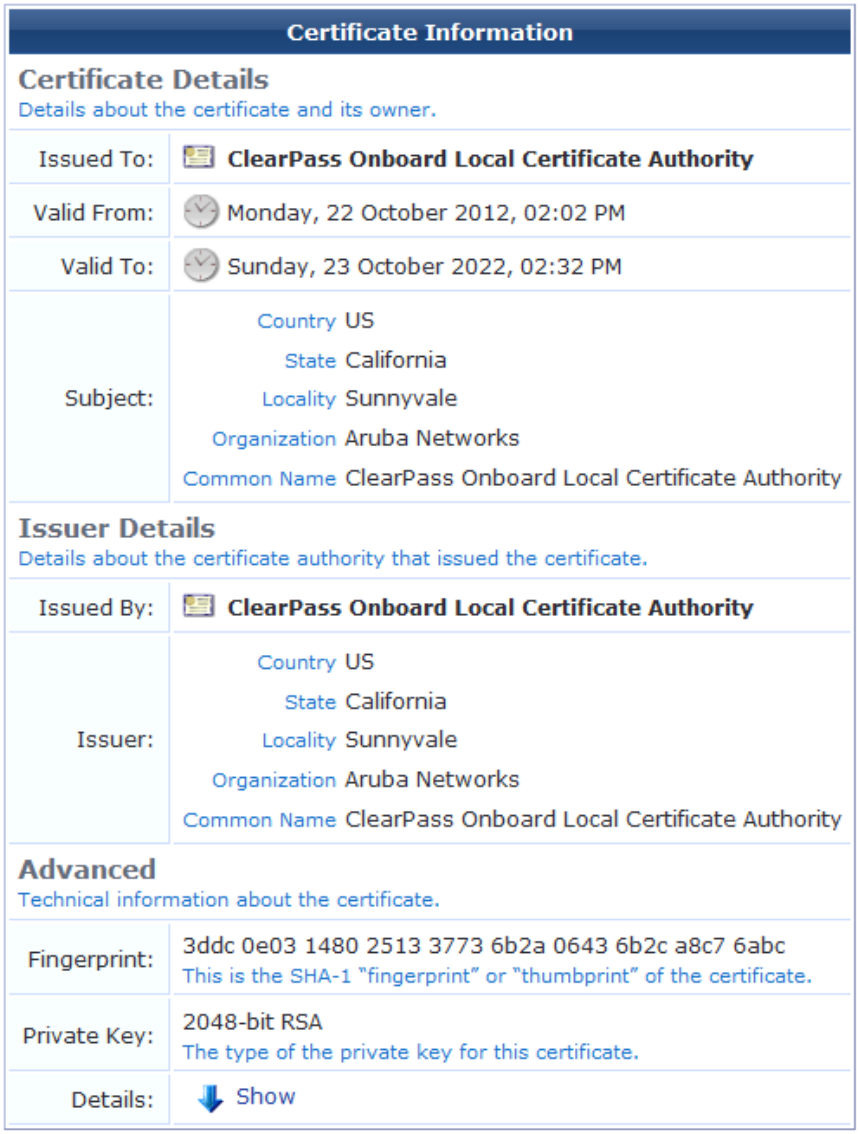
To view the Certificate Authority's trust chain, go to **Onboard > Certificate Authorities** and click the **Trust Chain** link for a certificate. The Certificate Authority Trust Chain page opens. This page shows a graphical representation of the certificates that make up the trust chain.



The first certificate listed is the root certificate. Root certificates are always self-signed and are explicitly trusted by clients.

Each additional certificate shown is an intermediate certificate. The last certificate in the list is the signing certificate that is used to issue client and server certificates.

To view the properties of a certificate in the trust chain, click the **Show certificate** link. The Certificate Information view opens.



To export a certificate:

1. Click the **Download Bundle** link. The Export Certificate form opens.

2. In the **Format** row, choose the certificate format. The form expands to include configuration options for that format.
3. Complete the fields with the appropriate information, and then click **Export Certificate**.

Considerations for iOS Devices

The server certificate is used by ClearPass to secure Web (HTTPS) and authentication (RADIUS) traffic. It can be configured in **ClearPass Policy Manager** under **Administration > Certificates > Server Certificate**.

The optimal configuration for Onboard is a server certificate issued by a trusted commercial certificate authority. A list of certificate authorities trusted by iOS devices can be found at http://support.apple.com/kb/HT5012.

Alternatively, if you only wish to use a single Onboard Certificate Authority, then you can use that Certificate Authority to sign the server certificate. Users will then have to install the certificate as part of the provisioning process.

For testing purposes, you can disable the requirement for HTTPS on CPPM's **Configuration > Authentication** page; however, this is an insecure configuration that should not be used in a production environment.

Onboard Configuration

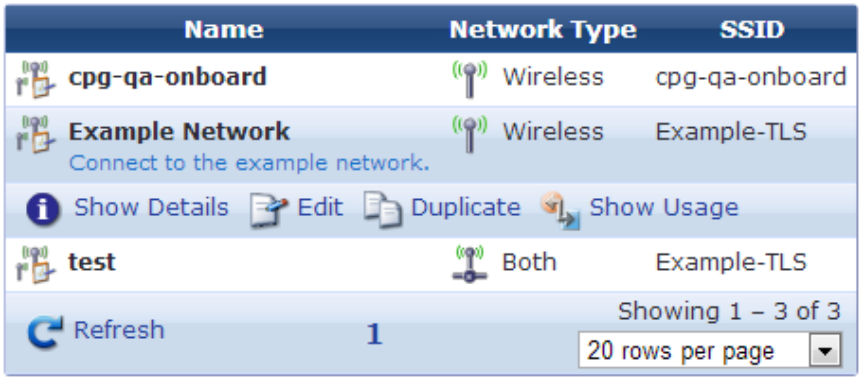
Onboard lets you create and manage the configuration settings that can be provisioned to onboarded devices. To manage configuration settings, go to **Onboard > Configuration > Start Here**. The index page opens. It includes with command links for accessing the different configuration settings as well as the configuration profiles that use them.

- For network settings, see "Network Settings " on page 130
- For iOS device settings, see "iOS Settings" on page 140
- For configuration profiles, see "Configuration Profiles" on page 165

Network Settings

You can define multiple network settings that can be sent to provisioned devices. Each network you configure is also a "configuration unit" that you can include in a configuration profile.

To create and work with network settings, go to **Onboard > Configuration > Network Settings**. The **Networks** list view opens.



All networks that have been provisioned are included in the list. You can click a network's row in the list for additional options:

Table 23: *The Network Settings List*

Field	Description
Show Details	Displays details for the network. The form expands to show its name, description, and configuration values for network access, wireless networks, enterprise protocols, enterprise authentication, enterprise trust, Windows networking, and proxy settings.
Edit	Edit any of a network's attributes. The Network Settings form opens.
Duplicate	Creates a copy of a network configuration to use as a basis for a new network. The Network Settings form opens with all attributes prepopulated and "Copy" appended to its name. You can rename the new configuration, and edit any of its attributes.
Show Usage	Displays a list of configuration profiles that use the network.
Create new network	To create a new network, click this link in the upper right corner. The Network Settings form opens.

For information on creating, editing, or duplicating n Network Settings configuration set, see:

- "Configuring Basic Network Access Settings " on page 131
- "Configuring Enterprise Protocol Settings" on page 134
- "Configuring Device Authentication Settings" on page 135
- "Configuring Certificate Trust Settings" on page 136
- "Configuring Windows-Specific Network Settings" on page 138
- "Configuring Proxy Settings" on page 139

Configuring Basic Network Access Settings

1. On the **Onboard > Configuration > Network Settings** list view, to configure the network settings that will be provisioned to devices, click the network's **Edit** link. To create a new network, click the **Create new network** link in the upper-right corner. The Network Access form opens with the **Access** tab displayed.

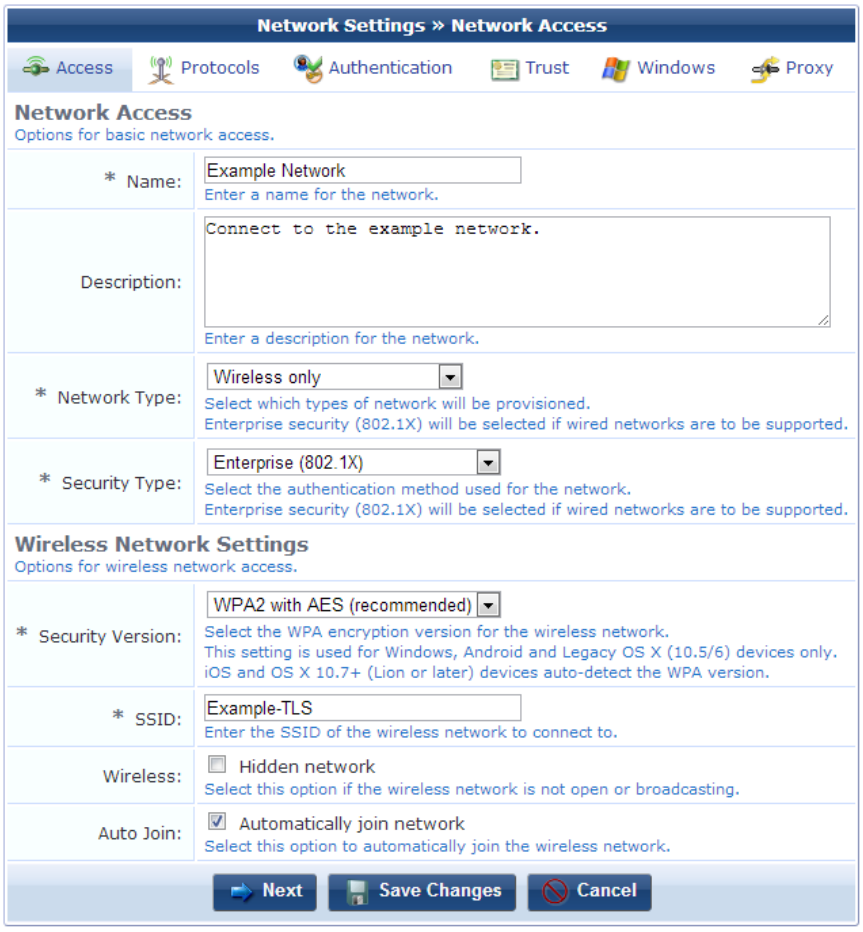
   The configuration process is the same for editing an existing network and for creating a new network. The Network Access form is divided into several tabs:

Tab	Description
Access	Specifies basic network properties, such as the name of the wireless network and the type of security that is used. This form is described below.
Protocols	Specifies the 802.1X authentication protocols that are used by the network. See "Configuring Enterprise Protocol Settings" on page 134.
Authentication	Specifies the type of device authentication to be used for the network. See "Configuring Device Authentication Settings" on page 135.
Trust	Specifies options related to mutual authentication. See "Configuring Certificate Trust Settings" on page 136.
Windows	Specifies networking options used only by devices using the Windows operating system. See "Configuring Windows-Specific Network Settings" on page 138.
Proxy	Specifies a proxy server to be used by devices connecting to the network. See "Configuring Proxy Settings" on page 139.

NOTE

Navigating between different tabs will save the changes you have made in each tab. The modified settings are indicated with a "#" marker in the tab. The settings used for device provisioning are not modified in the database until you click Create Network.

To edit the network's basic and wireless network access options, click the **Access** tab:



1. If you need to edit the network's name, enter the new name in the **Name** field.

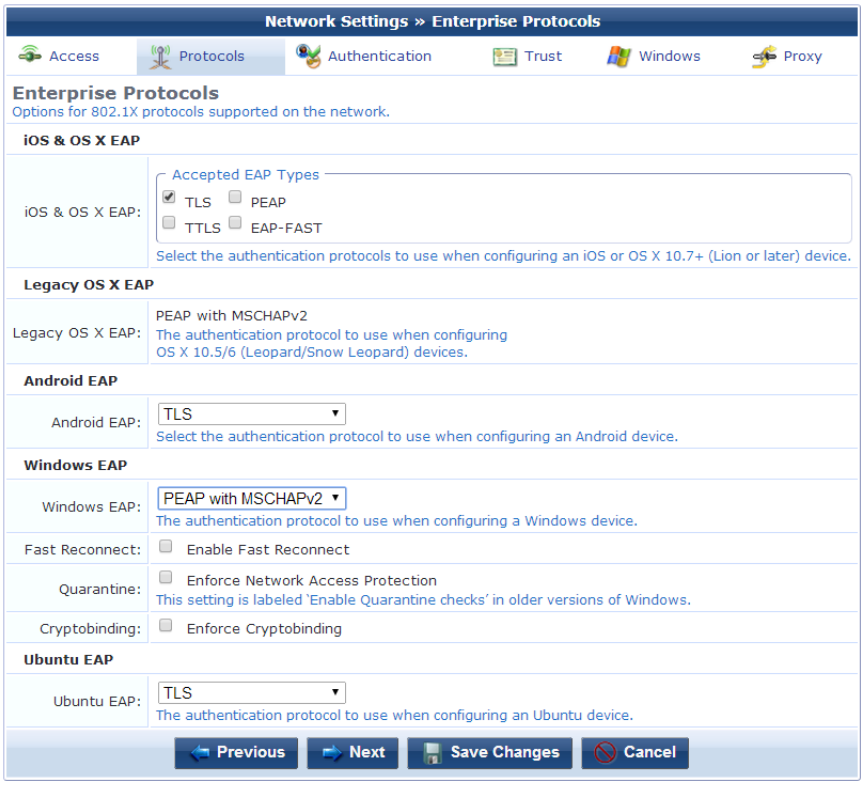
2. (Optional) You may enter additional identifying information in the **Description** field.
3. The options available in the **Network Type** drop-down list are:
   - **Both — Wired and Wireless** – Configures both wired (Ethernet) and wireless network adapters. Use this option when you have 802.1X configured for all types of network access.
   - **Wireless only** – Configures only wireless network adapters.
   - **Wired only** – Configures only wired (Ethernet) network adapters.
4. The options available in the **Security Type** drop-down list are:
   - **Enterprise (802.1X)** – Use this option to setup a network that requires user authentication.
   - This option is the only available choice when the Network Type is set to “Wired only”.
   - **Personal (PSK)** – Use this option to setup a network that requires only a pre-shared key (password) to access the network.

   This option is only available when the Network Type is set to “Wireless only”.
5. If you have selected the **Personal (PSK)** security type, you must provide the pre-shared key in the **Password** field. The minimum password length is six characters. Selecting the PSK security type will hide the **Protocols**, **Authentication**, and **Trust** tabs.
6. In the **Wireless Network Settings** area:
   - The **Security Version** field lets you set the encryption version for the wireless network to **WPA with TKIP** or **WPA2 with AES**.
   - In the **Auto Join** row, you can mark the **Automatically join network** check box to specify that the device should be automatically connected to the network when it is provisioned. If only one network is available to the user, the device will be connected automatically. If multiple networks are available, the user will be able to choose the network to connect to. If the **Automatically join network** option is not selected on this form, an option to manually connect to the network will be shown to the user.
7. Do one of the following:
   - Click **Next** to continue to the **Protocols** tab.
   - Click **Save Changes** to make the new network configuration settings take effect.
   - Click **Cancel** to discard your changes and return to the main Onboard configuration user interface.

For information about the list of network settings, see "Network Settings " on page 130. For more information about configuration profiles, see "Configuration Profiles" on page 165

Configuring Enterprise Protocol Settings

On the **Onboard > Configuration > Network Settings** form, click the **Protocols** tab to display the Enterprise Protocols form.



Use this form to specify the authentication methods required by your network infrastructure. The default EAP type is TLS for all platforms that support this method.

- The **iOS & OS X EAP** option supports TLS, TTLS, PEAP, and EAP-FAST.
- The **Legacy OS X EAP** option supports only PEAP with MSCHAPv2.
- The **Android EAP** option supports TLS, PEAP with MSCHAPv2, PEAP with GTC, TTLS with MSCHAPv2, TTLS with GTC, and TTLS with PAP.
- The **Windows EAP** option supports TLS and PEAP with MSCHAPv2.
- The **Ubuntu** option supports TLS and PEAP with MSCHAPv2.

These best practices are recommended when choosing the 802.1X authentication methods to provision:

- Configure PEAP with MSCHAPv2 for Onboard devices – Android, Windows, and legacy OS X (10.5/10.6).
- Configure EAP-TLS for iOS devices and OS X (10.7 or later).
- Other EAP methods, while possible, are limited in their applicability and should only be used if you have a specific requirement for that method.

The **Windows EAP** options that may be specified include:

- **Enable Fast Reconnect** – Fast Reconnect is a PEAP property that enables wireless clients to move between wireless access points on the same network without being re-authenticated each time they associate with a new access point. If TLS is selected, Fast Reconnect is not available.
- **Enforce Network Access Protection**– Enable this option to obtain a system statement-of-health (SSoH) from the OnGuard or Microsoft NAP Agent and send it to the authentication server during the 802.1X

authentication process. Use this option to enforce network access control (NAC) protections on the network. If TLS is selected, Enforce Network Access Protection is not available.

- **Enforce Cryptobinding** – Cryptobinding is a process that protects the authentication protocol negotiation against man-in-the-middle attacks. The cryptobinding request and response performs a two-way handshake between the peer and the authentication server using key materials. If TLS is selected, Enforce Cryptobinding is not available.

The **Ubuntu EAP** field lets you configure the authentication protocol to use when configuring an Ubuntu device. Options include:

- **TLS**
- **PEAP with MSCHAPv2**

When you have completed your selections on this tab, do one of the following:

- Click **Previous** to return to the Access tab.
- Click **Next** to continue to the Authentication tab.
- Click **Save Changes** to make the new network configuration settings take effect.
- Click **Cancel** to discard your changes and return to the main Onboard configuration user interface.

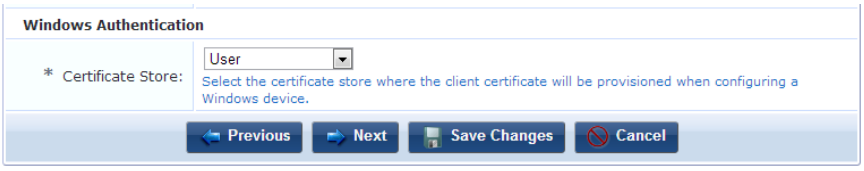
For information about the list of network settings, see "Network Settings " on page 130. For more information about configuration profiles, see "Configuration Profiles" on page 165

Configuring Device Authentication Settings

On the **Onboard > Configuration > Network Settings** form, click the **Authentication** tab to display the Enterprise Authentication form.

1. Select one of these options in the **iOS & OS X Credentials** drop-down list:
   - **Certificate** – A device certificate will be provisioned and used for EAP-TLS client authentication. When this option is selected, **EAP-TLS** must be selected on the **Protocols** tab.
   - **Username & Password** – A device certificate will be provisioned, but the client authentication will use unique device credentials (as for Onboard devices). When this option is selected, **EAP-TTLS** or **PEAP** must be selected on the **Protocols** tab.
2. The **Windows Authentication** area is included on this tab if TLS was chosen for Windows EAP on the Protocols tab.
   The **Certificate Store** field in this area lets you specify the certificate store where the client certificate will be provisioned. Options available for this field are:
   - **User** – Use user-only credentials. This is the default.
   - **Machine** – Use computer-only credentials.

- **Machine and User** – Use computer-only credentials or user-only credentials. When a user is logged on, the user's credentials are used for authentication. When no user is logged on, computer-only credentials are used for authentication.



3. Do one of the following:
   - Click **Previous** to return to the Protocols tab.
   - Click **Next** to continue to the Trust tab.
   - Click **Save Changes** to make the new network configuration settings take effect
   - Click **Cancel** to discard your changes and return to the main Onboard Configuration user interface.

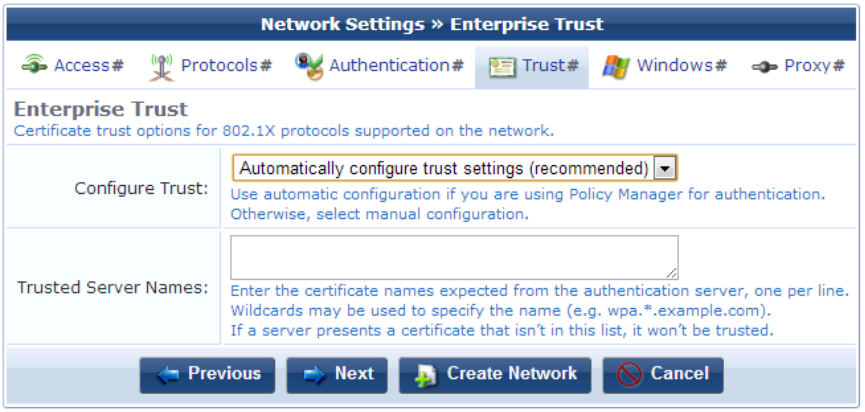
For information about the list of network settings, see "Network Settings " on page 130. For more information about configuration profiles, see "Configuration Profiles" on page 165

Configuring Certificate Trust Settings

On the **Onboard > Configuration > Network Settings** form, click the **Trust** tab to display the Enterprise Trust form. Use this form to create the network settings that will be sent to a provisioned device.

Configuring Trust Settings Automatically

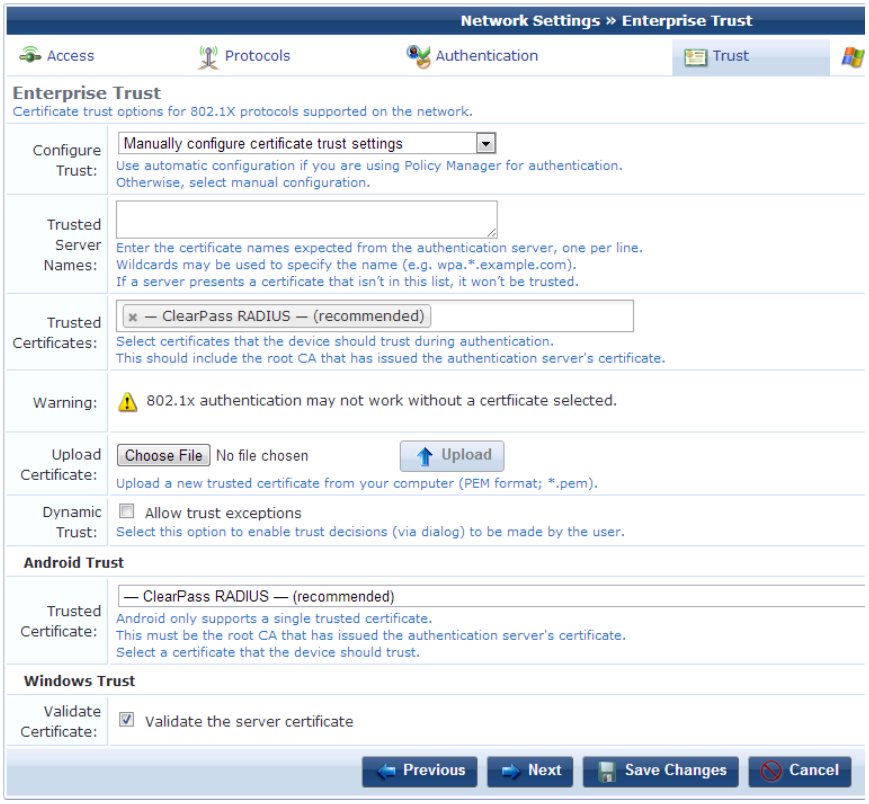
1. When you open this tab, the default selection in the **Configure Trust** field is **Automatically configure trust settings (recommended)**. With this option selected, Onboard automatically determines the appropriate certificate trust configuration for your deployment.



2. If the deployment is not using the built-in CA, you may use the **Trusted Server Names** text field to enter the certificate names to accept from the authentication server. Only certificates included in this list will be trusted. Enter each server name on a separate line. You can use wildcards.
3. Do one of the following:
   - Click **Previous** to return to the Authentication tab.
   - Click **Next** to continue to the Windows tab.
   - Click **Save Changes**to make the new network configuration settings take effect.
   - Click **Cancel** to discard your changes and return to the main Onboard configuration user interface.

Configuring Trust Settings Manually

1. In the **Configure Trust** drop-down list:
   - If you are using Policy Manager for authentication, leave this option set to **Automatically configure trust settings**. The complete trust chain is included in the profile download.
   - To change the recommended default setting and configure trust settings manually, choose **Manually configure certificate trust settings** . The form expands to include configuration options.



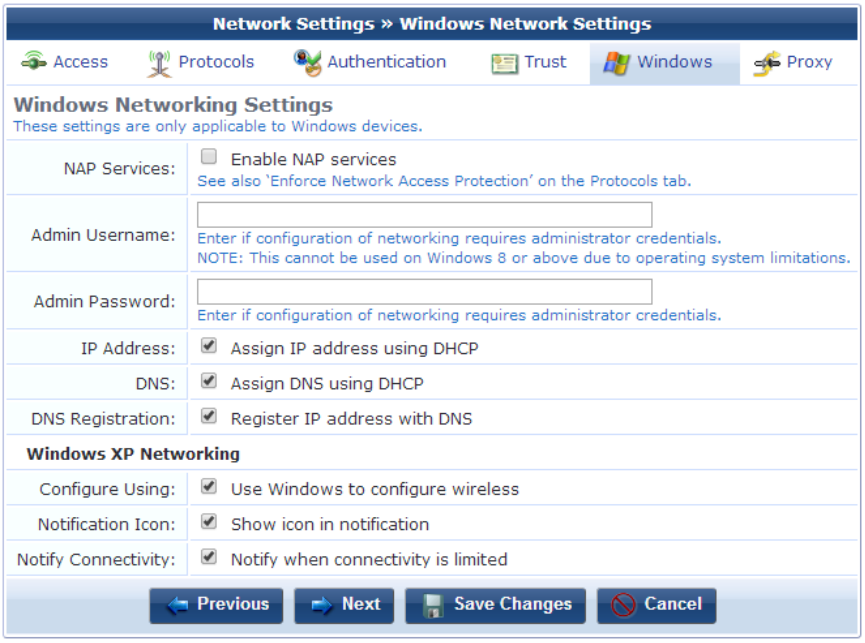
2. If the deployment is not using the built-in CA, you may use the **Trusted Server Names** text field to enter the certificate names to accept from the authentication server. Only certificates included in this list will be trusted. Enter each server name on a separate line. You can use wildcards.
3. In the **Trusted Certificates** row, the recommended certificate is selected by default. You may click the field to open the drop-down list and select a different certificate the client should trust. You should include the root certificate that issued the authentication server's certificate, and you should provide the certificate for each authentication server a provisioned device will use.
4. You can use the **Upload Certificate** options to import additional trusted certificates. Click **Choose File** to navigate to the file on your computer, then click **Upload**. The certificate is imported, and the certificate name is displayed above the form. You can click the **Show certificate** link next to the name to view certificate details. The certificate is also displayed in the Certificate Management list with the type "trusted."
5. In the **Dynamic Trust** row, you should avoid marking the **Allow trust exceptions** check box – the network administrator should make all trust decisions. Users will not generally review certificates for potential issues before accepting them. If you wish to enable trust decisions to be made by the user, you may unmark the **Allow trust exceptions** check box. Be aware that this is an insecure configuration, as a user can override a security warning if a man-in-the-middle attack occurs.
6. In the **Android Trust** area, use the **Trusted Certificate** drop-down list to select a certificate the device should trust. Android supports only a single trusted certificate; this must be the root CA that issued the authentication server's certificate. Be aware that if **None** is selected, 802.1x authentication might not work.

7. In the **Windows Trust** area, mark the **Validate the server certificate** check box. This ensures that the provisioned device will check the server certificate is valid before using the server for authentication. If this check box is unmarked, the configuration will not be secure. An attacker could provide another server certificate which the client would not verify.
8. Do one of the following:
   - Click **Previous** to return to the Authentication tab.
   - Click **Next** to continue to the Windows tab.
   - Click **Save Changes** to make the new network configuration settings take effect
   - Click **Cancel** to discard your changes and return to the main Onboard configuration user interface.

For information about the list of network settings, see "Network Settings " on page 130. For more information about configuration profiles, see "Configuration Profiles" on page 165

Configuring Windows-Specific Network Settings

On the **Onboard > Configuration > Network Settings** form, click the **Windows** tab to display the Windows Network Settings form.



Network Access Protection (NAP) is a feature in Windows Server 2008 that controls access to network resources based on a client computer's identity and compliance with corporate governance policy. NAP allows network administrators to define granular levels of network access based on who a client is, the groups to which the client belongs, and the degree to which that client is compliant with corporate governance policy. If a client is not compliant, NAP provides a mechanism to automatically bring the client back into compliance and then dynamically increase its level of network access.

Deploying NAP requires a NAP-compatible authentication server, so that appropriate policies may be implemented based on the statement of health provided by the NAP client.

To enable NAP for Microsoft Windows clients, mark the **Enable NAP services** check box on this tab. You will also need to mark the **Enable Quarantine Checks** check box on the **Protocols** tab.

The **Admin Username** field can be used if configuration of networking requires administrator credentials. This field lets you embed administrator credentials so you can allow privileged operations such as application

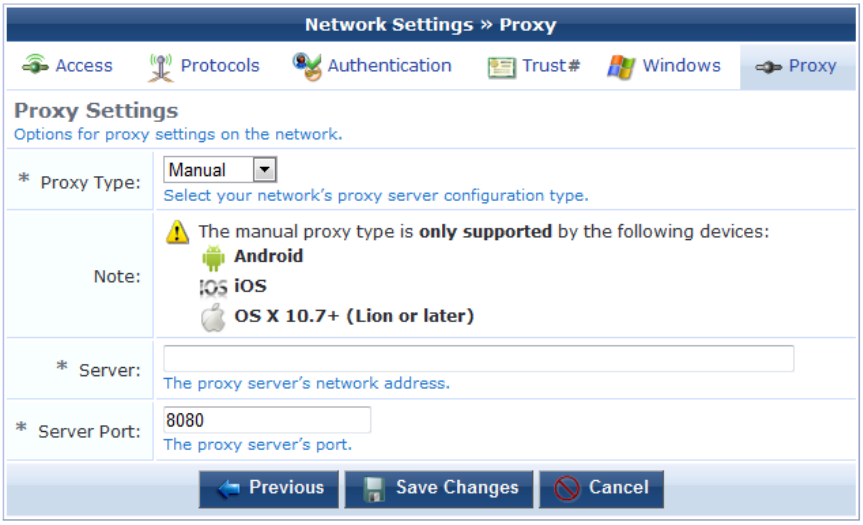
installation to be done during onboarding by end users who otherwise do not have admin privileges. (Not supported by Windows 8 or above)

- Do one of the following:
  - Click **Previous** to return to the Trust tab.
  - Click **Next** to continue to the Proxy tab.
  - Click **Save Changes** to make the new network configuration settings take effect.
  - Click **Cancel** to discard your changes and return to the main Onboard configuration user interface.

For information about the list of network settings, see "Network Settings " on page 130. For more information about configuration profiles, see "Configuration Profiles" on page 165

Configuring Proxy Settings

On the **Onboard > Configuration > Network Settings** form, click the **Proxy** tab to display the Proxy Settings form.



Select one of these options in the **Proxy Type** drop-down list:

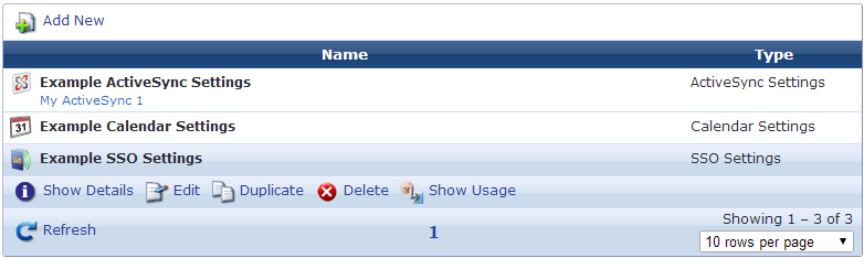
- **None**– No proxy server will be configured.
- **Manual**– A proxy server will be configured, if the device supports it. Specify the proxy server settings in the **Server** and **Server Port** fields.
- **Automatic**– The device will configure its own proxy server, if the device supports it. Specify the location of a proxy auto-config file in the **PAC URL** text field.
- Do one of the following:
  - Click **Previous** to return to the Windows tab.
  - Click **Save Changes** to make the new network configuration settings take effect
  - Click **Cancel** to discard your changes and return to the main Onboard configuration user interface.

For information about the list of network settings, see "Network Settings " on page 130. For more information about configuration profiles, see "Configuration Profiles" on page 165

iOS Settings

You can manage iOS device settings for provisioned devices. A variety of settings are available, including such things as contacts, email, passcode policy, VPN, and Web clips settings. After you define each of the settings you wish to use, you can include them in configuration profiles. The configuration profiles are available in the Provisioning Settings form, and can be associated with a device provisioning configuration set.

To create and work with iOS settings, go to **Onboard > Configuration > iOS Settings**. The **iOS Settings** list view opens.



All iOS settings that have been configured are included in the list. Each setting's name and type are shown in the list. You can click and iOS setting's row in the list for additional options:

Table 24: *The iOS Settings List*

Field	Description
Show Details	Displays details for the iOS setting. The form expands to show its name, description, and configuration values specific to the type of setting.
Edit	Edit the iOS setting's configuration. The Settings form for the type of iOS setting opens.
Duplicate	Creates a copy of an iOS setting to use as a basis for a new setting. The Settings form specific to the type of setting opens with all attributes prepopulated and "Copy" appended to its name. You can rename the new setting, and edit any of its attributes.
Delete	Deletes the iOS setting. You will be asked to confirm the deletion.
Show Usage	Displays a list of configuration profiles that use the iOS setting.
Add New	To create a new iOS setting, click this link above the table. The Settings form specific to the type of iOS setting opens.

For information on creating, editing, or duplicating the different types of iOS settings, see:

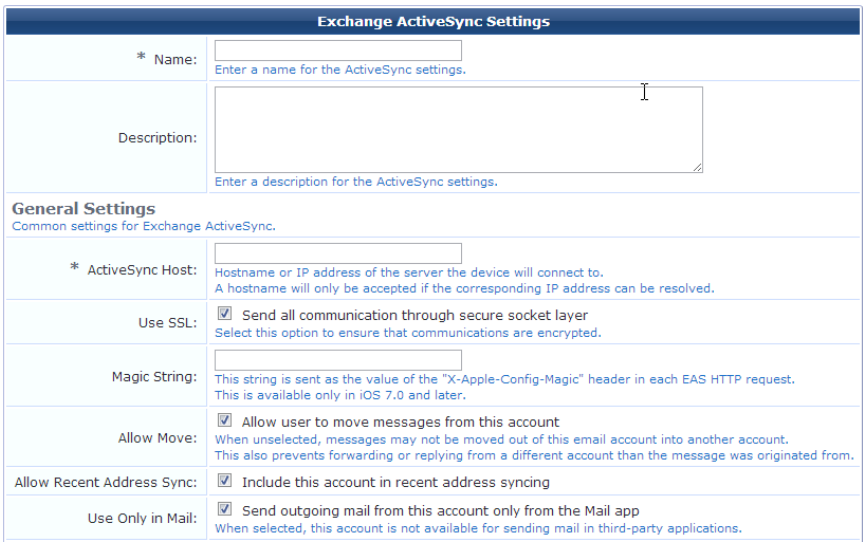
- "Configuring ActiveSync Settings " on page 141
- "Configuring AirPlay Settings" on page 143
- "Configuring AirPrint Settings" on page 144
- "Configuring APN Settings" on page 145
- "Configuring Calendar Settings" on page 145
- "Configuring Contacts Settings" on page 147
- "Configuring Email Settings" on page 148

Configuring ActiveSync Settings

Exchange ActiveSync configurations you define can be used in configuration profiles to automatically configure an email account on an iOS device. Use an ActiveSync configuration when you have an Exchange mail server and want to automatically provide the email settings to users provisioning their mobile devices. You can define multiple ActiveSync settings.

Exchange ActiveSync settings are only supported by iOS devices; they will be ignored by all other device types.

To create and work with Exchange ActiveSync configurations, go to **Onboard > Configuration > iOS Settings**. Either click an existing ActiveSync setting's name in the list; or click **Add New**, select **ActiveSync Settings** in the **Settings Type** drop-down list, and click **Create**. The **Exchange ActiveSync Settings** form opens.



1. In the **Name** field, give the ActiveSync configuration a short name that identifies it clearly. ActiveSync configuration names can include spaces.

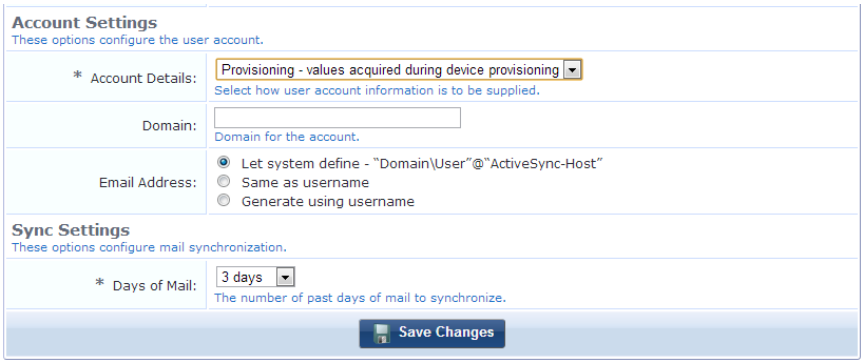
   If you are duplicating a configuration, the original name has a number appended to it. You may highlight this name and replace it with a new name.

2. In the **Description** field, briefly describe the characteristics of the ActiveSync setting.

In the **General Settings** area:

1. (Required) In the **ActiveSync Host** field, enter the hostname or IP address of the server the device will connect to.
2. To ensure that all communications are encrypted, select the check box in the **Use SSL** field.

3. In the **Magic String** field, enter the value to send as the "X-Apple-Config-Magic" header in each EAS HTP request.
4. To allow the user to move messages out of this email account into another account, select the check box in the **Allow Move** field. Leave this field blank to prevent moving messages between accounts, and to prevent forwarding or replying from other than the message's originating account.
5. To include this email account in recent address syncing, select the check box in the **Allow Recent Address Sync** field.
6. To send outgoing mail from this account only from the Mail app, and prevent sending mail in third-party applications, select the check box in the **Use Only in Mail** field.



In the **Account Settings** area:

1. (Required) Choose one of the following options from the **Account Details** drop-down list:
   - **User provided — entered by user on device.** This option requires the user to enter their credentials on the device to access their email.
   - **Identity certificate — created during provisioning.** This option uses the device's TLS client certificate to authenticate the user. Using this option requires configuration of the ActiveSync server to authenticate a user based on the client certificate.
   - **Provisioning — values acquired during device provisioning**.
   - **Shared preset values — testing only**. This option provides a fixed set of credentials to the device. These settings cannot be modified for each user when provisioning a device, so it is recommended that these settings only be used when testing Exchange integration.
2. In the **Domain** field, enter the domain for the account.
3. Select the appropriate option n the **Email Address** field. Options include **Let system define**, **Same as username**, and **Generate using username**.
4. If "Shared preset values - testing only" was chosen in the Account Details field, this form includes fields for login credentials. Enter the login information for testing in the **User**, **Password**, and **Confirm** fields. The minimum password length is six characters. If both the Domain and User fields are blank, the device will prompt the user.

In the **Sync Settings** area:

1. Choose one of the following options from the **Days of Mail** drop-down list:
   - **No Limit**
   - **1 day**
   - **3 days**
   - **1 week**

- **2 weeks**
- **1 month**

2. Click **Save Changes**. The Exchange ActiveSync setting is available as a configuration unit on the Configuration Profile form.

For more information about configuration profiles, see "Configuration Profiles" on page 165

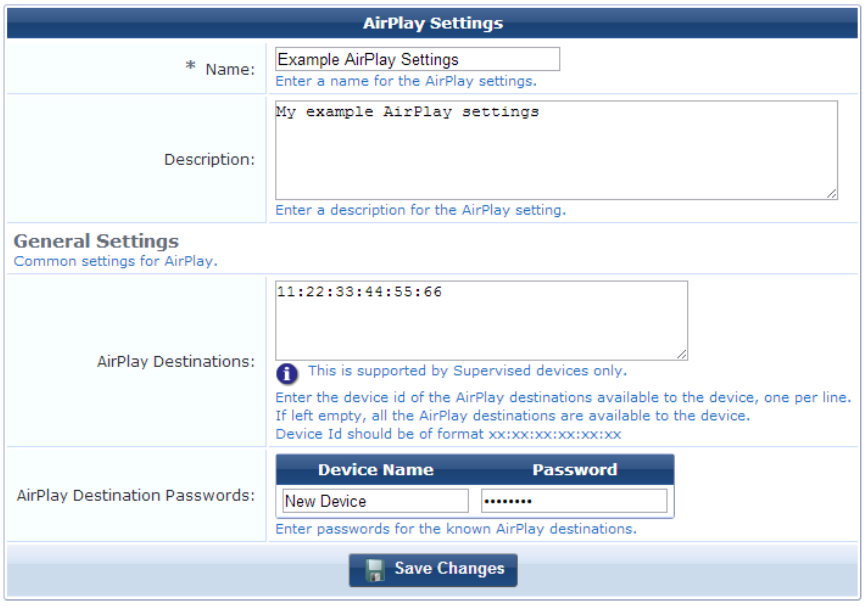
Configuring AirPlay Settings

AirPlay settings you define can be used in configuration profiles for an iOS device. An AirPlay setting includes its name and description, the destinations that are available to the device, and passwords for each destination. You can define multiple AirPlay settings.

AirPlay settings are only supported by iOS 7 devices; they will be ignored by all other device types.

To configure an AirPlay setting:

1. Go to **Onboard > Configuration > iOS Settings**. Either click an existing AirPlay setting's name in the list; or click **Add New**, select **AirPlay Settings** in the **Settings Type** drop-down list, and click **Create**. The **AirPlay Settings** form opens.



2. In the **Name** field, give this AirPlay setting a short name that identifies it clearly. AirPlay setting names can include spaces.

   If you are duplicating an AirPlay setting, the original name has "Copy" appended to it. You may highlight this name and replace it with a new name.

3. In the **Description** field, you can briefly describe the characteristics of the AirPlay setting.
4. In the **AirPlay Destinations** field, specify the device ID of each AirPlay destination that will be available to the device. Each device ID must be entered on a new line. To make all destinations available, leave this field empty.
5. (Optional) In the **AirPlay Destination Passwords** field, you may enter a device password for each destination. The minimum password length is six characters.

6. Click **Save Changes**. The AirPlay setting is available as a configuration unit on the Configuration Profile form.

For more information about configuration profiles, see "Configuration Profiles" on page 165

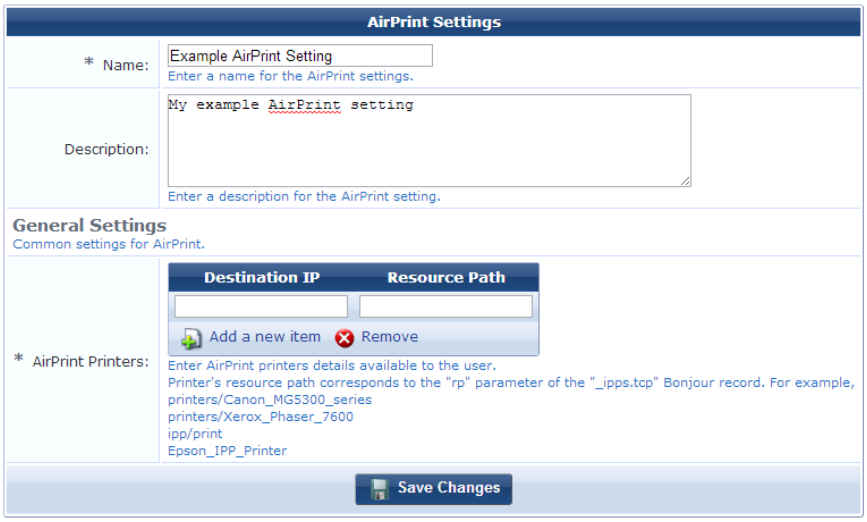
Configuring AirPrint Settings

AirPrint settings you define can be used in configuration profiles for an iOS device. An AirPrint setting includes its name and description, and AirPrint printer locations that are available to the user. You can define multiple AirPrint settings.

AirPrint settings are only supported on iOS 7 devices; they are ignored by all other devices.

To configure an AirPrint setting:

1. Go to **Onboard > Configuration > iOS Settings**. Either click an existing AirPrint setting's name in the list; or click **Add New**, select **AirPrint Settings** in the **Settings Type** drop-down list, and click **Create**. The **AirPrint Settings** form opens.



2. In the **Name** field, give this AirPrint setting a short name that identifies it clearly. AirPrint setting names can include spaces.

   If you are duplicating an AirPrint setting, the original name has "Copy" appended to it. You may highlight this name and replace it with a new name.

3. In the **Description** field, you can briefly describe the characteristics of the AirPrint setting.
4. (Required) In the **AirPrint Printers** field, specify the **Destination IP** address and **Resource Path** of each AirPrint location that will be available to the user.
5. Click **Save Changes**. The AirPrint setting is available as a configuration unit on the Configuration Profile form.

For more information about configuration profiles, see "Configuration Profiles" on page 165

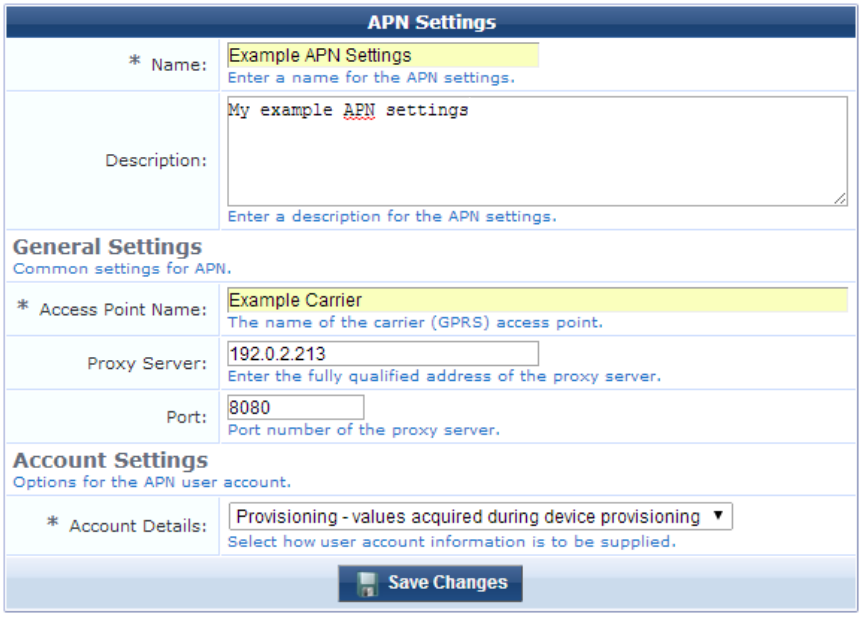
Configuring APN Settings

APN settings you define can be used in configuration profiles for an iOS device. An APN setting includes its name and description, carrier and proxy server information, and user account provisioning details. You can define multiple APN settings.

APN settings are only supported on iOS devices; they are ignored by all other devices.

To configure an APN setting:

1. Go to **Onboard > Configuration > iOS Settings**. Either click an existing APN setting's name in the list; or click **Add New**, select **APN Settings** in the **Settings Type** drop-down list, and click **Create**. The **APN Settings** form opens.



2. In the **Name** field, give this APN setting a short name that identifies it clearly. APN setting names can include spaces.

   If you are duplicating an APN setting, the original name has "Copy" appended to it. You may highlight this name and replace it with a new name.

3. In the **Description** field, you can briefly describe the characteristics of the APN setting.
4. Click **Save Changes**. The APN setting is available as a configuration unit on the Configuration Profile form.

For more information about configuration profiles, see "Configuration Profiles" on page 165

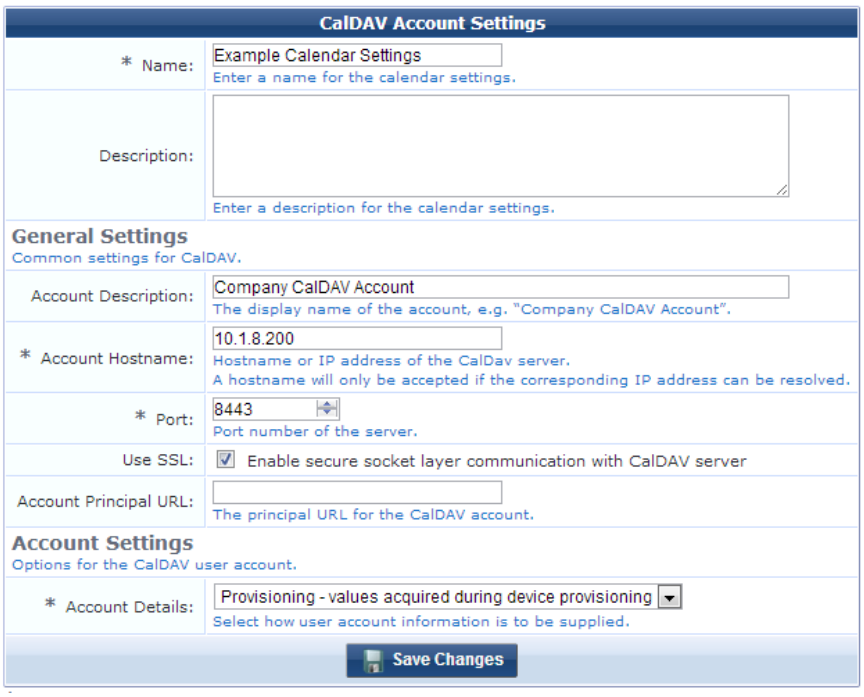
Configuring Calendar Settings

CalDAV settings you define can be used in configuration profiles for an iOS device. CalDAV accounts give a provisioned device access to scheduling information on a remote server. A CalDAV setting includes its name and description, the account description and hostname, port, principal URL, and whether SSL is enabled, as well as additional account details. You can define multiple CalDAV settings.

APN settings are only supported on iOS devices; they are ignored by all other devices.

To configure a CalDAV account:

1. Go to **Onboard > Configuration > iOS Settings**. Either click an existing Calendar setting's name in the list; or click **Add New**, select **Calendar Settings** in the **Settings Type** drop-down list, and click **Create**. The **CalDAV Account Settings** form opens.



2. In the **Name** field, give this calendar setting a short name that identifies it clearly. Calendar settings names can include spaces.

   If you are duplicating a calendar setting, the original name has "Copy" appended to it. You may highlight this name and replace it with a new name.

3. In the **Description** field, you can briefly describe the characteristics of the calendar settings.
4. In the **Account Description** field, you can enter the display name for the account.
5. (Required) In the **Account Hostname** field, enter the hostname of IP address of the CalDAV server.
6. (Required) In the **Port** field, use the counter to enter the port number of the CalDAV server.
7. To enable secure socket layer communication with the CalDAV server, mark the check box in the **Use SSL** row.
8. In the **Account Principal URL** field, you can enter the principal URL for the CalDAV account.
9. (Required) Choose an option from the **Account Details** drop-down list to indicate how user account information should be supplied. Options available in the list include:
   - **User provided - entered by user on device**
   - **Provisioning - values acquired during device provisioning**
   - **Shared preset values - testing only**
10. If **Shared preset values - testing only** is selected in the Account Details drop-down list, the **Username** and **Password** fields are added to the form. Enter the CalDAV username and password to be used. The minimum password length is six characters.
11. Click **Save Changes**. The calendar settings are available as a configuration unit on the Configuration Profile form.

For more information about configuration profiles, see "Configuration Profiles" on page 165

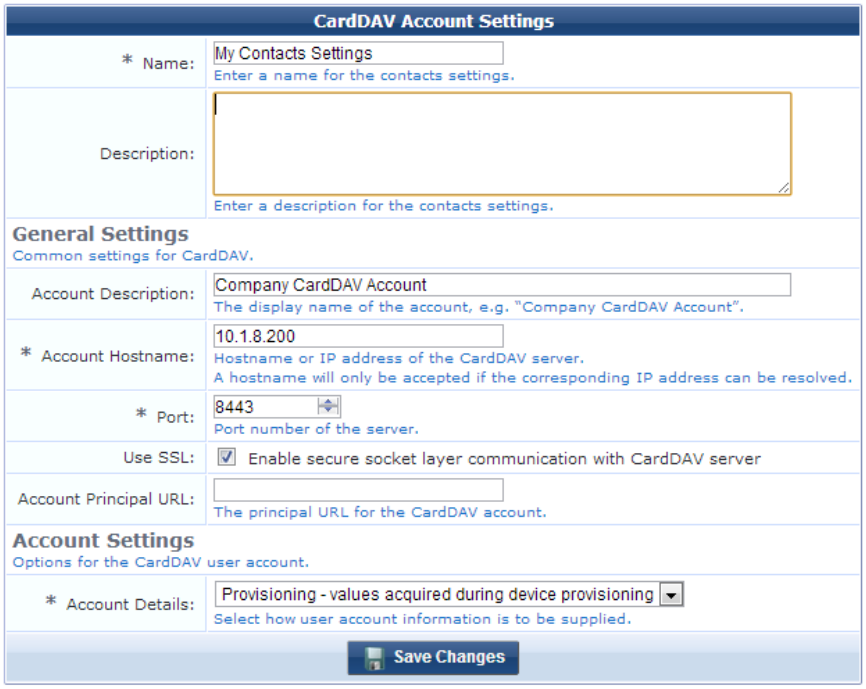
Configuring Contacts Settings

CardDAV settings you define can be used in configuration profiles for an iOS device. CardDAV accounts allow users of a provisioned device to access and share contact data on a server. A CardDAV setting includes its name and description, the account description and hostname, port, principal URL, and whether SSL is enabled, as well as additional account details. You can define multiple CardDAV settings.

CardDAV account settings are only supported on iOS devices; they are ignored by all other devices.

To configure a CardDAV account:

1. Go to **Onboard > Configuration > iOS Settings**. Either click an existing CardDAV setting's name in the list; or click **Add New**, select **Contacts Settings** in the **Settings Type** drop-down list, and click **Create**. The **CardDAV Account Settings** form opens.



2. In the **Name** field, give this contacts setting a short name that identifies it clearly. Contacts settings names can include spaces.

   If you are duplicating a contacts setting, the original name has "Copy" appended to it. You may highlight this name and replace it with a new name.

3. In the **Description** field, you can briefly describe the characteristics of the contacts settings.
4. In the **Account Description** field, you can enter the display name for the account.
5. (Required) In the **Account Hostname** field, enter the hostname of IP address of the CardDAV server.
6. (Required) In the **Port** field, use the counter to enter the port number of the CardDAV server.
7. To enable secure socket layer communication with the CardDAV server, mark the check box in the **Use SSL** row.
8. In the **Account Principal URL** field, you can enter the principal URL for the CardDAV account.

9. (Required) Choose an option from the **Account Details** drop-down list to indicate how user account information should be supplied. Options available in the list include:
   - **User provided - entered by user on device**
   - **Provisioning - values acquired during device provisioning**
   - **Shared preset values - testing only**
10. If **Shared preset values - testing only** is selected in the Account Details drop-down list, the **Username** and **Password** fields are added to the form. Enter the CardDAV username and password to be used. The minimum password length is six characters.
11. Click **Save Changes**. The contacts settings are available as a configuration unit on the Configuration Profile form.

For more information about configuration profiles, see "Configuration Profiles" on page 165

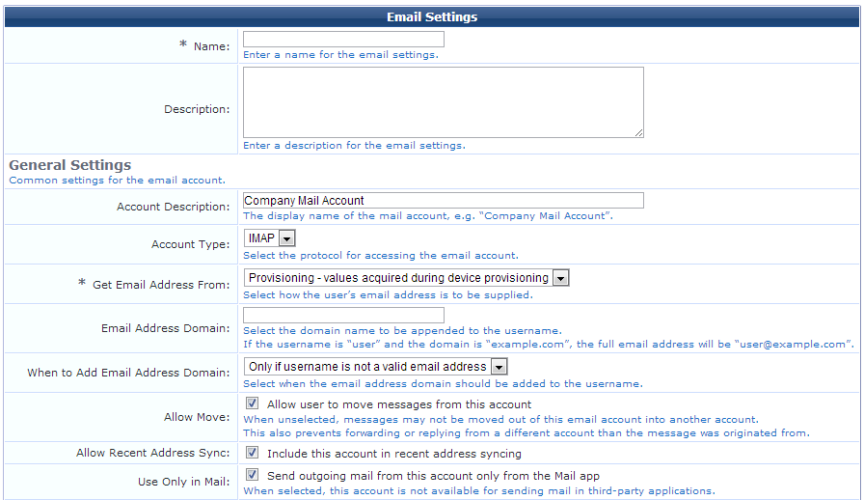
Configuring Email Settings

Email settings you define can be used in configuration profiles for an iOS device. You can define multiple Email settings.

Email settings are only supported on iOS devices; they are ignored by all other devices.

To configure email settings:

1. Go to **Onboard > Configuration > iOS Settings**. Either click an existing Email setting's name in the list; or click **Add New**, select **Email Settings** in the **Settings Type** drop-down list, and click **Create**. The **Email Settings** form opens.



2. In the **Name** field, give the email settings a short name that identifies it clearly. Email settings names can include spaces.

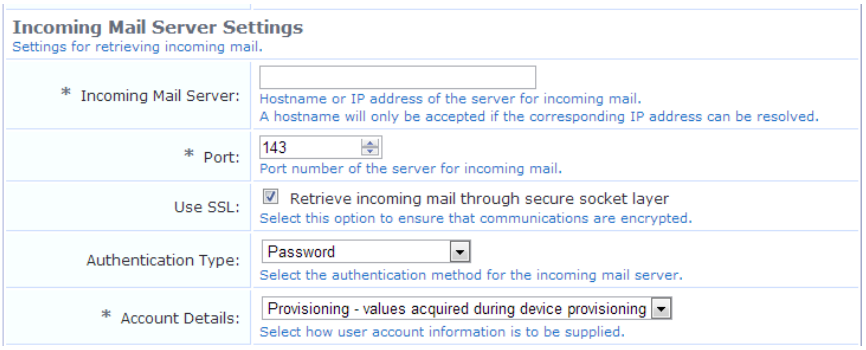
   If you are duplicating an email settings, the original name has "Copy" appended to it. You may highlight this name and replace it with a new name.
3. In the **Description** field, briefly describe the characteristics of the email settings.

In the **General Settings** area:

4. In the **Account Description** field, you can enter the display name for the mail account.

5. In the **Get Email Address From** field, choose an option from the drop-down list to indicate how user account information should be supplied. Options available in the list include:
   - **User provided - entered by user on device**
   - **Provisioning - values acquired during device provisioning**
   - **Shared preset values - testing only**

   The remaining fields available in the General Settings area will vary according to your choice in the this drop-down list.
6. In the **Email Address** field, enter the full email address for the account.
7. In the **Email Address Domain** field, enter the domain name to append to the username.
8. Choose an option in the When to **Add Email Address Domain** field. Available options include **Only if username is not a valid email address** and **Always add the domain**.
9. To allow users to move messages from the account, mark the check box in the **Allow Move** field.
10. To include the account in recent address syncing, mark the check box in the **Allow Recent Address Sync** field.
11. In the **Use Only in Mail** field, mark the check box if outgoing mail should only be sent from the Mail app, and should not be available for sending mail in third-party applications.

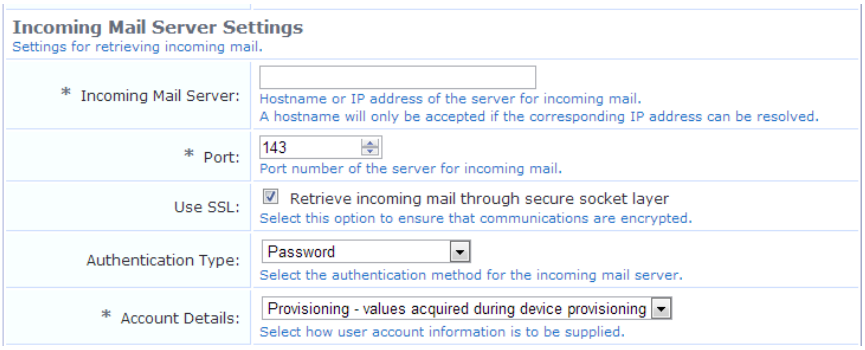


In the **Incoming Mail Server Settings** area:

1. Enter the hostname or IP address of the server for the incoming mail in the **Incoming Mail Server** field (for example, mail.exampleprovider.com).
2. In the **Port** drop-down list, use the counter to select the server to user for incoming mail.
3. To enable secure socket layer communication with the server and ensure that communications are encrypted, mark the check box in the **Use SSL** row.
4. Choose an authentication method from the drop-down list in the **Authentication Type** row. Options include:
   - **Password**
   - **MD5 Challenge-Response**
   - **NTLM**
   - **HTTP MD5 Digest**
   - **None**
5. Choose an option from the **Account Details** drop-down list to indicate how user account information should be supplied. Options available in the list include:
   - **User provided - entered by user on device**

- **Provisioning - values acquired during device provisioning**
- **Shared preset values - testing only**

6. If **Shared preset values - testing only** is selected in the Account Details drop-down list, the **Username** and **Password** fields are added to the form. Enter the CalDAV username and password for connecting to the server for incoming mail. The minimum password length is six characters.



In the **Outgoing Mail Server Settings** area:

1. Enter the hostname or IP address of the server for the outgoing mail in the **Outgoing Mail Server** field (for example, smtp.exampleprovider.com).
2. In the **Port** drop-down list, use the counter to select the server to user for outgoing mail.
3. To enable secure socket layer communication with the server and ensure that communications are encrypted, mark the check box in the **Use SSL** row.
4. Choose an authentication method from the drop-down list in the **Authentication Type** row. Options include:
   - **Password**
   - **MD5 Challenge-Response**
   - **NTLM**
   - **HTTP MD5 Digest**
   - **None**
5. Choose an option from the **Account Details** drop-down list to indicate how user account information should be supplied. Options available in the list include:
   - **User provided - entered by user on device**
   - **Provisioning - values acquired during device provisioning**
   - **Shared preset values - testing only**
6. If **Shared preset values - testing only** is selected in the Account Details drop-down list, the **Username** field is added to the form. Enter the username for connecting to the server for outgoing mail.
7. To use the same password for incoming and outgoing mail, mark the check box in the **Outgoing Password Same as Incoming** field.
8. To have the email account support S/MIME, mark the check box in the **Use S/MIME** row.
9. Click **Save Changes**. The application set is available as a configuration unit on the Configuration Profile form.

For more information about configuration profiles, see "Configuration Profiles" on page 165

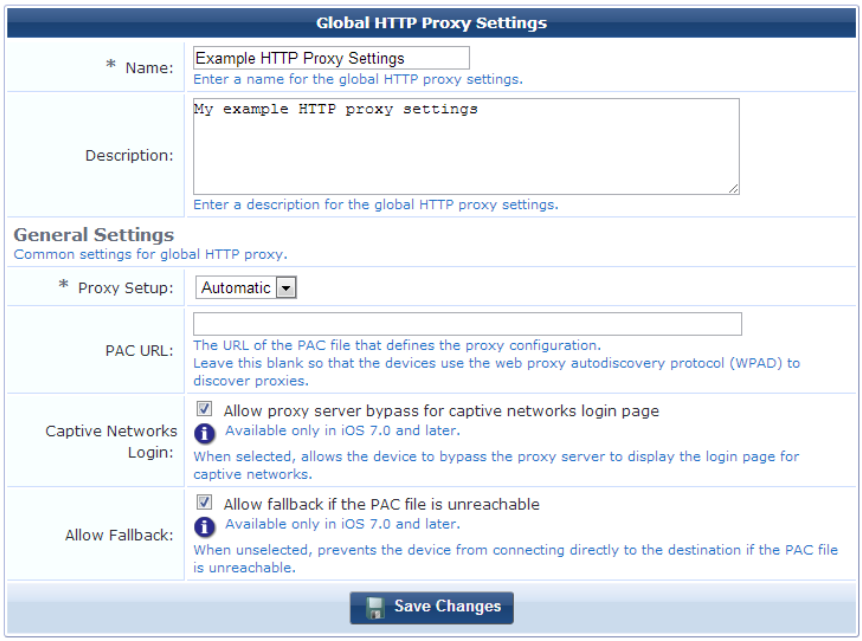
Configuring Global HTTP Proxy Settings

Global HTTP proxy settings you define can be used in configuration profiles for an iOS device. A global HTTP proxy setting includes its name, description, and common global HTTP proxy settings. You can define multiple global HTTP proxy settings.

Global HTTP proxy settings are only supported on supervised iOS devices; they are ignored by all other devices.

To configure a global HTTP proxy setting:

1. Go to **Onboard > Configuration > iOS Settings**. Either click an existing global HTTP proxy setting's name in the list; or click **Add New**, select **Global HTTP Proxy Settings** in the **Settings Type** drop-down list, and click **Create**. The **Global HTTP Proxy Settings** form opens.



2. In the **Name** field, give the global HTTP proxy setting a short name that identifies it clearly. Global HTTP proxy setting names can include spaces.

   If you are duplicating a global HTTP proxy setting, the original name has "Copy" appended to it. You may highlight this name and replace it with a new name.

3. In the **Description** field, briefly describe the characteristics of the global HTTP proxy setting.
4. (Required) In the **Proxy Setup** drop-down list, choose either **Manual** or **Automatic**. If you choose Manual, the form includes options for server, authentication, and login information. If you choose Automatic, the form includes options for PAC URL and fallback.
5. (Required for Manual setting) In the **Server** field, enter the proxy server's network address.
6. (Required for Manual setting) In the **Server Port** field, select the value for the proxy server's port.
7. In the **Authentication** field, enter the username that will be used to connect to the proxy server.
8. In the **Password** and **Confirm** fields, enter the password that will be used to connect to the proxy server. The minimum password length is six characters.
9. In the **PAC URL** field, you may enter the URL of the PAC file that defines the proxy configuration. To let devices use the Web proxy autodiscovery protocol (WPAD) to discover proxies, leave this field blank.

10. To allow the device to bypass the proxy server and display the login page for captive networks, mark the check box in the **Captive Networks Login** field. This option is only available for iOS 7.0 and later.
11. To allow devices to connect directly to the destination if the PAC file is unreachable, mark the check box in the **Allow Fallback** field. If this check box is not selected, devices are prevented from connecting directly to the destination in the event that the PAC file is unreachable. This option is only available for iOS 7.0 and later.
12. Click **Save Changes**. The global HTTP proxy setting is available as a configuration unit on the Configuration Profile form.

For more information about configuration profiles, see "Configuration Profiles" on page 165

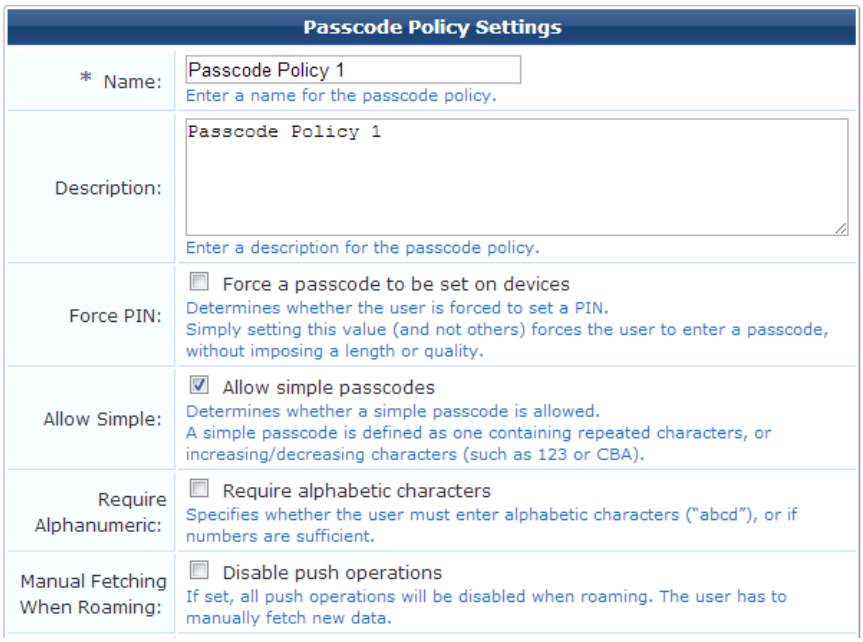
Configuring an iOS Device Passcode Policy

Passcode policy settings are typically used when you provision a corporate-owned device, or when a user is given remote access to sensitive information. Passcode policy settings you define can be used in configuration profiles for an iOS device. You can define multiple passcode policy settings.

Passcode policy settings are only supported by iOS devices; they will be ignored by all other device types.

To configure a passcode policy:

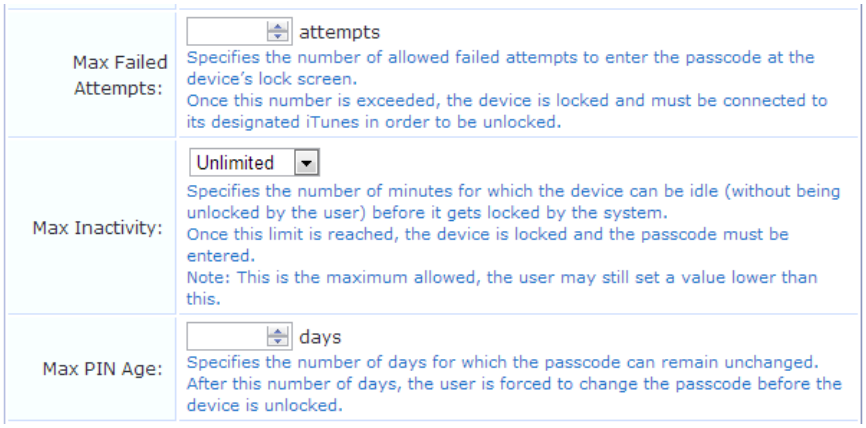
1. Go to **Onboard > Configuration > iOS Settings**. Either click an existing passcode policy setting's name in the list; or click **Add New**, select **Passcode Policy Settings** in the **Settings Type** drop-down list, and click **Create**. The **Passcode Policy Settings** form opens.



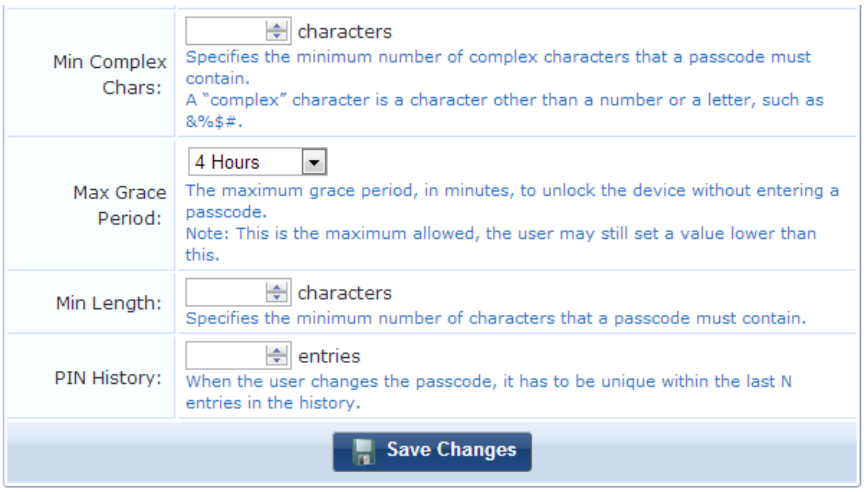
2. In the **Name** field, give the passcode policy a short name that identifies it clearly. Passcode policy names can include spaces.

   If you are duplicating a passcode policy, the original name has "Copy" appended to it. You may highlight this name and replace it with a new name.
3. In the **Description** field, briefly describe the characteristics of the passcode policy.
4. To require the user to create a passcode, mark the check box in the **Force PIN** field.

5. If the passcode will not need restrictions on repeated or sequential characters, you can mark the check box in the **Allow Simple** field.
6. If the passcode must include alphabetic characters in addition to numbers, mark the check box in the **Require Alphanumeric** field.
7. To disable all push operations while the user is roaming, requiring the user to manually fetch new data, mark the check box in the **Manual Fetching When Roaming** field.



8. To limit the number of times the passcode may be entered incorrectly before the device is locked, use the counter in the **Max Failed Attempts** field to specify the maximum number of attempts allowed.
9. To limit the time the device is allowed to be idle before it is locked and the user must re-enter the passcode, use the drop-down list in the **Max Inactivity** field to select a number of minutes. Options in this list are **Unlimited** or **2**, **5**, **10**, or **15** minutes. The user may set a lower number.
10. To specify a maximum duration for the passcode, use the counter in the **Max PIN Age** field. After the specified number of days, the device is locked and the user must change their passcode.



11. To require that the passcode include complex characters, use the counter in the **Min Complex Chars** field to specify how many complex characters it must contain. Complex, or special, characters are non-alphanumeric, such as &%$#.
12. To set a maximum time in which the user may unlock the device without re-entering the passcode, use the drop-down list in the **Max Grace Period** field to select a number of minutes. The user may set a lower number.
13. To specify the minimum number of characters the passcode must include, use the counter in the **Min Length** field to select the number of characters.

14. To specify that when the user changes their passcode the new value cannot be one that was used within a defined period of the passcode's history, use the counter in the **PIN History** field. The number you select is the number of recent passwords whose values will not be allowed.
15. Click **Save Changes**. The passcode policy is available as a configuration unit on the Configuration Profile form.

For more information about configuration profiles, see "Configuration Profiles" on page 165

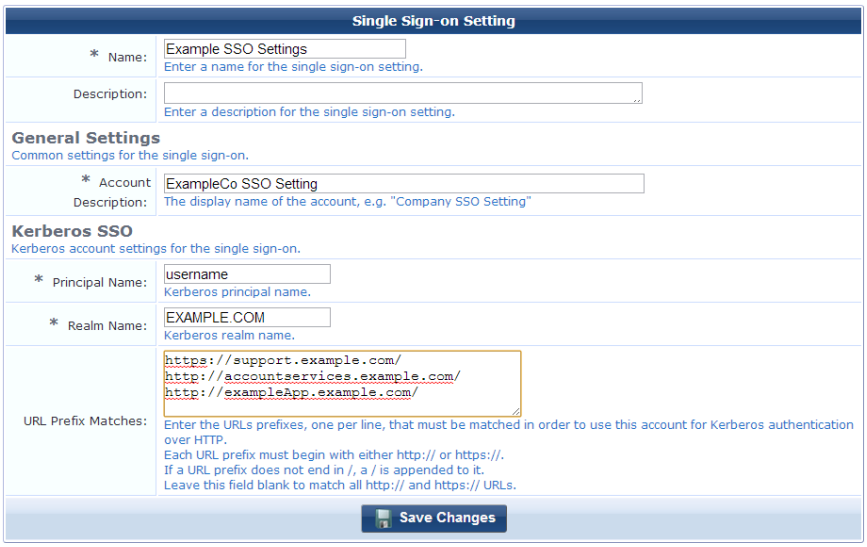
Configuring Single Sign-On Settings

Single Sign-On (SSO) settings let you configure the access-control properties that allow a user to log in once to access multiple related but independent applications or systems. SSO authenticates the user across all allowed resources during their session, eliminating additional login prompts. An SSO setting includes its name and description, the account's display name, and the Kerberos account principal name, realm name, and URL prefix matches. SSO settings you define can be used in configuration profiles for an iOS device. You can define multiple SSO settings.

SSO settings are only supported on iOS devices; they are ignored by all other devices.

To configure an SSO setting:

1. Go to **Onboard > Configuration > iOS Settings**. Either click an existing SSO setting's name in the list; or click **Add New**, select **SSO Settings** in the **Settings Type** drop-down list, and click **Create**. The **Single Sign-On Settings** form opens.



2. In the **Name** field, give the SSO setting a short name that identifies it clearly. SSO setting names can include spaces.
3. If you are duplicating an SSO setting, the original name has "Copy" appended to it. You may highlight this name and replace it with a new name.
4. In the **Description** field, briefly describe the characteristics of the SSO setting.
5. In the **Account Description** field, enter the account display name.
6. In the **Kerberos SSO** area, enter the Kerberos principal name in the **Principal Name** field. This is a unique ID, and includes three parts: the primary, the instance, and the realm. These follow the format `primary/instance@REALM`, where:

- Primary = First part of the principal name. For a user, it is the username. For a host, the it is the word "host".
- Instance = Optional string. Must be separated from the primary by a slash character. For a user, the instance might be null. For a host, this is the fully-qualified hostname—for example, "support.exampleSchool.edu".
- Realm = The Kerberos realm. Usually the same as the domain name, in uppercase letters—for example, "EXAMPLESCHOOL.EDU".

7. In the **Realm Name** field, enter the Kerberos realm name.
8. In the **URL Prefix Matches** field, enter the list of URL prefixes that must be matched for Kerberos authentication. Each URL prefix must begin with either http:// or https://. If a URL prefix does not end in /, a / is appended to it. Leave this field blank to match all http:// and https:// URLs.
9. Click **Save Changes**. The SSO setting is available as a configuration unit on the Configuration Profile form.

For more information about configuration profiles, see "Configuration Profiles" on page 165

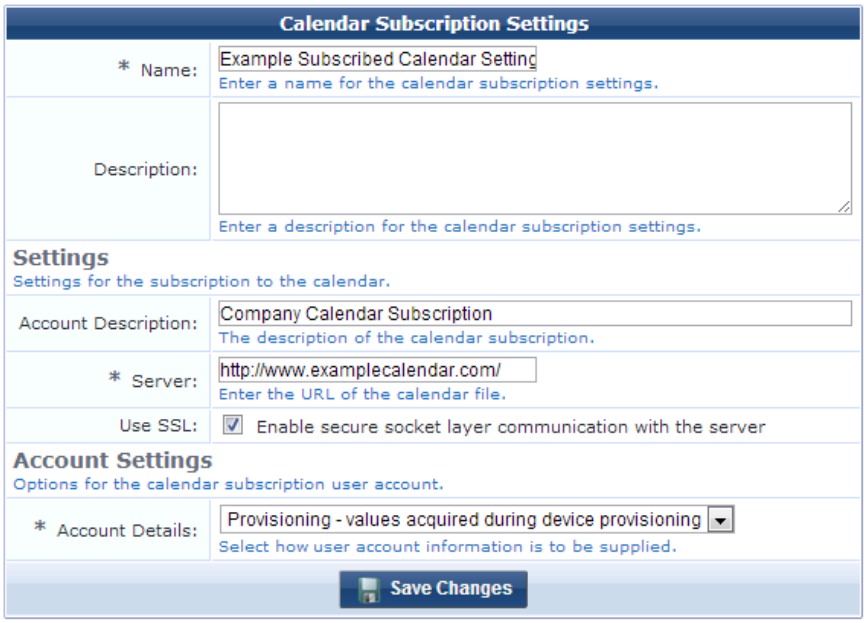
Configuring Calendar Subscription Settings

Subscribed calendar settings let you configure the calendar subscriptions that will be sent to the provisioned device. A calendar subscription's settings include its name and description, the account description, server, and whether SSL is enabled, as well as additional account details. Subscribed calendar settings you define can be used in configuration profiles for an iOS device. You can define multiple subscribed calendar settings.

Subscribed calendar settings are only supported on iOS devices; they are ignored by all other devices.

To configure a calendar subscription setting:

1. Go to **Onboard > Configuration > iOS Settings**. Either click an existing subscribed calendar setting's name in the list; or click **Add New**, select **Subscribed Calendar Settings** in the **Settings Type** drop-down list, and click **Create**. The **Subscribed Calendar Settings** form opens.



2. In the **Name** field, give this calendar subscription setting a short name that identifies it clearly. Calendar subscription settings names can include spaces.

If you are duplicating a calendar subscription setting, the original name has "Copy" appended to it. You may highlight this name and replace it with a new name.

3. In the **Description** field, you can briefly describe the characteristics of the calendar subscription settings.
4. In the **Account Description** field, you can enter the display name for the calendar subscription.
5. In the **Server** field, enter the URL of the calendar file.
6. To enable secure socket layer communication with the server, mark the check box in the **Use SSL** row.
7. In the **Account Settings** area, choose an option from the **Account Details** drop-down list to indicate how user account information should be supplied. Options available in the list include:
   - **User provided - entered by user on device**
   - **Provisioning - values acquired during device provisioning**
   - **Shared preset values - testing only**
8. If **Shared preset values - testing only** is selected in the Account Details drop-down list, the **Username** and **Password** fields are added to the form. Enter the username and password to be used for the subscribed calendar. The minimum password length is six characters.
9. Click **Save Changes**. The calendar settings are available as a configuration unit on the Configuration Profile form.

For more information about configuration profiles, see "Configuration Profiles" on page 165

Configuring an iOS Device VPN Connection

Use VPN configuration profiles when you have deployed a VPN infrastructure and want to automatically provide the secure connection settings to users at the time of device provisioning. You can automatically configure virtual private network (VPN) settings on iOS and OS X 10.7+ devices. VPN settings you define can be used in configuration profiles for an iOS device. You can define multiple VPN settings.

VPN configuration profiles are only supported by iOS and OS X 10.7+ (Lion or later) devices; they will be ignored by all other device types.

For information on configuring VPN connections, see:

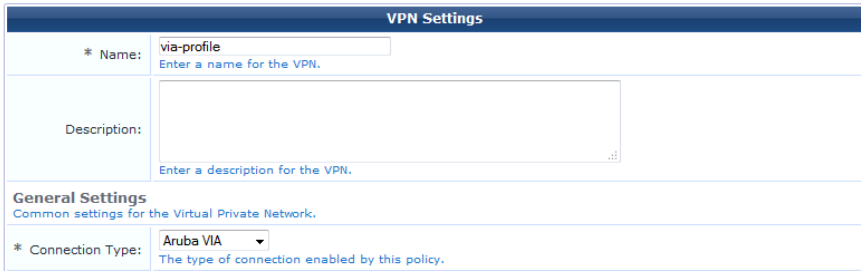
- "Configuring an iOS Device VIA Connection " on page 156
- "Configuring an iOS Device L2TP, PPTP, or IPSec Connection " on page 158

Configuring an iOS Device VIA Connection

ArubaVIA is a remote access solution that provides secure connections for Enterprise networks. VIA detects the user's network environment (trusted and un-trusted) and automatically connects the user to their enterprise network.

To configure the Aruba VIA solution on an iOS device:

1. Go to **Onboard > Configuration > iOS Settings**. Either click a VPN setting's name in the list; or click **Add New**, select **VPN Settings** in the **Settings Type** drop-down list, and click **Create**. The **VPN Settings** form opens.

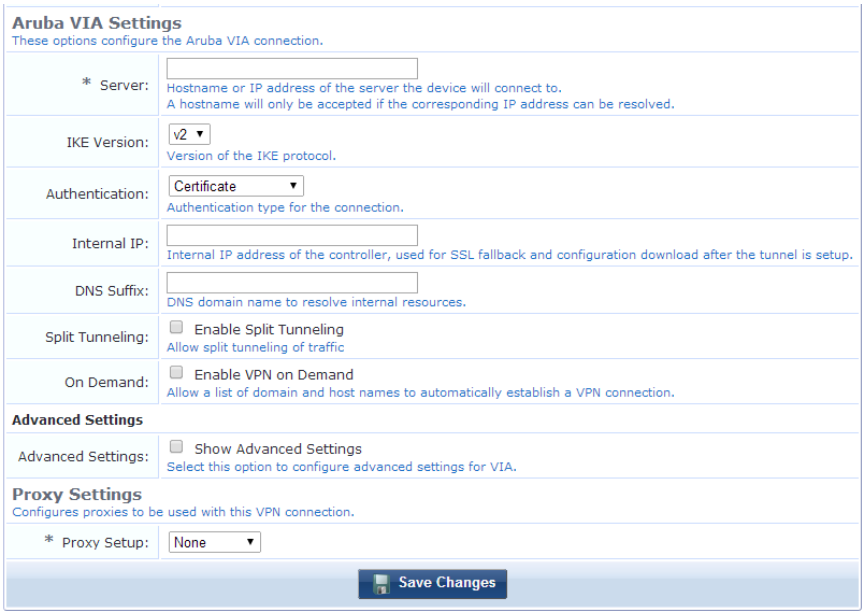


2. In the **Name** field, give the VPN configuration a short name that identifies it clearly. VPN configuration names can include spaces.

   If you are duplicating a VPN configuration, the original name has "Copy" appended to it. You may highlight this name and replace it with a new name.

3. In the **Description** field, briefly describe the characteristics of the VPN configuration.

4. In the **Connection Type** drop-down list, choose Aruba VIA. The Aruba VIA Settings form expands to include additional options.



5. In the **Server** field, enter a hostname or IP address of the server the device should connect to.

6. In the **IKE Version** field, select the version number for the Internet Key Exchange (IKE) protocol:

   - **v1** - This protocol performs the authentication in two phases.
   - **v2** - IKEv2 supports a wider variety of authentication mechanisms and it is faster when compared to IKEv1 method. IKEv2 has only single phase authentication process

7. In the **Authentication** drop-down list, configure the following authentication types based on the IKE version you select:

   a. If you choose the IKEv1 protocol, you can specify the following authentication types:

      - **Certificate** – The client certificate issued during device provisioning will also be used as the identity certificate for VPN connections. This option requires configuring your VPN server to allow VIA authentication using a client certificate.
      - **Shared Secret / Group Name** – An optional group name may be specified. A shared secret (pre-shared key) is used to establish the VIA connection. Authentication is performed with a username and password.

b. If you choose the IKEv2 protocol, you can specify the following authentication types. For VIA deployments that use IKEv2, the VPN server always uses a certificate for IKEv2 authentication phase. However, the devices can use certificates, EAP-MSCHAPv2, or EAP-TLS

   - **Certificate**
   - **EAP-TLS**
   - **EAP-MSCHAPv2**

8. Enter the **Internal IP** address assigned to the controller.
9. In the **DNS Suffix** field, enter the DNS domain name for the resolution of the internal resources.
10. If you select the **Enable Split Tunneling** option, all the traffic to the VIA tunneled networks goes through the controller and the rest is bridged directly on the device. You must specify the addresses and netmask to which data will be tunneled through VIA when you enable this option.
11. If you enable the **Enable VPN on Demand** option, the VPN connection will be automatically established when accessing certain domains. You must specify the domain names and the on-demand action that need to be applied to these domains when you enable this option.
12. To configure the advanced settings for VIA, check the option **Show Advanced Settings** and select the appropriate values.
13. You can specify a proxy server to use when the VPN connection is active. In the **Proxy Settings** area of the form, choose one of the following options from the **Proxy Setup** drop-down list:
    - **None** – No proxy server will be configured with this VPN profile.
    - **Manual** – A proxy server will be configured with this VPN profile. Specify the proxy server settings in the **Server** and **Port** fields.
    - If authentication is required to access this proxy, you may specify the username and password using the **Authentication** and **Password** text fields. The minimum password length is six characters.
    - **Automatic** – The proxy server will be automatically configured with this VPN profile. Specify the location of a proxy auto-config file in the **Proxy Server URL** text
14. Click **Save Changes**. The VPN configuration is available as a configuration unit on the Configuration Profile form.

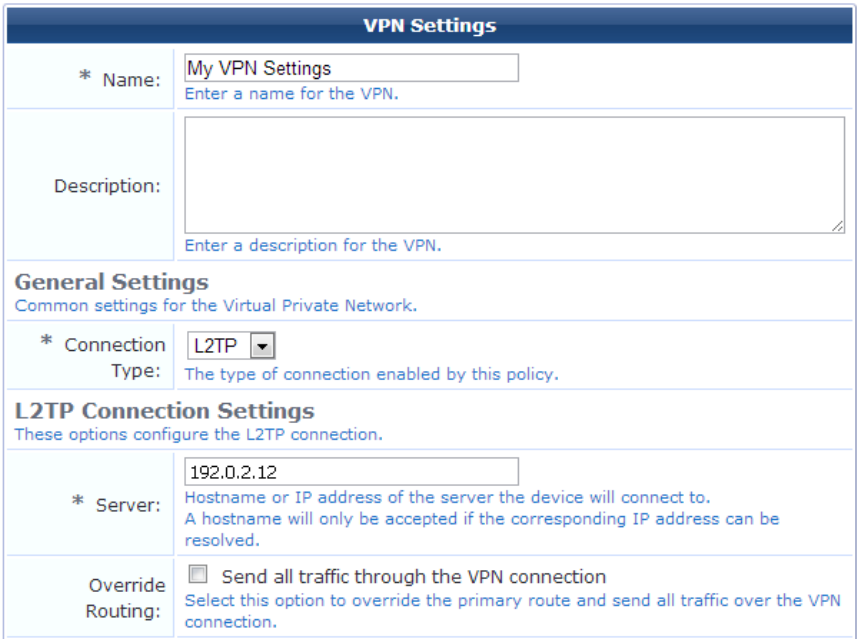
For more information about configuration profiles, see "Configuration Profiles" on page 165

Configuring an iOS Device L2TP, PPTP, or IPSec Connection

You can use VPN settings when you have deployed a VPN infrastructure and want to automatically provide the secure connection settings to users at the time of device provisioning.

To configure the L2TP, PPTP, or IPSec VPN settings:

1. Go to **Onboard > Configuration > iOS Settings**. Either click a VPN setting's name in the list; or click **Add New**, select **VPN Settings** in the **Settings Type** drop-down list, and click **Create**. The **VPN Settings** form opens.



2. In the **Name** field, give the VPN configuration a short name that identifies it clearly. VPN configuration names can include spaces.

   If you are duplicating a VPN configuration, the original name has "Copy" appended to it. You may highlight this name and replace it with a new name.

3. In the **Description** field, briefly describe the characteristics of the VPN configuration.

4. In the **Connection Type** drop-down list, choose the appropriate connection type to enable:

   - **L2TP** – Uses the Layer 2 Tunneling Protocol. Complete the fields displayed on the form for this connection type.
   - **PPTP** – Uses the Point-to-Point Tunneling Protocol. Complete the fields displayed on the form for this connection type.
   - **IPSec** – Uses the Internet Protocol with security extensions. Complete the fields displayed on the form for this connection type.

5. If you chose IPSec as the connection type, the **Authentication Type** includes a drop-down list with the following options:

   - **Identity Certificate** – The client certificate issued during device provisioning will also be used as the identity certificate for VPN connections. This option requires configuring your VPN server to allow IPSec authentication using a client certificate.
   - **Shared Secret / Group Name** – An optional group name may be specified. A shared secret (pre-shared key) is used to establish the IPSec VPN. Authentication is performed with a username and password.

6. In the **Machine Authentication** area, you may enter a value in the **Shared Secret** fields, or leave them blank to prompt the user to create the shared secret.
7. In the **User Authentication** area of the form, you may enter a value in the **Account** field, or leave them blank to prompt the user to enter the account.
8. In the **User Authentication** field, select either **Password** or **RSA SecurID** as the authentication type for the connection.
9. You can specify a proxy server to use when the VPN connection is active. In the **Proxy Settings** area of the form,. Choose one of the following options from the **Proxy Setup** drop-down list:
   - **None** – No proxy server will be configured with this VPN profile.
   - **Manual** – A proxy server will be configured with this VPN profile. Specify the proxy server settings in the **Server** and **Port** fields.
   - If authentication is required to access this proxy, you may specify the username and password using the **Authentication** and **Password** text fields. The minimum password length is six characters.
   - **Automatic** – The proxy server will be automatically configured with this VPN profile. Specify the location of a proxy auto-config file in the **Proxy Server URL** text field.
10. Click **Save Changes**. The VPN configuration is available as a configuration unit on the Configuration Profile form.

For more information about configuration profiles, see "Configuration Profiles" on page 165

Configuring Web Clips

When you create a Web clip, you can make any URL look like a native app on your device. You can assign it an icon, and when the icon is selected, the URL opens in its own frame. Web clip settings let you create a library of Web clips and bookmarks that can be sent to the provisioned device. A Web clip's settings include its name and description, the icon if one was chosen, the URL, and whether the user can remove it. Web clip settings you define can be used in configuration profiles for an iOS device. You can define multiple Web clip settings.

Web clip settings are only supported on iOS devices; they are ignored by all other devices.

To configure a Web clip setting:

1. Go to **Onboard > Configuration > iOS Settings**. Either click an existing Web clip setting's name in the list; or click **Add New**, select **Web Clip Settings** in the **Settings Type** drop-down list, and click **Create**. The **Web Clip Settings** form opens.

2. In the **Name** field, give the Web clip a short name that identifies it clearly. Web clip names can include spaces.

   If you are duplicating a Web clip, the original name has "Copy" appended to it. You may highlight this name and replace it with a new name.

3. In the **Description** field, briefly describe the characteristics of the Web clip.
4. In the **URL** field, enter the URL of the Web clip.
5. To enable the user to remove the Web clip, mark the check box in the **Removable** field.
6. If you wish to specify an icon for the Web clip, mark the check box in the **Choose New Icon** field. The form expands to include the Custom Icon field.
7. If icon files have been uploaded in Content Manager, they are displayed in the **Custom Icon** field. Highlight the icon to be used. If no images are displayed, upload your icon image or images to Content Manager, then return to this form.
8. Click **Save Changes**. The Web clip is available as a configuration unit on the Configuration Profile form.

For more information about configuration profiles, see "Configuration Profiles" on page 165

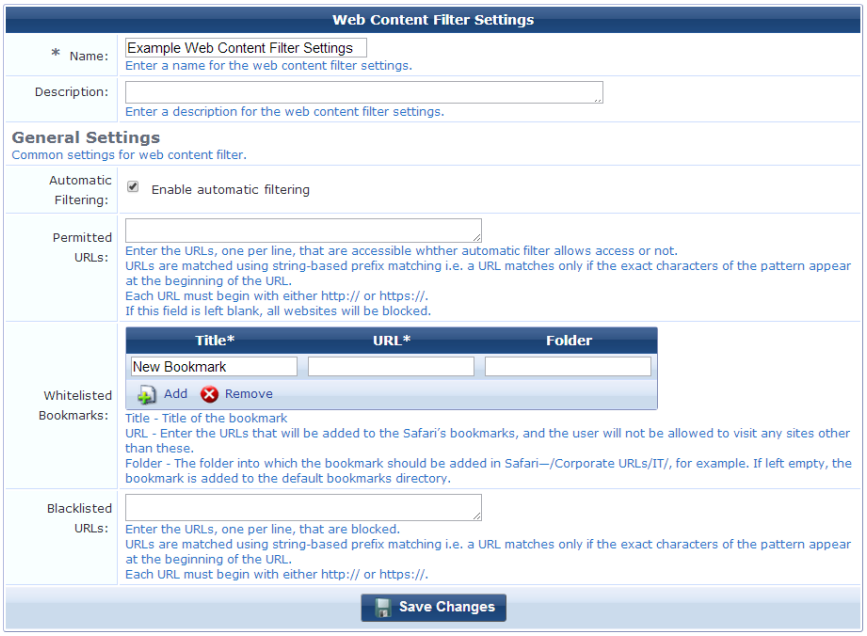
Configuring Web Content Filter Settings

Web content filter settings let you configure the lists of whitelisted and blacklisted Web URLs that will be sent to supervised provisioned devices. Web content filter settings you define can be used in configuration profiles for an iOS device. A Web content filter setting includes its name and description, automatic filtering option, and lists of permitted URLs, whitelisted bookmarks, and blacklisted URLs. You can define multiple Web content filter settings.

Web content filter settings are only supported on supervised iOS 7 devices; they are ignored by all other devices.

To configure a Web content filter setting:

1. Go to **Onboard > Configuration > iOS Settings**. Either click an existing Web content filter setting's name in the list; or click **Add New**, select **Web Content Filter Settings** in the **Settings Type** drop-down list, and click **Create**. The **Web Content Filter Settings** form opens.



2. In the **Name** field, give the Web content filter a short name that identifies it clearly. Web content filter names can include spaces.

   If you are duplicating a Web content filter, the original name has "Copy" appended to it. You may highlight this name and replace it with a new name.

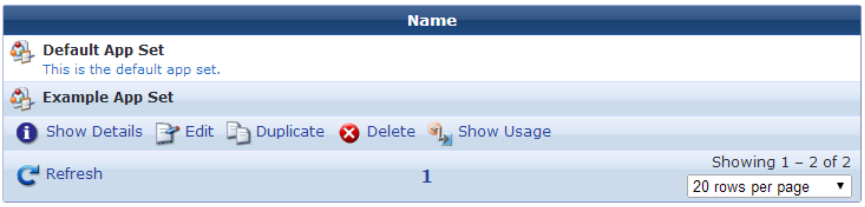
3. In the **Description** field, briefly describe the characteristics of the Web content filter.
4. To enable automatic filtering, select the check box in the **Automatic Filtering** field. The Permitted URLs field is added to the form.
5. If automatic filtering was selected, use the **Permitted URLs** field to specify URLs that should be accessible even if they would otherwise be denied by the automatic filter. Each URL must begin with either http:// or https://. If this field is left blank, all Web sites will be blocked.
6. In the **Whitelisted Bookmarks** field, enter the URLs to add to the bookmarks in Safari. The user will only be allowed to visit these sites. The bookmark title and URL are both required. If a folder name is not entered, the bookmark is added to the default bookmarks list in Safari.
7. In the **Blacklisted URLs** field, enter the URLs to block. Each URL must begin with either http:// or https://. All characters of the URL prefix must be an exact match.
8. Click **Save Changes**. The Web content filter is available as a configuration unit on the Configuration Profile form.

For more information about configuration profiles, see "Configuration Profiles" on page 165

Windows Applications

Application sets let you specify either individual apps or groups of apps that should be installed during device provisioning, and indicate whether they should be restarted when the device is provisioned. After you define each of the sets you wish to use, you can include them in configuration profiles. The configuration profiles are available in the Provisioning Settings form, and can be associated with a device provisioning configuration set.

To create and work with Windows application sets, go to **Onboard > Configuration > Windows Applications**. The **App Sets** list view opens.



All Windows application sets that have been configured are included in the list. Each set's name is shown in the list. You can click a Windows application set's row in the list for additional options:

Table 25: *The Windows App Set List*

Field	Description
Show Details	Displays details for the Windows application set. The form expands to show its name, description, and configuration values.
Edit	Edit the Windows application set's configuration. The App Set form opens.
Duplicate	Creates a copy of a Windows application set to use as a basis for a new set. The App Set form opens with all attributes prepopulated and "Copy" appended to its name. You can rename the new app set, and edit any of its attributes.
Delete	Deletes the Windows application set. You will be asked to confirm the deletion.
Show Usage	Displays a list of configuration profiles that use the Windows application set.
Create new app set	To create a new Windows application set, click this link above the table. The App Set configuration form opens.

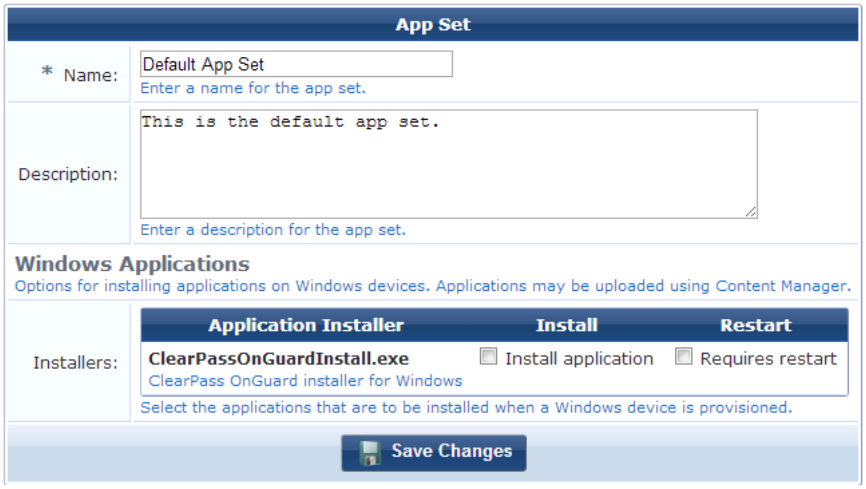
For information on configuring a Windows app set, see "Configuring App Sets" on page 163.

Configuring App Sets

App sets you define let you specify an app or group of apps to be installed during device provisioning, and whether an app requires the device to be restarted after provisioning.

To configure an app set:

1. Go to **Onboard > Configuration > Windows Applications**, and then either click the **Edit** link for and app set in the list, or click the **Create new app set** link in the upper-right corner. The App Set form opens.



2. In the **Name** field, give the app set a short name that identifies it clearly. App set names can include spaces.

   If you are duplicating an app set, the original name has "Copy" appended to it. You may highlight this name and replace it with a new name.

3. In the **Description** field, briefly describe the characteristics of the app set.
4. In the **Windows Applications** area, apps you have downloaded through the Content Manager are listed in the **Installers** field.
   - To specify that an app should be installed during provisioning, mark its **Install application** check box.
   - To specify that the device needs to be restarted after the app is installed, mark its **Requires restart** check box.
5. Click **Save Changes**. The app set is available as a configuration unit on the Configuration Profile form.

To add or manage apps in Content Manager, click the **Content Manager** link above the form. You can download apps to your system as content items, then upload them to the Content Manager.

For more information about configuration profiles, see "Configuration Profiles" on page 165

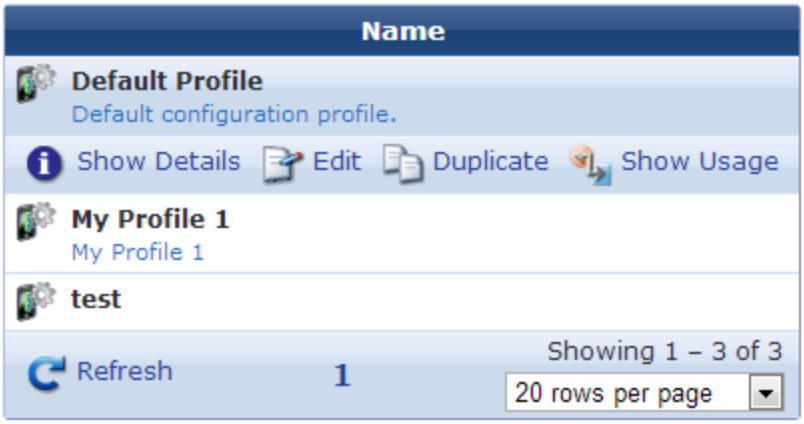
Deployment and Provisioning

Onboard lets you configure deployment and provisioning settings. Configuration profiles let you define the profile settings that will be provisioned to devices, including configuration units. Provisioning settings let you define the settings for device provisioning. The configuration profiles are available in the Provisioning Settings form.

- To create and manage configuration profiles, see "Configuration Profiles" on page 165
- To create and manage provisioning settings, see "Provisioning Settings " on page 168

Configuration Profiles

Onboard lets you create and manage multiple configuration profiles to choose from for your captive portal pages. To manage the configuration profiles that will be provisioned to onboarded devices, go to **Onboard > Deployment and Provisioning > Configuration Profiles**. The **Configuration Profiles** list view opens.



All configuration profiles that have been created are included in the list. You can click a profile's row in the list for additional options:

- To view details for a configuration profile, click its **Show Details** link.The form expands to show the following settings that will be provisioned to devices using it: The device's name and description, a list of the configuration units that will be provisioned to it, and a list of supervised devices. For information on configuration units, see "Onboard Configuration" on page 130.
- To edit any of a configuration profile's attributes, click its **Edit** link. The Profile form opens, where you can edit any of the profile's attributes.
- To create a copy of a profile to use as a basis for a new profile, click its **Duplicate** link. The Profile form opens with all attributes prepopulated and a number appended to the profile's name. You can rename the new profile, and edit any of its attributes.
- If a configuration profile is not currently being used, a **Delete** option is also available for it. This option is not available for the default profile or for configuration profiles that are currently used for device provisioning.
- To see if the configuration profile is currently used, click its **Show Usage** link. The form expands to show a list of device provisioning sets that use the profile. For more information, see "Provisioning Settings " on page 168.
- To create a new profile, click the **Create new configuration profile** link in the upper right corner. The Configuration Profile form opens.

For information on creating, editing, or duplicating a configuration profile, see "Creating and Editing Configuration Profiles" on page 165.

Creating and Editing Configuration Profiles

To create or edit a configuration profile:

1. Go to **Onboard > Deployment and Provisioning > Configuration Profiles**.

2. Click the **Create new configuration profile** link or click the **Edit** or **Duplicate** link for a profile in the list. The Configuration Profile form opens.

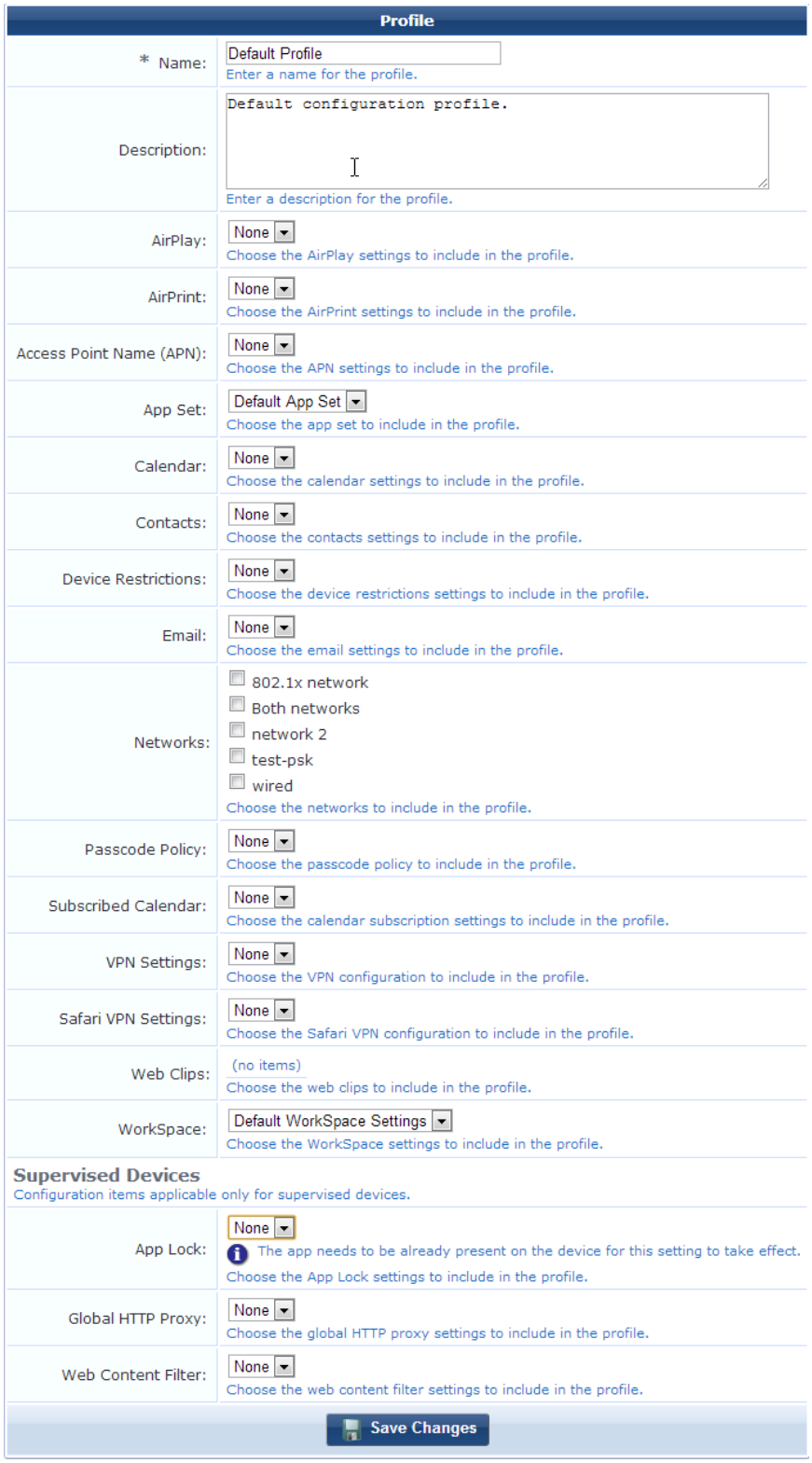


Table 26: *Create/Edit Configuration Profile Fields*

Field	Description
Name	(Required) Short name that identifies the configuration profile clearly. Configuration profile names can include spaces. If you are duplicating a profile, the original name has a number appended to it. You may highlight this name and replace it with a new name.
Description	(Optional) Brief description of the characteristics of the profile.
AirPlay	(Optional) AirPlay settings in this list were created on the **Onboard > Configuration > iOS Settings > AirPlay Settings** form. For more information, see "Configuring AirPlay Settings" on page 143.
AirPrint	(Optional) AirPrint settings in this list were created on the **Onboard > Configuration > iOS Settings > AirPrint Settings** form. For more information, see "Configuring AirPrint Settings" on page 144.
Access Point Name (APN)	(Optional) APN settings in this list were created on the **Onboard > Configuration > iOS Settings > APN Settings** form. For more information, see "Configuring APN Settings" on page 145.
App Set	(Optional) Application sets in this list were created on the **Onboard > Configuration > Windows Applications** form. For more information, see "Configuring App Sets" on page 163.
Calendar	(Optional) Calendar sets in this list were created on the **Onboard > Configuration > iOS Settings > Calendar Settings** form. For more information, see "Configuring Calendar Settings" on page 145.
Contacts	(Optional) Calendar sets in this list were created on the **Onboard > Configuration > iOS Settings > Contacts Settings** form. For more information, see "Configuring Contacts Settings" on page 147.
Email	(Optional) Email settings in this list were created on the **Onboard > Configuration > iOS Settings > Email Settings** form. For more information, see "Configuring Email Settings" on page 148.
Exchange ActiveSync	(Optional) ActiveSync configurations in this list were created on the **Onboard > Configuration > iOS Settings > Exchange ActiveSync Settings** form. For more information, see "Configuring ActiveSync Settings " on page 141.
Networks	(Optional) Select the check box of each network to include. Networks available here were created on the **Onboard > Configuration > Network Settings** form. For more information, see "Configuring Basic Network Access Settings " on page 131 and the related topics for the form.
Passcode Policy	(Optional) Passcode policy configurations in this list were created on the **Onboard > Configuration > iOS Settings > Passcode Policy Settings** form. For more information, see "Configuring an iOS Device Passcode Policy " on page 152.
Subsribed Calendar	(Optional) Calendar subscription settings in this list were created on the **Onboard > Configuration > iOS Settings > Calendar Subscription Settings** form. For more information, see "Configuring Calendar Subscription Settings" on page 155.
VPN Settings	(Optional) VPN configurations in this list were created on the **Onboard > Configuration > iOS Settings > VPN Settings** form. For more information, see "Configuring an iOS Device VPN Connection" on page 156.
Web Clips	(Optional) This drop-down list is only available if you have defined Web clip settings on the **Onboard > Configuration > iOS Settings > Web Clip Settings** form. For more

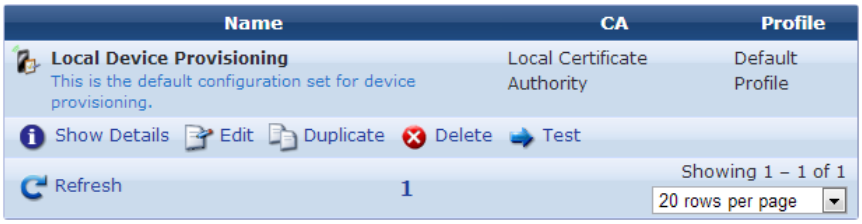
Field	Description
	information, see "Configuring Web Clips" on page 160.
Global HTTP Proxy	(Optional) HTTP proxy settings in this list were created on the **Onboard > Configuration > iOS Settings > Global HTTP Proxy Settings** form. This option is only available for supervised devices. For more information, see "Configuring Global HTTP Proxy Settings" on page 151.
Web Content Filter	(Optional) Web content filter settings in this list were created on the **Onboard > Configuration > iOS Settings > Web Content Filter Settings** form. This option is only available for supervised devices. For more information, see "Configuring Web Content Filter Settings" on page 161.

When you have completed your changes on this form, click **Save Changes**, the configuration profile is included in the Configuration Profile drop-down list on the Provisioning Settings form and can be associated with a device provisioning configuration set.

Provisioning Settings

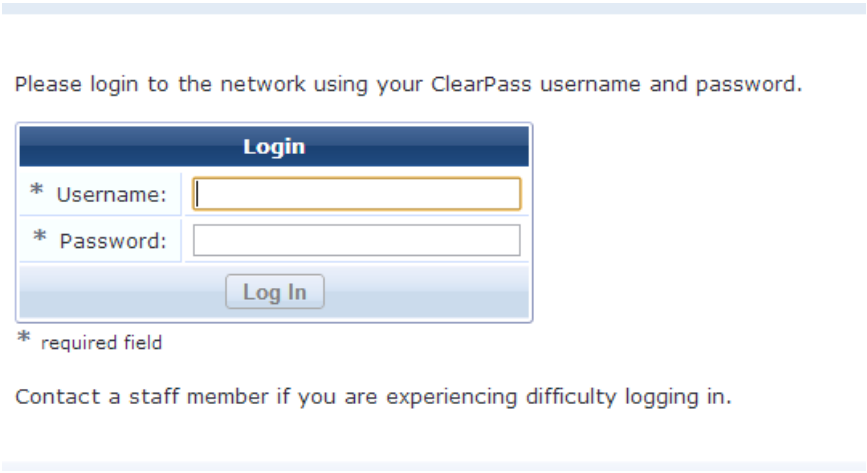
The Provisioning Settings page lists all your device provisioning configuration settings, and lets you define multiple device provisioning configurations for Onboard captive portal pages. You can assign different network settings to each of them. You can also choose from a variety of configuration profiles you have already defined for application sets, ActiveSync settings, passcode policies, and VPN settings.

To view the list of device provisioning configuration sets and work with them, go to **Onboard > Deployment and Provisioning > Provisioning Settings**. The Provisioning Settings list view opens. All device provisioning configuration settings that have been created are included in the list. Information shown for each setting includes its name, certificate authority (CA), and the configuration profile assigned to it.



You can click a provisioning setting's row in the list for additional options:

- To view details for a provisioning setting, click its **Show Details** link. The form expands to show a summary of the settings defined for it, including information for identity, authorization, supported devices, Web login page, device provisioning, profile signing, and reconnect behavior.
- To edit any of a provisioning setting's attributes, click its **Edit** link. The Device Provisioning Settings form opens.
- To create a copy of a provisioning setting to use as a basis for a new configuration, click its **Duplicate** link. The Device Provisioning Settings form opens with all attributes prepopulated and "Copy" appended to its name. You can rename the new configuration, and edit any of its attributes.
- To delete a provisioning set, you can click its **Delete** link.
- To view and test a device provisioning Web login page, click its **Test** link. The page opens in a new tab as it would appear to a user:



- To create a new provisioning set, click the **Create new provisioning settings** link in the upper right corner. The Device Provisioning Settings form opens.

For information on creating, editing, or duplicating a configuration profile, see "About Configuring Provisioning Settings " on page 169.

About Configuring Provisioning Settings

On the **Onboard > Deployment and Provisioning > Provisioning Settings** list view, to modify a provisioning set for Onboard captive portal pages, click its **Edit** link. To create a new provisioning set, click the **Create new provisioning settings** link in the upper-right corner. The Device Provisioning Settings form opens with the **General** tab displayed.

The configuration process is the same for editing an existing provisioning set and for creating a new set. The Device Provisioning Settings form is divided into several tabs:

Tab	Description
General	Specifies basic provisioning settings such as information about identity settings, authorization, and supported devices. See "Configuring Basic Provisioning Settings" on page 170.
Web Login	Specifies options for the Web login captive portal page such as the page name, labels and messages, skin, header and footer HTML, and access control. See "Configuring Provisioning Settings for the Web Login Page" on page 174.
iOS and OS X	Specifies options for Apple iOS and OS X device provisioning such as display text, profile security, certificate source, and reconnect behavior. See "Configuring Provisioning Settings for iOS and OS X" on page 176.
Legacy OS X	Specifies text displayed during legacy OS X device provisioning. See "Configuring Provisioning Settings for Legacy OS X Devices" on page 178.
Windows	Specifies options for Windows device provisioning such as the code-signing certificate and text displayed during provisioning. See "Configuring Provisioning Settings for Windows Devices" on page 179.
Android	Specifies options for Android devices such the rootkit detection and text displayed during provisioning. See "Configuring Provisioning Settings for Android Devices" on page 180.
Ubuntu	Specifies options for Ubuntu device provisioning such as instructions shown to the user during provisioning. See "Configuring Provisioning Settings for Ubuntu" on

Tab	Description
	page 181.
Chromebook	Specifies options for Chromebook device provisioning such as instructions shown to the user during provisioning. See "Configuring Provisioning Settings for Chromebook" on page 182. For more information about using Chromebook, see the appendix "Chromebook in Onboard " on page 527
Onboard Client	Specifies options for Windows, Android, and legacy OS X (10.5/6) device provisioning such as provisioning address and access, certificate validation, logo, and support information. See "Configuring Options for Onboard Client Devices" on page 184.

Configuring Basic Provisioning Settings

To configure basic provisioning settings, go to **Onboard > Deployment and Provisioning > Provisioning Settings**. The Provisioning Settings list opens. Either click the **Edit** link for a configuration set in the list, or click the **Create new provisioning settings** link in the upper-right corner to open the Device Provisioning Settings configuration form. This form has several tabs. The first tab that opens is the **General** tab, and is used to specify basic information about Onboard provisioning.

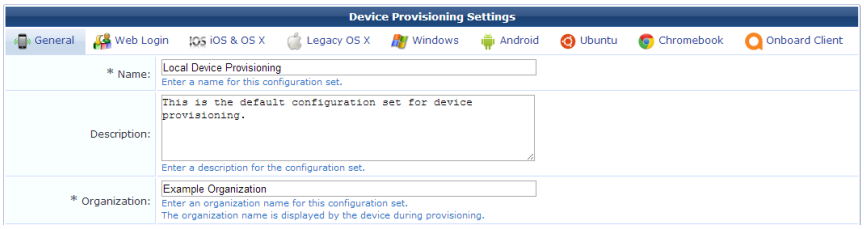


Table 27: *Device Provisioning Settings, General Tab, Top Area*

Field	Description
Name	Used internally to identify this set of Onboard settings for the network administrator. These values are never displayed to the user during device provisioning.
Description	
Organization	The name of your organization. This is displayed to the user during the device provisioning process.

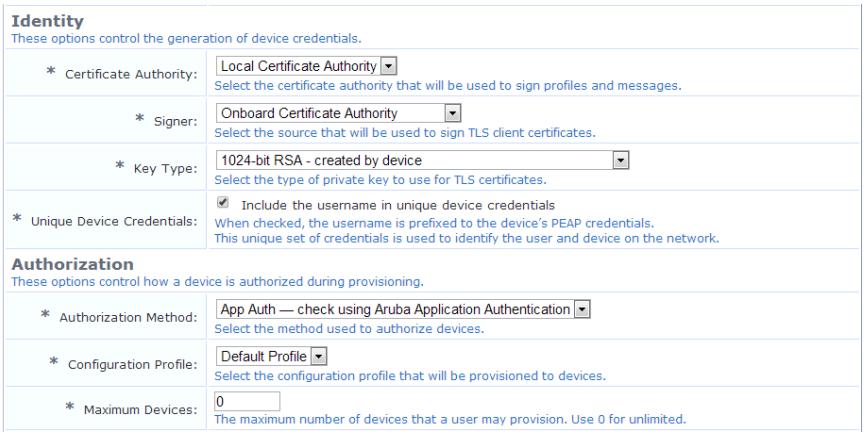


Table 28: *Device Provisioning Settings, General Tab, Identity Area*

Field	Description
Certificate Authority	(Required) You may select a different certificate authority (CA) if one has been created. This drop-down list originally contains a single certificate authority by default. If additional certificate authorities are created, they are included in this drop-down list (see "Creating a New Certificate Authority" on page 98).
Signer	(Required) Select the source to use for signing TLS client certificates. Options include **Onboard Certificate Authority** and **Active Directory Certificate Services** (ADCS). If Active Directory Certificate Services is chosen, the ADCS URL and ADCS Template rows are added to the form. ACDS can only be used with certificate-based authentication; it cannot be used with username/password authentication.
ADCS URL	(Required) If Active Directory Certificate Services was chosen in the Signer field, enter the URL of the ADCS server in the field. This URL should be the Web interface for ADCS, and is typically **http://<server>/certsrv/**.
ADCS Template	(Required) If Active Directory Certificate Services was chosen in the Signer field, enter the name of the template to use when requesting the certificate. If the name is not known, you can use the default name of "user".
Key Type	(Required) Specifies the type of private key that should be created when issuing a new certificate. You can select one of these options: • **1024-bit RSA – created by server**: Lower security. • **1024-bit RSA – created by device**: Lower security. Uses SCEP to provision the EAP-TLS certificate. • **2048-bit RSA – created by server**: Recommended for general use. • **2048-bit RSA – created by device**: Recommended for general use. Uses SCEP to provision the EAP-TLS certificate. • **4096-bit RSA – created by server**: Higher security. • **X9.62/SECG curve over a 256 bit prime field - created by server** • **NIST/SECG curve over a 384 bit prime field - created by server** See Note below this table.
Unique Device Credentials	Includes the username as a prefix in the device's PEAP credentials.

