Configuration Commands: g to z

hyperlocation

To configure Hyperlocation and related parameters for an AP group, use the **hyperlocation** command in the WLAN AP Group configuration (`Device(config-apgroup)#`) mode. To disable Hyperlocation and related parameter configuration for the AP group, use the **no** form of the command.

[no] hyperlocation [**threshold** {**detection** *value-in-dBm* | **reset** *value-btwn-0-99* | **trigger** *value-btwn-1-100*}]

Syntax Description

[no] hyperlocation	Enables or disables Hyperlocation for an AP group.
threshold detection *value-in-dBm*	Sets threshold to filter out packets with low RSSI. The **[no]** form of the command resets the threshold to its default value.
threshold reset *value-btwn-0-99*	Resets value in scan cycles after trigger. The **[no]** form of the command resets the threshold to its default value.
threshold trigger *value-btwn-1-100*	Sets the number of scan cycles before sending a BAR to clients. The **[no]** form of the command resets the threshold to its default value. **Note** Ensure that the Hyperlocation threshold reset value is less than the threshold trigger value.

Command Modes

WLAN AP Group 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.

- This example shows how to set threshold to filter out packets with low RSSI:

```
Device(config-apgroup)# [no] hyperlocation threshold detection -100
```

- This example shows how to reset value in scan cycles after trigger:

```
Device(config-apgroup)# [no] hyperlocation threshold reset 8
```

- This example shows how to set the number of scan cycles before sending a BAR to clients:

```
Device(config-apgroup)# [no] hyperlocation threshold trigger 10
```

idle-timeout

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

idle-timeout *value*

Syntax Description

value	Sets the idle-timeout value. Valid range is 15 to 100000 seconds.

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 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
```

ids (mesh)

To configure IDS (Rogue/Signature Detection) reporting for outdoor mesh APs, use the **ids** command.

ids

Syntax Description

This command has no keywords or arguments.

Command Default

IDS is disabled.

Command Modes

config-wireless-mesh-profile

Command History

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

Example

The following example shows how to configure IDS (Rogue/Signature Detection) reporting for outdoor mesh APs:

```
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)# ids
```

inactive-timeout

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

inactive-timeout *timeout-in-seconds*

Syntax Description

timeout-in-seconds	Specifies the inactive flow timeout value. The range is from 1 to 604800.

Command Default

None

Command Modes

ET-Analytics configuration

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	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 abort

To cancel an ongoing predownload or rolling access point (AP) upgrade operation, use the **install abort** command.

install abort

Syntax Description

This command has no keywords or arguments.

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

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

Example

The following example shows how to cancel a current predownload or install operation:

```
Device# install abort
```

install add file activate commit

To activate an installed SMU package and to commit the changes to the loadpath, use the **install add file activate commit** command.

install add file activate commit

Syntax Description

prompt-level	Sets the prompt level.
none	Prompting is not done.

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 activate an installed package and commit the changes:

```
Device# install add file vwlc_apsp_16.11.1.0_74.bin activate commit
```

install add file flash activate issu commit

To activate the installed package using issu technique and to commit the changes to the loadpath, use the **install add file flash activate issu commit** command.

install add file flash activate issu commit

Syntax Description

This command has no keywords or arguments.

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

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

Example

This example shows how to activate the installed package using issu technique and to commit the changes to the loadpath:

```
Device# install add file flash activate issu commit
```

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 profile

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

install activate profile

Syntax Description

profile	To activate the profile.

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 file

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

install activate file *file-name*

Syntax Description

file-name	Specifies the package name. Options are: bootflash:, flash:, and webui:.

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 use an auto cancel timer while activating an install package on a standby location:

```
Device# install activate file vwlc_apsp_16.11.1.0_74.bin
```

install commit

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

install commit

Syntax Description

This command has no keywords or arguments.

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

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

Example

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

```
Device# install commit
```

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

remove	Removes the install package.
profile	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*

Syntax Description

file-name	Specifies the package name. Options are: bootflash:, flash:, and webui:.

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 deactivate an install package:

```
Device# install deactivate file vwlc_apsp_16.11.1.0_74.bin
```

install deactivate

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

install deactivate file *file-name*

Syntax Description

file-name	Specifies the package name. Options are: bootflash:, flash:, and webui:.

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 deactivate an install package:

```
Device# install deactivate file vwlc_apsp_16.11.1.0_74.bin
```

install prepare

To prepare a SMU package to cancel, activate, or deactivate an operation, use the **install prepare** command.

install prepare {**abort** | **activate file** *file-name* | **deactivate file** *file-name* }

Syntax Description

abort	Prepares a SMU package for cancel operation.
activate file	Prepares a SMU package for activation.
file-name	Package name.
deactivate file	Prepares a SMU package for deactivation.

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 prepare a package for cancel, activate, or deactivate operation:

```
Device# install prepare abort
```

```
Device# install prepare activate file vwlc_apsp_16.11.1.0_74.bin
```

```
Device# install prepare deactivate file vwlc_apsp_16.11.1.0_74.bin
```

install prepare rollback

To prepare a SMU package for rollback operation, use the **install prepare rollback** command.

install prepare rollback to { **base** | **committed** | **id** *id* | **label** *label* }

Syntax Description

base	Prepares to roll back to the base image.
committed	Prepares to roll back to the last committed installation point.
id	Prepares rollback to the last committed installation point.
id	The identifier of the install point to roll back to.
label	Prepares to roll back to a specific install point label.
label	Label name, with a maximum of 15 characters.

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

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

Example

This example shows how to prepare a package for roll back to a particular id:

```
Device# install prepare rollback to id 2
```

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

base	Rolls back to the base image.
prompt-level none	Sets the prompt level as none.
committed	Rolls back to the last committed installation point.
id	Rolls back to a specific install point ID.
label	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*

Syntax Description

vlan-id	VLAN number. The range is 1 to 4094.

Command Default

The default VLAN interface is VLAN 1.

Command Modes

Global configuration

Command History

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

Usage Guidelines

SVIs are created the first time you enter the **interface vlan** *vlan-id* command for a particular VLAN. The *vlan-id* 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.

Note 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.

Note 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 chassis or a chassis stack 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**]

Syntax Description

web	(Optional) Configures the IPv4 web ACL.
acl-name	Specify the preauth ACL used for the WLAN with the security type value as webauth.

Command Default

None

Command Modes

WLAN configuration

Usage Guidelines

You must disable the WLAN before using this command. See Related Commands section for more information on how to disable a WLAN.

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	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*}

Syntax Description

<100-199>	Extended IP access-list number.
<2000-2699>	Extended IP access-list number (expanded range).

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 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 noform of this command.

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

Syntax Description

ip-address	IP address.
mask	Mask for the associated IP subnet.
secondary	(Optional) Specifies that the configured address is a secondary IP address. If this keyword is omitted, the configured address is the primary IP address. **Note** If the secondary address is used for a VRF table configuration with the **vrf** keyword, the **vrf** keyword must be specified also.
vrf	(Optional) Name of the VRF table. The *vrf-name* 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 16.10.1	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
match ip route-source	Specifies a source IP address to match to required route maps that have been set up based on VRF connected routes.
route-map	Defines the conditions for redistributing routes from one routing protocol into another, or to enable policy routing.
set vrf	Enables VPN VRF selection within a route map for policy-based routing VRF selection.
show ip arp	Displays the ARP cache, in which SLIP addresses appear as permanent ARP table entries.
show ip interface	Displays the usability status of interfaces configured for IP.
show route-map	Displays static and dynamic route maps.

ip admission

To enable web authentication, use the **ip admission** command in interface configuration mode. You can also use this command in fallback-profile configuration mode. To disable web authentication, use the **no** form of this command.

ip admission *rule*
no ip admission *rule*

Syntax Description

rule	IP admission rule name.

Command Default

Web authentication is disabled.

Command Modes

Interface configuration

Fallback-profile configuration

Command History

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

Usage Guidelines

The **ip admission** command applies a web authentication rule to a switch port.

This example shows how to apply a web authentication rule to a switchport:

```
Device# configure terminal
Device(config)# interface gigabitethernet1/0/1
Device(config-if)# ip admission rule1
```

This example shows how to apply a web authentication rule to a fallback profile for use on an IEEE 802.1x enabled switch port.

