



## Configuration Commands: g to z

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# icap subscription client anomaly-detection report-individual enable aggregate

To configure anomaly detection for client subscriptions and to enable individual report aggregation, use the **icap subscription client anomaly-detection report-individual enable aggregate** command.

**icap subscription client anomaly-detection report-individual enable aggregate**

<b>Syntax Description</b>	This command has no keywords or arguments.
---------------------------	--

<b>Command Default</b>	None
------------------------	------

<b>Command Modes</b>	AP profile configuration (config-ap-profile)
----------------------	--

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Bengaluru 17.12.1	This command was introduced.

## Examples

The following example shows how to configure anomaly detection for client subscriptions and to enable individual report aggregation:

```
Device(config)# ap profile default-ap-profile
Device(config-ap-profile)# icap subscription client anomaly-detection report-individual
enable aggregate
```



# icap subscription client anomaly-detection report-individual per-client throttle

To configure individual reports per client every five minutes on an AP, use the **icap subscription client anomaly-detection report-individual per-client throttle** command.

**icap subscription client anomaly-detection report-individual per-client throttle** *throttle value*

<b>Syntax Description</b>	<i>throttle value</i> Number of event reports per client. Valid value ranges from 0 to 50.
---------------------------	--

<b>Command Default</b>	None
------------------------	------

<b>Command Modes</b>	AP profile configuration (config-ap-profile)
----------------------	--

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Bengaluru 17.12.1	This command was introduced.

## Examples

The following example shows how to configure individual reports per client every five minutes on an AP:

```
Device(config)# ap profile default-ap-profile
Device(config-ap-profile)# icap subscription client anomaly-detection report-individual
per-client throttle 10
```

# icap subscription client anomaly-detection report-individual per-type throttle

To configure individual reports per type every five minutes on an AP, use the **icap subscription client anomaly-detection report-individual per-type throttle** command.

**icap subscription client anomaly-detection report-individual per-type throttle** *throttle value*

<b>Syntax Description</b>	<i>throttle value</i> Number of event reports per client. Valid value ranges from 0 to 100.
---------------------------	---

<b>Command Default</b>	None
------------------------	------

<b>Command Modes</b>	AP profile configuration (config-ap-profile)
----------------------	--

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Bengaluru 17.12.1	This command was introduced.

## Examples

The following example shows how to configure individual reports per type every five minutes on an AP:

```
Device(config)# ap profile default-ap-profile
Device(config-ap-profile)# icap subscription client anomaly-detection report-individual
per-type throttle 80
```

## icap subscription client exclude telemetry-data wlan

To enable iCAP filtering in an AP, use the **icap subscription client exclude telemetry-data wlan** command.

**icap subscription client exclude telemetry-data wlan** *wlan-profile-name*

<b>Syntax Description</b>	<i>wlan-profile-name</i> Specifies the name of the WLAN profile.	
<b>Command Default</b>	None	
<b>Command Modes</b>	Global configuration	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Dublin 17.10.1	This command was introduced.

This example shows how to enable iCAP filtering in an AP:

```
Device# configure terminal
Device(config)# ap profile xyz-ap-profile
Device(config-ap-profile)# description "xyz ap profile"
Device(config-ap-profile)# icap subscription client exclude telemetry-data wlan wlan-name
```

# idle-timeout

To configure the idle-timeout value in seconds for a wireless profile policy, use the **idle-timeout** command.

**idle-timeout** *value*

---

<b>Syntax Description</b>	<i>value</i> Sets the idle-timeout value. Valid range is 15 to 100000 seconds.
---------------------------	--

---

<b>Command Default</b>	None
------------------------	------

---

<b>Command Modes</b>	config-wireless-policy
----------------------	------------------------

---

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

---

## Examples

The following example shows how to set the idle-timeout in a wireless profile policy:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# wireless profile policy policy-profile-name
Device(config-wireless-policy)# idle-timeout 100
```

# image-download-mode

To configure image download using the HTTP, SFTP, TFTP, or CCO modes, use the **image-download-mode** command.

**image-download-mode** { **http** | **sftp** | **tftp** | **cco** }

<b>Syntax Description</b>	<b>http</b> Configures image download using the HTTP mode.						
	<b>sftp</b> Configures image download using the SFTP mode.						
	<b>tftp</b> Configures image download using the TFTP mode.						
	<b>cco</b> Configures image download using the CCO mode.						
<b>Command Default</b>	None						
<b>Command Modes</b>	Wireless image download profile configuration mode						
<b>Command History</b>	<table border="1"> <thead> <tr> <th style="border-bottom: 1px solid black;">Release</th> <th style="border-bottom: 1px solid black;">Modification</th> </tr> </thead> <tbody> <tr> <td style="border-bottom: 1px solid black;">Cisco IOS XE Gibraltar 16.12.2s</td> <td style="border-bottom: 1px solid black;">This command was introduced.</td> </tr> <tr> <td style="border-bottom: 1px solid black;">Cisco IOS XE Amsterdam 17.1.1s</td> <td style="border-bottom: 1px solid black;">The <b>image-download-mode cco</b> was introduced.</td> </tr> </tbody> </table>	Release	Modification	Cisco IOS XE Gibraltar 16.12.2s	This command was introduced.	Cisco IOS XE Amsterdam 17.1.1s	The <b>image-download-mode cco</b> was introduced.
Release	Modification						
Cisco IOS XE Gibraltar 16.12.2s	This command was introduced.						
Cisco IOS XE Amsterdam 17.1.1s	The <b>image-download-mode cco</b> was introduced.						

## Example

```
Device(config)# wireless profile image-download default
Device(config-wireless-image-download-profile)# image-download-mode http
```

# inactive-timeout

To enable in-active timer, use the **inactive-timeout** command.

**inactive-timeout** *timeout-in-seconds*

<b>Syntax Description</b>	<i>timeout-in-seconds</i> Specifies the inactive flow timeout value. The range is from 1 to 604800.				
<b>Command Default</b>	None				
<b>Command Modes</b>	ET-Analytics configuration				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Cisco IOS XE Gibraltar 16.12.1</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Cisco IOS XE Gibraltar 16.12.1	This command was introduced.
Release	Modification				
Cisco IOS XE Gibraltar 16.12.1	This command was introduced.				

This example shows how to enable in-active timer in the ET-Analytics configuration mode:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# et-analytics
Device(config-et-analytics)# inactive-timeout 15
Device(config-et-analytics)# end
```

# install add file tftp

To install a package file to the system, use the **install add file tftp** command.

**install add file tftp:** *tftp file path*

<b>Syntax Description</b>	<b>install add file tftp:</b> The <b>install add</b> command copies the file from the external server to the backup_image directory on the embedded wireless controller.				
<b>Command Default</b>	None				
<b>Command Modes</b>	Privileged EXEC mode				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Cisco IOS XE Amsterdam 17.1.1s</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Cisco IOS XE Amsterdam 17.1.1s	This command was introduced.
Release	Modification				
Cisco IOS XE Amsterdam 17.1.1s	This command was introduced.				

## Example

This example shows how to install a package file to the system:

```
Device#install add file tftp://<server-ip>/<path>/<smu-filename>
```

# install add profile default

To download the embedded wireless controller image from the external server, use the **install add profile default** command.

**install add profile** *profile\_name* **activate** **commit** **prompt-level none**

Syntax Description	add	Installs a package file to the system.
	profile	Selects a profile.
	<i>profile_name</i>	Adds a profile name with a maximum of 15 characters. Specify <b>default</b> to trigger the default behaviour.
	activate	Activates the installed profile.
	commit	Commits the changes to the loadpath.
	prompt-level	Sets the prompt-level to none.

**Command Default** None

**Command Modes** Privileged EXEC (#)

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.12.2s	This command was introduced.

**Usage Guidelines** Ensure that you have the *image-download-profile* configured on embedded wireless controller. Extract the contents of the image bundle (.zip archive) to an external TFTP or HTTP(S) server. The .zip archive contains the controller image and various compatible AP images (apXgY).

## Example

The following example shows how to download the embedded wireless controller image:

```
Device#install add profile default

install_add: START Thu Jan 24 20:08:01 UTC 2019
Jan 24 20:08:03.389: %INSTALL-5-INSTALL_START_INFO: R0/0: install_engine: Started install
add
Jan 24 20:08:03.389 %INSTALL-5-INSTALL_START_INFO: R0/0: install_engine: Started install
add
install_add: Default profile addition successful
SUCCESS: install_add Thu Jan 24 20:08:03 UTC 2019
Jan 24 20:08:04.358: %INSTALL-5-INSTALL_COMPLETED_INFO: R0/0: install_engine: Completed
install add
Jan 24 20:08:04.358 %INSTALL-5-INSTALL_COMPLETED_INFO: R0/0: install_engine: Completed
install add
WLC#
*Jan 24 20:08:03.350: %INSTALL-5-INSTALL_START_INFO: Chassis 1 R0/0: install_engine: Started
install add
```



```
*Jan 24 20:08:04.335: %INSTALL-5-INSTALL_COMPLETED_INFO: Chassis 1 R0/0: install_engine:  
Completed install add
```



---

**Note** The log `Completed install add` means that the command is successful and the download will start soon.

---

The following example verifies the the image download status:

```
Device#sh wireless ewc-ap predownload status
```

# install activate

To activate an installed package, use the **install activate** command.

**install activate** { **auto-abort-timer** | **file** | **profile** | **prompt-level** }

Syntax Description	auto-abort-timer	Sets the cancel timer. The time range is between 30 and 1200 minutes.
	file	Specifies the package to be activated.
	profile	Specifies the profile to be activated.
	prompt-level	Sets the prompt level.
Command Default	None	
Command Modes	Privileged EXEC (#)	
Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.12.2s	This command was introduced.

## Example

The following example shows how to activate the installed package:

```
Device# install activate profile default
install_activate: START Thu Nov 24 20:14:53 UTC 2019

System configuration has been modified.
Press Yes(y) to save the configuration and proceed.
Press No(n) for proceeding without saving the configuration.
Press Quit(q) to exit, you may save configuration and re-enter the command. [y/n/q] y
Building configuration...
[OK]Modified configuration has been saved
Jan 24 20:15:02.745: %INSTALL-5-INSTALL_START_INFO: R0/0: install_engine: Started install
activate
Jan 24 20:15:02.745 %INSTALL-5-INSTALL_START_INFO: R0/0: install_engine: Started install
activate
install_activate: Activating PACKAGE
```

# install activate auto-abort-timer

To set the abort timer, use the **install activate auto-abort-timer** command.

**install activate auto-abort-timer** *<30-1200>* **prompt-level none**

Syntax Description	auto-abort-timer	Sets the cancel timer. The time range is between 30 and 1200 minutes.
	<i>&lt;30-1200&gt;</i>	Specifies the cancel timer time in minutes.
	<b>prompt-level</b>	Specifies the prompt level.
	<b>none</b>	Specifies no prompting.

**Command Default** None

**Command Modes** Privileged EXEC (#)

Task ID	Task ID	Operation
	Cisco IOS XE Gibraltar 16.12.2s	This command was introduced.

## Example

The following example shows how to activate the cancel timer:

```
Device#install activate auto-abort-timer 30 prompt-level none
```

# install activate file

To activate an installed package, use the **install activate file** command.

**install activate file** *file-name*

<b>Syntax Description</b>	<i>file-name</i> Specifies the package name. Options are: bootflash:, flash:, and webui:.
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<b>Command Default</b>	None
------------------------	------

<b>Command Modes</b>	Privileged EXEC (#)
----------------------	---------------------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.11.1	This command was introduced.

## Example

The following example shows how to use an auto cancel timer while activating an install package on a standby location:

```
Device# install activate file vwlc_aps_16.11.1.0_74.bin
```

# install auto-abort-timer stop

To stop the auto abort timer, use the **install auto-abort-timer stop** command.

**install auto-abort-timer stop**

<b>Syntax Description</b>	<b>auto-abort-timer stop</b> Stops the auto-abort-timer				
<b>Command Default</b>	None				
<b>Command Modes</b>	Privileged EXEC (#)				
<b>Command History</b>	<table><thead><tr><th>Release</th><th>Modification</th></tr></thead><tbody><tr><td>Cisco IOS XE Amsterdam 17.1.1s</td><td>This command was introduced.</td></tr></tbody></table>	Release	Modification	Cisco IOS XE Amsterdam 17.1.1s	This command was introduced.
Release	Modification				
Cisco IOS XE Amsterdam 17.1.1s	This command was introduced.				

## Example

This example shows how to stop the auto abort timer:

```
Device#install auto-abort-timer stop
```

# install commit

To commit the changes to the loadpath, use the **install commit** command.

## **install commit**

<b>Syntax Description</b>	This command has no keywords or arguments.
---------------------------	--

<b>Command Default</b>	None
------------------------	------

<b>Command Modes</b>	Privileged EXEC (#)
----------------------	---------------------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.12.2s	This command was introduced.

## **Example**

The following example shows how to commit the changes to the loadpath:

```
Device# install commit
```

# install remove file backup\_image

To remove installed packages, use the **install remove file backup\_image** command.

**install remove file backup\_image** *filename*

<b>Syntax Description</b>	<i>filename</i> Specifies the file that needs to be removed.				
<b>Command Default</b>	None				
<b>Command Modes</b>	Privileged EXEC (#)				
<b>Command History</b>	<table><thead><tr><th>Release</th><th>Modification</th></tr></thead><tbody><tr><td>Cisco IOS XE Amsterdam 17.1.1s</td><td>This command was introduced.</td></tr></tbody></table>	Release	Modification	Cisco IOS XE Amsterdam 17.1.1s	This command was introduced.
Release	Modification				
Cisco IOS XE Amsterdam 17.1.1s	This command was introduced.				

## Example

This example shows how a file is removed from the package:

```
Device#install remove file backup_image: file_name
```

# install remove profile default

To specify an install package that is to be removed, use the **install remove profile default** command.

## install remove profile default

Syntax Description	
<b>remove</b>	Removes the install package.
<b>profile</b>	Specifies the profile to be removed.

**Command Default** None

**Command Modes** Privileged EXEC (#)

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.11.1	This command was introduced.

### Example

The following example shows how to remove a default profile:

```
Device# install remove profile default
```



# install deactivate

To specify an install package that is to be deactivated, use the **install deactivate file** command.

**install deactivate file** *file-name*

<b>Syntax Description</b>	<i>file-name</i> Specifies the package name. Options are: bootflash:, flash:, and webui:.				
<b>Command Default</b>	None				
<b>Command Modes</b>	Privileged EXEC (#)				
<b>Command History</b>	<table><thead><tr><th>Release</th><th>Modification</th></tr></thead><tbody><tr><td>Cisco IOS XE Gibraltar 16.11.1</td><td>This command was introduced.</td></tr></tbody></table>	Release	Modification	Cisco IOS XE Gibraltar 16.11.1	This command was introduced.
Release	Modification				
Cisco IOS XE Gibraltar 16.11.1	This command was introduced.				

## Example

The following example shows how to deactivate an install package:

```
Device# install deactivate file vwlc_aps_16.11.1.0_74.bin
```

# install rollback

To roll back to a particular installation point, use the **install rollback** command.

**install rollback to** {**base** | **committed** | **id** *id* | **label** *label*} [**prompt-level** **none**]

Syntax Description		
<b>base</b>		Rolls back to the base image.
<b>prompt-level none</b>		Sets the prompt level as none.
<b>committed</b>		Rolls back to the last committed installation point.
<b>id</b>		Rolls back to a specific install point ID.
<b>label</b>		Rolls back to a specific install point label.

**Command Default** None

**Command Modes** Privileged EXEC (#)

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.11.1	This command was introduced.

## Example

The following example shows how to specify the ID of the install point to roll back to:

```
Device# install rollback to id 1
```

# interface vlan

To create or access a dynamic switch virtual interface (SVI) and to enter interface configuration mode, use the **interface vlan** command in global configuration mode. To delete an SVI, use the **no** form of this command.

**interface vlan** *vlan-id*  
**no interface vlan** *vlan-id*

<b>Syntax Description</b>	<i>vlan-id</i>	VLAN number. The range is 1 to 4094.
---------------------------	----------------	--------------------------------------

<b>Command Default</b>	The default VLAN interface is VLAN 1.
------------------------	---------------------------------------

<b>Command Modes</b>	Global configuration
----------------------	----------------------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.12.1	This command was introduced.

<b>Usage Guidelines</b>	SVIs are created the first time you enter the <b>interface vlan</b> <i>vlan-id</i> command for a particular VLAN. The <i>vlan-id</i> corresponds to the VLAN-tag associated with data frames on an IEEE 802.1Q encapsulated trunk or the VLAN ID configured for an access port.
-------------------------	---



<b>Note</b>	When you create an SVI, it does not become active until it is associated with a physical port.
-------------	--

If you delete an SVI using the **no interface vlan** *vlan-id* command, it is no longer visible in the output from the **show interfaces** privileged EXEC command.



<b>Note</b>	You cannot delete the VLAN 1 interface.
-------------	---

You can reinstate a deleted SVI by entering the **interface vlan** *vlan-id* command for the deleted interface. The interface comes back up, but the previous configuration is gone.

The interrelationship between the number of SVIs configured on a and the number of other features being configured might have an impact on CPU utilization due to hardware limitations. You can use the **sdm prefer** global configuration command to reallocate system hardware resources based on templates and feature tables.

You can verify your setting by entering the **show interfaces** and **show interfaces vlan** *vlan-id* privileged EXEC commands.

This example shows how to create a new SVI with VLAN ID 23 and enter interface configuration mode:

```
Device(config)# interface vlan 23
Device(config-if)#
```

## ip access-group

To configure WLAN access control group (ACL), use the **ip access-group** command. To remove a WLAN ACL group, use the **no** form of the command.

```
ip access-group [web] acl-name
no ip access-group [web]
```

<b>Syntax Description</b>	<b>web</b> (Optional) Configures the IPv4 web ACL.				
	<i>acl-name</i> Specify the preauth ACL used for the WLAN with the security type value as webauth.				
<b>Command Default</b>	None				
<b>Command Modes</b>	WLAN configuration				
<b>Usage Guidelines</b>	You must disable the WLAN before using this command. See Related Commands section for more information on how to disable a WLAN.				
<b>Command History</b>	<table border="1"> <thead> <tr> <th style="text-align: left;">Release</th> <th style="text-align: left;">Modification</th> </tr> </thead> <tbody> <tr> <td>Cisco IOS XE Gibraltar 16.12.1</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Cisco IOS XE Gibraltar 16.12.1	This command was introduced.
Release	Modification				
Cisco IOS XE Gibraltar 16.12.1	This command was introduced.				

This example shows how to configure a WLAN ACL:

```
Device#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)#wlan wlan1
Device(config-wlan)#ip access-group test-acl
```

This example shows how to configure an IPv4 WLAN web ACL:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# wlan wlan1
Device(config-wlan)# ip access-group web test
Device(config-wlan)#
```

## ip access-list extended

To configure extended access list, use the **ip access-list extended** command.

```
ip access-list extended {<100-199> | <2000-2699>} access-list-name
```

<b>Syntax Description</b>	<100-199> Extended IP access-list number.
	<2000-2699> Extended IP access-list number (expanded range).
<b>Command Default</b>	None
<b>Command Modes</b>	Global configuration (config)
<b>Command History</b>	<b>Release</b>
	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.10.1 This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

### Examples

The following example shows how to configure extended access list:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# ip access-list extended access-list-name
```

# ip address

To set a primary or secondary IP address for an interface, use the **ip address** command in interface configuration mode. To remove an IP address or disable IP processing, use the no form of this command.

```
ip address ip-address mask [secondary [vrf vrf-name]]
no ip address ip-address mask [secondary [vrf vrf-name]]
```

## Syntax Description

<i>ip-address</i>	IP address.
<i>mask</i>	Mask for the associated IP subnet.
<b>secondary</b>	(Optional) Specifies that the configured address is a secondary IP address. If this keyword is omitted, the configured address is the primary IP address.  <b>Note</b> If the secondary address is used for a VRF table configuration with the <b>vrf</b> keyword, the <b>vrf</b> keyword must be specified also.
<b>vrf</b>	(Optional) Name of the VRF table. The <i>vrf-name</i> argument specifies the VRF name of the ingress interface.

## Command Default

No IP address is defined for the interface.

## Command Modes

Interface configuration (config-if)

## Command History

Release	Modification
Cisco IOS XE Gibraltar 16.12.1	This command was introduced.

## Usage Guidelines

An interface can have one primary IP address and multiple secondary IP addresses. Packets generated by the Cisco IOS software always use the primary IP address. Therefore, all devices and access servers on a segment should share the same primary network number.

Hosts can determine subnet masks using the Internet Control Message Protocol (ICMP) mask request message. Devices respond to this request with an ICMP mask reply message.

You can disable IP processing on a particular interface by removing its IP address with the **no ip address** command. If the software detects another host using one of its IP addresses, it will print an error message on the console.

The optional **secondary** keyword allows you to specify an unlimited number of secondary addresses. Secondary addresses are treated like primary addresses, except the system never generates datagrams other than routing updates with secondary source addresses. IP broadcasts and Address Resolution Protocol (ARP) requests are handled properly, as are interface routes in the IP routing table.

Secondary IP addresses can be used in a variety of situations. The following are the most common applications:

- There may not be enough host addresses for a particular network segment. For example, your subnetting allows up to 254 hosts per logical subnet, but on one physical subnet you need 300 host addresses. Using

secondary IP addresses on the devices or access servers allows you to have two logical subnets using one physical subnet.

- Many older networks were built using Level 2 bridges. The judicious use of secondary addresses can aid in the transition to a subnetted, device-based network. Devices on an older, bridged segment can be easily made aware that many subnets are on that segment.
- Two subnets of a single network might otherwise be separated by another network. This situation is not permitted when subnets are in use. In these instances, the first network is *extended*, or layered on top of the second network using secondary addresses.



**Note**

- If any device on a network segment uses a secondary address, all other devices on that same segment must also use a secondary address from the same network or subnet. Inconsistent use of secondary addresses on a network segment can very quickly cause routing loops.
- When you are routing using the Open Shortest Path First (OSPF) algorithm, ensure that all secondary addresses of an interface fall into the same OSPF area as the primary addresses.
- If you configure a secondary IP address, you must disable sending ICMP redirect messages by entering the **no ip redirects** command, to avoid high CPU utilization.

**Examples**

In the following example, 192.108.1.27 is the primary address and 192.31.7.17 is the secondary address for GigabitEthernet interface 1/0/1:

```
Device# enable
Device# configure terminal
Device(config)# interface GigabitEthernet 1/0/1
Device(config-if)# ip address 192.108.1.27 255.255.255.0
Device(config-if)# ip address 192.31.7.17 255.255.255.0 secondary
```

**Related Commands**

Command	Description
<b>match ip route-source</b>	Specifies a source IP address to match to required route maps that have been set up based on VRF connected routes.
<b>route-map</b>	Defines the conditions for redistributing routes from one routing protocol into another, or to enable policy routing.
<b>set vrf</b>	Enables VPN VRF selection within a route map for policy-based routing VRF selection.
<b>show ip arp</b>	Displays the ARP cache, in which SLIP addresses appear as permanent ARP table entries.
<b>show ip interface</b>	Displays the usability status of interfaces configured for IP.
<b>show route-map</b>	Displays static and dynamic route maps.

# ip dhcp pool

To configure a Dynamic Host Configuration Protocol (DHCP) address pool on a DHCP server and enter DHCP pool configuration mode, use the **ip dhcp pool** command in global configuration mode. To remove the address pool, use the no form of this command.

**ip dhcp pool** *name*  
**no ip dhcp pool** *name*



**Note** When configuring the **ip dhcp pool** command, note that it can be affected by the **ip dhcp database** command if an incorrect URL is provided. The console may hang due to multiple attempts by the DHCP service to reach the URL before it returns a failure. This is expected behavior. To prevent this issue, ensure that the correct URL, including the file name, is provided when using the **ip dhcp database** command, especially when it includes ftp/tftp.

## Syntax Description

<i>name</i>	Name of the pool. Can either be a symbolic string (such as engineering) or an integer (such as 0).
-------------	--

## Command Default

DHCP address pools are not configured.

## Command Modes

Global configuration

## Command History

Release	Modification
12.0(1)T	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

## Usage Guidelines

During execution of this command, the configuration mode changes to DHCP pool configuration mode, which is identified by the (config-dhcp)# prompt. In this mode, the administrator can configure pool parameters, like the IP subnet number and default router list.

## Examples

The following example configures pool1 as the DHCP address pool:

```
ip dhcp pool pool1
```

## Related Commands

Command	Description
<b>host</b>	Specifies the IP address and network mask for a manual binding to a DHCP client.
<b>ip dhcp excluded-address</b>	Specifies IP addresses that a Cisco IOS DHCP server should not assign to DHCP clients.



Command	Description
<b>network (DHCP)</b>	Configures the subnet number and mask for a DHCP address pool on a Cisco IOS DHCP server.

# ip dhcp-relay information option server-override

To enable the system to globally insert the server ID override and link selection suboptions into the DHCP relay agent information option in forwarded BOOTREQUEST messages to a Dynamic Host Configuration Protocol (DHCP) server, use the **ip dhcp-relay information option server-override** command in global configuration mode. To disable inserting the server ID override and link selection suboptions into the DHCP relay agent information option, use the **no** form of this command.

**ip dhcp-relay information option server-override**  
**no ip dhcp-relay information option server-override**

**Syntax Description** This command has no arguments or keywords.

**Command Default** The server ID override and link selection suboptions are not inserted into the DHCP relay agent information option.

**Command Modes** Global configuration (config)

## Command History

Release	Modification
Cisco IOS XE Release 2.1	This command was introduced on Cisco ASR 1000 Series Aggregation Services Routers.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE.
15.1(1)SY	This command was integrated into Cisco IOS Release 15.1(1)SY.

## Usage Guidelines

The **ip dhcp-relay information option server-override** command adds the following suboptions into the relay agent information option when DHCP broadcasts are forwarded by the relay agent from clients to a DHCP server:

- Server ID override suboption
- Link selection suboption

When this command is configured, the gateway address (giaddr) will be set to the IP address of the outgoing interface, which is the interface that is reachable by the DHCP server.

If the **ip dhcp relay information option server-id-override** command is configured on an interface, it overrides the global configuration on that interface only.

## Examples

In the following example, the DHCP relay will insert the server ID override and link selection suboptions into the relay information option of the DHCP packet. The loopback interface IP address is configured to be the source IP address for the relayed messages.

```
Device(config)# ip dhcp-relay information option server-override
Device(config)# ip dhcp-relay source-interface loopback 0
Device(config)# interface Loopback 0
Device(config-if)# ip address 10.2.2.1 255.255.255.0
```

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>ip dhcp relay information option server-id-override</b>	Enables the system to insert the server ID override and link selection suboptions on a specific interface into the DHCP relay agent information option in forwarded BOOTREQUEST messages to a DHCP server.

## ip dhcp-relay source-interface

To globally configure the source interface for the relay agent to use as the source IP address for relayed messages, use the **ip dhcp-relay source-interface** command in global configuration mode. To remove the source interface configuration, use the **no** form of this command.

**ip dhcp-relay source-interface** *type number*  
**no ip dhcp-relay source-interface** *type number*

Syntax Description	Parameter	Description
	<i>type</i>	Interface type. For more information, use the question mark (?) online help function.
	<i>number</i>	Interface or subinterface number. For more information about the numbering system for your networking device, use the question mark (?) online help function.

**Command Default** The source interface is not configured.

**Command Modes** Global configuration (config)

Command History	Release	Modification
	Cisco IOS XE Release 2.1	This command was introduced on Cisco ASR 1000 Series Aggregation Services Routers.
	12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE.
	15.1(1)SY	This command was integrated into Cisco IOS Release 15.1(1)SY.

**Usage Guidelines** The **ip dhcp-relay source-interface** command allows the network administrator to specify a stable, hardware-independent IP address (such as a loopback interface) for the relay agent to use as a source IP address for relayed messages.

If the **ip dhcp-relay source-interface** global configuration command is configured and the **ip dhcp relay source-interface** command is also configured, the **ip dhcp relay source-interface** command takes precedence over the global configuration command. However, the global configuration is applied to interfaces without the interface configuration.

### Examples

In the following example, the loopback interface IP address is configured to be the source IP address for the relayed messages:

```
Device(config)# ip dhcp-relay source-interface loopback 0
Device(config)# interface loopback 0
Device(config-if)# ip address 10.2.2.1 255.255.255.0
```

Related Commands	Command	Description
	<b>ip dhcp relay source-interface</b>	Configures the source interface for the relay agent to use as the source IP address for relayed messages.

# ip domain lookup

To enable IP Domain Name System (DNS)-based hostname-to-address translation, use the **ip domain lookup** command in global configuration mode. To disable DNS-based hostname-to-address translation, use the **no** form of this command.

**ip domain lookup** [ **nsap** | **recursive** | **source-interface** *interface-type-number* | **vrf** *vrf-name* { **source-interface** *interface-type-number* } ]

Syntax Description		
<b>nsap</b>	(Optional) Enables IP DNS queries for Connectionless Network Service (CLNS) and Network Service Access Point (NSAP) addresses.	
<b>recursive</b>	(Optional) Enables IP DNS recursive lookup.	
<b>source-interface</b> <i>interface-type-number</i>	(Optional) Specifies the source interface for the DNS resolver. Enter an interface type and number.	
<b>vrf</b> <i>vrf-name</i>	(Optional) Defines a Virtual Routing and Forwarding (VRF) table. For vrf-name, enter a name for the VRF table.	

**Command Default** IP DNS-based hostname-to-address translation is enabled.

**Command Modes** Global configuration (config)

Command History	Release	Modification
	Cisco IOS XE Fuji 16.9.2	This command was introduced.
	Cisco IOS XE Dublin 17.12.1	An issue relating to the configuration of the <b>ip domain lookup source-interface interface-type-number</b> command on Layer 3 physical interfaces was resolved. Starting from this release, even if configured on a Layer 3 physical interface, the command is retained across reloads and in case the port mode is changed.

**Usage Guidelines** If this command is enabled on a device and you execute the **show tcp brief** command, the output may be displayed very slowly.

When both IP and ISO CLNS are enabled on a device, the **ip domain lookup nsap** command allows you to discover a CLNS address without having to specify a full CLNS address, given a hostname.

This command is useful for the **ping** (ISO CLNS) command, and for CLNS Telnet connections.

If you configure the **ip domain lookup source-interface interface-type-number** command on a Layer 3 physical interface, note the following: If the port mode is changed or in case of a device reload, the command is automatically removed from running configuration (Refer to the output of the **show running-configuration** privileged EXEC command when this happens). Removal of the command causes DNS queries that use the specified source interface, to be dropped. The only available workaround is to reconfigure the command. Starting with Cisco IOS XE Dublin 17.12.1, this issue is resolved.

**Examples** The following example shows how to configure IP DNS-based hostname-to-address translation:

```
Device# configure terminal
Device(config)# ip domain lookup
Device(config)# end
```

The following example shows how to configure a source interface for the DNS domain lookup:

```
Device# configure terminal
Device(config)# ip domain lookup source-interface gigabitethernet1/0/2
Device(config)# end
```

# ip domain-name

To configure the host domain on the device, use the **ip domain-name** command.

**ip domain-name** *domain-name* [**vrf** *vrf-name*]

## Syntax Description

*domain-name* Default domain name.

*vrf-name* Specifies the virtual routing and forwarding (VRF) to use to resolve the domain name.

## Command Default

None

## Command Modes

Global configuration (config)

## Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

## Examples

The following example shows how to configure a host domain in a device:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# ip domain-name domain-name
```

# ip flow-export destination

To configure ETA flow export destination, use the **ip flow-export destination** command.

**ip flow-export destination** *ip\_address port\_number*

<b>Syntax Description</b>	<i>port_number</i> Port number. The range is from 1 to 65535.
---------------------------	---

<b>Command Default</b>	None
------------------------	------

<b>Command Modes</b>	ET-Analytics configuration
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<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.12.1	This command was introduced.

This example shows how to configure ETA flow export destination in the ET-Analytics configuration mode:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# et-analytics
Device(config-et-analytics)# ip flow-export
destination 120.0.0.1 2055
Device(config-et-analytics)# end
```



# ip helper-address

To enable forwarding of User Datagram Protocol (UDP) broadcasts, including Bootstrap Protocol (BOOTP), received on an interface, use the **ip helper-address** command in interface configuration mode. To disable forwarding of broadcast packets to specific addresses, use the **no** form of this command.

```
ip helper-address[{vrf name | global}] address {[redundancy vrg-name]}
no ip helper-address [{vrf name | global}] address {[redundancy vrg-name]}
```

Syntax Description	Parameter	Description
	<b>vrf name</b>	(Optional) Enables the VPN routing and forwarding (VRF) instance and the VRF name.
	<b>global</b>	(Optional) Configures a global routing table.
	<b>address</b>	Destination broadcast or host address to be used when forwarding UDP broadcasts. There can be more than one helper address per interface.
	<b>redundancy vrg-name</b>	(Optional) Defines the Virtual Router Group (VRG) name.

**Command Default** UDP broadcasts are not forwarded.

**Command Modes** Interface configuration (config-if)

Command History	Release	Modification
	10.0	This command was introduced.
	12.2(4)B	This command was modified. The <b>vrf name</b> keyword and argument pair and the <b>global</b> keyword were added.
	12.2(15)T	This command was modified. The <b>redundancy vrg-name</b> keyword and argument pair was added.
	12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB.
	12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
	12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

**Usage Guidelines** The **ip forward-protocol** command along with the **ip helper-address** command allows you to control broadcast packets and protocols that are forwarded.

One common application that requires helper addresses is DHCP, which is defined in RFC 1531. To enable BOOTP or DHCP broadcast forwarding for a set of clients, configure a helper address on the router interface connected to the client. The helper address must specify the address of the BOOTP or DHCP server. If you have multiple servers, configure one helper address for each server.

The following conditions must be met for a UDP or IP packet to be able to use the **ip helper-address** command:

- The MAC address of the received frame must be all-ones broadcast address (ffff.ffff.ffff).

- The IP destination address must be one of the following: all-ones broadcast (255.255.255.255), subnet broadcast for the receiving interface, or major-net broadcast for the receiving interface if the **no ip classless** command is also configured.
- The IP time-to-live (TTL) value must be at least 2.
- The IP protocol must be UDP (17).
- The UDP destination port must be for TFTP, Domain Name System (DNS), Time, NetBIOS, ND, BOOTP or DHCP packet, or a UDP port specified by the **ip forward-protocol udp** command in global configuration mode.

If the DHCP server resides in a VPN or global space that is different from the interface VPN, then the **vrf name** or the **global** option allows you to specify the name of the VRF or global space in which the DHCP server resides.

The **ip helper-address vrfname address** option uses the address associated with the VRF name regardless of the VRF of the incoming interface. If the **ip helper-address vrfname address** command is configured and later the VRF is deleted from the configuration, then all IP helper addresses associated with that VRF name will be removed from the interface configuration.

If the **ip helper-address address** command is already configured on an interface with no VRF name configured, and later the interface is configured with the **ip helper-address vrf name address** command, then the previously configured **ip helper-address address** command is considered to be global.




---

**Note** The **ip helper-address** command does not work on an X.25 interface on a destination router because the router cannot determine if the packet was intended as a physical broadcast.

---

The **service dhcp** command must be configured on the router to enable IP helper statements to work with DHCP. If the command is not configured, the DHCP packets will not be relayed through the IP helper statements. The **service dhcp** command is configured by default.

## Examples

The following example shows how to define an address that acts as a helper address:

```
Router(config)# interface ethernet 1
Router(config-if)# ip helper-address 10.24.43.2
```

The following example shows how to define an address that acts as a helper address and is associated with a VRF named host1:

```
Router(config)# interface ethernet 1/0
Router(config-if)# ip helper-address vrf host1 10.25.44.2
```

The following example shows how to define an address that acts as a helper address and is associated with a VRG named group1:

```
Router(config)# interface ethernet 1/0
Router(config-if)# ip helper-address 10.25.45.2 redundancy group1
```

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>ip forward-protocol</b>	Specifies which protocols and ports the router forwards when forwarding broadcast packets.
<b>service dhcp</b>	Enables the DHCP server and relay agent features on the router.

## ip http authentication

To specify a particular authentication method for HTTP server users, use the **ip http authentication** command in global configuration mode. To disable a configured authentication method, use the **no** form of this command

```
ip http authentication { aaa { command-authorization level list-name | exec-authorization list-name
| login-authentication list-name } | enable | local }
```

```
no ip http authentication { aaa { command-authorization level list-name | exec-authorization list-name
| login-authentication list-name } | enable | local }
```

### Syntax Description

<b>aaa</b>	Indicates that the authentication method used for the authentication, authorization, and accounting (AAA) login service should be used for authentication. The AAA login authentication method is specified by the <b>aaa authentication login default</b> command, unless otherwise specified by the <b>login-authentication listname</b> keyword and argument.
<b>command-authorization</b>	Sets the authorization method list for commands at the specified privilege level.
<i>level</i>	Indicates a privilege value from 0 through 15. By default, there are the following three command privilege levels on the router: <ol style="list-style-type: none"> <li>0--Includes the <b>disable</b> , <b>enable</b> , <b>exit</b> , <b>help</b> , and <b>logout</b> commands.</li> <li>1--Includes all user-level commands at the device prompt (&gt;).</li> <li>15--Includes all enable-level commands at the device prompt (&gt;).</li> </ol>
<i>list-name</i>	Sets the name of the method list.
<b>exec-authorization</b>	Sets the method list for EXEC authorization, which applies authorization for starting an EXEC session.
<b>login-authentication</b>	Sets the method list for login authentication, which enables AAA authentication for logins.
<b>enable</b>	Indicates that the “enable” password should be used for authentication. (This is the default method.)
<b>local</b>	Indicates that the login user name, password and privilege level access combination specified in the local system configuration (by the <b>username</b> global configuration command) should be used for authentication and authorization.

### Command Default

None

### Command Modes

Global Configuration (config)

### Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

---

**Usage Guidelines**

The **ip http authentication** command specifies the authentication method to be used for login when a client connects to the HTTP server. Use of the **aaa** option is recommended. The **enable**, **local**, and **tacacs** methods should be specified using the **aaa authentication login** command.

The “enable” password method is the default HTTP server authentication method. If the enable password is used as the HTTP server login authentication method, the client connects to the HTTP server with a default privilege level of 15.

---

**Examples**

The following example shows how to specify that AAA should be used for authentication for HTTP server users. The AAA login method is configured as the “local” username/password authentication method. This example also shows how to specify using the local username database for login authentication and EXEC authorization of HTTP sessions:

```
Device(config)# ip http authentication aaa authentication login LOCALDB local
Device(config)# aaa authorization exec LOCALDB local
Device(config)# ip http authentication aaa login-authentication LOCALDB
Device(config)# ip http authentication aaa exec-authorization LOCALDB
```

## ip http auth-retry

To configure the maximum number of authentication retry attempts within a specific time-window, use the **ip http auth-retry** command.

**ip http auth-retry** *retry\_number* **time-window** *time-in-minutes*

<b>Syntax Description</b>	<i>retry_number</i>	Specifies the maximum number of authentication retry attempts.
	<b>time-window</b>	Retry time window in minutes.
	<i>time-in-minutes</i>	The time window period in minutes during which the maximum number of authentication retries specified can be attempted.
<b>Command Default</b>	None	
<b>Command Modes</b>	Global configuration (config)	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

### Examples

The following example shows how to configure the maximum number of authentication retry attempts as 5 in a time-window of 2 minutes:

```
Device# ip http auth-retry 5 time-window 2
```

## ip http active-session-modules

To selectively enable HTTP applications that will service incoming HTTP requests from remote clients, use the **ip http active-session-modules** command. Use the **no** form of this command to return to the default, for which all HTTP services will be enabled.

**ip http active-session-modules** { *list-name* | **all** | **none** }

**no ip http active-session-modules** { *list-name* | **all** | **none** }

Syntax Description	
<i>list-name</i>	Enables only those HTTP services configured in the list identified by the <b>ip http session-module-list</b> command to serve HTTP requests. All other HTTP or HTTPS applications on the controller will be disabled.
<b>all</b>	Enables all HTTP applications to service incoming HTTP requests from remote clients.
<b>none</b>	Disables all HTTP services.

**Command Default** If no arguments or keywords are specified, all HTTP services are enabled.

**Command Modes** Global configuration (config)

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

**Usage Guidelines** Use the **ip http active-session-modules** command to selectively enable HTTP applications, for servicing incoming HTTP requests from remote clients. With this command, a selected list of applications can be enabled. All the applications can be enabled or none of the applications can be enabled, in other words, all disabled. Use the **ip http session-module-list** command to define a list of HTTP or secure HTTP (HTTPS) application names to be enabled. If an HTTP request is made for a service that is disabled, a 404 error message is displayed in the remote client browser.

### Examples

The following example shows how to configure a different set of services to be available for HTTP and HTTPS requests. In this example, all HTTP applications are enabled for providing services to remote clients, but for HTTPS services, only the HTTPS applications defined in list1 (Simple Certificate Enrollment Protocol [SCEP] and HOME\_PAGE) are enabled:

```
Device# ip http session-module-list list1 SCEP,HOME_PAGE
ip http active-session-modules all
ip http server
ip http secure-server
ip http secure-active-session-modules list1
```

## ip http client secure-ciphersuite

To specify the CipherSuite that should be used for encryption over the secure HTTP connection from the client to a remote server, use the **ip http client secure-ciphersuite** command in global configuration mode. To remove a previously configured CipherSuite specification for the client, use the **no** form of this command.

```
ip http client secure-ciphersuite [3des-ede-cbc-sha] [rc4-128-sha] [rc4-128-md5] [des-cbc-sha]
no ip http client secure-ciphersuite
```

### Syntax Description

<b>3des-ede-cbc-sha</b>	SSL_RSA_WITH_3DES_EDE_CBC_SHA--Rivest, Shamir, and Adleman (RSA) key exchange with 3DES and DES-EDE3-CBC for message encryption and Secure Hash Algorithm (SHA) for message digest.
<b>rc4-128-sha</b>	SSL_RSA_WITH_RC4_128_SHA--RSA key exchange (RSA Public Key Cryptography) with RC4 128-bit encryption for message encryption and SHA for message digest.
<b>rc4-128-md5</b>	SSL_RSA_WITH_RC4_128_MD5--RSA key exchange (RSA Public Key Cryptography) with RC4 128-bit encryption for message encryption and Message Digest 5 (MD5) for message digest.
<b>des-cbc-sha</b>	SSL_RSA_WITH_DES_CBC_SHA--RSA key exchange with DES-CBC for message encryption and SHA for message digest.

### Command Default

The client and server negotiate the best CipherSuite that they both support from the list of available CipherSuites.

### Command Modes

Global configuration

### Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE

### Usage Guidelines

This command allows you to restrict the list of CipherSuites (encryption algorithms) that the client offers when connecting to a secure HTTP server. For example, you may want to allow only the most secure CipherSuites to be used.

Unless you have a reason to specify the CipherSuites that should be used, or you are unfamiliar with the details of these CipherSuites, you should leave this command unconfigured and let the server and client negotiate the CipherSuite that they both support (this is the default). The **no** form of this command returns the list of available CipherSuites to the default (that is, all CipherSuites supported on your device are available for negotiation).

### Examples

The following example shows how to configure the HTTPS client to use only the SSL\_RSA\_WITH\_3DES\_EDE\_CBC\_SHA CipherSuite:

```
Router(config)# ip http client secure-ciphersuite 3des-ede-cbc-sha
```



## ip http secure-ciphersuite

To specify the CipherSuites that should be used by the secure HTTP server when negotiating a connection with a remote client, use the **ip http secure-ciphersuite** command in global configuration mode. To return the configuration to the default set of CipherSuites, use the **no** form of this command.

```
ip http secure-ciphersuite [3des-ede-cbc-sha] [rc4-128-sha] [rc4-128-md5] [des-cbc-sha]
no ip http secure-ciphersuite
```

Syntax Description	
<b>3des-ede-cbc-sha</b>	SSL_RSA_WITH_3DES_EDE_CBC_SHA--Rivest, Shamir, and Adleman (RSA) key exchange with 3DES and DES-EDE3-CBC for message encryption and Secure Hash Algorithm (SHA) for message digest.
<b>rc4-128-sha</b>	SSL_RSA_WITH_RC4_128_SHA --RSA key exchange (RSA Public Key Cryptography) with RC4 128-bit encryption for message encryption and SHA for message digest.
<b>rc4-128-md5</b>	SSL_RSA_WITH_RC4_128_MD5 --RSA key exchange (RSA Public Key Cryptography) with RC4 128-bit encryption for message encryption and Message Digest 5 (MD5) for message digest.
<b>des-cbc-sha</b>	SSL_RSA_WITH_DES_CBC_SHA--RSA key exchange with DES-CBC for message encryption and SHA for message digest.