Using a private key containing more bits will increase security, but will also increase the processing time required to create the certificate and authenticate the device. The additional processing required will also affect the battery life of a mobile device. It is recommended to use the smallest private key size that is feasible for your organization. The “created by device” options use SCEP to provision the EAP-TLS device certificate, so the private key is known only to the device rather than also known by the user. When a “created by device” option is selected, the generated key is used instead of a username/password authentication defined in Network Settings.

Table 29: *Device Provisioning Settings, General Tab, Authorization Area*

Field	Description
Authorization Method	Authorization method for devices. Options include **App Auth** and **RADIUS**.
Configuration Profile	Configuration profile to provision to devices. All configuration profiles that have been created are included in this list. A configuration profile specifies an application set, Exchange ActiveSync settings, network settings, passcode policy, VPN, and other settings. For more information, see "Onboard Configuration" on page 130.
Maximum Devices	Enter a number to limit the maximum number of devices that each user may

Field	Description
	provision. To be enrolled, a device must have a currently valid certificate, and its status set to Allowed (at **Onboard > Management and Control > View by Device**).
Unique Device Credentials	Adds the username as a prefix to the device's PEAP credentials.

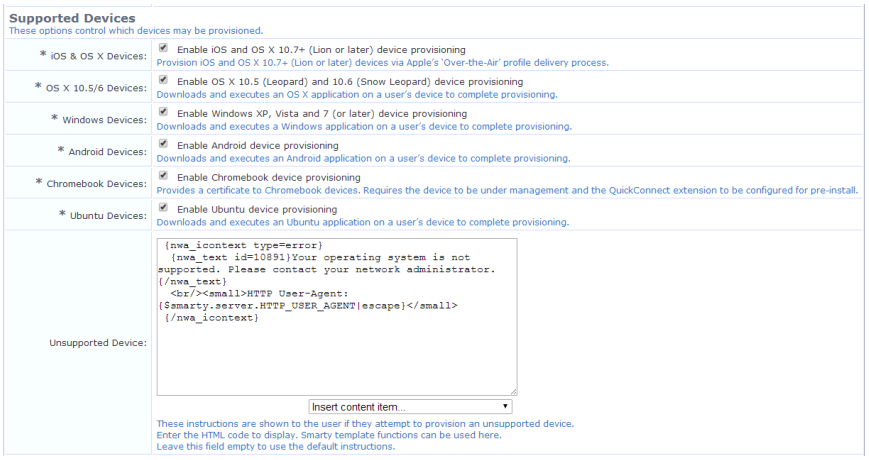


Table 30: *Device Provisioning Settings, General Tab, Supported Devices Area*

Field	Description
iOS & OS X Devices **OS X 10.5.6 Devices** **Windows Devices** **Android Devices** **Chromebook Devices** **Ubuntu Devices**	(Required) To enable device types for provisioning, mark their check boxes. When you unmark a check box for a device type that will not be provisioned, the corresponding tab is removed from this tabbed form.
Unsupported Device	HTML code for the message displayed to the user if their device is not supported.

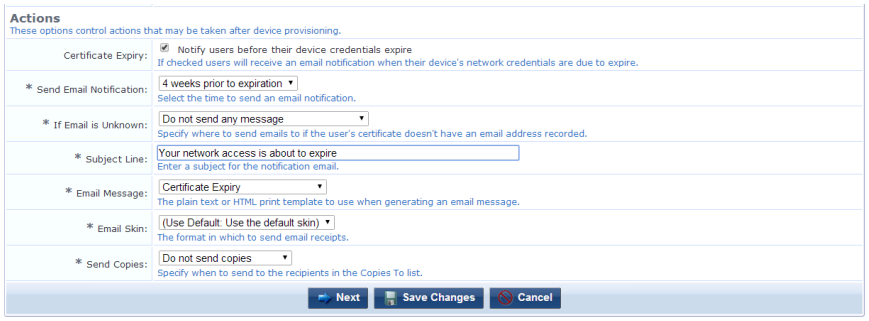


Table 31: *Device Provisioning Settings, General Tab, Actions Area*

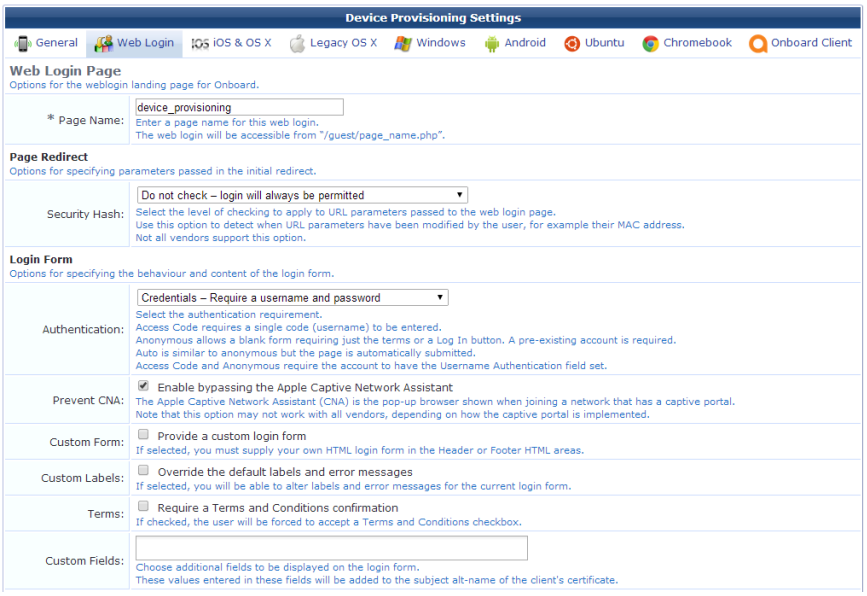
Field	Description
Certificate Expiry	Specifies that users will receive an email notification when their device's network credentials are about to expire. The form expands to include options for configuring the notification email.
Send Email Notification	When to send the email. Options include one, two, three, or four weeks before expiration.
If Email is Unknown	Action to take if the user's email address is not recorded with the certificate. Options include: • **Do not send any message** • **Send a message to a fixed email address** • **Send a message to username@domain**
Unknown Address	Address to use when no email address is known for the user.This field is added to the form if the "Send a message to a fixed email address" option is selected for unknown email addresses.
Unknown Domain	Domain to append to the username to form an email address.This field is added to the form if the "Send a message to username@domain" option is selected for unknown email addresses.
Subject Line	Subject line for the notification email.
Email Message	Plain text or HTML print template to use when generating the email message. Options include: • **Account List** • **Certificate Expiry** • **Download Receipt** • **GuestManager Receipt** • **One account per page** • **SMS Receipt** • **Sponsorship Confirmation** • **Two-column scratch cards**
Email Skin	Format to use for email receipts. Options include: • **Use the default skin** • **No skin – Plain text only** • **No skin – HTML only** • **No skin – Native receipt format** • **Aruba ClearPass Skin** • **Blank Skin** • **ClearPass Guest Skin** • **Custom Skin 1** • **Custom Skin 2**
Send Copies	How to send copies to the recipients in the Copies To list. Options include: • **Do not send copies** • **Always send using "cc:"** • **Always send using "Bcc:"**

Click **Next** to proceed to the next tab, or **Save Changes** to complete your edits.

Configuring Provisioning Settings for the Web Login Page

Onboard creates a default Web login page that is used to start the device provisioning process. To specify options for the Web login landing page:

1. Go to **Onboard > Deployment and Provisioning**, expand the provioning setting's row in the list, and click its **Edit** link. In the **Device Provisioning Settings** form, click the **Web Login** tab.

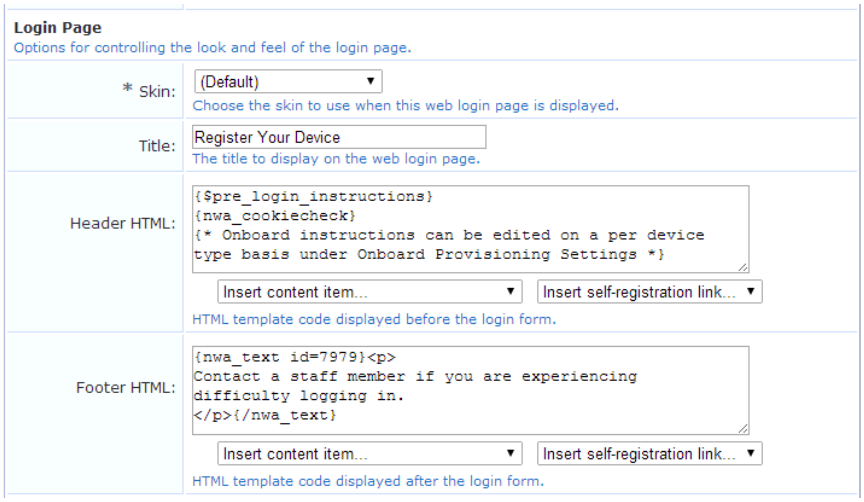


2. In the **Page Name** field, enter the page name for the Web login page.
3. In the **Page Redirect** area, use the **Security Hash** drop-down list to select the level of checking to apply to URL parameters passed to the Web login page. Options include:
   - **Do not check - login will always be permitted**
   - **Permit login on validation error - validation errors will be logged**
   - **Deny login on validation error - login will not be permitted**
4. In the **URL Hash Key** and **Confirm Key** fields, enter the shared secret that will be used to hash the redirect URL.

In the **Login Form** area:

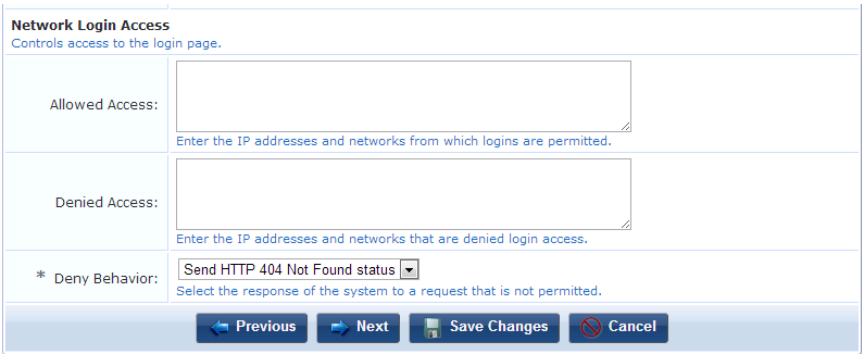
1. In the **Authentication** drop-down list, select the authentication requirement. Options include:
   - **Single Sign-On – Enable SSO for device provisioning** (SSO support is enabled at **CPPM > Configuration > Identity > Single Sign-On**)
   - **Access Code – Only require username for authentication**
   - **Anonymous – Do not require a username or password**
2. To enable bypassing the Apple Captive Network Assistant (CNA), select the **Prevent CNA** check box. The CNA is the pop-up browser shown when joining a network that has a captive portal. This option might not work with all vendors; it is dependent on how the captive portal is implemented.
3. Mark the **Custom Form** check box to use your own HTML login form in the header and footer areas.
4. To modify the login form's labels and error messages, mark the **Custom Labels** check box. The form expands to include the **Username Label**, **Password Label**, and **Log In Label** fields. Complete these fields with your customized label text.

5. To force the user to accept a "Terms and Conditions" statement, mark the check box in the **Terms** row. The form expands to include the **Terms Label**, **Terms Text**, **Terms Layout**, and **Terms Error** fields. Complete these fields with your customized values.
6. In the **Custom Fields** text box, you can enter values for custom fields that you have created in Guest Manager to be displayed on the Web login page.



In the **Login Page** area:

1. Use the **Skin** drop-down list to specify the skin to use for the login page.
2. Enter the title that will be displayed on the page in the **Title** field.
3. The device-specific tabs of the Provisioning Settings form may be used to customize the header and footer HTML instructions for each device type. Default text for the header and footer is shown in the **Header HTML** and **Footer HTML** fields and may be edited. You can also use the drop-down lists in these fields to add images or other content items or to insert a self-registration link.



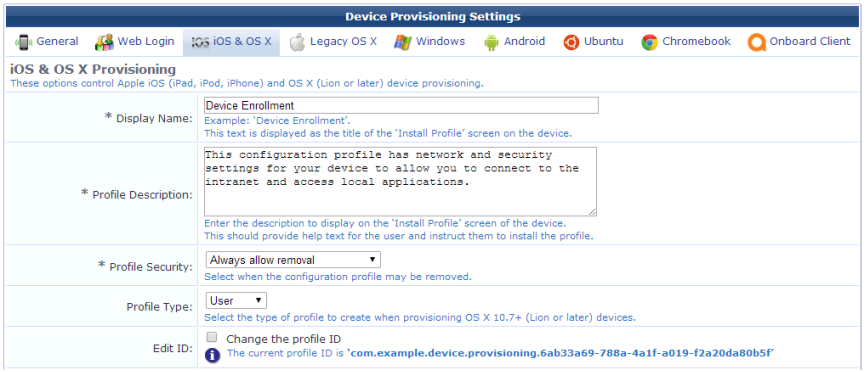
In the **Network Login Access** area:

1. In the **Allowed Access** field, enter the IP addresses and networks from which logins will be allowed.
2. In the **Denied Access** field, enter the IP addresses and networks from which logins will be denied.
3. Use the drop-down list in the **Deny Behavior** field to select the response shown to the user if their login request is denied. Options in this list include **Send HTTP 404 Not Found status**, **Show Access Denied page**, and **Show a blank page**.
4. When your entries are complete in this tab, click **Save Changes**. You can click **Next** to continue to the next tab, or **Previous** to return to the previous tab.

Configuring Provisioning Settings for iOS and OS X

To specify provisioning settings related to iOS and OS X devices:

1. Go to **Onboard > Deployment and Provisioning**, expand the provioning setting's row in the list, and click its **Edit** link. On the **Device Provisioning Settings** form, click the **iOS & OS X** tab.



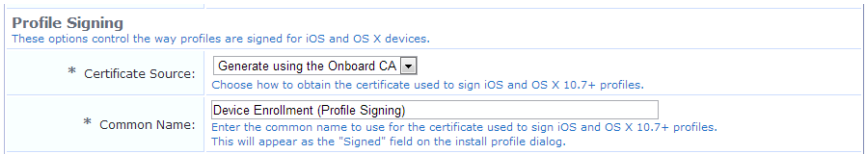
2. Use the **Display Name** and **Profile Description** text fields to control the user interface displayed during device provisioning.

3. In the **Profile Security** row, select one of the following options from the drop-down list to control how a device provisioning profile may be removed:
   - **Always allow removal** – The user may remove the device provisioning profile at any time, which will also remove the associated device configuration and unique device credentials.
   - **Remove only with authorization** – The user may remove the device provisioning profile if they also provide a password. The administrator must specify the password in the "Removal Password" and "Confirm Removal Password" fields. The minimum password length is six characters.
   - **Never allow removal** – The user cannot remove the device provisioning profile. This option should be used with caution, as the only way to remove the profile is to reset the device to factory defaults, and destroy all data on the device.
4. Use the drop-down list in the **Profile Type** row to select the type of profile to create, either **User** or **System**, when provisioning OS X 10.7+ (Lion or later) devices.

5. In the **Edit ID** row, Mark the **Change the profile ID** check box to change the unique value associated with the configuration profile. This value is used to identify the configuration settings as being from a particular source, and should be globally unique.

   When an iOS device receives a new configuration profile that has the same profile ID as an existing profile, the existing profile will be replaced with the new profile.

Changing the profile ID will affect any device that has already been provisioned with the existing profile ID. The default value is automatically generated and is globally unique. You should only change this value during initial configuration of device provisioning.



6. In the **Profile Signing** area, use the drop-down list in the **Certificate Source** row to specify how to obtain the certificate used to sign the profiles. The options available in the list are:
   - **Generate using the Onboard CA** -- This method establishes a trust chain when the CA certificate is already installed.
   - **Use an uploaded certificate** -- This method can be used for public access situations, and allows a .mobileconfig profile to be signed using a public SSL certificate (for example, one issued by VeriSign).
7. In the **Common Name** field, enter the display name of the certificate used to sign the configuration profile. This certificate will be automatically created by the certificate authority, and appears as the “Signed” field on the device when the user authorizes the device provisioning.

Configuring Instructions for iOS and OS X

To edit the instruction text shown during provisioning for iOS and OS X devices:

1. In the **Before Provisioning** text box, enter the instructions that are shown to the user before they provision their device. The text can be entered as HTML code, and you can use Smarty template functions. If this field is left empty, the default text will be displayed.
2. In the **After Provisioning** text box, enter the instructions that are shown to the user after they have provisioned their device. The text can be entered as HTML code, and you can use Smarty template functions. If this field is left empty, the default text will be displayed.
3. In the **iOS-4 Same SSID** text box, enter the instructions that are shown to the user of an iOS 4 device if they attempt to provision their device while connected to an SSID that will be provisioned. “Same SSID” provisioning is not supported. The text can be entered as HTML code, and you can use Smarty template functions. If this field is left empty, the default text will be displayed.

Configuring Reconnect Behavior for iOS and OS X

Reconnect is only supported by iOS 5+ and OS X 10.7+ (Lion or later) devices.

To configure the reconnect behavior iOS and OS X devices:

1. In the **Allow Automatic Reconnect** row, mark the check box if you want to allow the device to be automatically reconnected to the provisioned network. Automatic reconnect only applies when there is a single network configured to “Automatically join network.”
2. In the **Allow Manual Reconnect** row, mark the check box if you want to allow the device to be manually reconnected to the provisioned network. Manual reconnect only applies when automatic reconnect is not allowed or not applicable.

3. In the **Manual Reconnect Interface** row, enter the text that will be shown to the user if manual reconnect is allowed and applicable. Enter the text as HTML code. You can use Smarty template functions. If this field is left empty, the default text will be displayed.
4. In the **Connect Success** row, enter the text that will be shown to the user after successful reconnect. Enter the text as HTML code. You can use Smarty template functions. If this field is left empty, the default text will be displayed.
5. In the **Connect Failure** row, enter the text that will be shown to the user after a failed reconnect or if the device does not support reconnection (for example, for iOS 4 and earlier devices). Enter the text as HTML code. You can use Smarty template functions. If this field is left empty, the default text will be displayed.
6. In the **After Connect** row, enter the text that will be shown after a reconnect attempt, regardless of success or failure. Enter the text as HTML code. You can use Smarty template functions. If this field is left empty, the default text will be displayed.

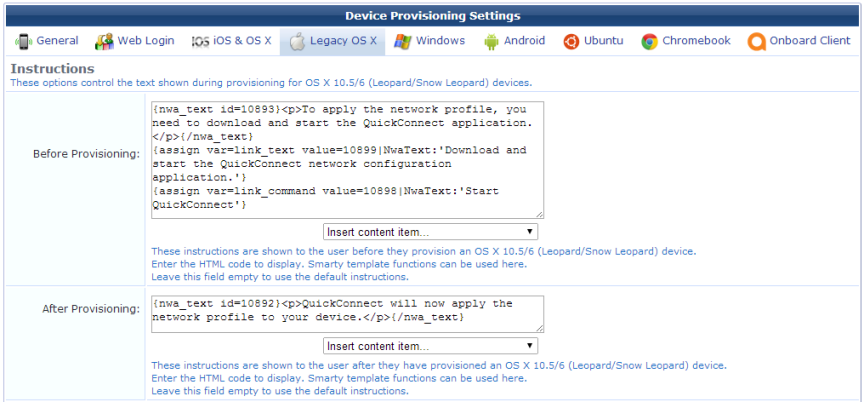
To configure delay and timeout settings:

1. Mark the check box in the **Advanced Settings** row. The form expands to include these options.
2. In the **Disconnect Delay** row, enter the duration in seconds for the Web server to wait after receiving a disconnect request before it sends the request to the controller. This delay gives the client time to receive a valid HTTP response before begin disconnected from the network.
3. In the **Reconnect Delay** row, enter the duration in seconds for the client to wait after sending a disconnect request to the Web server before it sends a reconnect request. This duration must give the Web server and the controller adequate time to negotiate a disconnect for the device first.
4. In the **Reconnect Timeout** row, enter the duration in seconds for the client to wait for a valid response after sending a reconnect request to the Web server. This duration must allow enough time for the client to be reconnected to the network (using the newly-installed settings) and for the Web server to then acknowledge the HTTP request.
5. When your entries are complete in this tab, click **Save Changes**. You can click **Next** to continue to the next tab, or **Previous** to return to the previous tab.

Configuring Provisioning Settings for Legacy OS X Devices

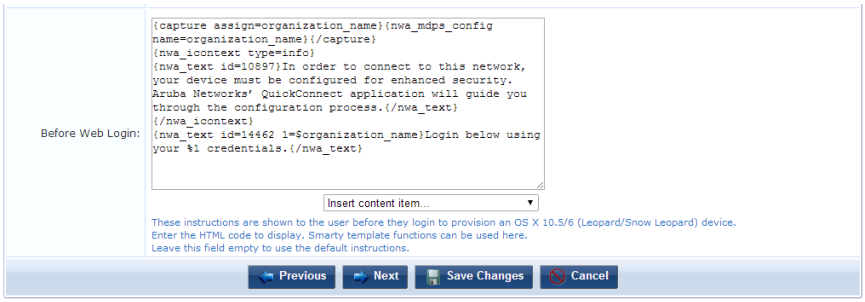
To specify provisioning settings related to legacy OS X 10.5 and 10.6 (Leopard and Snow Leopard) devices:

1. Go to **Onboard > Deployment and Provisioning**, expand the provioning setting's row in the list, and click its **Edit** link. On the **Device Provisioning Settings** form, click the **Legacy OS X** tab.



2. In the **Before Provisioning** text box, enter the instructions that are shown to the user before they provision their device. The text can be entered as HTML code, and you can use Smarty template functions. If this field is left empty, the default text will be displayed.

3. In the **After Provisioning** text box, enter the instructions that are shown to the user after they have provisioned their device. The text can be entered as HTML code, and you can use Smarty template functions. If this field is left empty, the default text will be displayed.

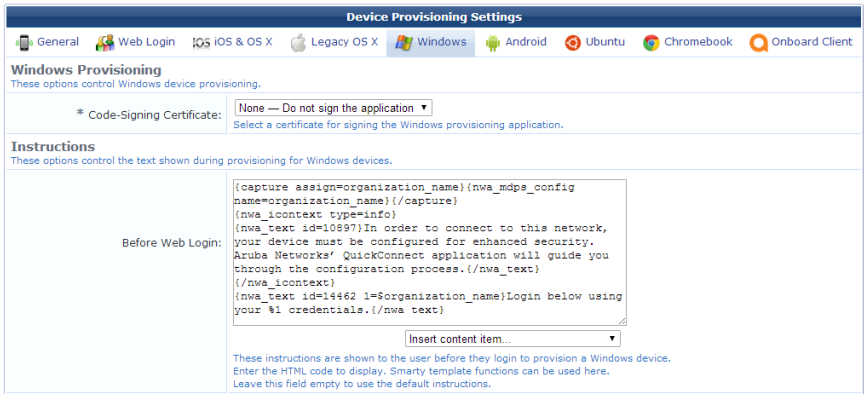


4. In the **Before Web Login** area, enter the instructions that are shown to the user before they log in to provision an OS X 10.5 or 10.6 device. The text can be entered as HTML code, and you can use Smarty template functions. If this field is left empty, the default text will be displayed.
5. You may use the **Insert content item** drop-down list to add an image file or other content item.
6. When your entries are complete in this tab, click **Save Changes**. You can click **Next** to continue to the next tab, or **Previous** to return to the previous tab.

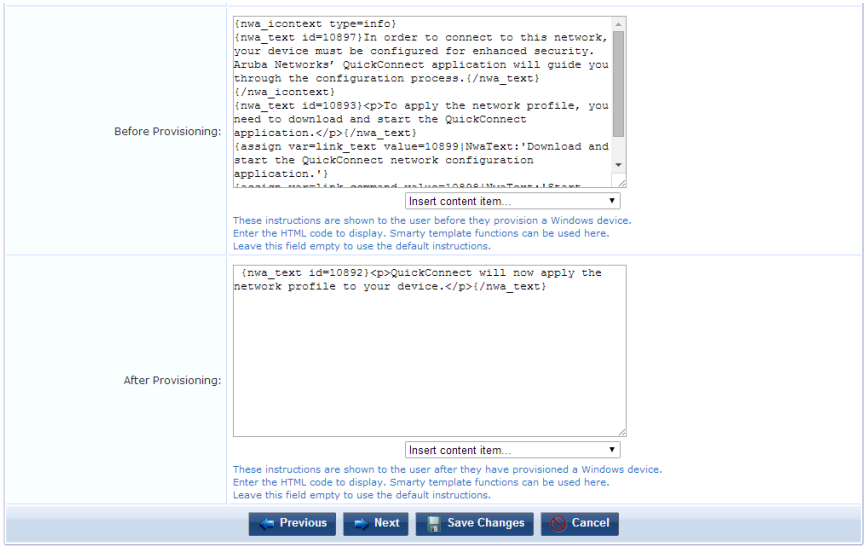
Configuring Provisioning Settings for Windows Devices

To specify provisioning settings related to Windows devices:

1. Go to **Onboard > Deployment and Provisioning**, expand the provioning setting's row in the list, and click its **Edit** link. On the **Device Provisioning Settings** form, click the **Windows** tab.



2. In the **Code-Signing Certificate** drop-down list, select a certificate for signing the provisioning application, or leave the default setting of **None-Do not sign the application**.
3. In the **Before Web Login** area, enter the instructions that are shown to the user before they log in to provision a Windows device. The text can be entered as HTML code, and you can use Smarty template functions. If this field is left empty, the default text will be displayed.

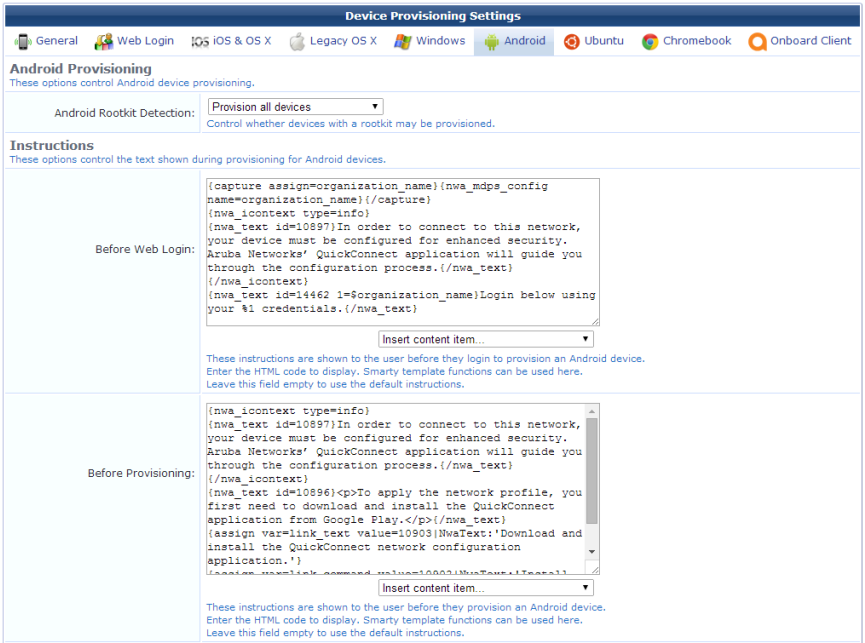


4. In the **Before Provisioning** text box, enter the instructions that are shown to the user before they provision their device. The text can be entered as HTML code, and you can use Smarty template functions. If this field is left empty, the default text will be displayed.
5. In the **After Provisioning** text box, enter the instructions that are shown to the user after they have provisioned their device. The text can be entered as HTML code, and you can use Smarty template functions. If this field is left empty, the default text will be displayed.
6. You may use the **Insert content item** drop-down list to add an image file or other content item.
7. When your entries are complete in this tab, click **Save Changes**. You can click **Next** to continue to the next tab, or **Previous** to return to the previous tab.

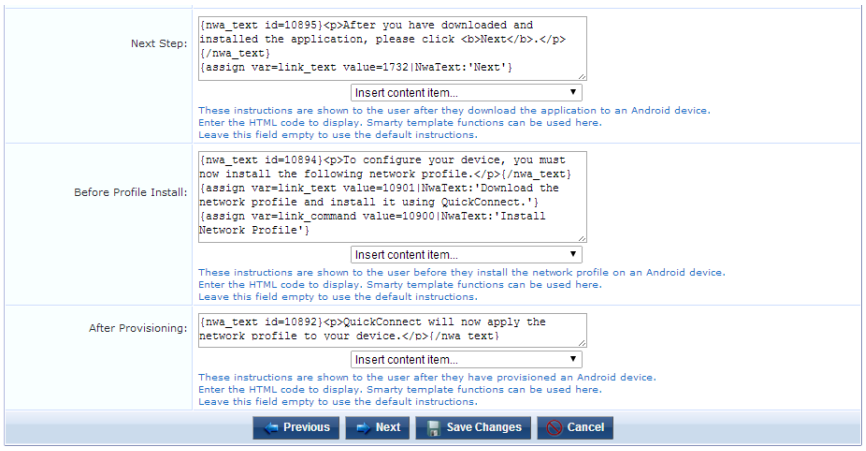
Configuring Provisioning Settings for Android Devices

To specify provisioning settings related to Android devices:

1. Go to **Onboard > Deployment and Provisioning**, expand the provioning setting's row in the list, and click its **Edit** link. On the **Device Provisioning Settings** form, click the **Android** tab.



2. In the **Android Rootkit Detection** drop-down list, choose one of the following options:
   - **Provision all devices**— All Android devices will be provisioned.
   - **Do not provision rooted devices**—Onboard will detect a jailbroken Android device and will not provision the device if it has been compromised.
3. In the **Before Web Login** area, enter the instructions that are shown to the user before they log in to provision an Android device. The text can be entered as HTML code, and you can use Smarty template functions. If this field is left empty, the default text will be displayed.
4. In the **Before Provisioning** text box, enter the instructions that are shown to the user before they provision their device. The text can be entered as HTML code, and you can use Smarty template functions. If this field is left empty, the default text will be displayed.

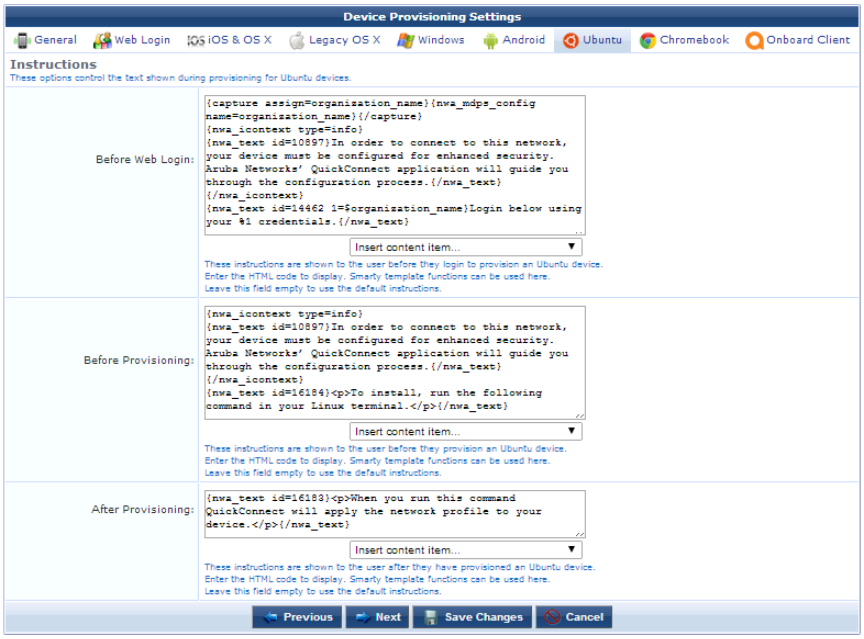


5. In the **Next Step** text box, enter the instructions that are shown to the user after they download the application to their device. The text can be entered as HTML code, and you can use Smarty template functions. If this field is left empty, the default text will be displayed.
6. In the **Before Profile Install** text box, enter the instructions that are shown to the user before they install the network profile on their device. The text can be entered as HTML code, and you can use Smarty template functions. If this field is left empty, the default text will be displayed.
7. In the **After Provisioning** text box, enter the instructions that are shown to the user after they have provisioned their device. The text can be entered as HTML code, and you can use Smarty template functions. If this field is left empty, the default text will be displayed.
8. You may use the **Insert content item** drop-down list to add an image file or other content item.
9. When your entries are complete in this tab, click **Save Changes**. You can click **Next** to continue to the next tab, or **Previous** to return to the previous tab.

Configuring Provisioning Settings for Ubuntu

To specify provisioning settings related to Ubuntu devices:

1. Go to **Onboard > Deployment and Provisioning**, expand the provioning setting's row in the list, and click its **Edit** link. On the **Device Provisioning Settings** form, click the **Ubuntu** tab.

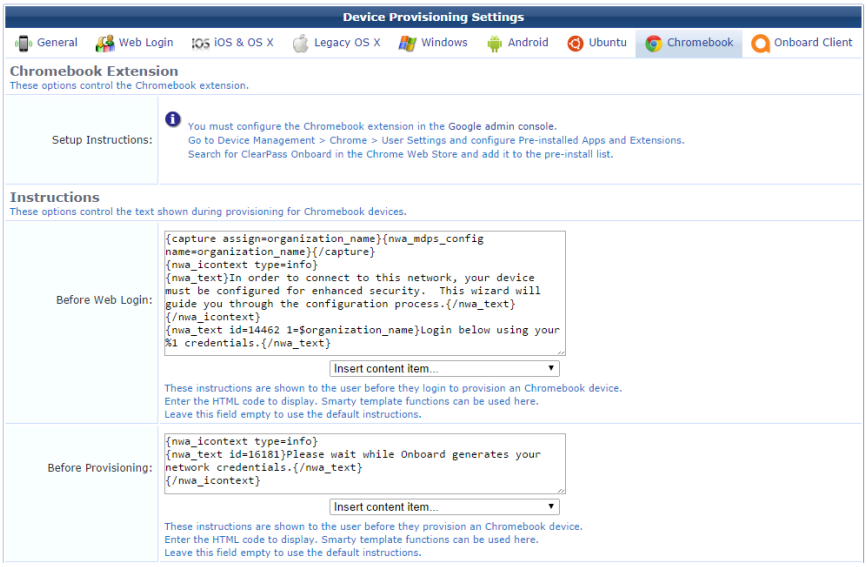


2. In the **Before Web Login** text box, enter the instructions that are shown to the user before they log in to provision an Ubuntu device. The text can be entered as HTML code, and you can use Smarty template functions. If this field is left empty, the default text will be displayed.
3. In the **Before Provisioning** text box, enter the instructions that are shown to the user before they provision their Ubuntu device. The text can be entered as HTML code, and you can use Smarty template functions. If this field is left empty, the default text will be displayed.
4. In the **After Provisioning** text box, enter the instructions that are shown to the user after they have provisioned their Ubuntu device. The text can be entered as HTML code, and you can use Smarty template functions. If this field is left empty, the default text will be displayed.
5. You may use the **Insert content item** drop-down list to add an image file or other content item.
6. When your entries are complete in this tab, click **Save Changes**. You can click **Next** to continue to the next tab, or **Previous** to return to the previous tab.

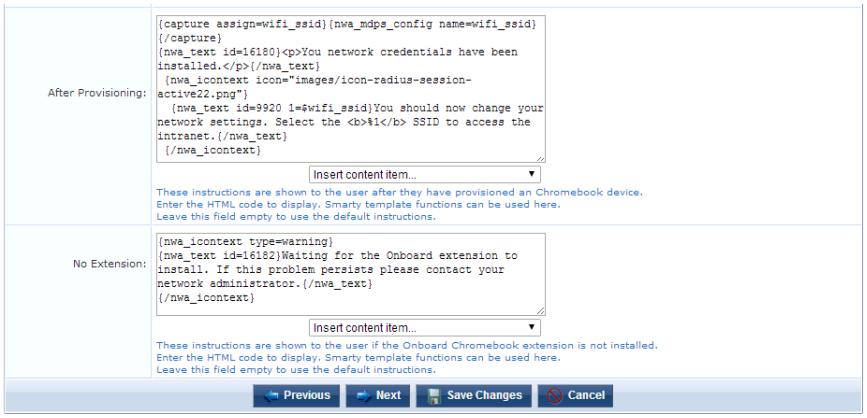
Configuring Provisioning Settings for Chromebook

To specify provisioning settings related to Chromebook devices:

1. Go to **Onboard > Deployment and Provisioning**, expand the provioning setting's row in the list, and click its **Edit** link. On the **Device Provisioning Settings** form, click the **Chromebook** tab.



2. In the **Chromebook Extension** field, read and follow the instructions for configuring the Chromebook extension in the Google admin console and adding the custom app. This field provides ID and server information that is specific to your installation.
3. In the **Before Web Login** text box, enter the instructions that are shown to the user before they log in to provision a Chromebook device. The text can be entered as HTML code, and you can use Smarty template functions. If this field is empty, the default text will be displayed.
4. In the **Before Provisioning** text box, enter the instructions that are shown to the user before they provision their Chromebook device. The text can be entered as HTML code, and you can use Smarty template functions. If this field is empty, the default text will be displayed.



5. In the **After Provisioning** text box, enter the instructions that are shown to the user after they have provisioned their Ubuntu device. The text can be entered as HTML code, and you can use Smarty template functions. If this field is empty, the default text will be displayed.
6. In the **No Extension** text box, enter the instructions that are shown to the user if the Onboard Chromebook extension is not installed. The text can be entered as HTML code, and you can use Smarty template functions. If this field is empty, the default text will be displayed.
7. You may use the **Insert content item** drop-down list to add an image file or other content item.
8. When your entries are complete in this tab, click **Save Changes**. You can click **Next** to continue to the next tab, or **Previous** to return to the previous tab.

Configuring Options for Onboard Client Devices

The Onboard Client tab is used to edit basic configuration options for Windows, Android, and legacy OS X (10.5 and 10.6) devices. This form is not used for iOS or OS X 10.7+ devices.

To specify provisioning settings related to these Onboard-capable devices:

1. Go to **Onboard > Deployment and Provisioning**, expand the provioning setting's row in the list, and click its **Edit** link. On the **Device Provisioning Settings** form, click the **Onboard Client** tab.

2. In the **Provisioning Address** drop-down list, choose the hostname or IP address to use for device provisioning:
   - **The system's hostname (requires DNS resolution)** – Select this option to use the system hostname for device provisioning.

This option requires that the device be able to resolve the listed hostname at the time the device is provisioned.

   - **The system's IP address (*network adapter name*)** – Select this option to use the IP address of the system for device provisioning. The drop-down list includes one option for each of the IP addresses detected on the system.

     Use this option when DNS resolution of the system's hostname is not available for devices that are in a provisioning role.
   - **Other IP address or hostname**... – Select this option to override the hostname or IP address to be specified during device provisioning. The administrator must enter the hostname or IP address in the "Address" text field.

     Use this option when special DNS or NAT conditions apply to devices that are in a provisioning role.
3. If you chose **Other IP address or hostname** in the Provisioning Address drop-down list, use the **Address** field to enter a hostname or IP address.
4. The **Provisioning Access** warning message is displayed when HTTPS is not required for guest access. HTTPS is recommended for all deployments as it secures the unique device credentials that will be issued to the device.

When using HTTPS for device provisioning, you must obtain a commercial SSL certificate. Self-signed SSL certificates, and SSL server certificates that have been issued by an untrusted or unknown root certificate authority, will cause

iOS device provisioning to fail with the message “The server certificate for ... is invalid”.

5. The **Validate Certificate** drop-down list is used to specify whether the SSL server’s certificate should be validated as trusted. When this option is set to **Yes, validate this web server’s certificate (recommended)**, a certificate validation failure on the client device will cause device provisioning to fail. This is the default option.

   You should change this option to **No, do not validate this web server’s certificate** only during testing, or if you are waiting for a commercial SSL certificate.

6. To display your enterprise’s logo, select an image from the list in the **Logo Image** field. Go to **Administration** > **Content Manager** to upload new images to use as the logo.

   The native size of the logo used in the QuickConnect client is 188 pixels wide, 53 pixels high. You may use an image of a different size and it will be scaled to fit, but for the best quality results it is recommended that you provide an image that is already the correct size.

7. The **Wizard Title** text field may be used to specify the text displayed to users when they launch the QuickConnect app to provision their device.

8. If provided, the **Password Recovery URL** and **Helpdesk URL** fields may be used to provide additional resources to users who encounter trouble in provisioning their devices.

NOTE

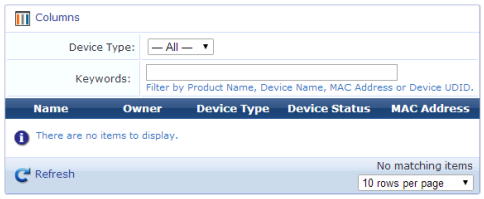
Ensure that users in the provisioning role can access these URLs.

9. When your entries are complete in this tab, click **Save Changes**. You can click **Previous** to return to the previous tab.

About the Self-Service Portal

The Self-Service Portal allows users to manage their onboarded BYOD devices without requiring IT intervention.

Figure 20 *Self-Service Portal*



The Self-Service Portal list displays Onboard devices. Select the type from the **Device Type** drop-down list in the filter area. Information shown for each device includes the device's name, owner's name, device type, the device's network access status, and the device ID (MAC address).

NOTE

Log in as the local user in the Self-Service portal to view the list of devices. For more information on configuring the local user credentials, see the section, *Adding and Modifying Local Users* in the latest ClearPass Policy Manager *User Guide*.

Users can perform the following operations:

- View, enable, disable, or delete a device.
- Revoke a device's client certificate.
- Report a device as lost or stolen.

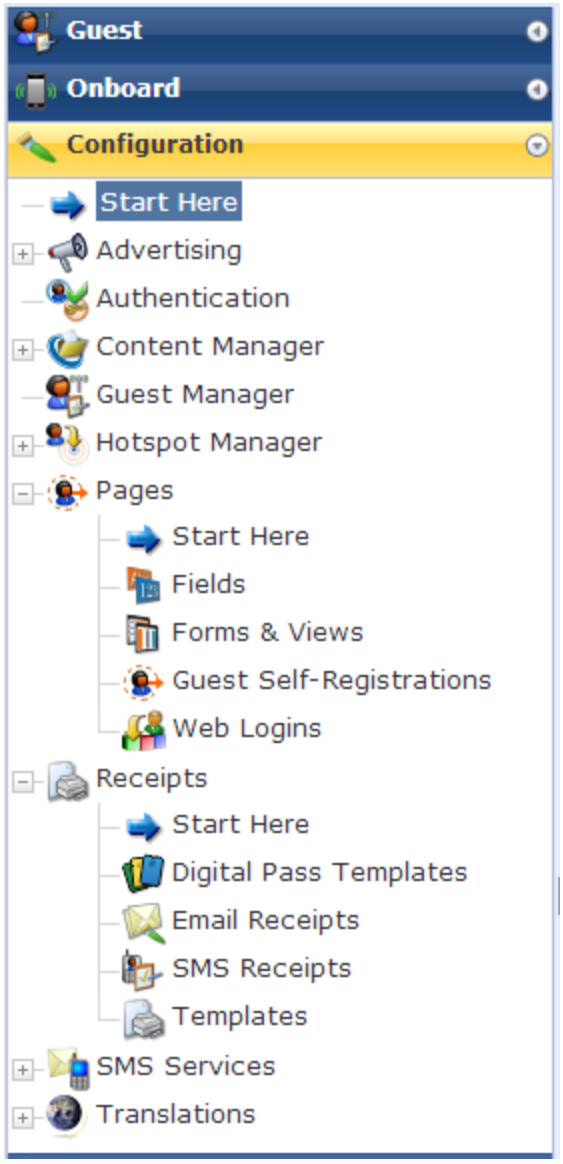
For more information on various device actions, see "Device Management (View by Device) " on page 110.

ClearPass Guest's built-in Configuration editor lets you customize many aspects of the appearance, settings, and behavior of the application. Areas you can customize include:

- Advertising services (see "Advertising Services" on page 313)
- Authentication settings
- Content asset management
- Guest Manager configuration
- Hotspot Manager (see "Hotspot Manager" on page 341)
- Pages, including:
  - Fields, forms, and views in ClearPass Guest
  - Guest self-registration processes and forms
  - Web login pages
- Receipts, including:
  - Digital passes
  - Settings for emailing visitor account receipts
  - SMS visitor account receipt settings
- SMS services
- Translation packs
- Visitor account provisioning services for IP phones

Accessing Configuration

To access ClearPass Guest's application customization features, click the **Configuration** link in the left navigation.

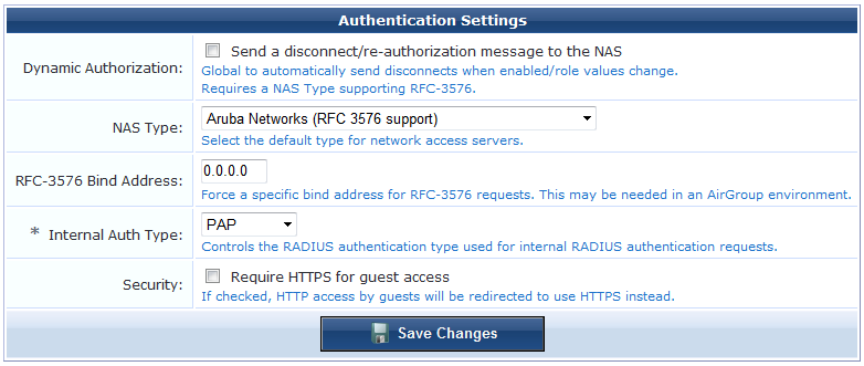


Configuring ClearPass Guest Authentication

You can use the Configuration module to modify authentication settings for the ClearPass Guest application.

To configure ClearPass Guest's authentication settings:

1. Go to **Configuration > Authentication**. The Authentication Settings form opens.



2. To send automatic disconnect or re-authorization messages when enabled or role values change, mark the check box in the **Dynamic Authorization** row. This requires a network access server (NAS) type that supports RFC-3576.
3. In the **NAS Type** row, use the drop-down list to choose the default type for network access servers.
4. To force a specific bind address for RFC-3576 requests, enter a value in the **RFC-3576 Bind Address** row. This might be needed in an AirGroup environment.
5. In the **Internal Auth Type** row, choose a type from the drop-down list. Choices in list include **PAP**, **CHAP**, and **MS-CHAP**. The internal authentication type controls the RADIUS authentication used for internal RADIUS requests.
6. To redirect HTTP access to use HTTPS instead, mark the check box in the **Security** row.

Content Manager

The Content Manager allows you to upload content items to ClearPass Guest. Content items are assets such as text, images, and animations. To work with your content items, go to **Configuration > Content Manager > Start Here**.

Content assets are organized into private files and public files. Private files are only available within the ClearPass application. Public files are accessible via HTTP/HTTPS for guest access using the application's built-in Web server.

This section includes:

Managing Content: Private Files and Public Files

Content items are assets such as text, images, and animations. After you upload them to ClearPass, you can use them in registrations, receipts, digital passes, and so on.

To use a content item, you can insert a reference to it into any custom HTML editor within the application. To do this, select the content item you want to insert from the drop-down list located in the lower right corner of the HTML editor. The item will be inserted using HTML that is most suited to the type of content inserted. To manually reference a content item, you can use the URL of the item directly. For example, an item named **logo.jpg** could be accessed using a URL such as: **http://192.0.2.23/public/logo.jpg**.

Content items are organized into two categories, private files and public files, and stored and accessed separately:

- **Private Files**—Content items in the Private Files list are only available within the ClearPass application. These files are not accessible to guests. To work with your private content items, go to **Configuration > Content Manager > Private Files**. The Private Files list view opens.
- **Public Files**—Public files are accessible via HTTP/HTTPS for guest access using the application's built-in Web server. To work with your public content items, go to **Configuration > Content Manager > Public Files**. The Public Files list view opens.

The list views and procedures are the same for both private and public files. Columns in the list show the filename, owner, file type, last modification date, and file size.

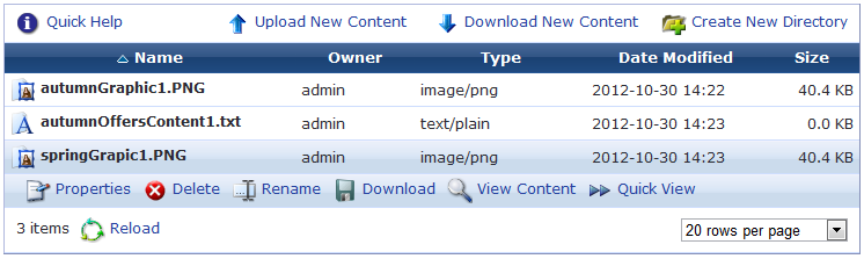
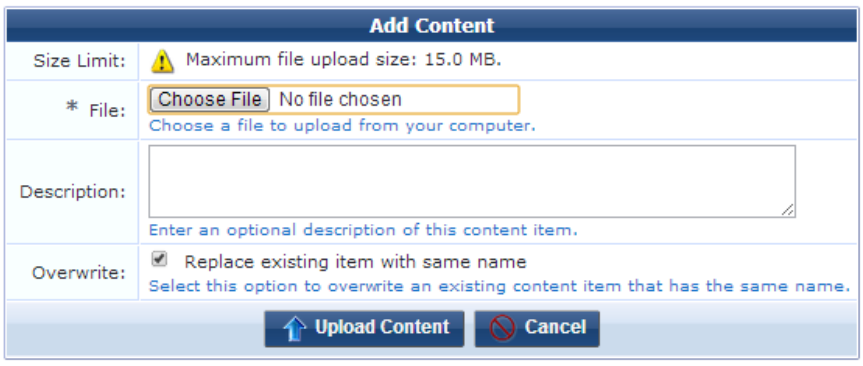


Table 32: *Content Files List View, Private Files or Public Files*

Field	Description
Upload New Content	Add a new content item from your system. See "Uploading Content " on page 190.
Download New Content	Add a new content item from another Web server. See "Downloading Content" on page 191.
Create New Directory	Add a new subdirectory under the currently displayed directory. See "Creating a New Content Directory" on page 191.
Properties	Displays the content file's properties. Information includes the file's owner, filename, description, type, image size, date modified, and file size.
Delete	Deletes the content file from the directory. You will be asked to confirm the deletion.
Rename	Modify the file's name or move it to another directory.
Download	Download a copy of the file to your local Downloads folder.
View Content	Opens a preview of the content item in a new browser tab.
Quick View	Displays a preview of the content item within the file's row in the list.

Uploading Content

1. To add a new content item using your Web browser, go to **Configuration > Content Manager**, and then go to either **Private Files** or **Public Files**, as appropriate. The list view opens. The procedures are the same for both private and public files.
2. Click the **Upload New Content** tab . The Add Content form opens.



3. In the **File** row, click **Browse** to navigate to the file you wish to upload. The Maximum file size is 15 MB.

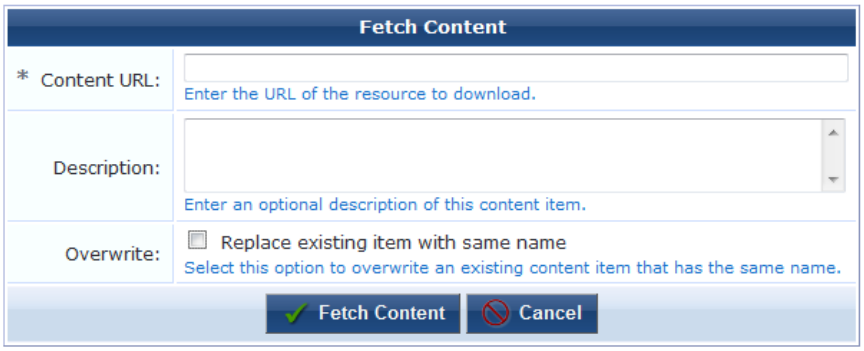
You can upload single content files, multiple content asset files and folders, or a Web deployment archive. To upload multiple assets, first compress the files as a "tarball" or zip file, then browse to it in the File field. Allowed file formats are .tgz, .tar.gz, .tb2, .tar.bz2, or .zip. When you have uploaded the file, the Extract option lets you create the new directory, navigate into it, and view and extract the files. Directory structure is preserved when extracting.

4. (Optional) You may enter a description of the content assets in the **Description** text area.
5. To overwrite a previous file of the same name, mark the **Overwrite** check box.
6. Click **Upload Content** to upload the file.

If you clicked the Upload New Content link on the Private Files list view, the file is added to the **private** directory in ClearPass. If you clicked the link on the Public Files list view, it is added to the **public** directory on the Web server. You can reference the file when creating custom HTML templates.

Downloading Content

1. To add a new content item from the internet or another Web server, go to **Configuration > Content Manager**, and then go to either **Private Files** or **Public Files**, as appropriate. The list view opens. The procedures are the same for both private and public files.
2. Click the **Download New Content** tab. The **Fetch Content** form opens.

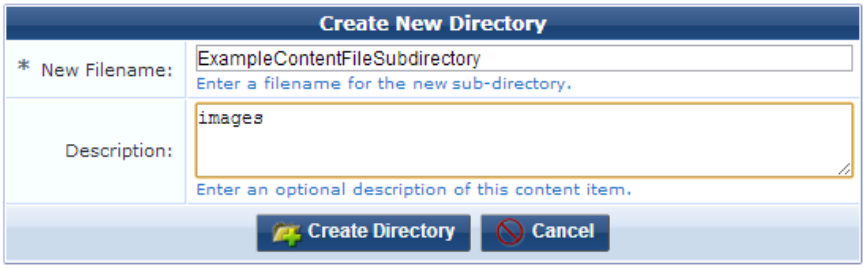


3. In the **Content URL** row, enter the URL of the content item to download.
4. (Optional) You may enter a description of the content assets in the **Description** text area.
5. To overwrite a previous file of the same name, mark the **Overwrite** check box.
6. Click **Fetch Content** to download the file.

If you clicked the Upload New Content link on the Private Files list view, the file is added to the **private** directory in ClearPass. If you clicked the link on the Public Files list view, it is added to the **public** directory on the Web server. You can reference the file when creating custom HTML templates.

Creating a New Content Directory

1. To add a new content subdirectory under either the private or public directory, go to **Configuration > Content Manager**, and then go to either **Private Files** or **Public Files**, as appropriate. The list view opens. The procedures are the same for both private and public files.
2. Click the **Create New Directory** tab. The **Create New Directory** form opens.



3. In the **New Filename** row, enter the name for the new subdirectory.
4. (Optional) You may enter a description of the directory in the **Description** text area.
5. Click **Create Directory**.

If you clicked the Create New Directory link on the Private Files list view, the subdirectory is added under the **private** directory in ClearPass. If you clicked the link on the Public Files list view, it is added under the **public** directory on the Web server. You can reference files in this subdirectory when creating custom HTML templates.

Configuring Guest Manager

The Guest Manager module allows the entire guest account provisioning process to be customized. This is useful in many different situations, such as:

- **Self-registration** – Allow your guests to self-register and create their own temporary visitor accounts.
- **Visitor surveys** – Define custom fields to store data of interest to you, and collect this information from guests using customized forms.
- **Branded print receipts** – Add your own branding images and text to print receipts.
- **SMS and email receipts** – Include a short text message with your guest's username and password, or send HTML emails containing images.
- **Advanced customization** – ClearPass Guest is flexible and can be used to provide location sensitive content and advertising.

Default Settings for Account Creation

The Guest Manager plugin configuration form lets you control the default settings for account creation.

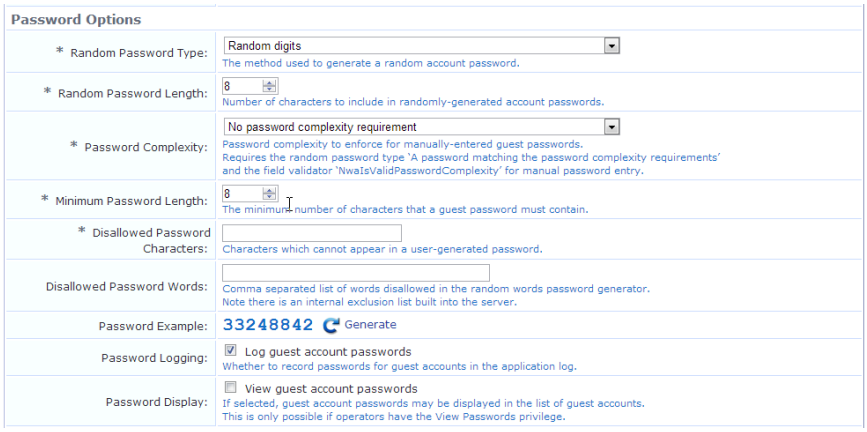
To modify settings for the Guest Manager plugin configuration, go to **Configuration > Guest Manager**. The Configure Guest Manager form opens.

You can also access this form from the **Administration > Plugin Manager > Guest Manager > Configuration** link.

Figure 21 *Configure Guest Manager, Username Options*

Field	Description
Username Type	The default method used to generate random account usernames (when creating groups of accounts). This may be overridden by using the **random_username_method** field.
Username Length	This field is displayed if the **Username Type** is set to “Random digits”, “Random letters”, “Random letters and digits” or “Sequential numbering”. The default length of random account usernames (when creating groups of accounts). This may be overridden by using the **random_username_length** field.
Username Example	(Optional) Shows a sample username generated according to the rules specified by the selections in the Username Type and Username Length fields. You can click the **Generate** link to view different examples.
Username Format	This field is displayed if the **Username Type** is set to “Format picture”. It sets the format of the username to be created. See "Format Picture String Symbols" on page 515 for a list of the special characters that may be used in the format string. This may be overridden by using the **random_username_picture** field.
Initial Sequence	(Optional) This field contains the next available sequence number for each username prefix that has been used. Automatic sequence numbering is used when the value of the **multi_initial_sequence** field is set to -1. The username prefix is taken from the **multi_prefix** field when usernames are automatically generated using the “nwa_sequence” method. You can edit the values stored here to change the next sequence numbers that will be used. This is an automatically managed field; in most situations there is no need to edit it.

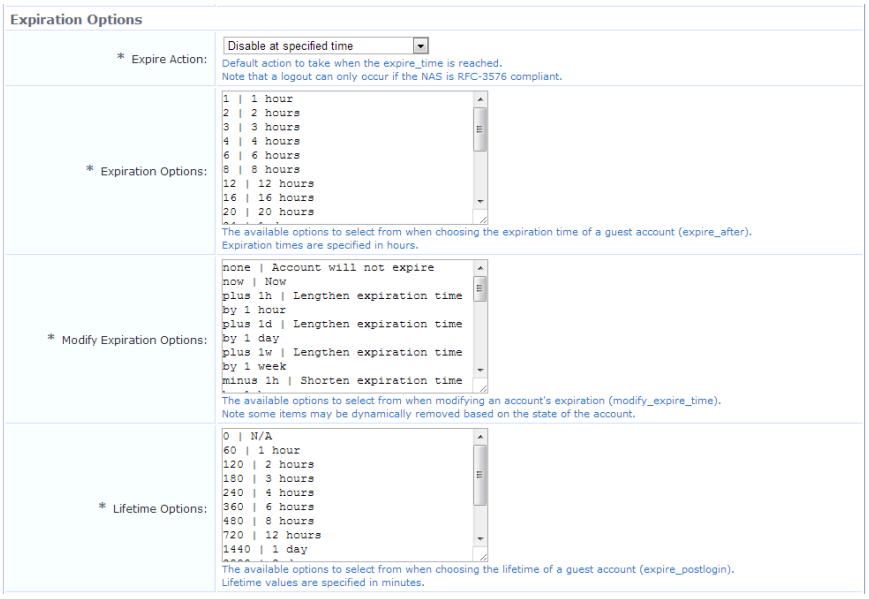
Figure 22 *Customize Guest Manager, Password Options*



Field	Description
Random Password Type	The default method used to generate random account passwords (when creating groups of accounts). This may be overridden by using the **random_password_method** field.
Random Password Length	The default length of random account passwords (when creating groups of accounts). This may be overridden by using the **random_password_length** field.
Password Format	This field is displayed if the **Password Type** field is set to “Format picture”. It sets the format of the password to be created. See "Format Picture String Symbols" on page 515 for a list of the special characters that may be used in the format string. This may be overridden by using the **random_password_picture** field.
Password Complexity	The policy to enforce when guests change their account passwords using the guest self-service user interface. Different levels of password complexity can require guests to select passwords that

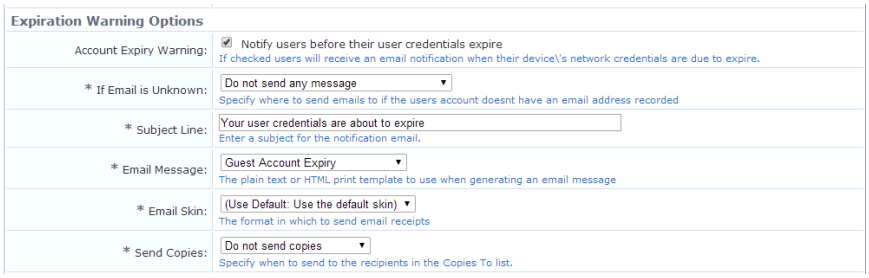
Field	Description
	contain different combinations of uppercase letters, lowercase letters, digits and symbols (!#$%&() *+,-./:;<=>?@[\\]^_{|}~,). The available options for this setting are: • No password complexity requirement • At least one uppercase and one lowercase letter • At least one digit • At least one letter and one digit • At least one of each: uppercase letter, lowercase letter, digit • At least one symbol • At least one of each: uppercase letter, lowercase letter, digit, and symbol
Minimum Password Length	The minimum acceptable password length for guests changing their account passwords. The original default password length is six characters.
Disallowed Password Characters	Special characters that should not be allowed in a guest password. Spaces are not allowed by default. You can specify special characters, numbers, and letters to exclude from passwords—for example, letters and numbers that can look similar, such as i, l, 1, 0, O, o, 5, S, 8, B.
Disallowed Password Words	(Optional) Enter a comma- separated list of words that are disallowed and will not be created by the random words password generator.
Password Example	(Optional) Shows a sample password generated according to the rules specified by the selections in the Password Type and Password Length fields. You can click the **Generate** link to view different examples.
Password Logging	(Optional) By default, the passwords for created guest accounts are logged in the application log and may be recovered from there. For increased security, you may prevent this password from being logged by unselecting this check box.
Password Display	(Optional) Select the **View guest account passwords** option to enable the display of visitor account passwords in the user list. To reveal passwords, the **password** field must be added to the "guest_ users" or "guest_edit" view, and the operator profile in use must also have the View Passwords privilege.

Figure 23 *Configure Guest Manager, Expiration Options*



Field	Description
Expire Action	Default action when the expiration time is reached. Available options available are: • **Disable at specified time** • **Delete and logout at specified time** • **Delete at specified time** • **Disable and logout at specified time**
Expiration Options	The options that should be available to select from when choosing the expiration time of a guest account (expire_after). These options are displayed as the values of the “Expires After” field when creating a user account. Values are in hours for relative account expiration times.
Modify Expiration Options	The options that should be available to select from when modifying an account's expiration (modify_expire_time). Some items may be dynamically removed based on the state of the account.
Lifetime Options	The options that should be available to select from when choosing the lifetime for a guest account (expire_postlogin). These options are displayed as the values of the “Account Lifetime” field when creating a user account. Values are in minutes for relative account lifetimes.

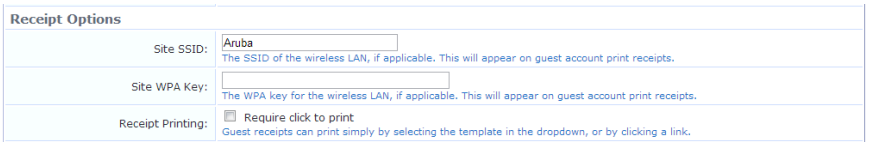
Figure 24 *Configure Guest Manager, Expiration Warning Options*

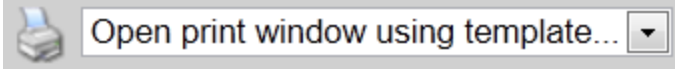


Field	Description
Account Expiry Warning	(Optional) If selected, users will receive an email notification 24 hours before their device's network credentials are about to expire. Expiration warning configuration options are added to the form.
If Email is Unknown	Use the drop-down list to specify where to send emails if the user's account does not have an email address recorded. Options include: • **Do not send any message** • **Send a message to a fixed email address** • **Send a message to username@domain**
Subject Line	Enter the subject line for the notification email.

Field	Description
Email Message	Use the drop-down list to specify the print template to use when generating the email message. Options include: • **Account List** • **Certificate Expiry** • **Download Receipt** • **Guest Account Expiry** • **GuestManager Receipt** • **One account per page** • **SMS Receipt** • **SMS Sponsor Confirmation Alert** • **Sponsorship Confirmation** • **Two-column scratch cards**
Email Skin	The format for the email receipts. Options include: • **Use default: Use the default skin** • **No skin - Plain text only** • **No skin - HTML only** • **No skin - Native receipt format** • **Use the default skin** • **Aruba ClearPass Skin** • **Blank Skin** • **ClearPass Guest Skin** • **Custom Skin 1** • **Custom Skin 2**
Send Copies	Use the drop-down list to specify when to send to recipients in the Copies To list. Options include: • **Do not send copies** • **Always send using "cc:"** • **Always send using "Bcc:"**

Figure 25 *Configure Guest Manager, Receipt Options*



Field	Description
Site SSID	(Optional) The Site SSID is the public name of the wireless local area network (WLAN). The default setting for this field is **Aruba**, and can be changed. The site SSID is displayed in the guest receipt as the **WiFi Network**, shown below this table.
Site WPA Key	(Optional) The encryption key used to secure the wireless network. If a value is entered in this field, it will appear on guest print receipts.
Receipt Printing	(Optional) Select the "Require click to print" option to change the behavior of the receipt page. When this option is not selected, the default behavior is to provide a drop-down list of print templates and to open a new window when one is selected:  When "Require click to print" is selected, the receipt page provides a drop-down list of print templates and a Print link that must be clicked to display the account receipt:

Field	Description
	Select a print template... Print

Figure 26 *Example Guest Receipt, Showing Site SSID Displayed as the WiFi Network*

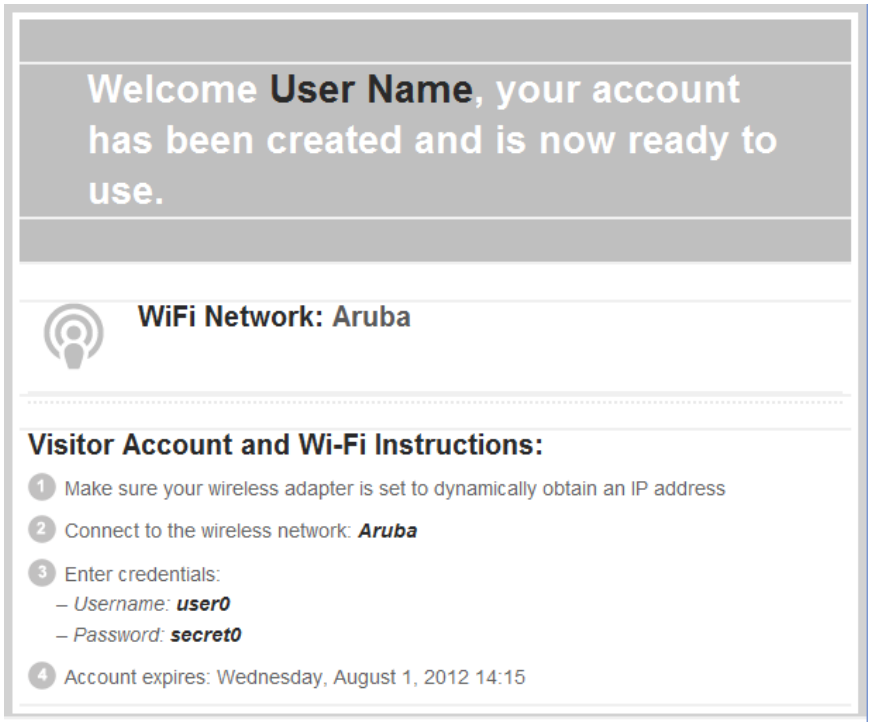
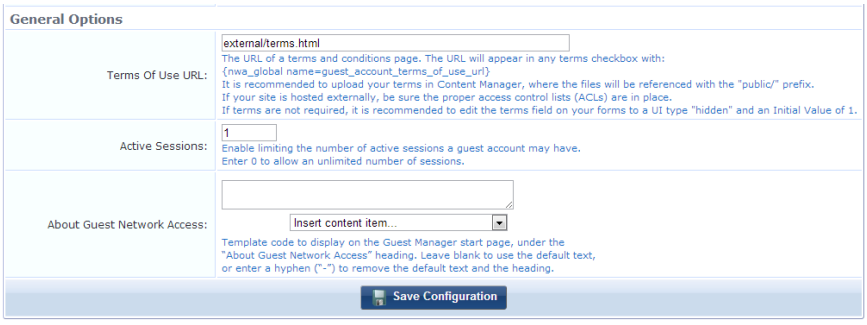


Figure 27 *Configure Guest Manager, General Options*



Field	Description
Terms of Use URL	(Optional) URL of a terms and conditions page provided to sponsors. You may upload an HTML file describing the terms and conditions of use by using the Content Manager (See "Managing Content: Private Files and Public Files" on page 189). If this file is called **terms.html**, then the Terms of Use URL should be **public/terms.html**. • If your site is hosted externally, be sure the proper access control lists (ACLs) are in place. • If terms are required, it is best practice to edit the terms field on you forms to a UI type "hidden" and an initial value of 1.
Active Sessions	(Optional) Default maximum number of active sessions that should be allowed for a guest account. This may be overridden by using the **simultaneous_use** field when creating or editing a guest account.
About Guest Network Access	(Optional) Allows the text displayed to operators on the Guest Manager start page to be customized, or removed (if a single hyphen "-" is entered).

About Fields, Forms, and Views

- A field is a named item of information. It may be used to display information to a user as static text, or it may be an interactive field where a user can select an option or enter text.
- A form is a group of fields that is used to collect information from an operator.
- A view is a grouping of fields that is used to display information to an operator.

Business Logic for Account Creation

When guest accounts are created, there are certain rules that must be followed in order to create a valid account. These rules apply to all accounts, regardless of how the account was created.

The business logic rules that control all guest account creation are described below. To see the display name corresponding to a field name, go to **Configuration > Pages > Fields** and scroll to the field name. Display names are shown in the Column Title column.

For information on customizing fields, see "Customizing Fields" on page 206.

Verification Properties

- **creator_accept_terms**: This field must be set to 1, indicating the creator has accepted the terms of use for creating the account. If the field is not present or is not set to 1, the visitor account is not created.
- **password2**: If this field is specified, its value must be equal to the "password" field, or else the visitor account is not created.
- **auto_update_account**: If this field is present and set to a non-zero value, account creation will not fail if the username already exists – any changes will be merged into the existing account using an update instead.

Basic User Properties

- **username**: This field is the name for the visitor account and may be provided directly. If this field is not specified, then use the email address from the **email** field, and if that is also not specified, then randomly generate a username (according to the value of the **random_username_method** and **random_username_length** fields).
- **modify_password**: This field controls password modification for the visitor account. It may be set to one of these values:
  - "reset" to randomly generate a new password according to the values of the **random_password_method** and **random_password_length** fields

- "password" to use the password specified in the **password** field
- "random_password" to use the password specified in the **random_password** field
- If blank or unset, the default password behavior is used, which is to use any available value from the **random_password** field and the **password** field, or assume that "reset" was specified otherwise.

- **password**: This field is the password for the visitor account and may be provided directly. If this field is not specified, then randomly generate a password (according to the values of the **random_password_method** and **random_password_length** fields).
- **role_id**: This field is the role to assign to the visitor account and may be specified directly. If this field is not specified, then determine the role ID from the **role_name** field. If no valid role ID is able to be determined, the visitor account is not created.
- **simultaneous_use**: This field determines the maximum number of concurrent sessions allowed for the visitor account. If this field is not specified, the default value from the GuestManager configuration is used.
- **random_username_method** – The method used to generate a random account username. If not specified, the default value from the GuestManager configuration is used.
- **random_username_length** – The length in characters of random account usernames. If not specified, the default value from the GuestManager configuration is used.
- **random_password_method** – The method used to generate a random account password. If not specified, the default value from the GuestManager configuration is used.
- **random_password_length** – The length in characters of random account passwords. If not specified, the default value from the GuestManager configuration is used. The default password length is six characters.

Visitor Account Activation Properties

- **enabled**: This field determines if the account is enabled or disabled; if not specified, the default is 1 (account is enabled).
- **do_schedule**, **modify_schedule_time**, **schedule_after** and **schedule_time**: These fields are used to determine the time at which the visitor account will be activated.
  - If **modify_schedule_time** is "none", then the account is disabled and has no activation time set.
  - If **modify_schedule_time** is "now", then the account is enabled and has no activation time set.
  - If **modify_schedule_time** is a value that specifies a relative time change, for example "+1h", then the visitor account's activation time is modified accordingly.
  - If **modify_schedule_time** is a value that specifies an absolute time, for example "2010-12-31 17:00", then the visitor account's activation time is set to that value.
  - If **modify_schedule_time** is "schedule_after" or "schedule_time", then the activation time is determined according to the **schedule_after** or **schedule_time** fields as explained below.
  - If **schedule_after** is set and not zero, then add that time in hours to the current time and use it as the activation time (setting **do_schedule** to 1); **enabled** will be set to zero.
  - Otherwise, if **schedule_after** is zero, negative or unset, and **schedule_time** has been specified, use that activation time (set **do_schedule** to 1 and **enabled** to 0). If the **schedule_time** specified is in the past, set **do_schedule** to 0 and **enabled** to 1.
  - Otherwise, if **schedule_time** if not specified, then the visitor account has no activation time and **do_schedule** will default to zero.

Visitor Account Expiration Properties

- **do_expire**, **modify_expire_time**, **expire_after** and **expire_time**: These fields are used to determine the time at which the visitor account will expire.
  - If **modify_expire_time** is "none", then the account has no expiration time set.
  - If **modify_expire_time** is "now", then the account is disabled and has no expiration time set.
  - If **modify_expire_time** is a value that specifies a relative time change, for example "+1h", then the visitor account's expiration time is modified accordingly.
  - If **modify_expire_time** is a value that specifies an absolute time, for example "2010-12-31 17:00", then the visitor account's expiration time is set to that value.
  - If **modify_expire_time** is "expire_after" or "expire_time", then the expiration time is determined according to the **expire_after** or **expire_time** fields as explained below.
  - If **expire_after** is set and not zero and the account will be activated immediately, then add the value in hours to the current time to determine the expiration time.
  - If **expire_after** is set and not zero and account activation is set for a future time (schedule_time) instead of the current time, then the expiration time is calculated relative to the activation time instead of the current time.
  - Otherwise, if **expire_after** is zero, negative or unset, and **expire_time** has been specified, use that expiration time. If the **expire_time** specified is in the past, set **do_expire** to 0 and ignore the specified expiration time.
  - If the **expire_timezone** field is used in conjunction with **expire_time** and a time zone and date are selected, the date calculation is adjusted relative to the time zone.
  - Otherwise, if **expire_time** is not specified, then the **expire_time** is not set and **do_expire** will always be set to zero.
  - If the **do_expire** field is not included in the form, the default expiration action is 4, Logout and Delete. This can be configured on the Customize Guest Manager page.
- **expire_postlogin**: This field determines the amount of time after the initial login for which the visitor account will remain valid. If this field is not specified, the default value is 0 (account lifetime not set).
- **expire_usage**: This field determines the total amount of login time permitted for the visitor account. If this field is not specified, the default value is 0 (account usage is unlimited).

Other Properties

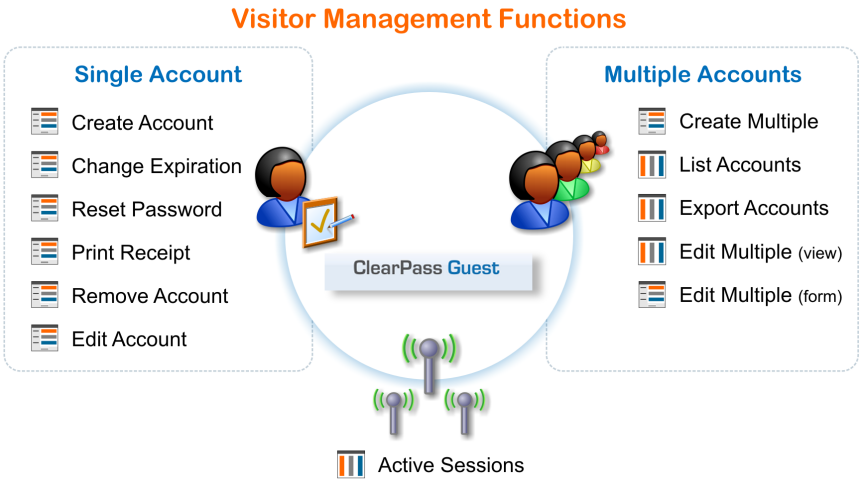
- All other properties specified at creation time are stored with the visitor account (for example, **email**, **visitor_name**, **visitor_company**, **visitor_phone**, **sponsor_name** as well as any custom fields that have been defined)

Standard Fields

See "Field, Form, and View Reference" on page 504 for a listing of the standard fields shipped with ClearPass Guest.

Standard Forms and Views

The figure below shows the standard forms and views in the application.



The table below lists all the forms and views used for visitor management.

Table 33: *Visitor Management Forms and Views*

Name	Type	Visitor Management Function	Editable?
change_expiration	Form	Change Expiration	Yes
create_multi	Form	Create Multiple	Yes
create_user	Form	Create Account	Yes
guest_edit	Form	Edit Account	Yes
guest_export	View	Export Accounts	Yes
guest_multi	View	Edit Multiple Accounts	Yes
guest_multi_form	Form	Edit Multiple Accounts	Yes
guest_receipt	Form	Print Receipt	No
guest_register	Form	Guest Self-Registration	Yes
guest_register_receipt	Form	Guest Self-Registration Receipt	Yes
guest_sessions	View	Active Sessions	Yes
guest_users	View	List Accounts	Yes
remove_account	Form	Remove Account	No
reset_password	Form	Reset Password	No

These forms are accessed directly:

- **create_multi** form – multiple account creation
- **create_user** form – sponsored account creation
- **guest_register** form – guest self-registration form

These forms are accessed through the action row of the **guest_users** view:

- **change_expiration** form – change expiration time for a single account
- **guest_multi_form** form – editing multiple accounts
- **guest_edit** form – editing single account
- **reset_password** form – reset password for a single account

These forms are the standard self-registration forms:

- **guest_register** form – self-registration form
- **guest_register_receipt** form – self-registration receipt

These standard views are defined in Guest Manager:

- **guest_export** view – view used when exporting guest account information
- **guest_multi** view – displays a list of guest accounts optimized for working with multiple accounts
- **guest_sessions** view – displays a list of current or historical sessions (See "Active Sessions Management" on page 33.)
- **guest_users** view – displays a list of guest accounts optimized for working with individual accounts

Configuring Access Code Logins

This section explains how to configure Guest Manager to create multiple accounts that have the ability to log in with only the username. We will refer to this as an **Access Code**.

Customize Random Username and Passwords

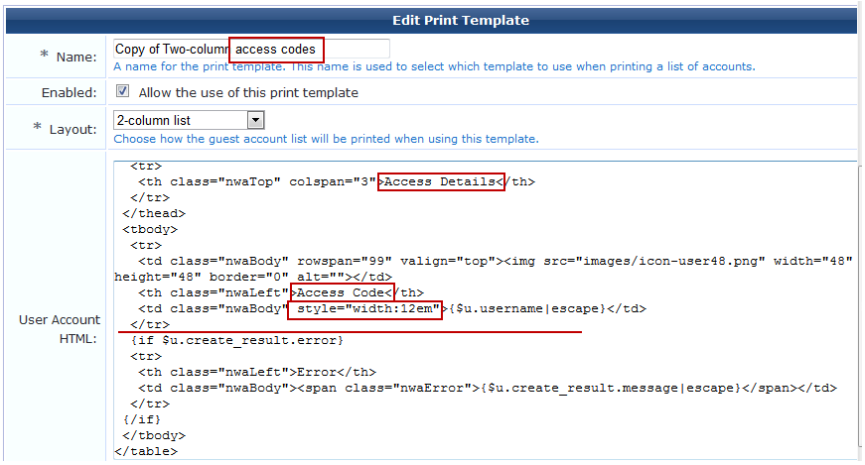
In this example we will set the random usernames and passwords to be a mix of letters and digits.

1. Go to **Configuration > Guest Manager**. The **Configure Guest Manager** form opens.
2. In the **Username Type** field, select **Random Letters and digits**. The generator matching the complexity will also include a mix of upper and lower case letters.
3. In the **Username Length field**, select **6** characters.
4. Configure other settings. See "Default Settings for Account Creation" on page 192 for a description. Click **Save Configuration** to save your changes.

Create the Print Template

By default, the print templates include username, password, and expiration, as well as other options. For the purpose of access codes, we only want the username presented. This access code login example bases the print template off an existing scratch card template.

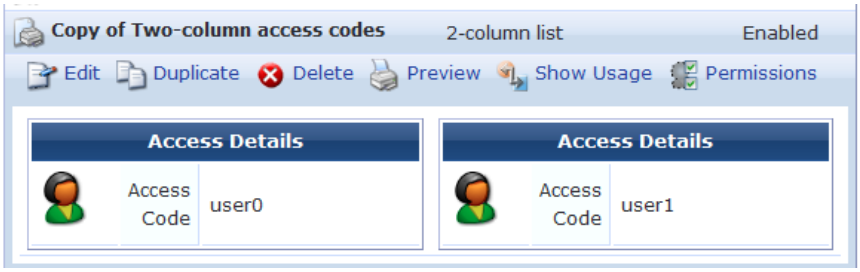
1. Go to **Configuration > Receipts > Templates.**
2. Select **Two-column scratch cards**, and then click **Duplicate**.
3. Select the **Copy of Two-column scratch cards** template, and then click **Edit**.
4. In the **Name** field, substitute **Access Code** for **Username** as shown below.



5. Remove extraneous data from the **User Account HTML** field. Example text is shown below.

```
<table {$table_class_content}>
 <thead>
<tr>
   <th class="nwaTop" colspan="3">Access Details</th>
  </tr>
 </thead>
 <tbody>
  <tr>
   <td class="nwaBody" rowspan="99" valign="top"><img src="images/icon-user48.png"
width="48" height="48" border="0" alt=""></td>
   <th class="nwaLeft">Access Code</th>
<td class="nwaBody" style="width:12em">{$u.username|htmlspecialchars}</td>
  </tr>
 {if $u.create_result.error}
  <tr>
   <th class="nwaLeft">Error</th>
<td class="nwaBody"><span class="nwaError">{$u.create_result.message}</span></td>
  </tr>
 {/if}
 </tbody>
</table>
```

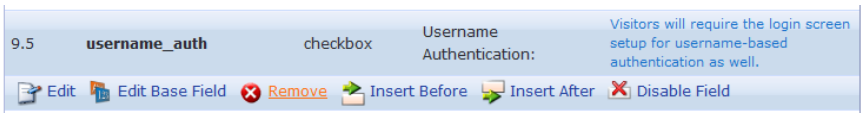
6. Click **Save Changes** to save your settings.
7. To preview the new template, select the template in the Guest Manager Print Templates list, then click **Preview**. The template is displayed. The template created by the example text given above would look like this:



Customize the Guest Accounts Form

Next, modify the **Guest Accounts** form to add a flag that to allows access-code based authentication.

1. Go to **Configuration > Pages > Forms & Views.**
2. In the **Customize Forms & Views** list, select **create_multi** and then click **Edit Fields**.
3. In the **Edit Fields** list, look for a field named **username_auth**. If the field exists but is not bolded and enabled, select it and click **Enable Field**.



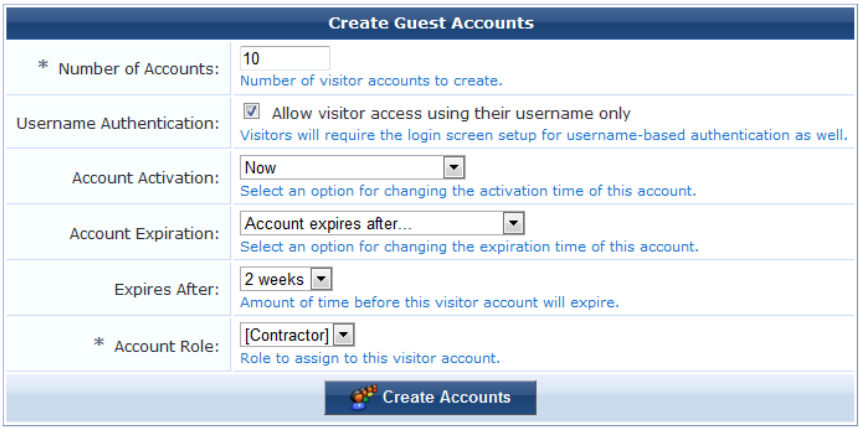
   If the field does *not* exist, select any field in the list (for example, **num_accounts**) and select **Insert After**. Click the **Field Name** drop-down list, select **username_auth** and allow the page to refresh. The defaults should be acceptable, but feel free to customize the label or description.

4. Click **Save Changes** to save your settings. After the field is enabled or inserted, you should see it bolded in the list of fields.

Create the Access Code Guest Accounts

After the account fields have been customized, you can create new accounts.

1. Go to **Guest > Create Multiple.**
2. In the **Create Multiple Guest Accounts** form, select the check box in the **Username Authentication** row that was added in the procedure above (see "Customize the Guest Accounts Form " on page 204). If you do not select this check box and if the username is entered on the login screen, the authentication will be denied. The example shown below will create 10 accounts that will expire in two weeks, or fours hours after the visitors first log in, whichever comes first.



3. Click **Create Accounts** to display the **Finished Creating Guest Accounts** page. If you create a large number of accounts, they are created at one time but might not all be displayed at the same time. (This will not affect the printing action in the following step.)

4. Confirm that the accounts settings are as you expected with respect to letters and digits in the username and password, expiration, and role.
5. Click the **Open print window using template** drop-down list and select the new print template you created using this procedure See "Create the Print Template" on page 202 for a description of this procedure. A new window or tab will open with the cards.

Pages

The Pages area of the user interface lets you customize the pages that are available to guests and sponsors. To work with pages configuration, go to **Configuration > Pages > Start Here**.

This section includes:

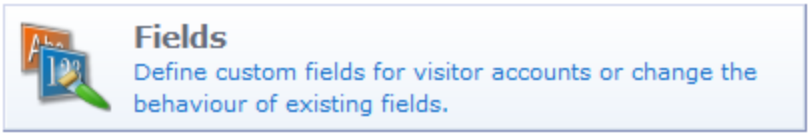
Customizing Fields

Custom fields are fields that you define yourself to cater for areas of interest to your organization. You are able to define custom fields for your guest accounts as well as edit the existing fields.

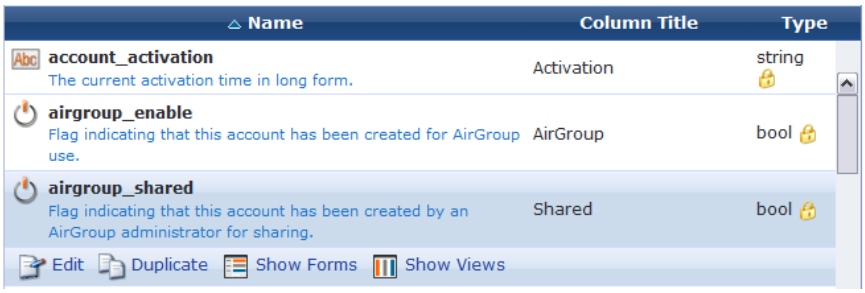
In addition you can delete and duplicate fields. For your convenience you are also able to list any forms or views that use a particular field.

NOTE

Fields that have a lock symbol cannot be deleted.



A complete list of fields is displayed on the **Configuration > Pages > Fields** form.

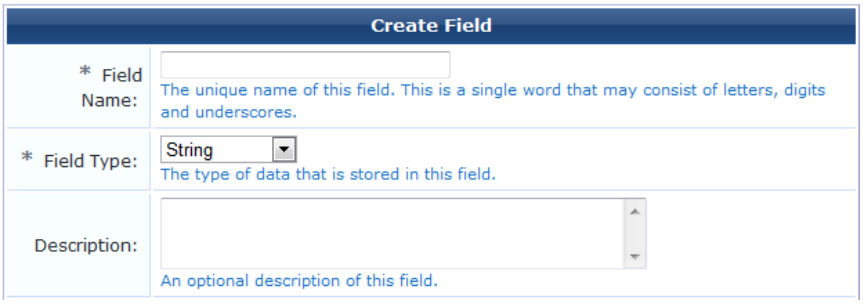


To display only the fields that have been created, click the **Custom Fields Only** link in the bottom row of the list view. To return to displaying all fields, click the **All Fields** link.

For information on properties of some specific fields, see "Business Logic for Account Creation" on page 198.

Creating a Custom Field

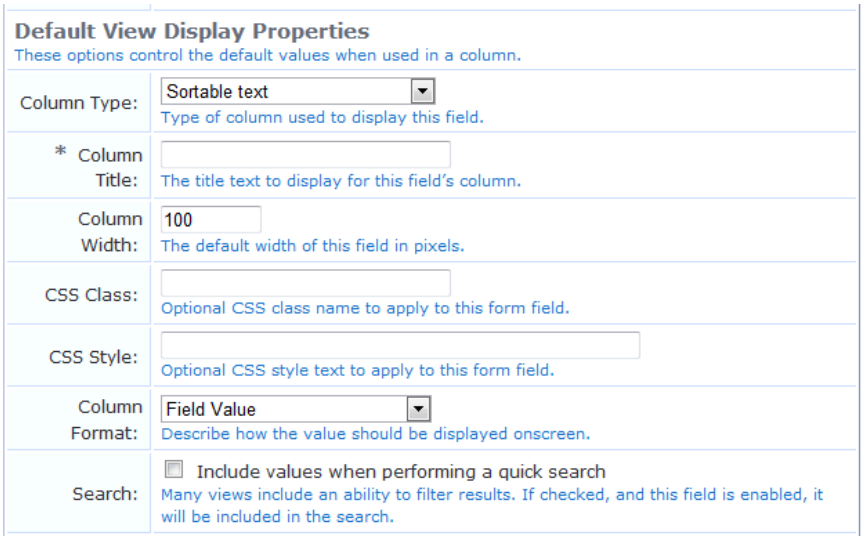
To create a custom field, go to **Configuration > Pages > Fields** and click the **Create** tab at the top of the form or the **Create a new field** link in the upper-right corner. The Create Field form is displayed.



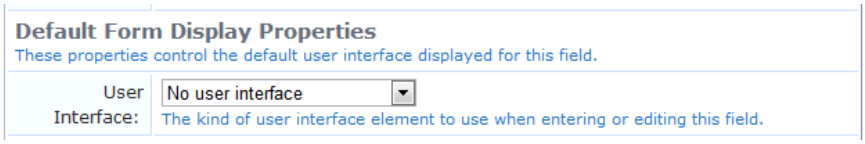
The **Field Name** is not permitted to have spaces but you can use underscores.

The **Field Type** can be one of **String**, **Integer**, **Boolean** or **No data type**. The No data type field would be used as a label, or a submit button.

Enter a description in the **Description** field. You can enter multiple-line descriptions which result in separate lines displayed on the form.

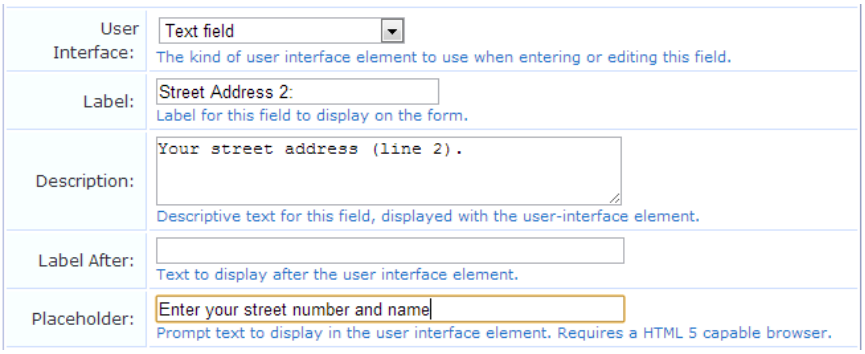


You can specify the default properties to use when adding this field to a view. See "View Field Editor" on page 234 for a description of the view display fields, including the Column Type and Column Format fields.

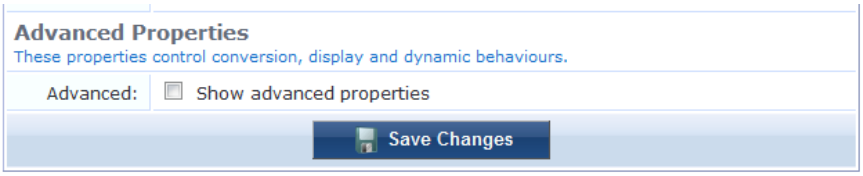


You can specify the default properties to use when adding the field to a form. See "View Field Editor" on page 234 for a list of the available user interface types.

If you select **Text** or **Password** as the **User Interface** type, the **Placeholder** row is added to this form. You may use this field to enter a temporary value, such as a hint for how to complete the field, that can later be overridden by the user completing the form that uses this field.



You can specify the default validation rules that should be applied to this field when it is added to a form. See "Form Validation Properties" on page 227 in this chapter for further information about form validation properties.



Select the **Show advanced properties** check box to reveal additional properties related to conversion, display and dynamic form behavior. See "View Field Editor" on page 234 in this chapter for more information about advanced properties.

Click the **Save Changes** button to complete the creation of a new field. The new field is added at the top of the field list. To change the position of the new field, you can re-sort the list or you can reload the page.

Duplicating a Field

To duplicate a field, go to **Configuration > Pages > Fields**, click the field to be duplicated, and then click its **Duplicate** link. The field is copied and a number appended to the end of the field name—for example, if you were to duplicate the **card_code** field, the duplicated field would be **card_code_1**. To rename the field, click **Edit**.

Editing a Field

You are able to alter the properties of the field by making changes to the Field Name, Field Type, or Description. To edit a field, go to **Configuration > Pages > Fields**, click the field to be edited, and then click its **Edit** link.

Click **Save Changes** to commit your changes to the field.

Deleting a Field

Fields that do not have a lock symbol can be deleted. A field that is currently in use on a form or view may not be deleted.

To delete a field, go to **Configuration > Pages > Fields**, click the field to be deleted, and then click its **Delete** link. You will be asked to confirm the deletion. A message indicates when the deletion is completed.

Displaying Forms that Use a Field

To see a list of the forms that use a field, go to **Configuration > Pages > Fields**, click the field, and then click its **Show Forms** link.

The list displays the forms that use the selected field. It also allows you to edit the form's fields by clicking the **Edit Fields** link. Click the **Use** link to open the form that uses that field.

If the field is used on multiple forms, you can select which form you would like to view.

Displaying Views that Use a Field

To see a list of views that use a field, go to **Configuration > Pages > Fields**, click the field, and then click its **Show Views**.

The list displays the views that use the selected field. It also allows you to edit the view's fields by clicking on the **Edit Fields** link. Click the **Use** link to display the view.

If the field is used on multiple views, you are able to select which view you would like to see.

Customizing AirGroup Registration Forms

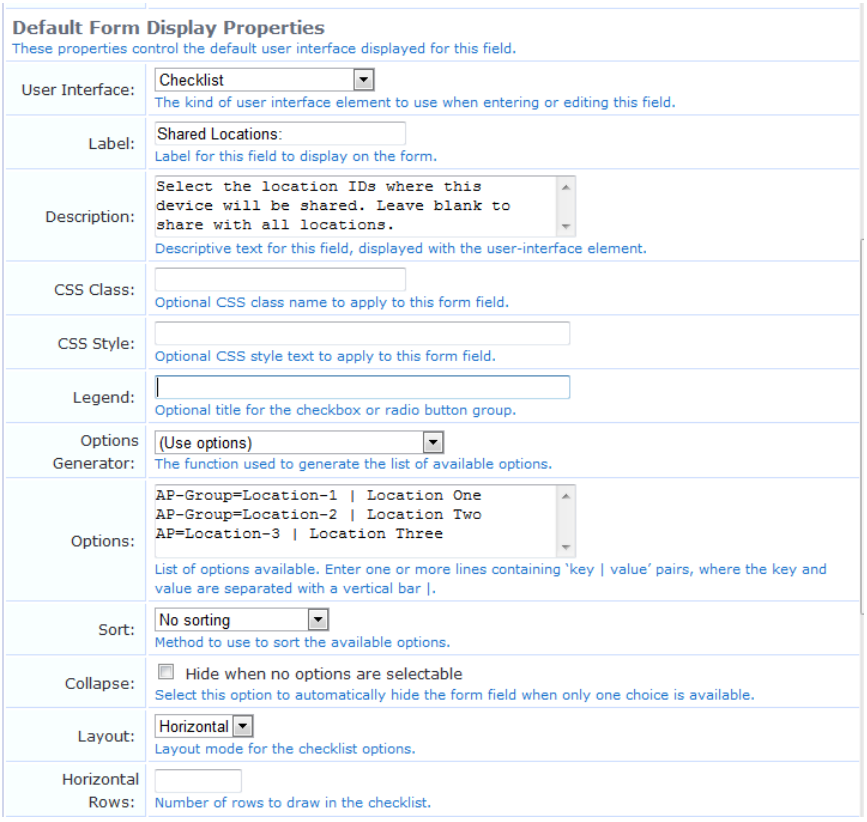
AirGroup allows users to register their personal mobile devices on the local network and define a group of friends or associates who are allowed to share them. If AirGroup Services is enabled, AirGroup administrators can provision their organization's shared devices and manage access, and AirGroup operators can register and provision a limited number of their own personal devices for sharing. For complete AirGroup deployment information, refer to the AirGroup sections in the *ArubaOS User Guide* and the ClearPass Policy Manager documentation.

On the device registration forms for AirGroup administrators and operators, the default **Shared Locations** and **Shared Roles** fields are text boxes where the user enters the information. These fields can be configured as selection options populated with existing locations or roles.

Configuring the Shared Locations and Shared Role Fields

To configure a predefined list of shared locations or shared roles:

1. Go to **Configuration > Pages > Fields** and click the **airgroup_shared_location** or **airgroup_shared_role** row. The form expands to include the **Edit**, **Duplicate**, **Show Forms**, and **Show Views** links.
2. Click the **Edit** link. The Define Custom Field form opens. Scroll to the **Default Form Display Properties** section.



3. In the **User Interface** drop-down list, select **Checklist**.
4. In the **Description** text box, delete the existing text, then enter **Select the location IDs where this device will be shared. Leave blank to share with all locations**.
5. Delete any text from the **CSS Class** and the **CSS Style** fields.
6. In the **Options Generator** drop-down list, select **(Use options)**.
7. In the **Options** text box, enter a list of values to use as the checklist options that presented to the user.

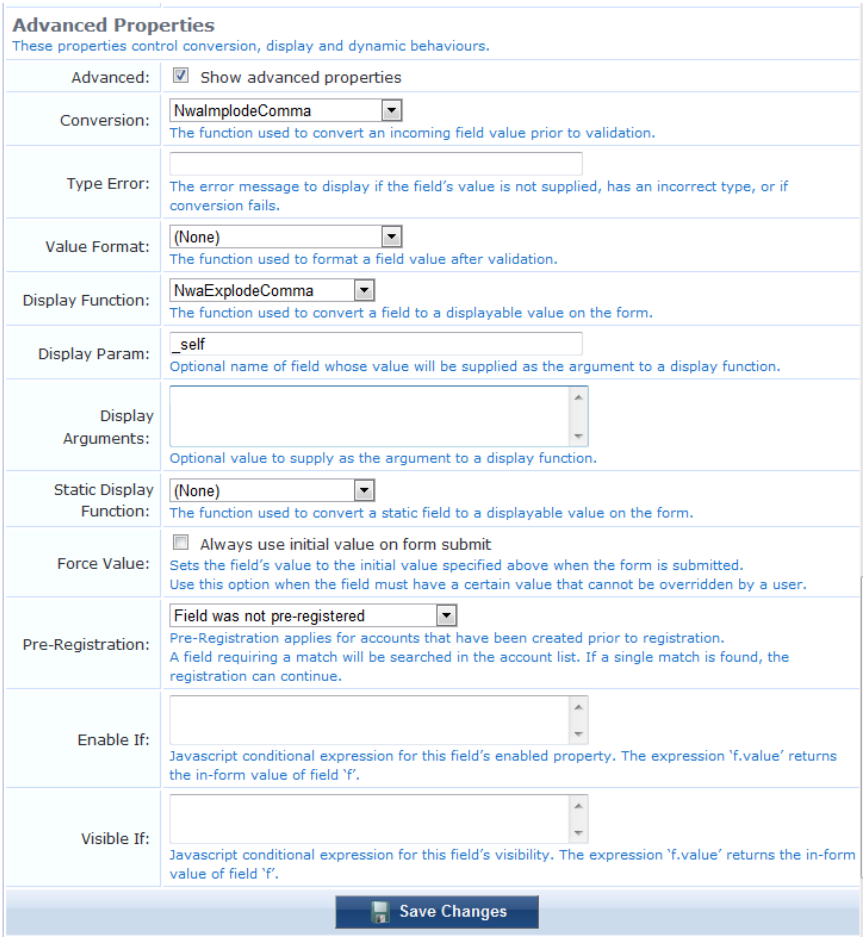
   The values you enter in the Options text box control both the values stored in the shared_location field in the database as well as the text displayed to the user in the checklist. Use the following format:

   ```
   tag1=value1 | Option 1

   tag2=value2 | Option 2
   ```

   ...where the tag=value pair **tag1=value1** represents the value stored in the shared_location field in the database, the pipe character (**|**) is a separator, and **Option 1** represents the text displayed in the checklist.
8. (Optional) To sort the locations by key or value, choose an option from the **Sort** drop-down list.
9. (Optional) To control the layout of the checklist on the form, first use the **Layout** drop-down list to select either **Vertical** or **Horizontal**. The name of the next field changes to correspond to your choice in this field. Enter the appropriate number in the **Vertical Rows** or **Horizontal Rows** field. If the Layout field is left blank, the default layout of a single list of checklist options is displayed.

To ensure the values are stored correctly as a comma-separated list:

1. Scroll to the **Advanced Properties** section of the form and mark the check box in the **Advanced** row. The form expands to include the advanced options.



2. In the **Conversion** drop-down list, select **NwaImplodeComma**. The form expands to include the Type Error row.
3. In the **Display Function** drop-down list, select **NwaExplodeComma**. The form expands to include the Display Param and Display Arguments rows.
4. In the **Display Param** text field, enter the value **_self**. Be sure to include the leading underscore character.
5. Click **Save Changes**.

Example:

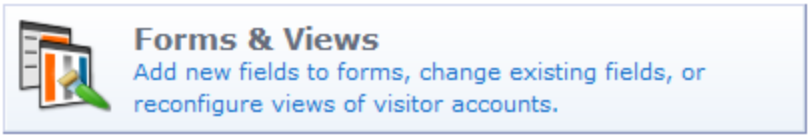
If the layout is set to vertical and the following options are specified:

```
AP-Group=Location-1 | Location One

AP-Group=Location-2 | Location Two

AP-Location-3 | Location Three
```

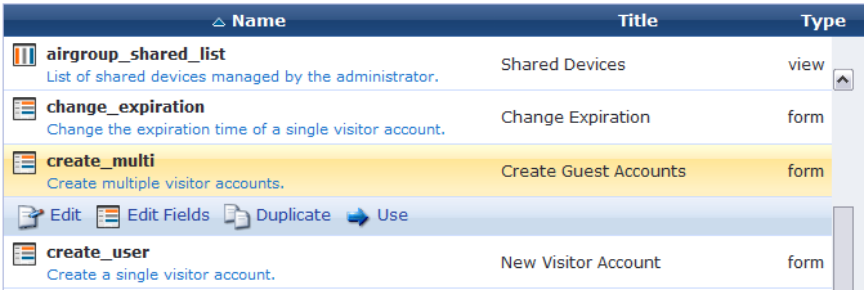
The user interface appears as follows:

Customizing Forms and Views

You can view a list of ClearPass Guest's forms and views. From this list view, you can change the layout of forms or views, add new fields to a form or view, or alter the behavior of an existing field.



To view or customize forms and views, go to **Configuration > Pages > Forms & Views**. The Customize Forms and Views page opens.

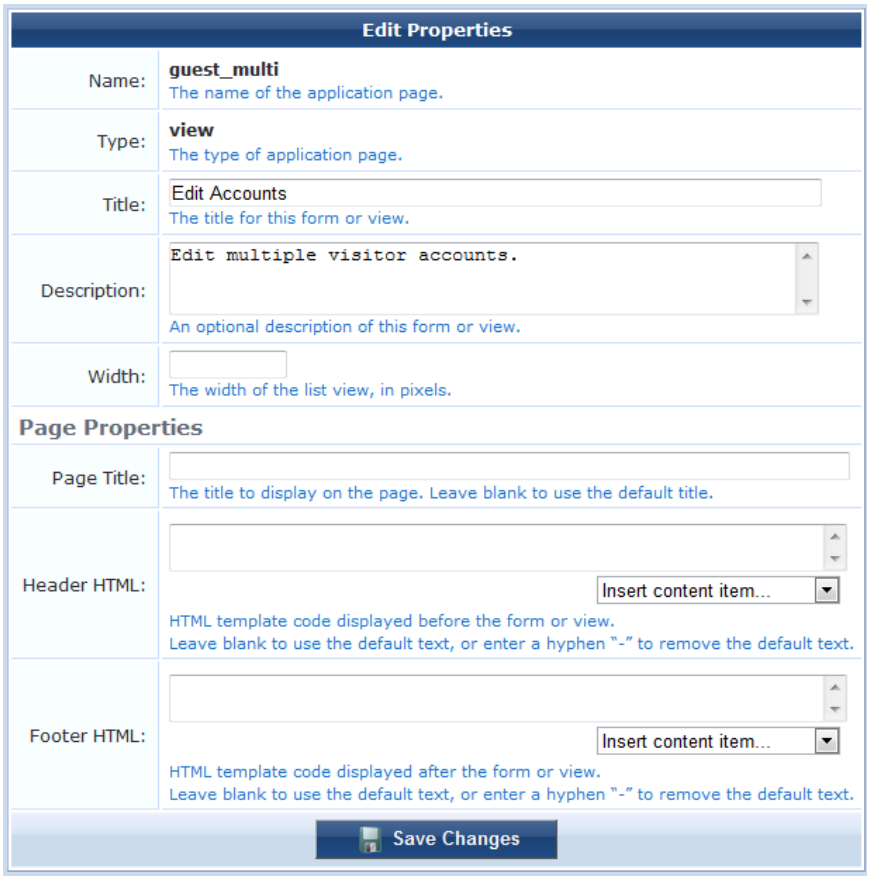


You can open a form or view directly from the Forms and Views page. To open form or view to use it, go to **Configuration > Pages > Forms & Views**, click the form's or view's row in the list, and then click its **Use** link. The form or view opens in a separate tab, and the Forms and Views tab stays open so you can work in both.

An asterisk (*****) shown next to a form or view indicates that the form or view has been modified from the defaults. You can click the **Reset to Defaults** link to remove your modifications and restore the original form. Resetting a form or view is a destructive operation and cannot be undone. You will be prompted to confirm the form or view reset before it proceeds.

Editing Forms and Views

You can change the general properties of a form or view such as its title and description. To edit the form or view, go to **Configuration > Pages > Forms & Views**, click the form's or view's row in the list, and then click its **Edit** link. The row expands to include the Edit Properties form.



The **Width** field is only displayed for views. It specifies the total width of the list view in pixels. If blank, a default value is used.

You can customize the page title, header HTML, and footer HTML for many forms and views (for example, Create Guest Account, Edit Guest Accounts, and others). When these options are available, the **Page Properties** area is included on the Edit Properties form.

Duplicating Forms and Views

You can make a copy of a form or view to use as a template in order to provide different forms and views to different operator profiles. See "Role-Based Access Control for Multiple Operator Profiles" on page 456 for a description. This enables you to provide different views of the underlying visitor accounts in the database depending on the operator's profile.

To make a copy of the form or view, go to **Configuration > Pages > Forms & Views**, click the form's or view's row in the list, and then click its **Duplicate** link. The copy is added to the Forms and Views list.

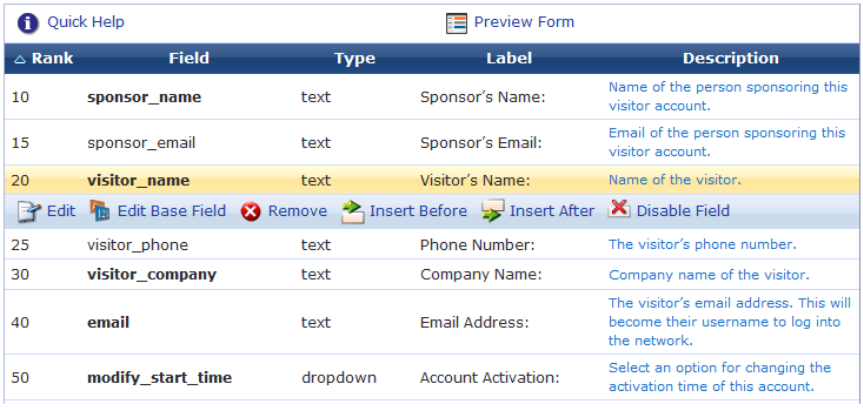
The name of the duplicated form or view is the same as the original with a number appended. This name cannot be changed. Use the **Title** and **Description** properties of the duplicated item to describe the intended purpose for the form or view.

Click the **Show Usage** link for a duplicated form or view to see the operator profiles that are referencing it.

Click the **Delete** link for a duplicated form or view to remove the copy. A duplicated item cannot be removed if it is referenced by an operator login account or an operator profile.

Editing Forms

To add a new field to a form, reorder the fields, or make changes to an existing field, go to **Configuration > Pages > Forms & Views**, click the form's row in the Customize Forms & Views list, and then click the **Edit Fields** link. The **Customize Form Fields** view opens.



Field	Description
Rank	Specifies the relative ordering of the fields when displaying the form. This list always shows the fields in order by rank.
Field	The name of the field in the database.
Type	Controls what kind of user interface element is used to interact with the user.
Label	The label for this field as it is displayed on the form.
Description	The description for this field as it is displayed on the form.

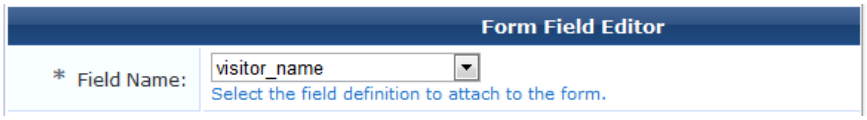
To work with a form field, click its row in the list. The row expands to include configuration options:

Field	Description
Edit	Make changes to an existing field. The Form Field Editor opens. Any changes made to the field using this editor will apply only to this field on this form.
Edit Base Field	Make changes to an existing field's definition. Any changes made to the field using this editor will apply to all forms that are using this field (except where the form field has already been modified to be different from the underlying field definition).
Remove	Removes the field from the form. To add a field back to the form after it has been removed, use the **Insert Before** or **Insert After** option and select it from the **Field Name** drop-down list in the Form Field Editor that opens.
Insert Before	Add a new field to the form. Clicking one of these links opens a blank form field editor and automatically sets the rank number of the new field.
Insert After	
Disable Field	Disables this field on the form. To enable it on the form again, click **Enable Field**.
Preview Form	Opens an example of the form so you can see what it looks like. This preview form can be submitted to test the field validation rules you have defined. If all fields are able to be validated, the form submit is successful and a summary of the values submitted is displayed. This allows you to verify any data conversion and formatting rules you have set up.

Form Field Editor

The form field editor is used to control both the data gathering aspects and user interface characteristics of a field.

To open the Form Field Editor, go to **Configuration > Pages > Forms & Views**, click a form or view, click its **Edit Fields** link, click the field, and then click the field's **Edit** link.



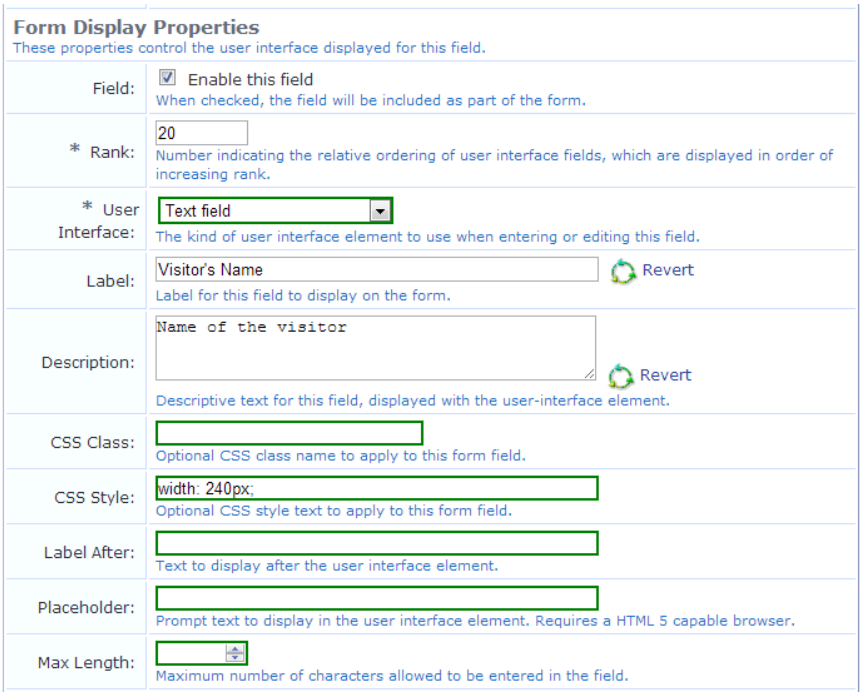
Each field can only appear once on a form. The **Field Name** selects which underlying field is being represented on the form.

The remainder of the form field editor is split into three sections:

- Form Display Properties
- Form Validation Properties
- Advanced Properties

See "Form Display Properties" on page 215 for detailed descriptions of these form sections.

Form Display Properties



On the Form Field Editor (see "Form Field Editor " on page 215), the form display properties control the user interface that this field will have. Different options are available in this section, depending on the selection you make in the User Interface drop-down list.

Fields with a green border use their base field's value. If you enter a different value to override the base field's value, a **Revert** option lets you return to the original value.

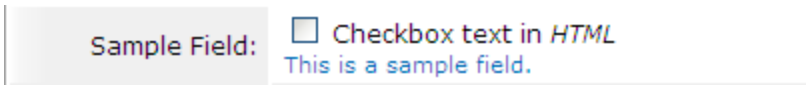
The available user interface elements are listed below, together with an example of each.

- **(Use default)** – The default user interface type defined for the field will be used.

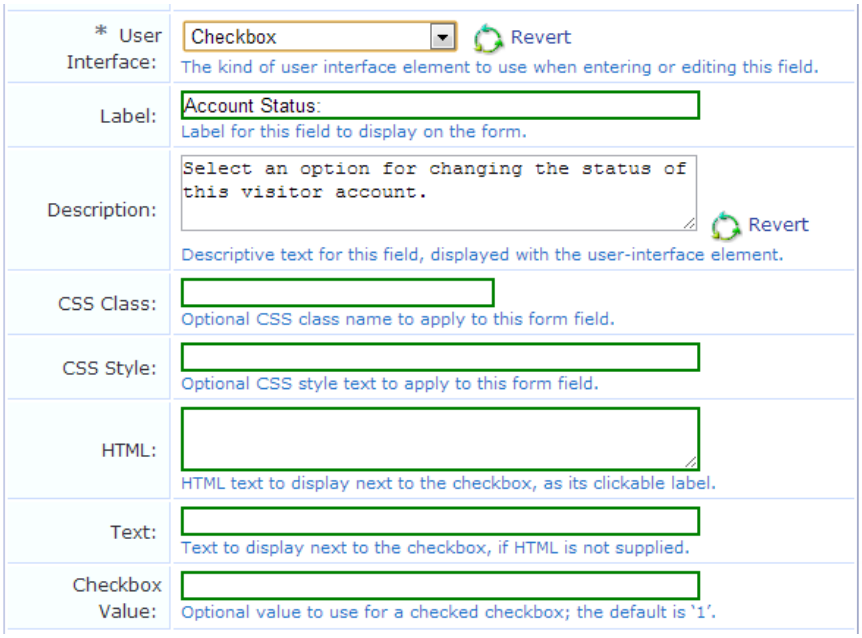
- **No user interface** – The field does not have a user interface specified. Using this value will cause a diagnostic message to be displayed ("Form element is missing the 'ui' element") when using the form.
- **CAPTCHA security code** – A distorted image of several characters will be displayed to the user, as shown below:

A new image may be generated, or the image may be played as an audio sample for visually impaired users. When using the recommended validator for this field (NwaCaptchaIsValid), the security code must be matched or the form submit will fail with an error.

- **Check box** – A check box is displayed for the field, as shown below:



The check box label can be specified using HTML. If the check box is selected, the field is submitted with its value set to the check box value (default and recommended value 1). If the check box is not selected, the field is not submitted with the form.

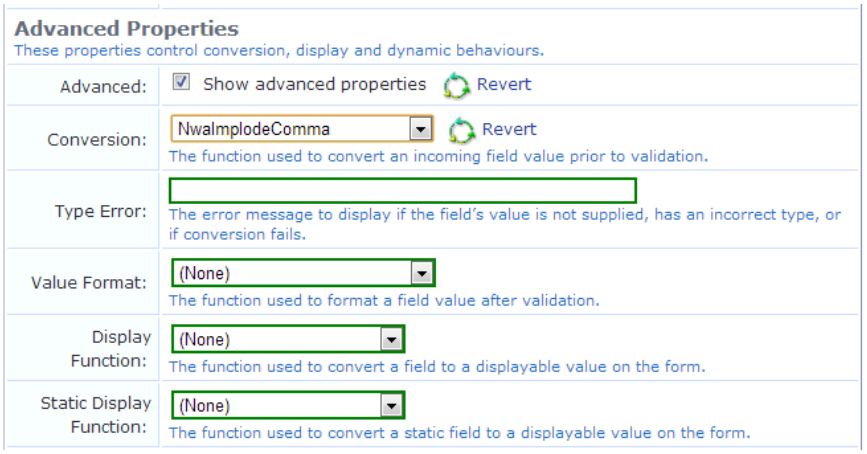


- **Checklist** – A list of check boxes is displayed, as shown below:

The text displayed for each check box is the value from the options list. Zero or more check boxes may be selected. This user interface type submits an array of values containing the option key values of each selected check box. Because an array value may not be stored directly in a custom field, you should use the conversion and value formatting facilities to convert the array value to and from a string when using this user interface type.

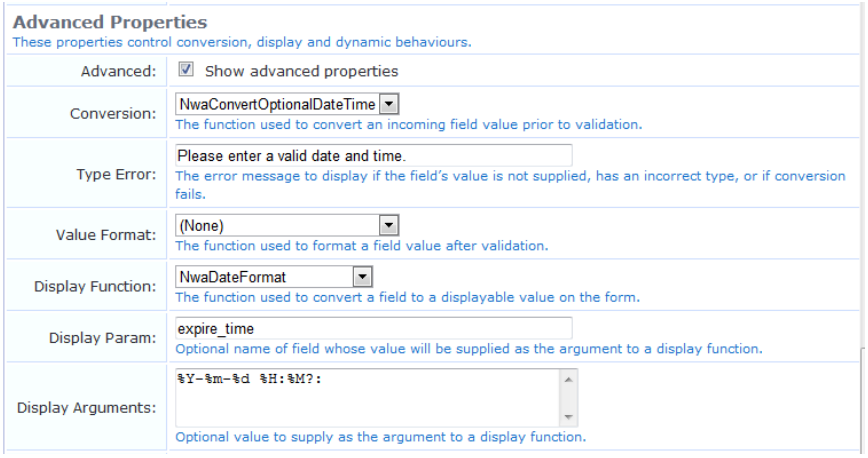
To store a comma-separated list of the selected values, enable the **Advanced** options, select "NwaImplodeComma" for **Conversion**, select "NwaExplodeComma" for **Display Function** and enter the field's name for **Display Param**.

