

# ARUBA WIRELESS AND CLEARPASS 6 INTEGRATION GUIDE

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*Technical Note*

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## Audience

This Aruba Wireless and ClearPass 6 Integration Guide is intended for system administrators and people who are integrating Aruba Networks Wireless Hardware with ClearPass 6.0.1.

## Typographic Conventions

The following conventions are used throughout this manual to emphasize important concepts.

Type Style	Description
<i>Italics</i>	Used to emphasize important items and for the titles of books.
<b>Boldface</b>	Used to highlight navigation in procedures and to emphasize command names and parameter options when mentioned in text.
Sample template code or HTML text	Code samples are shown in a fixed-width font.
<angle brackets>	When used in examples or command syntax, text within angle brackets represents items you should replace with information appropriate to your specific situation. For example: ping <ipaddr> In this example, you would type “ping” at the system prompt exactly as shown, followed by the IP address of the system to which ICMP echo packets are to be sent. Do not type the angle brackets.

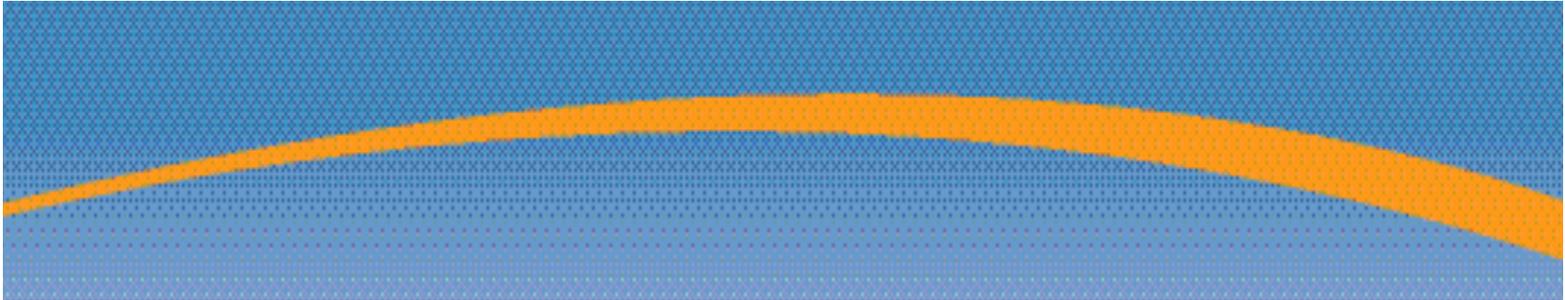
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Airheads Social Forums and Knowledge Base and Knowledge Base	<a href="http://community.arubanetworks.com">community.arubanetworks.com</a>
North American Telephone	1-800-943-4526 (Toll Free) 1-408-754-1200
International Telephones	<a href="http://www.arubanetworks.com/support-services/aruba-support-program/contact-support/">http://www.arubanetworks.com/support-services/aruba-support-program/contact-support/</a>
Software Licensing Site	<a href="https://licensing.arubanetworks.com/">https://licensing.arubanetworks.com/</a>
End of Support information	<a href="http://www.arubanetworks.com/support-services/end-of-life-products/end-of-life-policy/">www.arubanetworks.com/support-services/end-of-life-products/end-of-life-policy/</a>
Wireless Security Incident Response Team (WSIRT)	<a href="http://www.arubanetworks.com/support-services/security-bulletins/">http://www.arubanetworks.com/support-services/security-bulletins/</a>

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Americas and APAC	<a href="mailto:support@arubanetworks.com">support@arubanetworks.com</a>
EMEA	<a href="mailto:emea_support@arubanetworks.com">emea_support@arubanetworks.com</a>
WSIRT Email	<a href="mailto:wsirt@arubanetworks.com">wsirt@arubanetworks.com</a>

Please email details of any security problem found in an Aruba product.



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# 1. Aruba Wireless and ClearPass 6.0.1 Integration Guide

## Purpose

The purpose of this document is to provide instructions for integrating Aruba Networks Wireless Hardware with ClearPass 6.0.1. This will include basic topics for 802.1x, RADIUS, and Guest integration in an environment using an Aruba Networks WLAN Solution.

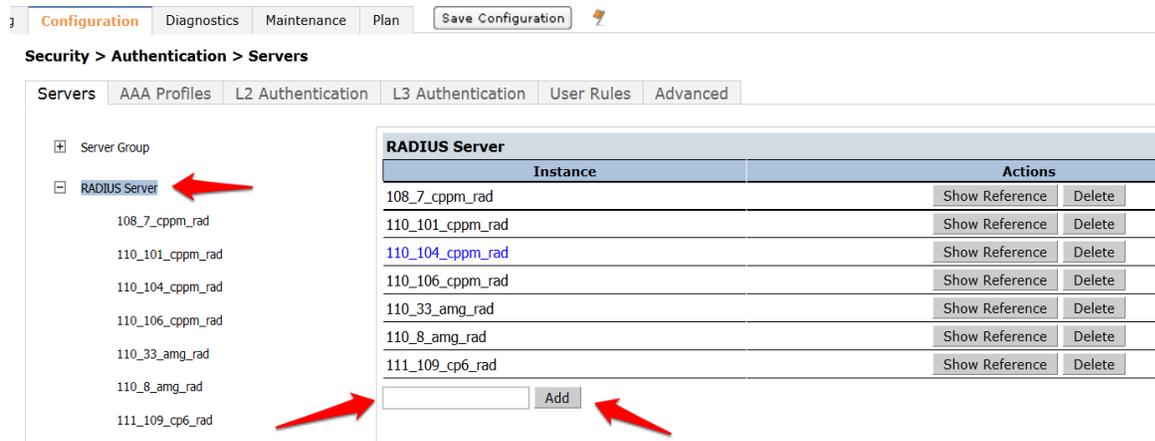
## Assumptions

1. Aruba Networks wireless controller is setup and running the latest code.
2. At least one access point is provisioned on the controller for testing.
3. 802.1x SSID is already configured.
4. Guest SSID with Captive Portal is already configured.
5. DHCP and DNS are appropriately configured.
6. ClearPass 6.0.1 server (VM or Physical Appliance) initial setup is complete. This includes network settings, time and date, and system name.
7. Aruba Wireless controller can communicate with ClearPass 6.0.1.
8. The Guest SSID VLAN can communicate with ClearPass 6.0.1.
9. All systems are appropriately licensed.
10. Only one interface is configured on ClearPass.

## Step 1: AOS Controller Configuration

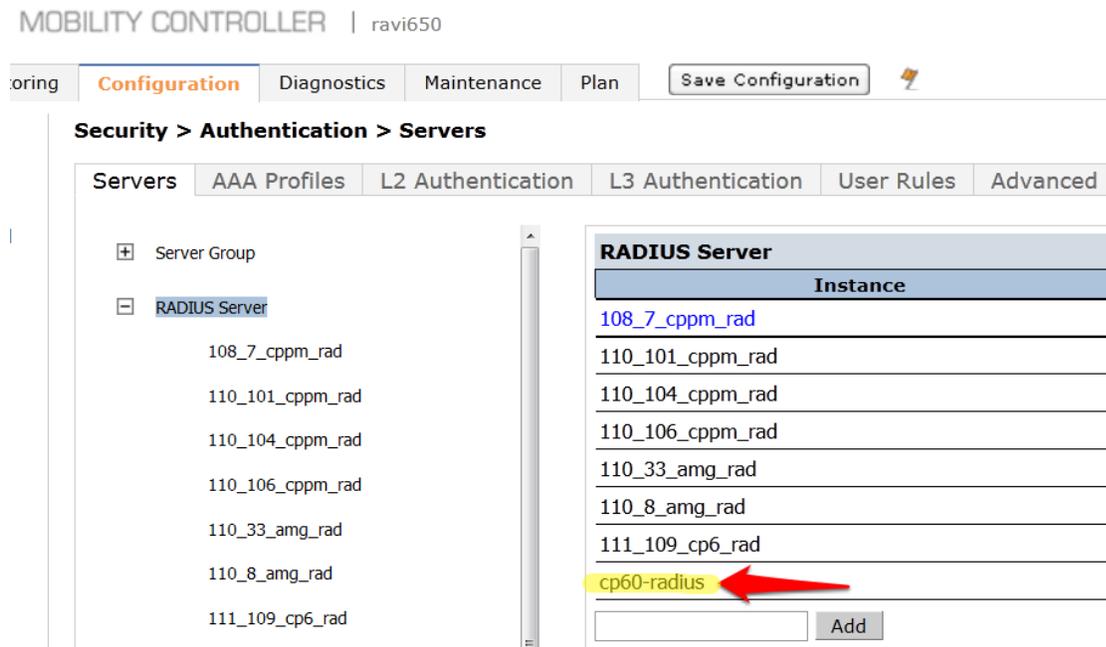
Login to the controller GUI as an admin user. Navigate to **Configuration->Security->Authentication->Servers tab**. Click on **RADIUS Server** and create a new RADIUS server by entering the new RADIUS server reference name in the empty Add box and clicking **Add**.

Figure 1 Adding a RADIUS Server



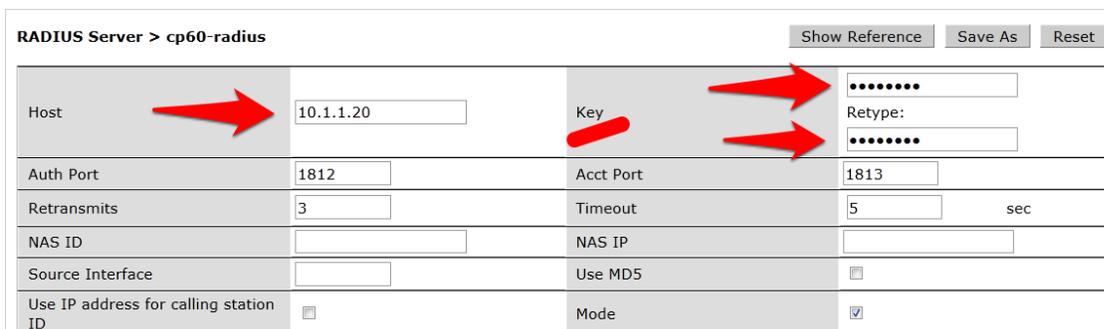
Click on the new server name that shows up in the RADIUS Server list on that page:

Figure 2 RADIUS Server list



Enter the IP address for ClearPass in the **Host** field. Enter <aruba123> for the **key**. Click **Apply** at the bottom of the page to save these configuration settings.

Figure 3 RADIUS server IP and Key entry

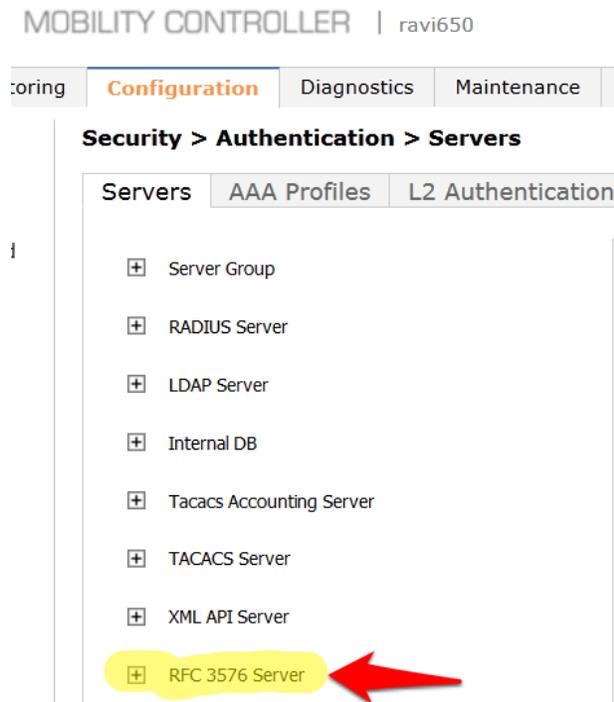


## Step 2: Adding a RFC 3576 Server

The next step is to add an RFC 3576 server entry for ClearPass.

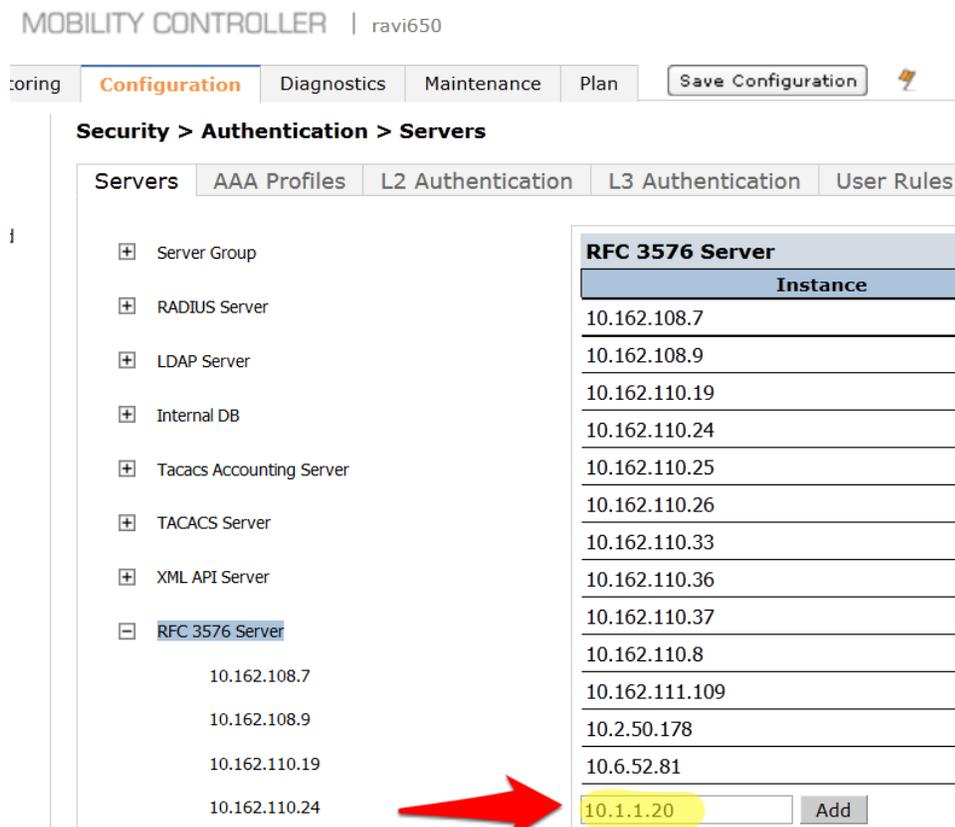
Click on **RFC 3576 Server**.

Figure 4 RFC 3576 Server list



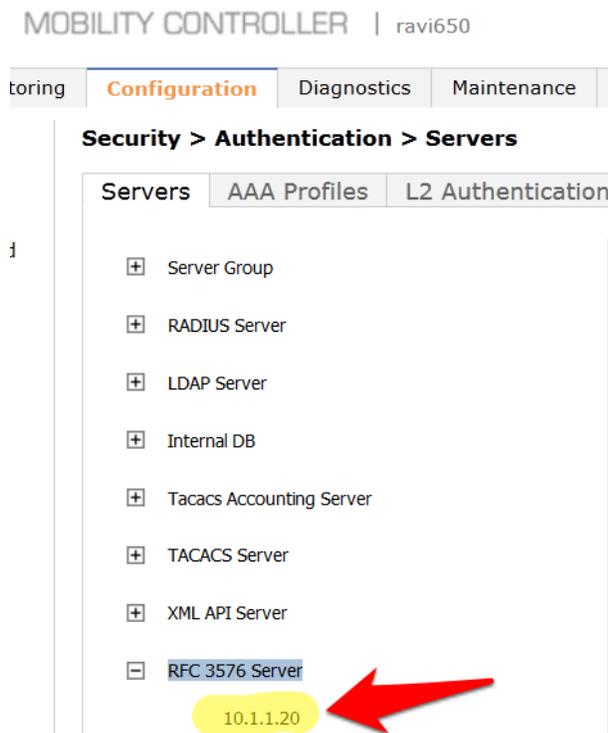
Enter the **IP address** of ClearPass in the entry box and click **Add**.

Figure 5 Adding a RF 3576 Server



Click on the IP address of ClearPass that appears in the left column under RFC 3576 Server.

Figure 6 RFC 3576 Server IP



You will be presented with a screen in the right column that looks like this:

Figure 7 Enter the RADIUS shared key

RFC 3576 Server > 10.1.1.20 Show Reference Save As Reset

Key	<input type="password"/>
Retype:	<input type="password"/>

1. You **MUST** enter the RADIUS shared key into the key boxes. Enter <aruba123> in both boxes and click **Apply** at the bottom of the page to save the changes.

**Note: This step is extremely important!**

### Step 3: Creating a new Server Group for ClearPass

The next step is to create a new Server Group for ClearPass. Click on Server Group.