**Command Default** The HTTPS server negotiates the best CipherSuite using the list received from the connecting client.

**Command Modes** Global configuration

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE

**Usage Guidelines** This command is used to restrict the list of CipherSuites (encryption algorithms) that should be used for encryption over the HTTPS connection. For example, you may want to allow only the most secure CipherSuites to be used.

Unless you have a reason to specify the CipherSuites that should be used, or you are unfamiliar with the details of these CipherSuites, you should leave this command unconfigured and let the server and client negotiate the CipherSuite that they both support (this is the default).

The supported CipherSuites vary by Cisco IOS software image. For example, “IP Sec56” (“k8”) images support only the SSL\_RSA\_WITH\_DES\_CBC\_SHA CipherSuite in Cisco IOS Release 12.2(15)T.

In terms of router processing load (speed), the following list ranks the CipherSuites from fastest to slowest (slightly more processing time is required for the more secure and more complex CipherSuites):

1. SSL\_RSA\_WITH\_DES\_CBC\_SHA
2. SSL\_RSA\_WITH\_RC4\_128\_MD5
3. SSL\_RSA\_WITH\_RC4\_128\_SHA

#### 4. SSL\_RSA\_WITH\_3DES\_EDE\_CBC\_SHA

Additional information about these CipherSuites can be found online from sources that document the Secure Sockets Layer (SSL) 3.0 protocol.

#### Examples

The following example shows how to restrict the CipherSuites offered to a connecting secure web client:

```
Router(config)# ip http secure-ciphersuite rc4-128-sha rc4-128-md5
```

## ip http secure-server

To enable a secure HTTP (HTTPS) server, enter the **ip http secure-server** command in global configuration mode. To disable the HTTPS server, use the **no** form of this command.

**ip http secure-server**  
**no ip http secure-server**

**Syntax Description** This command has no arguments or keywords.

**Command Default** The HTTPS server is disabled.

**Command Modes** Global configuration (config)

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.12.1	This command was introduced.

**Usage Guidelines** The HTTPS server uses the Secure Sockets Layer (SSL) version 3.0 protocol.



**Caution** When enabling an HTTPS server, you should always disable the standard HTTP server to prevent unsecured connections to the same services. Disable the standard HTTP server using the **no ip http server** command in global configuration mode (this step is precautionary; typically, the HTTP server is disabled by default).

If a certificate authority (CA) is used for certification, you should declare the CA trustpoint on the routing device before enabling the HTTPS server.

To close HTTP/TCP port 8090, you must disable both the HTTP and HTTPS servers. Enter the **no http server** and the **no http secure-server** commands, respectively.

### Examples

In the following example the HTTPS server is enabled, and the (previously configured) CA trustpoint CA-trust-local is specified:

```
Device#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)#ip http secure-server
Device(config)#ip http secure-trustpoint CA-trust-local
Device(config)#end

Device#show ip http server secure status
HTTP secure server status: Enabled
HTTP secure server port: 443
HTTP secure server ciphersuite: 3des-ede-cbc-sha des-cbc-sha rc4-128-md5 rc4-12a
HTTP secure server client authentication: Disabled
HTTP secure server trustpoint: CA-trust-local
```

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>ip http secure-trustpoint</b>	Specifies the CA trustpoint that should be used for obtaining signed certificates for the HTTPS server.
<b>ip http server</b>	Enables the HTTP server on an IP or IPv6 system, including the Cisco web browser user interface.
<b>show ip http server secure status</b>	Displays the configuration status of the HTTPS server.

# ip http server

To enable the HTTP server on your IP or IPv6 system, including the Cisco web browser user interface, enter the **ip http server** command in global configuration mode. To disable the HTTP server, use the **no** form of this command..

**ip http server**  
**no ip http server**

**Syntax Description** This command has no arguments or keywords.

**Command Default** The HTTP server uses the standard port 80 by default.  
HTTP/TCP port 8090 is open by default.

**Command Modes** Global configuration (config)

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.10.1	This command was introduced.

**Usage Guidelines** The command enables both IPv4 and IPv6 access to the HTTP server. However, an access list configured with the **ip http access-class** command is applied only to IPv4 traffic. IPv6 traffic filtering is not supported.



**Caution** The standard HTTP server and the secure HTTP (HTTPS) server can run on a system at the same time. If you enable the HTTPS server using the **ip http secure-server** command, disable the standard HTTP server using the **no ip http server** command to ensure that secure data cannot be accessed through the standard HTTP connection.

To close HTTP/TCP port 8090, you must disable both the HTTP and HTTPS servers. Enter the **no http server** and the **no http secure-server** commands, respectively.

## Examples

The following example shows how to enable the HTTP server on both IPv4 and IPv6 systems.

After enabling the HTTP server, you can set the base path by specifying the location of the HTML files to be served. HTML files used by the HTTP web server typically reside in system flash memory. Remote URLs can be specified using this command, but use of remote path names (for example, where HTML files are located on a remote TFTP server) is not recommended.

```
Device(config)#ip http server
Device(config)#ip http path flash:
```

Related Commands	Command	Description
	<b>ip http access-class</b>	Specifies the access list that should be used to restrict access to the HTTP server.
	<b>ip http path</b>	Specifies the base path used to locate files for use by the HTTP server.

Command	Description
ip http secure-server	Enables the HTTPS server.

## ip http session-module-list

To define a list of HTTP or secure HTTP application names, use the **ip http session-module-list** command in global configuration mode. To remove the defined list, use the **no** form of this command.

**ip http session-module-list** *listname* *prefix1* [ *prefix2*,...*prefixn* ]

**no ip http session-module-list** *listname* *prefix1* [ *prefix2*,...*prefixn* ]

<b>Syntax Description</b>	<i>listname</i>	Name of the list.
	<i>prefix 1</i>	Associated HTTP or HTTPS application names. Prefix strings represent the names of applications, for example, SCEP, WEB_EXEC or HOME_PAGE.
	<i>prefix2</i> ,... <i>prefixn</i>	(Optional) Additional associated HTTP or HTTPS application names. Each application is separated by a comma.
<b>Command Default</b>	No list of HTTP or HTTPS application names is defined.	
<b>Command Modes</b>	Global configuration (config)	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

**Usage Guidelines** Use this command to define a list of HTTP or HTTPS application names. The defined list can then be used by the **ip http active-session-modules** or **ip http secure-active-session-modules** commands to selectively enable HTTP or HTTPS applications, respectively, for servicing incoming HTTP and HTTPS requests from remote clients.

When defining a list of HTTP or HTTPS application names, use the following guidelines:

- A maximum of four lists can be defined on a controller. Attempts to define more than four lists will fail and an error message will be displayed stating the limit restrictions.
- An existing list can be removed using the **no ip http session-module-list** command.
- You cannot reconfigure an existing list. Instead of reconfiguring an existing list, remove the existing list and create a new list with the same name.
- There is no limit to how many application names can be in the list. However, the maximum number of sessions that can be registered with the Cisco IOS HTTP or HTTPS server is 32.

### Examples

The following example shows how to configure a different set of services to be available for HTTP and HTTPS requests. In this example, all HTTP applications are enabled for providing services to remote clients, but for HTTPS services, only the HTTPS applications defined in list1 (Simple Certificate Enrollment Protocol [SCEP] and HOME\_PAGE) are enabled:

```
Device# ip http session-module-list list1 SCEP,HOME_PAGE
Device# ip http active-session-modules all
```

```
Device# ip http server
Device# ip http secure-server
Device# ip http secure-active-session-modules list1
```



# ip ssh

To configure Secure Shell (SSH) control parameters on your router, use the **ip ssh** command in global configuration mode. To restore the default value, use the **no** form of this command.

```
ip ssh [{timeout seconds | authentication-retries integer}]
no ip ssh [{timeout seconds | authentication-retries integer}]
```

## Syntax Description

<b>timeout</b>	(Optional) The time interval that the router waits for the SSH client to respond.  This setting applies to the SSH negotiation phase. Once the EXEC session starts, the standard timeouts configured for the vty apply. By default, there are 5 vtys defined (0-4), therefore 5 terminal sessions are possible. After the SSH executes a shell, the vty timeout starts. The vty timeout defaults to 10 minutes.
<i>seconds</i>	(Optional) The number of seconds until timeout disconnects, with a maximum of 120 seconds. The default is 120 seconds.
<b>authentication- retries</b>	(Optional) The number of attempts after which the interface is reset.
<i>integer</i>	(Optional) The number of retries, with a maximum of 5 authentication retries. The default is 3.

## Command Default

SSH control parameters are set to default router values.

## Command Modes

Global configuration (config)

## Command History

Release	Modification
12.0(5)S	This command was introduced.
12.1(1)T	This command was integrated into Cisco IOS Release 12.1(1) T.
12.2(17a)SX	This command was integrated into Cisco IOS Release 12.2(17a)SX.
12.2(33)SRA	This command was integrated into Cisco IOS release 12.(33)SRA.
Cisco IOS XE Release 2.4	This command was implemented on the Cisco ASR 1000 series routers.

## Usage Guidelines

Before you configure SSH on your router, you must enable the SSH server using the **crypto key generate rsa** command.

## Examples

The following examples configure SSH control parameters on your router:

```
ip ssh timeout 120
ip ssh authentication-retries 3
```

# ip ssh version

To specify the version of Secure Shell (SSH) to be run on a router, use the **ip ssh version** command in global configuration mode. To disable the version of SSH that was configured and to return to compatibility mode, use the **no** form of this command.

```
ip ssh version [{1 | 2}]
no ip ssh version [{1 | 2}]
```

Syntax Description	
<b>1</b>	(Optional) Router runs only SSH Version 1.
<b>2</b>	(Optional) Router runs only SSH Version 2.

**Command Default** If this command is not configured, SSH operates in compatibility mode, that is, Version 1 and Version 2 are both supported.

**Command Modes** Global configuration

Command History	Release	Modification
	12.3(4)T	This command was introduced.
	12.3(2)XE	This command was integrated into Cisco IOS Release 12.3(2)XE.
	12.2(25)S	This command was integrated into Cisco IOS Release 12.2(25)S.
	12.3(7)JA	This command was integrated into Cisco IOS Release 12.3(7)JA.
	12.0(32)SY	This command was integrated into Cisco IOS Release 12.0(32)SY.
	12.4(20)T	This command was integrated into Cisco IOS Release 12.4(20)T.
	15.2(2)SA2	This command was implemented on the Cisco ME 2600X Series Ethernet Access Switches.

**Usage Guidelines** You can use this command with the **2** keyword to ensure that your router will not inadvertently establish a weaker SSH Version 1 connection.

**Examples** The following example shows that only SSH Version 1 support is configured:

```
Router (config)# ip ssh version 1
```

The following example shows that only SSH Version 2 is configured:

```
Router (config)# ip ssh version 2
```

The following example shows that SSH Versions 1 and 2 are configured:

```
Router (config)# no ip ssh version
```

**Related Commands**

<b>Command</b>	<b>Description</b>
debug ip ssh	Displays debug messages for SSH.
disconnect ssh	Terminates a SSH connection on your router.
<b>ip ssh</b>	Configures SSH control parameters on your router.
ip ssh rsa keypair-name	Specifies which RSA key pair to use for a SSH connection.
show ip ssh	Displays the SSH connections of your router.

# ip tftp blocksize

To specify TFTP client blocksize, use the **ip tftp blocksize** command.

**ip tftp blocksize** *blocksize-value*

---

## Syntax Description

*blocksize-value* Blocksize value. Valid range is from 512-8192 Kbps.

---

## Command Default

TFTP client blocksize is not configured.

## Command Modes

Global configuration (config)

---

## Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

---

## Usage Guidelines

Use this command to change the default blocksize to decrease the image download time.

## Example

The following example shows how to specify TFTP client blocksize:

```
Device(config)# ip tftp blocksize 512
```

## ip verify source

To enable IP source guard on an interface, use the **ip verify source** command in interface configuration mode. To disable IP source guard, use the **no** form of this command.

**ip verify source**  
**no ip verify source**

---

**Command Default** IP source guard is disabled.

---

**Command Modes** Interface configuration

---

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.12.1	This command was introduced.

---



---

**Usage Guidelines** To enable IP source guard with source IP address filtering, use the **ip verify source** interface configuration command.

---

**Examples** This example shows how to enable IP source guard with source IP address filtering on an interface:

```
Device(config)# interface gigabitethernet1/0/1
Device(config-if)# ip verify source
```

You can verify your settings by entering the **show ip verify source** privileged EXEC command.

# ipv4 acl

To create ACL configuration for wireless IPv4, use the **ipv4 acl** command configuration.

**ipv4 acl** *ipv4-acl-name*

<b>Syntax Description</b>	<b>ipv4 acl</b>	Creates ACL configuration for wireless IPv4.
	<i>ipv4-acl-name</i>	Specifies the IPv4 ACL name.
<b>Command Default</b>	None	
<b>Command Modes</b>	Wireless policy configuration mode	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Amsterdam 17.1.1s	This command was introduced.

## Example

This example shows how to create an ACL configuration for wireless IPv4:

```
Device(config-wireless-policy)#ipv4 acl ipv4-acl-name
```

# ipv4 dhcp

To configure the DHCP parameters for a WLAN, use the **ipv4 dhcp** command.

```
ipv4 dhcp {opt82 | {ascii | rid | format | {ap_ethmac | ap_location | apmac | apname | policy_tag | ssid | vlan_id }} | required | server dhcp-ip-addr}
```

Syntax Description	Parameter	Description
	<b>opt82</b>	Sets DHCP option 82 for wireless clients on this WLAN
	<b>required</b>	Specifies whether DHCP address assignment is required
	<b>server</b>	Configures the WLAN's IPv4 DHCP Server
	<b>ascii</b>	Supports ASCII for DHCP option 82
	<b>rid</b>	Supports adding Cisco 2 byte RID for DHCP option 82
	<b>format</b>	Sets RemoteID format
	<b>ap_ethmac</b>	Enables DHCP AP Ethernet MAC address
	<b>ap_location</b>	Enables AP location
	<b>apmac</b>	Enables AP MAC address
	<b>apname</b>	Enables AP name
	<b>site_tag (Policy tag)</b>	Enables Site tag
	<b>ssid</b>	Enables SSID
	<b>vlan_id</b>	Enables VLAN ID
	<i>dhcp-ip-addr</i>	Enter the override DHCP server's IP Address.

**Command Default** None

**Command Modes** config-wireless-policy

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

## Examples

The following example shows how to configure DHCP address assignment as a requirement:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# wireless profile policy demo-profile-name
Device(config-wireless-policy)# ipv4 dhcp required
```



# ipv4 flow monitor

To configure the IPv4 traffic ingress flow monitor for a WLAN profile policy, use the **ipv4 flow monitor input** command.

**ipv4 flow monitor** *monitor-name* **input**

<b>Syntax Description</b>	<i>monitor-name</i> Flow monitor name.
	<b>input</b> Enables flow monitor on ingress traffic.
<b>Command Default</b>	None
<b>Command Modes</b>	config-wireless-policy
<b>Command History</b>	<b>Release</b>
	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.10.1 This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

## Examples

The following example shows how to configure the IPv4 traffic ingress flow monitor for a WLAN profile policy:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# wireless profile policy policy-profile-name
Device(config-wireless-policy)# ipv4 flow monitor flow-monitor-name input
```

## ipv4 flow monitor output

To configure the IPv4 traffic egress flow monitor for a WLAN profile policy, use the **ipv4 flow monitor output** command.

**ipv4 flow monitor** *monitor-name* **output**

### Syntax Description

*monitor-name* Flow monitor name.

**output** Enables flow monitor on egress traffic.

### Command Default

None

### Command Modes

config-wireless-policy

### Command History

Release	Modification
Cisco IOS XE Amsterdam 17.2.1	This command was introduced in a release earlier than Cisco IOS XE Amsterdam 17.2.1.

### Examples

The following example shows how to configure the IPv4 traffic egress flow monitor for a WLAN profile policy:

```
Device(config-wireless-policy)#ipv4 flow monitor flow-monitor-name output
```

# ipv6 flow monitor input

To configure the IPv6 traffic ingress flow monitor for a WLAN profile policy, use the **ipv6 flow monitor input** command.

**ipv6 flow monitor** *monitor-name* **input**

<b>Syntax Description</b>	<i>monitor-name</i> Flow monitor name.	
	<b>input</b> Enables flow monitor on ingress traffic.	
<b>Command Default</b>	None	
<b>Command Modes</b>	config-wireless-policy	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Amsterdam 17.2.1	This command was introduced in a release earlier than Cisco IOS XE Amsterdam 17.2.1.

## Examples

The following example shows how to configure the IPv6 traffic ingress flow monitor for a WLAN profile policy:

```
Device(config-wireless-policy)#ipv6 flow monitor flow-monitor-name input
```

## ipv6 flow monitor output

To configure the IPv6 traffic egress flow monitor for a WLAN profile policy, use the **ipv6 flow monitor output** command.

**ipv6 flow monitor** *monitor-name* **output**

Syntax Description	
	<i>monitor-name</i> Flow monitor name.
	<b>output</b> Enables flow monitor on egress traffic.

Command Default	None
-----------------	------

Command Modes	config-wireless-policy
---------------	------------------------

Command History	Release	Modification
	Cisco IOS XE Amsterdam 17.2.1	This command was introduced in a release earlier than Cisco IOS XE Amsterdam 17.2.1.

### Examples

The following example shows how to configure the IPv6 traffic egress flow monitor for a WLAN profile policy:

```
Device(config-wireless-policy)#ipv6 flow monitor flow-monitor-name output
```

## ipv6 access-list

To define an IPv6 access list and to place the device in IPv6 access list configuration mode, use the **ipv6 access-list** command in global configuration mode. To remove the access list, use the **no** form of this command.

**ipv6 access-list** *access-list-name* | **match-local-traffic** | **log-update threshold** *threshold-in-msgs* | **role-based** *list-name*  
**noipv6 access-list** *access-list-name* | **client** *permit-control-packets* | **log-update** *threshold* | **role-based** *list-name*

Syntax Description		
<b>ipv6</b> <i>access-list-name</i>	Creates a named IPv6 ACL (up to 64 characters in length) and enters IPv6 ACL configuration mode.  <i>access-list-name</i> - Name of the IPv6 access list. Names cannot contain a space or quotation mark, or begin with a numeric.	
<b>match-local-traffic</b>	Enables matching for locally-generated traffic.	
<b>log-update threshold</b> <i>threshold-in-msgs</i>	Determines how syslog messages are generated after the initial packet match.  <i>threshold-in-msgs</i> - Number of packets generated.	
<b>role-based</b> <i>list-name</i>	Creates a role-based IPv6 ACL.	

**Command Default** No IPv6 access list is defined.

**Command Modes** Global configuration

Command History	Release	Modification

**Usage Guidelines** IPv6 ACLs are defined by using the **ipv6 access-list** command in global configuration mode and their permit and deny conditions are set by using the **deny** and **permit** commands in IPv6 access list configuration mode. Configuring the **ipv6 access-list** command places the device in IPv6 access list configuration mode--the device prompt changes to Device(config-ipv6-acl)#. From IPv6 access list configuration mode, permit and deny conditions can be set for the defined IPv6 ACL.



**Note** IPv6 ACLs are defined by a unique name (IPv6 does not support numbered ACLs). An IPv4 ACL and an IPv6 ACL cannot share the same name.

IPv6 is automatically configured as the protocol type in **permit any any** and **deny any any** statements that are translated from global configuration mode to IPv6 access list configuration mode.

Every IPv6 ACL has implicit **permit icmp any any nd-na**, **permit icmp any any nd-ns**, and **deny ipv6 any any** statements as its last match conditions. (The former two match conditions allow for ICMPv6 neighbor discovery.) An IPv6 ACL must contain at least one entry for the implicit **deny ipv6 any any** statement to take effect. The IPv6 neighbor discovery process makes use of the IPv6 network layer service; therefore, by default,

IPv6 ACLs implicitly allow IPv6 neighbor discovery packets to be sent and received on an interface. In IPv4, the Address Resolution Protocol (ARP), which is equivalent to the IPv6 neighbor discovery process, makes use of a separate data link layer protocol; therefore, by default, IPv4 ACLs implicitly allow ARP packets to be sent and received on an interface.

Use the **ipv6 traffic-filter** interface configuration command with the *access-list-name* argument to apply an IPv6 ACL to an IPv6 interface. Use the **ipv6 access-class** line configuration command with the *access-list-name* argument to apply an IPv6 ACL to incoming and outgoing IPv6 virtual terminal connections to and from the device.

An IPv6 ACL applied to an interface with the **ipv6 traffic-filter** command filters traffic that is forwarded, not originated, by the device.

## Examples

The example configures the IPv6 ACL list named list1 and places the device in IPv6 access list configuration mode.

```
Device(config)# ipv6 access-list list1
Device(config-ipv6-acl)#
```

The following example configures the IPv6 ACL named list2 and applies the ACL to outbound traffic on Ethernet interface 0. Specifically, the first ACL entry keeps all packets from the network FEC0:0:0:2::/64 (packets that have the site-local prefix FEC0:0:0:2 as the first 64 bits of their source IPv6 address) from exiting out of Ethernet interface 0. The second entry in the ACL permits all other traffic to exit out of Ethernet interface 0. The second entry is necessary because an implicit deny all condition is at the end of each IPv6 ACL.

```
Device(config)# ipv6 access-list list2 deny FEC0:0:0:2::/64 any
Device(config)# ipv6 access-list list2 permit any any
Device(config)# interface ethernet 0
Device(config-if)# ipv6 traffic-filter list2 out
```

# ipv6 acl

To create ACL configuration for wireless IPv6, use the **ipv6 acl** command configuration.

**ipv6 acl** *ipv6-acl-name*

<b>Syntax Description</b>	<b>ipv6 acl</b>	Creates ACL configuration for wireless IPv6.
	<i>ipv6-acl-name</i>	Specifies the IPv6 ACL name.
<b>Command Default</b>	None	
<b>Command Modes</b>	Wireless policy configuration mode	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Amsterdam 17.1.1s	This command was introduced.

## Example

This example shows how to create an ACL configuration for wireless IPv6:

```
Device(config-wireless-policy)#ipv6 acl ipv6-acl-name
```

# ipv6-address-type

To configure the 802.11u IPv6 address type, use the **ipv6-address-type** command. To remove the address type, use the **no** form of the command.

**ipv6-address-type** { **available** | **not-available** | **not-known** }

Syntax Description	available	Sets IPv6 address type as available.
	<b>not-available</b>	Sets IPv6 address type as not available.
	<b>not-known</b>	Sets IPv6 address type availability as not known.

**Command Default** None

**Command Modes** Wireless ANQP Server Configuration (config-wireless-anqp-server)

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.12.1	This command was introduced.

## Example

The following example shows how to configure a 802.11u IPv6 address type:

```
Device(config)# wireless hotspot anqp-server my-server
Device(config-wireless-anqp-server)# ipv4-address-type available
```



# ipv6 address

To configure an IPv6 address based on an IPv6 general prefix and enable IPv6 processing on an interface, use the **ipv6 address** command in interface configuration mode. To remove the address from the interface, use the **no** form of this command.

```
ipv6 address {ipv6-prefix/prefix-length | prefix-name sub-bits/prefix-length}
no ipv6 address {ipv6-address/prefix-length | prefix-name sub-bits/prefix-length}
```

## Syntax Description

<i>ipv6-address</i>	The IPv6 address to be used.
<i>/ prefix-length</i>	The length of the IPv6 prefix. A decimal value that indicates how many of the high-order contiguous bits of the address comprise the prefix (the network portion of the address). A slash mark must precede the decimal value.
<i>prefix-name</i>	A general prefix, which specifies the leading bits of the network to be configured on the interface.
<i>sub-bits</i>	The subprefix bits and host bits of the address to be concatenated with the prefixes provided by the general prefix specified with the <i>prefix-name</i> argument.  The <i>sub-bits</i> argument must be in the form documented in RFC 2373 where the address is specified in hexadecimal using 16-bit values between colons.

## Command Default

No IPv6 addresses are defined for any interface.

## Command Modes

Interface configuration

## Command History

Release	Modification
12.2(2)T	This command was introduced.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB.
12.2(25)SG	This command was integrated into Cisco IOS Release 12.2(25)SG.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
Cisco IOS XE Release 2.1	This command was integrated into Cisco ASR 1000 Series devices.
15.2(4)S	This command was integrated into Cisco IOS Release 15.2(4)S.
15.2(2)SNG	This command was implemented on the Cisco ASR 901 Series Aggregation Services devices.
Cisco IOS XE Release 3.2SE	This command was integrated into Cisco IOS XE Release 3.2SE.

**Usage Guidelines**

The **ipv6 address** command allows multiple IPv6 addresses to be configured on an interface in various different ways, with varying options. The most common way is to specify the IPv6 address with the prefix length.

Addresses may also be defined using the general prefix mechanism, which separates the aggregated IPv6 prefix bits from the subprefix and host bits. In this case, the leading bits of the address are defined in a general prefix, which is globally configured or learned (for example, through use of Dynamic Host Configuration Protocol-Prefix Delegation (DHCP-PD)), and then applied using the *prefix-name* argument. The subprefix bits and host bits are defined using the *sub-bits* argument.

Using the **no ipv6 address autoconfig** command without arguments removes all IPv6 addresses from an interface.

IPv6 link-local addresses must be configured and IPv6 processing must be enabled on an interface by using the **ipv6 address link-local** command.

**Examples**

The following example shows how to enable IPv6 processing on the interface and configure an address based on the general prefix called my-prefix and the directly specified bits:

```
Device(config-if) ipv6 address my-prefix 0:0:0:7272::72/64
```

Assuming the general prefix named my-prefix has the value of 2001:DB8:2222::/48, then the interface would be configured with the global address 2001:DB8:2222:7272::72/64.

**Related Commands**

Command	Description
<b>ipv6 address anycast</b>	Configures an IPv6 anycast address and enables IPv6 processing on an interface.
<b>ipv6 address eui-64</b>	Configures an IPv6 address and enables IPv6 processing on an interface using an EUI-64 interface ID in the low-order 64 bits of the address.
<b>ipv6 address link-local</b>	Configures an IPv6 link-local address for an interface and enables IPv6 processing on the interface.
<b>ipv6 unnumbered</b>	Enables IPv6 processing on an interface without assigning an explicit IPv6 address to the interface.
<b>no ipv6 address autoconfig</b>	Removes all IPv6 addresses from an interface.
<b>show ipv6 interface</b>	Displays the usability status of interfaces configured for IPv6.

# ipv6 dhcp pool

To configure a Dynamic Host Configuration Protocol (DHCP) for IPv6 server configuration information pool and enter DHCP for IPv6 pool configuration mode, use the **ipv6 dhcp pool** command in global configuration mode. To delete a DHCP for IPv6 pool, use the **no** form of this command.

**ipv6 dhcp pool** *poolname*  
**no ipv6 dhcp pool** *poolname*

Syntax Description	
<i>poolname</i>	User-defined name for the local prefix pool. The pool name can be a symbolic string (such as "Engineering") or an integer (such as 0).

**Command Default** DHCP for IPv6 pools are not configured.

**Command Modes** Global configuration

Command History	Release	Modification
	12.3(4)T	This command was introduced.
	12.2(18)SXE	This command was integrated into Cisco IOS Release 12.2(18)SXE.
	12.4(24)T	This command was integrated into Cisco IOS Release 12.4(24)T.
	Cisco IOS XE Release 2.1	This command was integrated into Cisco IOS XE Release 2.1.
	12.2(33)SRE	This command was modified. It was integrated into Cisco IOS Release 12.2(33)SRE.
	12.2(33)XNE	This command was modified. It was integrated into Cisco IOS Release 12.2(33)XNE.

**Usage Guidelines** Use the **ipv6 dhcp pool** command to create a DHCP for IPv6 server configuration information pool. When the **ipv6 dhcp pool** command is enabled, the configuration mode changes to DHCP for IPv6 pool configuration mode. In this mode, the administrator can configure pool parameters, such as prefixes to be delegated and Domain Name System (DNS) servers, using the following commands:

- **address prefix** *IPv6-prefix* [**lifetime** {*valid-lifetime preferred-lifetime* | **infinite**}] sets an address prefix for address assignment. This address must be in hexadecimal, using 16-bit values between colons.
- **link-address** *IPv6-prefix* sets a link-address IPv6 prefix. When an address on the incoming interface or a link-address in the packet matches the specified IPv6-prefix, the server uses the configuration information pool. This address must be in hexadecimal, using 16-bit values between colons.
- **vendor-specific** *vendor-id* enables DHCPv6 vendor-specific configuration mode. Specify a vendor identification number. This number is the vendor IANA Private Enterprise Number. The range is 1 to 4294967295. The following configuration command is available:
  - **suboption** *number* sets vendor-specific suboption number. The range is 1 to 65535. You can enter an IPv6 address, ASCII text, or a hex string as defined by the suboption parameters.



**Note** The **hex** value used under the **suboption** keyword allows users to enter only hex digits (0-f). Entering an invalid **hex** value does not delete the previous configuration.

Once the DHCP for IPv6 configuration information pool has been created, use the **ipv6 dhcp server** command to associate the pool with a server on an interface. If you do not configure an information pool, you need to use the **ipv6 dhcp server interface** configuration command to enable the DHCPv6 server function on an interface.

When you associate a DHCPv6 pool with an interface, only that pool services requests on the associated interface. The pool also services other interfaces. If you do not associate a DHCPv6 pool with an interface, it can service requests on any interface.

Not using any IPv6 address prefix means that the pool returns only configured options.

The **link-address** command allows matching a link-address without necessarily allocating an address. You can match the pool from multiple relays by using multiple link-address configuration commands inside a pool.

Since a longest match is performed on either the address pool information or the link information, you can configure one pool to allocate addresses and another pool on a subprefix that returns only configured options.

## Examples

The following example specifies a DHCP for IPv6 configuration information pool named `cisco1` and places the router in DHCP for IPv6 pool configuration mode:

```
Router(config)# ipv6 dhcp pool cisco1
Router(config-dhcpv6)#
```

The following example shows how to configure an IPv6 address prefix for the IPv6 configuration pool `cisco1`:

```
Router(config-dhcpv6)# address prefix 2001:1000::0/64
Router(config-dhcpv6)# end
```

The following example shows how to configure a pool named `engineering` with three link-address prefixes and an IPv6 address prefix:

```
Router# configure terminal
Router(config)# ipv6 dhcp pool engineering
Router(config-dhcpv6)# link-address 2001:1001::0/64
Router(config-dhcpv6)# link-address 2001:1002::0/64
Router(config-dhcpv6)# link-address 2001:2000::0/48
Router(config-dhcpv6)# address prefix 2001:1003::0/64
Router(config-dhcpv6)# end
```

The following example shows how to configure a pool named `350` with vendor-specific options:

```
Router# configure terminal
Router(config)# ipv6 dhcp pool 350
Router(config-dhcpv6)# vendor-specific 9
Router(config-dhcpv6-vs)# suboption 1 address 1000:235D::1
Router(config-dhcpv6-vs)# suboption 2 ascii "IP-Phone"
Router(config-dhcpv6-vs)# end
```

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>ipv6 dhcp server</b>	Enables DHCP for IPv6 service on an interface.
<b>show ipv6 dhcp pool</b>	Displays DHCP for IPv6 configuration pool information.

# ipv6 enable

To enable IPv6 processing on an interface that has not been configured with an explicit IPv6 address, use the **ipv6 enable** command in interface configuration mode. To disable IPv6 processing on an interface that has not been configured with an explicit IPv6 address, use the **no** form of this command.

**ipv6 enable**  
**no ipv6 enable**

**Syntax Description** This command has no arguments or keywords.

**Command Default** IPv6 is disabled.

**Command Modes** Interface configuration (config-if)

## Command History

Release	Modification
12.2(2)T	This command was introduced.
12.0(21)ST	This command was integrated into Cisco IOS Release 12.0(21)ST.
12.0(22)S	This command was integrated into Cisco IOS Release 12.0(22)S.
12.2(14)S	This command was integrated into Cisco IOS Release 12.2(14)S.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB.
12.2(25)SG	This command was integrated into Cisco IOS Release 12.2(25)SG.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
Cisco IOS XE Release 2.1	This command was integrated into Cisco IOS XE Release 2.1.
15.2(2)SNG	This command was implemented on the Cisco ASR 901 Series Aggregation Services devices.
Cisco IOS XE Release 3.2SE	This command was integrated into Cisco IOS XE Release 3.2SE.
15.2(2)SA2	This command was implemented on the Cisco ME 2600X Series Ethernet Access Switches.

**Usage Guidelines** The **ipv6 enable** command automatically configures an IPv6 link-local unicast address on the interface while also enabling the interface for IPv6 processing. The **no ipv6 enable** command does not disable IPv6 processing on an interface that is configured with an explicit IPv6 address.

## Examples

The following example enables IPv6 processing on Ethernet interface 0/0:

```
Device(config)# interface ethernet 0/0  
Device(config-if)# ipv6 enable
```

**Related Commands**

Command	Description
<b>ipv6 address link-local</b>	Configures an IPv6 link-local address for an interface and enables IPv6 processing on the interface.
<b>ipv6 address eui-64</b>	Configures an IPv6 address and enables IPv6 processing on an interface using an EUI-64 interface ID in the low-order 64 bits of the address.
<b>ipv6 unnumbered</b>	Enables IPv6 processing on an interface without assigning an explicit IPv6 address to the interface.
<b>show ipv6 interface</b>	Displays the usability status of interfaces configured for IPv6.

# ipv6 mld snooping

To enable Multicast Listener Discovery version 2 (MLDv2) protocol snooping globally, use the **ipv6 mld snooping** command in global configuration mode. To disable the MLDv2 snooping globally, use the **no** form of this command.

**ipv6 mld snooping**  
**no ipv6 mld snooping**

**Syntax Description** This command has no arguments or keywords.

**Command Default** This command is enabled.

**Command Modes** Global configuration

## Command History

Release	Modification
12.2(18)SXE	This command was introduced on the Supervisor Engine 720.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
15.4(2)S	This command was implemented on the Cisco ASR 901 Series Aggregation Services Router.

## Usage Guidelines

MLDv2 snooping is supported on the Supervisor Engine 720 with all versions of the Policy Feature Card 3 (PFC3).

To use MLDv2 snooping, configure a Layer 3 interface in the subnet for IPv6 multicast routing or enable the MLDv2 snooping querier in the subnet.

## Examples

This example shows how to enable MLDv2 snooping globally:

```
Router(config)# ipv6 mld snooping
```

## Related Commands

Command	Description
<b>show ipv6 mld snooping</b>	Displays MLDv2 snooping information.



## ipv6 nd managed-config-flag

To set the managed address configuration flag in IPv6 router advertisements, use the **ipv6 nd managed-config-flag** command in an appropriate configuration mode. To clear the flag from IPv6 router advertisements, use the **no** form of this command.

```
ipv6 nd managed-config-flag
no ipv6 nd managed-config-flag
```

<b>Syntax Description</b>	This command has no keywords or arguments.	
<b>Command Default</b>	The managed address configuration flag is not set in IPv6 router advertisements.	
<b>Command Modes</b>	Interface configuration	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.
<b>Usage Guidelines</b>	<p>Setting the managed address configuration flag in IPv6 router advertisements indicates to attached hosts whether they should use stateful autoconfiguration to obtain addresses. If the flag is set, the attached hosts should use stateful autoconfiguration to obtain addresses. If the flag is not set, the attached hosts should not use stateful autoconfiguration to obtain addresses.</p> <p>Hosts may use stateful and stateless address autoconfiguration simultaneously.</p>	
<b>Examples</b>	<p>This example shows how to configure the managed address configuration flag in IPv6 router advertisements:</p> <pre>Device(config)# interface Device(config-if)# ipv6 nd managed-config-flag</pre>	

## ipv6 nd other-config-flag

To set the other stateful configuration flag in IPv6 router advertisements, use the **ipv6 nd other-config-flag** command in an appropriate configuration mode. To clear the flag from IPv6 router advertisements, use the **no** form of this command.

**ipv6 nd other-config-flag**

---

### Syntax Description

This command has no keywords or arguments.

---

### Command Default

The other stateful configuration flag is not set in IPv6 router advertisements.

---

### Command Modes

Interface configuration  
Dynamic template configuration

---

### Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

---

### Usage Guidelines

The setting of the other stateful configuration flag in IPv6 router advertisements indicates to attached hosts how they can obtain autoconfiguration information other than addresses. If the flag is set, the attached hosts should use stateful autoconfiguration to obtain the other (nonaddress) information.




---

**Note** If the managed address configuration flag is set using the **ipv6 nd managed-config-flag** command, then an attached host can use stateful autoconfiguration to obtain the other (nonaddress) information regardless of the setting of the other stateful configuration flag.

---

### Examples

This example (not applicable for BNG) configures the “other stateful configuration” flag in IPv6 router advertisements:

```
Device(config)# interface
Device(config-if)# ipv6 nd other-config-flag
```

## ipv6 nd ra throttler attach-policy

To configure a IPv6 policy for feature RA throttler, use the **ipv6 nd ra-throttler attach-policy** command.

**ipv6 nd ra-throttler attach-policy** *policy-name*

<b>Syntax Description</b>	<b>ipv6</b>	IPv6 root chain.
	<b>ra-throttler</b>	Configure RA throttler on the VLAN.
	<b>attach-policy</b>	Apply a policy for feature RA throttler.
	<i>policy-name</i>	Policy name for feature RA throttler
<b>Command Default</b>	None	
<b>Command Modes</b>	config-vlan	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

### Examples

The following example shows how to configure configure a IPv6 policy for feature RA throttler:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# vlan configuration vlan-id
Device(config-vlan-config)# ipv6 nd ra-throttler attach-policy
```

## ipv6 nd rguard policy

To define the router advertisement (RA) guard policy name and enter RA guard policy configuration mode, use the **ipv6 nd rguard policy** command in global configuration mode.

**ipv6 nd rguardpolicy** *policy-name*

Syntax Description	
	<i>policy-name</i> IPv6 RA guard policy name.

**Command Default** An RA guard policy is not configured.

**Command Modes** Global configuration (config)#

Command History	Release	Modification
	12.2(50)SY	This command was introduced.
	15.2(4)S	This command was integrated into Cisco IOS Release 15.2(4)S.
	15.0(2)SE	This command was integrated into Cisco IOS Release 15.0(2)SE.
	Cisco IOS XE Release 3.2SE	This command was integrated into Cisco IOS XE Release 3.2SE.

**Usage Guidelines** Use the **ipv6 nd rguard policy** command to configure RA guard globally on a router. Once the device is in ND inspection policy configuration mode, you can use any of the following commands:

- **device-role**
- **drop-unsecure**
- **limit address-count**
- **sec-level minimum**
- **trusted-port**
- **validate source-mac**

After IPv6 RA guard is configured globally, you can use the **ipv6 nd rguard attach-policy** command to enable IPv6 RA guard on a specific interface.

### Examples

The following example shows how to define the RA guard policy name as `policy1` and place the device in policy configuration mode:

```
Device(config)# ipv6 nd rguard policy policy1
Device(config-ra-guard)#
```

**Related Commands***Table 1:*

<b>Command</b>	<b>Description</b>
<b>device-role</b>	Specifies the role of the device attached to the port.
<b>drop-unsecure</b>	Drops messages with no or invalid options or an invalid signature.
<b>ipv6 nd rguard attach-policy</b>	Applies the IPv6 RA guard feature on a specified interface.
<b>limit address-count</b>	Limits the number of IPv6 addresses allowed to be used on the port.
<b>sec-level minimum</b>	Specifies the minimum security level parameter value when CGA options are used.
<b>trusted-port</b>	Configures a port to become a trusted port.
<b>validate source-mac</b>	Checks the source MAC address against the link layer address.

## ipv6 traffic-filter

This command enables IPv6 traffic filter.

To enable the filtering of IPv6 traffic on an interface, use the **ipv6 traffic-filter** command. To disable the filtering of IPv6 traffic on an interface, use the **no** form of the command.

Use the **ipv6 traffic-filter** interface configuration command on the switch stack or on a standalone switch to filter IPv6 traffic on an interface. The type and direction of traffic that you can filter depends on the feature set running on the switch stack. Use the **no** form of this command to disable the filtering of IPv6 traffic on an interface.

**ipv6 traffic-filter** [**web**] *acl-name*

**no ipv6 traffic-filter** [**web**]

<b>Syntax Description</b>	<p><b>web</b> (Optional) Specifies an IPv6 access name for the WLAN Web ACL.</p> <p><i>acl-name</i> Specifies an IPv6 access name.</p>				
<b>Command Default</b>	Filtering of IPv6 traffic on an interface is not configured.				
<b>Command Modes</b>	wlan				
<b>Command History</b>	<table border="1"> <thead> <tr> <th style="border-bottom: 1px solid black;">Release</th> <th style="border-bottom: 1px solid black;">Modification</th> </tr> </thead> <tbody> <tr> <td></td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification		This command was introduced.
Release	Modification				
	This command was introduced.				
<b>Usage Guidelines</b>	<p>To configure the dual IPv4 and IPv6 template, enter the <b>sdm prefer dual-ipv4-and-ipv6 {default   vlan}</b> global configuration command and reload the switch.</p> <p>You can use the <b>ipv6 traffic-filter</b> command on physical interfaces (Layer 2 or Layer 3 ports), Layer 3 port channels, or switch virtual interfaces (SVIs).</p> <p>You can apply an ACL to outbound or inbound traffic on Layer 3 interfaces (port ACLs), or to inbound traffic on Layer 2 interfaces (router ACLs).</p> <p>If <b>any</b> port ACL (IPv4, IPv6, or MAC) is applied to an interface, that port ACL is used to filter packets, and any router ACLs attached to the SVI of the port VLAN are ignored.</p> <p>This example shows how to filter IPv6 traffic on an interface:</p> <pre>Device(config-wlan)# <b>ipv6 traffic-filter TestDocTrafficFilter</b></pre>				

# key chain

To create or modify a keychain, use the **key chain** command. To disable this feature, use the **no** form of this command.

**key chain***key-chain name* { **macsec** | **tcp** }  
**no key chain***key-chain name* { **macsec** | **tcp** }

## Syntax Description

<i>key-chain name</i>	Specifies the name of the key chain.
<b>macsec</b>	Specifies a MacSEC key chain.
<b>tcp</b>	Specifies the tcp key chain.

## Command Default

No default.

## Command Modes

Global configuration mode.

## Examples

The following example shows how to specify a key chain to identify authentication on a key-chain:

```
Device(config)# key chain key-chain-name macsec
```

## Related Commands

Command	Description
<b>key config-key</b>	Sets a private configuration key for general use.
<b>show key chain</b>	Displays authentication key information.

## key config-key

To set a private configuration key for private use, use the **key config-key** command. To disable this feature, use the **no** form of this command.

**key config-key** {1 LINE | **newpass** *config-key* | **password-encrypt** LINE}  
**no key config-key** {1 LINE | **newpass** *config-key* | **password-encrypt** LINE}

### Syntax Description

<b>1</b>	Sets a private configuration key for private use.
<b>newpass</b>	Specifies a new password without space or tabs.
<i>config-key</i>	Specifies the config key, with a minimum of 8 characters, and not beginning with the IOS special characters - !, #, and ;.
<b>password-encrypt</b>	Sets a private configuration key for password encryption.

### Command Default

None

### Command Modes

Global configuration mode.

### Examples

The following example shows how to specify a config-key:

```
Device(config)# key config-key password-encrypt config-key
```



# key config-key password-encrypt

To set a private configuration key for password encryption, use the **key config-key password-encrypt** command. To disable this feature, use the **no** form of this command.

**key config-key password-encrypt** <config-key>

## Syntax Description

*config-key* Enter a value with minimum 8 characters.

**Note** The value must not begin with the following special characters:  
!, #, and ;

## Command Default

None

## Command Modes

Global configuration mode

## Command History

Release	Modification
Cisco IOS XE Gibraltar 17.6.1	This command was introduced.

## Examples

The following example shows how to set a username and password for AP management:

```
Device# enable
Device# configure terminal
Device(config)# key config-key password-encryption 12345678
Device(config-ap-profile)# password encryption aes
Device(config-ap-profile)# end
```

# license air level

To configure AIR licenses on a wireless controller, enter the **license air level** command in global configuration mode. To revert to the default setting, use the **no** form of this command.