The "Vertical" and "Horizontal" layout styles control whether the check boxes are organized in top-to-bottom or left-to-right order. The default is "Vertical" if not specified. When using these options, you may also specify the desired number of columns or rows to adjust the layout appropriately.



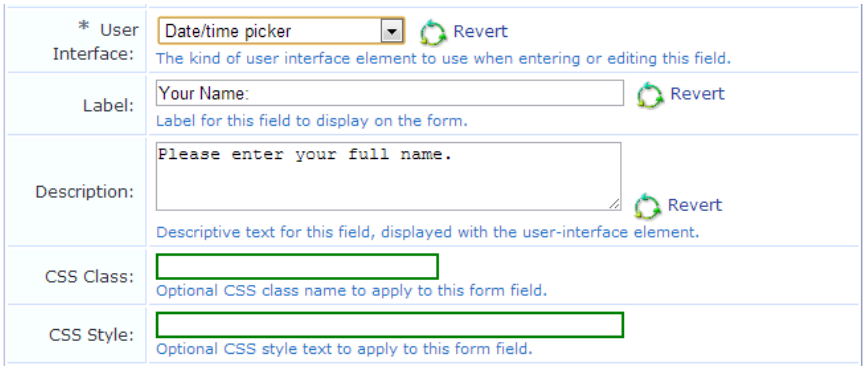
For example, suppose the first two check boxes are selected (in this example, with keys "one" and "two"). The incoming value for the field will be an array containing 2 elements, which can be written as `array ("one", "two")`. The NwaImplodeComma conversion is applied, which converts the array value into the string value "one,two", which is then used as the value for the field. Finally, when the form is displayed and the value needs to be converted back from a string, the NwaExplodeComma display function is applied, which turns the "one,two" string value into an array value `array("one", "two")`, which is used by the checklist to mark the first two items as selected.

- **Date/time picker** – A text field is displayed with an attached button that displays a calendar and time chooser. A date may be typed directly into the text field, or selected using the calendar:

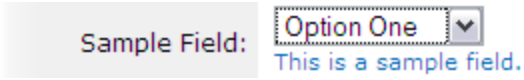


The text value typed is submitted with the form. If using a date/time picker, you should validate the field value to ensure it is a date.

Certain guest account fields, such as **expire_time** and **schedule_time**, require a date/time value to be provided as a UNIX time value. In this case, the conversion and display formatting options should be used to convert a human-readable date and time to the equivalent UNIX time and vice versa.



- **Drop-down list** – The field is displayed allowing a single choice from a drop-down list.



The text displayed for each option is the value from the options list. When the form is submitted, the key of the selected value becomes the value of the field.

If the "Hide when no options are selectable" check box is selected, and there is only a single option in the drop-down list, it will be displayed as a static text item rather than as a list with only a single item in it.

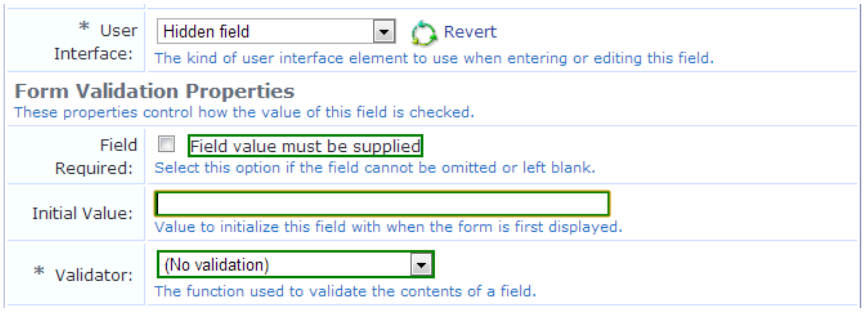
- **File upload** – Displays a file selection text field and dialog box (the exact appearance differs from browser to browser).

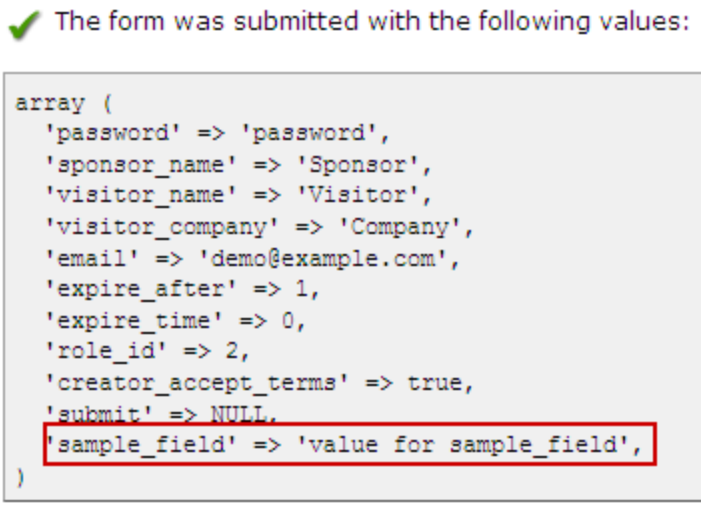
  File uploads cannot be stored in a custom field. This user interface type requires special form implementation support and is not recommended for use in custom fields.

- **Hidden field** – If Hidden Field is selected in the User Interface drop-down list, the field is not displayed to the user, but is submitted with the form. This option is often used to force a specific value such as a user's role or an expiration date. However, it is possible for someone to use browser tools to modify the initial

value when the form is submitted. If the value should be forced, use the **Force Value** setting under **Advanced Properties** to ensure the value cannot be overridden. For more information, see "Advanced Form Field Properties" on page 230.

To set the value to submit for this field, use the **Initial Value** option in the form field editor.



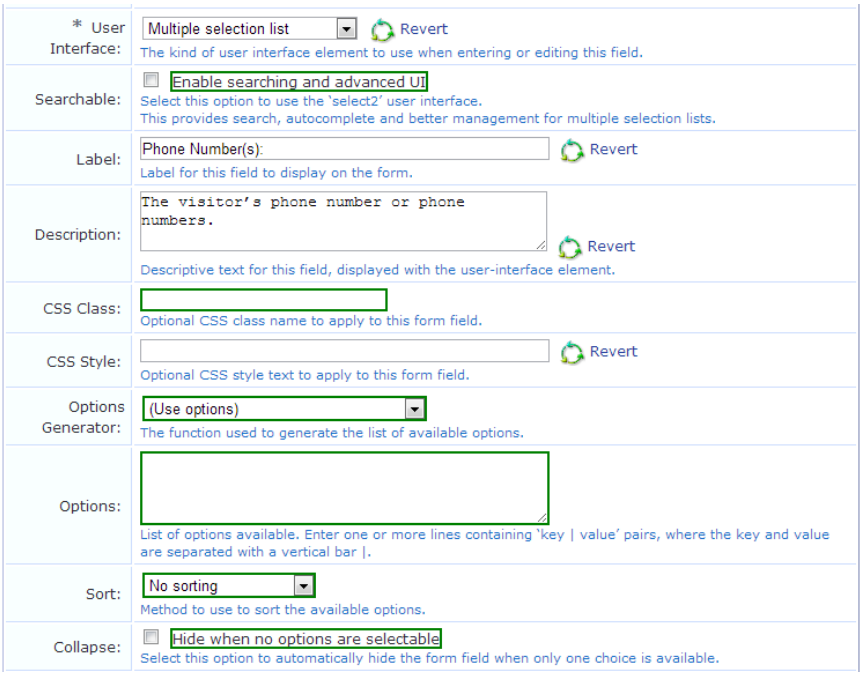


- **Multiple Selection List** -- A list of selectable options will be displayed.

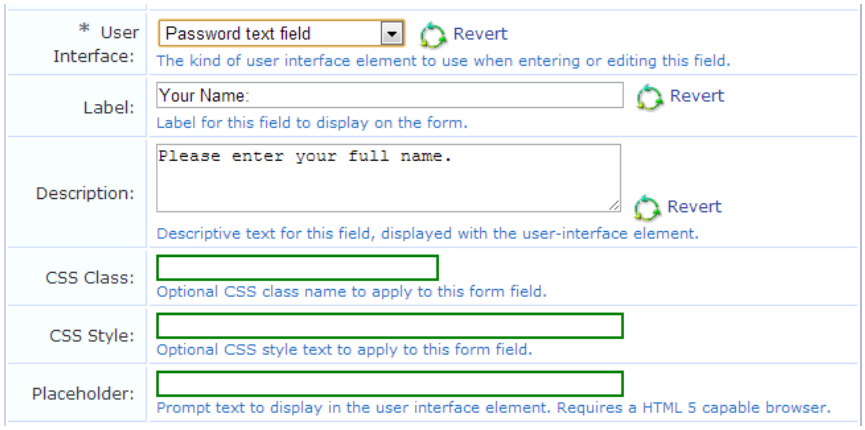
  The text displayed for each check box or radio button is the value from the options list. Zero or more check boxes may be selected. This user interface type submits an array of values containing the option key values of each selected check box. Because an array value may not be stored directly in a custom field, you should use the conversion and value formatting facilities to convert the array value to and from a string when using this user interface type.

  To store a comma-separated list of the selected values, enable the **Advanced** options, select "NwaImplodeComma" for **Conversion**, select "NwaExplodeComma" for **Display Function** and enter the field's name for **Display Param**.

  The "Vertical" and "Horizontal" layout styles control whether the check boxes are organized in top-to-bottom or left-to-right order. The default is "Vertical" if not specified. When using these options, you may also specify the desired number of columns or rows to adjust the layout appropriately.



- **Password text field** – The field is displayed as a text field, with input from the user obscured. The text typed in this field is submitted as the value for the field.

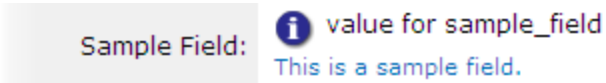


- **Radio buttons** – The field is displayed as a group of radio buttons, allowing one to be selected, as shown below:

The text displayed for each option is the value from the options list. When the form is submitted, the key of the selected value becomes the value of the field.

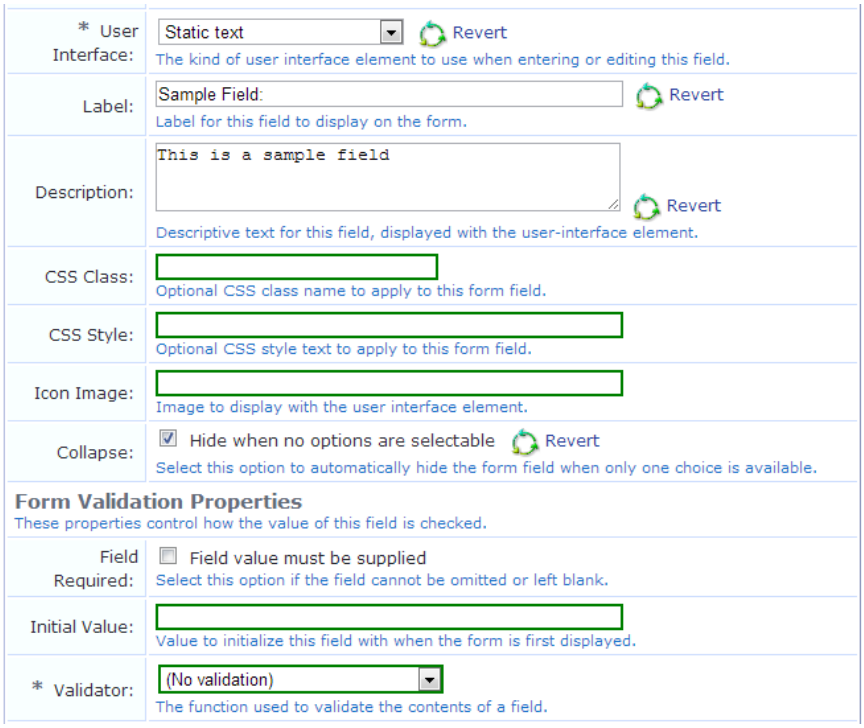
The "Vertical" and "Horizontal" layout styles control whether the radio buttons are organized in top-to-bottom or left-to-right order. The default is "Vertical" if not specified.

- **Static text** – The field's value is displayed as a non-editable text string. An icon image may optionally be displayed before the field's value. A hidden element is also included for the field, thereby including the field's value when the form is submitted.



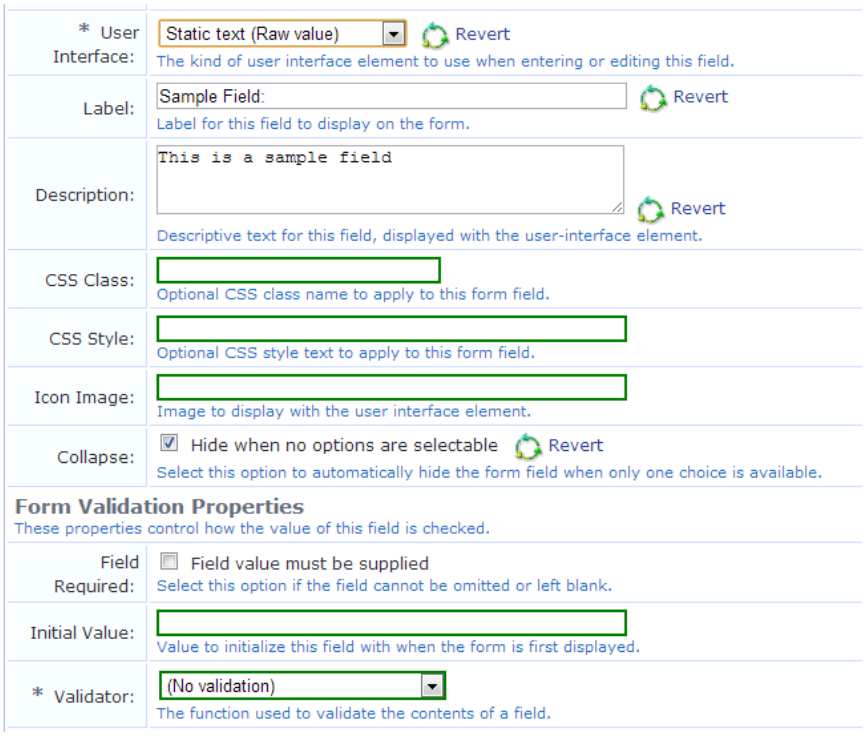
If the **Hide when no options are selectable** check box is selected in the **Collapse** row, the field will be hidden if its value is blank.

To set the value of this field, use the **Initial Value** option in the **Form Validation Properties** area of the form field editor.



- **Static text (Raw value)** – The field's value is displayed as a non-editable text string. HTML characters in the value are not escaped, which allows you to display HTML markup such as images, links and font formatting.

Use caution when using this type of user interface element, particularly if the field's value is collected from visitors. Allowing HTML from untrusted sources is a potential security risk.

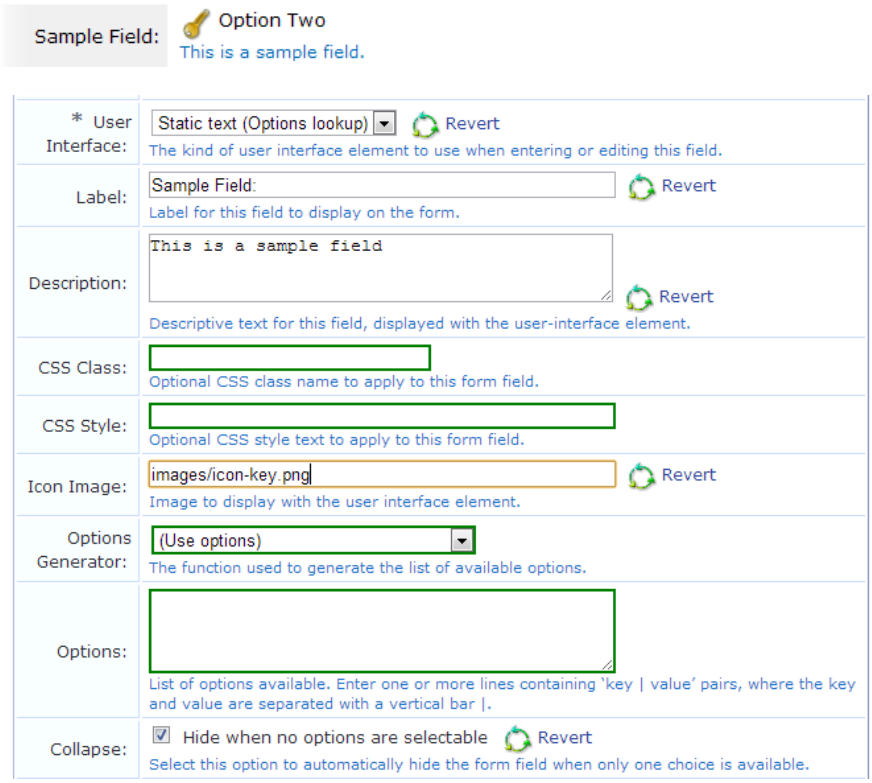


If the **Hide when no options are selectable** check box is selected in the **Collapse** row, the field will be hidden if its value is blank.

To set the value of this field, use the **Initial Value** option in the **Form Validation Properties** area of the form field editor.

- **Static text (Options lookup)** – The value of the field is assumed to be one of the keys from the field's option list. The value displayed is the corresponding value for the key, as a non-editable text string.

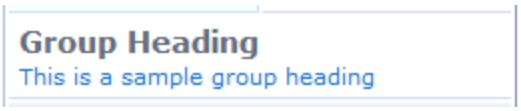
  An icon image may optionally be displayed before the field's value. A hidden element is also included for the field, thereby including the field's value when the form is submitted.



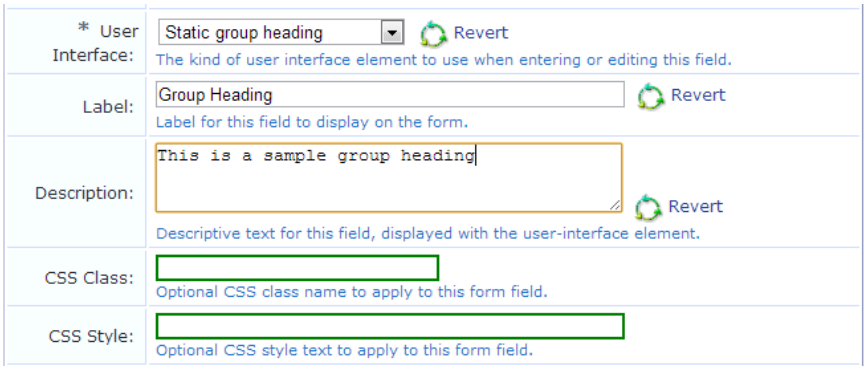
If the **Hide when no options are selectable** check box is selected in the **Collapse** row, the field will be hidden if its value is blank.

To set the value of this field, use the **Initial Value** option in the **Form Validation Properties** area of the form field editor.

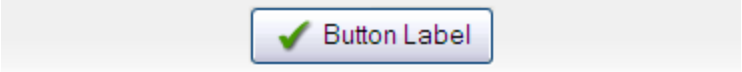
- **Static group heading** – The label and description of the field is used to display a group heading on the form, as shown below. The field's value is not used, and the field is not submitted with the form.

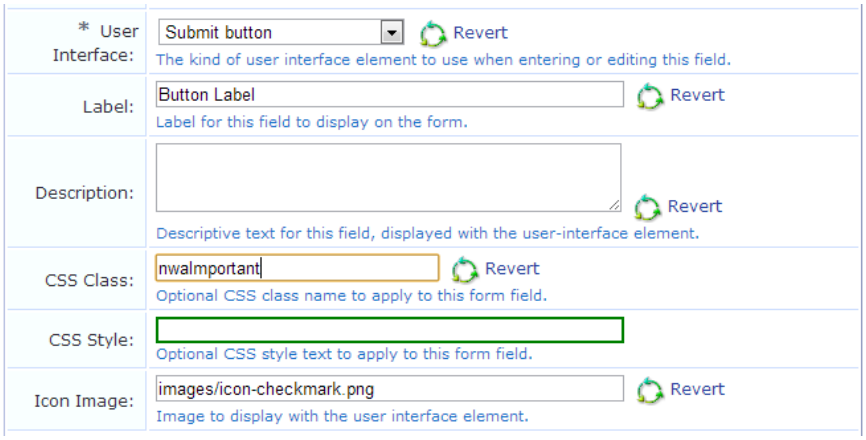


When using this user interface element, it is recommended that you use the "nwaImportant" CSS class to visually distinguish the group heading's title.



- **Submit button** – The field is displayed as a clickable form submit button, with the label of the field as the label of the button.

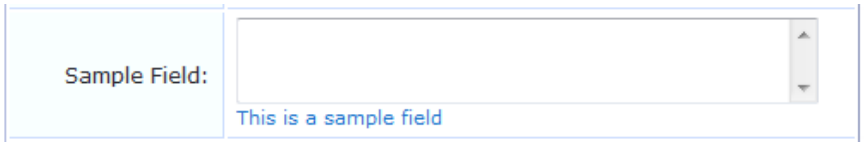


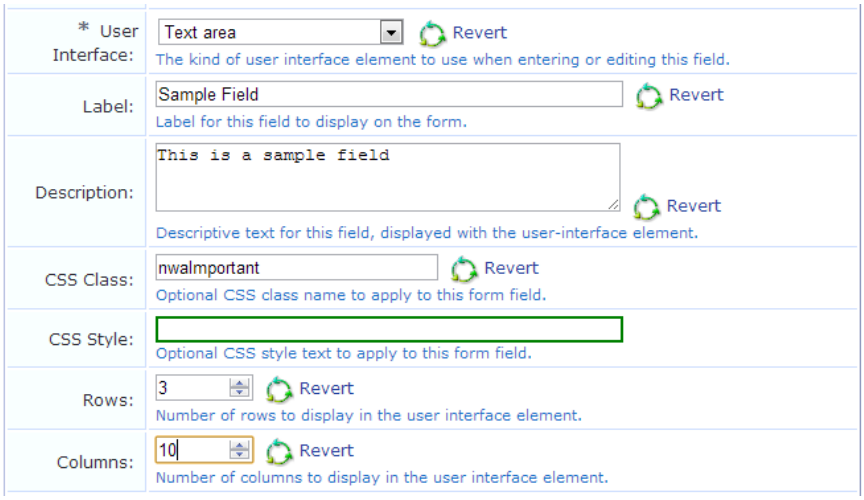


The description is not used. The field's value is ignored, and will be set to NULL when the form is submitted. To place an image on the button, an icon may be specified.

To match the existing user interface conventions, you should ensure that the submit button has the highest rank number and is displayed at the bottom of the form.

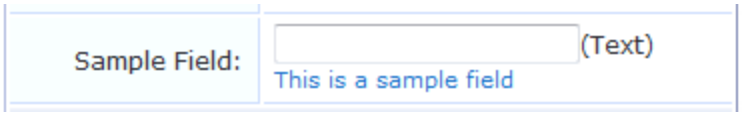
- **Text area** – The field is displayed as a multiple-line text box. The text typed in this box is submitted as the value for the field.



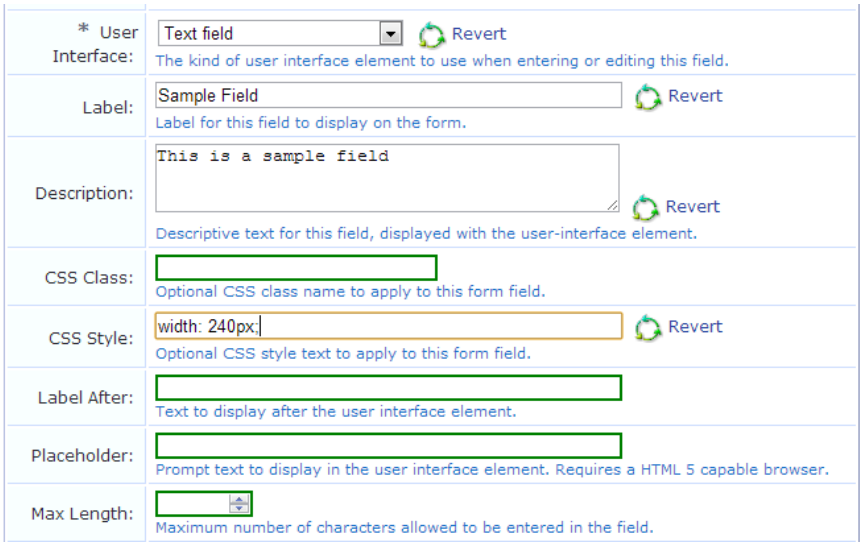


It is recommended that you specify the desired minimum dimensions of the text area, either with the **Rows** and **Columns** options, or by specifying a width in the **CSS Style** option (for example, "width: 460px; height: 100px;" specifies a 460 x 100 pixel minimum area).

- **Text field** – The field is displayed as a single-line text box. The text typed in this box is submitted as the value for the field.



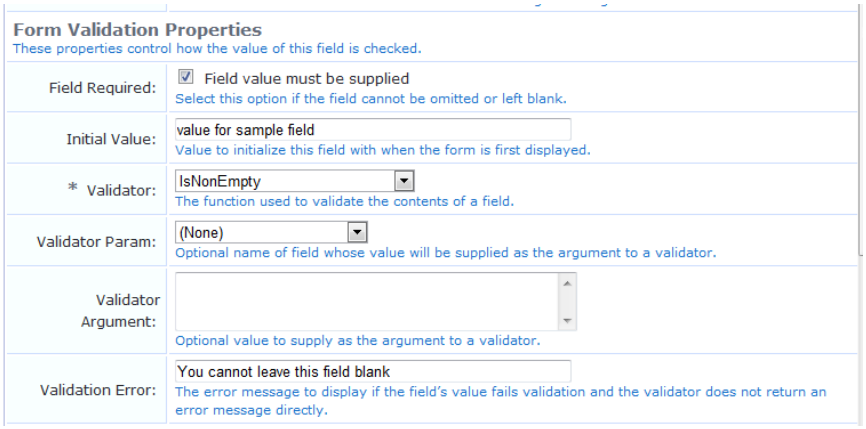
A short text label may be placed after the text box using the **Label After** option. This field allows you to specify HTML (using Smarty template syntax) instead of plain text to be displayed after the input field.



If you select **Text** or **Password** as the **User Interface** type, the Placeholder row is added to this form. You may use this field to enter a temporary value, such as a hint for how to complete the field, that can later be overridden by the user completing the form that uses this field.

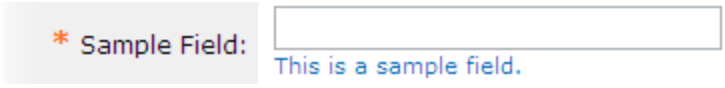
Form Validation Properties

On the Form Field Editor (see "Form Field Editor " on page 215), the form validation properties control the validation of data entered into a form. By specifying appropriate validation rules, you can detect when users attempt to enter incorrect data and require them to correct their mistake.



The initial value for a form field may be specified. Use this option when a field value has a sensible default. The initial value should be expressed in the same way as the field's value. In particular, for drop-down list and radio button selections, the initial value should be the key of the desired default option. Likewise, for date/time fields that have a display function set, the initial value should be a value that can be passed to the display function.

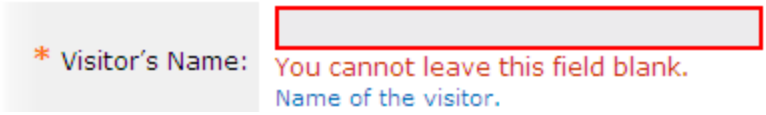
Select the **Field value must be supplied** check box to mark the field as a required field. Required fields are marked with an asterisk, as shown below:



An optional field may be left blank. In this case, the field is not validated as there is no value for the field. However, any value that is supplied for an optional field is subject to validation checks.

All values supplied for a required field are always validated, including blank values.

Validation errors are displayed to the user by highlighting the field(s) that are in error and displaying the validation error message with the field:



All fields must be successfully validated before any form processing can take place. This ensures that the form processing always has user input that is known to be valid.

To validate a specific field, choose a validator from the drop-down list. See "Form Field Validation Functions" on page 516 for a description of the built-in validators.

The Validator Param is the name of a field on the form, the value of which should be passed to the validator as its argument. This could be used to validate one field based on the contents of another. However, in most deployments this does not need to be set.

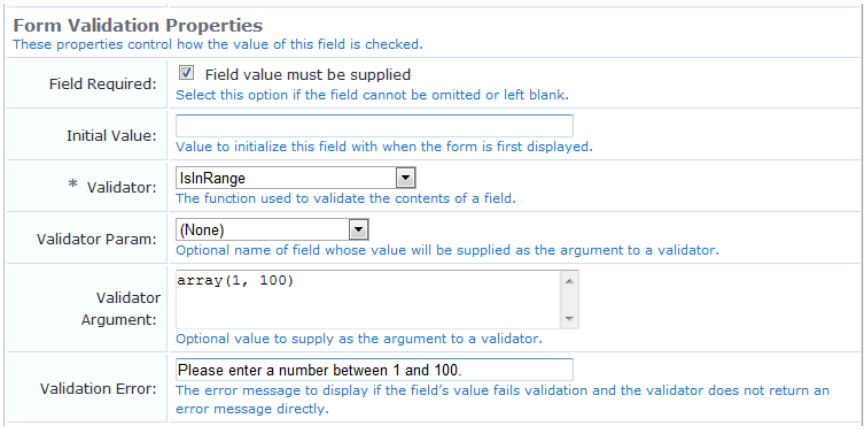
Set the Validator Param to its default value, "(Use argument)", to provide a fixed value as the argument to the validator.

The Validator Argument is used to provide further instructions to the selected validator. Not all validators require an argument; a validator such as **IsValidEmail** is entirely self-contained and will ignore the Validator

Argument. Validators such as **IsEqual**, **IsInRange** and **IsRegexMatch** use the argument to perform validation.

Examples of Form field Validation

Example 1 – To create a form field that requires an integer value between 1 and 100 (inclusive) to be provided, use the following settings in the form field editor (see "Form Field Editor " on page 215):



NOTE

The form field will contain an integer value, so you should set the field's type to Integer when you create it.

Use the PHP syntax **array(1, 100)** to specify the minimum and maximum values for the **IsInRange** validator. After saving changes on the form, this value will be internally converted to the equivalent code:

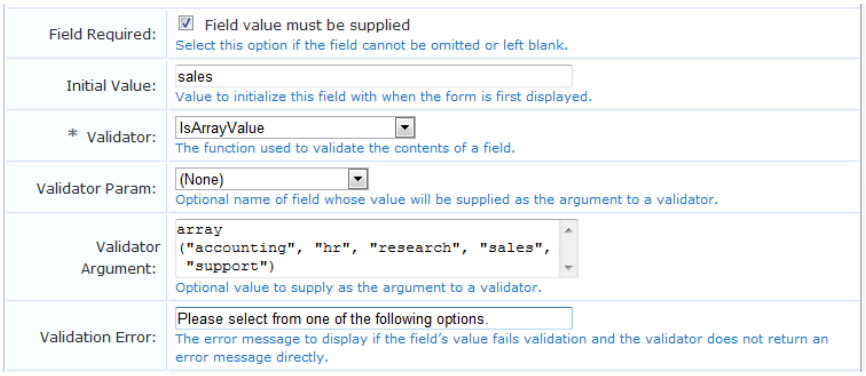
```
array (
  0 => 1,
  1 => 100,
)
```

With these validator settings, users that enter an invalid value will now receive a validation error message:

Furthermore, be aware that blank values, or non-numeric values, will result in a different error message:

The reason for this is that in this case, the validation has failed due to a type error – the field is specified to have an integer type, and a blank or non-numeric value cannot be converted to an integer. To set the error message to display in this case, use the Type Error option under the Advanced Properties.

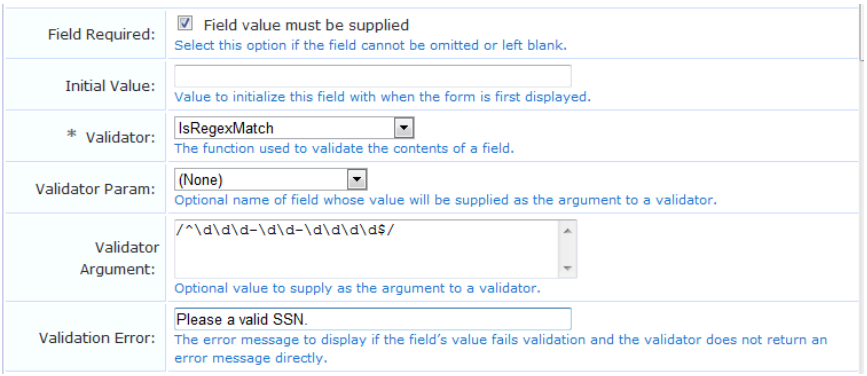
Example 2 – To create a form field that accepts one of a small number of string values, use the following settings in the form field editor:



This example could be used for a string field named **visitor_department**. Because the values are known in advance, a drop-down list is the most suitable user interface. An initial value for the form field, as shown above, could be used if most visitors are in fact there to visit the sales team.

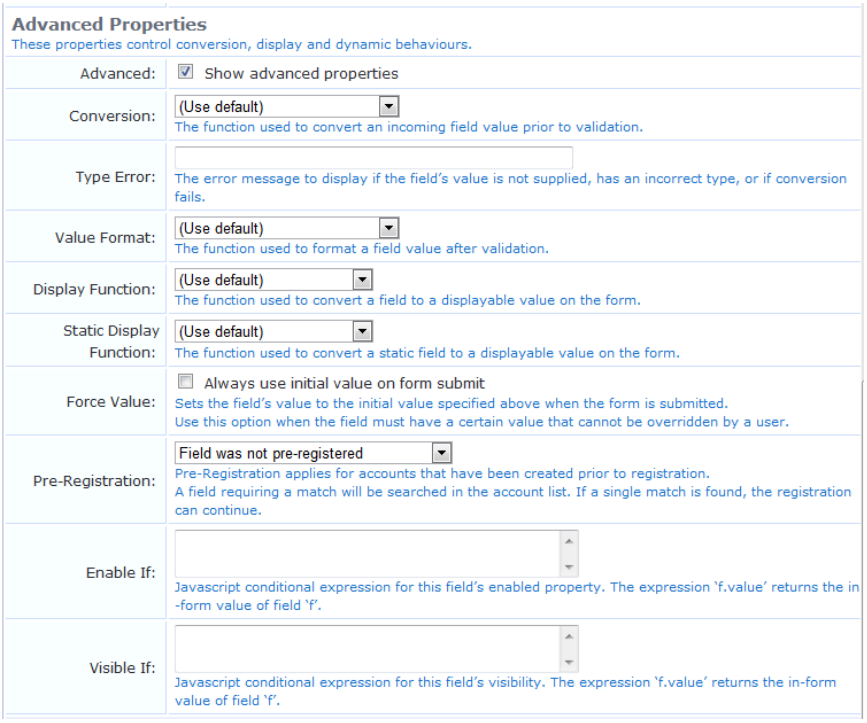
To match against a list of options used for a drop-down list or set of radio buttons, you can use the IsInOptionsList validator.

Example 3 – To create a form field that validates U.S. social security numbers using a regular expression, use the following settings in the form field editor:



Notice that the regular expression used here includes beginning and ending delimiters (in this case the **/** character), and ensures that the whole string matches by the start-of-string marker **^** and the end-of-string marker **$**. The construct **\d** is used to match a single digit. Many equivalent regular expressions could be written to perform this validation task. See "Regular Expressions" on page 526 for more information about regular expressions.

Advanced Form Field Properties



On the Form Field Editor (see "Form Field Editor " on page 215), the Advanced Properties control certain optional form processing behaviors. You can also specify JavaScript expressions to build dynamic forms similar to those found elsewhere in the application.

On the Customize Form Fields page, select the **Show advanced properties** check box to display the advanced properties in the form field editor.

The **Conversion**, **Value Format**, and **Display Function** options can be used to enable certain form processing behavior. See "Form Field Conversion Functions" on page 521 and "Form Field Display Formatting Functions" on page 522.

In the **Force Value** row, use the **Always use initial value on form submit** check box to prevent attempts to override the value set for a field. When this option is set, if a user modifies the field's value, it reverts to the specified initial value when the form is submitted. A similar effect can be achieved by using appropriate validation rules, but selecting this check box is easier. Using this option is recommended for hidden fields, particularly those related to security, such as role ID or expiration date.

For pre-registered guest accounts, some fields may be completed during pre-registration and some fields may be left for the guest to complete at registration. You can use the **Pre-Registration** field to specify whether the guest's entry must match the preliminary value provided for a field during pre-registration.

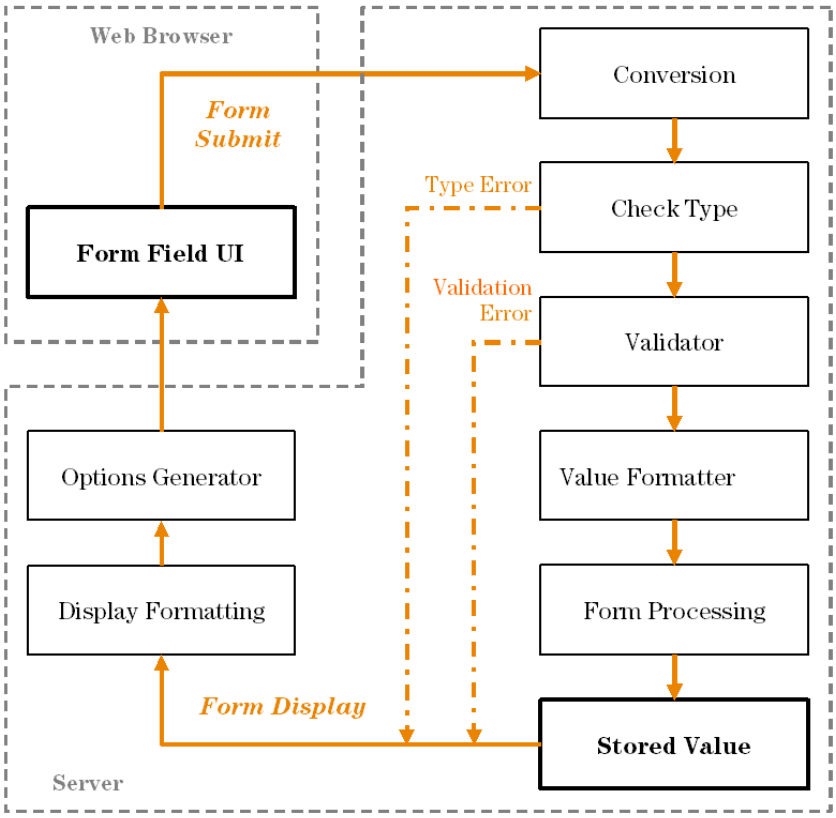
- If a value was not provided for a field when the account was created, choose **Field was not pre-registered** from the drop-down list.
- If a preliminary value was provided for the field but the guest's entered value does not need to match case or all characters, choose **Guest must supply field** from the drop-down list. For example, a bulk account creation might use random usernames, and each visitor's entry in that field would not need to match exactly.
- If a preliminary value was provided for the field and the guest's entered value must match case or all characters, choose **Guest must supply field (match case)** from the drop-down list. If the guest's entry does not successfully match the preregistered value, the account registration will not succeed. For example,

if a list of email addresses and phone numbers was imported for pre-registration, each visitor's entries for those fields at registration must match.

Form Field Validation Processing Sequence

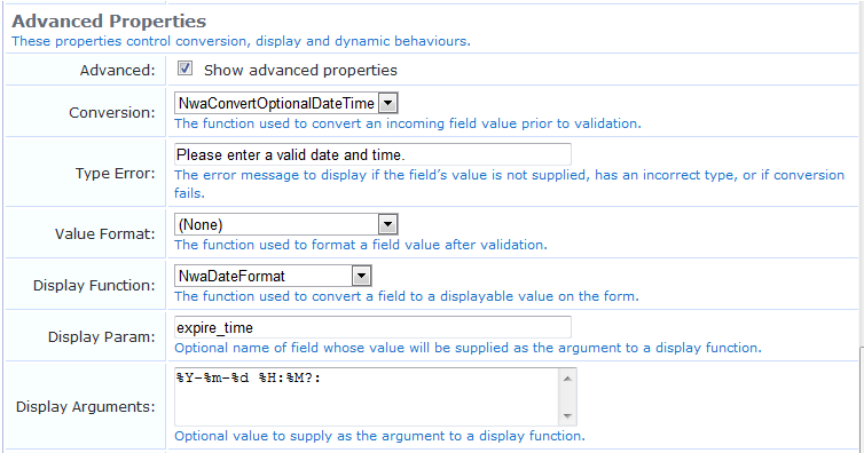
The following figure shows the interaction between the user interface displayed on a form and the various conversion and display options available on the Form Field Editor (see "Form Field Editor " on page 215) .

Figure 28 *Steps involved in form field processing*



The Conversion step should be used when the type of data displayed in the user interface is different from the type required when storing the field.

For example, consider a form field displayed as a date/time picker, such as the **expire_time** field used to specify an account expiration time on the **create_user** form. The user interface is displayed as a text field, but the value that is required for the form processing is a UNIX time (integer value).

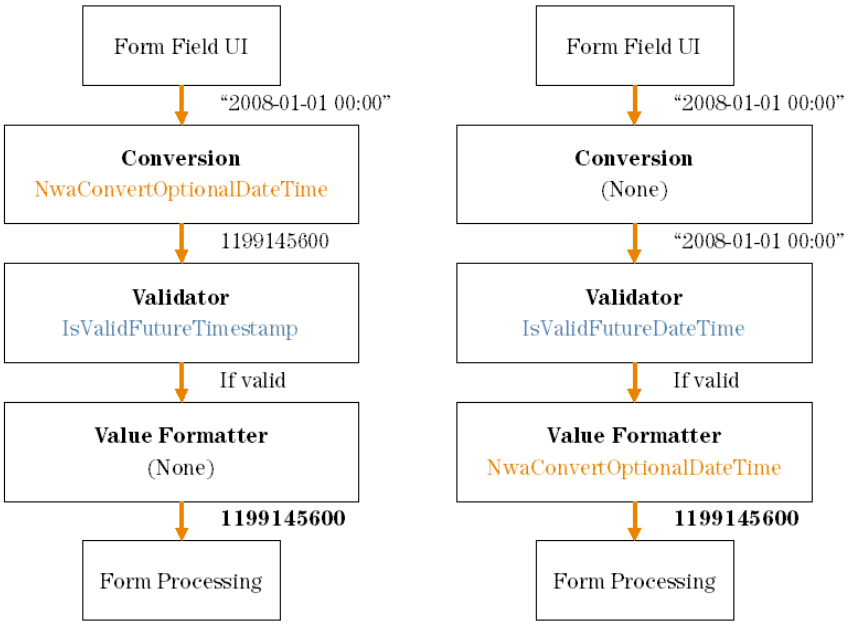


In this case, the Conversion function is set to NwaConvertOptionalDateTime to convert the string time representation from the form field (for example, "2008-01-01") to UNIX time (for example, 1199145600).

The Validator for the **expire_time** field is **IsValidFutureTimestamp**, which checks an *integer* argument against the current time.

The Value Formatter is applied after validation. This may be used in situations where the validator requires the specific type of data supplied on the form, but the stored value should be of a different type. In the **expire_time** field example, this is not required, and so the value formatter is not used. However, if the Conversion function had not been used, and the Validator had been set to **IsValidFutureDateTime** (which checks a *string* date/time value), then the Value Formatter would need to be set to NwaConvertOptionalDateTime to perform the data conversion before the form processing.

A comparison of these two approaches is shown below to illustrate the difference:



When using a Conversion or Value Format function, you will almost always have to set up a Display Function for the form field. This function is used to perform the conversion in the reverse direction – between the internal stored value and the value displayed in the form field.

See "Form Field Conversion Functions" on page 521 for a detailed list of the options available to you for the Conversion and Value Format functions.

The **Display Param** is the name of a form field, the value of which will be passed to the Display Function. In almost all cases this option should contain the name of the form field.

Display Arguments are available for use with a form field and are used to control the conversion process. In the case of the **expire_time** form field, the Display Function is set to **NwaDateFormat** to perform a conversion from a UNIX time to a date/time string, and the Display Argument specifies the format to use for the conversion.

See "Form Field Display Formatting Functions" on page 522 for a detailed list of the options available to you for the Display Function and Static Display Function.

The **Enable If** and **Visible If** options in the form field editor allow you to specify JavaScript expressions. The result obtained by evaluating these expressions is used to enable/disable, or show/hide the form field in real time, while an operator is using the form.

Unlike the other parts of the form field editor, the **Enable If** and **Visible If** expressions are evaluated by the operator's Web browser. These expressions are not used by the server for any other purpose.

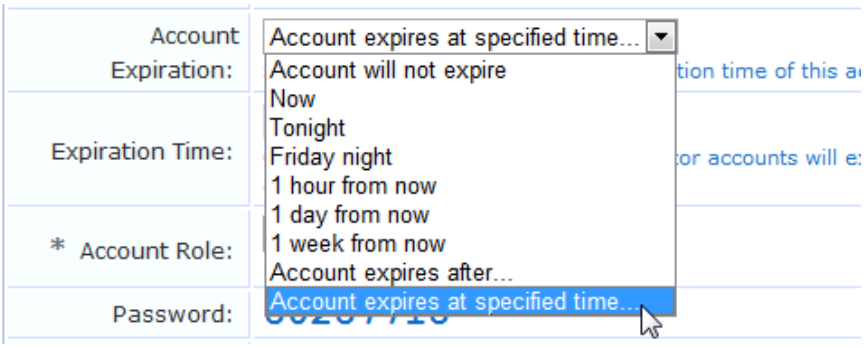
The expression must be a Boolean expression in the JavaScript language; statements and other code should not be included as this will cause a syntax error when the form is displayed in a Web browser.

Because of the scoping rules of JavaScript, all of the user interface elements that make up the form are available as variables in the local scope with the same name as the form field. Thus, to access the current value of a text field named **sample_field** in a JavaScript expression, you would use the code **sample_field.value**.

Most user interface elements support the **value** property to retrieve the current value. For check boxes, however, use the **checked** property to determine if the check box is currently selected.

The most practical use for this capability is to hide a form field until a certain value of some other related field has been selected.

For example, the default **create_user** form has an **Account Expiration** drop-down list. One of the values in this list is special: the **-1** option displays the value **Account expires at a specified time...**



When this option is selected, the form expands to include the **Expires After** row, allowing the user to specify a time other than one of the options in the list.

The **expire_time** field uses the JavaScript expression **expire_after.value < 0** for the **Visible If** option. When the -1 option has been selected, this condition will become true and the field will be displayed.

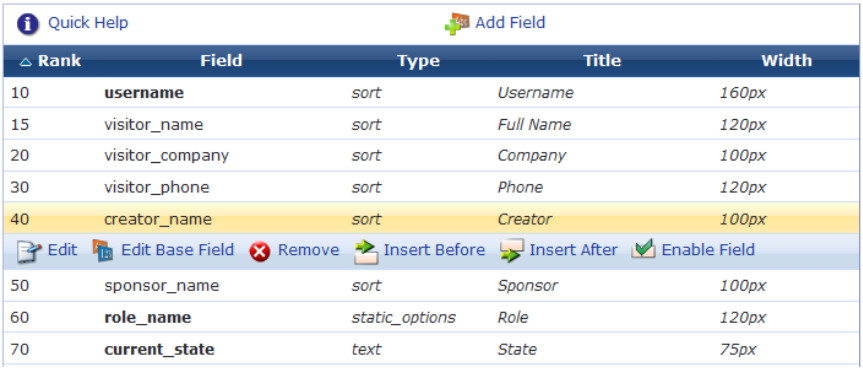
If the **expire_timezone** field is used in conjunction with **expire_time** and a time zone and date are selected, the date calculation is adjusted relative to the time zone.

Additional examples of the **Visible If** conditional expressions can be found in the **guest_edit** form.

Editing Views

A view is a page in the application that displays data, similar to a form, but does not contain interactive fields the user can modify. It consists of one or more columns, each of which contains a single field. You can change which fields are displayed and how each field is displayed. You can also define your own fields using the **Customize Fields** page, and then add them to a view by choosing appropriate display options for each new column.

To add a new field to a view, reorder the fields, or make changes to an existing field in a view, go to **Configuration > Pages > Forms & Views**, click the view, and click its **Edit Fields** link. The Customize View Fields editor opens.



View fields have a **Rank** number, which specifies the relative ordering of the columns when displaying the view. The Customize View Fields editor always shows the columns in order by rank.

The **Type** of each field is displayed. This controls what kind of user interface element is used to display the column, and whether the column is to be sortable or not. The **Title** of the column and the **Width** of the column are also shown in the list view. Values displayed in *italics* are default values defined for the field being displayed.

Click a view field in the list view to select it.

Use the **Edit** link to make changes to an existing column using the View Field Editor. Any changes made to the field using this editor will apply only to this field on this view.

Use the **Edit Base Field** link to make changes to an existing field definition. Any changes made to the field using this editor will apply to all views that are using this field (except where the view field has already been modified to be different from the underlying field definition).

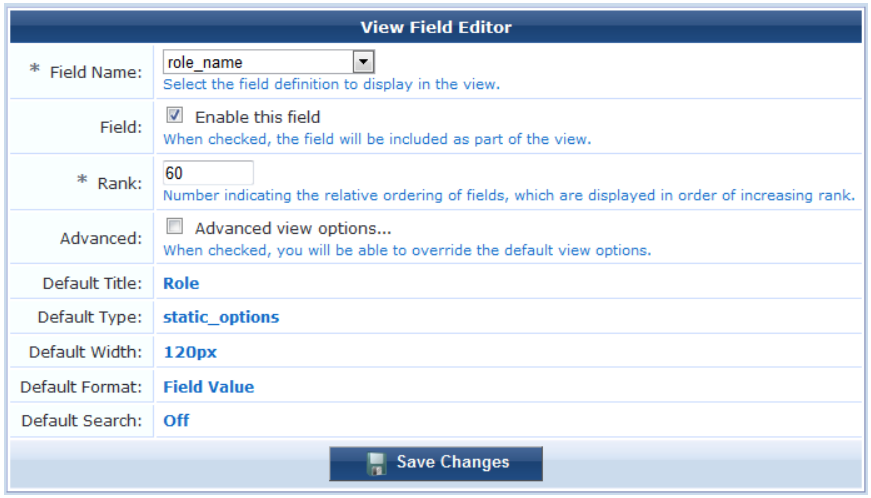
The **Insert Before** and **Insert After** links can be used to add a new column to the view. Clicking one of these links will open a blank view field editor and automatically set the rank number of the new column.

Use the **Enable Field** and **Disable Field** links to quickly turn the display of a column on or off.

Click the **Add Field** tab to add a new column to the view.

View Field Editor

The view field editor is used to control the data-display aspects of a column within the view.



Each column in a view displays the value of a single field.

To use the default view display properties for a field, you only need to select the field to display in the column and then click the **Save Changes** button.

To customize the view display properties, click the **Advanced view options...** check box.

The column type must be one of the following:

- **Text** – The column displays a value as text.
- **Sortable text** – The column displays a value as text, and may be sorted by clicking on the column heading.
- **Sortable text, case-insensitive** – The same as "Sortable text", but the column sorting will treat uppercase and lowercase letters the same.
- **Sortable numeric** – The column displays a numeric value, and may be sorted by clicking on the column heading.

The Column Format may be used to specify how the field's value should be displayed. You may choose from one of the following:

- **Field Value** – The value of the field is displayed as plain text.
- **Field Value (Un-Escaped)** – The value of the field is displayed as HTML.
- **Boolean – Yes/No** – The value of the field is converted to Boolean and displayed as "Yes" or "No".
- **Boolean – Enabled/Disabled** – The value of the field is converted to Boolean and displayed as "Enabled" or "Disabled".
- **Boolean – On/Off** – The value of the field is converted to Boolean and displayed as "On" or "Off".
- **Date** – The value of the field is assumed to be a UNIX timestamp value and is displayed as a date and time.
- **Duration (from seconds)** – The value of the field is assumed to be a time period measured in seconds and is displayed as a duration (for example, "23 seconds", "45 minutes")
- **Duration (from minutes)** – The value of the field is assumed to be a time period measured in minutes and is displayed as a duration (for example, "45 minutes", "12 hours")
- **Use form options** – The value of the field is assumed to be one of the keys from the field's option list. The value displayed is the corresponding value for the key.
- **Custom expression...** – The Display Expression text area is displayed allowing a custom JavaScript expression to be entered. See "View Display Expression Technical Reference" on page 523 for technical information about this display expression and a list of the functions that are available to format the value.

The Display Expression is a JavaScript expression that is used to generate the contents of the column. Generally, this is a simple expression that returns an appropriate piece of data for display, but more complex expressions can be used to perform arbitrary data processing and formatting tasks.

Customizing Guest Self-Registration

Guest self-registration allows an administrator to customize the process for guests to create their own visitor accounts. Self-registration is also referred to as self-provisioned access. The registration process consists of a data collection step (the 'registration page') and a confirmation step (the 'receipt page'):

- On the registration page, you can define what information is collected from visitors. New fields and data validation rules can be defined with the custom form editor. Specific details about the type of visitor accounts created are also set here.

- The receipt page typically contains static information about the guest account, but several different actions can be included, enabling visitors to obtain their receipt in different ways. The receipt page can also be used to automatically log the guest into a Network Access Server, enabling them to start using the network immediately.

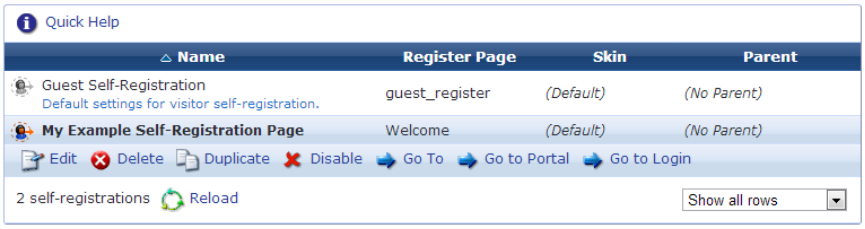
Detailed user interface customization can be performed for all parts of the self-registration process. You can define page titles, template code for the page header and footer, and choose a skin that controls the overall look and feel of self-registration. The default user interface customization can be disabled.

A guest self-registration process consists of many different settings. The Customize Guest Registration form organizes these settings into the different stages of the registration process, each on its own section of the form. These sections are displayed as separate pages in the Configuration UI. When you create a new registration page, the process walks you through these pages of the form one at a time. When you edit a registration page, links let you go directly to the section for the stage of the process you want to edit.

Accessing the Guest Self-Registration Customization Forms

To create a new guest self-registration page, go to **Configuration > Pages > Guest Self-Registrations** and click the **Create new self-registration page** link in the upper-right corner. The first part of the Customize Guest Registration form opens. See "Creating a Self-Registration Page" on page 241.

To work with an existing guest self-registration page, go to **Configuration > Guest Self-Registrations**. The Guest Self-Registration list view opens. All self-registration pages that have been created are included in this list.



Click a page's row in the list to select it. The row expands to include options for working with the self-registration pages.

Field	Description
Edit	Edit any of the self-registration page's properties. The Customize Guest Registration workflow diagram opens. Links in the workflow diagram provide access to any section of the registration page's properties. For information on editing the different parts of the self-registration process, see "Editing Self-Registration Pages" on page 240.
Delete	Deletes the guest self-registration page. You will be asked to confirm the deletion.
Duplicate	Creates a copy of the self-registration page and appends a number to page name. See "Duplicating a Self-Registration Page" on page 237.
Enable	Enables the self-registration page so it can be used.
Disable	Disables the self-registration page for the user and displays a message. See "Disabling a Self-Registration Page" on page 237.
Go To	Displays a preview of the Visitor Registration network access form. See "The "Go To" Option: The Registration Page" on page 237.

Field	Description
Go to Portal	Displays a preview of the Self Service Login portal. See "The "Go to Portal" Option " on page 238.
Go to Login	Displays a preview of the Network Login form. See "The "Go to Login" Option" on page 239.
Create new self-registration	Create a new self-registration page. See "Creating a Self-Registration Page" on page 241.

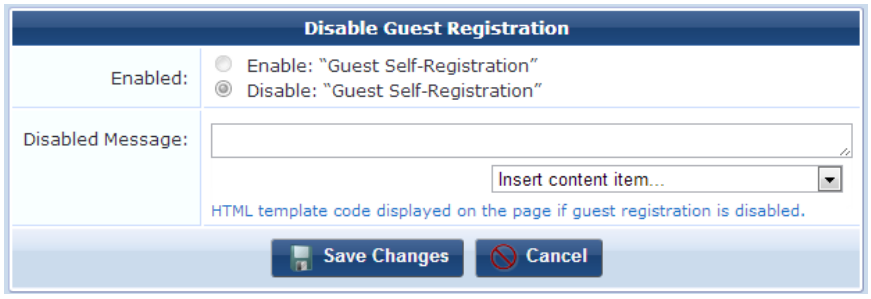
Duplicating a Self-Registration Page

When you choose the **Duplicate** option for a self-registration page, the row expands to include the **Duplicate Guest Registration** form. Complete the fields to rename the page and enter a name for the Register page. You can also give the page a description and indicate the parent page.

The Register page does not exist until you create it here. There are no spaces in this name. This page name will become part of the URL used to access the self provisioning page. For example, the default “guest_register” page is accessed using the URL **guest_register.php**.

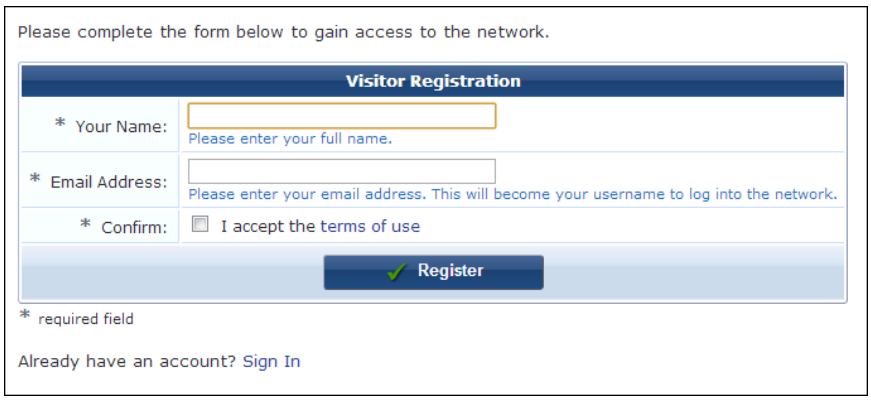
Disabling a Self-Registration Page

When you choose the **Disable** option for a self-registration page, the row expands to include the **Disable Guest Registration** form. In the **Disabled Message** text box, you may enter the HTML content to display on the page when guest registration is disabled. You can also use the drop-down list to add images or other content items.



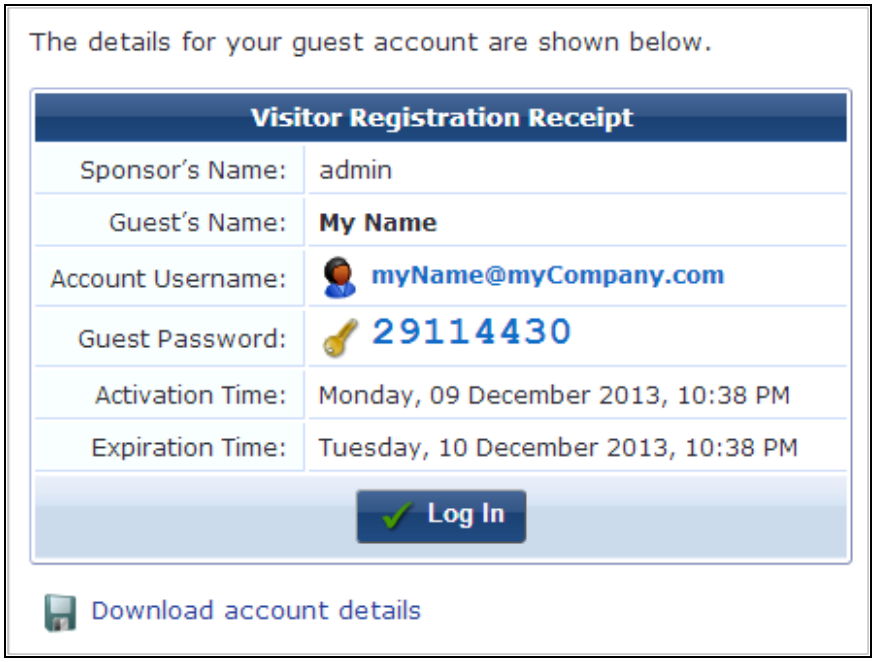
The "Go To" Option: The Registration Page

When you choose the **Go To** option for a self-registration page, the row expands to show an active preview of the **Visitor Registration** page and form as the visitor would see it. This is the registration page and data collection step. You may test the behavior of the form.



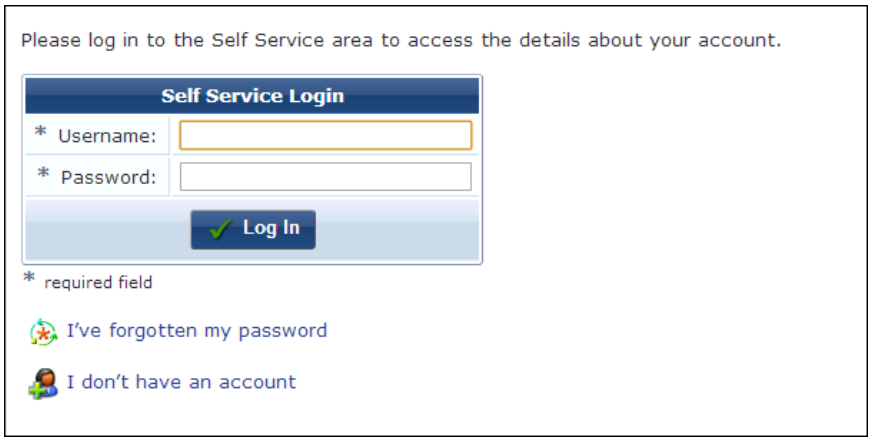
The Receipt Page

After the visitor successfully registers, the receipt page is their confirmation and provides their login and access information.



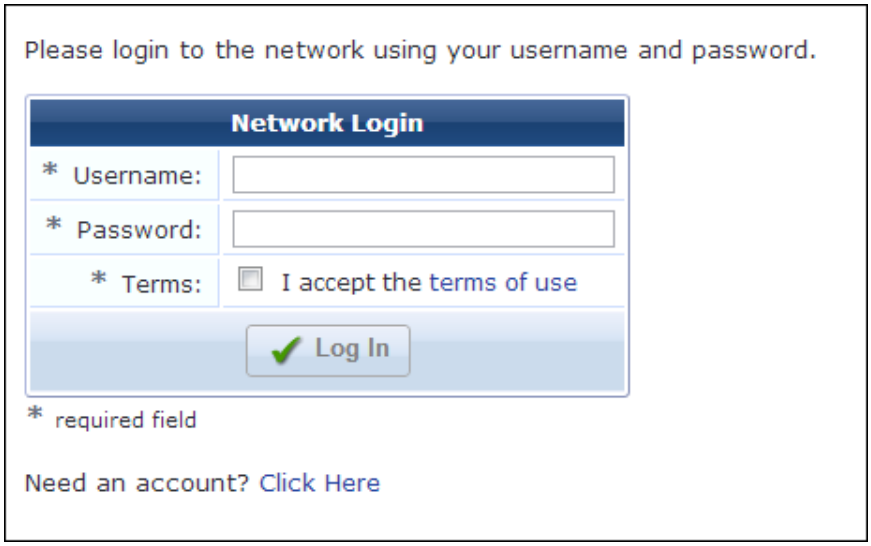
The "Go to Portal" Option

When you choose the **Go To Portal** option for a self-registration page, the row expands to show an active preview of the **Self Service Login** page and form as the visitor would see it. This form lets the visitor access their account information. You may test the behavior of the form.



The "Go to Login" Option

When you choose the **Go To Login** option for a self-registration page, the row expands to show an active preview of the **Network Login** page and form as the visitor would see it. This is the page the visitor sees when they log in to the network. You may test the behavior of the form.

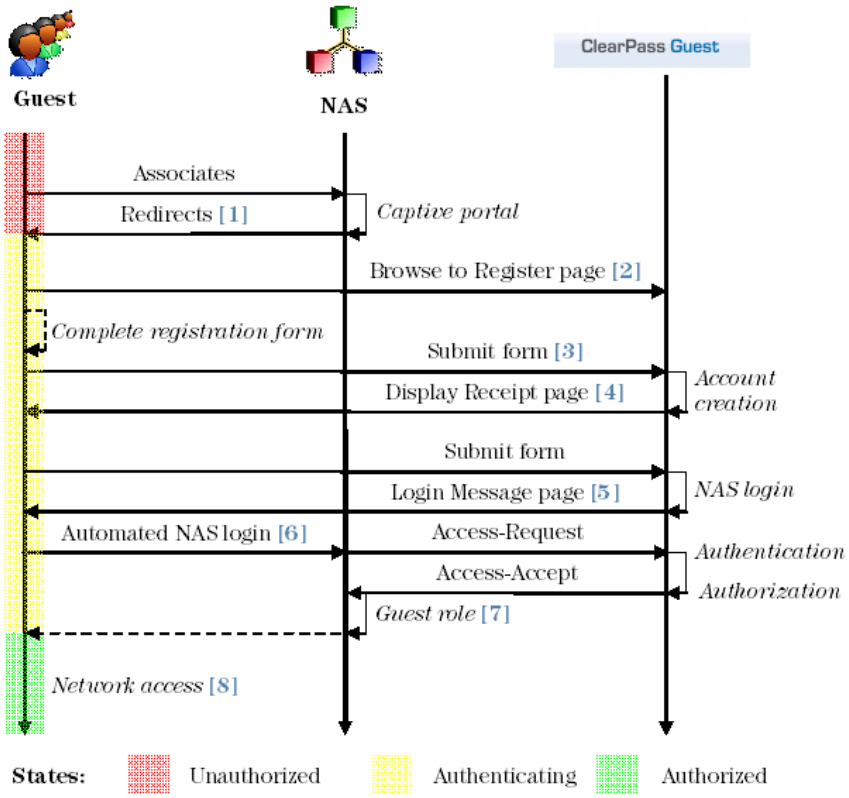


Self-Registration Sequence Diagram

To set up a captive portal with guest self-registration, you configure your Network Access Servers to redirect guests to the URL of the 'Go To' link. To complete the portal, you ensure that the NAS is configured to authorize users with the ClearPass Guest RADIUS server, and set up the self-registration NAS login to redirect registered guests back to the NAS.

This process is shown below.

Figure 29 *Sequence Diagram for Guest Self-Registration*



In this diagram, the stages in the self-registration process are identified by the numbers in brackets, as follows:

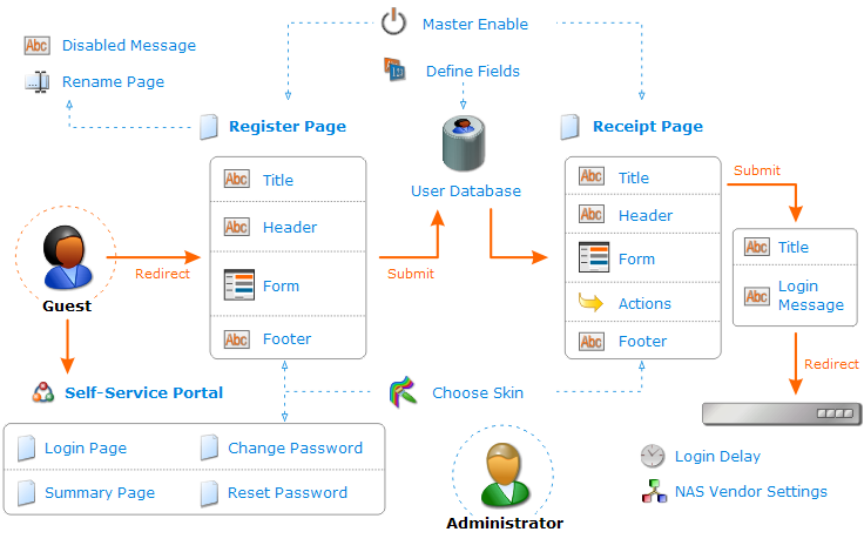
The captive portal redirects unauthorized users [1] to the registration page [2]. After submitting the registration form [3], the guest account is created and the receipt page is displayed [4] with the details of the guest account. If NAS login is enabled (the default), submitting the form on this page will display a login message [5] and automatically redirect the guest to the NAS login [6]. After authentication and authorization the guest's security profile is applied by the NAS [7], enabling the guest to access the network [8].

Editing Self-Registration Pages

When you edit a registration page, links let you go directly to the section of the Customize Guest Registration form that corresponds to the stage of the process you want to edit.

To edit a self-registration page, go to **Configuration > Pages > Guest Self-Registrations**, select the page in the list, and click its **Edit** link. The **Customize Guest Registration** workflow diagram opens.

Figure 30 Guest Self-Registration Workflow Diagram



The diagram shows the guest self-registration process. The solid orange arrows show the workflow for the visitor. The dotted blue arrows show the workflow for the administrator. The blue headings in the diagram are links to the corresponding sections of the Customize Guest Registration form. Click an icon or label in the diagram to jump directly to the editor for that item.

To view the Visitor Registration network access form (the registration page), click the **Launch this guest registration page** link in the upper-right corner. To view the self-service portal the visitor can use to log in to their account details after registration, click the **Launch self-service portal** link. To view the visitor's network access login form, click the **Launch network login** link.

Creating a Self-Registration Page

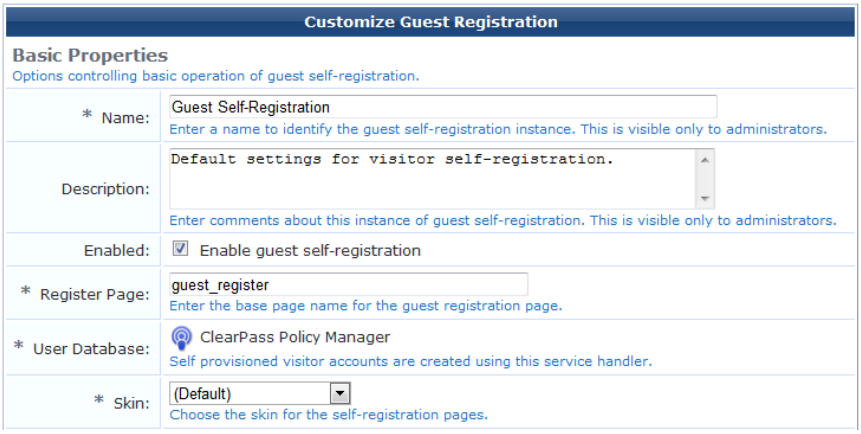
The Customize Guest Registration form is divided across several pages, which are displayed separately. When you create a new registration page, the process walks you through these pages of the form one at a time. As you complete each page of the form, you can click **Save and Continue** to move to the next section of the form. At any point, you can click **Save and Continue** or use your browser's **Back** button to move back and forth through the pages, or you can click **Save Changes** to exit the process and go to the self-registration process diagram.

To create a new guest self-registration page, go to **Configuration > Pages > Guest Self-Registration** and click the **Create new self-registration page** link. The first section of Customize Guest Registration form opens, where you can configure basic properties and access control. The Registration Page does not exist until you create it here.

Field	Description
Name	(Required) The name of this self-registration page to identify it —for example, "Guest Self-Registration". This name can include spaces. This name is only displayed to administrators within ClearPass; it is not seen by the visitor.
Description	You may enter comments to further identify or describe this page. This description is only displayed within ClearPass.
Enabled	When creation of this page is complete, select this check box to make it available to use. Deselect the check box if the page should not be used. When self-registration is enabled, you can edit, delete, duplicate or go to the page after it is created.
Register Page	(Required) The base page name for the guest registration page. Do not use spaces. Allowed characters are letters, numbers, underscores, and hyphens. This name becomes part of the URL used to access the self provisioning page. For example, the default "guest_register" page is accessed using the URL **guest_ register.php**. This name is only displayed to administrators within ClearPass; it is not seen by the visitor.
Parent	The page to use as a basis for this page's configuration. If a parent page is selected from this dropdown list, the parent page's values will be used for the new page's configuration. These values can be edited. If the **(No parent - standalone)** option is selected, all values must be configured.
Hotspot	Select this check box if the page will be used for Hotspot transactions. Requires the visitor to pay for access.
Authentication	Requires operator credentials to access the page. The sponsor's operator profile must include the **Guest Manager > Create New Guest Account** privilege.
Save Changes	Saves your changes and creates the self-registration page. This form closes and the self registration process diagram opens.
Save and Continue	Saves your changes and creates the self-registration page. The next section of the Customize Guest Registration form opens.

Configuring Basic Properties for Self-Registration

Click the **Master Enable**, **User Database**, **Choose Skin**, or **Rename Page** links to edit the basic settings for guest self-registration.



The Basic Properties window has configurable settings such as Name, Description, enabling guest-self registration, Register Page, Parent, and Authentication.

Using a Parent Page

To use the settings from a previously configured self-registration page, select an existing page name from the **Parent** drop-down menu. This is useful if you need to configure multiple registrations. You can always override parent page values by editing field values yourself. To create a self-registration page with new values, select the **Guest Self-Registration (guest_register)** option from the **Parent** field drop-down menu.

Paying for Access

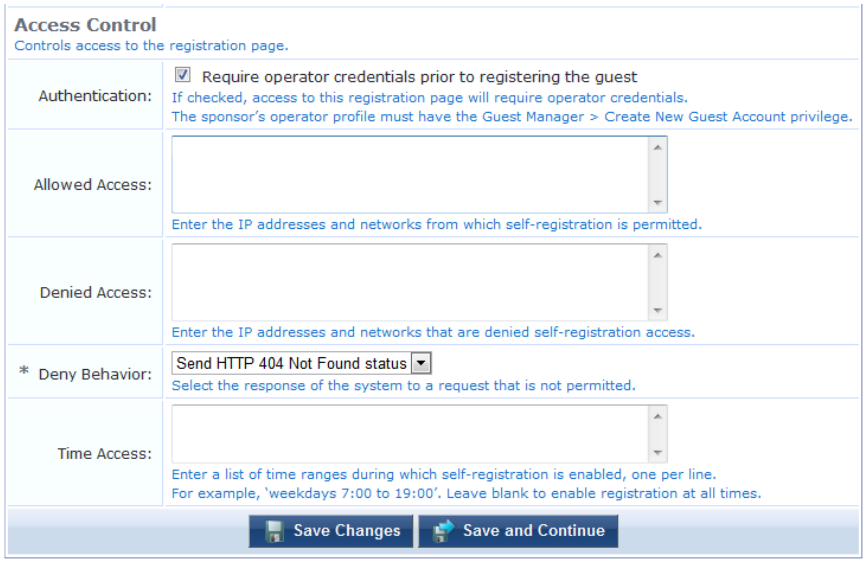
If you select a standalone self -registration, **(No parent- standalone)** option you can also configure the Hotspot option. You can configure this setting so that registrants have to pay for access.

Requiring Operator Credentials

If you want to require an operator to log in with their credentials before they can create a new guest account, select the **Require operator credentials prior to registering guest** check box. The sponsor's operator profile must have the **Guest Manager > Create New Guest Account privilege** already configured.

If you choose this option, the authenticated page it produces for creating accounts is very simple, and does not include navigation or other links that would otherwise be available in the operator user interface.

You can specify access restrictions for the self-registration page in the **Access Control** section of this form.



The **Allowed Access** and **Denied Access** fields are access control lists that determine if a client is permitted to access this guest self-registration page. You can specify multiple IP addresses and networks, one per line, using the following syntax:

- **1.2.3.4** – IP address
- **1.2.3.4/24** – IP address with network prefix length
- **1.2.3.4/255.255.255.0** – IP address with explicit network mask

Use the **Deny Behavior** drop-down list to specify the action to take when access is denied. The **Time Access** field allows you to specify the days and times that self-registration is enabled. Times must be entered in 24-hour clock format. For example:

- Mondays, Wednesdays and Fridays, 8:00 to 17:00
- Weekdays, 6:00 to 18:00
- Weekends 10:00 to 22:00 and Thursday 11:00 to 13:00

The access control rules will be applied in order, from the most specific match to the least specific match.

Access control entries are more specific when they match fewer IP addresses. The most specific entry is a single IP address (for example, **1.2.3.4**), while the least specific entry is the match-all address of **0.0.0.0/0**.

As another example, the network address **192.168.2.0/24** is less specific than a smaller network such as **192.168.2.192/26**, which in turn is less specific than the IP address **192.168.2.201** (which may also be written as **192.168.2.201/32**).

To determine the result of the access control list, the most specific rule that matches the client's IP address is used. If the matching rule is in the **Denied Access** field, then the client will be denied access. If the matching rule is in the **Allowed Access** field, then the client will be permitted access.

If the **Allowed Access** field is empty, all access will be allowed, except to clients with an IP address that matches any of the entries in the **Denied Access** field. This behavior is equivalent to adding the entry **0.0.0.0/0** to the **Allowed Access** field.

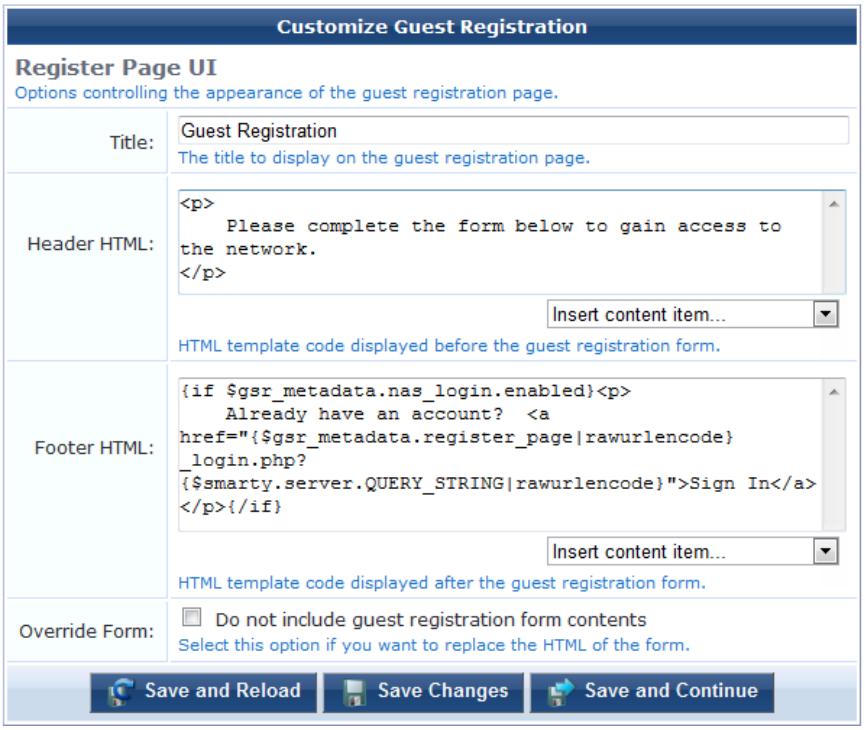
If the **Denied Access** list is empty, only clients with an IP address that matches one of the entries in the Allowed Access list will be allowed access. This behavior is equivalent to adding the entry **0.0.0.0/0** to the Denied Access list.

Editing Registration Page Properties

To edit the properties of the registration page:

1. Go to **Configuration > Pages > Guest Self-Registration**.
2. Select an entry in the **Guest Self-Registration** list and click its **Edit** link. The **Customize Guest Registration** workflow page appears.
3. Click the **Register Page** link, or one of the **Title**, **Header,** or **Footer** fields for the Register Page.

Figure 31 *The Customize Guest Registration Form*



Template code for the title, header, and footer may be specified. See "Smarty Template Syntax" on page 480 for details on the template code that may be inserted.

Select the **Do not include guest registration form contents** check box to override the normal behavior of the registration page, which is to display the registration form between the header and footer templates.

Click the **Save and Reload** button to update the self-registration page and launch or refresh a second browser window to show the effects of the changes.

Click the **Save Changes** button to return to the process diagram for self-registration.

Click the **Save and Continue** button to update the self-registration page and continue to the next editor.

Editing the Default Self-Registration Form Settings

To edit the fields on the self-registration form, go to **Configuration > Pages > Guest Self-Registration**, click the registration page's row in the list, and then click its **Edit** link. On the Customize Guest Registration diagram, click the **Form** link for the **Register Page**. The Customize Form Fields (guest_register) list opens.

Rank	Field	Type	Label	Description
10	sponsor_name	text	Sponsor's Name:	Name of the person sponsoring this account.
15	sponsor_email	text	Sponsor's Email:	Email of the person sponsoring this account.
20	**visitor_name**	text	Your Name:	Please enter your full name.
25	visitor_phone	text	Phone Number:	Please enter your contact phone number.
30	visitor_company	text	Company Name:	Please enter your company name.
40	**email**	text	Email Address:	Please enter your email address. This will become your username to log into the network.
50	start_time	datetime	Activation Time:	Scheduled date and time at which to enable the account. If blank, the account will be enabled immediately.
60	**expire_after**	hidden	Expires After:	Amount of time before this account will expire.
65	expire_time	datetime	Expiration Time:	Optional date and time at which the account will expire and be deleted. If blank, the account will not expire.
70	**role_id**	hidden	Account Role:	Role to assign to this account.
75	enabled	dropdown	Account Status:	Select an option for changing the status of this account.
80	random_password	static	Password:	
81	no_password	hidden	Password Change:	If set, prevents the user from changing their own password.
85	no_portal	hidden	Portal Login:	If set, prevents the user from logging into the guest service portal.
100	secret_question	text	Secret Question:	Enter your secret question. The answer will be required to reset your password.
101	secret_answer	text	Secret Answer:	Enter the answer to your secret question.
900	**create_time**	hidden	Created:	Time the account was created.
900	**mac**	hidden	MAC Address:	MAC address of the device.
901	**remote_addr**	hidden	Create Address:	This is your IP address.
902	http_user_agent	hidden	User Agent:	This is your browser's user agent string.
903	url			
904	**essid**	hidden	ESSID:	
905	**apname**	hidden	AP Name:	
905	**apgroup**	hidden	AP Group:	
906	**vcname**	hidden	Virtual Controller:	
1000	**auto_update_account**	hidden		
99990	**creator_accept_terms**	checkbox	Confirm:	
99999	**submit**	submit	Register	

The default settings for this form are as follows:

- The **visitor_name** and **email** fields are enabled. The email address of the visitor will become their username for the network.
- The **expire_after** field is set to a value of 24 by default; this sets the default expiration time for a self-registered visitor account to be 1 day after it was created. This field is hidden by default on the register page.
- The **role_id** field is set to a value of 2 by default; this sets the default role for a self-registered visitor account to the built-in Guest role. This field is hidden by default on the register page.
- The **auto_update_account** field is set by default. This is to ensure that a visitor who registers again with the same email address has their existing account automatically updated.

Columns on the form editor:

Table 34: *Form Editor Columns*

Field	Description
Rank	Specifies the relative ordering of the fields when displaying the form. This list always shows the fields in order by rank.
Type	Controls what kind of user interface element is used to interact with the user.
Label	The label for this field as it is displayed on the form.
Description	The description for this field as it is displayed on the form.

To work with a form field, click its row in the list. The row expands to include configuration options:

Table 35: *Form Editor Options*

Field	Description
Edit	Make changes to an existing field. The Form Field Editor opens. Any changes made to the field using this editor will apply only to this field on this form.
Edit Base Field	Make changes to an existing field's definition. Any changes made to the field using this editor will apply to all forms that are using this field (except where the form field has already been modified to be different from the underlying field definition).
Remove	Removes the field from the form. To add a field back to the form after it has been removed, use the Insert Before or Insert After option and select it from the Field Name drop-down list in the Form Field Editor that opens.
Insert Before	Add a new field to the form. Clicking one of these links opens a blank form field editor and automatically sets the rank number of the new field.
Insert After	
Disable Field	Disables this field on the form. To enable it on the form again, click **Enable Field**.
Preview Form	Opens an example of the form so you can see what it looks like. This preview form can be submitted to test the field validation rules you have defined. If all fields are able to be validated, the form submit is successful and a summary of the values submitted is displayed. This allows you to verify any data conversion and formatting rules you have set up.

See also:

"Editing Self-Registration Pages" on page 240

Creating a Single Password for Multiple Accounts

You can create multiple accounts that have the same password. In order to do this, you first customize the Create Multiple Guest Accounts form to include the Password field.

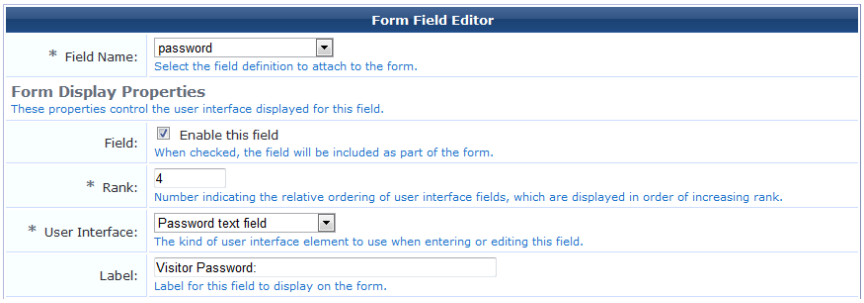
To include the Password field on the Create Multiple Guest Accounts form:

1. Go to **Configuration > Pages > Forms & Views**. Click the **create_multi** row, then click its **Edit Fields** link. The Customize Form Fields view opens, showing a list of the fields included in the Create Multiple Guest Accounts form and their descriptions.

   At this point, the Password field is not listed because the Create Multiple Guest Accounts form (create_multi) has not yet been customized to include it. You will create it for the form in the next step.

2. Click on any field in the list to expand a row, then click the **Insert After** link (you can modify this placement later). The Customize Form Field form opens.

3. In the **Field Name** row, choose **password** from the drop-down list. The form displays configuration options for this field.



4. In the **Field** row, mark the **Enable this field** check box.

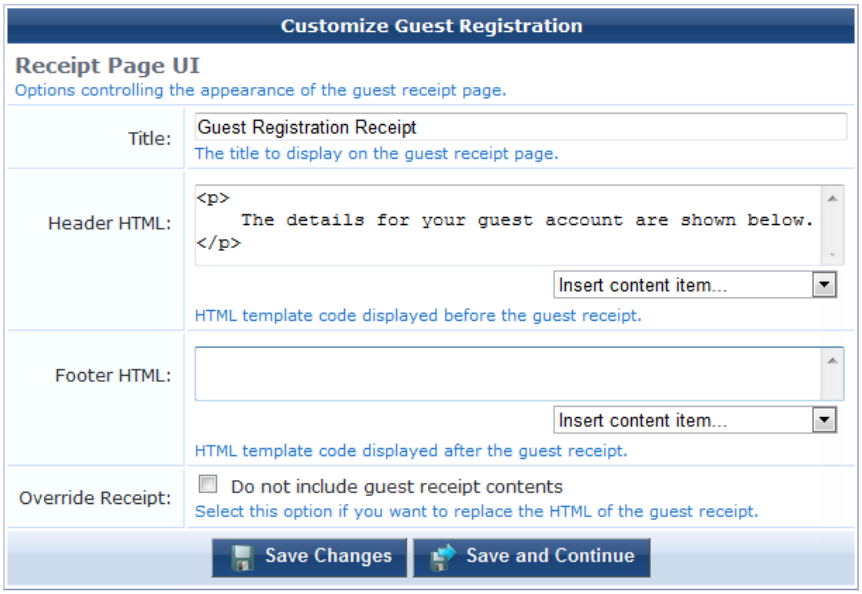
5. To adjust the placement of the password field on the Create Multiple Guest Accounts form, you may change the number in the **Rank** field.
6. In the **User Interface** row, choose **Password text field** from the drop-down list. The **Field Required** check box should now be automatically marked, and the **Validator** field should be set to **IsNonEmpty**.
7. Click **Save Changes**. The Customize Form Fields view opens again, and the password field is now included and can be edited.

To create the multiple accounts that all use the same password, see "Creating Multiple Guest Accounts" on page 45.

Editing Guest Receipt Page Properties

To edit the properties of the guest receipt page:

1. Go to **Configuration > Pages > Guest Self-Registration**
2. Select an entry in the **Guest Self-Registration** list and click its **Edit** link. The **Customize Guest Registration** workflow page appears.
3. Click the **Receipt Page** link or one of the **Title**, **Header,** or **Footer** fields for the Receipt Page to edit the properties of the receipt page. This page is shown to guests after their visitor account has been created.

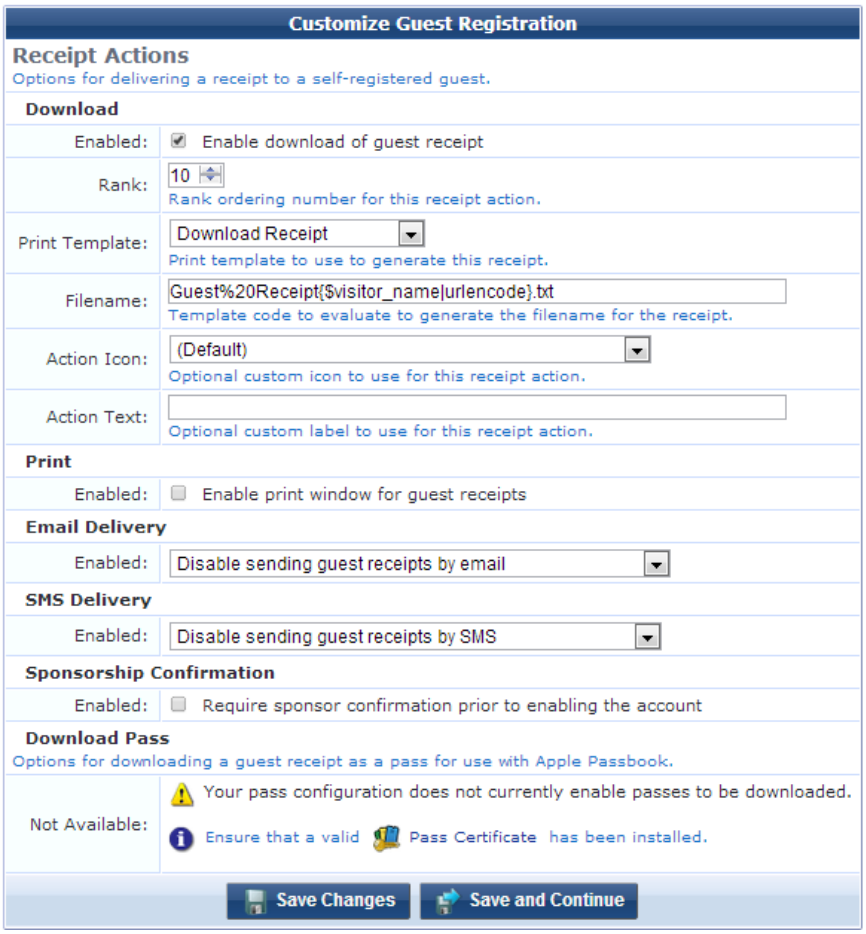


Click the **Save Changes** button to return to the process diagram for self-registration.

Editing Receipt Actions

To edit the actions that are available after a visitor account has been created:

1. Go to **Configuration > Pages > Guest Self-Registration.**
2. Select an entry in the **Guest Self-Registration** list and click its **Edit** link. The **Customize Guest Registration** workflow page appears.
3. In the **Receipt Page** area of the diagram, click the **Actions** link. The Receipt Actions form opens.



Enabling Sponsor Confirmation for Role Selection

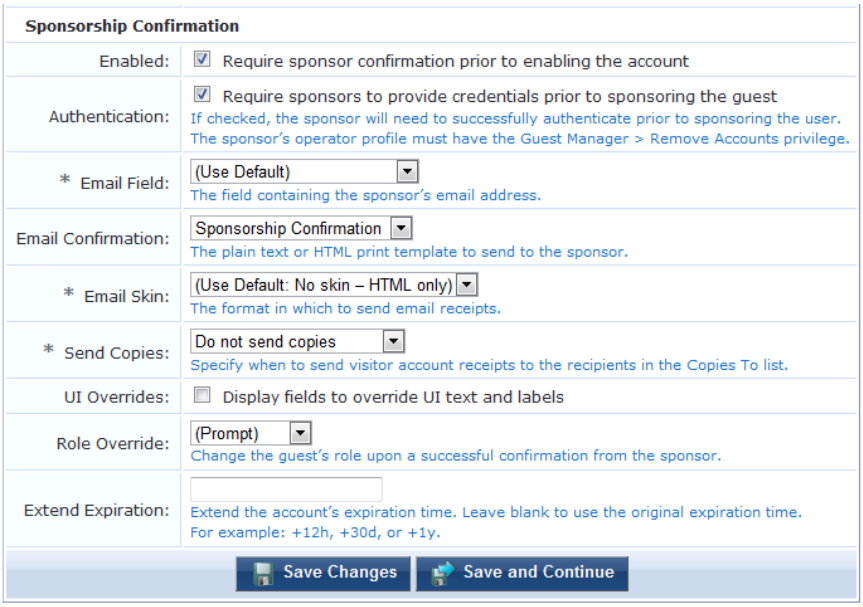
You can allow the sponsor to choose the role for the user account at the time the sponsor approves the self-registered account.

To enable role selection by the sponsor:

1. Go to **Configuration > Pages > Guest Self-Registration**. Click the **Guest Self-Registration** row, then click its **Edit** link. The Customize Guest Registration diagram opens.
2. In the **Receipt Page** area of the diagram, click the **Actions** link.

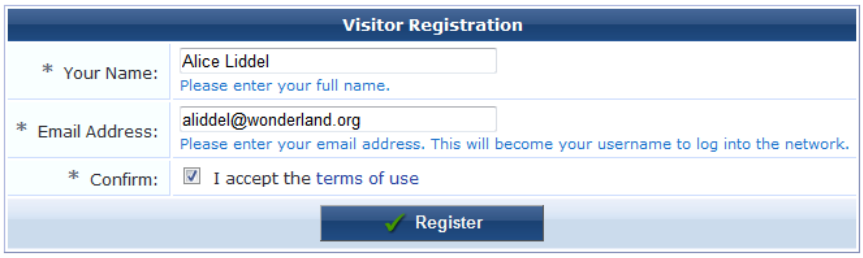
The Receipt Actions form opens.

3. In the **Sponsorship Confirmation** area at the bottom of the form, mark the **Enabled** check box for **Require sponsor confirmation prior to enabling the account**. The form expands to let you configure this option.



4. In the **Authentication** row, mark the check box for **Require sponsors to provide credentials prior to sponsoring the guest**.
5. In the **Role Override** row, choose **(Prompt)** from the drop-down list.
6. Complete the rest of the form with the appropriate information, then click **Save Changes**. The Customize Guest Registration diagram opens again.
7. You can click the **Launch this guest registration page** link at the upper-right corner of the Customize Guest Registration diagram to preview the Guest Registration login page.

The Guest Registration login page is displayed as the guest would see it.



When a guest completes the form and clicks the **Register** button, the sponsor receives an email notification.

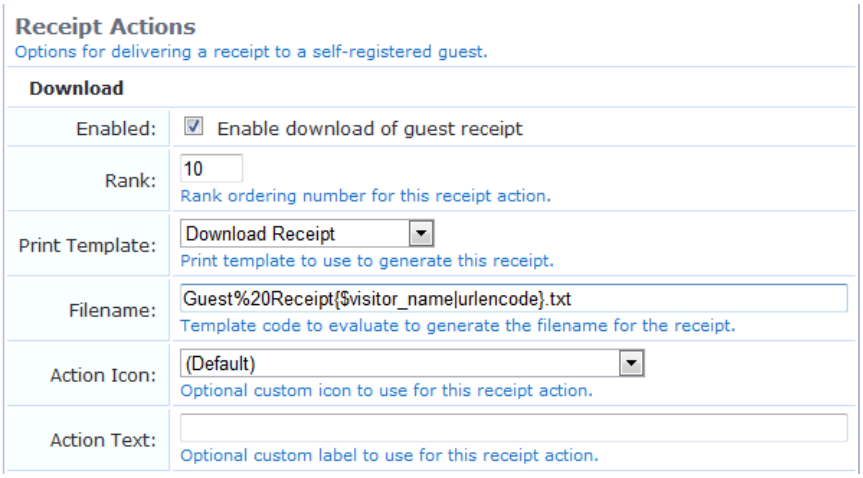
8. To confirm the guest's access, the sponsor clicks the **click here** link in the email, and is redirected to the Guest Registration Confirmation form.

9. In the **Account Role** drop-down list, the sponsor chooses the role for the guest, then clicks the **Confirm** button.

Editing Download and Print Actions for Guest Receipt Delivery

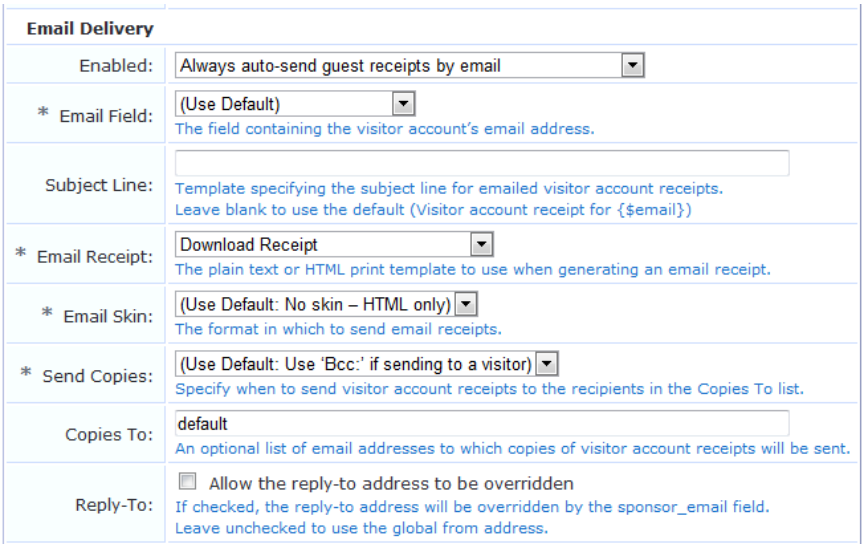
To enable the template and display options to deliver a receipt to the user as a downloadable file, or display the receipt in a printable window in the visitor's browser:

1. Go to **Configuration > Pages > Guest Self-Registration**. Click the **Guest Self-Registration** row, then click its **Edit** link. The Customize Guest Registration diagram opens.
2. In the **Receipt Page** area of the diagram, click the **Actions** link. The Receipt Actions form opens.
3. Select either the **Enable download of guest receipt** check box in the **Download** area, or the **Enable print window for guest receipts** check box in the **Print** area. The form expands to include configuration options.



Editing Email Delivery of Guest Receipts

The Email Delivery options available for the receipt page actions allow you to specify the email subject line, the print template and email format, and other fields relevant to email delivery.

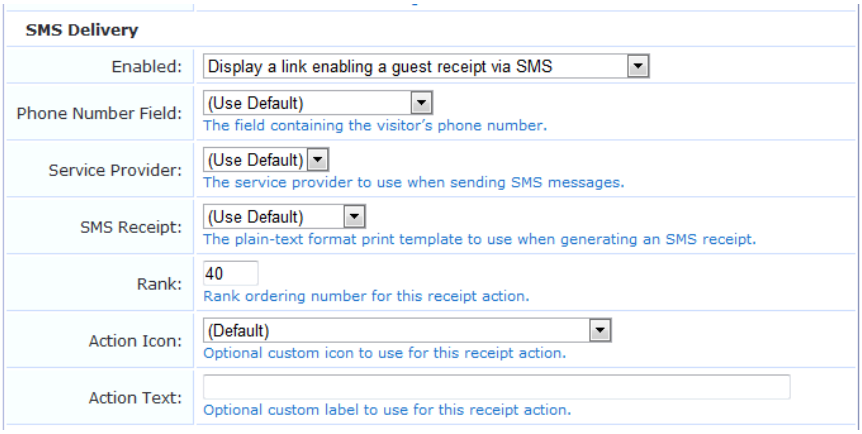


When email delivery is enabled, the following options are available to control email delivery:

- **Disable sending guest receipts by email** – Email receipts are never sent for a guest registration.
- **Always auto-send guest receipts by email** – An email receipt is always generated using the selected options, and will be sent to the visitor's email address.
- **Auto-send guest receipts by email with a special field set** – If the Auto-Send Field available for this delivery option is set to a non-empty string or a non-zero value, an email receipt will be generated and sent to the visitor's email address. The auto-send field can be used to create an "opt-in" facility for guests. Use a check box for the **auto_send_smtp** field and add it to the **create_user** form, or a guest self-registration instance, and email receipts will be sent to the visitor only if the check box has been selected.
- **Display a link enabling a guest receipt via email** – A link is displayed on the receipt page; if the visitor clicks this link, an email receipt will be generated and sent to the visitor's email address.
- **Send an email to a list of fixed addresses** – An email receipt is always generated using the selected options, and will be sent only to the list of email addresses specified in "Copies To".

Editing SMS Delivery of Guest Receipts

The SMS Delivery options available for the receipt page actions allow you to specify the print template to use, the field containing the visitor's phone number, and the name of an auto-send field.



These options under Enabled are available to control delivery of SMS receipts:

- **Disable sending guest receipts by SMS** – SMS receipts are never sent for a guest registration.
- **Always auto-send guest receipts by SMS** – An SMS receipt is always generated using the selected options, and will be sent to the visitor's phone number.
- **Auto-send guest receipts by SMS with a special field set** – If the Auto-Send Field is set to a non-empty string or a non-zero value, an SMS receipt will be generated and sent to the visitor's phone number. The **auto-send** field can be used to create an "opt-in" facility for guests. Use a check box for the **auto_send_sms** field and add it to the **create_user** form, or a guest self-registration instance, and SMS messages will be sent to the specified phone number only if the check box has been selected.
- **Display a link enabling a guest receipt via SMS** – A link is displayed on the receipt page; if the visitor clicks this link, an SMS receipt will be generated and sent to the visitor's phone number. Only one SMS receipt per guest registration can be sent in this way.

Enabling Downloading Passes

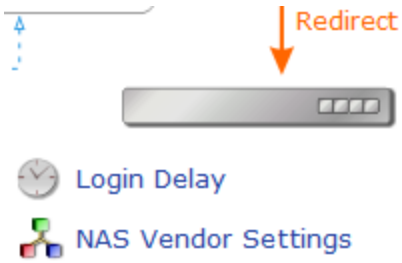
To enable downloading the receipt to the user as a digital pass:

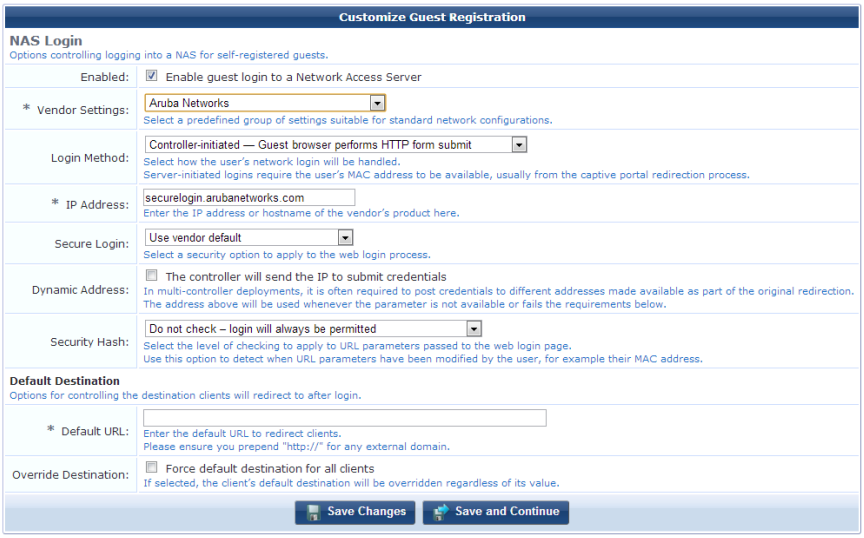
1. Go to **Configuration > Pages > Guest Self-Registration**. Click the **Guest Self-Registration** row, then click its **Edit** link. The Customize Guest Registration diagram opens.
2. In the **Receipt Page** area of the diagram, click the **Actions** link. The Receipt Actions form opens.
3. Scroll down to the Download Pass area of the form.
   - If a Pass Certificate is not installed, an error is displayed. For information on digital passes and installing pass certificates, see "Digital Passes" on page 271.
   - If the Pass Certificate is installed, select the appropriate pass template.

Enabling and Editing NAS Login Properties

To enable and edit the properties for automatic NAS login:

1. Go to **Configuration > Pages > Guest Self-Registration**. Click to expand the **Guest Self-Registration** row in the form, then click its **Edit** link. The Customize Guest Self-Registration diagram opens.
2. In the lower-right corner of the diagram, click the **NAS** box or the **NAS Vendor Settings** link. The NAS Login form opens.





If automatic guest login is not enabled, the submit button on the receipt page will not be displayed, and automatic NAS login will not be performed.

In the **Vendor Settings** field, if **Single Sign-On - SAML Identity Provider** is selected, an appropriate service must be created in CPPM using the ClearPass IDP service template. The external service provider must then be configured to use the SAML Web login page as the IdP.

Editing Login Page Properties

The login page is displayed if automatic guest login is enabled and a guest clicks the Submit button from the receipt page to log in.

To edit the properties of the login page:

1. Go to **Configuration > Pages > Guest Self-Registration**. Click to expand the registration page's row in the form, then click its **Edit** link. The Customize Guest Self-Registration diagram opens.
2. In the **Receipt Page** area of the diagram, click the **Title** or **Login Message** fields for the login page to edit the properties of the login page, then mark the **Enable guest login to a Network Access Server** check box.The form expands to include configuration options.

The login page is also a separate page that can be accessed by guests using the login page URL. The login page URL has the same base name as the registration page, but with **login** appended. To determine the login page URL for a guest self-registration page, first ensure that the **Enable guest login to a Network Access Server** option is checked, and then click the **Launch network login** link from the self-registration process diagram.

The login page consists of two separate parts: the login form page, and a login message page.

Configuring the Login Form Part of the Page

The options available under the **Login Form** heading may be used to customize the login page.

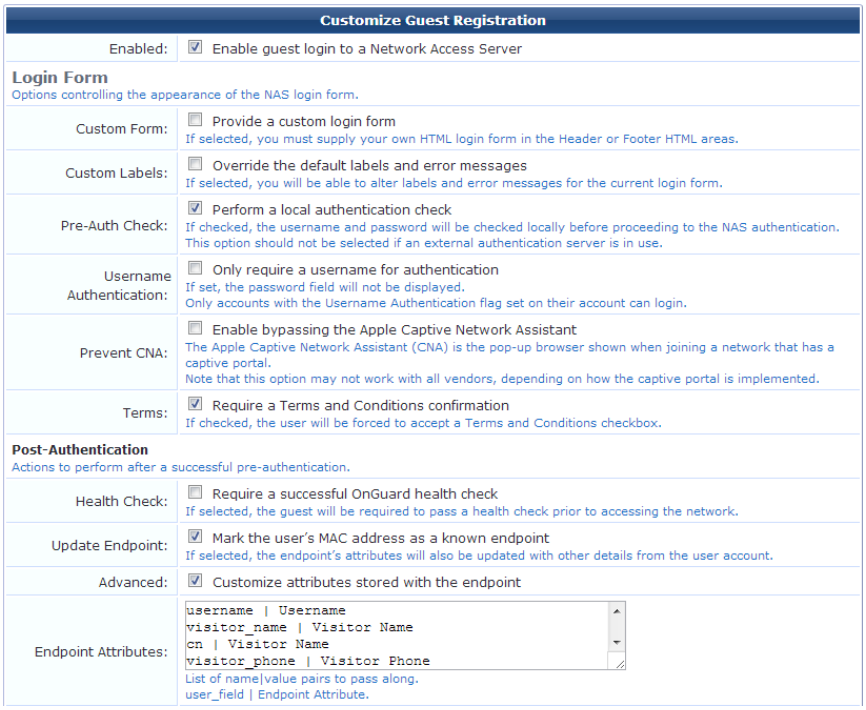


Table 36: *The Customize Guest Self-Registration Form, Login Form and Post-Authentication*

Field	Description
Custom Form	Indicates you will provide a custom login form. If selected, you must supply your own HTML login form for the header or footer HTML areas.
Custom Labels	Enables altering the default labels and error messages.
Username Label	Label that appears on the form for the username field. Leave blank to use the default, (Username:).
Password Label	Label that appears on the form for the password field. Leave blank to use the default (Password:).
Pre-Auth Check	The username and password will be checked locally before proceeding to the NAS authentication. Do not select this option if an external authentication server is used.
Pre-Auth Error	Customized label text to display if username and password lookup fails. Leave blank to use the default (Invalid username or password).
Username Authentication	Allows the user to log in with only a username. The Password field will not be displayed. Only accounts with the Username Authentication flag set can log in.
Prevent CNA	Enables bypassing the Apple Captive Network Assistant (CNA). The CNA is the pop-up browser shown when joining a network that has a captive portal. This option might not work with all vendors; it is dependent on how the captive portal is implemented.
Terms	Requires the user mark a check box to accept a Terms and Conditions agreement.
Terms Label	Label that appears on the form for the terms check box. Leave blank to use the default (Terms:).
Terms Text	Enter the HTML code containing your terms and conditions. Leave blank to use the default, (I accept the terms of use)

Field	Description
Terms Layout	Layout for the terms and conditions text—either above or below the Terms check box.
Terms Error	Text to display if the terms are not accepted. Leave blank to use the default (In order to log in, you must accept the terms and conditions.).
Log In Label	Label that appears on the form for the login button. Leave blank to use the default (Log In).
Health Check	Requires the visitor to pass a health check before they can access the network. The health check is done automatically through the OnGuard dissolvable agent.
Client Agents	The agent option OnGuard should use for client scanning. Options available in this drop-down list are: • **Native agents with Java fallback** • **Java Only** • **Native agents only** Native agents are available for the Microsoft Windows and Apple OS X operating systems. Each native agent is native to a specific platform and does not require Java.
Header HTML	The HTML content to display above the health check text. You can use the drop-down list to add images or other content items.
Footer HTML	The HTML content to display below the health check text. You can use the drop-down list to add images or other content items.
Update Endpoint	Marks the user's MAC address as a known endpoint, and updates the endpoint's attributes with other details from the user account (for example, the SSID, AP, and MAC address). If this check box is selected, the form expands to include the Advanced field.
Advanced	Lets you specify custom attributes to store in the endpoint. If this check box is selected, the form expands to include the Endpoint Attributes field.
Endpoint Attributes	Enter the list of name-value pairs to pass as custom attributes. Follow the format **user_field | Endpoint Attribute**. Examples are shown.

The login form page contains a form prompting for the guest's username and password. The title, header, and footer of this page can be customized. If the **Provide a custom login form** option is selected, then the form must also be provided in either the Header HTML or Footer HTML sections.

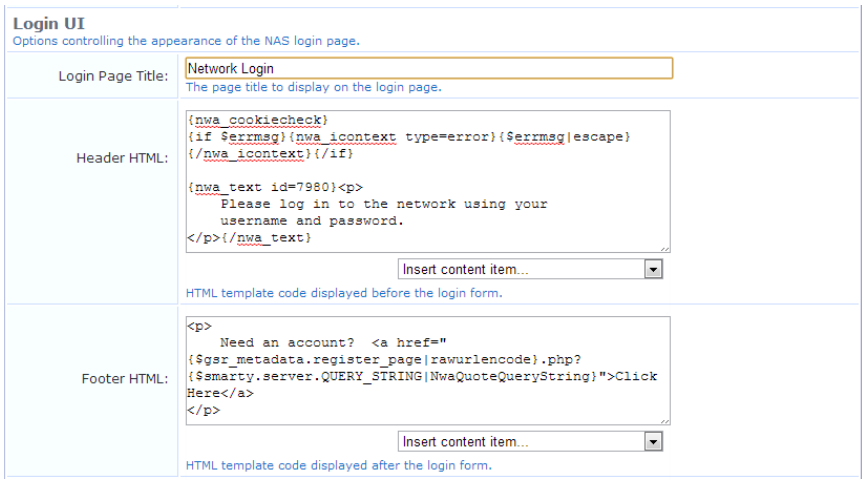
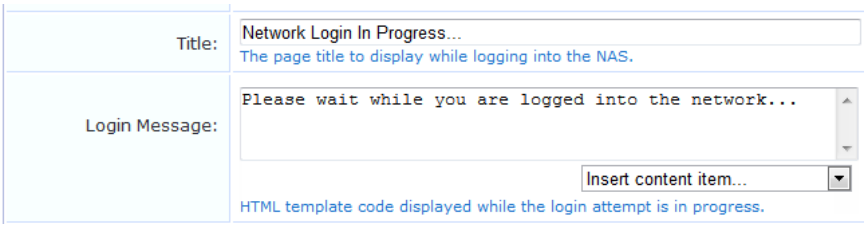


Table 37: *The Customize Guest Self-Registration Form, Login UI Section*

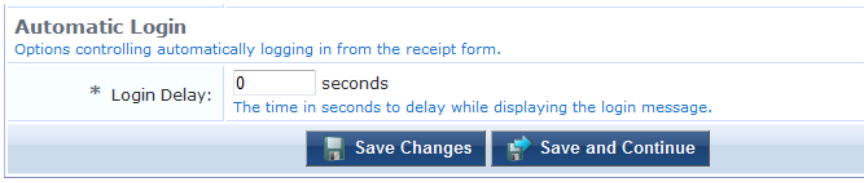
Field	Description
Login Page Title	The title that will be displayed on the NAS login page.
Header HTML	The HTML content to display above the NAS login form. You can use the drop-down lists to add images or other content items.
Footer HTML	The HTML content to display below the NAS login form. You can use the drop-down lists to add images or other content items.

Configuring the Login Message Part of the Page

The login message page is displayed after the login form has been submitted, while the guest is being redirected to the NAS for login. The title and message displayed on this page can be customized.



The login delay can be set. This is the time period, in seconds, for which the login message page is displayed.



Click the **Save Changes** button to return to the process diagram for self-registration.

Self-Service Portal Properties

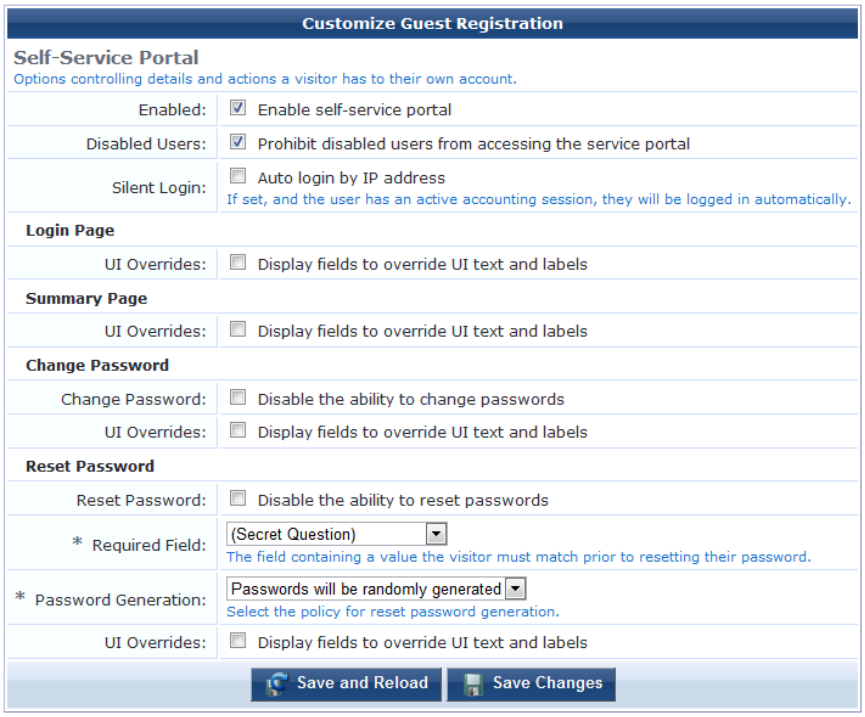
To edit the properties of the self-service portal:

1. Go to **Configuration > Pages > Guest Self-Registration**. Click to expand the **Guest Self-Registration** row in the form, then click its **Edit** link. The Customize Guest Self-Registration diagram opens.
2. Click the **Self-Service Portal** link or one of the **Login Page**, **Summary Page**, **Change Password,** or **Reset Password** links for the Self-Service Portal.

The self-service portal is accessed through a separate link that must be published to guests. The page name for the portal is derived from the registration page name by appending "_portal".

When the self-service portal is enabled, a **Go To Portal** link is displayed on the list of guest self-registration pages, and may be used to determine the URL that guests should use to access the portal.

The portal offers guests the ability to log in with their account details, view their account details, or change their password. Additionally, the Reset Password link provides a method allowing guests to recover a forgotten account password.



To adjust the user interface, use the override check boxes to display additional fields on the form. These fields allow you to customize all text and HTML displayed to users of the self-service portal.

The behavioral properties of the self-service portal are described below:

- The "Enable self-service portal" check box must be selected for guests to be able to access the portal. Access to the portal when it is disabled results in a disabled message being displayed; this message may be customized using the "Disabled Message" field.
- The "Disabled Users" check box controls whether a user account that has been disabled is allowed to log in to the portal.
- The "Change Password" check box controls whether guests are permitted to change their account password using the portal.
- The "Reset Password" check box controls whether guests are permitted to reset a forgotten account password using the portal. If this check box is enabled, the "Required Field" may be used to select a field value that the guest must match in order to confirm the password reset request.

If the "Auto login by IP address" option is selected, a guest accessing the self-service portal will be automatically logged in if their client IP address matches the IP address of an active RADIUS accounting session (that is, the guest's HTTP client address is the same as the RADIUS Framed-IP-Address attribute for an active session).

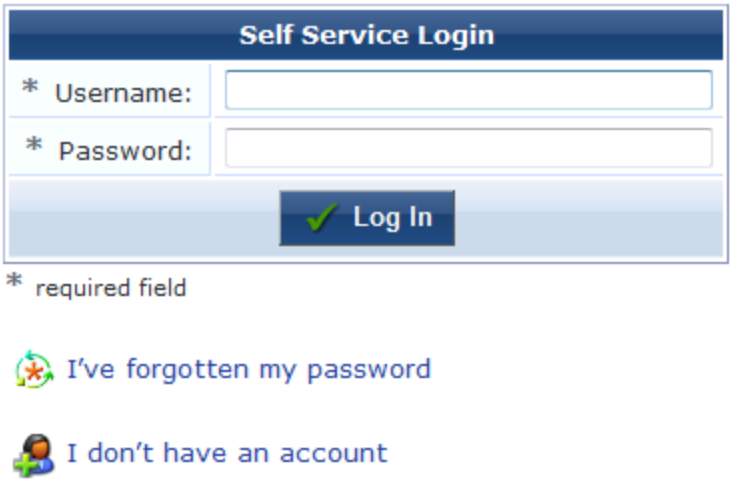
The Password Generation drop-down list controls what kind of password reset method is used in the portal. The default option is "Passwords will be randomly generated", but the alternative option "Manually enter passwords" may be selected to enable guests to select their own password through the portal.

Click the **Save Changes** button to return to the process diagram for self-registration.

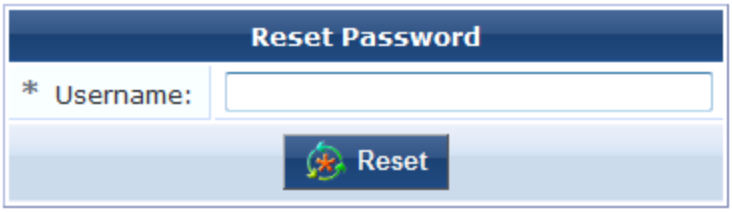
Resetting Passwords with the Self-Service Portal

The self-service portal includes the ability to reset a guest account's password.

The default user interface for the self-service portal is shown below:



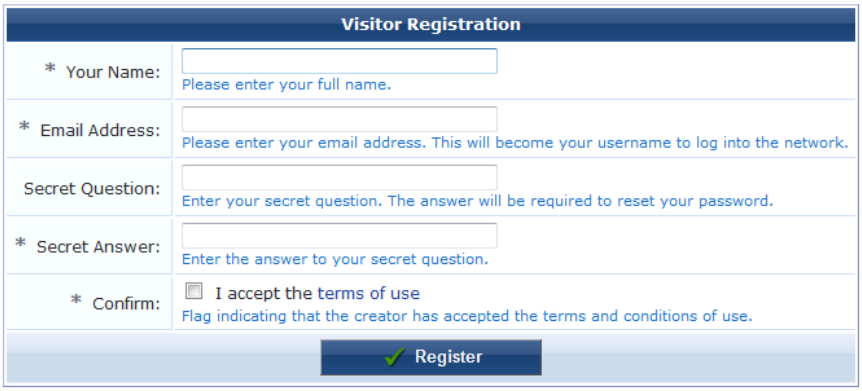
Clicking the **I've forgotten my password** link displays a form where the user password may be reset:



Entering a valid username will reset the password for that user account, and will then display the receipt page showing the new password and a login option (if NAS login has been enabled).

