



## Multiple Authentications for a Client

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## Information About Multiple Authentications for a Client

Multiple Authentication feature is an extension of Layer 2 and Layer 3 security types supported for client join.



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**Note** You can enable both L2 and L3 authentication for a given SSID.

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**Note** The Multiple Authentication feature is applicable for regular clients only.

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## Information About Supported Combination of Authentications for a Client

The Multiple Authentications for a Client feature supports multiple combination of authentications for a given client configured in the WLAN profile.

The following table outlines the supported combination of authentications:

Layer 2	Layer 3	Supported
MAB	CWA	Yes
MAB Failure	LWA	Yes
802.1X	CWA	Yes
PSK	CWA	Yes

iPSK + MAB	CWA	Yes
iPSK	LWA	No
MAB Failure + PSK	LWA	No Yes
MAB Failure + PSK	CWA	No

From 16.10.1 onwards, 802.1X configurations on WLAN support web authentication configurations with WPA or WPA2 configuration.

The feature also supports the following AP modes:

- Local
- FlexConnect
- Fabric

## Jumbo Frame Support for RADIUS Packets

This document describes how to configure IP Maximum Transmission Unit (MTU) size for RADIUS server. RADIUS packets will get fragmented based on IP MTU, if source interface is attached to RADIUS group. With the new design, the RADIUS packets get fragmented at interface IP MTU configured value.




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**Note** Fragmentation size is fixed.

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# Configuring Multiple Authentications for a Client

## Configuring WLAN for 802.1X and Local Web Authentication (GUI)

### Procedure

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- Step 1** Choose **Configuration > Tags & Profiles > WLANs**.
- Step 2** Select the required WLAN from the list of WLANs displayed.
- Step 3** Choose **Security > Layer2** tab.
- Step 4** Select the security method from the **Layer 2 Security Mode** drop-down list.
- Step 5** In the **Auth Key Mgmt**, check the **802.1x** check box.
- Step 6** Check the **MAC Filtering** check box to enable the feature.
- Step 7** After MAC Filtering is enabled, from the **Authorization List** drop-down list, choose an option.
- Step 8** Choose **Security > Layer3** tab.
- Step 9** Check the **Web Policy** check box to enable web authentication policy.

- Step 10** From the **Web Auth Parameter Map** and the **Authentication List** drop-down lists, choose an option.
- Step 11** Click **Update & Apply to Device**.

## Configuring WLAN for 802.1X and Local Web Authentication (CLI)

### Procedure

	Command or Action	Purpose
<b>Step 1</b>	<b>configure terminal</b>  <b>Example:</b> Device# <code>configure terminal</code>	Enters global configuration mode.
<b>Step 2</b>	<b>wlan profile-name wlan-id SSID_Name</b>  <b>Example:</b> Device(config)# <code>wlan wlan-test 3 ssid-test</code>	Enters WLAN configuration sub-mode.  <ul style="list-style-type: none"> <li>• <i>profile-name</i>: Profile name of the configured WLAN.</li> <li>• <i>wlan-id</i>: Wireless LAN identifier. Range is from 1 to 512.</li> <li>• <i>SSID_Name</i>: SSID that can contain 32 alphanumeric characters.</li> </ul> <p><b>Note</b> If you have already configured this command, enter the <b>wlan profile-name</b> command.</p>
<b>Step 3</b>	<b>security dot1x authentication-list auth-list-name</b>  <b>Example:</b> Device(config-wlan)# <code>security dot1x authentication-list default</code>	Enables security authentication list for dot1x security.  The configuration is similar for all dot1x security WLANs.
<b>Step 4</b>	<b>security web-auth</b>  <b>Example:</b> Device(config-wlan)# <code>security web-auth</code>	Enables web authentication.
<b>Step 5</b>	<b>security web-auth authentication-list authenticate-list-name</b>  <b>Example:</b> Device(config-wlan)# <code>security web-auth authentication-list default</code>	Enables authentication list for dot1x security.
<b>Step 6</b>	<b>security web-auth parameter-map parameter-map-name</b>	Maps the parameter map.