```
license air level { air-network-advantage [ addon air-dna-advantage ] | air-network-essentials [ addon air-dna-essentials ] }
```

**no license air level**

## Syntax Description

<b>air-network-advantage</b>	Configures the AIR Network Advantage license level.
<b>addon air-dna-advantage</b>	(Optional) Configures the add-on AIR DNA Advantage license level. This add-on option is available with the AIR Network Advantage license.
<b>air-network-essentials</b>	Configures the AIR Network Essentials license level.
<b>addon air-dna-essentials</b>	(Optional) Configures the add-on AIR DNA Essentials license level. This add-on option is available with the AIR Network Essential license.

## Command Default

For all Cisco Catalyst 9800 Wireless controllers the default license is AIR DNA Advantage.

For EWC-APs:

- Prior to Cisco IOS XE Bengaluru 17.4.1, the default license is AIR DNA Essentials.
- Starting with Cisco IOS XE Bengaluru 17.4.1, the default license is AIR Network Essentials

## Command Modes

Global configuration (config)

## Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced.
Cisco IOS XE Amsterdam 17.3.2a	This command continues to be available and applicable with the introduction of Smart Licensing Using Policy.
Cisco IOS XE Bengaluru 17.4.1	Only for EWC-APs, the default license was changed from AIR DNA Essentials to AIR Network Essentials.

## Usage Guidelines

In the Smart Licensing Using Policy environment, you can use the **license air level** command to change the license level being used on the product instance, or to additionally configure an add-on license on the product instance. The change is effective after a reload.

The licenses that can be configured are:

- AIR Network Essential
- AIR Network Advantage
- AIR DNA Essential

- AIR DNA Advantage

You can configure AIR DNA Essential or AIR DNA Advantage license level and on term expiry, you can move to the Network Advantage or Network Essentials license level, if you do not want to renew the DNA license.

Every connecting AP requires a Cisco DNA Center License to leverage the unique value properties of the controller.

**Specifics for EWC-APs**

Starting with Cisco IOS XE Bengaluru 17.4.1, *only for EWC-APs*, you can opt-out of purchasing an AIR DNA license. The option to opt-out of AIR DNA licenses is available only through the [Cisco Commerce](#) portal. When you opt-out, Smart Licensing Using Policy functionality is disabled.

For a new product instance, this means:

Condition	Required Action	Outcome or Result
You opt-out of AIR DNA licenses	None.	Use only AIR Network Essentials. Smart Licensing Using Policy functionality is disabled on the product instance and for your Smart Account and Virtual Account in CSSM. License usage is not recorded, and no reporting requirements apply.
You purchase AIR DNA licenses	Enter the <b>license air level</b> command in global configuration mode and configure the corresponding AIR DNA license. Reload to use the corresponding license.  Implement one of the supported topologies and fulfill reporting requirements. For information about implementing a topology, For information about implementing a topology, see the Supported Topologies section in the <a href="#">software configuration guide</a> of the required release.	Use the purchased AIR DNA and AIR Network license.  Smart Licensing Using Policy functionality is enabled on the product instance and for your Smart Account and Virtual Account in CSSM.

For an existing product instance, this means:

Condition	Required Action	Outcome or Result
You are using an AIR DNA license	None.	No change. You are already in the Smart Licensing Using Policy environment.

Condition	Required Action	Outcome or Result
You do not want to renew the DNA license on term expiry	On term expiry, enter the <b>license air level</b> command in global configuration mode and configure AIR Network Essentials or AIR Network Advantage. Reload to use the corresponding license.	If you had AIR DNA Essentials, you now use AIR Network Essentials. If you had AIR DNA Advantage, you now use AIR Network Advantage. Smart Licensing Using Policy functionality is disabled on the product instance and for your Smart Account and Virtual Account in CSSM. License usage is not recorded, and no reporting requirements apply.

### Examples

The following example show how to configure the AIR DNA Essential license level:

```
Device# configure terminal
Device(config)# license air level network-essentials addon air-dna-essentials
```

The following example shows how the AIR DNA Advantage license level is configured to begin with and then changed to AIR DNA Essentials:

Current configuration as AIR DNA Advantage:

```
Device# show version
Cisco IOS XE Software, Version 17.03.02
Cisco IOS Software [Amsterdam], C9800-CL Software (C9800-CL-K9_IOSXE), Version 17.3.2,
RELEASE SOFTWARE
<output truncated>
AIR License Level: AIR DNA Advantage
Next reload AIR license Level: AIR DNA Advantage
```

```
Smart Licensing Status: Registration Not Applicable/Not Applicable
<output truncated>
```

Configuration of AIR DNA Essentials :

```
Device# configure terminal
Device(config)# license air level air-network-essentials addon air-dna-essentials

Device# exit
Device# show version
Cisco IOS XE Software, Version 17.03.02
Cisco IOS Software [Amsterdam], C9800-CL Software (C9800-CL-K9_IOSXE), Version 17.3.2,
RELEASE SOFTWARE
<output truncated>
AIR License Level: AIR DNA Advantage
Next reload AIR license Level: AIR DNA Essentials
Smart Licensing Status: Registration Not Applicable/Not Applicable
<output truncated>
```

```
Device# write memory
Device# reload
```

After reload:

```
Device# show version
Cisco IOS XE Software, Version 17.03.02
```

```
Cisco IOS Software [Amsterdam], C9800-CL Software (C9800-CL-K9_IOSXE), Version 17.3.2,  
RELEASE SOFTWARE  
<output truncated>  
AIR License Level: AIR DNA Essentials  
Next reload AIR license Level: AIR DNA Essentials  
  
Smart Licensing Status: Registration Not Applicable/Not Applicable  
<output truncated>
```

## license smart (global config)

To configure licensing-related settings such as the mode of transport and the URL that the product instance uses to communicate with Cisco Smart Software Manager (CSSM), or Cisco Smart Licensing Utility (CSLU), or Smart Software Manager On-Prem (SSM On-Prem), to configure the usage reporting interval, to configure the information that must be excluded or included in a license usage report (RUM report), enter the **license smart** command in global configuration mode. Use the **no** form of the command to revert to default values.

```
license smart { custom_id ID | enable | privacy { all | hostname | version } | proxy { address
address_hostname | port port } | reservation | server-identity-check | transport { automatic | callhome
| cslu | off | smart } | url { url | cslu cslu_or_on-prem_url | default | smart smart_url | utility secondary_url
} | usage { customer-tags { tag1 | tag2 | tag3 | tag4 } tag_value | interval interval_in_days } | utility [
customer_info { city city | country country | postalcode postalcode | state state | street street } ] }
```

```
no license smart { custom_id | enable | privacy { all | hostname | version } | proxy { address
address_hostname | port port } | reservation | server-identity-check | transport | url { url | cslu
cslu_or_on-prem_url | default | smart smart_url | utility secondary_url } | usage { customer-tags { tag1
| tag2 | tag3 | tag4 } tag_value | interval interval_in_days } | utility [ customer_info { city city | country
country | postalcode postalcode | state state | street street } ] }
```

### Syntax Description

<b>custom_id</b> <i>ID</i>	Although available on the CLI, this option is not supported.
<b>enable</b>	Although visible on the CLI, configuring this keyword has no effect. Smart licensing is always enabled.

---

**privacy { all | hostname | version }**

Sets a privacy flag to prevent the sending of the specified data privacy related information.

When the flag is disabled, the corresponding information is sent in a message or offline file created by the product instance.

Depending on the topology this is sent to one or more components, including CSSM, CSLU, and SSM On-Prem.

*All data privacy settings are disabled by default.* You must configure the option you want to exclude from all communication:

- **all:** All data privacy related information is excluded from any communication.

The **no** form of the command causes all data privacy related information to be sent in a message or offline file.

**Note** The Product ID (PID) and serial number are *included in the RUM report* regardless of whether data privacy is enabled or not.

- **hostname:** Excludes hostname information from any communication. When hostname privacy is enabled, the *UDI* of the product instance is displayed on the applicable user interfaces (CSSM, CSLU, and SSM On-Prem).

The **no** form of the command causes hostname information to be sent in a message or offline file. The hostname is displayed on the applicable user interfaces (CSSM, CSLU, and SSM On-Prem).

- **version:** Excludes the Cisco IOS-XE software version running on the product instance and the Smart Agent version from any communication.

The **no** form of the command causes version information to be sent in a message or offline file.

---

---

**proxy** { **address** *address\_hostname* | **port** *port* }

Configures a proxy for license usage synchronization with CSLU or CSSM. This means that you can use this option to configure a proxy only if the transport mode is **license smart transport smart** (CSSM), or **license smart transport cslu** (CSLU).

However, you cannot configure a proxy for license usage synchronization in an SSM On-Prem deployment, which also uses **license smart transport cslu** as the transport mode.

Configure the following options:

- **address** *address\_hostname*: Configures the proxy address.

For *address\_hostname*, enter the IP address or hostname of the proxy.

- **port***port*: Configures the proxy port.

For *port*, enter the proxy port number.

---

**reservation**

Enables or disables a license reservation feature.

**Note** Although available on the CLI, this option is not applicable because license *reservation* is not applicable in the Smart Licensing Using Policy environment.

---

**server-identity-check**

Enables or disables the HTTP secure server identity check.

---

**transport** { **automatic** | **callhome** | **cslu** | **off** | **smart** }

Configures the mode of transport the product instance uses to communicate with CSSM. Choose from the following options:

- **automatic**: Sets the transport mode **cslu**.

**Note** The **automatic** keyword is not supported on Cisco Catalyst Wireless Controllers.

- **callhome**: Enables Call Home as the transport mode.
- **cslu**: Enables CSLU as the transport mode. This is the default transport mode.

The same keyword applies to both CSLU *and* SSM On-Prem, but the URLs are different. See **cslu***cslu\_or\_on-prem\_url* in the following row.

- **off**: Disables all communication from the product instance.
  - **smart**: Enables Smart transport.
-



---

```
url { url | cslu cslu_url | default | smart  
smart_url | utility secondary_url }
```

---

Sets URL that is used for the configured transport mode. Choose from the following options:

- **url**: If you have configured the transport mode as **callhome**, configure this option. Enter the CSSM URL exactly as follows:

```
https://tools.cisco.com/its/service/odbe/services/DDCEService
```

The **no license smart url url** command reverts to the default URL.

- **cslu cslu\_or\_on-prem\_url**: If you have configured the transport mode as **cslu**, configure this option, with the URL for CSLU or SSM On-Prem, as applicable:

- If you are using CSLU, enter the URL as follows:

```
http://<cslu_ip_or_host>:8182/cslu/v1/pi
```

For <cslu\_ip\_or\_host>, enter the hostname or the IP address of the windows host where you have installed CSLU. 8182 is the port number and it is the only port number that CSLU uses.

The **no license smart url cslu**

**cslu\_or\_on-prem\_url** command reverts to

```
http://cslu-local:8182/cslu/v1/pi
```

- If you are using SSM On-Prem, enter the URL as follows:

```
http://<ip>/cslu/v1/pi/<tenant ID>
```

For <ip>, enter the hostname or the IP address of the server where you have installed SSM On-Prem. The <tenantID> must be the default local virtual account ID.

**Tip** You can retrieve the entire URL from SSM On-Prem. In the software configuration guide (17.3.x and later), see Smart Licensing Using Policy > Task Library for Smart Licensing Using Policy > Retrieving the Transport URL (SSM On-Prem UI).

The **no license smart url cslu**

**cslu\_or\_on-prem\_url** command reverts to

```
http://cslu-local:8182/cslu/v1/pi
```

- **default**: Depends on the configured transport mode. Only the **smart** and **cslu** transport modes are supported with this option.

If the transport mode is set to **cslu**, and you configure **license smart url default**, the CSLU URL is

configured automatically

(<https://cslu-local:8182/cslu/v1/pi>).

If the transport mode is set to **smart**, and you configure **license smart url default**, the Smart URL is configured automatically

(<https://smartreceiver.cisco.com/licservice/license>).

- **smart** *smart\_url*: If you have configured the transport type as **smart**, configure this option. Enter the URL exactly as follows:

<https://smartreceiver.cisco.com/licservice/license>

When you configure this option, the system automatically creates a duplicate of the URL in **license smart url url**. You can ignore the duplicate entry, no further action is required.

The **no license smart url smartsmart\_url** command reverts to the default URL.

- **utility** *smart\_url*: Although available on the CLI, this option is not supported.
-

---

**usage** { **customer-tags** { **tag1** | **tag2** | **tag3** | **tag4** } *tag\_value* | **interval** *interval\_in\_days* } Configures usage reporting settings. You can set the following options:

- **customer-tags** { **tag1** | **tag2** | **tag3** | **tag4** } *tag\_value*: Defines strings for inclusion in data models, for telemetry. Up to 4 strings (or tags) may be defined.

For *tag\_value*, enter the string value for each tag that you define.

- **interval** *interval\_in\_days*: Sets the reporting interval in days. By default the RUM report is sent every 30 days. The valid value range is 1 to 3650.

If you set the value to zero, RUM reports are not sent, regardless of what the applied policy specifies - this applies to topologies where CSLU or CSSM may be on the receiving end.

If you set a value that is greater than zero and the transport type is set to **off**, then, between the *interval\_in\_days* and the policy value for `Ongoing reporting frequency(days):`, the lower of the two values is applied. For example, if *interval\_in\_days* is set to 100, and the value in the policy says `Ongoing reporting frequency (days):90`, RUM reports are sent every 90 days.

If you do not set an interval, and the default is effective, the reporting interval is determined entirely by the policy value. For example, if the default value is effective and only unenforced licenses are in use, if the policy states that reporting is not required, then RUM reports are not sent.

---

**utility** [ **customer\_info** { **city** *city* | **country** *country* | **postalcode** *postalcode* | **state** *state* | **street** *street* } ] Although visible on the CLI, this option is not supported.

---



---

#### Command Default

Cisco IOS XE Amsterdam 17.3.1 or earlier: Smart Licensing is enabled by default.

Cisco IOS XE Amsterdam 17.3.2a and later: Smart Licensing Using Policy is enabled by default.

---

#### Command Modes

Global config (config)

---

#### Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced.

---

Release	Modification
Cisco IOS XE Amsterdam 17.3.2a	<p>The following keywords and variables were introduced with Smart Licensing Using Policy:</p> <ul style="list-style-type: none"> <li>Under the <b>url</b> keyword, these options were introduced:           <pre>{ <b>cslu</b> <i>cslu_url</i>   <b>smart</b> <i>smart_url</i> }</pre> </li> <li>Under the <b>transport</b> keyword, these options were introduced:           <pre>{ <b>cslu</b>   <b>off</b> }</pre> <p>Further, the default transport type was changed from <b>callhome</b>, to <b>cslu</b>.</p> </li> <li><b>usage</b> { <b>customer-tags</b> { <b>tag1</b>   <b>tag2</b>   <b>tag3</b>   <b>tag4</b> } <i>tag_value</i>   <b>interval</b> <i>interval_in_days</i> }</li> </ul> <p>The following keywords and variables under the <b>license smart</b> command are deprecated and no longer available on the CLI: <b>enableand</b> and <b>conversion automatic</b>.</p>
Cisco IOS XE Amsterdam 17.3.3	<p>SSM On-Prem support was introduced. For product instance-initiated communication in an SSM On-Prem deployment, the existing <b>[no ]license smart url cslu</b><i>cslu_or_on-prem_url</i> command supports the configuration of a URL for SSM On-Prem as well. But the required URL format for SSM On-Prem is:</p> <pre>http://&lt;ip&gt;/cslu/v1/pi/&lt;tenant ID&gt;.</pre> <p>The corresponding transport mode that must be configured is also an existing command (<b>license smart transport cslu</b>).</p>
Cisco IOS XE Cupertino 17.9.1	<ul style="list-style-type: none"> <li>A new mechanism to send all data privacy related information was introduced. This information is no longer included in a RUM report.           <p>If data privacy is disabled (<b>no license smart privacy</b> {<b>all</b>   <b>hostname</b>   <b>version</b>} global configuration command), data privacy related information is sent in a separate sync message or offline file.</p> </li> <li>Support for sending hostname information was introduced.           <p>If the privacy setting for the hostname is disabled (<b>no license smart privacy hostname</b> global configuration command), hostname information is sent from the product instance, in a separate sync message, or offline file. Depending on the topology you have implemented, the hostname information is received by CSSM, CSLU, or SSM On-Prem. It is also displayed on the corresponding user interface.</p> </li> </ul>

## Usage Guidelines

### Data Privacy Settings

When you disable a privacy setting, the topology you have implemented determines the recipient and how the information reaches its destination:

- The recipient of the information may be one or more of the following: CSSM, CSLU, and SSM On-Prem. The privacy setting has no effect on a controller (Cisco DNA Center).

In case of the **hostname** keyword, after the hostname information is received by CSSM, CSLU, or SSM On-Prem, it is also displayed on the corresponding UIs – as applicable. If you then *enable* privacy the corresponding UIs revert to displaying the UDI of the product instance.

- How the information is sent.
  - In case of a topology where the product instance initiates communication, the product instance initiates the sending of this information in a message, to CSSM, or CSLU, or SSM On-Prem.
 

The product instance sends the hostname sent every time one of the following events occur: the product instance boots up, the hostname changes, there is a switchover in a High Availability set-up.
  - In case of a topology where CSLU or SSM On-Prem initiate communication, the corresponding component initiates the retrieval of privacy information from the product instance.
 

The hostname is retrieved at the frequency you configure in CSLU or SSM On-Prem, to retrieve information.
  - In case of a topology where the product instance is in an air-gapped network, privacy information is included in the offline file that is generated when you enter the **license smart save usage** privileged EXEC command.




---

**Note** For all topologies, data privacy related information is *not* included in the RUM report.

---

Data privacy related information it is not stored by the product instance *prior* to sending or saving. This ensures that if and when information is sent, it is consistent with the data privacy setting at the time of sending or saving.

### Communication failures and reporting

The reporting interval that you configure (**license smart usage interval** *interval\_in\_days* command), determines the date and time at which the product instance sends out the RUM report. If the scheduled interval coincides with a communication failure, the product instance attempts to send out the RUM report for up to four hours after the scheduled time has expired. If it is still unable to send out the report (because the communication failure persists), the system resets the interval to 15 minutes. Once the communication failure is resolved, the system reverts the reporting interval to the value that you last configured.

The system message you may see in case of a communication failure is %SMART\_LIC-3-COMM\_FAILED. For information about resolving this error and restoring the reporting interval value, in the software configuration guide of the required release (17.3.x onwards), see *System Configuration > Smart Licensing Using Policy > Troubleshooting Smart Licensing Using Policy*.

### Proxy server acceptance

When configuring the **license smart proxy** {**address** *address\_hostname* | **port***port*} command, note the change in the criteria for the acceptance of proxy servers, starting with Cisco IOS XE Bengaluru 17.6.1: only the status code of the proxy server response is verified by the system and not the reason phrase. The RFC format is `status-line = HTTP-version SP status-code SP reason-phrase CRLF`, where the status code is a three-digit numeric code. For more information about the status line, see [section 3.1.2 of RFC 7230](#).

### Examples

- [Examples for Data Privacy, on page 103](#)

- [Examples for Transport Type and URL, on page 103](#)
- [Examples for Usage Reporting Options, on page 104](#)

### Examples for Data Privacy

The following examples show how to configure data privacy related information using **license smart privacy** command in global configuration mode. The accompanying **show license status** output displays configured information.




---

**Note** The output of the **show** command only tells you if a particular option is enabled or disabled.

---

Here, no data privacy related information is sent:

```
Device# configure terminal
Device(config)# license smart privacy all
Device(config)# exit
Device# show license status
<output truncated>
Data Privacy:
  Sending Hostname: no
  Callhome hostname privacy: ENABLED
  Smart Licensing hostname privacy: ENABLED
  Version privacy: ENABLED

Transport:
  Type: Callhome
<output truncated>
```

### Examples for Transport Type and URL

The following examples show how to configure some of the transport types using the **license smart transport** and the **license smart url** commands in global configuration mode. The accompanying **show license all** output displays configured information.

Transport **cslu**:

```
Device# configure terminal
Device(config)# license smart transport cslu
Device(config)# license smart url default
Device(config)# exit
Device# show license all
<output truncated>
Transport:
  Type: cslu
  Cslu address: http://192.168.0.1:8182/cslu/v1/pi
  Proxy:
    Not Configured
<output truncated>
```

Transport **smart**:

```
Device# configure terminal
Device(config)# license smart transport smart
Device(config)# license smart url smart https://smartreceiver.cisco.com/licservice/license
Device(config)# exit
```

```

Device# show license all
<output truncated>
Transport:
  Type: Smart
  URL: https://smartreceiver-stage.cisco.com/licservice/license
  Proxy:
    Not Configured
<output truncated>

```

### Examples for Usage Reporting Options

The following examples show how to configure some of the usage reporting settings using the **license smart usage** command in global configuration mode. The accompanying **show running-config** output displays configured information.

Configuring the **customer-tag** option:

```

Device# configure terminal
Device(config)# license smart usage customer-tags tag1 SA/VA:01
Device(config)# exit
Device# show running-config | include tag1
license smart usage customer-tags tag1 SA/VA:01

```

Configuring a narrower reporting interval than the currently applied policy:

```

Device# show license status
<output truncated>
Usage Reporting:
Last ACK received: Sep 22 13:49:38 2020 PST
Next ACK deadline: Dec 21 12:02:21 2020 PST
Reporting push interval: 30 days
Next ACK push check: Sep 22 12:20:34 2020 PST
Next report push: Oct 22 12:05:43 2020 PST
Last report push: Sep 22 12:05:43 2020 PST
Last report file write: <none>
<output truncated>

```

```

Device# configure terminal
Device(config)# license smart usage interval 20
Device(config)# exit
Device# show license status
<output truncated>

```

```

Usage Reporting:
Last ACK received: Sep 22 13:49:38 2020 PST
Next ACK deadline: Nov 22 12:02:21 2020 PST
Reporting push interval: 20 days
Next ACK push check: Sep 22 12:20:34 2020 PST
Next report push: Oct 12 12:05:43 2020 PST
Last report push: Sep 22 12:05:43 2020 PST
Last report file write: <none>
<output truncated>

```



## license smart (privileged EXEC)

To configure licensing functions such as requesting or returning authorization codes, saving Resource Utilization Measurement reports (RUM reports), importing a file on to a product instance, establishing trust with Cisco Smart Software Manager (CSSM), synchronizing the product instance with CSSM, or Cisco Smart License Utility (CSLU), or Smart Software Manager On-Prem (SSM On-Prem), and removing licensing information from the product instance, enter the **license smart** command in privileged EXEC mode with the corresponding keyword or argument.

```
license smart { authorization { request { add | replace | save filepath_filename } feature_name { all |
local } | return { all | local } { offline [ filepath_filename ] | online } } | clear eventlog | export return
{ all | local } feature_name | factory reset | import filepath_filename | save { trust-request
filepath_filename | usage { all | days days | rum-id rum-ID | unreported } { file filepath_filename } } |
sync { all | local } | trust idtoken id_token_value { local | all } [{ force } ] }
```

Syntax Description	smart	Provides options for Smart Licensing.
	<b>authorization</b>	Provides the option to request for, or return, authorization codes.  Authorization codes are required <i>only</i> if you use licenses with enforcement type: export-controlled or enforced.
	<b>request</b>	Requests an authorization code from CSSM, CSLU (CSLU in-turn fetches it from CSSM), or SSM On-Prem and installs it on the product instance.
	<b>add</b>	Adds the requested license to the existing authorization code. The new authorization code will contain all the licenses of the existing authorization code and the requested license.
	<b>replace</b>	Replaces the existing authorization code. The new authorization code will contain only the requested license. All licenses in the current authorization code are returned.  When you enter this option, the product instance verifies if licenses that correspond to the authorization codes that will be removed, are in-use. If licenses are being used, an error message tells you to first disable the corresponding features.
	<b>save</b> <i>filepath_filename</i>	Saves the authorization code request to a file.  For <i>filepath_filename</i> , specify the absolute path to the file, including the filename.
	<i>feature_name</i>	Name of the license for which you are requesting an authorization code.
	<b>all</b>	Performs the action for all product instances in a High Availability configuration.
	<b>local</b>	Performs the action for the <i>active</i> product instance. This is the default option.
	<b>return</b>	Returns an authorization code back to the license pool in CSSM.

<b>offline</b> <i>filepath_filename</i>	<p>Means the product instance is not connected to CSSM. The authorization code is returned offline. This option requires you to print the return code to a file.</p> <p>Optionally, you can also specify a path to save the file. The file format can be any readable format, such as <code>.txt</code>.</p> <p>If you choose the offline option, you must complete the additional step of copying the return code from the CLI or the saved file and entering it in CSSM.</p>
<b>online</b>	Means that the product instance is in a connected mode. The authorization code is returned to CSLU or CSSM directly.
<b>clear eventlog</b>	Clears all event log files from the product instance.
<b>export return</b>	Returns the authorization key for an export-controlled license.
<b>factory reset</b>	Clears all saved licensing information from the product instance.
<b>import</b> <i>filepath_filename</i>	<p>Imports a file on to the product instance. The file may be that of an authorization code, a trust code, or, or a policy.</p> <p>For <i>filepath_filename</i>, specify the location, including the filename.</p>
<b>save</b>	Provides options to save RUM reports or trust code requests.
<b>trust-request</b> <i>filepath_filename</i>	<p>Saves the trust code request for the active product instance in the specified location.</p> <p>For <i>filepath_filename</i>, specify the absolute path to the file, including the filename.</p>
<b>usage</b> { <b>all</b>   <b>days</b> <i>days</i>   <b>rum-id</b> <i>rum-ID</i>   <b>unreported</b> } { <b>file</b> <i>file_path</i> }	<p>Saves RUM reports (license usage information) in the specified location. You must specify one of these options:</p> <ul style="list-style-type: none"> <li>• <b>all</b>: Saves all RUM reports.</li> <li>• <b>days</b> <i>days</i>: Saves RUM report for the last <i>n</i> number of days (excluding the current day). Enter a number. The valid range is 0 to 4294967295. For example, if you enter 3, RUM reports of the last three days are saved.</li> <li>• <b>rum-Id</b> <i>rum-ID</i>: Saves a specified RUM ID. The valid value range is 0 to 18446744073709551615.</li> <li>• <b>unreported</b>: Saves all unreported RUM reports.</li> </ul> <p><b>file</b> <i>filepath_filename</i>: Saves the specified usage information to a file. Specify the absolute path to the file, including the filename.</p>

---

**sync** { **all** | **local** } Synchronizes with CSSM or CSLU, or SSM On-Prem, to send and receive any pending data. This includes uploading pending RUM reports, downloading the ACK response, any pending authorization codes, trust codes, and policies for the product instance.

Specify the product instance by entering one of these options:

- **all**: Performs synchronization for all the product instances in a High Availability set-up. If you choose this option, the product instance also sends the list of all the UDIs in the synchronization request.
- **local**: Performs synchronization only for the active product instance sending the request, that is, its own UDI. This is the default option.

---

**trust idtoken**  
*id\_token\_value* Establishes a trusted connection with CSSM.  
To use this option, you must first generate a token in the CSSM portal. Provide the generated token value for *id\_token\_value*.

---

**force** Submits a trust code request even if a trust code already exists on the product instance.  
  
A trust code is node-locked to the UDI of a product instance. If the UDI is already registered, CSSM does not allow a new registration for the same UDI. Entering the **force** keyword overrides this behavior.

---

**Command Default**

Cisco IOS XE Amsterdam 17.3.1 or earlier: Smart Licensing is enabled by default.  
Cisco IOS XE Amsterdam 17.3.2a and later: Smart Licensing Using Policy is enabled by default.

---

**Command Modes**

Privileged EXEC

---

**Command History**

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced.

Release	Modification
Cisco IOS XE Amsterdam 17.3.2a	<p>The following keywords and variables were introduced with Smart Licensing Using Policy:</p> <ul style="list-style-type: none"> <li>• <b>authorization</b> { <b>request</b> { <b>add</b>   <b>replace</b> } <i>feature_name</i> { <b>all</b>   <b>local</b> }   <b>return</b> { <b>all</b>   <b>local</b> } { <b>offline</b> [ <i>path</i> ]   <b>online</b> } }</li> <li>• <b>import</b> <i>file_path</i></li> <li>• <b>save</b> { <b>trust-request</b> <i>filepath_filename</i>   <b>usage</b> { <b>all</b>   <b>days</b> <i>days</i>   <b>rum-id</b> <i>rum-ID</i>   <b>unreported</b> } { <b>file</b> <i>file_path</i> } }</li> <li>• <b>sync</b> { <b>all</b>   <b>local</b> }</li> <li>• <b>trust idtoken</b> <i>id_token_value</i> { <b>local</b>   <b>all</b> } [ <b>force</b> ]</li> </ul> <p>The following keywords and variables under the <b>license smart</b> command are deprecated and no longer available on the CLI:</p> <ul style="list-style-type: none"> <li>• <b>register idtoken</b> <i>token_id</i> [ <b>force</b> ]</li> <li>• <b>renew id</b> { <b>ID</b>   <b>auth</b> }</li> <li>• <b>debug</b> { <b>error</b>   <b>debug</b>   <b>trace</b>   <b>all</b> }</li> <li>• <b>reservation</b> { <b>cancel</b> [ <b>all</b>   <b>local</b> ]   <b>install</b> [ <b>file</b> ] <i>key</i>   <b>request</b> { <b>all</b>   <b>local</b>   <b>universal</b> }   <b>return</b> [ <b>all</b>   <b>authorization</b> { <i>auth_code</i>   <b>file</b> <i>filename</i> }   <b>Local</b> ] <i>key</i> }</li> <li>• <b>mfg reservation</b> { <b>request</b>   <b>install</b>   <b>install file</b>   <b>cancel</b> }</li> <li>• <b>conversion</b> { <b>start</b>   <b>stop</b> }</li> </ul>
Cisco IOS XE Amsterdam 17.3.3	<p>Support for SSM On-Prem was introduced. You can perform licensing-related tasks such as saving Resource Utilization Measurement reports (RUM reports), importing a file on to a product instance, synchronizing the product instance, returning authorization codes, and removing licensing information from the product instance in an SSM On-Prem deployment.</p>
Cisco IOS XE Cupertino 17.7.1	<p>The following enhancements were introduced in this release:</p> <ul style="list-style-type: none"> <li>• The <b>save</b> <i>filepath_filename</i> keyword and variable was added to the <b>license smart authorization request</b> string.</li> </ul> <p>Although visible on the CLI, the new keywords are not applicable, because there are no export-controlled or enforced licenses on any of the Cisco Catalyst Wireless Controllers.</p> <ul style="list-style-type: none"> <li>• The existing <b>license smart save usage</b> command was enhanced to include a trust code request in applicable topologies.</li> </ul>

## Usage Guidelines

### Overwriting a Trust Code

Use case for the **force** option when configuring the **license smart trust idtoken** command: You use same token for all the product instances that are part of one Virtual Account. If the product instance has moved

from one account to another (for instance, because it was added to a High Availability set-up, which is part of another Virtual Account), then there may be an existing trust code you have to overwrite.

### Removing Licensing Information

Entering the **license smart factory reset** command removes all licensing information (except the licenses in-use) from the product instance, including any authorization codes, RUM reports etc. Therefore, we recommend the use of this command only if the product instance is being returned (Return Material Authorization, or RMA), or being decommissioned permanently. We also recommend that you send a RUM report to CSSM, before you remove licensing information from the product instance - this is to ensure that CSSM has up-to-date usage information.

### Authorization Codes and License Reservations:

Options relating to authorization codes and license reservations:

- Since there are no export-controlled or enforced licenses on any of the Cisco Catalyst Wireless Controllers, and the notion of reserved licenses is not applicable in the Smart Licensing Using Policy environment, the following commands are not applicable:
  - `{ { license smart authorization request { add | replace | save path } feature_name { all | local } request_count } }`
  - **license smart export return**
- The following option is applicable and required for any SLR authorization codes you may want to return:

```
license smart authorization return { all | local } { offline [ path ] | online }
```

### Examples

- [Example for Saving Licensing Usage Information, on page 109](#)
- [Example for Installing a Trust Code, on page 110](#)
- [Example for Returning an SLR Authorization Code, on page 110](#)

### Example for Saving Licensing Usage Information

The following example shows how you can save license usage information on the product instance. You can use this option to fulfil reporting requirements in an air-gapped network. In the example, the file is first save to flash memory and then copied to a TFTP location:

```
Device> enable
Device# license smart save usage unreported file flash:RUM-unrep.txt
Device# dir
Directory of bootflash:/

33      -rw-                5994   Nov 2 2020 03:58:04 +05:00  RUM-unrep.txt

Device# copy flash:RUM-unrep.txt tftp://192.168.0.1//auto/tftp-user/user01/
Address or name of remote host [192.168.0.1]?
Destination filename [//auto/tftp-user/user01/RUM-unrep.txt]?
!!
15128 bytes copied in 0.161 secs (93963 bytes/sec)
```

After you save RUM reports to a file, you must upload it to CSSM (from a workstation that has connectivity to the internet, and Cisco).

### Example for Installing a Trust Code

The following example shows how to install a trust code even if one is already installed on the product instance. This requires connectivity to CSSM. The accompanying **show license status** output shows sample output after successful installation:

Before you can install a trust code, you must generate a token and download the corresponding file from CSSM.

Use the **show license status** command (Trust Code Installed:) to verify results.

```
Device> enable
Device# license smart trust idtoken
NGMwMjk5mYtNZaxMS00NzMZmtgWm local force
```

```
Device# show license status
<output truncated>
Trust Code Installed:
  Active: PID:C9800-CL-K9,SN:93BBAH93MGS
          INSTALLED on Nov 02 05:19:05 2020 IST
  Standby: PID:C9800-CL-K9,SN:9XECPSUU4XN
           INSTALLED on Nov 02 05:19:05 2020 IST
<output truncated>
```

### Example for Returning an SLR Authorization Code

The following example shows how to remove and return an SLR authorization code. Here the code is returned offline (no connectivity to CSSM). The accompanying **show license all** output shows sample output after successful return:

```
Device> enable
Device# show license all
<output truncated>
License Authorizations
=====
Overall status:
  Active: PID:C9800-CL-K9,SN:93BBAH93MGS
          Status: SPECIFIC INSTALLED on Nov 02 03:16:01 2020 IST
          Last Confirmation code: 102fc949
  Standby: PID:C9800-CL-K9,SN:9XECPSUU4XN
           Status: SPECIFIC INSTALLED on Nov 02 03:15:45 2020 IST
           Last Confirmation code: ad4382fe
<output truncated>

Device# license smart authorization return local offline
Enter this return code in Cisco Smart Software Manager portal:
UDI: PID:C9800-CL-K9,SN:93BBAH93MGS
     Return code: CqaUPW-WSPYiq-ZNU2ci-SnWydS-hBCXHP-MuyPqy-PJ1GiG-tPTGQj-S2h
UDI: PID:C9800-CL-K9,SN:9XECPSUU4XN
     Return code: CNLwxR-eWiAEJ-XaTEQg-j4rrYW-dSRz9j-37VpcP-imjuLD-mNeA4k-TXA

Device# show license all
<output truncated>
License Authorizations
=====
Overall status:
```

```
Active: PID:C9800-CL-K9,SN:93BBAH93MGS
      Status: NOT INSTALLED
      Last return code: CqaUPW-WSPYiq-ZNU2ci-SnWydS-hBCXHP-MuyPqy-PJ1GiG-tPTGQj-S2h
Standby: PID:C9800-CL-K9,SN:9XECPSUU4XN
      Status: NOT INSTALLED
      Last return code: CNLwxR-eWiAEJ-XaTEQg-j4rrYW-dSRz9j-37VpcP-imjuLD-mNeA4k-TXA
<output truncated>
```

If you choose the **offline** option, you must complete the additional step of copying the return code from the CLI or the saved file and entering it in CSSM.

# line vty

To identify a specific line for configuration and begin the command in line configuration mode in a virtual terminal for remote console access, use the **line vty** command.

**line vty** *line\_number*

<b>Syntax Description</b>	<i>line_number</i> First line number. Valid values range from 0 to 530.
---------------------------	---

<b>Command Default</b>	None
------------------------	------

<b>Command Modes</b>	Global configuration (config)
----------------------	-------------------------------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

## Examples

The following example shows how to identify a specific line for configuration in a virtual terminal:

```
Device# line vty 10
```



# load

To configure site tag-based load balancing, use the **load** command.

**load** *load*

<b>Syntax Description</b>	<i>load</i> Specifies the estimate of the relative load reserved for the site. Values range between 0 to 1000. The default value 0 means no load recommendation for the site.				
<b>Command Default</b>	None				
<b>Command Modes</b>	Global configuration (config)				
<b>Command History</b>	<table border="1"> <thead> <tr> <th style="border-right: 1px solid black;">Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td style="border-right: 1px solid black;">Cisco IOS XE Dublin 17.10.1</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Cisco IOS XE Dublin 17.10.1	This command was introduced.
Release	Modification				
Cisco IOS XE Dublin 17.10.1	This command was introduced.				

This example shows how to configure site tag-based load balancing:

```
Device# configure terminal
Device(config)# wireless tag site areal
Device(config-site-tag)# load 200
Device(config-site-tag)# end
```

## local-auth ap eap-fast

To configure Flex policy local authentication using EAP Fast method, use the **local-auth ap eap-fast** command.

**local-auth ap eap-fast** *profile-name*

<b>Syntax Description</b>	<i>profile-name</i> Enter eap-fast profile name.				
<b>Command Default</b>	None				
<b>Command Modes</b>	config-wireless-flex-profile				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Cisco IOS XE Gibraltar 16.10.1</td> <td>This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.</td> </tr> </tbody> </table>	Release	Modification	Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.
Release	Modification				
Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.				

### Examples

The following example shows how to configure EAP Fast method authentication on a Flex policy:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# wireless profile flex profile-name
Device(config-wireless-flex-profile)# local-auth ap eap-fast eap-fast-profile-name
```

# local-site

To configure the site as local site, use the **local-site** command.

## local-site

<b>Syntax Description</b>	<b>local-site</b> Configure this site as local site.				
<b>Command Default</b>	None				
<b>Command Modes</b>	config-site-tag				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Cisco IOS XE Gibraltar 16.10.1</td> <td>This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.</td> </tr> </tbody> </table>	Release	Modification	Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.
Release	Modification				
Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.				

## Examples

The following example shows how to set the current site as local site:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# wireless tag site tag-name
Device(config-site-tag)# local-site
```

# location expiry

To configure the location expiry duration, use the **location expiry** command in global configuration mode.

**location expiry** { **calibrating-client** | **client** | **tags** } *timeout-duration*

Syntax Description	
<b>calibrating-client</b>	Timeout value for calibrating clients.
<b>client</b>	Timeout value for clients.
<b>tags</b>	Timeout value for RFID tags.
<i>timeout-duration</i>	Timeout duration, in seconds.

**Command Default** Timeout value is not configured.

**Command Modes** Global configuration (config)

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.10.1	This command was introduced.

## Example

This example shows how to configure the location expiry duration:

```
Device(config)# location expiry tags 50
```

# location notify-threshold

To configure the NMSP notification threshold for RSSI measurements, use the **location notify-threshold** command in global configuration mode. To remove the NMSP notification threshold for RSSI measurements, use the **no** form of this command.

```
location notify-threshold {client | rogue-aps | tags} db
no location notify-threshold {client | rogue-aps | tags}
```

Syntax Description		
<b>client</b>	Specifies the NMSP notification threshold (in dB) for clients and rogue clients.	The valid range for the threshold parameter is 0 to 10 dB, and the default value is 0 dB.
<b>rogue-aps</b>	Specifies the NMSP notification threshold (in dB) for rogue access points.	The valid range for the threshold parameter is 0 to 10 dB, and the default value is 0 dB.
<b>tags</b>	Specifies the NMSP notification threshold (in dB) for RFID tags.	The valid range for the threshold parameter is 0 to 10 dB, and the default value is 0 dB.
<b>db</b>		The valid range for the threshold parameter is 0 to 10 dB, and the default value is 0 dB.

**Command Default** No default behavior or values.

**Command Modes** Global configuration

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.12.1	This command was introduced.

This example shows how to configure the NMSP notification threshold to 10 dB for clients. A notification NMSP message is sent to MSE as soon as the client RSSI changes by 10 dB:

```
Device# configure terminal
Device(config)# location notify-threshold client 10
Device(config)# end
```

# log-export-mode

To configure the log export using FTP, STP and TFTP, use the **log-export-mode** command. Use the **no** command to negate the command or to set the command to its default.

**log-export-mode** { **ftp** | **stp** | **tftp** }

**no log-export-mode** { **ftp** | **stp** | **tftp** }

Syntax Description	
	<b>ftp</b> Configures the log export using FTP.
	<b>stp</b> Configures the log export using STP.
	<b>tftp</b> Configures the log export using TFTP.

<b>Command Default</b>	None
------------------------	------

<b>Command Modes</b>	Wireless trace export profile configuration
----------------------	---

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.12.2s	This command was introduced.

## Example

```
Device(config)# wireless profile transfer trace-export trace-export-name
Device(config-wireless-trace-export-profile)# log-export-mode tftp
```

# login authentication

To configure login authentication parameters, use the **login authentication** command.

**login authentication** *word* **default**

---

## Syntax Description

*word* Authentication list with a name.

**default** Uses the default authentication list.

---



---

## Command Default

None

---

## Command Modes

Line configuration

---

## Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

---



---

## Examples

The following example shows how to configure login authentication :

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# line console 0
Device(config-line)# login authentication NO_LOGIN
```

## login block-for

To configure the login security on the Cisco controller and to set the duration for which the controller has to block further login attempts after a specified number of consecutive failed login attempts within a certain time frame, use the **login block-for** command.

**login block-for** *duration* **attempts** *attempts* **within** *time-frame*

Syntax Description	Parameter	Description
	<i>duration</i>	Specifies the duration in seconds for which the device will block login attempts
	<b>attempts</b>	Number of consecutive failed login attempts
	<i>attempts</i>	Specifies the maximum number of failed attempts
	<b>within</b>	Time frame within which the specified number of consecutive failed login attempts must occur to trigger the blocking
	<i>time-frame</i>	Specifies the time period in seconds

**Command Default** None

**Command Modes** Global Configuration

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

### Examples

The following example shows how to configure the login security on the controller to set the duration of 60 seconds for which the controller has to block further login attempts after 3 unsuccessful login attempts within a period of 10 seconds.:

```
Device# login block-for 60 attempts 3 within 10
```



# mac-filtering

To enable MAC filtering on a WLAN, use the **mac-filtering** command.

**mac-filtering** [*mac-authorization-list* ]

---

## Syntax Description

*mac-authorization-list* Name of the Authorization list.

---



---

## Command Default

None

---

## Command Modes

config-wlan

---

## Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

---

## Examples

The following example shows how to enable MAC filtering on a WLAN:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# wlan wlan-name wlan-index SSID-name
Device(config-wlan)# mac-filtering
```

## mab request format attribute

To configure the delimiter while configuring MAC filtering on a WLAN, use the **mab request format attribute** command in global configuration mode. To disable the delimiter while configuring MAC filtering on a WLAN, use the **no** form of this command.

```
mab request format attribute { 1 groupsize size separator separator [ lowercase | uppercase ] | 2 { 0 | 7 | LINE } LINE password | 32 vlan access-vlan }
```

```
no mab request format attribute { 1 groupsize size separator separator [ lowercase | uppercase ] | 2 { 0 | 7 | LINE } LINE password | 32 vlan access-vlan }
```

Syntax Description		
<b>1</b>		Specifies the username format used for MAB requests.
<b>groupsize</b> <i>size</i>		Specifies the number of hex digits per group. The valid values range from 1 to 12.
<b>separator</b> <i>separator</i>		Specifies how to separate groups. The separators are hyphen (-), colon (:), and full stop (.) For more information about the groupsize and separator, refer to the <a href="#">Overview of the Configurable MAB Username and Password</a> .
<b>lowercase</b>		Specifies the username in lowercase format.
<b>uppercase</b>		Specifies the username in uppercase format.
<b>2</b>		Specifies the global password used for all the MAB requests.
<b>0</b>		Specifies the unencrypted password.
<b>7</b>		Specifies the hidden password.
<b>LINE</b>		Specifies the encrypted or unencrypted password.
<i>password</i>		LINE password.
<b>32</b>		Specifies the NAS-Identifier attribute.
<b>vlan</b>		Specifies a VLAN.
<b>access-vlan</b>		Specifies the configured access VLAN.
<b>Command Default</b>	None	
<b>Command Modes</b>	Global configuration (config)	

---

**Command History**

<b>Release</b>	<b>Modification</b>
Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

---

**Example:**

The following example shows how to configure the delimiter while configuring MAC filtering:

```
Device# configure terminal  
Enter configuration commands, one per line. End with CNTL/Z.  
Device(config)# mab request format attribute 1 groupsize 4 separator -
```

# map-fast-ancestor-find

To configure the MAP fast ancestor find mode in wireless mesh profile, use the **map-fast-ancestor-find** command.

## **map-fast-ancestor-find**

<b>Syntax Description</b>	This command has no keywords or arguments.	
<b>Command Default</b>	None	
<b>Command Modes</b>	Wireless mesh profile configuration (config-wireless-mesh-profile)	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Dublin 17.11.1	This command was introduced.

## **Example**

The following example shows how to configure MAP fast ancestor find mode for a mesh AP profile:

```
Device # configure terminal
Device (config)# wireless profile mesh mesh-profile
Device (config-wireless-mesh-profile)# map-fast-ancestor-find
```

## match (access-map configuration)

To set the VLAN map to match packets against one or more access lists, use the **match** command in access-map configuration mode on the switch stack or on a standalone switch. To remove the match parameters, use the **no** form of this command.