Figure 8 ClearPass Server Group

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oring **Configuration** Diagnostics Maintenance Plan

**Security > Authentication > Servers**

Servers	AAA Profiles	L2 Authentication	L3 /
<input type="checkbox"/> Server Group			
<input type="checkbox"/> RADIUS Server			
<input type="checkbox"/> LDAP Server			
<input type="checkbox"/> Internal DB			
<input type="checkbox"/> Tacacs Accounting Server			
<input type="checkbox"/> TACACS Server			
<input type="checkbox"/> XML API Server			
<input type="checkbox"/> RFC 3576 Server			
<input type="checkbox"/> Windows Server			

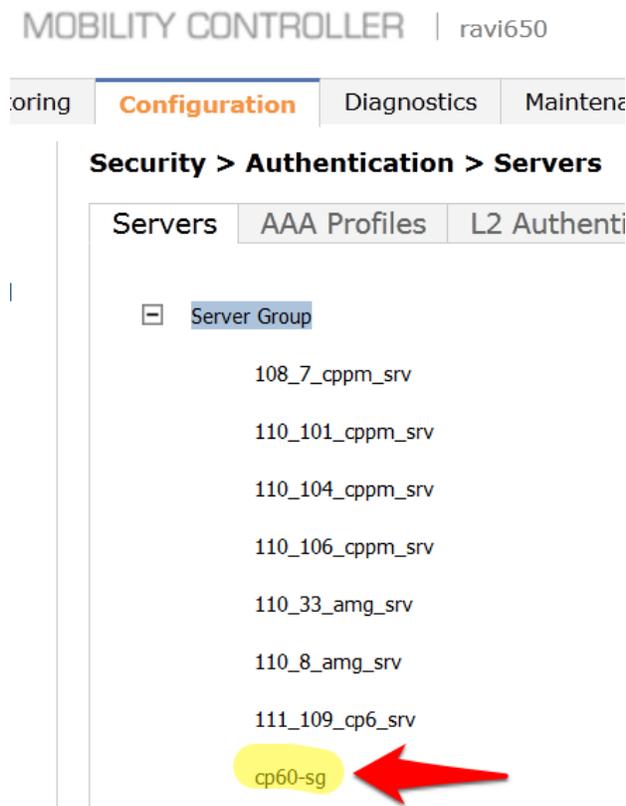
Enter a reference name for your ClearPass Server Group in the empty box and click **Add**.

Figure 9 Adding a ClearPass Server Group



Select the newly created Server Group on the right under Server Group:

Figure 10 ClearPass Server Group list

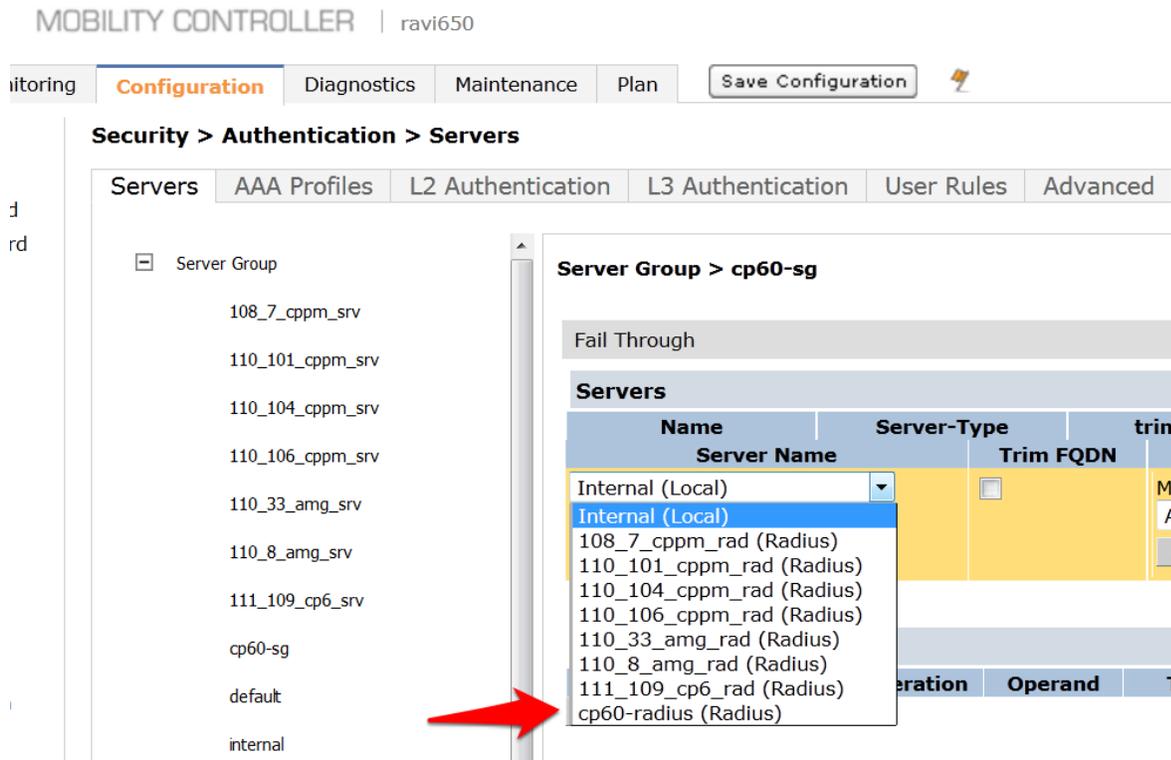


Click **New** and select the ClearPass RADIUS server from the previous step.

Figure 11 Adding a ClearPass RADIUS Server



Figure 12 Selecting the newly created ClearPass Server Group



2. Click **Add Server**. Click **Apply** at the bottom of the page to save the changes.

Figure 13 Select Add Server ClearPass button

Server Group > cp60-sg Show Reference Save As Reset

Fail Through

**Servers**

Name	Server-Type	trim-FQDN	Match-Rule	Actions
Server Name	Trim FQDN	Match Type	Operator	Match String
cp60-radius (Radius)	<input type="checkbox"/>	Authstring	contains	
		<span>Add Rule</span>	<span>Delete Rule</span>	

Add Server Cancel

**Server Rules**

Priority	Attribute	Operation	Operand	Type	Action	Value	Validated	Actions
New								

Captive Portal profile

Click on the **L3 Authentication** tab.

Figure 14 L3 Authentication tab

MOBILITY CONTROLLER | ravi650

oring **Configuration** Diagnostics Maintenance Plan Save Configuration

**Security > Authentication > Servers**

Servers AAA Profiles L2 Authentication **L3 Authentication** User Rule

Server Group

- 108\_7\_cppm\_srv
- 110\_101\_cppm\_srv
- 110\_104\_cppm\_srv
- 110\_106\_cppm\_srv
- 110\_33\_amg\_srv
- 110\_8\_amg\_srv
- 111\_109\_cp6\_srv
- cp60-sg**
- default
- internal

**Server Group > cp60-sg**

Fail Through

**Servers**

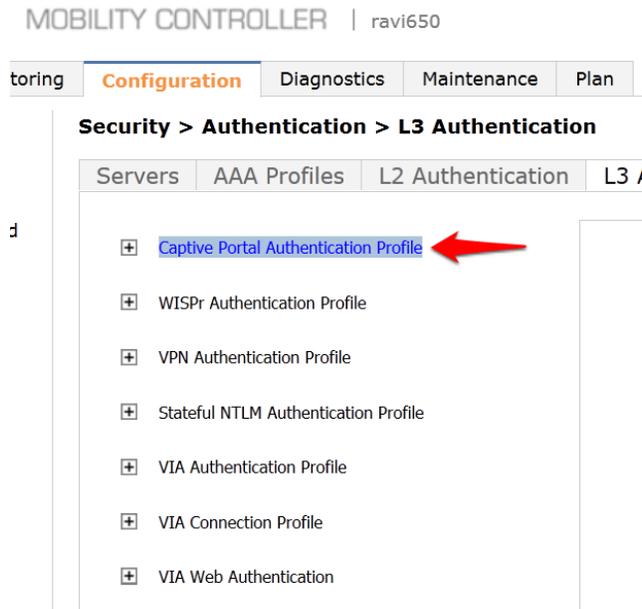
Name	Server-Type
Server Name	
cp60-radius (Radius)	

**Server Rules**

Priority	Attribute	Operation
New		

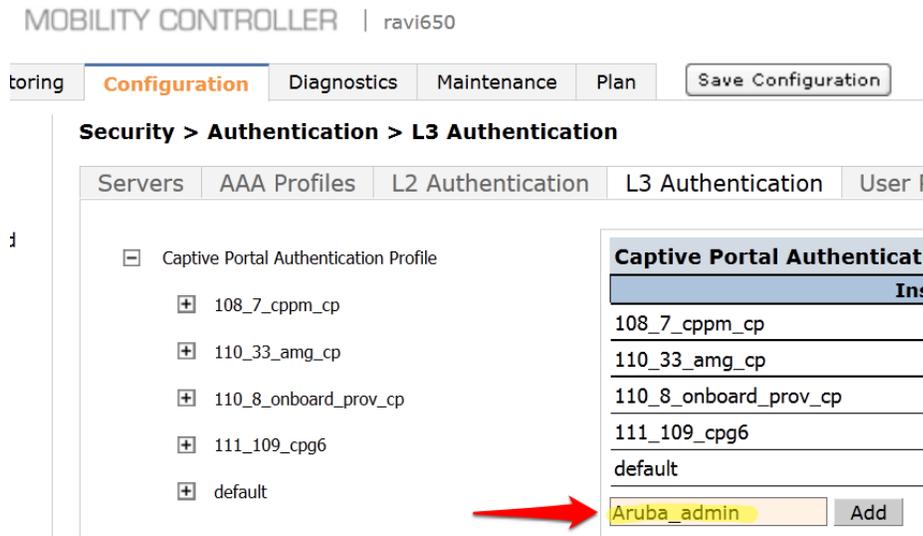
Click on **Captive Portal Authentication Profile**.

Figure 15 Select Captive Portal Authentication Profile



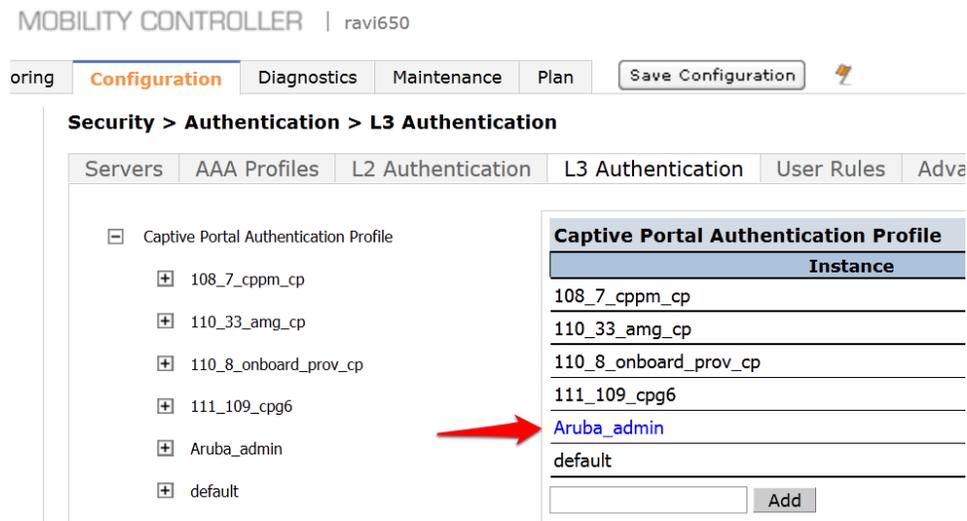
Enter a new Captive Portal profile name in the empty box and click **Add**.

Figure 16 Enter a new Captive Portal profile name



Select the newly created **Captive Portal Authentication Profile** under **Captive Portal Authentication Profile** on the right.

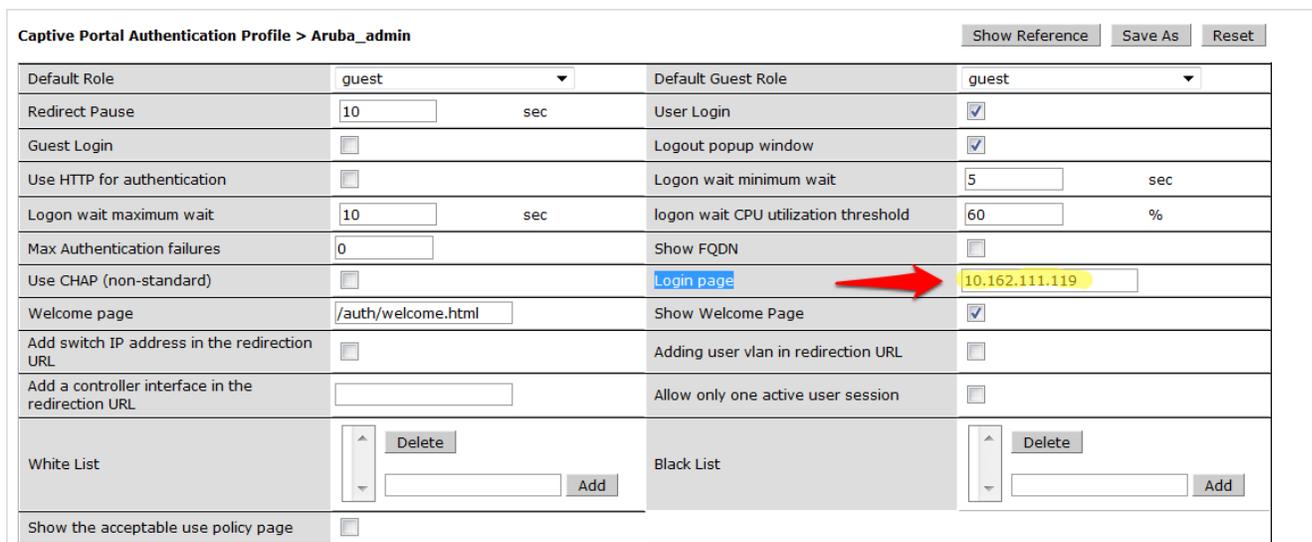
Figure 17 Select the newly created Captive Portal Authentication Profile



There are two things we need to change on this profile.

3. Change the **Login page** to [http://10.1.1.20/guest/guest\\_register\\_login.php](http://10.1.1.20/guest/guest_register_login.php) (replacing the 10.1.1.20 with the IP address of your ClearPass 6.0.1 server).

Figure 18 Captive Portal Authentication Profile login page IP



Click **Apply** at the bottom to save the changes.

4. Click on **Server Group** under the **Captive Portal Authentication Profile** and change the **Server Group** from **default** to the Server Group that you created for ClearPass in the previous steps and click **Apply** at the bottom of the page to save the changes.