	Command or Action	Purpose
	<b>Example:</b> Device(config-wlan)# <b>security web-auth parameter-map WLAN1_MAP</b>	<b>Note</b> If a parameter map is not associated with a WLAN, the configuration is considered from the global parameter map.
<b>Step 7</b>	<b>no shutdown</b>  <b>Example:</b> Device(config-wlan)# <b>no shutdown</b>	Enables the WLAN.

### Example

```
wlan wlan-test 3 ssid-test
security dot1x authentication-list default
security web-auth
security web-auth authentication-list default
security web-auth parameter-map WLAN1_MAP
no shutdown
```

## Configuring WLAN for Preshared Key (PSK) and Local Web Authentication (GUI)

### Procedure

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- Step 1** Choose **Configuration > Tags & Profiles > WLANs**.
  - Step 2** Select the required WLAN.
  - Step 3** Choose **Security > Layer2** tab.
  - Step 4** Select the security method from the **Layer 2 Security Mode** drop-down list.
  - Step 5** In the Auth Key Mgmt, uncheck the **802.1x** check box.
  - Step 6** Check the **PSK** check box.
  - Step 7** Enter the **Pre-Shared Key** and choose the PSK Format from the **PSK Format** drop-down list and the PSK Type from the **PSK Type** drop-down list.
  - Step 8** Choose **Security > Layer3** tab.
  - Step 9** Check the **Web Policy** checkbox to enable web authentication policy.
  - Step 10** Choose the Web Auth Parameter Map from the **Web Auth Parameter Map** drop-down list and the authentication list from the **Authentication List** drop-down list.
  - Step 11** Click **Update & Apply to Device**.
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## Configuring WLAN for Preshared Key (PSK) and Local Web Authentication

### Procedure

	Command or Action	Purpose
<b>Step 1</b>	<b>configure terminal</b> <b>Example:</b> Device# <code>configure terminal</code>	Enters global configuration mode.
<b>Step 2</b>	<b>wlan profile-name wlan-id SSID_Name</b> <b>Example:</b> Device(config)# <code>wlan wlan-test 3 ssid-test</code>	Enters WLAN configuration sub-mode. <ul style="list-style-type: none"> <li>• <i>profile-name</i>- Is the profile name of the configured WLAN.</li> <li>• <i>wlan-id</i> - Is the wireless LAN identifier. Range is from 1 to 512.</li> <li>• <i>SSID_Name</i> - Is the SSID which can contain 32 alphanumeric characters.</li> </ul> <p><b>Note</b> If you have already configured this command, enter <b>wlan profile-name</b> command.</p>
<b>Step 3</b>	<b>security wpa psk set-key ascii/hex key password</b> <b>Example:</b> Device(config-wlan)# <code>security wpa psk set-key ascii 0 PASSWORD</code>	Configures the PSK shared key.
<b>Step 4</b>	<b>no security wpa akm dot1x</b> <b>Example:</b> Device(config-wlan)# <code>no security wpa akm dot1x</code>	Disables security AKM for dot1x.
<b>Step 5</b>	<b>security wpa akm psk</b> <b>Example:</b> Device(config-wlan)# <code>security wpa akm psk</code>	Configures the PSK support.
<b>Step 6</b>	<b>security web-auth</b> <b>Example:</b> Device(config-wlan)# <code>security web-auth</code>	Enables web authentication for WLAN.
<b>Step 7</b>	<b>security web-auth authentication-list authenticate-list-name</b> <b>Example:</b> Device(config-wlan)# <code>security web-auth authentication-list webauth</code>	Enables authentication list for dot1x security.

	Command or Action	Purpose
<b>Step 8</b>	<b>security web-auth parameter-map</b> <i>parameter-map-name</i>  <b>Example:</b> <pre>(config-wlan)# security web-auth parameter-map WLAN1_MAP</pre>	Configures the parameter map.  <b>Note</b> If parameter map is not associated with a WLAN, the configuration is considered from the global parameter map.