```
match { ip address { name number } [{ name number }] [{ name number }] . . . | ipv6 address
{ name number } [{ name number }] [{ name number }] . . . | mac address { name } [{ name
}] [{ name }] . . . }
no match { ip address { name number } [{ name number }] [{ name number }] . . . | ipv6
address { name number } [{ name number }] [{ name number }] . . . | mac address { name }
[{ name }] [{ name }] . . . }
```

### Syntax Description

<b>ip address</b>	Sets the access map to match packets against an IP address access list.
<b>ipv6 address</b>	Sets the access map to match packets against an IPv6 address access list.
<b>mac address</b>	Sets the access map to match packets against a MAC address access list.
<i>name</i>	Name of the access list to match packets against.
<i>number</i>	Number of the access list to match packets against. This option is not valid for MAC access lists.

### Command Default

The default action is to have no match parameters applied to a VLAN map.

### Command Modes

Access-map configuration

### Command History

Release	Modification
	This command was introduced.

### Usage Guidelines

You enter access-map configuration mode by using the **vlan access-map** global configuration command.

You must enter one access list name or number; others are optional. You can match packets against one or more access lists. Matching any of the lists counts as a match of the entry.

In access-map configuration mode, use the **match** command to define the match conditions for a VLAN map applied to a VLAN. Use the **action** command to set the action that occurs when the packet matches the conditions.

Packets are matched only against access lists of the same protocol type; IP packets are matched against IP access lists, IPv6 packets are matched against IPv6 access lists, and all other packets are matched against MAC access lists.

IP, IPv6, and MAC addresses can be specified for the same map entry.

This example shows how to define and apply a VLAN access map vmap4 to VLANs 5 and 6 that will cause the interface to drop an IP packet if the packet matches the conditions defined in access list al2:

**match (access-map configuration)**

```
Device(config)# vlan access-map vmap4  
Device(config-access-map)# match ip address a12  
Device(config-access-map)# action drop  
Device(config-access-map)# exit  
Device(config)# vlan filter vmap4 vlan-list 5-6
```

You can verify your settings by entering the **show vlan access-map** privileged EXEC command.

## match activated-service-template

To create a condition that evaluates true based on the service template activated on a session, use the **match activated-service-template** command in control class-map filter configuration mode. To create a condition that evaluates true if the service template activated on a session does not match the specified template, use the **no-match activated-service-template** command in control class-map filter configuration mode. To remove the condition, use the **no** form of this command.

**match activated-service-template** *template-name*

**no-match activated-service-template** *template-name*

**no** {**match** | **no-match**} **activated-service-template** *template-name*

<b>Syntax Description</b>	<i>template-name</i> Name of a configured service template as defined by the <b>service-template</b> command.
---------------------------	---

**Command Default** The control class does not contain a condition based on the service template.

**Command Modes** Control class-map filter configuration (config-filter-control-classmap)

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Release 3.2SE	This command was introduced.

**Usage Guidelines** The **match activated-service-template** command configures a match condition in a control class based on the service template applied to a session. A control class can contain multiple conditions, each of which will evaluate as either true or false. The control class defines whether all, any, or none of the conditions must evaluate true for the actions of the control policy to be executed.

The **no-match** form of this command specifies a value that results in an unsuccessful match. All other values of the specified match criterion result in a successful match. For example, if you configure the **no-match activated-service-template SVC\_1** command, all template values except SVC\_1 are accepted as a successful match.

The **class** command associates a control class with a control policy.

### Examples

The following example shows how to configure a control class that evaluates true if the service template named VLAN\_1 is activated on the session:

```
class-map type control subscriber match-all CLASS_1
 match activated-service-template VLAN_1
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>activate</b> (policy-map action)	Activates a control policy or service template on a subscriber session.
	<b>class</b>	Associates a control class with one or more actions in a control policy.
	<b>match service-template</b>	Creates a condition that evaluates true based on an event's service template.

Command	Description
service-template	Defines a template that contains a set of service policy attributes to apply to subscriber sessions.



# match any

To perform a match on any protocol that passes through the device, use the **match any** command.

## match any

---

**Command Default**

None

---

**Command Modes**

config-cmap

---

**Command History**

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

---

## Examples

The following example shows how to match any packet passing through the device:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# class-map cmap-name
Device(config-cmap)# match any
```

## match message-type

To set a message type to match a service list, use the **match message-type** command.

```
match message-type {announcement | any | query}
```

### Syntax Description

<b>announcement</b>	Allows only service advertisements or announcements for the Device.
<b>any</b>	Allows any match type.
<b>query</b>	Allows only a query from the client for a certain Device in the network.

### Command Default

None

### Command Modes

Service list configuration.

### Command History

Release	Modification
Cisco IOS XE Gibraltar 16.12.1	This command was introduced.

### Usage Guidelines

Multiple service maps of the same name with different sequence numbers can be created, and the evaluation of the filters will be ordered on the sequence number. Service lists are an ordered sequence of individual statements, with each one having a permit or deny result. The evaluation of a service list consists of a list scan in a predetermined order, and an evaluation of the criteria of each statement that matches. A list scan is stopped once the first statement match is found and a permit/deny action associated with the statement match is performed. The default action after scanning through the entire list is to deny.



**Note** It is not possible to use the **match** command if you have used the **service-list mdns-sd service-list-name query** command. The **match** command can be used only for the **permit** or **deny** option.

### Example

The following example shows how to set the announcement message type to be matched:

```
Device(config-mdns-sd-sl)# match message-type announcement
```

## match non-client-nrt

To match non-client NRT (non-real-time), use the **match non-client-nrt** command in class-map configuration mode. Use the **no** form of this command to return to the default setting.

**match non-client-nrt**  
**no match non-client-nrt**

<b>Syntax Description</b>	This command has no arguments or keywords.				
<b>Command Default</b>	None				
<b>Command Modes</b>	Class-map				
<b>Command History</b>	<table><thead><tr><th>Release</th><th>Modification</th></tr></thead><tbody><tr><td>Cisco IOS XE Gibraltar 16.12.1</td><td>This command was introduced.</td></tr></tbody></table>	Release	Modification	Cisco IOS XE Gibraltar 16.12.1	This command was introduced.
Release	Modification				
Cisco IOS XE Gibraltar 16.12.1	This command was introduced.				
<b>Usage Guidelines</b>	None				

This example show how you can configure non-client NRT:

```
Device(config)# class-map test_1000
Device(config-cmap)# match non-client-nrt
```

# match protocol

To configure the match criterion for a class map on the basis of a specified protocol, use the **match protocol** command in class-map configuration or policy inline configuration mode. To remove the protocol-based match criterion from the class map, use the **no** form of this command. For more information about the **match protocol** command, refer to the *Cisco IOS Quality of Service Solutions Command Reference*.

**match protocol** {*protocol-name* | **attribute category** *category-name* | **attribute sub-category** *sub-category-name* | **attribute application-group** *application-group-name*}

## Syntax Description

<i>protocol-name</i>	Name of the protocol (for example, bgp) used as a matching criterion.
<i>category-name</i>	Name of the application category used as a matching criterion.
<i>sub-category-name</i>	Name of the application subcategory used as a matching criterion.
<i>application-group-name</i>	Name of the application group as a matching criterion. When the application name is specified, the application is configured as the match criterion instead of the application group.

## Command Default

No match criterion is configured.

## Command Modes

Class-map configuration

## Command History

Release	Modification
Cisco IOS XE Gibraltar 16.12.1	This command was introduced.

This example shows how to create class maps with apply match protocol filters for application name, category, and sub category:

```
Device# configure terminal
Device(config)# class-map cat-browsing
Device(config-cmap)# match protocol attribute category browsing
Device(config-cmap)#end

Device# configure terminal
Device(config)# class-map cat-fileshare
Device(config-cmap)# match protocol attribute category file-sharing
Device(config-cmap)#end

Device# configure terminal
Device(config)# class-map match-any subcat-terminal
Device(config-cmap)# match protocol attribute sub-category terminal
Device(config-cmap)#end

Device# configure terminal
Device(config)# class-map match-any webex-meeting
Device(config-cmap)# match protocol webex-meeting
Device(config-cmap)#end
```

This example shows how to create policy maps and define existing class maps for upstream QoS:

```
Device# configure terminal
Device(config)# policy-map test-avc-up
Device(config-pmap)# class cat-browsing
Device(config-pmap-c)# police 150000
Device(config-pmap-c)# set dscp 12
Device(config-pmap-c)#end
```

```
Device# configure terminal
Device(config)# policy-map test-avc-up
Device(config-pmap)# class cat-fileshare
Device(config-pmap-c)# police 1000000
Device(config-pmap-c)# set dscp 20
Device(config-pmap-c)#end
```

```
Device# configure terminal
Device(config)# policy-map test-avc-up
Device(config-pmap)# class subcat-terminal
Device(config-pmap-c)# police 120000
Device(config-pmap-c)# set dscp 15
Device(config-pmap-c)#end
```

```
Device# configure terminal
Device(config)# policy-map test-avc-up
Device(config-pmap)# class webex-meeting
Device(config-pmap-c)# police 50000000
Device(config-pmap-c)# set dscp 21
Device(config-pmap-c)#end
```

This example shows how to create policy maps and define existing class maps for downstream QoS:

```
Device# configure terminal
Device(config)# policy-map test-avc-down
Device(config-pmap)# class cat-browsing
Device(config-pmap-c)# police 200000
Device(config-pmap-c)# set dscp 10
Device(config-pmap-c)#end
```

```
Device# configure terminal
Device(config)# policy-map test-avc-up
Device(config-pmap)# class cat-fileshare
Device(config-pmap-c)# police 300000
Device(config-pmap-c)# set wlan user-priority 2
Device(config-pmap-c)# set dscp 20
Device(config-pmap-c)#end
```

```
Device# configure terminal
Device(config)# policy-map test-avc-up
Device(config-pmap)# class subcat-terminal
Device(config-pmap-c)# police 100000
Device(config-pmap-c)# set dscp 25
Device(config-pmap-c)#end
```

```
Device# configure terminal
Device(config)# policy-map test-avc-up
Device(config-pmap)# class webex-meeting
Device(config-pmap-c)# police 60000000
```

```
Device(config-pmap-c) # set dscp 41
Device(config-pmap-c) #end
```

This example shows how to apply defined QoS policy on a WLAN:

```
Device# configure terminal
Device(config) #wlan alpha
Device(config-wlan) #shut
Device(config-wlan) #end
Device(config-wlan) #service-policy client input test-avc-up
Device(config-wlan) #service-policy client output test-avc-down
Device(config-wlan) #no shut
Device(config-wlan) #end
```

## match service-instance

To set a service instance to match a service list, use the **match service-instance** command.

**match service-instance** *line*

<b>Syntax Description</b>	<i>line</i> Regular expression to match the service instance in packets.				
<b>Command Default</b>	None				
<b>Command Modes</b>	Service list configuration				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Cisco IOS XE Gibraltar 16.12.1</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Cisco IOS XE Gibraltar 16.12.1	This command was introduced.
Release	Modification				
Cisco IOS XE Gibraltar 16.12.1	This command was introduced.				
<b>Usage Guidelines</b>	It is not possible to use the <b>match</b> command if you have used the <b>service-list mdns-sd service-list-name query</b> command. The <b>match</b> command can be used only for the <b>permit</b> or <b>deny</b> option.				

### Example

The following example shows how to set the service instance to match:

```
Device(config-mdns-sd-sl)# match service-instance servInst 1
```

## match service-type

To set the value of the mDNS service type string to match, use the **match service-type** command.

**match service-type** *line*

<b>Syntax Description</b>	<i>line</i> Regular expression to match the service type in packets.
---------------------------	--

<b>Command Default</b>	None
------------------------	------

<b>Command Modes</b>	Service list configuration
----------------------	----------------------------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.12.1	This command was introduced.

<b>Usage Guidelines</b>	It is not possible to use the <b>match</b> command if you have used the <b>service-list mdns-sd</b> <i>service-list-name</i> <b>query</b> command. The <b>match</b> command can be used only for the <b>permit</b> or <b>deny</b> option.
-------------------------	---

### Example

The following example shows how to set the value of the mDNS service type string to match:

```
Device(config-mdns-sd-sl)# match service-type _ipp._tcp
```



# match user-role

To configure the class-map attribute filter criteria, use the **match user-role** command.

**match user-role** *user-role*

---

## Command Default

None

---

## Command Modes

config-filter-control-classmap

---

## Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

## Examples

The following example shows how to configure a class-map attribute filter criteria:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# class-map type control subscriber match-any map-name
Device(config-filter-control-classmap)# match user-role user-role
```

## match username

To create a condition that evaluates true based on an event's username, use the **match username** command in control class-map filter configuration mode. To create a condition that evaluates true if an event's username does not match the specified username, use the **no-match username** command in control class-map filter configuration mode. To remove the condition, use the **no** form of this command.

**match username** *username*  
**no-match username** *username*  
**no** {**match** | **no-match**} **username** *username*

### Syntax Description

<i>username</i>	Username.
-----------------	-----------

### Command Default

The control class does not contain a condition based on the event's username.

### Command Modes

Control class-map filter configuration (config-filter-control-classmap)

### Command History

Release	Modification
Cisco IOS XE Release 3.2SE	This command was introduced.

### Usage Guidelines

The **match username** command configures a match condition in a control class based on the username. A control class can contain multiple conditions, each of which will evaluate as either true or false. The control class defines whether all, any, or none of the conditions must evaluate true to execute the actions of the control policy.

The **no-match** form of this command specifies a value that results in an unsuccessful match. All other values of the specified match criterion result in a successful match. For example, if you configure the **no-match username josmithe** command, the control class accepts any username value except josmithe as a successful match.

The **class** command associates a control class with a control policy.

### Examples

The following example shows how to configure a control class that evaluates true if the username is josmithe:

```
class-map type control subscriber match-all CLASS_1
 match username josmithe
```

### Related Commands

Command	Description
<b>class</b>	Associates a control class with one or more actions in a control policy.
<b>policy-map type control subscriber</b>	Defines a control policy for subscriber sessions

## match (access-map configuration)

To set the VLAN map to match packets against one or more access lists, use the **match** command in access-map configuration mode. Use the **no** form of this command to remove the match parameters.

```
{match ip address {namenumber} [{namenumber}] [{namenumber}]... | mac address name [name]
[name]... }
{no match ip address {namenumber} [{namenumber}] [{namenumber}]... | mac address name
[name] [name]... }
```

### Syntax Description

<b>ip address</b>	Set the access map to match packets against an IP address access list.
<b>mac address</b>	Set the access map to match packets against a MAC address access list.
<b>name</b>	Name of the access list to match packets against.
<b>number</b>	Number of the access list to match packets against. This option is not valid for MAC access lists.

### Command Default

The default action is to have no match parameters applied to a VLAN map.

### Command Modes

Access-map configuration

### Command History

Release	Modification
Cisco IOS XE Gibraltar 16.12.1	This command was introduced.

### Usage Guidelines

You enter access-map configuration mode by using the **vlan access-map** global configuration command.

You must enter one access list name or number; others are optional. You can match packets against one or more access lists. Matching any of the lists counts as a match of the entry.

In access-map configuration mode, use the **match** command to define the match conditions for a VLAN map applied to a VLAN. Use the **action** command to set the action that occurs when the packet matches the conditions.

Packets are matched only against access lists of the same protocol type; IP packets are matched against IP access lists, and all other packets are matched against MAC access lists.

Both IP and MAC addresses can be specified for the same map entry.

### Examples

This example shows how to define and apply a VLAN access map *vmap4* to VLANs 5 and 6 that will cause the interface to drop an IP packet if the packet matches the conditions defined in access list *al2*.

```
Device(config)# vlan access-map vmap4
Device(config-access-map)# match ip address al2
Device(config-access-map)# action drop
Device(config-access-map)# exit
```

```
Device(config)# vlan filter vmap4 vlan-list 5-6
```

You can verify your settings by entering the **show vlan access-map** privileged EXEC command.

## match (class-map configuration)

To define the match criteria to classify traffic, use the **match** command in class-map configuration mode. Use the **no** form of this command to remove the match criteria.

### Cisco IOS XE Everest 16.5.x and Earlier Releases

```
match {access-group {name acl-name acl-index} | class-map class-map-name | cos cos-value | dscp
dscp-value | [ip] dscp dscp-list | [ip] precedence ip-precedence-list | precedence
precedence-value1...value4 | qos-group qos-group-value | vlan vlan-id}
no match {access-group {name acl-name acl-index} | class-map class-map-name | cos cos-value | dscp
dscp-value | [ip] dscp dscp-list | [ip] precedence ip-precedence-list | precedence
precedence-value1...value4 | qos-group qos-group-value | vlan vlan-id}
```

### Cisco IOS XE Everest 16.6.x and Later Releases

```
match {access-group {name acl-name acl-index} | cos cos-value | dscp dscp-value | [ip] dscp dscp-list
| [ip] precedence ip-precedence-list | mpls experimental-value | non-client-nrt | precedence
precedence-value1...value4 | protocol protocol-name | qos-group qos-group-value | vlan vlan-id | wlan
wlan-id}
no match {access-group {name acl-name acl-index} | cos cos-value | dscp dscp-value | [ip] dscp
dscp-list | [ip] precedence ip-precedence-list | mpls experimental-value | non-client-nrt | precedence
precedence-value1...value4 | protocol protocol-name | qos-group qos-group-value | vlan vlan-id | wlan
wlan-id}
```

Syntax Description		
<b>access-group</b>		Specifies an access group.
<b>name</b> <i>acl-name</i>		Specifies the name of an IP standard or extended access control list (ACL) or MAC ACL.
<i>acl-index</i>		Specifies the number of an IP standard or extended access control list (ACL) or MAC ACL. For an IP standard ACL, the ACL index range is 1 to 99 and 1300 to 1999. For an IP extended ACL, the ACL index range is 100 to 199 and 2000 to 2699.
<b>class-map</b> <i>class-map-name</i>		Uses a traffic class as a classification policy and specifies a traffic class name to use as the match criterion.
<b>cos</b> <i>cos-value</i>		Matches a packet on the basis of a Layer 2 class of service (CoS)/Inter-Switch Link (ISL) marking. The cos-value is from 0 to 7. You can specify up to four CoS values in one <b>match cos</b> statement, separated by a space.
<b>dscp</b> <i>dscp-value</i>		Specifies the parameters for each DSCP value. You can specify a value in the range 0 to 63 specifying the differentiated services code point value.

<b>ip dscp</b> <i>dscp-list</i>	Specifies a list of up to eight IP Differentiated Services Code Point (DSCP) values to match against incoming packets. Separate each value with a space. The range is 0 to 63. You also can enter a mnemonic name for a commonly used value.
<b>ip precedence</b> <i>ip-precedence-list</i>	Specifies a list of up to eight IP-precedence values to match against incoming packets. Separate each value with a space. The range is 0 to 7. You also can enter a mnemonic name for a commonly used value.
<b>precedence</b> <i>precedence-value1...value4</i>	Assigns an IP precedence value to the classified traffic. The range is 0 to 7. You also can enter a mnemonic name for a commonly used value.
<b>qos-group</b> <i>qos-group-value</i>	Identifies a specific QoS group value as a match criterion. The range is 0 to 31.
<b>vlan</b> <i>vlan-id</i>	Identifies a specific VLAN as a match criterion. The range is 1 to 4094.
<b>mpls</b> <i>experimental-value</i>	Specifies Multi Protocol Label Switching specific values.
<b>non-client-nrt</b>	Matches a non-client NRT (non-real-time).
<b>protocol</b> <i>protocol-name</i>	Specifies the type of protocol.
<b>wlan</b> <i>wlan-id</i>	Identifies 802.11 specific values.

**Command Default** No match criteria are defined.

**Command Modes** Class-map configuration

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.12.1	This command was introduced

**Usage Guidelines** The **match** command is used to specify which fields in the incoming packets are examined to classify the packets. Only the IP access group or the MAC access group matching to the Ether Type/Len are supported. If you enter the **class-map match-any** *class-map-name* global configuration command, you can enter the following **match** commands:

- **match access-group** *name acl-name*



**Note** The ACL must be an extended named ACL.

- **match ip dscp** *dscp-list*
- **match ip precedence** *ip-precedence-list*

The **match access-group** *acl-index* command is not supported.

To define packet classification on a physical-port basis, only one **match** command per class map is supported. In this situation, the **match-any** keyword is equivalent.

For the **match ip dscp** *dscp-list* or the **match ip precedence** *ip-precedence-list* command, you can enter a mnemonic name for a commonly used value. For example, you can enter the **match ip dscp af11** command, which is the same as entering the **match ip dscp 10** command. You can enter the **match ip precedence critical** command, which is the same as entering the **match ip precedence 5** command. For a list of supported mnemonics, enter the **match ip dscp ?** or the **match ip precedence ?** command to see the command-line help strings.

Use the **input-interface** *interface-id-list* keyword when you are configuring an interface-level class map in a hierarchical policy map. For the *interface-id-list*, you can specify up to six entries.

## Examples

This example shows how to create a class map called class2, which matches all the incoming traffic with DSCP values of 10, 11, and 12:

```
Device(config)# class-map class2
Device(config-cmap)# match ip dscp 10 11 12
Device(config-cmap)# exit
```

This example shows how to create a class map called class3, which matches all the incoming traffic with IP-precedence values of 5, 6, and 7:

```
Device(config)# class-map class3
Device(config-cmap)# match ip precedence 5 6 7
Device(config-cmap)# exit
```

This example shows how to delete the IP-precedence match criteria and to classify traffic using acl1:

```
Device(config)# class-map class2
Device(config-cmap)# match ip precedence 5 6 7
Device(config-cmap)# no match ip precedence
Device(config-cmap)# match access-group acl1
Device(config-cmap)# exit
```

This example shows how to specify a list of physical ports to which an interface-level class map in a hierarchical policy map applies:

```
Device(config)# class-map match-any class4
Device(config-cmap)# match cos 4
Device(config-cmap)# exit
```

This example shows how to specify a range of physical ports to which an interface-level class map in a hierarchical policy map applies:

```
Device(config)# class-map match-any class4
Device(config-cmap)# match cos 4
Device(config-cmap)# exit
```

You can verify your settings by entering the **show class-map** privileged EXEC command.

## match wlan user-priority

To match 802.11 specific values, use the **match wlan user-priority** command in class-map configuration mode. Use the **no** form of this command to return to the default setting.

```
match wlan user-priority wlan-value [wlan-value] [wlan-value] [wlan-value]
no match wlan user-priority wlan-value [wlan-value] [wlan-value] [wlan-value]
```

<b>Syntax Description</b>	<i>wlan-value</i> The 802.11-specific values. Enter the user priority 802.11 TID user priority (0-7). (Optional) Enter up to three user priority values separated by white-spaces.				
<b>Command Default</b>	None				
<b>Command Modes</b>	Class-map configuration (config-cmap)				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Cisco IOS XE Gibraltar 16.12.1</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Cisco IOS XE Gibraltar 16.12.1	This command was introduced.
Release	Modification				
Cisco IOS XE Gibraltar 16.12.1	This command was introduced.				
<b>Usage Guidelines</b>	None				

This example show how you can configure user-priority values:

```
Device(config)# class-map test_1000
Device(config-cmap)# match wlan user-priority 7
```



# max-bandwidth

To configure the wireless media-stream's maximum expected stream bandwidth in Kbps, use the **max-bandwidth** command.

**max-bandwidth** *bandwidth*

<b>Syntax Description</b>	<i>bandwidth</i> Maximum Expected Stream Bandwidth in Kbps. Valid range is 1 to 35000 Kbps.	
<b>Command Default</b>	None	
<b>Command Modes</b>	media-stream	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

## Examples

The following example shows how to configure wireless media-stream bandwidth in Kbps:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# wireless media-stream group doc-grp 224.0.0.0 224.0.0.223
Device(config-media-stream)# max-bandwidth 3500
```

# max-through

To limit multicast router advertisements (RAs) per VLAN per throttle period, use the **max-through** command in IPv6 RA throttle policy configuration mode. To reset the command to its defaults, use the **no** form of this command.

**max-through** {*mt-value* | **inherit** | **no-limit**}

## Syntax Description

*mt-value* Number of multicast RAs allowed on the VLAN before throttling occurs. The range is from 0 through 256.

**inherit** Merges the setting between target policies.

**no-limit** Multicast RAs are not limited on the VLAN.

## Command Default

10 RAs per VLAN per 10 minutes

## Command Modes

IPv6 RA throttle policy configuration (config-nd-ra-throttle)

## Command History

Release	Modification
Cisco IOS XE Release 3.2XE	This command was introduced.

## Usage Guidelines

The **max-through** command limits the amount of multicast RAs that are passed through to the VLAN per throttle period. This command can be configured only on a VLAN.

## Example

```
Device(config)# ipv6 nd ra-throttle policy policy1
Device(config-nd-ra-throttle)# max-through 25
```

# mdns-sd

To configure the mDNS service discovery gateway, use the **mdns-sd** command. To disable the configuration, use the **no** form of this command.

```
mdns-sd { gateway | service-definition service-definition-name | service-list service-list-name { IN | OUT } | service-policy service-policy-name }
```

```
no mdns-sd { gateway | service-definition service-definition-name | service-list service-list-name { IN | OUT } | service-policy service-policy-name }
```

Syntax Description	mdns-sd	Configures the mDNS service discovery gateway.
	<b>gateway</b>	Configures mDNS gateway.
	<b>service-definition</b>	Configures mDNS service definition.
	<i>service-definition-name</i>	Specifies the mDNS service definition name.
	<b>service-list</b>	Configures mDNS service list.
	<i>service-list-name</i>	Specifies the mDNS service definition name.
	<b>IN</b>	Specifies the inbound filtering.
	<b>OUT</b>	Specifies the outbound filtering.
	<b>service-policy</b>	Configures mDNS service policy.
	<i>service-policy-name</i>	Specifies the mDNS service policy name.

**Command Default** None

**Command Modes** Global configuration

Command History	Release	Modification
	Cisco IOS XE Amsterdam 17.3.1	This command was introduced.

**Usage Guidelines** None

## Example

The following example shows how to configure the mDNS service discovery gateway:

```
Device(config)# mdns-sd gateway
```

## mdns-sd-interface

To configure the mDNS service discovery per WLAN, use the **mdns-sd-interface** command. To disable the command, use the **no** form of this command.

```
mdns-sd-interface { drop | gateway }
```

```
no mdns-sd-interface { drop | gateway }
```

Syntax Description	
<b>mdns-sd-interface</b>	Configures the mDNS service discovery per WLAN
<b>drop</b>	Disables mDNS gateway and bridging for WLAN.
<b>gateway</b>	Enables mDNS gateway for WLAN.

**Command Default** None

**Command Modes** WLAN configuration

Command History	Release	Modification
	Cisco IOS XE Amsterdam 17.3.1	This command was introduced.

**Usage Guidelines** None

### Example

The following example shows how to configure the mDNS service discovery per WLAN:

```
Device(config-wlan)# mdns-sd-interface gateway
```

# mdns-sd flex-profile

To configure the mDNS service discovery flex profile, use the **mdns-sd flex-profile** command. To disable the command, use the **no** form of this command.

**mdns-sd flex-profile** *flex-profile-name*

**no mdns-sd flex-profile** *flex-profile-name*

<b>Syntax Description</b>	<b>mdns-sd flex-profile</b>	Configures the mDNS service discovery flex profile.
	<i>flex-profile-name</i>	Specifies the mDNS flex profile name.

**Command Default** None

**Command Modes** Global configuration

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Amsterdam 17.3.1	This command was introduced.

**Usage Guidelines** None

## Example

The following example shows how to configure the mDNS service discovery flex profile:

```
Device(config)# mdns-sd flex-profile mdns-flex-profile
```

# mdns-sd profile

To apply the mDNS flex profile to the wireless flex profile, use the **mdns-sd profile** command in the wireless flex profile mode. To disable the command, use the **no** form of this command.

**mdns-sd profile** *flex-profile-name*

**no mdns-sd profile** *flex-profile-name*

<b>Syntax Description</b>	<b>mdns-sd profile</b>	Configures the mDNS flex profile in the wireless flex profile.
	<i>flex-profile-name</i>	Specifies the mDNS flex profile name.

**Command Default** None

**Command Modes** Wireless flex profile configuration

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Amsterdam 17.3.1	This command was introduced.

**Usage Guidelines** None

## Example

The following example shows how to apply the mDNS flex profile to the wireless flex profile:

```
Device(config-wireless-flex-profile)# mdns-sd profile mdns-flex-profile
```

## method fast

To configure EAP profile to support EAP-FAST method, use the **method fast** command.

**method fast** [**profile** *profile-name*]

---

### Syntax Description

*profile-name* Specify the method profile.

---



---

### Command Default

None

---

### Command Modes

config-eap-profile

---

### Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

---

### Examples

The following example shows how to enable EAP Fast method on a EAP profile:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# eap profile profile-name
Device(config-eap-profile)# method fast
```

## mgmtuser username

To set a username and password for AP management, use the **mgmtuser username** command. To disable this feature, use the **no** form of this command.

**mgmtuser username** *username* **password** {0 | 8} *password*

Syntax Description	
	<i>username</i> Enter a username for AP management.
	0 Specifies an UNENCRYPTED password.
	8 Specifies an AES encrypted password.
	<i>password</i> Configures the encryption password (key).

**Command Default** None

**Command Modes** AP Profile Configuration (config-ap-profile)

Command History	Release	Modification
	Cisco IOS XE Gibraltar 17.6.1	This command was introduced.

### Examples

The following example shows how to set a username and password for AP management:

```
Device# enable
Device# configure terminal
Device(config)# ap profile default-ap-profile
Device(config-ap-profile)# mgmtuser username myusername password 0
Device(config-ap-profile)# end
```



## monitor capture (access list/class map)

To configure a monitor capture specifying an access list or a class map as the core filter for the packet capture, use the **monitor capture** command in privileged EXEC mode. To disable the monitor capture with the specified access list or class map as the core filter, use the **no** form of this command.

```
monitor capture capture-name { access-list access-list-name | class-map class-map-name
}
no monitor capture capture-name { access-list access-list-name | class-map
class-map-name }
```

Syntax Description		
<i>capture-name</i>		The name of the capture.
<b>access-list</b> <i>access-list-name</i>		Configures an access list with the specified name.
<b>class-map</b> <i>class-map-name</i>		Configures a class map with the specified name.

**Command Default** A monitor capture with the specified access list or a class map as the core filter for the packet capture is not configured.

**Command Modes** Privileged EXEC (#)

Command History	Release	Modification
	Cisco IOS XE Release 3.7S	This command was introduced.

**Usage Guidelines** Configure the access list using the **ip access-list** command or the class map using the **class-map** command before using the **monitor capture** command. You can specify a class map, or an access list, or an explicit inline filter as the core filter. If you have already specified the filter when you entered the **monitor capture match** command, the command replaces the existing filter.

### Examples

The following example shows how to define a core system filter using an existing access control list:

```
Device> enable
Device# configure terminal
Device(config)# ip access-list standard acl1
Device(config-std-nacl)# permit any
Device(config-std-nacl)# exit
Device(config)# exit
Device# monitor capture mycap access-list acl1
Device# end
```

The following example shows how to define a core system filter using an existing class map:

```
Device> enable
Device# configure terminal
Device(config)# ip access-list standard acl1
Device(config-std-nacl)# permit any
Device(config-std-nacl)# exit
Device(config)# class-map match-all cmap
Device(config-cmap)# match access-group name acl
Device(config-cmap)# exit
```

## monitor capture (access list/class map)

```
Device(config)# exit  
Device# monitor capture mycap class-map classmap1  
Device# end
```

# monitor capture export

To store captured packets in a file, use the **monitor capture export** command in privileged EXEC mode.

**monitor capture** *capture-name* **export** *filelocation / file-name*

Syntax Description		
<i>capture-name</i>	Name of the capture.	
<b>export</b>	Stores all the packets in capture buffer to a file of type .PCAP.	
<i>file-location/file-name</i>	Destination file location and name.	

**Command Default** The captured packets are not stored.

**Command Modes** Privileged EXEC (#)

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.12.1	This command was introduced.

**Usage Guidelines** Use the **monitor capture export** command only when the storage destination is a capture buffer. The file may be stored either remotely or locally. Use this command either during capture or after the packet capture has stopped. The packet capture could have stopped because one or more end conditions has been met or you entered the **monitor capture stop** command.

## Examples

The following example shows how to export capture buffer contents:

```
Device> enable
Device# monitor capture mycap export tftp://10.1.88.9/mycap.pcap
Device# end
```

## monitor capture (interface/control plane)

To configure monitor capture specifying an attachment point and the packet flow direction, use the **monitor capture** command in privileged EXEC mode. To disable the monitor capture with the specified attachment point and the packet flow direction, use the **no** form of this command.

```
monitor capture capture-name { interface type number | control-plane } { in | out | both }
no monitor capture capture-name { interface type number | control-plane } { in | out | both }
}
```

### Syntax Description

<i>capture-name</i>	Name of the capture.
<b>interface</b> <i>type number</i>	Configures an interface with the specified type and number as an attachment point.
<b>control-plane</b>	Configures a control plane as an attachment point.
<b>in</b>	Specifies the inbound traffic direction.
<b>out</b>	Specifies the outbound traffic direction.
<b>both</b>	Specifies both inbound and outbound traffic directions.

### Command Default

The monitor packet capture filter specifying is not configured.

### Command Modes

Privileged EXEC (#)

### Command History

Release	Modification
Cisco IOS XE Gibraltar 16.12.1	This command was introduced.

### Usage Guidelines

Repeat the **monitor capture** command as many times as required to add multiple attachment points.

### Examples

The following example shows how to add an attachment point to an interface:

```
Device> enable
Device# monitor capture mycap interface GigabitEthernet 0/0/1 in
Device# end
```

The following example shows how to add an attachment point to a control plane:

```
Device> enable
Device# monitor capture mycap control-plane out
Device# end
```

# monitor capture limit

To configure capture limits, use the **monitor capture limit** command in privileged EXEC mode. To remove the capture limits, use the **no** form of this command.

```

monitor capture capture-name limit [ duration seconds ] [ every number ] [
packet-length size ] [ packets number ] [ pps number ]
no monitor capture name limit [ duration ] [ every ] [ packet-length ] [ packets ]
[ pps ]

```

## Syntax Description

<i>capture-name</i>	Name of the packet capture.
<b>duration</b> <i>seconds</i>	(Optional) Specifies the duration of the capture, in seconds. The range is from 1 to 1000000.
<b>every</b> <i>number</i>	(Optional) Specifies that, in a series of packets, the packet whose numerical order is denoted by the <i>number</i> argument should be captured. The range is from 2 to 100000.
<b>packet-length</b> <i>bytes</i>	(Optional) Specifies the packet length, in bytes. If the actual packet is longer than the specified length, only the first set of bytes whose number is denoted by the <i>bytes</i> argument is stored.
<b>packets</b> <i>packets-number</i>	(Optional) Specifies the number of packets to be processed for capture.
<b>pps</b> <i>pps-number</i>	(Optional) Specifies the number of packets to be captured per second. The range is from 1 to 1000000.

## Command Default

No capture limits are configured.

## Command Modes

Privileged EXEC (#)

## Command History

Release	Modification
Cisco IOS XE Gibraltar 16.12.1	This command was introduced.

## Usage Guidelines

If no duration is specified, the capture does not stop until it is manually interrupted. The entire packet is processed if the **packet-length** *bytes* keyword-argument pair is not specified. All matched packets are captured, if the **every** *number* keyword-argument pair is not specified. All matched packets are captured if the **packets** *packets-number* keyword-argument pair is not specified. The incoming packets are captured at the rate of 1 million packets per second if the **pps** *number* keyword-argument pair is not specified.

## Examples

The following example shows how to specify capture limits:

```

Device> enable
Device# monitor capture mycap limit duration 10
Device# monitor capture mycap limit packet-length 128
Device# monitor capture mycap limit packets 100
Device# monitor capture mycap limit pps 1000

```

```
Device# monitor capture mycap limit duration 10 packet-length 128 packets 100  
Device# end
```

## monitor capture match

To define an explicit inline core filter, use the **monitor capture match** command in privileged EXEC mode. To remove this filter, use the **no** form of this command.

```

monitor capture capture-name match
{ any | { ipv4 | ipv6 } { source-prefix/length | any | host } source-ip-address { {
destination-prefix/length | any | host } destination-ip-address } | protocol { tcp | udp } { {
source-prefix/length | any | host } { { destination-prefix/length | any | host } | [ { eq | gt | lt |
neg } ] port-number } | range start-port-number end-port-number | [ { eq | gt | lt | neg } ]
port-number | range start-port-number end-port-number } } | mac { source-mac-address
| { any | host } source-mac-address } source-mac-address-mask { destination-mac-address |
{ any | host } destination-mac-address } destination-mac-address-mask }
no monitor capture capture-name match

```

### Syntax Description

<i>epc-capture-name</i>	Name of the capture.
<b>any</b>	Specifies all packets.
<b>ipv4</b>	Specifies IPv4 packets.
<b>ipv6</b>	Specifies IPv6 packets.
<i>source-prefix/length</i>	The network prefix and length of the IPv4 or IPv6 source address.
<b>any</b>	Specifies network prefix of any source IPv4 or IPv6 address.
<b>host</b>	Specifies the source host.
<i>source-ip-address</i>	Source IPv4 or IPv6 address.
<i>destination-prefix/length</i>	Destination IPv4 or IPv6 address.
<b>any</b>	Specifies the network prefix and length of any IPv4 or IPv6 destination address.
<b>host</b>	Specifies the destination host.
<i>destination-ip-address</i>	Destination IPv4 or IPv6 address.
<b>protocol</b>	Specifies the protocol.
<b>tcp</b>	Specifies the TCP protocol.
<b>udp</b>	Specifies the UDP protocol.
<b>eq</b>	(Optional) Specifies that only packets with a port number that is equal to the port number associated with the IP address are matched.

<b>gt</b>	(Optional) Specifies that only packets with a port number that is greater than the port number associated with the IP address are matched.
<b>lt</b>	(Optional) Specifies that only packets with a port number that is lower than the port number associated with the IP address are matched.
<b>neq</b>	(Optional) Specifies that only packets with a port number that is not equal to the port number associated with the IP address are matched.
<i>port-number</i>	(Optional) The port number associated with the IP address. The range is from 0 to 65535.
<b>range</b>	(Optional) Specifies the range of port numbers.
<i>start-port-number</i>	(Optional) The start of the range of port numbers. The range is from 0 to 65535.
<i>end-port-number</i>	(Optional) The end of the range of port numbers. The range is from 0 to 65535.
<b>mac</b>	Specifies a Layer 2 packet.
<i>source-mac-address</i>	The source MAC address.
<b>any</b>	Specifies the network prefix of any source MAC address.
<b>host</b>	Specifies the MAC source host.
<i>source-mac-address-mask</i>	The source MAC address mask.
<i>destination-mac-address</i>	The destination MAC address.
<b>any</b>	Specifies the network prefix of any destination MAC address.
<b>host</b>	Specifies the MAC source host.
<i>destination-mac-address-mask</i>	The destination MAC address mask.

**Command Modes** Privileged EXEC (#)

**Command History**

Release	Modification
Cisco IOS XE Gibraltar 17.12.1	This command was introduced.

**Usage Guidelines**

Use the **monitor capture** command to specify the core filter as a class map, access list, or explicit inline filter. Any filter has already specified before you enter the **monitor capture match** command is replaced.



## Examples

The following example shows how to set various explicit filters:

```
Device> enable
Device# monitor capture mycap match any
Device# monitor capture mycap match mac any any
Device# monitor capture mycap match ipv4 any any
Device# monitor capture mycap match ipv4 protocol udp 198.51.100.0/24 eq 20001 any
Device# end
```

The following example shows how to set a filter for MAC addresses:

```
Device> enable
Device# monitor capture match mycap mac 0030.9629.9f84 0000.0000.0000 0030.7524.9f84
0000.0000.0000
Device# end
```

The following example shows how to set a filter for IPv4 traffic:

```
Device> enable
Device# monitor capture match mycap ipv4 198.51.100.0/24 198.51.100.1 203.0.113.0/24
203.0.113.254
Device# end
```

## monitor capture start

To start the capture of packet data at a traffic trace point into a buffer, use the **monitor capture start** command in privileged EXEC mode.

**monitor capture** *epc-capture-name* **start**

<b>Syntax Description</b>	<i>epc-capture-name</i>	Name of the capture.
---------------------------	-------------------------	----------------------

**Command Default** Data packets are not captured into a buffer.

**Command Modes** Privileged EXEC (#)

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.12.1	This command was introduced.

**Usage Guidelines** Use the **monitor capture start** command to enable the packet data capture after the capture point is defined. To stop the capture of packet data, use the **monitor capture stop** command.

Ensure that system resources such as CPU and memory are available before starting a capture.

### Examples

The following example shows how to start capture buffer contents:

```
Device> enable
Device# monitor capture mycap start
Device# monitor capture mycap export tftp://10.1.88.9/mycap.pcap
Device# monitor capture mycap limit packets 100 duration 60
Device# monitor capture mycap start
Device# end
```

# monitor capture stop

To stop the capture of packet data at a traffic trace point, use the **monitor capture stop** command in privileged EXEC mode.

```
monitor capture epc-capture-name stop
```

<b>Syntax Description</b>	<i>epc-capture-name</i>	Name of the capture.
---------------------------	-------------------------	----------------------

**Command Default** The packet data capture is ongoing.

**Command Modes** Privileged EXEC (#)

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.12.1	This command was introduced.

**Usage Guidelines** Use the **monitor capture start** command to start the capture of packet data that you started by using the **monitor capture start** command. You can configure two types of capture buffers: linear and circular. When the linear buffer is full, data capture stops automatically. When the circular buffer is full, data capture starts from the beginning and the data is overwritten.

## Examples

The following example shows how to stop capture buffer contents:

```
Device> enable
Device# monitor capture mycap stop
Device# end
```

# mop sysid

To enable an interface to send out periodic Maintenance Operation Protocol (MOP) system identification messages, use the **mopsysid** command in interface configuration mode. To disable MOP message support on an interface, use the **no** form of this command.

**mop sysid**  
**no mop sysid**

**Syntax Description** This command has no arguments or keywords.

**Command Default** Enabled

**Command Modes** Interface configuration

## Command History

Release	Modification
10.0	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

## Usage Guidelines

You can still run MOP without having the background system ID messages sent. This command lets you use the MOP remote console, but does not generate messages used by the configurator.

## Examples

The following example enables serial interface 0 to send MOP system identification messages:

```
Router(config)# interface serial 0
Router(config-if)# mop sysid
```

## Related Commands

Command	Description
<b>mop device-code</b>	Identifies the type of device sending MOP sysid messages and request program messages.
<b>mop enabled</b>	Enables an interface to support the MOP.

## multicast vlan

To configure multicast on a single VLAN, use the **multicast vlan** command. To remove the multicast, use the **no** form of the command.

```
multicast vlan vlan-id
no multicast vlan vlan-id
```

---

### Syntax Description

*vlan-id* Specifies the VLAN ID.

---

### Command Default

Disabled.

### Command Modes

Wireless policy configuration

---

### Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced.

---

This example shows how to configure multicast:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# wireless profile policy policy-test
Device(config-wireless-policy)# multicast vlan 12
```

## nac

To enable RADIUS Network Admission Control (NAC) support, use the **nac** command. To disable NAC support, use the **no** form of this command.

