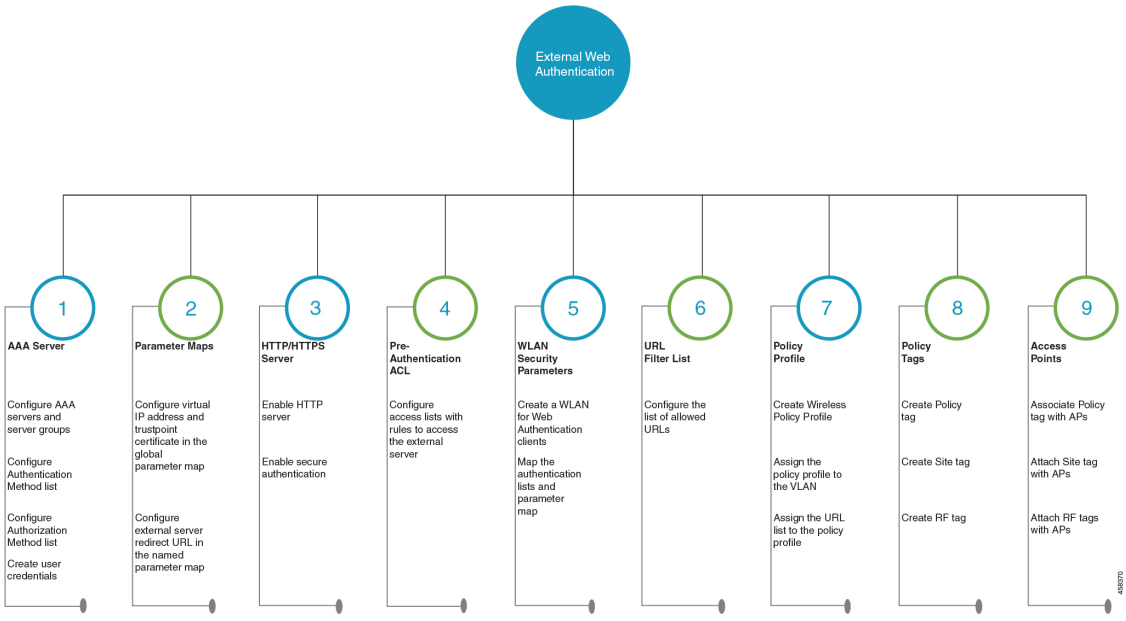
Configure External Web Authentication

This section outlines the configuration tasks for configuring external web authentication using the CLI and the WebUI. The following workflow diagram depicts the step-by-step configuration for external web authentication. Depending on your preferred mode of configuration, you can navigate to the respective topics using the links provided here.

Figure 1: Workflow for Configuring External Web Authentication



- Configure External Web Authentication using the CLI, on page 2
- Configure External Web Authentication using the WebUI, on page 18

Configure External Web Authentication using the CLI

Configure AAA Server and Server Groups

When trying to access the WLC, you will be prompted to enter a username and password in order to let you connect to the guest network. By default, these credentials are validated against the local database of users on the controller. Alternatively, you can set up a remote AAA RADIUS or LDAP server for authentication.

Step 1 **enable**

Example:

```
Device> enable
```

Enables privileged EXEC mode.

- Enter your password if prompted.

Step 2 **configure terminal**

Example:

```
Device# configure terminal
```

Enters global configuration mode.

Step 3 To configure LDAP server, do the following:

a) **ldap server** *server-name*

Example:

```
Device(config)#ldap server WEBAUTHSERVER
```

Defines a LDAP server and enters LDAP server configuration mode.

b) **ipv4** *ipv4-address*

Example:

```
Device(config-ldap-server)# ipv4 192.168.1.192
```

Specifies the LDAP server IP address using IPv4.

c) **bind authenticate root-dn password** [**0** *string* | **7** *string*] *string*

Example:

```
Device(config-ldap-server)#bind authenticate root-dn admin password 6 Cisco12345
```

Use 0 line option to configure an unencrypted shared secret. Use 7 line option to configure an encrypted shared secret.

Specifies a shared secret text string used between the controller and LDAP server.

d) **base-dn** *string*

Example:

```
Device(config-ldap-server)#base-dn CN=Users,DC=lab,DC=com
```

Specifies the base Distinguished Name (DN) of the search.

Step 4 To configure RADIUS server, do the following:

a) **radius server** *server-name*

Example:

```
Device(config)#radius server WEBAUTHSERVER
```

Configures a RADIUS server.

b) **address ipv4** *address* **auth-port** *auth_port_number* **acct-port** *acct_port_number*

Example:

```
Device(config-radius-server)address ipv4 10.48.71.92 auth-port 1812 acct-port 1813
```

Specifies the RADIUS server IP address using IPv4.

c) **key** *key*

Example:

```
Device(config-radius-server)#key cisco
```

Step 5 To configure TACACS+ server, do the following:

a) **tacacs server** *server-name*

Example:

```
Device(config)#tacacs server WEBAUTHSERVER
```

b) **address ipv4** *address*

Example:

```
Device(config-server-tacacs)address ipv4 9.2.62.56
```

The *list-name* is a character string used to name the list you are creating. The *list-name* should not exceed 255 characters.

Specifies the TACACS+ server IP address using IPv4.

c) **key** *key*

Example:

```
Device(config-server-tacacs)#key cisco
```

Step 6 **exit**

Example:

```
Device(config-ldap-server)#exit
OR
Device(config-radius-server)#exit
OR
Device(config-server-tacacs+)#exit
```

Returns to the configuration mode.

Step 7 **aaa group server** {**ldap** | **radius** | **tacacs+**} *server-group*

Example:

```
Device(config-ldap-sg)#aaa group server ldap LDAPGROUP
OR
Device(config-sg-radius)#aaa group server radius RADGROUP
OR
Device(config-sg-tacacs+)#aaa group server tacacs+ TACGROUP
```

server-group refers to the server group name with a maximum length of 32 strings.