**Example**

```
wlan wlan-test 3 ssid-test
security wpa psk set-key ascii 0 PASSWORD
no security wpa akm dot1x
security wpa akm psk
security web-auth
security web-auth authentication-list webauth
security web-auth parameter-map WLAN1_MAP
```

## Configuring WLAN for PSK or Identity Preshared Key (iPSK) and Central Web Authentication (GUI)

**Procedure**

- 
- Step 1** Choose **Configuration > Tags & Profiles > WLANs**.
  - Step 2** Select the required WLAN.
  - Step 3** Choose **Security > Layer2** tab.
  - Step 4** Select the security method from the **Layer 2 Security Mode** drop-down list.
  - Step 5** In the **Auth Key Mgmt**, uncheck the **802.1x** check box.
  - Step 6** Check the **PSK** check box.
  - Step 7** Enter the **Pre-Shared Key** and choose the PSK Format from the **PSK Format** drop-down list and the PSK Type from the **PSK Type** drop-down list.
  - Step 8** Check the **MAC Filtering** check box to enable the feature.
  - Step 9** With MAC Filtering enabled, choose the Authorization List from the **Authorization List** drop-down list.
  - Step 10** Choose **Security > Layer3** tab.
  - Step 11** Check the **Web Policy** checkbox to enable web authentication policy.
  - Step 12** Choose the Web Auth Parameter Map from the **Web Auth Parameter Map** drop-down list and the authentication list from the **Authentication List** drop-down list.
  - Step 13** Click **Update & Apply to Device**.
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# Configuring WLAN for PSK or Identity Preshared Key (iPSK) and Central Web Authentication

## Configuring WLAN

### Procedure

	Command or Action	Purpose
<b>Step 1</b>	<b>configure terminal</b> <b>Example:</b> Device# <code>configure terminal</code>	Enters global configuration mode.
<b>Step 2</b>	<b>wlan profile-name wlan-id SSID_Name</b> <b>Example:</b> Device(config)# <code>wlan wlan-test 3 ssid-test</code>	Enters WLAN configuration sub-mode.  <ul style="list-style-type: none"> <li>• <i>profile-name</i> - Is the profile name of the configured WLAN.</li> <li>• <i>wlan-id</i> - Is the wireless LAN identifier. Range is from 1 to 512.</li> <li>• <i>SSID_Name</i> - Is the SSID which can contain 32 alphanumeric characters.</li> </ul> <p><b>Note</b> If you have already configured this command, enter <b>wlan profile-name</b> command.</p>
<b>Step 3</b>	<b>no security wpa akm dot1x</b> <b>Example:</b> Device(config-wlan)# <code>no security wpa akm dot1x</code>	Disables security AKM for dot1x.
<b>Step 4</b>	<b>security wpa psk set-key ascii/hex key password</b> <b>Example:</b> Device(config-wlan)# <code>security wpa psk set-key ascii 0 PASSWORD</code>	Configures the PSK AKM shared key.
<b>Step 5</b>	<b>mac-filtering auth-list-name</b> <b>Example:</b> Device(config-wlan)# <code>mac-filtering test-auth-list</code>	Sets the MAC filtering parameters.

### Example

```
wlan wlan-test 3 ssid-test
no security wpa akm dot1x
```

```
security wpa psk set-key ascii 0 PASSWORD
mac-filtering test-auth-list
```

## Applying Policy Profile to a WLAN

### Procedure

	Command or Action	Purpose
<b>Step 1</b>	<b>configure terminal</b> <b>Example:</b> Device# <b>configure terminal</b>	Enters global configuration mode.
<b>Step 2</b>	<b>wireless profile policy <i>policy-profile-name</i></b> <b>Example:</b> Device(config)# <b>wireless profile policy policy-iot</b>	Configures the default policy profile.
<b>Step 3</b>	<b>aaa-override</b> <b>Example:</b> Device(config-wireless-policy)# <b>aaa-override</b>	Configures AAA override to apply policies coming from the AAA or ISE servers.
<b>Step 4</b>	<b>nac</b> <b>Example:</b> Device(config-wireless-policy)# <b>nac</b>	Configures NAC in the policy profile.
<b>Step 5</b>	<b>no shutdown</b> <b>Example:</b> Device(config-wireless-policy)# <b>no shutdown</b>	Shutdown the WLAN.
<b>Step 6</b>	<b>end</b> <b>Example:</b> Device(config-wireless-policy)# <b>end</b>	Returns to privileged EXEC mode.