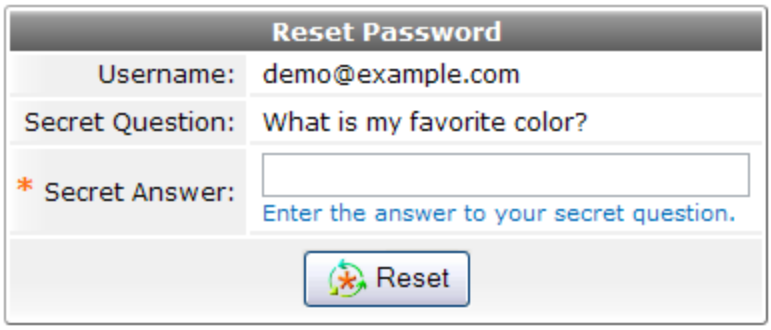
This feature allows the password to be reset for any guest account on the system, which may pose a security risk. It is strongly recommended that when this feature of the self-service portal is enabled, guest registrations should also store a secret question/secret answer field.

To enable a more secure password reset operation, first enable the **secret_question** and **secret_answer** fields to the registration form. The default appearance of these fields is shown below:

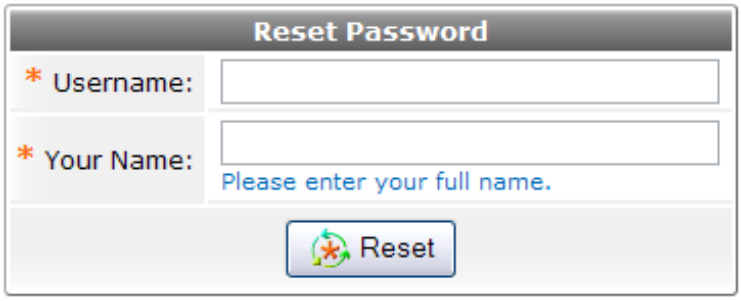


Next, enable the **Required Field** option in the Self-Service Portal properties. Setting this to **(Secret Question)** will ask the guest the **secret_question** and will only permit the password to be reset if the guest supplies the correct **secret_answer** value.

With these settings, the user interface for resetting the password now includes a question and answer prompt after the username has been determined:



Selecting a different value for the "Required Field" allows other fields of the visitor account to be checked. These fields should be part of the registration form. For example, selecting the **visitor_name** field as the "Required Field" results in a **Reset Password** form like this:



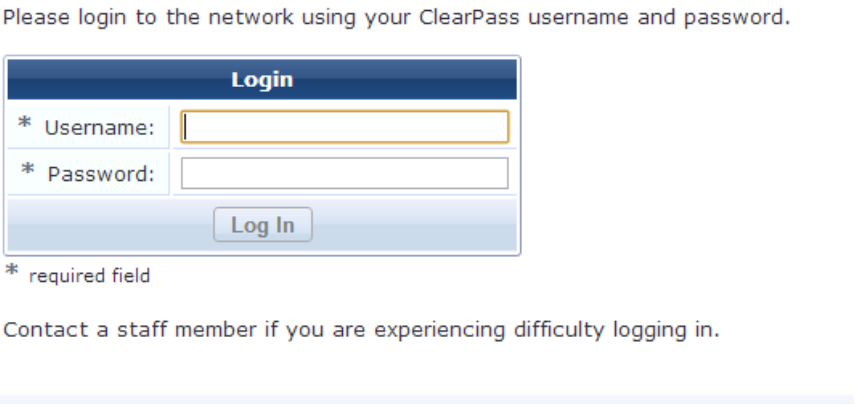
Managing Web Logins

The Web Logins page lists all the Web login pages you have created, and lets you edit and test them and create new Web login pages.

To view the list of your Web login pages and work with them, go to **Configuration > Pages > Web Logins**. The Web Logins list view opens. All Web login pages you have created are included in the list. Information shown for each page includes its name for internal identification, title as displayed in the user interface, filename, and the skin assigned to it.

You can click a page's row in the list for additional options:

Table 38: *The Web Logins List View*

Field	Description
Edit	Edit any of a Web login page's attributes. The Web Login Editor form opens. For more information, see "Creating and Editing Web Login Pages" on page 261.
Duplicate	Create a copy of a Web login page to use as a basis for a new page. A progress bar is shown while the page settings are duplicated. When it is complete, the new page is displayed in the list with "Copy of" prepended to its name. The copy has all attributes prepopulated from the original page. You can click the copy's row in the list to open the editor and edit any of its attributes.
Delete	Delete the page. You will be asked to confirm the deletion.
Test	View and test a Web login page. The page opens in a new tab as it would appear to a user: 
Create new Web login page	Create a new Web login page. For more information, see "Creating and Editing Web Login Pages" on page 261.

Creating and Editing Web Login Pages

Onboard device provisioning pages are now managed from the Web Login tab in Onboard > Provisioning Settings.

Onboard creates a default Web login page that is used to start the device provisioning process.

To create a new Web login page, go to **Configuration > Pages > Web Logins** and click the **Create new Web login page** link in the upper-right corner. The Web Login Editor form opens.

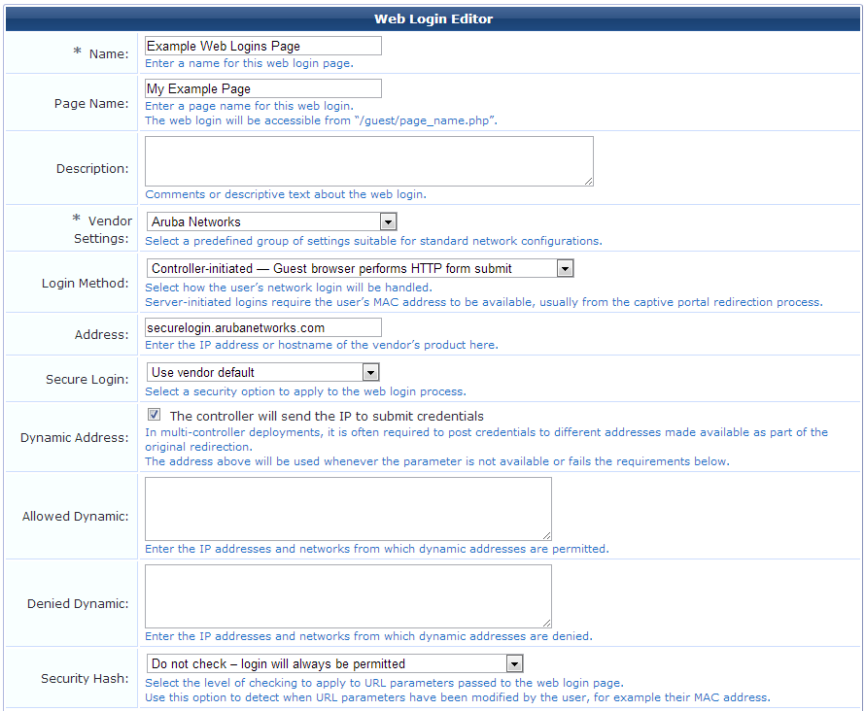


Table 39: *Web Login Editor, General Properties*

Field	Description
Name	(Required) Enter a name for the page.
Page Name	Identifier page name that will appear in the URL -- for example, "/guest/page_name.php".
Description	Additional information or comments about the page.
Vendor Settings	(Required) Vendor-specific settings for network configuration. This drop-down list includes a list of **Vendors** to you can select from, and a list of **Other** settings: • **Custom Settings**—The form includes options for configuring your custom settings. • **Captive portal with ClearPass Web Auth**—The form includes the options for configuring this vendor setting. • **Single Sign-On - SAML Identity Provided**—Complete the configuration options for this vendor setting. An appropriate service must also be created in CPPM using the ClearPass IDP service template. The external service provider must then be configured to use the SAML Web login page as the IdP. • **Single Sign-On - Authorize Only**—Allows the server to be configured as an IdP, and a login form is not displayed. If the AppAuth request to validate the SAML SP request is successful, the user is logged in through the normal SAML IdP flow. If the AppAuth request is not successful, a SAML Failure response is returned to the service provider. This vendor setting is useful if you have configured Aruba Auto SignOn (ASO) with third-party identity providers.
Login Method	Specifies how the user's network login should be handled. Options include: • **Controller-initiated—Guest browser performs HTTP form submit** • **Server-initiated—Change of authorization (RFC 3576) sent to controller**—Server-initiated logins require the user's MAC address to be available. This is usually acquired through the captive portal redirect.

Field	Description
	• **Policy Initiated—An enforcement policy will control a change of authorization**—This option should be selected if a Policy Manager policy that includes a "bounce client" will be run as part of the page's actions. This option should be selected if you are using OnGuard health checks.
Address	(Required) IP address or hostname of the vendor's product.
Secure Login	Security option to use for the Web login process. Options include: • **Use vendor default** • **Secure login using HTTPS** • **Send cleartext passwords over HTTP**.
Dynamic Address	For multi-controller deployments, enables sending the IP to submit credentials. The **Allowed Dynamic** and **Denied Dynamic** fields are added to the form.
Allowed Dynamic	IP addresses and networks that will be allowed.
Denied Dynamic	IP addresses and networks that will be denied.
Security Hash	Level of checking to apply to URL parameters passed to the Web login page. Detects when URL parameters have been modified by the user (for example, their MAC address). To prevent the user from tampering with parameters passed in the redirect URL (for example, their MAC address), select one of the validation error options. If one of the validation error options is selected, the form expands to include the URL Hash Key fields.
URL Hash Key **Confirm Key**	(Required) Enter the RADIUS shared secret for the redirect URL's hash verification process in both fields.

Options in the **Login Form** area specify the behavior and content of the login form. The options available in this area depend on the selection you made in the Vendor Settings field:

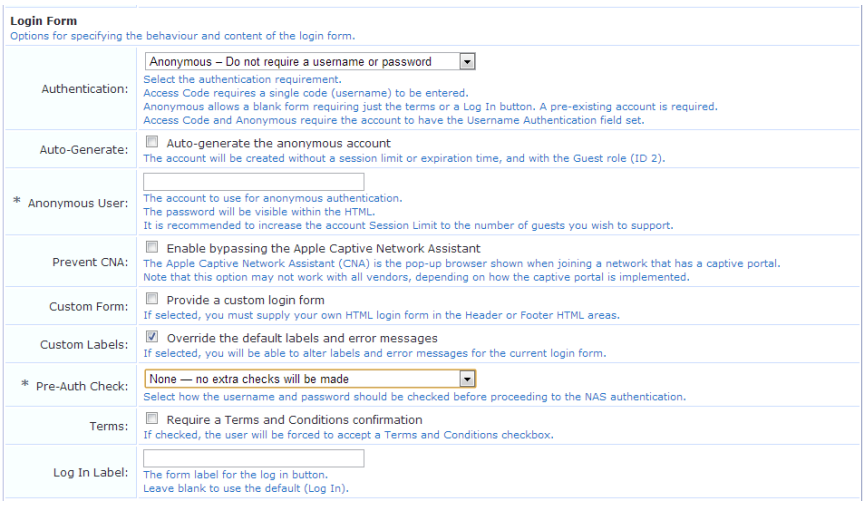


Table 40: *Web Login Editor, Login Form Properties*

Field	Description
Submit URL	URL of the NAS device's login form.
Submit Method	Method to use when submitting the login form to the NAS. Options include: • **POST** • **GET**
Authentication	Authentication requirement options include: • **Credentials — Require a username and password** • **Access Code — Only require a username for authentication**—This option does not require a password. • **Anonymous — Do not require a username or password**—This option adds the **Auto-Generate** and **Anonymous User** fields to the form. It allows a blank form with only the terms or a Log In button. A pre-existing account is required. • **Auto — Do not require a username or password and automatically submit the page**—This option can be used if now authentication or prompting is needed. A pre-existing local anonymous account is required. This option should be selected if you are using OnGuard health checks.
Auto-Generate	Auto-generates the anonymous account. Account is created without a session limit or expiration time, and with the Guest role (ID 2).
Anonymous User	(Required) Account to use for anonymous authentication. The password will be visible in the HTML. The account Session Limit should be increased to the number of guests to be supported.
Prevent CNA	Enables bypassing the Apple Captive Network Assistant (CNA). The CNA is the pop-up browser shown when joining a network that has a captive portal. This option might not work with all vendors; it is dependent on how the captive portal is implemented.
Custom Form	Indicates you will provide a custom login form. If selected, you must supply your own HTML login form for the header or footer HTML areas.
Custom Labels	Enables altering the default labels and error messages. This option adds the **Pre-Auth Error** field to the form.
Username Field	Name of the username field for the login form. This value is passed to the NAS device when the form is submitted.
Username Suffix	Suffix automatically appended to the username before submitting the login form to the NAS.
Username Label	Label that appears on the form for the username field. Leave blank to use the default, (Username:).
Password Field	Name of the password field for the login form. This value is passed to the NAS device when the form is submitted.
Password Encryption	Type of password encryption to use when submitting the login form. Options include: • **No Encryption (plaintext password)** • **UAM basic** • **UAM with shared secret**
Password Label	Label that appears on the form for the password field. Leave blank to use the default (Password:).

Field	Description
UAM Secret	Shared secret between the NAS device and the Web login form.
Pre-Auth Check	How the username and password should be checked before authentication. Options include: • **None — no extra checks will be made** • **App Auth — check using Aruba Application Authentication** (the default) • **Local — match a local acount** • **RADIUS — check using a RADIUS request** • **Single Sign-On — enable SSO for this Web login**—When this option is selected, guests are redirected to the identity provider (IdP) configured in CPPM, where they authenticate themselves. They are redirected back to CPPM, which verifies the login was successful and uses the same credentials to redirect to the actual Web login flow. (SSO support is enabled at **CPPM > Configuration > Identity > Single Sign-On**)
Pre-Auth Error	Customized label text to display if username and password lookup fails. Leave blank to use the default (Invalid username or password).
Terms	Requires the user mark a check box to accept a Terms and Conditions agreement.
Extra Fields	You may specify any additional field names and values to send to the NAS device. Enter these as `name=value` pairs, one per line.
Terms Label	Label that appears on the form for the terms check box. Leave blank to use the default (Terms:).
Terms Text	Enter the HTML code containing your terms and conditions. Leave blank to use the default, (I accept the terms of use)
Terms Layout	Layout for the terms and conditions text—either above or below the Terms check box.
Terms Error	Text to display if the terms are not accepted. Leave blank to use the default (In order to log in, you must accept the terms and conditions.).
Log In Label	Label that appears on the form for the login button. Leave blank to use the default (Log In).
Skin	Skin to use for the Web login page. Options include: • **(Default)** • **Aruba ClearPass Skin** • **Blank Skin** • **ClearPass Guest Skin** • **Custom Skin 1** • **Custom Skin 2**
Title	Title to display on the Web login page. To use the default (Login), leave this field blank.
Login Message	Enter the HTML template code for the text to display while the login is in progress.
Login Delay	Specifies the number of seconds to delay while displaying the login message. The default content is shown, and can be modified. You can also use the drop-down list to add images or other content items.

Options in the **Default Destination** area control the destination page users are redirected to after login:

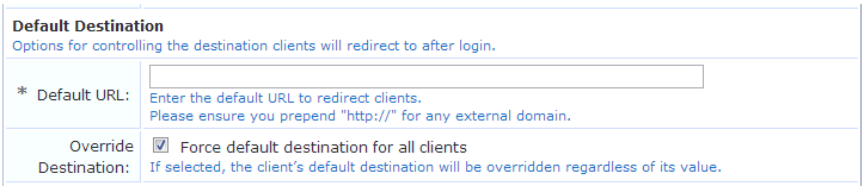


Table 41: *Web Login Editor, Default Destination Properties*

Field	Description
Default URL	The default URL for the redirect page. For external domains, this must include the **http://** prefix.
Override Destination	Forces the default destination for all clients, overriding any default value already set on the client.

Options in the **Login Page** area control the look and feel of the login page:

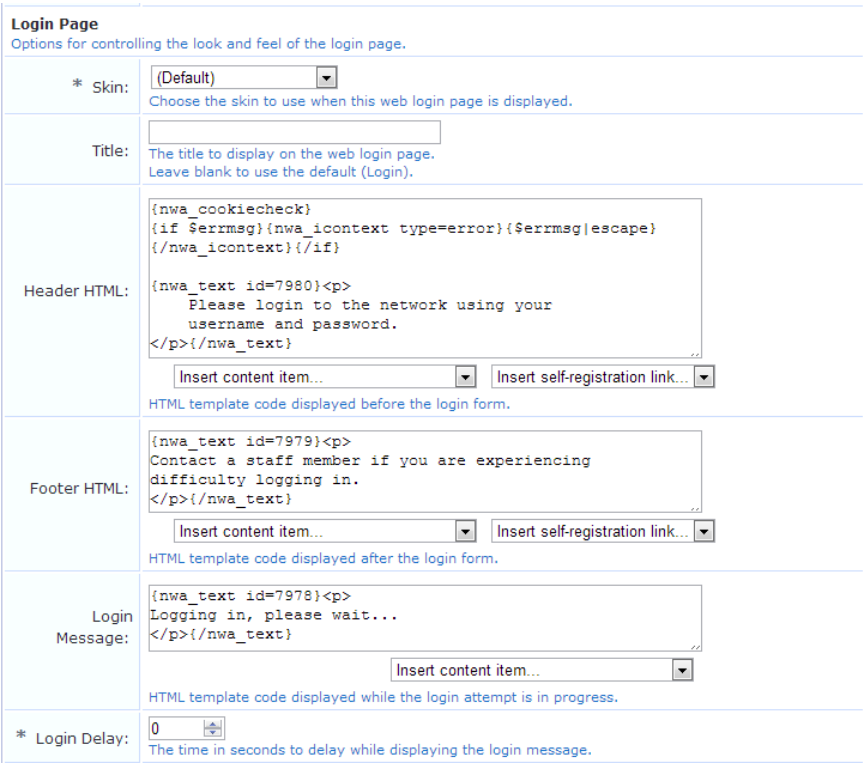
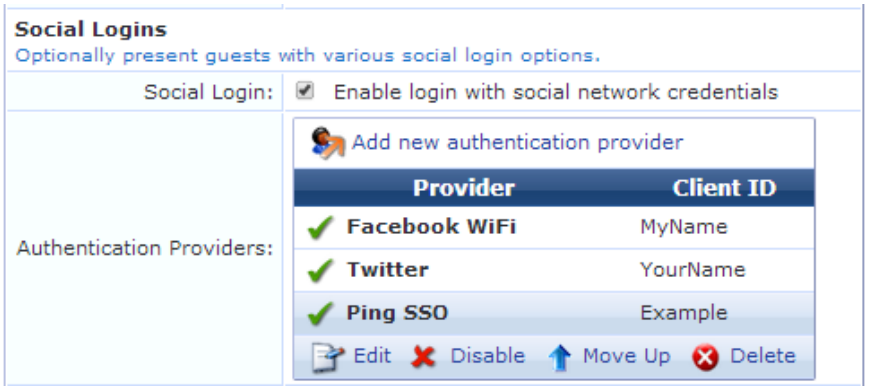


Table 42: *Web Login Editor, Login Page Properties*

Field	Description
Skin	(Required) Specifies the skin to use for the login page.
Title	The title that will be displayed on the page.
Header HTML	The HTML content to display above the login form. The default content is shown, and can be modified. You can also use the drop-down lists to add images or other content items, or to insert a self-registration link.
Footer HTML	The HTML content to display below the login form. The default content is shown, and can be modified. You can also use the drop-down lists to add images or other content items, or to insert a self-

Field	Description
	registration link.
Login Message	Enter the HTML template code for the text to display while the login attempt is in progress. The default content is shown, and can be modified. You can also use the drop-down list to add images or other content items.
Login Delay	Specifies the number of seconds to delay while displaying the login message.

Options in the **Social Logins** area let you present guests with various social login options:



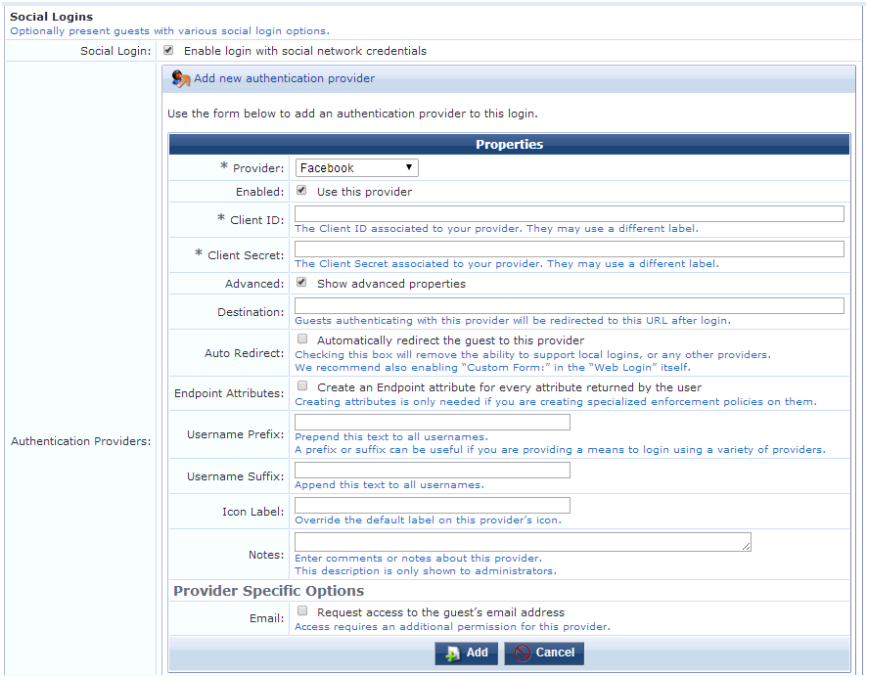


Table 43: *Web Logins Editor, Social Logins Properties*

Field	Description
Social Login	To enable the use of social network credentials to log in, select this check box. The form expands to include social login configuration options.
Authentication Providers	All social network providers that have been configured are included in this list.
Add new authentication provider	Opens the properties form for adding and configuring a social network provider.
Debug	If selected, social logins debugging will be included in the application log.
Edit	Opens the Properties form. You can edit any of the configuration options for the provider.
Disable	Disables the provider. To enable it again, click the Enable link.
Move Up Move Down	Moves the provider up or down in the list.
Delete	Removes the provider from the list and deletes its configuration. You will be asked to confirm the deletion.
Add new authentication provider	Opens the properties form for adding and configuring a social network provider.
Provider	(Required) Select a social network provider from the drop-down list.
Enabled	If selected, this provider can be used.
Client ID	The client ID to use with this provider. The provider might use a different label.
Client Secret	The client secret to use with this provider. The provider might use a different label.
Advanced	Displays additional options on this form.
Destination	URL to which guests authenticating with this provider will be redirected after logging in.
Auto Redirect	If selected, local logins and other providers will not be supported. If this option is selected, we recommend you also enable **Custom Form** in the **Login Form** area.
Endpoint Attributes	If selected, an endpoint attribute is created for every attribute returned by the user. This is only needed if you are creating specialized enforcement policies on them.
Flatten Prefix	If Endpoint Attributes was selected, you may enter text to prepend to all keys when flattening. This stores a normalized version of all the returned attributes in the endpoint. If nothing is entered in this field, the default "social" will be used.
Username Prefix	Text to prepend to all usernames. A prefix can be useful if you are providing a way to log in using a variety of providers.
Username Suffix	Text to append to all usernames. A suffix can be useful if you are providing a way to log in using a variety of providers.
Icon Label	Overrides the default label on the provider's icon.

Field	Description
Notes	You may enter additional notes or comments about the provider. This description is only seen by administrators.
Email	If selected, allows the provider to request access to the guest's email address. Access requires additional permission for the provider.
Google Plus	if selected, allows the provider to request access to the guest's Google Plus profile. Access requires additional permission for the provider.
Google Apps VIP	Name of the user record attribute to apply to the `social_vip` flag. For more information, refer to the Google Directory API for retrieving users.
Allow Guests	If selected, allows Google accounts that are not part of your domain to log in as guests. The `social_vip` flag will be set to false for these users.
Admin SDK Refresh Token	(Required) Enter a valid Google API admin refresh token. To generate a new refresh token, clear this value. You will need to generate a new authorization code.
Generate Code	To generate a new authorization code, click the link in this field. You will be redirected to a new window to generate an authorization code.
Authorization Code	(Required) When you generate a new code, it is automatically entered in this field, and you can close the redirect window.
LinkedIn VIP	Enter a LinkedIn Distance value (0 - 3). If the guest is within this distance, the `social_vip` flag will be enabled for them.
Add	When your entries are complete on the Properties, form, click this button. The Properties form closes and the provider is included in the Authentication Providers list.

Options in the **Network Login Access** area control access to the login page:

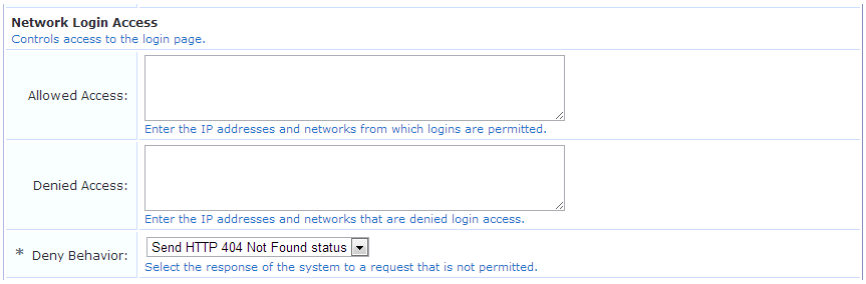


Table 44: *Web Login Editor, Network Login Access Properties*

Field	Description
Allowed Access	The IP addresses and networks from which logins will be allowed.
Denied Access	The IP addresses and networks from which logins will be denied.
Deny Behavior	(Required) The response shown to the user if their login request is denied. Options in this drop-down list include: • **Send HTTP 404 Not Found status** • **Show Access Denied page** • **Show a blank page**

Options in the **Post-Authentication** area control the actions to perform after a successful pre-authentication:

Table 45: *Web Login Editor, Post-Authentication Properties*

Field	Description
Health Check	Requires the visitor to pass a health check before they can access the network. The health check is done automatically through the OnGuard dissolvable agent.
Client Agents	The agent option OnGuard should use for client scanning. Options available in this drop-down list are: • **Native agents with Java fallback** • **Java Only** • **Native agents only** Native agents are available for the Microsoft Windows and Apple OS X operating systems. Each native agent is native to a specific platform and does not require Java.
Header HTML	The HTML content to display above the health check text. The default content is shown, and can be modified. You can also use the drop-down list to add images or other content items.
Footer HTML	The HTML content to display below the health check text. The default content is shown, and can be modified. You can also use the drop-down list to add images or other content items.
Update Endpoint	Marks the user's MAC address as a known endpoint, and updates the endpoint's attributes with other details from the user account. If this check box is selected, the form expands to include the Advanced field.
Advanced	Lets you specify custom attributes to store in the endpoint. If this check box is selected, the form expands to include the Endpoint Attributes field.
Endpoint Attributes	Enter the list of name-value pairs to pass as custom attributes. Follow the format **user_field | Endpoint Attribute**. Examples are shown in this text box.

Receipts

The Receipts area of the user interface lets you customize the receipts that are available to guests and sponsors. To work with receipts configuration, go to **Configuration > Receipts > Start Here**.

This section includes:

- "Digital Passes" on page 271
- "Email Receipts and SMTP Services" on page 284
- "Customizing SMS Receipt" on page 290
- "Customizing Print Templates " on page 291

Digital Passes

Digital passes are cryptographically signed files containing fields and images that are used as boarding passes, event tickets, coupons, store passes, or other scannable items.

In ClearPass Guest, you can upload and install digital pass certificates, create new templates for digital passes, and use the passes for guest receipts.

To work with digital passes, go to **Configuration > Receipts > Digital Pass Templates**.

This section includes:

About Digital Passes

A digital pass is a cryptographically signed file that contains fields and images. When viewed by a user, a pass looks like a simple card, with a front side and a back side. Passes are issued to users as boarding passes, event tickets, coupons, store passes, or other scannable items (for example, a membership pass).

Passes can be organized in Apple Passbook on the user's device. Good visual design practices ensure that each pass can be quickly recognized when displayed amongst other passes. (Apple Passbook is available on Apple iOS 6+ devices.)

To use a pass such as a membership card or store card, the user selects it from the passbook and displays it so the barcode can be scanned. To use a pass such as a boarding pass or event ticket where date relevance or location relevance was configured, it can be accessed when it becomes active on the lock screen at the relevant time or place.

Passes for Guest Receipts in ClearPass Guest

In ClearPass Guest, you can use passes to provide a guest receipt to a user who has registered using a guest self-registration page. ClearPass Guest supports the pass format specified for the Apple Passbook application.

The front of a guest receipt pass typically shows the site SSID, the username, password, and account expiration time. The back of the pass provides instructions for connecting to the network. It also contains logos and icons, typically those of the organization providing the guest receipt. The exact details of what is written into the guest receipt pass are determined by a pass template.

When the guest has registered and the guest receipt page is displayed, they can click the Add to Passbook link. This generates the new guest receipt pass, using fields from the registered guest account such as the username, password, and expiration time. The fields included in the pass, as well as where they are placed and how they are formatted, are determined by the pass template that was selected for the guest self registration. The pass is also cryptographically signed using a Pass Certificate.The generated pass is provided as a download, and the user can add the downloaded pass to their passbook.

Pass Templates

The pass template defines what is written into the pass. You can create, edit, copy, and delete pass templates. For more information, see "Managing Digital Passes" on page 276 and "Creating and Editing a Digital Pass Template" on page 277.

Pass templates define:

- Name and a description: Used to identify the template in ClearPass administrative forms and views.
- Style: Boarding Pass, Event ticket, Coupon, Store Pass, or Generic.
- Colors: Foreground, background, and label. If no alternate colors are specified, then default colors will be used. If there are alternate colors specified, then they will be used instead of the default colors.
- Summary: Short description for a voice-over.
- Icon: Displayed on the lock screen. A shine effect is automatically applied to the icon. To select an icon image, it must first be uploaded to the Public Files area of the content manager.
- Logo: Displayed in the top left corner of the front of the pass. To select a logo image, it must first be uploaded to the Public Files area of the content manager.
- Fields: For the front and back of the pass. The information shown on the pass is broken up into fields. Each field is defined by a dictionary which gives it a value and label (which are displayed to the user), a unique key, and optional information about how its value should be formatted.
- Relevant locations (GPS coordinates) and relevant date: Used by Apple Passbook to show a message on the Lock screen where and when the pass becomes relevant.

Many settings for a pass template accept standard template code. This is the same template code that is supported for print templates. This allows an administrator to specify either simple direct values or more complex values based upon the evaluation of template code. All template code is evaluated at the time that the pass is generated from the pass template, using values from the guest receipt as inputs to the pass template.

A pass can contain both a low-resolution version (i.e. for non-Retina displays) and a high-resolution version (i.e. for Retina displays) of each image. If uploaded to the content manager, the high-resolution version of an image is also automatically included in the pass. The high-resolution version must be named with a @2x suffix placed just before the file extension—for example:

`Company_Logo.png` (low-resolution file name)

`Company_Logo@2x.png` (high-resolution file name)

Apple Passbook Certificates

You must have a Pass Certificate issued by Apple to be able to generate Apple Passbook passes.

As part of the generation process, the pass is cryptographically signed using a Pass Certificate. A Pass Certificate is a special type of X.509 certificate issued by Apple through the Apple Developer portal. You need a Pass Certificate to cryptographically sign the passes when they are generated and downloaded. This cryptographic signature is verified by Passbook when adding a pass. Passbook will only accept a pass that has been signed by a valid Pass Certificate issued by Apple. To obtain a pass certificate, you must have an Apple developer account. You may register for a developer account at developer.apple.com.

For more information, see "Viewing Digital Pass Certificates" on page 274 and "Installing Digital Pass Certificates" on page 275.

Digital Passes Process Overview

To obtain and install an Apple Passbook certificate:

1. Log in to the Apple Developer portal at developer.apple.com.
2. Register a Pass Type ID for your pass.
3. Create a certificate for your Pass Type ID.

4. Follow the portal's instructions to create a certificate signing request using Keychain Access (a standard Mac OS X application) and submit it to the portal.
5. Download the Pass Type ID certificate.

You also need to provide the private key for the pass certificate. If you created the certificate signing request using Keychain Access:

1. In Keychain Access, locate the private key for the certificate signing request.
2. Export this private key to a Personal Information Exchange (.p12) file.

To install the pass certificate and the associated private key in ClearPass Guest, go to **Configuration > Digital Passes > Start Here** and click **Install Pass Certificate**. For more information, see "Installing Digital Pass Certificates" on page 275.

To enable pass downloads:

1. Go to **Configuration > Guest Self-Registration**, click an enabled guest self registration's row, and then click its **Edit** link.
2. In the diagram, click the **Actions** link for the **Receipt Page**.
3. Scroll down to the **Download Pass** area and set the **Enabled** field to **Display a link enabling download of a guest receipt pass**.
4. Select the Template to use (there should be at least one default template available for selection).

Viewing Digital Pass Certificates

You must have a pass certificate in order to generate and download passes. A Pass Certificate is a special type of X.509 certificate issued by Apple through the Apple Developer portal. You need a Pass Certificate to cryptographically sign the passes when they are generated and downloaded. This cryptographic signature is verified by Passbook when adding a pass. Passbook will only accept a pass that has been signed by a valid Pass Certificate issued by Apple.

To view the certificate that will be used to sign Apple Passbook digital passes, go to **Configuration > Digital Passes > Pass Certificate**. If a pass certificate has been installed, this page displays the certificate details.

If no pass certificate is installed yet, no details are displayed. Click the **Upload pass certificate** link to obtain and install a certificate. See "Installing Digital Pass Certificates" on page 275.

Installing Digital Pass Certificates

You must have a valid Pass Certificate issued by Apple in order to generate and download passes. To obtain a pass certificate, you first need an Apple developer account. Developer accounts are free; to register for an account, go to developer.apple.com and click the register link at the bottom of the page.

To obtain the Apple Passbook certificate that will be used to sign digital passes:

1. Log in to the Apple Developer portal at **developer.apple.com**.
2. Register a Pass Type ID for your pass.
3. Create a certificate for your Pass Type ID.
4. Follow the portal's instructions to create a certificate signing request using Keychain Access (a standard Mac OS X application) and submit it to the portal.
5. Download the Pass Type ID certificate.

You also need to provide the private key for the pass certificate. If you created the certificate signing request using Keychain Access:

1. In **Keychain Access**, locate the private key for the certificate signing request.
2. Export this private key to a Personal Information Exchange (.p12) file.

To install the certificate, go to **Configuration > Digital Passes > Start Here** and click the **Install Pass Certificate** link, or go to **Configuration > Digital Passes > Pass Certificate** and click the **Upload pass certificate** link. Step 1 of the Install Pass Certificate form opens.

Field	Description
Format	Specify whether you will upload the certificate as a file or paste in the certificate text. The form expands to include the Step 2 options.
Certificate	For certificates pasted as text, copy and paste the digital certificate's text. This is a block of encoded text and should include the "BEGIN CERTIFICATE" and "END CERTIFICATE" lines. For uploaded certificate files, browse to the certificate to upload. This should be one of the following: PEM encoded X.509 file containing the certificate (*.pem) PKCS#12 encoded file containing both the certificate and the private key (*.p12)
Private Key	For private keys pasted as text, copy and paste the private key's text. This is a block of encoded text and should include the "BEGIN PRIVATE KEY" and "END PRIVATE KEY" lines. For uploaded private key files, if the certificate file does not include the private key, browse to the private key to upload. The private key should be either a PEM-encoded or a Personal Information Exchange (.p12) file.
Passphrase **Confirm Passphrase**	The passphrase that was used to encrypt the file containing the private key. If the private key is not encrypted, leave this field blank.
Upload Certificate	The certificate is uplpaded and the details are displayed on the Pass Certificate page. See Viewing the Digital Pass Certificate.

Managing Digital Passes

Pass properties are defined in pass templates. These properties include name and a description, style (type of pass), colors, summary, icon, logo, fields, relevant locations, relevant date, and associated apps.

To view or work with your list of digital pass templates, go to **Configuration > Digital Passes > Pass Templates**. The Pass Templates list view opens.

Field	Description
Edit	Edit any of the template's properties.
Copy	Make a copy of the template to use as a basis for a new template.
Reset to Defaults	Resets the default template to its original settings if changes were made. (Only available for the default template)
Delete	Deletes the pass template. (The default Guest Receipt template cannot be deleted)
Create a new template	Create a new template.

Creating and Editing a Digital Pass Template

To create or edit a digital pass template, go to **Configuration > Digital Passes > Pass Templates**, and then click the **Create a new template** link in the upper right corner, or click the **Edit** link for a template in the list. The Pass Template Settings form opens.

Defining Basic Properties

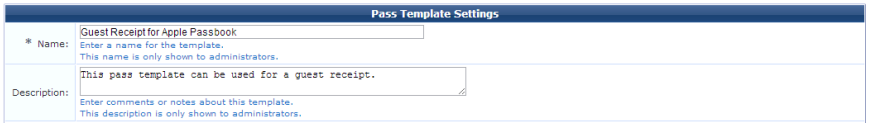
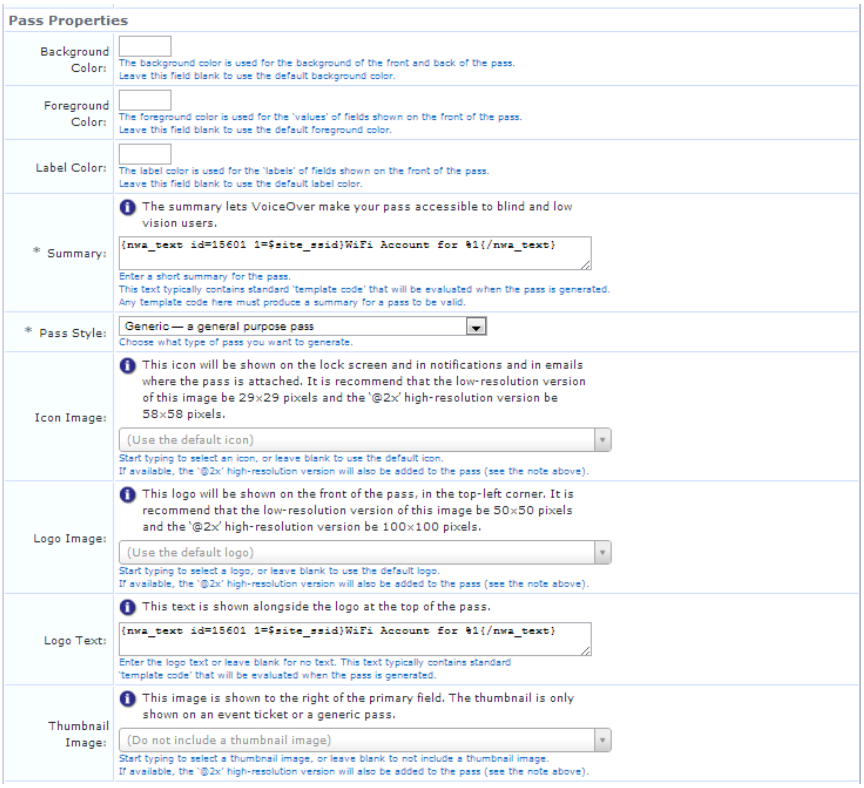


Table 46: *Basic Properties, Pass Template Settings*

Field	Description
Name	Short name that identifies the template clearly. Digital pass template names can include spaces. You may highlight this name and replace it with a new name.
Description	Comments or notes about the template. This description is only seen by administrators.

Defining Pass Properties



For examples of variables that can be used in the Summary and Logo Text fields described in the following table, click the **Example 'template code' replacements** link above the form, or see "Example Template Code Variables" on page 283.

For a list of image fields supported by each of the different pass styles, click the **A note regarding images and icons** link above the form, or see "Images in Digital Passes" on page 283.

Table 47: *Pass Properties, Pass Template Settings*

Field	Description
Background Color	Color used for the background of both the front and back of the pass. To use the default color, leave this field blank.
Foreground Color	Color used for the "values" field on the front of the pass. To use the default foreground color, leave this field blank.
Label Color	Used for the labels of fields shown on the front of the pass. To use the default label color, leave this field blank.
Summary	(Required) Short summary for the pass. This lets VoiceOver make the pass accessible to blind and low-vision users. Summary text typically contains standard template code that is evaluated when the pass is generated. Template code entered here must produce a summary for the pass to be valid.
Pass Style	(Required) Style of pass to generate. Options include: • **Generic — a general purpose pass** • **Boarding Pass (e.g., airline, boat, bus, train)** • **Coupon (e.g., coupon, special offer, discount)** • **Event Ticket (e.g., conference, sporting event, concert, movie)** • **Store Card (e.g., loyalty, discount, points, gift)**

Field	Description
Icon Image	Icon shown on the lock screen and in notifications and emails where the pass is attached. To use the default icon, leave this field blank. The low-resolution version of the icon image should be 29 x 29 pixels. If an "@2x" high-resolution version is available, it will also be added to the pass. The "@2x" high-resolution version should be 58 x 58 pixels.
Logo Image	Logo shown at the top-left corner of the front of the pass. To use the default logo, leave this field blank. The low-resolution version of the logo image should be 50 x 50 pixels. If an "@2x" high-resolution version is available, it will also be added to the pass. The "@2x" high-resolution version should be 100 x 100 pixels.
Logo Text	Text shown next to the logo at the top of the pass. To have no text next to the logo, leave this field blank. Logo text typically contains standard template code that is evaluated when the pass is generated.
Thumbnail Image	Image shown to the right of the primary field. To have no thumbnail image, leave this field blank. The thumbnail image is only shown on the Event Ticket or Generic pass styles. If an "@2x" high-resolution version is available, it will also be added to the pass.
Transit Type	Transport type for a Boarding Pass style of pass. Options include **Air**, **Boat**, **Bus**, **Generic**, or **Train**. The icon corresponding to the selected type of transit will be shown on the front of the pass between the first two primary fields.
Footer Image	Image shown below all of the fields on the front of a Boarding Pass style of pass. To have no footer image, leave this field blank. If an "@2x" high-resolution version is available, it will also be added to the pass.
Strip Image	Image shown behind the primary field on the front of the pass. To have no strip image, leave this field blank. The strip image is only used on the Coupon, Event Ticket, or Store Card pass styles. The low-resolution version of the strip image should be 312 x 84 pixels for Event Tickets, and 312 x 123 for Store Card and Coupon pass styles. If an "@2x" high-resolution version is available, it will also be added to the pass.The "@2x" high-resolution version of the strip image should be double the width and height of the low-resolution version for each pass style.
Background Image	Image shown as a background on the front of an Event Ticket. If a background image is specified, any background color that was specified will be ignored. To have no background image, leave this field blank. The background image is only shown on the Event Ticket pass style. If an "@2x" high-resolution version is available, it will also be added to the pass.

Defining Pass Fields

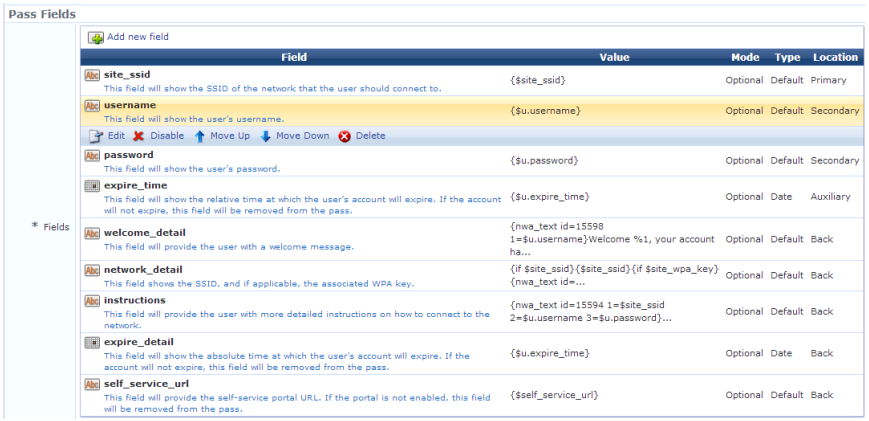


Table 48: *Pass Fields, Pass Template Settings*

Field	Description
Fields	List of fields currently included in this pass template, with descriptions. You can click a field's row for configuration options.
Edit	Opens the Field Properties editor, where you can enable the field and modify its placement, content, and presentation properties.
Disable	Disables the field for the pass. To enable it again, click its **Enable** link.
Move Up	Fields are shown in this list in their rank order. You can use the Move Up and Move Down links to modify the order.
Move Down	
Delete	Deletes a field from this pass template. You will be asked to confirm the deletion.
Add new field	Click this link to add and configure a new field.

Defining Relevant Locations

When a relevant location is configured and enabled, the pass can be displayed on the user's lock screen when they arrive within a radius of the specified coordinates — for example, a Boarding Pass can be displayed when the user arrives at a station or airport. The size of the location's radius is determined by the pass style.

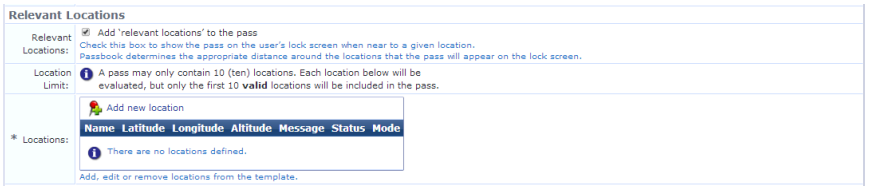


Table 49: *Relevant Locations, Pass Template Settings*

Field	Description
Relevant Locations	If selected, shows the digital pass on the user's lock screen when near a given location. Passbook determines the appropriate distance around the location for the pass to be displayed on the lock screen.
Location Limit	A pass template may only contain 10 locations. More may be added here, but only the first 10 valid locations will be included in the pass.
Locations	(Required) Lists the locations that have been defined for this pass template.
Add new location	Click this link to add and configure a new location.

Defining Relevant Dates

When a relevant date is configured and enabled, the pass can be displayed on the user's lock screen during an appropriate window of time–for example, an Event Ticket pass would be displayed within the time window for entry to the event. The length of the time window is determined by the pass style.

If the result of processing a 'date' field is a number, then that number will be interpreted as a UNIX timestamp (i.e. the number of seconds since the UNIX epoch of 1st January 1970 00:00:00 GMT). A UNIX timestamp of 0 (zero) or less will be treated the same as an empty value.

If the result of processing a 'date' field is textual (i.e. not a number and not empty), then the text will be converted to a valid date and time value. If conversion fails, or if the date is on or prior to the 1st January 1970 00:00:00 GMT (i.e. a UNIX timestamp of 0 or less), then the field will be treated as though it were empty.

If you set a relevant date for a Generic pass template, it must also include a relevant location.

For examples of variables that can be used in the Date field described in the following table, click the **Example 'template code' replacements** link above the form, or see "Example Template Code Variables" on page 283.

Table 50: *Relevant Dates, Pass Template Settings*

Field	Description
Relevant Date	If selected, shows the digital pass on the user's lock screen when near a given date. Passbook determines the appropriate span of time around the date for the pass to be displayed on the lock screen. You can also edit a date type field in the **Pass Fields** area of the form to be a relevant date.
Date and Location	If the template is a Generic pass style, a relevant location must also be included in order for a relevant date to take effect.
Date Mode	Options include:

Field	Description
	• **Optional — The pass can still be generated even if no value is supplied for the date field** • **Required — The pass will not be generated if the value for the date field is empty**
Date Rank	Rank order for processing the date field defined here. If multiple relevant date fields are included in the template, they are processed in ascending order, and the first field that has a valid date will be the relevant date for the pass.
Date	Text for the relevant date. For no value, leave this field empty. Date text typically contains standard template code that is evaluated when the pass is generated.
Date Fields	If the result of processing a date field is a number, the number is interpreted as a UNIX timestamp. If the result of processing a date field is textual (not a number and not empty), the text is converted to a valid date and time value.

Defining Associated Apps

Multiple associated apps can be added. An Apple ID must be provided for each app. Although multiple associated apps may be referenced by a pass, a link is displayed on the back of the pass only for the first app that is compatible with the device. If the app is installed on the device, the link displayed on the pass opens the app. If the app is not installed on the device, the link opens the App Store at that app.

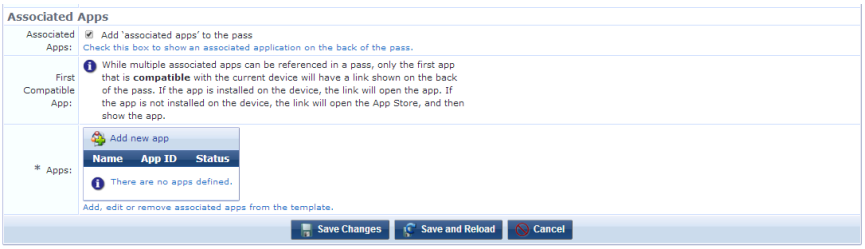


Table 51: *Associated Apps, Pass Template Settings*

Field	Description
Associated Apps	If selected, shows an associated application on the back of the pass. Passbook determines the appropriate distance around the location for the pass to be displayed on the lock screen.
First Compatible App	Multiple associate apps can be referenced by a pass, but only the first app that is compatible with the current device will have a link shown on the back of the pass. If the app is installed on the device, that link will open the app. If the app is not installed, the link will open the app store and show the app.
Apps	Lists the associated apps that are referenced by this pass template.
Add new app	Click this link to add a reference to a new associated app to the pass template.

When you have completed your entries on this page, click **Save Changes**. The new service is created and displayed in the IP Phone Services list.

Example Template Code Variables

When you create or edit a digital pass template, many of the settings accept standard template code. This is the same code that is supported for print templates. This allows you to specify either simple direct values or more complex values based upon the evaluation of template code. All template code is evaluated when the pass is generated from the pass template, using values from the guest receipt as inputs to the pass template.

The table below shows some of the special variables that can be used in the pass template fields that accept template code. This variables list is also available when you go to **Configuration > Digital Passes > Pass Templates**, click the **Edit** or **Create** link, and then click the **Example 'template code' replacements** link. Variables are available for user fields and certificate fields.

Variable	Description	Example
	User Fields	
{$u.username}	User account name	12345678
{$u.password}	User account password	87654321
{$u.enabled}	Non-zero if the guest account is enabled	1
{$u.role_name}	Role assigned to guest account	Guest
{$u.start_time}	Time at which the guest account will become active	1155772123
{$u.expire_time}	Time at which the guest account will expire	1155858523
{$u.expire_postlogin}	Lifetime of the guest account login in minutes after login	120
{$u.visitor_name}	User's name	Susan Guest
{$u.visitor_company}	User's company name	Acme Sprockets
{$u.sponsor_name}	Sponsor's name	John Sponsor
{$u.*custom_field*}	Custom fields attached to the account	
{$action}	Action taken on account (create, delete or edit)	create
{$source}	Source of account action (create_user, reset_password, etc.)	create_user
{$result.error}	Non-zero if an error occurred while creating the guest account	0
{$result.message}	Message related to the account creation	
{$timestamp}	Time at which the receipt was generated	1155752000
{$site_ssid}	SSID of the wireless LAN	
{$site_wpa_key}	WPA key for the wireless LAN	
	Certificate Fields	
{$c.username}	Username stored in the certificate	user0
{$c.device_type}	Device type stored in the certificate	iOS
{$c.device_udid}	Device UDID stored in the certificate	123456789abcdef0123456789abcdef0123456789a
{$c.device_imei}	Device IMEI stored in certificate	1123456789012345
{$c.device_iccid}	Device ICCID stored in the certificate	1234567890123456789
{$c.mac_address}	MAC address stored in the certificate	01:23:45:67:89:ab
{$c.product_name}	Product name stored in the certificate	iPad2,1
{$c.product_version}	Product version stored in the certificate	10B329
{$c.custom_field}	Custom field(s) stored in the certificate	field1=a,field2=b
{$c.email_address}	Email address stored in the certificate	test@example.com
{$c.valid_from}	Time at which the certificate becomes valid	1155772123
{$c.valid_to}	Time at which the certificate expires	1155858523
{$c.page_name}	Name of the page at which a new certificate can be provisioned	device_provisioning

Images in Digital Passes

To make images available for selection, they must first be uploaded to the Public Files area in Content Manager.

The images supported by each style of pass are shown below. This images list is also available when you go to **Configuration > Digital Passes > Pass Templates**, click the **Edit** or **Create** link, and then click the **A note regarding images and icons** link.

	Icon	Logo	Background	Thumbnail	Strip	Footer
Boarding Pass	✓	✓	✗	✗	✗	✓
Coupon	✓	✓	✗	✗	✓	✗
Event Ticket (without strip image)	✓	✓	✓	✓	✗	✗
Event Ticket (with strip image)	✓	✓	✗	✗	✓	✗
Generic Pass	✓	✓	✗	✓	✗	✗
Store Card	✓	✓	✗	✗	✓	✗

Only PNG image files (*.png) are supported by passes.

A pass can contain both a low-resolution version (i.e. for non-Retina displays) and a high-resolution version (i.e. for Retina displays) of each image. If it has been uploaded to the content manager, the high-resolution version of an image is also automatically included in the pass. The high-resolution version must be named with the suffix **@2x** at the end of the filename, just before the file extension—for example:

- Company_Logo.png (low-resolution filename)
- Company_Logo@2x.png (high-resolution filename)

Email Receipts and SMTP Services

With SMTP Services, you can configure ClearPass Guest to send customized guest account receipts to visitors and sponsors by email. Email receipts may be sent in plain text or HTML format. You may also send email receipts using any of the installed skins to provide a look and feel.

To use the email sending features, you must have the **SMTP Services Plugin** installed.

This section includes:

About Email Receipts

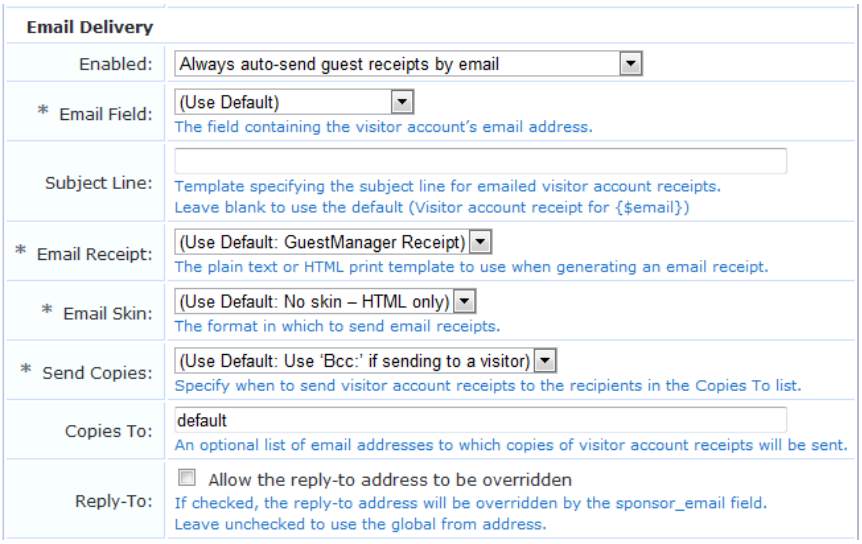
You can send email receipts for guest accounts that are created using either sponsored guest access or self-provisioned guest access. This is convenient in situations where the visitor may not be physically present to receive a printed receipt.

ClearPass Guest may be configured to automatically send email receipts to visitors, or to send receipts only on demand. Email receipts may be sent manually from the guest account receipt page by clicking the  **Send email receipt** link displayed there.

When using guest self-registration, the email delivery options available for the receipt page actions allow you to specify the email subject line, the print template and email format, and other fields relevant to email delivery.

To configure these email delivery options:

1. Go to **Configuration > Pages > Guest Self-Registration**. Click to expand the **Guest Self-Registration** row in the form, and then click its **Edit** link. The Customize Guest Self-Registration diagram opens.
2. In the **Receipt Page** area, click the **Actions** link. The Receipt Actions form opens.
3. Scroll to the **Email Delivery** section of the form and choose one of the options from the **Enabled** drop-down list. The form expands to include configuration options for email delivery.



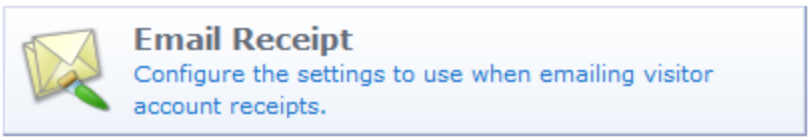
The following options are available in the **Enabled** drop-down list to control email delivery:

Table 52: *Email Delivery Options, Customize Guest Self-Registration*

Field	Description
Disable sending guest receipts by email	Email receipts are never sent for a guest registration.
Always auto-send guest receipts by email	An email receipt is always generated using the selected options, and is sent to the visitor's email address.
Auto-send guest receipts by email with a special field set	If the **Auto-Send** Field is set to a non-empty string or a non-zero value, an email receipt is generated and sent to the visitor's email address. The **auto-send** field can be used to create an "opt-in" facility for guests. Use a check box for the **auto_send_sms** field and add it to the **create_user** form, or a guest self-registration instance, and SMS messages are sent to the specified phone number only if the check box has been selected.
Display a link enabling a guest receipt via email	A link is displayed on the receipt page; if the visitor clicks this link, an email receipt is generated and sent to the visitor's email address.
Send an email to a list of fixed addresses	An email receipt is always generated using the selected options, and is sent only to the list of email addresses specified in the "Copies To" field.

Configuring Email Receipts

You can configure the default settings used when generating an email receipt by going to **Configuration > Receipts > Email Receipts**.



See "Email Receipt Options" on page 286 for details about the email receipt options.

Email Receipt Options

The **Customize Email Receipt** form may be used to set default options for visitor account email receipts. To configure email receipt options, go to **Configuration > Pages > Email Receipts**. The Customize Email Receipt form opens.

Figure 32 *Customize Email Receipt page*

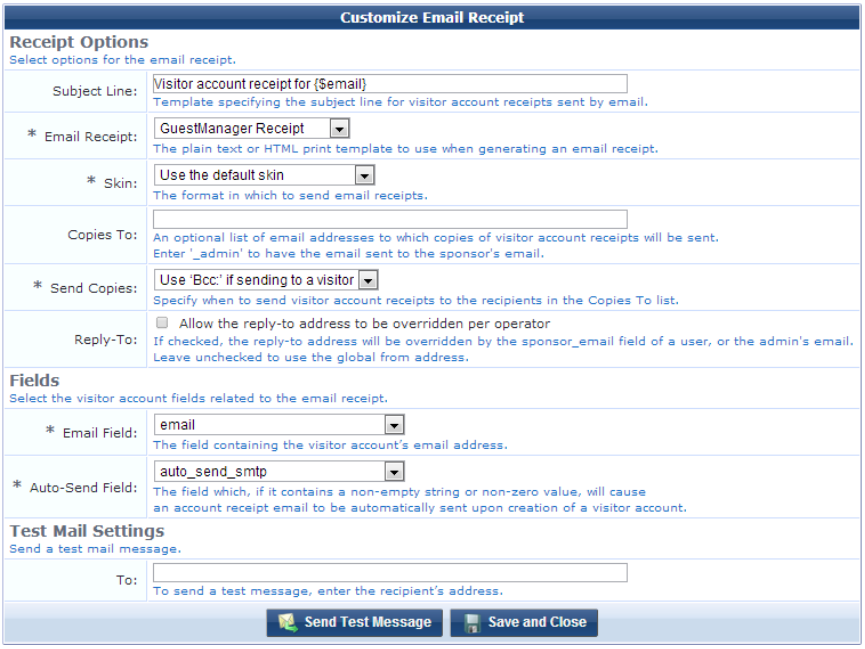


Table 53: *The Customize Email Receipt Form*

Field	Description
Subject Line	May contain template code, including references to guest account fields. The default value, `Visitor account receipt for {$email}`, uses the value of the **email** field. See "Smarty Template Syntax" on page 480 for more information on template syntax.
Email Receipt	Select the plain text or HTML template to use for the email receipt.
Skin	Specifies a skin to be used to provide the basic appearance of the email. You may select from one of the installed skins, or use one of these special options: • **No skin – Plain text only** – A skin is not used, and the email will be sent in plain text format. Use this option to remove all formatting from the email. • **No skin – HTML only** – A skin is not used, but the email will be sent in HTML format. Use this option to provide a basic level of formatting in the email. • **No skin – Native receipt format** – A skin is not used. The email will be sent in either plain text or HTML format, depending on the type of print template that was selected. • **Use the default skin** – The skin currently marked as the default skin is used. When sending an email message using HTML formatting, the images and other resources required to display the page will be included in the message.
Copies To	Creates a list of additional email addresses that are designated to receive copies of the generated email receipts. To have the email receipt sent to the sponsor's email address, enter the keyword **_admin** in this field. In this case

Field	Description
	the email receipt will be sent to the current operator.
Send Copies	Choose a value from the drop-down list to specify how copies of the email receipts will be sent to the additional email addresses listed in the Copies To field: • **Do not send copies** – The Copies To list is ignored and email is not copied. • **Always send using 'cc:'** – The Copies To list is always sent a copy of any guest account receipt (even if no guest account email address is available). • **Always send using 'bcc:'** – The Copies To list is always sent a blind copy of any guest account receipt (even if no guest account email address is available). • **Use 'cc:' if sending to a visitor** – If a guest account email address is available, the email addresses in the Copies To list will be copied. • **Use 'bcc:' if sending to a visitor** – If a guest account email address is available, the email addresses in the Copies To list will be blind copied.
Reply-To	To use the global From Address, do *not* mark the check box in the field. If you want the Reply-To address to be overridden by the sponsor_email field of the user, or by the admin's email, select the check box in this field. When you select this check box, the Override From field is added to the form.
Override From	Overrides the From Address instead of using the Reply-To value.
Email Field	The field that will contain the visitor's email address.
Auto-Send Field	The field that will cause an account receipt email to be automatically sent when a visitor account is created. The email receipt will only be sent if the field selected here contains a non-empty string of non-zero value.
Test Mail Settings	To preview and verify the appearance of the email receipt, you can send yourself or another person a test message.Enter the test message recipient's email address, then click **Send Test Message**. The test message is sent immediately.

Figure 33 *Example of Email Receipt Test Message Content*

About Customizing SMTP Email Receipt Fields

The behavior of email receipt operations can be customized with certain guest account fields. You do this on a per-user basis.

Table 54: *SMTP Email Receipt Fields*

Field	Description
smtp_enabled	May be set to a non-zero value to enable sending an email receipt. If unset, the default value from the email receipt configuration is used. The special values "_Auto" (Always auto-send guest receipts by email), "_AutoField" (Auto-send guest receipts by email with a special field set), "_Click" (Display a link enabling a guest receipt via email), and "_Cc" (Send an email to a list of fixed addresses) may also be used.
smtp_subject	Specifies the subject line for the email message. Template variables appearing in the value will be expanded. If the value is "default", the default subject line from the email receipt configuration is used.
smtp_template_id	Specifies the print template ID to use for the email receipt. If blank or unset, the default value from the email receipt configuration is used.
smtp_receipt_format	Specifies the email format to use for the receipt. It may be one of "plaintext" (No skin – plain text only), "html_embedded" (No skin – HTML only), "receipt" (No skin – Native receipt format), "default" (Use the default skin), or the plugin ID of a skin plugin to specify that skin. If blank or unset, the default value from the email receipt configuration is used.
smtp_email_field	Specifies the name of the field that contains the visitor's email address. If blank or unset, the default value from the email receipt configuration is used. Additionally, the

Field	Description
smtp_auto_send_field	Specifies the name of the field that contains the auto-send flag. If blank or unset, the default value from the email receipt configuration is used. Additionally, the special values "_Disabled" and "_Enabled" may be used to never send email or always send email, respectively.
smtp_cc_list	Sspecifies a list of additional email addresses that will receive a copy of the visitor account receipt. If the value is "default", the default carbon-copy list from the email receipt configuration is used.
smtp_cc_action	Specifies how to send copies of email receipts. It may be one of "never", "always_cc", "always_bcc", "conditional_cc", or "conditional_bcc". If blank or unset, the default value from the email receipt configuration is used.

Logic for Sending Email Receipts

The logic used to send an email receipt is:

- If email receipts are disabled, take no action.
- Otherwise, check the auto-send field.
  - If it is "_Disabled" then no receipt is sent.
  - If it is "_Enabled" then continue processing.
  - If it is any other value, assume the **auto-send** field is the name of another guest account field. Check the value of that field, and if it is zero or the empty string then no receipt is sent.
- Determine the email recipients:
  - Address the email to the value specified by the **email** field in the visitor account. If the **email** field is "_None" then do not send an email directly to the visitor.
  - Depending on the value of the Send Copies setting, add the email addresses from the Copies To: list to the email's "Cc:" or "Bcc:" list.
- If there are any "To:", "Cc:" or "Bcc:" recipients, generate an email message using the specified print template and send it to the specified recipient list.
- Additional options and considerations are described in the following table:

Table 55: *Logic for Email Receipts: Additional Options*

Field	Description
smtp_warn_before_subject	This field overrides what is specified in the subject line under Logout Warnings on the email receipt. If the value is "default", the default subject line under the Logout Warnings section on the email receipt configuration is used.
smtp_warn_before_template_id	This fieldoverrides the print template ID specified under Logout Warnings on the email receipt. If the value is "default", the default template ID under the Logout Warnings section on the email receipt configuration is used.
smtp_warn_before_receipt_format	This field overrides the email format under Logout Warnings to use for the receipt. It may be one of "plaintext" (No skin – plain text only), "html_embedded" (No skin – HTML only), "receipt" (No skin – Native receipt format), "default" (Use the default skin), or the plugin ID of a

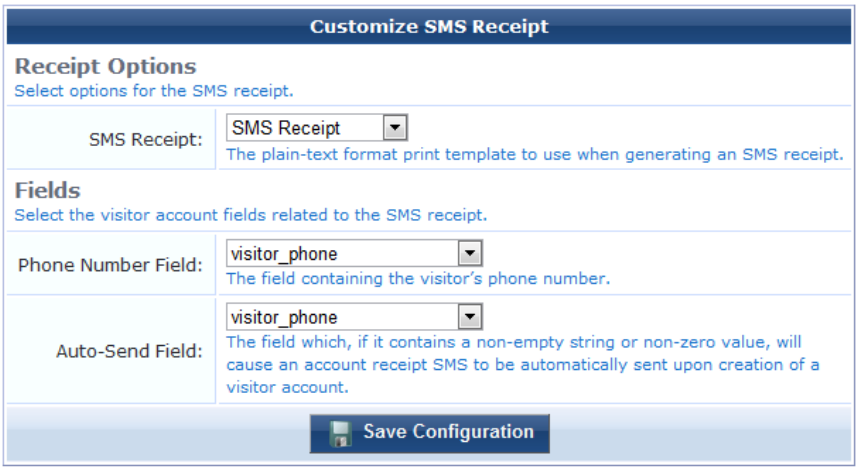
Field	Description
smtp_warn_before_cc_list	This overrides the list of additional email addresses that receive a copy of the visitor account receipt under Logout Warnings on the email receipt.If the value is “default”, the default carbon-copy list under Logout Warnings from the email receipt configuration is used.
smtp_warn_before_cc_action	This field overrides how copies are sent as indicated under Logout Warnings on the email receipt. to send copies of email receipts. It may be one of “never”, “always_cc”, “always_bcc”, “conditional_cc”, or “conditional_bcc”. If blank or unset, the default value from the email receipt configuration is used.
warn_before_from_sponsor	This field overrides the Reply To field (that is, the sponsor_email field of a user, or the admin's email) under the Logout Warnings on the email receipt. If the value is “default”, the Reply To field under Logout Warnings from the email receipt configuration is used.
warn_before_from	This field overrides the Override From field under the Logout Warnings on the email receipt. If the value is “default”, the Override From field under Logout Warnings from the email receipt configuration is used.

Customizing SMS Receipt

To configure SMS receipt options, go to **Configuration > Receipts > SMS Receipts**. The Customize SMS Receipt page opens.

The fields described below are for the SMS plugin configuration page. Use the SMS receipt page for further customization. For information on standard SMS services, see "SMS Services" on page 296.

Figure 34 *Customize SMS Receipt page*



SMS Receipt Fields

The behavior of SMS receipt operations can be customized with certain guest account fields. You can override global settings by setting these fields.

- **sms_enabled** – This field may be set to a non-zero value to enable sending an SMS receipt. If unset, the default value is true.
- **sms_handler_id** – This field specifies the handler ID for the SMS service provider. If blank or unset, the default value from the SMS plugin configuration is used.

- **sms_template_id** – This field specifies the print template ID for the SMS receipt. If blank or unset, the default value from the SMS plugin configuration is used.
- **sms_phone_field** – This field specifies the name of the field that contains the visitor's phone number. If blank or unset, the default value from the SMS plugin configuration is used.
- **sms_auto_send_field** – This field specifies the name of the field that contains the auto-send flag. If blank or unset, the default value from the SMS plugin configuration is used. Additionally, the special values "_**Disabled**" and "**_Enabled**" may be used to never send an SMS or always send an SMS, respectively.

The logic used to send an SMS receipt is:

- If SMS receipts are disabled, take no action.
- Otherwise, check the auto-send field.
  - If it is "_Disabled" then no receipt is sent.
  - If it is "_Enabled" then continue processing.
  - If it is any other value, assume the **auto-send** field is the name of another guest account field. Check the value of that field, and if it is zero or the empty string then no receipt is sent.
- Determine the phone number – if the **phone number** field is set and the value of this field is at least 7 characters in length, then use the value of this field as the phone number. Otherwise, if the value of **the auto-send** field is at least 7 characters in length, then use the value of this field as the phone number.
- If the phone number is at least 7 characters long, generate a receipt using the specified plain-text print template and send it to the specified phone number.

ClearPass Guest 3.9 and earlier used www.amigopod.com for a number of actions, including updates, SMS, and network diagnostics. The address used now is clearpass.arubanetworks.com. If you have opened host-specific openings in your firewall for the ClearPass appliance, please update them to the new name.

Customizing Print Templates

Print templates are used to define the format and appearance of a guest account receipt. To work with print templates, go to **Configuration > Receipts > Templates**. The Guest Manager Print Templates list view opens.

Click a print template's row in the list to select it. The template's row expands to include the **Edit**, **Duplicate**, **Delete**, **Preview**, **Show Usage**, and **Permissions** options.

The **Edit code** action is displayed for a print template when it has been created using the wizard, but subsequently modified. See "Modifying Wizard-Generated Templates" on page 294 in this chapter for further information.

Options to show where a print template is being used, and to control individual permissions for a print template, are also available when selecting a print template. See "Setting Print Template Permissions" on page 294.

Name	Format	Status
Account List	List	Enabled
Certificate Expiry	Page	Enabled
Download Receipt	Plain Text	Enabled
GuestManager Receipt	Page	Enabled
One account per page	Page	Enabled
SMS Receipt	Plain Text	Enabled
Sponsorship Confirmation	Page	Enabled
Two-column scratch cards	2-column list	Enabled

8 print templates Reload Show all rows

Plain text print templates may be used with SMS services to send guest account receipts; see "About SMS Guest Account Receipts " on page 304 for details. Because SMS has a 160 character limit, the number of characters used in the plain text template will be displayed below the preview. If you are including a guest account's email address in the SMS, remember to allow for lengthy email addresses (up to 50 characters is a useful rule of thumb).

Creating New Print Templates

To define a new print template, go to **Configuration > Receipts > Templates** and click the **Create new print template** link in the upper-right corner. This opens a window with four parts.

The first part lists the variables that can be used in the template together with their meaning and an example of each. User and certificate fields are available for print templates.

Variable	Description	Example
	User Fields	
{$u.username}	User account name	12345678
{$u.password}	User account password	87654321
{$u.enabled}	Non-zero if the guest account is enabled	1
{$u.role_name}	Role assigned to guest account	Guest
{$u.start_time}	Time at which the guest account will become active	1155772123
{$u.expire_time}	Time at which the guest account will expire	1155858523
{$u.expire_postlogin}	Lifetime of the guest account login in minutes after login	120
{$u.visitor_name}	User's name	Susan Guest
{$u.visitor_company}	User's company name	Acme Sprockets
{$u.sponsor_name}	Sponsor's name	John Sponsor
{$u.*custom_field*}	Custom fields attached to the account	
{$action}	Action taken on account (create, delete or edit)	create
{$source}	Source of account action (create_user, reset_password, etc.)	create_user
{$result.error}	Non-zero if an error occurred while creating the guest account	0
{$result.message}	Message related to the account creation	
{$timestamp}	Time at which the receipt was generated	1155752000
{$site_ssid}	SSID of the wireless LAN	Aruba
{$site_wpa_key}	WPA key for the wireless LAN	
	Certificate Fields	
{$c.username}	Username stored in the certificate	user0
{$c.device_type}	Device type stored in the certificate	iOS
{$c.device_udid}	Device UDID stored in the certificate	123456789abcdef0123456789abcdef0123456789a
{$c.device_imei}	Device IMEI stored in certificate	1123456789012345
{$c.device_iccid}	Device ICCID stored in the certificate	1234567890123456789
{$c.mac_address}	MAC address stored in the certificate	01:23:45:67:89:ab
{$c.product_name}	Product name stored in the certificate	iPad2,1
{$c.product_version}	Product version stored in the certificate	10B329
{$c.custom_field}	Custom field(s) stored in the certificate	field1=a,field2=b
{$c.email_address}	Email address stored in the certificate	test@example.com
{$c.valid_from}	Time at which the certificate becomes valid	1155772123
{$c.valid_to}	Time at which the certificate expires	1155858523
{$c.page_name}	Name of the page at which a new certificate can be provisioned	device_provisioning

This section is followed by three other sections: the body, the header and the footer. Each section must be written in HTML. There is provision in each section for the insertion of multiple content items such as logos.

You are able to add Smarty template functions and blocks to your code. These act as placeholders to be substituted when the template is actually used.

See "Smarty Template Syntax" on page 480 for further information on Smarty template syntax.

You can use an **{if}** statement to define a single print template that caters to multiple situations. For example, if you want to customize the print template to display different content depending on the action that has been taken, the following code could be used:

```
{if $action == "create"}
<p>
 Your guest account has been created and is now ready to use!
</p>
<ul>
{if $site_ssid}
 <li>Connect to the wireless network named: <b>{$site_ssid}</b></li>
{/if}
 <li>Make sure your network adapter is set to 'DHCP - Obtain an IP address
Automatically'.</li>
 <li>Open your Web browser.</li>
 <li>Enter your username and password in the spaces provided.</li>
</ul>
{elseif $action == "edit"}
<p>
 Your guest account has been updated.
</p>
{elseif $action == "delete"}
{/if}
<table {$table_class_content} width="500">
 <tbody>
{if $u.guest_name}
<tr>
<th class="nwaLeft">guest name</th>
<td class="nwaBody">{$u.guest_name}</td>
</tr>
{/if}
```

If this code is placed in the User Account HTML section, it will cater to the create, edit, and delete options.

Print Template Wizard

The **Create new print template using wizard** link on the **Configuration > Receipts > Templates** page provides a simplified way to create print templates by selecting a basic style and providing a logo image, title and content text, and selecting the guest account fields to include.

A real-time preview allows changes made to the design to be viewed immediately.

To use the Print Template Wizard, first select a style of print template from the Style list. Small thumbnail images are shown to indicate the basic layout of each style. There are four built-in styles:

- **Table** – Best for square or nearly square logo images, and well suited for use with “scratch card” guest accounts.
- **Simple** – Best for wide or tall logo images and for situations where an operator will print a page with guest account details.
- **Centered** – Best for wide logo images; less formal design.
- **Label Printer** – These print template styles are designed for small thermal printers in various widths. On-screen assistance is provided when printing to ensure that a consistent result can be obtained.

Click the **Preview at right** or **Preview at bottom** link at the top of the page to move the real-time preview of the print template.

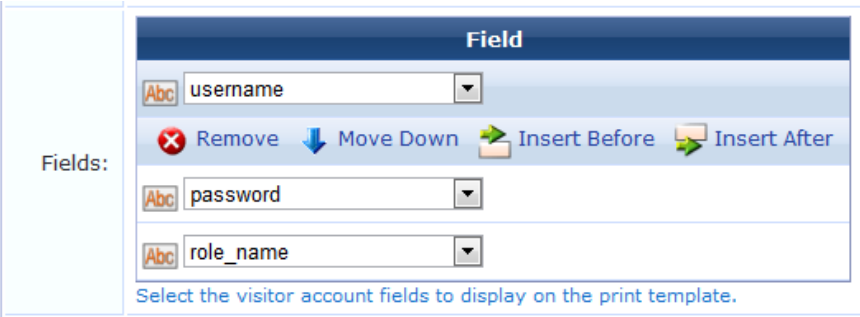
Each of the basic styles provides support for a logo image, title area, subtitle area, notes area, and footer text. These items can be customized by typing in an appropriate value in the Print Template Wizard.

NOTE

As the print template is a HTML template, it is possible to use HTML syntax as well as Smarty template code in these areas. See the "Reference" on page 477 chapter for reference material about HTML and Smarty template code.

The print template may also contain visitor account fields. The value of each field is displayed in the print template. By default, the wizard sets up the template with the **username**, **password** and **role_name** fields, but these may be customized.

Options in the **Fields** row let you add, remove, or change the order of fields. Use the drop-down list to choose the field name, then click the icon at the left of the drop-down list. The field's row expands to include the option links.



Use the **Remove**, **Move Up**, **Move Down**, **Insert Before**, and **Insert After** links to adjust the fields that are to be included on the print template.

Click the **Create Template** button to save your newly created print template and return to the list.

Modifying Wizard-Generated Templates

After you create a print template using the print template wizard, you can return to the wizard to modify it.

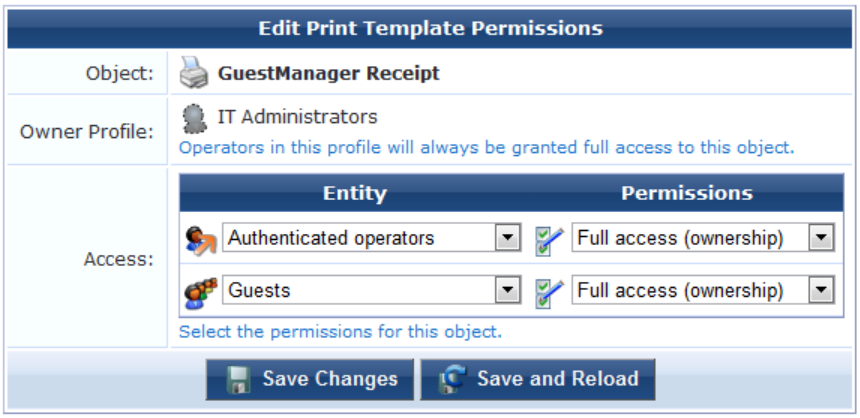
Click the **Edit print template code (Advanced)** link to use the standard print template editor. See "Creating New Print Templates" on page 292 for a description.

NOTE

If you use the wizard to edit a print template after changes have been made to it outside the wizard, those outside changes will be lost. This is indicated with the warning message "The print template code has been modified. Making changes using the wizard will destroy any changes made outside of the wizard."

Setting Print Template Permissions

On the **Configuration > Receipts > Templates** list view, the **Permissions** link for a template can be used to control access to an individual print template at the level of an operator profile. The Permissions link is only displayed if the current operator has the Object Permissions privilege. This privilege is located in the Administrator group of privileges.



The permissions defined on this screen apply to the print template identified in the "Object" line.

The owner profile always has full access to the print template.

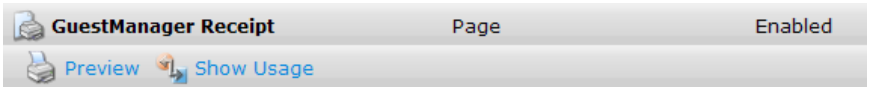
To control access to this print template by other entities, add or modify the entries in the "Access" list. To add an entry to the list, or remove an entry from the list, click one of the icons in the row. A **Delete** icon and an **Add** icon will then be displayed for that row.

Select one of the following entities in the Entity drop-down list:

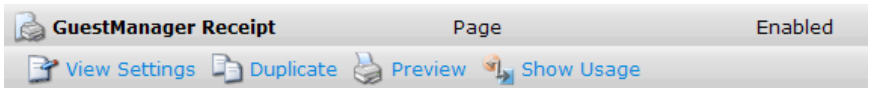
- **Operator Profiles** – a specific operator profile may be selected. The corresponding permissions will apply to all operators with that operator profile.
- Other Entities
  - **Authenticated operators** – the permissions for all operators (other than the owner profile) may be set using this item. Permissions for an individual operator profile will take precedence over this item.
  - **Guests** – the permissions for guests may be set using this item.

The permissions for the selected entity can be set using the Permissions drop-down list:

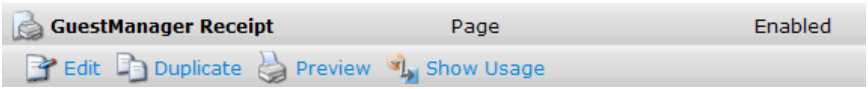
- **No access** – the print template is not visible in the list, and cannot be used, edited, duplicated, or deleted.
- **Visible-only access** – the print template is visible in the list, but cannot be edited, duplicated, or deleted.



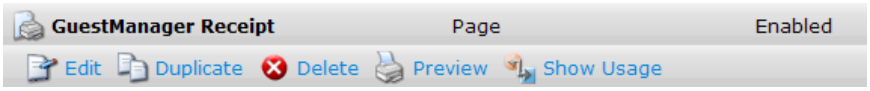
- **Read-only access** – the print template is visible in the list, and the settings for it may be viewed. The print template cannot be edited or deleted.



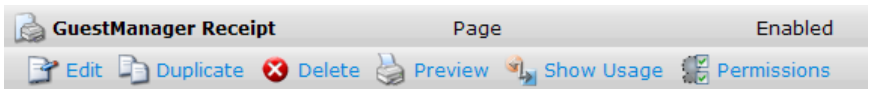
- **Update access** – the print template is visible in the list, and may be edited. The print template cannot be deleted and the permissions for the print template cannot be modified.



- **Update and delete access** – the print template is visible in the list, and may be edited or deleted. The permissions for the print template cannot be modified.



- **Full access (ownership)** – the print template is visible in the list, and may be edited or deleted. The permissions for the print template can be modified, if the operator has the Object Permissions privilege.



SMS Services

With SMS Services, you can configure ClearPass Guest to send SMS messages to guests. You can use SMS to send a customized guest account receipt to your guest's mobile phone. You can also use SMS Services to send an SMS from your Web browser. To use the SMS features, you must have the SMS Services plugin installed.

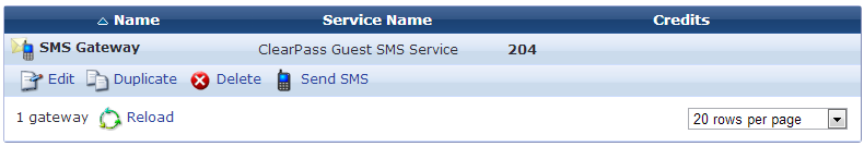
This section describes:

NOTE

ClearPass Guest 3.9 and earlier used www.amigopod.com for a number of actions, including updates, SMS, and network diagnostics. The address used now is clearpass.arubanetworks.com. If you have host-specific openings in your firewall for the ClearPass appliance, please update them to the new address.

Viewing SMS Gateways

To view the list of SMS gateways, go to **Configuration > SMS Services > Gateways**. The SMS Gateways list displays the name and available credits for any currently defined SMS gateways. A ClearPass Guest SMS service is automatically added when a subscription ID is configured in CPPM. You can also add one here.



- To work with a gateway, click its row in the list. The gateway's row expands to include the **Edit**, **Duplicate**, **Delete**, **Make Default**, and **Send SMS** options.

Table 56: *SMS Gateways List*

Field	Description
Edit	Lets you make changes to the gateway. See "Editing an SMS Gateway" on page 301.
Duplicate	Lets you make a copy of the gateway to use as a base for a new gateway. A new gateway will be added to the list with the name "Copy of <original gateway>".
Delete	Lets you remove the gateway from the list. You are asked to confirm the deletion. Click **OK** at the prompt to delete the gateway.
Make Default	Lets you make this gateway the default gateway for SMS messages.
Send SMS	Lets you send an SMS message via this gateway. The row expands to include the New SMS Message form, where you can enter the recipient's mobile phone number and the message text, then send the message.

- To add a carrier to the list, click the **Create a new SMS gateway** link in the upper-right corner. The Create SMS Gateway opens. See "Creating a New SMS Gateway" on page 297.

Creating a New SMS Gateway

An SMS gateway is automatically created and added to the SMS Gateways list when you enter your subscription ID in ClearPass Policy Manager at **Administration > Agents and Software Updates > Software Updates**. You can also use ClearPass Guest to create an SMS gateway.

To create a new SMS gateway through ClearPass Guest:

1. Go to **Configuration > SMS Services > Gateways**. The SMS Gateways list view opens.
2. Click the **Create new SMS gateway** link in the upper right corner. The **SMS Gateway Configuration** form opens.

The first part of the SMS Gateway Configuration form includes the **Service Settings** options:

Table 57: *SMS Gateway Configuration -- Gateway and Service Settings Options*

Field	Description
SMS Gateway	(Required) The SMS gateway service to use. Options in this drop-down list include: • **ClearPass Guest SMS Service** • **Custom HTTP Handler** • **SMS over SMTP** • **External Providers** The options presented in the Service Settings area depend on the gateway selected here.
Display Name	Name for this gateway service handler. The name entered here is the one that will be displayed to operators using the system.
Carrier Selection	Select how the carrier will be determined. Options in this list include: • **Registration form will have the visitor_carrier field**—The visitor will supply the carrier information when they register. • **Select a carrier**—The form expands to include the Mobile Carrier field. Choose the carrier from the **Mobile Carrier** drop-down list. • **Configure Carrier Settings**—The form expands to include configuration options for the carrier.
Mobile Carrier	(Required) If you chose the **Select a carrier** option in the **Carrier Selection** field, you must specify a carrier from this drop-down list.
SMS Address	If a carrier was specified, indicate how the email address will be determined. Options are **Use a template to determine the email address**, or **Use a fixed email address**.

Field	Description
Address	(Required) If a fixed email address was specified, enter the email address to which all SMS messages will be sent.
Address Template	(Required) If a template to determine the address was specified, enter an example address that will be used as the pattern for the address format.
Number Format	Choose a country code requirement option from this drop-down list. The available options are **Use the visitor's value**, **Always include the country code**, or **Never include the country code**.
Country Code	(Required) The carrier's country code.
Subject Line	Text for the message's subject line. This field supports Smarty template syntax. For a Smarty template syntax description, See "Smarty Template Syntax" on page 480.
Service URL	(Required) The URL template to use when sending a message. Use the following items in the template: • @USERNAME@ – Service Username • @PASSWORD@ – Service Password • @API_ID@ – API ID • @FROM@ – SMS Source Address • @TO@ – Recipient • @MESSAGE@ – Message • @MESSAGE_ENC@ – Message that has already been URL encoded
Service Method	(Required) If **Custom HTTP Handler** was selected in the SMS Gateway field, specify the HTTP method to use—either **GET** or **POST**.
HTTP Headers	If the POST option was selected in the Service Method field for a custom HTTP handler gateway, you can use this text field to override the HTTP header. For example: `Content-Type: text/xml`
HTTP Post	(Required) If the POST option was selected in the Service Method field for a custom HTTP handler gateway, you can use this text field to enter the text to post. See the service URL field for available substitutions.
Authentication Method	(Required) Specifies how the username and password will be passed to the gateway. Select either **Substituted parameters** or **HTTP Basic Authentication**.
Service Username	(Required) Your authorization username for your SMS service provider. If you are using ClearPass Guest SMS Service and have entered your ClearPass subscription ID in the Software Updates page of ClearPass Policy Manager's Administration module, leave this field blank. The subscription ID is automatically used as the username for the ClearPass SMS Service.
Service Password **Confirm Password**	(Required) Your password for your SMS service provider. If you are using ClearPass Guest SMS Service and have entered your ClearPass subscription ID in the Software Updates page of ClearPass Policy Manager's Administration module, leave this field blank. The subscription ID is automatically used as the password for the ClearPass SMS Service.
API ID	Optional API ID, if required by the SMS provider.
SSL Certificate	Path of the uploaded SSL certificate (public/cert.pem). This must be in .pem format.
SSL Passphrase	Passphrase for the certificate specified in the **SSL Certificate** field. If there is no passphrase,

Field	Description
Confirm Passphrase	leave this field blank.
SMS Source Address	Enter the originator address of sent SMS messages. Depending on the provider, this may be either a phone number or a short string.
Message Format	If needed for custom SMS handlers, you can select the check box to specify that the message format should be converted to hex-encoded UTF-16 (Unicode).

The Mobile Number Settings area of the SMS Gateway Configuration form includes options for defining the mobile phone number settings:

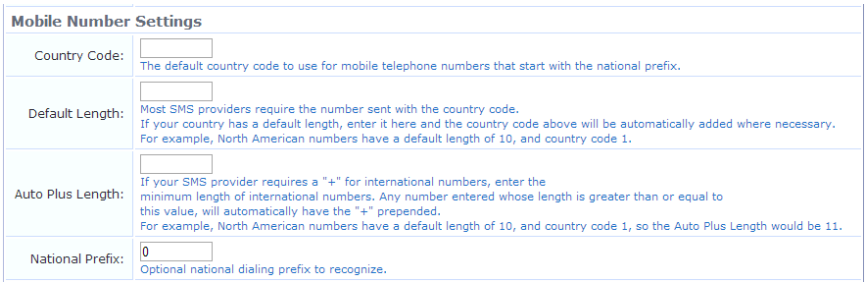


Table 58: *SMS Gateway Configuration -- Mobile Number Settings Options*

Field	Description
Country Code	Default country code to use for mobile telephone numbers that start with the national prefix. Most SMS providers require that the number be sent with the country code.
Default Length	If your country has a default length, enter it here. The country code entered in the previous field will be automatically added if it is required. For example, North American numbers have a default length of 10, and country code 1.
Auto Plus Length	If your SMS provider requires a "+" for international numbers, enter the minimum length for international numbers. If a phone number is entered whose length is greater than or equal to this value, the "+" will automatically be prepended. For example, North American numbers have a default length of 10 and a country code of 1, so the Auto Plus Length would be 11.
National Prefix	If your country uses a national dialing prefix such as "0", you may enter it here. When sending an SMS to a number that starts with the national dialing prefix, the prefix is removed and replaced with the country code instead.

The lower part of the SMS Gateway Configuration form includes the Connection Settings, Debug, and Test SMS Settings areas:

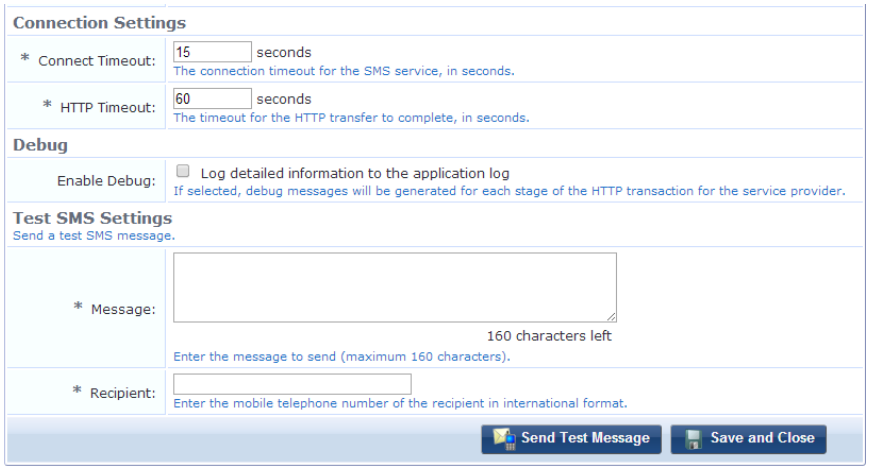


Table 59: *SMS Gateway Configuration -- Connection Settings, Debug, and Test SMS Settings Options*

Field	Description
Connection Timeout	(Required) The connection timeout for this SMS service, in seconds.
HTTP Timeout	(Required) The timeout for the HTTP transfer to complete, in seconds.
Enable Debug	To log detailed information in the application log for each stage of the HTTP transaction, select the check box in this row.
Message	(Required) To verify the configuration, enter a test message.
Recipient	(Required) To verify the configuration, enter the test recipient's mobile phone number.
Send Test Message	To verify the configuration, after you enter the test message and the test recipient's mobile number, click this button. The test recipient should receive the message and confirm the results.

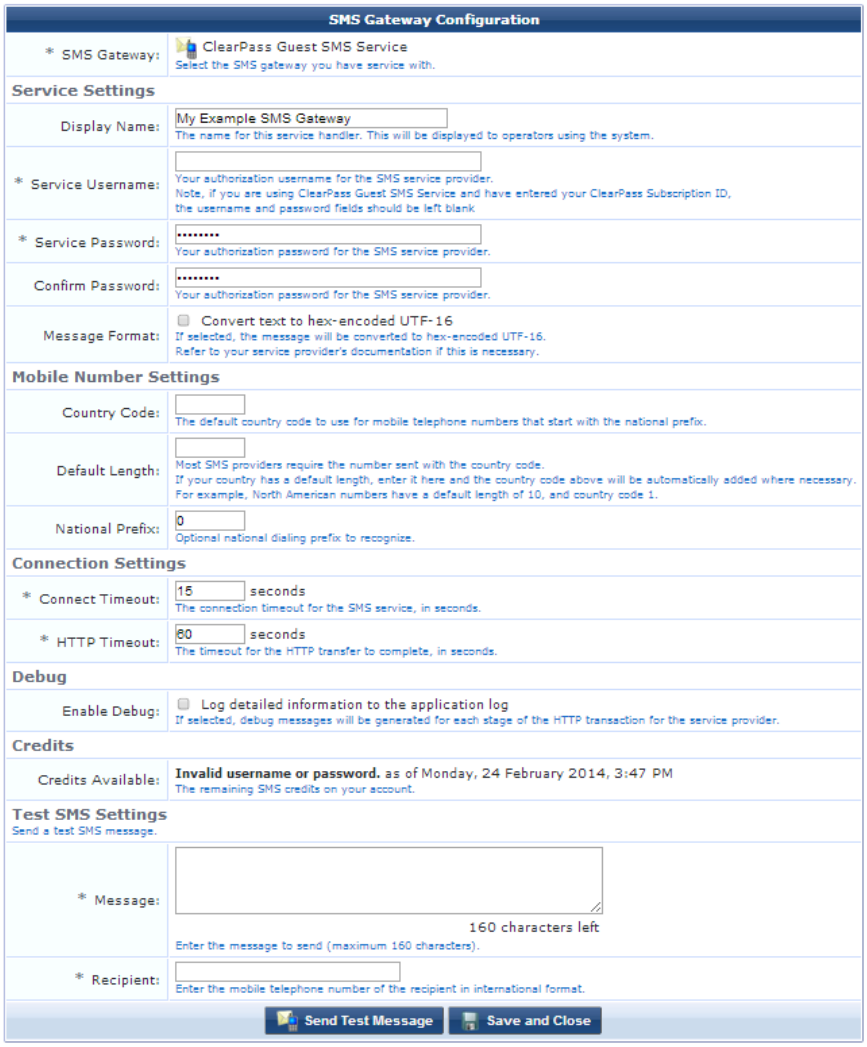
Complete the fields with the appropriate information, then click **Save and Close**. The new configuration settings will take effect immediately.

When you save your entries for the SMS over SMTP option, a new screen, **Mobile Carriers**, is added to the left navigation. For more information, see "Working with the Mobile Carriers List" on page 305.

Editing an SMS Gateway

To edit an SMS gateway:

1. Go to **Configuration > SMS Services > Gateways**. The SMS Gateways list view opens.
2. Click the gateway's row in the list, then click its **Edit** link. The Edit SMS Gateway form opens.



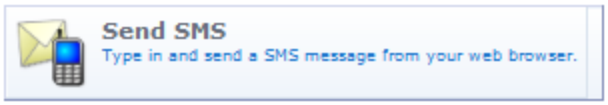
3. The **SMS Gateway** field displays the gateway service that was selected when the gateway was created. This cannot be edited after creation.
4. In the **Service Settings** area, you may edit the **Display Name.**
5. When you duplicate an SMS over SMTP gateway, the Carrier Selection configuration options are included. In the **Carrier Selection** drop-down list, choose one of the following options:
   - **Registration form will have the visitor_carrier field**—The visitor will supply the carrier information when they register.
   - **Select a carrier**—The form includes the Mobile Carrier field. Choose the carrier from the **Mobile Carrier** drop-down list.
   - **Configure Carrier Settings**—The form expands to include configuration options for the carrier:
     - **SMS Address**—You may choose to use a template to determine the email address, or to use a fixed address.
     - **Address Template or Address**—If you chose to use a template to determine the address, the next field is **Address Template**. Enter an example email address that will be used as the pattern for the address format. If you chose to use a fixed email address, the next field is **Address**. Enter the email address to which all messages will be sent.

- **Number Format**—Choose a country code requirement option from this drop-down list. The available options are **Use the visitor's value**, **Always include the country code**, or **Never include the country code**.
- **Subject Line**—You may enter text for the message's subject line. This field supports Smarty template syntax. For a Smarty template syntax description, See "Smarty Template Syntax" on page 480.

6. To log detailed information in the application log for each stage of the HTTP transaction, mark the check box in the **Enable Debug** row.
7. To verify the configuration, enter a test message in the **Message** field and enter the test recipient's mobile phone number in the **Recipient** field, then click **Send Test Message**.
8. When all fields are completed appropriately, click **Save and Close**. The SMS Gateways list is updated with the changes.

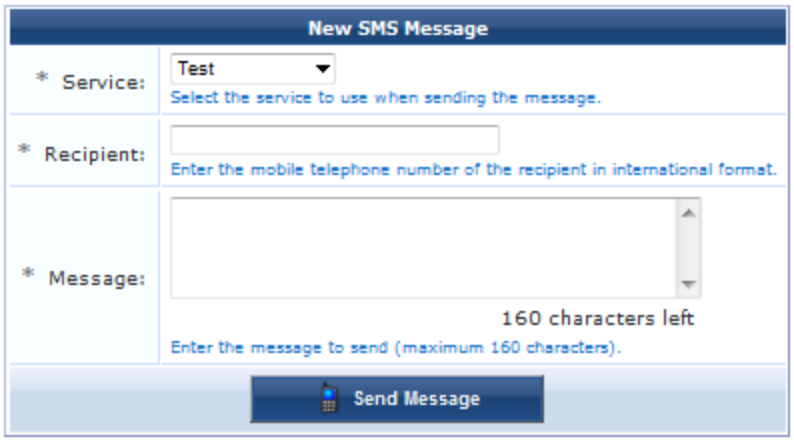
Sending an SMS

You are able to send an SMS message if the system has been configured to allow this.



To send an SMS message:

1. Go to **Configuration > SMS Services > Send SMS**. The **New SMS Message** form opens.



2. Complete the form by typing in the SMS message and entering the mobile phone number that you are sending the SMS to. The maximum length for the message is 160 characters. If multiple services are available, you may also choose the service to use when sending the message.
3. Click **Send Message**.

About SMS Credits

Most SMS providers use a system of credits when for sending messages. In ClearPass Guest SMS Services, one credit is used for each sent message. The credit is used when the message is sent, regardless of whether the recipient actually receives the message. Please review your provider's details and pricing.

To determine the number of remaining SMS credits for a service, go to the **Configuration > SMS Services > Gateways** list, and find the service's row in the list. The **Credits Available** column indicates the number of remaining SMS credits for your account. This value is determined when the first message is sent, and is updated after sending each message.

When credits are running low, a warning message is emailed to the administrator group. The email address is determined by looking up all local operators with the special IT Administrators operator profile, and using any configured email address for those operators.

Up to three messages will be sent:

- A low-credit warning is sent when the "Credits Available" value reaches the warning threshold (the default value is 50).
- A second low-credit warning is sent when the "Credits Available" value reaches half the warning threshold.
- A final message is sent when the "Credits Available" value reaches zero.

NOTE

To adjust the warning threshold, set the **Credit Warning** value in the configuration for the SMS Services Plugin.

About SMS Guest Account Receipts

You can send SMS receipts for guest accounts that are created using either sponsored guest access or self-provisioned guest access. This is convenient in situations where the visitor may not be physically present to receive a printed receipt.

ClearPass Guest may be configured to automatically send SMS receipts to visitors, or to send receipts only on demand.

To manually send an SMS receipt:

1. Go to the **Guest > Manage Accounts** and click to expand the row of the guest to whom you want to send a receipt.
2. Click **Print** to display the Updated Account Details view, and then click the **Send SMS receipt** link. The SMS Receipt form opens. Use the fields on this form to enter the service to use, the recipient's mobile phone number, and the message text.

When using guest self-registration, SMS Delivery options are available for the receipt page actions; See "Editing Receipt Actions" on page 248 for full details. For more information on SMS services, see "SMS Services" on page 296.

SMS Receipt Options

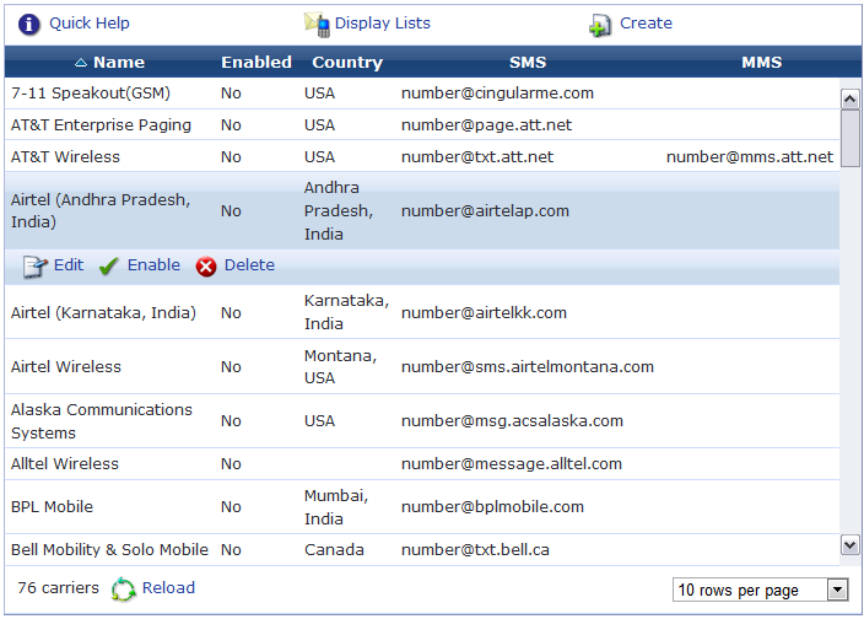
SMS receipt configuration options are available in the Customization module (see "Customizing SMS Receipt" on page 290). Advanced configuration options for the SMS Services, including receipt options, are also available in the plugin configuration (see "Configuring Plugins" on page 445 in this chapter).

Working with the Mobile Carriers List

If you have included SMS over SMTP gateways in your SMS gateways list, you can manage the list of SMTP carriers that are included in the Mobile Carrier drop-down list on the **Configuration > SMS Services > Gateways > Edit SMS Gateway** form.

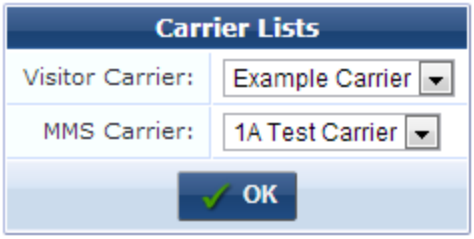
To view or work with the Mobile Carriers list:

1. Go to **Administration > SMS Services > Mobile Carriers**. The Mobile Carrier List view opens. The carriers in this list are the ones that are included in the Mobile Carrier drop-down list on the **SMS Services > SMS Gateways > Edit SMS Gateway** form.

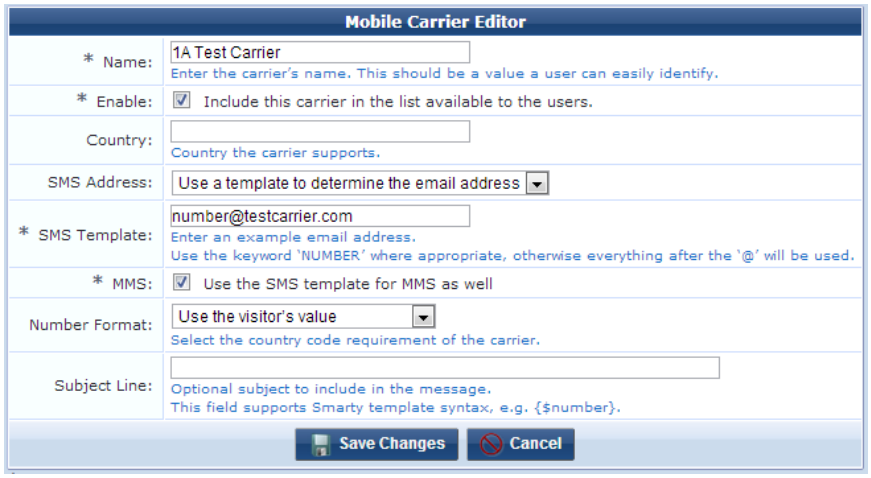


2. To filter the list, click the **Display Lists** tab above the form. The form expands to include the Carrier Lists options. Use this drop-down list to specify the visitor carrier or MMS carrier.

To be available in the drop-down lists on this Carrier Lists form, a carrier must first be enabled.



3. To enable, disable, or delete a carrier, click the carrier in the list. The carrier's row expands to include the **Edit**, **Enable** or **Disable**, and **Delete** options.
   - To enable a carrier, click the **Enable** link in its row, then refresh the screen. The carrier will then be available to work with and will be included in the drop-down lists when you click the **Display Lists** link.
4. The procedures for adding and for editing a carrier are the same.
   - To add a carrier to the list, click the **Create** tab above the form. The Mobile Carrier Editor form is added at the top of the list.
   - To edit an existing carrier, click the carrier's row in the list, then click its **Edit** link. The row expands to include the Mobile Carrier Editor form for that carrier.
   - When creating or editing a gateway, to include the Mobile Carrier field in the visitor's registration form, choose **Registration form will have the visitor_carrier field** in the **Carrier Selection** drop-down list. The Mobile Carrier field is also added to the Test SMS Settings area of the forms.



5. In the **Name** field, enter the carrier's name. If there is more than one format of the carrier company's name, use the format the public most readily identifies with the carrier service.
6. To include the carrier in the list of choices for users, mark the **Enable** check box.
7. (Optional) In the **Country** field, enter the country where the carrier's service is offered. If appropriate, you may also indicate an area within the country, such as a city, county, or state.
8. In the **SMS Address** drop-down list, choose one of the following options:
   - **Use a template to determine the email address**— When this option is chosen, the next field's name becomes **SMS Template**.
   - **Use a fixed email address**—Use this option if all SMS messages are to be sent to the same address. When this option is chosen, the next field's name becomes **Address**.
9. Configure the option you chose in the previous step:
   - If you chose **Use a template**... in the **SMS Address** field, enter an example email address in the **SMS Template** field. This provides the pattern for the address format.

- The default is to substitute the number for all characters preceding the @ sign, producing the pattern **number@address**.
- Some carriers require additional characters before or after the phone number. In this case, use the keyword string **NUMBER** in the pattern to limit the substitution to just the phone number portion of the address—for example, NUMBER.msg@carrier.example.com, or username+NUMBER@mymail.com

- If you chose **Use a fixed email address** n the **SMS Template** field, use the **Address** field to enter the email address to which all SMS messages will be sent.

10. In the **MMS** row:
    - To use the SMS template for MMS messages, mark the check box in this row. The SMS Address configuration will be applied to MMS messages, and the MMS Template row is removed from the form.
    - To use an MMS template for MMS messages, leave this check box unmarked.
11. If you will use an MMS template for MMS messages, enter an example email address in the **MMS Template** field. This provides the pattern for the address format.
12. In the **Number Format** row, choose a country code requirement option from the drop-down list. The available options are **Use the visitor's value**, **Always include the country code**, or **Never include the country code**.
13. (Optional) In the **Subject Line** field, you may enter text for the message's subject line. This field supports Smarty template syntax, and the number is available as {$number}.

    For example:

    ```
    Sent to: {$number} in the year {'Y'|date}
    ```

    ...would produce:

    Sent to: 15555551234 in the year 2012

    For a Smarty template syntax description, See "Smarty Template Syntax" on page 480.
14. When all fields are completed appropriately, click **Save Changes**. The Mobile Carrier List is updated with the changes.

About Translations

Translation services let you configure the language that will be displayed to guests in the ClearPass Guest interface. You can set a default language, enable auto-detection based on the user's browser settings, enable various language packs, and allow the user to select the language. Language packs are editable, letting you customize label and message text and numerous other settings. You can use the Plugin Manager to enable the translation assistant features, and to configure ClearPass Guest's language settings for your own use.

- To view and manage your list of enabled translation packs, see "Translation Packs" on page 308.
- To edit basic information for a translation pack, see "Creating and Editing Translation Packs" on page 308.
- To set the default language, show IDs for labels and messages, and provide a language selector on each page of the user interface, see "Translation Assistant" on page 310.
- To customize a translation pack's labels and messages, see "Customizing Translated User Interface Text" on page 311.

- To view the Translation Plugin settings, see "Configuring the Translations Plugin" on page 450 in the Administration module.

Translation Packs

To work with individual translation packs, go to **Configuration > Translations > Translation Packs**. The **Language Packs** list view opens.

All translation packs that have been enabled are included in the list. You can click a translation pack's row in the list for additional options:

Table 60: *Translation Packs List View Options*

Field	Desription
Edit	Enable or disable the translation pack and edit its name, display name, language code, flag image, and list of locale identifiers. For more information, see "Creating and Editing Translation Packs" on page 308.
Override Translations	Specify and edit the translated wording of the application's labels and messages. For more information, see "Customizing Translated User Interface Text" on page 311.
Export	Lets you download your customized translations to a file and send them to your ClearPass Support team. Your feedback helps us enhance the default translations. In the form that opens when you click **Export**, enter **support@arubanetworks.com** in the recipients field. This form is only available if you have created customized translations.
Duplicate	Create a new translation pack. You can give the copy of the translation pack a new name, enable it, and edit its display name, language code, flag image, and locales list. For more information, see "Creating and Editing Translation Packs" on page 308.
Use	Applies this language pack. Labels in ClearPass Guest are displayed in the language. To revert, click the Use link for a different language in the list.
Make Default	Use a translation pack as the new default language for the application. You can also reset the default language from the Translation Assistant form.

Creating and Editing Translation Packs

To create or edit a translation pack:

Go to **Configuration > Translations > Translation Packs**, then click the **Edit** or **Duplicate** link for a translation pack in the list. The Edit Translation Pack or Create Translation Pack form opens.

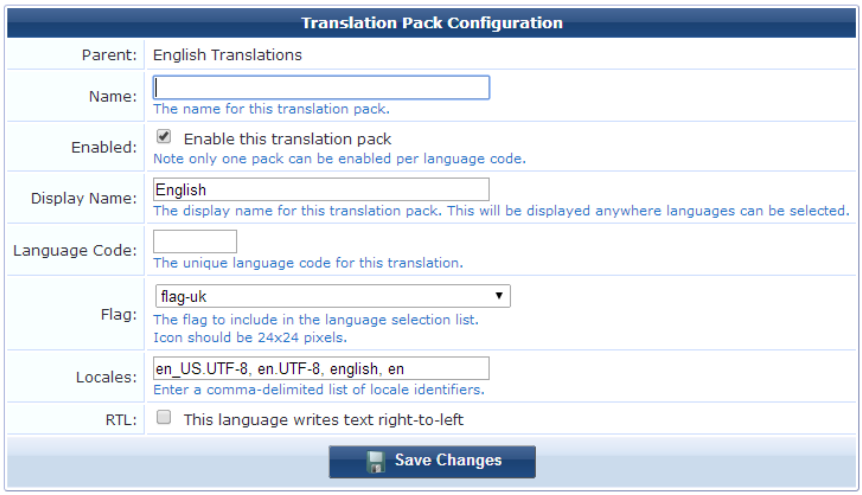
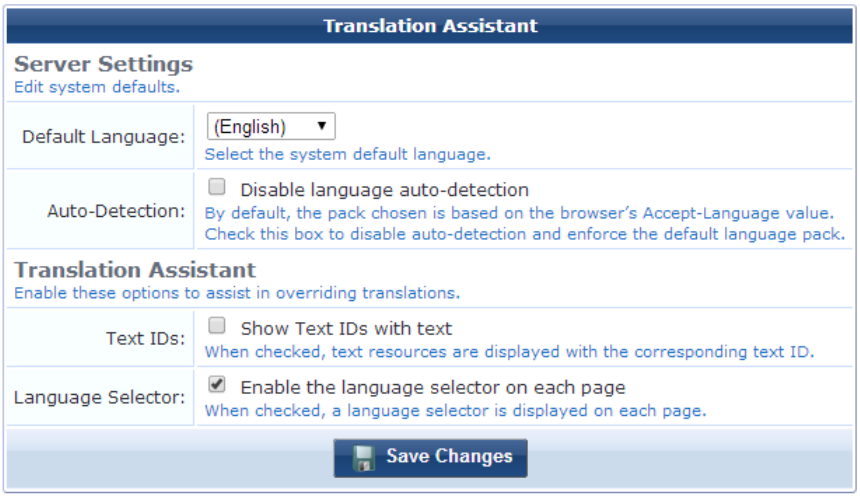


Table 61: *Translation Pack Configuration*

Field	Description
Parent	Name of the translation pack you used as a basis. This field only appears if you are duplicating a translation pack,
Name	Name of this translation pack. This identifying name is different from the display name, and is only seen by application administrators.
Enabled	You can select the check box to enable this translation pack, or leave it unselected to create the translation pack but not enable it yet. Each language code can have only one corresponding translation pack enabled at a time.
Display Name	Name to display in the language selection options in the user interface.
Language Code	The unique ISO 639-1 language code that corresponds to this translation pack. Only one translation pack at a time can be enabled for each language code.
Flag	Filename of the flag image to use for this translation pack. Image files should have been previously uploaded to the Content Manager. In the user interface's language selection options, a small image of a flag is shown next to each language.
Locales	Enter a comma-delimited list of locale identifiers for this language pack. Locale identifiers let you customize translation packs for regional differences.
Save Changes	Saves your changes and returns you to the Translations Pack list view.

Translation Assistant

To configure some basic user assistance features for the user interface's language settings, go to **Configuration > Translations > Translation Assistant**. The Translation Assistant form opens.



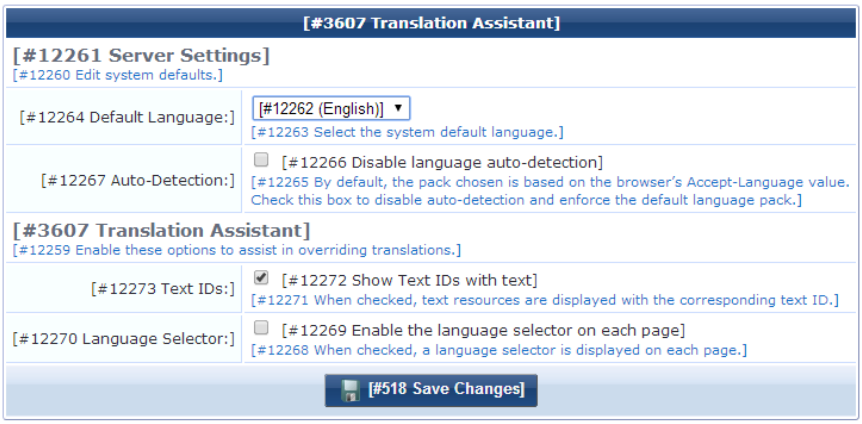


Table 62: *Translation Assistant Configuration*

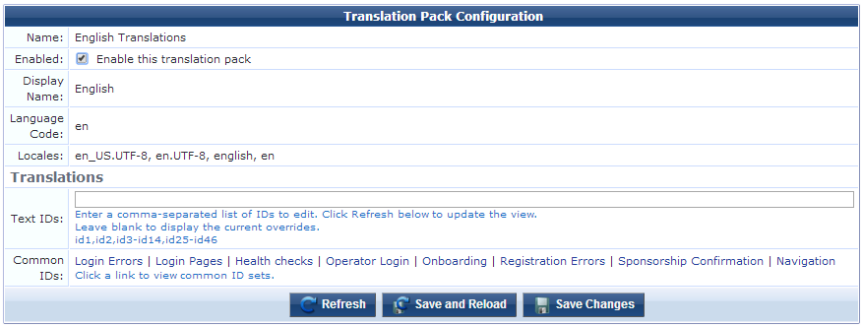
Field	Description
Default Language	Sets the default language pack for the user's application.
Auto-Detection	If selected, disables automatic browser-based language detection and enforces the default translation pack instead. The default behavior is to use the language the user's browser has detected as preferred, instead of using the default translation pack.
Text IDs	If selected, the text IDs are displayed on all headings and field names in the ClearPass Guest user interface, and an **Override all translations generated for this page** link is displayed at the bottom of each page. Displaying the text IDs lets translators easily identify the fields on each page in order to customize translations. For more information, see "Customizing Translated User Interface Text" on page 311.
Language Selector	If selected, provides language selection options on each page of the user interface. A row of language links with flags is displayed at the bottom of each page. If this check box is not selected, the language selection options are only displayed on the login page.
Save Changes	Saves your changes on this form.

Customizing Translated User Interface Text

You can override the default translations provided for labels and messages in the user interface, customizing these items in each translation pack.

To customize label and message text for a translation pack, do one of the following:

- Go to **Configuration > Translations > Translation Packs**, and then click the **Override Translations** link for a translation pack in the list. The Edit Translations form opens. Text IDs for any items that already have custom overrides are listed in the **Translations** area of the form. To edit a different field, you can enter its text ID and refresh the form. A row will be added for the field.



- Go to **Configuration > Translations > Translation Assistant**. Select the language, select the check box in the **Text IDs** field, and save your changes. Text IDs are shown with every label, and an **Override all translations generated for this page** link is now displayed at the bottom of every page in ClearPass Guest. To customize translations for a certain page or group of pages, go to the page you want to translate and click its **Override all translations generated for this page** link. The Edit Translations form opens. Text IDs for that page and the set of pages it belongs to (for example, all pages related to Web Logins) are listed in the Translations area of the form. The form includes a row for each text ID, where you can provide a custom translation.

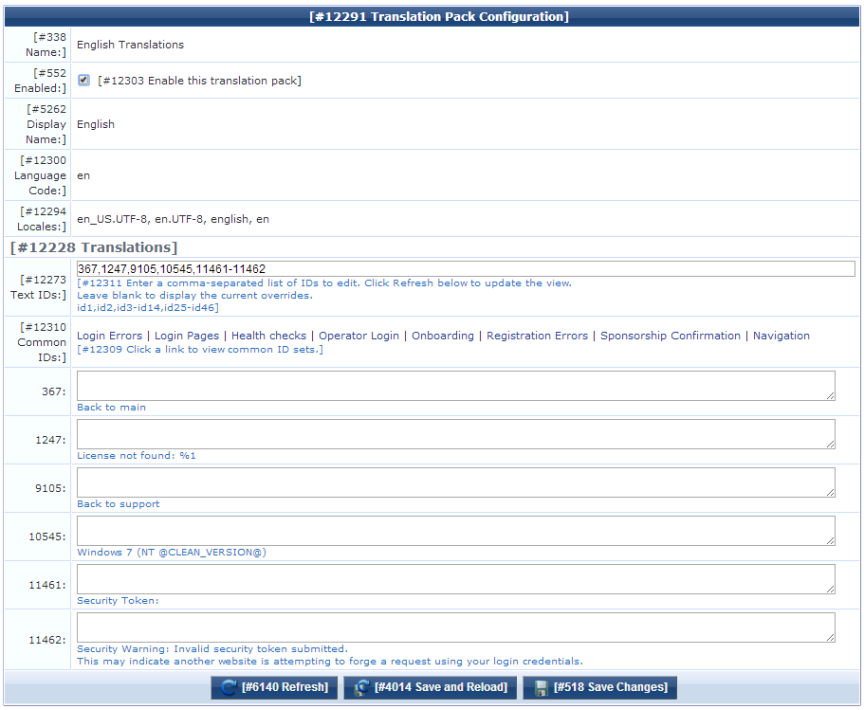


Table 63: *The Translation Pack Configuration Form*

Field	Description
Name	These fields show the information for this translation pack and cannot be edited on this form.
Display Name	
Language Code	
Locales	
Enabled	If selected, enables this translation pack. If this translation pack should not be enabled at this time, leave this check box unselected. Each language code can have only one corresponding translation pack enabled at a time.
Text IDs	List of text IDs for labels and messages in the ClearPass Guest user interface. • If you accessed this form from the **Overide Translations** link on the **Translation Packs** list view, this field is empty. If you know the text IDs of fields you want to edit, enter them here, separated by commas, and then click **Refresh**. To view or edit just the items that already have custom overrides, you can leave this field blank. • If you accessed this form from the **Override all translations generated for this page** link at the bottom of any page in ClearPass Guest, this field contains a list of all the text IDs for that page and related pages and messages.
Common IDs	Each link in this field corresponds to a group of related pages and messages. Click a link to display the text IDs for all labels and messages in that group. The text IDs are listed in the **Text IDs** field, and a row is added to the form for each text ID.
(text ID numbers)	These rows appear if text IDs were specified in the Text IDs field. The default text for the field is shown below the text box. For each item you want to override, enter the new text in the text box.
Refresh	If you entered items in the **Text IDs** field, click this button to add their rows to the form so you can edit them.
Save and Reload	Saves your changes and reloads this form.
Save Changes	Saves your changes and returns to the Translation Packs list view.