Creates a server-group identification.

Step 8 **server name** *server-name*

Example:

```
Device(config-ldap-sg)#server name WEBAUTHSERVER
OR
Device(config-sg-radius)#server name WEBAUTHSERVER
OR
Device(config-sg-tacacs+)#server name WEBAUTHSERVER
```

Maps the LDAP/RADIUS/TACACS+ server to the server group.

If you have multiple LDAP/RADIUS/TACACS+ servers that can be used for authentication, it is recommended to map all these servers to the same server group. The WLC handles load balancing different authentications among the servers in the server group.

Step 9 **end**

Example:

```
Device(config-ldap-sg)#end
OR
Device(config-sg-radius)#end
OR
Device(config-sg-tacacs+)#end
```

Exits the global configuration mode and returns to privileged EXEC mode.

Configure Local Authentication and Authorization

A method list is a sequential list describing the authentication and authorization methods to be queried to authenticate a user. Method lists enable you to designate one or more security protocols to be used for authentication and authorization, thus ensuring a backup system in case the initial method fails.

Configure the following steps to specify the local username database as the method of user authentication at login.

Step 1 **enable**

Example:

```
Device> enable
```

Enables privileged EXEC mode.

- Enter your password, if prompted.

Step 2 **configure terminal**

Example:

```
Device# configure terminal
```

Enters global configuration mode.

Step 3 **aaa new-model**

Example:

```
Device(config)# aaa new-model
```

Enables AAA functionality.

Step 4 **aaa authentication login** {**default** | *list-name*} **local group** *AAA-server-group*

Example:

```
Device(config)#aaa authentication login WIRELESS_LWA_AUTHENTICATION local
```

The *list-name* is a character string used to name the list you are creating. The *list-name* should not exceed 255 characters.

group *AAA_server_group* lets you specify the AAA server group that you have created for authorization.

Sets the login authentication to use the local username database. The default keyword applies the local user database authentication to all ports.

Step 5 **aaa authorization network** {**default** | *list-name*} **local group** *AAA_server_group*

Example:

```
Device(config)#aaa authorization network WIRELESS_LWA_AUTHORIZATION local
```

group *AAA_server_group* lets you specify the AAA server group that you have created for authorization.

Creates an authorization method list for external web-based authorization.

Step 6 **user-name** *user name*

Example:

```
Device(config)#username guest
```

Creates guest user name in the local database, and establishes a username-based authentication system.

For *user-name*, specify the user ID as one word. Spaces and quotation marks are not allowed.

Step 7 **password** {*encryption-type* | *password*}

Example:

```
Device(config-user-name)#password cisco123
```

- For *encryption-type*, enter **0** for configuring unencrypted password,**6** to configure an encrypted password, **7** to configure a hidden password or **0-9** for nnnot speifying any encryption type.
- For *password*, specify the password the user must enter to gain access to the switch. The password must be from 1 to 25 characters, can contain embedded spaces, and must be the last option specified in the username command.

Configures the password for the guest user name in the local database.

Step 8 **end**

Example:

```
Device(config-user-name)# end
```

Exits the global configuration mode and returns to privileged EXEC mode.

Configure Pre-Authentication ACL

Pre-authentication ACL is used in web authentication to allow certain types of traffic before the authentication is complete. This allows the clients limited access to particular network resources before authentication. When using an external web server for web authentication, you need to configure a pre-authentication ACL for the external web server.

Before you begin

Ensure that you have configured the WLAN.

Step 1 **enable**

Example:

```
Device> enable
```

Enables privileged EXEC mode.

- Enter your password, if prompted.

Step 2 **configure terminal**

Example:

```
Device# configure terminal
```

Enters global configuration mode.

Step 3 **ip access-list extended** *access-list-name*

Example:

```
Device(config)#ip access-list extended EWA_ACL
```

Defines an extended access list using a name, and enters the access-list configuration mode.

Step 4 {**permit** | **deny**} *protocol* {*source* [*source-wildcard*] | **host** *source* | **any**} {*destination* [*destination-wildcard*] | host *destination* | **any**}

Specifies a permit or deny statement in named IP access list configuration mode.

The *source* is the source address of the network or host from which the packet is being sent specified as:

- The 32-bit quantity in dotted-decimal format.
- The keyword **any** as an abbreviation for *source* and *source-wildcard* of 0.0.0.0 255.255.255.255. You do not need to enter a source-wildcard.
- The keyword **host** as an abbreviation for *source* and *source-wildcard* of source 0.0.0.0.

(Optional) The *source-wildcard* applies wildcard bits to the source.

Example:

```
Device(config-ext-nacl)# permit ip any host 193.43.158.111
```

Step 5 **end**

Example:

```
Device(config-wlan)#end
```

Returns to privileged EXEC mode.

Configure Parameter Maps

A parameter map allows you to modify parameters that control the behavior of actions configured under a control policy. A parameter map for web-based authentication sets parameters that can be applied to subscriber sessions during authentication. If you do not create a parameter map, the policy uses default parameters.

Before you begin

- You have already downloaded and installed a third-party certificate signed by a trusted certificate authority on the controller. Applicable only if you are opting to use third-party certificates.

Step 1 **enable**

Example:

```
Device> enable
```

Note Enter your password if prompted.

Enables privileged EXEC mode.

Step 2 **configure terminal**

Example:

```
Device#configure terminal
```

Enters global configuration mode.

Step 3 Configure the global parameter map as follows:

a) **parameter-map type webauth global**

Example:

```
Device(config)#parameter-map type webauth global
```

The **parameter-map-name** must not exceed 99 characters.