### Example

```
wireless profile policy policy-iot
aaa-override
nac
no shutdown
```



# Configuring 802.1x and Central Web Authentication on Controller (CLIs)

## Creating AAA Authentication

### Procedure

	Command or Action	Purpose
<b>Step 1</b>	<b>configure terminal</b> <b>Example:</b> Device# configure terminal	Enters global configuration mode.
<b>Step 2</b>	<b>aaa new-model</b> <b>Example:</b> Device(config)# aaa new-model	Creates a AAA authentication model.

## Configuring AAA Server for External Authentication

### Procedure

	Command or Action	Purpose
<b>Step 1</b>	<b>configure terminal</b> <b>Example:</b> Device# configure terminal	Enters global configuration mode.
<b>Step 2</b>	<b>radius-server attribute wireless authentication call-station-id ap-name-ssid</b> <b>Example:</b> Device(config)# radius-server attribute wireless authentication call-station-id ap-name-ssid	Configures a call station identifier sent in the RADIUS authentication messages.
<b>Step 3</b>	<b>radius server <i>server-name</i></b> <b>Example:</b> Device(config)# radius server ISE2	Sets the RADIUS server.
<b>Step 4</b>	<b>address ipv4 <i>radius-server-ip-address</i></b> <b>Example:</b> Device(config-radius-server)# address ipv4 111.111.111.111	Specifies the RADIUS server address.

	Command or Action	Purpose
<b>Step 5</b>	<b>timeout</b> <i>seconds</i> <b>Example:</b> Device(config-radius-server)# timeout 10	Specify the time-out value in seconds. The range is between 10 and 1000 seconds.
<b>Step 6</b>	<b>retransmit</b> <i>number-of-retries</i> <b>Example:</b> Device(config-radius-server)# retransmit 10	Specify the number of retries to the server. The range is between 0 and 100.
<b>Step 7</b>	<b>key</b> <i>key</i> <b>Example:</b> Device(config-radius-server)# key cisco	Specifies the authentication and encryption key used between the device and the key string RADIUS daemon running on the RADIUS server.  <i>key</i> covers the following: <ul style="list-style-type: none"> <li>• 0—Specifies unencrypted key.</li> <li>• 6—Specifies encrypted key.</li> <li>• 7—Specifies HIDDEN key.</li> <li>• Word—Unencrypted (cleartext) server key.</li> </ul>
<b>Step 8</b>	<b>exit</b> <b>Example:</b> Device(config-radius-server)# exit	Returns to the configuration mode.
<b>Step 9</b>	<b>aaa group server radius</b> <i>server-group</i> <b>Example:</b> Device(config)# aaa group server radius ISE2	Creates a RADIUS server-group identification.
<b>Step 10</b>	<b>server name</b> <i>server-name</i> <b>Example:</b> Device(config)# server name ISE2	Configures the server name.
<b>Step 11</b>	<b>radius-server deadtime</b> <i>time-in-minutes</i> <b>Example:</b> Device(config)# radius-server deadtime 5	Defines the time in minutes when a server marked as DEAD is held in that state. Once the deadtime expires, the controller marks the server as UP (ALIVE) and notifies the registered clients about the state change. If the server is still unreachable after the state is marked as UP and if the DEAD criteria is met, then server is marked as DEAD again for the deadtime interval.

	Command or Action	Purpose
		<p><i>time-in-mins</i>—Valid values range from 1 to 1440 minutes. Default value is zero. To return to the default value, use the <b>no radius-server deadtime</b> command.</p> <p>The <b>radius-server deadtime</b> command can be configured globally or per aaa group server level.</p> <p>You can use the <b>show aaa dead-criteria</b> or <b>show aaa servers</b> command to check for dead-server detection. If the default value is zero, deadtime is not configured.</p>

## Configuring AAA for Authentication

### Before you begin

Configure the RADIUS server and AAA group server.