Figure 19 Changing "default" server group to the newly created Captive Portal Authentication Profile server name

### Security > Authentication > L3 Authentication

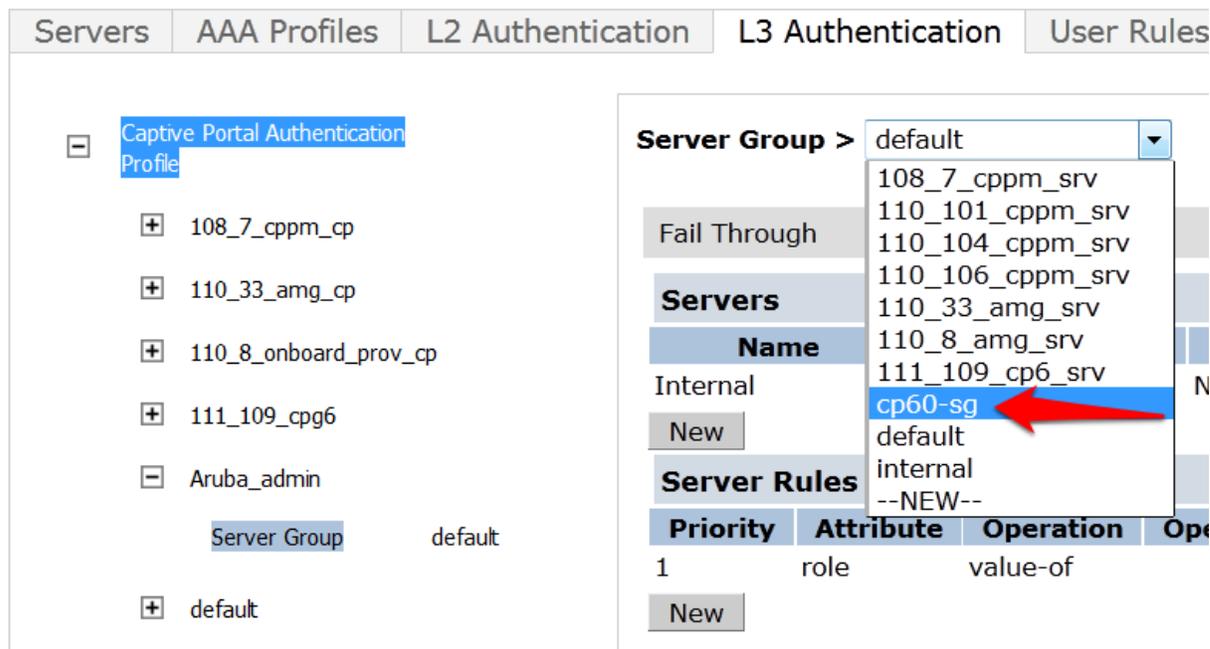
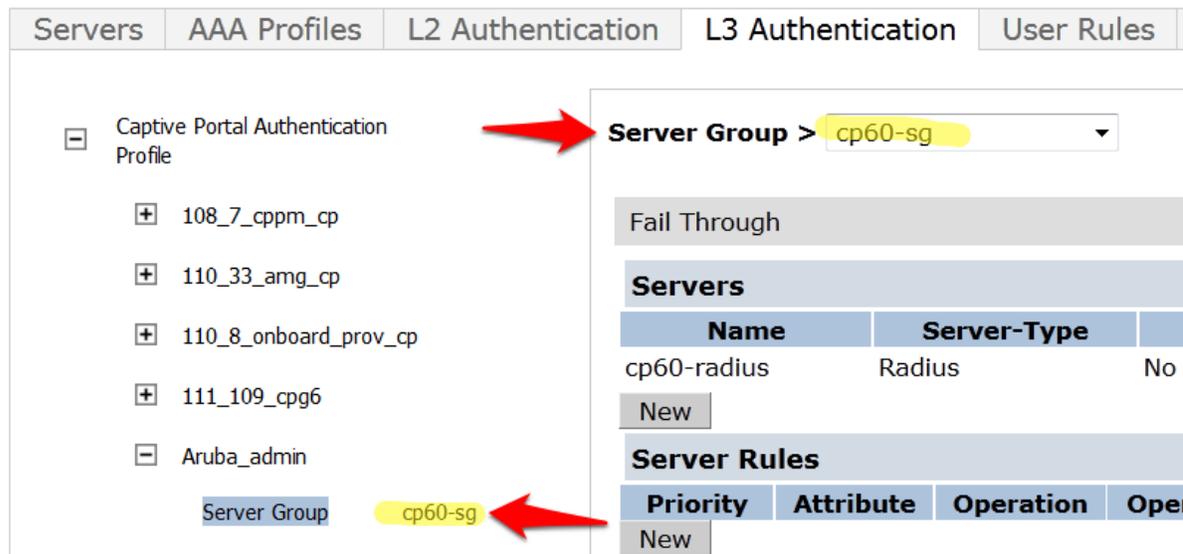


Figure 20 The newly created Captive Portal Authentication Profile server Group

### Security > Authentication > L3 Authentication



## Step 4: Create a Captive Portal role

Now we need to create our Captive Portal role, which is the role that clients will receive when they connect to the Guest SSID.

Navigate to **Configuration->Security->Access Control->User Roles** tab. Click **Add** to create a new User Role.

Figure 21 User Roles tab

Security > Access Control > User Roles

User Roles				
System Roles				
Policies				
Time Ranges				
Guest Access				
Name	Firewall Policies	Bandwidth Contract		Actions
108_7_cpmm_cp	logon-control/,captiveportal/	Up:Not Enforced	Down:Not Enforced	Show Reference Edit Delete
110_33_amg_logon	logon-control/,captiveportal/	Up:Not Enforced	Down:Not Enforced	Show Reference Edit Delete
110_8_onboard_prov_logon	110_8_onboard_prov_cp_list_operations/,logon-control/,captiveportal/	Up:Not Enforced	Down:Not Enforced	Show Reference Edit Delete
111_109_cpg6_logon	logon-control/,captiveportal/	Up:Not Enforced	Down:Not Enforced	Show Reference Edit Delete
authenticated	allowall/,v6-allowall/	Up:Not Enforced	Down:Not Enforced	Show Reference Edit Delete
default-via-role	allowall/	Up:Not Enforced	Down:Not Enforced	Show Reference Edit Delete
default-vpn-role	allowall/,v6-allowall/	Up:Not Enforced	Down:Not Enforced	Show Reference Edit Delete
denyall	Not Configured	Up:Not Enforced	Down:Not Enforced	Show Reference Edit Delete
guest	http-acl/,https-acl/,dhcp-acl/,icmp-acl/,dns-acl/,v6-http-acl/,v6-https-acl/,v6-dhcp-acl/,v6-icmp-acl/,v6-dns-acl/	Up:Not Enforced	Down:Not Enforced	Show Reference Edit Delete
guest-logon	v6-logon-control/,captiveportal6/,logon-control/,captiveportal/	Up:Not Enforced	Down:Not Enforced	Show Reference Edit Delete
logon	ocsp-acl/,captiveportal6/,logon-control/,captiveportal/,vpnlogon/,v6-logon-control/	Up:Not Enforced	Down:Not Enforced	Show Reference Edit Delete
voice	sip-acl/,noe-acl/,svp-acl/,vocera-acl/,skinny-acl/,h323-acl/,dhcp-acl/,tftp-acl/,dns-acl/,icmp-acl/	Up:Not Enforced	Down:Not Enforced	Show Reference Edit Delete
Add				

Enter a name like <CPG-Login> for the **Role Name** under **Firewall Policies**, Click **Add**.

Figure 22 Adding a User Role

Security > User Roles > Add Role

User Roles				
System Roles				
Policies				
Time Ranges				
Guest Access				
<b>Role Name</b>		CPG-Login		
<b>Firewall Policies</b>				
<b>Name</b>		<b>Rule Count</b>		
Add				

For the first policy, it is essentially important that we add an ACL that will allow our **Guest user** to access ClearPass 6.0.1, which is where the Captive Portal webpage will be hosted.

Choose the radio button for **Create New Policy**, and click the **Create** button:

Figure 23 Create new User Role Policy

**Security > User Roles > Add Role**

User Roles | System Roles | Policies | Time Ranges | Guest Access

**Role Name**

**Firewall Policies**

Name	Rule Count
<input type="button" value="Add"/>	

Choose From Configured Policies

Create New Policy From Existing Policy

Create New Policy

Enter and select the following information:

- **Policy Name:** <CP6-web-ACL>
- **Policy Type:** <Session>

Click **Add**.

Figure 24 Entering the Policy Name and Policy Type

**Security > User Roles > Add Role > Add New Policy**

User Roles | System Roles | Policies | Time Ranges | Guest Access

Policy Name

Policy Type

**Rules**

IP Version	Source	Destination	Service	Action	Log	Mirror	Queue	Time
------------	--------	-------------	---------	--------	-----	--------	-------	------

Select and enter the following information for the first line of the ACL:

- **IP Version:** <IPv4>
- **Source:** <User>
- **Destination:** host
  - **Host IP:** (the IP address of your ClearPass server)
- **Service:** <service>
  - **Service:** <svc-http (tcp 80)>

- **Action:** <permit>

Figure 25 Entering the ACL (Access Control List) field names

**Security > User Roles > Add Role > Add New Policy**

Policy Name: CP6-web-ACL  
 Policy Type: Session

**Rules**

IP Version	Source	Destination	Service	Action	Log	Mirror	Queue	Time
IPv4	user	host Host IP 10.162.111.119	service Service svc-http (tcp 80)	permit				

Add

Click **Add** at the far right underneath this rule.

Figure 26 Firewall policy rule Add button

« Back

sify Media	TOS	802.1p Priority	Action
<input type="checkbox"/>	<input type="checkbox"/>		

Black List:  Classify Media:  TOS:  802.1p Priority:

Add Cancel

Done

Click **Add** again to add another line to this ACL, identical to the previous line except:

Choose **Service: svc-https (tcp 443)**

Figure 27 Adding a svc-https (tcp 443 Service ACL

**Security > User Roles > Add Role > Add New Policy**

User Roles System Roles Policies Time Ranges Guest Access

Policy Name

Policy Type

**Rules**

IP Version	Source	Destination	Service	Action	Log	Mirror	Queue	Time R
IPv4	user	host 10.162.111.119	svc-http	permit			low	

IP Version	Source	Destination	Service	Action
<input type="text" value="IPv4"/>	<input type="text" value="user"/>	<input type="text" value="host"/> Host IP <input type="text" value="10.162.111.119"/>	<input type="text" value="service"/> Service <input type="text" value="svc-https (tcp 443)"/>	<input type="text" value="permit"/>

Click **Add** at the far right underneath this rule.

Figure 28 Accepting the ACL rows created

**Security > User Roles > Add Role > Add New Policy**

User Roles System Roles Policies Time Ranges Guest Access

Policy Name

Policy Type

**Rules**

IP Version	Source	Destination	Service	Action	Log	Mirror	Queue
IPv4	user	host 10.162.111.119	svc-http	permit			low
IPv4	user	host 10.162.111.119	svc-https	permit			low

Click **Done**

You will be brought back to the Add Role page where you were creating your CPG-Login User Role.

Figure 29 User Roles Add page listings

**Security > User Roles > Add Role**

User Roles System Roles Policies Time Ranges Guest Access

**Role Name**

**Firewall Policies**

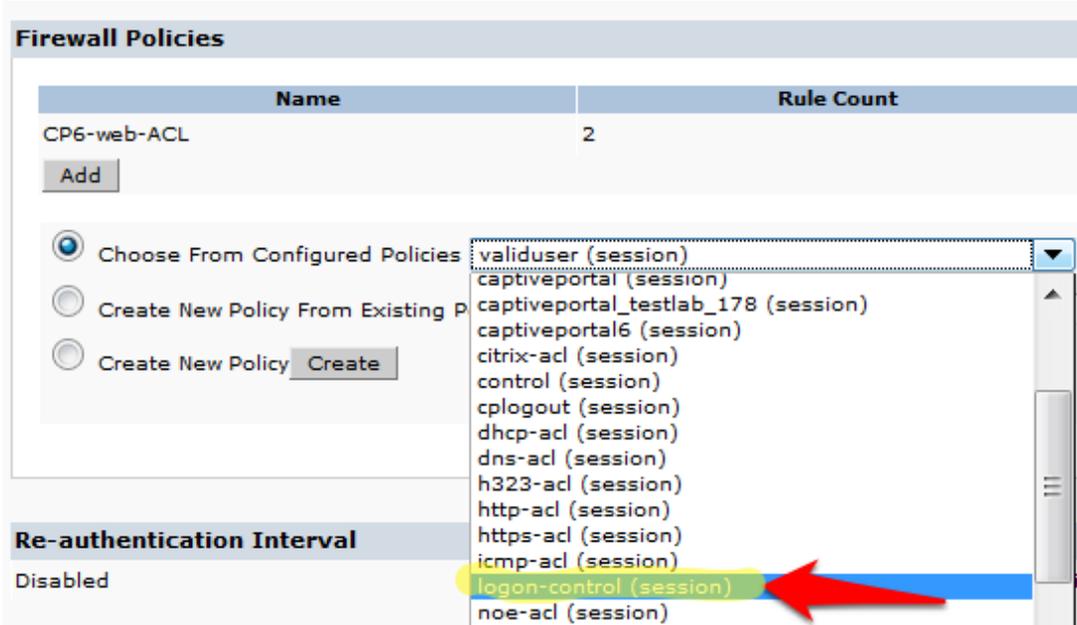
Name	Rule Count
CP6-web-ACL	2

## Step 5: Pre-configured Firewall Policies

The Firewall Policy that you just created has been added to the list. Now we need to add two more pre-configured Firewall Policies.

Click **Add** under **Firewall Policies**. Select the radio button for **Choose From Configured Policies** and select the policy called **logon-control (session)**.

Figure 30 Firewall logon-control (session) policy

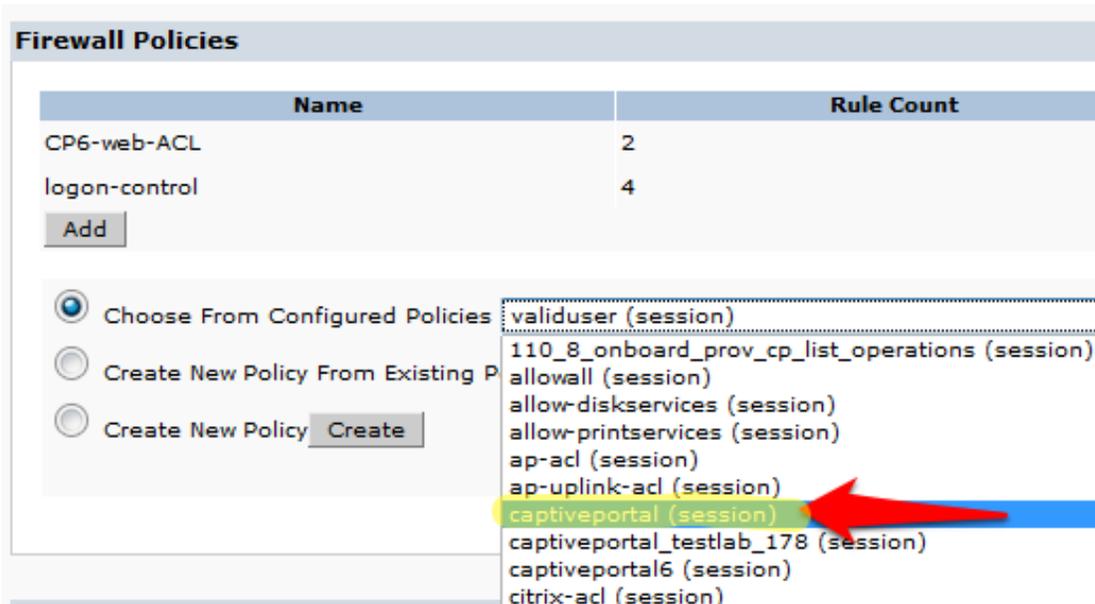


Click **Done** in the **Firewall Policies** section.

Click **Add** again in the **Firewall Policies** section.

Select the radio button for **Choose From Configured Policies** and select the policy called **captiveportal (session)**.

Figure 31 Firewall "captiveportal (session)" policy



Click **Done** in the **Firewall Policies** section. Your Firewall Policy should look like this:

Figure 32 Firewall Policies list

Firewall Policies		
Name	Rule Count	Location
CP6-web-ACL	2	
logon-control	4	
captiveportal	8	

**NOTE:** The Firewall policy order **MUST** place “captive portal” at the **bottom** of the list!

Scroll down this page to the **Captive Portal Profile** section.

Select the previously configured Captive Portal Profile from the drop-down list.

Figure 33 Aruba\_admin captive portal being chosen



Click the **Change** button.

Figure 34 Select the previously configured Captive Portal Profile



Verify that the “Not Assigned” has changed to the name of your Captive Portal Profile.



Click **Apply** at the bottom of the page to save the newly created User Role.

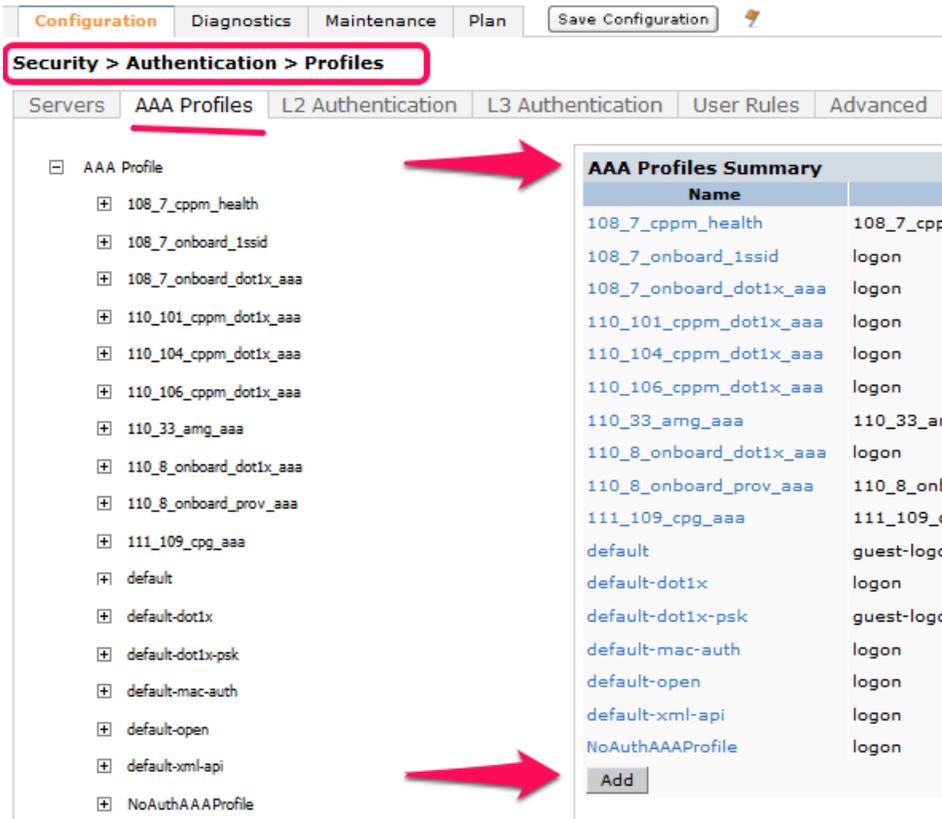
## Step 6: Creating AAA Profiles for the ClearPass Guest and 802.1x SSID

The next step is to create AAA Profiles for the ClearPass Guest and 802.1x SSID.