```
nac [ ise | xwf ]
no nac
```

<b>Syntax Description</b>	<b>ise</b> Configures Radius NAC support (Identity Service Engine)
	<b>xwf</b> Configures Express Wi-Fi NAC support.

<b>Command Default</b>	NAC is disabled.
------------------------	------------------

<b>Command Modes</b>	Wireless policy configuration
----------------------	-------------------------------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.10.1	This command was introduced.

This example shows how to configure RADIUS NAC:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# wireless profile policy default-policy-profile
Device(config-wireless-policy)# nac
```

## nas-id option2

To configure option 2 parameters for a NAS-ID, use the **nas-id option2** command.

```
nas-id option2 {sys-ip | sys-name | sys-mac }
```

<b>Syntax Description</b>	<b>sys-ip</b> System IP Address.				
	<b>sys-name</b> System Name.				
	<b>sys-mac</b> System MAC address.				
<b>Command Default</b>	None				
<b>Command Modes</b>	config-aaa-policy				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Cisco IOS XE Gibraltar 16.10.1</td> <td>This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.</td> </tr> </tbody> </table>	Release	Modification	Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.
Release	Modification				
Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.				

### Examples

The following example shows how to configure the system IP address for the NAS-ID:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# wireless aaa policy profile-name
Device(config-aaa-policy)# nas-id option2 sys-ip
```

# network

To configure the network number in decimal notation, use the **network** command.

**network** *network-number* [{*network-mask* | **secondary** }]

## Syntax Description

*ipv4-address* Network number in dotted-decimal notation.

*network-mask* Network mask or prefix length.

**secondary** Configure as secondary subnet.

## Command Default

None

## Command Modes

dhcp-config

## Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

## Examples

The following example shows how to configure network number and the mask address:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# ip dhcp pool name
Device(dhcp-config)# network 209.165.200.224 255.255.255.0
```



# nmosp cloud-services enable

To configure NMSP cloud services, use the **nmosp cloud-services enable** command.

**nmosp cloud-services enable**

---

**Command Default**

None

---

**Command Modes**

Global configuration (config)

---

**Command History**

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

---

## Examples

The following example shows how to enable NMSP cloud services:

```
Device# configure terminal  
Enter configuration commands, one per line. End with CNTL/Z.  
Device(config)# nmosp cloud-services enable
```

## nmsp cloud-services http-proxy

To configure the proxy for NMSP cloud server, use the **nmsp cloud-services http-proxy** command.

**nmsp cloud-services http-proxy** *proxy-server port*

Syntax Description	
<i>proxy-server</i>	Enter the hostname or the IP address of the proxy server for NMSP cloud services.
<i>port</i>	Enter the proxy server port number for NMSP cloud services.

Command Default	None
-----------------	------

Command Modes	Global configuration (config)
---------------	-------------------------------

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

### Examples

The following example shows how to configure the proxy for NMSP cloud server:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# nmsp cloud-services http-proxy host-name port-number
```

## nmosp cloud-services server token

To configure the NMSP cloud services server parameters, use the **nmosp cloud-services server token** command.

**nmosp cloud-services server token** *token*

<b>Syntax Description</b>	<i>token</i> Authentication token for the NMSP cloud services.	
<b>Command Default</b>	None	
<b>Command Modes</b>	config	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

### Examples

The following example shows how to configure the for the NMSP cloud services server parameters:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# nmosp cloud-services server token authentication-token
```

## nmsp cloud-services server url

To configure NMSP cloud services server URL, use the **nmsp cloud-services server url** command.

```
nmsp cloud-services server url url
```

---

### Syntax Description

*url* URL of the NMSP cloud services server.

---



---

### Command Default

None

---

### Command Modes

Global configuration (config)

---



---

### Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

---

### Examples

The following example shows how to configure a URL for NMSP cloud services server:

```
Device(config)# nmps cloud-services server url http://www.example.com
```

## nmosp notification interval

To modify the Network Mobility Services Protocol (NMSP) notification interval value on the controller to address latency in the network, use the **nmosp notification interval** command in global configuration mode.

```
nmosp notification interval { attachment | location | rssi { clients | rfid | rogues { ap | client } } }
```

Syntax Description		
	<b>attachment</b>	Specifies the time used to aggregate attachment information.
	<b>location</b>	Specifies the time used to aggregate location information.
	<b>rssi</b>	Specifies the time used to aggregate RSSI information.
	<b>clients</b>	Specifies the time interval for clients.
	<b>rfid</b>	Specifies the time interval for rfid tags.
	<b>rogues</b>	Specifies the time interval for rogue APs and rogue clients .
	<b>ap</b>	Specifies the time used to aggregate rogue APs .
	<b>client</b>	Specifies the time used to aggregate rogue clients.

**Command Default** No default behavior or values.

**Command Modes** Global configuration

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.12.1	This command was introduced.

This example shows how to set the NMSP notification interval for the active RFID tags to 25 seconds:

```
Device# configure terminal
Device(config)# nmosp notification-interval rfid 25
Device(config)# end
```

This example shows how to modify NMSP notification intervals for device attachment (connecting to the network or disconnecting from the network) every 10 seconds:

```
Device# configure terminal
Device(config)# nmosp notification-interval attachment 10
Device(config)# end
```

This example shows how to configure NMSP notification intervals for location parameters (location change) every 20 seconds:

```
Device# configure terminal  
Device(config)# nmsp notification-interval location 20  
Device(config)# end
```

# nmosp strong-cipher

To enable the new ciphers, use the **nmosp strong-cipher** command in global configuration mode. To disable, use the **no** form of this command.

**nmosp strong-cipher**  
**no nmosp strong-cipher**

**Syntax Description** This command has no arguments or keywords.

**Command Default** The new ciphers are not enabled.

**Command Modes** Global configuration (config)

Command History	Release	Modification
	15.2(2)E	This command was introduced.

**Usage Guidelines** The **nmosp strong-cipher** command enables strong ciphers for new Network Mobility Service Protocol (NMSP) connections.



**Note** The existing NMSP connections will use the default cipher.

## Examples

The following example shows how to enable a strong-cipher for NMSP:

```
Device> enable
Device> configure terminal
Device(config)# nmosp strong-cipher
```

Related Commands	Command	Description
	<b>show nmosp status</b>	Displays the status of active NMSP connections.

## ntp auth-key

To configure the Network Time Protocol (NTP) server authentication key information on an AP profile, use the **ntp auth-key** command. To remove the NTP server authentication key information from an AP profile, use the **no ntp auth-key** command.

**ntp auth-key index** *key-index* **type** { **md5** | **sha1** } **format** { **ascii** | **hex** } **key** { **0** | **8** } *server-key*

### Syntax Description

<i>key-index</i>	Key index. Valid range is from 1 to 65535.
<b>md5</b>	Specifies that a Message Digest 5 (MD5) authentication key will follow.
<b>sha1</b>	Specifies that a Secure Hash Algorithm 1 (SHA1) authentication key will follow.
<b>format</b>	Defines the key format—ASCII or HEX..
<b>ascii</b>	Specifies that an ASCII key will follow.
<b>hex</b>	Specifies that a hex key will follow.
<b>key</b>	Defines the NTP server key—unencrypted or encrypted.
<b>0</b>	Specifies that an UNENCRYPTED password will follow.
<b>8</b>	Specifies that an AES encrypted password will follow.
<i>server-key</i>	NTP server key. For ASCII key, ensure that the length is less than 21 bytes. For HEX key, the length should be less than 41, using only numbers between 0-9 and characters from a-f.

### Command Default

NTP server authentication is not set.

### Command Modes

AP profile configuration (config-ap-profile)

### Command History

Release	Modification
Cisco IOS XE Bengaluru 17.6.1	This command was introduced.

### Examples

The following example shows how to configure NTP server authentication key information on an AP profile:

```
Device# configure terminal
Device(config)# ap profile test
Device(config-ap-profile)# ntp ip 198.51.100.5
Device(config-ap-profile)# ntp auth-key index 12 type
md5 format ascii key 0 test
```



# option

To configure optional data parameters for a flow exporter for , use the **option** command in flow exporter configuration mode. To remove optional data parameters for a flow exporter, use the **no** form of this command.

**option** {**exporter-stats** | **interface-table** | **sampler-table**} [{**timeout** *seconds*}]  
**no option** {**exporter-stats** | **interface-table** | **sampler-table**}

Syntax Description		
<b>exporter-stats</b>		Configures the exporter statistics option for flow exporters.
<b>interface-table</b>		Configures the interface table option for flow exporters.
<b>sampler-table</b>		Configures the export sampler table option for flow exporters.
<b>timeout</b> <i>seconds</i>		(Optional) Configures the option resend time in seconds for flow exporters. The range is 1 to 86400. The default is 600.

**Command Default** The timeout is 600 seconds. All other optional data parameters are not configured.

**Command Modes** Flow exporter configuration

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.12.1	This command was introduced.

**Usage Guidelines** The **option exporter-stats** command causes the periodic sending of the exporter statistics, including the number of records, bytes, and packets sent. This command allows the collector to estimate packet loss for the export records it receives. The optional timeout alters the frequency at which the reports are sent.

The **option interface-table** command causes the periodic sending of an options table, which allows the collector to map the interface SNMP indexes provided in the flow records to interface names. The optional timeout can alter the frequency at which the reports are sent.

The **option sampler-table** command causes the periodic sending of an options table, which details the configuration of each sampler and allows the collector to map the sampler ID provided in any flow record to a configuration that it can use to scale up the flow statistics. The optional timeout can alter the frequency at which the reports are sent.

To return this command to its default settings, use the **no option** or **default option** flow exporter configuration command.

The following example shows how to enable the periodic sending of the sampler option table, which allows the collector to map the sampler ID to the sampler type and rate:

```
Device(config)# flow exporter FLOW-EXPORTER-1
Device(config-flow-exporter)# option sampler-table
```

The following example shows how to enable the periodic sending of the exporter statistics, including the number of records, bytes, and packets sent:

```
Device(config)# flow exporter FLOW-EXPORTER-1
Device(config-flow-exporter)# option exporter-stats
```

The following example shows how to enable the periodic sending of an options table, which allows the collector to map the interface SNMP indexes provided in the flow records to interface names:

```
Device(config)# flow exporter FLOW-EXPORTER-1  
Device(config-flow-exporter)# option interface-table
```

# parameter-map type subscriber attribute-to-service

To configure parameter map type and name, use the **parameter-map type subscriber attribute-to-service** command.

**parameter-map type subscriber attribute-to-service** *parameter-map-name*

<b>Syntax Description</b>	<p><b>attribute-to-service</b> Name the attribute to service.</p> <p><i>parameter-map-name</i> Name of the parameter map. The map name is limited to 33 characters.</p>				
<b>Command Default</b>	None				
<b>Command Modes</b>	Global configuration (config)				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Cisco IOS XE Gibraltar 16.10.1</td> <td>This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.</td> </tr> </tbody> </table>	Release	Modification	Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.
Release	Modification				
Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.				

## Examples

The following example shows how to configure parameter map type and name:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# parameter-map type subscriber attribute-to-service parameter-map-name
```

# pae

To enable product telemetry collection, use the **pae** command. To disable product telemetry collection, use the **no** form of this command.

**pae**

**no pae**

---

**Command Default** Product telemetry is enabled.

---

**Command Modes** Global configuration (config)

---

Command History	Release	Modification
	Cisco IOS XE Dublin 17.10.1	This command was introduced.

---



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## Examples

The following example shows how to disable product telemetry collection:

```
Device# configure terminal
Device(config)# no pae
```

## parameter-map type webauth

To configure the webauth parameter type for a specific parameter map or all the parameter maps, use the **parameter-map type webauth** command.

```
parameter-map type webauth { parameter-map-name | global }
```

<b>Syntax Description</b>	<i>parameter-map-name</i>	Name of the parameter map. The map name is limited to 99 characters.
	<b>global</b>	Applies the configuration to all the parameter maps.
<b>Command Default</b>	None	
<b>Command Modes</b>	Global configuration (config)	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

### Examples

The following example shows how to configure the webauth parameter type for a parameter map named *parameter-map1*:

```
Device# configure terminal
Device(config)# parameter-map type webauth parameter-map1
```

## password encryption aes

To enable strong (AES) password encryption, use the **password encryption aes** command. To disable this feature, use the **no** form of this command.

```
password encryption aes
no password encryption aes
```

<b>Syntax Description</b>	<b>password</b>	Configures the encryption password (key).
	<b>encryption</b>	Encrypts system passwords.
	<b>aes</b>	Enables stronger (AES) password encryption.
<b>Command Default</b>	None	
<b>Command Modes</b>	Global configuration mode.	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.12.2s	This command was introduced.

### Example

The following example shows how to enable AES password encryption :

```
Device(config)#password encryption aes
```

# peer-blocking

To configure peer-to-peer blocking on a WLAN, use the **peer-blocking** command. To disable peer-to-peer blocking, use the **no** form of this command.

```
peer-blocking {drop | forward-upstream}
no peer-blocking
```

## Syntax Description

<b>drop</b>	Specifies the device to discard the packets.
<b>forward-upstream</b>	Specifies the packets to be forwarded on the upstream VLAN. The device next in the hierarchy to the device decides what action to take regarding the packets.

## Command Default

Peer blocking is disabled.

## Command Modes

WLAN configuration

## Command History

### Release Modification

This command was introduced.

## Usage Guidelines

You must disable the WLAN before using this command. See Related Commands section for more information on how to disable a WLAN.

This example shows how to enable the drop and forward-upstream options for peer-to-peer blocking:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# wlan wlan1

Device(config-wlan)# peer-blocking drop
Device(config-wlan)# peer-blocking forward-upstream
```

This example shows how to disable the drop and forward-upstream options for peer-to-peer blocking:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# wlan wlan1

Device(config-wlan)# no peer-blocking drop
Device(config-wlan)# no peer-blocking forward-upstream
```

## pmf-death

To enable PMF-denial type deauthentication rogue AP containment, use the **pmf-death** command. To disable PMF-denial type deauthentication rogue AP containment, use the **no** form of this command.

**pmf-death**

**no pmf-death**

<b>Syntax Description</b>	This command has no keywords or arguments.
---------------------------	--

<b>Command Default</b>	None
------------------------	------

<b>Command Modes</b>	PMF denial configuration (config-pmf-denial)
----------------------	--

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Dublin 17.12.1	This command was introduced.

### Examples

The following example shows how to enable PMF-denial type deauthentication rogue AP containment.

```
Device# configure terminal
Device(config)# ap profile xyz-ap-profile
Device(config-ap-profile)# rogue detection containment pmf-denial
Device(config-pmf-denial)# pmf-death
```



# policy

To configure media stream admission policy, use the **policy** command.

**policy** {**admit** | **deny**}

## Syntax Description

**admit** Allows traffic for a media stream group.

**deny** Denies traffic for a media stream group.

## Command Default

None

## Command Modes

media-stream

## Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

## Examples

The following example shows how to allow traffic for a media stream group:

```
Device # configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# wireless media-stream group ms-group 224.0.0.0 224.0.0.223
Device(media-stream)# policy admit
```

# police

To define a policer for classified traffic, use the **police** command in policy-map class configuration mode. Use the **no** form of this command to remove an existing policer.

```
police rate-bps burst-byte [conform-action transmit]
no police rate-bps burst-byte [conform-action transmit]
```

<b>Syntax Description</b>	<i>rate-bps</i>	Specify the average traffic rate in bits per second (b/s). The range is 1000000 to 1000000000.
	<i>burst-byte</i>	Specify the normal burst size in bytes. The range is 8000 to 1000000.
	<b>conform-action transmit</b>	(Optional) When less than the specified rate, specify that the switch transmits the packet.
<b>Command Default</b>	No policers are defined.	
<b>Command Modes</b>	Policy-map class configuration	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.12.1	This command was introduced.

**Usage Guidelines** A policer defines a maximum permissible rate of transmission, a maximum burst size for transmissions, and an action to take if either maximum is exceeded.

When configuring hierarchical policy maps, you can only use the **police** policy-map command in a secondary interface-level policy map.

The port ASIC device, which controls more than one physical port, supports 256 policers on the switch (255 user-configurable policers plus 1 policer reserved for internal use). The maximum number of configurable policers supported per port is 63. Policers are allocated on demand by the software and are constrained by the hardware and ASIC boundaries. You cannot reserve policers per port. There is no guarantee that a port will be assigned to any policer.

To return to policy-map configuration mode, use the **exit** command. To return to privileged EXEC mode, use the **end** command.

## Examples

This example shows how to configure a policer that transmits packets if traffic is less than 1 Mb/s average rate with a burst size of 20 KB. There is no packet modification.

```
Device(config)# class-map class1
Device(config-cmap)# exit
Device(config)# policy-map policy1
Device(config-pmap)# class class1
Device(config-pmap-c)# police 1000000 20000 conform-action transmit
Device(config-pmap-c)# exit
```

This example shows how to configure a policer that transmits packets if traffic is less than 1 Mb/s average rate with a burst size of 20 KB. There is no packet modification. This example uses an abbreviated syntax:

```
Device(config)# class-map class1
Device(config-cmap)# exit
Device(config)# policy-map policy1
Device(config-pmap)# class class1
Device(config-pmap-c)# police 1m 20000 conform-action transmit
Device(config-pmap-c)# exit
```

This example shows how to configure a policer, which marks down the DSCP values with the values defined in policed-DSCP map and sends the packet:

```
Device(config)# policy-map policy2
Device(config-pmap)# class class2
Device(config-pmap-c)# police 1000000 20000 exceed-action policed-dscp-transmit
Device(config-pmap-c)# exit
```

You can verify your settings by entering the **show policy-map** privileged EXEC command.

# police cir

To set the policing of committed information rate, use the **police cir** command.

**police cir** *<target bit rate>*

<b>Syntax Description</b>	<b>police cir</b>	Polices committed information rate.
	<i>8000-10000000000</i>	Sets the target bit rate at bits per second. The range is between 8000 and 10000000000.
<b>Command Default</b>	None	
<b>Command Modes</b>	Policy map class configuration	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Amsterdam 17.2.1	This command was introduced.

## Example

This example shows how to set the committed information rate:

```
Device(config-pmap-c)#police cir 8000
```

# policy-map

To create or modify a policy map that can be attached to multiple physical ports or switch virtual interfaces (SVIs) and to enter policy-map configuration mode, use the **policy-map** command in global configuration mode. Use the **no** form of this command to delete an existing policy map and to return to global configuration mode.

**policy-map** *policy-map-name*  
**no policy-map** *policy-map-name*

## Syntax Description

*policy-map-name* Name of the policy map.

## Command Default

No policy maps are defined.

## Command Modes

Global configuration (config)

## Command History

Release	Modification
Cisco IOS XE Gibraltar 16.12.1	This command was introduced.

## Usage Guidelines

After entering the **policy-map** command, you enter policy-map configuration mode, and these configuration commands are available:

- **class**—Defines the classification match criteria for the specified class map.
- **description**—Describes the policy map (up to 200 characters).
- **exit**—Exits policy-map configuration mode and returns you to global configuration mode.
- **no**—Removes a previously defined policy map.
- **sequence-interval**—Enables sequence number capability.

To return to global configuration mode, use the **exit** command. To return to privileged EXEC mode, use the **end** command.

Before configuring policies for classes whose match criteria are defined in a class map, use the **policy-map** command to specify the name of the policy map to be created, added to, or modified. Entering the **policy-map** command also enables the policy-map configuration mode in which you can configure or modify the class policies for that policy map.

You can configure class policies in a policy map only if the classes have match criteria defined for them. To configure the match criteria for a class, use the **class-map** global configuration and **match** class-map configuration commands. You define packet classification on a physical-port basis.

Only one policy map per ingress port is supported. You can apply the same policy map to multiple physical ports.

You can apply a nonhierarchical policy maps to physical ports. A nonhierarchical policy map is the same as the port-based policy maps in the device.

A hierarchical policy map has two levels in the format of a parent-child policy. The parent policy cannot be modified but the child policy (port-child policy) can be modified to suit the QoS configuration.

In VLAN-based QoS, a service policy is applied to an SVI interface.



**Note** Not all MQC QoS combinations are supported for wired ports. For information about these restrictions, see chapters "Restrictions for QoS on Wired Targets" in the QoS configuration guide.

## Examples

This example shows how to create a policy map called policy1. When attached to the ingress port, it matches all the incoming traffic defined in class1, sets the IP DSCP to 10, and polices the traffic at an average rate of 1 Mb/s and bursts at 20 KB. Traffic less than the profile is sent.

```
Device(config)# policy-map policy1
Device(config-pmap)# class class1
Device(config-pmap-c)# set dscp 10
Device(config-pmap-c)# police 1000000 20000 conform-action transmit
Device(config-pmap-c)# exit
```

This example show you how to configure hierarchical polices:

```
Device# configure terminal
Device(config)# class-map c1
Device(config-cmap)# exit
```

```
Device(config)# class-map c2
Device(config-cmap)# exit
```

```
Device(config)# policy-map child
Device(config-pmap)# class c1
Device(config-pmap-c)# priority level 1
Device(config-pmap-c)# police rate percent 20 conform-action transmit exceed action drop
Device(config-pmap-c-police)# exit
Device(config-pmap-c)# exit
```

```
Device(config-pmap)# class c2
Device(config-pmap-c)# bandwidth 20000
Device(config-pmap-c)# exit
```

```
Device(config-pmap)# class class-default
Device(config-pmap-c)# bandwidth 20000
Device(config-pmap-c)# exit
Device(config-pmap)# exit
```

```
Device(config)# policy-map parent
Device(config-pmap)# class class-default
Device(config-pmap-c)# shape average 1000000
Device(config-pmap-c)# service-policy child
Device(config-pmap-c)# end
```

This example shows how to delete a policy map:

```
Device(config)# no policy-map policymap2
```

You can verify your settings by entering the **show policy-map** privileged EXEC command.

# policy-map

To create or modify a policy map that can be attached to multiple physical ports or switch virtual interfaces (SVIs) and to enter policy-map configuration mode, use the **policy-map** command in global configuration mode. Use the **no** form of this command to delete an existing policy map and to return to global configuration mode.

**policy-map** *policy-map-name*  
**no policy-map** *policy-map-name*

## Syntax Description

*policy-map-name* Name of the policy map.

## Command Default

No policy maps are defined.

## Command Modes

Global configuration (config)

## Command History

Release	Modification
Cisco IOS XE Gibraltar 16.12.1	This command was introduced.

## Usage Guidelines

After entering the **policy-map** command, you enter policy-map configuration mode, and these configuration commands are available:

- **class**—Defines the classification match criteria for the specified class map.
- **description**—Describes the policy map (up to 200 characters).
- **exit**—Exits policy-map configuration mode and returns you to global configuration mode.
- **no**—Removes a previously defined policy map.
- **sequence-interval**—Enables sequence number capability.

To return to global configuration mode, use the **exit** command. To return to privileged EXEC mode, use the **end** command.

Before configuring policies for classes whose match criteria are defined in a class map, use the **policy-map** command to specify the name of the policy map to be created, added to, or modified. Entering the **policy-map** command also enables the policy-map configuration mode in which you can configure or modify the class policies for that policy map.

You can configure class policies in a policy map only if the classes have match criteria defined for them. To configure the match criteria for a class, use the **class-map** global configuration and **match** class-map configuration commands. You define packet classification on a physical-port basis.

Only one policy map per ingress port is supported. You can apply the same policy map to multiple physical ports.

You can apply a nonhierarchical policy maps to physical ports. A nonhierarchical policy map is the same as the port-based policy maps in the device.

A hierarchical policy map has two levels in the format of a parent-child policy. The parent policy cannot be modified but the child policy (port-child policy) can be modified to suit the QoS configuration.

In VLAN-based QoS, a service policy is applied to an SVI interface.



**Note** Not all MQC QoS combinations are supported for wired ports. For information about these restrictions, see chapters "Restrictions for QoS on Wired Targets" in the QoS configuration guide.

## Examples

This example shows how to create a policy map called policy1. When attached to the ingress port, it matches all the incoming traffic defined in class1, sets the IP DSCP to 10, and polices the traffic at an average rate of 1 Mb/s and bursts at 20 KB. Traffic less than the profile is sent.

```
Device(config)# policy-map policy1
Device(config-pmap)# class class1
Device(config-pmap-c)# set dscp 10
Device(config-pmap-c)# police 1000000 20000 conform-action transmit
Device(config-pmap-c)# exit
```

This example show you how to configure hierarchical polices:

```
Device# configure terminal
Device(config)# class-map c1
Device(config-cmap)# exit
```

```
Device(config)# class-map c2
Device(config-cmap)# exit
```

```
Device(config)# policy-map child
Device(config-pmap)# class c1
Device(config-pmap-c)# priority level 1
Device(config-pmap-c)# police rate percent 20 conform-action transmit exceed action drop
Device(config-pmap-c-police)# exit
Device(config-pmap-c)# exit
```

```
Device(config-pmap)# class c2
Device(config-pmap-c)# bandwidth 20000
Device(config-pmap-c)# exit
```

```
Device(config-pmap)# class class-default
Device(config-pmap-c)# bandwidth 20000
Device(config-pmap-c)# exit
Device(config-pmap)# exit
```

```
Device(config)# policy-map parent
Device(config-pmap)# class class-default
Device(config-pmap-c)# shape average 1000000
Device(config-pmap-c)# service-policy child
Device(config-pmap-c)# end
```

This example shows how to delete a policy map:

```
Device(config)# no policy-map policymap2
```

You can verify your settings by entering the **show policy-map** privileged EXEC command.



# port

To configure the port number to use when configuring the custom application, use the **port** command.

**port** *port-no*

---

## Syntax Description

*port-no* Port number.

---



---

## Command Default

None

---

## Command Modes

config-custom

---

## Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

---

## Examples

The following example shows how to configure the port number to use when configuring the custom application:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# ip nbar custom custom-protocol http host host-string
Device(config-custom)# http host hostname
Device(config-custom)# port port-no
```

# priority priority-value

To configure media stream priority, use the **priority** *priority-value* command.

**priority** *priority-value*

<b>Syntax Description</b>	<i>priority-value</i> Media stream priority value. Valid range is 1 to 8, with 1 being lowest priority and 8 being highest priority.				
<b>Command Default</b>	None				
<b>Command Modes</b>	config-media-stream				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Cisco IOS XE Gibraltar 16.10.1</td> <td>This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.</td> </tr> </tbody> </table>	Release	Modification	Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.
Release	Modification				
Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.				

## Examples

The following example shows how to set the media stream priority value to the highest, that is 8:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# wireless media-stream group my-media-group 224.0.0.0 224.0.0.223
Device(config-media-stream)# priority 8
```

# public-ip

To configure the NAT public IP address of the controller, use the **public-ip** command.

**public-ip** { *ipv4-address* | *ipv6-address* }

## Syntax Description

*ipv4-address* Sets IPv4 address.

*ipv6-address* Sets IPv6 address.

## Command Default

None

## Command Modes

Management Interface Configuration(config-mgmt-interface)

## Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

## Usage Guidelines

### Example

The following example shows how to configure the NAT public IP address of the controller:

```
Device# configure terminal
Device(config)# wireless management interface Vlan1
Device(config-mgmt-interface)# public-ip 192.168.172.100
```

# qos video

To configure over-the-air QoS class to video only, use the **qos video** command.

## qos video

### Command Default

None

### Command Modes

config-media-stream

### Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

## Examples

The following example shows how to configure over-the-air QoS class to video only:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# wireless media-stream group my-media-group 224.0.0.0 224.0.0.223
Device(config-media-stream)# qos video
```

# radius server

To configure the RADIUS server, use the **radius server** command in global configuration mode.

**radius server** *server-name*

<b>Syntax Description</b>	<i>server-name</i> RADIUS server name.				
<b>Command Default</b>	None				
<b>Command Modes</b>	Global configuration				
<b>Command History</b>	<table><thead><tr><th>Release</th><th>Modification</th></tr></thead><tbody><tr><td>Cisco IOS XE Gibraltar 16.12.1</td><td>This command was introduced.</td></tr></tbody></table>	Release	Modification	Cisco IOS XE Gibraltar 16.12.1	This command was introduced.
Release	Modification				
Cisco IOS XE Gibraltar 16.12.1	This command was introduced.				
<b>Usage Guidelines</b>	None				

The following example shows how to configure a radius server:

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

## radius-server deadline

To improve RADIUS response times when some servers might be unavailable, use the **radius-server deadline** command to cause the unavailable servers to be skipped immediately. To set dead-time to the default value of 0, use the **no** form of this command.

**radius-server deadline** *time-in-minutes*

**no radius-server deadline**

### Syntax Description

*time-in-minutes* Length of time, in minutes, for which a RADIUS server is skipped over by transaction requests, up to a maximum of 1440 minutes (24 hours).

### Command Default

Dead time is set to 0.

### Command Modes

Global configuration (config)

### Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

### Usage Guidelines

Use this command to mark as "dead" any RADIUS servers that fail to respond to authentication requests, thus avoiding the wait for the request to time out before trying the next configured server. A RADIUS server marked as "dead" is skipped by additional requests for the duration of minutes or unless there are no servers not marked "dead."

### Example

The following example shows how to set deadline for RADIUS servers that fail to respond to authentication requests:

```
Device(config)# radius-server deadline 5
```

# radius-server attribute wireless accounting call-station-id

To configure call station identifier sent in the RADIUS accounting messages, use the **radius-server attribute wireless accounting call-station-id** command. To remove the call station identifier from the radius accounting messages, use the **no** form of the command.

```
radius-server attribute wireless authentication call-station-id { ap-ethmac-only | ap-ethmac-ssid |
ap-ethmac-ssid-flexprofilename | ap-ethmac-ssid-policytagname | ap-ethmac-ssid-sitetagname |
ap-group-name | ap-label-address | ap-label-address-ssid | ap-location | ap-macaddress |
ap-macaddress-ssid | ap-macaddress-ssid-flexprofilename | ap-macaddress-ssid-policytagname |
ap-macaddress-ssid-sitetagname | ap-name | ap-name-ssid | flex-profile-name | ipaddress | macaddress
| policy-tag-name | site-tag-name | vlan-id }
```

## Syntax Description

<b>ap-ethmac-only</b>	Sets the call station identifier type to be AP's radio MAC address.
<b>ap-ethmac-ssid</b>	Sets the call station identifier type AP's radio MAC address with SSID.
<b>ap-ethmac-ssid-flexprofilename</b>	Sets the call station identifier type AP's radio MAC address with SSID and flex profile name.
<b>ap-ethmac-ssid-policytagname</b>	Sets the call station identifier type AP's radio MAC address with SSID and policy tag name.
<b>ap-ethmac-ssid-sitetagname</b>	Sets the call station identifier type AP's radio MAC address with SSID and site tag name.
<b>ap-group-name</b>	Sets the call station identifier type to use the AP group name.
<b>ap-label-address</b>	Sets the call station identifier type to the AP's radio MAC address that is printed on the AP label.
<b>ap-label-address-ssid</b>	Sets the call station identifier type to the AP's radio MAC address and SSID that is printed on the AP label.
<b>ap-location</b>	Sets the call station identifier type to the AP location.
<b>ap-macaddress</b>	Sets the call station identifier type to the AP's radio MAC address.
<b>ap-macaddress-ssid</b>	Sets the call station identifier type to the AP's radio MAC address with SSID.
<b>ap-macaddress-ssid-flexprofilename</b>	Sets the call station identifier type to the AP's radio MAC address with SSID and flex profile name.
<b>ap-macaddress-ssid-policytagname</b>	Sets the call station identifier type to the AP's radio MAC address with SSID and policy tag name.
<b>ap-macaddress-ssid-sitetagname</b>	Sets the call station identifier type to the AP's radio MAC address with SSID and site tag name.
<b>ap-name</b>	Sets the call station identifier type to the AP name.

<b>ap-name-ssid</b>	Sets the call station identifier type to the AP name with SSID.
<b>flex-profile-name</b>	Sets the call station identifier type to the flex profile name.
<b>ipaddress</b>	Sets the call station identifier type to the IP address of the system.
<b>macaddress</b>	Sets the call station identifier type to the MAC address of the system.
<b>policy-tag-name</b>	Sets the call station identifier type to the policy tag name.
<b>site-tag-name</b>	Sets the call station identifier type to the site tag name.
<b>vlan-id</b>	Sets the call station identifier type to the system's VLAN ID.

**Command Default** Call station identifier is not configured.

**Command Modes** Global Configuration(config)

#### Command History

Release	Modification
Cisco IOS XE Gibraltar 16.12.1	This command was introduced.
Cisco IOS XE Bengaluru 17.4.1	This command was modified. The <b>policy-tag-name</b> , <b>flex-profile-name</b> , <b>ap-macaddress-ssid-flexprofile-name</b> , <b>ap-macaddress-ssid-policytagname</b> , <b>ap-macaddress-ssid-sitetagname</b> , <b>ap-ethmac-ssid-flexprofile-name</b> , <b>ap-ethmac-ssid-policytagname</b> , and <b>ap-ethmac-ssid-sitetagname</b> keywords were introduced.

#### Usage Guidelines

##### Example

The following example shows how to configure a call station identifier sent in the RADIUS accounting messages:

```
Device(config)# radius-server attribute wireless accounting call-station-id site-tag-name
```



# radius-server attribute wireless authentication call-station-id

To configure call station identifier sent in the RADIUS authentication messages, use the **radius-server attribute wireless authentication call-station-id** command. To remove the call station identifier from the radius accounting messages, use the **no** form of the command.

```
radius-server attribute wireless authentication call-station-id { ap-ethmac-only | ap-ethmac-ssid |
ap-ethmac-ssid-flexprofilename | ap-ethmac-ssid-policytagname | ap-ethmac-ssid-sitetagname |
ap-group-name | ap-label-address | ap-label-address-ssid | ap-location | ap-macaddress |
ap-macaddress-ssid | ap-macaddress-ssid-flexprofilename | ap-macaddress-ssid-policytagname |
ap-macaddress-ssid-sitetagname | ap-name | ap-name-ssid | flex-profile-name | ipaddress | macaddress
| policy-tag-name | site-tag-name | vlan-id }
```

Syntax Description		
<b>ap-ethmac-only</b>		Sets the call station identifier type to be AP's radio MAC address.
<b>ap-ethmac-ssid</b>		Sets the call station identifier type AP's radio MAC address with SSID.
<b>ap-ethmac-ssid-flexprofilename</b>		Sets the call station identifier type AP's radio MAC address with SSID and flex profile name.
<b>ap-ethmac-ssid-policytagname</b>		Sets the call station identifier type AP's radio MAC address with SSID and policy tag name.
<b>ap-ethmac-ssid-sitetagname</b>		Sets the call station identifier type AP's radio MAC address with SSID and site tag name.
<b>ap-group-name</b>		Sets the call station identifier type to use the AP group name.
<b>ap-label-address</b>		Sets the call station identifier type to the AP's radio MAC address that is printed on the AP label.
<b>ap-label-address-ssid</b>		Sets the call station identifier type to the AP's radio MAC address and SSID that is printed on the AP label.
<b>ap-location</b>		Sets the call station identifier type to the AP location.
<b>ap-macaddress</b>		Sets the call station identifier type to the AP's radio MAC address.
<b>ap-macaddress-ssid</b>		Sets the call station identifier type to the AP's radio MAC address with SSID.
<b>ap-macaddress-ssid-flexprofilename</b>		Sets the call station identifier type to the AP's radio MAC address with SSID and flex profile name.
<b>ap-macaddress-ssid-policytagname</b>		Sets the call station identifier type to the AP's radio MAC address with SSID and policy tag name.
<b>ap-macaddress-ssid-sitetagname</b>		Sets the call station identifier type to the AP's radio MAC address with SSID and site tag name.
<b>ap-name</b>		Sets the call station identifier type to the AP name.

<b>ap-name-ssid</b>	Sets the call station identifier type to the AP name with SSID.
<b>flex-profile-name</b>	Sets the call station identifier type to the flex profile name.
<b>ipaddress</b>	Sets the call station identifier type to the IP address of the system.
<b>macaddress</b>	Sets the call station identifier type to the MAC address of the system.
<b>policy-tag-name</b>	Sets the call station identifier type to the policy tag name.
<b>site-tag-name</b>	Sets the call station identifier type to the site tag name.
<b>vlan-id</b>	Sets the call station identifier type to the system's VLAN ID.

**Command Default** Call station identifier is not configured.

**Command Modes** Global Configuration(config)

#### Command History

Release	Modification
Cisco IOS XE Gibraltar 16.12.1	This command was introduced.
Cisco IOS XE Bengaluru 17.4.1	This command was modified. The <b>policy-tag-name</b> , <b>flex-profile-name</b> , <b>ap-macaddress-ssid-flexprofile-name</b> , <b>ap-macaddress-ssid-policytagname</b> , <b>ap-macaddress-ssid-sitetagname</b> , <b>ap-ethmac-ssid-flexprofile-name</b> , <b>ap-ethmac-ssid-policytagname</b> , and <b>ap-ethmac-ssid-sitetagname</b> keywords were introduced.

#### Usage Guidelines

##### Example

The following example shows how to configure a call station identifier sent in the RADIUS authentication messages:

```
Device(config)# radius-server attribute wireless authentication call-station-id site-tag-name
```

# range

To configure range from MAP to RAP bridge, use the **range** command.

**range** *range-in-feet*

<b>Syntax Description</b>	<i>range-in-feet</i> Configure the range value in terms of feet. Valid range is from 150 feet to 132000 feet.				
<b>Command Default</b>	1200				
<b>Command Modes</b>	config-wireless-mesh-profile				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Cisco IOS XE Gibraltar 16.10.1</td> <td>This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.</td> </tr> </tbody> </table>	Release	Modification	Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.
Release	Modification				
Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.				

## Examples

The following example shows how to configure range from MAP to RAP bridge for a mesh AP profile:

```
Device # configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device (config)# wireless profile mesh mesh-profile
Device (config-wireless-mesh-profile)# range 300
```

# record wireless avc basic

To apply the *wireless avc basic* AVC flow record to a flow monitor, use the **record wireless avc basic** command.

**record wireless avc basic**

---

## Command Default

None

---

## Command Modes

config-flow-monitor

---

## Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

---

## Usage Guidelines

This command specifies the basic wireless AVC template. When you are configuring AVC, you will need to create a flow monitor using the **record wireless avc basic** command.

## Examples

The following example shows how to apply the *wireless avc basic* AVC flow record to a flow monitor named *test-flow*:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# flow monitor test-flow
Device(config-flow-monitor)# record wireless avc basic
```

# redirect

To configure a redirect to an external portal, use the **redirect** command.

**redirect** {**for-login** | **on-failure** | **on-success**} *redirect-url-name*

## Syntax Description

<b>for-login</b>	To login, redirect to this URL.
<b>on-failure</b>	If login fails, redirect to this URL.
<b>on-success</b>	If login is successful, redirect to this URL.
<i>redirect-url-name</i>	Redirect URL name.

## Command Default

None

## Command Modes

config-params-parameter-map

## Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

## Examples

The following example shows how to configure an redirect to an external IPv4 URL to login:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# parameter-map type webauth parameter-name
Device(config-params-parameter-map)# redirect for-login cisco.com
```

# redirect portal

To configure external IPv4 or IPv6 portal, use the **redirect portal** command.

**redirect portal** {**ipv4** | **ipv6**} *ip-addr*

## Syntax Description

**ipv4** IPv4 portal address

**ipv6** IPv6 portal address

## Command Default

None

## Command Modes

config-params-parameter-map

## Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

## Examples

The following example shows how to configure an external IPv4 portal address:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# parameter-map type webauth parameter-name
Device(config-params-parameter-map)# redirect portal ipv4 192.168.1.100
```

# remote-lan

To map an RLAN policy profile to an RLAN profile, use the **remote-lan** command.

**remote-lan** *remote-lan-profile-name* **policy** *rlan-policy-profile-name* **port-id** *port-id*

<b>Syntax Description</b>	<i>remote-lan-profile-name</i>	Remote LAN profile name.
	<i>rlan-policy-profile-name</i>	Remote LAN policy profile name.
	<i>port-id</i>	Port ID.
<b>Command Default</b>	None	
<b>Command Modes</b>	Global configuration (config)	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.10.1	This command was introduced.

## Example

This example shows how to map an RLAN policy profile to an RLAN profile:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# wireless tag policy remote-lan-policy-tag
Device(config-policy-tag)# remote-lan rlan_profile_name policy rlan_policy_profile port-id
2
Device(config-policy-tag)# end
```

## request platform software trace archive last

To archive all the trace logs relevant to all the processes running on a system, use the **request platform software trace archive last** command in privileged EXEC mode.

**request platform software trace archive last** *number* [ **days** | **hours** | **minutes** | **seconds** ] **target** { **bootflash:** | **cloudfs:** | **crashinfo:** | **flash:** }

### Syntax Description

<b>number</b>	Archive timeframe, in days, hours, minutes, or seconds.
<b>days</b>	Specifies the number of days for which the trace files have to be archived.
<b>hours</b>	Specifies the number of hours for which the trace files have to be archived.
<b>minutes</b>	Specifies the number of minutes for which the trace files have to be archived.
<b>seconds</b>	Specifies the number of seconds for which the trace files have to be archived.
<b>target</b>	Specifies the location and name of the archive file.
<b>bootflash:</b>	Specifies the archive file name and location.
<b>cloudfs:</b>	Specifies the archive file name and location.
<b>crashinfo:</b>	Specifies the archive file name and location.
<b>flash:</b>	Specifies the archive file name and location.

### Command Default

None

### Command Modes

Privileged EXEC (#)

### Command History

Release	Modification
Cisco IOS XE Dublin 17.12.1	This command was introduced.

### Examples

The following example shows how to archive all the trace logs relevant to all the processes running on a system:

```
Device# request platform software trace archive last 5 days target flash:
```



# rf tag

To configure an RF tag to the AP, use the **rf tag** command.

**rf tag** *rf-tag-name*

<b>Syntax Description</b>	<i>rf-tag-name</i> RF tag name.	
<b>Command Default</b>	None	
<b>Command Modes</b>	config-ap-tag	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.10.1	This command was introduced.
<b>Usage Guidelines</b>	The AP will disconnect and rejoin after running this command.	

## Example

The following example shows how to configure an RF tag:

```
Device(config-ap-tag)# rf-tag rftag1
```

# rogue detection containment pmf-denial

To enable PMF-denial rogue AP containment, use the **rogue detection containment pmf-denial** command. To disable PMF-denial rogue AP containment, use the **no** form of this command.

**rogue detection containment pmf-denial**

**no rogue detection containment pmf-denial**

<b>Syntax Description</b>	This command has no keywords or arguments.
---------------------------	--

<b>Command Default</b>	None
------------------------	------

<b>Command Modes</b>	Global configuration (config)
----------------------	-------------------------------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Dublin 17.12.1	This command was introduced.

## Examples

The following example shows how to enable PMF-denial rogue AP containment:

```
Device# configure terminal
Device(config)# ap profile xyz-ap-profile
Device(config-ap-profile)# rogue detection containment pmf-denial
Device(config-pmf-denial)# pmf-deauth
```

## rrc-evaluation

To configure Resource Reservation Control (RRC) reevaluation admission, use the **rrc-evaluation** command.

**rrc-evaluation** {**initial** | **periodic**}

### Syntax Description

**initial** Configures initial admission evaluation.

**periodic** Configures periodic admission evaluation.

### Command Default

None

### Command Modes

config-media-stream

### Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

### Examples

The following example shows how to configure the RRC reevaluation admission to initial admission evaluation.

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# wireless media-stream group my-media-group 224.0.0.0 224.0.0.223
Device(config-media-stream)# rrc-evaluation initial
```

# security

To configure mesh security, use the **security** command.

```
security { eap | psk }
```

## Syntax Description

**eap** Configure mesh security EAP for Mesh AP.

**psk** Configure mesh security PSK for Mesh AP

## Command Default

EAP

## Command Modes

config-wireless-mesh-profile

## Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

## Examples

The following example shows how to configure mesh security with EAP protocol on an Mesh AP:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# wireless profile mesh profile-name
Device(config-wireless-mesh-profile)# security eap
```

# security dot1x authentication-list

To configure security authentication list for IEEE 802.1x, use the **security dot1x authentication-list** *auth-list-name* command.

**security dot1x authentication-list** *auth-list-name*

Syntax Description	Parameter	Description
	<i>auth-list-name</i>	Authentication list name.
Command Default	None	
Command Modes	config-wlan	
Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

## Examples

The following example shows how to configure security authentication list for IEEE 802.1x:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# wlan wlan-name
Device(config-wlan)# security dot1x authentication-list auth-list-realm
```

# security ft

To configure 802.11r fast transition parameters, use the **security ft** command. To configure fast transition **over the air**, use the **no security ft over-the-ds** command.