```
Device# configure terminal
Device(config)# fallback profile profile1
Device(config-fallback-profile)# ip admission rule1
```

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*

Syntax Description

name	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
host	Specifies the IP address and network mask for a manual binding to a DHCP client.
ip dhcp excluded-address	Specifies IP addresses that a Cisco IOS DHCP server should not assign to DHCP clients.
network (DHCP)	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.

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 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

Command	Description
ip dhcp relay information option server-id-override	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

type	Interface type. For more information, use the question mark (?) online help function.
number	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
ip dhcp relay source-interface	Configures the source interface for the relay agent to use as the source IP address for relayed messages.

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 monitor

To configure IP NetFlow monitoring, use the **ip flow monitor** command. To remove IP NetFlow monitoring, use the **no** form of this command.

ip flow monitor *ip-monitor-name* {**input** | **output**}
no ip flow monitor *ip-monitor-name* {**input** | **output**}

Syntax Description

ip-monitor-name	Flow monitor name.
input	Enables a flow monitor for ingress traffic.
output	Enables a flow monitor for egress traffic.

Command Default

None

Command Modes

WLAN configuration

Usage Guidelines

You must disable the WLAN before using this command.

Command History

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

This example shows how to configure an IP flow monitor for the ingress traffic:

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

This example shows how to disable an IP flow monitor:

```
Device# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Device(config)# wlan wlan1
Device(config-wlan)# no ip flow monitor test input
```

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*

Syntax Description

port_number	Port number. The range is from 1 to 65535.

Command Default

None

Command Modes

ET-Analytics configuration

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	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

vrf *name*	(Optional) Enables the VPN routing and forwarding (VRF) instance and the VRF name.
global	(Optional) Configures a global routing table.
address	Destination broadcast or host address to be used when forwarding UDP broadcasts. There can be more than one helper address per interface.
redundancy *vrg-name*	(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 **vrf** *name* keyword and argument pair and the **global** keyword were added.
12.2(15)T	This command was modified. The **redundancy** *vrg-name* 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-addressvrf***name address* option uses the address associated with the VRF name regardless of the VRF of the incoming interface. If the **ip helper-addressvrf***name 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

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

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 16.10.1	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

Command	Description
ip http secure-trustpoint	Specifies the CA trustpoint that should be used for obtaining signed certificates for the HTTPS server.
ip http server	Enables the HTTP server on an IP or IPv6 system, including the Cisco web browser user interface.
show ip http server secure status	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
ip http access-class	Specifies the access list that should be used to restrict access to the HTTP server.
ip http path	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 igmp snooping

To globally enable Internet Group Management Protocol (IGMP) snooping on the device or to enable it on a per-VLAN basis, use the **ip igmp snooping** global configuration command on the device stack or on a standalone device. To return to the default setting, use the **no** form of this command.

ip igmp snooping [**vlan** *vlan-id*]
no ip igmp snooping [**vlan** *vlan-id*]

Syntax Description

vlan *vlan-id*	(Optional) Enables IGMP snooping on the specified VLAN. Ranges are 1—1001 and 1006—4094.

Command Default

IGMP snooping is globally enabled on the device.

IGMP snooping is enabled on VLAN interfaces.

Command Modes

Global configuration

Command History

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

Usage Guidelines

When IGMP snooping is enabled globally, it is enabled in all of the existing VLAN interfaces. When IGMP snooping is globally disabled, it is disabled on all of the existing VLAN interfaces.

VLAN IDs 1002 to 1005 are reserved for Token Ring and FDDI VLANs, and cannot be used in IGMP snooping.

Example

The following example shows how to globally enable IGMP snooping:

```
Device(config)# ip igmp snooping
```

The following example shows how to enable IGMP snooping on VLAN 1:

```
Device(config)# ip igmp snooping vlan 1
```

You can verify your settings by entering the **show ip igmp snooping** command in privileged EXEC mode.

ip multicast vlan

To configure IP multicast on a single VLAN, use the **ip multicast vlan** command in global configuration mode. To remove the VLAN from the WLAN, use the **no** form of the command.

ip multicast vlan {*vlan-name vlan-id*}
no ip multicast vlan{*vlan-name vlan-id*}

Syntax Description

vlan-name	Specifies the VLAN name.
vlan-id	Specifies the VLAN ID.

Command Default

Disabled.

Command Modes

WLAN configuration

Command History

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

Usage Guidelines

None

This example configures vlan_id01 as a multicast VLAN.