Navigate to **Configuration->Security->Authentication->AAA Profiles tab**.

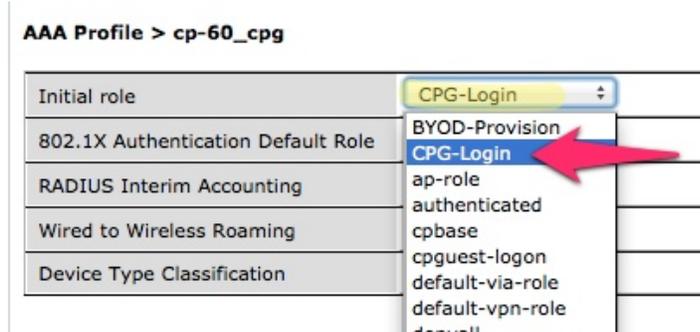
Click **Add**, enter a name for the ClearPass Guest Profile, and then click **Add** again.

Figure 35 Adding a ClearPass Guest Profile



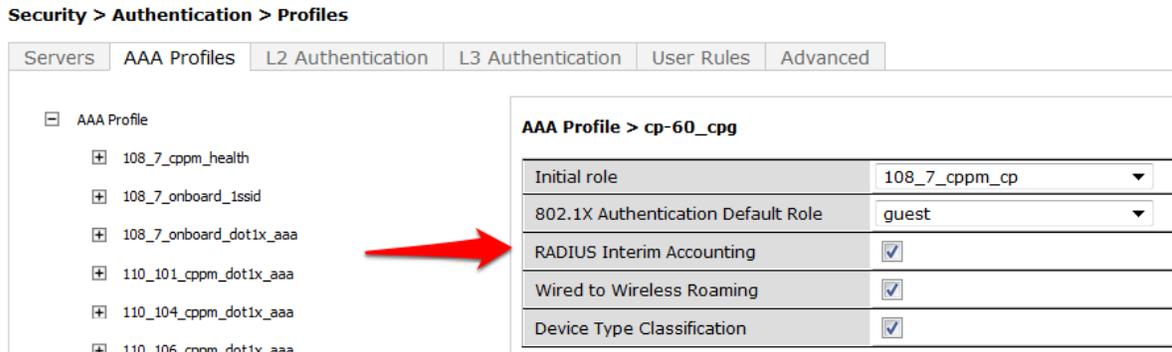
Now in the left column, click on the new profile that you just created. Change the Initial role to the role that you created in Step 4: Create a Captive Portal role page 20.

Figure 36 Changing the default Initial role



**Tech Tip:** On this page you will see an option for **RADIUS Interim Accounting**. This should be checked if you want live utilization updates in ClearPass, usually used to control guest users based on Bandwidth Utilization.

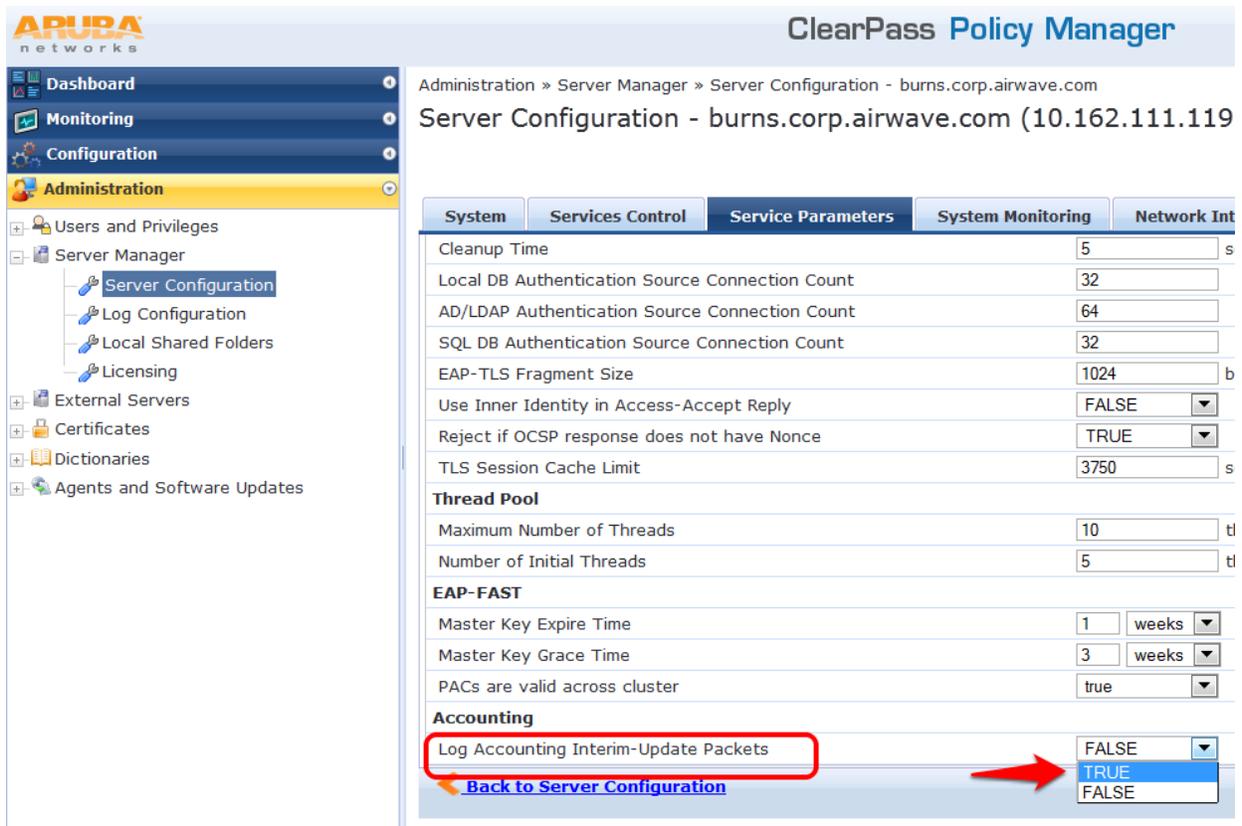
Figure 37 RADIUS Interim Accounting option



**Note:** This also needs to be enabled on ClearPass.

In ClearPass Policy Manager, navigate to:  
**Administration->Server Manager->Server Configuration->Select Server->Service Parameters->RADIUS Server->Log Accounting Interim-Update Packets="TRUE".**

Figure 38 Log Accounting Interim-Update Packets option in CPPM

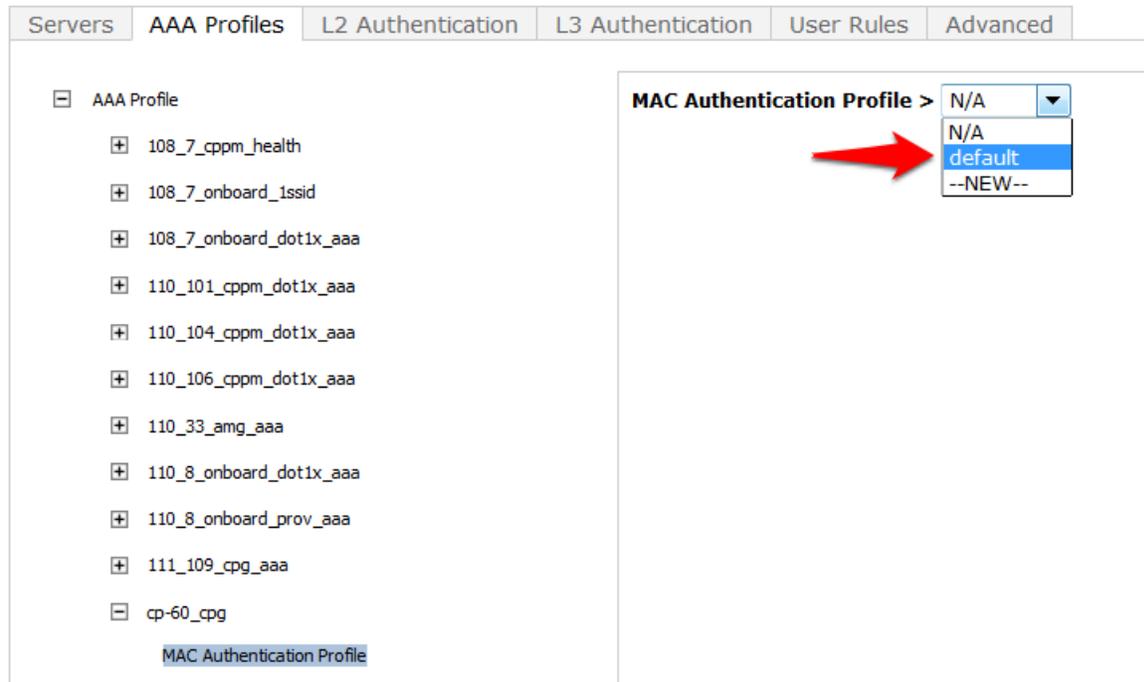


Set the subsections of the profile as described below, clicking **Apply** after each change:

**MAC Authentication Profile: default**

Figure 39 MAC Authentication Profile setting = default

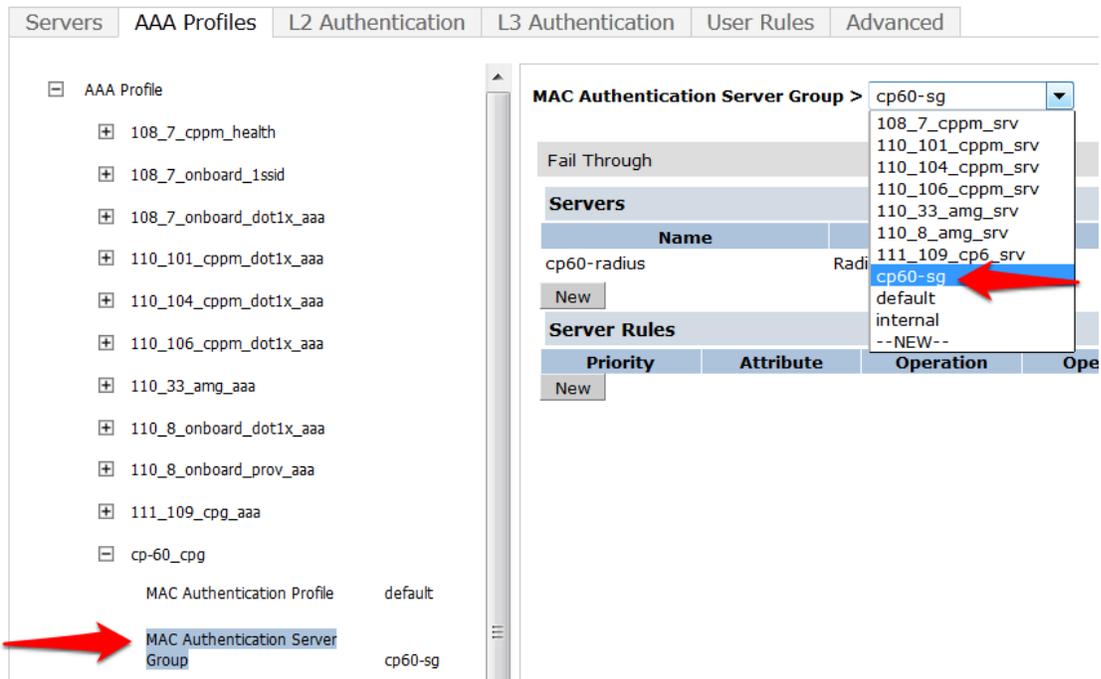
**Security > Authentication > Profiles**



**MAC Authentication Server Group:** (Your ClearPass 6.0.1 Server Group)

Figure 40 MAC Authentication Server Group option

**Security > Authentication > Profiles**



**RADIUS Accounting Server Group:** (Your ClearPass 6.0.1 Server Group)

Figure 41 RADIUS Accounting Server Group option

Security > Authentication > Profiles

The screenshot shows the configuration interface for AAA Profiles. On the left, a tree view under 'AAA Profile' lists various profiles, with 'RADIUS Accounting Server Group' selected and highlighted by a red arrow. On the right, the configuration for the selected profile is shown. The 'RADIUS Accounting Server Group' dropdown is set to 'cp60-sg'. Below this, there are sections for 'Fail Through', 'Servers', and 'Server Rules'. The 'Servers' section contains a table with columns 'Name' and 'Attribute'. The 'Server Rules' section contains a table with columns 'Priority' and 'Attribute'. A red arrow points to the 'cp60-sg' option in the dropdown menu.

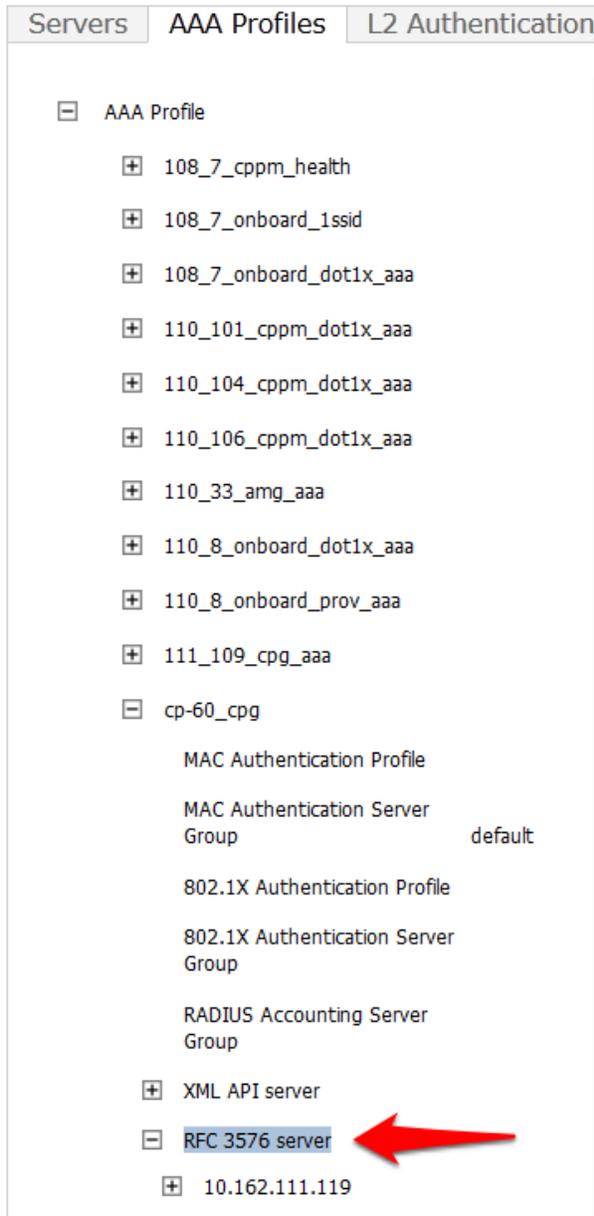
Name	Attribute
cp60-radius	cp60-radius
cp60-sg	cp60-sg

Priority	Attribute
default	default
internal	internal
--NEW--	--NEW--

Click on **RFC 3576** for this AAA Profile.

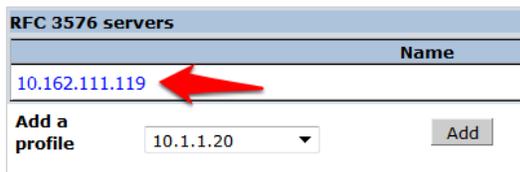
Figure 42 RFC 3576 for this AAA Profile

**Security > Authentication > Profiles**



From the **Add a profile** list, select the IP address of your ClearPass server and click the **Add** button.