Creates the global parameter map.

b) **virtual-ip** {**ipv4** | **ipv6**} *virtual-ip-address* **virtual-host** *virtual-host-name*

Example:

```
Device(config-params-parameter-map)#virtual-ip ipv4 192.0.2.1 virtual-host wlc.dnasapaces.com
```

Note that you can configure virtual IP address only using the global parameter map. It is mandatory to configure a virtual ip address while configuring external web authentication. Otherwise, the clients will be redirected to the internal web authentication login page of the controller.

The Virtual IP address for the WLC must be configured as a non-routable IP address. You must ensure it does not overlap with the network infrastructure. The address can be configured to use an IP address from the internal allocated networks. Defined on RFC1918.

Specifies the virtual IP address of the external web server to which the guest users are redirected.

c) **webauth-http-enable**

Example:

```
Device(config-params-parameter-map)#webauth-http-enable
```

Enables HTTP server for web authentication.

d) **intercept-https-enable**

Example:

```
Device(config-params-parameter-map)#intercept-https-enable
```

Note This command is applicable only if you have configured **virtual-ip** and(or) **ip http secure-server** commands.

Enables the clients to redirect to the webauthentication login page when trying to manually access an HTTPS website.

e) **trustpoint** *trustpoint-name*

Example:

```
Device(config-params-parameter-map)#trustpoint trustpoint-name
```

Configures the trustpoint for HTTPS login page. The trustpoint corresponds to the device certificate the WLC will use in conjunction with the virtual IP and hostname.

Step 4 (Optional) **sleeping-client timeout** *timeout-in-minutes*

Example:

```
Device(config-params-parameter-map)#sleeping-client timeout
```

Enable the clients with guest access to sleep and wake up without having to go through another authentication process through the login page. You can configure the duration for which sleeping clients should be remembered for before reauthentication becomes necessary.

The valid timeout range is between 10 minutes and 43200 minutes. If you do not use the timeout keyword, the sleeping client is configured with the default timeout value of 720 minutes.

Step 5 Configure the named parameter map as follows:

a) **parameter-map type webauth** {*parameter-map-name* | **global**}

Example:

```
Device(config)#parameter-map type webauth ewa_parameter_map
```

Creates a parameter map and enters parameter-map webauth configuration mode.

b) **type** {**authbypass** | **consent** | **webauth** | **webconsent**}

Example:

```
Device(config-params-parameter-map)#type webauth
```

Note Note that **authbypass** is not supported on wireless web authentication.

Configures the type of web authentication, such as authentication bypass, consent, webauth, or webconsent.

c) **redirect** {{**for-login** | **on-failure** | **on-success**} *url* | **portal** {**ipv4** *ipv4-address* | **ipv6** *ipv6-address*}}

Example:

```
Device(config-params-parameter-map)#redirect for-login https://cisco.wifi-mx.com/p2/polarisred
Device(config-params-parameter-map)#redirect portal ipv6 9:1:1::100
```

portal {**ipv4** *ipv4-address* | **ipv6** *ipv6-address*}}: Specify the IP address of the web server in the *ipv4-address* or *ipv6-address*variables, when using external web server for redirection.

Note If you are trying to access IPv6 URL and you have an IPv4 web server, the controller redirects the client to an internal page as domain redirection is not supported. It is recommended to have a dual-stack web server and configure virtual IPv6 address in the global parameter map.

Configures the redirect URL for the login, failure, and success pages. If the login page has any resource that needs to be fetched from the server, you will need to include those resource URLs in URL filtering.

d) (Optional) **timeout init-state sec** *seconds*

Example:

```
Device(config-params-parameter-map)#timeout init-state sec 60
```

Sets the timeout period for a user to complete the authentication.

e) (Optional) **redirect append** { **ap-mac | client-mac | wlan-ssid**} **tag** *tag-name*

Example:

```
Device(config-params-parameter-map)#redirect append ap-mac tag ap_mac
 Device(config-params-parameter-map)#redirect append wlan-ssid tag wlan
 Device(config-params-parameter-map)#redirect append client-mac tag client_mac
```

Note If you are migrating from AireOS, you must run these commands explicitly.

Appends the client MAC address, access point MAC address and the WLAN SSID to the redirect URL. External web server uses this domain specific information to provide location-based portal.

Enables you to configure the global and user-defined parameter maps which is required for external Web Authentication

Configure WLAN Security Parameters

WLAN profile defines the properties of a WLAN such as Profile Name, Status, WLAN ID, L2 and L3 Security parameters, AAA Server associated with this SSID and other parameters that are specific to a particular WLAN.

Before you begin

- Ensure that you have configured a parameter map for web authentication.
- Ensure that you have configured a authentication method list for web authentication.
- Run the **show wlan summary** command to view the configured security types.

Step 1 **enable**

Example:

```
Device>enable
```

Enables privileged EXEC mode.

- Enter your password, if prompted.

Step 2 **configure terminal**

Example:

```
Device#configure terminal
```

Enters global configuration mode.

Step 3 **wlan** *profile-name wlan-id ssid-name*

Example:

```
Device(config)#wlan WLAN_EWA_LOCAL 34 WLAN_EWA_LOCAL
```

Specifies the WLAN name and ID.

profile-name is the WLAN name which can contain 32 alphanumeric characters.

wlan-id is the wireless LAN identifier. The valid range is from 1 to 512.

ssid-name is the SSID which can contain 32 alphanumeric characters.

Step 4 Depending on your configuration, enter one of the following commands:

- **ip access-group web** *access-list-name*
- **ipv6 traffic-filter web***access-list-name*

Example:

```
Device(config-wlan)# ip access-group EWA_ACL
```

OR

```
Device(config-wlan)# ipv6 traffic-filter web EWA_ACL
```

Maps the ACL to the web authentication WLAN.

access-list-name is the IPv4 ACL name or ID.

Step 5 (Optional) **no security wpa**

Example:

```
Device(config-wlan)#no security wpa
```

Disables the WPA security, if configured.

Step 6 Configure layer 2 security, as required. You can configure open authentication or a combination of any of the following supported security methods.