```
security ft [{over-the-ds | reassociation-timeout timeout-jn-seconds}]
no security ft [{over-the-ds | reassociation-timeout}]
```

Syntax Description	Parameter	Description
	<b>over-the-ds</b>	(Optional) Specifies that the 802.11r fast transition occurs over a distributed system. The no form of the command with this parameter configures security ft over the air.
	<b>reassociation-timeout</b>	(Optional) Configures the reassociation timeout interval.
	<i>timeout-in-seconds</i>	(Optional) Specifies the reassociation timeout interval in seconds. The valid range is between 1 to 100. The default value is 20.

**Command Default** The feature is disabled.

**Command Modes** WLAN configuration

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.12.1	This command was introduced.

**Usage Guidelines** None  
WLAN Security must be enabled.

## Example

The following example configures security FT configuration for an open WLAN:

```
Device#wlan test
Device(config-wlan)# client vlan 0140
Device(config-wlan)# no mobility anchor sticky
Device(config-wlan)# no security wpa
Device(config-wlan)# no security wpa akm dot1x
Device(config-wlan)# no security wpa wpa2
Device(config-wlan)# no security wpa wpa2 ciphers aes
Device(config-wlan)# security ft
Device(config-wlan)# shutdown
```

The following example shows a sample security FT on a WPA-enabled WLAN:

```
Device# wlan test
Device(config-wlan)# client vlan 0140
Device(config-wlan)# no security wpa akm dot1x
Device(config-wlan)# security wpa akm ft psk
Device(config-wlan)# security wpa akm psk set-key ascii 0 test-test
```

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

## security pmf

To configure 802.11w Management Frame Protection (PMF) on a WLAN, use the **security pmf** command. To disable management frame protection, use the **no** form of the command.

```
security pmf {association-comeback association-comeback-time-seconds | mandatory | optional |
saquery-retry-time saquery-retry-time-milliseconds}
no security pmf [{association-comeback association-comeback-time-seconds | mandatory | optional |
saquery-retry-time saquery-retry-time-milliseconds}]
```

Syntax Description		
<b>association-comeback</b>		Configures the 802.11w association comeback time.
<i>association-comeback-time-seconds</i>		Association comeback interval in seconds. Time interval that an associated client must wait before the association is tried again after it is denied with a status code 30. The status code 30 message is "Association request rejected temporarily; Try again later."  The range is from 1 through 20 seconds.
<b>mandatory</b>		Specifies that clients are required to negotiate 802.1w PMF protection on the WLAN.
<b>optional</b>		Specifies that the WLAN does not mandate 802.11w support on clients. Clients with no 802.11w capability can also join.
<b>saquery-retry-time</b>		Time interval identified before which the SA query response is expected. If the device does not get a response, another SA query is tried.
<i>saquery-retry-time-milliseconds</i>		The saquery retry time in milliseconds. The range is from 100 to 500 ms. The value must be specified in multiples of 100 milliseconds.

**Command Default** PMF is disabled.

**Command Modes** WLAN configuration

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.12.1	This command was introduced.

**Usage Guidelines** You must have WPA (Wi-Fi Protected Access) and AKM (Authentication Key Management) configured to use this feature. See Related Command section for more information on configuring the security parameters.

802.11w introduces an Integrity Group Temporal Key (IGTK) that is used to protect broadcast or multicast robust management frames. IGTK is a random value, assigned by the authenticator station (device) used to protect MAC management protocol data units (MMPDUs) from the source STA. The 802.11w IGTK key is



derived using the four-way handshake and is used only on WLANs that are configured with WPA2 security at Layer 2.

This example shows how to enable the association comeback value at 15 seconds.

```
Device(config-wlan)# security pmf association-comeback 15
```

This example shows how to configure mandatory 802.11w MPF protection for clients on a WLAN:

```
Device(config-wlan)# security pmf mandatory
```

This example shows how to configure optional 802.11w MPF protection for clients on a WLAN:

```
Device(config-wlan)# security pmf optional
```

This example shows how to configure the saquery parameter:

```
Device(config-wlan)# security pmf saquery-retry-time 100
```

This example shows how to disable the PMF feature:

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

# security static-wep-key

To configure static WEP keys on a WLAN, use the **security static-wep-key** command.

```
security static-wep-key {authentication {open | sharedkey } | encryption {104 | 40 } {ascii | hex | {0 | 8 } wep-key | wep-index }}
```

## Syntax Description

<b>open</b>	Open system authentication.
<b>sharedkey</b>	Shared key authentication.
<b>0</b>	Specifies an UNENCRYPTED password is used.
<b>8</b>	Specifies an AES encrypted password is used.
<i>wep-key</i>	Enter the name of the WEP key.

## Command Default

None

## Command Modes

config-wlan

## Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

## Examples

The following example shows how to authenticate 802.11 using shared key:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# wlan profile-name wlan-id
Device(config-wlan)# security static-wep-key authentication sharedkey
```

# security web-auth

To change the status of web authentication used on a WLAN, use the **security web-auth** command. To disable web authentication on a WLAN, use the **no** form of the command.

**security web-auth** [{**authentication-list** *authentication-list-name* | **on-macfilter-failure** | **parameter-map** *parameter-map-name*}]

**no security web-auth** [{**authentication-list** [*authentication-list-name*] | **on-macfilter-failure** | **parameter-map** [*parameter-name*]}]

Syntax Description		
<b>authentication-list</b> <i>authentication-list-name</i>	Sets the authentication list for IEEE 802.1x.	
<b>on-macfilter-failure</b>	Enables web authentication on MAC failure.	
<b>parameter-map</b> <i>parameter-map-name</i>	Configures the parameter map.	

**Command Default** Web authentication is disabled.

**Command Modes** WLAN configuration

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.12.1	This command was introduced.

## Examples

The following example shows how to configure the authentication-list web authentication on a WLAN:

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

## security wpa akm

To configure authentication key management using Cisco Centralized Key Management (CCKM), use the **security wpa akm** command. To disable the authentication key management for Cisco Centralized Key Management, use the **no** form of the command.

```
security wpa [{ akm { cckm | dot1x | ft | pmf | psk } | wpa1 [ ciphers { aes | tkip } ] | wpa2
[ ciphers { aes } ]}]
no security wpa [{ akm { cckm | dot1x | ft | pmf | psk } | wpa1 [ ciphers { aes | tkip } ]
| wpa2 [ ciphers { aes } ]}]
```

Syntax Description	akm	Configures the Authentication Key Management (AKM) parameters.
	aes	Configures AES (Advanced Encryption Standard) encryption support.
	cckm	Configures Cisco Centralized Key Management support.
	ciphers	Configures WPA ciphers.
	dot1x	Configures 802.1x support.
	ft	Configures fast transition using 802.11r.
	pmf	Configures 802.11w management frame protection.
	psk	Configures 802.11r fast transition pre-shared key (PSK) support.
	tkip	Configures Temporal Key Integrity Protocol (TKIP) encryption support.
	wpa2	Configures Wi-Fi Protected Access 2 ( WPA2) support.

**Command Default** By default Wi-Fi Protected Access2, 802.1x are enabled. WPA2, PSK, CCKM, FT dot1x, FT PSK, PMF dot1x, PMF PSK, FT Support are disabled. The FT Reassociation timeout is set to 20 seconds, PMF SA Query time is set to 200.

**Command Modes** WLAN Configuration (config-wlan)

### Command History

#### Release Modification

This command was introduced.

### Example

The following example shows how to configure CCKM on the WLAN.

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
```

```
Device(config)# wlan wlan1  
Device(config-wlan)#security wpa akm cckm
```

## security wpa akm sae

To enable Auth Key Management (AKM) Secure Agile Exchange (SAE), use the **security wpa akm sae** command. Use the **no** form of this command to disable the feature.

**security wpa akm sae**

**no security wpa akm sae**

Syntax	Description
<b>security</b>	Configures the security policy for a WLAN.
<b>wpa</b>	Configures WPA/WPA2 Support for a WLAN.
<b>akm</b>	Configures Auth Key Management.
<b>sae</b>	Configures SAE support.

**Command Default** None

**Command Modes** WLAN configuration mode (config-wlan)

Command History	Release	Modification
	Cisco IOS XE Bengaluru 17.5.1	This command was introduced.

The following example shows how to enable Auth Key Management (AKM) Secure Agile Exchange (SAE):

```
Device# configure terminal
Device(config)# wlan wlan-test 3 ssid-test
Device(config-wlan)# security wpa akm sae
```

## sensor-name

To set the sensor name for Stealthwatch Cloud registration, use the **sensor-name** *swc-sensor-name* command. To disable the command, use the **no** form of this command.

**sensor-name** *swc-sensor-name*

**no sensor-name** *swc-sensor-name*

<b>Syntax Description</b>	<b>sensor-name</b>	Sets the sensor name for Stealthwatch Cloud registration.
	<i>swc-sensor-name</i>	Specifies the Stealthwatch service key. The device serial number is the default value.
<b>Command Default</b>	None	
<b>Command Modes</b>	Stealthwatch Cloud monitor configuration mode	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Bengaluru 17.4.1	This command was introduced.
<b>Usage Guidelines</b>	None	

### Example

This example shows how to set the sensor name for Stealthwatch Cloud registration:

```
Device(config-stealthwatch-cloud-monitor)# sensor-name SwC-sensor-name
```

# service-key

To set the Stealthwatch Cloud service key, use the **service-key** *swc-service-key*. To disable the command, use the **no** form of this command.

**service-key** *swc-service-key*

**no service-key** *swc-service-key*

Syntax Description	service-key	swc-service-key
	Sets the Stealthwatch Cloud service key.	
	Service-key is provided by the Stealthwatch Cloud portal. The alternative to service-key is the authentication through the IP address allowed list.	
	<i>swc-service-key</i>	Specifies the Stealthwatch service key.

**Command Default** None

**Command Modes** Stealthwatch Cloud monitor configuration mode

Command History	Release	Modification
	Cisco IOS XE Bengaluru 17.4.1	This command was introduced.

**Usage Guidelines** None

## Example

This example shows how to set the Stealthwatch Cloud service key:

```
Device(config-stealthwatch-cloud-monitor)# service-key xxxxxxxxxxxxxxxxxxxxxxx
```



## service-policy

To configure the quality of service (QoS) service policy, use the **service-policy** command. To disable a QoS policy, use the **no** form of this command.

```
service-policy { client | input | output } policy-name
no { client | input | output } policy-name
```

<b>Syntax Description</b>	<b>client</b>	Assigns a policy map to all clients in the WLAN.
	<b>input</b>	Assigns an input policy map.
	<b>output</b>	Assigns an output policy map.
	<i>policy-name</i>	The policy map name.
<b>Command Default</b>	None	
<b>Command Modes</b>	Wireless policy configuration	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.10.1	This command was introduced.

### Examples

This example shows how to configure the input service policy:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# wireless profile policy default-policy-profile
Device(config-wireless-policy)# service-policy input test1
```

## service-policy qos

To configure a QoS service policy, use the **service-policy qos** command.

**service-policy qos** {**input** | **output**}*policy-name*

<b>Syntax Description</b>	<b>input</b>	Input QoS policy.
	<b>output</b>	Output QoS policy.
	<i>policy-name</i>	Policy name.
<b>Command Default</b>	None	
<b>Command Modes</b>	config-service-template	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

### Examples

The following example shows how to configure an output QoS policy:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# service-template fabric-profile-name
Device(config-service-template)# service-policy qos output policy-name
```

# service-template

To configure service template, use the **service-template** command.

```
service-template service-template-name {access-group acl_list | vlan vlan_id | absolute-timer seconds
| service-policy qos {input | output}}
```

Syntax Description		
<i>service-template-name</i>		Name of the service template.
<i>acl_list</i>		Access list name to be applied.
<i>vlan_id</i>		VLAN ID. The VLAN ID value ranges from 1 to 4094.
<i>seconds</i>		Session timeout value for service template. The session timeout value ranges from 1 to 65535 seconds.
<b>service-policy qos</b> { <b>input</b>   <b>output</b> }		QoS policies for client.

**Command Default** None

**Command Modes** Global configuration

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.12.1	This command was introduced.

**Usage Guidelines** None

The following example shows how to configure service template:

```
Device#configure terminal
Device(config)#service-template cisco-phone-template
Device(config-service-template)#access-group foo-acl
Device(config-service-template)#vlan 100
Device(config-service-template)#service-policy qos input foo-qos
Device(config-service-template)#end
```

## service timestamps

To configure the system to time-stamp debugging or logging messages, use the **service timestamps** command in global configuration commands. Use the **no** form of this command to disable this service.

```
service timestamps debug log {datetime | uptime localtime msec show-timezone year}
no service timestamps debug log
```

### Syntax Description

<b>debug</b>	Debug as the timestamp message type.
<b>log</b>	Log as the timestamp message type.
<b>datetime</b>	<b>datetime</b>
<b>uptime</b>	(Optional) Time stamp with time since the system was rebooted.
<b>localtime</b>	(Optional) Time stamp relative to the local time zone.
<b>msec</b>	(Optional) Include milliseconds in the date and time stamp.
<b>show-timezone</b>	(Optional) Include the time zone name in the time stamp.
<b>year</b>	(Optional) Include year in timestamp.

### Command Default

No time-stamping.

If **service timestamps** is specified with no arguments or keywords, default is **service timestamps debug uptime**.

The default for **service timestamps debug datetime** is to format the time in UTC, with no milliseconds and no time zone name.

The command **no service timestamps** by itself disables time stamps for both debug and log messages.

### Command Modes

Global configuration

### Command History

Release	Modification
Cisco IOS XE Amsterdam 17.1.1s	This command was introduced in a release earlier than Cisco IOS XE Amsterdam 17.1.1s.

### Usage Guidelines

Time stamps can be added to either debugging or logging messages independently. The uptime form of the command adds time stamps in the format HHHH:MM:SS, indicating the time since the system was rebooted. The datetime form of the command adds time stamps in the format MMM DD HH:MM:SS, indicating the date and time according to the system clock. If the system clock has not been set, the date and time are preceded by an asterisk (\*) to indicate that the date and time are probably not correct.

### Example

The following example enables time stamps on debugging messages, showing the time since reboot:

```
Device(config)# service timestamps debug uptime
```

The following example enables time stamps on logging messages, showing the current time and date relative to the local time zone, with the time zone name included:

```
Device(config)# service timestamps log datetime localtime show-timezone
```

## session-timeout

To configure session timeout for clients associated to a WLAN, use the **session-timeout** command. To restore the default value, use the **no** form of this command.

**session-timeout seconds**  
**no session-timeout**

<b>Syntax Description</b>	<i>seconds</i> Timeout or session duration in seconds. The range is from 300 to 86400. The default value is 1800.  Configuring 86400 is equivalent to max timeout. And value 0 is not recommended.				
<b>Command Default</b>	None				
<b>Command Modes</b>	WLAN configuration				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Cisco IOS XE Gibraltar 16.12.1</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Cisco IOS XE Gibraltar 16.12.1	This command was introduced.
Release	Modification				
Cisco IOS XE Gibraltar 16.12.1	This command was introduced.				

This example shows how to configure a session timeout to 3600 seconds:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)#wireless profile policy policy1
Device(config-wireless-policy)#session-timeout 3600
```

## set

To classify IP traffic by setting a Differentiated Services Code Point (DSCP) or an IP-precedence value in the packet, use the **set** command in policy-map class configuration mode. Use the **no** form of this command to remove traffic classification.

**set**

**cos** | **dscp** | **precedence** | **ip** | **qos-group** | **wlan**

**set cos**

{*cos-value*} | {**cos** | **dscp** | **precedence** | **qos-group** | **wlan**} [{**table** *table-map-name*}]

**set dscp**

{*dscp-value*} | {**cos** | **dscp** | **precedence** | **qos-group** | **wlan**} [{**table** *table-map-name*}]

**set ip** {**dscp** | **precedence**}

**set precedence** {*precedence-value*} | {**cos** | **dscp** | **precedence** | **qos-group**} [{**table** *table-map-name*}]

**set qos-group**

{*qos-group-value* | **dscp** [{**table** *table-map-name*}] | **precedence** [{**table** *table-map-name*}]}

**set wlan user-priority**

*user-priority-value* | **costable** *table-map-name* | **dscptable** *table-map-name* | **qos-grouptable** *table-map-name* | **wlantable** *table-map-name*

**Syntax Description****cos**

Sets the Layer 2 class of service (CoS) value or user priority of an outgoing packet. You can specify these values:

- *cos-value*—CoS value from 0 to 7. You also can enter a mnemonic name for a commonly used value.
- Specify a packet-marking category to set the CoS value of the packet. If you also configure a table map for mapping and converting packet-marking values, this establishes the "map from" packet-marking category. Packet-marking category keywords:
  - **cos**—Sets a value from the CoS value or user priority.
  - **dscp**—Sets a value from packet differentiated services code point (DSCP).
  - **precedence**—Sets a value from packet precedence.
  - **qos-group**—Sets a value from the QoS group.
  - **wlan**—Sets the WLAN user priority values.
- (Optional) **table** *table-map-name*—Indicates that the values set in a specified table map are used to set the CoS value. Enter the name of the table map used to specify the CoS value. The table map name can be a maximum of 64 alphanumeric characters.

If you specify a packet-marking category but do not specify the table map, the default action is to copy the value associated with the packet-marking category as the CoS value. For example, if you enter the **set cos precedence** command, the precedence (packet-marking category) value is copied and used as the CoS value.



---

**dscp**

Sets the differentiated services code point (DSCP) value to mark IP(v4) and IPv6 packets. You can specify these values:

- **cos-value**—Number that sets the DSCP value. The range is from 0 to 63. You also can enter a mnemonic name for a commonly used value.
- Specify a packet-marking category to set the DSCP value of the packet. If you also configure a table map for mapping and converting packet-marking values, this establishes the "map from" packet-marking category. Packet-marking category keywords:
  - **cos**—Sets a value from the CoS value or user priority.
  - **dscp**—Sets a value from packet differentiated services code point (DSCP).
  - **precedence**—Sets a value from packet precedence.
  - **qos-group**—Sets a value from the QoS group.
  - **wlan**—Sets a value from WLAN.
- (Optional)**table** *table-map-name*—Indicates that the values set in a specified table map will be used to set the DSCP value. Enter the name of the table map used to specify the DSCP value. The table map name can be a maximum of 64 alphanumeric characters.

If you specify a packet-marking category but do not specify the table map, the default action is to copy the value associated with the packet-marking category as the DSCP value. For example, if you enter the **set dscp cos** command, the CoS value (packet-marking category) is copied and used as the DSCP value.

---

**ip**

Sets IP values to the classified traffic. You can specify these values:

- **dscp**—Specify an IP DSCP value from 0 to 63 or a packet marking category.
  - **precedence**—Specify a precedence-bit value in the IP header; valid values are from 0 to 7 or specify a packet marking category.
-

---

**precedence**

Sets the precedence value in the packet header. You can specify these values:

- *precedence-value*— Sets the precedence bit in the packet header; valid values are from 0 to 7. You also can enter a mnemonic name for a commonly used value.
- Specify a packet marking category to set the precedence value of the packet.
  - **cos**—Sets a value from the CoS or user priority.
  - **dscp**—Sets a value from packet differentiated services code point (DSCP).
  - **precedence**—Sets a value from packet precedence.
  - **qos-group**—Sets a value from the QoS group.
- (Optional) **table** *table-map-name*—Indicates that the values set in a specified table map will be used to set the precedence value. Enter the name of the table map used to specify the precedence value. The table map name can be a maximum of 64 alphanumeric characters.

If you specify a packet-marking category but do not specify the table map, the default action is to copy the value associated with the packet-marking category as the precedence value. For example, if you enter the **set precedence cos** command, the CoS value (packet-marking category) is copied and used as the precedence value.

---

---

**qos-group**

Assigns a QoS group identifier that can be used later to classify packets.

- *qos-group-value*—Sets a QoS value to the classified traffic. The range is 0 to 31. You also can enter a mnemonic name for a commonly used value.
- **dscp**—Sets the original DSCP field value of the packet as the QoS group value.
- **precedence**—Sets the original precedence field value of the packet as the QoS group value.
- (Optional)**table** *table-map-name*—Indicates that the values set in a specified table map will be used to set the DSCP or precedence value. Enter the name of the table map used to specify the value. The table map name can be a maximum of 64 alphanumeric characters.

If you specify a packet-marking category (**dscp** or **precedence**) but do not specify the table map, the default action is to copy the value associated with the packet-marking category as the QoS group value. For example, if you enter the **set qos-group precedence** command, the precedence value (packet-marking category) is copied and used as the QoS group value.

---

**wlan user-priority** *wlan-user-priority*

Assigns a WLAN user-priority to the classified traffic. You can specify these values:

- *wlan-user-priority*—Sets a WLAN user priority to the classified traffic. The range is 0 to 7.
- **cos**—Sets the Layer 2 CoS field value as the WLAN user priority.
- **dscp**—Sets the DSCP field value as the WLAN user priority.
- **precedence**—Sets the precedence field value as the WLAN user priority.
- **wlan**—Sets the WLAN user priority field value as the WLAN user priority.
- (Optional)**table** *table-map-name*—Indicates that the values set in a specified table map will be used to set the WLAN user priority value. Enter the name of the table map used to specify the value. The table map name can be a maximum of 64 alphanumeric characters.

If you specify a packet-marking category but do not specify the table map, the default action is to copy the value associated with the packet-marking category as the WLAN user priority. For example, if you enter the **set wlan user-priority cos** command, the cos value (packet-marking category) is copied and used as the WLAN user priority.

**Command Default**

No traffic classification is defined.

**Command Modes**

Policy-map class configuration

**Command History****Release**

Cisco IOS XE Gibraltar 16.12.1

**Modification**

This command was introduced in Cisco IOS XE Gibraltar 16.12.1.

**Usage Guidelines**

For the **set dscp** *dscp-value* command, the **set cos** *cos-value* command, and the **set ip precedence** *precedence-value* command, you can enter a mnemonic name for a commonly used value. For example, you can enter the **set dscp af11** command, which is the same as entering the **set dscp 10** command. You can enter the **set ip precedence critical** command, which is the same as entering the **set ip precedence 5** command. For a list of supported mnemonics, enter the **set dscp ?** or the **set ip precedence ?** command to see the command-line help strings.

When you configure the **set dscp cos** command, note the following: The CoS value is a 3-bit field, and the DSCP value is a 6-bit field. Only the three bits of the CoS field are used.

When you configure the **set dscp qos-group** command, note the following:

- The valid range for the DSCP value is a number from 0 to 63. The valid value range for the QoS group is a number from 0 to 99.
- If a QoS group value falls within both value ranges (for example, 44), the packet-marking value is copied and the packets is marked.
- If QoS group value exceeds the DSCP range (for example, 77), the packet-marking value is not be copied and the packet is not marked. No action is taken.

The **set qos-group** command cannot be applied until you create a service policy in policy-map configuration mode and then attach the service policy to an interface or ATM virtual circuit (VC).

To return to policy-map configuration mode, use the **exit** command. To return to privileged EXEC mode, use the **end** command.

## Examples

This example shows how to assign DSCP 10 to all FTP traffic without any policers:

```
Device(config)# policy-map policy_ftp
Device(config-pmap)# class-map ftp_class
Device(config-cmap)# exit
Device(config)# policy policy_ftp
Device(config-pmap)# class ftp_class
Device(config-pmap-c)# set dscp 10
Device(config-pmap)# exit
```

You can verify your settings by entering the **show policy-map** privileged EXEC command.

## sftp-image-path (image-download-mode sftp)

To configure the image path of the SFTP server for image download, use the **sftp-image-path** command. Use the **no** form of the command to negate the command or to set the command to its default.

```
sftp-image-path sftp-image-path
```

```
no sftp-image-path sftp-image-path
```

<b>Syntax Description</b>	<i>sftp-image-path</i> Specifies the image path of the SFTP server.
---------------------------	---

<b>Command Default</b>	None
------------------------	------

<b>Command Modes</b>	Wireless image download profile SFTP configuration
----------------------	--

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.12.2s	This command was introduced.

### Example

```
Device(config)# wireless profile image-download default
Device(config-wireless-image-download-profile)# image-download-mode sftp
Device(config-wireless-image-download-profile-sftp)# sftp-image-path
/download/object/stream/images/ap-images
```

## sftp-image-server (image-download-mode sftp)

To configure the SFTP server address for image download, use the **sftp-image-server** command. Use the **no** form of this command to negate the configuration or to set the command to its default.

```
sftp-image-server {A.B.C.D | X:X:X:X::X}
```

```
no sftp-image-server {A.B.C.D | X:X:X:X::X}
```

<b>Syntax Description</b>	<i>A.B.C.D</i> Specifies the SFTP IPv4 server address.
	<i>X:X:X:X::X</i> Specifies the SFTP IPv6 server address.
<b>Command Default</b>	None
<b>Command Modes</b>	Wireless image download profile SFTP configuration mode.
<b>Command History</b>	<b>Release</b>
	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.12.2s This command was introduced.

### Example

```
Device(config)# wireless profile image-download default
Device(config-wireless-image-download-profile)# image-download-mode sftp
Device(config-wireless-image-download-profile-sftp)# sftp-image-server 10.1.1.1
```

## sftp-password (image-download-mode sftp)

To configure the SFTP server password for image download, use the **sftp-password** command. Use the **no** form of this command to negate the configuration or to set the command to its default.

```
sftp-password {0 | 8} <Enter password> <Re-enter password>
```

```
no sftp-password {0 | 8} <Enter password> <Re-enter password>
```

Syntax Description		
<b>0</b>	Specifies that an unencrypted password will follow.	
<b>8</b>	Specifies that an AES encrypted password will follow.	
<i>password</i>	Specifies the SFTP server password.	
<i>re-enter password</i>	Indicates that the user must re-enter the SFTP server password.	

**Command Default** None

**Command Modes** Wireless image download profile SFTP configuration

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.12.2s	This command was introduced.

### Example

```
Device(config)# wireless profile image-download default
Device(config-wireless-image-download-profile)# image-download-mode sftp
Device(config-wireless-image-download-profile-sftp)# sftp-password 0 xxxxxxxx
```



## sftp-password (trace-export)

To configure the SFTP server password for trace export, use the **sftp-password** command. Use the **no** form of this command to negate the configuration or to set the command to its default.

```
sftp-password <Enter password> <Re-enter password>
```

```
no sftp-password <Enter password> <Re-enter password>
```

<b>Syntax Description</b>	<i>password</i>	Specifies the SFTP server password.
	<i>re-enter password</i>	Indicates that the user must re-enter the SFTP server password.
<b>Command Default</b>	None	
<b>Command Modes</b>	Wireless trace export profile SFTP configuration	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.12.2s	This command was introduced.

### Example

```
Device(config)# wireless profile transfer trace-export trace_export_name
Device(config-wireless-trace-export-profile)# log-export-mode sftp
Device(config-wireless-trace-export-profile-sftp)# sftp-password xxxxxxxx xxxxxxxx
```

## sftp-path

To configure the path at the SFTP server for trace log export, use the **sftp-path** command. Use the **no** form of the command to negate the command or to set the command to its default.

```
sftp-path sftp-path
```

```
no sftp-path sftp-path
```

<b>Syntax Description</b>	<i>sftp-path</i> Specifies the path at the SFTP server.				
<b>Command Default</b>	None				
<b>Command Modes</b>	Wireless trace export profile SFTP configuration				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Cisco IOS XE Gibraltar 16.12.2s</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Cisco IOS XE Gibraltar 16.12.2s	This command was introduced.
Release	Modification				
Cisco IOS XE Gibraltar 16.12.2s	This command was introduced.				

### Example

```
Device(config)# wireless profile transfer trace-export trace_export_name
Device(config-wireless-trace-export-profile)# log-export-mode sftp
Device(config-wireless-trace-export-profile-sftp)# sftp-path
/download/object/stream/images/ap-images
```

## sftp-server

To configure the SFTP server address for trace export, use the **sftp-server** command. Use the **no** form of this command to negate the configuration or to set the command to its default.

```
sftp-server {A.B.C.D | X:X:X:X::X}
```

```
no sftp-server {A.B.C.D | X:X:X:X::X}
```

<b>Syntax Description</b>	<i>A.B.C.D</i> Specifies the SFTP IPv4 server address.
	<i>X:X:X:X::X</i> Specifies the SFTP IPv6 server address.

<b>Command Default</b>	None
------------------------	------

<b>Command Modes</b>	Wireless trace export profile SFTP configuration
----------------------	--

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.12.2s	This command was introduced.

### Example

```
Device(config)# wireless profile transfer trace-export trace_export_name
Device(config-wireless-trace-export-profile)# log-export-mode sftp
Device(config-wireless-trace-export-profile-sftp)# sftp-server 10.1.1.1
```

## sftp-username (image-download-mode sftp)

To configure the SFTP server username for image download, use the **sftp-username** command. Use the **no** form of this command to negate the configuration or to set the command to its default.

```
sftp-username Username
```

```
no sftp-username Username
```

<b>Syntax Description</b>	<i>username</i> Specifies the SFTP server username.				
<b>Command Default</b>	None				
<b>Command Modes</b>	Wireless image download profile SFTP configuration				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Cisco IOS XE Gibraltar 16.12.2s</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Cisco IOS XE Gibraltar 16.12.2s	This command was introduced.
Release	Modification				
Cisco IOS XE Gibraltar 16.12.2s	This command was introduced.				

### Example

```
Device(config)# wireless profile image-download default
Device(config-wireless-image-download-profile)# image-download-mode sftp
Device(config-wireless-image-download-profile-sftp)# sftp-username sftp-server-username
```

## sftp-username (trace-export)

To configure the SFTP server username for trace export, use the **sftp-username** command. Use the **no** form of this command to negate the configuration or to set the command to its default.

```
sftp-username Username
```

```
no sftp-username Username
```

<b>Syntax Description</b>	<i>username</i> Specifies the SFTP server username.				
<b>Command Default</b>	None				
<b>Command Modes</b>	Wireless trace export profile SFTP configuration				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Cisco IOS XE Gibraltar 16.12.2s</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Cisco IOS XE Gibraltar 16.12.2s	This command was introduced.
Release	Modification				
Cisco IOS XE Gibraltar 16.12.2s	This command was introduced.				

### Example

```
Device(config)# wireless profile transfer trace-export trace_export_name
Device(config-wireless-trace-export-profile)# log-export-mode sftp
Device(config-wireless-trace-export-profile-sftp)# sftp-username sftp-server-username
```

## snmp-server enable traps wireless

To enable wireless notifications for a host, use the **snmp-server enable traps wireless** command.

**snmp-server enable traps wireless** [ **AP** | **bsnMobileStation** | **MESH** | **bsnAutoRF** | **rogue** | **wireless\_mobility** | **RRM** | **bsnGeneral** ]

Syntax Description		
<b>AP</b>	Enables wireless SNMP traps for APs	
<b>bsnMobileStation</b>	Enables wireless client traps	
<b>MESH</b>	Enables wireless mesh traps	
<b>bsnAutoRF</b>	Enables wireless RF related traps	
<b>rogue</b>	Enables traps for wireless rogue	
<b>wireless_mobility</b>	Enables traps for wireless mobility	
<b>RRM</b>	Enables traps for wireless RRM	
<b>bsnGeneral</b>	Enables general controller traps	

**Command Default** None

**Command Modes** Global Configuration (config)

Command History	Release	Modification
	Cisco IOS XE Bengaluru 17.4.1	This command was introduced.

### Examples

The following example shows how to enable wireless notifications for a host:

```
Device# snmp-server enable traps wireless MESH
```

## snmp-server subagent cache

To prevent CPU spikes in the controller during Simple Network Management Protocol (SNMP) polling, use the **snmp-server subagent cache** command. To disable the subagent cache, use the **no** form of this command.

**snmp-server subagent cache** [ **timeout** *seconds* ]

**snmp-server subagent cache** [ **timeout** *seconds* ]

<b>Syntax Description</b>	<b>timeout</b>	Specifies the subagent cache timeout.
	<i>seconds</i>	The server timeout value, in seconds. The valid values range from 1 to 100, with a default of 60.
<b>Command Default</b>	None	
<b>Command Modes</b>	Global configuration (config)	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Dublin 17.11.1	This command was introduced.
<b>Usage Guidelines</b>	Use this command to prevent CPU spikes in the controller by clearing the cache at regular intervals.	
<b>Examples</b>	The following example shows how to prevent CPU spikes in the controller during SNMP polling:	
	<pre>Device# configure terminal Device(config)# snmp-server subagent cache</pre>	

# ssid broadcast persistent

To enable the SSID broadcast mode, use the **ssid broadcast persistent** command. Use the **no** form of the command to disable the feature.

**ssid broadcast persistent**

**no ssid broadcast persistent**

---

**Syntax Description** This command has no keywords or arguments.

---



---

**Command Default** None

---

**Command Modes** AP profile configuration (config-ap-profile)

---

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.12.1	This command was introduced.

---



---

**Usage Guidelines** Enabling or disabling this feature causes the AP to re-join.

---

**Examples** The following example shows how to enable the SSID broadcast mode:

```
Device# configure terminal
Device(config)# ap profile ap-profile-name
Device(config-ap-profile)# ssid broadcast persistent
```



## statistics ap-system-monitoring alarm-enable

To enable alarms for AP real-time statistics (CPU and Memory), use the **statistics ap-system-monitoring alarm-enable** command. Use the **no** form of this command to disable the feature.

[no] **statistics ap-system-monitoring alarm-enable**

<b>Syntax Description</b>	<b>statistics</b>	Configures the AP statistics.
	<b>ap-system-monitoring alarm-enable</b>	Enables alarms for AP real-time statistics (CPU and Memory).
<b>Command Default</b>	None	
<b>Command Modes</b>	AP Profile Configuration (config-ap-profile)	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Bengaluru 17.5.1	This command was introduced.

### Example

The following example shows how to enable alarms for AP real-time statistics (CPU and Memory):

```
Device(config)# ap profile default-ap-profile
Device(config-ap-profile)# statistics ap-system-monitoring alarm-enable
```

## statistics ap-system-monitoring alarm-hold-time

To define the hold time interval before triggering the alarm, use the **statistics ap-system-monitoring alarm-hold-time** command.

**statistics ap-system-monitoring alarm-hold-time** *0-3600*

Syntax Description	statistics	Configures the AP statistics.
	<b>ap-system-monitoring alarm-hold-time</b>	Enables alarms for AP real-time statistics (CPU and Memory).
	<i>0-3600</i>	Specifies the alarm hold time interval in seconds.

**Command Default** None

**Command Modes** AP Profile Configuration (config-ap-profile)

Command History	Release	Modification
	Cisco IOS XE Bengaluru 17.5.1	This command was introduced.

### Example

The following example shows how to define the hold time interval before triggering the alarm:

```
Device(config)# ap profile default-ap-profile
Device(config-ap-profile)# statistics ap-system-monitoring alarm-hold-time 60
```

# statistics ap-system-monitoring alarm-retransmit-time

To define the interval between retransmissions of the trap alarm, use the **statistics ap-system-monitoring alarm-retransmit-time**

**statistics ap-system-monitoring alarm-retransmit-time** *0-65535*

<b>Syntax Description</b>	<b>statistics</b>	Configures the AP statistics.
	<b>ap-system-monitoring alarm-retransmit-time</b>	Define the interval between retransmissions of the trap alarm.
	<i>0-65535</i>	Specifies the interval between retransmissions of the trap alarm, in seconds.
<b>Command Default</b>	None	
<b>Command Modes</b>	AP Profile Configuration (config-ap-profile)	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Bengaluru 17.5.1	This command was introduced.

## Example

The following example shows how to define the interval between retransmissions of the trap alarm:

```
Device(config)# ap profile default-ap-profile
Device(config-ap-profile)# statistics ap-system-monitoring alarm-retransmit-time 60
```

## statistics ap-system-monitoring cpu-threshold

To define the threshold percentage for CPU usage on the AP to trigger alarms, use the **statistics ap-system-monitoring cpu-threshold** command.

**statistics ap-system-monitoring cpu-threshold** *0-100*

<b>Syntax Description</b>	<b>statistics</b>	Configures the AP statistics.
	<b>ap-system-monitoring cpu-threshold</b>	Defines the threshold for CPU usage on AP to trigger alarms.
	<i>0-100</i>	Specifies the percentage of threshold for CPU usage on AP to trigger alarms.
<b>Command Default</b>	None	
<b>Command Modes</b>	AP Profile Configuration (config-ap-profile)	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Bengaluru 17.5.1	This command was introduced.

### Example

The following example shows how to define the threshold percentage for CPU usage on the AP to trigger alarms:

```
Device(config)# ap profile default-ap-profile
Device(config-ap-profile)# statistics ap-system-monitoring cpu-threshold 70
```

## statistics ap-system-monitoring enable

To enable monitoring of AP real-time statistics (CPU and Memory), use the **statistics ap-system-monitoring enable** command. Use the **no** form of this command to disable the feature.

[no] **statistics ap-system-monitoring enable**

<b>Syntax Description</b>	<b>statistics</b>	Configures the AP statistics.
	<b>ap-system-monitoring enable</b>	Enables monitoring of AP real-time statistics (CPU and Memory).
<b>Command Default</b>	None	
<b>Command Modes</b>	AP Profile Configuration (config-ap-profile)	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Bengaluru 17.5.1	This command was introduced.

### Example

The following example shows how to enable monitoring of AP real-time statistics (CPU and Memory):

```
Device(config)# ap profile default-ap-profile
Device(config-ap-profile)# statistics ap-system-monitoring enable
```

## statistics ap-system-monitoring mem-threshold

To define the threshold percentage for memory usage on the AP, to trigger alarms.

**statistics ap-system-monitoring mem-threshold** *0-100*

<b>Syntax Description</b>	<b>statistics</b>	Configures the AP statistics.
	<b>ap-system-monitoring mem-threshold</b>	Defines the threshold for memory usage on AP to trigger alarms.
	<i>0-100</i>	Specifies the percentage of threshold for memory usage on AP to trigger alarms.
<b>Command Default</b>	None	
<b>Command Modes</b>	AP Profile Configuration (config-ap-profile)	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Bengaluru 17.5.1	This command was introduced.

### Example

The following example shows how to define the threshold percentage for memory usage on the AP to trigger alarms:

```
Device(config)# ap profile default-ap-profile
Device(config-ap-profile)# statistics ap-system-monitoring mem-threshold 60
```

# statistics ap-system-monitoring sampling-interval

To define the sampling interval, use the **statistics ap-system-monitoring sampling-interval**

**statistics ap-system-monitoring sampling-interval** 2-900

<b>Syntax Description</b>	<b>statistics</b>	Configures the AP statistics.
	<b>ap-system-monitoring sampling-interval</b>	Defines the sampling interval.
	2-900	Specifies the sampling interval, in seconds.
<b>Command Default</b>	None	
<b>Command Modes</b>	AP Profile Configuration (config-ap-profile)	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Bengaluru 17.5.1	This command was introduced.

## Example

The following example shows how to define the sampling interval:

```
Device(config)# ap profile default-ap-profile
Device(config-ap-profile)# statistics ap-system-monitoring sampling-interval 100
```

# statistics ap-system-monitoring stats-interval

To define the statistics interval, which gives more weight in the calculations to the statistics received in the last statistic interval seconds, use the **statistics ap-system-monitoring stats-interval**

**statistics ap-system-monitoring stats-interval** *120-900*

<b>Syntax Description</b>	<b>statistics</b>	Configures the AP statistics.
	<b>ap-system-monitoring stats-interval</b>	Defines the statistics interval, which gives more weight in the calculations to the statistics received in the last statistic interval seconds.
	<i>120-900</i>	Specifies the statistics interval, in seconds.
<b>Command Default</b>	None	
<b>Command Modes</b>	AP Profile Configuration (config-ap-profile)	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Bengaluru 17.5.1	This command was introduced.

### Example

The following example shows how to define the statistics interval:

```
Device(config)# ap profile default-ap-profile
Device(config-ap-profile)# statistics ap-system-monitoring stats-interval 120
```



# stealthwatch-cloud-monitor

To configure Stealthwatch Cloud monitor and enter the Stealthwatch Cloud Monitor configuration mode, use the **stealthwatch-cloud-monitor** command. To disable the command, use the **no** form of this command.

**stealthwatch-cloud-monitor**

**no stealthwatch-cloud-monitor**

<b>Command Default</b>	None				
<b>Command Modes</b>	Global Configuration				
<b>Syntax Description</b>	<b>stealthwatch-cloud-monitor</b> Configures Stealthwatch Cloud monitor.				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Cisco IOS XE Bengaluru 17.4.1</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Cisco IOS XE Bengaluru 17.4.1	This command was introduced.
Release	Modification				
Cisco IOS XE Bengaluru 17.4.1	This command was introduced.				
<b>Usage Guidelines</b>	None				

## Example

This example shows how to configure Stealthwatch Cloud monitor:

```
Device(config)# stealthwatch-cloud-monitor
```

# stopbits

To configure the stop bits for the console port, use the **stopbits** command. To revert to the default values, use the **no** form of this command.

```
stopbits { 1 | 2 }
```

```
no stopbits { 1 | 2 }
```

## Syntax Description

- |          |                          |
|----------|--------------------------|
| <b>1</b> | Specifies one stop bit.  |
| <b>2</b> | Specifies two stop bits. |

## Command Default

1 stop bit

## Command Modes

Line configuration

## Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

## Usage Guidelines

You can configure the console ports only from a session on the console port.

## Examples

The following example shows how to configure the stop bits for the console port:

```
Device# configure terminal
Device(config)# line console 0
Device(config-line)# stopbits 1
```

# tag rf

To configure a policy tag for an AP filter, use the **tag rf** command.

```
tag rf rf-tag
```

<b>Syntax Description</b>	<i>rf-tag</i> RF tag name.				
<b>Command Default</b>	None				
<b>Command Modes</b>	config-ap-filter				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Cisco IOS XE Gibraltar 16.10.1</td> <td>This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.</td> </tr> </tbody> </table>	Release	Modification	Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.
Release	Modification				
Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.				

## Examples

The following example shows how to configure a policy tag for an AP filter:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# ap filter name ap-filter-name
Device(config-ap-filter)# rf tag rf-tag-name
```

## tag site

To configure a site tag for an AP filter, use the **tag site** *site-tag* command.

**tag site** *site-tag*

<b>Syntax Description</b>	<i>site-tag</i>	Name of the site tag.
<b>Command Default</b>	None	
<b>Command Modes</b>	config-ap-filter	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

### Examples

The following example shows how to configure a site tag for an AP filter:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# ap filter name ap-filter-name
Device(config-ap-filter)# site tag site-tag-name
```

## tftp-image-path (image-download-mode tftp)

To configure the image path at the TFTP server for image download, use the **tftp-image-path** command. Use the **no** form of this command to negate the configuration or to set the command to its default.

```
tftp-image-path tftp-image-path
```

```
no tftp-image-path tftp-image-path
```

<b>Syntax Description</b>	<i>tftp-image-path</i> Specifies the image path of the TFTP server.				
<b>Command Default</b>	None				
<b>Command Modes</b>	Wireless image download profile TFTP configuration				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Cisco IOS XE Gibraltar 16.12.2s</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Cisco IOS XE Gibraltar 16.12.2s	This command was introduced.
Release	Modification				
Cisco IOS XE Gibraltar 16.12.2s	This command was introduced.				

### Example

```
Device(config)# wireless profile image-download default
Device(config-wireless-image-download-profile)# image-download-mode tftp
Device(config-wireless-image-download-profile-tftp)# tftp-image-path
/download/object/stream/images/ap-images
```

## tftp-image-server (image-download-mode tftp)

To configure the TFTP server address for image download, use the **tftp-image-server** command. Use the **no** form of this command to negate the configuration or to set the command to its default.

```
image-download-mode tftp
```

```
tftp-image-server {A.B.C.D | X:X:X:X::X}
```

```
no tftp-image-server {A.B.C.D | X:X:X:X::X}
```

Syntax Description	
	<i>A.B.C.D</i> Specifies the TFTP IPv4 server address.
	<i>X:X:X:X::X</i> Specifies the TFTP IPv6 server address.

Command Default	None
-----------------	------

Command Modes	Wireless image download profile TFTP configuration
---------------	--

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.12.2s	This command was introduced.

### Example

```
Device(config)# wireless profile image-download default
Device(config-wireless-image-download-profile)# image-download-mode tftp
Device(config-wireless-image-download-profile-tftp)# tftp-image-server 10.1.1.1
```

## tftp-path

To configure the path at the TFTP server for trace log export, use the **tftp-path** command. Use the **no** form of the command to negate the command or to set the command to its default.

```
tftp-path tftp-path
```

```
no tftp-path tftp-path
```

<b>Syntax Description</b>	<i>tftp-path</i> Specifies the path at the TFTP server.				
<b>Command Default</b>	None				
<b>Command Modes</b>	Wireless trace export profile TFTP configuration				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Cisco IOS XE Gibraltar 16.12.2s</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Cisco IOS XE Gibraltar 16.12.2s	This command was introduced.
Release	Modification				
Cisco IOS XE Gibraltar 16.12.2s	This command was introduced.				