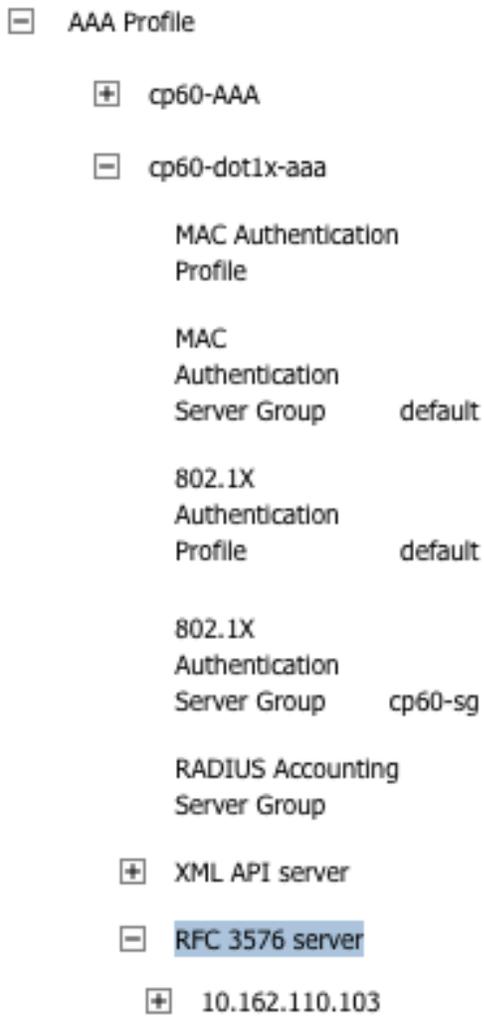
Figure 43 IP address of your ClearPass server



Click **Apply** to save these settings.

Repeat Creating AAA Profiles for the ClearPass Guest and 802.1x SSID, page 26, to create the AAA Profile for the 802.1x SSID. The only difference is that this AAA Profile will have 802.1x settings but no MAC Authentication Profile. See example below:

Figure 44 Configuring no MAC Authentication Profile



## Step 7: Associating a 802.1x SSID and Guest SSID with AAA Profiles

The next step is to associate our 802.1x SSID and Guest SSID with the AAA Profiles we just created.

Navigate to **Configuration->Advanced Services->All Profiles**.

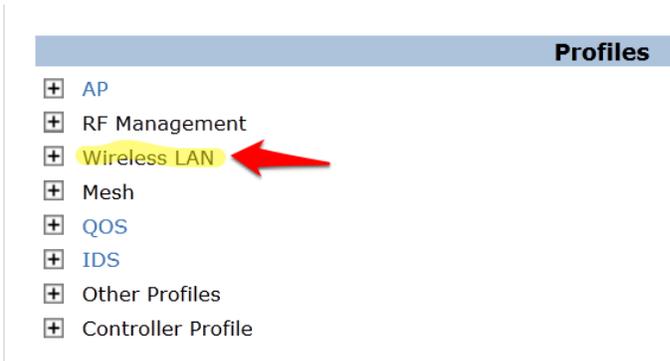
Figure 45 Advanced Services All Profiles menu



Expand the **Wireless LAN** section.

Figure 46 Advanced Services Wireless LAN Profile

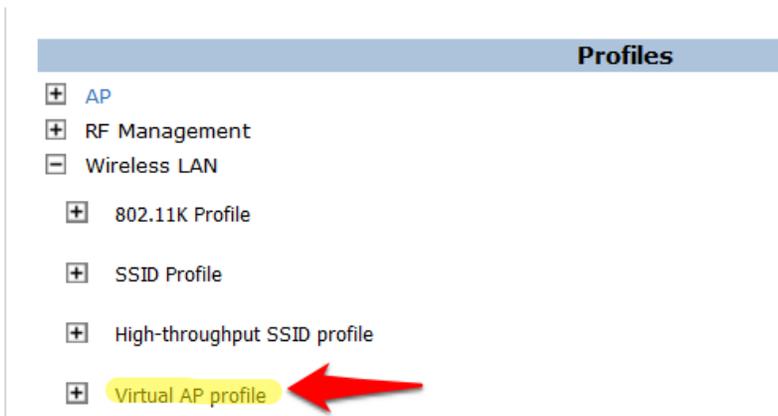
### Advanced Services > All Profile Management



Expand the **Virtual AP profile** and locate your Guest and 802.1x SSID profiles.

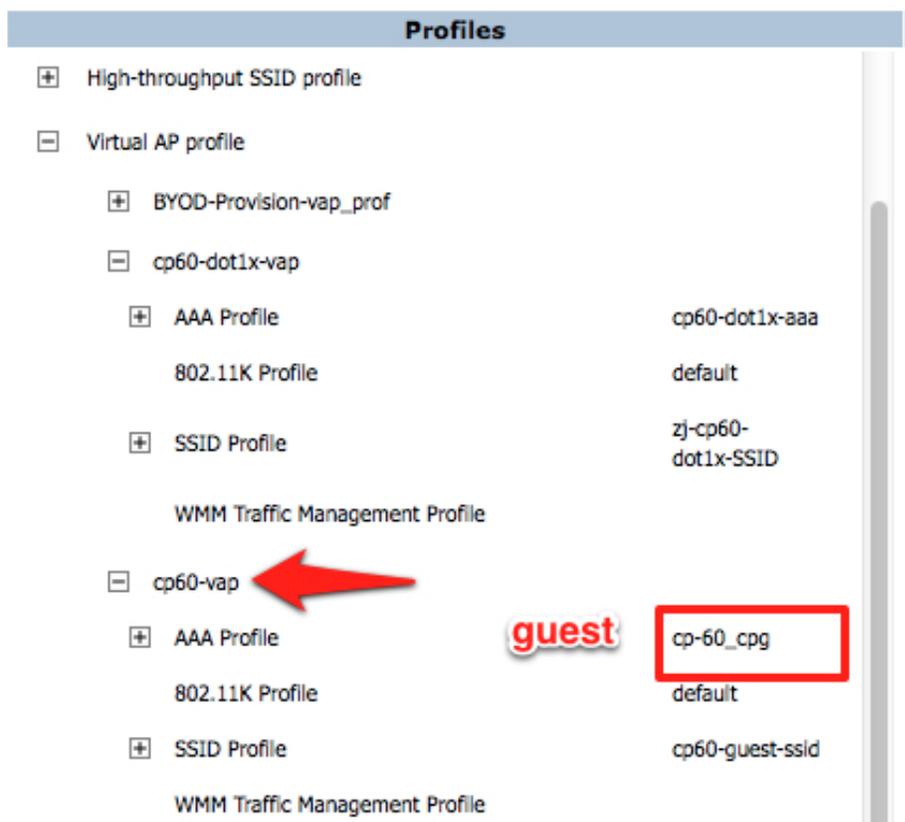
Figure 47 Advanced Services Virtual AP Profile

### Advanced Services > All Profile Management



Modify each Virtual AP profile to use the appropriate AAA Profile that you created in the previous section.

Figure 48 Virtual AP Profile modifications



Make sure to click **Apply** after each change.

Click the **Save Configuration** button at the top of the page once the changes are completed.

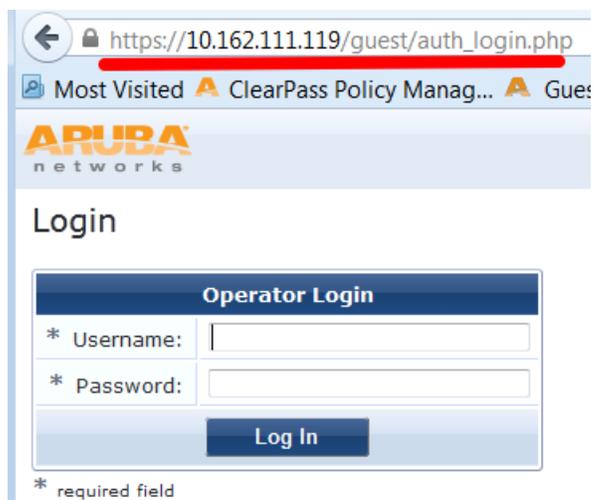
## Step 8: ClearPass Guest Setup

In this step we will configure basic Guest Registration and Login.

### Basic Guest Registration and Login configuration

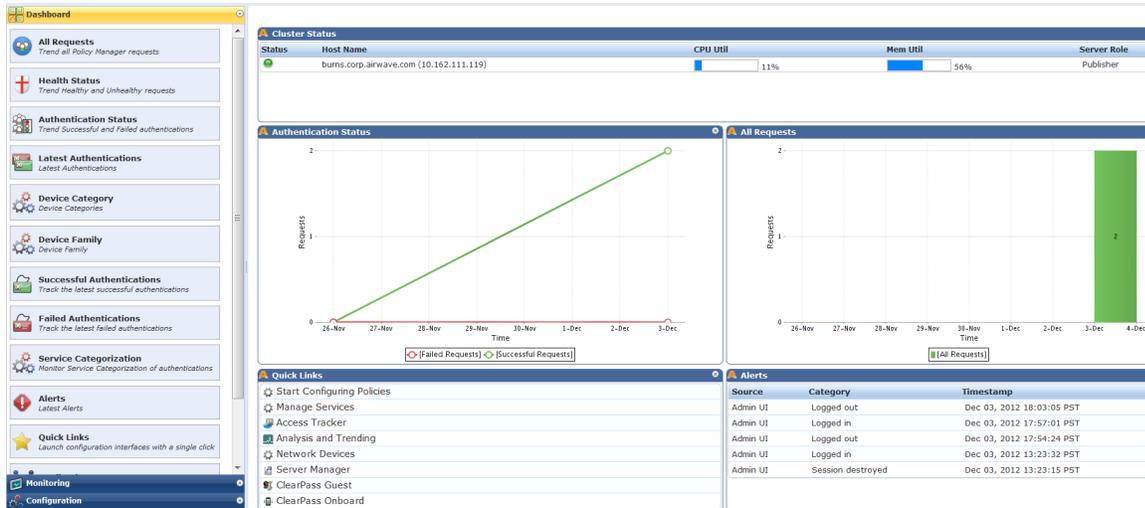
Log into ClearPass Policy Manager (<https://<your-cp-ip-here>/tips>).

Figure 49 Policy Manager login



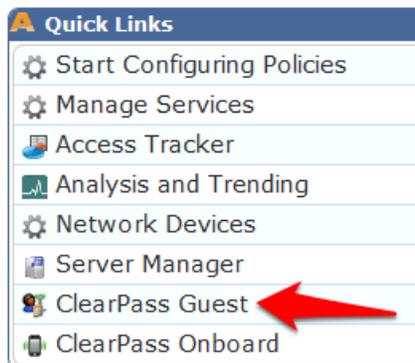
After you login, you will see the ClearPass Policy Manager Dashboard.

Figure 50 ClearPass Policy Manager Dashboard



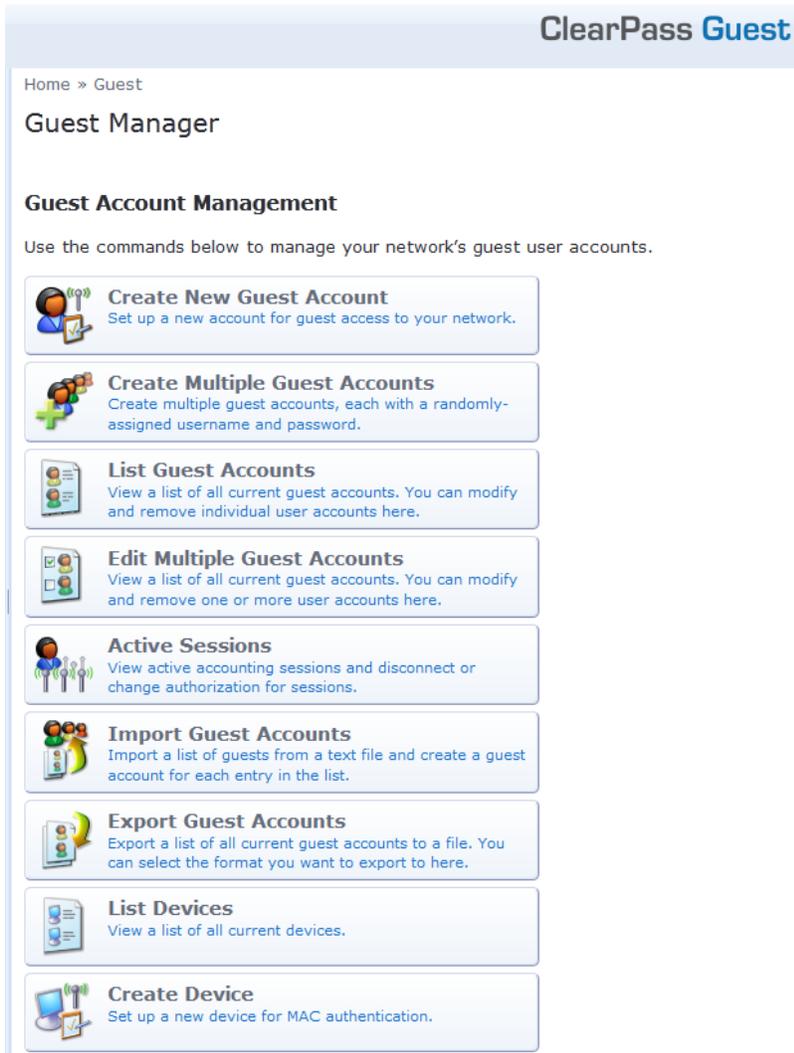
One of the Dashboard objects is Quick Links. Click on the quick link for ClearPass Guest

Figure 51 ClearPass Guest Quick Link



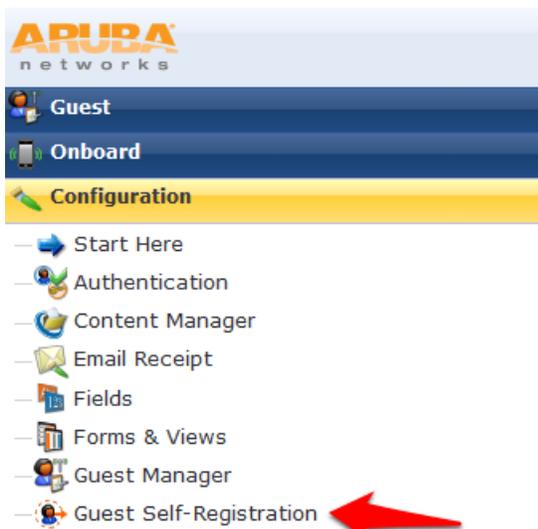
Clicking this link will automatically log you into the ClearPass Guest administration page. Alternatively you could enter the url for the Guest page) (<https://<your-cp-ip-here>/guest>).

Figure 52 ClearPass Guest administration page



Navigate to **Configuration->Guest Self-Registration**.

Figure 53 ClearPass Guest Self-Registration selection



Click on the preconfigured **Guest Self-Registration** profile. This will reveal several options. Click **Edit**.

Figure 54 ClearPass Guest Self-Registration menu

Home » Configuration » Guest Self-Registration

## Guest Self-Registration

Use this list view to manage the pages used for guest self-registration.

Quick Help			
Name	Register Page	Skin	Parent
<b>Guest Self-Registration</b> Default settings for visitor self-registration.	guest_register	(Default)	(No Parent)
Edit Delete Duplicate Disable Go To			
1 self-registration  Reload			20 rows per page

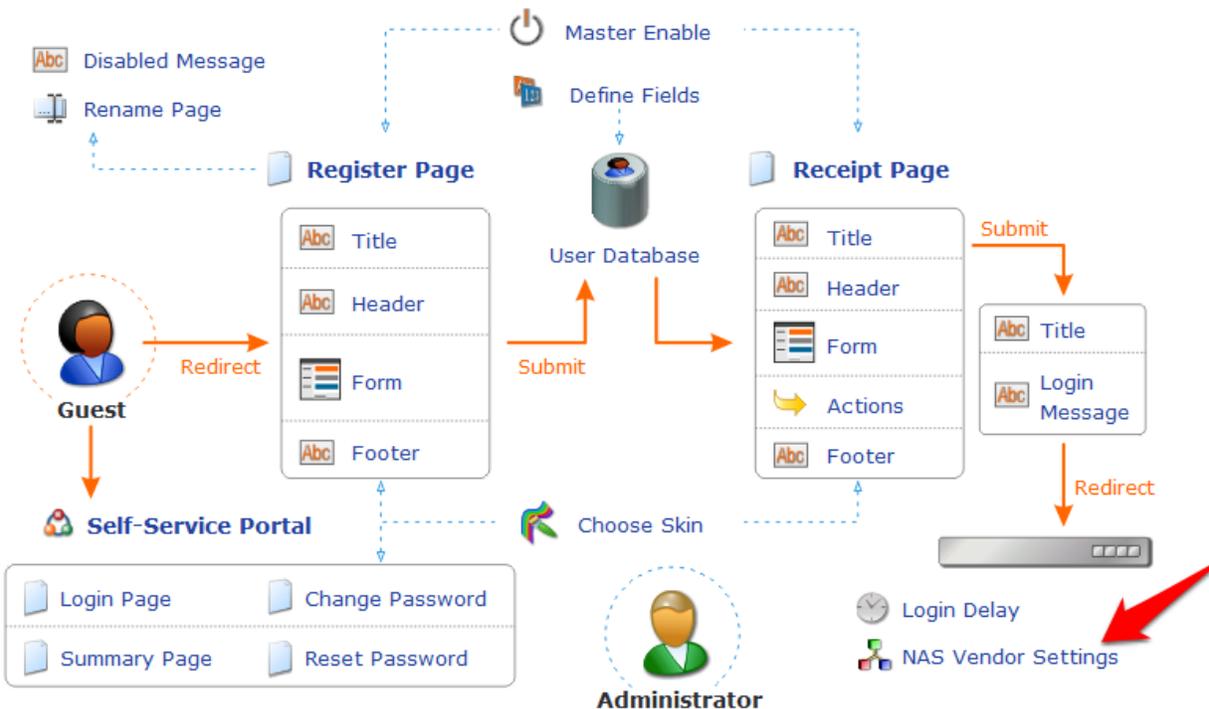
Back to configuration

Back to main

In this guest registration profile, it is necessary to enable web login. Click **NAS Vendor Settings** from the edit diagram:

Figure 55 NAS Vendor Settings

### Guest Self-Registration 'Guest Self-Registration'



On the **NAS Login** settings page, check the checkbox to **Enable guest login to a Network Access Server**. It will prepopulate the settings with Aruba Networks NAS settings.