- MAB
- MAB Failure
- 802.1X
- PSK
- iPSK
- MAB Failure + PSK
- MAB Failure + OWE
- MAB Failure + SAE

Step 7 **security web-auth**

Example:

```
Device(config-wlan)#security web-auth
```

Enables web authentication for WLAN.

Step 8 **security web-auth** {**authentication-list** *authentication-list-name*}

Example:

```
Device(config-wlan)#security web-auth authentication-list WIRELESS_EWA_AUTHENTICATION
```

Enables authentication list for for web authentication.

authentication-list *authentication-list-name*: Sets the authentication list for IEEE 802.1X.

Note We recommend you to create named authentication list.

Step 9 **security web-auth** {**authorization-list** *authorization-list-name*}

Example:

```
Device(config-wlan)#security web-auth authorization-list WIRELESS_EWA_AUTHORIZATION
```

Enables authorization list for for web authentication.

authorization-list *authorization-list-name*: Sets the override-authorization list for IEEE 802.1X.

Note We recommend you to create named authorization list.

Step 10 **security web-auth parameter-map** *parameter-map-name*

Example:

```
Device(config-wlan)#security web-auth parameter-map EWA_PARAMETER_MAP
```

Maps the parameter map to the WLAN.

Note We recommend you to create a named parameter map.

Step 11 **no shutdown**

Example:

```
Device(config-wlan)# no shutdown
```

Enables the WLAN.

Step 12 **end**

Example:

```
Device(config-wlan)#end
```

Returns to privileged EXEC mode.

Configuring the URLFilter List

Step 1 **configure terminal**

Example:

```
Device# configure terminal
```

Enters global configuration mode.

Step 2 **urlfilter list** *url-filterlist-name*

Example:

```
Device(config)# urlfilter list urllist_local_preauth
```

Configures the URL filter list.

url-filterlist-name refers to the URL filter list name. The list name must not exceed 32 alphanumeric characters.

Step 3 **action permit**

Example:

```
Device(config-urlfilter-params)#action permit
```

Configures the list of allowed URLs.

Step 4 **url** *url*

Example:

```
Device(config-urlfilter-params)#url url1.dns.com
```

Configures a URL.

Create Wireless Policy Profile

Policy profile contains policy to be associated with the WLAN. It specifies the settings for client VLAN, URL filters, session and idle timeout settings and so on.

Before you begin

- Ensure you have created the VLANs for assigning the wireless clients.
- Ensure you have defined pre-authentication URL Filter list for the URLs.

Step 1 **enable**

Example:

```
Device> enable
```

Enables privileged EXEC mode.

- Enter your password, if prompted.

Step 2 **configure terminal**

Example:

```
Device# configure terminal
```

Enters global configuration mode.

Step 3 **wireless profile policy** *profile-name*

Example:

```
Device(config)#wireless profile policy EWA_POLICY_PROFILE
```

Configures the WLAN policy profile.

Step 4 **urlfilter list pre-auth-filter** *name*

Example:

```
Device(config-wireless-policy)#urlfilter list pre-auth-filter urllist_local_preauth
```

Applies the URL list to the policy profile.

Step 5 **vlan** *vlan-name*

Example:

```
Device(config-wireless-policy)#vlan 100
```

Assigns the profile policy to the VLAN.

Step 6 **no shutdown**

Example:

```
Device(config-wireless-policy)# no shutdown
```

Restarts the WLAN.

Step 7 **end**

Example:

```
Device(config)# end
```

Returns to privileged EXEC mode.

Create a Policy Tag

A policy tag constitutes mapping of the WLAN profile to the policy profile. The WLAN profile defines the wireless characteristics of the WLAN. The policy profile defines the network policies and the switching policies for the client.

You can either create a new policy tag or use the default policy tag. The default policy tag automatically maps any SSID with a WLAN ID between 1 to 16 to the default policy profile. It cannot be modified nor deleted. If you have a WLAN with ID 17 or higher, the default policy tag cannot be used.

Before you begin

- Ensure you have configured a WLAN for web authentication.
- Ensure you have configured a WLAN policy profile.

Step 1 **configure terminal**

Example:

```
Device#configure terminal
```

Enters global configuration mode.

Step 2 **wireless tag policy** *policy-tag-name*

Example:

```
Device(config)#wireless tag policy lwa_policy_tag
```

Configures a policy tag and enters policy tag configuration mode.

Step 3 **wlan** *wlan-name* **policy** *profile-policy-name*

Example:

```
Device(config-policy-tag)#wlan wlan_lwa_local policy wlan_lwa_local
```

Maps the WLAN policy profile to a WLAN profile.

Step 4 **end**

Example:

```
Device(config-policy-tag)# end
```

Saves the configuration, exits configuration mode, and returns to privileged EXEC mode.

Configure a Site Tag

Site tag assigns the AP join profile settings to the AP and determines if the site is a local site, in which case the APs will be in local mode.

To get the best performance from your 9800 Series wireless controller, it is recommended that you:

- Use custom site tags and not the default site tag
- Assign the same site tag to all the APs in the same roaming domain
- Limit the number of APs to 500 per site tag for best performance
- Not exceed the recommended maximum number of APs per site tag based on the controller model

Step 1 **configure terminal**

Example:

```
Device#configure terminal
```

Enters global configuration mode.

Step 2 **wireless tag site** *site-tag*

Example:

```
Device(config)#wireless tag site site_lwa
```

Configures site tag and enters site tag configuration mode. The site is configured as a local site, by default. To configure the site tag as Flexconnect, run the **no local-site** command.

Step 3 **description** *description*

Example:

```
Device(config-site-tag)# description default site tag
```

Adds a description for the site tag.

Step 4 **end**

Example:

```
Device(config-site-tag)# end
```

Returns to privileged EXEC mode.