### Procedure

	Command or Action	Purpose
<b>Step 1</b>	<p><b>aaa authentication login</b></p> <p><b>Example:</b></p> <pre>Device# aaa authentication login ISE_GROUP group ISE2 local</pre>	Defines the authentication method at login.
<b>Step 2</b>	<p><b>aaa authentication dot1x</b></p> <p><b>Example:</b></p> <pre>Device(config)# aaa authentication network ISE_GROUP group ISE2 local</pre>	Defines the authentication method at dot1x.

## Configuring Accounting Identity List

### Before you begin

Configure the RADIUS server and AAA group server.

### Procedure

	Command or Action	Purpose
<b>Step 1</b>	<p><b>aaa accounting identity <i>named-list</i> start-stop group <i>server-group-name</i></b></p> <p><b>Example:</b></p>	Enables accounting to send a start-record accounting notice when a client is authorized and a stop-record at the end.

	Command or Action	Purpose
	Device# aaa accounting identity ISE start-stop group ISE2	<b>Note</b> You can also use the default list instead of the named list.

## Configuring AAA for Central Web Authentication

### Before you begin

Configure the RADIUS server and AAA group server.

### Procedure

	Command or Action	Purpose
<b>Step 1</b>	<b>aaa server radius dynamic-author</b>  <b>Example:</b> Device# aaa server radius dynamic-author	Configures the Change of Authorization (CoA) on the controller.
<b>Step 2</b>	<b>client client-ip-addr server-key key</b>  <b>Example:</b> Device(config-locsvr-da-radius)# client 111.111.111.111 server-key ciscokey	Configures a server key for a RADIUS client.

## Defining an Access Control List for Radius Server

### Procedure

	Command or Action	Purpose
<b>Step 1</b>	<b>configure terminal</b>  <b>Example:</b> Device# configure terminal	Enters global configuration mode.
<b>Step 2</b>	<b>ip access-list extended redirect</b>  <b>Example:</b> Device(config)# ip access-list extended redirect	The HTTP and HTTPS browsing does not work without authentication (per the other ACL) as ISE is configured to use a redirect ACL (named <b>redirect</b> ).
<b>Step 3</b>	<b>sequence-number deny icmp any</b>  <b>Example:</b>	Specifies packets to reject according to the sequence number.

	Command or Action	Purpose
	Device(config-ext-nacl)# 10 deny icmp any	<b>Note</b> You must have the DHCP, DNS, and ISE servers in the reject sequences. Refer to <a href="#">Configuration Example to Define an Access Control List for Radius Server</a> , wherein the <i>111.111.111.111</i> refers to the IP address of the ISE server.
<b>Step 4</b>	<b>permit TCP any any eq web-address</b> <b>Example:</b> Device(config-ext-nacl)# permit TCP any any eq www	Redirects all HTTP or HTTPS access to the Cisco ISE login page.

## Configuration Example to Define an Access Control List for Radius Server

This example shows how to define an access control list for RADIUS server:

```
Device# configure terminal
Device(config-ext-nacl) # 10 deny icmp any
Device(config-ext-nacl) # 20 deny udp any any eq bootps
Device(config-ext-nacl) # 30 deny udp any any eq bootpc
Device(config-ext-nacl) # 40 deny udp any any eq domain
Device(config-ext-nacl) # 50 deny tcp any host 111.111.111.111 eq 8443
Device(config-ext-nacl) # 55 deny tcp host 111.111.111.111 eq 8443 any
Device(config-ext-nacl) # 40 deny udp any any eq domain
Device(config-ext-nacl) # end
```

## Configuring WLAN

### Procedure

	Command or Action	Purpose
<b>Step 1</b>	<b>configure terminal</b> <b>Example:</b> Device# configure terminal	Enters global configuration mode.
<b>Step 2</b>	<b>wlan wlan-name</b> <b>Example:</b> Device(config)# wlan wlan30	Enters WLAN configuration mode.
<b>Step 3</b>	<b>security dot1x authentication-list ISE_GROUP</b> <b>Example:</b> Device(config-wlan)# security dot1x authentication-list ISE_GROUP	Configures 802.1X for a WLAN.