Figure 56 Enable guest login to a Network Access Server

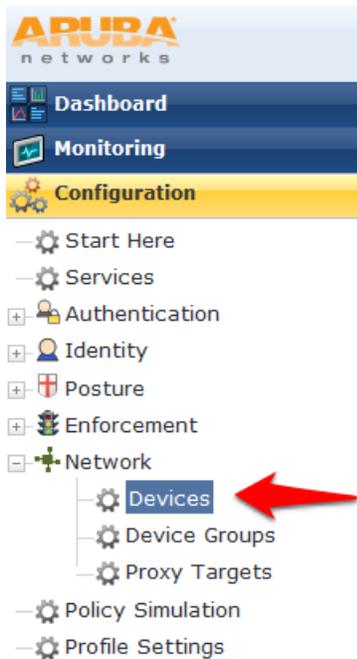
Customize Guest Registration	
<b>NAS Login</b> Options controlling logging into a NAS for self-registered guests.	
Enabled:	<input checked="" type="checkbox"/> Enable guest login to a Network Access Server
* Vendor Settings:	Aruba Networks Select a predefined group of settings suitable for standard network configurations.
IP Address:	securelogin.arubanetworks.com Enter the IP address or hostname of the vendor's product here.
Secure Login:	Use vendor default Select a security option to apply to the web login process.
Dynamic Address:	<input type="checkbox"/> The controller will send the IP to submit credentials In multi-controller deployments, it is often required to post credentials to different addresses made available as part of the original redirection. The address above will be used whenever the parameter is not available or fails the requirements below.
<b>Default Destination</b> Options for controlling the destination clients will redirect to after login.	
Default URL:	<input type="text"/> Enter the default URL to redirect clients. Please ensure you prepend "http://" for any external domain.
Override Destination:	<input type="checkbox"/> Force default destination for all clients If selected, the client's default destination will be overridden regardless of its value.
<input type="button" value="Save Changes"/> <input type="button" value="Save and Continue"/>	

Click **Save Changes**.

## 2. ClearPass Policy Manager Setup

In ClearPass Policy Manager, navigate to **Configuration->Network->Devices**.

Figure 57 ClearPass Policy Manager Network Devices selection



Click **Add Device** in the top right corner of the page.

Figure 58 Add a ClearPass Policy Manager Network Device



Enter a **Name** and the **IP or Subnet address** for your Wireless Controller. For the RADIUS Shared Secret, enter <aruba123> (the same shared secret we used in the Controller setup for RADIUS and RFC 3576). Select **Aruba** as the **Vendor Name**, and check the box to **Enable RADIUS CoA**

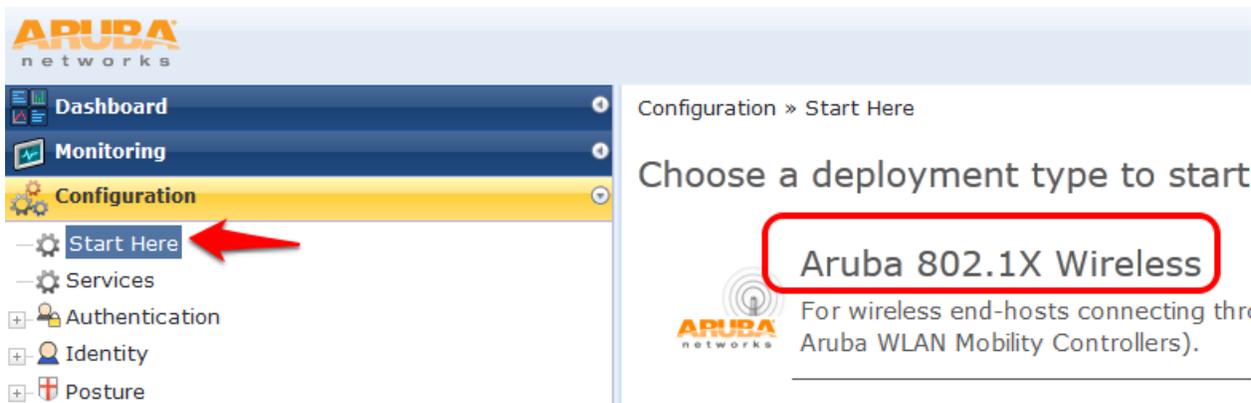
Figure 59 Configuring a ClearPass Policy Manager Network Device

Add Device				
Device		SNMP Read Settings	SNMP Write Settings	CLI Settings
Name:	Aruba Test Controller			
IP or Subnet Address:	10.1.1.10	(e.g., 192.168.1.10 or 192.168.1.1/24)		
Description:				
RADIUS Shared Secret:	.....	Verify:	.....	
TACACS+ Shared Secret:		Verify:		
Vendor Name:	Aruba			
Enable RADIUS CoA:	<input checked="" type="checkbox"/>	RADIUS CoA Port:	3799	
Attributes				
Attribute	Value			
1. Click to add...				
				Add Cancel

Click **Add**.

Navigate to **Configuration->Start Here** and select Aruba 802.1X Wireless.

Figure 60 Aruba 802.1X Wireless 'Start Here' selection



Give the service a name such as <WLAN Enterprise Service>.

Figure 61 Naming a 802.1X Wireless Service

Services



Service	Authentication	Roles	Enforcement	Summary
Type:	Aruba 802.1X Wireless			
Name:	WLAN Enterprise Service			
Description:	Aruba 802.1X Wireless Access Service			
Monitor Mode:	<input type="checkbox"/> Enable to monitor network access without enforcement			
More Options:	<input type="checkbox"/> Authorization <input type="checkbox"/> Posture Compliance <input type="checkbox"/> Audit End-hosts <input type="checkbox"/> Profile Endpoints			
<b>Service Rule</b>				
Matches <input type="radio"/> ANY or <input checked="" type="radio"/> ALL of the following conditions:				
Type	Name	Operator	Value	
1. Radius:IETF	NAS-Port-Type	EQUALS	Wireless-802.11 (19)	
2. Radius:IETF	Service-Type	BELONGS_TO	Login-User (1), Framed-User (2), Authenticate-Only (8)	
3. Radius:Aruba	Aruba-Essid-Name	EXISTS		
4. Click to add...				

Click **Next**.

On the **Authentication** tab, Click the **Select to Add** down arrow and choose **[Local User Repository] [Local SQL DB]** as the **Authentication Sources**.

Figure 62 802.1X Authentication Methods and Sources

Service	Authentication	Roles	Enforcement	Summary
Authentication Methods:	<div style="border: 1px solid gray; padding: 5px;">                     [EAP PEAP]                      [EAP FAST]                      [EAP TLS]                      [EAP TTLS]                 </div> <div style="margin-top: 5px;"> <input type="button" value="Move Up"/> <input type="button" value="Move Down"/> <input type="button" value="Remove"/> <input type="button" value="View Details"/> <input type="button" value="Modify"/> </div> <div style="margin-top: 5px;">                     --Select to Add--                 </div>			
Authentication Sources:	<div style="border: 1px solid gray; padding: 5px;">                     [Local User Repository] [Local SQL DB]                 </div> <div style="margin-top: 5px;"> <input type="button" value="Move Up"/> <input type="button" value="Move Down"/> <input type="button" value="Remove"/> <input type="button" value="View Details"/> <input type="button" value="Modify"/> </div> <div style="margin-top: 5px;">                     --Select to Add--                 </div>			
Strip Username Rules:	<input type="checkbox"/> Enable to specify a comma-separated list of rules to strip use			

Click **Next**.

For initial testing, **Role mapping Policy** will not be used. Click **Next** on the **Roles** tab at the bottom right corner of the page to continue.

Figure 63 802.1X Role Mapping Policy

Configuration » Services » Add

### Services

Service	Authentication	Roles	Enforcement	Summary
Role Mapping Policy: --Select--				
<b>Role Mapping Policy Details</b>				
Description:	-			
Default Role:	-			
Rules Evaluation Algorithm:	-			
<b>Conditions</b>				

On the **Enforcement** tab, no changes are necessary. Click **Next** at the bottom right corner of the page to continue.

Figure 64 802.1X Enforcement configuration

Configuration » Services » Add

### Services

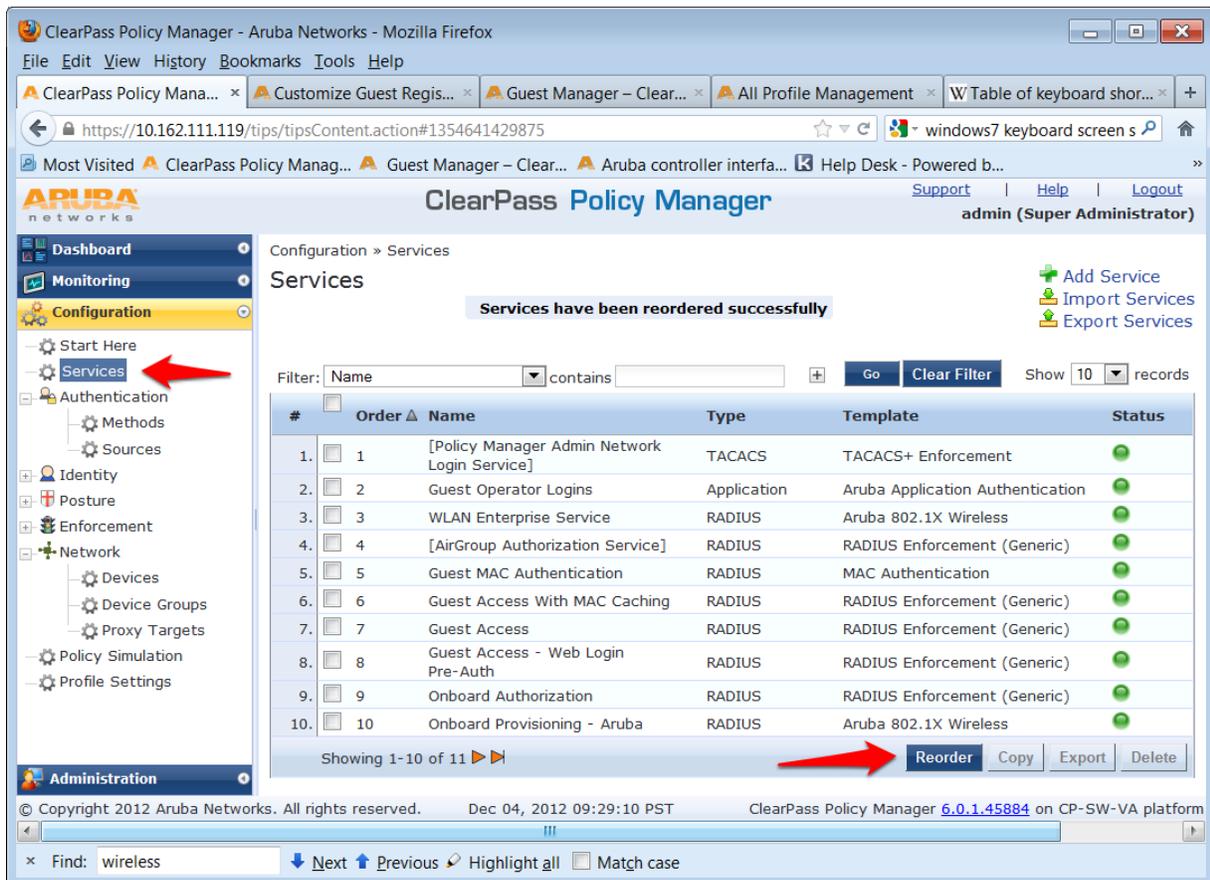
Service	Authentication	Roles	Enforcement	Summary
Use Cached Results:	<input type="checkbox"/> Use cached Roles and Posture attributes			
Enforcement Policy:	[Sample Allow Access Policy]			
<b>Enforcement Policy Details</b>				
Description:	Sample policy to allow network access			
Default Profile:	[Allow Access Profile]			
Rules Evaluation Algorithm:	evaluate-all			
<b>Conditions</b>				
1. (Date:Day-of-Week BELONGS_TO Monday, Tuesday, Wednesday,				

Review the summary and click **Save**.

**Important!** You must move the WLAN Enterprise Service above any generic RADIUS services that are not filtering via service rules. ClearPass 6.0.1 does not ship with any generic RADIUS services that have no service rules.

Navigate to **Configuration->Services** and select **Reorder** to move “WLAN Enterprise Service” above ANY generic RADIUS services that are not filtering via service rules.

Figure 65 ClearPass Policy Manager Reorder menu



Select <WLAN Enterprise Service> and click on the **Move up** button to position above ANY generic RADIUS services that are not filtering via service rules.

**Note:** Do NOT move any services you create ABOVE the initial services that are installed with ClearPass Policy Manager. **IF** you add a service and move it ABOVE the initial services installed your newly created service **could** intercept RADIUS requests that “Guest Mac authentication”, which is Mac caching, or Onboarding, and AirGroup.

Figure 66 Reorder Services 'Move Up' process

Configuration » Services » Reorder

### Reorder Services

Order	Name
1	[Policy Manager Admin Network Login Service]
2	Guest Operator Logins
3	[AirGroup Authorization Service]
4	Guest MAC Authentication
5	Guest Access With MAC Caching
6	Guest Access
7	Guest Access - Web Login Pre-Auth
8	Onboard Authorization
9	Onboard Provisioning - Aruba
10	[Aruba Device Access Service]
11	WLAN Enterprise Service

Service Details:

Name: WLAN Enterprise Service  
Template: Aruba 802.1X Wireless  
Type: RADIUS  
Description: Aruba 802.1X Wireless Access Service  
Status: Enabled

Service Rule  
( (Radius:IETF:NAS-Port-Type EQUALS Wireless-802.11 (19))  
AND (Radius:IETF:Service-Type BELONGS\_TO Login-User (1), Frame  
AND (Radius:Aruba:Aruba-Essid-Name EXISTS ) )  
AND (Connection:Protocol EQUALS RADIUS)

If you are running the beta version of 6.0, you may not have the Guest MAC Authentication services. If this is the case, please [download](#) the non-beta version of 6.0, as it will include these services by default.

## Guest SSID Login service configuration

To configure the Guest SSID Login service, navigate to **Configuration->Services**. Click on **Guest Access With MAC Caching**.

Figure 67 Guest Access With MAC Caching

ARUBA networks ClearPass F

Configuration » Services

Services

Filter: Name contains

#	Order	Name
1.	1	[Policy Manager Admin Network Login Service]
2.	2	Guest Operator Logins
3.	3	WLAN Enterprise Service
4.	4	[AirGroup Authorization Service]
5.	5	Guest MAC Authentication
6.	6	Guest Access With MAC Caching
7.	7	Guest Access

Click on the **Service** tab.

In order to get this service to respond to the guest SSID, click the **Radius:Aruba, Aruba-Essid-Name, EQUALS, <Guest SSID Name>** row under **Service Rule** sub-tab to modify.

Replace the <Guest SSID Name> with the actual guest SSID used on the controller.

In the example below, the guest SSID is: **zj-cpg60**

Figure 68 Service Rule Guest SSID conditions

### Services - Guest Access With MAC Caching

Summary	Service	Authentication	Authorization	Roles	Enforcement
Name:	Guest Access With MAC Caching				
Description:	Service for guest access via captive portal (non-802.1x)				
Type:	RADIUS Enforcement (Generic)				
Status:	Enabled				
Monitor Mode:	<input type="checkbox"/> Enable to monitor network access without enforcement				
More Options:	<input checked="" type="checkbox"/> Authorization <input type="checkbox"/> Posture Compliance <input type="checkbox"/> Audit End-hosts <input type="checkbox"/> Profile Endpoints				
<b>Service Rule</b>					
Matches <input type="radio"/> ANY or <input checked="" type="radio"/> ALL of the following conditions:					
Type	Name	Operator	Value		
1. Radius:IETF	Calling-Station-Id	EXISTS			
2. Connection	Client-Mac-Address	NOT_EQUALS	%{Radius:IETF:User-Name}		
3. Radius:Aruba	Aruba-Essid-Name	EQUALS	zj-cpg60		
4. Click to add...					