### Example

```
Device(config)# wireless profile transfer trace-export trace_export_name
Device(config-wireless-trace-export-profile)# log-export-mode tftp
Device(config-wireless-trace-export-profile-tftp)# tftp-path
/download/object/stream/images/ap-images
```

## tftp-server

To configure the TFTP server address for trace export, use the **tftp-server** command. Use the **no** form of this command to negate the configuration or to set the command to its default.

```
tftp-server {A.B.C.D | X:X:X:X::X}
```

```
no tftp-server {A.B.C.D | X:X:X:X::X}
```

Syntax Description	
<i>A.B.C.D</i>	Specifies the TFTP IPv4 server address.
<i>X:X:X:X::X</i>	Specifies the TFTP IPv6 server address.

Command Default	None
-----------------	------

Command Modes	Wireless trace export profile TFTP configuration
---------------	--

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.12.2s	This command was introduced.

### Example

```
Device(config)# wireless profile transfer trace-export trace_export_name
Device(config-wireless-trace-export-profile)# log-export-mode tftp
Device(config-wireless-trace-export-profile-tftp)# tftp-server 10.1.1.1
```



# timezone delta

To configure timezone offset for an AP, use the **timezone delta** command. To remove the timezone offset for an AP, use the **no timezone** command.

**timezone delta hour** *offset-hour* **minute** *offset-minute*

<b>Syntax Description</b>	<b>hour</b> <i>offset-hour</i>	Local hour difference from Coordinated Universal Time (UTC). Valid range is from -12 to 14.
	<b>minute</b> <i>offset-minute</i>	Local minute difference from UTC. Valid range is from 0 to 59.
<b>Command Default</b>	AP timezone is not set.	
<b>Command Modes</b>	AP profile configuration (config-ap-profile)	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Bengaluru 17.6.1	This command was introduced.

**Usage Guidelines** You can configure the AP timezone only for each AP profile. You cannot configure the AP timezone for each AP. To configure the timezone, either apply the current controller timezone or the time difference. By default, timezone is disabled.

## Examples

The following example shows how to configure timezone offset for AP:

```
Device# configure terminal
Device(config)# ap profile test
Device(config-ap-profile)# timezone delta hour -12 minute 2
```

# udp-timeout

To configure timeout value for UDP sessions, use the **udp-timeout** command.

**udp-timeout** *timeout\_value*

---

## Syntax Description

*timeout\_value* Is the timeout value for UDP sessions.

The range is from 1 to 30 seconds.

**Note** The *public-key* and *resolver* parameter-map options are automatically populated with the default values. So, you need not change them.

---

## Command Default

None

## Command Modes

Profile configuration

## Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced.

---

## Example

This example shows how to configure timeout value for UDP sessions:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# parameter-map type umbrella global
Device(config-profile)# token 57CC80106C087FB1B2A7BAB4F2F4373C00247166
Device(config-profile)# local-domain dns_w1
Device(config-profile)# udp-timeout 2
Device(config-profile)# end
```

# umbrella-param-map

To configure the Umbrella OpenDNS feature for WLAN, use the **umbrella-param-map** command.

**umbrella-param-map** *umbrella-name*

<b>Syntax Description</b>	<i>umbrella-name</i>				
<b>Command Default</b>	None				
<b>Command Modes</b>	config-wireless-policy				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Cisco IOS XE Gibraltar 16.10.1</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Cisco IOS XE Gibraltar 16.10.1	This command was introduced.
Release	Modification				
Cisco IOS XE Gibraltar 16.10.1	This command was introduced.				

## Example

This example shows how to configure the Umbrella OpenDNS feature for WLAN:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# wireless profile policy default-policy-profile
Device(config-wireless-policy)# umbrella-param-map global
Device(config-wireless-policy)# end
```

# update-timer

To configure the mDNS update timers for flex profile, use the **update-timer** command. To disable the command, use the **no** form of this command.

```
update-timer { service-cache <1-100> | statistics <1-100> }
```

```
update-timer { service-cache <1-100> | statistics <1-100> }
```

Syntax Description	update-timer	Configures the mDNS update timers for flex profile.
	<b>service-cache</b> <1-100>	Specifies the mDNS update service-cache timer for flex profile. The default value is one minute,
	<b>statistics</b> <1-100>	Specifies the mDNS update statistics timer for flex profile. The default value is one minute,

**Command Default** None

**Command Modes** mDNS flex profile configuration

Command History	Release	Modification
	Cisco IOS XE Amsterdam 17.3.1	This command was introduced.

## Examples

The following example shows how to configure the mDNS update timers for flex profile:

```
Device(config-mdns-flex-prof)# update-timer service-cache 20
```

# url

To configure the Stealthwatch Cloud server URL, use the **url** *swc-server-url* command. To disable the command, use the **no url** form of this command.

**url** *swc-server-url*

**no url** *swc-server-url*

<b>Syntax Description</b>	<b>url</b>	Sets the Stealthwatch Cloud server URL.
	<i>swc-server-url</i>	Stealthwatch Cloud URL.

**Command Default** None

**Command Modes** Stealthwatch Cloud Monitor Configuration

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Bengaluru 17.4.1	This command was introduced.

**Usage Guidelines** None

## Example

This example shows how to configure the Stealthwatch Cloud server URL:

```
Device(config-stealthwatch-cloud-monitor)# url https://sensors.eu-2.obsrvbl.com
```

## urlfilter list

To configure Flex URL filtering commands for ACL binding, use the **urlfilter list** c in the wireless flex profile ACL mode. To disable the feature, use the **no** form of the command.

**urlfilter list** *urlfilter-list-name*

**[no] urlfilter list** *urlfilter-list-name*

<b>Syntax Description</b>	<b>urlfilter list</b>	Configures the Flex URL filtering commands for ACL binding.
	<i>urlfilter-list-name</i>	Specifies the URL filter list name.
<b>Command Default</b>	None	
<b>Command Modes</b>	Wireless Flex Profile ACL configuration	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Amsterdam 17.1.1	This command was introduced.

### Example

This example shows how the Flex URL filtering commands for ACL binding, is configured:

```
Device(config-wireless-flex-profile-acl)# urlfilter list urlfilter-list-name
```

# usb-enable

To enable USB for Cisco access points (APs), use the **usb-enable** command. To disable the command, use the **no** form of this command.

**usb-enable**

**no usb-enable**

<b>Syntax Description</b>	<b>usb-enable</b> Enables USB for Cisco APs.				
<b>Command Default</b>	None				
<b>Command Modes</b>	AP profile configuration mode				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Cisco IOS XE Bengaluru 17.4.1</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Cisco IOS XE Bengaluru 17.4.1	This command was introduced.
Release	Modification				
Cisco IOS XE Bengaluru 17.4.1	This command was introduced.				
<b>Usage Guidelines</b>	None				

## Example

This example shows how to enable USB for Cisco APs:

```
Device(config-ap-profile)# usb-enable
```

# username

To add a user who can access the Cisco ISE-3315 using SSH, use the **username** command in configuration mode. If the user already exists, the password, the privilege level, or both change with this command. To delete the user from the system, use the **no** form of this command.

**[no] username** *username* **password** {**hash** | **plain**} *password* **role** {**admin** | **user**} [**disabled** [**email** *email-address*]] [**email** *email-address*]

For an existing user, use the following command option:

**username** *username* **password** **role** {**admin** | **user**} *password*

## Syntax Description

<i>username</i>	You should enter only one word which can include hyphen (-), underscore (_) and period (.).
<b>Note</b>	Only alphanumeric characters are allowed at an initial setup.
<b>password</b>	The command to use specify password and user role.
<i>password</i>	Password character length up to 40 alphanumeric characters. You must specify the password for all new users.
<b>hash</b>   <b>plain</b>	Type of password. Up to 34 alphanumeric characters.
<b>role</b> <b>admin</b>   <b>user</b>	Sets the privilege level for the user.
<b>disabled</b>	Disables the user according to the user's email address.
<b>email</b> <i>email-address</i>	The user's email address. For example, user1@example.com.
<b>wlan-profile-name</b>	Displays details of the WLAN profile.

## Command Default

The initial user during setup.

## Command Modes

Configuration

## Usage Guidelines

The **username** command requires that the username and password keywords precede the hash / plain and the admin / user options.

### Example 1

```
ncs/admin(config)# username admin password hash ##### role admin
ncs/admin(config)#
```

### Example 2

```
ncs/admin(config)# username admin password plain Secr3tp@swd role admin
ncs/admin(config)#
```

### Example 3

```
ncs/admin(config)# username admin password plain Secr3tp@swd role admin email
```



```
admin123@example.com  
ncs/admin(config)#
```

# violation

To configure stream violation policy on periodic reevaluation, use the **violation** command.

**violation** {**drop** | **fallback**}

Syntax Description	Parameter	Description
	<b>drop</b>	Stream will be dropped on periodic reevaluation.
	<b>fallback</b>	Stream will be demoted to BestEffort class on periodic reevaluation.
Command Default	None	
Command Modes	config-media-stream	
Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

## Examples

The following example shows how to configure stream violation policy on periodic reevaluation:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# wireless media-stream group my-media-group 224.0.0.0 224.0.0.223
Device(config-media-stream)# violation drop
```

# wgb broadcast-tagging

To configure WGB broadcast tagging for a wireless policy profile, use the **wgb broadcast-tagging** command.

**wgb broadcast-tagging**

---

**Command Default**

None

---

**Command Modes**

config-wireless-policy

---

**Command History**

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

---

## Examples

The following example shows how to enable WGB broadcast tagging for a wireless policy profile:

```
Device# configure terminal  
Enter configuration commands, one per line. End with CNTL/Z.  
Device(config)# wireless profile policy profile-policy-name  
Device(config-wireless-policy)# wgb broadcast-tagging
```

# wgb vlan

To configure WGB VLAN client support for a WLAN policy profile, use the **wgb vlan** command.

## wgb vlan

### Command Default

None

### Command Modes

config-wireless-policy

### Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

## Examples

The following example shows how to enable WGB VLAN client support for the WLAN policy profile named *wlan1-policy-profile*:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# wireless profile policy wlan1-policy-profile
Device(config-wireless-policy)# wgb vlan
```

# whitelist acl

To configure the whitelist ACL, use the **whitelist acl** command.

**whitelist acl** { *standard\_acl\_value* | *extended\_acl\_value* | *acl\_name* }

<b>Syntax Description</b>	<i>standard_acl_value</i>	Specifies the standard access list. Range is from 1 to 199.
	<i>extended_acl_value</i>	Specifies the extended access list. Range is from 1300 to 2699.
	<i>acl_name</i>	Specifies the named access list.
<b>Command Default</b>	None	
<b>Command Modes</b>	ET-Analytics configuration	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.12.1	This command was introduced.

This example shows how to enable in-active timer in the ET-Analytics configuration mode:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# et-analytics
Device(config-et-analytics)# whitelist acl
eta-whitelist
Device((config-et-analytics)# ip access-list
extended eta-whitelist
Device(config-ext-nacl)# permit udp any any eq tftp
Device(config-ext-nacl)# end
```

# wired-vlan-range

To configure wired VLANs on which mDNS service discovery should take place, use the **wired-vlan-range** command. To disable the command, use the **no** form of this command.

**wired-vlan-range** *wired-vlan-range-value*

Syntax Description	Command	Description
	<b>wired-vlan-range</b>	Configures wired VLANs on which mDNS service discovery should take place.
	<i>wired-vlan-range-value</i>	Specifies the wired VLAN range value.

**Command Default** None

**Command Modes** mDNS flex profile configuration

Command History	Release	Modification
	Cisco IOS XE Amsterdam 17.3.1	This command was introduced.

## Examples

The following example shows how to configure wired VLANs on which mDNS service discovery should take place:

```
Device(config-mdns-flex-prof)# wired-vlan-range range-value
```

## config wlan assisted-roaming

To configure assisted roaming on a WLAN, use the **config wlan assisted-roaming** command.

```
config wlan assisted-roaming { neighbor-list | dual-list | prediction } { enable | disable } wlan_id
```

### Syntax Description

<b>neighbor-list</b>	Configures an 802.11k neighbor list for a WLAN.
<b>dual-list</b>	Configures a dual band 802.11k neighbor list for a WLAN. The default is the band that the client is currently associated with.
<b>prediction</b>	Configures an assisted roaming optimization prediction for a WLAN.
<b>enable</b>	Enables the configuration on the WLAN.
<b>disable</b>	Disables the configuration on the WLAN.
<i>wlan_id</i>	Wireless LAN identifier between 1 and 512 (inclusive).

### Command Default

The 802.11k neighbor list is enabled for all WLANs.

By default, dual band list is enabled if the neighbor list feature is enabled for the WLAN.

### Command History

Release	Modification
8.3	This command was introduced.

### Usage Guidelines

When you enable the assisted roaming prediction list, a warning appears and load balancing is disabled for the WLAN, if load balancing is already enabled on the WLAN.

The following example shows how to enable an 802.11k neighbor list for a WLAN:

```
(Cisco Controller) >config wlan assisted-roaming neighbor-list enable 1
```

# wireless aaa policy

To configure a wireless AAA policy, use the **wireless aaa policy** command.

```
wireless aaa policy aaa-policy
```

---

<b>Syntax Description</b>	<i>aaa-policy</i> Name of the wireless AAA policy.
---------------------------	--

---

<b>Command Default</b>	None
------------------------	------

---

<b>Command Modes</b>	Global configuration (config)
----------------------	-------------------------------

---

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

---

## Examples

The following example shows how to configure a wireless AAA policy named *aaa-policy-test*

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# wireless aaa policy aaa-policy-test
```



# wireless aaa policy

To configure a new AAA policy, use the **wireless aaa policy** command.

**wireless aaa policy** *aaa-policy-name*

---

## Syntax Description

*aaa-policy-name* AAA policy name.

---



---

## Command Default

None

---

## Command Modes

Global configuration (config)

---

## Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

---

## Examples

The following example shows how to configure a AAA policy name:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# wireless aaa policy my-aaa-policy
```

## wireless autoqos policy-profile

To enable the **autoqos** wireless policy with an executable command, use the **autoqos** command. Use the **disable** command to disable wireless AutoQoS.

```
wireless autoqos policy-profile policy-profile-name default_policy_profile mode { clear |
enterprise-avc | fastlane | guest | voice }
```

### wireless autoqos disable

Syntax Description	Command	Description
	<b>autoqos</b>	Configures wireless Auto QoS.
	<b>mode</b>	Specifies the wireless AutoQoS mode.
	<b>enterprise-avc</b>	Enables AutoQoS wireless enterprise AVC policy.
	<b>clear</b>	Clears the configured wireless policy.
	<b>fastlane</b>	Enables the AutoQoS fastlane policy. This will disable and enable the 2.4GHz or 5GHz 802.11 network.
	<b>guest</b>	Enables AutoQoS wireless guest policy.
	<b>voice</b>	Enables AutoQoS wireless voice policy. This will disable and enable the 2.4GHz or 5GHz 802.11 network.

**Command Default** None

**Command Modes** Privilege EXEC mode

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.12.2s	This command was introduced.

### Example

This example shows how to enable AutoQoS wireless enterprise policy:

```
Device# wireless autoqos policy-profile default-policy-profile mode enterprise-avc
```

## wireless broadcast vlan

To enable broadcast support on a VLAN, use the **wireless broadcast vlan** command in global configuration mode. To disable Ethernet broadcast support, use the **no** form of the command.

```
wireless broadcast vlan [vlan-id]
no wireless broadcast vlan [vlan-id]
```

<b>Syntax Description</b>	<i>vlan-id</i> (Optional) Specifies the VLAN ID to enable broadcast support to that VLAN. The value ranges from 1 to 4095.				
<b>Command Default</b>	None				
<b>Command Modes</b>	Global configuration mode				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Cisco IOS XE Gibraltar 16.12.1</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Cisco IOS XE Gibraltar 16.12.1	This command was introduced.
Release	Modification				
Cisco IOS XE Gibraltar 16.12.1	This command was introduced.				
<b>Usage Guidelines</b>	<p>Use this command in the global configuration mode only.</p> <p>This example shows how to enable broadcasting on VLAN 20:</p> <pre>Device(config)# wireless broadcast vlan 20</pre>				

# wireless client

To configure client parameters, use the **wireless client** command in global configuration mode.

```
wireless client {association limit assoc-number interval interval | band-select {client-rssi rss |
cycle-count count | cycle-threshold threshold | expire dual-band timeout | expire suppression timeout}
| max-user-login max-user-login | timers auth-timeout seconds | user-timeout user-timeout}
```

## Syntax Description

<b>association limit</b> <i>assoc-number</i> <b>interval</b> <i>interval</i>	Enables association request limit per access point slot at a given interval and configures the association request limit interval.  You can configure number of association request per access point slot at a given interval from one through 100.  You can configure client association request limit interval from 100 through 10000 milliseconds.
<b>band-select</b>	Configures the band select options for the client.
<b>client-rssi</b> <i>rss</i>	Sets the client received signal strength indicator (RSSI) threshold for band select.  The minimum dBm of a client RSSI to respond to probe is between -90 and -20.
<b>cycle-count</b> <i>count</i>	Sets the band select probe cycle count.  You can configure the cycle count from 1 to 10.
<b>cycle-threshold</b> <i>threshold</i>	Sets the time threshold for a new scanning cycle.  You can configure the cycle threshold from 1 to 1000 milliseconds.
<b>expire dual-band</b> <i>timeout</i>	Sets the timeout before stopping to try to push a given client to the 5-GHz band.  You can configure the timeout from 10 to 300 seconds, and the default value is 60 seconds.
<b>expire suppression</b> <i>timeout</i>	Sets the expiration time for pruning previously known dual-band clients.  You can configure the suppression from 10 to 200 seconds, and the default timeout value is 20 seconds.
<b>max-user-login</b> <i>max-user-login</i>	Configures the maximum number of login sessions for a user.
<b>timers auth-timeout</b> <i>seconds</i>	Configures the client timers.
<b>user-timeout</b> <i>user-timeout</i>	Configures the idle client timeout.

**Command Default** No default behavior or values.

**Command Modes** Global configuration

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.10.1	This command was introduced.

This example shows how to set the probe cycle count for band select to 8:

```
Device# configure terminal
Device(config)# wireless client band-select cycle-count 8
Device(config)# end
```

This example shows how to set the time threshold for a new scanning cycle with threshold value of 700 milliseconds:

```
Device# configure terminal
Device(config)# wireless client band-select cycle-threshold 700
Device(config)# end
```

This example shows how to suppress dual-band clients from the dual-band database after 70 seconds:

```
Device# configure terminal
Device(config)# wireless client band-select expire suppression 70
Device(config)# end
```

## wireless client mac-address

To configure the wireless client settings, use the **wireless client mac-address** command in global configuration mode.

```
wireless client mac-address mac-addr ccx {clear-reports | clear-results | default-gw-ping | dhcp-test
| dns-ping | dns-resolve hostname host-name | get-client-capability | get-manufacturer-info |
get-operating-parameters | get-profiles | log-request {roam | rsna | syslog} | send-message message-id
| stats-request measurement-duration {dot11 | security} | test-abort | test-association ssid bssid dot11
channel | test-dot1x [profile-id] bssid dot11 channel | test-profile {anyprofile-id}
```

### Syntax Description

<b><i>mac-addr</i></b>	MAC address of the client.
<b>ccx</b>	Cisco client extension (CCX).
<b>clear-reports</b>	Clears the client reporting information.
<b>clear-results</b>	Clears the test results on the controller.
<b>default-gw-ping</b>	Sends a request to the client to perform the default gateway ping test.
<b>dhcp-test</b>	Sends a request to the client to perform the DHCP test.
<b>dns-ping</b>	Sends a request to the client to perform the Domain Name System (DNS) server IP address ping test.
<b>dns-resolve hostname</b> <i>host-name</i>	Sends a request to the client to perform the Domain Name System (DNS) resolution test to the specified hostname.
<b>get-client-capability</b>	Sends a request to the client to send its capability information.
<b>get-manufacturer-info</b>	Sends a request to the client to send the manufacturer's information.
<b>get-operating-parameters</b>	Sends a request to the client to send its current operating parameters.
<b>get-profiles</b>	Sends a request to the client to send its profiles.
<b>log-request</b>	Configures a CCX log request for a specified client device.
<b>roam</b>	(Optional) Specifies the request to specify the client CCX roaming log
<b>rsna</b>	(Optional) Specifies the request to specify the client CCX RSNA log.
<b>syslog</b>	(Optional) Specifies the request to specify the client CCX system log.

---

**send-message** *message-id*

---

Sends a message to the client.

Message type that involves one of the following:

- 1—The SSID is invalid
  - 2—The network settings are invalid.
  - 3—There is a WLAN credibility mismatch.
  - 4—The user credentials are incorrect.
  - 5—Please call support.
  - 6—The problem is resolved.
  - 7—The problem has not been resolved.
  - 8—Please try again later.
  - 9—Please correct the indicated problem.
  - 10—Troubleshooting is refused by the network.
  - 11—Retrieving client reports.
  - 12—Retrieving client logs.
  - 13—Retrieval complete.
  - 14—Beginning association test.
  - 15—Beginning DHCP test.
  - 16—Beginning network connectivity test.
  - 17—Beginning DNS ping test.
  - 18—Beginning name resolution test.
  - 19—Beginning 802.1X authentication test.
  - 20—Redirecting client to a specific profile.
  - 21—Test complete.
  - 22—Test passed.
  - 23—Test failed.
  - 24—Cancel diagnostic channel operation or select a WLAN profile to resume normal operation.
  - 25—Log retrieval refused by the client.
  - 26—Client report retrieval refused by the client.
  - 27—Test request refused by the client.
  - 28—Invalid network (IP) setting.
  - 29—There is a known outage or problem with the network.
-



- 30—Scheduled maintenance period.
- 31—The WLAN security method is not correct.
- 32—The WLAN encryption method is not correct.
- 33—The WLAN authentication method is not correct.

<b>stats-request</b> <i>measurement-duration</i>	Sends a request for statistics.
<b>dot11</b>	(Optional) Specifies dot11 counters.
<b>security</b>	(Optional) Specifies security counters.
<b>test-abort</b>	Sends a request to the client to abort the current test.
<b>test-association</b> <i>ssid bssid</i> <i>dot11 channel</i>	Sends a request to the client to perform the association test.
<b>test-dot1x</b>	Sends a request to the client to perform the 802.1x test.
<i>profile-id</i>	(Optional) Test profile name.
<i>bssid</i>	Basic SSID.
<i>dot11</i>	Specifies the 802.11a, 802.11b, or 802.11g network.
<i>channel</i>	Channel number.
<b>test-profile</b>	Sends a request to the client to perform the profile redirect test.
<b>any</b>	Sends a request to the client to perform the profile redirect test.
<i>profile-id</i>	Test profile name.
<b>Note</b>	The profile ID should be from one of the client profiles for which client reporting is enabled.

**Command Default** No default behavior or values.

**Command Modes** Global configuration

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.12.1	This command was introduced.

**Usage Guidelines** The **default-gw-ping** test does not require the client to use the diagnostic channel.

This example shows how to clear the reporting information of the client MAC address 00:1f:ca:cf:b6:60:

```
Device# configure terminal
```

**wireless client mac-address**

```
Device(config)# wireless client mac-address 00:1f:ca:cf:b6:60 ccx clear-reports  
Device(config)# end
```

# wireless client vlan-persistent

To enable client roaming across different policy profiles, use the **wireless client vlan-persistent** command.

**wireless client vlan-persistent**

**no wireless client vlan-persistent**

---

**Syntax Description**

This command has no keywords or arguments.

---

---

**Command Default**

None

---

**Command Modes**

Global Configuration (config)

---

**Command History**

<b>Release</b>	<b>Modification</b>
Cisco IOS XE Amsterdam 17.3.1	This command was introduced.

---

---

**Examples**

The following example shows how to enable client roaming across different policy profiles:

```
Device(config) # wireless client vlan-persistent
```

# wireless config validate

To validate whether the wireless configuration is complete and consistent (all the functional profiles and tags are defined, and all the associations are complete and consistent), use the **wireless config validate** command in privileged EXEC mode.

## wireless config validate

**Syntax Description** This command has no keywords or arguments.

**Command Default** None

**Command Modes** Privileged EXEC (#)

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.10.1	This command was introduced.

## Usage Guidelines

In Cisco vEWLC, the wireless configuration is built using a collection of profiles, with each profile defining a functional block. These functional blocks are defined independently and is used to realize well-defined associations through intent based work-flows in building the wireless LAN. Such flexibility of modularizing the functional blocks requires the administrator to ensure that all associations are consistent and complete.

To ensure completeness and consistency of the wireless configuration, a configuration validation library is used to validate the configuration definitions across tables. The **wireless config validate** exec command is introduced from this release to validate the wireless configuration and report inconsistencies, if any, using contextual error message that is visible in btrace infra and on the console (if console logging is enabled). This command calls out any inconsistencies (unresolved associations) enabling you to realize a functional wireless LAN.

Use the following command to direct the output to a file: **show logging | redirect bootflash: filename** .

The following set of wireless configurations are validated:

RF tag	Site tag	Policy tag	Policy profile	Flex profile
site-tag	flex-profile	wlan profile	IPv4 ACL name	VLAN ACL
poliy-tag	ap-profile	policy profile	Fabric name	ACL-policy
rf-tag	---	---	service-policy input and output name	RF Policy (5GHz and 24GHz)
---	---	---	service-policy input and client output name	---

### Example

The following is sample output from the **wireless config validate** command

```
Device# wireless config validate
```

```
Oct 10 18:21:59.576 IST: %CONFIG_VALIDATOR_MESSAGE-5-EWLC_GEN_ERR: Chassis 1 R0/0: wncmgrd:  
Error in AP: fc99.473e.0a90 Applied site-tag : mysite definition does not exist  
Oct 10 18:21:59.576 IST: %CONFIG_VALIDATOR_MESSAGE-5-EWLC_GEN_ERR: Chassis 1 R0/0: wncmgrd:  
Error in AP: fc99.473e.0a90 Applied policy-tag : mypolicy definition does not exist  
Oct 10 18:21:59.576 IST: %CONFIG_VALIDATOR_MESSAGE-5-EWLC_GEN_ERR: Chassis 1 R0/0: wncmgrd:  
Error in AP: fc99.473e.0a90 Applied rf-tag : myrf definition does not exist
```

# wireless country

To configure one or more country codes for a device, use the **wireless country** command.

**wireless country** *country-code*

<b>Syntax Description</b>	<i>country-code</i> Two-letter country code.
---------------------------	--

<b>Command Default</b>	None
------------------------	------

<b>Command Modes</b>	Global configuration
----------------------	----------------------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Amsterdam 17.3.1	This command was introduced.

<b>Usage Guidelines</b>	The Cisco must be installed by a network administrator or qualified IT professional and the installer must select the proper country code. Following installation, access to the unit should be password protected by the installer to maintain compliance with regulatory requirements and to ensure proper unit functionality. See the related product guide for the most recent country codes and regulatory domains.
-------------------------	--

This example shows how to configure country code on the device to IN (India):

```
Device(config)# wireless country IN
```

# wireless exclusionlist mac address

To manually add clients to the exclusionlist, use the wireless exclusion list command. To remove the manual entry, use the no form of the command.

**wireless exclusionlist** *mac\_address* **description**

<b>Syntax Description</b>	<b>description</b> <i>value</i> Configures the entry description.
<b>Command Default</b>	None
<b>Command Modes</b>	Global Configuration
<b>Command History</b>	<p><b>Cisco IOS XE Gibraltar 16.10.1 Modification</b></p> <p>This command was introduced in this release.</p>
<b>Usage Guidelines</b>	<p>If a client was added to the exclusion list dynamically, the command to remove it is <b>wireless client mac-address xxxx.xxxx.xxxx deauthenticate</b> from enable mode.</p>

## Example

This example shows how to manage exclusion entries:

```
Device(config)# wireless exclusion list xxxx.xxxx.xxxx
```

# wireless ipv6 ra wired

To enable the forwarding of Router Advertisement message to the wired clients, use the **wireless ipv6 ra wired** command.

**wireless ipv6 ra wired** { **nd** { **na-forward** | **ns-forward** } | **ra-wired** }

## Syntax Description

<i>nd</i>	Configures wireless IPv6 ND parameters.
<i>na-forward</i>	Enables forwarding of Neighbor Advertisement to wireless clients.
<i>ns-forward</i>	Enable forwarding of Neighbor Solicitation to wireless clients.
<i>ra</i>	Configures wireless IPv6 Router Advertisement parameters.
<i>wired</i>	Enables forwarding of Router Advertisement message to the wired clients.

## Command Default

None

## Command Modes

Global Configuration (config)

## Command History

Release	Modification
Cisco IOS XE Gibraltar 16.12.3	This command was introduced.

## Example

The following example shows how to enable the forwarding of Router Advertisement message to the wired clients:

```
Device(config)# wireless ipv6 ra wired
```



## Warning

The **wireless ipv6 ra wired** command must be enabled only for certification purpose and not during the deployment.



# wireless load-balancing

To globally configure aggressive load balancing on the controller, use the **wireless load-balancing** command in global configuration mode.

**wireless load-balancing** {**denial** *denial-count* | **window** *client-count*}

<b>Syntax Description</b>	<p><b>denial</b> <i>denial-count</i> Specifies the number of association denials during load balancing.</p> <p>Maximum number of association denials during load balancing is from 1 to 10 and the default value is 3.</p> <hr/> <p><b>window</b> <i>client-count</i> Specifies the aggressive load balancing client window, with the number of clients needed to trigger aggressive load balancing on a given access point.</p> <p>Aggressive load balancing client window with the number of clients is from 0 to 20 and the default value is 5.</p>				
<b>Command Default</b>	Disabled.				
<b>Command Modes</b>	Global configuration				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Cisco IOS XE Gibraltar 16.12.1</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Cisco IOS XE Gibraltar 16.12.1	This command was introduced.
Release	Modification				
Cisco IOS XE Gibraltar 16.12.1	This command was introduced.				
<b>Usage Guidelines</b>	<p>Load-balancing-enabled WLANs do not support time-sensitive applications like voice and video because of roaming delays.</p> <p>When you use Cisco 7921 and 7920 Wireless IP Phones with controllers, make sure that aggressive load balancing is disabled on the voice WLANs for each controller. Otherwise, the initial roam attempt by the phone might fail, causing a disruption in the audio path.</p> <p>This example shows how to configure association denials during load balancing:</p> <pre>Device# <b>configure terminal</b> Device(config)# <b>wireless load-balancing denial 5</b> Device(config)# <b>end</b></pre>				

# wireless macro-micro steering transition-threshold

To configure micro-macro transition thresholds, use the **wireless macro-micro steering transition-threshold** command.

```
wireless macro-micro steering transition-threshold {balancing-window | client count number-clients
} {macro-to-micro | micro-to-macro RSSI in dBm}
```

Syntax Description	
<b>balancing-window</b>	Active instance of the configuration in Route-processor slot 0.
<b>client</b>	Standby instance of the configuration in Route-processor slot 0.
<i>number-clients</i>	Valid range is 0 to 65535 clients.
<b>macro-to-micro</b>	Configures the macro to micro transition RSSI.
<b>micro-to-macro</b>	Configures micro-macro client load balancing window.
<i>RSSI in dBm</i>	RSSI in dBm. Valid range is -128 to 0.

**Command Default** None

**Command Modes** Global configuration (config)

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

## Examples

The following example shows how to configure balancing-window:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# wireless macro-micro steering transition-threshold balancing-window
number-of-clients
```

# wireless macro-micro steering probe-suppression

To configure micro-macro probe suppressions, use the **wireless macro-micro steering probe-suppression** command.

**wireless macro-micro steering probe-suppression** {**aggressiveness** *number-of-cycles* | | **hysteresis***RSSI in dBm* | **probe-auth** | **probe-only**}

## Syntax Description

<b>aggressiveness</b>	Configures probe cycles to be suppressed. The number of cycles range between 0 - 255.
<b>hysteresis</b>	Indicate show much greater the signal strength of a neighboring access point must be in order for the client to roam to it. The RSSI decibel value ranges from -6 to -3.
<b>probe-auth</b>	Enables mode to suppress probes and single auth
<b>probe-only</b>	Enables mode to suppress only probes

## Command Default

None

## Command Modes

Global configuration (config)

## Command History

### Examples

The following example shows how to configure balancing-window:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# wireless macro-micro steering probe-suppression aggressiveness
number-of-cycles
```

# wireless management certificate

To create a wireless management certificate details, use the **wireless management certificate** command.

**wireless management certificate ssc** { **auth-token** { **0** | **8** } *token* | **trust-hash** *hash-key* }

## Syntax Description

<b>auth-token</b>	Authentication token.
<i>token</i>	Token name.
<b>trust-hash</b>	Trusted SSC hash list.
<i>hash-key</i>	SHA1 fingerprint.
<b>0</b>	Specifies an UNENCRYPTED token.
<b>8</b>	Specifies an AES encrypted token.

## Command Default

None

## Command Modes

Global Configuration(config)

## Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

## Example

The following example shows how to configure a wireless management certificate:

```
Device# configure terminal
Device(config)# wireless management certificate ssc trust-hash test
```

# wireless management interface

To create a wireless management interface, use the **wireless management interface** command.

**wireless management interface** { GigabitEthernet | Loopback | Vlan } *interface-number*

---

## Syntax Description

*interface-number* Interface number.

---



---

## Command Default

None

---

## Command Modes

Global Configuration(config)

---

## Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

---

## Example

The following example shows how to configure a wireless management interface:

```
Device# configure terminal
Device(config)# wireless management interface vlan vlan1
```

# wireless management trustpoint

To create a wireless management trustpoint, use the **wireless management trustpoint** command.

**wireless management trustpoint** *trustpoint-name*

---

## Syntax Description

*trustpoint-name* Trustpoint name.

---



---

## Command Default

None

---

## Command Modes

Global Configuration(config)

---

## Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

---



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## Usage Guidelines

Use this command only on the Cisco Catalyst 9800 Wireless Controller for Cloud platform and not on appliances as the appliances use the SUDI certificate by default without the need for this command.

## Example

The following example shows how to configure a wireless management trustpoint:

```
Device# configure terminal
Device(config)# wireless management trustpoint test
```

# wireless mesh alarm association count

To configure the mesh alarm association count, use the **wireless mesh alarm association count** command.

**wireless mesh alarm association count** *count*

## Syntax Description

*count* Number of alarm associations. The valid range is between 1 and 30.

## Command Default

None

## Command Modes

config

## Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

## Examples

The following example shows how to configure the mesh alarm association count:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# wireless profile policy wireless mesh alarm association count 10
```

# wireless mesh alarm high-snr

To configure the mesh alarm high-snr value, use the **wireless mesh alarm high-snr** command.

**wireless mesh alarm high-snr** *high-snr*

<b>Syntax Description</b>	<i>high-snr</i> Set the high-snr value. The valid range is between 31 and 100.
---------------------------	--

<b>Command Default</b>	None
------------------------	------

<b>Command Modes</b>	config
----------------------	--------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

## Examples

The following example shows how to configure the mesh high-snr:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# wireless profile policy wireless mesh alarm high-snr 75
```



## wireless mesh alarm low-snr

To configure the mesh alarm low-snr value, use the **wireless mesh alarm low-snr** command.

```
wireless mesh alarm low-snr low-snr
```

---

### Syntax Description

*low-snr* Set the low-snr value. The valid range is between 1 and 30.

---

### Command Default

None

### Command Modes

config

---

### Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

---

### Examples

The following example shows how to configure the mesh high-snr:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# wireless profile policy wireless mesh alarm low-snr 5
```

## wireless mesh alarm max-children map

To configure the mesh alarm max-children map value, use the **wireless mesh alarm max-children map** command.

**wireless mesh alarm max-children map** *max-children*

<b>Syntax Description</b>	<i>max-children</i> Set the mesh alarm max-children map parameter. The valid range is between 1 and 50.
---------------------------	---

<b>Command Default</b>	None
------------------------	------

<b>Command Modes</b>	config
----------------------	--------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

### Examples

The following example shows how to configure the mesh alarm max-children map value:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# wireless mesh alarm max-children map 35
```

# wireless mesh alarm max-children rap

To configure the mesh alarm max-children rap value, use the **wireless mesh alarm max-children rap** command.

**wireless mesh alarm max-children rap** *max-children*

<b>Syntax Description</b>	<i>max-children</i> Set the mesh alarm max-children rap parameter. The valid range is between 1 and 50.	
<b>Command Default</b>	None	
<b>Command Modes</b>	config	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

## Examples

The following example shows how to configure the mesh alarm max-children rap value:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# wireless mesh alarm max-children rap 40
```

# wireless mesh alarm max-hop

To configure the mesh alarm max-hop parameter, use the **wireless mesh alarm max-hop** command.

**wireless mesh alarm max-hop** *max-hop*

<b>Syntax Description</b>	<i>max-hop</i> Set the mesh alarm max-hop count. Valid range is between 1 and 16.
---------------------------	---

<b>Command Default</b>	None
------------------------	------

<b>Command Modes</b>	config
----------------------	--------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

## Examples

The following example shows how to configure the mesh alarm max-hop parameter:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# wireless mesh alarm max-hop 15
```

# wireless mesh alarm parent-change count

To configure the max parent-change count value, use the **wireless mesh alarm parent-change count** command.

**wireless mesh alarm parent-change count** *count*

<b>Syntax Description</b>	<i>count</i> Set the max parent-change count value. Valid range is between 1 and 30.				
<b>Command Default</b>	None				
<b>Command Modes</b>	config				
<b>Command History</b>	<table><thead><tr><th>Release</th><th>Modification</th></tr></thead><tbody><tr><td>Cisco IOS XE Gibraltar 16.10.1</td><td>This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.</td></tr></tbody></table>	Release	Modification	Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.
Release	Modification				
Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.				

## Examples

The following example shows how to configure the alarm parent change count value:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# wireless mesh alarm parent-change count 6
```

# wireless mesh backhaul bdomain-channels

To configure and allow the Extended UNII B Domain channels for Outdoor mesh APs backhaul radio, use the **wireless mesh backhaul bdomain-channels** command.

## wireless mesh backhaul bdomain-channels

<b>Syntax Description</b>	<b>bdomain-channels</b> Allows the Extended UNII B Domain channels for Outdoor mesh APs backhaul radio.  The <b>[no]</b> form of the command disables the use of the Extended UNII B Domain channels by the mesh APs backhaul radio.	
<b>Command Default</b>	None	
<b>Command Modes</b>	config	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

## Examples

The following example shows how to disable the use of Extended UNII B Domain channels by the Outdoor mesh APs backhaul radio:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# no wireless mesh backhaul bdomain-channels
```

## wireless mesh backhaul rrm

To configure the mesh backhaul, use the **wireless mesh backhaul** command.

```
wireless mesh backhaul {bdomain-channels | rrm}
```

<b>Syntax Description</b>	<b>backhaul</b>	Configures the Mesh Backhaul.
	<b>bdomain-channels</b>	Allows Extended UNII B Domain channels for Outdoor mesh APs backhaul radio.
	<b>rrm</b>	Configures RRM for the mesh backhaul.
<b>Command Default</b>	None	
<b>Command Modes</b>	config	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

### Examples

The following example shows how to configure RRM for the mesh backhaul:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# wireless mesh backhaul rrm
```

# wireless mesh cac

To configure the mesh CAC Mode, use the **wireless mesh cac** command.

**wireless mesh cac**

<b>Syntax Description</b>	<b>ca</b> Configures the mesh CAC Mode.	
<b>Command Default</b>	None	
<b>Command Modes</b>	config	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

## Examples

The following example shows how to configure the mesh CAC mode:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# wireless mesh cac
```



# wireless mesh ethernet-bridging allow-bdpu

To configure STP BPDUs for wired mesh uplink, use the **wireless mesh ethernet-bridging allow-bdpu** command.

**wireless mesh ethernet-bridging allow-bdpu**

<b>Syntax Description</b>	<b>ethernet-bridging</b> Configure ethernet bridging.
	<b>allow-bdpu</b> Configures STP BPDUs towards wired MESH uplink.
<b>Command Default</b>	None
<b>Command Modes</b>	config
<b>Command History</b>	<b>Release</b>
	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.10.1 This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

## Examples

The following example shows how to configure STP BPDUs towards wired MESH uplink:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# wireless mesh ethernet-bridging allow-bdpu
```

# wireless mesh security psk provisioning

To provision the mesh security psk parameters, use the **wireless mesh security psk provisioning** command.

```
wireless mesh security psk provisioning {default_psk | inuse psk-index | key psk-index{0 | 8}enter-psk-name psk-description}
```

Syntax Description	
<b>provisioning</b>	configuring mesh psk provisioning parameters.
<b>default_psk</b>	Set the mesh provisioning to the default-psk settings.
<b>inuse</b>	Configuring the psk inuse index
<i>psk-index</i>	Enter PSK key index. Valid range is between 1 and 5.
<b>key</b>	Configure a pre-shared-key
<i>psk-index</i>	Enter PSK key index. Valid range is between 1 and 5.
<b>0</b>	Choose to enter an UNENCRYPTED password.
<b>8</b>	Choose to enter an AES encrypted password.
<i>enter-psk-name</i>	Enter a name for the configured psk key.
<i>psk-description</i>	Enter a description for this key.

**Command Default** None

**Command Modes** config

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

## Examples

The following example shows how to provision the default psk key for the mesh security:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# wireless mesh security psk provisioning default_psk
```

# wireless mesh subset-channel-sync

To configure the subset channel sync for mobility group, use the **wireless mesh subset-channel-sync** command.

**wireless mesh subset-channel-sync**

<b>Syntax Description</b>	<b>subset-channel-sync</b> Configures the subset channel sync for mobility group				
<b>Command Default</b>	None				
<b>Command Modes</b>	config				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Cisco IOS XE Gibraltar 16.10.1</td> <td>This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.</td> </tr> </tbody> </table>	Release	Modification	Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.
Release	Modification				
Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.				

## Examples

The following example shows how to configure subset channel sync for mobility group:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# wireless mesh subset-channel-sync
```

## wireless ewc-ap ap ap-type

To convert a single AP to CAPWAP or to embedded wireless controller, use the **wireless ewc-ap ap ap-type** command.

**wireless ewc-ap ap ap-type** *Cisco-AP-name* { **capwap** | **ewc** }

Syntax Description		
<b>ewc-ap</b>		Configures the embedded wireless controller parameters.
<b>ap-type</b>		Configures the AP parameter.
<i>Cisco-AP-name</i>		Indicates the name of the Cisco AP.
<b>capwap</b>		Changes to Capwap ap-type.
<b>ewc</b>		Changes to the embedded wireless controller ap-type.

**Command Default** None

**Command Modes** Privileged EXEC mode

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.12.1	This message was introduced.

### Example

The following example shows how to convert a single AP to a CAPWAP ap-type or a embedded wireless controller ap-type:

```
Device#wireless ewc-ap ap ap-type ap_name {capwap | ewc}
```

## wireless ewc-ap ap capwap

To specify the CAPWAP parameters for an AP, use the **wireless ewc-ap ap capwap** command.

**wireless ewc-ap ap capwap** *Primary-Controller-Name* { **A.B.C.D** | **X:X:X:X::X** }

Syntax Description		
<b>ewc-ap</b>	Configures the embedded wireless controller parameters.	
<b>capwap</b>	Configures the CAPWAP parameters.	
<i>Primary-Controller-Name</i>	Indicates the name of the controller.	
<b>A.B.C.D</b>	Indicates the IPv4 address of the primary controller.	
<b>X:X:X:X::X</b>	Indicates the IPv6 address of the primary controller.	
Command Default	None	
Command Modes	Privileged EXEC mode	
Command History	Release	Modification
	Cisco IOS XE 16.12.1	This message was introduced.

### Example

The following example shows how to specify the CAPWAP parameters for an AP:

```
Device#wireless ewc-ap ap capwap controller_name {10.1.1.1 | 9:0:0:0::1}
```

# wireless ewc-ap ap reload

To reload the embedded wireless controller AP, use the **wireless ewc-ap ap reload** command.

## wireless ewc-ap ap reload

<b>Syntax Description</b>	<b>ewc-ap</b>	Configures the embedded wireless controller parameters.
	<b>reload</b>	Reloads the embedded wireless controller AP.
<b>Command Default</b>	None	
<b>Command Modes</b>	Privileged EXEC mode	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE 16.12.1	This message was introduced.

## Example

The following example shows how to reload the embedded wireless controller AP:

```
Device#wireless ewc-ap ap reload
```

# wireless ewc-ap ap shell

To access the AP parameters on the embedded wireless controller AP shell, use the **wireless ewc-ap ap shell** command.

**wireless ewc-ap ap shell** { **chassis** { *chassis-number* | **active** | **standby** } **R0** | **username** }

Syntax Description	Parameter	Description
	<b>chassis</b>	Specifies the chassis.
	<i>chassis-number</i>	Specifies the chassis number as either 1 or 2.
	<b>active</b>	Configures the active instance in route processor slot 0.
	<b>standby</b>	Configures the standby instance in route processor slot 0.
	<b>R0</b>	Specifies the route processor in slot 0.
	<b>username</b>	Specifies the AP management username.