```
Device# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Device(config)# wireless multicast
Device(config)# wlan test-wlan 1
Device(config-wlan)# ip multicast vlan vlan_id01
```

ip nbar protocol-discovery

To configure application recognition on the wireless policy on enabling the NBAR2 engine, use the **ip nbar protocol-discovery** command.

ip nbar protocol-discovery

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 application recognition on the wireless policy:

```
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)# ip nbar protocol-discovery
```

ip nbar protocol-pack

To load the protocol pack from bootflash, use the **ip nbar protocol-pack** command.

ip nbar protocol-pack bootflash:[{**force**}]

Syntax Description

bootflash:	Load the protocol pack from bootflash:
force	Force load the Load protocol pack from the selected source.

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 load the NBAR2 protocol pack from bootflash:

```
Device# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Device(config)# ip nbar protocol-pack bootflash:
```

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

timeout	(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.
seconds	(Optional) The number of seconds until timeout disconnects, with a maximum of 120 seconds. The default is 120 seconds.
authentication- retries	(Optional) The number of attempts after which the interface is reset.
integer	(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

1	(Optional) Router runs only SSH Version 1.
2	(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

Command	Description
debug ip ssh	Displays debug messages for SSH.
disconnect ssh	Terminates a SSH connection on your router.
ip ssh	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 16.10.1	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 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

opt82	Sets DHCP option 82 for wireless clients on this WLAN
required	Specifies whether DHCP address assignment is required
server	Configures the WLAN's IPv4 DHCP Server
ascii	Supports ASCII for DHCP option 82
rid	Supports adding Cisco 2 byte RID for DHCP option 82
format	Sets RemoteID format
ap_ethmac	Enables DHCP AP Ethernet MAC address
ap_location	Enables AP location
apmac	Enables AP MAC address
apname	Enables AP name
policy_tag	Enables Policy tag
ssid	Enables SSID
vlan_id	Enables VLAN ID
dhcp-ip-addr	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**

Syntax Description

monitor-name	Flow monitor name.
input	Enables flow monitor on ingress traffic.

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 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
```

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

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

Command Default

No IPv6 access list is defined.

Command Modes

Global configuration

Command History

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

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 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

ipv6-address	The IPv6 address to be used.
/ *prefix-length*	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.
prefix-name	A general prefix, which specifies the leading bits of the network to be configured on the interface.
sub-bits	The subprefix bits and host bits of the address to be concatenated with the prefixes provided by the general prefix specified with the *prefix-name* argument. The *sub-bits*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
ipv6 address anycast	Configures an IPv6 anycast address and enables IPv6 processing on an interface.
ipv6 address eui-64	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.
ipv6 address link-local	Configures an IPv6 link-local address for an interface and enables IPv6 processing on the interface.
ipv6 unnumbered	Enables IPv6 processing on an interface without assigning an explicit IPv6 address to the interface.
no ipv6 address autoconfig	Removes all IPv6 addresses from an interface.
show ipv6 interface	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

poolname	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

Command	Description
ipv6 dhcp server	Enables DHCP for IPv6 service on an interface.
show ipv6 dhcp pool	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
ipv6 address link-local	Configures an IPv6 link-local address for an interface and enables IPv6 processing on the interface.
ipv6 address eui-64	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.
ipv6 unnumbered	Enables IPv6 processing on an interface without assigning an explicit IPv6 address to the interface.
show ipv6 interface	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
show ipv6 mld snooping	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

Syntax Description

This command has no keywords or arguments.

Command Default

The managed address configuration flag is not set in IPv6 router advertisements.

Command Modes

Interface 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

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.

Hosts may use stateful and stateless address autoconfiguration simultaneously.