Advertising Services lets you deliver marketing promotions and advertisements to your users on a variety of Guest Management registration, receipt, and login pages.

To work with ClearPass Guest Advertising Services, go to **Configuration > Advertising > Start Here**.

This section includes:

About Advertising Services

This section describes the main elements you work with to configure Advertising Services to deliver marketing promotions and advertisements through ClearPass Guest: materials, promotions, campaigns, spaces, and pages.

Materials

A material is the individual advertisement you deliver — the ad the user sees. You can deliver ads through Web browsers, email, and SMS. The "type" of an advertising material can be a text, image, Flash, raw HTML, YouTube, or SMS text advertisement. Materials can also be assigned any number of labels, which can be used by promotions to create labeled promotions and to provide intelligent delivery.

Promotions

Most of the rules for how and when advertisements are delivered and what materials should be included are defined in a promotion. These rules are applied to all of the advertising materials that the promotion includes, whether those materials are included directly or indirectly.

A promotion can include both materials and/or other promotions. You can use this feature to build simple groupings of materials with simple rules or more complex groupings of materials and promotions with more complex rules.

Promotions can be enabled and disabled, and have a start date and an end date. They can also be assigned any number of labels. Promotions can include materials and/or other promotions using a fixed, rotating, weighted, or labeled content selection type.

Promotions can also be configured to use intelligent delivery, which uses labels to match relevant advertising to users.

Materials and promotions are then organized into advertising campaigns that run over a specified date range and with a specified priority (rank and weight).

Campaigns

An advertising campaign is the strategy by which you organize the presentation of your ads. It defines which promotions and materials to deliver, and when they should be delivered. You can rank and weight a campaign to balance it against other campaigns. A campaign can also be configured for presentation between a specified start date and end date.

Spaces

Spaces are the areas of a page that are defined for advertising content. Spaces use simple rules to select advertisements with the appropriate size, number, and format of materials. The space determines what types of materials can be shown (images, text ads, SMS ads) and, in the case of images, any size constraints on the size of the ad. For example, size constraints on a 'top' space would normally ensure that only wide but short images are displayed, whereas the constraints on a 'right' space would often allow any type of ad but require that the ad be narrower (e.g. 320 pixels wide).

Pages

Finally, for each ClearPass Guest page or group of pages, you can specify the advertising spaces you want to make active and the campaigns and materials to present on them. Advertising can be placed on login, registration, receipt, and self-service pages, and email and SMS receipts.

Advertising Services Process Overview

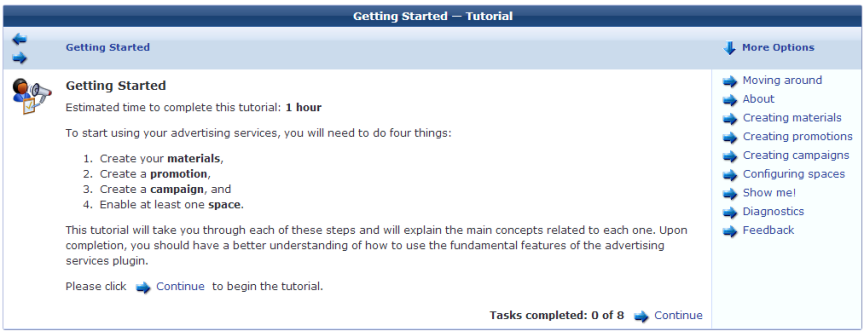
To use advertising services:

1. Add fields for gathering demographic information to Guest self-registration forms.
2. Create the materials and upload them to ClearPass Guest.
3. Create a promotion.
4. Create a campaign.
5. Enable at least one space.
6. For each page or group of pages, specify which campaigns and spaces can be presented.
7. Fine-tune campaign delivery to ensure the best user experience.

About the Tutorial

ClearPass Guest provides a Getting Started tutorial to help you become familiar with Advertising Services concepts and procedures. You can refer to the tutorial at any time.

To view the tutorial, go to **Configuration > Advertising > Start Here** and click the **Getting Started** link. The first page of the tutorial window opens.



Topics in the tutorial cover how to create materials, promotions, and campaigns and configure spaces. You can view the finished product of the practice exercises. Tips are provided on how to troubleshoot the different stages of the process.

Navigating the Tutorial

Table 64: *Tutorial Navigation Elements*

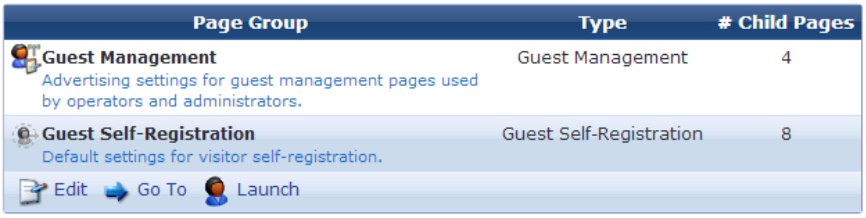
To:	Do This:
Move through the tutorial sequentially	Click the **Continue** link in the bottom right corner next to the count of completed tasks.
Move one page forward or backward	Use the right and left arrows in the top left corner.
Jump to any section of the tutorial	Use the navigation links on the right side.
See additional navigation options	Click the **More Options** link in the upper right corner. The navigation menu expands to include the Getting Started, Restart Tutorial, and Quit Tutorial links.
Go back to the beginning	Click the **More Options** link in the upper right corner, and then click the **Restart Tutorial** link. You will be asked to confirm, and are returned to the Getting Started page.
Exit the tutorial at any time	Click the **More Options** link in the upper right corner, and then click the **Quit Tutorial** link.

After you open the tutorial window, it remains open on your screen as you navigate through the application. This lets you refer to it and to related areas of the application at the same time. To close the tutorial window, click the **Quit Tutorial** link.

Advertising Pages

The Advertising Pages form lists the Guest Manager areas whose pages can be used for advertising, and provides access to advertising configuration for them. In ClearPass Guest, these pages include login, registration, receipt and self-service pages, and email and SMS receipts.

To work with the advertising settings for a Guest Manager page group or page, go to **Configuration > Advertising > Pages**. The **Edit Page** list view opens.



Columns show the page group, the type of page, and the number of child pages in that group. For example, the Guest Management page group has four child pages and the Guest Self-Registration page group has eight child pages, as shown in the following table.

Table 65: *Page Groups and Child Pages*

Page Group	Child Pages
Guest Management	Web Receipts Download Receipt Email Receipts SMS Receipts
Guest Self-Registration	Registration Page Receipt Page Receipt Download Receipt Email Login Page Login Message Receipt SMS Self-Service :Portal

You can click a page group in the **Advertising Pages** list for additional options:

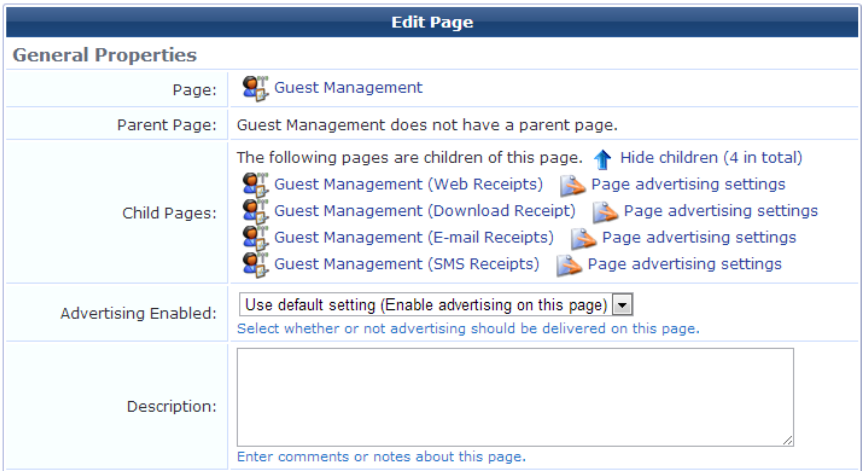
Table 66: *Advertising Pages List*

Field	Description
Edit	Edit the advertising settings for any of the pages in the Guest Management or Self-Registration page groups. See "Editing Advertising Pages" on page 316.
Go To	Opens the corresponding area of the ClearPass Guest application: For Guest Management, opens the Start page of the Guest Manager module. For Guest Self-Registration, opens the Customize Guest Registration edit diagram.
Launch	For Guest Self-Registration, opens the visitor self-registration login page in a new tab.

Editing Advertising Pages

In ClearPass Guest, advertising can be placed on registration pages, receipt and self-service pages, and email and SMS receipts. For each of these pages, you can specify whether or not advertising will be delivered, the advertising spaces that will be used, and the campaigns to present on the page. These settings can be applied to all pages in a page group, or can be overridden for single pages in the group.

To edit advertising settings for a page group or page, go to **Configuration > Advertising > Pages**, then click the Edit link for a page group. The **Edit Page** form opens.



In the **General Properties** area of the form, select either the page group or page and configure the basic properties.

NOTE

If you leave the Edit Page form set to the parent page, your edits will apply to the parent page of the group and to all the child pages in the group. To override these settings for a child page, you must click **Show Children**, and then click the **Page advertising settings** link for the child page.

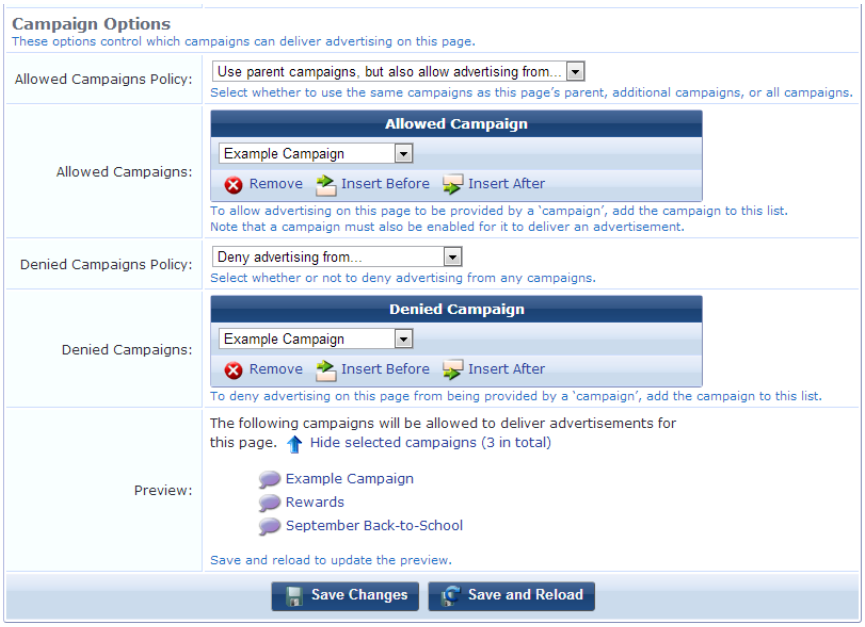
Table 67: *General Properties, Edit Page*

Field	Description
Page	The page group being edited. The page group name is a link to the corresponding area of the application: • The **Guest Management** link opens the Start page of the Guest Manager module. • The **Guest Self-Registration** link opens the Customize Guest Registration edit diagram.
Parent Page	Indicates the page's parent page, if there is one. This field only contains links when you are editing a child page. • Click **Launch page** to open the parent page. • Click **Page advertising settings** to configure advertising for the parent page.
Child Pages	Indicates the page's child pages, if there are any. This field only contains links when you are editing a parent page. • Click **Show Children** to display the list of child pages. • You can click a child page's name to go to the Customize Guest Registration form for that child page. • To configure advertising services for a specific child page, click the **Page advertising settings** link for the child page.
Advertising Enabled	Specifies whether the page is enabled or disabled for advertising. • **Use default setting (Enable advertising on this page)**–Enables advertising on this page and on its child pages. Available for page group only. • **Use parent setting**–Ensures that advertising on this child page is only enabled if advertising is enabled for the parent page. Available for child pages only. Default setting for a child page. • **Disable advertising on this page**–Disables advertising on this page. If this is a parent page, disables advertising for all child pages that are configured to "Use parent setting". • **Enable advertising on this page**–Enables advertising on this page. If this is a parent page, enables advertising for all child pages that are configured to "Use parent setting".
Description	Optional comments or notes about the page.

In the **Space Options** area of the form, set the options that control which advertising spaces can be shown on this page. The final set of advertising spaces that is used is determined by first applying the Allowed Spaces policy, and then applying the Denied Spaces policy.

Table 68: *Space Options, Edit Page*

Field	Description
Allowed Spaces Policy	Specifies which spaces to use. Options include: • **Use default setting (Allow advertising in all spaces)**–Allows advertising in all enabled and applicable advertising spaces. Available for page group only. • **Allow advertising in...**–The form expands to include the Allowed Spaces row. Available for page group only. • **Use parent spaces**–Allows advertising in the list of spaces defined by the parent page's space options (determined by applying the Allowed Spaces Policy followed by the Denied Spaces Policy). Available for child pages only. • **Use parent spaces, but also allow advertising in...**–The form expands to include the Allowed Spaces row. Additional spaces you select are added to the list of spaces defined by the parent page's space options (determined by applying the Allowed Spaces Policy followed by the Denied Spaces Policy). Available for child pages only. • **Allow advertising in all spaces**–Allows advertising in all enabled and applicable spaces. The Denied Spaces Policy is applied after this field, so the final list of spaces that is used might be less than what is allowed here.
Allowed Spaces	If **Use parent spaces, but also allow advertising in** is selected in the Allowed Spaces Policy, use the controls in this field to add and sort spaces. Any advertising space you specify in this field will be added to the list of spaces used to deliver advertisements. (To be displayed, spaces must also be enabled) Suggestion: You can use this field at the page group level to specify a small number of allowed spaces, and then at the child page level to add extra spaces as needed,
Denied Spaces Policy	Specifies whether to deny advertising in any spaces. Options include: • **No change**–Leaves the list of spaces allowed by the Allowed Spaces Policy unchanged. • **Deny advertising in...**–The form expands to include the Denied Spaces row. • **Deny advertising in all spaces**–Denies advertising in all spaces for this page.
Denied Spaces	If **Deny advertising in...** is selected, use the controls in this field to specify the denied spaces. Suggestion: You can also use this field to specify an exception to an "Allow advertising in all spaces" setting.
Preview	Displays a preview of the form showing your changes. To review the chosen set of advertising spaces, click the **Save and Reload** button and then expand this Preview list.



In the **Campaign Options** area of the form, set the options that control which campaigns can deliver advertising on this page. The final set of advertising campaigns that is used is determined by first applying the Allowed Campaigns Policy, and then applying the Denied Campaigns Policy.

Table 69: *Campaign Options, Edit Page*

Field	Description
Allowed Campaigns Policy	Specifies which campaigns to use. Options include: • **Use default setting (Allow advertising from all campaigns)**–Allows advertising from all enabled and applicable campaigns. Available for page group only. • **Allow advertising from...**–The form expands to include the Allowed Campaigns row. Available for page group only. • **Allow advertising from all campaigns**–Allows advertising from all enabled and applicable advertising campaigns. • **Use parent campaigns**–Allows advertising from the list of campaigns defined by the parent page's campaign options (determined by applying the Allowed Campaigns Policy followed by the Denied Campaigns Policy). Available for child pages only. • **Use parent campaigns, but also allow advertising from...**–The form expands to include the Allowed Campaigns row. Additional campaigns you select are added to the list of campaigns defined by the parent page's campaign options (determined by applying the Allowed Campaigns Policy followed by the Denied Campaigns Policy). Available for child pages only. The Denied Campaigns Policy is applied after this field, so the final list of campaigns that is used might be less than what is allowed here.
Allowed Campaigns	If **Use parent campaigns, but also allow advertising from...** is selected, use the controls in this field to add and sort campaigns. (To display ads, campaigns must also be enabled) Suggestion: You can use this field at the page group level to specify a small number of allowed campaigns, and then at the child page level to add extra campaigns as needed,
Denied Campaigns Policy	Specifies whether to deny advertising in any campaigns. Options include: • **No change**–Leaves the list of campaigns allowed by the Allowed Campaigns Policy unchanged. • **Deny advertising from...**–The form expands to include the Denied Campaigns

Field	Description
	row. • **Deny advertising from all campaigns**–Denies advertising from all campaigns for this page. Suggestion: You can also use this field to specify an exception to an "Allow advertising from all campaigns" setting.
Denied Campaigns	If **Deny advertising from...** is selected, use the controls in this field to specify the denied campaigns.
Preview	Displays a preview of the form showing your changes. To review the chosen set of advertising campaigns, click the **Save and Reload** button and then expand this Preview list.

The nwa_adspace Smarty Template Tag

For details about Smarty Template syntax and HTML, see "Smarty Template Syntax" on page 480 of the Reference chapter.

The nwa_adspace Smarty Template tag is for advanced users. You need to understand HTML and Smarty Templates in order to use it correctly.

The `nwa_adspace` tag can be placed into HTML fields that:

- Support Smarty Template evaluation
- Belong to pages that support advertising

The `nwa_adspace` tag supports the following parameters:

- `location`
- `name`
- `media`
- `stage`
- `container`
- `style`

location

The value of the Location field that must be set for an advertising space to be matched by location. The Location field and the Other Location field are configured on the Edit Space form (see "Creating and Editing Advertising Spaces" on page 324).

You must specify either a `location` or a `name`. The `nwa_adspace` tag will give an error if you do not specify at least one of these parameters.

if a `location` parameter is specified, then the value of the `location` parameter will be compared to the **Location** field of each advertising space. If the values match, then advertisements will be delivered at the point in the HTML where the nwa_adspace tag is defined, and according to any constraints defined by the advertising space.

To see which Location value a space uses, review the **Location** column in the **Advertising Spaces** list view ("Advertising Spaces" on page 323).

Advertising spaces support a number of preset Location options as well as custom locations via the Other Location field. The following parameters are supported for the location parameter:

Table 70: *Values for the `location` Parameter*

Value	Description
N/A	None–for manually-positioned spaces
`web_top`	Page Top–above content
`web_left`	Page Left–to the left of content
`web_bottom`	Page Bottom–below content
`web_right`	Page Right–to the right of content
`web_interstitial`	Page Interstitial–briefly replaces content
`sms_top`	SMS Top–above content
`sms_bottom`	SMS Bottom–below content
*Use **Other Location***	Other–for user-defined locations

name

The value of the Name field that must be set for an advertising space to be matched by name.

You must specify either a `location` or a `name`. The `nwa_adspace` tag will give an error if you do not specify at least one of these parameters.

if a `name` parameter is specified, then the value of the `name` parameter will be compared to the **Name** field of each advertising space. If the values match, then advertisements will be delivered at the point in the HTML where the nwa_adspace tag is defined, and according to any constraints defined by the advertising space.

media

The type of media that advertisements are being delivered to.

You must specify a `media` value. The `nwa_adspace` tag will give an error if you do not specify this parameter.

The media parameter must be set correctly for the context in which the nwa_adspace tag will be processed. The following values are supported for the media parameter:

Table 71: *Values for the* `media` *Parameter*

Value	Description
`sms`	Specify this value to deliver SMS advertisements only.
`web`	Specify this value to deliver Web and Email advertisements only.

stage

The value of the Stage field that must be set for an advertising campaign to be matched.

You must specify a `stage` value. The `nwa_adspace` tag will be unable to match any advertising campaigns if you do not specify this parameter.

The `stage` parameter is used when processing advertising campaigns. Only the promotions or materials specified at the corresponding stage of the advertising campaign will be delivered. The following values are supported for the `stage` parameter:

Table 72: *Values for the* `stage` *Parameter*

Value	Description
`web_login`	Specify this value to deliver advertising on a login page (landing page).
`web_registration`	Specify this value to deliver advertising on a guest self-registration page.
`web_receipt`	Specify this value to deliver advertising on a receipt page.
`web_self_service`	Specify this value to deliver advertising on a guest self-service page.
`web_after_login`	Specify this value to deliver advertising on a login message page (post-login page).
`sms_receipt`	Specify this value to deliver advertising on an SMS receipt.

container

The name of the HTML element tag in which advertisements will be placed.

The nwa_adspace Smarty Template tag is for advanced users. You need to understand HTML and Smarty Templates in order to use it correctly.

When advertisements are to be delivered to a Web page or an email, they can be grouped and their layout controlled more effectively by placing them in a container. Typically, a DIV container would be used, but other valid HTML tags can be specified.

If the container parameter is not specified, then advertisements are delivered to the Web page or email without any extra grouping.

style

The style attribute of the HTML container element.

This parameter is only relevant when the `media` parameter is set to `web` and an HTML tag name has been specified for the `container` parameter.

If you specify a container, you can use the `style` parameter to specify style attributes for the container. The `style` parameter is optional.

Advertising Spaces

Spaces are the areas of a page that are defined for advertising content. The Advertising Spaces list shows and describes the spaces that are currently defined on each type of page, differentiated by device. Descriptions include typical uses of the space. Several built-in spaces are available. You can also create new custom advertising spaces.

To work with the settings for advertising spaces, go to **Configuration > Advertising > Spaces**. The **Advertising Spaces** list view opens.

Space Name	Location
Mobile Page Bottom (built-in) A built-in advertising space for a mobile device that is located at the bottom of a page. This space is typically used for up to three text advertisements.	Page Bottom (web_bottom)
Edit Enable Copy	
Mobile Page Interstitial (built-in) A built-in advertising space for a mobile device that briefly replaces the page content. This space is typically used for a single video advertisement (e.g. 300 pixels wide, by 240 pixels high).	Page Interstitial (web_interstitial)
Mobile Page Top (built-in) A built-in advertising space for a mobile device that is located at the top of a page. This space is typically used for short but wide banner images (e.g. 300 pixels wide, by 100 pixels high).	Page Top (web_top)
Page Bottom (built-in) A built-in advertising space that is located at the bottom of a page. This space is typically used for up to three text advertisements.	Page Bottom (web_bottom)
Page Interstitial (built-in) A built-in advertising space that briefly replaces the page content. This space is typically used for a single large video advertisement (e.g. 480 pixels wide, by 360 pixels high).	Page Interstitial (web_interstitial)
Page Left (built-in) A built-in advertising space that is located on the left of a page. This space is typically used for up to three narrow Flash and image advertisements (e.g. 300 pixels wide, by 200 pixels high) and/or text advertisements.	Page Left (web_left)

All advertising spaces that have been created are included in this list. You can click a space's row in the list for additional options.

Table 73: *Advertising Spaces List*

Field	Description
Edit	Edit any of the space's properties. See "Creating and Editing Advertising Spaces" on page 324.
Delete	Deletes a custom space. You will be asked to confirm the deletion. Not available for built-in spaces.
Enable	Enable the space so advertising will be displayed in it. Before advertising will be delivered in an enabled space on a specific page, the page's settings also need to allow advertising in the space.
Disable	To make advertising inactive again for an enabled space, click the **Disable** link.
Copy	Make a copy of the space configuration to use as a basis for a new configuration. Suggestion: If you want to have multiple advertising spaces in the same location—for example, one for images and one just for text—creating a copy of a space and making slight changes to it might be the simplest way.
Create new advertising space	Create a new custom advertising space.

Creating and Editing Advertising Spaces

Spaces define the areas of a page that can display advertising content. Spaces use simple rules to select advertisements with the appropriate size, number, and format of materials. The space determines what types of materials can be shown (images, text ads, SMS ads) and, in the case of images, any size constraints on the size of the ad. For example, size constraints on a 'top' space would normally ensure that only wide but short images are displayed, whereas the constraints on a 'right' space would often allow any type of ad but require that the ad be narrower (e.g. 320 pixels wide).

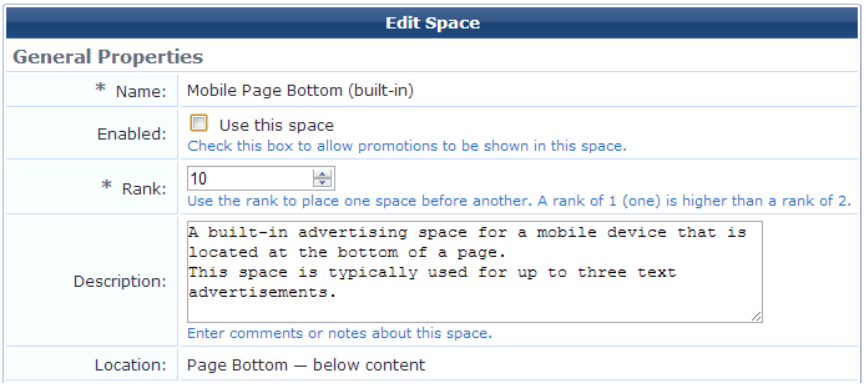
Each space is configured to deliver advertisements in a particular location on a page, such as the top, bottom, left, or right. There is also what is called an "interstitial location": Instead of being displayed in an area of a page, interstitial ads replace the main content of a page for a brief time. For example, after a user logs in, an interstitial ad might be displayed for a moment before the main page content is displayed.

Each space is also given a rank. A rank of 1 is given higher preference than a rank of 2. The relative ranks you assign to spaces ensure they are displayed in the order you want. For example, if you have two spaces defined to be in the same location, the space you give a rank of 1 will be placed above the space that has a rank of 2.

The built-in advertising spaces are created automatically by the Advertising Services plugin. Most properties of a built-in space can be edited. You can also create new custom advertising spaces.

- To edit advertising settings for either a built-in or custom space, go to **Configuration > Advertising > Spaces**, then click the **Edit** link for a space. The **Edit Space** form opens.
- To create a new custom advertising space, click the **Create new advertising space** link in the upper-right corner. The **Create Space** form opens.

The Edit Space and Create Space forms are identical, and are described below.



In the **General Properties** area of the form, set the basic properties for the space:

Table 74: *General Properties, Edit Space*

Field	Description
Name	(Required) Name that clearly identifies this space. For a built-in space, this cannot be edited.
Enabled	If selected, allows advertising to be shown in this space. If this check box is not selected, the space will not show any advertisements. Before advertising will be delivered in an enabled space on a specific page, the page's settings also need to allow advertising in the space.
Rank	(Required) Applies a relative rank to the space. A rank of 1 is given higher preference than a rank of 2.
Description	Optional comments or notes about this advertising space.
Location	Describes position of the space on the page. For a built-in space, this cannot be edited. For custom spaces, options include: • **None - for manually positioned spaces**–Select this option if you will use the `nwa_adspace` Smarty Template tag, and to only specify the `name` parameter, not the `location` parameter. For more information, see "The nwa_adspace Smarty Template Tag" on page 320. • **Page Top - above content**–The space will deliver advertisements above the main content of a Web page. • **Page Left - to the left of content**–The space will deliver advertisements to the left of the main content of a Web page. • **Page Bottom - below content**–The space will deliver advertisements below the main content of a Web page. • **Page Right - to the right of content**–The space will deliver advertisements to the right of the main content of a Web page. • **Page Interstitial - briefly replaces content**–The space will deliver advertisements that will briefly replace the main content of a Web page. • **SMS Top - above content**–The space will deliver advertisements above the main content of an SMS message. • **SMS Bottom - below content**–The space will deliver advertisements below the main content of an SMS message. • **Other - for user defined locations**–Select this option if you will use the `nwa_adspace` Smarty Template tag to define a custom location by specifying the `location` parameter, not the `name` parameter. For more information, see "The nwa_adspace Smarty Template Tag" on page 320. If you select this option, the Other Location field is added to the form.
Other Location	If you selected **Other - for user-defined locations** in the **Location** field, use this field to define a name for a custom location. The custom location can then be referenced in any Smarty Template by using the `nwa-adspace` Smarty Template tag.

"Other Location" Example

If you wanted to add a custom advertising space that is positioned on the far-right edge of the registration page, you could do it as shown in the following example:

1. Choose **Other - for user defined locations** in the **Location** field.
2. In the **Other Location** field, create the name **custom_right**.
3. In a guest self-registration page, edit the Footer HTML to include an `nwa_adspace` Smarty Template tag as follows:

```
{nwa_adspace media="web"
        location="custom_right"
        stage="web_registration"
        container="div"
        style="position:absolute; left:839px; top:92px; width:320px; margin:20px 0 0 20px;"}
```

For more information, see "The nwa_adspace Smarty Template Tag" on page 320.

In the **Geometry** area of the form, set the options that control the width and height of the space.

Some devices, such as desktop computers and laptops, have a large screen. Other devices, such as smart phones, have a small screen. Although it is possible to deliver large advertisements to small screens, it does not provide the best user experience. Geometry constraints let you configure an advertising space to be only displayed on a large screen or only displayed on a small screen. Typically, the width and height constraints would also be set to values that are appropriate for the selected screen type.

The screen type is detected by looking at the browser's User Agent value. Laptops, desktops, and devices like the iPad are treated as large-screen devices. Smart phones and other mobile devices are treated as small-screen devices.

While we endeavor to correctly detect the screen type for as many devices as possible, we are unable to test every possible device, so we do not claim detection to be correct for all devices.

Table 75: *Geometry Options, Edit Space*

Field	Description
Screen Types	Limits the types of screen that will show this space. This setting only applies to Web advertising. Options include: • **All Screens — show on both small and large screens**–Ignores the detected screen type. • **Small Screens — show on small screens only (phones; mobile devices)**–This space will only be shown if the user's device is detected to be a small-screen device. • **Large Screens — show on large screens only (laptops, desktops)**–This space will only be shown if the user's device is detected to be a large-screen device.
Minimum Width	Optimum minimum width in pixels for advertising materials shown in this space. If an advertisement has a size (for example, a Flash or YouTube ad), the width of that advertisement must be at least as large as this minimum width if it is to be shown in this space. If you do not want to have a minimum width constraint, leave this field blank.
Maximum Width	Optimum maximum width in pixels for advertising materials shown in this space. If an advertisement has a size (for example, a Flash or YouTube ad), the width of that advertisement must be no larger than this maximum width if it is to be shown in this space. If you do not want to have a maximum width constraint, leave this field blank. Best Practice: Because an advertising space also has padding, it is best to set the maximum width constraint to be 20 pixels wider than the widest image that will be displayed in this space.
Width	Minimum and/or maximum width in pixels for this space.
Minimum Height	Optimum minimum height in pixels for advertising materials shown in this space. If an advertisement has a size (for example, a Flash or YouTube ad), the height of that advertisement must be at least as large as this minimum height if it is to be shown in this space. If you do not want to have a minimum height constraint, leave this field blank.
Maximum Height	Optimum maximum height in pixels for advertising materials shown in this space. If an advertisement has a size (for example, a Flash or YouTube ad), the height of that advertisement must be no larger than this maximum height if it is to be shown in this space. If you do not want to have a maximum height constraint, leave this field blank. Best Practice: Because an advertising space also has padding, it is best to set the maximum height constraint to be 20 pixels wider than the tallest image that will be displayed in this space.
Height	Minimum and/or maximum height in pixels for this space.
Maximum Rows	Maximum number of rows of advertisements to show in this space. A space can show multiple rows of ads, up to the maximum number of rows specified here. However, if a maximum height was specified, the system will only output as many rows as will fit within the maximum height constraint for the space.
Maximum Columns	Maximum number of columns of advertisements to show in this space. A space can show multiple columns of ads, up to the maximum number of columns specified (there is always at least one column). However, if a maximum width was specified, the system will only output as many columns as will fit within the maximum width constraint for the space.

"Maximum Height" Example

If a maximum height was specified, the system will only output as many rows as will fit within the maximum height constraint for the space. For example, with a maximum height constraint of 100 and a maximum rows constraint of 3, the system could output any of the following:

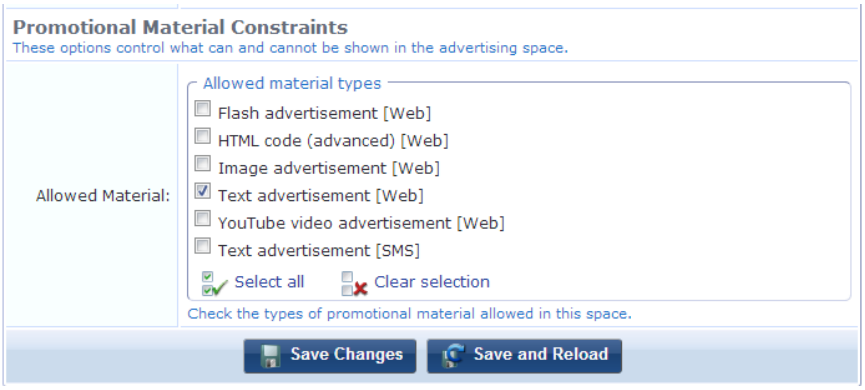
- Three rows with heights 40, 40, and 20
- Three rows with heights 30, 30, and 30

- Two rows with heights 60 and 40
- Two rows with heights 50 and 50
- One row of height 80
- One row of height 100

"Maximum Width" Example

If a maximum width was specified, the system will only output as many columns as will fit within the maximum width constraint for the space. For example, with a maximum width constraint of 100 and a maximum columns constraint of 3, the system could output any of the following:

- Three columns with widths 40, 40, and 20
- Three columns with widths 30, 30, and 30
- Two columns with widths 60 and 40
- Two columns with widths 50 and 50
- One columns of widths 80
- One columns of widths 100



In the **Promotional Material Constraints** area of the form, set the options that control what can and cannot be shown in the advertising space:

Table 76: *Promotional Material Constraints, Edit Space*

Field	Description
Allowed Material	Select each type of promotional material that should be allowed in this space. Types included are: • **Flash advertisement [Web]** • **HTML code (advanced) [Web]** • **Image advertisement [Web]** • **Text advertisement [Web]** • **YouTube video advertisement [Web]** • **Text advertisement [SMS]**

When you have completed your entries on this form:

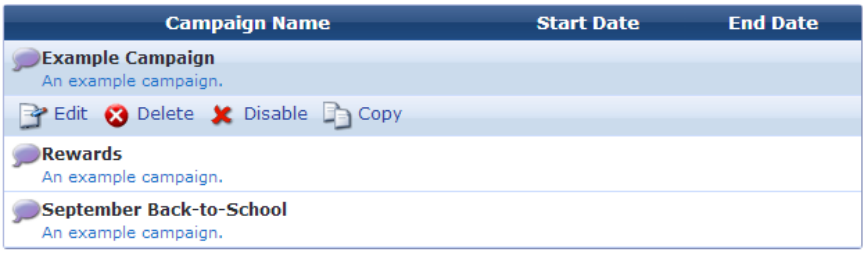
- If you are creating a new space, click **Create** to create the new space and return to the Advertising Spaces list, or click **Create and Reload** to create the new space and reload the Edit Space form.
- If you are editing an existing space, click **Save** to save your changes and return to the Advertising Spaces list, or click **Save and Reload** to save your changes and reload the Edit Space form.

Advertising Campaigns

An advertising campaign is the strategy by which you organize the presentation of your ads. It defines which promotions and materials to deliver, and when they should be delivered.

The system requires at least one advertising campaign to be configured and enabled for any advertisements to be delivered.

To create and work with advertising campaigns, go to **Configuration > Advertising > Campaigns**. The **Advertising Campaigns** list view opens.



All advertising campaigns that have been created are included in this list. You can click a campaign's row in the list for additional options.

Table 77: *Advertising Campaigns List*

Field	Description
Edit	Edit any of the campaign's properties. See "Creating and Editing Advertising Campaigns" on page 329.
Delete	Delete the campaign from the system. You will be asked to confirm the deletion.
Enable	Enable the advertising campaign so it will provide advertisements. Before advertising will be delivered from an enabled campaign on a specific page, the page's settings also need to allow advertising from the campaign.
Disable	Disable the campaign. To make the campaign active again, click the **Enable** link.
Copy	Make a copy of the campaign's settings to use as a basis for a new campaign.
Create new advertising campaign	Create a new advertising campaign.

Creating and Editing Advertising Campaigns

An advertising campaign is the strategy by which you organize the presentation of your ads. It defines which promotions and materials to deliver, and at which stages they should be delivered. You can rank and weight a campaign to balance it against other campaigns. A campaign can also be configured for presentation between a specified start date and end date.

Campaigns can be delivered at the following stages:

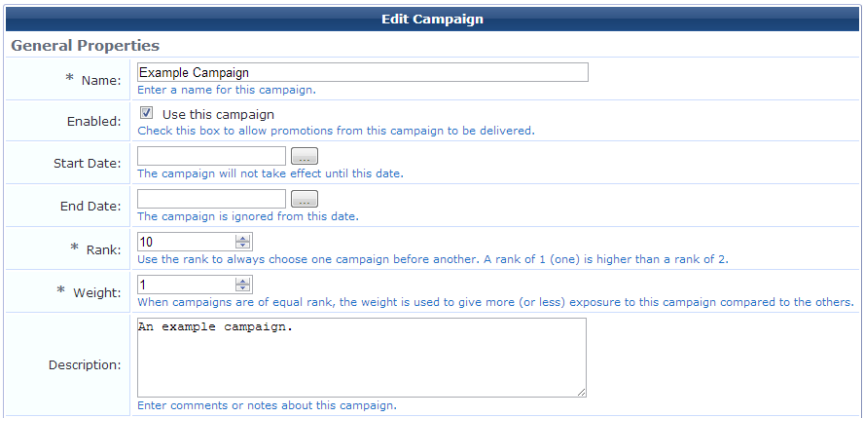
- On the login page
- On the registration page

- On the registration receipt
- On the self-service portal pages
- Immediately after login
- On the SMS registration receipt

You can edit advertising campaigns, and you can create new advertising campaigns.

- To edit an advertising campaign, go to **Configuration > Advertising > Campaigns**, and then click the **Edit** link for a campaign in the list. The **Edit Campaign** form opens.
- To create a new advertising campaign, click the **Create new advertising campaign** link in the upper-right corner. The **Create Campaign** form opens.

The Edit Campaign and Create Campaign forms are identical, and are described below.



In the **General Properties** area of the form, set the basic properties for the campaign:

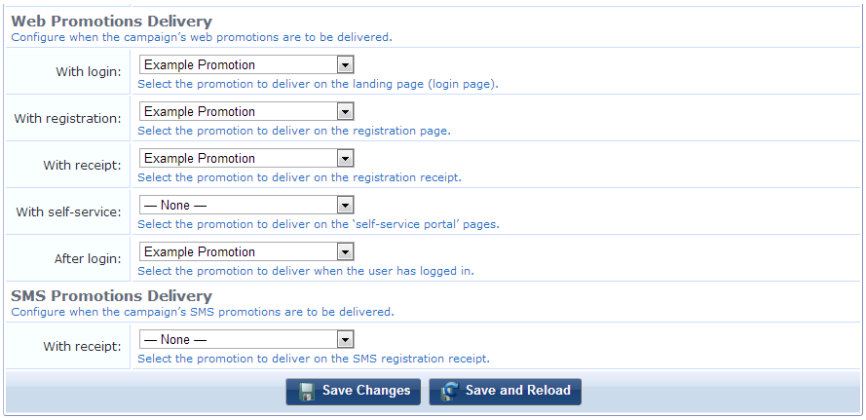
Table 78: *General Properties, Edit Campaign*

Field	Description
Name	(Required) Name that clearly identifies this campaign.
Enabled	If selected, allows promotions from this campaign to be delivered. If this check box is not selected, no ads will be provided from this campaign. Before advertising will be delivered from a campaign to a specific page, the page's settings also need to allow advertising from the campaign.
Start Date	(Optional) Date and time on which this campaign will begin. To start delivering this campaign immediately, leave this field blank. Click the button to open the calendar picker. In the calendar, use the arrows to select the year and month, click the numbers in the Time fields to increment the hours and minutes, then click a day to select the date.
End Date	(Optional) Date and time after which the campaign will no longer be delivered. To deliver this campaign indefinitely, leave this field blank. Click the button to open the calendar picker. In the calendar, use the arrows to select the year and month, click the numbers in the Time fields to increment the hours and minutes, then click a day to select the date.

Field	Description
Rank	(Required) Applies a relative rank to the campaign, which defines the order in which campaigns are processed when delivering ads. A rank of 1 is higher than a rank of 2. For information about campaign ranks, see "Campaign Rank and Weight" on page 332.
Weight	(Required) Applies a weight to a campaign. If two campaigns have equal rank, one with a greater weight will be displayed more than the other. For information about campaign weights, see "Campaign Rank and Weight" on page 332.
Description	Optional comments or notes about the campaign.

At the time ads are delivered on your pages, the system processes the information in the General Properties area in the following order:

1. Verifies which campaigns are enabled and ignores ones that are not.
2. Checks for start dates that are less than or equal to "now" and ignores campaigns that are not scheduled to start yet.
3. Checks for end dates that are greater than "now" and ignores campaigns whose end date is past.
4. Checks the rank of each remaining campaign. Includes only the highest ranked campaign, or multiple campaigns that have the same highest rank.
5. If there are multiple campaigns, checks the weight of each remaining campaign.



In the **Web Promotions Delivery** area of the form, set the options that define when the campaign's Web promotions are delivered. Use the **SMS Promotions Delivery** area to set when the campaign's SMS promotions are delivered.

The drop-down lists in the Web Promotions area also allow you to select a material instead of a promotion. This usage is rare, though, as it would display only a single static item.

Table 79: *Web Promotions Delivery, Edit Campaign*

Field	Description
With Login	Select the promotion to deliver on the landing page (login page). To not display ads at this stage, select **None**.
With Registration	Select the promotion to deliver on the registration page. To not display ads at this stage, select **None**
With Receipt	Select the promotion to deliver on the registration receipt. To not display ads at this stage, select

Field	Description
	None
With Self-Service	Select the promotion to deliver on the self-service portal pages. To not display ads at this stage, select **None**
After Login	Select the promotion to deliver when the user has logged in. To not display ads at this stage, select **None**
With Receipt	Select the promotion to deliver on the SMS registration receipt. To not display ads at this stage, select **None**

Campaign Rank and Weight

Each advertising campaign must be assigned a rank and weight. These numbers let you balance how campaigns are chosen relative to each other.

- **Rank**—This number determines which of the available campaigns will be used. A lower number has a higher rank or priority, so a rank of 1 takes priority over a rank of 2. When the available campaigns are compared, the campaign with the highest rank (for example, rank = 1) is used and the other campaigns are ignored. To use multiple campaigns at the same time, they must have the same rank; they will be dropped if they have a lower rank.
- **Weight**—When multiple campaigns of equal rank are used, the weight determines how often each campaign's ads should be displayed relative to ads from the other campaigns.

Suppose you have multiple advertising campaigns that are defined to provide ads at the same time and stage. You can modify the *rank* to ensure that ads are displayed from the campaigns in the order you want. You can modify the *weight* to ensure that, on average, more ads are displayed from campaigns with higher weight. The frequency of display is determined by the ratio of each weight to the total weights.

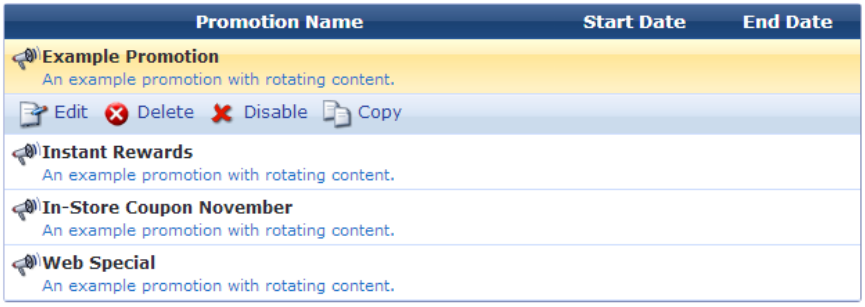
- Example: Assume two campaigns of equal rank. If campaign A has a weight of 10, and campaign B has a weight of 5, campaign A's ads will be shown twice as often as campaign B's ads. To look at this another way, 10 + 5 = 15, and campaign A's ads will be shown, on average, 10 out of every 15 times.
- Example: Assume three campaigns of equal rank. Campaign A has a weight of 2, campaign B has a weight of 3, and campaign C has a weight of 5. These numbers add up to 10, so on average, campaign A will be shown 2 out of every 10 times, campaign B would be shown 3 out of every 10 times, and campaign C would be shown 5 out of every 10 times.

Ranks and weights are assigned to campaigns when they are created or edited. See "Creating and Editing Advertising Campaigns" on page 329.

Advertising Promotions

Promotions define rules for how and when advertisements are delivered and what materials should be included. Promotions can also be configured to use intelligent delivery, presenting relevant advertising to users.

To create and work with advertising promotions, go to **Configuration > Advertising > Promotions**. The **Advertising Promotions** list view opens.



All advertising promotions that have been created are included in this list. You can click a promotion's row in the list for additional options.

Table 80: *Advertising Promotions List*

Field	Description
Edit	Edit any of the promotion's properties. See "Creating and Editing Advertising Promotions" on page 333.
Delete	Delete the promotion from the system. You will be asked to confirm the deletion.
Enable	Enable the promotion so it will provide advertisements.
Disable	Disable the promotion. To make the promotion active again, click the **Enable** link.
Copy	Make a copy of the promotion's settings to use as a basis for a new promotion.
Create new advertising promotion	Create a new advertising promotion.

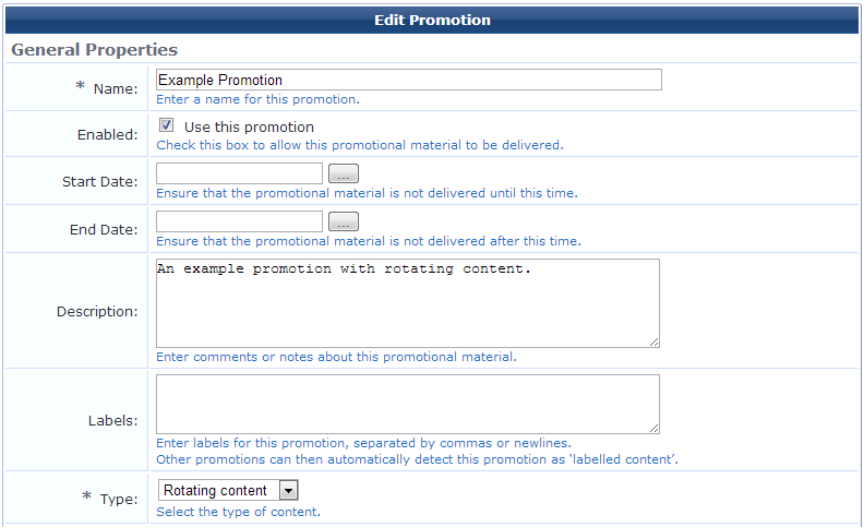
Creating and Editing Advertising Promotions

Most of the rules for how and when advertisements are delivered and what materials should be included are defined in a promotion. These rules are applied to all of the advertising materials that the promotion includes, whether those materials are included directly or indirectly.

A promotion can include both materials and/or other promotions. You can use this feature to build simple groupings of materials with simple rules, or more complex groupings of materials and promotions with more complex rules.

Promotions can be enabled and disabled, and have a start date and an end date. They can also be assigned any number of labels. Promotions can include materials and/or other promotions using a fixed, rotating, weighted, or labeled content selection type. Promotions can also be configured to use intelligent delivery, which uses labels to match relevant advertising to users.

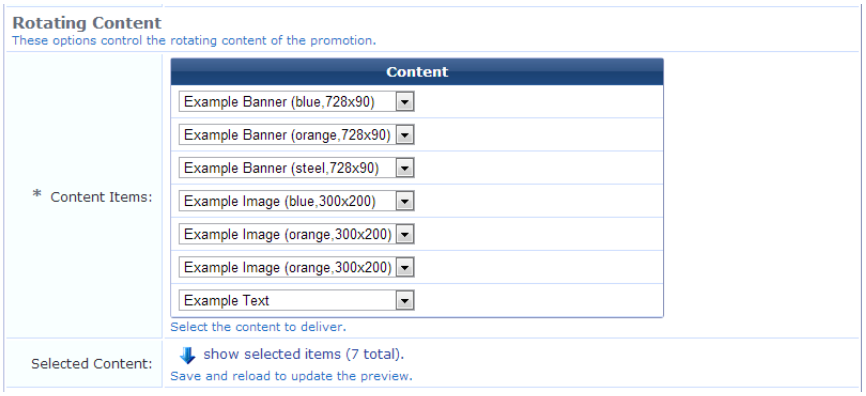
To edit an advertising promotion, go to **Configuration > Advertising > Promotions**, then click the **Edit** link for a promotion. The **Edit Promotion** form opens.



In the **General Properties** area of the form, set the basic properties for the promotion:

Table 81: *General Properties, Edit Promotion*

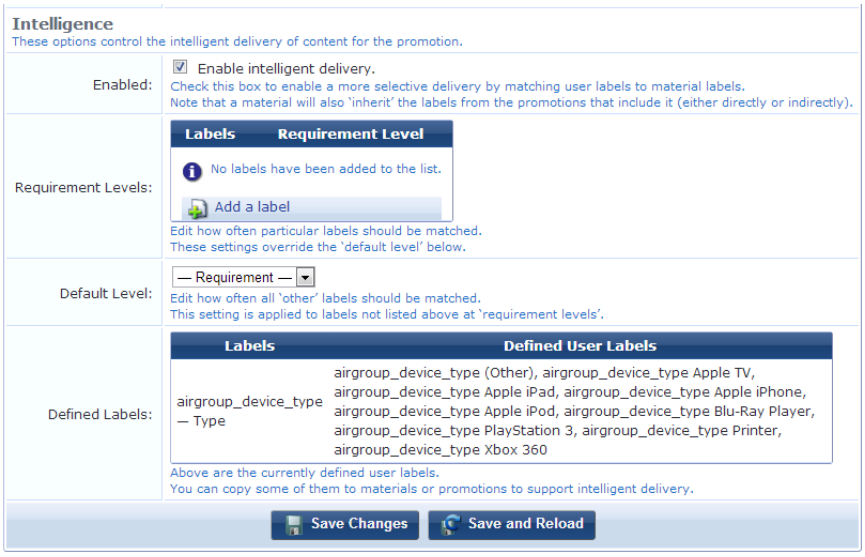
Field	Description
Name	(Required) Name that clearly identifies this promotion.
Enabled	If selected, allows this promotional to deliver ads. If this check box is not selected, no ads will be provided by this promotion.
Start Date	(Optional) Date and time when the promotion can start providing ads. To have this promotion start providing ads immediately,leave this field blank. Click the button to open the calendar picker. In the calendar, use the arrows to select the year and month, click the numbers in the Time fields to increment the hours and minutes, then click a day to select the date.
End Date	Date and time after which the promotion will no longer provide ads. To have this promotion deliver ads indefinitely, leave this field blank. Click the button to open the calendar picker. In the calendar, use the arrows to select the year and month, click the numbers in the Time fields to increment the hours and minutes, then click a day to select the date.
Description	Optional comments or notes about this promotional material.
Labels	To apply labels to this promotion, enter the labels in this field. To create new labels, enter the new label names separated by commas or new lines. The system creates each new label as a "tag". If some labels were already created, clicking in this field displays a list of the existing label tags to choose from. If you include labels here, other promotions will detect this promotion as labeled content. Labels are used to include or exclude this promotion when creating another higher-level labeled-content promotion. When processing intelligent delivery rules, labels are applied to all materials that are included, either directly or indirectly, by this promotion. For more information, see "Using Labels in Advertising Services" on page 336.
Type	(Required) The type of content. Options include: • Rotating content • Fixed content • Weighted content • Labeled content When you make a selection here, the name of the next area of the form changes to match and includes the appropriate options.



Depending on the selection in the **Type** field, the next area of the form will be either **Rotating Content**, **Weighted Content**, **Fixed Content**, or **Labeled Content**. In this area, set the options that control the content of the promotion.

Table 82: *Rotating, Fixed, Weighted, or Labeled Content, Edit Promotion*

Field	Description
Content	For fixed content, select a single content item for the promotion.
Content Items	(Required) For rotating or weighted content, all items in this list are initially selected. Click an item's row to access controls for removing items or changing their order.
Content Types	(Labeled content) Types of content to include in this promotion. Options include: • All content types • Materials only • Promotions only
Inclusion Mode	(Labeled content) How the list of inclusive labels is matched to the available content. Options include: • All of the "inclusive labels" must match • At least one of the "inclusive labels" must match
Inclusive Labels	(Labeled content) Enter inclusive labels, separated by commas or new lines. Content must match these labels to be included in the promotion. (Refer to the Defined Labels field in the Intelligence area of the form)
Exclusion Mode	(Labeled content) How the list of exclusive labels is matched to the available content. Options include: • All of the "exclusive labels" must match • At least one of the "exclusive labels" must match
Exclusive Labels	(Labeled content) Enter exclusive labels, separated by commas or new lines. Content is excluded from the promotion if it matches these labels. (Refer to the Defined Labels field in the Intelligence area of the form)
Selected Content	List of the content selected on this form. After making changes to the content selection, click the **Save and Reload** button to refresh this list.



In the **Intelligence** area of the form, set the options that control intelligent delivery of content for the promotion:

Table 83: *Intelligence Options, Edit Promotion*

Field	Description
Enabled	If selected, allows a more selective delivery by matching user labels to material labels. (Material also inherits labels from the promotions that include it)
Requirement Levels	How often the specified labels should be matched. These settings override the Default Level in the next field. Use the controls to select label groups and a requirement level for each one.
Default Level	How often all other labels should be matched (applies to labels not selected in the Requirement Levels field).
Defined Labels	List of currently-defined user labels.

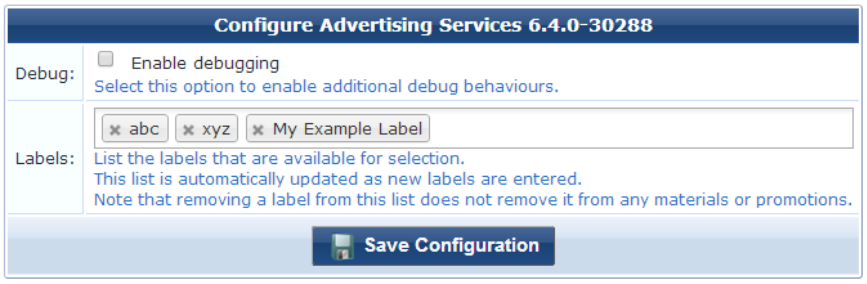
Using Labels in Advertising Services

A *label* identifies a user attribute or category. In Advertising Services, you can add intelligent delivery to your campaigns by creating labels and applying them to your promotions and materials:

1. Configure your pages to include fields for collecting user information such as gender, age, hobbies, or product preferences. When a user completes these fields, the attributes are stored in ClearPass (see "Creating a Custom Field " on page 206).
2. In the **Edit Promotion** form, use the **Labels** field to apply or easily create labels that correspond to the information-gathering fields you added to your pages (see "Creating and Editing Advertising Promotions" on page 333).
3. Configure the promotion to use labeled content (promotions, materials, or both), and specify which labels to include or exclude.
4. Also on the **Edit Promotion** form, enable the promotion for intelligent delivery. Indicate the percentage of ads that should match the labels. (For reference, this form provides a list of the labels that have already been defined in the system.)
5. On the **Edit Materials** form, you can also use the **Labels** field to apply existing labels or create new ones (see "Creating and Editing Advertising Materials" on page 338).

6. After the promotions and materials that include the labels and intelligent delivery configuration are complete, include them in a campaign (see "Creating and Editing Advertising Campaigns" on page 329).
7. When a user visits the pages while the campaign is running, Advertising Services displays ads with the labeled content that matches the user's attributes.

When you create labels in the Edit Promotion or Edit Materials forms, they are created as "tags" in the system. Clicking in a Labels field provides an auto-suggested list of existing tags to choose from. To see a list of Label tags that have already been created for your advertising campaigns, go to **Administration > Plugin Manager** and click the **Configuration** link for the **Advertising Services** plugin:



Advertising Materials

A material is the individual advertisement you deliver — the ad the user sees.

To create and work with advertising materials, go to **Configuration > Advertising > Materials**. The **Advertising Materials** list view opens.

All advertising materials that have been created are included in this list. You can click a material's row in the list for additional options.

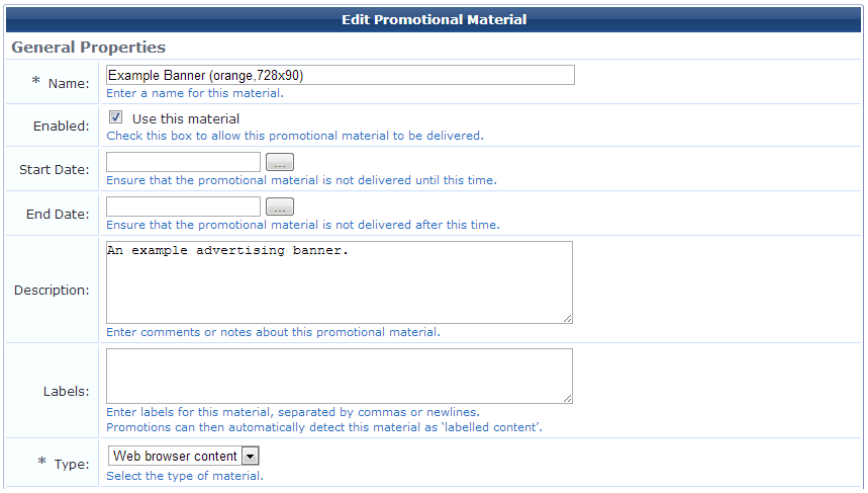
Table 84: *Advertising Materials List*

Field	Description
Edit	Edit any of the material's properties. See "Creating and Editing Advertising Materials" on page 338.
Delete	Delete the material from the system. You will be asked to confirm the deletion.
Disable	Disable the material. To make the material active again, click the **Enable** link.
Copy	Make a copy of the material's settings to use as a basis for a new material.
Create new advertising promotion	Create a new advertising material.

Creating and Editing Advertising Materials

An advertising material is the individual advertisement you deliver — the ad the user sees. You can deliver ads through Web browsers, email, and SMS. The medium of an advertising material can be a text, image, Flash, raw HTML, YouTube, or SMS text advertisement. Materials can also be assigned any number of labels, which can be used by promotions to create labeled promotions and to provide intelligent delivery.

To edit settings for an advertising material, go to **Configuration > Advertising > Materials**, then click the **Edit** link for a material. The **Edit Promotional Material** form opens.

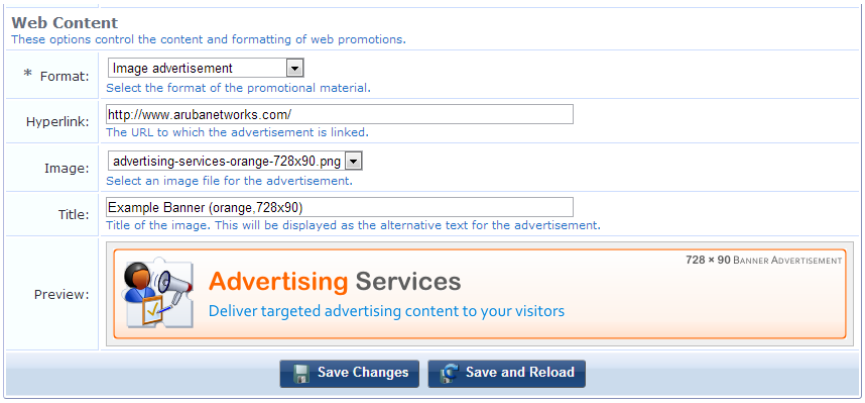


In the **General Properties** area of the form, set the basic properties for the material:

Table 85: *General Properties, Edit Promotional Material*

Field	Description
Name	(Required) Name for this material.
Enabled	If selected, allows this material to be delivered.
Start Date	Date and time on which this campaign will begin. To start delivering this material immediately, leave this field blank.
End Date	Date and time after which the material will no longer be delivered. To deliver this material indefinitely, leave this field blank.

Field	Description
Description	Optional comments or notes about the material.
Labels	To apply labels to this material, enter the labels in this field. To create new labels, enter the new label names separated by commas or new lines. The system creates each new label as a "tag". If some labels were already created, clicking in this field displays a list of the existing label tags to choose from. If you include labels here, promotions will detect this material as labeled content. Labels are used to include or exclude material for a labeled content promotion. Labels are matched when processing intelligent delivery rules of a promotion that includes this material.
Type	(Required) The type of content. Options include: • Web browser content • SMS content When you make a selection here, the name of the next area of the form changes to match and includes the appropriate options.



Depending on the selection in the **Type** field, the next area of the form will be either **SMS Content** or **Web Content**. In this area, set the options that control either the content of the SMS text messages promotion, or the content and formatting of the Web promotion.

Table 86: *SMS Content or Web Content, Edit Material*

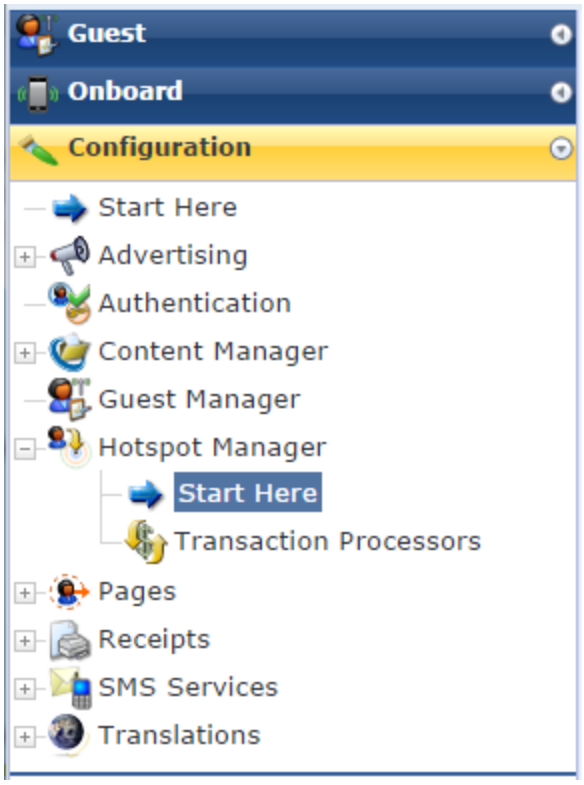
Field	Description
Text	(SMS content) Enter the message text. To keep messages short, use 80 characters or fewer.
Format	(Web content) (Required) If Web browser content is selected in the Type field, use this field to select the format of the Web content material. Options include: • Flash advertisement • HTML code (advanced) • Image advertisement • Text advertisement • YouTube video advertisement When you make a selection here, the rest of the form includes the appropriate options.
Flash	(Flash) The Flash animation file (.swf) of the material. Either select a file that is already uploaded to Content Manager, or upload a new file. Maximum file upload size is 15.0 MB.
Template Code	(HTML code) To code your own advertisement using raw HTML, enter the HTML code to display. Smarty template functions can be used. You can also use the drop-

Field	Description
	down list to add images or other content items.
Preview	(HTML code) Preview of the HTML. The preview is updated when you modify the contents of the Template Code field.
Hyperlink	(Image advertisement; Text advertisement) The destination page URL to which the advertisement is linked. To not associate a destination URL with the advertisement, leave this field blank.
Image	(Image advertisement) The image file for the advertisement. Either select a file that is already uploaded to Content Manager, or upload a new file. Maximum file upload size is 15.0 MB.
Title	(Image advertisement; Text advertisement) Specify alternative text for the image. For a text advertisement, the title is shown as the first line of the ad; if a hyperlink is also specified, the title is clickable.
Preview	(Image advertisement) Preview of the selected advertisement. The preview is updated as you modify the properties of the advertisement.
Body	(Text advertisement) Content for the text advertisement.
Footer	(Text advertisement) The last line of a text advertisement. If a hyperlink is also specified, the footer is clickable
Video ID	(YouTube video advertisement) (Required) The YouTube video identifier for the video to display. This is a unique identifier for a video that has already been uploaded to YouTube.
Width	(YouTube video advertisement) (Required) The desired width in pixels for the video.
Height	(YouTube video advertisement) (Required) The desired height in pixels for the video.
Edit Global Settings	(YouTube video advertisement) Select this option to configure global settings that will apply to all advertising materials.
Experimental YouTube API	(YouTube video advertisement) Specifies whether the experimental API is enabled for all devices. Options include: • All devices –Use the experimental API for all devices • Disabled –Use the standard YouTube API (recommended) • Select Devices – Use the experimental API for specific devices
IFrame API Devices	(YouTube video advertisement) If selected, the experimental YouTube IFrame API is used only for iOS devices.

The Hotspot Manager controls self-provisioned guest or visitor accounts. This is where the customer is able to create his or her own guest account on your network for access to the Internet. This can save you time and resources when dealing with individual accounts.

Accessing Hotspot Manager

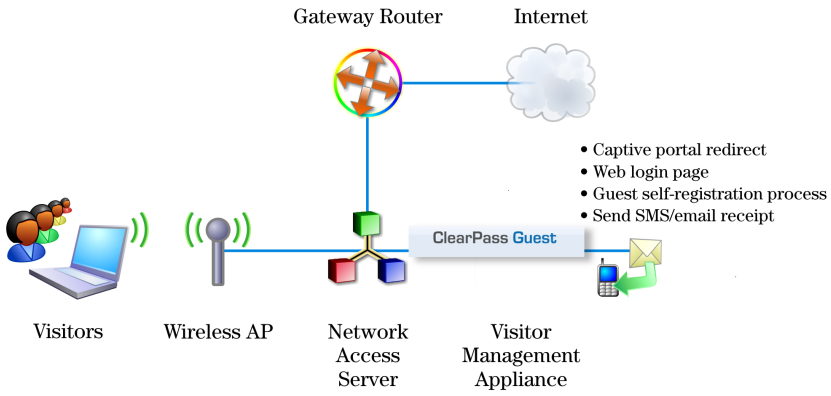
To access ClearPass Guest's hotspot management features, go to **Configuration > Hotspot Manager**.



About Hotspot Management

The following diagram shows how the process of customer self provisioning works.

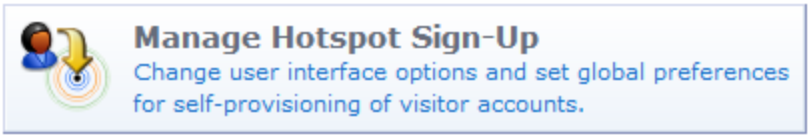
Figure 35 *Guest self-provisioning*



- Your customer associates to a local access point and is redirected by a captive portal to the login page.
- Existing customers may log in with their Hotspot username and password to start browsing.
- New customers click the **Hotspot Sign-up** link.
- On page 1, the customer selects one of the Hotspot plans you have created.
- On page 2, the customer enters their personal details, including credit card information if purchasing access.
- The customer's transaction is processed, and, if approved, their visitor account is created according to the appropriate Hotspot plan.
- On page 3, the customer receives an invoice containing confirmation of their transaction and the details of their newly created visitor account.
- The customer is automatically logged in with their username and password, providing instant Hotspot access.

Managing the Hotspot Sign-up Interface

You can enable visitor access self provisioning by navigating to **Configuration > Hotspot Manager > Start Here** and selecting the **Manage Hotspot Sign-up** command.



The Hotspot Preferences form opens. This form allows you to change user interface options and set global preferences for the self-provisioning of visitor accounts.

The **Enable guest access self-provisioning** check box must be selected for self-provisioning to be available.

The **Require HTTPS** field, when enabled, redirects guests to an HTTPS connection for greater security.

The **Service Not Available Message** allows an HTML message to be displayed to visitors if self-provisioning has been disabled. See "Smarty Template Syntax" on page 480 in the Reference chapter for details about the template syntax you may use to format this message.

Click the **Save Changes** button after you have entered all the required data.

Captive Portal Integration

To start the visitor self-provisioning process, new visitor registration is performed by redirecting the visitor to the URL specified on the Hotspot Preferences page; for example: https://guest.example.com/hotspot_plan.php. The Hotspot Sign-Up page opens to the first page of the wizard, Choose Plan.

The hotspot_plan.php page accepts two parameters:

- The **source** parameter is the IP address of the customer.
- The **destination** parameter is the original URL the customer was attempting to access (that is, the customer's home page). This is used to automatically redirect the customer on successful completion of the sign-up process.

For browsers without JavaScript, you may use the **<noscript>** tag to allow customers to sign up:

```
<noscript>
        <a href="https://guest.example.com/     hotspot_plan.php">Hotspot Sign-Up</a>
</noscript>
```

However, in this situation the MAC address of the customer will not be available, and no automatic redirection to the customer's home page will be made. You may want to recommend to your customers that JavaScript be enabled for best results.

Web Site Look-and-Feel

The skin of a Web site is its external look and feel. It can be thought of as a container that holds the application, its style sheet (font size and color for example), its header and footer, button style, and so on.

The default skin used by ClearPass Guest is the one that is enabled in the Plugin Manager. The skin is seen by all users on the login page.

SMS Services

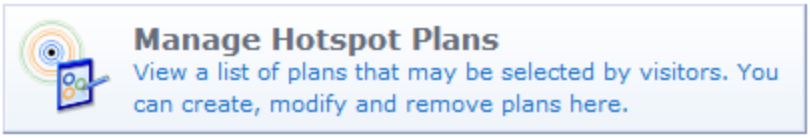
Configure the following settings in the **SMS Services** section of the **Hotspot Preferences** form to override the default SMS settings with your own custom configuration.

- **SMS Receipt**: Click this drop-down list to select the template you want to use for SMS receipts. The default value is **SMS Receipt**.
- **Phone Number Field**: Click this drop down list and identify the field that contains the visitor's phone number. The default value is **visitor_phone**.
- **Auto-Send Field**: Click this drop-down list and select the field which, when configured with any string or non-zero value, will trigger the automatic sending of an SMS receipt. The default value of this field is **auto_send_sms**.

Managing Hotspot Plans

Your Hotspot plans determine how a customer is to pay for Internet access when connected through ClearPass Guest. You also have the option to allow free access.

To view the list of hotspot plans your visitors can select and to access plan management, go to **Configuration > Hotspot Manager > Start Here** and click the **Manage Hotspot Plans** link.



The Manage Hotspot Plans page opens, showing the list of default plans. Plans that are enabled have their name in **bold** and their icon in color: . Plans that are not enabled have their icon in gray: .

Plan Name	Description	Actions
Free Access	Free basic wireless access. Limited to 64 kbit, Web browsing traffic only, and a maximum of one hour.	Edit Delete
Hourly Access	Wireless access charged at $2.95 per hour. Offers full Internet access at 128 kbit/sec.	Edit Delete
Daily Access	Wireless access charged at $24.95 per day (24 hours). Offers full Internet access at 256 kbit/sec.	Edit Delete
Weekly Access	Wireless access charged at $54.95 per week (7 days). Offers full Internet access at 256 kbit/sec.	Edit Delete

- To create or edit an existing plan, see "Editing or Creating a Hotspot Plan" on page 345.
- To delete a plan, click the **Delete** button in the plan's row. When a plan is deleted it is not possible to undo the deletion.

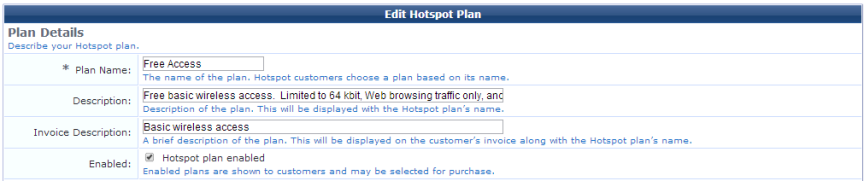
Editing or Creating a Hotspot Plan

When you create or edit a hotspot plan, you can customize which plans are available for selection, and any of the plan's details, such as its description, cost to purchase, allocated role, and the format of the customer's generated username and password.

1. To create or edit a plan, first go to **Configuration > Hotspot Manager > Start Here**, click the **Manage Hotspot Plans** link, and then:
   - To create a new plan, click the **Create Hotspot plan** link in the upper-right corner. The Create Hotspot Plan form opens.
   - To edit a plan, click the **Edit** link in the plan's row. The **Edit Hotspot Plan** form opens.

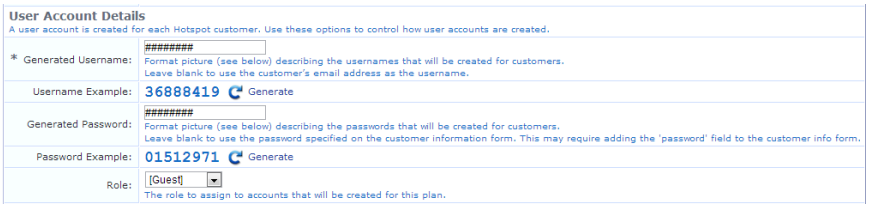
   The procedures are the same for both the Create Hotspot Plan and the Edit Hotspot Plan forms.

Figure 36 *Edit Hotspot Plan, Plan Details*



2. In the **Plan Details** area, enter a name for the plan and descriptions to display in the UI and the customer invoice.
3. To enable the plan, leave the **Enabled** check box marked. To disable the plan, unmark this check box. Disabled plans are not displayed to customers.

Figure 37 *Edit Hotspot Plan, User Account Details*



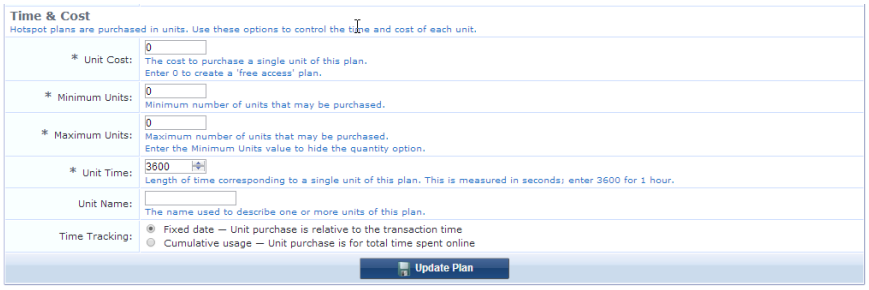
4. In the **User Account Details** area, you can specify the usage of numbers, letters, and symbols in the generated username and password. To use only digits, leave the value in the **Generated Username** and **Generated Password** fields set to **######**. To indicate a different combination of numbers, letters, or symbols, use the following parameters:
   - The number or hash symbol (**#**) is replaced with a random digit (0-9)
   - The dollar symbol (**$**) is replaced with a random letter
   - The underscore symbol (_) is replaced with a random lowercase letter
   - The carat symbol (**^**) is replaced with a random uppercase letter
   - The asterisk symbol (*****) is replaced with a random letter or digit
   - The "at" symbol (**@**) is replaced with a random letter or digit, excluding vowels
   - The exclamation symbol (**!**) is replaced with a random punctuation symbol
   - The ampersand symbol (**&**) is replaced with a random character (letter, digit, or punctuation symbol)
   - All other characters are used without modification

   For more information, see "Format Picture String Symbols" on page 515.

   The **Username Example** field shows a sample username generated according to the rules specified by the entries in the Generated Username field. You can click the **Generate** link to view different examples.

   The **Password Example** field shows a sample password generated according to the rules specified by the entires in the Generated Password field. You can click the **Generate** link to view different examples.

Figure 38 *Edit Hotspot Plan, Time and Cost Details*



5. Complete the rest of the fields appropriately for your organization's needs, then click **Create Plan** or **Edit Plan**. The Manage Hotspot Plans list opens with the new plan displayed.

Managing Transaction Processors

Your hotspot plan must also identify the transaction processing gateway used to process credit card payments. ClearPass Guest supports plugins for the following transaction processing gateways:

- Authorize.Net AIM
- CashNet

- CyberSource
- eWAY
- Micros Fidelio
- Netregistry
- Paypal
- WorldPay

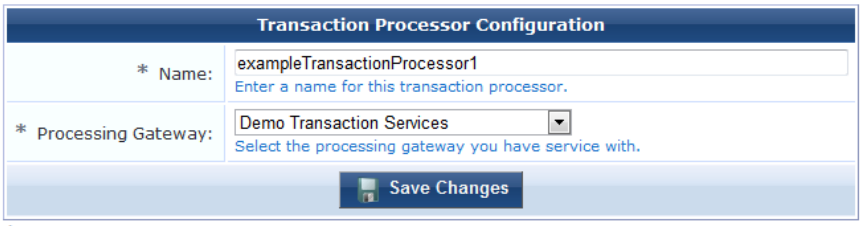
ClearPass Guest also includes a Demo transaction processor that you can use to create hotspot forms and test hotspot transactions.

Creating a New Transaction Processor

The Transaction Processor Configuration form is used to create and to edit transaction processors.

To define a new transaction processor:

1. Go to **Configuration > Hotspot Manager > Transaction Processors** and click the **Create new transaction processor** link in the upper-right corner. The Transaction Processor Configuration form opens.



2. In the **Name** field, enter a name for the transaction processor.
3. In the **Processing Gateway** drop-down list, select the gateway with which you have a service account. The form expands to include additional configuration fields for that gateway type.

   Each transaction processing gateway type requires unique merchant identification, password, and configuration information. Depending on the gateway provider, these configuration items will include some of the following:

   - API Login
   - API Password
   - API Username
   - Auto Email
   - Beagle Anti-Fraud
   - Business Center Login
   - Customer ID
   - Installation ID
   - Logging
   - Merchant ID
   - Mode
   - Production Environment URL
   - Shared Secret

- Signature
- Test Environment URL
- Test WSDL
- Transaction Key
- Transaction Password
- Transactions Timeout

If your transaction processor requires visitors to enter their address,ClearPass Guest will automatically include address fields in the guest self-registration forms that use that transaction processor.

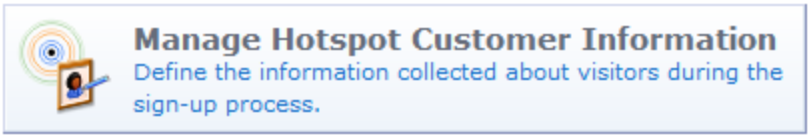
Managing Existing Transaction Processors

After you define a transaction processor, it is included in the transaction processor list. When you select an individual processor in the list, the following options are available:

- **Edit** – changes the properties of the specified transaction processor
- **Delete** – removes the processor from the Transaction Processors list
- **Duplicate** – creates a copy of a transaction processor
- **Show Usage** – opens a window in the Transaction Processors list that shows if the profile is in use, and lists any hotspots associated with that transaction processor. Each entry in this window appears as a link to the **General Hotspot References** form that lets you change the transaction processor associated with that hotspot.

Managing Customer Information

You can customize the fields that the customer sees, the details of these fields, and the order in which they are presented. To customize the fields, go to **Configuration > Hotspot Manager > Start Here** and click the **Manage Hotspot Customer Information** link.



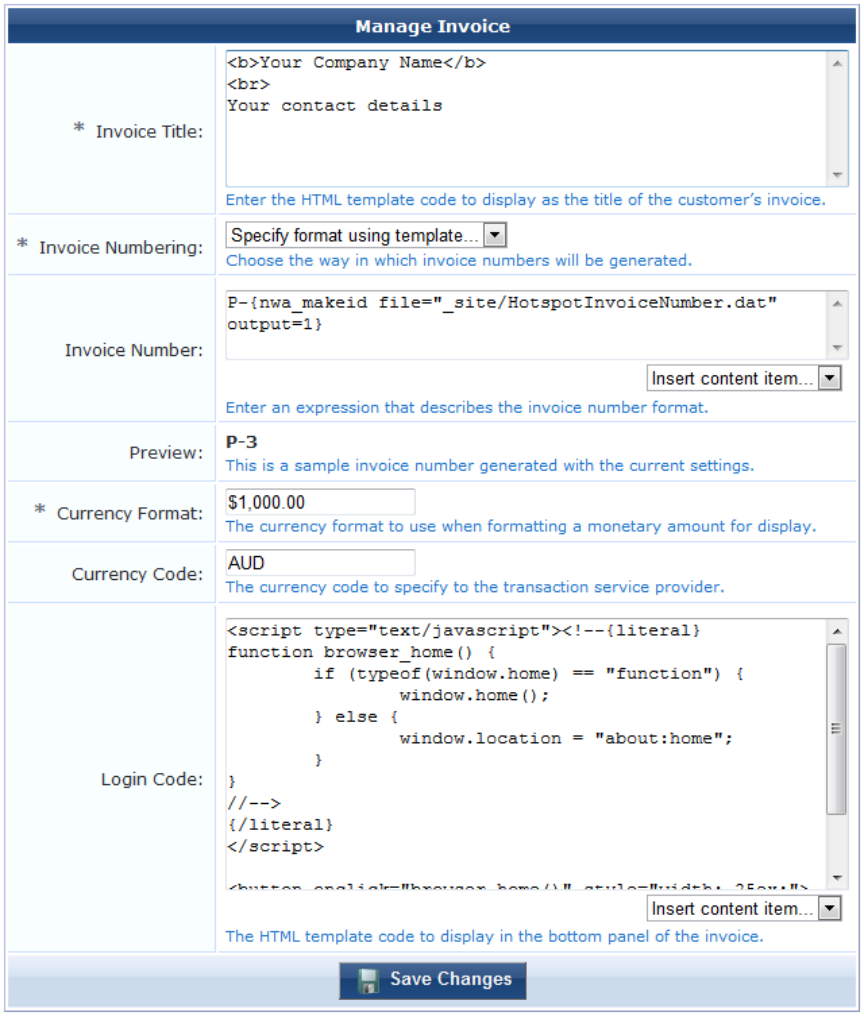
The Customize Form Fields view opens for the customer information form. See "Duplicating Forms and Views" on page 213 for instructions for completing the form field editor.

Managing Hotspot Invoices

After the customer's transaction has been processed successfully, the customer receives an invoice containing confirmation of their transaction and the details of their newly created hotspot user account. You can customize the title shown on the invoice and how the invoice number is created. You can also customize the currency displayed on the invoice.

To customize the hotspot invoice:

1. Go to **Configuration > Hotspot Manager > Start Here** and then click the **Manage Hotspot Invoice** link. The Manage Hotspot Invoice form opens.



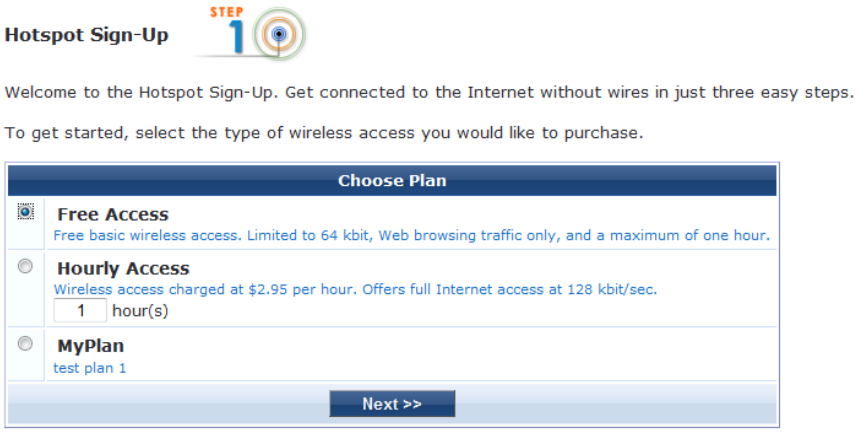
2. The **Invoice Title** must be written in HTML. See "Basic HTML Syntax" on page 477 for details about basic HTML syntax.
3. Complete the rest of the fields appropriately. You can use Smarty functions on this page. See "Smarty Template Syntax" on page 480 for further information on these. You can also insert content items such as logos or prepared text. See "Customizing Guest Self-Registration" on page 235 for details on how to do this.
4. Click **Save Changes**.

Customizing the User Interface

Each aspect of the user interface your hotspot customers see can be customized.

Customizing Visitor Sign-Up Page One

Page one of the guest self-provisioning process asks the guest to select a plan. An example of the default "Choose Plan" page is shown below.



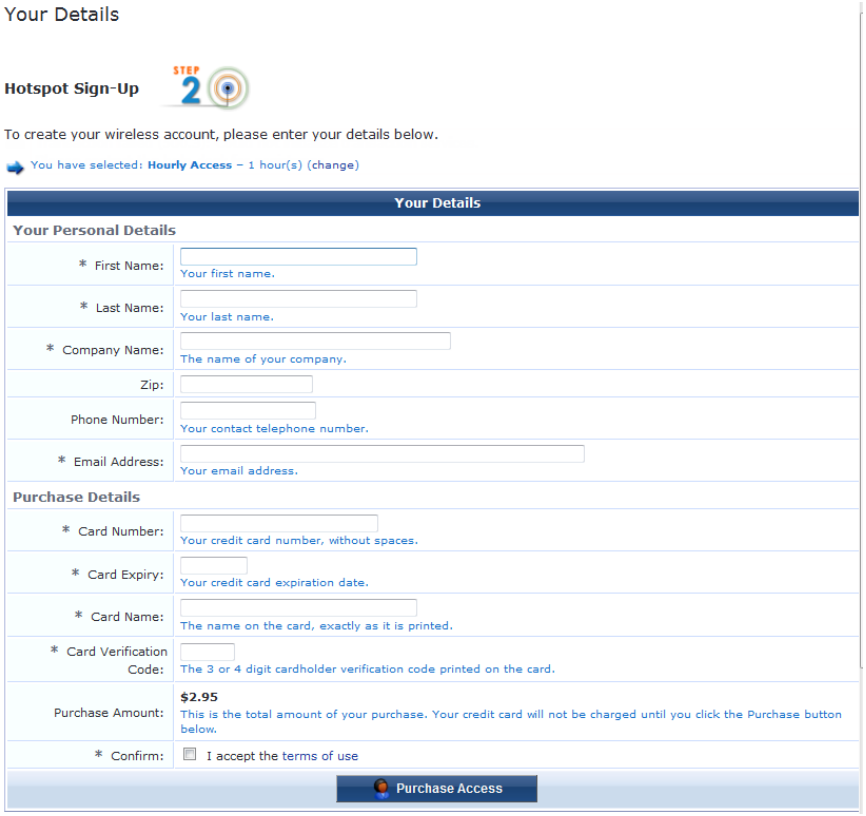
To customize how this page is displayed to the guest, go to **Configuration > Hotspot Manager > Start Here**, click the **Manage Hotspot Sign-Up** link, and then click the **Customize page 1 (Choose Plan)** link in the upper-right corner.

The Edit Hotspot Plan Selection Page form opens. You can use this form to edit the title, introductory text, and footer of the "Choose Plan" page. The introduction and the footer are HTML text that can use template syntax. See "Smarty Template Syntax" on page 480 in the Reference chapter.

Customizing Visitor Sign-Up Page Two

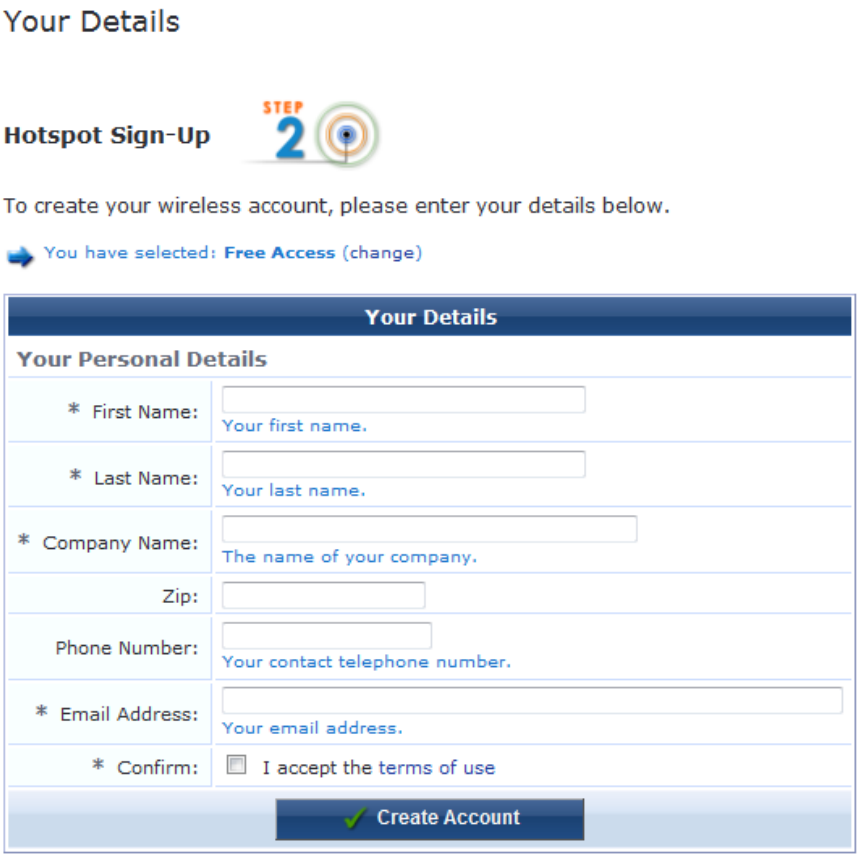
Page two of the guest self-provisioning process asks the guest to provide their personal details and payment method.

The example below shows the default "Your Details" page if the customer chooses to pay for the Hourly Access plan.



Although it is not shown in this illustration, the default page also includes footer text providing information about privacy policies and security pertaining to the data collected by this page.

The example below shows the default "Your Details" page for a customer who chooses the Free Access plan.



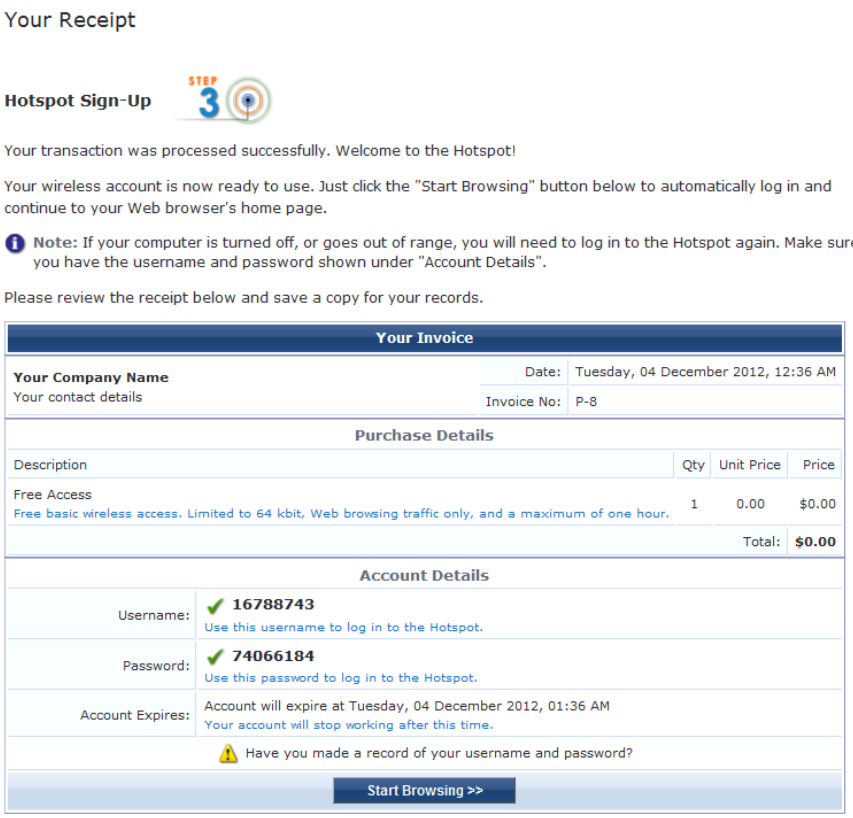
To customize how the "Your Details" page is displayed to the guest, go to **Configuration > Hotspot Manager > Start Here**, click the **Manage Hotspot Sign-Up** link, and then click the **Customize page 2 (Customer Details)** link in the upper-right corner.

The Edit Hotspot User Details Page form opens. You can use this form to edit the content displayed when the customer enters their personal details, including credit card information if purchasing access. The progress of the user's transaction is also shown on this page.

See "Smarty Template Syntax" on page 480 for details about the template syntax you may use to format the content on this page.

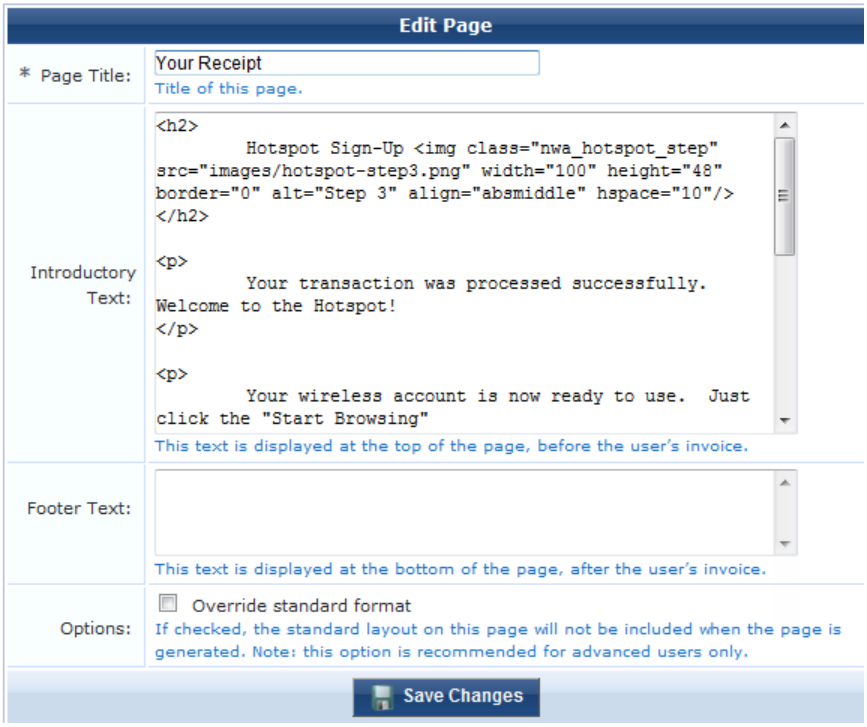
Customizing Visitor Sign-Up Page Three

Page three of the guest self-provisioning process provides the customer an invoice containing confirmation of their transaction and the details of their newly created wireless account. An example of the default “Your Receipt” page is shown below.



To customize how the “Your Receipt” page is displayed to the guest, go to **Configuration > Hotspot Manager > Start Here**, click the **Manage Hotspot Sign-Up** link, and then click the **Customize page 3 (Invoice or Receipt)** link in the upper-right corner.

The Edit Hotspot User Receipt Page form opens. You can use this form to edit the title, introductory text, and footer text of the receipt page.



See "Smarty Template Syntax" on page 480 for details about the template syntax you may use to format the content on this page.

Viewing the Hotspot User Interface

The Hotspot Manager allows you to view and test Hotspot self-provisioning pages, as well as log in to and view the Hotspot self-service portal that allows customers to view their current account expiration date, purchase time extensions, log out of the Hotspot, or change their user password.

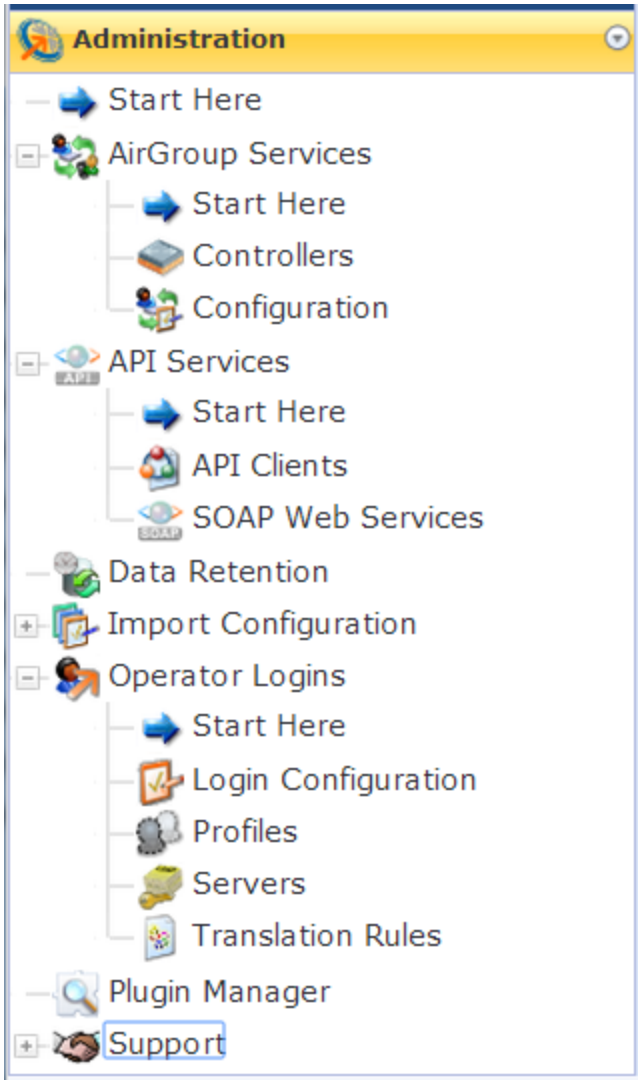
To access either of these user pages, go to **Configuration > Hotspot manager** and select the **Self-Provisioning** or **Self-Service** links in the left navigation menu.

The Administration module provides tools used by a network administrator to perform both the initial configuration and ongoing maintenance of ClearPass Guest.

Accessing Administration

To access ClearPass Guest's administration features, click the **Administration** link in the left navigation.

Figure 39 *The Administration Module's Left Navigation*



AirGroup Services

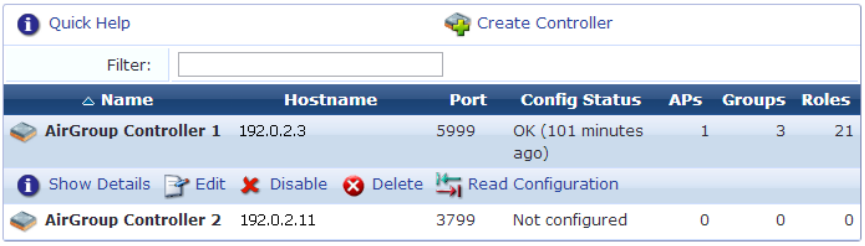
This section describes creating and managing AirGroup controllers and configuring the AirGroup plugin, and provides links to other AirGroup steps performed in ClearPass Guest. For an overview of AirGroup functionality, see "AirGroup Deployment Process" on page 28. For complete AirGroup deployment information, refer to the AirGroup sections in the *ArubaOS User Guide* and the ClearPass Policy Manager documentation.

This section describes the following:

AirGroup Controllers

You can create and manage multiple AirGroup controllers. You may configure each controller's remote access and other information, poll the current configuration, and view configuration details.

To work with your AirGroup controllers, go to **Administration > AirGroup Services > Controllers**. The **AirGroup Controllers** list view opens.

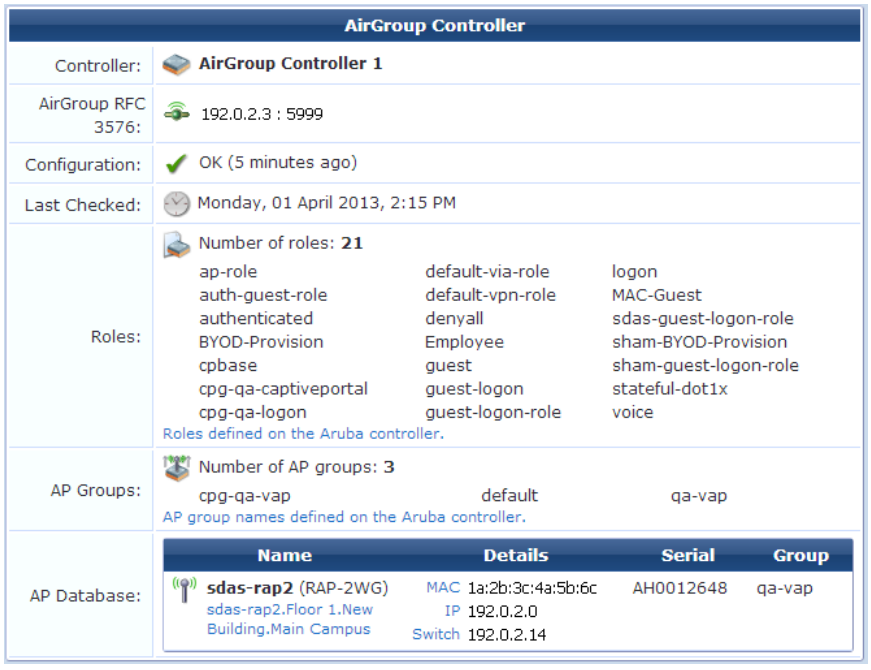


All AirGroup controllers that have been created are included in the list. You can click an AirGroup controller's row in the list for additional options:

Table 87: *AirGroup List Options*

Field	Description
Show Details	View details for the AirGroup controller: Name, hostname or IP address and port number, configuration status, last polling time, currently defined roles and AP groups, and AP database details. See "AirGroup Controller Details" on page 359
Edit	Edit the AirGroup controller's attributes. The Edit AirGroup Controller form opens. For more information, see "Creating and Editing AirGroup Controllers " on page 359 .
Disable	Disables the AirGroup controller. To enable it again at any time, click its **Enable** link.
Delete	Deletes the AirGroup controller. You are asked to confirm the deletion.
Read Configuration	Immediately poll the AirGroup controller's current configuration. A progress bar is shown during the polling action. When the poll is complete, you can click **Show Details** to review the updated configuration details for the roles, AP groups, and AP database. For information on setting an automatic polling schedule, see "Configuring AirGroup Services" on page 361.
Create Controller	Create a new AirGroup controller. The Create AirGroup Controller form opens. For more information, see "Creating and Editing AirGroup Controllers " on page 359.
AirGroup Diagnostics	Perform AirGroup diagnostics. For more information, see "AirGroup Diagnostics" on page 362.

Figure 40 *AirGroup Controller Details*



Creating and Editing AirGroup Controllers

When you create a new AirGroup controller or edit an existing one, you may configure its name, description, notification status, its network connection and authentication settings, and SSH (Secure Shell) details for remote access.

To create a new AirGroup controller or edit an existing controller:

1. Go to **Administration > AirGroup Services > Controllers**, then either click **Create AirGroup controller** at the top of the form, or click a controller's **Edit** link. The Create Controller form opens.

Table 88: *Create AirGroup Controller*

Field	Description
Name	Short name that identifies the controller clearly. AirGroup controller names can include spaces.
Description	Additional useful information about the controller.
Enabled	Enables Policy Manager's AirGroup notification service for the controller. With this service enabled, the controller receives change of authorization (CoA) Requests for sharing events from associated MAC addresses and the events are logged.
Hostname	Hostname or IP address of the controller.
RFC 3576 Port	UDP port number for receiving CoA notifications. The default in ClearPass Guest is **5999**.
Shared secret	Shared secret for AirGroup dynamic notifications.
SSH Username	SSH username for accessing the controller.
SSH Password	SSH password for accessing the controller. The minimum password length is six characters.
Enable Password	The enable password for the controller.
SSH Timeout	Timeout limit in seconds for reading the configuration. The default is 15 seconds.

Configuring AirGroup Services

To enable support for dynamic notification of AirGroup events when new devices are added, each AirGroup-enabled controller must also be defined in ClearPass Guest. Configuration options include specifying roles to exclude from the user interface, and setting an automatic polling schedule, message parameters, and logging levels.

To configure AirGroup Services, go to **Administration > AirGroup Services > Configuration**. The Configure AirGroup Services form opens.

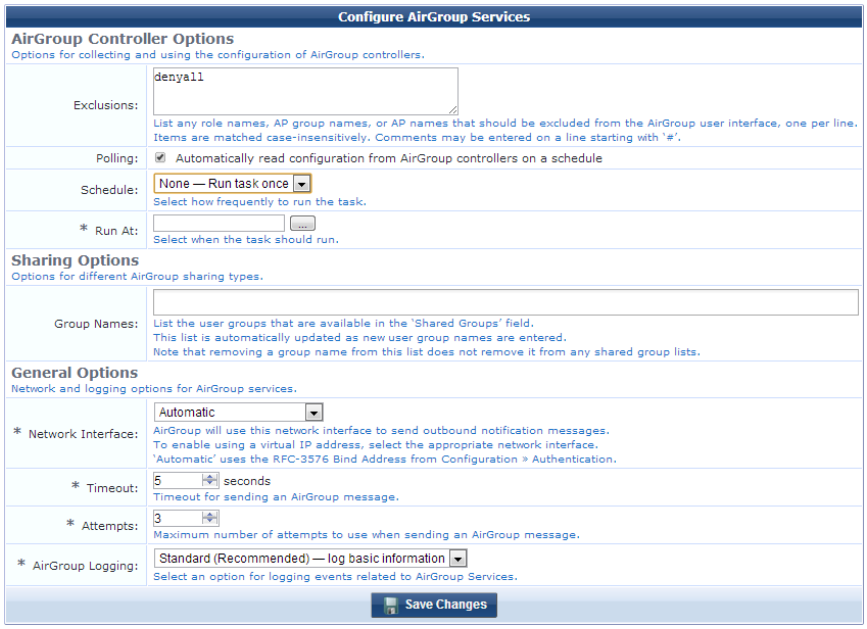


Table 89: *Configure AirGroup Services*

Field	Description
Exclusions	Role names, AP group names, or AP names that should not be displayed in the AirGroup user interface. Enter each item on a separate line. Entries are not case-sensitive. To add a comment, enter it on a separate line that begins with the "**#**" character.
Polling	If selected, schedules automatic polling of AirGroup controller configuration. The form expands to include scheduling options.
Schedule	Choose one of the following options from the drop-down list and complete the scheduling details: • **None -- Run task at once**: In the **Run At** field, use the calendar picker to specify the month, day, and time to poll for configuration. • **Hourly**: In the **Minute** field, enter the number of minutes past the hour to poll for configuration, or **00** to poll on the hour. If you do not need to poll every hour, you can use the check boxes in the **Hours** field to specify which hours of the day the poll should run. • **Daily**: Use the text boxes in the **Time of Day** field to enter the hour and minute of the day the poll should run. • **Weekly**: Use the check boxes in the **Weekdays** field to specify the day or days of the week the poll should run, then use the text boxes in the **Time of Day** field to enter the hour and minute of the day the poll should run. • **Monthly**: Use the check boxes in the **Months** field to specify which month or months the poll should run, then use the text boxes in the **Days** field to specify the day or days of the month. Use the text boxes in the **Time of Day** field to enter the hour and minute of the day the poll should run. • **Yearly**: In the **Run On** field, use the drop-down list to select a month, then enter the day and time in the text boxes.

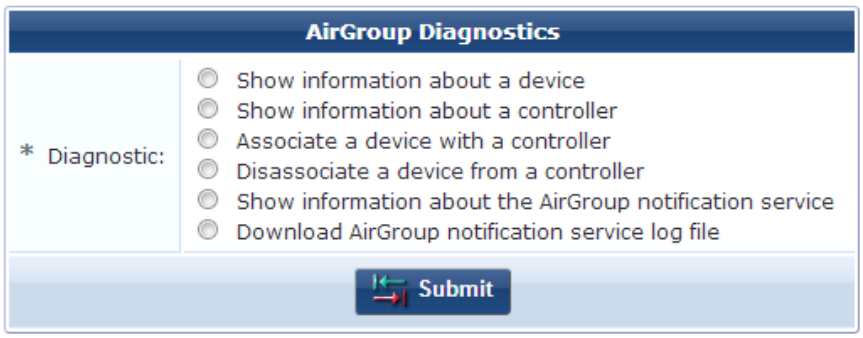
Field	Description
	When a poll is run, you may click **Show Details** in the **Controllers** list to view the updated configuration. For more information, see "AirGroup Controllers" on page 358. Automatic polling is run only on the publisher node.
Group Names	Enter names of shared groups that should be available in the Shared Groups field for users to choose from when they share a device. If additional user groups are also entered by users when they share a device, the list in the configuration is automatically updated to capture these fields. Removing a group name from this list does not remove it from other shared group lists. When you type a name for the group in the Group Names field, press the Enter key, and click Save, the group is created in the system and appears as a "tag". For more information, see "About AirGroup Time-Based Sharing" on page 75. Each group name may not exceed 64 characters. A maximum of 32 group names may be entered. The maximum character limit for the list is 320 characters (including comma separators).
Network Interface	Interface AirGroup will use to send outbound notification messages. To enable using a virtual IP address, select the appropriate interface. Options include: • **Automatic** — Automatically chooses the appropriate source IP address; either the management port or the data port, depending on the controller's IP address. • **Management port [MGMT]** — Always uses the management port as the source address. • **Data/External port [DATA]** — Always uses the data port as the source address.
Timeout	Number of seconds after which an attempt to send an AirGroup message will time out.
Attempts	Maximum number of times the system should attempt to send an AirGroup message.
AirGroup Logging	Choose one of the following options: • **Disabled—Do not log AirGroup related events** • **Standard (Recommended)—Log basic information** • **Extended—Log additional information** • **Debug—Log debug information** • **Trace—Log all debug information**

See also:

- "AirGroup Diagnostics" on page 362
- "AirGroup Services " on page 358

AirGroup Diagnostics

The AirGroup Diagnostics form lets you perform several diagnostic actions. To access this form, go to **Administration > AirGroup Services > Configuration**, and then click the **AirGroup Diagnostics** link in the upper-right corner. The AirGroup Diagnostics form opens.



When you choose the diagnostic you want to run, the form expands to include fields for identifying information. When you enter the information and click **Submit**, the results of the query are displayed below the form. To run another diagnostic, click the **Reset Form** link before selecting the diagnostic.

Table 90: *AirGroup Diagnostics*

Field	Description
Show information about a device	Enter the device's MAC address. Information shown includes: • Device information (as entered on **Guest > Create Device**) • Controller IP address and AirGroup protocol version • Hostname of associated server, management IP address, and role • Times of AirGroup authorization requests along with controller IPs and enforcement profiles
Show information about a controller	Enter the controller's IP address or hostname. Information shown includes: • Times of AirGroup authorization requests along with MAC address, controller IPs, and enforcement profiles • MAC address, AirGroup state, time of last update, and expiration setting for devices associated with the controller
Associate a device with a controller	Links a MAC address to a controller as though the controller had issued an AirGroup authorization request for the device. Enter the device's MAC address and controller's IP address or hostname. Select the AirGroup protocol version. Two links are added below the form, one for viewing the device information, and one for viewing the controller information.
Disassociate a device from a controller	Removes the link between the MAC address and the controller as though the controller had reported the device no longer present on the network. Enter the device's MAC address and controller's IP address or hostname. Two links are added below the form, one for viewing the device information, and one for viewing the controller information.
Show information about the AirGroup notification service	Displays a list of statistics from the AirGroup notification service, showing values for various work items, CoA clients and requests, and RADIUS items.
Download AirGroup notification service log file	Downloads the log file to your system's Download folder.

See also:

- "Configuring AirGroup Services" on page 361
- "AirGroup Controllers" on page 358
- "AirGroup Services " on page 358

Creating AirGroup Administrators

AirGroup Administrators are users of ClearPass Guest who can define and manage their organization's shared devices. Devices can be shared globally, or shared with restrictions based on the username, role, or location of the user trying to access the device.

The AirGroup Administrator profile is automatically created in ClearPass Guest when the AirGroup Services plugin is installed. This profile is used to define the AirGroup Administrator role. To create an AirGroup Administrator, see "Creating a New Operator" on page 464.

Creating AirGroup Operators

AirGroup Operators are users of ClearPass Guest who can provision a limited number of their own personal devices. Each device provisioned by an operator is automatically shared with all of that operator's provisioned devices. The operator can also define a group of other users who are allowed to share the operator's devices.

The AirGroup Operator profile is automatically created in ClearPass Guest when the AirGroup Services plugin is installed. This profile is used to define the AirGroup Operator role. To create an AirGroup Operator, see "Creating a New Operator" on page 464.

Authenticating AirGroup Users via LDAP

ClearPass Guest supports LDAP authentication for administrators and operators. To provide AirGroup Services to LDAP-authenticated users:

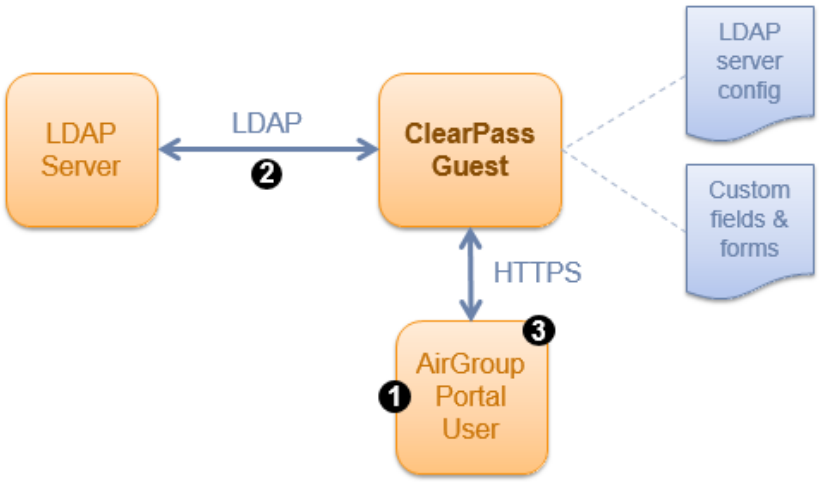
1. Define the LDAP server for AirGroup. See "External Operator Authentication" on page 465.
2. Define the appropriate translation rules to categorize the LDAP users. See "Custom LDAP Translation Processing" on page 474.

Configuring LDAP User Search for AirGroup

On the AirGroup device registration portal, the Shared Roles and Shared Locations lists allow searching and selecting from the roles and locations defined in an AirGroup-enabled controller in order to specify the users with whom an AirGroup device should be shared. This section describes how to configure ClearPass Guest to enable interactive directory-based user search for these AirGroup fields.

LDAP User Search Architecture

The LDAP user search feature has several architectural components, as shown in the following diagram.



User Search Workflow

The workflow for a typical user search operation is:

1. The user of the AirGroup portal starts typing a username. This triggers a dynamic request to ClearPass Guest.
2. ClearPass Guest performs a search operation against the configured LDAP server.

3. Search results are returned to the portal user, who can then select from one of the matching item, or continue typing to further narrow the search.

Configuration Summary

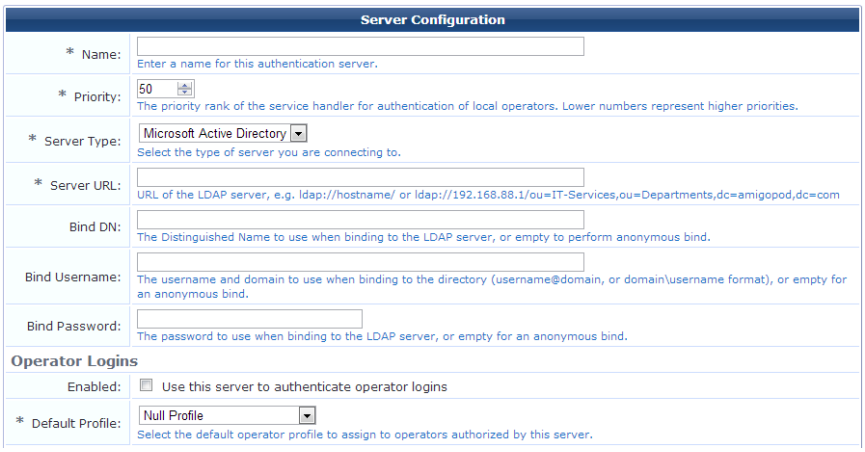
To configure LDAP user search for AirGroup, you will:

1. Create a ClearPass Guest LDAP server
2. Enable user search for this server
3. Configure the user interface for the airgroup_shared_user field
4. Specify user search options for the user interface

Each of these steps is described in the following sections.

Basic LDAP Server Settings

In ClearPass Guest, go to **Administration > Operator Logins > Servers** and click the **Create new LDAP server** link.

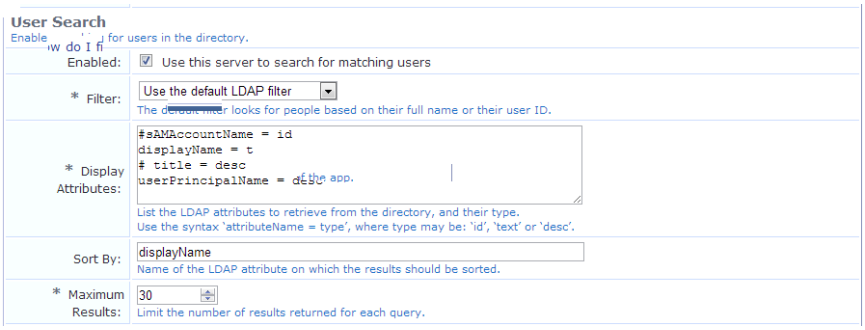


In the **basic properties** and **Operator Logins** areas of the Edit Authentication Server form:

Table 91: *Edit Authentication Server, Basic Properties*

Field	Description
Name	Enter a name for the LDAP server.
Server URL	Provide the LDAP URL of the server. This would typically be in the form: `ldap://ldap-server-hostname.example.com/<LDAP Base DN>`
Bind DN	If your directory server requires authentication, provide suitable credentials. A typical base DN for Microsoft Active Directory might be DC=example,DC=com.
Bind Password	
Enabled	Clear the **Use this server to authenticate operator logins**check box unless you also plan to configure LDAP operator logins with this server.

User Search Settings



In the **User Search** area of the Edit Authentication Server form:

Table 92: *Edit Authentication Server, User Search*

Field	Description
Enabled	Mark the **Use this server to search for matching users** checkbox. The form expands to include additional options.

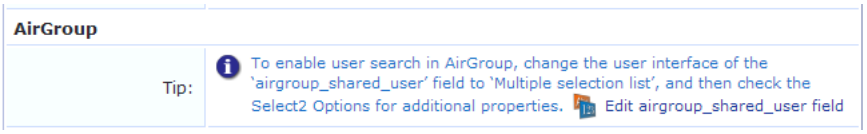
Filter	(Required) Select one of the following options:
	• **Use the default LDAP filter**—Uses an LDAP filter suitable for an Active Directory search operation.
	  ▪ The default filter matches user accounts based on any portion of the username (sAMAccountName attribute), or any portion of the user's full name (displayName attribute), and eliminates resources (display name starting with "*"), disabled accounts, and users without a userPrincipalName attribute.
	• **Specify a custom LDAP filter...**—Allows you to enter a specific LDAP filter expression.
	  ▪ This should be a valid LDAP filter expression per RFC 4515.
	  ▪ The keyword **@SEARCH@** is replaced with the user's actual search term when the filter is used.

Display Attributes *	(Required) Provide a list of LDAP attributes to retrieve when searching, and the treatment to apply to each attribute: • **id**—Use the LDAP attribute as the value of a matching item. This value is used when a matching item is selected. This would normally be the case for the LDAP attribute that specifies the username. The directory should contain unique values in this attribute. • **text**—Use the LDAP attribute as the text to display for a matching item. • This would normally be the case for the LDAP attribute that specifies the user's common name (displayName in Microsoft Active Directory). Users will typically want to search on this attribute. • **desc**—Use the LDAP attribute as additional descriptive text to display for a matching item. This is an optional item. There must be exactly one attribute that is identified as an "id" attribute. Multiple LDAP attributes may be identified as "text" or "desc" attributes, in which case all the values are displayed together in the search results. If no LDAP attribute is identified as a "text" attribute, the "id" attribute will be used as the text. To use one attribute in different ways, provide a list of types. For example, specify sAMAccountName = id, desc to have the username act as both the ID and the description text. Comments may be entered in this field by starting a line with the "#" character.
Sort By	Specify the name of an attribute on which to order the search results. Otherwise, the default value of displayName orders the results by the user's full name.
Maximum Results	(Required) Limits the total number of search results that can be displayed.

***** In the **Display Attributes** field, the default value field provides the following behavior:

- **sAMAccountName = id**—The username is used as the value for a selected item.
- **displayName = text**—The user's full name is displayed as the label for a matching item.
- **# title = desc**—Commented out and not used by default. Enables the title of the user to be shown in the description.
- **userPrincipalName = desc**—The user's email address is displayed as descriptive text for a matching item.