	Command or Action	Purpose
<b>Step 4</b>	<b>no shutdown</b> <b>Example:</b> Device(config-wlan)# no shutdown	Enables the WLAN.

## Configuring Policy Profile

### Procedure

	Command or Action	Purpose
<b>Step 1</b>	<b>configure terminal</b> <b>Example:</b> Device# configure terminal	Enters global configuration mode.
<b>Step 2</b>	<b>wireless profile policy <i>profile-name</i></b> <b>Example:</b> Device(config)# wireless profile policy wireless-profile1	Configures policy profile.
<b>Step 3</b>	<b>aaa-override</b> <b>Example:</b> Device(config-wireless-policy)# aaa-override	Configures AAA override to apply policies coming from the AAA or Cisco Identify Services Engine (ISE) server.
<b>Step 4</b>	<b>accounting-list <i>list-name</i></b> <b>Example:</b> Device(config-wireless-policy)# accounting-list ISE	Sets the accounting list for IEEE 802.1x.
<b>Step 5</b>	<b>ipv4 dhcp required</b> <b>Example:</b> Device(config-wireless-policy)# ipv4 dhcp required	Configures DHCP parameters for WLAN.
<b>Step 6</b>	<b>nac</b> <b>Example:</b> Device(config-wireless-policy)# nac	Configures Network Access Control (NAC) in the policy profile. NAC is used to trigger the Central Web Authentication (CWA).
<b>Step 7</b>	<b>vlan 25</b> <b>Example:</b> Device(config-wireless-policy)# vlan 25	Configures guest VLAN profile.
<b>Step 8</b>	<b>no shutdown</b> <b>Example:</b>	Enables policy profile.

	Command or Action	Purpose
	Device(config-wireless-policy)# no shutdown	

## Mapping WLAN and Policy Profile to Policy Tag

### Procedure

	Command or Action	Purpose
<b>Step 1</b>	<b>configure terminal</b> <b>Example:</b> Device# configure terminal	Enters global configuration mode.
<b>Step 2</b>	<b>wireless tag policy <i>policy-tag-name</i></b> <b>Example:</b> Device(config-policy-tag)# wireless tag policy xx-xre-policy-tag	Configures policy tag and enters policy tag configuration mode.
<b>Step 3</b>	<b>wlan <i>wlan-name</i> policy <i>profile-policy-name</i></b> <b>Example:</b> Device(config-policy-tag)# wlan wlan30 policy wireless-profile1	Maps a policy profile to a WLAN profile.
<b>Step 4</b>	<b>end</b> <b>Example:</b> Device(config-policy-tag)# end	Saves the configuration and exits the configuration mode and returns to privileged EXEC mode.

## Configuring ISE for Central Web Authentication with Dot1x (GUI)

### Defining Guest Portal

#### Before you begin

Define the guest portal or use the default guest portal.

#### Procedure

- 
- Step 1** Login to the Cisco Identity Services Engine (ISE).
  - Step 2** Choose **Work Centers > Guest Access > Portals & Components**.
  - Step 3** Click **Guest Portal**.
-

## Defining Authorization Profile for a Client

### Before you begin

You can define the authorization profile to use guest portal and other additional parameters as per the requirement. Authorization profile redirects the client to the authentication portal. In the latest Cisco ISE version, Cisco\_Webauth authorization results exist already, and you can edit the same to modify the redirection ACL name to match the configuration in the controller.