Assign a Policy Tag to an AP

Access Points are tagged based on the broadcast domain, the site it belongs to, and the desired RF characteristics. Once tagged, the AP gets a list of WLANs to be broadcast along with the properties of the respective SSIDs, properties of the APs on the local/remote site, and the RF properties of the network.

Each access point is assigned three unique tags: a policy, site, and RF tag. By default, when an AP joins the Cisco Catalyst 9800 Wireless Controller, it gets default tags; the default policy tag, default site tag, and default RF tag. Users can make changes to the default tags or create custom tags. For more information about tags, see "Tags, Profiles, and SSIDs" chapter in the *Cisco Catalyst 9800 Series Wireless Controller Software Configuration Guide*.

Before you begin

- Ensure you have created a policy tag that maps the WLAN profile to the policy profile.
- Ensure you have created a site tag.

Step 1 **configure terminal**

Example:

```
Device#configure terminal
```

Enters the global configuration mode.

Step 2 **ap** *mac-address*

Example:

```
Device (config)#ap 28ac.9eb7.7220
```

Configures an AP and enters the ap tag configuration mode.

Note Use the Ethernet MAC address.

Step 3 **policy-tag** *policy-tag-name*

Example:

```
Device (config-ap-tag)#policy-tag lwa_policy_tag
```

Maps a policy tag to an AP.

Step 4 **site-tag** *site-tag-name*

Example:

```
Device (config-ap-tag)#site-tag site_lwa
```

Maps a site tag to an AP.

Step 5 **end**

Example:

```
Device (config-ap-tag)#end
```

Exits the configuration mode and returns to privileged EXEC mode.

Enable the HTTP/HTTPS Server for Web Authentication

Before you begin

Ensure that you have reviewed the Guidelines for Configuring Secure HTTP Access.

Step 1 **configure terminal**

Example:

```
Device#configure terminal
```

Enters global configuration mode.

Step 2 **ip http server**

Example:

```
Device(config)#ip http server
```

Enables the HTTP server. The local web authentication feature uses the HTTP server to communicate with the hosts for user authentication.

Note It is mandatory to enable **ip http server** for web authentication.

Step 3 **ip http secure-server**

Example:

```
Device(config)#ip http secure-server
```

Enables secure authentication. With secure authentication enabled, the login page always uses HTTPS even if the client sends an HTTP request.

You can configure custom authentication proxy web pages or specify a redirection URL for successful login.

Note To ensure secure authentication when you enter the **ip http secure-server** command, the login page is always in HTTPS (secure HTTP) even if the user sends an HTTP request.

Step 4 **end**

Example:

```
Device(config)# end
```

Exits configuration mode.

Configure External Web Authentication using the WebUI

Configure AAA Server and Server Groups

If you are planning to use an AAA server for authenticating the guest users, configure external servers and server groups as follows.

Step 1 Choose **Configuration** > **Security** > **AAA** and click **Servers/Groups**.

Step 2 To create a new RADIUS server, go to the **Servers** tab, click **RADIUS** and click **+ Add**.

The **Create AAA RADIUS Server** window, configure the following details.

a) In the **Name** field, enter the name of the RADIUS server.
b) In the **Server Address** field, enter the IPv4 or IPv6 address, or hostname.
c) To enable the Protected Access Credential (PAC) authentication key, check the **PAC Key** check box.
d) From the **Key Type** drop-down list, choose the authentication key type.

The key types are **Clear Text**, **Encrypted**, and **Hidden**.

e) In the **Key** and **Confirm Key** fields, enter the authentication key.
f) In the **Auth Port** field, enter the authorization port number.
g) the **Acct Port** field, enter the accounting port number.
h) In the **Server Timeout** field, enter the timeout duration, in seconds.
i) In the **Retry Count** field, enter the number of retries.
j) Use the **Support for CoA** toggle button to enable or disable change of authorization (CoA).
k) Click **Apply to Device**.

Step 3 To create a new TACACS+ server, go to the **Servers** tab, click **TACACS+** and click **+ Add**.

a) In the **Name** field, enter the name of the TACACS+ server.
b) In the **Server Address** field, enter the IPv4 or IPv6 address, or hostname.
c) In the **Key** and **Confirm Key** fields, enter the authentication key.
d) In the **Port** field, enter the port number.
e) In the **Server Timeout** field, enter the timeout duration, in seconds.
f) Click **Apply to Device**.

Step 4 To create a new LDAP server, go to the **Servers** tab, click **LDAP** and click **+ Add**.

a) In the **Server Name** field, enter the LDAP server name.
b) In the **Server Address** field, enter the IPv4 or IPv6 address, or hostname.
c) In the **Port Number** field, enter the port number to use.
d) From the **Simple Bind** drop-down list, choose the authentication key type.
e) In the **User Base DN** field, enter the details.
f) From the **User Attribute** drop-down list, choose the user attribute.
g) In the **User Object Type** field, enter the object type details and click the + icon.

The objects that have been added are listed in the area below. Use the x mark adjacent to each object to remove it.

h) In the **Server Timeout** field, enter the timeout duration, in seconds.
i) Check the **Secure Mode** check box to enable secure mode.

Checking this enables the **Trustpoint Name** drop-down list.

j) From the **Trustpoint Name** drop-down list, choose the trustpoint.
k) Click **Apply to Device**.

Step 5 Choose **Configuration** > **Security** > **AAA** > **Server Groups**.

You can configure servers of different types in one group. The list of servers in a server group is an ordered list. The first available server in the list is used for authentication.

Step 6 To create a new RADIUS server, go to the **Server Groups** tab, click **RADIUS** and click **+ Add**.

The **Create AAA RADIUS Server Group** window displays.

a) In the **Name** field, enter the name of the RADIUS server group.
b) From the **MAC-Delimiter** drop-down list, choose the delimiter to be used in the MAC addresses that are sent to the RADIUS servers.
c) From the **MAC Filtering** drop-down list, choose a value based on which to filter MAC addresses.
d) To configure the dead time for the server group and direct AAA traffic to alternative groups of servers that have different operational characteristics, in the **Dead-Time** field, enter the amount of time, in minutes, after which a server is assumed to be dead.
e) Choose the servers that you want to include in the server group from the **Available Servers** list and move them to the **Assigned Servers** list.
f) Click **Apply to Device**.