Click **Save** to register the modifications to the service.

Repeat those steps for the **Guest MAC Authentication** service:

Figure 69 Service Rule Guest MAC Authentication conditions

### Services - Guest MAC Authentication

Summary	Service	Authentication	Authorization	Roles	Enforcement
Name:	Guest MAC Authentication				
Description:	Service performing authentication for cached MAC entries for guest accounts				
Type:	MAC Authentication				
Status:	Enabled				
Monitor Mode:	<input type="checkbox"/> Enable to monitor network access without enforcement				
More Options:	<input checked="" type="checkbox"/> Authorization <input type="checkbox"/> Audit End-hosts <input type="checkbox"/> Profile Endpoints				
<b>Service Rule</b>					
Matches <input type="radio"/> ANY or <input checked="" type="radio"/> ALL of the following conditions:					
Type	Name	Operator	Value		
1. Connection	Client-Mac-Address	EQUALS	%{Radius:IETF:User-Name}		
2. Radius:Aruba	Aruba-Essid-Name	EQUALS	zj-cpg60		
3. Click to add...					

The next step is to add a User Role. Even though no role mapping is in use in the WLAN Enterprise Service, a user role must be created for any local user account added into the Local User Repository.

Navigate to **Configuration->Identity->Roles**

Click **Add Role** in the top right corner of the page.

Figure 70 Adding a Local User Repository Device



Enter <TestRole> as the name, and click **Save**.

Figure 71 Adding a Identity Role

The screenshot shows the Aruba configuration interface. The left sidebar has a navigation tree with 'Configuration' expanded. Under 'Configuration', 'Identity' is selected and highlighted with a red arrow. Under 'Identity', 'Roles' is also highlighted with a red arrow. The main content area shows the 'Roles' configuration page. At the top, there is a filter: 'Name' contains. Below the filter is a table of roles:

#	Name
1.	TestRole
2.	[TACACS Super Admin]
3.	[TACACS Receptionist]
4.	[TACACS Read-only Admin]
5.	[TACACS Network Admin]
6.	[TACACS Help Desk]
7.	[TACACS API Admin]
8.	[Other]
9.	[Onboard Windows]

Navigate to **Configuration->Identity->Local Users**. Click **Add User**. Enter the following information:

- User ID: <test>
- Name: <Test User>
- Password: <test123>
- Verify Password: <test123>
- Enable User: check box <(Check to enable local user)>
- Role: select <TestRole> from the drop down menu

Figure 72 Guest SSID Local User conditions

### Add Local User ✕

User ID	<input type="text" value="test"/>
Name	<input type="text" value="Test User"/>
Password	<input type="password" value="....."/>
Verify Password	<input type="password" value="....."/>
Enable User	<input checked="" type="checkbox"/> (Check to enable local user)
Role	<input type="text" value="TestRole"/>

#### Attributes

Attribute	Value	
1.	Click to add...	

Click **Add**.

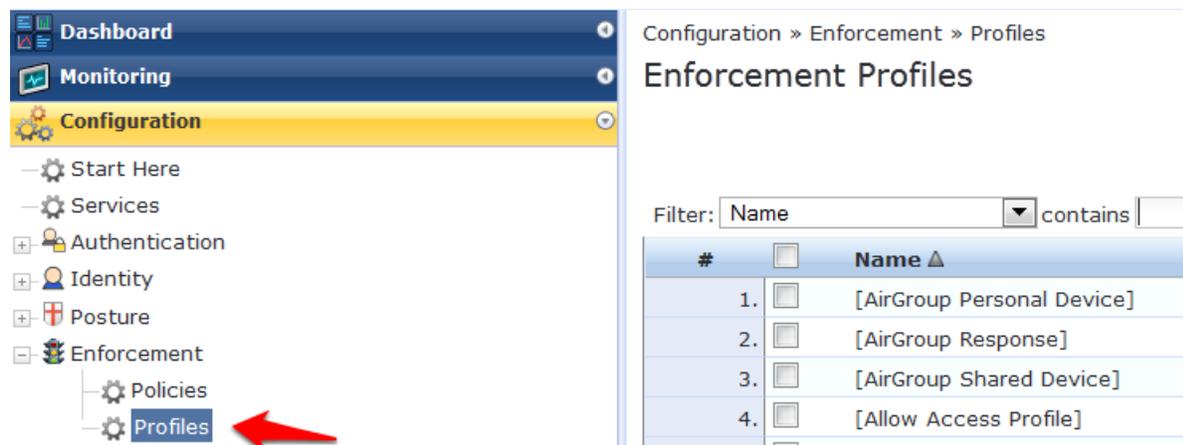
### 3. Testing the 802.1x and Guest SSID

At this point testing of the 802.1x and Guest SSID could commence. However, when 802.1x is tested with the Test User account, the user will authenticate but receive the guest role on the controller. This is because an Aruba User Role is not being passed back for the Test User. When the controller receives the RADIUS Accept from a successful authentication, the controller will give the client the default 802.1x role set in the AAA Profile.

In order to pass back an Aruba User Role, an Enforcement Profile must be built and the Sample Allow Access Policy must be modified to send this Enforcement Profile.

Navigate to **Configuration->Enforcement->Profiles**.

Figure 73 Configuring Enforcement Profiles



The screenshot displays the Aruba ClearPass configuration interface. On the left, a navigation sidebar is visible with the following items: Dashboard, Monitoring, Configuration (highlighted), Start Here, Services, Authentication, Identity, Posture, and Enforcement. Under Enforcement, 'Policies' and 'Profiles' are listed, with a red arrow pointing to 'Profiles'. The main content area is titled 'Configuration » Enforcement » Profiles' and 'Enforcement Profiles'. It features a filter box with 'Name' selected and 'contains' as the operator. Below the filter is a table with the following data:

#	<input type="checkbox"/>	Name ▲
1.	<input type="checkbox"/>	[AirGroup Personal Device]
2.	<input type="checkbox"/>	[AirGroup Response]
3.	<input type="checkbox"/>	[AirGroup Shared Device]
4.	<input type="checkbox"/>	[Allow Access Profile]

Click Add Enforcement **Profile** in the top right corner of the page.

Give it a name like <Aruba Authenticated Role>. Make sure the **Template** selected is **Aruba RADIUS Enforcement**:

Figure 74 Adding a new Enforcement Profile

Configuration » Enforcement » Profiles » Add Enforcement Profile

### Enforcement Profiles

Profile	Attributes	Summary
Template:	Aruba RADIUS Enforcement	
Name:	Aruba Authenticated Role	
Description:		
Type:	RADIUS	
Action:	<input checked="" type="radio"/> Accept <input type="radio"/> Reject <input type="radio"/> Drop	
Device Group List:		<div style="text-align: right;"><input type="button" value="Remove"/> <input type="button" value="View Details"/> <input type="button" value="Modify"/></div>
	--Select--	

Click **Next**.

Click on “Enter role here” and enter <authenticated> in the **Value** field as the role to be passed back. Then



click on the disk icon to save the line.

Click **Save**.

Figure 75 Enforcement Profile Attributes

### Enforcement Profiles

Profile	Attributes	Summary
<b>Click the disk icon to save the line!</b>		
Type	Name	Value
1. Radius:Aruba	Aruba-User-Role (1)	= authenticated
2. Click to add...		

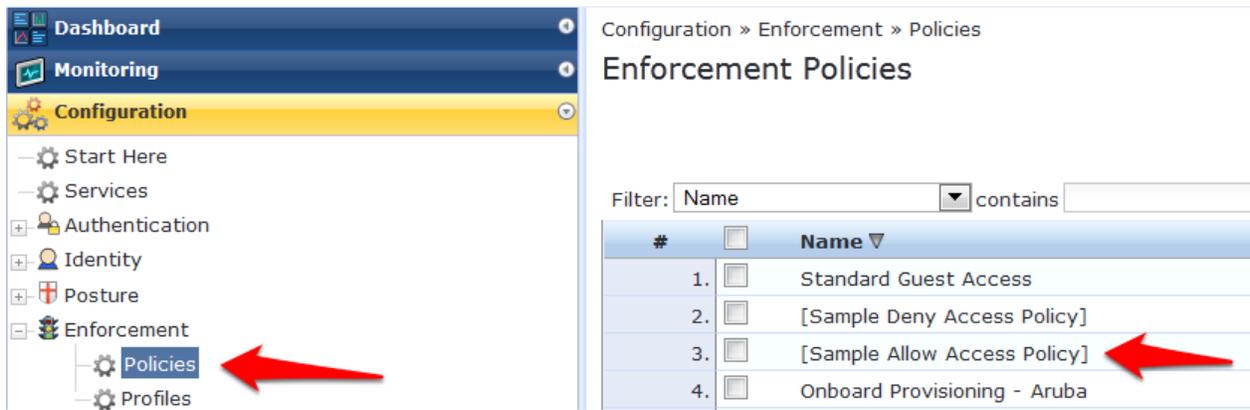
**Tech Tip:** Get used to clicking that disk icon. Whenever you edit a line like this, click the disk icon to save the line, or else your change may not get saved.

Click **Next**.

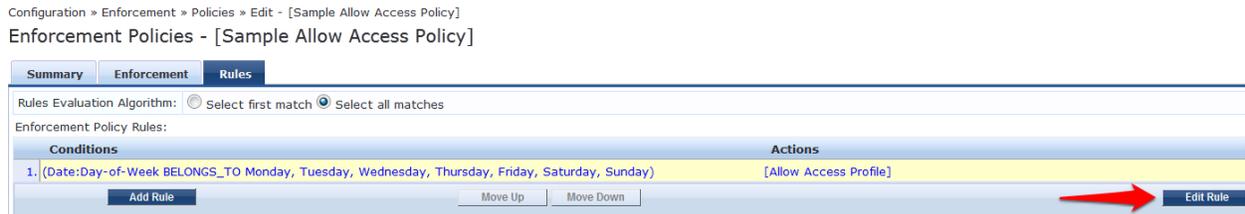
Click **Save**.

Navigate to **Configuration->Enforcement->Policies**. Click on the “Sample Allow Access Policy” to edit.

Figure 76 Enforcement Policies rule configuration

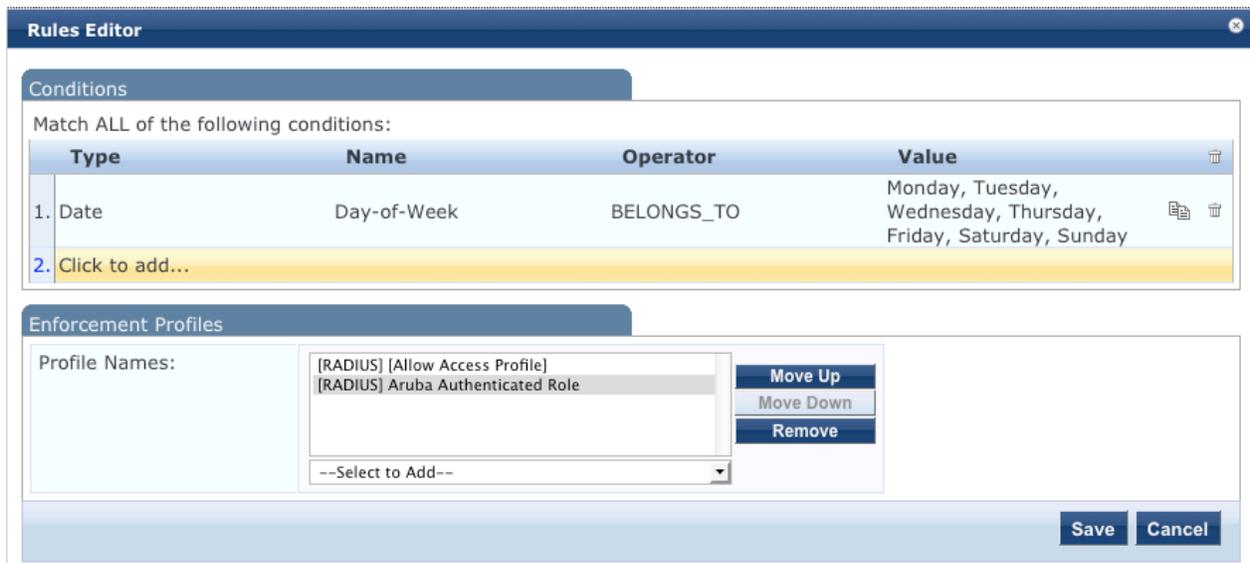


Click on the **Rules** tab. Click on the only Condition in the list to highlight it, and click **Edit Rule**.



Select the **Aruba Authenticated Profile** from the -- Select to Add -- drop down menu to the list of Enforcement Profiles that will be executed when a user successfully authenticates:

Figure 77 Enforcement Authenticated Profile Rules Editor



Click **Save** in the **Rules Editor** window.

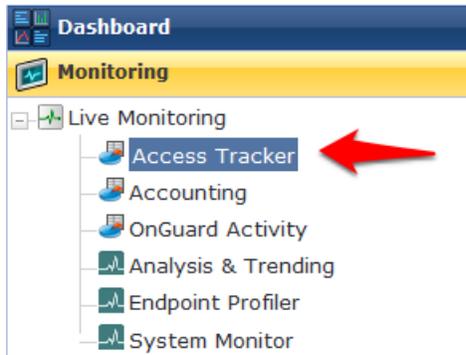
Click **Save** in the lower right corner of the page.

## Step 9: Test the 802.1x SSID

Connect to the 802.1x SSID, and login with the local user account (NOT the guest account) created in the ClearPass Policy Manager setup.

Navigate to **Monitoring->Live Monitoring->Access Tracker**.

Figure 78 Live Monitoring Access Tracker menu



A **RADIUS, ACCEPT** for the WLAN Enterprise Service server should be visible.

Figure 79 802.1x SSID RADIUS, ACCEPT WLAN Enterprise Service

Access Tracker Nov 01, 2012 15:09:01 PDT Auto Refresh

Data Filter: [All Requests] Server: (10.1.1.20)  
Date Range: Last 1 day before Today Edit

Filter: Type contains  Go Clear Filter Show 10 records

Server	Type	User	Service Name	Login	Date and Time
10.1.1.20	RADIUS	test	WLAN Enterprise Service	ACCEPT	2012/11/01 15:08:46

## Step 10: Testing the Guest SSID

At this point, both the 802.1x SSID and the Guest SSID can be tested. Start by testing the Guest SSID.

In ClearPass Policy Manager navigate to **Monitoring->Live Monitoring->Access Tracker**.

When your device first connects to the Guest SSID you will notice a MAC Auth REJECT. This is for the MAC Caching on the Guest SSID.

Figure 80 MAC Auth REJECT for the MAC Caching on the Guest SSID

Access Tracker Nov 07, 2012 15:51:05 PST Auto Refresh

Data Filter: [All Requests] Server: (10.1.1.20)  
Date Range: Last 1 day before Today Edit

Filter: Type contains  Go Clear Filter Show 10 records

Server	Type	User	Service Name	Login	Date and Time
10.1.1.20	RADIUS	7a:12:ab:3d:c8:ab	Guest MAC Authentication	REJECT	2012/11/07 15:50:33

Open up a web browser on your device that just connected. It should redirect you to the Guest Login page. Select **Click Here** after **Need an account?**

Figure 81 ClearPass Guest Login

## Network Login

Please login to the network using your ClearPass username and password.

Network Login	
* Username:	<input type="text"/>
* Password:	<input type="password"/>
* Terms:	<input type="checkbox"/> I accept the <a href="#">terms of use</a>
<input type="button" value="Log In"/>	

\* required field

Need an account? [Click Here](#)

You will be then be presented with the Guest Account Creation page.

Figure 82 ClearPass Guest Registration

## Guest Registration

Please complete the form below to gain access to the network.

Visitor Registration	
* Your Name:	<input type="text"/> <small>Please enter your full name.</small>
* Email Address:	<input type="text"/> <small>Please enter your email address. This will become your username to log into the network.</small>
* Confirm:	<input type="checkbox"/> I accept the <a href="#">terms of use</a>
<input type="button" value="Register"/>	

\* required field

Enter the information (Email Address will become the guest username), check the box to accept the terms of use, and click Register.

You will then be presented with the Guest Registration Receipt that shows the guest username and password.

Figure 83 ClearPass Guest Registration Receipt

## Guest Registration Receipt

The details for your guest account are shown below.

Visitor Registration Receipt	
Sponsor's Name:	admin
Visitor's Name:	<b>Test User</b>
Account Username:	 <b>test@test.com</b>
Visitor Password:	 <b>76435597</b>
Expiration Time:	Friday, 02 November 2012, 01:24 PM
<input type="button" value="Log In"/>	

Clicking **Log In** button will automatically submit these credentials to the wireless controller's internal captive portal, which will create a RADIUS request with the Authentication Method PAP. This request will hit the Guest SSID Login Service that was created in ClearPass Policy Manager in the previous step.