### Procedure

---

- Step 1** Login to the Cisco Identity Services Engine (ISE).
  - Step 2** Choose **Policy > Policy Elements > Authorization > Authorization Profiles**.
  - Step 3** Click **Add** to create your own custom or edit the Cisco\_Webauth default result.
- 

## Defining Authentication Rule

### Procedure

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- Step 1** Login to the Cisco Identity Services Engine (ISE).
  - Step 2** Choose **Policy > Policy Sets** and click on the appropriate policy set.
  - Step 3** Expand **Authentication** policy.
  - Step 4** Expand **Options** and choose an appropriate **User ID**.
- 

## Defining Authorization Rule

### Procedure

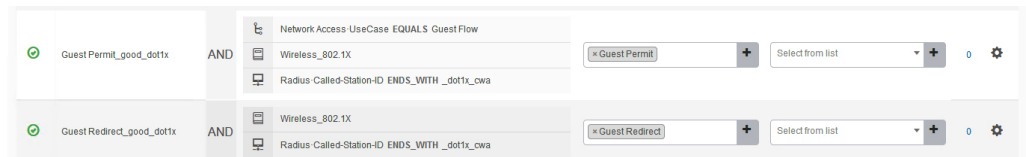
---

- Step 1** Login to the Cisco Identity Services Engine (ISE).
- Step 2** Choose **Policy > Policy Sets > Authorization Policy**.
- Step 3** Create a rule that matches the condition for 802.1x with a specific SSID (using Radius-Called-Station-ID).
  - Note** You get to view the CWA redirect attribute.
- Step 4** Choose the already created authorization profile.
- Step 5** From the **Result/Profile** column, choose the already created authorization profile.
- Step 6** Click **Save**.



**Note** The following image depicts the working configuration sample for your reference.

**Figure 1: Working Configuration Sample**



## Creating Rules to Match Guest Flow Condition

### Before you begin

You must create a second rule that matches the guest flow condition and returns to network access details once the user completes authentication in the portal.

### Procedure

- Step 1** Login to the Cisco Identity Services Engine (ISE).
- Step 2** Choose **Policy > Policy Sets > Authorization Policy**.
- Step 3** Create a rule that matches the condition for 802.1x with, Network Access-UseCase EQUALS Guest, and a specific SSID (using Radius-Called-Station-ID).

**Note** You get to view the Permit Access.

- Step 4** From the **Result/Profile** column, choose the already created authorization profile.
- Step 5** Choose the default or customized Permit Access.
- Step 6** Click **Save**.

## Verifying Multiple Authentication Configurations

### Layer 2 Authentication

After L2 authentication (Dot1x) is complete, the client is moved to *Webauth Pending* state.

To verify the client state after L2 authentication, use the following commands:

```
Device# show wireless client summary
Number of Local Clients: 1
MAC Address  AP Name  WLAN  State  Protocol  Method  Role
-----
58ef.68b6.aa60  ewlcl_ap_1  3  Webauth Pending  11n(5)  Dot1x  Local
Number of Excluded Clients: 0
```

```
Device# show wireless client mac-address <mac_address> detail
```

```
Auth Method Status List
```

```
Method: Dot1x
Webauth State: Init
Webauth Method: Webauth
Local Policies:
Service Template: IP-Adm-V6-Int-ACL-global (priority 100)
URL Redirect ACL: IP-Adm-V6-Int-ACL-global
Service Template: IP-Adm-V4-Int-ACL-global (priority 100)
URL Redirect ACL: IP-Adm-V4-Int-ACL-global
Service Template: wlan_svc_default-policy-profile_local (priority 254)
Absolute-Timer: 1800
VLAN: 50
```

```
Device# show platform software wireless-client chassis active R0
```

ID	MAC Address	WLAN	Client	State
0xa0000003	58ef.68b6.aa60	3		L3 Authentication

```
Device# show platform software wireless-client chassis active F0
```

ID	MAC Address	WLAN	Client	State	AOM ID	Status
0xa0000003	58ef.68b6.aa60	3		L3		Authentication. 730.

```
Device# show platform hardware chassis active qfp feature wireless wlclient cpp-client
summary
```

```
Client Type Abbreviations:
```

```
RG - REGULAR BLE - BLE
HL - HALO LI - LWFL INT
```

```
Auth State Abbreviations:
```

```
UK - UNKNOWN IP - LEARN IP IV - INVALID
L3 - L3 AUTH RN - RUN
```

```
Mobility State Abbreviations:
```

```
UK - UNKNOWN IN - INIT
LC - LOCAL AN - ANCHOR
FR - FOREIGN MT - MTE
IV - INVALID
```

```
EoGRE Abbreviations:
```

```
N - NON EOGRE Y - EOGRE
```