**Command Default** None

**Command Modes** Privileged EXEC

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.12.2s	This command was introduced.

## Example

```
Device#wireless ewc-ap ap shell chassis 1 R0
```

## wireless ewc-ap ap shell username

To configure the AP management username on the embedded wireless controller AP shell, use the **wireless ewc-ap ap shell username** command.

**wireless ewc-ap ap shell username** *username* **chassis** { *chassis-number* | **active** | **standby** } **R0**

Syntax Description	Parameter	Description
	<b>chassis</b>	Specifies the chassis.
	<i>chassis-number</i>	Specifies the chassis number as either 1 or 2.
	<b>active</b>	Configures the active instance in route processor slot 0.
	<b>standby</b>	Configures the standby instance in route processor slot 0.
	<b>R0</b>	Specifies the route processor in slot 0.
	<b>username</b>	Specifies the AP management username.

**Command Default** None

**Command Modes** Privileged EXEC

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.12.2s	This command was introduced.

### Example

```
Device#wireless ewc-ap ap shell username username1 chassis 1 R0
```



## wireless ewc-ap preferred-master

To select the standby controller when the network is up and running, use the **wireless ewc-ap preferred-master** command.

**wireless ewc-ap preferred-master** *AP-name*

<b>Syntax Description</b>	<b>ewc-ap</b>	Configures the embedded wireless controller parameters.
	<b>preferred-master</b>	Configures the preferred primary AP.
	<i>AP-name</i>	Indicates the name of the preferred primary AP.
<b>Command Default</b>	None	
<b>Command Modes</b>	Global configuration (config)	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.12.1	This message was introduced.

### Example

The following example shows how to set a preferred primary ap-type:

```
Device(config)#wireless ewc-ap preferred-master AP-name
```

# wireless ewc-ap factory-reset

To perform factory reset on the embedded wireless controller and on all the access points connected to the controller, use the **wireless ewc-ap factory-reset** command.

## wireless ewc-ap factory-reset

<b>Syntax Description</b>	<b>ewc-ap</b>	Configures the embedded wireless controller parameters
	<b>factory-reset</b>	Resets Cisco AP configuration to factory default.
<b>Command Default</b>	None	
<b>Command Modes</b>	Privileged EXEC mode	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE 16.12.1	This command was introduced.

## Example

The following example shows how to factory-reset the embedded wireless controller network:

```
Device#wireless ewc-ap factory-reset
```

## wireless ewc-ap vrrp vrid

To configure the embedded wireless controller VRRP network identifier, use the **wireless ewc-ap vrrp vrid** command.

**wireless ewc-ap vrrp vrid***value* <1-255>

<b>Syntax Description</b>	<b>ewc-ap</b> Configures the embedded wireless controller parameters.				
	<b>vrrp</b> Configures the preferred primary AP embedded wireless controller VRRP.				
	<b>vrid</b> Indicates the VRRP VRID. Values are from 1-255. The default value is 1.				
	<i>value</i> Indicates the VRRP VRID value.				
<b>Command Default</b>	None				
<b>Command Modes</b>	Global configuration mode				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Cisco IOS XE Gibraltar 16.12.1</td> <td>This message was introduced.</td> </tr> </tbody> </table>	Release	Modification	Cisco IOS XE Gibraltar 16.12.1	This message was introduced.
Release	Modification				
Cisco IOS XE Gibraltar 16.12.1	This message was introduced.				

### Example

The following example shows how to configure the VRRP network identifier:

```
Device#wireless ewc-ap vrrp vrid 1
```

## wireless profile flex

To configure a wireless flex profile and enter wireless flex profile configuration mode, use the **wireless profile flex** command. To disable the feature, use the **no** form of the command.

**wireless profile flex** *custom-flex-profile*

[no] **wireless profile flex** *custom-flex-profile*

<b>Syntax Description</b>	<b>wireless profile flex</b>	Configures a wireless flex profile and enter wireless flex profile configuration mode.
	<i>custom-flex-profile</i>	Specifies the flex profile name.
<b>Command Default</b>	None	
<b>Command Modes</b>	Wireless flex profile mode	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Amsterdam 17.1.1s	This command was introduced.

### Example

This example shows how the wireless flex profile is configured:

```
Device(config)#wireless profile flex custom-flex-profile
```

# wireless profile image-download default

To configure the default image download profile for AP Join Download and Predownload, use the following command:



**Note** **Default** is the only profile name that you can enter.

## wireless profile image-download default

### Syntax Description

**wireless profile** Configures the wireless profile parameters.

**image-download** Configures the EWC-AP image download parameters.

**default** Specifies the profile name - default. Default is the only profile name that you can enter.

### Command Default

None

### Command Modes

Global configuration

### Command History

Release	Modification
Cisco IOS XE Gibraltar 16.12.2s	This command was introduced.

### Example

```
Device# wireless profile image-download default
```

# wireless profile mesh

To configure the mesh profile on an access point (AP), use the **wireless profile mesh** *profile-name* command.

**wireless profile mesh** *profile-name*

<b>Syntax Description</b>	<i>profile-name</i>	Name of the profile.
<b>Command Default</b>	None	
<b>Command Modes</b>	Global configuration (config)	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Cupertino 17.7.1	This command was introduced.

## Examples

The following example shows how to configure the mesh profile on an AP:

```
Device# configure terminal
(config)#wireless profile mesh test1
```

# wireless profile policy

To configure WLAN policy profile, use the **wireless profile policy** command.

**wireless profile policy** *policy-profile*

---

## Syntax Description

*policy-profile* Name of the WLAN policy profile.

---

## Command Default

The default profile name is default-policy-profile.

## Command Modes

Global configuration (config)

---

## Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

---

## Examples

The following example shows how to configure a WLAN policy profile:

```
Device(config)# wireless profile policy mywlan-profile-policy
```

## wireless profile transfer

To configure the export of trace logs on the embedded wireless controller, use the **wireless profile transfer** command. Use the **no** form of this command to negate the command or to set the command to its default.

[no] **wireless profiletransfertrace-export** *trace-export-profile-name*

<b>Syntax Description</b>	<b>trace-export</b>	Configures the trace export parameters.
	<i>trace-export-profile-name</i>	Specifies the trace export profile name.
<b>Command Default</b>	None	
<b>Command Modes</b>	Global configuration	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.12.2s	This command was introduced.

### Example

```
Device# wireless profile transfer trace-export trace-export-profile-name
```



## wireless rfid

To set the static radio-frequency identification (RFID) tag data timeout value, use the **wireless rfid** command in global configuration mode.

**wireless rfid timeout** *timeout-value*

<b>Syntax Description</b>	<b>timeout</b>	Configures the static RFID tag data timeout value.
	<i>timeout-value</i>	RFID tag data timeout value. Valid values range from 60-7200.
<b>Command Default</b>	None	
<b>Command Modes</b>	Global configuration (config)	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.10.1	This command was introduced.

### Example

This example shows how to set the static RFID tag data timeout value.

```
Device(config)# wireless rfid timeout 70
```

## wireless security dot1x

To configure IEEE 802.1x global configurations, use the **wireless security dot1x** command.

```
wireless security dot1x [{eapol-key {retries retries | timeout milliseconds} | group-key interval
sec | identity-request {retries retries | timeout seconds} | radius [call-station-id] {ap-macaddress |
ap-macaddress-ssid | ipaddress | macaddress} | request {retries retries | timeout seconds} | wep key
{index 0 | index 3}}]
```

Syntax Description	
<b>eapol-key</b>	Configures eapol-key related parameters.
<b>retries</b> <i>retries</i>	(Optional) Specifies the maximum number of times (0 to 4 retries) that the controller retransmits an EAPOL (WPA) key message to a wireless client. The default value is 2.
<b>timeout</b> <i>milliseconds</i>	(Optional) Specifies the amount of time (200 to 5000 milliseconds) that the controller waits before retransmitting an EAPOL (WPA) key message to a wireless client using EAP or WPA/WPA-2 PSK. The default value is 1000 milliseconds.
<b>group-key interval</b> <i>sec</i>	Configures EAP-broadcast key renew interval time in seconds (120 to 86400 seconds).
<b>identity-request</b>	Configures EAP ID request related parameters.
<b>retries</b> <i>retries</i>	(Optional) Specifies the maximum number of times (0 to 4 retries) that the controller request the EAP ID. The default value is 2.
<b>timeout</b> <i>seconds</i>	(Optional) Specifies the amount of time (1 to 120 seconds) that the controller waits before retransmitting an EAP Identity Request message to a wireless client. The default value is 30 seconds.
<b>radius</b>	Configures radius messages.
<b>call-station-id</b>	(Optional) Configures Call-Station Id sent in radius messages.
<b>ap-macaddress</b>	Sets Call Station Id Type to the AP's MAC Address.
<b>ap-macaddress-ssid</b>	Sets Call Station Id Type to 'AP MAC address': 'SSID'.
<b>ipaddress</b>	Sets Call Station Id Type to the system's IP Address.
<b>macaddress</b>	Sets Call Station Id Type to the system's MAC Address.
<b>request</b>	Configures EAP request related parameters.

<b>retries</b> <i>retries</i>	(Optional) For EAP messages other than Identity Requests or EAPOL (WPA) key messages, specifies the maximum number of times (0 to 20 retries) that the controller retransmits the message to a wireless client.  The default value is 2.
<b>timeout</b> <i>seconds</i>	(Optional) For EAP messages other than Identity Requests or EAPOL (WPA) key messages, specifies the amount of time (1 to 120 seconds) that the controller waits before retransmitting the message to a wireless client.  The default value is 30 seconds.
<b>wep key</b>	Configures 802.1x WEP related paramters.
<b>index 0</b>	Specifies the WEP key index value as 0
<b>index 3</b>	Specifies the WEP key index value as 3

**Command Default**

Default for eapol-key-timeout: 1 second.  
Default for eapol-key-retries: 2 retries.

**Command Modes**

config

**Command History**

Release	Modification
Cisco IOS XE Gibraltar 16.12.1	This command was introduced.

**Usage Guidelines**

None.

This example lists all the commands under **wireless security dot1x**.

```
Device#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)#wireless security dot1x ?
  eapol-key          Configure eapol-key related parameters
  group-key          Configures EAP-broadcast key renew interval time in seconds
  identity-request   Configure EAP ID request related parameters
  radius             Configure radius messages
  request            Configure EAP request related parameters
  wep                Configure 802.1x WEP related paramters
  <cr>
```

## wireless security dot1x radius accounting mac-delimiter

To configure a MAC delimiter for called-station-ID or a calling-station-ID, use the **wireless security dot1x radius accounting mac-delimiter** command.

To remove MAC delimiter for a called-station-ID or a calling-station-ID, use the **no** form of the command.

```
wireless security dot1x radius accounting mac-delimiter { colon | hyphen | none | single-hyphen
}
```

Syntax Description	Option	Description
	<b>colon</b>	Sets the delimiter to colon.
	<b>hyphen</b>	Sets the delimiter to hyphen.
	<b>none</b>	Disables delimiters.
	<b>single-hyphen</b>	Sets the delimiters to single hyphen.

**Command Default** None

**Command Modes** Global Configuration Mode

Command History	Release	Modification
	Cisco IOS XE 3.6.0 E	This command was introduced.

This example shows how to configure a MAC delimiter for called-station-ID or a calling-station-ID to colon:

```
Device(config)# wireless security dot1x radius accounting mac-delimiter colon
```

# wireless security dot1x radius accounting username-delimiter

To set the delimiter type, use **wireless security dot1x radius accounting username-delimiter** command, to remove the configuration, use the **no** form of this command.

**wireless security dot1x radius accounting username-delimiter** { colon | hyphen | none | single-hyphen }

Syntax Description	Option	Description
	<b>colon</b>	Sets the delimiter to colon.
	<b>hyphen</b>	Sets the delimiter to hyphen.
	<b>none</b>	Disables delimiters.
	<b>single-hyphen</b>	Sets the delimiters to single hyphen.

**Command Default** None

**Command Modes** Global Configuration Mode.

Command History	Release	Modification
	Cisco IOS XE 3.7.2 E	This command was introduced.

This example shows how to sets the delimiter to colon.

```
Device(config)# wireless security dot1x radius accounting username-delimiter colon
```

## wireless security dot1x radius callStationIdCase

To configure Call Station Id CASE send in RADIUS messages, use the **wireless security dot1x radius callStationIdCase** command.

To remove the Call Station Id CASE send in RADIUS messages, use the **no** form of the command.

**wireless security dot1x radius callStationIdCase** {**lower** | **upper**}

<b>Syntax Description</b>	<b>lower</b>	Sends all Call Station Ids to RADIUS in lowercase
	<b>upper</b>	Sends all Call Station Ids to RADIUS in uppercase
<b>Command Default</b>	None	
<b>Command Modes</b>	Global Configuration Mode	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE 3.6.0 E	This command was introduced.

This example shows how to configure Call Station Id CASE send in RADIUS messages in lowercase:

```
Device(config)# wireless security dot1x radius callstationIdCase lower
```

# wireless security dot1x radius mac-authentication call-station-id

To configure call station ID type for mac-authentication, use the **wireless security dot1x radius mac-authentication call-station-id** command. To remove the configuration, use the **no** form of it.

**wireless security dot1x radius mac-authentication call-station-id ap-ethmac-only | ap-ethmac-ssid | ap-group-name | ap-label-address | ap-label-address-ssid | ap-location | ap-macaddress | ap-macaddress-ssid | ap-name | ap-name-ssid | ipaddress | macaddress | vlan-id**

Syntax	Description
<b>ap-ethmac-only</b>	Sets call station ID type to the AP Ethernet MAC address.
<b>ap-ethmac-ssid</b>	Sets call station ID type to the format 'AP Ethernet MAC address':'SSID'.
<b>ap-group-name</b>	Sets call station ID type to the AP Group Name.
<b>ap-label-address</b>	Sets call station ID type to the AP MAC address on AP Label.
<b>ap-label-address-ssid</b>	Sets call station ID type to the format 'AP Label MAC address': 'SSID'.
<b>ap-location</b>	Sets call station ID type to the AP Location.
<b>ap-macaddress</b>	Sets call station ID type to the AP Radio MAC Address.
<b>ap-macaddress-ssid</b>	Sets call station ID type to the 'AP radio MAC Address':'SSID'.
<b>ap-name</b>	Sets call station ID type to the AP name.
<b>ap-name-ssid</b>	Sets call station ID type to the format 'AP name':'SSID'.
<b>ipaddress</b>	Sets call station ID type to the system IP Address.
<b>macaddress</b>	Sets call station ID type to the system MAC Address.
<b>vlan-id</b>	Sets call station ID type to the VLAN ID.

**Command Default** None

**Command Modes** Global Configuration Mode

Command History	Release	Modification
	Cisco IOS XE 3.7.2	This command was introduced.
	E	

The example show how to set call station ID type to the AP Ethernet MAC address:

```
Device(config)# wireless security dot1x radius mac-authentication call-station-id
ap-ethmac-only
```

# wireless security dot1x radius mac-authentication mac-delimiter

To configure MAC-Authentication attributes, use the **wireless security dot1x radius mac-authentication mac-delimiter** command.

To remove MAC-Authentication attributes, use the **no** form of the command.

**wireless security dot1x radius mac-authentication mac-delimiter** { **colon** | **hyphen** | **none** | **single-hyphen** }

Syntax Description	Option	Description
	<b>colon</b>	Sets the delimiter to colon.
	<b>hyphen</b>	Sets the delimiter to hyphen.
	<b>none</b>	Disables delimiters.
	<b>single-hyphen</b>	Sets the delimiters to single hyphen.

**Command Default** None

**Command Modes** Global Configuration Mode

Command History	Release	Modification
	Cisco IOS XE 3.6.0 E	This command was introduced.

This example shows how to configure MAC-Authentication attributes to colon:

```
Device(config)# Scurity dot1x radius mac-authentication mac-delimiter colon
```



# wireless security web-auth retries

To enable web authentication retry on a particular WLAN, use the **wireless wireless security web-auth retries** command. To disable, use the **no** form of the command.

**wireless security web-auth retries** *retries*  
**no wireless security web-auth retries**

## Syntax Description

<b>wireless security web-auth</b>	Enables web authentication on a particular WLAN.
<b>retries</b> <i>retries</i>	Specifies maximum number of web authentication request retries. The range is from 0 through 30. The default value is 3.

## Command Default

### Command Modes

config

## Command History

Release	Modification
Cisco IOS XE Gibraltar 16.12.1	This command was introduced.

## Usage Guidelines

None.

This example shows how to enable web authentication retry on a particular WLAN.

```
Device#configure terminal
Device# wireless security web-auth retries 10
```

# wireless tag policy

To configure wireless tag policy, use the **wireless tag policy** command.

```
wireless tag policy policy-tag
```

---

<b>Syntax Description</b>	<i>policy-tag</i> Name of the wireless tag policy.
---------------------------	--

---

<b>Command Default</b>	The default policy tag is default-policy-tag.
------------------------	---

---

<b>Command Modes</b>	Global configuration (config)
----------------------	-------------------------------

---

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

---

## Examples

The following example shows how to configure a wireless policy tag:

```
Device(config)# wireless tag policy guest-policy
```

# wireless tag site

To configure a wireless site tag, use the **wireless tag site** *site-tag* command.

**wireless tag site** *site-tag*

---

**Syntax Description**

*site-tag* Name of the site tag.

---

---

**Command Default**

None

---

**Command Modes**

Global configuration (config)

---

---

**Command History**

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced.

---

## Example

The following example shows how to configure a site tag:

```
Device(config)# wireless tag site test-site
```

# wireless wps ap-authentication threshold

To configure the alarm trigger threshold for access point neighbor authentication, use the **wireless wps ap-authentication threshold** command. To remove the access point neighbor authentication, use the no form of the command.

**wireless wps ap-authentication threshold** *value*

**no wireless wps ap-authentication threshold** *value*

<b>Syntax Description</b>	<b>threshold</b> <i>value</i> Specifies that the WMM-enabled clients are on the wireless LAN. The threshold value range is between 1 and 255. The default value is 1.
---------------------------	---

<b>Command Default</b>	None
------------------------	------

<b>Command Modes</b>	Global Configuration mode
----------------------	---------------------------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Amsterdam 16.12.1	This command was introduced.

<b>Usage Guidelines</b>	None
-------------------------	------

## Example

The following example shows you how to configure the alarm trigger threshold for access point neighbor authentication:

```
Device(config)# wireless wps ap-authentication threshold 1
```

## wireless wps client-exclusion

To configure client exclusion policies, use the **wireless wps client-exclusion** command. To remove the client exclusion policies, use the **no** form of the command.

```
wireless wps client-exclusion {all | dot11-assoc | dot11-auth | dot1x-auth | ip-theft | web-auth}
no wireless wps client-exclusion {all | dot11-assoc | dot11-auth | dot1x-auth | ip-theft | web-auth}
```

<b>Syntax Description</b>	<b>dot11-assoc</b>	Specifies that the controller excludes clients on the sixth 802.11 association attempt, after five consecutive failures.
	<b>dot11-auth</b>	Specifies that the controller excludes clients on the sixth 802.11 authentication attempt, after five consecutive failures.
	<b>dot1x-auth</b>	Specifies that the controller excludes clients on the sixth 802.11X authentication attempt, after five consecutive failures.
	<b>ip-theft</b>	Specifies that the control excludes clients if the IP address is already assigned to another device.  For more information, see the Usage Guidelines section.
	<b>web-auth</b>	Specifies that the controller excludes clients on the fourth web authentication attempt, after three consecutive failures.
	<b>all</b>	Specifies that the controller excludes clients for all of the above reasons.
<b>Command Default</b>	Enabled.	
<b>Command Modes</b>	config	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.12.1	This command was introduced.
<b>Usage Guidelines</b>	In IP-theft scenarios, there are differences between the older Cisco IOS XE releases and the Cisco IOS XE Denali 16.x releases:	

Older Cisco IOS XE Releases	Cisco IOS XE Denali 16.x Releases
<p>Priority wise, wired clients have higher priority over wireless clients, and DHCP IP has higher priority over static IP. The client security type is not checked; security of all client types are treated with same priority.</p> <p>If the existing binding is from a higher priority source, the new binding is ignored and an IP-theft is signaled. If the existing binding has the same source-priority as the new binding, the binding is ignored and an IP-theft is signaled. This ensures that the bindings are not toggled if two hosts send traffic using the same IP. Only the initial binding is retained in the software. If the new binding is from a higher priority source, the existing binding is replaced. This results in an IP-theft notification of existing binding and also a new binding notification.</p>	<p>There is not really a fundamental difference between wired and wireless; what matters is the trust (preflevel) of the entry, which is a function on how it was learnt (ARP, DHCP, ND, and so on) and the policy that is attached to the port. When preflevel is equal, the IP takeover is denied if the old entry is still reachable. IP takeover occurs when the update comes from a trusted port or a new entry gets IP from the DHCP server. Otherwise, you must explicitly grant it. The IP-theft is not reported if an old entry is replaced by a new and a more trusted one.</p>

This example shows how to disable clients on the 802.11 association attempt after five consecutive failures.

```
Device#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)#wireless wps client-exclusion dot11-assoc
```

# wireless wps mfp ap-impersonation

To configure AP impersonation detection, use the **wireless wps mfp ap-impersonation** command. Use the **no** form of this command to disable the configuration.

**wireless wps mfp ap-impersonation**

**no wireless wps mfp ap-impersonation**

---

<b>Syntax Description</b>	<b>ap-impersonation</b> Configures AP impersonation detection.
---------------------------	--

---

---

<b>Command Default</b>	None
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---

<b>Command Modes</b>	Global Configuration mode
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---

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Amsterdam 16.12.1	This command was introduced.

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<b>Usage Guidelines</b>	None
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## Example

The following example shows you how to configure AP impersonation detection:

```
Device(config)# wireless wps mfp ap-impersonation
```

## wireless wps rogue network-assurance enable

To enable the rogue wireless service assurance (WSA) events, use the **wireless wps rogue network-assurance enable** command. Use the **no** form of this command to disable the configuration.

**wireless wps rogue network-assurance enable**

**no wireless wps rogue network-assurance enable**

<b>Syntax Description</b>	<b>network-assurance enable</b> Enables rogue WSA events.
<b>Command Default</b>	None
<b>Command Modes</b>	Global Configuration mode
<b>Command History</b>	<b>Release</b>
	<b>Modification</b>
	Cisco IOS XE Amsterdam 16.12.1 This command was introduced.
<b>Usage Guidelines</b>	None

### Example

The following example shows you how to enable the rogue wireless service assurance events:

```
Device(config)# wireless wps rogue network-assurance enable
```



## wireless wps rogue ap aaa

To configure the use of AAA/local database to detect valid AP MAC addresses, use the **wireless wps rogue ap aaa** command. Use the **no** form of this command to disable the configuration.

**wireless wps rogue ap aaa**

**no wireless wps rogue ap aaa**

<b>Syntax Description</b>	<b>aaa</b> Configures the use of AAA or local database to detect valid AP MAC addresses.				
<b>Command Default</b>	None				
<b>Command Modes</b>	Global Configuration mode				
<b>Command History</b>	<table><thead><tr><th>Release</th><th>Modification</th></tr></thead><tbody><tr><td>Cisco IOS XE Amsterdam 16.12.1</td><td>This command was introduced.</td></tr></tbody></table>	Release	Modification	Cisco IOS XE Amsterdam 16.12.1	This command was introduced.
Release	Modification				
Cisco IOS XE Amsterdam 16.12.1	This command was introduced.				
<b>Usage Guidelines</b>	None				

### Example

The following example shows you how to configure the use of AAA/local database to detect valid AP MAC addresses:

```
Device(config)# wireless wps rogue ap aaa
```

## wireless wps rogue ap aaa polling-interval

To configure Rogue AP AAA validation interval, in seconds, use the **wireless wps rogue ap aaa polling-interval** command. To disable the configuration, use the no form of this command.

**wireless wps rogue ap aaa polling-interval** *60 - 86400*

**no wireless wps rogue ap aaa polling-interval** *60 - 86400*

Syntax Description		
<b>aaa</b>	Sets the use of AAA or local database to detect valid AP MAC addresses.	
<b>polling-interval</b>	Configures the rogue AP AAA validation interval.	
<i>60 - 86400</i>	Specifies AP AAA validation interval, in seconds.	

**Command Default** None

**Command Modes** Global configuration

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.12.1	This command was introduced.

**Usage Guidelines** None

### Example

This example shows how to configure Rogue AP AAA validation interval, in seconds:

```
Device(config)# wireless wps rogue ap aaa polling-interval 120
```

# wireless wps rogue ap init-timer

To configure the init timer for rogue APs, use the **wireless wps rogue ap init-timer** command. Use the **no** form of this command to disable the configuration.

**wireless wps rogue ap init-timer**

**no wireless wps rogue ap init-timer**

<b>Syntax Description</b>	<b>init-timer</b> Configures the init timer for rogue APs.				
<b>Command Default</b>	None				
<b>Command Modes</b>	Global Configuration mode				
<b>Command History</b>	<table><thead><tr><th>Release</th><th>Modification</th></tr></thead><tbody><tr><td>Cisco IOS XE Amsterdam 16.12.1</td><td>This command was introduced.</td></tr></tbody></table>	Release	Modification	Cisco IOS XE Amsterdam 16.12.1	This command was introduced.
Release	Modification				
Cisco IOS XE Amsterdam 16.12.1	This command was introduced.				
<b>Usage Guidelines</b>	None				

## Example

The following example shows you how to configure the init timer for rogue APs:

```
Device(config)# wireless wps rogue ap init-timer
```

## wireless wps rogue ap mac-address rldp initiate

To initiate and configure Rogue Location Discovery Protocol on rogue APs, use the **wireless wps rogue ap mac-address rldp initiate** command.

**wireless wps rogue ap mac-address** *<MAC Address>* **rldp initiate**

Syntax Description		
<b>wps</b>		Configures the WPS settings.
<b>rogue</b>		Configures the global rogue devices.
<b>ap mac-address</b> <i>&lt;MAC Address&gt;</i>		The MAC address of the APs.
<b>rldp initiate</b>		Initiates RLDP on rogue APs.

**Command Default** None

**Command Modes** Privileged EXEC (#)

Command History	Release	Modification
	Cisco IOS XE Amsterdam 16.12.1	This command was introduced.

**Usage Guidelines** None

### Example

The following example shows you how to initiate and configure Rogue Location Discovery Protocol on rogue APs:

```
Device# wireless wps rogue ap mac-address 10.1.1 rldp initiate
```

# wireless wps rogue ap notify-min-rssi

To configure the minimum RSSI notification threshold for rogue APs, use the **wireless wps rogue ap notify-min-rssi** command. Use the **no** form of this command to disable the configuration.

**wireless wps rogue ap notify-min-rssi**

**no wireless wps rogue ap notify-min-rssi**

---

<b>Syntax Description</b>	<b>notify-min-rssi</b> Configure the minimum RSSI notification threshold for rogue APs.
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<b>Command Default</b>	None
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<b>Command Modes</b>	Global Configuration mode
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---

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Amsterdam 16.12.1	This command was introduced.

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<b>Usage Guidelines</b>	None
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## Example

The following example shows you how to configure the minimum RSSI notification threshold for rogue APs:

```
Device(config)# wireless wps rogue ap notify-min-rssi
```

## wireless wps rogue ap notify-rssi-deviation

To configure the RSSI deviation notification threshold for rogue APs, use the **wireless wps rogue ap notify-rssi-deviation** command. Use the **no** form of this command to disable the configuration.

**wireless wps rogue ap notify-rssi-deviation**

**no wireless wps rogue ap notify-rssi-deviation**

<b>Syntax Description</b>	<b>notify-rssi-deviation</b> Configures the RSSI deviation notification threshold for rogue APs.
---------------------------	--

<b>Command Default</b>	None
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<b>Command Modes</b>	Global Configuration mode
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<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Amsterdam 16.12.1	This command was introduced.

<b>Usage Guidelines</b>	None
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### Example

The following example shows you how to configure the RSSI deviation notification threshold for rogue APs:

```
Device(config)# wireless wps rogue ap notify-rssi-deviation
```

# wireless wps rogue ap rldp alarm-only

To set Rogue Location Discovery Protocol (RLDP) and alarm if rogue is detected, use the **wireless wps rogue ap rldp alarm-only** command. Use the **no** form of this command to disable the configuration.

**wireless wps rogue ap rldp alarm-only**

**no wireless wps rogue ap rldp alarm-only**

<b>Syntax Description</b>	<b>alarm-only</b> Sets RLDP and alarm if rogue is detected.				
<b>Command Default</b>	None				
<b>Command Modes</b>	Global Configuration mode				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Cisco IOS XE Amsterdam 16.12.1</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Cisco IOS XE Amsterdam 16.12.1	This command was introduced.
Release	Modification				
Cisco IOS XE Amsterdam 16.12.1	This command was introduced.				
<b>Usage Guidelines</b>	None				

## Example

The following example shows you how to set RLDP and alarm if rogue is detected:

```
Device(config)# wireless wps rogue ap rldp alarm-only
```

## wireless wps rogue ap rldp alarm-only monitor-ap-only

To perform RLDP only on monitor APs, use the **wireless wps rogue ap rldp alarm-only monitor-ap-only** command. Use the **no** form of this command to disable the configuration.

**wireless wps rogue ap rldp alarm-only monitor-ap-only**

**no wireless wps rogue ap rldp alarm-only monitor-ap-only**

---

<b>Syntax Description</b>	<b>monitor-ap-only</b> Performs RLDP on monitor APs only.
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<b>Command Default</b>	None
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<b>Command Modes</b>	Global Configuration mode
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<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Amsterdam 16.12.1	This command was introduced.

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<b>Usage Guidelines</b>	None
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### Example

The following example shows you how to perform RLDP only on monitor APs,:

```
Device(config)# wireless wps rogue ap rldp alarm-only monitor-ap-only
```



## wireless wps rogue ap rldp auto-contain

To configure RLDP, alarm and auto-contain if rogue is detected, use **wirelesswps rogueaprl dp auto-contain** command. Use the **no** form of the command to disable the alarm.

**[no] wireless wps rogue ap rldp auto-contain monitor-ap-only**

<b>Syntax Description</b>	<b>monitor-ap-only</b> Perform RLDP only on monitor AP	
<b>Command Default</b>	None	
<b>Command Modes</b>	Global Configuration	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.12.1	This command was introduced.
	Cisco IOS XE 3.7.3E	The <b>no</b> form of the command was introduced.

### Example

This example shows how to configure an alarm for a detected rogue.

```
Device# wireless wps rogue ap rldp auto-contain
```

## wireless wps rogue ap rldp retries

To configure RLDP retry times on rogue APs, use the **wireless wps rogue ap rldp retries** command. Use the **no** form of this command to disable the configuration.

**wireless wps rogue ap rldp retries**

**no wireless wps rogue ap rldp retries**

<b>Syntax Description</b>	<b>retries</b> Configures RLDP retry times on rogue APs.
---------------------------	--

<b>Command Default</b>	None
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<b>Command Modes</b>	Global Configuration mode
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<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Amsterdam 16.12.1	This command was introduced.

<b>Usage Guidelines</b>	None
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### Example

The following example shows you how to configure RLDP retry times on rogue APs:

```
Device(config)# wireless wps rogue ap rldp retries
```

# wireless wps rogue ap rldp schedule

To configure RLDP scheduling, use the **wireless wps rogue ap rldp schedule** command. Use the **no** form of this command to disable the configuration.

**wireless wps rogue ap rldp schedule**

**no wireless wps rogue ap rldp schedule**

<b>Syntax Description</b>	<b>schedule</b> Configures RLDP scheduling.				
<b>Command Default</b>	None				
<b>Command Modes</b>	Global Configuration mode				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Cisco IOS XE Amsterdam 16.12.1</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Cisco IOS XE Amsterdam 16.12.1	This command was introduced.
Release	Modification				
Cisco IOS XE Amsterdam 16.12.1	This command was introduced.				
<b>Usage Guidelines</b>	None				

## Example

The following example shows you how to configure RLDP scheduling:

```
Device(config)# wireless wps rogue ap rldp schedule
```

# wireless wps rogue ap rldp schedule day

To configure the day when RLDP scheduling is to be done, use the **wireless wps rogue ap rldp schedule day** command. Use the **no** form of this command to disable the configuration.

```
wireless wps rogue ap rldp schedule day { friday | monday | saturday | sunday | thursday
| tuesday | wednesday } start [HH:MM:SS] end [HH:MM:SS]
```

```
no wireless wps rogue ap rldp schedule day { friday | monday | saturday | sunday | thursday
| tuesday | wednesday } start [HH:MM:SS] end [HH:MM:SS]
```

<b>Syntax Description</b>	<b>day</b> { <b>friday</b>   <b>monday</b>   <b>saturday</b>   <b>sunday</b>   <b>thursday</b>   <b>tuesday</b>   <b>wednesday</b> }	Configures the day of the week when RLDP scheduling is to be done.
	<b>start</b> [HH:MM:SS]	Configures the start time for RLDP schedule for the day.
	<b>end</b> [HH:MM:SS]	Configures the end time for RLDP schedule for the day.

**Command Default** None

**Command Modes** Global Configuration mode

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Amsterdam 16.12.1	This command was introduced.

**Usage Guidelines** None

## Example

The following example shows you how to configure the day of the week, when RLDP scheduling is to be done:

```
Device(config)# wireless wps rogue ap rldp schedule day friday start 10:10:10 end 15:15:15
```

# wireless wps rogue ap timeout

To configure the expiry time for rogue APs, in seconds, use the **wireless wps rogue ap timeout** command. Use the **no** form of this command to disable the configuration.

**wireless wps rogue ap timeout** *240-3600*

**no wireless wps rogue ap timeout** *240-3600*

<b>Syntax Description</b>	<b>rogue ap timeout</b>	Configures the expiry time for rogue APs, in seconds.	
	<i>240-3600</i>	Specifies the number of seconds before rogue entries are flushed.	
<b>Command Default</b>	None		
<b>Command Modes</b>	Global configuration		
<b>Command History</b>	<b>Release</b>	<b>Modification</b>	
	Cisco IOS XE Gibraltar 16.12.1	This command was introduced.	
<b>Usage Guidelines</b>	None		

## Example

This example shows how to configure the expiry time for rogue APs, in seconds:

```
Device(config)# wireless wps rogue ap timeout 250
```

# wireless wps rogue auto-contain

To configure the auto contain level and to configure auto containment for monitor AP mode, use the **wireless wps rogue auto-contain** command. To disable the configuration, use the **no** form of this command.

**wireless wps rogue auto-contain** { level 1 - 4 | monitor-ap-only }

**no wireless wps rogue auto-contain** { level 1 - 4 | monitor-ap-only }

Syntax Description		
<b>auto-contain</b>	Configures auto contain for rogue devices.	
<b>level</b>	Configures auto contain levels.	
<b>1 - 4</b>	Specifies the auto containment levels.	
<b>monitor-ap-only</b>	Configures auto contain for monitor AP mode.	

**Command Default** None

**Command Modes** Global configuration

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.12.1	This command was introduced.

**Usage Guidelines** None

## Example

This example shows how to configure the auto contain level and to configure auto containment for monitor AP mode:

```
Device(config)# wireless wps rogue auto-contain level 2
```

```
Device(config)# wireless wps rogue auto-contain monitor-ap-only
```

# wireless wps rogue client aaa

To configure the use of AAA or local database to detect valid MAC addresses of rogue clients, use the **wireless wps rogue client aaa** command. Use the **no** form of this command to disable the configuration.

**wireless wps rogue client aaa**

**no wireless wps rogue client aaa**

<b>Syntax Description</b>	<b>aaa</b> Configures the use of AAA or local database to detect valid MAC addresses of rogue clients.				
<b>Command Default</b>	None				
<b>Command Modes</b>	Global Configuration mode				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Cisco IOS XE Amsterdam 16.12.1</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Cisco IOS XE Amsterdam 16.12.1	This command was introduced.
Release	Modification				
Cisco IOS XE Amsterdam 16.12.1	This command was introduced.				
<b>Usage Guidelines</b>	None				

## Example

The following example shows you how to configure the use of AAA or local database to detect valid MAC addresses of rogue clients:

```
Device(config)# wireless wps rogue client aaa
```

## wireless wps rogue client mse

To configure Mobility Services Engine (MSE) to detect valid MAC addresses of rogue clients, use the **wireless wps rogue client mse** command. Use the **no** form of this command to disable the configuration.

**wireless wps rogue client mse**

**no wireless wps rogue client mse**

<b>Syntax Description</b>	<b>mse</b> Configures the MSE to detect valid MAC addresses of rogue clients.				
<b>Command Default</b>	None				
<b>Command Modes</b>	Global Configuration mode				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Cisco IOS XE Amsterdam 16.12.1</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Cisco IOS XE Amsterdam 16.12.1	This command was introduced.
Release	Modification				
Cisco IOS XE Amsterdam 16.12.1	This command was introduced.				
<b>Usage Guidelines</b>	None				

### Example

The following example shows you how to configure Mobility Services Engine (MSE) to detect valid MAC addresses of rogue clients:

```
Device(config)# wireless wps rogue client mse
```



## wireless wps rogue client client-threshold

To configure rogue client per a rogue AP SNMP trap threshold, use the **wireless wps rogue client client-threshold** command. To disable the configuration, use the **no** form of this command.

**wireless wps rogue client client-threshold** *0 - 256*

**no wireless wps rogue client client-threshold** *0 - 256*

<b>Syntax Description</b>	<b>rogue client</b>	Configures rogue clients.
	<b>client-threshold</b>	Configures the rogue client per a rogue AP SNMP trap threshold.
	<i>0 - 256</i>	Specifies the client threshold.
<b>Command Default</b>	None	
<b>Command Modes</b>	Global configuration	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.12.1	This command was introduced.
<b>Usage Guidelines</b>	None	

### Example

This example shows how to configure rogue client per a rogue AP SNMP trap threshold:

```
Device(config)# wireless wps rogue ap timeout 250
```

## wireless wps rogue client notify-min-rssi

To configure the minimum RSSI notification threshold for rogue clients, use the **wireless wps rogue client notify-min-rssi** command. Use the **no** form of this command to disable the configuration.

**wireless wps rogue client notify-min-rssi** *-128 - -70*

**no wireless wps rogue client notify-min-rssi** *-128 - -70*

### Syntax Description

<b>rogue clients</b>	Configures rogue clients.
<b>notify-min-rssi</b>	Configures the minimum RSSI notification threshold for rogue clients.
<i>-128 - -70</i>	Specifies the RSSI threshold in decibels.

### Command Default

None

### Command Modes

Global configuration

### Command History

Release	Modification
Cisco IOS XE Gibraltar 16.12.1	This command was introduced.

### Usage Guidelines

None

### Example

This example shows how to configure the minimum RSSI notification threshold for rogue clients:

```
Device(config)# wireless wps rogue client notify-min-rssi -125
```

# wireless wps rogue client notify-rssi-deviation

To configure the RSSI deviation notification threshold for rogue clients, use the **wireless wps rogue client notify-rssi-deviation** command. To disable the configuration, use the **no** form of this command.

**wireless wps rogue client notify-rssi-deviation** *0 - 10*

**no wireless wps rogue client notify-rssi-deviation** *0 - 10*

<b>Syntax Description</b>	<b>notify-rssi-deviation</b>	Configures the RSSI deviation notification threshold for rogue clients.
	<i>0 - 10</i>	Specifies the RSSI threshold in decibels.

**Command Default** None

**Command Modes** Global configuration

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.12.1	This command was introduced.

**Usage Guidelines** None

## Example

This example shows how to configure the RSSI deviation notification threshold for rogue clients:

```
Device(config)# wireless wps rogue client notify-rssi-deviation 6
```

## wireless wps rogue notify-syslog

To enable syslog notification for rogue events, use the **wireless wps rogue notify-syslog** command.

### wireless wps rogue notify-syslog

<b>Syntax Description</b>	This command has no keywords or arguments.	
<b>Command Default</b>	None	
<b>Command Modes</b>	Global configuration (config)	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.10.1	This command was introduced.

### Example

This example shows how to enable syslog notification for rogue events:

```
Device# configure terminal
Device(config)# wireless wps rogue notify-syslog
```

## wireless wps rogue rule

To configure rogue classification rule, use the **wireless wps rogue rule** command.

```
wireless wps rogue rule rule-name priority priority {classify{friendly | malicious} | condition
{client-count number | duration | encryption | infrastructure | rsi | ssid} | default | exit | match {all |
any} | no | shutdown}
```

Syntax Description		
<b>rule</b> <i>rule-name</i>		Specifies a rule name.
<b>priority</b> <i>priority</i>		Changes the priority of a specific rule and shifts others in the list accordingly.
<b>classify</b>		Specifies the classification of a rule.
<b>friendly</b>		Classifies a rule as friendly.
<b>malicious</b>		Classifies a rule as malicious.
<b>condition</b> { <b>client-count</b> <i>number</i>   <b>duration</b>   <b>encryption</b>   <b>infrastructure</b>   <b>rsi</b>   <b>ssid</b> }		Specifies the conditions for a rule that the rogue access point must meet. Type of the condition to be configured. The condition types are listed below: <ul style="list-style-type: none"> <li>• <b>client-count</b>—Requires that a minimum number of clients be associated to a rogue access point. The valid range is 1 to 10 (inclusive).</li> <li>• <b>duration</b>—Requires that a rogue access point be detected for a minimum period of time. The valid range is 0 to 3600 seconds (inclusive).</li> <li>• <b>encryption</b>—Requires that the advertised WLAN does not have encryption enabled.</li> <li>• <b>infrastructure</b>—Requires the SSID to be known to the controller</li> <li>• <b>rsi</b>—Requires that a rogue access point have a minimum RSSI value. The range is from -95 to -50 dBm (inclusive).</li> <li>• <b>ssid</b>—Requires that a rogue access point have a specific SSID.</li> </ul>
<b>default</b>		Sets the command to its default settings.
<b>exit</b>		Exits the sub-mode.
<b>match</b> { <b>all</b>   <b>any</b> }		Configures matching criteria for a rule. Specifies whether a detected rogue access point must meet all or any of the conditions specified by the rule in order for the rule to be matched and the rogue access point to adopt the classification type of the rule.
<b>no</b>		Negates a command or set its defaults.
<b>shutdown</b>		Shuts down the system.

**Command Default** None.

**Command Modes** Global configuration

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.12.1	This command was introduced.

**Usage Guidelines**

None.

This example shows how to create a rule that can organize and display rogue access points as Friendly:

```
Device# configure terminal  
Device(config)# wireless wps rogue rule ap1 priority 1  
Device(config-rule)# classify friendly  
Device(config)# end
```

# wireless wps rogue security-level

To configure the wireless WPS rogue detection security levels, use the **wireless wps rogue security-level** command. Use the **no** form of this command to disable the configuration.

**wireless wps rogue security-level** { **critical** | **custom** | **high** | **low** }

**no wireless wps rogue security-level** { **critical** | **custom** | **high** | **low** }

Syntax Description	
<b>rogue security-level</b>	Configures the rogue detection security level.
<b>critical</b>	Specifies the rogue detection setup for highly sensitive deployments.
<b>custom</b>	Specifies the customizable security level.
<b>high</b>	Specifies the rogue detection setup for medium-scale deployments.
<b>low</b>	Specifies the basic rogue detection setup for small-scale deployments.

**Command Default** None

**Command Modes** Global configuration

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.12.1	This command was introduced.

**Usage Guidelines** None

## Example

This example shows how to configure the wireless WPS rogue detection security levels:

```
Device(config)# wireless wps rogue security-level critical
```

## wireless-default radius server

To configure multiple radius servers, use the **wireless-default radius server** command.

```
wireless-default radius server IP key secret
```

<b>Command Default</b>	None	
<b>Command Modes</b>	Global configuration (config)	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.10.1	This command was introduced.
<b>Usage Guidelines</b>	Using this utility, you can configure a maximum of ten radius servers.	

### Example

This example shows how to configure multiple radius servers:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# wireless-default radius server 9.2.58.90 key cisco123
Device(config)# end
```



## wlan policy

To map a policy profile to a WLAN profile, use the **wlan policy** command.

**wlan** *wlan-name* **policy** *policy-name*

### Syntax Description

*wlan-name* Name of the WLAN profile.

**policy** Map a policy profile to the WLAN profile.

*policy-name* Name of the policy profile.

### Command Default

None

### Command Modes

config-policy-tag

### Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced in a release earlier than Cisco IOS XE Gibraltar 16.10.1.