Configuring the AirGroup Shared User Field

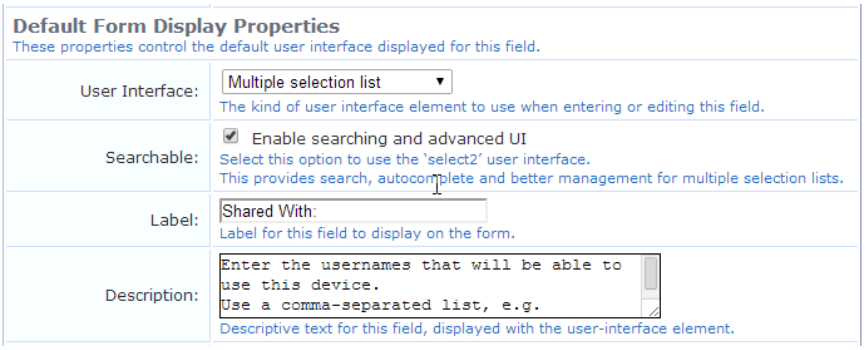


The **AirGroup** row of the Edit Authentication Server form is the starting point to enable the server for user search in AirGroup. This row provides a brief description of the process and a link to the **airgroup_shared_user** field's configuration form.

The **airgroup_shared_user** field stores a list of usernames with whom an AirGroup device should be shared. To enable user search, this field must be updated with new configuration options.

To configure the airgroup_shared_user field, do one of the following:

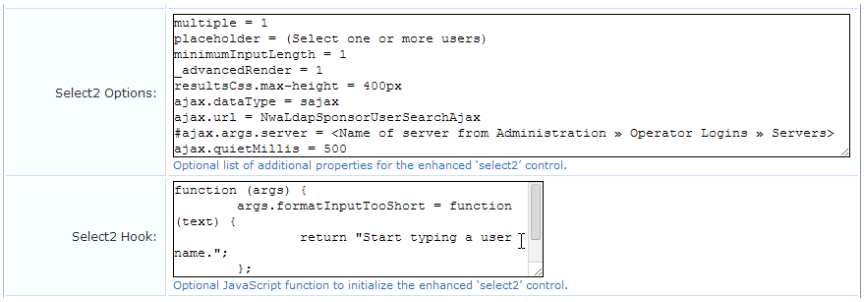
- From the **Administration > Operator Logins > Servers > Edit Authentication Server** form, click the **Edit airgroup_shared_user field** link provided in the **Tip** in the **AirGroup** row.
- If you are not starting from the Edit Authentication Server form, go to **Configuration > Fields**, select the **airgroup_shared_user** field in the list, and then click **Edit**. The Define Custom Field form for that field opens.



Use the **Default Form Display Properties** area of the form to set the field type and enable search:

Table 93: *Default Form Display Properties, Relevant Fields*

Field	Description
User Interface	Type of user interface element to use for this field. Select **Multiple selection list** from this drop-down list.
Searchable	Select the **Enable searching and advanced UI** check box in this row. The Select2 Options and Select2 Hook fields are added to the form.



In the **Advanced Properties** area of the form, you will customize the user interface for single and multiple-selection capabilities.

Table 94: *Advanced Properties, Relevant Fields*

Field	Description
Advanced	Select the **Show advanced properties** check box. Additional configuration options are added to the form.
Select2 Options	Used to customize the user interface for the "select2" control, which provides both single and multiple-selection capabilities. Default values are preconfigured for these fields. These defaults are intended for use with user search. However, the **ajax.args.server** parameter must be configured with the name of the LDAP server that should be searched.
Select2 Hook	
Save Changes	After the server name is specified in the ajax.args.server parameter in the Select2 Hook field, when you save your changes the AirGroup device registration portal includes the capability to search the directory based on username.

For details of the advanced options, functions, and additional parameters provided in the **Select2 Options** and **Select2 Hook** fields, see "Select2 Options Details" on page 368 and "Select2 Hook Details" on page 369. For in-depth technical information about these functions, refer to the Select2 programmer's documentation at http://ivaynberg.github.com/select2/.

Select2 Options Details

When configuring the airgroup_shared_user field for AirGroup user search, the advanced options provided in the **Select2 Options** field are shown in the following table:

Table 95: *Details, Select2 Options Field*

Option	Description
multiple = 1	Specifies that the field allows multiple selections. When this parameter is set, individual selections can be cleared by clicking an "x" delete icon displayed with each selection, or by using the Backspace key to erase a selected item.
placeholder = (Select one or more users)	Specifies the placeholder text that is displayed when the field is empty.
minimumInputLength = 1	Specifies that at least one character must be typed before a search operation is triggered. If the directory has a large number of user accounts in it, performing a single-character search is not likely to return any useful results, in which case this value should be increased.
_advancedRender = 1	Specifies that the list of matching items should be rendered in a way which includes an icon, text and description. If this parameter is not specified, only text is displayed in the matching items.

Option	Description
resultsCss.max-height = 400px	Specifies that the list of matching items should be up to 400 pixels in height. Additional CSS properties may be specified using the “resultsCss” value, if required.
ajax.dataType = sajax	Specifies that the field should use a dynamic query mechanism to look up a search term. This parameter should not be changed.
ajax.url = NwaAirGroupUserSearchAjax	Specifies that the field should perform a user search. This parameter should not be changed.
ajax.args.server = ...	Specifies the name of the LDAP server that should be searched. This parameter must match the name of the LDAP server that was created, or else the search operation will fail.
ajax.quietMillis = 500	Specifies that the user search operation should be performed after half a second (500 ms). This parameter is used to avoid performing searches while the user is still typing. To increase the responsiveness of the user interface, this parameter can be reduced, but doing so may increase the number of search operations performed against the LDAP server.

Additional parameters that may be specified in this field include:

Table 96: *Additional Parameters, Select2 Options Field*

Option	Description
width = 460px	Specifies the width of the field. A value in pixels may be specified, or another length unit supported by CSS. This parameter does not need to be specified if the CSS Style field is already used to specify a width.
maximumInputLength = <number>	Specifies the maximum number of characters that may be entered.
maximumSelectionSize = <number>	Specifies the maximum number of items that can be selected. After this number has been reached, the drop-down list will show a message returned by the formatSelectionTooBig function.
closeOnSelect = false	Specify this option to prevent the drop-down list from closing when a value is selected. This parameter is not recommended when dynamic search is enabled, as a dynamic list does not contain all possible items that may be selected.
containerCss.<style-name> = <style-value>	Specify CSS properties that will be applied to the containing element of the “select2” control.
dropdownCss.<style-name> = <style-value>	Specify CSS properties that will be applied to the drop-down list element of the “select2” control.

For in-depth technical information about these functions, refer to the Select2 programmer’s documentation at http://ivaynberg.github.com/select2/. For information on configuring AirGroup for LDAP user search, see "Configuring LDAP User Search for AirGroup" on page 364.

Select2 Hook Details

The **Select2 Hook** field may be used to attach certain dynamic behaviors to the “select2” control.

This field must contain the definition of a JavaScript function that takes a single argument. The argument to this function specifies certain behavioral properties of the control. The function should return the argument, updated as necessary to specify the behavior that you want.

To change the behavior of the “select2” control, you need to attach a JavaScript function definition to one or more properties of the hook function’s argument.

The hook function may also set or update any of the properties specified in the “Select2 Options”.

A simple example is included as the default value with the airgroup_shared_user field:

```
function (args) {
args.formatInputTooShort = function (text) {
return "Start typing a user name.";
};
return args;
}
```

The functions that may be defined by the “Select2 Hook” function shown in the following table:

Table 97: *Select2 Hook Functions*

Function	Description
sortResults(results, container, query)	Used to sort the results list for searching right before it is displayed. Useful for sorting matches by relevance to the user’s search term.
formatNoMatches (term)	Function used to render the “No matches” message. Should return an HTML string.
formatSearching()	Function used to render the “Searching…” message that is displayed while a search is in progress. Should return an HTML string, or null to disable the message.
formatInputTooShort (term, minLength)	Function used to render the “Search input too short” message. Should return an HTML string.
formatSelectionTooBig (maxSize)	Function used to render the “You cannot select any more choices” message. Should return an HTML string.

For in-depth technical information about these functions, refer to the Select2 programmer’s documentation at http://ivaynberg.github.com/select2/. For information on configuring AirGroup for LDAP user search, see "Configuring LDAP User Search for AirGroup" on page 364.

MACTrac Services

MACTrac allows users to register their personal mobile devices on a local network. Each device registered by an operator is automatically shared with all of that operator’s registered devices. There is no limit to the number of device accounts an operator can create, and no expiration time is set on device accounts.

You use ClearPass Policy Manager to create MACTrac operators. MACTrac operators can then log in through ClearPass Guest to register and manage their devices.

For example, in a university setting, MACTrac provides a simple way for students to register their various devices on the network:

- The student is authenticated and can register as many devices as they wish.
- MACTrac automatically detects each device's OS type, letting the network administrator easily build an inventory of the devices on the network and architect an appropriate network policy.

- There is no additional license fee for these devices: Although MACTrac is part of ClearPass Guest, MACTrac device registrations do not count against the ClearPass Guest license.
- As with other ClearPass Guest forms and views, the MACTrac user interface can be customized by adding a custom skin or options such as an "Add Another Device" button.

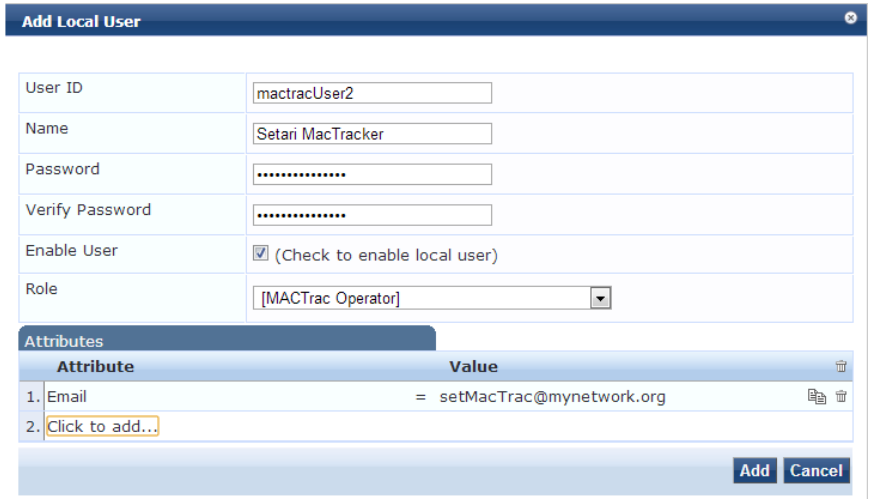
This section describes the following:

Creating MACTrac Operators

MACTrac operators are users of ClearPass Guest who can register their personal devices on a local network. The MACTrac operator profile and translation rule are already available in ClearPass Guest, and the MACTrac role is available in ClearPass Policy Manager. No expiration time is set on MACTrac operator accounts.

To create a MACTrac operator:

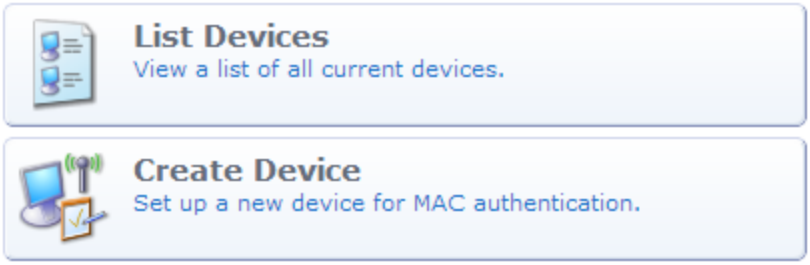
1. In ClearPass Policy Manager, go to **Configuration > Identity > Local Users** and click **Add User**. The Add Local User form opens.



2. In the **User ID** field, enter the MACTrac operator's username.
3. Complete the **Name** and **Password** fields. The minimum password length is six characters.
4. The new operator is enabled by default. If the operator is not to be activated until a later time, you may unmark the check box in the **Enable User** field.
5. In the **Role** drop-down list, select **MACTrac Operator**.
6. You may use the **Attribute** drop-down lists to include additional information such as **Phone**, **Email**, **Sponsor**, **Title**, **Department**, or **Designation** and provide values for these attributes.
7. Click **Add**. The new MACTrac operator is added to the Local Users list view. To edit any of the values shown above, click the operator's row in the list.

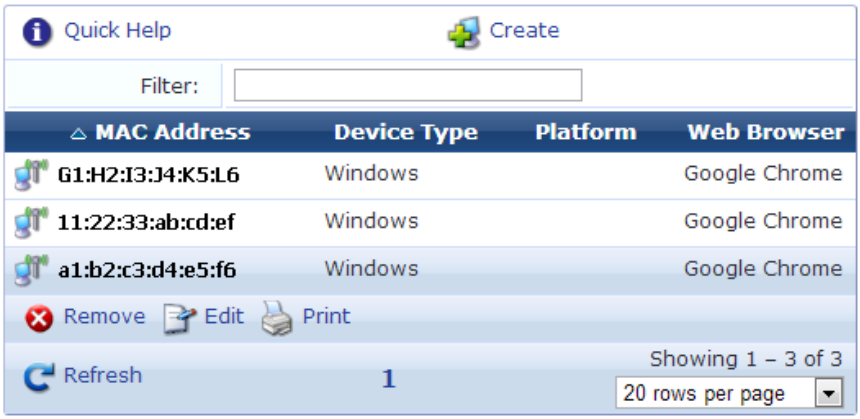
Managing MACTrac Devices

The MACTrac operators you create can log in to ClearPass Guest to register their devices on their local network. Their view of the Guest user interface only includes the MACTrac features.



MACTrac operators can create and manage multiple device accounts. Options include editing, printing details, disabling, and deleting accounts.

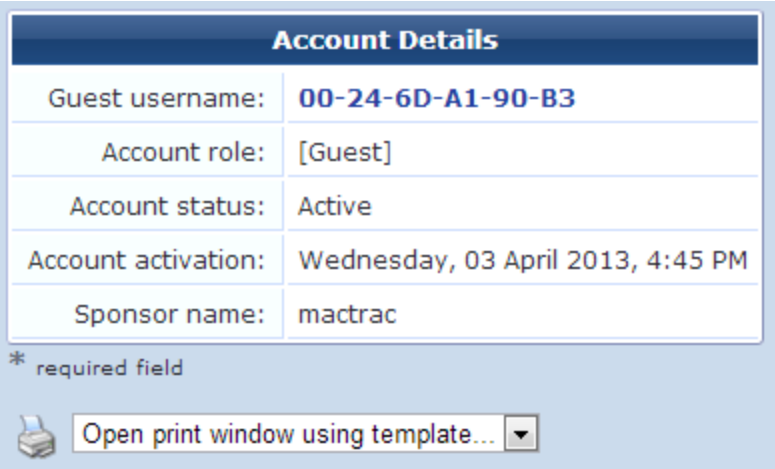
To work with MACTrac devices, log in to ClearPass Guest as a MACTrac operator and go to **Guest > List Devices**. The MACTrac Devices list view opens.



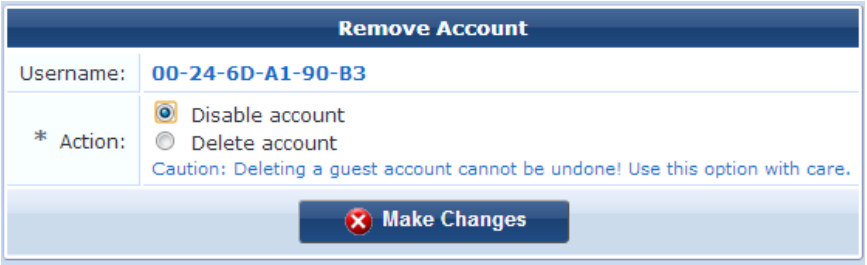
All MACTrac devices that have been registered are included in the list. You can click a device account's row in the list for additional options:

- To edit any of a device account's attributes, click its **Edit** link. The Edit MACTrac Device form opens. The process for editing a device account is the same as for creating the account. For more information, see "Registering MACTrac Devices " on page 373.

- To print a copy of the device account's details, click its **Print** link. The Account Details form opens and includes print options.



- To disable or delete a device account, click its Remove link. A confirmation dialog opens. You may specify either **Disable** or **Delete**, then click **Make Changes**. To enable a disabled account, click its **Activate** link.



Registering MACTrac Devices

The Register Device form is used by MACTrac operators to create their device accounts on their local network. There is no limit to the number of accounts an operator can create, and no expiration time is set on device accounts.

To register a MACTrac device:

1. Log in to ClearPass Guest as a MACTrac operator and go to **Guest > Create Device**. The Register Device form opens.

2. The **MAC Address** field is required, and should be prepopulated for the user. This is enabled in the Mobility Controller. For more information, see "Automatically Supplying the MACTrac Device Address" on page 374.

3. (Optional) Enter a name for the device in the **Device Name** field.
4. (Optional) The **Device Type** field is prepopulated if detected, and indicates whether it is a computer, printer, or other type of device.
5. (Optional) The **Device Platform** field is prepopulated if detected, and indicates whether it is a Windows, Mac, Linux, or Android platform, and whether it is a mobile phone.
6. (Optional) The Browser Vendor/Version field is prepopulated if detected, and indicates whether it is an Internet Explorer, Google Chrome, Mozilla Firefox, or other browser.
7. (Optional) The **Enabled By** field displays the operator's name.
8. Click **Create MAC** to register the device and create the account. The device account is included in the MACTrac Devices list, and can be shared with the operator's other registered devices.

The default Register Device form is described here. ClearPass administrators can customize this form with additional fields.

About MAC Addresses

A MAC address is a number that uniquely identifies your device's network interface. A MAC address is sometimes referred to as an Ethernet hardware address (EHA), hardware address, or physical address.

MAC addresses are usually formatted as twelve characters grouped in pairs separated by either colons or hyphens. They may consist of only number pairs, or include number pairs and letter pairs, and in some cases do not include separators—for example:

00:11:22:33:44:55

00-11-22-33-44-55

11:22:33:AA:BB:CC

112233AABBCC

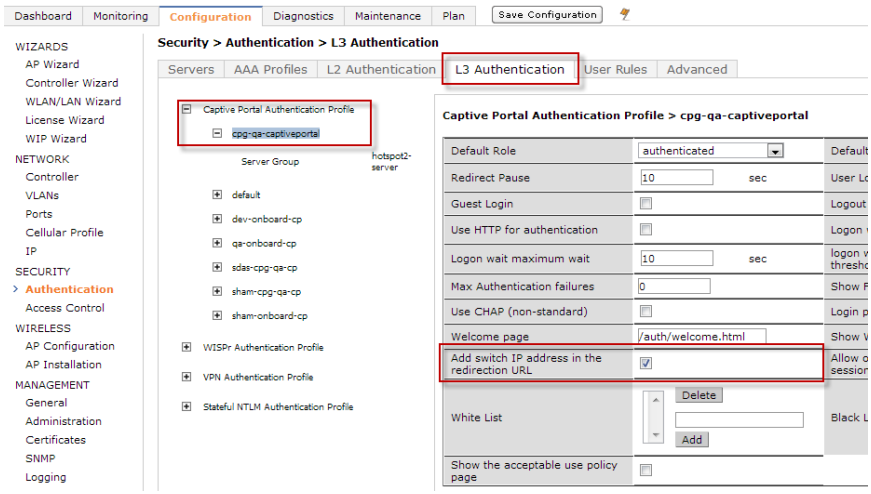
If for some reason the Mac Address field on the Register Device form is not prepopulated, you may need to find your device's address. Methods for finding the MAC address differ according to the type of device and operating system. Due to the variety of devices, these methods cannot all be described here, but they are easy to find on the Internet. An Internet search for "mac address" will return a number of pages describing how to quickly find MAC addresses for different device types.

Automatically Supplying the MACTrac Device Address

To ensure that the MAC address, device type, and browser vendor/version are prepopulated on the MACTrac Register Device form, verify that these options are set in the Mobility Controller.

To set MACTrac prepopulating options:

1. Log in to the Mobility Controller.
2. In the **Configuration** tab, go to **Security > Authentication** in the left menu.
3. Click the **L3 Authentication** tab, then choose **Captive Portal Authentication Profile > cpg-qa-captiveportal**.
4. On the form, mark the check box in the **Add switch IP address in the redirection URL** row.



API Services

API Services includes all APIs and API-related privileges that are available for ClearPass Guest. To work with API services, go to **Administration > API Services**.

This section includes:

API Clients

You can create and manage multiple API clients. You may configure each API client's operator profile, grant type, refresh token, and other information.

To work with API clients, go to **Administration > API Services > API Clients**. The API Clients list view opens.

All API clients that have been created are included in the list. You can click an API client's row in the list for additional options:

Table 98: *AirGroup List Options*

Field	Description
Edit	Edit theAPI client's attributes. The Edit API Client form opens. For more information, see "Creating and Editing API Clients" on page 376.
Disable	Disables the API client. You will be asked to confirm the action. Disabling an API client also invalidates any access tokens, refresh tokens, or authorization codes associated with it.
Enable	Enables a disabled API client.
Delete	Deletes the API client. You will be asked to confirm the deletion.
Create API Client	Opens the Create API Client form. For more information, see "Creating and Editing API Clients" on page 376.

Creating and Editing API Clients

To create or edit an API client, go to **Administration > API Services > API Clients** and either click the **Edit** link for an API client in the list, or click the **Create API client** link in the upper-right corner. The Edit API Client or Create API Client form opens. The procedure is the same for both forms.

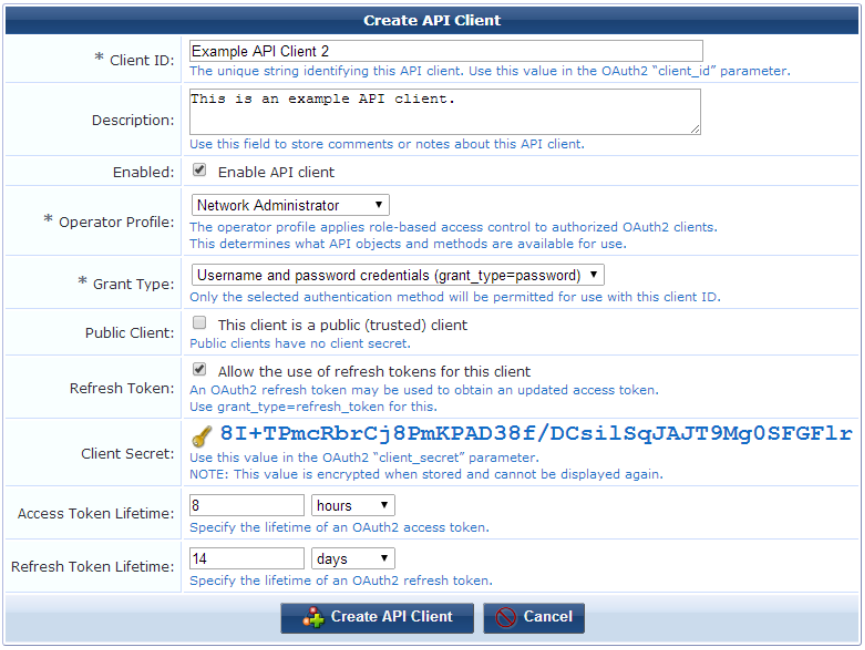


Table 99: *Create API Client*

Field	Description
Client ID	(Required) Name for the API client. Enter a unique string. (Use this value in the OAuth2 `client_id` parameter)
Description	Additional information or comments about the API client.
Enabled	If selected, enables the API client.
Operator Profile	(Required) Specifies the role that can access this API client, and determines which API objects and methods are available. Options include: • **API Guest Operator**

Field	Description
	• **BYOD Operator** • **Device Registration** • **Help Desk** • **Network Administrator** • **Null Profile** • **Operations and Marketing** • **Read-only Administrator** • **Receptionist** • **Super Administrator**
Grant Type	(Required) Specifies the OAuth2 grant type authentication method to be used with this API client ID. Only the selected authentication method will be allowed. Options include: • **Client credentials (grant_type=client_credentials)** • **Username and password credentials (grant_type=password)**
Public Client	If selected, the API client will be a public (trusted) client, and will not require a client secret.
Refresh Token	If selected, an OAuth2 refresh token may be used to obtain an updated access token. (Use `grant_type=refresh_token`)
Client Secret	If a client secret is required, it is displayed in this field. Record this value for reference. When the API client is created, this value is encrypted and cannot be displayed again. When you edit an existing API client, this field includes the option to generate and display a new secret. (Use this value in the OAuth2 `client_secret` parameter)
Access Token Lifetime	Specifies the lifetime of the OAuth2 access token. Enter a number in the first text field, and use the drop-down list to indicate the unit of time. Options include: • **seconds** • **minutes** • **hours** • **days** • **weeks**
Refresh Token Lifetime	Specifies the lifetime of the OAuth2 refresh token, if one was specified. Enter a number in the first text field, and use the drop-down list to indicate the unit of time. Options include: • **seconds** • **minutes** • **hours** • **days** • **weeks**
Create API Client	Creates the API client. It is included in the API Clients list view.

Configuring the API Framework Plugin

The API Framework plugin supports OAuth2 authentication and authorization, and provides all application programming interface (API) services for ClearPass Guest. Settings you can configure for this plugin include the access token lifetime, the authorization code lifetime, the refresh token lifetime, and the API logging level.

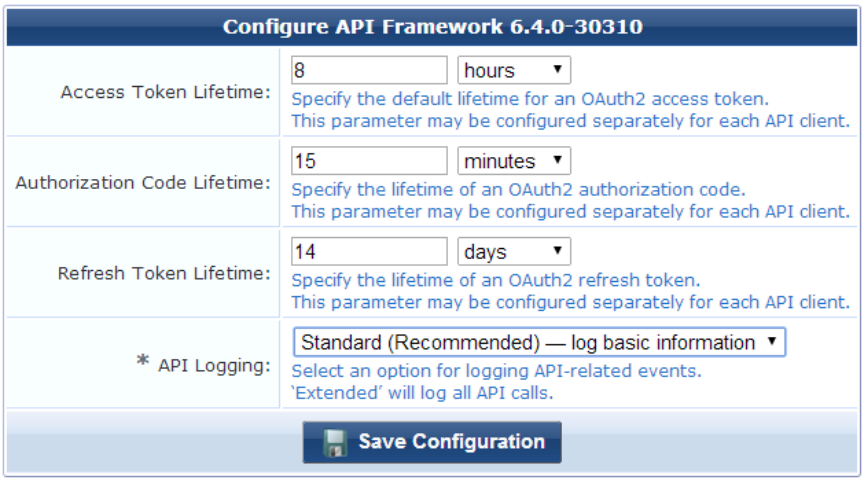


Table 100: *API Framework Plugin Configuration*

Field	Description
Access Token Lifetime	(Optional) Specifies the default lifetime of an OAuth2 access token. Unless it is changed, the default value is 8 hours. To change the value, enter a number in the first text field, and use the drop-down list to indicate the unit of time. Options include: • **seconds** • **minutes** • **hours** • **days** • **weeks** The value for this parameter may also be configured separately for each API client (see "Creating and Editing API Clients" on page 376).
Authorization Code Lifetime	(Optional) Specifies the default lifetime of an OAuth2 authorization code. Unless it is changed, the default value is 15 minutes. To change the value, enter a number in the first text field, and use the drop-down list to indicate the unit of time. Options include: • **seconds** • **minutes** • **hours** • **days** • **weeks** The value for this parameter may also be configured separately for each API client (see "Creating and Editing API Clients" on page 376).
Refresh Token Lifetime	(Optional) Specifies the default lifetime of an OAuth2 refresh token. Unless it is changed, the default value is 14 days. To change the value, enter a number in the first text field, and use the drop-down list to indicate the unit of time. Options include: • **seconds** • **minutes** • **hours** • **days** • **weeks** The value for this parameter may also be configured separately for each API client (see "Creating and Editing API Clients" on page 376).

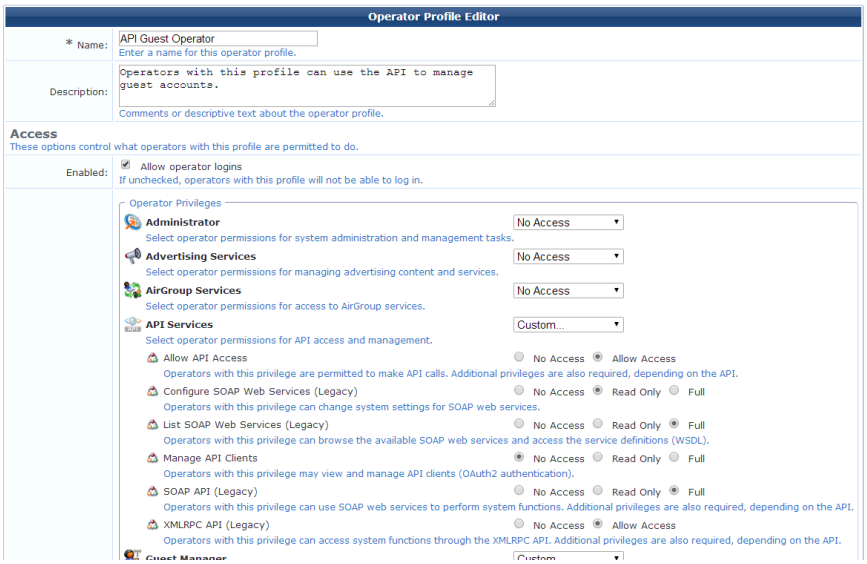
Field	Description
API Logging	(Required) Specifies the logging level for API-related events. Options include: • **Disabled - do not log API-related events** • **Standard (Recommended) - log basic information** • **Extended - log additional information** (this option logs all API calls) • **Debug - log debug information** • **Trace - log all debug information**
Save Configuration	Commits your changes.

Setting API Privileges in Operator Profiles

To use ClearPass Guest's API services, the API privileges must be set up in the user's operator profile. Existing operator profiles that have the Administrator privilege set to Full Access must be updated to specifically include the appropriate privilege in order for XML-RPC clients to work.

To set up API privileges:

1. Go to **Administration > Operator Logins > Profiles**, and either click the **Edit** link for an existing profile in the list or click the **Create a new operator profile** link to create a new profile. The **Operator Profile Editor** form opens.



2. In the **Privileges** field, select **Custom** in the **API Services** drop-down list. The field expands to show the API privileges. Privileges included here are:
   - **Allow API Access**
   - **Configure SOAP Web Services**
   - **List SOAP Web Services**
   - **Manage API Clients**
   - **SOAP API**
   - **XMLRPC API**
3. For the **Allow API Access** privilege, select the **Allow Access** radio button.
4. For each of the remaining privileges in the list, select the appropriate access level. Access levels include:
   - **No Access**

- **Read Only**
- **Full**
- **Allow Access**

5. If you want to allow the API operator profile to query for Guest Manager configuration settings, set the **Manage Customization** privilege to **Read Only** access.
6. Complete the rest of the settings appropriately for the operator profile and then click **Save Changes**.

About OAuth

The OAuth 2 RFC 6749 specification for accessing a new set of modern API's is supported by ClearPass 6.4 and later. All OAuth2 requests MUST use the SSL endpoint available at **https://<ClearPass IP or FQDN>/api/oauth**.

OAuth 2.0 is a simple and secure authorization framework. It allows applications to acquire an access token for ClearPass through a variety of workflows supported within the OAuth2 specification. After an application has an access token, it can access the various APIs serviced by ClearPass either to configure the platform itself or act on behalf of a ClearPass Operator. To use OAuth for authorization:

- Decide on the use case for API Access — Either ClearPass administrative configuration, or managing ClearPass data on behalf of a ClearPass Operator (Guest Management, Onboarded devices, Device Registration etc).
- Create a ClearPass API Client definition that matches the use case above — Either Service Account (client credentials) or Authorized User Account (resource owner password), respectively.
- Request an Access Token using the Client ID details from the ClearPass API client definition created in the previous step.
- Make authorized API calls to the ClearPass APIs by including the Bearer <access_token> in the HTTP Authorization header.

OAuth Basics

The best way to understand the different use cases for OAuth2 is to start with the various roles that make up a possible OAuth2 transaction.

Resource Owner

The resource owner is the person or application that owns the data that is to be shared. For example, a user on Facebook or Twitter could be a resource owner, in the same way as an Operator on ClearPass. The resource they own is their data. Typically the resource owner is thought of as a person but it could also be an application. The OAuth 2.0 specification supports different workflows for each of these use cases.

Resource Server

The resource server is the server hosting the resources. For example, either a platform such as Facebook or a ClearPass Server could be considered a resource server. It is essentially the server hosting the protected content that will be accessed via the APIs.

Client Application

The client application is the application requesting access to the protected resources stored on the resource server.

Authorization Server

The authorization server authorizes the client application to access the resources of the resource owner. The authorization server and the resource server can be deployed as part of the same server, but the OAuth 2.0

specification does not dictate whether they should be co-located or separated. For simplicity, the rest of this document assumes the resource server and authorization server are co-located on the same server.

OAuth2 Client or App

Before any OAuth transactions can be processed, the first step is to register a new app with the service (API Client definition in ClearPass). When you register a new app with the Authorization Server, you specify basic information such as the application name and the OAuth2 grant type. Depending on the grant type selected, a redirect URI may also be requested in order to whitelist the redirect destination for OAuth2 workflows that are initiated from Web server, browser-based, or mobile apps.

The output of registering an OAuth2 app is a client id and client secret.

Client ID and Secret

After you register your app, you will receive a client ID and a client secret. The client ID is considered public information, and is used to build login URLs, or is included in JavaScript source code on a page. The client secret must be kept confidential. If a deployed app such as JavaScript or native apps cannot keep the secret confidential, then the secret is not used.

Redirect URI

During registration of the new OAuth app, often a redirect URI must be included. This redirect URI is used when a resource owner grants authorization to the client application. When a resource owner has successfully authorized the client application via the authorization server, the resource owner is redirected back to the client application, to the redirect URI. It is important to maintain the redirect URI accurately as this forms a key security mechanism of OAuth2 to whitelist the redirect destination and avoid hi-jacking of the authorization workflow, as publicized in articles such as http://tetraph.com/covert_redirect/oauth2_openid_covert_redirect.html.

State

To protect the security of your users by preventing request forgery attacks, the client app should create an anti-forgery state token. The first step is to create a unique session token that holds state between your app and the user's client. The app later match this unique session token with the authentication response returned by the Authorization server to verify that the user is making the request, and not a malicious attacker. These tokens are often referred to as cross-site request forgery (CSRF) tokens.

Authorization Grant Types for OAuth

OAuth 2 provides several "grant types" for different use cases. ClearPass supports the following defined grant types:

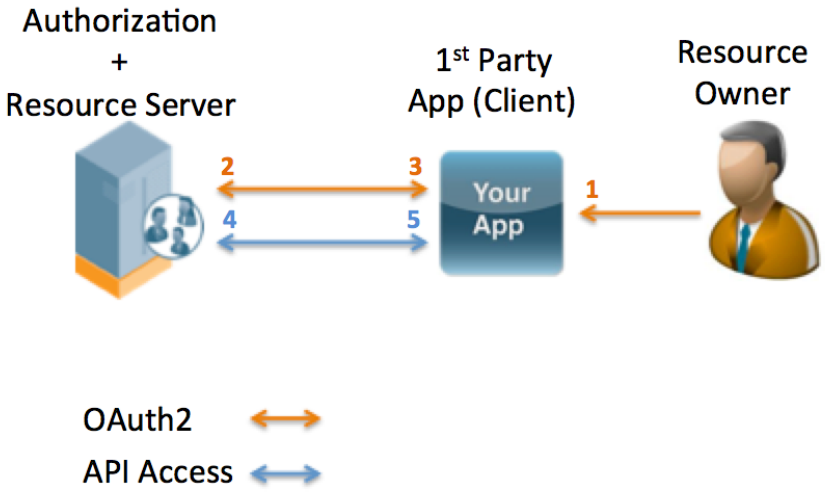
- **Password**— For logging in with a username and password
- **Client credentials**— For application access

Resource Owner Password Grant Type

OAuth 2 also provides a password grant type, which can be used to exchange a username and password for an access token directly. This is often compared with HTTP basic authentication because the same credentials are being exchanged, but it has the same security benefits as the other OAuth2 grant types in expiring the access token and the ability to refresh the access token without the need to cache or resubmit the user credentials.

Since this requires the application to natively collect the user's credentials, this grant type should only be used for apps with a direct relationship (first party) with the authorization server. A real world example would be the official mobile app for a social networking site versus allowing 3rd party developers to leverage APIs to develop their own mobile experience for the social platform (they should be leveraging the Implicit flow).

The following diagram shows the transaction flow of password grant type.



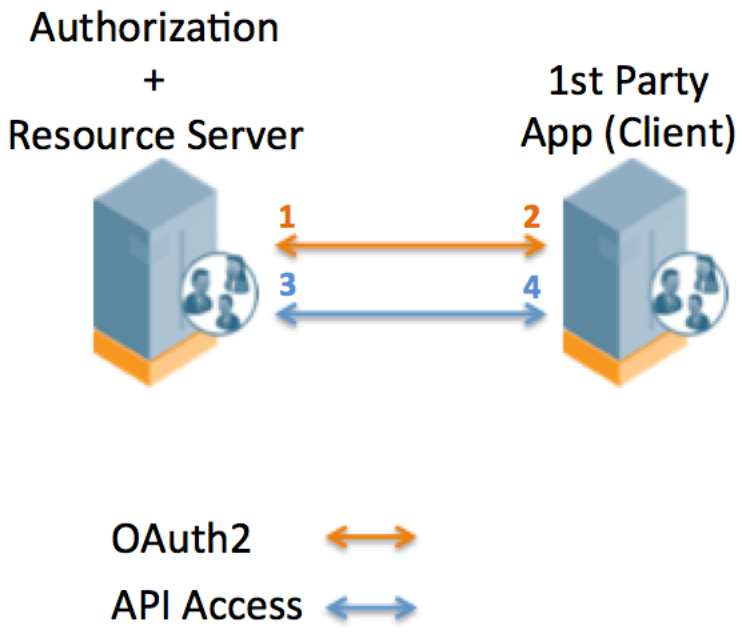
1. The user enters credentials directly into the app's native user interface. The app should not cache user credentials under any circumstances.
2. The app submits the user credentials to the authorization server. Credentials include `grant_type=password`, `user`, `password`, `client_id`, and `client_secret`. The `client_secret` is not required if the OAuth2 app is defined as a public client.
3. The resource server returns the access token to use in subsequent API calls. This includes `access_token`, `expiry time`, `token_type=bearer`, and `refresh_token`.
4. The app includes the access token in the HTTP Authorization header. This includes the Bearer `access_token`.
5. The resource server returns the authenticated API payload.

Client Credentials Grant Type

The simplest grant type offered by OAuth2 doesn't include a 3rd party user at all and is essentially intended for server-to-server integrations for updating the application server configuration. In this case, applications need a way to get an access token for their own user and need to do this outside the context of any specific user. OAuth provides the client credentials grant type for this purpose.

Given the simplicity of this grant type, many developers may use its basic workflow to recover an access token so they can quickly get started with the APIs. That being said, client credentials should never be used in production where an untrusted 3rd party developer has access to the client secret.

The following diagram shows the transaction flow of the client credentials grant type.



1. The first-party app submits an access token request to the authorization server. This includes `grant_type=client_credentials`, `client_id`, and `client_secret`.
2. The resource server returns the access token to use in subsequent API calls. This includes `access_token`, `expiry time`, and `token_type=bearer`.
3. The app includes the access token in the HTTP Authorization header. This includes Bearer `access_token`.
4. The resource server returns authenticated API payload.

Application Service Accounts for OAuth

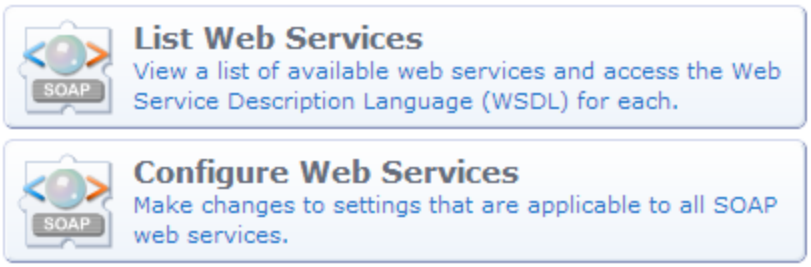
Google APIs such as the Prediction API and Google Cloud Storage can act on behalf of your application without accessing user information. In these situations your application needs to prove its own identity to the API, but no user consent is necessary. Similarly, in enterprise scenarios, your application can request delegated access to some resources.

For these types of server-to-server interactions you need a service account, which is an account that belongs to your application instead of to an individual end-user. Your application calls Google APIs on behalf of the service account, and user consent is not required. (In non-service-account scenarios, your application calls Google APIs on behalf of end-users, and user consent is sometimes required.)

SOAP Web Services and API

SOAP Web services provide a way of transferring data across the Internet to integrate Web-based applications. Web services let businesses share data and processes programmatically, and can be added to a user interface to provide functionality.

To access this feature in ClearPass Guest, you must have the SOAP Web Services plugin installed.



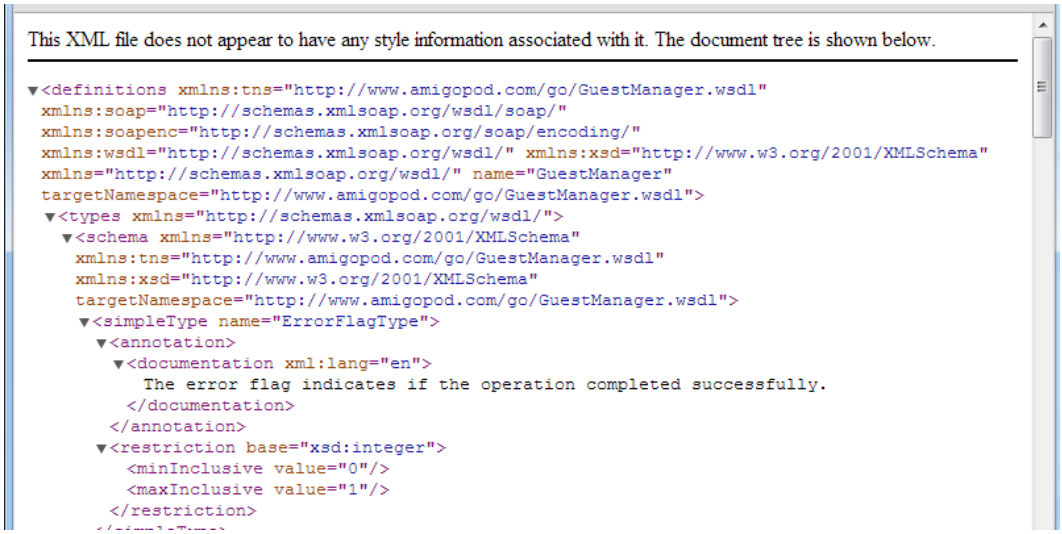
Viewing Available Web Services

To view the Web services available in ClearPass Guest:

1. Go to **Administration > Web Services > List Web Services**. The Available Web Services list view opens.

2. To view details for a service, click its image in the **Web Service** field. The row expands to include the Service URL and Service Info fields for that Web service.

3. The **Service Info** field briefly describes the processes this Web service provides.In the **Service URL** field, you can click the link to view the Web Service Description Language (WSDL) that defines that service. The WSDL opens in a new tab.



4. When you have finished reviewing the available Web services, click **Done**.

Configuring Web Services

To configure the SOAP Web Services plugin:

1. Go to **Administration > Web Services > Configure Web Services**. The Configure Web Services form opens.

2. To allow operators to make WSDL requests without being logged in, mark the check box in the **WSDL Access** field.
3. Use the counter in the **Maximum Request Size** field to set the maximum size in kilobytes that will be allowed for a SOAP request.
4. In the **SOAP Debugging** row, use the drop-down list to set the debugging level for SOAP service requests. Options include:
   - **1 -- Log SOAP errors only**
   - **2 -- Log SOAP errors with full request body**
   - **3 -- Log all SOAP requests**
   - **4 -- Log all SOAP requests with full details**
5. When your changes are complete, click **Save Configuration**. The configuration is applied to all SOAP Web services in the application.

SOAP API Introduction

The SOAP interface is available to third-party applications that will integrate with the ClearPass Guest Visitor Management Appliance.

Audience

This API is intended for developers of applications that must interoperate with a ClearPass Guest-based visitor management solution. Solution developers are assumed to be familiar with HTTP-based Web services and the associated concepts and technologies related to these services, including Extensible Markup Language (XML), XML Schemas, Web Service Definition Language (WSDL), and the Simple Object Access Protocol (SOAP).

Many software development tools provide assistance with Web services integration. While this document cannot cover all possible integration methods, examples are given using Microsoft Visual C# 2008.

API Documentation Overview

- "About the SOAP API" on page 386 provides a high-level overview of the API, explaining what it is and how to use it.
- "Integration Example" on page 391 provides an integration example to demonstrate the usage of SOAP web services.
- "API Documentation" on page 395 contains a detailed list of the available API calls, including documentation about each method defined by the web services.

Disclaimer

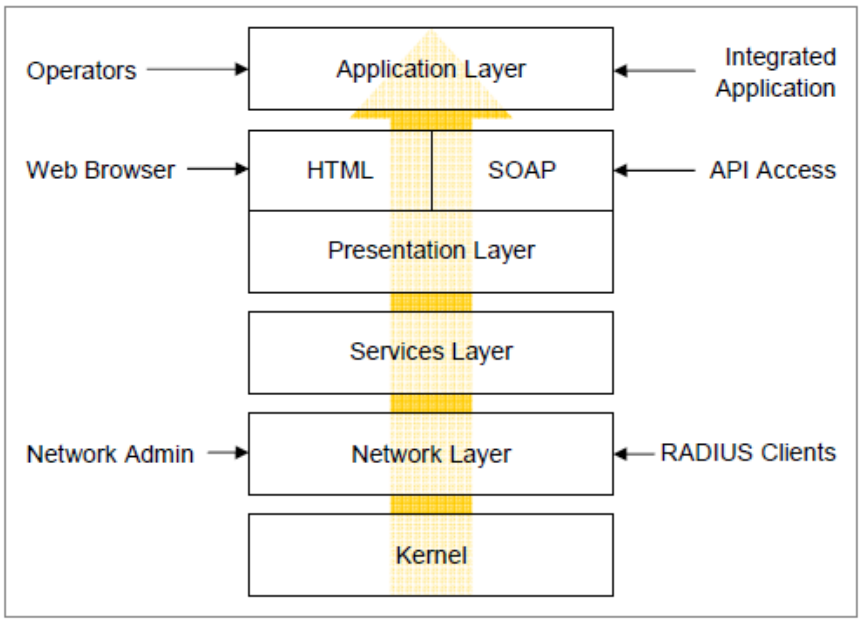
The topics of network design, security architectures, and visitor access are complex subjects, and no single document can hope to cover all of the possible combinations of network equipment, network design, deployment requirements, and device configurations, nor can all the possible security implications for a particular recommendation be covered. Therefore, while you read this document, it is best to consider it as a guide to developing your own understanding of the network design topics covered, and as a basis for further investigation.

About the SOAP API

The ClearPass Guest SOAP API provides direct access to the underlying functionality of ClearPass Guest. Developers wishing to provide integrated applications can make use of this API to programmatically perform actions that would otherwise require manual operation of the user interface.

Architecture Overview

The ClearPass Guest software is built using multiple layers:



- At the lowest level, the kernel provides basic functions common to the entire system. This includes the Web interface framework, appliance operating system, and runtime support services.
- The network layer provides critical networking support, including the RADIUS server and the ability for network administrators to manage and control the networking aspects of the appliance.
- The services layer provides one or more implementations of application services that are used by the layers above. Examples of these services include managing a user database used for AAA, handling the authentication of operators, and providing translated text resources.
- The presentation layer supplies the tools and framework necessary for the appliance software to interact with the outside world. The basic presentation layer services include authentication checks, session establishment, input checking, validation and conversion, and command execution. Both SOAP and HTML presentation methods are supplied, which adapt the underlying basic presentation to appropriate conventions suitable for a machine-to-machine or human-to-machine interaction.
- The application layer provides the page templates, business logic, and the concrete features making up visitor management applications such as Guest Manager or Hotspot Manager. These applications are built using the services provided by the lower layers.

Authentication and Access Control

SOAP API requests require that operator authentication information is provided using HTTP Basic authentication.

Page privileges are applied to SOAP authenticated sessions in the same way as the HTML user interface. However, SOAP access also requires the SOAP API privilege to be granted.

Refer to "Using the SOAP API" on page 388 for details on creating an operator profile with suitable privileges for SOAP API access.

HTTP headers

When making a SOAP API request, the **SOAPAction** HTTP header is required. The value of this header indicates the type of request being made.

The **Content-Type** header must be specified as either **text/xml** or the **application/soap+xml** MIME type.

The **Authorization** header must contain a valid HTTP Basic authentication string, as specified in RFC 2617.

Character Set Encoding

ClearPass Guest supports the Unicode character set, using the UTF-8 encoding. Although other character sets are supported, it is recommended that all SOAP API requests be constructed using the UTF-8 character set, as this eliminates the need for character set conversions while also allowing all Unicode characters to be expressed directly.

The character set encoding of a request may be specified using the Content-Type header, for example:

```
Content-Type: text/xml; charset=utf-8
```

SOAP Faults

SOAP 1.1 defines a generalized fault response which is used to indicate that the server could not process the body of the request. The SOAP `<Fault>` element contains a description of the error, which is divided into a `<faultcode>` that briefly summarizes the problem, and a `<faultstring>` that contains a description of the error.

Additionally, the API-specific details of the error are provided in a `<details>` element.

The following table lists the fault codes and corresponding descriptions that might be encountered while using the SOAP API:

Table 101: *Fault Codes and Descriptions*

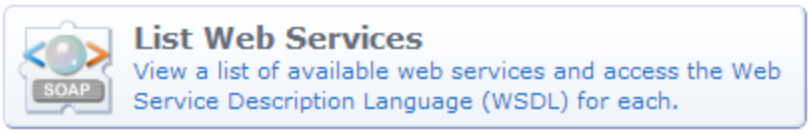
Fault	Reason for Fault
Client.BadRequest	Request exceeds the maximum allowable size. Increase the maximum SOAP request size, or reduce the size of the request.
Client.Authentication	Invalid username or password. Check that the credentials supplied are correct.
Client.MethodNotFound	The SOAP method request was not found.
Client.Error	Another non-specific client error occurred. Check the `<faultstring>` for more details.
Server.MethodNotImplemented	The SOAP method requested is not implemented.
Server.Error	An error occurred while attempting to convert data, or another non-specific server error occurred. Check the `<faultstring>` for more details.

Certain conditions might also cause errors that are not reported as a fault. These cases are typically caused by errors in constructing the SOAP request. In these cases, a non-XML result may be returned; check the body of the result, or the application log for details about the cause of the error.

Using the SOAP API

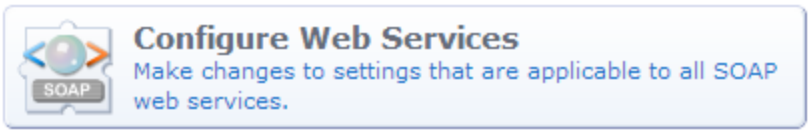
This section describes how to access, configure, and debug Web Services, create a SOAP API operator, and access the WSDL.

Accessing SOAP Web Services



Use the **List Web Services** command link available from the Administration page, or go to **Administration > Web Services**, to access the SOAP Web Services user interface.

Configuring SOAP Web Services



Use the **Configure Web Services** command link to make changes to system settings affecting the SOAP API.

SOAP Debugging

Select a higher level for the **SOAP Debugging** configuration option to log additional details to the application log.

To access the application log, go to **Administration > Plugin Manager > Application Log**.

At the highest debugging level of **4**, every SOAP request and response will be logged including full HTTP headers and contents, which may be useful when trying to identify the exact cause of a problem.

Creating a SOAP API Operator

The SOAP API requires both authentication and authorization components.

- **Authentication** means that suitable credentials must be provided via the HTTP "basic" access authentication method. A valid ClearPass Guest operator username and password must be provided.
- **Authorization** for the SOAP API requires that the corresponding user account has sufficient privileges to perform the requested operation. In the ClearPass Guest role-based access control system, this requires at a minimum that the SOAP API privilege is granted, as well as any additional privileges required for the operation requested.

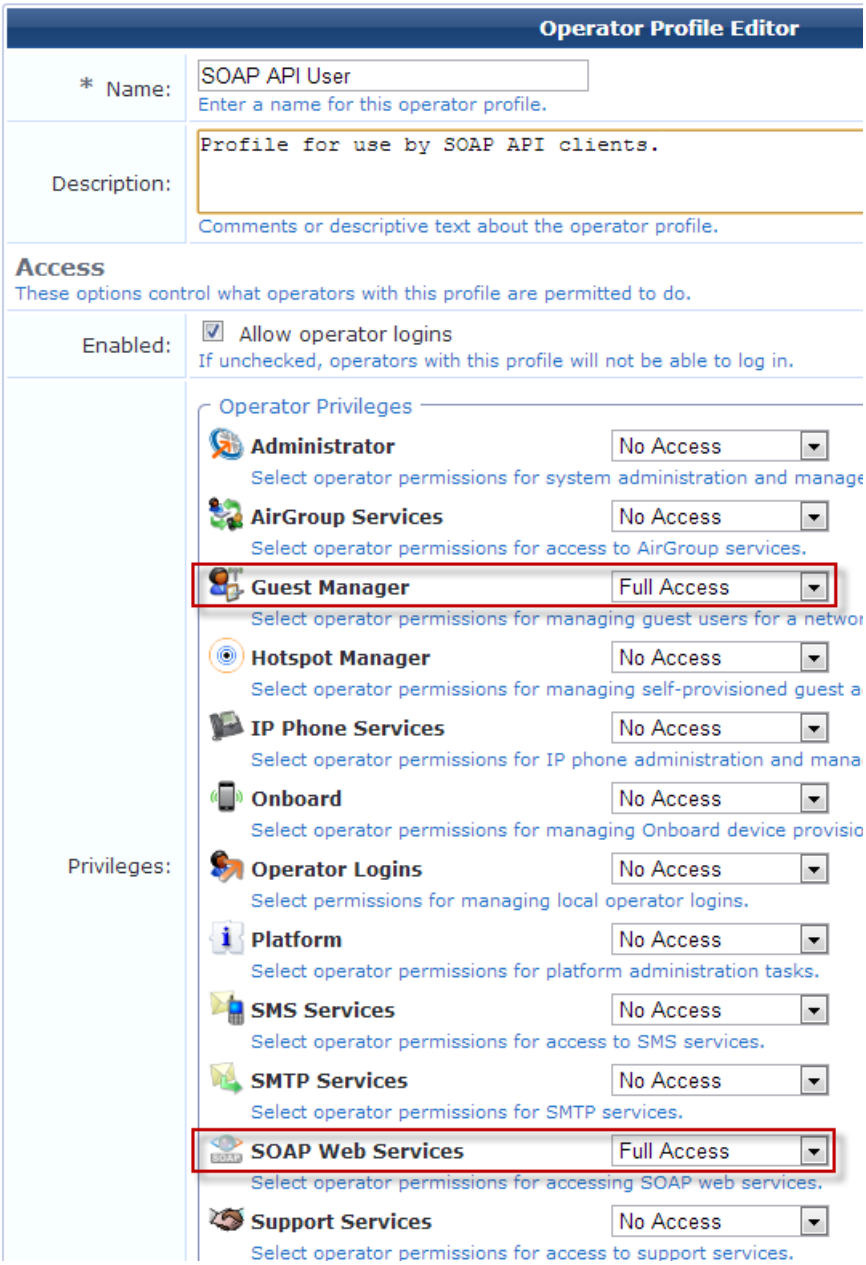
While the default administrative account will automatically gain SOAP API privileges, for security reasons it is strongly recommended that a specific operator profile be created for use by SOAP API clients.

To create a suitable operator profile, go to **Administration > Operator Logins > Profiles**, then click the **Create a new operator profile** link.

In the **Privileges** list, select either **Full Access** for the **SOAP Web Services** privilege, or choose **Custom...** and then select either **Read Only** or **Full** for the **SOAP API** privilege.

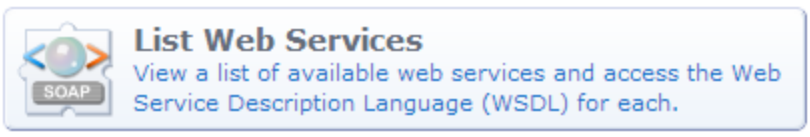
You should also select suitable permissions for the **Guest Manager** privilege, depending on the type of requests that will be made.

An example profile is shown below.



After you have created a suitable operator profile, create the operator login. See "Local Operator Authentication" on page 464 and "External Operator Authentication" on page 465, or refer to the "Configuring LDAP Operator Logins" article on Arubapedia.

Accessing the WSDL



Use the **List Web Services** command link to browse the available Web services and obtain additional details about each one.

In the **Web Service field**, click the icon for **GuestManager Web Services** to view the Service URL and additional information about the service.

NOTE

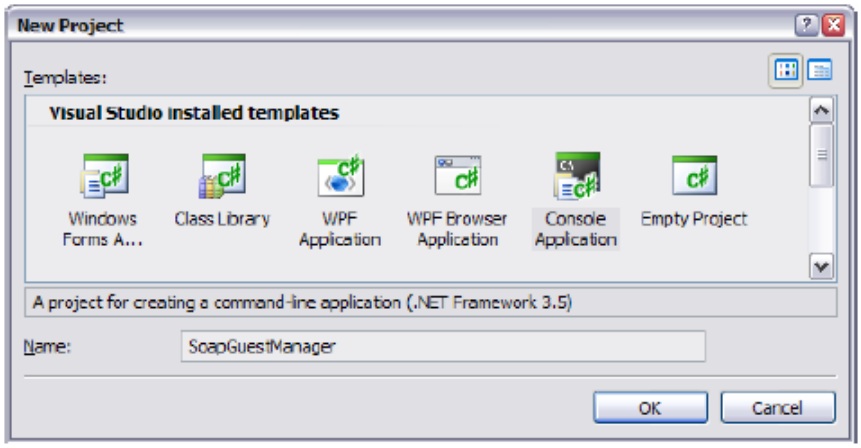
If the "Allow anonymous access to WSDL" option is specified in the SOAP Web Services configuration, accessing the WSDL through the specified Service URL does not require logging in to the ClearPass Guest user interface. For more information, see "Configuring Web Services " on page 385.

Integration Example

In this section, a simple console application will be developed using Microsoft Visual C# 2008 Express Edition. The “Add Service Reference” feature of this development tool will be used to automatically create a Web service interface which can then be used from the code.

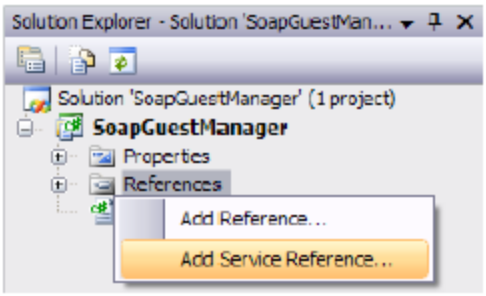
Create a New Project

From the **File** menu, choose **New Project**.



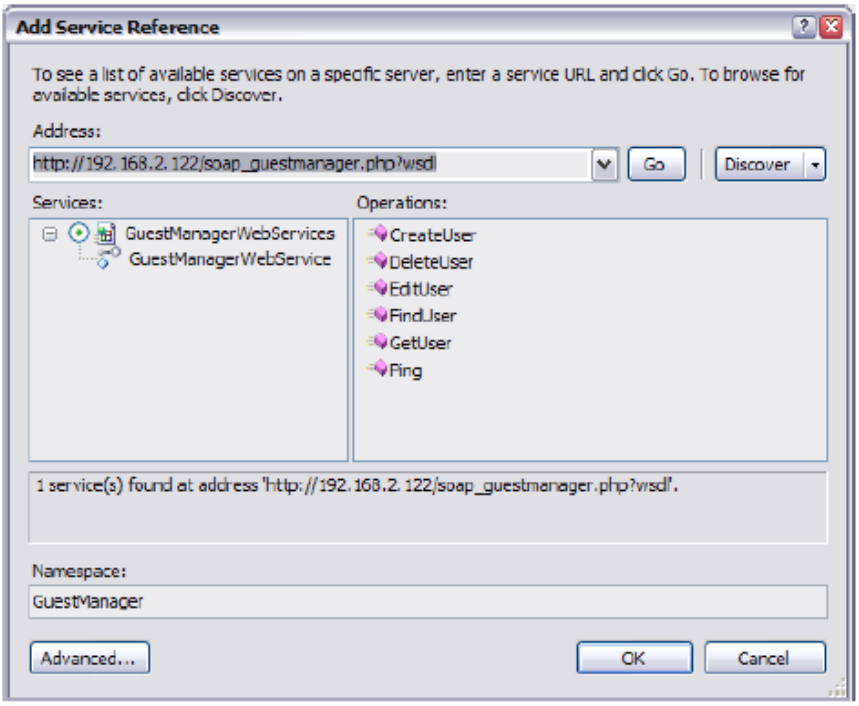
Add Service Reference

In the **Solution Explorer**, right-click the **References** folder, and click **Add Service Reference**.



The Add Service Reference dialog box appears. Enter the **Service URL** for the GuestManager Web Services into the **Address** box, and click the **Go** button.

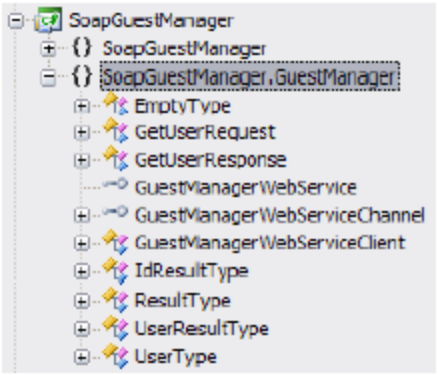
The WSDL is downloaded, and a list of the Web services and operations found is displayed.



In the **Namespace** text field, type in a name. This name is used to organize the automatically generated code that interfaces with the Web service.

Click the **OK** button to create the Web service reference.

To browse the created classes, double-click the **GuestManager** service reference. The Object Browser will be displayed with the selected namespace highlighted.



Configuring HTTP Basic Authentication

Performing a simple API call, such as the "Ping" operation described in "Operations" on page 398, can be used to verify that the Web service is correctly configured and ready for use.

Because the SOAP API requires HTTP Basic authentication, ensure that you have a suitable operator profile and operator login credentials, as explained in"Using the SOAP API" on page 388.

Configuring the Web service reference to use authentication requires editing the app.config file to make two changes:

- The **mode** attribute of the `<security>` tag must be changed to "TransportCredentialOnly".
- The **clientCredentialType** attribute of the `<transport>` tag must be changed to "Basic".

The updated app.config file is shown below, with the appropriate changes highlighted.

```
<?xml version="1.0" encoding="utf-8" ?>
<configuration>
    <system.serviceModel>
        <bindings>
            <basicHttpBinding>
                <binding name="GuestManagerSoapBinding" closeTimeout="00:01:00"
                    openTimeout="00:01:00" receiveTimeout="00:10:00"
                    sendTimeout="00:01:00"
                    allowCookies="false" bypassProxyOnLocal="false"
                    hostNameComparisonMode="StrongWildcard"
                    maxBufferSize="65536" maxBufferPoolSize="524288"
                    maxReceivedMessageSize="65536"
                    messageEncoding="Text" textEncoding="utf-8"
                    transferMode="Buffered"
                    useDefaultWebProxy="true">
                    <readerQuotas maxDepth="32" maxStringContentLength="8192"
                        maxArrayLength="16384"
                        maxBytesPerRead="4096" maxNameTableCharCount="16384" />
                    <security mode="TransportCredentialOnly">
                        <transport clientCredentialType="Basic"
                            proxyCredentialType="None"
                            realm="" />
                        <message clientCredentialType="UserName"
                            algorithmSuite="Default" />
                    </security>
                </binding>
            </basicHttpBinding>
        </bindings>
        <client>
            <endpoint address="http://192.168.2.122/soap_service.php"
                binding="basicHttpBinding"
                bindingConfiguration="GuestManagerSoapBinding"
                contract="GuestManager.GuestManagerWebService"
                name="GuestManagerWebServicePort" />
        </client>
    </system.serviceModel>
</configuration>
```

Performing an API Call

This section outlines the C# code required to use the Web service.

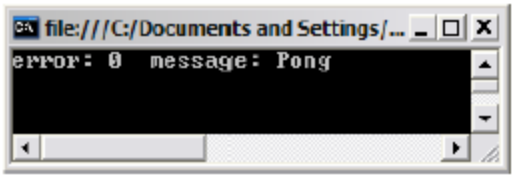
First, add a using declaration for the namespace containing the Web services:

```
using SoapGuestManager.GuestManager;
```

The following code can now be added to invoke the Ping operation and display the result.

```
// Create the client
GuestManagerWebServiceClient client = new GuestManagerWebServiceClient();
client.ClientCredentials.UserName.UserName = "soapapi";
client.ClientCredentials.UserName.Password = "bubbles";

// Perform a Ping operation
EmptyType pingRequest = new EmptyType();
ResultType pingResponse = client.Ping(pingRequest);

// Display the response
System.Console.Out.WriteLine("error: {0}  message: {1}",
    pingResponse.error, pingResponse.message);
```

When invoked, this performs the Ping operation and displays the following output:



Securing Web Services Using HTTPS

Because HTTP Basic authentication is insecure, it is strongly recommended that the HTTPS transport be used for all SOAP API calls.

To use HTTPS as the transport for SOAP API requests, the following changes should be made to the application configuration file:

- The **mode** attribute of the `<security>` tag must be changed to “Transport”.
- The **address** attribute of the `<endpoint>` tag must be changed to a URL including the “https:” prefix.

The updated app.config file is shown below, with the relevant changes highlighted.

```
<?xml version="1.0" encoding="utf-8" ?>
<configuration>
    <system.serviceModel>
        <bindings>
            <basicHttpBinding>
                <binding name="GuestManagerSoapBinding" ...>
                    <readerQuotas ... />
                    <security mode="Transport">
                        <transport clientCredentialType="Basic"
                            proxyCredentialType="None"
                            realm="" />
                        <message clientCredentialType="UserName"
                            algorithmSuite="Default" />
                    </security>
                </binding>
            </basicHttpBinding>
        </bindings>
        <client>
            <endpoint address="https://192.168.2.122/soap_service.php"
                binding="basicHttpBinding"
                bindingConfiguration="GuestManagerSoapBinding"
                contract="GuestManager.GuestManagerWebService"
                name="GuestManagerWebServicePort" />
        </client>
    </system.serviceModel>
</configuration>
```

Additionally, if a self-signed certificate is being used on the remote server, you will need to provide a suitable ServerCertificateValidationCallback implementation to validate the peer's certificate.

The following code is a minimal implementation that accepts all server certificates without verification:

```
// Trust self-signed certificates
System..Net.ServicePointManager.ServerCertificateValidationCallback =
   ((sender, certificate, chain, sslPolicyErrors) => true);
```

In a production environment, it is strongly recommended that you deploy an SSL certificate that is signed by a trusted root CA known to all parties, and use the built-in server certificate validation procedures. This will ensure the security of the transaction cannot be compromised by a man-in-the-middle attack.

API Documentation

This section describes the following:

XML Namespaces

The XML namespace for the GuestManager Web Services is:

http://www.amigopod.com/go/GuestManager.wsdl

The table below indicates additional XML namespaces that are referenced:

Table 102: *XML Namespaces*

Component	XML Namespace
SOAP Envelope	http://schemas.xmlsoap.org/wsdl/soap/
SOAP Encoding	http://schemas.xmlsoap.org/soap/encoding/
WSDL	http://schemas.xmlsoap.org/wsdl/
XML Schema	http://www.w3.org/2001/XMLSchema

SOAP Addressing

Web Service Endpoint

The endpoint of the SOAP service is located at the relative URL:

soap_guestmanager.php.

This path is relative to the full Guest URL, which can be constructed using http: or https: and the fully-qualified domain name of the ClearPass Guest appliance.

- Example: http://192.168.2.122/guest/soap_guestmanager.php
- Example: https://192.168.2.122/guest/soap_guestmanager.php (secure)

Web Service Definition

The WSDL for the web service may be accessed by appending ?wsdl to the service URL.

- Example: http://192.168.2.122/guest/soap_guestmanager.php?wsdl

Types

This section describes the types defined in the WSDL schema.

EmptyType

This type must be empty, that is, containing zero child elements.

- Example:

```
<ping/>
```

ErrorFlagType

The error flag indicates if the operation completed successfully.

Only the values zero (0) and one (1) are supported.

- A successful operation is indicated with:

```
<error>0</error>
```

- A failed operation is indicated with:

```
<error>1</error>
```

IdResultType

Standard result type), with an optional `<id>` element.

- Example:

```
<result>
    <error>0</error>
    <id>551</id>
</result>
```

- Example:

```
<result>
    <error>1</error>
    <message>This username is already in use</message>
</result>
```

IdType

Specifies a user ID. The user ID is a positive integer value, starting at 1.

- Example:

```
<id>551</id>
```

ResultType

Operations return a standard result type. The `<error>` flag indicates if the operation completed successfully. If the operation failed, the `<message>` contains a description of the error.

- Example of a successful operation:

```
<result>
    <error>0</error>
    <message/>
</result>
```

- Example of a successful operation with message:

```
<result>
    <error>0</error>
    <message>Pong</message>
</result>
```

- Example of an unsuccessful operation:

```
<result>
    <error>1</error>
    <message>This username is already in use</message>
</result>
```

UserResultType

Standard result type, with an optional <user> element.

- Example of a successful operation:

```
<result>
  <error>0</error>
  <message></message>
  <user>
    <creator_name>soapapi</creator_name>
    <do_expire>4</do_expire>
    <do_schedule>false</do_schedule>
    <enabled>true</enabled>
    <expire_time>2010-03-18T16:14:25+10:00</expire_time>
    <id>3</id>
    <role_id>2</role_id>
    <role_name>Guest</role_name>
    <schedule_time>1970-01-01T10:00:00+10:00</schedule_time>
    <simultaneous_use>1</simultaneous_use>
    <username>demo@example.com</username>
  </user>
</result>
```

- Example of an unsuccessful operation:

```
<result>
  <error>1</error>
  <message>Cannot find account with ID 3</message>
</result>
```

UserType

The User type defines a visitor account, which consists of a number of fields.

The fields available may be customized in Guest Manager. Go to **Guest Manager > Configuration > Fields** to create new fields or modify existing fields.

Adding or removing fields will update the UserType schema in the WSDL for GuestManager Web Services. Ensure that you update any clients using this WSDL if the fields are modified.

Each field of the visitor account corresponds to an XML element with the same name as the field.

All fields within the UserType schema are marked as optional; however, certain operations may require that particular fields are provided.

- Example of a user definition:

```
<user>
  <creator_name>soapapi</creator_name>
  <do_expire>4</do_expire>
  <do_schedule>false</do_schedule>
  <enabled>true</enabled>
  <expire_time>2010-03-18T16:14:25+10:00</expire_time>
  <id>3</id>
  <role_id>2</role_id>
  <role_name>Guest</role_name>
  <schedule_time>1970-01-01T10:00:00+10:00</schedule_time>
  <simultaneous_use>1</simultaneous_use>
  <username>demo@example.com</username>
</user>
```

Operations

CreateUser

Creates a new user account.

Headers	
Name	**Value**
SOAPAction	amigopod.guest.create

Input Parameters (Request)	
Name	**Type**
user	UserType ▪ See “Notes” below

Output Parameters (Response)	
Name	**Type**
result	IdResultType

Access Control	
Privilege	**Value**
SOAP API	Full Access
Create New Guest Account	Full Access

Notes

- The standard business logic for visitor account creation applies to visitor accounts created with the SOAP API. For details, refer to the section “Business logic for account creation” in the ClearPass Guest User Guide, or search for this term in the online help.
- The **creator_accept_terms** field must be set to the Boolean value “true” in order to create an account.
- A value for the **role_id** field must be specified to create a visitor account. The SOAP API user must also be permitted to create visitor accounts with this role.

Examples

Example code implementing visitor account creation:

```
static string TestCreate(GuestManagerWebServiceClient client)
{
    System.Console.Out.WriteLine("Sending CreateUser request...");

    // Perform a CreateUser operation
    UserType createRequest = new UserType();
    createRequest.username = "demo@example.com";
    createRequest.creator_accept_terms = true;
    createRequest.creator_accept_termsSpecified = true;
    createRequest.expire_after = "12";
    createRequest.creator_name = client.ClientCredentials.UserName.UserName;
    createRequest.role_id = "2"; // Guest

    IdResultType createResponse = client.CreateUser(createRequest);

    // Display the response
    System.Console.Out.WriteLine("CreateUser response:  error: {0}  message: {1}",
        createResponse.error, createResponse.message);
    return createResponse.id;
}
```

Example request for CreateUser:

```
<s:Envelope xmlns:s="http://schemas.xmlsoap.org/soap/envelope/">
  <s:Body xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
    <CreateUser xmlns="http://www.amigopod.com/go/GuestManager.wsdl">
      <user xmlns="">
        <creator_accept_terms>true</creator_accept_terms>
        <creator_name>soapapi</creator_name>
        <expire_after>12</expire_after>
        <role_id>2</role_id>
        <username>demo@example.com</username>
      </user>
    </CreateUser>
  </s:Body>
</s:Envelope>
```

Successful response:

```
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns1="http://www.amigopod.com/go/GuestManager.wsdl">
  <SOAP-ENV:Body>
    <ns1:CreateUserResponse>
      <result>
        <error>0</error>
        <message>Created guest account for demo@example.com</message>
        <id>1</id>
      </result>
    </ns1:CreateUserResponse>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

Failure response:

```
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns1="http://www.amigopod.com/go/GuestManager.wsdl">
  <SOAP-ENV:Body>
    <ns1:CreateUserResponse>
      <result>
        <error>1</error>
        <message>This username is already in use</message>
      </result>
    </ns1:CreateUserResponse>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

DeleteUser

Deletes a user account by ID or matching fields

Headers	
Name	**Value**
SOAPAction	amigopod.guest.delete
Input Parameters (Request)	
Name	**Type**
user	UserType ▪ See "Notes" below
Output Parameters (Response)	
Name	**Type**
result	ResultType
Access Control	
Privilege	**Value**
SOAP API	Full Access
Remove Accounts	Full Access
Notes	

- This operation deletes a single visitor account that matches all of the field values specified in the user parameter.
- Exactly one account must match; if more than one match is found, or if no match is found, an error will be returned and no visitor accounts will be deleted.

Examples

Example code implementing visitor account deletion:

```
static void TestDelete(GuestManagerWebServiceClient client, UserType user)
{
    System.Console.Out.WriteLine("Sending DeleteUser request...");

    // Perform a DeleteUser operation
    ResultType deleteResponse = client.DeleteUser(user);

    // Display the response
    System.Console.Out.WriteLine("DeleteUser response:  error: {0}  message: {1}",
        deleteResponse.error, deleteResponse.message);
}
```

Example request for DeleteUser:

```
<s:Envelope xmlns:s="http://schemas.xmlsoap.org/soap/envelope/">
  <s:Body xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
    <DeleteUser xmlns="http://www.amigopod.com/go/GuestManager.wsdl">
      <user xmlns="">
        <id>6</id>
      </user>
    </DeleteUser>
  </s:Body>
</s:Envelope>
```

Successful response:

```
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns1="http://www.amigopod.com/go/GuestManager.wsdl">
  <SOAP-ENV:Body>
    <ns1:DeleteUserResponse>
      <result>
        <error>0</error>
        <message>Deleted guest account demo@example.com. User has no active
connections to disconnect.</message>
      </result>
    </ns1:DeleteUserResponse>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

Failure response:

```
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns1="http://www.amigopod.com/go/GuestManager.wsdl">
  <SOAP-ENV:Body>
    <ns1:DeleteUserResponse>
      <result>
        <error>1</error>
        <message>Cannot find account with ID 3</message>
      </result>
    </ns1:DeleteUserResponse>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

EditUser

Modifies properties of a user account by ID.

Headers	
Name	**Value**
SOAPAction	`amigopod.guest.edit`
Input Parameters (Request)	
Name	**Type**
`user`	`UserType` ▪ See “Notes” below
Output Parameters (Response)	
Name	**Type**
`result`	`ResultType`
Access Control	
Privilege	**Value**
SOAP API	Full Access
Remove Accounts	Full Access
Notes	

- This operation modifies the properties of a visitor account to match the field values specified in the `user` parameter.
- The **id** field must be specified to indicate the ID of the visitor account to modify. This field is assigned by the system when the visitor account is created and cannot be changed.

Examples

Example code implementing visitor account modification:

```
static void TestEdit(GuestManagerWebServiceClient client, UserType user)
{
    System.Console.Out.WriteLine("Sending EditUser request...");

    // Perform an EditUser operation
    ResultType editResponse = client.EditUser(user);

    // Display the response
    System.Console.Out.WriteLine("EditUser response:  error: {0}  message: {1}",
        editResponse.error, editResponse.message);
}
```

Example request for EditUser:

```
<s:Envelope xmlns:s="http://schemas.xmlsoap.org/soap/envelope/">
  <s:Body xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
    <EditUser xmlns="http://www.amigopod.com/go/GuestManager.wsdl">
      <user xmlns="">
        <creator_name>soapapi</creator_name>
        <do_expire>4</do_expire>
        <do_schedule>false</do_schedule>
        <enabled>true</enabled>
        <expire_time>2010-03-18T18:29:50+10:00</expire_time>
        <id>5</id>
        <role_id>2</role_id>
        <role_name>Guest</role_name>
        <schedule_time>1970-01-01T10:00:00+10:00</schedule_time>
        <simultaneous_use>1</simultaneous_use>
        <username>demo@example.com</username>
      </user>
    </EditUser>
  </s:Body>
</s:Envelope>
```

Successful response:

```
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns1="http://www.amigopod.com/go/GuestManager.wsdl">
  <SOAP-ENV:Body>
    <ns1:EditUserResponse>
      <result>
        <error>0</error>
        <message>
          Updated user account demo@example.com in the database&lt;br /&gt;
        </message>
      </result>
    </ns1:EditUserResponse>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

Failure response:

```
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns1="http://www.amigopod.com/go/GuestManager.wsdl">
  <SOAP-ENV:Body>
    <ns1:EditUserResponse>
      <result>
        <error>1</error>
        <message>Invalid UserType: id must be specified</message>
      </result>
    </ns1:EditUserResponse>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

FindUser

Returns properties of a user account by matching fields.

Headers	
Name	**Value**
SOAPAction	`amigopod.guest.find`

Input Parameters (Request)	
Name	**Type**
`user`	`UserType`

Output Parameters (Response)	
Name	**Type**
`result`	`UserResultType`

Access Control	
Privilege	**Value**
SOAP API	Read Only Access
List Guest Accounts	Read Only Access

Notes

- This operation locates a single visitor account that matches all of the field values specified in the `user` parameter.
- Exactly one account must match; if more than one match is found, or if no match is found, an error will be returned.
- If a visitor account was found, its properties will be returned in the `<user>` element of the result.

Examples

Example code implementing search for a visitor account based on a username.

```
static UserType TestFind(GuestManagerWebServiceClient client, string username)
{
    System.Console.Out.WriteLine("Sending FindUser request for {0}...",
        username);

    // Perform a FindUser operation
    UserType findRequest = new UserType();
    findRequest.username = username;
    UserResultType findResponse = client.FindUser(findRequest);

    // Display the response
    System.Console.Out.WriteLine("FindUser response:  error: {0}  message: {1}",
        findResponse.error, findResponse.message);
    if (findResponse.user != null)
    {
        System.Console.Out.WriteLine("  id: {0}", findResponse.user.id);
    }
    return findResponse.user;
}
```

Example request for FindUser:

```
<s:Envelope xmlns:s="http://schemas.xmlsoap.org/soap/envelope/">
  <s:Body xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
    <FindUser xmlns="http://www.amigopod.com/go/GuestManager.wsdl">
      <user xmlns="">
        <username>demo@example.com</username>
      </user>
    </FindUser>
  </s:Body>
</s:Envelope>
```

Successful response:

```
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns1="http://www.amigopod.com/go/GuestManager.wsdl">
  <SOAP-ENV:Body>
    <ns1:FindUserResponse>
      <result>
        <error>0</error>
        <message></message>
        <user>
          <creator_name>soapapi</creator_name>
          <do_expire>4</do_expire>
          <do_schedule>false</do_schedule>
          <enabled>true</enabled>
          <expire_time>2010-03-18T16:30:59+10:00</expire_time>
          <id>4</id>
          <role_id>2</role_id>
          <role_name>Guest</role_name>
          <schedule_time>1970-01-01T10:00:00+10:00</schedule_time>
          <simultaneous_use>1</simultaneous_use>
          <username>demo@example.com</username>
        </user>
      </result>
    </ns1:FindUserResponse>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

Failure response:

```
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns1="http://www.amigopod.com/go/GuestManager.wsdl">
  <SOAP-ENV:Body>
    <ns1:FindUserResponse>
      <result>
        <error>1</error>
        <message>No user account found</message>
        <user/>
      </result>
    </ns1:FindUserResponse>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

GetUser

Returns properties of a user account by ID.

Headers	
Name	**Value**
SOAPAction	amigopod.guest.get

Input Parameters (Request)	
Name	**Type**
id	IdType

Output Parameters (Response)	
Name	**Type**
result	UserResultType

Access Control	
Privilege	**Value**
SOAP API	Read Only Access
List Guest Accounts	Read Only Access

Notes

- Returns a `<user>` element corresponding to the visitor account with the specified ID.
- If the specified ID is invalid, no `<user>` element is returned and the `<error>` flag is set to 1.

Examples

Example code implementing a guest lookup operation:

```
static UserType TestGet(GuestManagerWebServiceClient client, string id)
{
    System.Console.Out.WriteLine("Sending GetUser request for ID {0}...", id);

    // Perform a GetUser operation
    UserResultType getResponse = client.GetUser(id);

    // Display the response
    System.Console.Out.WriteLine("GetUser response:  error: {0}  message: {1}",
        getResponse.error, getResponse.message);
    if (getResponse.user != null)
    {
        System.Console.Out.WriteLine("  username: {0}", getResponse.user.username);
    }
    return getResponse.user;
}
```

Example request for GetUser:

```
<s:Envelope xmlns:s="http://schemas.xmlsoap.org/soap/envelope/">
  <s:Body xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
    <GetUser xmlns="http://www.amigopod.com/go/GuestManager.wsdl">
      <id xmlns="">3</id>
    </GetUser>
  </s:Body>
</s:Envelope>
```

Successful response:

```
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns1="http://www.amigopod.com/go/GuestManager.wsdl">
  <SOAP-ENV:Body>
    <ns1:GetUserResponse>
      <result>
        <error>0</error>
        <message></message>
        <user>
          <creator_name>soapapi</creator_name>
          <do_expire>4</do_expire>
          <do_schedule>false</do_schedule>
          <enabled>true</enabled>
          <expire_time>2010-03-18T16:14:25+10:00</expire_time>
          <id>3</id>
          <role_id>2</role_id>
          <role_name>Guest</role_name>
          <schedule_time>1970-01-01T10:00:00+10:00</schedule_time>
          <simultaneous_use>1</simultaneous_use>
          <username>demo@example.com</username>
        </user>
      </result>
    </ns1:GetUserResponse>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

Failure response -- for example, user ID not found:

```
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns1="http://www.amigopod.com/go/GuestManager.wsdl"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <SOAP-ENV:Body>
    <ns1:GetUserResponse>
      <result xsi:type="ns1:ResultType">
        <error>1</error>
        <message>Cannot find account with ID 3</message>
      </result>
    </ns1:GetUserResponse>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

Ping

Checks that the SOAP server is alive.

Headers	
Name	**Value**
SOAPAction	amigopod.guest.ping
Input Parameters (Request)	
Name	**Type**
ping	EmptyType
Output Parameters (Response)	
Name	**Type**
result	ResultType
Access Control	
Privilege	**Value**
SOAP API	Read Only Access
Notes	

- Returns a standard result type with the **message** set to "pong".

Examples

Example code implementing a Ping test operation.

```
static void TestPing(GuestManagerWebServiceClient client)
{
    System.Console.Out.WriteLine("Sending Ping request...");

    // Perform a Ping operation
    EmptyType pingRequest = new EmptyType();
    ResultType pingResponse = client.Ping(pingRequest);

    // Display the response
    System.Console.Out.WriteLine("Ping response:  error: {0}  message: {1}",
        pingResponse.error, pingResponse.message);
}
```

Example request for Ping:

```
<s:Envelope xmlns:s="http://schemas.xmlsoap.org/soap/envelope/">
  <s:Body xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
    <Ping xmlns="http://www.amigopod.com/go/GuestManager.wsdl">
      <ping xmlns=""/>
    </Ping>
  </s:Body>
</s:Envelope>
```

Successful response:

```
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope xmlns:SOAP-
ENV="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns1="http://www.amigopod.com/go/GuestManager.wsdl">
  <SOAP-ENV:Body>
    <ns1:PingResponse>
      <result>
        <error>0</error>
        <message>Pong</message>
      </result>
    </ns1:PingResponse>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

The XML-RPC Interface and API

This section describes the XML-RPC interface available to third-party applications that will integrate with the ClearPass Guest Visitor Management Appliance.

Audience:

- Developers of integrated applications. Some familiarity with HTTP based web services and XMLRPC is assumed.
- System administrators of the ClearPass Guest application.

System Requirements:

- ClearPass Guest 6.1.0 (minimum)
- XML-RPC client

For more details about XML-RPC, or to read the XML-RPC specification, visit http://xmlrpc.scripting.com/.

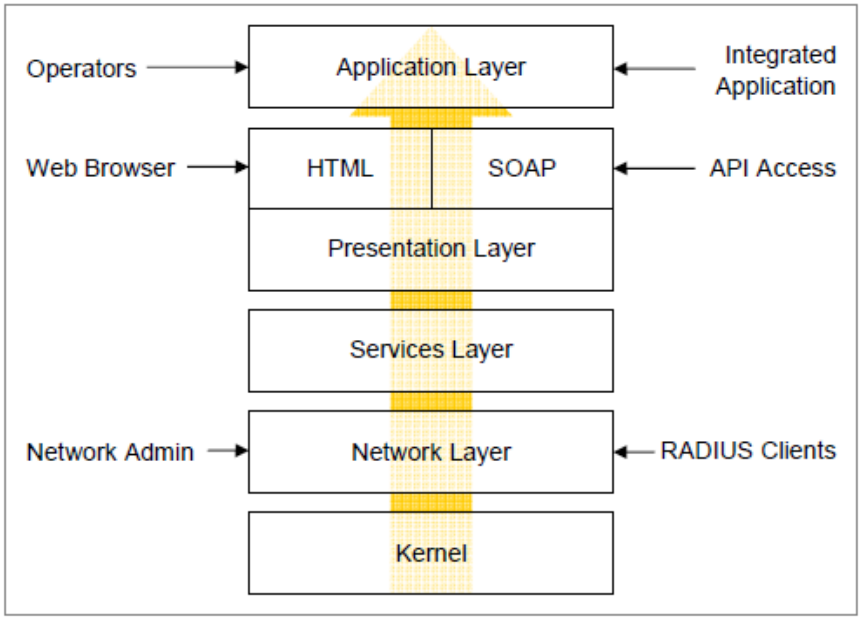
This section includes the following:

About the XML-RPC API

The ClearPass Guest XML-RPC API provides direct access to the underlying functionality of the ClearPass Guest Visitor Management Appliance. Developers wishing to provide integrated applications can use this API to programmatically perform actions that would otherwise require manual operation of the user interface.

Architecture Overview

The ClearPass Guest VMA software is built using multiple layers of software.



At the lowest level, the kernel provides basic functions common to the entire system. This includes the Web interface framework, appliance operating system, and runtime support services.

The network layer provides critical networking support, including the RADIUS server and the ability for network administrators to manage and control the networking aspects of the VMA.

The services layer provides one or more implementations of application services that are used by the layers above. Examples of these services include managing a user database used for AAA, handling the authentication of operators, and providing translated text resources.

The presentation layer supplies the tools and framework necessary for the VMA software to interact with the outside world. The basic presentation layer services include authentication checks, session establishment, input checking, validation and conversion, and command execution. Both XML-RPC and HTML presentation methods are supplied, which adapt the underlying basic presentation to appropriate conventions suitable for a machine-to-machine or human-to-machine interaction.

The application layer provides the page templates, business logic, and the concrete features making up visitor management applications, such as Guest Manager or Hotspot Manager. These applications are built using the services provided by the lower layers.

API Symmetry

Because ClearPass Guest VMA applications are built using the framework supplied by the presentation layer, there is a direct symmetry between application features provided to operators using a Web browser (HTML presentation), and application features provided to external applications using the XML-RPC presentation.

In particular, the following items are shared between HTML and XML-RPC presentations:

- Access control
- Parameter names
- Parameter validation rules
- Customized fields and their rules

Access Control

Page privileges are applied to XML-RPC authenticated sessions in the same way as the HTML user interface. However, XML-RPC access also requires the XML-RPC API privilege to be granted.

Parameter Names

The parameter names passed to the XML-RPC interface are the same as the field names in the HTML user interface.

Parameter Validation

Each field of the forms in the HTML user interface is subject to validation according to the rules defined for that field. The same rules also apply to XML-RPC parameters.

If a required field is missing, or an invalid value for a field is supplied, an error is generated by the presentation layer and returned to the XML-RPC client.

Field Customization

Some forms in the HTML user interface are customizable. New fields may be defined (for example, stored with a guest account) and used as part of the form in the presentation layer. Policy-based processing of fields includes form validation, data conversion and input formatting, and user interface metadata (for example, the list of valid options for a multiple-choice "dropdown" control).

These custom fields are automatically inherited as XML-RPC parameters, and the same policy-based processing is applied to them.

Parameter Types

The XML-RPC specification supports a wide range of data types. The following data types are supported by the XML-RPC presentation layer:

Table 103: *Data Types Supported by XML-RPC*

Data Type	Description
Array	Associative array using numeric keys with a 0-based index
Boolean	True or false
Flag	Scalar value of 0 or 1, implicitly Boolean
Integer	Integer, 32-bit range
Number	Numeric value, floating point OK
Scalar	Non-array value
String	String, UTF-8 encoded
Struct	Associative array using string keys May be nested (shown in the syntax as first.second, etc.)

Data Representation

Unless otherwise specified, all strings should be considered to be UTF-8 encoded Unicode.

Dates and times are represented in an ISO-8601 compatible format:

```
YYYY-MM-DD hh:mm:ss
```

XML-RPC Faults

An XML-RPC Fault is a specific kind of return value indicating that an error has occurred in the presentation layer. The return value is a struct containing three named values:

Table 104: *XML-RPC Faults*

Name	Type	Description
error	Flag	Set to 1 for an XML-RPC Fault
faultCode	Integer	Status code indicating the cause of the fault
faultString	String	Description of the fault

This type of return might appear as:

```
'error' => 1,
'faultCode' => 401,
'faultString' => 'Invalid username or password',
```

These are the predefined XML-RPC Fault codes:

Table 105: *XML-RPC Faults*

Code	Description
401	Authentication problem -- invalid username or password
404	File implementation of XML-RPC method not found
501	XML-RPC implementation not found
502	XML-RPC method registration failed
503	XML-RPC server creation failed
504	Access denied
505	No XML-RPC implementation for this page

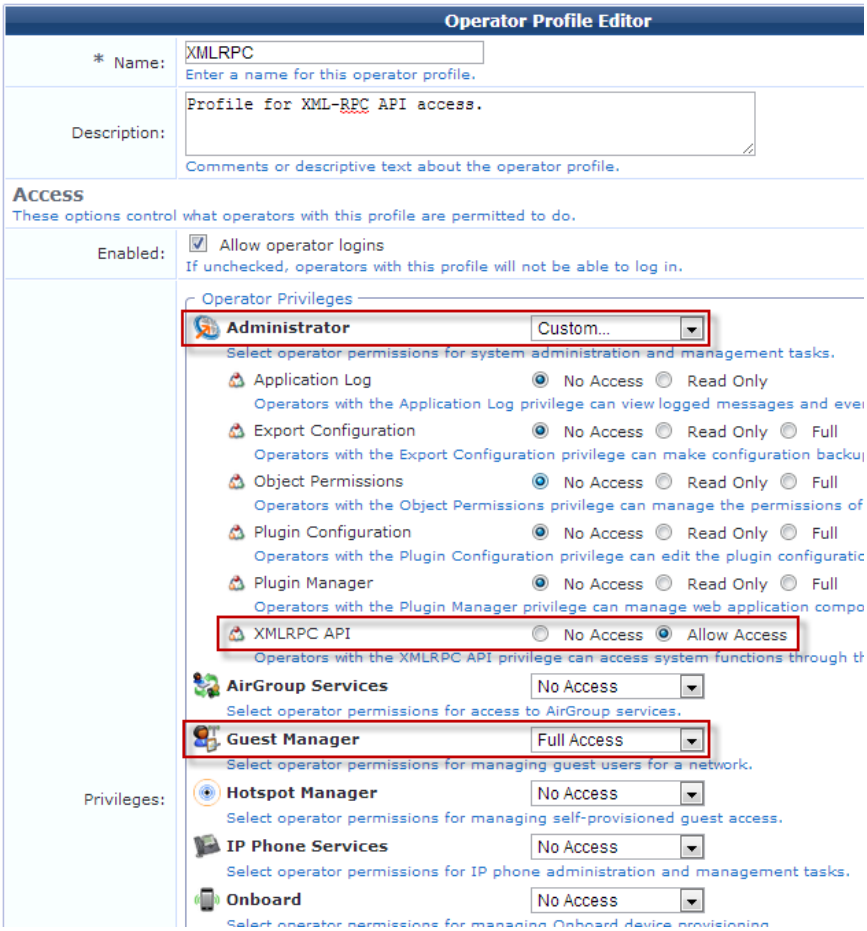
Accessing the API

Accessing the API requires an operator account with a profile that has the XML-RPC API privilege, plus any privileges required for the API calls. You will first create the operator profile, then create the role, a local user, and a translation rule to map the role name to the profile. Some steps are performed in ClearPass Guest and some steps are performed in ClearPass Policy Manager.

Creating the Profile

To create a sample XML-RPC API profile:

1. In ClearPass Guest, go to **Administration > Operator Logins > Profiles** and click the **Create a new operator profile** link. The Operator Profile Editor form opens.
2. Enter a name and description that clearly identify the profile.
3. In the **Access** area, mark the **Allow operator logins** check box.
4. In the **Administrator** drop-down list, choose **Custom**. The row expands to include additional options.
5. For the **XMLRPC API** option, mark the **Allow Access** radio button.
6. In the **Guest Manager** drop-down list, choose **Full Access**.

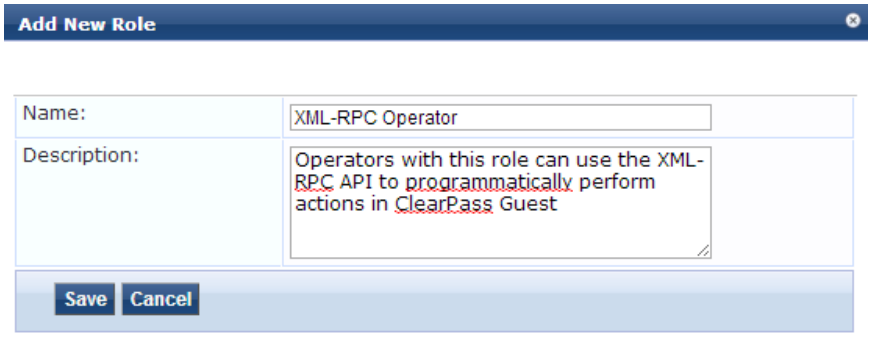


7. Click **Save Changes**. The profile is added to the Operator Profiles list.

Creating the Role

After you create the profile, the next step is to create the role:

1. In ClearPass Policy Manager, go to **Configuration > Identity > Roles** and click the **Add User** link. The Add New Role form opens.
2. Enter a name and description that clearly identify the role.



3. Click **Save**. The role is added to the Roles list.

Creating the Local User

After you create the role, you create the local user:

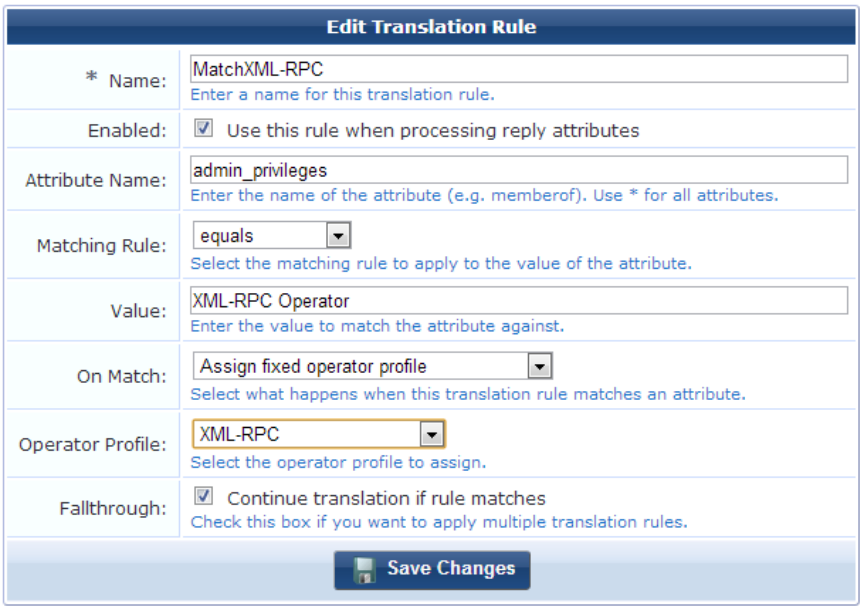
1. In Clear Pass Policy Manager, go to **Configuration > Identity > Local Users** and click **Add User**. The Add Local User form opens.

2. In the **Role** drop-down list, choose the **XML-RPC Operator** role you created.
3. Complete the rest of the fields appropriately, then click **Add**. The new XML-RPC operator is added the Local Users list.

Creating the Translation Rule

After you have created the profile, role, and local user (operator), create a translation rule to map the role name to the operator profile.

1. In ClearPass Guest, go to **Administration > Operator Logins > Translation Rules** and click the **Create new translation rule** link. The Edit Translation Rule form opens.



2. In the **Name** field, enter a descriptive name for the translation rule. In the example shown above, the translation rule is to check that the operator is an XML-RPC user, hence the name MatchXML-RPC.
3. Mark the **Enabled** check box to enable this rule after you create it. If you do not select this check box, the rule you create will appear in the rules list, but will not be active until you enable it.
4. In the **Matching Rule** drop-down list, select **equals**.
5. In the **Value** field, enter the name of the XML-RPC Operator role you defined.
6. In the **On Match** drop-down list, select **Assign fixed operator profile**. The form expands to include the Operator Profile row.
7. In the **Operator Profile** drop-down list, select the XML-RPC profile.
8. If you want to use multiple translation rules, select the **Fallthrough** check box.
9. Click **Save Changes**.

The user you created can now use the XML-RPC API functions.

Invoking the API

An XMLRPC method call consists of:

- An XML document specifying the method name and parameters,
- sent as a HTTP POST with `Content-Type: text/xml`,
- using HTTP Basic user authorization,
- at https://amigopod/xmlrpc.php

SSL Security

Different levels of certificate validation checks may be necessary, depending on the SSL certificate that has been installed. This corresponds to the user interface provided by Web browsers for certificate trust and verification.

The examples presented in this document assume a self-signed certificate has been installed, and reduce the level of SSL verification accordingly. In a secure environment, make use of the peer verification that SSL provides by either installing an SSL certificate signed by a well-known certificate authority, or issue your own certificates from a network's certificate authority.

Method Summary

These methods are currently available:

Table 106: *XML-RPC Method Summary*

Method Name	Synopsis
amigopod.guest.change.expiration	Change the expiration time of a guest account
amigopod.guest.create	Create a new guest account
amigopod.guest.delete	Disable or remove a guest account
amigopod.guest.edit	Change one of more properties of a guest account
amigopod.guest.enable	Enable a guest account
amigopod.guest.get	List one or more guest accounts
amigopod.guest.list	List guest accounts
amigopod.guest.reset.password	Reset a guest account's password
amigopod.mac.create	Create a new MAC device account
amigopod.mac.edit	Change one or more properties of a device account
amigopod.mac.list	List MAC device accounts

For more details on these methods, refer to "API Documentation" on page 414.

API Documentation

This section describes the following methods:

- "Method amigopod.mac.create" on page 426
- "Method amigopod.mac.edit" on page 428
- "Method amigopod.mac.list" on page 430

Method amigopod.guest.change.expiration

Change the expiration time of a guest account.

Parameters

Name	Type	Description
uid	Scalar	ID of the guest account to update
guestaccountexpiry	Scalar	Amount of time in hours before the guest account will expire

Return Values

Name	Type	Description
error	Flag	0 if successful, 1 if an error occurred
message	String	Status message describing the operation
item	Struct	Updated user information record
_error	String	Field-specific error message
_error_flag	Flag	Field-specific error flag, set to 1 if present

Access Control

Requires the **change_expiration** privilege (**Guest Manager > Change Expiration** in the Operator Profile Editor).

Example Usage

Sample parameters for the call:

```
'uid' => 162,
'guestaccountexpiry' => 24,
```

Result returned by a successful operation:

```
'error' => 0,
'message' => 'Changed expiration time of guest account
Account will expire at 2014-11-28 23:27:00',
'item' => array (
   'id' => 162,
   'do_expire' => 4,
   'expire_time' => 1196256420,
   'username' => '',
)
```

Result returned by a failed operation:

```
'uid' => 162,
'username' => '',
'expiration_time' => '',
'user_enabled' => '',
'guestaccountexpiry_error' => 'Please choose from one of these options.',
'guestaccountexpiry_error_flag' => 1,
```

```
'error' => 1,
```

Method amigopod.guest.create

Create a new guest account.

Parameters

Name	Type	Description
sponsor_name	String	Name of the person sponsoring the guest account.
visitor_name	String	Name of the visitor.
visitor_company	String	Company name of the visitor.
email	String	The visitor's email addresss. This will become their username to log in to the network.
expire_after	Numeric	Amount of time before the account will expire. Specified in hours.
expire_time	String	Optional date and time at which the guest account will expire.
role_id	Integer	RADIUS role ID to assign to the guest account.
creator_accept_terms	Flag	Set to 1 to indicate acceptance of the service's terms of use.
*****	*	Other fields as specified by **create_user** form customization.

Return Values

Name	Type	Description
error	Flag	Set to 1 if the guest account was not created
id	Integer	Set to the ID of the guest account if the account was created
password	String	Set to a randomly-generated value (default behavior only)
***_error**	String	Field-specific error message
***_error_flag**	Flag	Field-specific error flag, set to 1 if present

Access Control

Requires the **create_user** privilege (**Guest > Create Guest Account** in the Operator Profile Editor).

Example Usage

Sample parameters for the call:

```
'sponsor_name' => 'Sponsor Name',
'visitor_name' => 'Visitor Name',
'visitor_company' => 'Visitor Company',
'email' => 'demo@example.com',
'expire_after' => 4,
'expire_time' => '',
'role_id' => 2,
'visitor_phone' => '0',
'creator_accept_terms' => 1,
```

Result returned by a successful operation:

```
'username' => 'demo@example.com',
'password' => '73067792',
'role_id' => 2,
'role_name' => 'Guest',
'simultaneous_use' => '1',
'do_schedule' => 0,
'enabled' => true,
'expire_time' => 1196769257,
'do_expire' => 4,
'expire_postlogin' => 0,
'sponsor_name' => 'Sponsor Name',
'visitor_name' => 'Visitor Name',
'visitor_company' => 'Visitor Company',
'email' => 'demo@example.com',
'creator_accept_terms' => true,
'id' => 1,
```

Result returned by a failed operation:

```
'password' => 78342029',
'expire_time' => '',
'submit' => '',
'sponsor_name_error' => 'You cannot leave this field blank.',
'sponsor_name_error_flag' => 1,
'visitor_name_error' => 'You cannot leave this field blank.',
'visitor_name_error_flag' => 1,
'visitor_company_error' => 'You cannot leave this field blank.',
'visitor_company_error_flag' => 1,
'email_error' => 'Please enter a valid email address.',
'email_error_flag' => 1,
'expire_after_error' => 'Please choose from one of the available options.',
'expire_after_error_flag' => 1,
'expire_time_error' => 'Please enter a valid date and time.',
'expire_time_error_flag' => 1,
'role_id_error' => 'Parameter must be provided.',
'role_id_error_flag' => 1,
'creator_accept_terms_error' => 'You must accept the terms of use to continue.',
'creator_accept_terms_error_flag' => 1,
'error' => 1,
```

Method amigopod.guest.delete

Disable or remove a guest account.

Parameters

Name	Type	Description
uid	Integer	ID of the guest account to delete
delete_account	Flag	Set to 0 to disable the guest account, 1 to delete the guest account

Return Values

This function might return a Boolean false value if some input parameters are invalid.

Name	Type	Description
error	Flag	Set to 1 if the guest account was not deleted
message	String	Message describing the success or failure of the operation
item	Struct	User structure containing updated field values
uid	Integer	ID of the guest account
***_error**	String	Field-specific error message
***_error_flag**	Flag	Field-specific error flag, set to 1 if present

Access Control

Requires the **remove_account** privilege (**Guest Manager > Remove Accounts** in the Operator Profile Editor).

Example Usage

Sample parameters for the call:

```
'uid' => '162',
'delete_account' => '0',
```

Result returned by a successful operation:

```
'error' => 0,
'message' => 'Disabled guest account ',
'item' =>
array (
   'id' => 162,
   'enabled' => 0,
   'username' => '',
),
```

Result returned by a failed operation:

```
'uid' => 162,
'username' => '',
'expiration_time' => '',
'user_enabled' => '',
'delete_account_error' => 'Please choose from one of these options.',
'delete_account_error_flag' => 1,
'error' => 1,
```

Method amigopod.guest.edit

Change one of more properties of a guest account.

Parameters

Name	Type	Description
uid	Integer	ID of the guest account to edit
username	String	Name of the guest account
password	String	May be: **random_password** to indicate the guest account's password should be set to a random password **password_value** to indicate the guest account's password should be set to the value in the password_ value field The empty string to leave the password unmodified
password_value	String	Optional password to set the guest account's password (if the **password** field is **password_value**)
role_id	Integer	RADIUS role ID to assign to the guest account
enabled	Flag	Boolean value indicating whether the guest account is enabled
simultaneous_use	Integer	Number of simultaneous sessions allowed by the guest account
do_schedule	Flag	Flag indicating if the guest account should be enabled at schedule_time
schedule_time	String	Date and time at which the guest account will be enabled
do_expire	Integer	Action to take when the expire_time is reached
expire_time	String	Time at which the guest account will expire
expire_postlogin	Integer	Time period for which the guest account will be valid after the first login, or 0 for indefinitely

Return Values

Name	Type	Description
error	Flag	Set to 1 if the guest account was not modified
message	String	Message describing the success or failure of the operation
item	Struct	User structure containing updated field values
uid	Integer	ID of the guest account
***_error**	String	Field-specific error message
***_error_flag**	Flag	Field-specific error flag, set to 1 if present

Access Control

Requires the **full_user_control** privilege (**Guest Manager > Full User Control** in the Operator Profile Editor).

Example Usage

Sample parameters for the call:

```
'uid' => 162,
'username' => 'demo@example.com',
'password' => 'password_value',
'password_value' => 'password',
'role_id' => 2,
'enabled' => 1,
'simultaneous_use' => 1,
'do_schedule' => 0,
'schedule_time' => '',
'do_expire' => 4,
'expire_time' => '2014-12-01 00:00:00',
'expire_postlogin' => 0,
```

Sample successful call:

```
'error' => 0,
'message' => 'Edited properties of guest account demo@example.com',
'item' =>
array (
   'id' => 162,
   'username' => 'demo@example.com',
   'role_id' => 2,
   'enabled' => true,
   'simultaneous_use' => 1,
   'do_schedule' => 0,
   'do_expire' => 4,
   'expire_postlogin' => 0,
   'role_name' => 'Guest',
   'expire_time' => 1196431200,
),
```

Sample failed call:

```
'uid' => 162,
'random_password' => '59447116',
```

```
'password_value' => '',
'schedule_time' => '',
'expire_time' => '',
'user_enabled' => '',
'username_error' => 'You cannot leave this field blank.',
'username_error_flag' => 1,
'password_error' => 'Please choose from one of the available options',
'password_error_flag' => 1,
'role_id_error' => 'Please choose from one of the available options',
'role_id_error_flag' => 1,
'enabled_error' => 'Parameter must be provided',
'enabled_error_flag' => 1,
'simultaneous_use_error' => 'Please enter a non-negative integer value.',
'simultaneous_use_error_flag' => 1,
'do_schedule_error' => 'Please choose from one of the available options',
'do_schedule_error_flag' => 1,
'schedule_time_error' => 'Parameter must be a string',
'schedule_time_error_flag' => 1,
'do_expire_error' => 'Please choose from one of the available options',
'do_expire_error_flag' => 1,
'expire_time_error' => 'Parameter must be a string',
'expire_time_error_flag' => 1,
'expire_postlogin_error' => 'Please choose from one of the available options',
'expire_postlogin_error_flag' => 1,
'error' => 1,
```

Method amigopod.guest.enable

Enable a guest account.

Parameters

Name	Type	Description
uid	Integer	ID of the guest account to enable

Return Values

This function might return a Boolean **false** value if some input parameters are invalid.

Name	Type	Description
error	Flag	Set to 1 if the guest account was not enabled
message	String	Message describing the success or failure of the operation
item	Struct	User structure containing updated field values
uid	Integer	ID of the guest account
_error	String	Field-specific error message
_error_flag	Flag	Field-specific error flag, set to 1 if present

Access Control

Requires the **remove_account** privilege (**Guest Manager > Remove Accounts** in the Operator Profile Editor).

Example Usage

Sample parameters for the call:

```
'uid' => '162',
```

Sample successful call:

```
'error' => 0,
'message' => 'Guest account has been re-enabled',
'item' =>
array (
   'id' => 162,
   'enabled' => 1,
   'username' => '',
),
```

Sample failed call:

```
'error' => 1,
'message' => 'Account not found: ID 162',
```

Method amigopod.guest.get

List one or more guest accounts.

Parameters

Name	Type	Description
id	Integer Array	Retrieve a single guest account by ID (integer parameter), or multiple guest accounts by ID (array parameter)

Return Values

Name	Type	Description
id	Mixed	ID or IDs of the guest accounts being returned
users	Array	• If a single ID was requested, **users** contains the guest account requested (or an error field if an error occurred) • If multiple IDs were requested, **users** contains an array of results

Access Control

Requires the **guest_users** privilege (**Guest Manager > List Guest Accounts** in the Operator Profile Editor).

Example Usage

Sample parameters:

```
'id' => array(150, 162)
```

Sample successful call:

```
'id' =>
```

```
array (
   0 => 150,
   1 => 162,
),
'users' =>
array (
   0 =>
   array (
            'id' => '150',
            'username' => '44454318',
            'enabled' => '1',
            'role_id' => '2',
            'email' => '',
            'notes' => 'GuestManager account 22 of 30 created by root from 192.168.2.3',
            'do_expire' => '0',
            'expire_time' => '',
            'simultaneous_use' => '1',
            'expire_postlogin' => '0',
            'do_schedule' => '0',
            'schedule_time' => '',
            'ip_address' => '',
            'netmask' => '',
   ),
   1 =>
   array (
            'id' => '162',
            'username' => 'demo@example.com',
            'enabled' => '1',
            'role_id' => '2',
            'email' => 'demo@example.com',
            'notes' => '',
            'do_expire' => '4',
            'expire_time' => '1196253480',
            'simultanous_use' => '1',
            'expire_postlogin' => '0',
            'do_schedule' => '0',
            'schedule_time' => '',
            'ip_address' => '',
            'netmask' => '',
            'auto_send_sms' => '',
            'creator_accept_terms' => '1',
            'role_name' => 'Guest',
            'sponsor_name' => 'Sponsor Name',
            'visitor_company' => 'Visitor Company',
            'visitor_name' => 'Visitor Name',
            'visitor_phone' => '0',
   ),
),
```

Sample failed call:

```
'id' => 162,
'users' =>
array (
   'error' => 1,
   'message' => 'Account not found: ID 162',
),
```

Method amigopod.guest.list

List guest accounts. (To retrieve devices, see "Method amigopod.mac.list" on page 430)

Parameters

Name	Type	Description
details	Flag	Optional parameter; if set to 1 then full details of all guest accounts are returned, otherwise only the IDs are returned
sort	string	Optonal parameter. If set to 1, then sorts first by the specified column, and then by username. For the **field_name** and **+field_name** formats, sort order will be ascending (A to Z); for the **-field_name** format the sort order will be descending (Z to A).
filter	string	Allows searching for multiple values when using the equality (=) or inequality (!=) operators. For more information, see the Filter description in "Managing Single Guest Accounts " on page 55.

Return Values

Name	Type	Description
ids	Array	Array of guest account IDs (if **details** was 0)
users	Array	Array of guest account structures (if **details** was 1)

Access Control

Requires the **guest_users** privilege (**Guest Manager > List Guest Accounts** in the Operator Profile Editor).

Example Usage

Sample parameters:

```
'details' => 0,
```

Sample successful call:

```
'ids' =>
array (
   0 => '37',
   1 => '141',
   2 => '40',
   ...
),
```

Method amigopod.guest.reset.password

Reset a guest account's password to a random value.

Parameters

Name	Type	Description
uid	Integer	ID of the guest account to reset the password for

Return Values

Name	Type	Description
error	Flag	Set to 1 if the password was not reset
message	String	Message describing the success or failure of the operation
item	Struct	User structure containing updated field values
_error	String	Field-specific error message
_error_flag	Flag	Field-specific error flag, set to 1 if present

Access Control

Requires the **reset_password** privilege (**Guest Manager > Reset Password** in the Operator Profile Editor).

Example Usage

Sample parameters for the call:

```
'uid' => 162,
```

Sample successful call:

```
'error' => 0,
'message' => 'Guest account password reset for
Password changed to 37172833',
'item' =>
array (
   'id' => 162,
   'password' => '37172833',
   'username' => '',
),
```

Sample failed call:

```
'error' => 1,
'message' => 'Account not found: ID 162',
```

Method amigopod.mac.create

Create a new MAC device account.

Parameters

Name	Type	Description
sponsor_name	String	Name of the person sponsoring the device account.
visitor_name	String	Name of the visitor.
visitor_company	String	Company name of the visitor.
email	String	The visitor's email address. This will become their username to log in to the network.
expire_after	Numeric	Amount of time before the device account will expire. Specified in hours.
expire_time	String	Optional date and time at which the device account will expire.
role_id	Integer	RADIUS role ID to assign to the device account.
creator_accept_terms	Flag	Set to 1 to indicate acceptance of the service's terms of use.
*	*	Other fields as specified by **create_user** form customization.

Return Values

Name	Type	Description
error	Flag	Set to 1 if the device account was not created
id	Integer	Set to the ID of the device account if the account was created
password	String	Set to a randomly-generated value (default behavior only)
***_error**	String	Field-specific error message
***_error_flag**	Flag	Field-specific error flag, set to 1 if present

Access Control

Requires the **mac_create** privilege (**Guest Manager > Create New MAC Authentication** in the Operator Profile Editor).

Example Usage

Sample parameters for the call:

```
'sponsor_name' => 'Sponsor Name',
'visitor_name' => 'Visitor Name',
'visitor_company' => 'Visitor Company',
'email' => 'demo@example.com',
'expire_after' => 4,
'expire_time' => '',
'role_id' => 2,
'visitor_phone' => '0',
'creator_accept_terms' => 1,
```

Result returned by a successful operation:

```
'username' => 'demo@example.com',
'password' => '73067792',
'role_id' => 2,
'role_name' => 'Guest',
'simultaneous_use' => '1',
'do_schedule' => 0,
'enabled' => true,
'expire_time' => 1196769257,
'do_expire' => 4,
'expire_postlogin' => 0,
'sponsor_name' => 'Sponsor Name',
'visitor_name' => 'Visitor Name',
'visitor_company' => 'Visitor Company',
'email' => 'demo@example.com',
'creator_accept_terms' => true,
'id' => 1,
```

Result returned by a failed operation:

```
'password' => 78342029',
'expire_time' => '',
'submit' => '',
'sponsor_name_error' => 'You cannot leave this field blank.',
'sponsor_name_error_flag' => 1,
'visitor_name_error' => 'You cannot leave this field blank.',
'visitor_name_error_flag' => 1,
'visitor_company_error' => 'You cannot leave this field blank.',
'visitor_company_error_flag' => 1,
'email_error' => 'Please enter a valid email address.',
'email_error_flag' => 1,
'expire_after_error' => 'Please choose from one of the available options.',
'expire_after_error_flag' => 1,
'expire_time_error' => 'Please enter a valid date and time.',
'expire_time_error_flag' => 1,
'role_id_error' => 'Parameter must be provided.',
'role_id_error_flag' => 1,
'creator_accept_terms_error' => 'You must accept the terms of use to continue.',
'creator_accept_terms_error_flag' => 1,
'error' => 1,
```

Method amigopod.mac.edit

Change one of more properties of a device account.

Parameters

Name	Type	Description
uid	Integer	ID of the device account to edit
username	String	Name of the device account
password	String	May be: **random_password** to indicate the device account's password should be set to a random password **password_value** to indicate the device account's password should be set to the value in the password_ value field The empty string to leave the password unmodified
password_value	String	Optional password to set the device account's password (if the **password** field is **password_value**)
role_id	Integer	RADIUS role ID to assign to the device account
enabled	Flag	Boolean value indicating whether the device account is enabled
simultaneous_use	Integer	Number of simultaneous sessions allowed by the device account
do_schedule	Flag	Flag indicating if the device account should be enabled at schedule_time
schedule_time	String	Date and time at which the device account will be enabled
do_expire	Integer	Action to take when the expire_time is reached
expire_time	String	Time at which the device account will expire
expire_postlogin	Integer	Time period for which the device account will be valid after the first login, or 0 for indefinitely

Return Values

Name	Type	Description
error	Flag	Set to 1 if the device account was not modified
message	String	Message describing the success or failure of the operation
item	Struct	User structure containing updated field values
uid	Integer	ID of the device account
***_error**	String	Field-specific error message
***_error_flag**	Flag	Field-specific error flag, set to 1 if present

Access Control

Requires the **full_user_control** privilege (**Guest Manager > Full User Control** in the Operator Profile Editor).

Example Usage

Sample parameters for the call:

```
'uid' => 162,
'username' => 'demo@example.com',
'password' => 'password_value',
'password_value' => 'password',
'role_id' => 2,
'enabled' => 1,
'simultaneous_use' => 1,
'do_schedule' => 0,
'schedule_time' => '',
'do_expire' => 4,
'expire_time' => '2014-12-01 00:00:00',
'expire_postlogin' => 0,
```

Sample successful call:

```
'error' => 0,
'message' => 'Edited properties of guest account demo@example.com',
'item' =>
array (
   'id' => 162,
   'username' => 'demo@example.com',
   'role_id' => 2,
   'enabled' => true,
   'simultaneous_use' => 1,
   'do_schedule' => 0,
   'do_expire' => 4,
   'expire_postlogin' => 0,
   'role_name' => 'Guest',
   'expire_time' => 1196431200,
),
```

Sample failed call:

```
'uid' => 162,
'random_password' => '59447116',
```

```
'password_value' => '',
'schedule_time' => '',
'expire_time' => '',
'user_enabled' => '',
'username_error' => 'You cannot leave this field blank.',
'username_error_flag' => 1,
'password_error' => 'Please choose from one of the available options',
'password_error_flag' => 1,
'role_id_error' => 'Please choose from one of the available options',
'role_id_error_flag' => 1,
'enabled_error' => 'Parameter must be provided',
'enabled_error_flag' => 1,
'simultaneous_use_error' => 'Please enter a non-negative integer value.',
'simultaneous_use_error_flag' => 1,
'do_schedule_error' => 'Please choose from one of the available options',
'do_schedule_error_flag' => 1,
'schedule_time_error' => 'Parameter must be a string',
'schedule_time_error_flag' => 1,
'do_expire_error' => 'Please choose from one of the available options',
'do_expire_error_flag' => 1,
'expire_time_error' => 'Parameter must be a string',
'expire_time_error_flag' => 1,
'expire_postlogin_error' => 'Please choose from one of the available options',
'expire_postlogin_error_flag' => 1,
'error' => 1,
```

Method amigopod.mac.list

List MAC device accounts. (To retrieve guest accounts, see "Method amigopod.guest.list" on page 424)

Parameters

Name	Type	Description
details	Flag	Optional parameter; if set to 1 then full details of all device accounts are returned, otherwise only the IDs are returned.
sort	string	Optonal parameter. If set to 1, then sorts first by the specified column, and then by username. For the **field_name** and **+field_name** formats, sort order will be ascending (A to Z); for the **-field_name** format the sort order will be descending (Z to A).
filter	string	Allows searching for multiple values when using the equality (=) or inequality (!=) operators. For more information, see the Filter description in "Managing Single Guest Accounts " on page 55.

Return Values

Name	Type	Description
ids	Array	Array of device account IDs (if **details** was 0).
users	Array	Array of device account structures (if **details** was 1).

Access Control

Requires the **mac_list** privilege (**Guest Manager > List MAC Authentication Accounts** in the Operator Profile Editor).

Example Usage

Sample parameters:

```
'details' => 0,
```

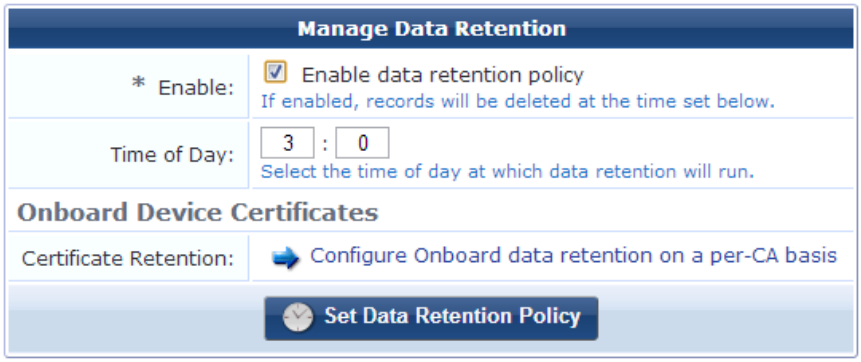
Sample successful call:

```
'ids' =>
array (
   0 => '37',
   1 => '141',
   2 => '40',
   ...
),
```

Data Retention

The Data Retention Policy page (**Administration > Data Retention**) lets you manage historical data by deleting it.

Figure 41 *Data Retention Policy page*



1. To enable the data retention policy option, mark the **Enable** check box, and then enter the time of day at which records will be deleted.
2. To configure Onboard certificate retention, click the link in the **Certificate Retention** row. The Certificate Authorities list in the Onboard module opens.

If you wish to configure the times after which expired accounts are deleted, refer to the ClearPass Policy Manager documentation for cluster-wide parameters. Data retention of guest accounts and logs is configured in CPPM under **Administration > Server Configuration > Cluster-Wide Parameters**.

3.9 Configuration Import

To help ClearPass Guest 3.9 customers transition to ClearPass Guest 6.x, the Import Configuration forms let you:

- Create a full or custom backup of your Guest implementation. See "Creating a Customized Configuration Backup" on page 432.
- Upload a 3.9 configuration backup file to your ClearPass Guest 6.x file system, making the items in it available for import. See "Uploading the 3.9 Backup File " on page 433.
- Select items from it to import, restoring those configurations in your ClearPass Guest 6.x system. See "Restoring Configuration Items " on page 434
- Review details for configuration items after import, including anything that might be different between 3.9 and 6.2 and any actions you might need to take. See "Viewing Imported Item Details " on page 435 and "Import Information for Specific Import Items " on page 437.

Creating a Customized Configuration Backup

You can use the Configuration Backup form to create and export a full or customized configuration backup file.

To create a configuration backup:

1. Go to **Administration > Import Configuration > Import Configuration**, then click the **Create a customized backup** link in the upper-right corner. The Configuration Backup form opens.
2. In the **Backup Mode** drop-down list, select either **Complete backup** or **Custom backup**, as appropriate.
3. In the **Backup Name** field, enter the name of the backup file.
4. If you choose to do a custom backup, the form expands to include the list of items to choose from. When this list first opens, all items are included by default. Categories are displayed—for example, Guest Manager, SMS Services, and so on—and subordinate items in the categories are hidden. To configure a custom backup, use the controls in the **Backup Set** list to specify just the items you want to include:
   - ✔ The green arrow and **bold** font indicate an item and all its subordinate items will be included.
   - The blue arrow is a visual aid marking an item as a category that has subordinate items listed below it. To view the subordinate items, click the blue arrow. If the arrow is gray, there are no subordinate items.
   - ✖ To exclude an item from the import, click the **X** in the item's row. The X turns red to indicate it will be excluded. You can click the **X** for a category to exclude all items in that category. To include an excluded item, click the arrow in its row.
5. When you have completed and verified your selections, click **Download Backup**. The configuration backup is saved to your Downloads folder as a .dat file. You can then click either the **Restore a backup configuration** link, or **Import Configuration > Import Configuration** in the left navigation to upload and restore the file.

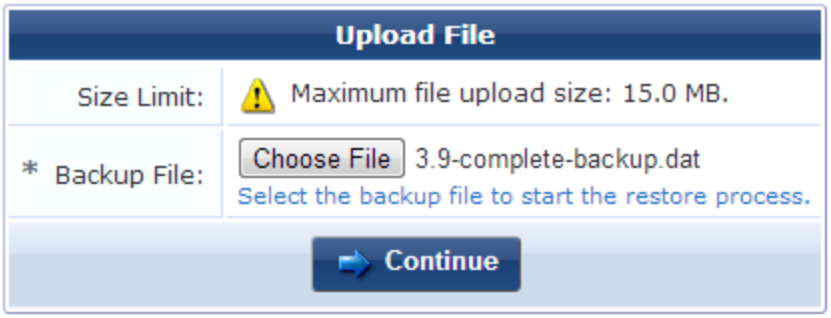
Uploading the 3.9 Backup File

To upload a Guest 3.9 configuration to ClearPass Guest 6.x:

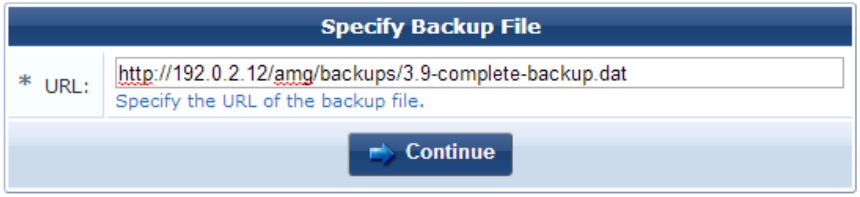
1. Upgrade your 3.9 system to the latest 3.9.x monthly patch.
2. Deploy your 6.x system, and upgrade it to the latest 6.x monthly patch.
3. In your 3.9 system, make a complete configuration backup. For details on how to back up your system, refer to the "Backup and Restore" section in the "Administrator Tasks" chapter of your "ClearPass Guest 3.9 Deployment Guide."

Be sure to use the **Complete backup** option in your 3.9 system's Backup Mode drop-down list to ensure that references between items are properly migrated. Partial imports might not work as expected.

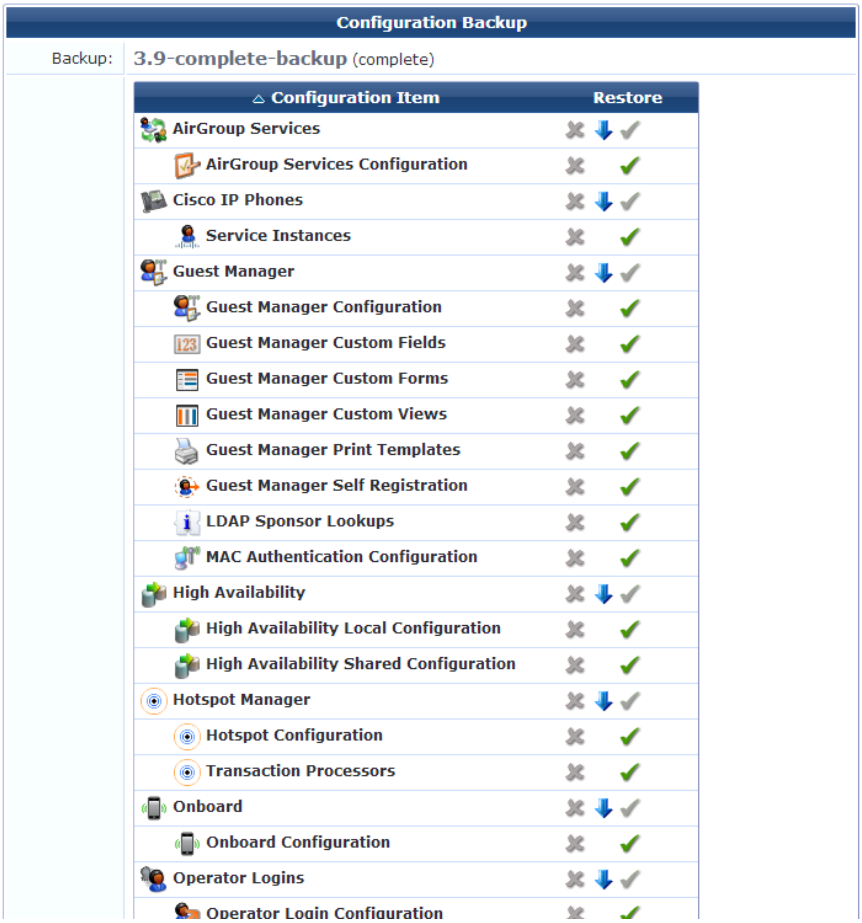
4. In your 6.x system, go to **Administration > Import Configuration**. The Import Configuration: Step 1 page opens with the Upload File form displayed.
5. If your file does not exceed the 15.0 MB size limit, you can use this Upload File form to browse to the location where you stored your 3.9 backup file. To use the Upload File form, click the **Browse** button in the **Backup File** row to navigate to and select the backup file you want to restore.



If your file is larger than the maximum file upload size of 15.0 MB, you must specify a URL instead. Click the **Restore a backup from a URL** link above the **Upload File** form. The Specify Backup File form is displayed. Enter the URL for the backup file.



6. Click **Continue**. The backup file is uploaded to your 6.x system, making the items available for import, and the **Import Configuration: Step 2** page opens.



This form shows every configuration item in your backup file, and provides options for restoring items or excluding them from the restoration. For more information, see the next section, "Restoring Configuration Items " on page 434.

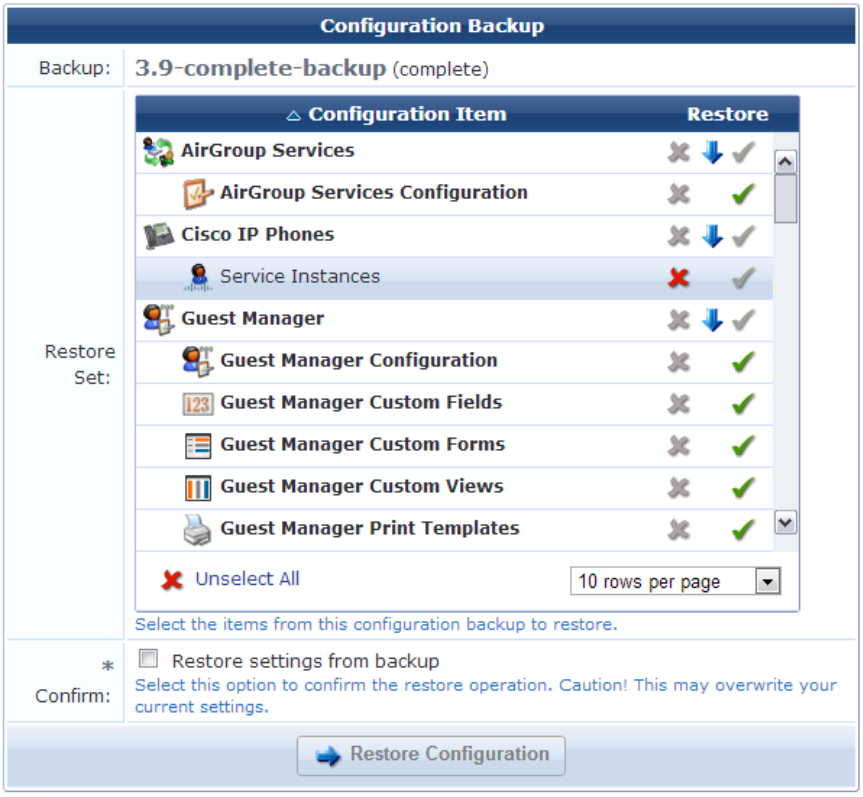
Restoring Configuration Items

This section describes how to use the **Import Configuration: Step 2** form to import 3.9 configuration items to your 6.2 system after you upload them.

To select and restore your configuration items:

1. Go to **Administration > Import Configuration** and complete the steps described in "Uploading the 3.9 Backup File " on page 433.
2. When the **Import Configuration: Step 2** form is displayed, review the list of items. You can use the options in the **Restore** column to select the items to import.

Partial imports might not work as expected. To ensure that references between items are properly migrated, use the default Restore settings.



- To exclude an item from the import, click the **X** in the item's row. The X turns red to indicate it will be excluded. You can click the **X** for a category to exclude all items in that category.
- To make it easier to select just a few items, you can scroll to the bottom of the list and click the **Unselect All** link. All items are then marked with a red X and will be excluded from the import. You can then select the green check marks for just the items you want.
- The blue arrow is a visual aid marking an item as a category that has subordinate items listed below it.
- To include an item in the import, click the check mark in the item's row. The check mark turns green and the item's name is highlighted in **bold** font to indicate it will be included. You can click the check mark for a category to include all items in the category.

3. Select the items in the list that you want to restore, then mark the **Restore settings from backup** check box to confirm.

CAUTION

Restoring the backup will overwrite your current settings.

4. Click **Restore Configuration**. System progress is displayed while items are being imported. When the import is complete, the Finished Import page displays the Import Notices list for the restored items. For more information, see "Viewing Imported Item Details " on page 435.

Viewing Imported Item Details

After you click Restore Configuration to import your 3.9 configuration to your 6.2 system, the Finished Import page displays the Import Notices list for the restored items. You can click an item's row in the list for additional options. For some items, a link is provided to the relevant page in the application.

To view information for imported configuration items:

1. Go to **Administration > Import Configuration > Last Import**. The Import Notices list opens.

Status	Operation / Notice	Count
Imported	Import AirGroup Services Configuration	1
Migrated	Import Guest Manager Configuration	1
Imported	Import Guest Manager Custom Field	77
Show Details Go to Fields		
Migrated	Import Guest Manager Custom Field	26
Obsolete	Import Guest Manager Custom Field	2
Migrated	Import Guest Manager Custom Form	17
Imported	Import Guest Manager Custom Form	3
Migrated	Import Guest Manager Custom View	6
Imported	Import Guest Manager Custom View	1
Action Required	Import Guest Manager Print Template	11
Imported	Import LDAP Sponsor Lookups	1
Migrated	Import MAC Authentication Configuration	1
Migrated	Import Service Handler	5
Migrated	Import Operator Login Configuration	1
Obsolete	Import Operator Login	4
Error	Import Service Handler	1
Error	Import Operator Servers	1
Imported	Import LDAP Translation Rules	8
Action Required	Import LDAP Translation Rules	1
Processed	Import Palo Alto Network Services Configuration	1
Processed	Import RADIUS Authentication Servers	2
Unsupported	Import RADIUS Certificates	1
Obsolete	Import RADIUS Database Connections	1

The Import Notices list provides information about items that were handled during the last import. This list includes the following columns:

- **Status** -- The import status of the item in the same row. Possible statuses include Imported, Migrated, Obsolete, Action Required, Error, Processed, Unsupported, and Warning. These statuses are described more fully in the table below.
- **Operation/Notice** -- This column shows the operation performed on the item, and the name of the item. If the item was imported, the value in this column will be "Import <item name>. If the item could not be imported, you can click the row to view the item details for more information.
- **Count** -- The number of items imported for each configuration item. For example, the number shown in the Count column for Guest Manager Custom Fields indicates the number of customized fields that were imported.

2. You can click a configuration item's row in the list for additional options.
   - For some items, you can click a link to go to the relevant page in the application.
   - To view details for a configuration item, click its **Show Details** link. The form expands to show details of the import results for the item. The details explain the import status, and advise you of any further action that might be required.

Table 107: *Configuration Import Statuses*

Status		Description
✔	**Imported**	The item was successfully imported with no changes.
➡	**Migrated**	The item was successfully imported but some aspects were modified for 6.2, as described in Show Details for the item. For example, if a field imported in a 3.9 configuration has a different name in 6.2 but was successfully matched and updated, the change is indicated by an arrow: Migrated field: schedule_time --> start_time
✔	**Processed**	The item was processed for the import but was not applicable and was ignored, as described in Show Details for the item. For example, a disabled network configuration, or a service that is now handled in Policy Manager instead of Guest, or a plugin version that was already up to date.
⚠	**Action Required**	Items with this status might or might not have been imported, and require further verification or manual configuration, as described in Show Details for the item. For example, print templates that should be reviewed, reports that should be recreated using Insight instead of Reporting Manager, custom database settings that are not supported, items that should now be configured in Policy Manager instead of Guest, or server addresses that should be verified to ensure they are current.
⊘	**Unsupported**	The item was not imported because it is not supported in 6.2. For example, RADIUS certificates, RADIUS Dictionary, custom items for which no handler could be found, or items such as the system log or RADIUS database that are now managed in Policy Manager.
ⓘ	**Obsolete**	The item was not imported because it is obsolete in 6.2. For example, fields that no longer exist, obsolete operator login settings, RADIUS database settings or server configurations, or deleted user accounts.
✖	**Error**	The item was not imported because it was missing or unavailable. For example, missing service handler implementations or unavailable skin plugins.
⚠	**Warning**	The item was imported but the details include information the operator should be aware of. For example, plugins might have been exported from your 3.9 system by out-of-date plugin versions.

For import details specific to each import item, see "Import Information for Specific Import Items " on page 437.

Import Information for Specific Import Items

For each configuration category on the Import Notices list, this section describes items that might be changed, unsupported, or obsolete, and any actions you might need to take.

This section includes the following:

Import Information: Advertising Services

- Advertising Services is unsupported.

Import Information: AirGroup Services

- The following AirGroup 3.9 fields are renamed:

3.9 Name		6.1 Name
shared_location	=	airgroup_shared_location
shared_role	=	airgroup_shared_role
shared_user	=	airgroup_shared_user

- The definitions of some fields are also updated.
- AirGroup controller names default to the hostname.

Import Information: Cisco IP Phones

- The user database is the default ClearPass Policy Manager user database.
- The SMS service handler ID might be updated.

Import Information: Guest Manager

Guest Manager Configuration

- The new default for the Expire Action setting is 1. Any non-default setting is updated to this new default.
- Any Account Retention setting is removed.
- Any non-default Session Warning setting is updated to the new default.

Custom Fields:

- The following 3.9 custom fields are obsolete and are not imported:

  do_schedule

  delete_time
- The following 3.9 custom fields are renamed:

3.9 Name		6.2 Name
schedule_time	=	start_time
modify_schedule_time	=	modify_start_time
schedule_after	=	start_after

Custom Forms and Views:

- Forms and views that referenced renamed fields are updated to reference the new field name.
- Forms and views that referenced obsolete fields have those fields removed from the definition.

Print Templates:

- ⚠ Print templates are flagged as Action Required. Print templates might require changes where defaults have changed or fields have been renamed. Review the templates and correct as necessary to fix fields that have been changed.

Self Registration:

- The user database is the default ClearPass Policy Manager user database.

LDAP Sponsor Lookups:

- All LDAP operator servers and translation rules are imported. All 6.2 LDAP translation rules are also kept, because the new default LDAP rules are required for correct operation.
- ⚠ Imported LDAP translation rules should be reviewed for correct order.

MAC Authentication Configuration:

- Non-default MAC Separator settings are updated to the new default (-).
- Non-default MAC Case settings are updated to the new default (lower).
- AirGroup Debug settings are obsolete and are removed.

Import Information: High Availability (HA)

- If HA was not configured, the shared configuration is processed but ignored.
- ⛔ If HA was configured, it is unsupported.
- ⚠ If HA nodes were configured, do the following for each shared configuration :
  - Configure a Virtual IP address in CPPM.
  - Configure Publisher Redundancy in CPPM.

Import Information: Hotspot Manager

- Non-default User Database settings are updated to the default ClearPass Policy Manager user database.
- Non-default Transaction Processing settings reference the correct transaction processor.
- A cookie check (nwa_cookiecheck) is added to the default hotspot plan template.

Import Information: Onboard

To restore your Onboard device provisioning pages, you must import RADIUS Web logins.

- The server certificate in CPPM might need to be configured before provisioned devices can connect to the network.
- The QuickConnect client provisioning address might need to be verified as the correct one for the new server.

Import Information: Operator Logins

Operator Login Configuration

- A client-side cookie check (nwa_cookiecheck) is added to the Login Message setting.

Operator Logins

- Operator logins are obsolete.

Operator Profiles

- If the IT Administrators profile is imported, it is updated to keep existing privileges and is migrated.
- Any non-default Password Change Policy is removed and the profile is migrated.
- Any non-default user skins are reset to the default skin and the profile is migrated.

Operator Servers

- Operator servers are imported as service handlers.

Operator Translation Rules

- If there are any new translation rules, the translation rules should be reviewed for correct order.

Import Information: Palo Alto Network Services

- If Palo Alto Network Services Configuration was disabled, it is processed and ignored.
- If it was enabled, it must be configured in CPPM.

Import Information: RADIUS Services

RADIUS services are now handled in ClearPass Policy Manager instead of ClearPass Guest.

RADIUS Authentication Servers

- Default authentication servers are processed but ignored (Local User Database, Local Certificate Authority)
- For all other authentication servers, an authentication source must be created in CPPM.

RADIUS Certificates

- RADIUS certificates are unsupported.

RADIUS Database Accounting Records

- RADIUS database accounting records are unsupported.

RADIUS Database Connections

- The RADIUS database connection for the local RADIUS server is obsolete.
- For any custom user databases, an authentication source must be created in CPPM.

RADIUS Database User Accounts

- User accounts are migrated and keep the status (disabled, pending, active, expired) they had in 3.9. Any field names that differ in 6.2 are updated.
- User accounts with the Deleted status are obsolete.

RADIUS Dictionary

- The RADIUS dictionary is unsupported.

RADIUS NAS List

- Each RADIUS network access server (NAS) is imported as a CPPM network access device (NAD) client.

RADIUS Server Configuration

- Non-default RADIUS Server Number settings are obsolete.
- Non-default RADIUS Server Port settings are obsolete.
- Default RADIUS Server Options are not applicable; they are processed and ignored.
- For any non-default RADIUS Server Options, an authentication source must be created in CPPM.
- Non-default Case Insensitive Username settings are obsolete.
- Non-default Include Active Sessions settings are obsolete.
- Non-default EAP Server settings are obsolete.
- Non-default AAA Debug settings are obsolete.
- Non-default Extra RADIUS Attributes settings are obsolete.
- Non-default Interim Accounting settings are obsolete.
- RADIUS Server Configuration is imported (and flagged as imported or action required)

RADIUS User Roles

- For any role that does not have the default attributes (Reply-Message := <?= $role['name'], the role must be manually configured in CPPM.
- For any role that had MAC caching enabled, the role must be manually configured in CPPM.

RADIUS Web Logins

- RADIUS Web logins are imported.

Import Information: Reporting Manager Definitions

- Reports must be re-created in ClearPass Insight.

Import Information: Server Configuration

- ClearPass settings are obsolete.

Data Retention

- Data Retention settings for Onboard are imported.

Database Configuration

- Default (empty) database configuration settings are processed and ignored.
- Non-default database configuration settings should be reviewed for potential issues.

Installed Plugin List

- For imported plugins that were not up-to-date (e.g. pre-3.9), you must review the version numbers provided in Show Details, upgrade those plugins in your 3.9 system, and import the plugins again.

Network Hostname

- The network hostname must be set in CPPM.

Network Hosts

- Default hosts files (references to localhost only) are obsolete.
- For a non-default hosts file, the DNS must be properly configured.

Network Interface Configuration

- Network interfaces are unsupported.

Security Audit Settings

- Security audit settings are obsolete.

Server Time Setup

- Server time settings must be configured in CPPM.

SNMP Configuration

- If SNMP was enabled, settings must be configured in CPPM.

SSL Certificate Setup

- The backup certificate is processed and ignored.
- For other certificates, the certificate and the private key should be downloaded and the certificate imported into CPPM.

Subscription IDs

- If the following settings do not have default values, they are updated to the new default values and migrated:
  - Session ID
  - Update URL
  - Facility

- For non-default Application URLs, changes should be reviewed.
- Subscription IDs must be added to CPPM.
- For non-default HTTP Proxy settings, the HTTP proxy must be configured in CPPM.

System HTTP Proxy

- For non-default HTTP Proxy settings, the HTTP proxy must be configured in CPPM.

System Kernel Configuration

- System kernel configuration is obsolete.

System Log Setup

- System log setup is obsolete.
- If a local collector was enabled, it is unsupported.

Web Application Configuration

- Default Application Configuration settings are processed and ignored.
- For non-default Application Configuration settings, PHP settings must be configured in CPPM.

Web Server Configuration

- Web server configuration is obsolete.

Import Information: SMS Services

- SMS gateways are imported as service handlers.

Import Information: SMTP Services

- The following settings are updated to the new defaults and the configuration is migrated:
  - Additional Headers
  - Copies To
  - Email Receipt
  - Enable warnings
  - From Address
  - Logout Warnings
  - Mail Transfer Settings
  - Override From
  - Password
  - Reply-To
  - Send Copies
  - Skin
  - SMTP Port

- SMTP Server
- Subject Line
- Username
- Use Sendmail
- Use SSL encryption

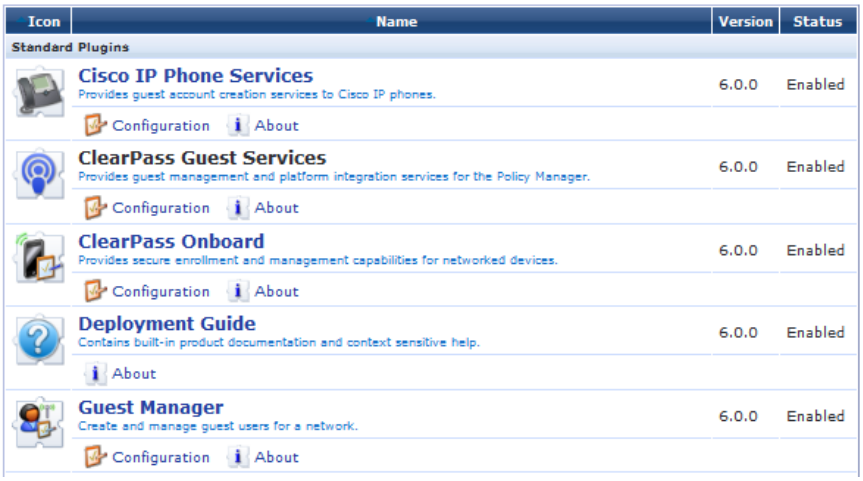
Plugin Manager

Plugins are the software components that fit together to make your Web application. The Available Plugins list shows all the plugins currently included in your application. It lets you view information about each plugin and configure some aspects of most plugins. You can click a plugin's name to go directly to that area of the application—for example, clicking the name of the **SMTP Services** plugin opens the Customize Email Receipt page in the Configuration module.

Viewing Available Plugins

To access the Available Plugins list, go to **Administration > Plugin Manager.**The Available Plugins page opens.Plugins are listed by category and include:

- Standard application plugins—Provide corresponding functionality for interactive use by operators
- Kernel plugins—Provide the basic framework for the application
- Operator Login plugins—Control access to the Web application
- Skin plugins—Provide the style for the application's visual appearance
- Transaction Processor plugins—Provide transaction service handlers for interfacing with various payment solution providers
- Translation—Provides configurable language settings for the application

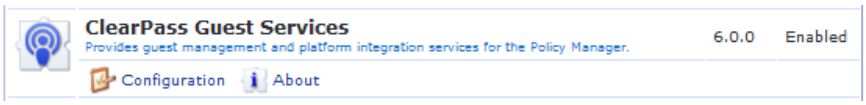


The **About** link displays information about the plugin, including the installation date and update date. The About page for the Kernel plugin also includes links to verify the integrity of all plugin files or perform an application check.

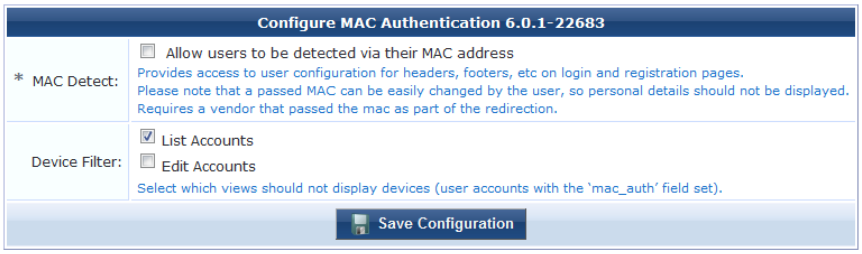
Click a plugin's **Configuration** link to view or modify its settings. See "Configuring Plugins" on page 445 for details about the configuration settings.

Configuring Plugins

You can configure most standard, kernel, skin, and translation plugins. Skin plugins can also be enabled or disabled, letting you choose which skin to use. To view or change a plugin's configuration, go to the **Administration > Plugin Manager** page and click the **List Available Plugins** command.



To view or change the configuration settings for a plugin, click the plugin's **Configuration** link. The **Configure Plugin** form shows the current configuration settings for a plugin, and allows you to make changes to these settings.



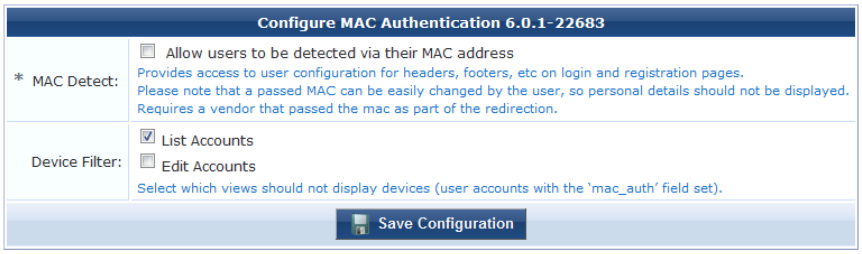
To undo any changes to the plugin's configuration, click the plugin's **Restore default configuration** link. The plugin's configuration is restored to the factory default settings.

In most cases, plugin configuration settings do not need to be modified directly. Use the customization options available elsewhere in the application to make configuration changes.

For more information about plugin configuration:

- **AirGroup Services**—See "Configuring AirGroup Services" on page 361
- **API Services**—See "Configuring the API Framework Plugin" on page 378
- **Aruba ClearPass Skin—**See "Configuring Plugins" on page 445
- **Guest Manager**—See "Default Settings for Account Creation" on page 192
- **IP Phone Services**—See "Configuring the IP Phone Services Plugin" on page 449
- **Kernel**—See "Configuring Plugins" on page 445
- **MAC Authentication**—See "MAC Address Formats" on page 76

- **SMS Services**—See "Configuring Plugins" on page 445
- **SMTP Services**—See "Email Receipt Options" on page 286
- **SOAP Web Services**—See "Configuring Web Services " on page 385
- **Translation Services**—See "Configuring the Translations Plugin" on page 450

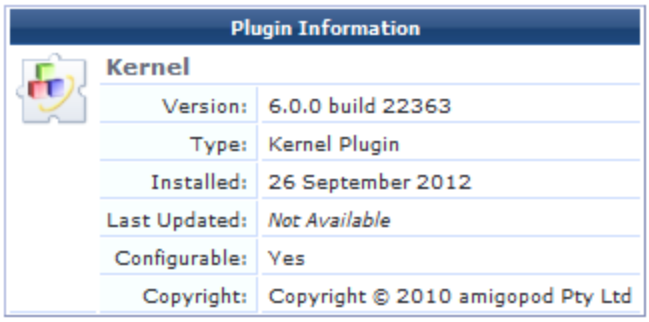


Configuring the Kernel Plugin

The Kernel Plugin provides the basic framework for the application. Settings you can configure for this plugin include the application title, the debugging level, the base URL, and the application URL, and autocomplete.

1. To change the application's title, enter the new name in the **Application Title** field (for example, your company name) to display that text as the title of your Web application. Click **Save Configuration**.
2. The Kernel plugin's **Debug Level** and **Application URL** options should not be modified unless you are instructed to do so by Aruba support.
3. To turn off autocomplete on forms, mark the check box in the **Form Auto Complete** row. This disables credentials caching.
4. In the **Security** row, to prevent the Web application being used from within another frame, mark the check box for **Enable protection against "Clickjacking" attacks**.
5. To allow access to secure Web sites providing an invalid certificate, you can mark the check box in the **SSL Verification** row.
6. To restore the plugin's configuration to the original settings, click the **Restore default configuration** link below the form. A message alerts you that the change cannot be undone, and a comparison of the current and default settings highlights the changes that will be made.

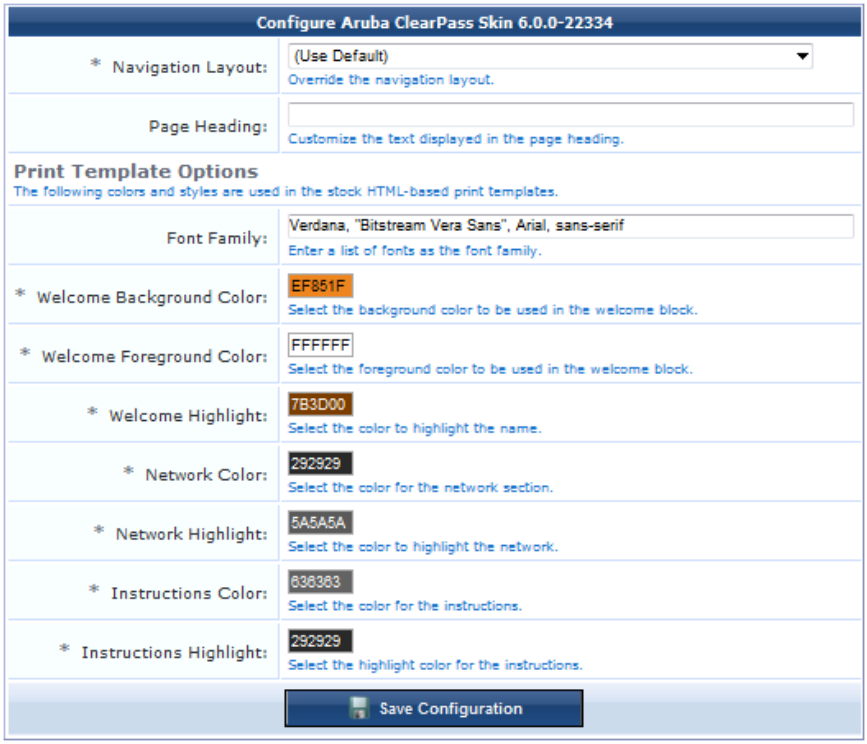
7. Review the differences between the current settings and the default configuration. To commit the change to the default settings. click the **Restore Default Configuration** link.



Configuring the Aruba ClearPass Skin Plugin

A Web application's skin determines its visual style—the colors, menus, and graphics. You can use either the standard Aruba ClearPass skin plugin, a blank plugin if you are providing your own complete HTML page, or custom skin plugins that let you configure the colors, navigation, logo, and icons.

1. To modify the standard Aruba ClearPass skin plugin, click its **Configuration** link on the Available Plugins page.



2. The default navigation layout is "expanded." To change the behavior of the navigation menu, click the **Navigation Layout** drop-down list and select a different expansion level for menu items.
3. The **Page Heading** field allows you to enter additional heading text to be displayed at the very top of the page.
4. In the **Font Family** row, to change the font, delete the current selection and enter the list of fonts to use.
5. To change a color in any of the color fields, click the color sample box to open the color picker. Set a color, then click **Select** in the color picker for that item. Repeat for each color you want to change.
6. Click Save Configuration.

The default skin used by the ClearPass Guest application is the one that is enabled in the Plugin Manager. To change the default skin globally, go to the plugin list and click the **Enable** link for the skin you would like to use as the default. When you install a new custom skin, it is automatically enabled and becomes the default skin. If your application's appearance does not automatically change, find the custom plugin in the list, click **Configure**, and click its **Enable** link. If you prefer to use the standard Aruba ClearPass skin, navigate to it in the Available Plugins list and click its **Enable** link.

The default skin is displayed on all visitor pages, and on the login page if no other skin is specified for it. However; you can override this for a particular operator profile, an individual operator, or give the login page a different appearance than the rest of the application. You can also specify a skin for guest self-registration pages.

- To use a different skin for a particular operator profile, see "Creating an Operator Profile" on page 458.
- To use a different skin for an individual operator login, see "Local Operator Authentication" on page 464.
- To have the login page use a different skin than the rest of the application, see "Operator Logins Configuration" on page 456.
- To specify a skin for a customized guest self-registration page, see "Configuring Basic Properties for Self-Registration" on page 243.

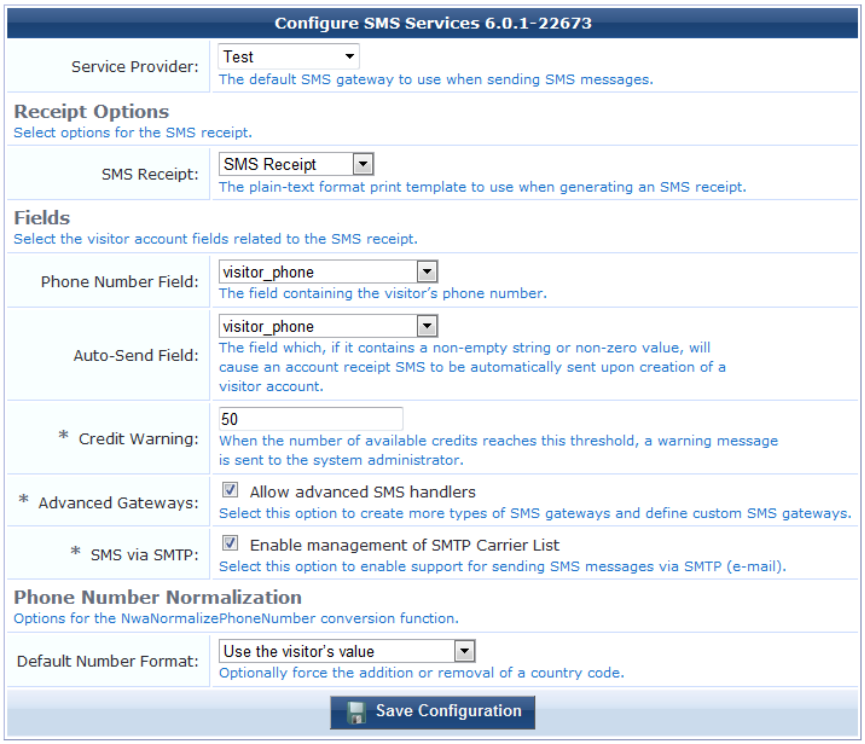
Configuring the SMS Services Plugin

The SMS Services plugin configuration allows you to configure options related to SMS receipts. You may also configure SMS receipt options in the Customization module (see "Customizing SMS Receipt" on page 290).

To view or configure SMS services and receipt options:

1. Go to **Administration > Plugin Manager**. The Available Plugins list opens.
2. Scroll to the **SMS Services** row and click its **Configuration** link. The Configure SMS Services form opens.

Figure 42 *Configure SMS Services Plugin*



SMS Receipt – Select the print template to be used when an SMS receipt is created. The print template used for the receipt must be in plain text format.

- **Phone Number Field** – Select which guest account field contains the guest's mobile telephone number. This field is used to determine the SMS recipient address.
- **Auto-Send Field** – Select a guest account field which, if set to a non-empty string or non-zero value, will trigger an automatic SMS when the guest account is created or updated. The **auto-send** field can be used to create an "opt-in" facility for guests. Use a check box for the **auto_send_sms** field and add it to the **create_user** form, or a guest self-registration instance, and SMS messages will be sent to the specified phone number only if the check box has been selected.
- **Credit Warning** – When SMS credits get below this threshold, the system will send a warning to the system administrator.
- **Advanced Gateways** – Select this option to configure SMS gateways from multiple SMS providers. ClearPass Guest SMS services support SMS USA, SMS Worldwide, AQL, Sirocco, Tempos 21 and Upside Wireless SMS gateways.
- **SMS via SMTP** – Select this option to allow visitor account receipt messages to be sent in an email using the defined SMTP server.
- **Phone Number Normalization** – The phone number normalization process translates phone strings that are entered in various formats into a single standard format. Click this drop-down list and select one of the following options:
  - **Use the visitors value**: When you select this option, the SMS gateway will always send the SMS message using the phone number and country code entered by the visitor.
  - **Always include the country code**: When you select this option, the SMS gateway will always send the SMS message using the global country code and default phone number length specified in the **Default Country Code** and **Default Phone Length** fields. For example, consider an Australian mobile phone number with a default number length of 9 plus a leading zero, and a country code of 61. If you selected the **Always include the country code** option, the Australian mobile number *0412345678* would normalize to *+61412345678* in the internationalized format.
  - **Never include the country code**: When you select this option, any country code specified by the visitor is removed before the SMS message is sent.

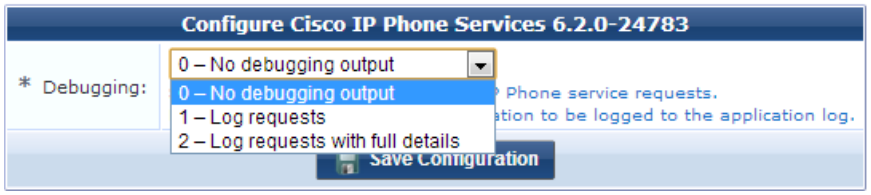
ClearPass Guest 3.9 and earlier used www.amigopod.com for a number of actions, including updates, SMS, and network diagnostics. The address used now is clearpass.arubanetworks.com. If you have host-specific openings in your firewall for the ClearPass appliance, please update them to the new address.

Configuring the IP Phone Services Plugin

The Cisco IP Phone Services plugin configuration allows you to configure debugging levels for Cisco IP Phone service requests. The higher the debugging level, the more information will be included in the application log.

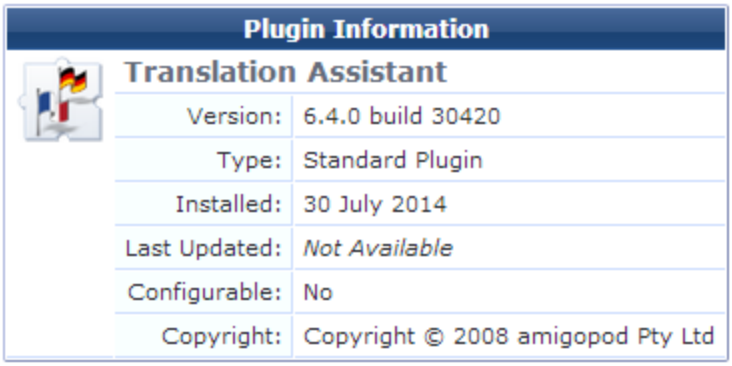
Available debugging levels are:

- 0 — No debugging output
- 1 — Log requests
- 2 — Log requests with full details



Configuring the Translations Plugin

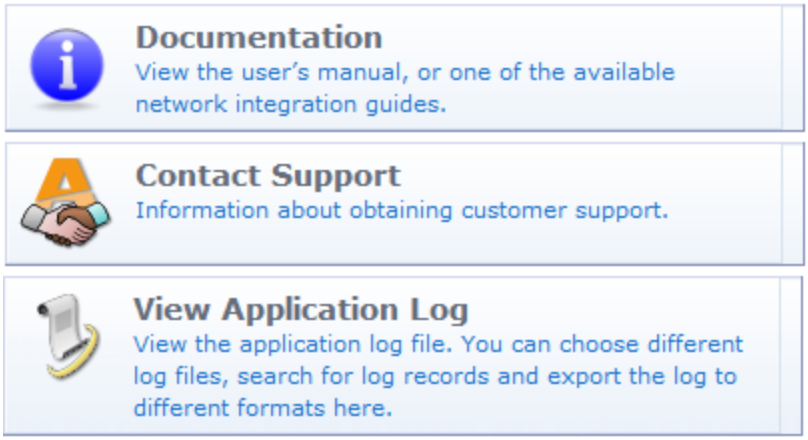
The Translation Assistant plugin shows the current version, type, original installation date, date of last update, whether it can be configured, and the copyright date. The Translation Assistant plugin cannot be configured.



By default, the display language for the ClearPass Guest user interface is automatically detected based on the user's browser settings. To enable or disable language packs, set a default language for ClearPass Guest, or customize label and message text, see "About Translations" on page 307.

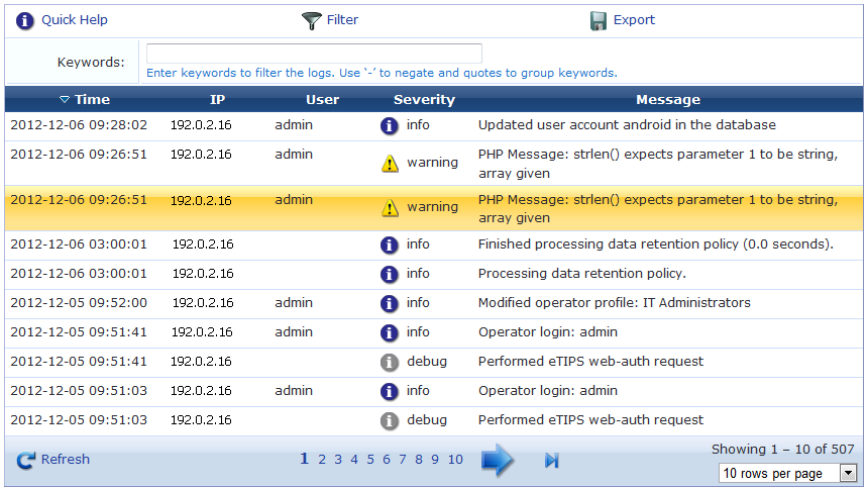
Support Services

The **Administration > Support Services** page provides links to ClearPass Guest documentation, the application log, and Aruba Customer Support contact information.



Viewing the Application Log

To view events and messages generated by the application, go to **Administration > Support > Application Log**. The Application Log view opens.



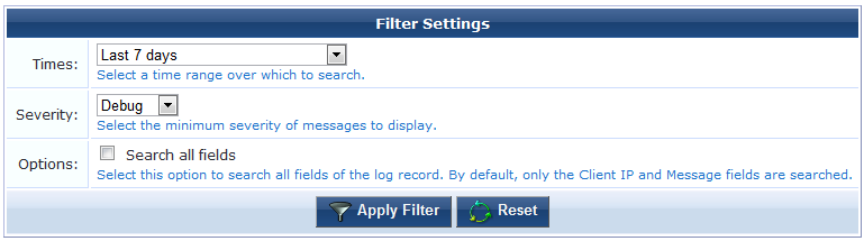
To view in-depth information about an event, click the event's row. The form expands to show details. Click the event's row again to close it.

To view the logs for a different server when in a cluster, use the Server drop-down list above the table.

To search for a particular log record, use the **Keywords** field above the table to enter search terms. You can use the hyphen character (-) in front of a keyword to exclude items, and you can use quotes (" ") to group words as a key phrase.

The Application Log lists the events, messages, and configuration changes for the past seven days. To view events and messages for a different period, or to limit the search items:

1. Click the **Filter** tab. The Filter Settings form opens.



2. You can use the **Times** drop-down list to specify a time period to filter for.
3. The **Severity** drop-down list lets you limit the range of severity to search for:

- **Error—**Returns Error items
- **Warning—**Returns Error and Warning items
- **Info—**Returns Error, Warning, and Info items
- **Debug—**Returns Error, Warning, Info, and Debug items

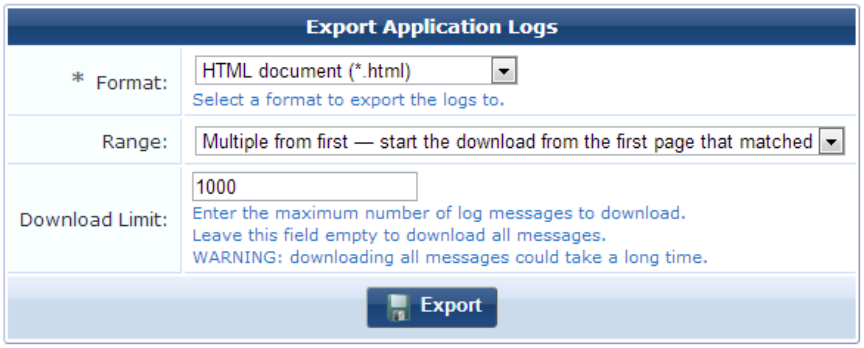
4. By default, only the Client IP and Message fields are searched. To search all fields, mark the check box in the **Options** row.

Events are stored in the Application Log for seven days by default. To review a record of significant runtime events prior to the last seven days, you can use the Audit Viewer in ClearPass Policy Manager's Monitoring module.

Exporting the Application Log

To save the log in other formats:

1. Click the **Export** tab. The Export Application Logs form opens.



2. In the **Format** drop-down list, choose the format you want the file saved as. The available formats are HTML document (.html), Comma-Separated Values (.CSV), Tab-Separated Values (.tsv), Text file (.txt), and XML document (.xml). The default format is HTML.
3. In the **Range** drop-down list, select the range of pages to save. Options include the current page only, all pages starting from the current page, or all pages starting from the first page that matched any keyword or filter criteria you entered.
4. If you entered a range of pages in the Range drop-down list, the form expands to include the **Download Limit** row.
5. Click **Export**. You are given the option to open the file, save it to your Downloads folder (the default), or save it to another location.

Contacting Support

To view contact information for Aruba Support, go to **Administration > Support > Contact Support**. The Contact Support page opens. This page provides the following information:

- Toll-free telephone numbers for North American support
- A link to contact Aruba Support by email
- A link to Aruba's online Contact Support page, which includes telephone numbers and other contact information for over 30 countries

Viewing Documentation

To view ClearPass Guest documentation, go to **Administration > Support > Documentation**. The Documentation page opens.

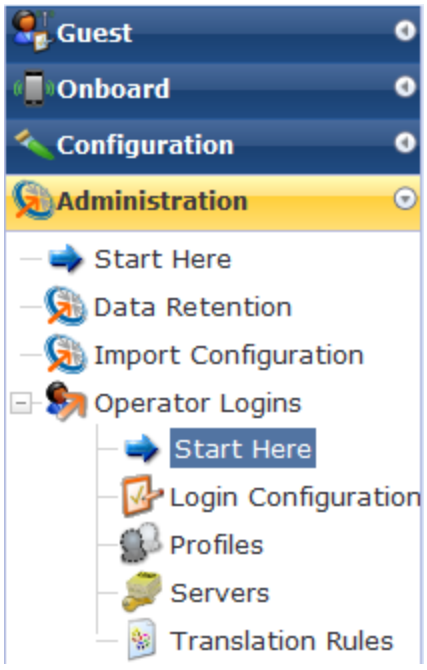
- To view this User Guide in your browser as online help, click **Browse Documentation**. The document opens in a separate browser tab.
- To view the User Guide as a PDF, click **Deployment Guide**. The PDF file opens in a separate tab.

An operator is a company's staff member who is able to log in to ClearPass Guest. Different operators may have different roles that can be specified with an operator profile. These profiles might be to administer the ClearPass Guest network, manage guests, or run reports.

Operators may be defined locally in ClearPass Guest, or externally in an LDAP directory server.

Accessing Operator Logins

To access ClearPass Guest's operator login features, click the **Administration** link in the left navigation, then click **Operator Logins**.



About Operator Logins

ClearPass Guest supports role-based access control through the use of operator profiles. Each operator using the application is assigned a profile which determines the actions that the operator may perform, as well as global settings such as the look and feel of the user interface.

Your profile may only allow you to create guest accounts, or your profile might allow you to create guest accounts as well as print reports. What your profile permits is determined by the network administrator.

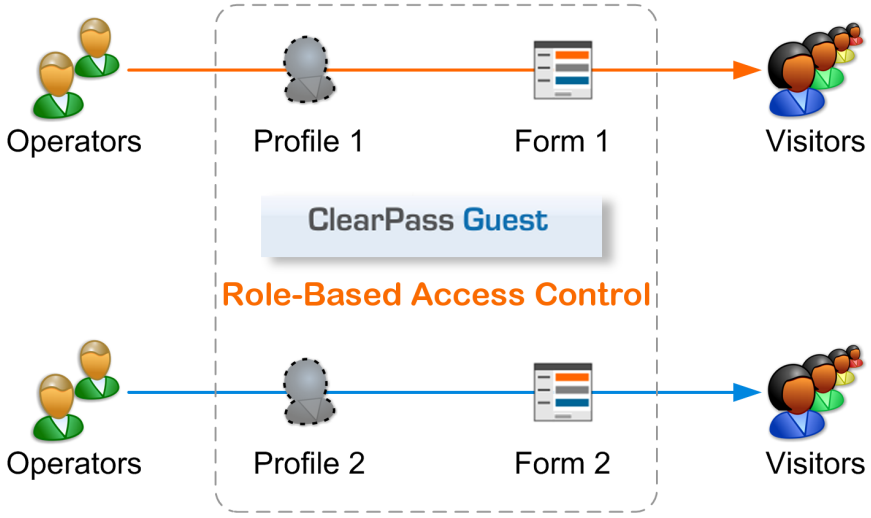
Two types of operator logins are supported: local operators and operators who are defined externally in your company's directory server. Both types of operators use the same login screen.

Role-Based Access Control for Multiple Operator Profiles

Using the operator profile editor, the forms and views used in the application may be customized for a specific operator profile, which enables advanced behaviors to be implemented as part of the role-based access control model.

This process is shown in the following diagram.

Figure 43 *Operator profiles and visitor access control*



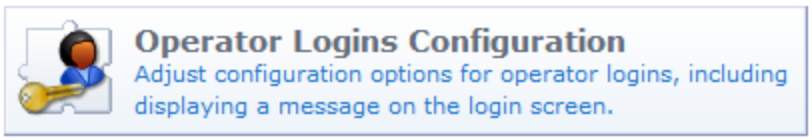
See "About Operator Logins" on page 455 for details on configuring different forms and views for operator profiles.

Operator Logins Configuration

You are able to configure a message on the login screen that will be displayed to all operators. This must be written in HTML. You may also use template code to further customize the appearance and behavior of the login screen.

Options related to operator passwords may also be specified, including the complexity requirements to enforce for operator passwords.

Go to **Administration > Operator Logins** and click the **Operator Logins Configuration** command link to modify these configuration parameters.



Custom Login Message

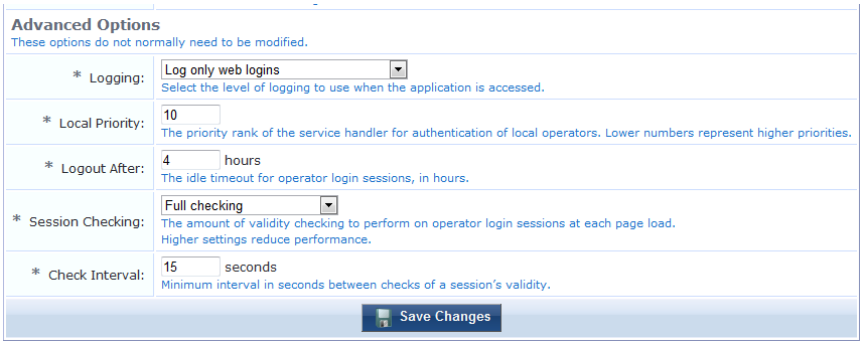
If you are deploying ClearPass Guest in a multi-lingual environment, you can specify different login messages depending on the currently selected language.

The following example from the demonstration site uses Danish (da), Spanish (es) and the default language English, as highlighted in bold:

```
{if $current_language == 'da'}

<p>
 Indtast brugernavn og password for at <br>
 få adgang til ClearPass Guest
</p>
<p>
 Kontakt <a href="http://www.airwire.dk/">Airwire</a> (Norden) for at få demoadgang
</p>
{elseif $current_language == 'es'}
<p>
Para entrar en el web demo de ClearPass Guest,<br>
 necesitas un nombre y contraseña.
</p>
<p>
 Si no tienes un login, puedes obtener uno<br>
 <a href="http://www.arubanetworks.com/">contactando con Aruba Networks</a>.
</p>
{else}
<p>
 The ClearPass Guest demo site <br>
 requires a username and password.
</p>
<p>
 If you don't have a login, <br>
 <a href="http://www.arubanetworks.com/">contact Aruba Networks</a> to obtain one.
</p>
{/if}
<br clear="all">
```

In the **Login Footer** field, enter any HTML information that you want displayed in the Operator Login form. Select the login skin from the **Login Skin** drop-down menu. Options include the default skin or a customized skin.

Advanced Operator Login Options



The following options are available in the Logging drop-down list:

- No logging
- Log only failed operator login attempts
- Log only Web logins
- Log only XMLRPC access
- Log all access

Log messages for operator logins, whether successful or unsuccessful, are shown in the application log.

Automatic Logout

The Logout After option in the Advanced Options section lets you configure an amount of idle time after which an operator's session will be ended.

The value for Logout After should be specified in hours. You can use fractional numbers for values less than an hour; for example, use 0.25 to specify a 15 minute idle timeout.

Operator Profiles

An operator profile determines what actions an operator is permitted to take when using ClearPass Guest.

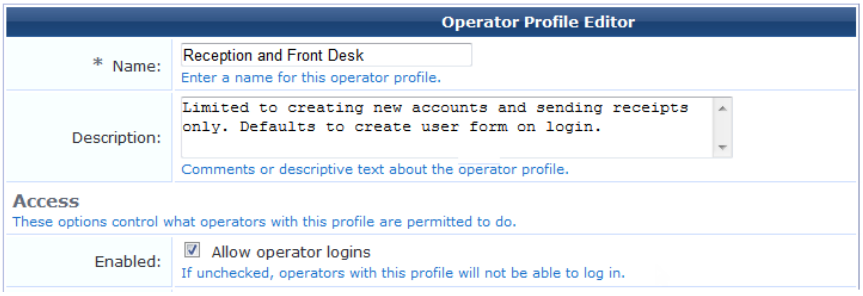
Some of the settings in an operator profile may be overridden in a specific operator's account settings. These customized settings will take precedence over the default values defined in the operator profile.

To define new operator profiles and to make changes to existing operator profiles, go to **Administration > Operator Logins > Profiles**. The Operator Profiles page opens with the profiles list displayed.

Creating an Operator Profile

On the **Administration > Operator Logins > Operator Profiles** page, click the **Create a new operator profile** link to create a new operator profile.

The **Edit Operator Profile (new)** form is displayed. This form has several sections, which are described in more detail below.

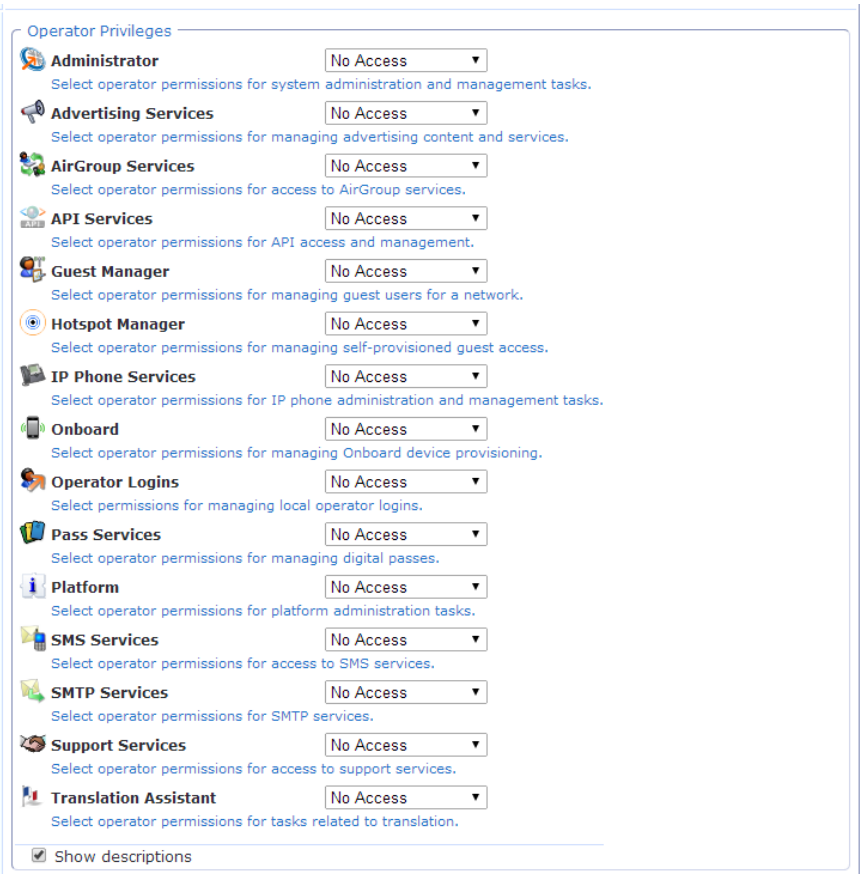


The fields in the first area of the form identify the operator profile and capture any optional information:

1. You must enter a name for this profile in the **Name** field.
2. (Optional) You may enter additional information about the profile in the **Description** field.

The fields in the **Access** area of the form define permissions for the operator profile:

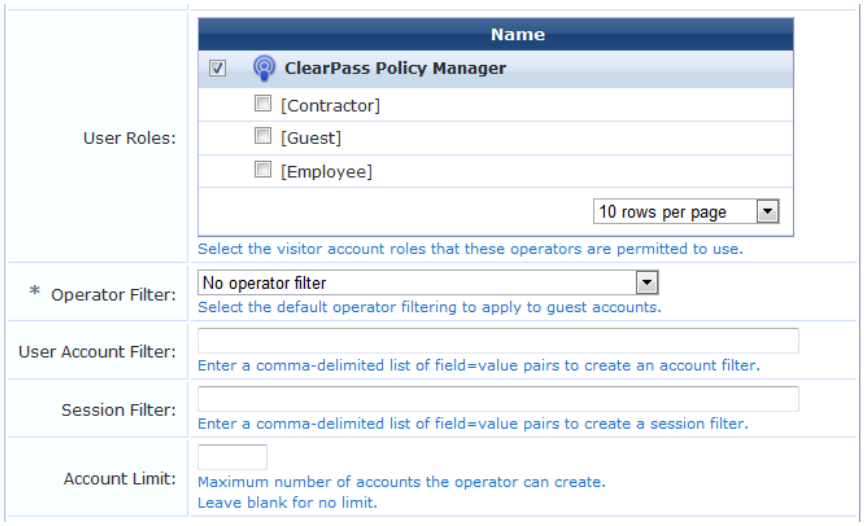
1. In the **Enabled** row, the **Allow Operator Logins** check box is selected by default. To disable a profile, unmark the **Allow Operator Logins** check box. If a profile is disabled, any operators with that profile will be unable to log in to the system. This may be useful when performing system maintenance tasks.
2. In the **Operator Privileges** area, use the drop-down lists to select the appropriate permissions for this operator profile.



For each permission, you may grant **No Access**, **Read Only Access**, **Full Access**, or **Custom** access. The default in all cases is No Access. This means that you must select the appropriate privileges in order for the profile to work. See "Operator Profile Privileges" on page 462 for details about the available access levels for each privilege.

If you choose the **Custom** setting for an item, the form expands to include additional privileges specific to that item.

3. The **User Roles** list allows you to specify which user databases and roles the operator will be able to access.



   If one or more roles are selected, then only those roles will be available for the operator to select from when creating a new guest account. The guest account list is also filtered to show only guest accounts with these roles.

   If a database is selected in the User Roles list, but no roles within that database are selected, then all roles defined in the database will be available. This is the default option.

4. The **Operator Filter** may be set to limit the types of accounts that can be viewed by operators. Options include: default, no operator filter, only show accounts created by the operator, and only show accounts created by operators within their profile.

5. The **User Account Filter** and **Session Filter** fields are optional, and allow you to create and configure these filtering options:

   - The **User Account Filter** field lets you create a persistent filter applied to the user account list. For example, this feature is useful in large deployments where an operator only wants to have a filtered view of some accounts. To create an account filter, enter a comma-delimited list of field-value pairs. Supported operators are described below.
   - The **Session Filter** field lets you create a filter for only that session. To create a session filter, enter a comma-delimited list of field-value pairs. Supported operators are described below.

   The user can enter a simple substring to match a portion of the username or any other fields that are configured for search, and may include the following operators:

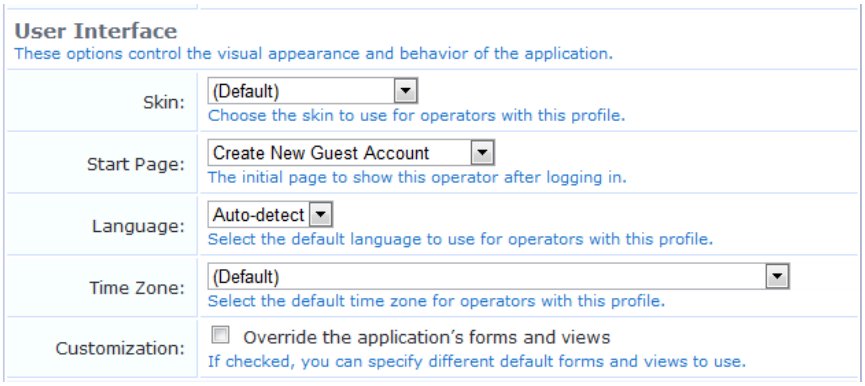
Table 108: *Operators supported in filters*

Operator	Meaning	Additional Information
=	is equal to	You may search for multiple values when using the equality (=) or inequality !=) operators. To specify multiple values, list them separated by the pipe character (|). For example, specifying the filter "role_id=2|3, custom_field=Value" restricts the user accounts displayed to those with role IDs 2 and 3 (Guest and Employee), and with the field named "custom_field" set to "Value".
!=	is not equal to	
>	is greater than	
>=	is greater than or equal to	
<	is less than	
<=	is less than or equal to	
~	matches the regular expression	
!~	does not match the regular expression	

6. In the **Account Limit** row, you can enter a number to specify the maximum number of accounts an operator can create. Disabled accounts are included in the account limit. To set no limit, leave the Account Limit field blank.

   When you create or edit an AirGroup operator, the value you enter in the Account Limit field specifies the maximum number of devices an AirGroup operator with this profile can create.

Configuring the User Interface



The fields in the **User Interface** area of the form determine elements of the application's visual appearance and behavior that operators with this profile will see. The **Skin**, **Start Page**, **Language**, and **Time Zone** options specify the defaults to use for operators with this profile. Individual operator logins may have different settings, which will be used instead of the values specified in the operator profile. For information on specifying options at the individual operator level, see "Local Operator Authentication" on page 464.

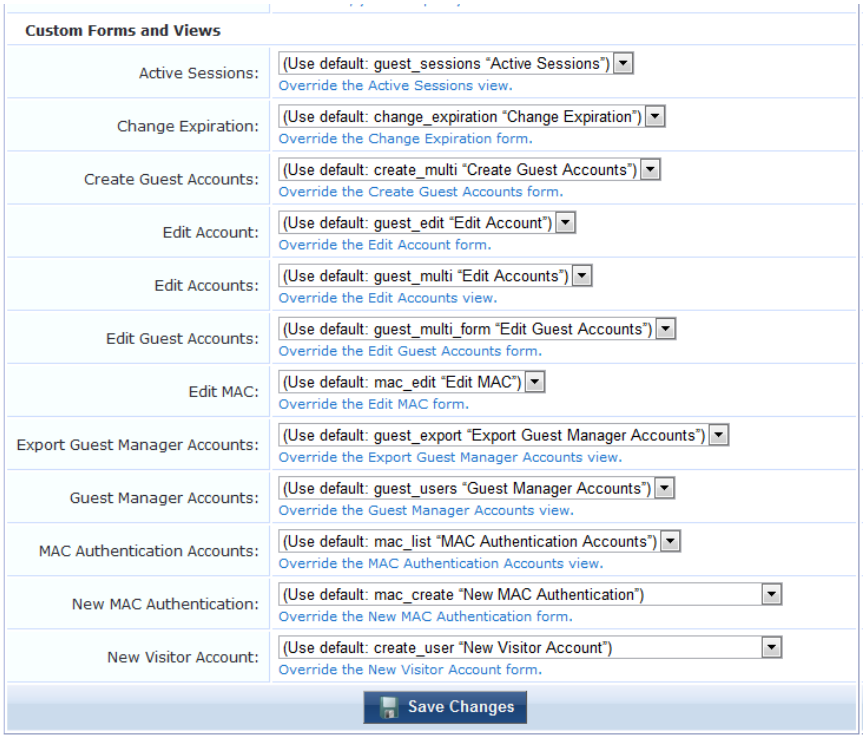
1. (Optional) In the **Skin** row, the **Default** setting indicates that the skin plugin currently marked as enabled in the Plugin Manager will be used. To have a different skin displayed for users with this operator profile, choose one of the available skins from the drop-down list. For more information on skins, see "Plugin Manager" on page 444.
2. (Optional) In the **Start Page** row, the **Default** setting indicates that the application's standard Home page will be the first page displayed after login. To have a different start page displayed to users with this operator profile, choose a page from the drop-down list. For example, if a profile is designed for users who

do only certain tasks, you might want the application to open at the module where those tasks are performed.

3. (Optional) In the **Language** row, the default setting is **Auto-detect**. This lets the application determine the operator's language preference from their local system settings. To specify a particular language to use in the application, choose the language from the drop-down list.
4. (Optional) In the **Time Zone** row, the **Default** setting indicates that the operator's time zone will default to the system's currently configured time zone. You can use the drop-down list to specify a particular time zone.
5. (Optional) In the **Customization** row, you can choose to override the application's default forms and views. For more information, see the next section, "Customizing Forms and Views" on page 212.

Customizing Forms and Views

You can use the **Customization** option in the Operator Profile Editor to override default forms and views and specify different ones to be used for the operator profile.



To specify that an operator profile should use a different form when creating a new visitor account:

1. (Optional) In the **Customization** row, select the **Override the application's forms and views** check box. The form expands to show the forms and views that can be modified. If alternative forms or views have been created, you may use the drop-down lists to specify which ones to use.
2. When you have selected the custom forms and views to use, click **Save Changes** to complete the creation of the operator profile.

Operator Profile Privileges

The privilege selections available for an operator profile provide you with control over the functionality that is available to operators.

No Access means that the operator will have no access to the particular area of functionality. Options for that functionality will not appear for that operator in the menus.

Read Only Access means that the operator can see the options available but is unable to make any changes to them.

Full Access means that all the options are available to be used by the operator.

Custom access allows you to choose individual permissions within each group. For example, Guest Manager allows you to control access to the following areas:

- Active sessions management
- Viewing historical data for active sessions
- Changing expiration time of guest accounts
- Creating multiple guest accounts
- Creating new guest accounts
- Editing multiple guest accounts
- Exporting guest account data
- Full user control of guest accounts
- Importing guest accounts
- Listing guest accounts
- Managing customization of guest accounts
- Managing print templates
- Removing or disabling guest accounts
- Resetting guest passwords

Refer to the description of each individual operator privilege to determine what the effects of granting that permission will be.

Managing Operator Profiles

After a profile is created you are able to view, to edit and to create new profiles. When you click an operator profile entry in the Operator Profiles list, a menu appears that allows you to perform any of the following operations:

- **View/Hide Details** – displays or hides configuration details for the selected operator profile, including the profile name, description, operator login access, and the settings for the defined skin, start page, language and time zone.
- **Edit** – changes the properties of the specified operator profile
- **Delete** – removes the operator profile from the Operator Profiles list
- **Duplicate** – creates a copy of an operator profile
- **Create Operator** – opens the **Create Operator Login** form, allowing you to create a new operator login associated with the selected operator profile.
- **Show Operators** – shows a list of operator login names associated with that operator profile
- **Show Usage** – opens a window in the Operator Profiles list that shows if the profile is in use, and lists any LDAP authentication servers, LDAP translation rules, and operator logins associated with that profile. Each entry in this window appears as a link to the form that lets you edit that LDAP or operator login setting.

Configuring AirGroup Operator Device Limit

By default, an AirGroup operator can create up to five personal devices. To change this default:

1. Go to **Administration > Operator Logins > Profiles**, then select the **AirGroup Operator** profile in the list.
2. Click the **Edit** link. The Edit Operator Profile form opens.
3. In the **Account Limit** field, specify an appropriate value. This is the maximum number of personal devices that an operator with this profile can create.
4. Click **Save Changes**.

You can create a set of operator profiles and configure each profile with a different account limit. This makes it easy to assign operator profiles appropriately for small groups, larger groups, or events. To create each profile in the set, duplicate the built-in AirGroup Operator profile, and update the Account Limit field in the new profile.

Local Operator Authentication

ClearPass Policy Manager profiles and ClearPass Guest profiles are different. To create a ClearPass Guest operator login, local users are first defined in ClearPass Policy Manager with a role that matches an operator profile in Guest, then rules are used to map the role to the Guest operator profile.

Creating a New Operator

To create a new operator or administrator for ClearPass Guest or AirGroup, some steps are performed in ClearPass Policy Manager (CPPM), and some steps are performed in ClearPass Guest, as described below:

1. Create an operator profile in ClearPass Guest, or use an existing one. See "Operator Profiles" on page 458.
   - To create an AirGroup user, choose either the **AirGroup Administrator** or **AirGroup Operator** profile, as appropriate. These profiles are automatically included in ClearPass Guest when the AirGroup Services plugin is installed.
   - MACTrac users are created entirely in CPPM.
2. Create a CPPM role for the operator: In CPPM, go to **Configuration > Identity > Roles** and create a role that matches the operator profile. Refer to the ClearPass Policy Manager documentation for information on creating the role.
   - When creating AirGroup users or MACTrac users, the appropriate roles are already created in CPPM.
3. Create a local user for the operator: In CPPM, go to **Configuration > Identity > Local Users** and click **Add User**. In the Add Local User form, complete the fields and choose the appropriate role from the Role drop-down list.
   - To create an AirGroup user, choose either the **AirGroup Administrator** or **AirGroup Operator** role, as appropriate.
   - To create a MACTrac user, choose the **MACTrac Operator** role. This form completes MACTrac user creation; the following steps are not required.

4. Create a translation rule to map the CPPM role name to the ClearPass Guest operator profile: In ClearPass Guest, go to **Administration > Operator Logins > Translation Rules**.
5. In the **Translation Rules** list, find the profile in the list, look at the **Action** column to verify the operator profile assignment, and then click its **Edit** link. The row expands to include the **Edit Translation Rule** form.
6. Edit the fields appropriately to match the CPPM role name to the ClearPass Guest operator profile. See "LDAP Translation Rules" on page 472.
7. Click **Save Changes**.

External Operator Authentication

Operators defined externally in your company's directory server form the second type of operator. Authentication of the operator is performed using LDAP directory server operations. The attributes stored for an authenticated operator are used to determine what operator profile should be used for that user.

At **Administration > Operator Logins > Start Here**, the **Manage Operator Servers** and the **Translation Rules** commands allow you to set up operator logins integrated with a Microsoft Active Directory domain or another LDAP server.

The operator management features, such as creating and editing operator logins, apply only to local operator logins defined in ClearPass Guest. You cannot create or edit operator logins using LDAP. Only authentication is supported.

Manage LDAP Operator Authentication Servers

ClearPass Guest supports a flexible authentication mechanism that can be readily adapted to any LDAP server's method of authenticating users by name. There are built-in defaults for Microsoft Active Directory servers and POSIX-compliant directory servers.

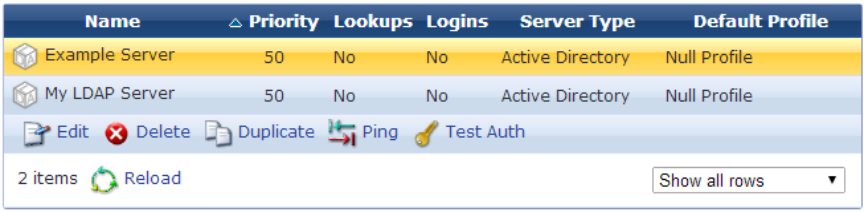
When an operator attempts to log in, each LDAP server that is enabled for authentication is checked, in order of priority from lowest to highest.

When a server is found that can authenticate the operator's identity (typically with a username and password), the LDAP server is queried for the attributes associated with the user account.

These LDAP attributes are then translated to operator attributes using the rules defined in the LDAP translation rules. In particular, an operator profile will be assigned to the authenticated user with this process, which controls what that user is permitted to do.

Viewing the LDAP Server List

If you have defined one or more LDAP servers, those servers will appear in the LDAP server list at **Administration > Operator Logins > Servers**.

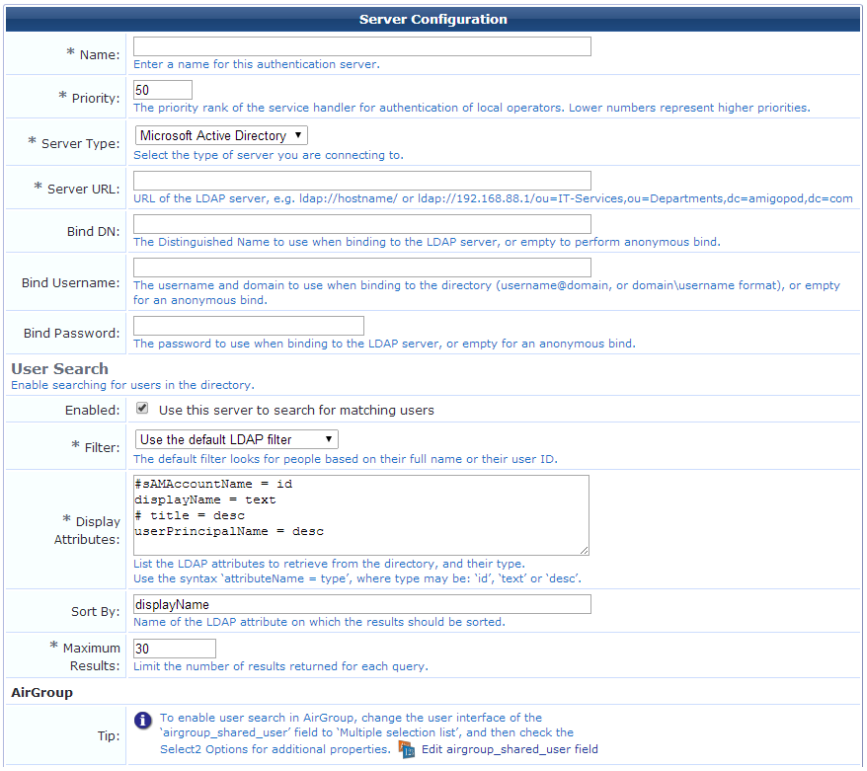


Select any of the LDAP servers in the list to display options to perform the following actions on the selected server:

- **Edit**—Opens the Server Configuration form, where you can make changes to the properties of the LDAP server.
- **Delete**—Removes the server from the LDAP server list.
- **Duplicate**—Creates a copy of an LDAP server. You can then click the Edit link to open the Server Configuration form and use original server's properties as a template for creating a new server.
- **Disable—**Temporarily disables a server while retaining its entry the server list.
- **Enable—**Reenables a disabled LDAP server.
- **Ping—**Sends a ping message (echo request) to the LDAP server to verify connectivity between the LDAP server and the ClearPass Guest server.
- **Test Auth**—Adds a **Test Operator Login** area in the LDAP servers form that allows you to test authentication of operator login values.
- **Test Lookup**—Adds a **Test Operator Lookup** form in the LDAP servers list that allows you to look up sponsor names. This option is only available if sponsor lookup has been enabled for the server on the Edit Authentication Server page.

Creating an LDAP Server

To create an LDAP server, go to **Administration > Operator Logins > Servers**, and click the **Create new LDAP server** link in the upper-right corner. The authentication **Server Configuration** form opens.



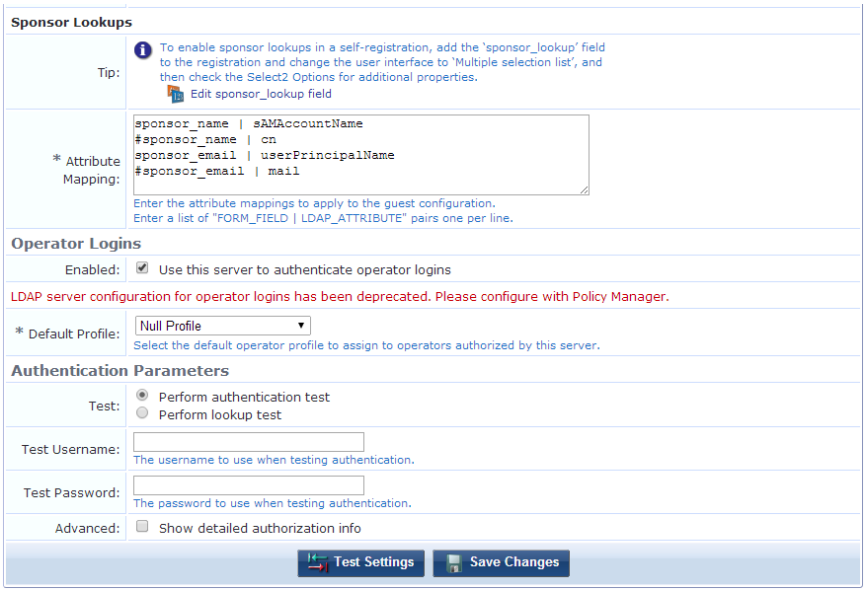
To specify a basic LDAP server connection (hostname and optional port number), use a Server URL of the form **ldap://hostname/** or **ldap://hostname:port/**. See "Advanced LDAP URL Syntax" on page 469 for more details about the types of LDAP URL you may specify.

This form allows you to specify the type of LDAP server your system will use. Click the **Server Type** drop-down list and select one of the following options:

Table 109: *Server Type Parameters*

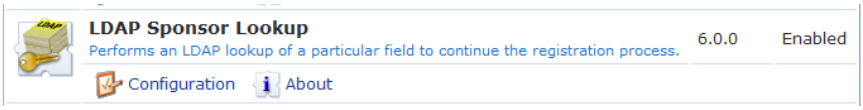
Server Type	Required Configuration Parameters
Microsoft Active Directory	• **Server URL**: The URL of the LDAP server • **Bind DN**: The password to use when binding to the LDAP server, or empty for an anonymous bind. • **Bind Password**: If your LDAP server does not use anonymous bind, you must supply the required credentials to bind to the directory. (Leave this field blank to use an anonymous bind.) For more information on the Microsoft Active Directory server type, see "Advanced LDAP URL Syntax" on page 469.
POSIX Compliant	• **Server URL**: The URL of the LDAP server • **Bind DN**: The password to use when binding to the LDAP server, or empty for an anonymous bind. • **Bind Password**: The password to use when binding to the LDAP server. Leave this field blank to use an anonymous bind. • **Base DN**: The Distinguished Name to use for the LDAP search.
Custom	• **Server URL**: The URL of the LDAP server • **Bind DN**: The password to use when binding to the LDAP server, or empty for an anonymous bind. • **Bind Password**: The password to use when binding to the LDAP server. Leave this field blank to use an anonymous bind. • **Base DN**: The Distinguished Name to use for the LDAP search. • **Unique ID**: The name of an LDAP attribute used to match the username. • **Filter**: Additional LDAP filters to use to search for the server. • **Attributes**: List of LDAP attributes to retrieve. Or leave bland to retrieve all attributes (default).

If you mark the **Enabled** check box in the **User Search** area, the form expands to include the AirGroup and Sponsor Lookup configuration options.



For **Sponsor Lookups**, if you want to enable the validation of sponsor emails during self-registration, you must add the sponsor_lookup field to the registration and change the user interface to "Multiple selection list"

and then check the Select2 Options for additional properties. The server will then look up sponsors during self-registration and double-check the attribute used for emails on the LDAP server. This option requires that the **sponsor_email** and **do_ldap_lookup** fields are enabled in the registration form, and that you have the LDAP Sponsor Lookup plugin installed. Use the Plugin Manager to verify that this plugin is available.



In the **Operator Logins** area, to use this LDAP server to authenticate operator logins, select the **Enabled** check box. Use the **Default Profile** drop-down list to select the default operator profile to assign to operators authorized by this LDAP server.LDAP servers for operator logins are configured in Policy Manager.

When you have completed the form, you can check your settings. Use the **Test Username** and **Test Password** fields to supply a username and password for the authentication check, then click the **Test Settings** button. The minimum password length is six characters. If the authentication is successful, the operator profile assigned to the username will be displayed. If the authentication fails, an error message will be displayed. See "LDAP Operator Server Troubleshooting" on page 469 for information about common error messages and troubleshooting steps to diagnose the problem.

Click the **Save Changes** button to save this LDAP Server. If the server is marked as enabled, subsequent operator login attempts will use this server for authentication immediately.

Advanced LDAP URL Syntax

If you select Microsoft Active Directory as the **Server Type** on the **Administration > Operator Logins > Servers > Server Configuration** form, the LDAP server connection will use a default distinguished name of the form **dc=domain,dc=com**, where the domain name components are taken from the bind username.

To specify a different organizational unit within the directory, include a distinguished name in the LDAP server URL, using a format such as:

```
ldap://192.0.2.1/ou=IT%20Services,ou=Departments,dc=server,dc=com
```

To specify a secure connection over SSL/TLS, use the prefix **ldaps://**.

To specify the use of LDAP v3, use the prefix **ldap3://**, or **ldap3s://** if you are using LDAP v3 over SSL/TLS.

When Microsoft Active Directory is selected as the **Server Type**, LDAP v3 is automatically used.

An LDAP v3 URL has the format **ldap://host:port/dn?attributes?scope?filter?extensions**.

- **dn** is the base X.500 distinguished name to use for the search.
- **attributes** is often left empty.
- **scope** may be 'base', 'one' or 'sub'.
- **filter** is an LDAP filter string, for example, (objectclass=*)
- **extensions** is an optional list of name=value pairs.

Refer to RFC 2255 for further details.

LDAP Operator Server Troubleshooting

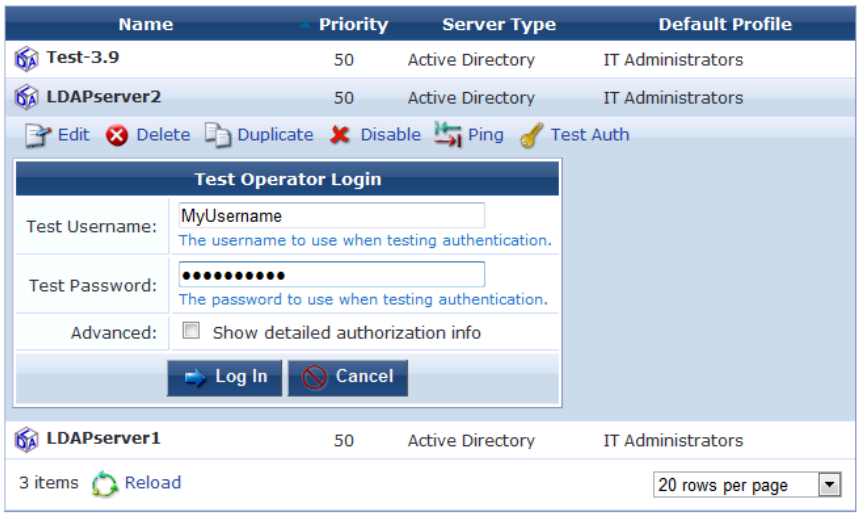
At **Administration > Operator Logins > Servers**, you can use the LDAP **Operator Servers** list to troubleshoot network connectivity, operator authentication, and to look up operator usernames.

Testing Connectivity

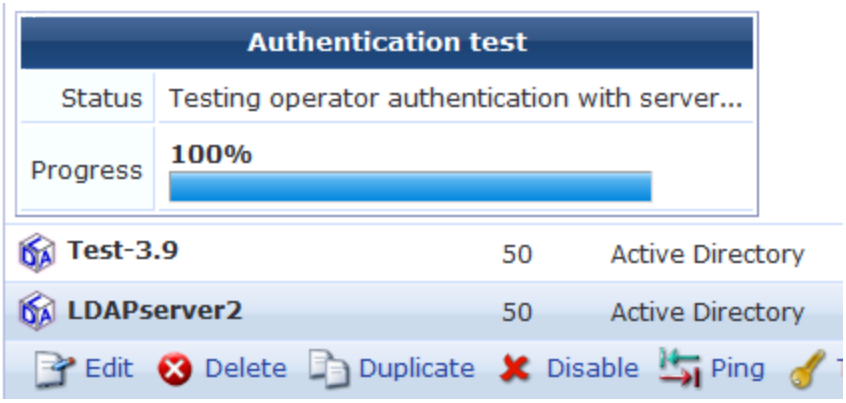
To test network connectivity between an LDAP server and the ClearPass Guest server, click the **Ping** link in the server's row. The results of the test appear below the server entry in the LDAP server table.

Testing Operator Login Authentication

1. To test authentication of operator login values, select a server name in the LDAP Server table, then click the **Test Auth** link. The **Test Operator Login** form is added to the page.



2. Enter an operator username and password for the LDAP Server. The minimum password length is six characters.
3. (Optional) Click the **Advanced** check box to display detailed authorization information for the specified operator.
4. Click **Log In** to attempt to authenticate the LDAP server, or click **Cancel** to cancel the test. The Authentication Test area is added above the server names to indicate the test's progress.



You can also verify operator authentication when you create a new LDAP server configuration using the **Test Settings** button on the **LDAP Configuration** form (See "Creating an LDAP Server" on page 467 for a description).

Looking Up Sponsor Names

This option is only available if sponsor lookup has been enabled for the server on the Edit Authentication Server page.

1. To look up a sponsor, select a server name in the LDAP Server table, then click the **Test Lookup** link. The Test Operator Lookup area is added to the LDAP servers list.
2. In the **Lookup** field, enter a lookup value. This can be an exact username, or you can include wildcards.If you use wildcards, the search might return multiple values.
3. In the **Search Mode** field, use the drop-down list to specify whether to search for an exact match or use wildcard values.
4. (Optional) Click the **Advanced** check box to display detailed authorization information for the specified sponsor.
5. Click **Search Directory** to attempt to find sponsor names that match the lookup values, or click **Cancel** to cancel the test. The Authentication Test area is added above the server names to indicate the search's progress.

Troubleshooting Error Messages

The error messages in the following table can be used to diagnose error messages such as: "LDAP Bind failed: Invalid credentials (80090308: LdapErr: DSID-0C090334, comment: AcceptSecurityContext error, data **525**, vece), bind DN was: ..."

Table 110: *LDAP Error Messages*

Error Data	Reason
525	User not found
52e	Invalid credentials (password is incorrect)
530	Not permitted to log on at this time
531	Not permitted to log on at this workstation
532	Password has expired
533	Account is disabled
701	Account has expired
773	User must reset password
775	User account is locked

Other items to consider when troubleshooting LDAP connection problems:

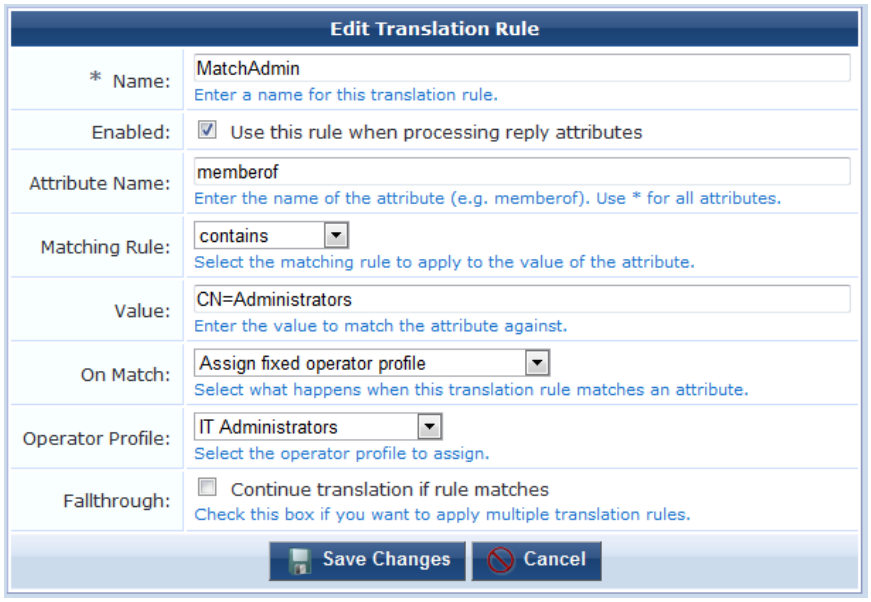
- **Verify that you are using the correct LDAP version** – use ldap:// for version 2 and ldap3:// to specify LDAP version 3.
- **Verify that you are using an SSL/TLS connection** – use ldaps:// or ldap3s:// as the prefix of the Server URL.
- **Verify that the Bind DN is correct** – the correct DN will depend on the structure of your directory, and is only required if the directory does not permit anonymous bind.
- **Verify that the Base DN is correct** – the Base DN for user searches is fixed and must be specified as part of the Server URL. If you need to search in different Base DNs to match different kinds of operators, then you should define multiple LDAP Servers and use the priority of each to control the order in which the directory searches are done.

LDAP Translation Rules

LDAP translation rules specify how to determine operator profiles based on LDAP attributes for an authenticated operator.

To create a new LDAP translation rule:

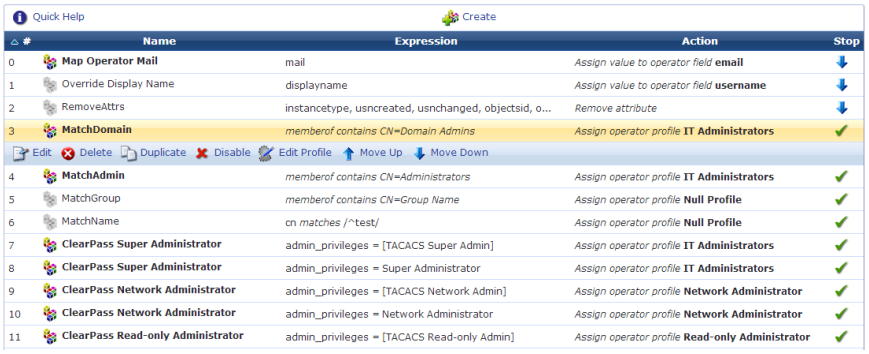
1. Go to **Administration > Operator Logins > Translation Rules**, and then click the **Create new translation rule** link. The Edit Translation Rule form opens.



2. In the **Name** field, enter a self-explanatory name for the translation rule. In the example above, the translation rule is to check that the user is an administrator, hence the name **MatchAdmin**.
3. Select the **Enabled** check box to enable this rule after you create it. If you do not select this check box, the rule you create will appear in the rules list, but will not be active until you enable it.
4. Click the **Matching rule** drop-down list and select a rule. The Matching Rule field can be one of:
   - (blank) – always matches
   - **contains** – case-insensitive substring match anywhere in string
   - **matches** – regular expression match, where the value is a Perl-compatible regular expression including delimiters (for example, to match the regular expression “admin” case-insensitively, use the value “**/admin/i**”; See "Regular Expressions" on page 526 for more details about regular expressions)
   - **equals** – case-insensitive string comparison, matches on equality
   - **does not equal** – case-insensitive string comparison, matches on inequality
   - **less than** – numerical value is less than the match value
   - **greater than** – numerical value is greater than the match value
   - **starts with** – case-insensitive substring match at start of string
   - **ends with** – case-insensitive substring match at end of string
5. Select a Value. The **Value** field states what is to be matched, in this case **CN=Administrators** to look for a specific group of which the user is a member.

6. Click the **On Match** drop-down list and select the action the system should take when there is a match. Your options here are to:
   - **Do nothing** – makes no changes.
   - **Assign fixed operator profile** – assigns the selected Operator Profile to the operator.
   - **Assign attribute's value to operator field** – uses the value of the attribute as the value for an operator field. This option can be used to store operator configuration details in the directory. (For operator profiles from enforcement profiles, matching can be performed on either their IDs or their name values, even if the Fallthrough option is not selected)
   - **Assign custom value to operator field** – uses a template to assign a value to a specific operator field. If you choose this option, the form expands to include the Custom text box for you to enter your custom template code. See "Custom LDAP Translation Processing" on page 474. (For operator profiles from enforcement profiles, matching can be performed on either their IDs or their name values, even if the Fallthrough option is not selected)
   - **Apply custom processing** – evaluates a template that may perform custom processing on the LDAP operator. If you choose this option, the form expands to include the Custom text box for you to enter your custom template code. See "Custom LDAP Translation Processing" on page 474.
   - **Remove attribute from operator** – removes the selected LDAP attribute from the operator.
7. Click the **Operator Profile** drop-down list and select the profile to be assigned if there is a rule match. In the example shown above, if the Administrator group is matched, the **Administrator** profile is to be assigned.
8. Select the **Fallthrough** check box if you want to use multiple translation rules. When you create multiple rules, you can build a complete logical structure to perform any type of processing on the LDAP attributes available in your directory.
9. Click **Save Changes** to save your rule settings.

The **Administration > Operator Logins > Translation Rules** window shows a list of all configured translation rules.



Translation rules are processed in order, until a matching rule is found that does not have the Fallthrough field set.

To edit the matching rule list, select an entry in the table to display a menu that lets you perform the following actions:

- **Edit** – Changes the configuration of matching rule
- **Delete** – Removes matching rule from the list
- **Duplicate** – Creates a duplicate copy of an existing rule
- **Disable** – Temporarily disables the rule without deleting it from the rule list

- ✔ **Enable** – Re-enables a disabled operator login
- **Edit Profile** – Opens the Edit Operator Profile form for the operator profile assigned to the selected translation rule
- **Move Up** – Moves the rule up to a higher priority on the rule list
- **Move Down** – Moves the rule down to a lower priority on the rule list

Custom LDAP Translation Processing

When matching an LDAP translation rule, custom processing may be performed using a template.

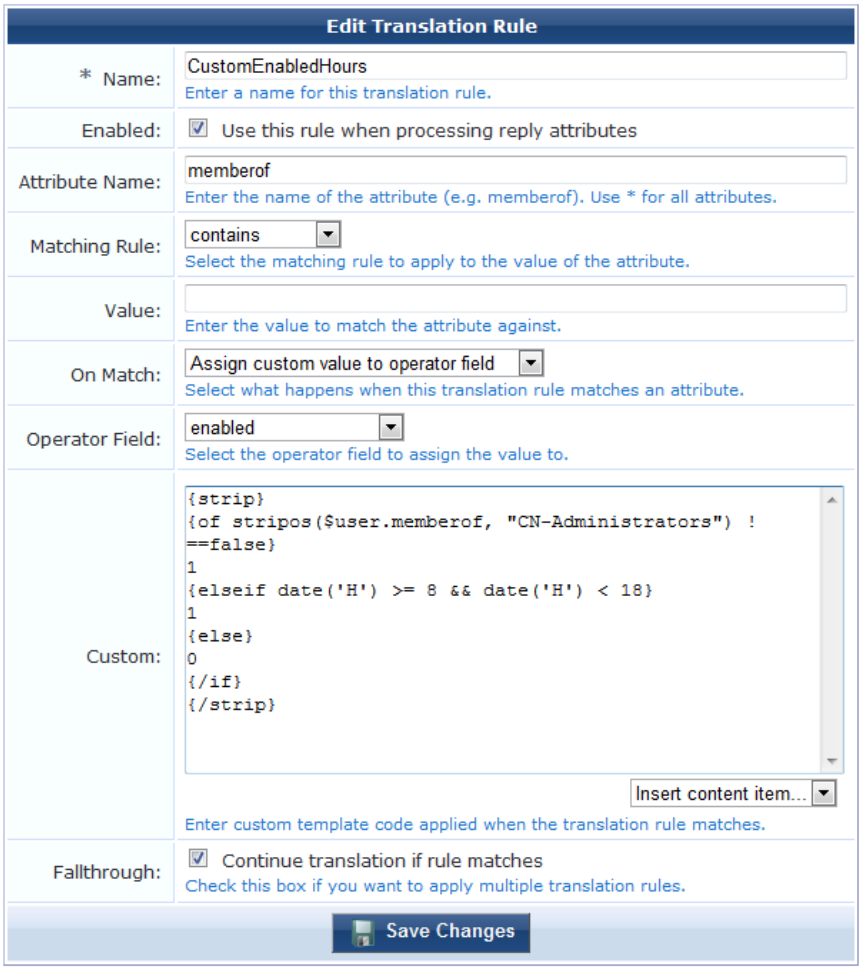
The template variables available are listed in the table below.

Table 111: *Template Variables*

Variable	Description
`$attr`	The name of the LDAP attribute that was matched.
`$user`	Contains settings for the operator, including all LDAP attributes returned from the server.

For a Smarty template syntax description, See "Smarty Template Syntax" on page 480. These may be used to make programmatic decisions based on the LDAP attribute values available at login time.

For example, to permit non-administrator users to access the system only between the hours of 8:00 am and 6:00 pm, you could define the following LDAP translation rule:



The Custom rule is:

```
{strip}
{if stripos($user.memberof, "CN=Administrators")!==false}
1
{elseif date('H') >= 8 && date('H') < 18}
1
{else}
0
{/if}
{/strip}
```

Explanation: The rule will always match on the "memberof" attribute that contains the user's list of groups. The operator field "enabled" will determine if the user is permitted to log in or not. The custom template uses the {strip} block function to remove any whitespace, which makes the contents of the template easier to understand. The {if} statement first checks for membership of the Administrators group using the PHP stripos () function for case-insensitive substring matching; if matched, the operator will be enabled. Otherwise, the server's current time is checked to see if it is after 8am and before 6pm; if so, the operator will be enabled. If neither condition has matched, the "enabled" field will be set to 0 and login will not be permitted.

This chapter includes the following sections:

Basic HTML Syntax

ClearPass Guest allows different parts of the user interface to be customized using the Hypertext Markup Language (HTML).

Most customization tasks only require basic HTML knowledge, which is covered in this section.

HTML is a markup language that consists primarily of *tags* that are enclosed inside angle brackets, for example, ** **. Most tags are paired to indicate the start and end of the text being marked up; an end tag is formed by including the tag inside the angle brackets with a forward slash, for example, ** **.

Use the following standard HTML tags in customization:

Table 112: *Standard HTML Tags*

Item	HTML Syntax
Basic Content	
	`<h1>Main Heading</h1>`
	`<h2>Subheading</h2>`
	`<h3>Section heading</h3>`
	`<p>Paragraph text</p>`
	` ` ` ` – equivalent syntax (XHTML)

	`<ul>`
	`  <li>List item text</li>`
	`</ul>`

	`<ol>`
	`  <li>List item text</li>`
	`</ol>`

Item	HTML Syntax
Text Formatting	
	`<b>words to be made bold</b>` `<strong>equivalent syntax</strong>`
	`<i>words to be made italic</i>` `<em>equivalent syntax</em>`
	`<u>words to underline</u>`
	`<tt>Shown in fixed-width font</tt>`
	`<span style="…">Uses CSS formatting</span>` `<span class="…">Uses predefined style</span>`
	`<div style="…">Uses CSS formatting</div>` `<div class="…">Uses predefined style</div>`
Hypertext	
	`<a href="`*url*`">Link text to click on</a>`
	`<img src="url">` `<img src="url" />` – XHTML equivalent
	`<img src="url" align="left">`

For more details about HTML syntax and detailed examples of its use, consult a HTML tutorial or reference guide.

Standard HTML Styles

ClearPass Guest defines standard CSS classes you can use to provide consistent formatting within the user interface.

Examples of these styles are given below.

Table 113: *Formatting Classes*

Class Name	Applies To	Description
nwaIndent	Tables	Indent style used in tables
nwaLayout	Tables	Used when you want to lay out material in a table without the material looking as if it is in a table; in other words, without borders
nwaContent	Tables	Class used for a standard table with borders
nwaTop	Table Header	Table heading at top
nwaLeft	Table Header	Left column of table
nwaRight	Table Header	Right column of table
nwaBottom	Table Header	Table heading at bottom
nwaBody	Table Cell	Style to apply to table cell containing data
nwaHighlight	Table Cell	Highlighted text (used for mouseover)
nwaSelected	Table Cell	Selected text (table row after mouse click)
nwaSelectedHighlight	Table Cell	Selected text with mouseover highlight
nwaInfo	All	Informational text message
nwaError	All	Error text message

Class Name	Applies To	Description
nwaImportant	All	Text that should be prominently displayed Table subheadings
nwaUsername	All	Text used to display a username
nwaPassword	All	Text used to display a password

Smarty Template Syntax

ClearPass Guest's user interface is built using the Smarty template engine. This template system separates the program logic and visual elements, enabling powerful yet flexible applications to be built.

When customizing template code that is used within the user interface, you have the option of using Smarty template syntax within the template. Using the programming features built into Smarty, you can add your own logic to the template. You can also use predefined template functions and block functions to ensure a consistent user interface.

Basic Template Syntax

Following is a brief introduction to the usage of the Smarty template engine. For more information, please refer to the Smarty documentation at http://www.smarty.net/docs.php, or the Smarty Crash Course at http://www.smarty.net/crashcourse.php.

Text Substitution

Simple text substitution in the templates may be done with the syntax **{$variable}**, as shown below:

```
The current page's title is: {$title}
```

Template File Inclusion

To include the contents of another file, this can be done with the following syntax:

```
{include file="public/included_file.html"}
```

Smarty template syntax found in these files is also processed, as if the file existed in place of the **{include}** tag itself.

Comments

To remove text entirely from the template, comment it out with the Smarty syntax `{* commented text *}`. Be aware that this is different from an HTML comment, in that the Smarty template comment will never be included in the page sent to the Web browser.

Variable Assignment

To assign a value to a page variable, use the following syntax:

```
{assign var=name value=value}
```

The "value" can be a text value (string), number, or Smarty expression to be evaluated, as shown in the examples below:

```
{assign var=question value="forty plus two"}
The question is: {$question}
{assign var=answer value=42}
The answer is: {$answer}
{assign var=question_uppercase value=$question|strtoupper}
THE QUESTION IS: {$question_uppercase}
```

Conditional Text Blocks

To include a block of text only if a particular condition is true, use the following syntax:

```
{if $username != ""}
  <tr>
   <td class="nwaBody">Username:</td>
   <td class="nwaBody">{$username}</td>
  </tr>
{else}
  <!-- No user name, no table row -->
{/if}
```

The condition tested in the **{if} ... {/if}** block should be a valid PHP expression. The **{else}** tag does not require a closing tag.

Script Blocks

The brace characters **{** and **}** are specially handled by the Smarty template engine. Using text that contains these characters, such as CSS and JavaScript blocks, requires a Smarty block **{literal} ... {/literal}**:

```
<script type="text/javascript" language="JavaScript">
{literal}
<!--
function my_function() {
    // some Javascript code here
}
// -->
{/literal}
</script>
```

Failing to include the **{literal}** tag will result in a Smarty syntax error when using your template. Single instances of a **{** or **}** character can be replaced with the Smarty syntax **{ldelim}** and **{rdelim}** respectively.

Repeated Text Blocks

To repeat a block of text for each item in a collection, use the **{section} ... {/section}** tag:

```
{section loop=$collection name=i}
<tr>
  <td class="nwaBody">
   {$collection[i].name}
  </td>
</tr>
{sectionelse}
  <!-- included if $collection is empty -->
{/section}
```

The content after a **{sectionelse}** tag is included only if the **{section}** block would otherwise be empty.

Foreach Text Blocks

An easier to use alternative to the **{section} ... {/section}** tag is to use the **{foreach} ... {/foreach}** block:

```
{foreach key=key_var item=item_var from=$collection}
  {$key_var} = {$item_var}
{foreachelse}
  <!—included if $collection is empty -->
{/foreach}
```

The advantage of this syntax is that each item in the collection is immediately available as the named item variable, in this example **{$item_var}**. This construct is also useful when iterating through associative arrays indexed by key, as the key is immediately available with each item.

A `name=` attribute may be supplied with the opening **{foreach}** tag. When a name is supplied, the following additional Smarty variables are available for use inside the **{foreach} ... {/foreach}** block:

- **{$smarty.foreach.*name*.first}** – true if the item being processed is the first item in the collection
- **{$smarty.foreach.*name*.last}** – true if the item being processed is the last item in the collection
- **{$smarty.foreach.*name*.index}** – counter for the current item, starting at 0 for the first item
- **{$smarty.foreach.*name*.iteration}** – counter for the current item, starting at 1 for the first item
- **{$smarty.foreach.*name*.total}** – value indicating the total number of items in the collection

The content after a **{foreachelse}** tag is included only if the **{foreach}** block would otherwise be empty.

Modifiers

Smarty provides *modifiers* that can be used to gain greater control over the formatting of data. Modifiers can be included by following a variable with a vertical bar **|** and the name of the modifier. Any arguments to the modifier can be specified using a colon **:** followed by the arguments.

The following example prints a date using the YYYY-MM-DD syntax:

```
{$expire_time|nwadateformat:"%Y-%m-%d"}
```

See "Date/Time Format Syntax" on page 496 for detailed information on the date/time format modifiers, and see Table 114.

Table 114: *Smarty Modifiers*

Modifier	Description
htmlspecialchars	Escapes characters used in HTML syntax with the equivalent HTML entities (& for &, < for < and > for >)
nl2br	Replaces newline characters in the value with HTML line breaks (** **)
number_format	Formats a numerical value for display; an optional modifier argument may be used to specify the number of decimal places to display (default is 0)
nwadateformat	Date/time formatting; see "nwadateformat Modifier" on page 496 for details about this modifier function
nwatimeformat	Date/time formatting; see "Date/Time Format String Reference" on page 497 for details about this modifier function
nwamoneyformat	Formats a monetary amount for display purposes; an optional modifier argument may be used to specify the format string. This modifier is equivalent to the NwaMoneyFormat() function; see "NwaMoneyFormat" on page 501 for details.
strtolower	Converts the value to lowercase
strtoupper	Converts the value to uppercase
ucfirst	Converts the first character of the value to uppercase
ucwords	Converts the first character of each word in the value to uppercase

Predefined Template Functions

Template functions are used to perform different kinds of processing when the template is used. The result of a template function takes the place of the function in the output of the template.

Functions are of two kinds: *block functions*, which have a beginning and ending tag enclosing the text operated on by the function, and *template functions*, which have just a single tag and do not enclose text.

To use a function, enclose the function name in curly braces **{ }** and provide any attributes that may be required for the function. Block functions also require a closing tag.

dump

`{dump var=$value}`

Smarty registered template function. Displays the value of a variable.

Use the following Smarty syntax to print a variable's contents:

```
{dump var=$var_to_dump export=html}
```

The contents of the variable are printed in a **<pre>** block. Use the attribute "export=1" to use PHP's `var_export()` format, or omit this attribute to get the default behavior – PHP's `var_dump()` format.

Use the attribute "html=1" to escape any HTML special characters in the content. This can also be done with attribute "export=html", and is recommended for use in most situations (so that any embedded HTML is not interpreted by the browser).

nwa_commandlink

`{nwa_commandlink} … {/nwa_commandlink}`

Smarty registered block function. Generates a "command link" consisting of an icon, main text and explanatory text.

Command links are block elements and are roughly the equivalent of a form button. A command link is typically used to represent a choice the user should make to proceed. The command link contains an icon, command text (that sums up the action taken by the command link), and any explanatory text needed for the command.

Usage example:

```
{nwa_commandlink icon="images" command="Command Link" linkwidth="400"
commandclass="nwaImportant" text="This is a sentence explaining the command."
textclass="nwaInfo"}link_here.php{/nwa_commandlink}
```

- The "icon" parameter is the SRC to the image of the icon. This should normally be a relative path.
- The "command" parameter is the main text of the command link.
- The "text" parameter is the explanatory text describing the action that lies behind the command link. (This is optional.)
- The "linkwidth" parameter, if specified, indicates the width of the command link in pixels. This should be at least 250; the recommended value is 400.
- The "width" and "height" parameters, if specified, provide the dimensions of the icon to display. If not specified, this is automatically determined from the image.
- The "onclick" parameter, if specified, provides the contents for the onclick attribute of the link.
- The "commandclass" parameter, if specified, sets the class attribute of the DIV element enclosing the command text. The default class is "nwaImportant".
- The "textclass" parameter, if specified, sets the class attribute of the P element enclosing the command link's descriptive text. The default class is "nwaInfo".
- The "alt" parameter, if specified, sets the ALT attribute of the command link's icon. If not specified, the default alt text used is the command text.

- The “target” parameter, if specified, sets the TARGET attribute of the hyperlink. If not specified, no TARGET attribute is provided.

The body of the element is the HREF of the command link. The “icon” and “command” parameters are required. All other parameters are optional.

nwa_iconlink

```
{nwa_iconlink} … {/nwa_iconlink}
```

Smarty registered block function. Generates a combined icon and text link to a specified URL.

Usage example:

```
{nwa_iconlink icon="images/icon-info22.png" text="More Information"}more_information.php
{/nwa_iconlink}
```

- The “icon” parameter is the SRC to the image of the icon. This should normally be a relative path.
- The “text” parameter is the text to display next to the icon. This will also be used as the alternate text (that is, a tooltip) for the icon image.
- The “width” and “height” parameters, if specified, provide the dimensions of the icon to display. If not specified, this is automatically determined from the image.
- The “onclick” parameter, if specified, provides the contents for the onclick attribute of the link.
- The “target” parameter, if specified, provides the contents for the target attribute of the link.
- The “alt” parameter, if specified, sets the ALT attribute of the icon. If not specified, the default alt text used is the icon text.
- The “style” parameter, if specified, provides CSS for the SPAN element used to implement the icon link.

The body of the element is the HREF of the link. This HREF will be added to both the icon and the text. If the content of the link is empty, no link will be inserted. This can be used to insert an icon and text as an inline group. No HTML entity escaping is performed when inserting content using this function.

nwa_icontext

```
{nwa_icontext} … {/nwa_icontext}
```

Smarty registered block function. Generates a block of text with a marker icon displayed in the top left.

Usage examples:

```
{nwa_icontext icon="images/icon-info22.png"}Text to display{/nwa_icontext}
{nwa_icontext type="info"}Information block{/nwa_icontext}
```

- The “icon” parameter, if specified, is the SRC to the image of the icon. This should normally be a relative path.
- The “width” and “height” parameters, if specified, provide the dimensions of the icon to display. If not specified, this is automatically determined from the image.
- The “alt” parameter, if specified, provides the alternate text for the icon.
- The “class” parameter, if specified, is the style name to apply to a containing DIV element wrapped around the content. If this is empty, and a default is not provided through the “type” parameter, no wrapper DIV is added.
- The “style” parameter, if specified, is the CSS inline style to apply to a containing DIV element, as for the “class” parameter.
- The “type” parameter, if specified, indicates a predefined style to apply; this may be one of the following:
  - **error** – red cross symbol
  - **fatal** – skull symbol

- **info** – information symbol
- **note** (or **arrow**) – right-pointing arrow
- **ClearPass Guest** – ClearPass Guest logo
- **ok** (or **tick**) – green tick mark
- **warn** (or **warning**) – warning symbol
- **wait** – animated spinner

If "noindent=1" is specified, the block is not indented using the 'nwaIndent' style. If "novspace=1" is specified, the block uses a 'DIV' element, rather than a 'P' element. If neither "icon" nor "type" is supplied, the default behavior is to insert an "info" type image. Specifying a "type" is equivalent to specifying an "icon", "width", "height" and "alt" parameter, and may also include a "class" depending on the type selected.

Usage example:

```
{nwa_icontext struct=$error}{/nwa_icontext}
```

The "struct" parameter, if specified, uses a standard result type. If the "error" key is set and non-zero, the "type" parameter is set to the value error, and the "message" key is converted to a HTML formatted error message for display.

nwa_quotejs

```
{nwa_quotejs} … {/nwa_quotejs}
```

Smarty registered block function. Quotes its content in a string format suitable for use in JavaScript. This function also translates UTF-8 sequences into the corresponding JavaScript Unicode escape sequence (\uXXXX)

Usage example:

```
{nwa_quotejs}String with ' and "{/nwaquote_js}
```

The output of this will be:

```
'String with \' and \"'
```

The "body" parameter, if set, indicates that the string quotes are already supplied; in this case the beginning and ending quotes are not included in the output.

nwa_radius_query

```
{nwa_radius_query _method=MethodName _assign=var …}
```

Smarty registered template function. Performs accounting-based queries on the RADIUS server and returns the result for use in a template.

Usage example:

```
{nwa_radius_query _method=GetCallingStationTraffic
  callingstationid=$dhcp_lease.mac_address
  from_time=86400 in_out=out _assign=total_traffic}
```

This example uses the `GetCallingStationTraffic` query function and passes the "callingstationid", "from_time" and "in_out" parameters. The result is assigned to a template variable called total_traffic, and will not generate any output.

This template function accepts the following parameters to select a RADIUS database and other connection options:

- **_db** – ID of the RADIUS database service handler (this parameter is optional, the default service handler will be used if it not set)
- **_debug** – Set to a nonzero value to enable debugging
- **_quiet** – Set to a nonzero value to inhibit warning/error messages

The following parameters control the query to be executed:

- **_method** (required) – Name of the query function to execute. A brief listing of the available methods is provided below.
- **_arg0, _arg1, ..., _argN** (optional) – Positional arguments for the query function.
- Named arguments may also be supplied; the arguments must be named identically to the function arguments listed in the documentation for the query function.

The following parameters control how the result should be processed:

- **_assign** – Name of a page variable to store the output; if not set, output is sent to the browser as the result of evaluating the template function.
- **_output** – Index of item to return from the RPC result; if not set, the complete result is returned. This may be of use when an array containing multiple values is returned and only one of these values is required.
- **_default** – Default value to display or return if an error occurs or the _output field is not available in the result.

For ease of use, "assign" is also supported as a synonym for "_assign".

This template function does not generate any output if the **_assign** parameter is set.

The methods that are available for use with this function are listed below. The $criteria array consists of one or more criteria on which to perform a database search. The array is used for advanced cases where pre-defined helper functions do not provide required flexibility.

ChangeToRole()

```
ChangeToRole($username, $role_name)
```

Changes the RADIUS role assigned to the user. If the user currently has active sessions, this function will trigger an RFC 3576 Change-of-Authorization (CoA) Request to the network access server.

The $username parameter specifies the user account to modify; use the expression GetAttr('User-Name') to use the value from the RADIUS User-Name attribute.

The $role_name parameter specifies the name of the RADIUS User Role to apply to the user.

Example:

Use the following as a conditional expression for an attribute. If the user's traffic in the past 24 hours exceeds 50 MB, the user is changed to the "Over-Quota" role.