After logging in on the test device, return to Access Tracker in ClearPass Policy Manager.

Notice the RADIUS ACCEPT entry for [test@test.com](mailto:test@test.com):

Figure 84 RADIUS, ACCEPT configuration for a newly created 802.1x SSID Guest account

Filter:  contains     Show  records

Server	Type	User	Service Name	Login	Date and Time ▾
10.1.1.20	RADIUS	test@test.com	Guest Access With MAC Caching	ACCEPT	2012/11/07 15:52:34
10.1.1.20	RADIUS	7a:12:ab:3d:c8:ab	Guest MAC Authentication	REJECT	2012/11/07 15:50:33

**STOP!** Wait 3 minutes before proceeding to the next step. For MAC Caching, the service queries the Insight Database. Information is pushed to the Insight Database every 3 minutes.

## 4. Testing the MAC Caching

The next steps test the MAC Caching.

1. SSH to your controller and run:

```
show user-table | include <test@test.com>
```

command where <test@test.com> is the 802.1x SSID guest user created, in order to find the MAC address of the test device.

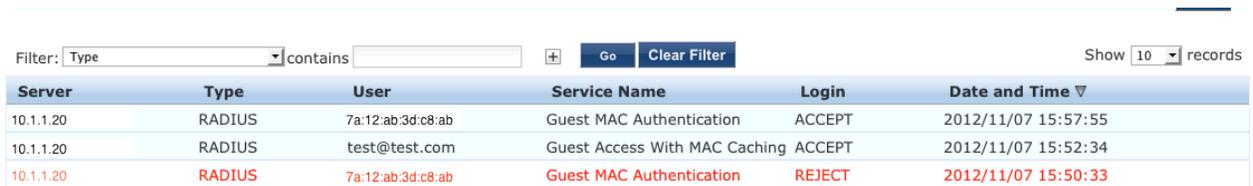
2. Disable the wireless on the test device and run:

```
aaa user delete mac <00:aa:22:bb:44:cc>
```

command where <00:aa:22:bb:44:cc> is the MAC address returned from the show user-table command.

3. Re-enable the wireless on the test device. Now in Access Tracker you will see a successful MAC authentication.

Figure 85 Successful MAC authentication



Filter: Type contains [ ] + Go Clear Filter Show 10 records

Server	Type	User	Service Name	Login	Date and Time
10.1.1.20	RADIUS	7a:12:ab:3d:c8:ab	Guest MAC Authentication	ACCEPT	2012/11/07 15:57:55
10.1.1.20	RADIUS	test@test.com	Guest Access With MAC Caching	ACCEPT	2012/11/07 15:52:34
10.1.1.20	RADIUS	7a:12:ab:3d:c8:ab	Guest MAC Authentication	REJECT	2012/11/07 15:50:33

## 5. Advanced Features

### Controller Management Login Authentication with ClearPass Policy Manager

In ClearPass Policy Manager, navigate to **Configuration->Identity->Roles**.

Click **Add Roles**.

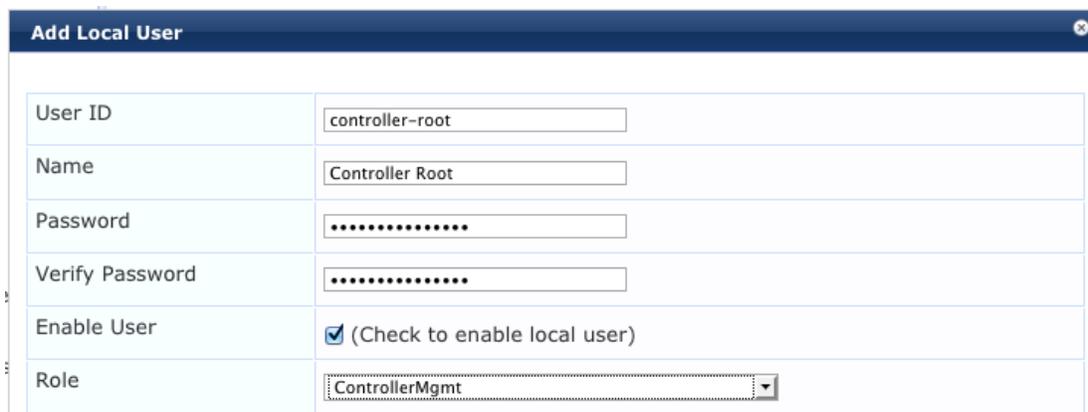
Create a new role called **ControllerMgmt**.

Navigate to **Configuration->Identity->Local Users**.

Click **Add User**.

Enter the information from Figure 86 Adding a Controller Management Local User, using whatever you want for the password (this will be the login and password for managing the controller).

Figure 86 Adding a Controller Management Local User



Add Local User	
User ID	controller-root
Name	Controller Root
Password	.....
Verify Password	.....
Enable User	<input checked="" type="checkbox"/> (Check to enable local user)
Role	ControllerMgmt

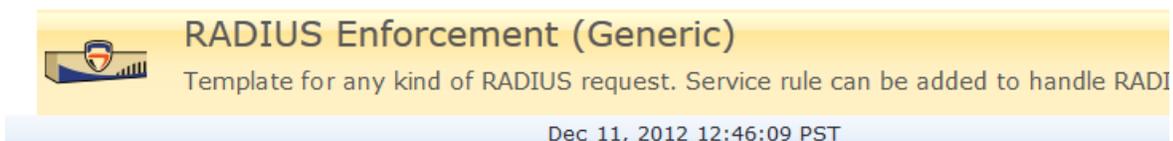
Click **Add** to save this user account.

### RADIUS Enforcement (Generic) configuration

Navigate to **Configuration->Start Here**.

Scroll down the right main column and click on **RADIUS Enforcement (Generic)**.

Figure 87 RADIUS Enforcement (Generic) template



#### Service

Give the service a name such as <Aruba Controller Management Login>.

Add the Service Rules from Figure 88 RADIUS Enforcement (Generic) Service Rules configuration below for each Service Rule by selecting from each of their corresponding drop down arrow menu settings.

Figure 88 RADIUS Enforcement (Generic) Service Rules configuration

Service Rule				
Matches <input type="radio"/> ANY or <input checked="" type="radio"/> ALL of the following conditions:				
Type	Name	Operator	Value	
1.	Radius:IETF	NAS-Port	EQUALS	0
2.	Radius:IETF	NAS-Port-Type	EQUALS	Wireless-802.11 (19)
3.	Radius:IETF	Service-Type	EQUALS	Administrative-User (6)
4.	Click to add...			

**Remember** to click the disk  at the end of each Service Rule in order to save the line configuration.

Click **Next**.

## Authentication

For **Authentication Methods**, Click the **Select to Add** drop down arrow and choose **[MACHAP]**.

For **Authentication Sources**, Click the **Select to Add** drop down arrow and choose **[Local User Repository]** **[Local SQL DB]**.

Figure 89 RADIUS Enforcement (Generic) Authentication configuration

Summary	Service	Authentication	Roles	Enforcement
Authentication Methods:				
	[MSCHAP] 	<input type="button" value="Move Up"/> <a href="#">Add new Authentication Method</a> <input type="button" value="Move Down"/> <input type="button" value="Remove"/> <input type="button" value="View Details"/> <input type="button" value="Modify"/>		
	--Select to Add--			
Authentication Sources:				
	[Local User Repository] [Local SQL DB] 	<input type="button" value="Move Up"/> <a href="#">Add new Authentication Source</a> <input type="button" value="Move Down"/> <input type="button" value="Remove"/> <input type="button" value="View Details"/> <input type="button" value="Modify"/>		
	--Select to Add--			
Strip Username Rules: <input type="checkbox"/> Enable to specify a comma-separated list of rules to strip username prefixes or suffixes				

Click **Next**.

## Roles

**Tech Tip:** You could use a **Role Mapping Policy**, but it is not required. It would be required if the Authentication source was Active Directory, in which case you would create a Role Mapping rule that would look for the following configuration:

**Authorization: SomeADServer:MemberOf:Contains:IT-Admins;**

**Role Name: ControllerMgmt**

Click **Next**.

## Enforcement

On the **Enforcement** tab, Click **Add new Enforcement Policy**.

Give the new Enforcement Policy a name like <Controller Login Enforcement>.

Figure 90 RADIUS Enforcement (Generic) Enforcement configuration

Enforcement	Rules	Summary
Name:	Controller Login Enforcement	
Description:		
Enforcement Type:	<input checked="" type="radio"/> RADIUS <input type="radio"/> TACACS+ <input type="radio"/> WEBAUTH (SNMP/Agent/CLI/CoA) <input type="radio"/> Application	
Default Profile:	--Select to Add--	<a href="#">View Details</a> <a href="#">Modify</a> <a href="#">Add new Enforcement Profile</a>

Click **Add new Enforcement Profile**. Use the **Aruba RADIUS Enforcement** template. Enter a name for the Enforcement Profile such as <Aruba MGMT Root User>.

Figure 91 RADIUS Enforcement (Generic) Enforcement Profile Template and Name

Profile	Attributes	Summary
Template:		Aruba RADIUS Enforcement
Name:		Aruba MGMT Root User
Description:		
Type:	RADIUS	
Action:	<input checked="" type="radio"/> Accept <input type="radio"/> Reject <input type="radio"/> Drop	
Device Group List:	--Select--	

Click **Next**.

Add each Attribute from Figure 92 RADIUS Enforcement (Generic) Enforcement Attribute configuration below by selecting from each of their corresponding drop down arrow menu settings **except** for **Value**. Enter **root** in the **Value** field column.

**Note:** **Aruba-User-Role** is changed to **Aruba-Admin-Role**

Figure 92 RADIUS Enforcement (Generic) Enforcement Attribute configuration

Profile	Attributes	Summary
Type	Name	Value
1. Radius:Aruba	Aruba-Admin-Role (4)	= root
2. Click to add...		

**Remember** to click the disk  at the end of each Attribute in order to save the line configuration.

Click **Next**.

Figure 93 RADIUS Enforcement (Generic) Enforcement configuration Summary

Profile	Attributes	Summary
<b>Profile:</b>		
Template:	Aruba RADIUS Enforcement	
Name:	Aruba MGMT Root User	
Description:		
Type:	RADIUS	
Action:	Accept	
Device Group List:	-	
<b>Attributes:</b>		
Type	Name	Value
1. Radius:Aruba	Aruba-Admin-Role	= root

Click **Save**. This will return you to the Enforcement Policy creation.

Change the **Default Profile** to **Deny Access Profile**.

Enforcement	Rules	Summary
Name:	Controller Login Enforcement	
Description:	From the documentation procedure	
Enforcement Type:	<input checked="" type="radio"/> RADIUS <input type="radio"/> TACACS+ <input type="radio"/> WEBAUTH (SNMP/Agent/CLI/CoA) <input type="radio"/> Application	
Default Profile:	[Deny Access Profile] <input type="button" value="View Details"/> <input type="button" value="Modify"/>	

Click **Next**.

On the **Rules** tab, click **Add Rule**.

Enforcement	Rules	Summary
Rules Evaluation Algorithm:	<input checked="" type="radio"/> Select first match <input type="radio"/> Select all matches	
Enforcement Policy Rules:		
<b>Conditions</b>		
<input type="button" value="Add Rule"/>		

Enter the values from Figure 94 RADIUS Enforcement (Generic) Rule Conditions and Enforcement Profiles below for each Rules Editor Condition column by selecting their corresponding drop down arrow menu settings.

Figure 94 RADIUS Enforcement (Generic) Rule Conditions and Enforcement Profiles

The screenshot shows the 'Rules Editor' interface. The 'Conditions' section contains a table with the following data:

Type	Name	Operator	Value
1. Tips	Role	EQUALS	ControllerMgmt
2. Click to add...			

The 'Enforcement Profiles' section shows a list of profile names with '[RADIUS] Aruba MGMT Root User' selected. A red arrow points to this selection. To the right of the list are buttons for 'Move Up', 'Move Down', and 'Remove'. Below the list is a dropdown menu with '--Select to Add--'. At the bottom right are 'Save' and 'Cancel' buttons.

Click **Save**.

Click **Next**.

Figure 95 RADIUS Enforcement (Generic) Enforcement Rules Profile Summary

The screenshot shows the 'Enforcement Rules Profile Summary' page with three tabs: 'Enforcement', 'Rules', and 'Summary'. The 'Summary' tab is active and displays the following information:

**Enforcement:**

- Name: Controller Login Enforcement
- Description: From the documentation procedure
- Enforcement Type: RADIUS
- Default Profile: [Deny Access Profile]

**Rules:**

- Rules Evaluation Algorithm: First applicable

Conditions	Actions
1. (Tips:Role EQUALS ControllerMgmt)	[RADIUS] Aruba MGMT Root User

Click **Save** to log the Enforcement Policy.

The newly created Enforcement Policy should automatically be selected for the Service in the Service creation flow.

The screenshot shows the 'Service' configuration page with tabs for 'Service', 'Authentication', 'Roles', 'Enforcement', and 'Summary'. The 'Enforcement' tab is active and displays the following configuration:

- Use Cached Results:  Use cached Roles and Posture attributes from previous sessions
- Enforcement Policy: Controller Login Enforcement (with 'Modify' and 'Add new Enforcement Policy' buttons)

**Enforcement Policy Details:**

- Description:
- Default Profile: [Deny Access Profile]
- Rules Evaluation Algorithm: first-applicable

Conditions	Enforcement Profiles
1. (Tips:Role EQUALS ControllerMgmt)	Aruba MGMT Root User

Click **Next**.

Figure 96 RADIUS Enforcement (Generic) Enforcement Policy Service Creation Flow

Service	Authentication	Roles	Enforcement	Summary
<b>Service:</b>				
Type:	RADIUS Enforcement (Generic)			
Name:	Aruba Controller Management Login			
Description:	Aruba Wireless & ClearPass 6 Integration Guide example			
Monitor Mode:	Disabled			
More Options:	-			
<b>Service Rule</b>				
Match ALL of the following conditions:				
Type	Name	Operator	Value	
1. Radius:IETF	NAS-Port	EQUALS	0	
2. Radius:IETF	NAS-Port-Type	EQUALS	Wireless-802.11 (19)	
3. Radius:IETF	Service-Type	EQUALS	Administrative-User (6)	
<b>Authentication:</b>				
Authentication Methods:	[MSCHAP]			
Authentication Sources:	[Local User Repository] [Local SQL DB]			
Strip Username Rules:	-			
<b>Roles:</b>				
Role Mapping Policy:	-			
<b>Enforcement:</b>				
Use Cached Results:	Disabled			
Enforcement Policy:	Controller Login Enforcement			

Click **Save**.

**Note:** Reorder the service so that it is **above** the **Guest Access With MAC Caching** service.

### Reorder Services

Order	Name
1	[Policy Manager Admin Network Login Service]
2	Guest Operator Logins
3	[AirGroup Authorization Service]
4	Guest MAC Authentication
5	Aruba Controller Management Login
6	Guest Access With MAC Caching
7	Guest Access
8	Guest Access - Web Login Pre-Auth
9	Onboard Authorization
10	Onboard Provisioning - Aruba
11	[Aruba Device Access Service]
12	WLAN Enterprise Service

Click **Save**.

### Management Authentication Servers

Login to the Aruba Controller Interface

Navigate to **Configuration->Management->Administration**.

1. Change **Default Role** to **no-access**.
2. Check the checkbox for **Enable**.

3. Check the checkbox for **MSCHAPv2**.
4. Change the **Server Group** to the ClearPass Policy Manager server group created earlier in this document.

**Management Authentication Servers**

Allow Local Authentication  

Default Role	no-access	Enable	<input checked="" type="checkbox"/>
MSCHAPv2	<input checked="" type="checkbox"/>		

Server Group > cp60-sg Show Reference Save As Reset

**Important!** Leave the **Allow Local Authentication** box checked. If this box is unchecked and there is a problem with the Management Authentication configuration, you **will not** be able to login to the controller if **Allow Local Authentication** is unchecked.

Click **Apply** to save these settings.

Logout of the controller and test login with the controller-root test user created earlier.

In Access Tracker you should see the **Type = RADIUS** and **Login = ACCEPT** for the controller-root test user:

Filter: Type contains  + Go Clear Filter Show 10 records

Server	Type	User	Service Name	Login	Date and Time
10.1.1.20	RADIUS	controller-root	Aruba Controller Management Login	ACCEPT	2012/11/01 16:36:50

---

## 6. Troubleshooting

*Problem:*

MAC Caching is not working.

*Solution:*

Check the Endpoints Repository, navigate to **Configuration->Identity->Endpoints** for the device in question. Click on the device and verify that the device status is set to Known. If it is not, verify that the correct controller-ip vlan has been set on the wireless controller.

*Problem:*

During creation of Enforcement Policy, an error appears when trying to save: Name contains special characters...

*Solution:*

Creation of the Enforcement Policy has timed out. Click Cancel, then create the Enforcement Policy again.