Step 7 To create a new TACACS+ server, go to the **Server Groups** tab, click **TACACS+** and click **+ Add**.

The **Create AAA TACACS Server Group** window displays.

a) In the **Name** field, enter the name of the TACACS+ server group.
b) Choose the servers that you want to include in the server group from the **Available Servers** list and move them to the **Assigned Servers** list.
c) Click **Apply to Device**.

Step 8 To create a new LDAP server, go to the **Server Groups** tab, click **LDAP** and click **+ Add**.

The **Create AAA LDAP Server Group** window displays.

a) In the **Name** field, enter the name of the LDAP server group.
b) Choose the servers that you want to include in the server group from the **Available Servers** list and move them to the **Assigned Servers** list.
c) Click **Apply to Device**.

Configure Local Authentication and Authorization

Step 1 Configure authentication method list as follows. Authentication is the process by which a system or network verifies the identity of a user who wishes to access it.

a) Choose **Configuration** > **Security** > **AAA**.
b) Go to **AAA Method List** tab, click **Authentication** on the left side and then click **+ Add**.
c) In the **Quick Setup: AAA Authentication** window that is displayed, enter a name for your method list in the **Method List Name** field.

   The name can contain alphanumeric characters including underscores and hyphens. Do not include space.

d) From the **Type** drop-down list, choose **login** to enable web authentication.
e) From the **Group Type** drop-down list, choose **local** to enable local authentication.

   The options are **group** and **local**. You have to choose **group** to enable authentication on an AAA server. To enable authentication locally on the controller, choose **local**.

f) If you want to configure a local server as a fallback method when the servers in the groups are unavailable, check the **Fallback to local** checkbox.

   The **Fallback to local** checkbox is enabled only if you select the group type as **group**.

g) From the **Available Server Groups** box, select the server groups that you have created in Step 1.
h) Click **Apply to Device**.

Step 2 To provide access to system or network resources based on their identity, configure authorization method list as follows:

a) Choose **Configuration** > **Security** > **AAA**.
b) Go to **AAA Method List** tab, click **Authorization** on the left side and then click **+ Add**.
c) In the **Quick Setup: AAA Authorization** window that is displayed, enter a name for your method list in the **Method List Name** field.

   The name can contain alphanumeric characters including underscores and hyphens. Do not include space.

d) From the **Type** drop-down list, choose **login** to enable web authentication.
e) From the **Group Type** drop-down list, choose **login** to enable local authentication.

   The options are **group** and **local**. You have to choose **group** to enable authentication on an AAA server. To enable authentication locally on the controller, choose **local**.

f) If you want to configure a local server as a fallback method when the servers in the groups are unavailable, check the **Fallback to local** checkbox.

   The **Fallback to local** checkbox is enabled only if you select the group type as **group**.

g) From the **Available Server Groups** box, select the server groups that you have created in Step 1.
h) Click **Apply to Device**.

Configuring Pre-Authentication ACL

While configuring External Web Authentication, you must define ACL rules that will allow the clients to access the external web server.

Step 1 Choose **Configuration** > **Security** > **ACL**.

Step 2 In the **ACL Name** field, enter a name for the ACL that you are configuring.

The SSID name can contain up to 32 alphanumeric characters. By default, the profile name that you have entered in the above step is automatically taken as the SSID. You can go with the default name or add a new one.

Step 3 In the **ACL Type** drop-down list, choose **IPV4 Extended**.

Maps the authentication list to the web authentication WLAN.

Step 4 In the **Sequence** field, enter a sequence value to specify the sequence number for the access list statement.

The valid range is between 100 and 199 or 2000 and 26991

Step 5 In the **Action** drop-down list, choose **Premit** or **Deny**, as applicable.

Step 6 In the **Source Type** drop-down list, choose the required source type. The options available are **any**, **Host** and **Network**.

If you choose the source type as **Host**, then you must enter the **Host Name/IP**.

If you choose the source type as **Network**, then you must specify the Source IP address and Source Wildcard mask.

Step 7 In the **Destination Type** drop-down list, choose the required destination type. The options available are **any**, **Host** and **Network**.

If you choose the destination type as **Host**, then you must enter the **Host Name/IP**.

If you choose the destination type as **Network**, then you must specify the **Destination IP** address and **Destination Wildcard** mask.

Step 8 In the **Protocol** drop-down list, choose a protocol.

Step 9 Click **Add**.

Step 10 Add all the rules, as applicable and click **Apply to Device**.

Configure Local Guest User Credentials

This is applicable only if you are configuring local web authentication. For external web authentication, create the user credentials on the external AAA server.

Before you begin

Step 1 Choose **Administration** > **User Administration**.

Step 2 To create a new guest user account, click **+ Add**.

Step 3 In the **Create User Administration** window that is displayed, configure the following mandatory fields, as required.

a) **User Name**: Enter a unique user name.

It can contain alphanumeric characters including underscores and hyphens. Space is not allowed.

b) Choose the privilege level for the guest user from the **Privilege** drop-down list.

The options are **`Admin`**, **`Read Only`**, **`No Access`** and **`Lobby Admin`**.

Click **Go to Advanced Mode** to view the privilege level number assgined to a particular user.

c) Type the password in the **Password** and **Confirm Password** fields.

The password must contain a mininum of 6 characters and a maximum of 127 characters.

Step 4 Click **Apply to Device**.

Configure Parameter Maps

Before you begin

Depending on your configuration options, ensure you have taken care of the following before starting this procedure.