```
return GetUserTraffic(86400) > 50e6 && ChangeToRole("Over-Quota");
```

GetCallingStationCurrentSession()

```
GetCallingStationCurrentSession($callingstationid, $mac_format = null)
```

Looks up the current (most recent) active session for the specified calling station ID.

Because different NAS equipment can send differently-formatted MAC addresses in the Calling-Station-Id attribute, the `$mac_format` argument may be specified. This should be a sprintf-style format string that accepts 6 arguments (the octets of the MAC address). The default if not specified is the IEEE 802 standard format, **%02X-%02X-%02X-%02X-%02X-%02X** – that is, uppercase hexadecimal with each octet separated with a hyphen.

See "GetCurrentSession()" on page 488 for details of the return value.

GetCallingStationSessions()

```
GetCallingStationSessions($callingstationid, $from_time, $to_time = null, $mac_format =
null)
```

Calculate the number of sessions for accounting records matching a specific calling-station-id. The calling station id address is looked up automatically from the RADIUS Access-Request (Calling-Station-ID attribute).

Because different NAS equipment can send differently-formatted MAC addresses in the Calling-Station-Id attribute, the `$mac_format` argument may be specified. This should be a sprintf-style format string that accepts 6 arguments (the octets of the MAC address). The default if not specified is the IEEE 802 standard format, **%02X-%02X-%02X-%02X-%02X-%02X** – that is, uppercase hexadecimal with each octet separated with a hyphen.

See "GetTraffic()" on page 490 for details on how to specify the time interval.

GetCallingStationTime()

```
GetCallingStationTime($callingstationid, $from_time, $to_time = null, $mac_format = null)
```

Calculate sum of session times in a specified time interval.

Because different NAS equipment can send differently-formatted MAC addresses in the Calling-Station-Id attribute, the `$mac_format` argument may be specified. This should be a sprintf-style format string that accepts 6 arguments (the octets of the MAC address). The default if not specified is the IEEE 802 standard format, **%02X-%02X-%02X-%02X-%02X-%02X** – that is, uppercase hexadecimal with each octet separated with a hyphen.

The calling station ID is looked up automatically from the RADIUS Access-Request (Calling-Station-ID attribute).

See "GetTraffic()" on page 490 for details on how to specify the time interval.

GetCallingStationTraffic()

```
GetCallingStationTraffic($callingstationid, $from_time, $to_time = null,
$in_out = null, $mac_format = null)
```

Calculate sum of traffic counters in a time interval. Sessions are summed if they have the same Calling-Station-Id attribute as that specified in the RADIUS Access-Request.

If no Calling-Station-Id attribute was included in the request, returns zero.

Because different NAS equipment can send differently-formatted MAC addresses in the Calling-Station-Id attribute, the `$mac_format` argument may be specified. This should be a sprintf-style format string that accepts 6 arguments (the octets of the MAC address). The default if not specified is the IEEE 802 standard format, **%02X-%02X-%02X-%02X-%02X-%02X** – that is, uppercase hexadecimal with each octet separated with a hyphen. This string matches what ClearPass Guest sees from the NAS.

The time interval specified by `$from_time` and optionally `$to_time` is also used to narrow the search.

If `$to_time` is not specified, `$from_time` is a "look back" time, that is, the time interval in seconds before the current time.

If `$to_time` is specified, the interval considered is between `$from_time` and `$to_time`.

`$in_out` may be "in" to count only input octets, "out" to count only output octets, or any other value to count both input and output octets towards the traffic total.

Examples:

- Use the following as the condition expression for a RADIUS role attribute. Authorizes a user only if their total traffic (in + out) in the past day does not exceed 10 MB. Be aware that the attribute with this condition expression will never be included in the response!
- return GetUserTraffic(86400) > 10485760 && AccessReject()
- Like the above, but only considers output (that is, user downloads):
- return GetUserTraffic(86400,'out') > 10485760 && AccessReject()
- Another way to limit the past 30 days downloads to 100 MB:

- return GetUserTraffic($now - 86400*30, $now, 'out') > 100*1024*1024 && AccessReject()
- Limit by MAC address, 50 MB download in past 24 hours:

```
return GetCallingStationTraffic(86400, 'out') > 50000000 && AccessReject()
```

GetCurrentSession()

```
GetCurrentSession($criteria)
```

Looks up the details for an active session, based on the specified criteria.

This is a multi-purpose function that has a very flexible query interface. For ease of use, consider using one of the related functions "GetCallingStationCurrentSession()" on page 486, "GetIpAddressCurrentSession()" on page 488, or "GetUserCurrentSession()" on page 491.

Returns null if there is no matching session, otherwise returns a single session array – a typical result follows:

```
array (
  'id' => '2073',
  'acctsessionid' => '4a762dbf00000002',
  'acctuniqueid' => 'c199b5a94ebf5184',
  'username' => 'demo@example.com',
  'realm' => '',
  'role_name' => 'Guest',
  'nasipaddress' => '192.168.2.20',
  'nasportid' => '',
  'nasporttype' => '',
  'calledstationid' => '',
  'callingstationid' => '',
  'acctstarttime' => '1249258943',
  'connectinfo_start' => '',
  'acctstoptime' => NULL,
  'connectinfo_stop' => NULL,
  'acctsessiontime' => 0,
  'acctinputoctets' => 0,
  'acctoutputoctets' => 0,
  'acctterminatecause' => NULL,
  'servicetype' => '',
  'framedipaddress' => '192.168.2.3',
  'framedprotocol' => '',
  'acctauthentic' => '',
  'nastype' => 'cisco_3576',
  'nas_name' => 'centos',
  'total_traffic' => 0,
  'state' => 'stale',
  'traffic_input' => 0,
  'traffic_output' => 0,
  'traffic_usage' => 0,
  'session_time' => 29641260,
)
```

GetIpAddressCurrentSession()

```
GetIpAddressCurrentSession($ip_addr = null)
```

Looks up the current (most recent) active session for the specified client IP address. If ip_addr is not specified, it defaults to the current value of $smarty.server.REMOTE_ADDR, which may not be the same value as the IP address of the session if there is a NAT.

See "GetCurrentSession()" on page 488 for details of the return value.

GetIpAddressSessions()

```
GetIpAddressSessions($ip_addr, $from_time = null, $to_time = null)
```

Calculate the number of sessions for accounting records matching a specific IP address. The IP address attribute is looked up automatically from the RADIUS Access-Request (Framed-IP-Address attribute).

See "GetTraffic()" on page 490 for details on how to specify the time interval.

See "GetIpAddressTraffic()" on page 489 for additional details on the `$ip_addr` argument.

GetIpAddressTime()

```
GetIpAddressTime($ip_addr, $from_time = null, $to_time = null)
```

Calculate sum of session times in a specified time interval. The IP address is looked up automatically from the RADIUS Access-Request (Framed-IP-Address attribute).

See "GetTraffic()" on page 490 for details on how to specify the time interval.

See "GetIpAddressTraffic()" on page 489 for additional details on the `$ip_addr` argument.

GetIpAddressTraffic()

```
GetIpAddressTraffic($ip_addr, $from_time = null, $to_time = null, $in_out = null)
```

Calculate sum of traffic counters in a time interval. The IP address used is determined based on the context. If processing a RADIUS Access-Request, the IP address is determined using the Framed-IP-Address attribute. If processing a HTTP request, the current client IP address is assumed (from $_SERVER['REMOTE_ADDR']).

Specifying an empty value for the IP address (such as null, false, or empty string) also causes the current client IP address to be used.

See "GetTraffic()" on page 490 for details on how to specify the time interval.

GetSessions()

```
GetSessions($criteria, $from_time, $to_time = null)
```

Calculate the number of sessions from accounting records in the database.

This is a multi-purpose function that has a very flexible query interface. For ease of use, consider using one of the related functions "GetCallingStationSessions()" on page 486, "GetIpAddressSessions()" on page 488, "GetUserActiveSessions()" on page 490, or "GetUserSessions()" on page 491.

`$criteria` is the criteria on which to search for matching accounting records.

As well as the criteria specified, the time interval specified by `$from_time` and optionally `$to_time` is also used to narrow the search.

If `$to_time` is not specified, `$from_time` is a "look back" time, that is, the time interval in seconds before the current time.

If `$to_time` is specified, the interval considered is between `$from_time` and `$to_time`.

Returns the total number of sessions for matching accounting records in the time interval specified.

GetSessionTimeRemaining()

```
GetSessionTimeRemaining($username, $format = "relative")
```

Calculates the session time remaining for a given user account, if the user account was to be authenticated at the moment of the call.

The $username parameter is required. This is the username for the authentication.

The $format parameter is optional, and defaults to “relative” if not otherwise specified. This parameter may be one of the following values:

- “relative” or “session_time”: Calculates the session timeout as for the Session-Timeout RADIUS attribute, that is, the number of seconds before the session should end. If the session does not have a session timeout, the value returned is 0.
- “time”: Calculates the session end time, as the UNIX time at which the session should end. If the session does not have an expiration time, the value returned is 0.
- Other values: These are interpreted as a date format (see “NwaDateFormat”) and the session end time is returned in this format. (Examples: “iso8601”, “longdate”, “recent”, ‘%Y-%m-%d %H:%M’, etc.). If the session does not have an expiration time, the value returned is a blank string.

GetTime()

```
GetTime($criteria, $from_time, $to_time = null)
```

Calculate the sum of session times for accounting records in the database.

This is a multi-purpose function that has a very flexible query interface. For ease of use, consider using one of the related functions. See "GetCallingStationTime()" on page 487, "GetIpAddressTime()" on page 489, or "GetUserTime()" on page 491.

`$criteria` is the criteria on which to search for matching accounting records.

As well as the criteria specified, the time interval specified by `$from_time` and optionally `$to_time` is also used to narrow the search.

If `$to_time` is not specified, `$from_time` is a “look back” time, that is, the time interval in seconds before the current time.

If `$to_time` is specified, the interval considered is between `$from_time` and `$to_time`.

Returns the total session time for all matching accounting records in the time interval specified.

GetTraffic()

```
GetTraffic($criteria, $from_time, $to_time = null, $in_out = null)
```

Calculate the sum of traffic counters for accounting records in the database.

Revoking access for a device is only possible This is a multi-purpose function that has a very flexible query interface. For ease of use, consider using one of the related functions "GetCallingStationTraffic()" on page 487, "GetIpAddressTraffic()" on page 489, or "GetUserTraffic()" on page 491.

`$criteria` is the criteria on which to search for matching accounting records. The time interval specified by `$from_time` and optionally `$to_time` is used with the criteria to narrow the search.

If `$to_time` is not specified, `$from_time` is a “look back” time, that is, the time interval in seconds before the current time. If `$to_time` is specified, the interval considered is between `$from_time` and `$to_time`.

`$in_out` may be “in” to count only input octets, “out” to count only output octets, or any other value to count both input and output octets towards the traffic total. This argument returns the computed total of traffic for all matching accounting records.

GetUserActiveSessions()

```
GetUserActiveSessions($username, $callingstationid = null)
```

Looks up the list of all sessions for the specified username.

The username attribute is looked up automatically from the RADIUS Access-Request (User-Name attribute). If a `$callingstationid` argument is supplied, sessions that match that Calling-Station-Id are excluded from the count of active sessions.

GetUserActiveSessionCount()

```
GetUserActiveSessionCount($username)
```

Counts the number of currently active sessions for the current username.

The username attribute is looked up automatically from the RADIUS Access-Request (User-Name attribute).

GetUserCumulativeUsage()

```
GetUserCumulativeUsage($username)
```

Looks up the total cumulative time for the username.

The username attribute is looked up automatically from the RADIUS Access-Request (User-Name attribute).

GetUserCurrentSession()

```
GetUserCurrentSession($username)
```

Looks up the current (most recent) active session for the specified username.

See "GetCurrentSession()" on page 488 for details of the return value.

GetUserFirstLoginTime()

```
GetUserFirstLoginTime($username)
```

Looks up the first login time for the specified username.

The username attribute is looked up automatically from the RADIUS Access-Request (User-Name attribute).

GetUserSessions()

```
GetUserSessions($username, $from_time, $to_time = null)
```

Calculate the number of sessions for accounting records matching a specific user-name. The username attribute is looked up automatically from the RADIUS Access-Request (User-Name attribute).

See "GetTraffic()" on page 490 for details on how to specify the time interval.

GetUserTime()

```
GetUserTime($username, $from_time, $to_time = null)
```

Calculate sum of session times in a specified time interval.

See "GetTraffic()" on page 490 for details on how to specify the time interval.

GetUserTraffic()

```
GetUserTraffic($username, $from_time, $to_time = null, $in_out = null)
```

Calculate sum of traffic counters in a time interval. Sessions are summed if they have the same User-Name attribute as that specified in the RADIUS Access-Request.

See "GetCallingStationTraffic()" on page 487 for details on how to specify the time interval.

Advanced Developer Reference

The reference documentation in this section is intended for advanced usage by developers.

nwa_assign

```
{nwa_assign …}
```

Smarty registered template function. Assigns a page variable based on the output of a generator function.

Simple usage example:

```
{nwa_assign var=my_variable value=my_value}
```

- The "var" parameter specifies the page variable that will receive the output.
- The "value" parameter specifies the value to assign to "var".

The various request variables may also be accessed using one of two supported methods:

- `{nwa_assign var=_GET.get_variable value=...}`
- `{nwa_assign var=smarty.get.get_variable value=...}`

The variables that can be accessed this way are _GET (smarty.get), _POST (smarty.post), _REQUEST (smarty.request), _SESSION (smarty.session), _COOKIE (smarty.cookies), and _ENV (smarty.env).

Assigning to values in _SESSION will persist the value for the next page load in the session.

Alternative usage example:

```
{nwa_assign var=userskin_plugin generator=NwaGetPluginDetails arg=$u.userskin}
```

- The "generator" parameter specifies the generator function to be called.
- A single "arg" parameter, if specified, provides a 1-argument form of calling the function; alternatively, "arg1", "arg2", ... may be specified to form an array of arguments to pass to the generator.

nwa_bling

```
{nwa_bling …}
```

Smarty registered template function. Adds various kinds of visual effects to the page.

Usage example:

```
{nwa_bling id=$some_id type=fade}
```

The "id" parameter is the ID of the HTML element to which you will add 'bling' effects The "type" parameter is the kind of bling desired:

- "fade": element smoothly fades in and out
- "blink": element blinks slowly

nwa_makeid

```
{nwa_makeid …}
```

Smarty registered template function. Creates a unique identifier and assigns it to a named page variable. Identifiers are unique for a given page instantiation.

Usage example:

```
{nwa_makeid var=some_id}
```

The "var" parameter specifies the page variable that will be assigned.

Alternative usage:

```
{nwa_makeid var=some_id file=filename}
```

The "file" parameter specifies a file which contains a unique ID. This allows issued IDs to be unique across different page loads. To return the value rather than assign it to a variable, use the syntax:

```
{nwa_makeid [file=filename] output=1}
```

Otherwise, this template function does not generate any output.

nwa_nav

```
{nwa_nav} … {/nwa_nav}
```

Smarty registered block function. Defines a block area for navigation, a control, or generates navigation control HTML of a particular type.

Blocks are individual components of the navigation area, which basically consist of HTML. Blocks for actual navigation items have substitution tags in the form **@tagname@**.

The recognized tags are described in the table below.

Table 115: *Navigation Tags*

Tag	Description
@a@	navigation name
@name@	navigation item name (HTML safe)
@jsname@	navigation item name (JavaScript quoted)
@href@	navigation item hyperlink
@jshref@	navigation item hyperlink (JavaScript quoted)
@icon@	navigation item icon, if specified

When used with the "block" parameter, the {nwa_nav} control does not generate any HTML. When used with the "type" parameter, the {nwa_nav} control uses the previously defined blocks to generate the HTML navigation area. The following types are recognized:

- **simple** – Only the current L1 item has L2 items, L3 only when L2 active
- **all-l1** – All current L1 items are shown to L3, otherwise L1 only
- **expanded** – All L1 items have L2 items, L3 only when L2 active
- **all-expanded** – All items shown to L3

The "reset" parameter may be specified to clear any existing navigation settings.
Usage example:

```
{nwa_nav block=level1_active}<li class="active">@a@</li>{/nwa_nav}{nwa_nav block=level1_
inactive}<li>@a@</li>{/nwa_nav}...{nwa_nav type=simple}{/nwa_nav} {* this generates the
HTML *}
```

Block types can be one of the following types:

- enter_level1_item
- enter_level2_item
- enter_level3_item
- exit_level1_item
- exit_level2_item
- exit_level3_item
- between_level1_items
- between_level2_items
- between_level3_items

- level1_active
- level1_inactive
- level2_active
- level2_inactive
- level2_parent_active
- level2_parent_inactive
- level3_active
- level3_inactive
- enter_level1
- enter_level2
- enter_level3
- exit_level1
- exit_level2
- exit_level3

nwa_plugin

```
{nwa_plugin …}
```

Smarty registered template function. Generates plugin information based on the parameters specified. Specifying which plugin:

- The 'id' parameter specifies a plugin ID.
- The 'name' parameter specifies a plugin name, or plugin filename.
- The 'page' parameter specifies a page name provided by the plugin.
- The 'privilege' parameter specifies a privilege defined by the plugin.

If none of the above is specified, the default is the same as specifying the 'page' parameter with the current script name as argument (that is, the current page).

Specifying the output:

- The 'notfound' parameter specifies the return value, if the plugin was not found (default is the empty string).
- The 'output' parameter specifies the metadata field to return

If 'output' is not specified, the default is 'output=id'; that is, the plugin ID is returned.

nwa_privilege

```
{nwa_privilege} … {/nwa_privilege}
```

Smarty registered block function. Includes output only if a certain kind of privilege has been granted.

Usage examples:

```
{nwa_privilege access=create_user} .. content .. {/nwa_privilege}
```

The "access" parameter specifies the name of a privilege to check for any access.

```
{nwa_privilege readonly=create_user} .. content .. {/nwa_privilege}
```

The "readonly" (synonym "ro") parameter specifies the name of a privilege to check for read-only access. Be aware that an operator with read-write access also has read-only access. To include content if the user ONLY

has read access, that is, not if the user has full access, prefix the privilege name with a **#** character and use the parameter name "readonly" (or "ro").

```
{nwa_privilege full=create_user} .. content .. {/nwa_privilege}
```

The "full" (synonym "rw") parameter specifies the name of a privilege to check for full read-write access. The "name" parameter is the name of the privilege to check. If "name" is prefixed with a "!", the output is included only if that privilege is NOT granted (inverts the sense of the test). An optional "level" parameter may be specified, which is the level of access to the privilege required (default is 0, or any access).

nwa_replace

```
{nwa_replace 1=… 2=…} … {/nwa_replace}
```

Smarty registered block function. Replace %1, %2, etc with the passed parameters 1=, 2=, etc.

Usage example:

```
{nwa_replace 1=$param1 2=$param2 ...}
This is the text resource to be replaced, where %1 and %2
are the arguments, etc.
{/nwa_replace}
```

The numbered parameters are expanded in the translated string with the positional arguments **%1**, **%2** and so forth.

nwa_text

```
{nwa_text} … {/nwa_text}
```

Smarty registered block function. Translates the block's content, if a language pack is available.

Usage example:

```
{nwa_text id=TEXT_ID 1=$param1 2=$param2 ...}
This is the text resource to be translated, where %1 and %2 are the arguments, etc.
{/nwa_text}
```

- The "id" parameter is the text ID of the resource.
- The numbered parameters are expanded in the translated string with the positional arguments **%1**, **%2** and so forth.

nwa_userpref

```
{nwa_userpref …}
```

Smarty template function. Returns the current setting of a user preference (stored with the Web application user account)

Usage examples:

```
{nwa_userpref name=prefName}
{nwa_userpref name=prefName default=10}
{nwa_userpref has=prefName}
```

- "name": return the named user preference
- "default": supply a value to be returned if the preference is not set
- "has": return 1 if the named preference exists for the current user, 0 if the preference does not exist

nwa_youtube

```
{nwa_youtube video=ID width=cx height=cy …} … {/nwa_youtube}
```

Smarty registered block function. Provides simple support for embedding a YouTube video in the body of a page. The content of this block is the initial "alternate content" that will be presented until the YouTube player can be embedded (if it can be embedded).

Not all devices are capable of playing back YouTube video content.

Usage example:

```
{nwa_youtube video=Y7dpJ0oseIA width=320 height=240}
YouTube is the world's most popular online video community.
{/nwa_youtube}
```

The supported parameters for this block function are:

- **video** (required) – the YouTube video ID to embed.
- **width** (required) – the width in pixels of the video.
- **height** (required) – the height in pixels of the video.
- **autoplay** (optional) – if true, auto-play the video.
- **chrome** (optional) – if true, use the chromed player; that is, provide a user experience with playback controls.
- **version** (optional) – the minimum version required to play the video.
- **onended** (optional) – the name of a global function (that is, a member of the JavaScript "window" object) that is to be called at the end of video playback.

Date/Time Format Syntax

This section describes the two basic modifiers available for you to use in ClearPass Guest:

- "nwadateformat Modifier" on page 496
- "nwatimeformat Modifier" on page 497

nwadateformat Modifier

The date format takes one or two arguments – the format description and an optional default value (used if there is no time/date to display). UTF-8 is the character encoding used throughout the application, as this covers languages such as Spanish that use non-ASCII characters.

The full list of special formats is:

Table 116: *Date and Time Formats*

Preset Name	Date/Time Format	Example
hhmmss	%H%M%S	141345
hh:mm:ss	%H:%M:%S	14:13:45
iso8601	%Y%m%d	20080407
iso8601t	%Y%m%d%H%M%S	20080407141345
iso-8601	%Y-%m-%d	2008-04-07
iso-8601t	%Y-%m-%d %H:%M:%S	2008-04-07 14:13:45
longdate	%A, %d %B %Y, %I:%M %p	Monday, 07 April 2008, 2:13 PM

Preset Name	Date/Time Format	Example
rfc822	%a, %d %b %Y %H:%M:%S %Z	Mon, 07 Apr 2008 14:13:45 EST
displaytime	%l:%M %p	2:13 PM
recent	–	2 minutes ago

The % items on the right hand side are the same as those supported by the php function strftime().

The string "**?:**", if present will return the string following the "?:" if the time value is 0. Otherwise, the format string up to the "?:" is used.

See "Date/Time Format String Reference" on page 497 in this chapter for a full list of the supported date/time format string arguments.

Examples of date formatting using the nwadateformat Smarty modifier are as follows:

{$u.expire_time|nwadateformat:"longdate"}
Monday, 07 April 2008, 2:13 PM

{$u.expire_time|nwadateformat:"iso8601"}
20080407

{$u.expire_time|nwadateformat:"iso-8601t"}
2008-04-07 14:13:45

{$u.expire_time|nwadateformat:"iso8601?:N/A"}
20080407 (or **N/A** if no time specified)

{$u.expire_time|nwadateformat:"%m/%d/%Y"}
04/07/2008

nwatimeformat Modifier

The nwatimeformat modifier takes one argument – the format description. The "minutes_to_natural" argument converts an argument specified in minutes to a text string describing an equivalent but more natural measurement for the time interval (hours, days or minutes depending on the value). An example of this usage is for the expire_postlogin field which has a value measured in minutes:

```
{$u.expire_postlogin|nwatimeformat:"minutes_to_natural"}
```

The other formats accepted for this modifier are the same as those described for the nwadateformat modifier. See "nwadateformat Modifier" on page 496.

Date/Time Format String Reference

Table 117: *Date and Time Format Strings*

Format	Result
%a	Abbreviated weekday name for the current locale
%A	Full weekday name for the current locale
%b	Abbreviated month name for the current locale

Format	Result
%B	Full month name for the current locale
%c	Preferred date and time representation for the current locale
%C	Century number (2-digit number, 00 to 99)
%d	Day of the month as a decimal number (01 to 31)
%D	Same as %m/%d/%y
%e	Day of the month as a decimal number; a single digit is preceded by a space (‘ 1’ to ‘31’)
%h	Same as %b
%H	Hour as a decimal number (00 to 23)
%I	Hour as a decimal number (01 to 12)
%m	Month as a decimal number (01 to 12)
%M	Minute as a decimal number (00 to 59)
%p	“AM” or “PM”
%r	Local time using 12-hour clock (%I:%M %p)
%R	Local time using 24-hour clock (%H:%M)
%S	Second as a decimal number (00 to 60)
%T	Current time (%H:%M:%S)
%u	Weekday as a decimal number (1=Monday...7=Sunday)
%w	Weekday as a decimal number (0=Sunday...6=Saturday)
%x	Preferred date representation for the current locale, without the time
%X	Preferred time representation for the current locale, without the date
%y	Year as a decimal number without the century (00 to 99)
%Y	Year as a decimal number
%%	A literal % character

Programmer’s Reference

This section describes the following:

NwaAlnumPassword

```
NwaAlnumPassword($len)
```

Generates an alpha-numeric password (mixed case) of length `$len` characters.

NwaBoolFormat

```
NwaBoolFormat($value, $options = null)
```

Formats a boolean value as a string. If 3 function arguments are supplied, the 2nd and 3rd arguments are the values to return for false and true, respectively. Otherwise, the `$options` parameter specifies how to do the conversion:

- If an integer 0 or 1, the string values "**0**" and "**1**" are returned.
- If a string containing a "**|**" character, the string is split at this separator and used as the values for false and true respectively.
- If an array, the 0 and 1 index values are used for false and true values.
- Otherwise, the string values "true" and "false" are returned.

NwaByteFormat

```
NwaByteFormat($bytes, $unknown = null)
```

Formats a non-negative size in bytes as a human readable number (bytes, KB, MB, GB, etc.) Assumes that 1 KB = 1024 bytes, 1 MB = 1024 KB, etc. If a negative value is supplied, returns the `$unknown` string. If a non-numeric value is supplied, that value is returned directly.

NwaByteFormatBase10

```
NwaByteFormatBase10($bytes, $unknown = null)
```

Formats a non-negative size in bytes as a human readable number (bytes, KB, MB, GB, etc.) Assumes “base 10” rules in measurement; that is, 1 KB = 1000 bytes, 1 MB = 1000 KB, etc. If a negative value is supplied, returns the `$unknown` string. If a non-numeric value is supplied, that value is returned directly.

NwaComplexPassword

```
NwaComplexPassword($len = 8)
```

Generates complex passwords of at least `$len` characters in length, where `$len` must be at least 4. A complex password includes at least 1 each of a lower case character, upper case character, digit, and punctuation (symbol).

NwaCsvCache

```
NwaCsvCache($csv_file, $use_cache = true, $options = null)
```

Loads and parses the contents of a CSV file, using a built-in cache. The cache may be cleaned for a specific file by setting `$use_cache` to false. The cache may be cleaned for ALL files by setting `$csv_file` to the empty string and `$use_cache` to false.

CSV parsing options (see "NwaParseCsv" on page 501) may be specified in `$options`. Additionally, a 2-argument form of this function may be used by passing an array of `$options` as the second argument; in this case, `$use_cache` is assumed to be true. This function returns false if the file does not exist; otherwise, returns an array of arrays containing each of the parsed records from the file.

NwaDigitsPassword($len)

```
NwaDigitsPassword($len)
```

Generates digit-only passwords of at least $len characters in length.

NwaDynamicLoad

```
NwaDynamicLoad($func)
```

Loads the PHP function `$func` for use in the current expression or code block. Returns true if the function exists (that is, the function is already present or was loaded successfully), or false if the function does not exist.

Attempting to use an undefinced function will result in a PHP Fatal Error. Use this function before using any of the standard Nwa...() functions.

NwaGeneratePictureString

```
NwaGeneratePictureString($string)
```

Creates a password based on a format string. For details on the special characters recognized in $string, see "Format Picture String Symbols" on page 515.

NwaGenerateRandomPasswordMix

```
NwaGenerateRandomPasswordMix($password_len, $lower = 1, $upper = 1, $digit = 1, $symbol = -1)
```

Generates a random password that meets a certain minimum complexity requirement.

- `$password_len` specifies the total length in characters of the generated password. The password returned will be at least `$upper + $lower + $digit + $symbol` characters in length. Any length beyond the required minimum will be made up of any allowed characters.
- `$lower` specifies the minimum number of lowercase characters to include, or -1 to not use any lowercase characters.

- `$upper` specifies the minimum number of uppercase characters to include, or -1 to not use any uppercase characters.
- `$digit` specifies the minimum number of digits to include, or -1 to not use any digits.
- `$symbol` specifies the minimum number of symbol characters to include, or -1 to not use any symbol or punctuation characters.

NwaLettersDigitsPassword

```
NwaLettersDigitsPassword($len)
```

Generates an alpha-numeric password of `$len` characters in length consisting of lowercase letters and digits.

NwaLettersPassword

```
NwaLettersPassword($len)
```

Generates a password of `$len` characters in length consisting of lowercase letters.

NwaMoneyFormat

```
NwaMoneyFormat($amount, $format = null)
```

Formats a monetary amount for display purposes. The current page language is used to adjust formatting to the country specified. Returns a result that is guaranteed to be in UTF-8.

The `$format` argument may be null, to specify the default behavior (U.S. English format), or it may be a pattern string containing the following:

- currency symbol (prefix)
- thousands separator
- decimal point
- number of decimal places

The format **"€1.000,00**" uses the Euro sign as the currency symbol, "**.**" as the thousands separator, "**,**" as the decimal point, and 2 decimal places.

If not specified explicitly, the default format is "**$1,000.00**".

NwaParseCsv

```
NwaParseCsv($text, $options = null)
```

Parses text containing comma-separated values and returns the result as a list of records, where each record contains a list of fields. Supports CSV escaping using double quotes.

`$options` may be specified to control additional parsing options described in the table below.

Table 118: *Parsing Options*

Function	Description
fs	The field separator character (default is comma ",")
rs	The record separator character (default is newline "\n")
quo	The quote character (default is double quote ")
excel_compatible	If true, recognize ="..." syntax as well as "..." (default true)

Function	Description
dos_compatible	If true, convert \r\n line endings to \n (default true)
encoding	If set, specifies the input character set to convert from (default not set)
out_charset	If set, specifies the desired character set to convert to using the iconv() function . (default is "UTF-8//TRANSLIT")
max_records	maximum number of records to return
max_fields	maximum number of fields per record
skip_records	number of records to skip at start of input
skip_fields	number of fields to skip at start of each record
sort	post-processing option; order string for NwaCreateUsortFunc to sort the records by the specified column(s)
slice_offset	post-processing option: starting offset of slice to return; see array_slice() function
slice_length	post-processing option: length of slice to return; see array_slice() function

See "NwaParseCsv" on page 501 and "NwaVLookup" on page 503.

NwaParseXml

```
NwaParseXml($xml_text)
```

Parses a string as an XML document and returns the corresponding document structure as an associative array. Returns an array containing the following elements:

- **error** – set if there was a problem parsing the XML
- **message** – describes the parse error

Otherwise, the return is an array with these elements:

- **name** – name of the document element
- **attributes** – attributes of the document element
- **children** – array containing any child elements
- **content** – element content text

NwaPasswordByComplexity

```
NwaPasswordByComplexity($len, $mode = false)
```

Generates a random password of at least `$len` characters in length, based on one of the standard complexity requirements specified in `$mode`. If `$mode` is false or the empty string, the default password complexity is taken from the Guest Manager plugin configuration.

Otherwise, $mode should be one of the following values:

- **none** – No password complexity requirement
- **case** – At least one uppercase and one lowercase letter
- **number** – At least one digit
- **punctuation** – At least one symbol

- **complex** – At least one of each: uppercase letter, lowercase letter, digit, and symbol

NwaSmsIsValidPhoneNumber

```
NwaSmsIsValidPhoneNumber($phone_number)
```

Validates a phone number supplied in E.164 international dialing format, including country code.

- Any spaces and non-alphanumeric characters are removed.
- If the first character is a plus sign (+), the phone number is assumed to be in E.164 format already and the plus sign is removed; otherwise, if the SMS service handler national prefix is set and the phone number starts with that prefix, then the prefix is replaced with the country code.
- The phone number must contain no fewer than 5 and no more than 15 digits.
- The phone number is validated for a valid country code prefix.
- If all the foregoing conditions are met, the validator returns TRUE; otherwise, the validator returns FALSE.

NwaStrongPassword

```
NwaStrongPassword($len)
```

Generate strong passwords of `$len` characters in length.

A strong password may contain uppercase letters, lowercase letters, digits and certain symbols. The strong password does not contain commonly-confused characters such as “O” and “0” (capital O and zero), “I” and “l” (capital I and lowercase L), “2” and “Z” (two and capital Z), or “8” and “B” (eight and capital B).

NwaVLookup

```
NwaVLookup($value, $table, $column_index, $range_lookup = true, $value_column = 0, $cmp_fn
= null)
```

Table lookup function, similar to the Excel function VLOOKUP(). This function searches for a value in the first column of a table and returns a value in the same row from another column in the table. This function supports the values described in the table below.

Table 119: *NwaVLookup Options*

Option	Description
$value	The value to be searched for
$table	A 2D array of data to search; for example, a data table returned by NwaCsvCache() or NwaParseCsv()
$column_index	The desired index of the data
$range_lookup	Specifies whether to find an exact or approximate match. If true (default), assumes the table is sorted and returns either an exact match, or the match from the row with the next largest value that is less than `$value`. If false, only an exact match is returned; NULL is returned on no match
value_column	Specifies the column index in the table that contains the values; the default is 0; in other words, the first column.
$cmp_fn	Specifies a comparison function to use for values; if null, the default is used (simple equality operator ==, or the == and > operators if using binary search). The comparison function should take 2 arguments and return a value < 0, == 0, > 0 depending on the sort ordering of the arguments.

Be aware of the following differences from Excel VLOOKUP:

- Column indexes are 0-based.
- Column indexes can also be strings.

See "NwaParseCsv" on page 501 and "NwaCsvCache" on page 500.

NwaWordsPassword

```
NwaWordsPassword($len)
```

Generates a password consisting of two randomly-chosen words, separated by a small number (1 or 2 digits); that is, in the format **word1***XX***word2**. The random words selected will have a maximum length of `$len` characters, and a minimum length of 3 characters. `$len` must be at least 3.

Field, Form, and View Reference

This section describes the following:

GuestManager Standard Fields

The table below describes standard fields available for the GuestManager form.

Table 120: *GuestManager Standard Fields*

Field	Description
account_activation	String. The current account activation time in long form. This field is available on the change_expiration and guest_enable forms. The value is generated from the **do_schedule** and **schedule_time** fields, and may be one of the following: • Account will be enabled at *date andtime* • Account is currently active • No account activation
auto_update_account	Boolean flag indicating that an already existing account should be updated, rather than failing to create the account. This field should normally be enabled for guest self-registration forms, to ensure that a visitor that registers again with the same email address has their existing account automatically updated. Set this field to a non-zero value or a non-empty string to enable automatic update of an existing account. This field controls account creation behavior; it is not stored with created visitor accounts.
auto_update_account	Boolean flag indicating that an already existing account should be updated,

Field	Description
	rather than failing to create the account. This field should normally be enabled for guest self-registration forms, to ensure that a visitor that registers again with the same email address has their existing account automatically updated. Set this field to a non-zero value or a non-empty string to enable automatic update of an existing account. This field controls account creation behavior; it is not stored with created visitor accounts.
captcha	Special field used to enable the use of a CAPTCHA security code on a form. This field should be used with the user interface type "CAPTCHA security code" and the standard validator NwaCaptchaIsValid in order to provide the standard security code functionality.
change_of_ authorization	Boolean flag indicating that any existing sessions for a visitor account should be disconnected or modified using RFC 3576. If this field is not specified on a form that modifies the visitor account, the default value is taken from the configuration for the RADIUS Services plugin. Set this field to a non-zero value or a non-empty string to enable RFC 3576 updates for active sessions. Set this field to a zero value or the empty string to disable RFC 3576 updates for active sessions.
create_time	Integer. Time at which the account was created. The creation time is specified as a UNIX timestamp. This field is automatically configured with the current time when the Initial Value is set to: `array('generator' => 'time')`
creator_accept_terms	Boolean flag indicating that the creator has accepted the terms and conditions of use. When creating an account, this field must be present, and must be set to the value **1**. If this field is unset, or has any other value, account creation will fail with an error message. To set the correct value for this field, use a check box (to require confirmation from the creator) or a hidden field (if use of the form is considered acceptance of the terms and conditions). This field controls account creation behavior; it is not stored with created visitor accounts.
creator_name	String. Name of the creator of the account. This field does not have a default value. See "sponsor_name" on page 512.
do_expire	Integer that specifies the action to take when the expire time of the account is reached. See "expire_time" on page 506. • 0—Account will not expire • 1—Disable • 2—Disable and logout • 3—Delete • 4—Delete and logout "Disable" indicates that the enabled field will be set to 0, which will prevent further authorizations using this account. "Logout" indicates that a RADIUS Disconnect-Request will be used for all active sessions that have a username matching the account username. This option requires the NAS to support RFC 3576 dynamic authorization. See "RFC 3576 Dynamic Authorization" on page 35 for more information.
do_schedule	Boolean flag indicating if the account should be enabled at schedule_time. Set this field to 0 to disable automatic activation of the account at the activation time. Set this field to 1, and provide a valid time in the schedule_time field, to automatically enable the account at the specified activation time. See "schedule_time" on page 511.
dynamic_expire_time	Integer. Time at which the account will expire, calculated according to the account's expiration timers. The value of this field is a UNIX timestamp. This

Field	Description
	field is available when modifying an account using the change_expiration or guest_edit forms.
dynamic_is_authorized	Boolean flag indicating if the user account is authorized to log in. This field is available when modifying an account using the change_expiration or guest_edit forms.
dynamic_is_expired	Boolean flag indicating if the user account has already expired. This field is available when modifying an account using the change_expiration or guest_edit forms.
dynamic_session_time	Integer. The maximum session time that would be allowed for the account, if an authorization request was to be performed immediately. Measured in seconds. Set to 0 if the account is either unlimited (dynamic_is_expired is false), or if the account has expired (dynamic_is_expired is true). This field is available when modifying an account using the change_expiration or guest_edit forms.
email	String. Email address for the account. This field may be up to 100 characters in length. When creating an account, if the **username** field is not set then the **email** field is used as the username of the account.
enabled	Boolean flag indicating if the account is enabled. Set this field to **0** to disable the account. If an account is disabled, authorization requests for the account will always fail. Set this field to **1** to enable the account.
expiration_time	String. Description of the account's expiration time. This field is set when modifying an account. This field is available on the change_expiration and guest_enable forms. The value is generated from the **do_expire**, **expire_time**, **expire_postlogin** and **expire_usage** fields, and may be one of the following: • Account will expire at *date andtime*, or *interval* after first login, or after *interval* total usage • Account will expire at *date andtime* or *interval* after first login • Account will expire at *date andtime* or after *interval* total usage • Account will expire at *date andtime* • Expires *interval* after first login or after *interval* total usage • Expires *interval* after first login • Expires after *interval* total usage • No expiration time set
expire_time	Integer. Time at which the account will expire. The expiration time should be specified as a UNIX timestamp. Setting an **expire_time** value also requires a non-zero value to be set for the **do_expire** field; otherwise, the account expiration time will not be used. Set this field to **0** to disable this account expiration timer. If the **expire_timezone** field is used in conjunction with **expire_time** and a time zone and date are selected, the date calculation is adjusted relative to the time zone.
expire_timezone	String. Provides a drop-down list of time zones to use in conjunction with **expire_time** and **start_time**. When **expire_timezone** is selected and a date is chosen, the date is adjusted to be relative to the time zone. By default, expire_timezone uses the NwaGenerateTimeZoneList options generator. To use a smaller subset of time zones, change the Options Generator to (Use options) and provide your "value | name" pairs. Please reference the default list for valid time zone values.
expire_usage	Integer. The total time period in seconds for which the account may be used. Usage is calculated across all accounting sessions with the same username. Set

Field	Description
	this field to **0** to disable this account expiration timer.
http_user_agent	String. Identifies the Web browser that you are using. This tracks user's browsers when they are registering. This is stored with the user's account.
id	String. Internal user ID used to identify the guest account to the system.
ip_address	String. The IP address to assign to stations authenticating with this account. This field may be up to 20 characters in length. The value of this field is not currently used by the system. However, a RADIUS user role may be configured to assign IP addresses using this field by adding the Framed-IP-Address attribute, and setting the value for the attribute to: `<?= $user["ip_address"]`
modify_expire_postlogin	String Value indicating how to modify the **expire_postlogin** field. This field is only of use when editing a visitor account. It may be set to one of the following values: • "expire_postlogin" to set the post-login expiration time to the value in the expire_postlogin field; • "plus *X*" or "minus *X*", where *X* is a time measurement, to extend or reduce the post-login expiration timer by *X* (minutes, but may have a "ywdhms" suffix to indicate years, weeks, days, hours, minutes, seconds respectively); • A number, to set the post-login expiration time to the value specified; • Any other value to leave expire_postlogin unmodified. This field controls account modifications; it is not stored with the visitor account.
modify_expire_time	String. Value indicating how to modify the **expire_time** field. This field may be provided when creating or editing a visitor account. It may be set to one of the following values: • "none" to disable the account expiration timer (**do_expire** and **expire_time** will both be set to 0); • "now" to disable the account immediately; • "expire_time" to use the expiration time specified in the **expire_time** field; • "expire_after" to set the expiration time to the current time, plus the number of hours in the **expire_after** field; • "plus *X*" or "minus *X*", where *X* is a time measurement, to extend or reduce the expiration time by *X* (hours, but may have a "ywdhms" suffix to indicate years, weeks, days, hours, minutes, seconds respectively); • A time measurement "*X*", to set the expiration time to the current time plus *X*; • Any other value to leave expire_time unmodified. This field controls account creation and modification behavior; it is not stored with created or modified visitor accounts.
modify_expire_usage	String. Value indicating how to modify the **expire_usage** field. This field is only of use when editing a visitor account. It may be set to one of the following values: • "expire_usage" to set the cumulative usage expiration timer to the value in the expire_usage field; • "plus ***X***" or "minus ***X***", where ***X*** is a time measurement, to extend or reduce the cumulative usage expiration timer by ***X*** (seconds, but may have a "ywdhms" suffix to indicate years, weeks, days, hours, minutes, seconds respectively); • A number, to set the cumulative usage expiration time to the value specified; • Any other value to leave expire_usage unmodified. This field controls account modifications; it is not stored with the visitor account.
modify_password	String. Value indicating how to modify the account password. • It may be one of the following values:

Field	Description
	• "random_password" to use the password specified in the **random_password** field; • "reset" to create a new password, using the method specified in the **random_password_method** field (or the global defaults, if no value is available in this field); • "password" to use the value from the **password** field; • Any other value leaves the password unmodified. This field controls account creation and modification behavior; it is not stored with created or modified visitor accounts.
modify_schedule_time	String. Value indicating how to modify the **schedule_time** field. It may be one of the following values: • "none" to disable the account activation time; • "now" to activate the account immediately; • "schedule_time" to use the activation time specified in the **schedule_time** form field (normally a UNIX time, but may be 0 to disable activation time); • "schedule_after" to set the activation time to the current time plus the number of hours in the **schedule_after** field; • "plus *X*", where *X* is a time measurement, to extend the activation time by *X*. The time measurement is normally hours, but may have a "ywdhms" suffix to indicate years, weeks, days, hours, minutes, or seconds, respectively. Alternatively, this operation may be written equivalently as '+X', 'pX', 'plusX', 'add X', 'addX', or 'aX'. Example: to delay activation time by 2 days, use the value **+2d**. • "minus *X*", where *X* is a time measurement, to reduce the activation time by *X*. See above for details about specifying a time measurement. Alternatively, this operation may be written equivalently as '-X', 'mX', 'minusX', 'sub X', 'subX', or 'sX'. Example: to bring forward activation time by 12 hours, use the value **-12h**. • A time measurement "*X*", to set the activation time to the current time plus *X*. • A time and date specification, to set the activation time to that time and date. Many different formats are specified; for clarity it is recommended that a standard format such as ISO-8601 is used ("YYYY-MM-DD hh:mm:ss" format). • Any other value to leave **schedule_time** unmodified. This field controls account creation and modification behavior; it is not stored with created or modified visitor accounts.
multi_initial_sequence	Integer. Initial sequence number. This field is used when creating guest accounts and the **random_username_method** field is set to "nwa_sequence". If this field is not set, the next available sequence number for the given **multi_prefix** is used. Sequence numbering will start with 0 if no initial sequence number has been set.
multi_prefix	String. The prefix of each username generated when creating guest accounts and the **random_username_method** field is set to "nwa_sequence".
netmask	String. Network address mask to use for stations using the account. This field may be up to 20 characters in length. The value of this field is not currently used by the system. However, a RADIUS user role may be configured to assign network masks using this field by adding the Framed-IP-Netmask attribute, and setting the value for the attribute to: `<?= $user["netmask"]`
no_password	Boolean. If set, prevents a user from changing their own password using the guest self-service portal. Set this field to a non-zero value or a non-empty string to disable guest-initiated password changes. The default is to allow guest-initiated password changes, unless this field is set.

Field	Description
no_portal	Boolean. If set, prevents a user from logging into the guest service portal. Set this field to a non-zero value or a non-empty string to disable guest access to the self-service portal. The default is to allow guest access to the self-service portal, unless this field is set.
no_warn_before	Boolean. User does not receive a logout expiration warning. The admin or user can opt out of this option by setting the field to 1.
notes	String. Comments or notes stored with the account. This field may be up to 255 characters in length.
num_accounts	Integer. The number of accounts to create when using the **create_multi** form. This field controls account creation behavior; it is not stored with created visitor accounts.
password	String. Password for the account. This field may be up to 64 characters in length.
password2	String. Password for the account. If this field is set, its value must match the value of the **password** field for the account to be created or updated. This can be used to verify that a password has been typed correctly. This field controls account creation and modification behavior; it is not stored with created or modified visitor accounts.
password_action	String. Controls the password changing behavior for a guest account. This field may be set to one of the following values: • *empty string* – Default behavior; that is, guests are not required to change their password • **deny** – Prevents the guest from changing their password • **first** – Requires the guest to change their password on their first login • **next** – Requires the guest to change their password on their next login • **recur** – Require the guest to change their password on a regular schedule (as specified by the password_action_recur field) • **recur_next** – Require the guest to change their password on their next (or first) login, and then on a regular schedule (as specified by the password_action_recur field) If the guest is required to change their password, this will take place during a network login, before the guest is redirected to the NAS for login. Guest password changes are only supported for Web login pages and guest self-registration pages that have the "Perform a local authentication check" option enabled. The default behavior is to leave guest passwords under the control of the guest. With the default behavior, guests are not prevented from changing their password, but are also not required to change it on any particular schedule.
password_action_recur	String. Specifies a date or relative time, after which a guest will be required to change their password. Using this field also requires the **password_action** field to be set to the value 'recur'. The value of this field should be a relative time measurement, indicated with a plus sign; for example "+15 days" or "+2 months".
password_last_change	Integer. The time that the guest's password was last changed. The password change time is specified as a UNIX timestamp. This field is automatically updated with the current time when the guest changes their password using the self-service portal.
random_password	String. This field contains a randomly-generated password. This field is set when modifying an account (**guest_edit** form).

Field	Description
random_password_length	String. The length, in characters, of randomly generated account passwords. • For **nwa_words_password,** the **random_password_length** is the maximum length of the random words to use. Two random words will be used to create the password, joined together with a small number (up to 2 digits). • For **nwa_picture_password**, the **random_password_length** is ignored.
random_password_ method	String. Identifier specifying how passwords are to be created. It may be one of the following identifiers: • **nwa_digits_password** to create a password using random digits. The length of the password is specified by the random_password_length field. • **nwa_letters_password** to create a password using random lowercase letters (a through z). The length of the password is specified by the random_ password_length field. • **nwa_lettersdigits_password** to create a password using random lowercase letters and digits (a through z and 0 through 9). The length of the password is specified by the random_password_length field. • **nwa_alnum_password** to create a password using a combination of random digits, uppercase letters and lowercase letters (a-z, A-Z and 0-9). The length of the password is specified by the random_password_length field. • **nwa_strong_password** to create a password using a combination of digits, uppercase letters, lowercase letters, and some punctuation. Certain characters are omitted from the password. The length of the password is specified by the random_password_length field. • **nwa_complex_password** to create a complex password string which contains uppercase letters, lowercase letters, digits and symbol characters. • **nwa_complexity_password** is dynamic and matches your complexity setting for password generation. For example, if you require your passwords to have both letters and digits, then this validator will confirm that the password has at least one of each. • **nwa_words_password** to create a random password using a combination of two randomly-selected words and a number between 1 and 99. The maximum length of each of the randomly-selected words is specified by the **random_password_length** field. • **nwa_picture_password** to create a password using the format string specified by the random_password_picture field.
random_password_picture	String. The format string to use when creating a random password, if **random_ password_method** is set to “nwa_picture_password”.
random_username_length	The length, in characters, of randomly generated account usernames. • For nwa_words_password, the **random_username_length** is the maximum length of the random words to use. Two random words will be used to create the username, joined together with a small number (up to 2 digits). • For nwa_picture_password, the **random_username_length** is ignored. • For nwa_sequence, the **random_username_length** is the length of the sequence number in the username; the sequence number will be zero-padded. For example, specifying a length of 4 will result in sequence numbers 0001, 0002, etc.
random_username_ method	String. Identifier specifying how usernames are to be created. It may be one of the following identifiers: • **nwa_sequence** to assign sequential usernames. In this case, the **multi_ prefix** field is used as the prefix for the username, followed by a sequential number; the number of digits is specified by the **random_username_length** field. • **nwa_picture_password** to create a random username using the format

Field	Description
	string specified by the **random_username_picture** field. • **nwa_digits_password** to create a username using random digits. The length of the username is specified by the **random_username_length** field. • **nwa_letters_password** to create a username using random lowercase letters. The length of the username is specified by the **random_username_length** field. • **nwa_lettersdigits_password** to create a username using random lowercase letters and digits. The length of the username is specified by the **random_username_length** field. • **nwa_alnum_password** to create a username using a combination of random digits, uppercase letters and lowercase letters. The length of the username is specified by the **random_username_length** field. • **nwa_strong_password** to create a username using a combination of digits, uppercase letters, lowercase letters, and some punctuation. Certain characters are omitted from the generated username to ensure its readability (for example, “o”, “O” and “0”). The length of the username is specified by the **random_username_length** field. • **nwa_words_password** to create a username using a combination of two randomly-selected words and a number between 1 and 99. The maximum length of each of the randomly-selected words is specified by the **random_username_length** field.
random_username_picture	String. The format string to use when creating a username, if the **random_username_method** field is set to **nwa_picture_password.** See "Format Picture String Symbols" on page 515 for a list of the special characters that may be used in the format string.
remote_addr	String. The IP address of the guest at the time the guest account was registered.This field may be up to 20 characters in length. The value of this field is not currently used by the system.
role_id	Integer. Role to assign to the account.The value of this field must be the integer ID of a valid RADIUS user role.
role_name	String. Name of the role assigned to the account.
schedule_after	Integer. Time period, in hours, after which the account will be enabled. This field is used when the **modify_schedule_time** field is set to **schedule_after**. The value is specified in hours and is relative to the current time. This field controls account creation behavior; it is not stored with created visitor accounts.
schedule_time	Integer. Time at which the account will be enabled. The time should be specified as a UNIX timestamp.
secret_answer	String. The guest’s answer to the secret question that is stored in the secret_question field. To use this field, first add both the **secret_question** and **secret_answer** fields to a guest self-registration form. Then, in the self-service portal for a guest self-registration page, select the “Secret Question” as the Required Field. This configuration requires that guests provide the correct answer in order to reset their account password. Answers must match with regards to case in order to be considered as correct.
secret_question	String. The guest’s secret question used to confirm the identity of a guest during a reset password operation.
simultaneous_use	Integer. Maximum number of simultaneous sessions allowed for the account.

Field	Description
sponsor_email	Email address of the sponsor of the account. If the **sponsor_email** field can be inserted into an email receipt and used future emails, the “Reply-To” email address will always be the email address of the original sponsor, not the current operator.
sponsor_name	String. Name of the sponsor of the account. The default value of this field is the username of the current operator.
submit	No Type. Field attached to submit buttons. This field controls account creation behavior; it is not stored with created visitor accounts.
user_activity	Integer. Login activity of the guest account. This field is available in views and may be used to determine the most recent start and stop time of visitor account sessions.
username	String. Username of the account. This field may be up to 64 characters in length.
visitor_company	String. The visitor’s company name.
visitor_name	String. The visitor’s full name.
vvisitor_phone	String. The visitor’s contact telephone number.

Hotspot Standard Fields

The table below describes standard fields available for the Hotspot form.

Table 121: *Hotspot Standard Fields*

Field	Description
address	String. The visitor’s street address.
card_code	String. The 3 or 4 digit cardholder verification code printed on the credit card. This field is only used during transaction processing.
card_expiry	String. Credit card expiry date. This field is only used during transaction processing.
card_name	String. Name shown on the credit card. This field is only used during transaction processing.
card_number	String. Credit card number. This field is only used during transaction processing.
city	String. The visitor’s city or town name.
country	String. The visitor’s country name.
first_name	String. The visitor’s first name.
hotspot_plan_id	No Type. The ID of the plan (visitor access settings) selected by the visitor.
hotspot_plan_name	No Type. The name of the plan (visitor access settings) selected by the visitor.
last_name	String. The visitor’s last name.
password2	String. Password for the account (used to confirm a manually typed password).

Field	Description
personal_details	No Type. Field attached to a form label.
purchase_amount	No Type. Total amount of the transaction. This field is only used during transaction processing.
purchase_details	No Type. Field attached to a form label.
state	String. The visitor's state or locality name.
submit_free	No Type. Field attached to a form submit button.
visitor_accept_ terms	Boolean. Flag indicating that the visitor has accepted the terms and conditions of use.
visitor_fax	String. The visitor's fax telephone number.
zip	String. The visitor's zip or postal code.

SMS Services Standard Fields

The table below describes standard fields available for the SMS Services form.

Table 122: *SMS Services Standard Fields*

Field	Description
auto_send_sms	Boolean. Flag indicating that a SMS receipt should be automatically sent upon creation of the account.
sms_auto_send_field	String. This field specifies the name of the field that contains the auto-send flag. If blank or unset, the default value from the SMS plugin configuration is used. Additionally, the special values "_Disabled" and "_Enabled" may be used to never send an SMS or always send an SMS, respectively.
sms_enabled	Boolean. This field may be set to a non-zero value to enable sending an SMS receipt. If unset, the default value is true.
sms_handler_id	String. This field specifies the handler ID for the SMS service provider. If blank or unset, the default value from the SMS plugin configuration is used.
sms_phone_field	String. This field specifies the name of the field that contains the visitor's phone number. If blank or unset, the default value from the SMS plugin configuration is used.
sms_template_id	String. This field specifies the print template ID for the SMS receipt. If blank or unset, the default value from the SMS plugin configuration is used.
sms_warn_before_message	String. This field overrides the logout warning message. If blank or unset, the default value from the Customize SMS Receipt page is used
visitor_carrier	String. The visitor's mobile phone carrier.

SMTP Services Standard Fields

The table below describes standard fields available for the SMTP Services.

Table 123: *SMPT Services Standard Fields*

Field	Description
auto_send_smtp	Boolean. Flag indicating that an email receipt should be automatically sent upon creation of the guest account. Set this field to a non-zero value or a non-empty string to enable an automatic email receipt to be sent. This field can be used to create an *opt-in* facility for guests. Use a check box for the auto_send_smtp field and add it to the create_user form, or a guest self-registration instance, and email receipts will be sent to the visitor only if the check box has been selected. Alternatively, to always send an SMTP receipt, this field can be set to a value of 1 using a hidden field.
smtp_auto_send_field	String. This field specifies the name of the field that contains the auto-send flag. If blank or unset, the default value from the email receipt configuration is used. Additionally, the special values **_Disabled** and **_Enabled** may be used to never send email or always send email, respectively.
smtp_cc_action	String. This field specifies how to send copies of email receipts. It may be one of **never**, **always_cc**, **always_bcc**, **conditional_cc**, or **conditional_bcc**. If blank or unset, the default value from the email receipt configuration is used.
smtp_cc_list	String. This field specifies a list of additional email addresses that will receive a copy of the visitor account receipt. If the value is **default**, the default carbon-copy list from the email receipt configuration is used.
smtp_email_field	String. This field specifies the name of the field that contains the visitor's email address. If blank or unset, the default value from the email receipt configuration is used. Additionally, the special value **_None** indicates that the visitor should not be sent any email.
smtp_enabled	String. This field may be set to a non-zero value to enable sending an email receipt. If unset, the default value from the email receipt configuration is used. The special values **_Auto** (Always auto-send guest receipts by email), **_AutoField** (Auto-send guest receipts by email with a special field set), **_Click** (Display a link enabling a guest receipt via email), and **_Cc** (Send an email to a list of fixed addresses) may also be used.
smtp_receipt_format	String. This field specifies the email format to use for the receipt. It may be one of **plaintext** (No skin – plain text only), **html_embedded** (No skin – HTML only), **receipt** (No skin – Native receipt format), **default** (Use the default skin), or the plugin ID of a skin plugin to specify that skin. If blank or unset, the default value from the email receipt configuration is used.
smtp_subject	String. This field specifies the subject line for the email message. Template variables appearing in the value will be expanded. If the value is **default**, the default subject line from the email receipt configuration is used.
smtp_template_id	String. This field specifies the print template ID to use for the email receipt. If blank or unset, the default value from the email receipt configuration is used.
smtp_warn_before_subject	String. This field overrides what is specified in the subject line under Logout Warnings on the email receipt. If the value is "default", the default subject line under the Logout Warnings section on the email receipt configuration is used.

Field	Description
smtp_warn_before_template_id	String. This field overrides the print template ID specified under Logout Warnings on the email receipt. If the value is “default”, the default template ID under the Logout Warnings section on the email receipt configuration is used.
smtp_warn_before_receipt_format	String. This field overrides the format in the **Email Receipt** field under Logout Warnings. It may be one of “plaintext” (No skin – plain text only), “html_embedded” (No skin – HTML only), “receipt” (No skin – Native receipt format), “default” (Use the default skin), or the plugin ID of a skin plugin to specify that skin. If blank or unset, the default value in the **Email Receipt** Field under the Logout Warnings on the email receipt configuration is used.
smtp_warn_before_cc_list	String. This overrides the list of additional email addresses that receive a copy of the visitor account under Logout Warnings on the email receipt. If the value is “default”, the default carbon-copy list under Logout Warnings from the email receipt configuration is used.
smtp_warn_before_cc_action	String. This field overrides how copies are sent as indicated under Logout Warnings on the email receipt. to send copies of email receipts. It may be one of “never”, “always_cc”, “always_bcc”, “conditional_cc”, or “conditional_bcc”. If blank or unset, the default value from the email receipt configuration is used.
warn_before_from_sponsor	String. This field overrides the **Reply To** field (that is, the sponsor_email field of a user, or the admin's email) under the Logout Warnings on the email receipt. If the value is “default”, the **Reply To** field under Logout Warnings from the email receipt configuration is used.
warn_before_from	String. This field overrides the Override From field under the Logout Warnings on the email receipt. If the value is “default”, the Override From field under Logout Warnings from the email receipt configuration is used.

Format Picture String Symbols

When generating a username or password using the `nwa_picture_password` method, a “picture string” should be provided to specify the format of generated username or password in the **random_username_picture** or **random_password_picture** field.

The picture string is used as the username or password, with the following symbols replaced with a random character:

Table 124: *Picture String Symbols*

Symbol	Replacement
#	Random digit (0-9)
$ or ?	Random letter (A-Z, a-z)
_	Random lowercase letter (a-z)
^	Random uppercase letter (A-Z)
*	Random letter or digit (A-Z, a-z, 0-9)

Symbol	Replacement
!	Random punctuation symbol, excluding apostrophe and quotation marks
&	Random character (letter, digit or punctuation excluding apostrophe and quotation marks)
@	Random letter or digit, excluding vowels

Any other alphanumeric characters in the picture string will be used in the resulting username or password. Some examples of the picture string are shown below:

Table 125: *Picture String Example Passwords*

Picture String	Sample Password
####	3728
user####	user3728
v^^#__	vQU3nj
@@@@@	Bh7Pm

Form Field Validation Functions

See "Form Validation Properties" on page 227, and "Examples of Form field Validation" on page 228 for details about using validation functions for form fields.

The built-in validator functions are:

- **IsArrayKey** – Checks that the value is one of the keys in the array supplied as the argument to the validator.
- **IsArrayValue** – Checks that the value is one of the values in the array supplied as the argument to the validator.
- **IsEqual** – Checks that the value is equal to the value supplied as the argument to the validator, allowing for standard type conversion rules.
- **IsGreaterThan** – Checks that the value is strictly greater than a specified minimum value supplied as the argument to the validator.
- **IsIdentical** – Checks that the value is equal to the value supplied as the argument to the validator, and has the same type.
- **IsInRange** – Checks that the value is in a specified range between a minimum and maximum value. The minimum and maximum values are specified as a 2-element array as the argument to the validator.
- **IsInOptionsList**—Checks against a list of options in the policy definition.
- **IsNonEmpty** – Checks that the value is a non-empty string (length non-zero and not all whitespace), or a non-empty array.
- **IsNonNegative** – Checks that the value is numeric and non-negative.
- **IsRegexMatch** – Checks that the value matches a regular expression supplied as the argument the validator. The regular expression should be a Perl-compatible regular expression with delimiters. For example, the validator argument **/^a/i** will match any value that starts with an “a”, case-insensitively. "Regular Expressions" on page 526 for more information about regular expression syntax.

- **IsValidAirGroupSharedGroups** – Checks that the value is a valid shared group list. Otherwise, returns a description of the error(s).

  If `$arg` is an array it may specify the following options:

  - `syntax_only`: Default `true`. If `false`, requires that the values provided correspond to those from the AirGroup plugin configuration.
  - `protocol_version`: Default `2`. If `1`, changes the default validation properties (see below).
  - `max_groups`: Maximum number of groups to allow, default `32`.
  - `max_group_length`: Maximum length in characters of any single group name, default `64`.
  - `max_group_list_length`: Maximum total length of the group list, including comma separator characters, default `320`.

  Shared groups are only available in AirGroup protocol version 2. If validation is performed with AirGroup protocol version 1 (i.e., `$arg` is set to `array ('protocol_version' => 1)`), then a non-empty group list is considered an error.

  Setting a `max_*` parameter to `0` disables validation of that property.
- **IsValidAirGroupSharedLocations** – Checks that the value is a valid shared location list. Otherwise, returns a description of the error(s).

  1. Checks if a value consists of valid tag = value pairs. Tag should be AP-Name, AP-Group, or FQLN, else error is thrown.
  2. FQLN format is dot-separated and the format is APname.Floor.Building.Campus. Floor bit has to be "floor" + an integer.
  3. The number of tag=value pairs should not be more than 5.
  4. AP-Name value should not contain a '.'

  If `$arg` is an array it may specify the following options:

  - `syntax_only`: Default `true`. If `false`, requires that the values provided correspond to those from the AirGroup controller configuration.
  - `protocol_version`: Default `2`. If `1`, changes the default validation properties (see below).
  - `max_locations`: Maximum number of location tags to allow, default `100`.
  - `max_location_length`: Maximum length in characters of any single location tag, default `64`.
  - `max_location_list_length`: Maximum total length of the shared location list, including comma separator characters, default `1000`.
  - `include_ap_group`: Default `true`. Allows AP-Group=... tags.
  - `include_ap_name`: Default `true`. Allows AP-Name=... tags.
  - `include_fqln`: Default `true`. Allows FQLN=... tags.

  For the same validation as performed in AirGroup protocol version 1, set `$arg` to `array('protocol_version' => 1)`.

  Setting a `max_*` parameter to `0` disables validation of that property.
- **IsValidAirGroupSharedRoles** – Checks that value is a valid shared role list. Otherwise, returns a description of the error(s).

  If `$arg` is an array it may specify the following options:

- `syntax_only`: Default `true`. If `false`, requires that the values provided correspond to those from the AirGroup controller configuration.
- `protocol_version`: Default `2`. If `1`, changes the default validation properties (see below).
- `max_roles`: Maximum number of roles to allow, default `100`.
- `max_role_length`: Maximum length in characters of any single role name, default `64`.
- `max_role_list_length`: Maximum total length of the role list, including comma separator characters, default `1000`.

For the same validation as performed in AirGroup protocol version 1, set `$arg to array('protocol_version' => 1)`.

Setting a `max_*` parameter to `0` disables validation of that property.

- **IsValidAirGroupSharedUser** – Checks that the value is a comma-separated user list, where user names should not contain "," or space.

  If `$arg` is an array it may specify the following options:

  - `protocol_version`: Default 2. If 1, changes the default validation properties (see below).
  - `max_users`: Maximum number of usernames to allow, default 100.
  - `max_user_length`: Maximum length in characters of any single username, default 64.
  - `max_user_list_length`: Maximum total length of the username list, including comma separator characters, default 1000.

  For the same validation as performed in AirGroup protocol version 1, set `$arg` to `array('protocol_version' => 1)`.

  Setting a `max_*` parameter to `0` disables validation of that property.

- **IsValidBool** – Checks that the value is a standard Boolean truth value. Valid Boolean values are the integers **0** and **1** and the PHP values **false** and **true**.
- **IsValidDateTime** – Checks that the value appears to be a valid time specification string according to the rules of the PHP function strtotime(). Valid date/time syntax includes ISO 8601 standard times (**YYYY-MM-DD hh:mm:ss**) with and without time zone specifications, as well as many other formats. The `$value` is expected to be an integer specifying a UNIX time value (seconds since 1970-01-01 00:00:00 UTC).

  `$arg` may be:

  - `null`, to not perform any min/max check
  - a scalar value, to use as the maximum allowable value
  - an array containing "`min`" or "`max`" entries

  Use the syntax:

  ```
  array(
    'min' => '1 day',
    'max' => '90 days',
  )
  ```

- **IsValidEmail** – Checks that the value appears to be a valid RFC 822-compliant email address. When using the IsValidEmail validator, the validator argument may be specified with a whitelist/blacklist of domain names. Use the syntax:

  ```
  array(
    'allow' => array(
      'corp-domain.com',
      'other-domain.com',
    ),
  ```

```
  'deny' => array(
    'blocked-domain.com',
    'other-blocked-domain.com',
  ),
)
```

- The keys 'whitelist' and 'blacklist' may also be used for 'allow' and 'deny', respectively.
- An 'allow' or 'deny' value that is a string is converted to a single element array.
- Wildcard matching may be used on domain names: the prefix '*.' means match any domain that ends with the given suffix. A '*' component can also be used inside the hostname, and will match zero or more domain name components.
- If the 'allow' list is empty or unset, the default behavior is to accept ALL domains other than those listed in the 'deny' list.
- If the 'deny' list is empty or unset, the default behavior is to deny ALL domains other than those listed in the 'allow' list.
- If both 'allow' and 'deny' lists are provided, the default behavior is to accept a domain name that does not match any of the patterns provided. The 'allow' list is checked first, followed by 'deny'. To obtain the opposite behavior, specify the wildcard '*' as the last entry in the 'deny' list.

- **IsValidFileUpload** – Checks that the value is a file upload.
- **IsValidFutureDateTime** – Checks that the value is a valid time specification string according to the rules of the PHP function strtotime(), and that the time specification refers to a point in the future. The `$value` is expected to be an integer specifying a UNIX time value (seconds since 1970-01-01 00:00:00 UTC).

  `$arg` may be:

  - `null`, to not perform any min/max check
  - a scalar value, to use as the maximum allowable value
  - an array containing "`min`" or "`max`" entries

  Use the syntax:

  ```
  array(
    'min' => '1 day',
    'max' => '90 days',
  )
  ```

- **IsValidFutureTimestamp** – Checks that the value is a valid UNIX time referring to a point in the future. The `$value` is expected to be an integer specifying a UNIX time value (seconds since 1970-01-01 00:00:00 UTC).

  `$arg` may be:

  - `null`, to not perform any min/max check
  - a scalar value, to use as the maximum allowable value
  - an array containing "`min`" or "`max`" entries

  Use the syntax:

  ```
  array(
    'min' => '1 day',
    'max' => '90 days',
  )
  ```

- **IsValidHostname** – Checks that the value is a valid IP address or a hostname that resolves to an IP address.

- **IsValidHostnameCidr** – Checks that the value is a valid IP address or hostname, which may also have an optional /N suffix indicating the network prefix length in bits (CIDR notation).
- **IsValidHostnamePort** – Checks that the value is a valid IP address or hostname, which may optionally include a port number specified with the syntax **hostname:port**.
- **IsValidIpAddr** – Checks that the value is a valid IP address.
- **IsValidLdapAttribute** – Checks that the value is a valid LDAP attribute name; that is, a string that starts with a letter, and which contains only letters, numbers, underscore (_) and hyphen (-).
- **IsValidNetmask** – Checks that the value is a valid network mask in dotted-quad notation; that is, an IP address such as 255.255.255.128 that contains a single string of *N* 1 bits followed by (32 – *N*) 0 bits.
- **IsValidNumber** – Checks that the value is numeric; that is, an integer or a decimal value. The validator argument may be an array containing one or more of the following additional options:
  - **no_negative** – if set to true, negative numbers are not accepted as a valid value.
  - **no_zero** – if set to true, zero is not accepted as a valid value.
  - **only_integer** – if set to true, decimal numbers are not accepted and only integer values are valid.
- **IsValidPassword2** – Checks that the value is a valid password that satisfies certain requirements. The validator argument must be an array describing which of the following requirements to check. To perform any password checking, the "minimum_length" and "complexity_mode" fields must be specified.
  - **password2** – specifies the name of the field containing the duplicate password entry (optional, for password validation). Defaults to "password2" if not specified.
  - **password2_required** – if nonzero, indicates that the "password2" entry must be supplied.
  - **username** – specifies the name of the field containing the username. If empty or unset, the password is not checked against this field for a match.
  - **minimum_length** – specifies the minimum length of the password in characters.
  - **disallowed_chars** – if set, specifies characters that are not allowed in the password.
  - **complexity_mode** – specifies the set of rules to use when checking the password.
  - **complexity** – if set, specifies rules for checking the composition of the password. If unset, defaults to a preset value for password complexity with modes "none", "basic", "number", "punctuation" and "complex". These rules check that passwords obey certain requirements according to the following table:

Table 126: *Complexity Requirements*

Rule Set	Min. Length	Description
none	–	No special requirements
basic	8	Non-space characters
number	8	At least 1 digit
punctuation	8	At least 1 punctuation character (non-alphanumeric)
complex	8	At least 1 digit, 1 non-alphanumeric, 1 uppercase and 1 lowercase letter

- **IsValidSentence** – Checks that the value is considered to be a 'sentence"; that is, a string which starts with an upper-case letter and ends in a full stop.

- **IsValidTimestamp** – Checks that the value is a numeric UNIX timestamp (which measures the time in seconds since January 1, 1970 at midnight UTC).
- **IsValidTimeZone** – Checks that the value is a valid string describing a recognized time zone.
- **IsValidUrl** – Checks that the value appears to be a valid URL that includes a scheme, hostname and path. For example, in the URL http://www.example.com/, the scheme is **http**, the hostname is **www.example.com** and the path is **/**. The validator argument may optionally be an array containing a 'scheme' key that specifies an array of acceptable URL protocols.
- **IsValidUsername** – Checks that the value is a valid username. Usernames cannot be blank or contain spaces.
- **NwaCaptchaIsValid** – Checks that the value matches the security code generated in the CAPTCHA image. This validator should only be used with the standard **captcha** field.
- **NwaGuestManagerIsValidRoleId** – Checks that the value is a valid role ID for the current operator and user database.
- **NwaIsValidExpireAfter** – Checks that the value is one of the account expiration time options specified in the Guest Manager configuration.
- **NwaIsValidLifetime** – Checks that the value is one of the account lifetime options specified in the Guest Manager configuration.

Form Field Conversion Functions

The Conversion and Value Format functions that are available are listed below:

- **NwaConvertOptionalDateTime** – Converts a string representation of a time to the UNIX time representation (integer value). The conversion leaves blank values unmodified.
- **NwaConvertOptionalInt** – Converts a string representation of an integer to the equivalent integer value. The conversion leaves blank values unmodified.
- **NwaConvertStringToOptions** – Converts a multi-line string representation of the form

```
key1 | value1
key2 | value2
```

to the array representation

```
array (
  'key1' => 'value1',
  'key2' => 'value2',
)
```

- **NwaImplodeComma** – Converts an array to a string by joining all of the array values with a comma.
- **NwaTrim** – Removes leading and trailing whitespace from a string value.
- **NwaTrimAll** – Removes all whitespace from a string (including embedded spaces, newlines, carriage returns, tabs, etc).
- **NwaStrToUpper** – Formats the text string to all uppercase letters.
- **NwaStrToLower** – Formats the text string to all lowercase letters.
- **NwaNormalizePhoneNumber** – Removes all spaces, dashes, parenthesis and non-numerical characters from the phone number.

Form Field Display Formatting Functions

The Display Functions that are available are listed below:

Table 127: *Form Field Display Functions*

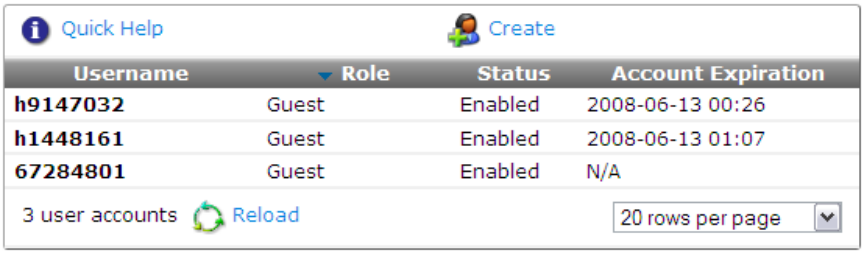
Function	Description
NwaBoolFormat	Formats a Boolean value as a string. • If the argument is 0 or 1, a 0 or 1 is returned for false and true, respectively. • If the argument is a string containing a "|" character, the string is split at the | separator and used for false and true values. • If the argument is an array, the 0 and 1 index values are used for false and true values. Otherwise, the string values "false" and "true" are returned.
NwaByteFormat	Formats a non-negative size in bytes as a human readable number (bytes, KB, MB, GB, etc). 1 KB is defined as 1,024 bytes, 1 MB as 1,024 KB (1,048,576 bytes), and 1 GB as 1,024 MB (1,073,741,824 bytes). • If a negative value is supplied, returns the argument (or null if no argument was supplied). • If a non-numeric value is supplied, that value is returned directly.
NwaCurrencyFormat	Formats a numeric value that indicates a monetary amount as a string. If the argument is null or not supplied, the current locale's settings are used to format the monetary value. • The argument may be an array, which will override the current locale's settings (see NwaNumberFormat for the list of settings that are used). • The argument may be a numeric value, which is used as the number of fractional digits to use when formatting the monetary amount (other locale settings will remain unchanged in this case).
NwaDateFormat	Format a date like the PHP function strftime(), using the argument as the date format string. Returns a result guaranteed to be in UTF-8 and correct for the current page language. See "Date/Time Format Syntax" on page 496 for a list of available date/time formats, or use one of the following special format strings: • **hhmmss**, **hh:mm:ss** – time of day • **iso8601**, **iso8601t**, **iso-8601**, **iso-8601t** – various ISO 8601 date formats with and without hyphen separators and the time of day • **longdate** – date and time in long form • **displaytime** – time of day • **?:** – returns the string following the ?: if the time value is 0, or uses the format string before the ?: otherwise • **recent** – for example, "2 minutes ago", "3 months ago"

Function	Description
NwaDurationFormat	Converts a time measurement into a description of the corresponding duration. • Format parameters: seconds, minutes, hours, days, weeks. • Any format can be converted to another. • By default, this function converts an elapsed time value specified in seconds to a value that is displayed in weeks, days, hours, minutes and seconds. Up to four additional arguments may be supplied to control the conversion: • in_format – The current units of the value being converted (seconds, minutes, hours, days, weeks) • max_format – Controls the max increment you want displayed. • min_format – Controls the min increment you want displayed. Only whole numbers are printed. • default – If set, this value will be returned when the resulting duration (after min_ format is taken into account) is 0.
NwaExplodeComma	Converts a string to an array by splitting the string at each comma and forming an array of all the substrings created in this way.
NwaNumberFormat	Formats a numeric value as a string. If the argument is null or not supplied, the current locale's settings are used to format the numeric value. The argument may be an array or a numerica value. If the argument is an array, it will override the current locale's settings (see below for the list of settings that are used). If the argument is a numeric value, it is used as the number of fractional digits to use when formatting the string (other locale settings will remain unchanged in this case). The specific locale settings used are from **localeconv(),** and are listed below. For *general numeric formatting* : • frac_digits – number of decimal places to display • decimal_point – character to use for decimal point • thousands_sep – character to use for thousands separator For *signs for positive/negative values:* • positive_sign – sign for positive values • p_sign_posn – position of sign for positive values (0..4) • negative_sign – sign for negative values • n_sign_posn – position of sign for negative values (0..4) For *formatting for monetary amounts*: • mon_decimal_point – decimal point character for monetary values • mon_thousands_sep – thousands separator for monetary values • p_sep_by_space – true if a space separates currency symbol from a positive value • p_cs_precedes – true if currency symbol precedes positive value • n_sep_by_space – true if a space separates currency symbol from a negative value • n_cs_precedes – true if currency symbol precedes negative value Additionally, the special value monetary, if true, indicates that a currency value should be formatted, rather than a regular numeric value.

View Display Expression Technical Reference

A page that contains a view is displayed in an operator's Web browser. The view contains data that is loaded from the server dynamically. Because of this, both data formatting and display operations for the view are implemented with JavaScript in the Web browser.

For each item displayed in the view, a JavaScript object is constructed. Each field of the item is defined as a property of this object. When evaluating the JavaScript Display Expression, the **data** variable is used to refer to this object. Thus, the expression **data.my_field** would return the value of the field named "my_field".



In the above view (the **guest_users** view), the four columns displayed correspond to the **username**, **role_name**, **enabled**, and **expire_time** fields.

Table 128: *Display Expressions for Data Formatting*

Value	Description
Display Expressions	
data.username.bold()	Displays the username string as bold text.
data.role_name	Displays the name of the role.
Nwa_BooleanText(data.enabled, "Enabled", "Disabled")	Displays either “Enabled” or “Disabled” depending on the value of the **enabled** field.
(parseInt(data.do_expire) != 0) ? Nwa_DateFormat(data.expire_time, "%Y-%m-%d %H:%M") : "N/A"	Displays “N/A” if the account has no expiration time, or a date and time string if an expiration time has been set.
JavaScript functions	
Nwa_BooleanText(*value*, *if_true*, *if_false***[**, *if_undefined***])**	Returns the value of *if_true* or *if_false* depending on whether the *value* evaluates to a Boolean true or false, respectively. If the value has an undefined type (in other words. has not been set), and the *if_undefined* parameter was provided, returns *if_undefined*.
Nwa_DateFormat(*value*, *format***)**	Converts a numerical *value* (UNIX time) to a string using the date and time format string *format*. The format string uses similar syntax to the NwaDateFormat() function. See "Date/Time Format String Reference" on page 497 for a full list of the supported format strings.
Nwa_FloatFormat(*value*, *decimals***)**	Converts a numerical *value* to a string, with the number of decimal places specified in *decimals*.
Nwa_MinutesToNatural(*value***)**	Converts a numeric *value* measuring a time in minutes to a natural time representation (such as “2 minutes”, “3 hours”, “11 days”).

Value	Description
Nwa_NumberFormat(*value***[,** *if_undefined***])** **Nwa_NumberFormat(** *value*, *decimals***)Nwa_NumberFormat(** *value*, *decimals*, *dec_point*, *thousands_sep***[,** *if_undefined***])**	Converts a numerical value to a string. If the value has an undefined type (in other words, has not been set), and the if_undefined parameter was provided, returns if_undefined. Otherwise, the number is converted to a string using the number of decimal places specified in decimals (default 0), the decimal point character in dec_point (default "."), and the thousands separator character in thousands_sep (default ",").
Nwa_TrimText(*value*, *length***)**	Trims excessively long strings to a maximum of *length* characters, appending an ellipsis ("...") if the string was trimmed.
Nwa_ValueText(*value***[,** *if_undefined***])**	If the *value* has an undefined type (in other words, has not been set), and the *if_undefined* parameter was provided, returns *if_undefined*, or a HTML non-breaking space (" ") otherwise. Otherwise, the *value* is converted to a string for display.

LDAP Standard Attributes for User Class

The following list provides some of the attributes for the LDAP User class. For a complete list you should consult http://msdn2.microsoft.com/en-us/library/ms683980(VS.85).aspx#windows_2000_server_attributes.

- **userPrincipalName**: The userPrincipalName is a single-valued and indexed property that is a string that specifies the user principal name (UPN) of the user. The UPN is an Internet-style login name for the user based on the Internet standard RFC 822. The sAMAccountName property is a single-valued property that is the logon name The objectSid property is a single-valued property that specifies the security identifier (SID) of the user.
- **accountExpires**: The accountExpires property specifies when the account will expire.
- **badPasswordTime**: The badPasswordTime property specifies when the last time the user tried to log onto the account using an incorrect password.
- **badPwdCount**: The badPwdCount property specifies the number of times the user tried to log on to the account using an incorrect password.
- **codePage**: The codePage property specifies the code page for the user's language of choice. This value is not used by Windows 2000.
- **countryCode**: The countryCode property specifies the country code for the user's language of choice. This value is not used by Windows 2000.
- **lastLogoff**: The lastLogoff property specifies when the last logoff occurred.
- **lastLogon**: The lastLogon property specifies when the last logon occurred.
- **logonCount**: The logonCount property counts the number of successful times the user tried to log on to this account.
- **mail**: The mail property is a single-valued property that contains the SMTP address for the user (such as demo@example.com).
- **memberOf**: The memberOf property is a multi-valued property that contains groups of which the user is a direct member.
- **primaryGroupID**: The primaryGroupID property is a single-valued property containing the relative identifier (RID) for the primary group of the user.

- **sAMAccountType**: The sAMAccountType property specifies an integer that represents the account type.
- **unicodePwd**: The unicodePwd property is the password for the user.

Regular Expressions

The characters shown in Table 129 can be used to perform pattern matching tasks using regular expressions.

Table 129: *Regular Expressions for Pattern Matching*

Regex	Matches
a	Any string containing the letter “a”
^a	Any string starting with “a”
^a$	Only the string “a”
a$	Any string ending with “a”
.	Any single character
\.	A literal “.”
[abc]	Any of the characters a, b, or c
[a-z0-9A-Z]	Any alphanumeric character
[^a-z]	Any character not in the set a through z
a?	Matches zero or one “a”
a+	Matches one or more: a, aa, aaa, ...
a*	Matches zero or more: empty string, a, aa, aaa...
a|b	Alternate matches: Matches an “a” or “b”
(a.*z)	Grouping: matches sequentially within parentheses
a*?	“Non-greedy” zero or more matches
\ooo	The character with octal code ooo
\040	A space
\d	Any decimal digit
\D	Any character that is not a decimal digit

The regular expression syntax used is Perl-compatible. For further details on writing regular expressions, consult a tutorial or programming manual.

This appendix describes Chromebook functionality in ClearPass Onboard. It provides an introduction to Chromebook in Onboard, and discusses considerations as well as Onboard and Google Admin configuration for Chromebook.

This section includes:

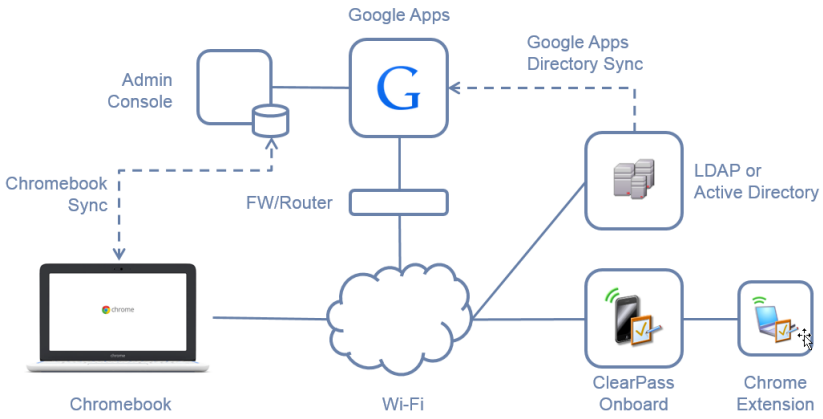
About Chromebook in Onboard

Chromebook is a managed device. When you use Google Apps for Business or Google Apps for Education, you use the Google Admin console for provisioning, management, and control of Chromebook devices.

However, Chromebook still requires a Wi-Fi connection to work.

Administrators can take advantage of ClearPass Onboard's Chromebook support for certificate enrolling. Users can be provided with EAP-TLS client certificates to securely establish their network identity. All of the existing capabilities of Onboard can then be leveraged to ensure reliable and policy-controlled access to the network.

Figure 44 *Network Architecture*



In the network architecture diagram shown in "Network Architecture " on page 527:

- Chromebook users access the network through the local Wi-Fi.
- The Google Apps domain provides user login services and other apps, such as the Chrome Web Store, Google Docs, Google Sheets, and more.
- The Admin Console is used by administrators to provision new Chromebooks and manage existing Chromebooks.
- Chromebook Sync is used to ensure that settings from the Admin Console are applied to all Chromebooks in the domain.

- Users, groups, and other details can be provisioned in Google Apps from an existing directory using the Google Apps Directory Sync tool.
- ClearPass Onboard provides device provisioning and certificate enrollment services.
- The Chrome Extension provides support for Onboard device provisioning for Chromebook devices.

Caveats and Recommendations

This section describes requirements related to licenses, extensions, deployment, versions, certificates, provisioning, and authentication sources.

Google Admin Chromebook License is Required

Chromebook management is only available in the Google Admin console (https://admin.google.com) if a suitable license has been added for the domain under management.

Managed Chromebook Deployment is Required

Chromebook is a managed device, not a "BYOD" device. The support for Onboard is limited to device provisioning and enrollment in an administrator-managed network. Non-managed Chromebook devices cannot be enrolled using ClearPass Onboard.

Chrome Extension is Required

Chromebook does not natively support device enrollment with products such as ClearPass Onboard. For this, a Chrome extension is required.

Additionally, because of the software security model used by Chromebook, "normal" Chrome extensions (for example, those installed from the Chrome Web Store) do not have permissions to alter the certificate store on the device. To do this requires an administratively configured extension, which is why Chromebook must be managed for Onboard enrollment to work.

For details of how to configure the Google Admin console to automatically install this extension when a user logs into Chromebook, refer to the **Configure Chrome Extension** section in "Google Admin Configuration for Chromebook" on page 531 .

Chromebook Release 37 or Later is Required

The Onboard extension requires Chrome version 37 or later. As of the time of this writing (July 2014) this version of Chrome is only available in the development channel.

To provision Chromebook devices with the development channel, create an organizational unit within your organization. For that organizational unit, configure Device Settings and set the **Release Channel** to **Move to Development Channel**. Then move one or more devices into this organizational unit to enable the development channel.

When the stable release catches up with the development channel, no special configuration will be required to enable Onboard for Chromebook.

For more information on the Chromebook stable, beta and development channels, refer to this article: https://support.google.com/chromebook/answer/1086915

Chromebook Supports Only "Created by Device" Certificates

Chromebook includes a trusted platform module (TPM) for protection of cryptographic private keys, including the private key for the TLS client certificate issued to the device by Onboard.

Because of this, Chromebook will always create its own private key. The **Key Type** option in **Device Provisioning Settings** will be ignored by Chromebook devices, and will always default to **created by device**.

The key size is 1024 bits or 2048 bits, as specified in the Device Provisioning Settings.

If an unsupported selection is made in the Provisioning Settings form, the default used will be a 2048-bit private key.

A Separate Provisioning SSID is Required

Chromebook cannot be provisioned unless it is already online, in order to sync with the appropriate settings from the Google Admin console.

To handle the initial configuration task, we recommend you follow these steps:

- Configure an Onboard provisioning SSID.
  - Ensure that this SSID has an access-control list that allows the Chromebook to log in and sync with Google Apps. For details on the contents of the ACL, refer to this article: https://support.google.com/chrome/a/answer/3504942#sslinspection
  - Use a captive portal on this SSID that redirects users to the Onboard device provisioning page.
  - Note that this SSID can also be used to Onboard other devices that are supported by ClearPass Onboard.
- Ensure that the Chromebook is enrolled.
  - To manually enroll a brand-new Chromebook, press **Ctrl+Alt+E** before attempting to log in with any domain credentials.
  - Be aware that once a user has signed in to a device, you cannot enroll the device. The device must be wiped in order to restart the enrollment process.
  - For more details on enrolling a Chrome device, including details on automatic enrollment, refer to this article: https://support.google.com/chrome/a/answer/1360534
- Sign in to the device using the credentials of an account in the Google Apps domain.
  - Connect to the provisioning SSID using the Chrome setup wizard.

Do not save the credentials you used to connect to the provisioning SSID.

  - The device will sync with the Admin console settings.
  - This will also install the Onboard Chrome extension, if it is configured correctly in the Google Admin console.
- Open the Chrome browser on the device.
  - The captive portal will redirect you to the device provisioning page.
  - Sign in with appropriate credentials.
  - The Chrome device will be provisioned with a new certificate.
  - The provisioned network should be automatically activated when it is available. If not, manually connect to the network to verify that EAP-TLS is working correctly.

Directory-Based Authentication Source is Recommended

When a Chromebook user with an EAP-TLS certificate connects to the network, an authorization check is performed to ensure that the certificate is still valid, and that the user account associated with the certificate is still permitted to use the network.

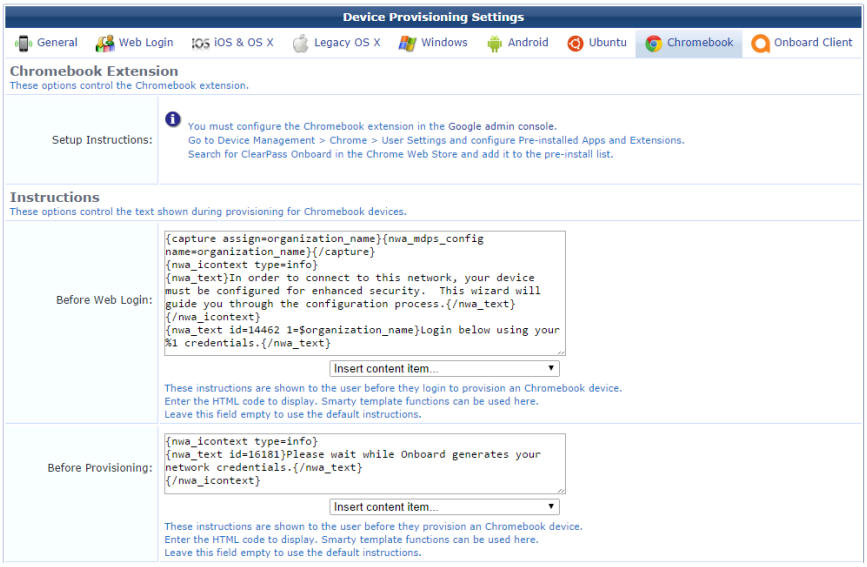
ClearPass Policy Manager provides this capability for multiple authentication sources. However, at this time, no built-in Google Apps authentication source is available.

Many Chromebook deployments will take advantage of Google Apps Directory Sync to use an existing LDAP or Active Directory authentication source. In this environment, a ClearPass authentication source can be used to verify the status of a user account when a device connects to the network.

If your deployment does not have an LDAP or Active Directory source, you can still use Onboard to provision Chromebook devices. However, in this environment you must manually revoke the certificates of users who are no longer authorized to access the network.

Onboard Configuration for Chromebook

The **Onboard > Deployment and Provisioning > Provisioning Settings > Chromebook** tab provides Chromebook configuration settings:



The text displayed on the device provisioning page for Chromebook devices can be customized using additional settings on this tab.

In addition, to ensure that Chromebook support is enabled, use the **Enable Chromebook device provisioning** check box on the **General** tab (this check box is selected by default).

For more information, see "Configuring Provisioning Settings for Chromebook" on page 182 in the Onboard chapter.

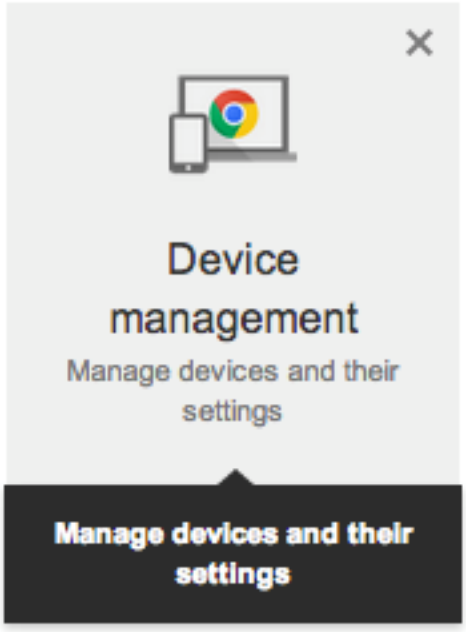
Google Admin Configuration for Chromebook

This section describes Google Admin configuration for Chromebook in Onboard.

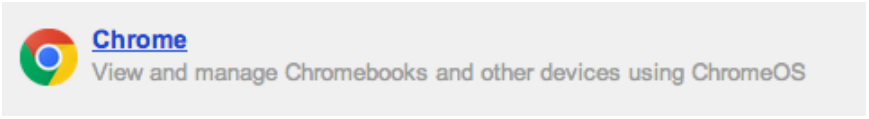
To begin, log in to the Google admin console at https://admin.google.com/.

Configuring the Chrome extension

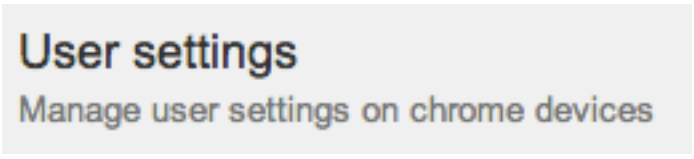
1. In the Google Admin console, select the **Device Management** option.



2. Select the **Chrome** option.



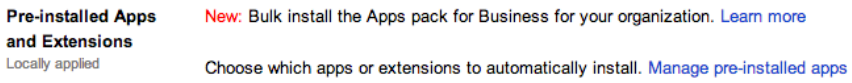
3. Go to **User Settings**.



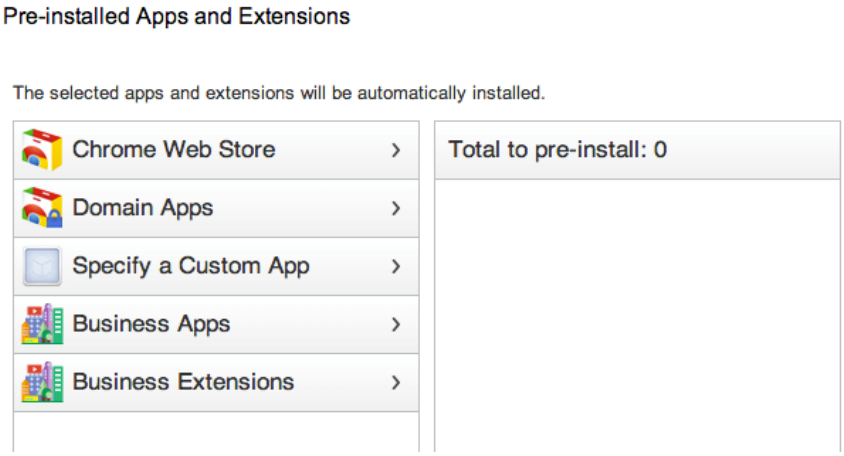
NOTE

If you have multiple organizational units or levels, be sure to select the appropriate organizational unit or level before you make changes to the settings.

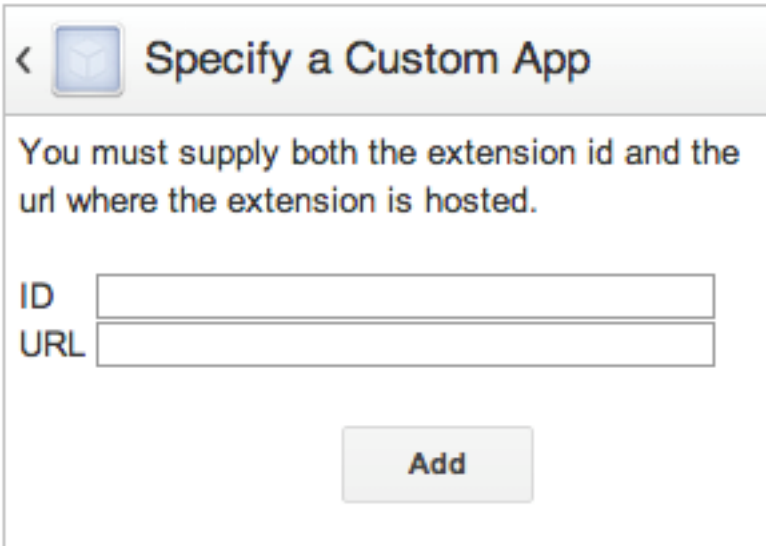
4. In the user settings, find the **Pre-installed Apps and Extensions** section, and then click the **Manage pre-installed apps** link.



5. Select **Specify a Custom App**.



6. Enter the **ID** and **URL** of the Onboard Chromebook extension and then click **Add**.



NOTE

The ID and URL information is available on the **Onboard > Deployment and Provisioning > Provisioning Settings > Chromebook** tab.

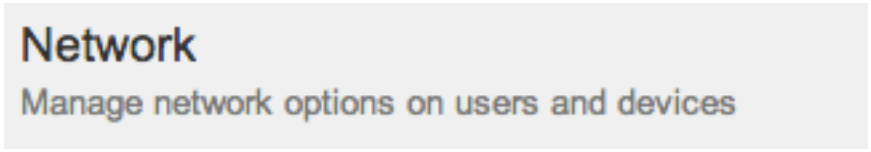
NOTE

If you have a cluster environment, the URL may be modified to refer to any subscriber node.

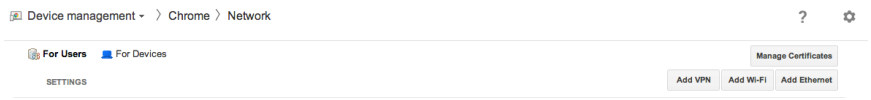
7. Verify that the extension is listed in the **Pre-installed Apps and Extensions** list, and then click **Save**.
8. Remember to save your changes using the **Save changes** button at the bottom left of the page.

Configuring Network Settings

1. From the Chrome Management page, go to **Network**.



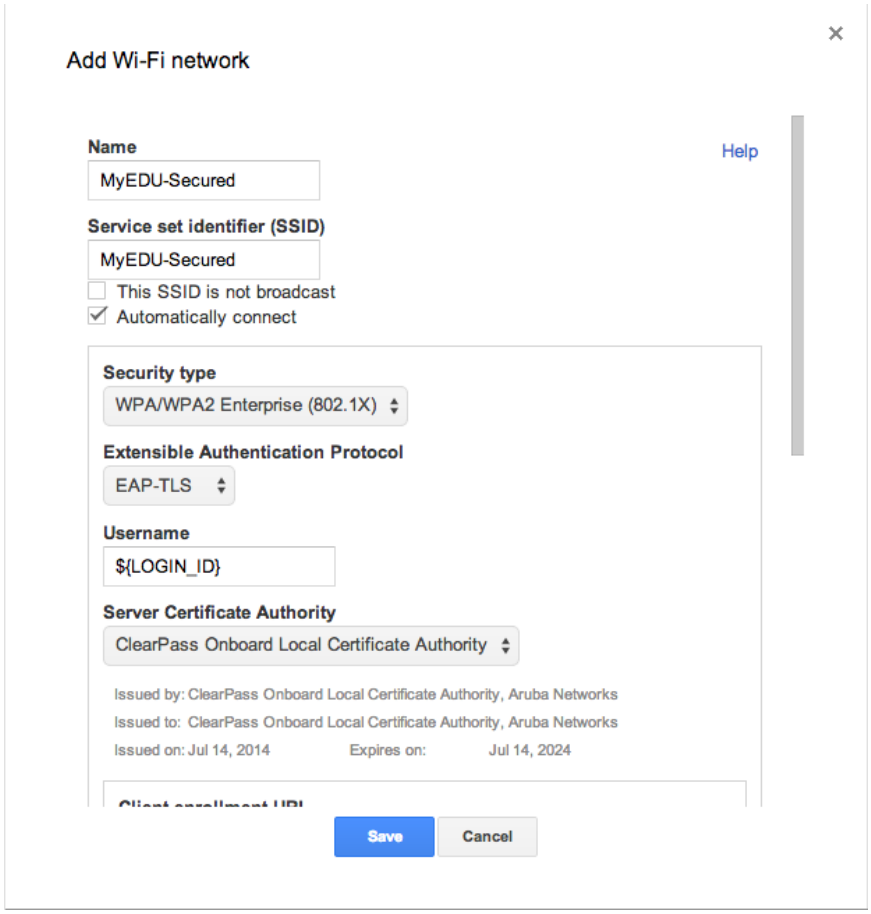
2. You should see the **For Users** tab selected. Click the **Add Wi-Fi** button on the right.



3. Specify a **Name** and **SSID** for the network, and select the **Automatically Connect** option.
4. Change the **Security Type** to **WPA/WPA2 Enterprise (802.1X)**,
5. Under **Extensible Authentication Protocol**, select **EAP-TLS**.
6. The **Username** can be set as a fixed value (for example, anonymous), or it can take the variables **${LOGIN_ID}** (for example, johndoe) or **${LOGIN_EMAIL}** (for example, johndoe@mydomain.com).
7. If your RADIUS server doesn't have a commercially issued certificate, then you might need to use the **Add new certificate...** option for **Server Certificate Authority** to upload the signer of the RADIUS certificate.

Be sure to use the **Root CA** and not the **Signer CA**.

If you already have an appropriate certificate in the list, then it can be selected directly.



8. For **Client enrollment URL**, provide the URL of the Onboard captive portal page—for example, https://server/onboard/device_provisioning.php.
9. You should also specify the **Common Name** of the Onboard CA's issuing certificate in **Issuer pattern > Common name**—for example, "ClearPass Onboard Local Certificate Authority (Signing)".
10. Click **Save** to save the network settings, and remember to click **Save changes** to commit.

$criteria Array that consists of one or more criteria on which to perform a data-based search. This array is used for advanced cases where predefined helper functions do not provide required flexibility.

802.1X Standard for port-based network access control, designed to enhance 802.11 WLAN security. The 802.1X standard provides an authentication framework, allowing a user to be authenticated by a central authority. The actual algorithm that is used to determine whether a user is authentic is left open and multiple algorithms are possible.

AAA Authentication, Authorization, and Accounting.

Access-Accept Response from RADIUS server indicating successful authentication, and containing authorization information.

Access-Reject Response from RADIUS server indicating a user is not authorized.

Access-Request RADIUS packet sent to a RADIUS server requesting authorization.

accounting Process of recording summary information about network access by users and devices.

Accounting-Request RADIUS packet type sent to a RADIUS server containing accounting summary information.

Accounting-Response RADIUS packet sent by the RADIUS server to acknowledge receipt of an Accounting-Request.

accounting session time Length of time the guest has been using the network.

Active Directory (AD) Microsoft Active Directory. Directory server that stores information about a variety of things, such as organizations, sites, systems, users, shares, and other network objects or components. It also provides authentication and authorization mechanisms, and a framework within which related services can be deployed.

ActiveSync Mobile data synchronization app developed by Microsoft that allows a mobile device to be synchronized with either a desktop or a server running compatible software products.

AirGroup Application that allows end users to register their personal mobile devices on a local network and define a group of friends or associates who are allowed to share them. Primarily designed for colleges and other institutions. AirGroup configuration is distributed across the Aruba mobility controller, ClearPass Policy Manager, and ClearPass Guest.

Amigopod Original name of the ClearPass Guest application. No longer used, but still appears in some syntax.

app Application.

application identifier Unique identifier generated when a provisioning profile is created. In combination with the approved domain, it allows app distribution.

audit servers Evaluate the health of clients that do not have an installed agent, or that cannot respond to Policy Manager interactions. Audit servers typically operate in lieu of authentication methods, authentication sources, or internal posture policies and posture servers.

authentication Verification of a user's credentials, typically a username and password.

authentication source Identity repository against which Policy Manager verifies identity. CPPM supports the following authentication source types: Microsoft Active Directory, LDAP-compliant directories, RSA or other RADIUS-based token servers, and SQL database, as well as Static Host lists for MAC-based authentication.

authorization Authorization controls the type of access that an authenticated user is permitted to have.

authorization source Collects attributes for use in role-mapping rules. You specify the attributes you want to collect when you configure the authentication source. CPPM supports the following authorization source types: Microsoft Active Directory, any LDAP compliant directory, RSA or other RADIUS-based token servers, and SQL database, including the local user store.

bounce To shut down and restart a service or port.

BYOD Bring your own device.Refers to using personal mobile devices within an employer's enterprise network infrastructure, and the associated network and resource management challenges.

CA See *Certificate Authority*.

captive portal Implemented by NAS. Provides access to network only to authorized users.

Certificate Authority (CA) Entity in a public key infrastructure system that issues certificates to clients. A certificate signing request received by the CA is converted into a certificate when the CA adds a signature that is generated with the CA's private key. See *digital certificate*, *private key*, and *public key infrastructure*.

CHAP Challenge-Handshake Authentication Protocol. Authentication scheme used by Point to Point Protocol (PPP) servers to validate the identity of remote clients.

ClearPass Access Management System for creating and enforcing policies across a network to all devices and applications. The ClearPass integrated platform includes Policy Manager, Guest, Onboard, OnGuard, Insight, Profile, AirGroup, and MACTrac.

ClearPass Guest See *Guest*.

CoA Change of Authorization.

collectors Network elements providing data for profiling endpoints. The following collectors send endpoint attributes to Profile: DHCP, Onboard, HTTP User Agent, MAC OUI, ActiveSync plugin, OnGuard, SNMP, and Subnet Scanner.

common name (CN) See *distinguished name*.

CPPM ClearPass Policy Manager. May refer to the Policy Manager application, or all applications within the ClearPass platform. See also *Policy Manager*.

CRL Certificate revocation list. List of revoked certificates maintained by a certificate authority and regularly updated.

cryptobinding Short for cryptographic binding. Procedure in a tunneled EAP method that binds together the tunnel protocol and the tunneled authentication method(s), ensuring the relationship between a collection of data assets. Cryptographic binding focuses on protecting the server; mutual cryptographic binding protects both peer and server.

CSR Certificate Signing Request.

CSV Comma-separated values.

device category Classification describing a device's type—for example, computer, smartdevice, printer, access point, and so on. One of three hierarchical elements in a device profile.

device family Within the device category, a classification based on the type of operating system or vendor—for example, if the device category is Computer, the value for device family might be Windows, Linux, or Mac OS. One of three hierarchical elements in a device profile.

device fingerprint Information collected about a device for the purpose of identification. Fingerprints can fully or partially identify individual users or devices even when cookies are turned off.

device name Within the device family, a classification based on granular details such as OS version—for example, if the device family is Windows, the value for device name might be Windows 7 or Windows 2008 Server. One of three hierarchical elements in a device profile.

device provisioning Process of preparing a device for use on an enterprise network, by creating the appropriate access credentials and setting up the network connection parameters. Same as onboarding.

DHCP Dynamic Host Configuration Protocol. An auto-configuration protocol used on IP networks. Computers or any network peripherals that are connected to IP networks must be configured before they can communicate with other computers on the network. DHCP allows a computer to be configured automatically, eliminating the need for a network administrator. DHCP also provides a central database to keep track of computers connected to the network; this database helps prevent any two computers from being configured with the same IP address.

digital certificate Contains identification data (see *distinguished name*) and the public key portion of a public/private key pair, and a signature that is generated by a certificate authority. The signature ensures the integrity of the data in the certificate (only the certificate authority can create valid certificates).

Disconnect-Ack NAS response packet to a Disconnect-Request, indicating that the session was disconnected.

Disconnect-Nak NAS response packet to a Disconnect-Request, indicating that the session could not be disconnected.

Disconnect-Request RADIUS packet type sent to a NAS requesting that a user or session be disconnected.

dissolvable agent Functionality within ClearPass OnGuard. Performs a one-time check at login to ensure policy compliance. Devices not meeting compliance can be redirected to a captive portal for manual remediation. When the browser page used during authentication is closed, the dissolvable agent is removed, leaving no trace. The Web-based dissolvable agent is ideal for personal, non IT-issued devices that connect via a captive portal and do not allow agents to be permanently installed. See also persistent agent and OnGuard.

distinguished name (DN) Series of fields in a digital certificate that, taken together, constitute the unique identity of the person or device that owns the digital certificate. Common fields in a distinguished name include country, state, locality, organization, organizational unit, and the “common name”, which is the primary name used to identify the certificate.

DN See *distinguished name*.

EAP Extensible Authentication Protocol (RFC 3748). An authentication framework that supports multiple authentication methods. In tunneled EAP methods, authentication and posture credential exchanges occur inside of a protected outer tunnel.

EAP-FAST EAP – Flexible Authentication Secure Tunnel. (tunneled)

EAP-GTC EAP Generic Token Card. (non-tunneled)

EAP-MD5 EAP-Method Digest 5. (non-tunneled)

EAP-MSCHAP; EAP-MSCHAPv2 EAP Microsoft Challenge Handshake Authentication Protocol, version 1 and version 2. (non-tunneled)

EAPoUDP EAP over UDP. See also *UDP*.

EAP-PEAP Protected EAP. A widely-used protocol for securely transporting authentication data across a network. (tunneled)

EAP-TLS EAP – Transport LayerSecurity (RFC 5216). A certificate-based authentication method supporting mutual authentication, integrity-protected ciphersuite negotiation and key exchange between two endpoints.

EAP-TTLS EAP – Transport Layer Security (RFC 5216). A certificate-based authentication method supporting mutual authentication, integrity-protected ciphersuite negotiation and key exchange between two endpoints.

form Interactive page in the application where users can provide or modify data.

field In a database or user interface, a single item of information about a visitor account; attribute.

FQLN Fully Qualified Location Name. A device location identifier in the format: APname.Floor.Building.Campus.

GET HTTP request method that submits data to be processed to a specified resource.

Guest Configurable ClearPass application for secure visitor network access management. Access permissions to ClearPass Guest features are controlled through an operator profile that can be integrated with an LDAP server or Active Directory login. The ClearPass Guest application can be accessed either directly or through CPPM.

guest See *Visitor*.

IdP Identity Provider. Service that authenticates a user or client identity and issues security tokens for ACS.

Insight ClearPass analytics and reporting application.

intermediate CA Certificate authority with a certificate that was issued by another certificate authority. See *trust chain*.

iOS Operating system from Apple, Inc. for mobile devices, including the iPhone, iPad, and iPod Touch.

jailbreak; jailbroken Modifying an iOS device in order to download applications, extensions, or themes not authorized by Apple. The term is also sometimes used to describe similar activity on non-Apple devices. The legal implications of jailbreaking a device vary by country and by device.

landing page See *Web login*.

LDAP Lightweight Directory Access Protocol; communications protocol used to store and retrieve information about users and other objects in a directory.

MAC address Media Access Control Address. Unique identifier assigned to network interfaces for communications on a network. A device may have a wired network address and a wireless network address.

MAC auth MAC Authentication Method. Authenticates devices based on their MAC address. MAC authentication might be the only method of client authentication or clients may also be required to authenticate themselves using other methods, depending on the network privileges required.

MAC OUI The OUI is the first half of a MAC address. It can be useful in some cases for better identifying endpoints, or for profiling devices like printers that might be configured with static IP addresses. See also *OUI*.

MACTrac Application that allows end users to register their personal mobile devices on a local network. Each device registered by an operator is automatically shared with all of that operator's registered devices. There is no limit to the number of device accounts an operator can create, and no expiration time is set on device accounts. MACTrac operators are created in CPPM, and can then log in through ClearPass Guest to register and manage their devices.

MAM Mobile Application Management. The employee owns the mobile device used for work, and the company provides and manages the features.

MDM Mobile Device Management. The company owns and manages the mobile device the employee uses for work. A company-issued laptop is actually an MDM device, but MDM features in ClearPass allow company management to be applied to a variety of devices.

MIB Management Information Base. Hierarchical database used by SNMP to manage the devices being monitored.

NAD Network Access Device. The device that automatically connects the user to the preferred network; for example, an AP or an Ethernet switch.

NAK Negative AcKnowledgement code. Response indicating that a transmitted message was received with errors or corrupted, or that the receiving end is not ready to accept transmissions.

NAP Network Access Protection. Platform on the Windows Server that allows network administrators to define specific levels of network access based on identity, groups, and policy compliance. The NAP Agent is a service that collects and manages health information for NAP client computers.

Network Access Server (NAS) Device that provides network access to users, such as a wireless access point, network switch, or dial-in terminal server. When a user connects to the NAS device, a RADIUS user authentication request (Access-Request) is generated by the NAS.

nMAP Network Mapper. Open source utility for network discovery and security auditing. Nmap uses IP packets to determine such things as the hosts available on a network and their services, operating systems and versions, types of packet filters/firewalls, and so on.

NTP Network Time Protocol. Protocol for synchronizing the clocks of computers over a network.

OCSP Online certificate status protocol (RFC 2560). Protocol used to determine the current status of a digital certificate without requiring CRLs.

Onboard ClearPass application for automating 802.1X configuration and provisioning for "bring your own device" (BYOD) and IT-managed devices across wired, wireless, and virtual private networks (VPNs). Information Onboard collects during device onboarding is sent to Profile and used for device category, family, and name classification. ClearPass Onboard features are part of the Onboard module in the ClearPass Guest application.

onboarding Process of preparing a device for use on an enterprise network, by creating the appropriate access credentials and setting up the network connection parameters. Same as device provisioning.

onboard-capable device Device supported by the QuickConnect application.

onboard provisioning Process used to securely provision a device and configure it with network settings.

OnGuard Functionality within ClearPass that uses persistent and dissolvable agents to perform endpoint protection, posture assessments, and health checks, ensuring compliance is met before devices connect. See also dissolvable agent and persistent agent.

operator Person who uses ClearPass Guest to create guest accounts or perform system administration. Operators act as sponsors for visitor access.

operator login Configuration defining a ClearPass Guest operator's roles and access privileges.

operator profile Characteristics assigned to a class of operators, such as the permissions granted to those operators.

OS X Operating system from Apple, Inc. for desktop and laptop computers.

OUI Organizationally Unique Identifier. Synonymous with Company ID or Vendor ID, an OUI is a 24-bit, globally-unique assigned number referenced by various standards. The OUI is used as the first half of a MAC address.

over-the-air provisioning Process used to securely provision a device and configure it with network settings; applies to iOS and OS X 10.7+ only.

PANW Palo Alto Networks. Network security company whose products include a firewall with which ClearPass integrates, exchanging user context related to posture assessments.

PAP Password Authentication Protocol. Validates users by password, PAP does not encrypt passwords for transmission and is thus considered insecure.

PEAP Protected EAP. See *EAP-PEAP*.

persistent agent Functionality within ClearPass OnGuard. Provides nonstop monitoring and automatic remediation and control, and supports automatic and manual remediation. When running persistent OnGuard agents, CPPM can centrally send system-wide notifications and alerts, and allow or deny network access. See also dissolvable agent and OnGuard.

ping Test network connectivity using an ICMP echo request ("ping").

PKCS#*n* Public-key cryptography standard N. Refers to a numbered standard related to topics in cryptography, including private keys (PKCS#1), digital certificates (PKCS#7), certificate signing requests (PKCS#10), and secure storage of keys and certificates (PKCS#12).

PKI See *public-key infrastructure*.

Policy Manager ClearPass Policy Manager (CPPM) is the main application of the ClearPass access management platform, and is used to create and enforce policies across a network for all devices and applications. CPPM also includes links to Guest, Insight, and Onboard. OnGuard and Profile features and some AirGroup configuration items are included within the Policy Manager user interface.

POST HTTP request method that requests date from a specified resource.

posture Set of characteristics describing the health of an endpoint device seeking access to the network. These may include such things as device type, operating system, or antivirus software. Posture assessment or posture validation: Using rules to evaluate and provide a security assessment for the endpoint and its user, assuring they are compliant. Posture token: Health status of the endpoint.

posture policies, internal Internal posture policies test requests against internal posture rules to assess health. Posture rule conditions can contain attributes present in vendor-specific posture dictionaries.

posture servers Evaluate client health based on specified vendor-specific posture credentials, typically posture credentials that cannot be evaluated internally by Policy Manager (that is, not by internal posture policies). Currently, Policy Manager supports two forms of posture server interfaces: RADIUS posture servers and GAMEv2 posture servers.

pre-shared key See *PSK*.

print template Defines the format and appearance of a guest account receipt.

private key The part of a public/private key pair that is always kept private. The private key is used to encrypt a message's signature to authenticate the sender (only the sender knows the private key). The private key is also used to decrypt a message that was encrypted with the sender's public key (only the sender can decrypt it). See also *public key*.

Profile Functionality within ClearPass that automatically classifies endpoints, using attributes obtained from collectors. It associates an endpoint with a specific user or location, secures access for devices like printers and IP cameras, and can be used to implement BYOD flows where access is controlled based on the type of the device and the identity of the user.

PSK Pre-shared key. Shared secret that was previously shared between two parties over a secure channel prior to use.

public key The part of a public/private key pair that is made public. The public key is used to encrypt a message; the recipient's private key is required to decrypt the message. A large part of a digital certificate is the certificate owner's public key. See also *private key*.

public-key infrastructure Security technology based on digital certificates and the assurances provided by strong cryptography. See also *certificate authority*, *digital certificate*, *public key*, *private key*.

push certificates Enable the server to work with the Apple Push Notification Service (APNS) and Apple iOS devices connected to an MDM account.

QC See *QuickConnect*.

QuickConnect Functionality within ClearPass used to securely provision an Android, Windows, or OS X device and configure it with network settings. QuickConnect's functionality is now incorporated within Onboard.

RADIUS Remote Access Dial-In User Server. Network access-control protocol for verifying and authenticating users; provides AAA management. A RADIUS transaction might be 802.1X, MAC-Auth, or generic RADIUS.

RFC Request For Comments; a commonly-used format for Internet standards documents.

RFC 3576 Dynamic Authorization Dynamic authorization describes the ability to make changes to a visitor account's session while it is in progress. This might include disconnecting a session or updating some aspect of the authorization for the session.

role Type of access being granted. ClearPass lets you define multiple roles. Such roles could include employee, guest, team member, or press. Roles are used for both guest access (user role) and operator access to ClearPass. See *operator profile*.

root CA Certificate authority that signs its own certificate (a self-signed certificate), and must be explicitly trusted by users of the CA.

SAML Security Assertion Markup Language. XML-based framework for communicating user authentication, entitlement, and attribute information. SAML enables single sign-on by allowing users to authenticate at an identity provider and then access service providers without additional authentication.

SAN Subject Alternative Name. SANs let you specify a list of host names to be protected by a single SSL certificate. Multiple domain names are secured by adding them to the Subject Alternative Name (SAN) field during enrollment. The common name, or primary domain name, on the certificate must be a registered fully qualified domain name.

SCP Secure copy; SCP Protocol. Network protocol that supports file transfers between hosts on a network.

SCEP Simple certificate enrollment protocol. Protocol for requesting and managing digital certificates.

self-signed certificate See *root CA*.

session Service provided by a NAS to an authorized user.

skin A Web site's visual appearance, or "look and feel." It can be thought of as a container that holds the application, its layout, style sheet (font size and color for example), header and footer, and so forth.

Smarty Template engine for PHP, facilitating the separation of presentation (HTML/CSS) from application logic.

SMS Short Message System; a method for delivering short messages (up to 140 characters) to mobile phones.

SNMP Simple Network Management Protocol. A TCP/IP standard protocol for managing devices on IP networks. Network administrators use SNMP to monitor and map network availability, and facilitate the exchange of information between network devices.

SOAP Web Services SOAP Web services provide a way of transferring data across the Internet to integrate Web-based applications. Web services let businesses share data and processes programmatically, and can be added to a user interface to provide functionality. The SOAP interface is available to third-party applications that will integrate with the ClearPass Guest Visitor Management Appliance. The API provides direct access to the underlying functionality of the ClearPass Guest Visitor Management Appliance. Developers wishing to provide integrated applications can use the API to programmatically perform actions that would otherwise require manual operation of the user interface.

SoH Statement of Health.

sponsor See *operator*.

SSID Service Set Identifier. Unique identifier attached to the header of packets sent over a WLAN that acts as a password when a mobile device tries to connect to the basic service set (BSS).

SSO Single Sign-On. Access-control property that lets a user log in once to access multiple related but independent applications or systems to which they have privileges. The process authenticates the user across all allowed resources during their session, eliminating additional login prompts.

static host A hostname; a relationship between a name and an IP address. A static host list is a named list of MAC or IP addresses.

TACACS Family of protocols that handle remote authentication and related services for network access control through a centralized server.

TLS See *EAP-TLS*.

trust chain Sequence of certificates, starting at a trusted root certificate, that establishes the identity of each certificate in the chain.

trusted root See *root CA*.

TTY TTY-enabled devices allow telephones to transmit text communications for people who are deaf or hard of hearing as well as voice communication.

UDID Unique Device Identifier for an iOS device.

UDP User Datagram Protocol. Part of the TCP/IP family of protocols used for data transfer. UDP is typically used for streaming media, and is a "stateless" protocol, meaning it doesn't acknowledge that the packets being sent have been received.

unique device credentials Network authentication credentials that uniquely identify the device and user and enable management of provisioned devices. May be a username and password or a TLS client certificate, depending on the type of device.

user database Database of the guests on the system.

UUID Universally Unique Identifier. Unique identifier generated when a provisioning profile is created, allowing proper app distribution permissions.

view Page in the application that displays data but does not contain interactive fields the user can modify. Usually a table listing things like accounts or other sets of data and providing links to related actions or forms.

visitor Someone who is permitted to access the Internet through your Network Access Server. Also referred to as a guest.

VMA Visitor Management Appliance. Refers to the ClearPass Guest application.

VPN Virtual private network. Enables secure access to a corporate network when located remotely.

VSA Vendor-specific attribute.

walled garden Defined set of internet or network resources that can or cannot be accessed by unauthorized users through the captive portal.

WebAuth User-authentication system for Web pages and Web applications. Web authentication transactions through the dissolvable agent in OnGuard.

Web login Login page displayed to a visitor.

Wi-Fi Wireless Fidelity. Wireless technology providing connectivity within an local area network.

X.509 Standard defining the format and contents of digital certificates.

XML-RPC XML Remote Procedure Call. Protocol that uses XML to encode its calls and HTTP as a transport mechanism. The XML-RPC interface is available to third-party applications that will integrate with the ClearPass Guest Visitor Management Appliance. The ClearPass Guest XML-RPC API provides direct access to the

underlying functionality of the ClearPass Guest Visitor Management Appliance. Developers wishing to provide integrated applications can use the API to programmatically perform actions that would otherwise require manual operation of the user interface.

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