CPP IF_H	DP IDX	MAC Address	VLAN	CT	MCVL	AS	MS	E	WLAN	POA
0X49	0XA0000003	58ef.68b6.aa60	50	RG	0	L3	LC	N	wlan-test	0x90000003

```
Device# show platform hardware chassis active qfp feature wireless wlclient datapath summary
```

Vlan	DP IDX	MAC Address	VLAN	CT	MCVL	AS	MS	E	WLAN	POA
0X49	0xa0000003	58ef.68b6.aa60	50	RG	0	L3	LC	N	wlan-test	0x90000003

### Layer 3 Authentication

Once L3 authentication is successful, the client is moved to *Run* state.

To verify the client state after L3 authentication, use the following commands:

```
Device# show wireless client summary
```

```
Number of Local Clients: 1
```

```
MAC Address  AP Name  WLAN  State  Protocol  Method  Role
```

```
-----
```

```
58ef.68b6.aa60  ewlcl_ap_1  3      Run    11n(5)  Web Auth  Local
```

```
Number of Excluded Clients: 0
```

```
Device# show wireless client mac-address 58ef.68b6.aa60 detail
```

```
Auth Method Status List
```

```
Method: Web Auth
```

```
Webauth State: Authz
```

```
Webauth Method: Webauth
```

```
Local Policies:
```

```
Service Template: wlan_svc_default-policy-profile_local (priority 254)
```

```
Absolute-Timer: 1800
```

```
VLAN: 50
```

```
Server Policies:
```

```
Resultant Policies:
```

```
VLAN: 50
```

```
Absolute-Timer: 1800
```

```
Device# show platform software wireless-client chassis active R0
```

```
ID          MAC Address      WLAN  Client State
```

```
-----
```

```
0xa0000001 58ef.68b6.aa60  3      Run
```

```
Device# show platform software wireless-client chassis active f0
```

```
ID          MAC Address      WLAN  Client State  AOM ID.  Status
```

```
-----
```

```
0xa0000001 58ef.68b6.aa60.  3      Run          11633    Done
```

```
Device# show platform hardware chassis active qfp feature wireless wlclient cpp-client summary
```

```
Client Type Abbreviations:
```

```
RG - REGULAR  BLE - BLE
```

```
HL - HALO     LI - LWFL INT
```

```
Auth State Abbreviations:
```

```
UK - UNKNOWN  IP - LEARN  IP IV - INVALID
```

```
L3 - L3 AUTH  RN - RUN
```

```
Mobility State Abbreviations:
```

```
UK - UNKNOWN  IN - INIT
```

```
LC - LOCAL    AN - ANCHOR
```

```
FR - FOREIGN  MT - MTE
```

```
IV - INVALID
```

```
EoGRE Abbreviations:
```

```
N - NON EOGRE  Y - EOGRE
```

```
CPP IF_H  DP IDX      MAC Address  VLAN  CT  MCVL AS MS E  WLAN  POA
```

```
-----
```

```
0X49      0XA0000003  58ef.68b6.aa60  50  RG  0  RN LC N wlan-test 0x90000003
```

```
Device# show platform hardware chassis active qfp feature wireless wlclient datapath summary
```

```
Vlan  pal_if_hd1      mac          Input Uidb      Output Uidb
```

```
-----
```

```
50      0xa0000003      58ef.68b6.aa60      95929      95927
```

### Verifying PSK+Webauth Configuration

```
Device# show wlan summary
```

```
Load for five secs: 0%/0%; one minute: 0%; five minutes: 0%  
Time source is NTP, 12:08:32.941 CEST Tue Oct 6 2020
```

```
Number of WLANs: 1
```

```
ID Profile Name SSID Status Security
```

---

```
23 Gladius1-PSKWEBAUTH Gladius1-PSKWEBAUTH UP [WPA2][PSK][AES],[Web Auth]
```