- The virtual gateway IP address of the WLC that it uses for its communication with the wireless clients is available.
- You have already installed a third-party certificate signed by a trusted certificate authority on the controller. Applicable only if you are opting to use third-party certificates.
- The external AAA server is configured for web authentication and the URL is available.
- The custom HTML pages for authentication are uploaded to the controller or external server, as applicable.

Step 1 Configure the Global parameter map as follows:

a) On the **Web Auth** page, in the list of parameter maps displayed, click **global**.

b) To set the redirect address for web authentication login page, enter the virtual IP address in the **Virtual IPv4 Address**. If the client uses an IPv6 address, enter the IPv6 address in the **Virtual IPv6 Address** field.

It is recommended that you configure a nonroutable IP address for the virtual interface, ideally not overlapping with the network infrastructure addresses.

c) To specify the hostname for the Virtual IP address used for web authentication, enter the hostname in the **Virtual IPv4 Hostname** field.

Configures hostname for the virtual IP address for web authetication.

Note For web authentication, ensure you configure a hostname that is different from the hostname configured for the management IP address of the WLC, if configured already.

d) To use third party certificates for secure communication, in the **Trustpoint** drop-down list, choose the trustpoint label that you have generated for web authentication.

Maps the third party certificate that you have imported in to the controller to the parameter map. A trustpoint contains the device identity certificate along with the corresponding CA certificate. For information about configuring a trustpoint for web authentication, see "Trustpoint Configuration on 9800" section in *Configuring Trustpoints on Cisco Catalyst 9800 Series Wireless Controllers*.

e) To enable secure authentication for the login page, check **Web Auth intercept HTTPs** checkbox.

Intercepts HTTPS requests and passes credentials over an encrypted link.

f) To configure settings for failed login attempts, check **Watch List Enable** checkbox and enter the watch list timeout period in the **Watch List Expiry Timeout** field.

If watch list is enabled, the host is added to the watch list if a user fails to authenticate after the maximum number of login attempts. After the host's IP address is on the watch list, the controller does not intercept HTTP packets from that host or perform WebAuth processing until the expiry timer has expired.

g) Click **Update & Apply**.

Step 2 Create a named parameter map as follows:

a) Choose **Configuration** > **Security** > **Web Auth**.

b) On the **Web Auth** page, click **Add**.
c) In the **Create Web Auth Parameter** window that is displayed, enter a name for the parameter map in the **Parameter-map name** field.
d) In the **Maximum HTTP connections** field, enter the maximum number of HTTP connections that you want to allow. The range of value is 1-200.
e) In the **Init-State Timeout** field, enter the time after which the init state timer should expire due to the user's failure to enter valid credentials on the login page. The range is 60-3932100.
f) In the **Type** drop-down list, choose the type of Web Authentication page that is displayed during the login process.

The following are the options available:

- **Webauth**: The controller presents a policy page with the user name and password. You need to enter the correct credentials to access the network.
- **Consent**: The controller redirects you to a usage policy page with Accept button. You need to click accept the policy to access the network.
- **Webconsent**: The controller redirects you to a usage policy page with **Accept** or **Deny** buttons along with user name or password. You need to enter the correct credentials and accept the usage policy to access the network.
- **Authbypass**: This is not supported.

g) Click **Apply to Device**.

The newly created named parameter map appears in the list of parameter maps in the **Web Auth** page.

Step 3 Edit a named parameter map as follows:

a) On the **Web Auth** page, click the name of the parameter map that you created in step 2.
b) In the **Edit Web Auth Parameter** window that is displayed, choose the required **Banner Type**.

The banner types available are:

- **None**
- **Banner Text**: Click the radio button and enter the required banner text to be displayed in the **Banner Text** field.
- **File Name**: Click the radio button and in the **File Name** field, specify the path of the file from which the banner text has to be fetched.

c) To set the maximum number of HTTP connections allowed, enter the number in **Maximum HTTP connections** field.
d) To enable authentication of sleeping clients and then specify the sleeping client timeout, check the **Sleeping Client Status** checkbox and enter the timeout period in the **Sleeping Client Timeuot** field.

Allows successfully authenticated host devices to stay logged in for a configured period without re-authentication.

The valid range is between 10 minutes and 43200 minutes.

e) Click **Update & Apply**.

A pop-up with **Configuration Successfully Applied** message appears.

Step 4 Configure an external server for authentication as follows:

a) On the **Web Auth** page, click the name of the parameter map that you created in step 2.
b) In the **Edit Web Auth Parameter** window that is displayed, go to the **Advanced** tab.

c) Under **Redirect to external server**, enter the URL of the external server that will host the authentication pages for the login, succesful login and login failure pages.

- **Redirect for log-in**
- **Redirect On-Success**
- **Redirect On-Failure**

d) In the **Portal IPV4 Address** field, enter the IPv4 address of the external server to send redirects.
e) If the external server uses an IPv6 address, in the **Portal IPV6 Address** field, enter the IPv6 address of the portal to send redirects.
f) Click **Update & Apply**.

A pop-up with **Configuration Successfully Applied** message appears.

Step 5 Configure custom authentication pages on the controller as follows:

a) On the **Web Auth** page, click the name of the parameter map that you created in step 2.
b) In the **Edit Web Auth Parameter** window that is displayed, go to the **Advanced** tab.
c) Under **Customized page**, configure the following custom pages, as required. Ensure you have copied all the customized HTML pages to the to the disk or flash of the controller.

- **Login Failed Page**
- **Login Page**
- **Logout Page**
- **Login Successful Page**

d) Choose the HTML pages that you have copied to the flash drive of the controller for each of the options.
e) Click **Update & Apply**.

A pop-up with **Configuration Successfully Applied** message appears.

Configure Web Authentication WLAN

This topic describes the steps to create a WLAN and map the authentication list and parameter map that you have created for web authentication.

Before you begin

- Ensure that you have configured an access control list (ACL) for guest users.
- Ensure that you have configured a parameter map for web authentication.
- Ensure that you have configured a authentication method list for web authentication.

Step 1 Choose **Configuration** > **Tags and Profiles** > **WLANs**.

Step 2 Click **Add** to add a new WLAN Profile.

Step 3 Enter a profile name in the **Profile Name** field.

The profile name can contain up to 32 alphanumeric characters.

Step 4 In the **SSID** field, enter the SSID name.

The SSID name can contain up to 32 alphanumeric characters. By default, the profile name that you have entered in the above step is automatically taken as the SSID. You can go with the default name or add a new one.

Step 5 In the **WLAN ID** field, enter a valid ID between 1 and 4096.

This field is automatically filled in by the system with an available id. You can assign a new ID, if required.

Step 6 Click the **Status** toggle button to enable the WLAN.

Step 7 If the Broadcast SSID is disabled, click the toggle button to enable the SSID for broadcast, so that it is visible to all wireless clients within the range.

Step 8 Go to the **Security** tab and then under **Layer2** tab, in the **Layer 2 Security Mode** list, choose **None**.

For web authentication, you must disable all layer 2 security features.

Step 9 Under **Layer3**, check the **Web Policy** checkbox.

Step 10 In the **Web Auth Parameter** drop-down list, choose the parameter map that you have created earlier.

Maps the parameter map to the web authentication WLAN.

Step 11 In the **Authentication List** drop-down list, choose the authentication list that you have created earlier.

Maps the authentication list to the web authentication WLAN.

Step 12 Click **Show Advanced Settings**, under **Preauthentication ACL**, choose the preauthentication ACL that you have created for guest users, if any.

Maps the ACL to the web auth WLAN. The preauthentication ACLs are used to provide guests access to DNS and DHCP only. Access to the network is provided only after successful authentication.

Step 13 Click **Apply to Device**.

The newly added WLAN appears in the list of WLANs configured in the system.

Configuring the URL Filter List

Step 1 Choose **Configuration** > **Security** > **URL Filters**.
The **URL Filters** page is displayed.

Step 2 Click the **Add** button.
The **Add URL Filters** window is displayed.

Step 3 In the **List Name** box, type a name for the URL Filter list that you are creating.

Step 4 From the **Type** drop-down list, choose either **PRE-AUTH** or **POST-AUTH**.

a) **POST-AUTH**: Specify the **Redirect Servers** for **IPv4** and **IPv6**.

Step 5 In the **Action** field, use the slider to **Permit** or **Deny** the URLs.

Step 6 Specify the URLs in the **URLs** box. Enter every URL on a new line.

Step 7 Click **Apply to Device**.

Create Wireless Policy Profile

Policy profile contains policies to be associated with the WLAN. It defines the network policies and the switching policies for the client.

Before you begin

- Ensure you have created the VLANs for assigning the wireless clients.
- Ensure you have created the URL Filters for allowing clients access to the external server.
- Ensure you have created custom preauthentication ACL to allow or block certain traffic which are not available in the default ACLs.

Step 1 Choose **Configuration** > **Tags & Profiles** > **Policy**.

Step 2 On the **Policy Profile** page, click **Add**.

Step 3 In the **Add Policy Profile** window, in **General** tab, enter a name and description for the policy profile.

Step 4 To enable the policy profile, set **Status** as **Enabled**.

Step 5 Go to the **Access Policies** tab and

a) In the **VLAN** section, choose the VLAN that you have created for assigning the wireless guest clients in the **VLAN/VLAN Group** drop-down list.
b) In the **WLAN ACL** section, choose the URL filters from the **IPv4 ACL** and **IPv6 ACL** drop-down lists.
c) In the **URL Filters** section, choose the URL filters from the **Pre Auth** and **Post Auth** drop-down lists.

Step 6 Click **Apply to Device**.

The newly created policy profile appears in the list of profiles configured in the system.

Configure a Policy Tag

A policy tag maps the WLAN profile to the policy profile. You can either create a new policy tag or use the default policy tag. The default policy tag automatically maps any SSID with a WLAN ID between 1 to 16 to the default policy profile. It cannot be modified nor deleted. If you have a WLAN with ID 17 or higher, the default policy tag cannot be used.

Before you begin

- Ensure you have configured a WLAN for web authentication.
- Ensure you have configured a WLAN policy profile.

Step 1 Configure a Policy Tag as follows:

Step 2 Choose **Configuration** > **Tags & Profiles** > **Tags**.

Step 3 On the **Policy** tab, click **+ Add**.

Step 4 On the **Add Policy Tag** dialog box, enter a name for the policy tag in the **Name** field.

Step 5 Expand **WLAN-POLICY Maps**, click **+ Add.**

Step 6 In the **WLAN Profile** drop-down list, choose the WLAN profile that you have configured for web authentication clients.

Step 7 In the **Policy Profile** drop-down list, choose the policy profile that you have configured for web authentication WLAN.

Step 8 Click the button with a tick mark to save the settings.

Step 9 Click **Apply to Device**.

What to do next

Assign the policy tag to an Access Point.

Assign a Policy Tag to an AP

Before you begin

- Ensure you have created a policy tag that maps the WLAN profile to the policy profile.

Step 1 Choose **Configuration** > **Wireless** > **Access Points**.

The **All Access Points** section displays details of all the APs on your network.

Step 2 To edit the configuration details of an AP, click the row for that AP.

The **Edit AP** window is displayed.

Step 3 In the **General** tab and **Tags** section, in the **Policy** drop-down list, choose the policy tag that you created.

Step 4 If you have configured a site tag and an RF tag, in the **Site** and **RF** drop-down lists, choose the tags that you have created.

Step 5 Click **Update & Apply to Device**.

Step 6 To apply the tags to multiple APs, in the **Advanced** tab, select the access points by checking the checkboxes for the APs and click **+ Tag APs**.

Step 7 In the **Tag APs** dialog box, choose the policy tag, site tag and RF tag that you want to assign to the access points and click **Apply to Device**.