Examples

This example shows how to configure the managed address configuration flag in IPv6 router advertisements:

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

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*

Syntax Description

ipv6	IPv6 root chain.
ra-throttler	Configure RA throttler on the VLAN.
attach-policy	Apply a policy for feature RA throttler.
policy-name	Policy name for feature RA throttler

Command Default

None

Command Modes

config-vlan

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 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 raguard policy

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

ipv6 nd raguardpolicy *policy-name*

Syntax Description

policy-name	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 raguard 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 raguard 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 raguard policy policy1
Device(config-ra-guard)#
```

Related Commands

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

ipv6 snooping policy

Note

All existing IPv6 Snooping commands (prior to) now have corresponding SISF-based device-tracking commands that allow you to apply your configuration to both IPv4 and IPv6 address families. For more information, see device-tracking policy.

To configure an IPv6 snooping policy and enter IPv6 snooping configuration mode, use the **ipv6 snooping policy** command in global configuration mode. To delete an IPv6 snooping policy, use the **no** form of this command.

ipv6 snooping policy *snooping-policy*
no ipv6 snooping policy *snooping-policy*

Syntax Description

snooping-policy	User-defined name of the snooping policy. The policy name can be a symbolic string (such as Engineering) or an integer (such as 0).

Command Default

An IPv6 snooping policy is not configured.

Command Modes

Global configuration

Command History

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

Usage Guidelines

Use the **ipv6 snooping policy** command to create an IPv6 snooping policy. When the **ipv6 snooping policy** command is enabled, the configuration mode changes to IPv6 snooping configuration mode. In this mode, the administrator can configure the following IPv6 first-hop security commands:

- The **device-role** command specifies the role of the device attached to the port.
- The **limit address-count** *maximum* command limits the number of IPv6 addresses allowed to be used on the port.
- The **protocol** command specifies that addresses should be gleaned with Dynamic Host Configuration Protocol (DHCP) or Neighbor Discovery Protocol (NDP).
- The **security-level** command specifies the level of security enforced.
- The **tracking** command overrides the default tracking policy on a port.
- The **trusted-port** command configures a port to become a trusted port; that is, limited or no verification is performed when messages are received.

This example shows how to configure an IPv6 snooping policy:

```
Device(config)# ipv6 snooping policy policy1
Device(config-ipv6-snooping)#
```

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**]

Syntax Description

web	(Optional) Specifies an IPv6 access name for the WLAN Web ACL.
acl-name	Specifies an IPv6 access name.

Command Default

Filtering of IPv6 traffic on an interface is not configured.

Command Modes

wlan

Command History

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

Usage Guidelines

To configure the dual IPv4 and IPv6 template, enter the **sdm prefer dual-ipv4-and-ipv6 {default | vlan}** global configuration command and reload the switch.

You can use the **ipv6 traffic-filter** command on physical interfaces (Layer 2 or Layer 3 ports), Layer 3 port channels, or switch virtual interfaces (SVIs).

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).

If **any** 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.

This example shows how to filter IPv6 traffic on an interface:

```
Device(config-wlan)# ipv6 traffic-filter TestDocTrafficFilter
```

key

To identify an authentication key on a key chain, use the **key** command in key-chain configuration mode. To remove the key from the key chain, use the **no** form of this command.

key *key-id*
no key *key-id*

Syntax Description

key-id	Identification number of an authentication key on a key chain. The range of keys is from 0 to 2147483647. The key identification numbers need not be consecutive.

Command Default

No key exists on the key chain.

Command Modes

Command Modes Key-chain configuration (config-keychain)

Usage Guidelines

It is useful to have multiple keys on a key chain so that the software can sequence through the keys as they become invalid after time, based on the **accept-lifetime** and **send-lifetime** key chain key command settings.

Each key has its own key identifier, which is stored locally. The combination of the key identifier and the interface associated with the message uniquely identifies the authentication algorithm and Message Digest 5 (MD5) authentication key in use. Only one authentication packet is sent, regardless of the number of valid keys. The software starts looking at the lowest key identifier number and uses the first valid key.

If the last key expires, authentication will continue and an error message will be generated. To disable authentication, you must manually delete the last valid key.

To remove all keys, remove the key chain by using the **no key chain** command.

Examples

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

```
Device(config-keychain)#key 1
```

Related Commands

Command	Description
accept-lifetime	Sets the time period during which the authentication key on a key chain is received as valid.
key chain	Defines an authentication key chain needed to enable authentication for routing protocols.
key-string (authentication)	Specifies the authentication string for a key.
show key chain	Displays authentication key information.

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
```

ldap attribute-map

To configure a dynamic attribute map on an SLDAP server, use the **ldap attribute-map** command.

ldap attribute-map *map-name*

Command Default

None

Command Modes

Global configuration (config)

Command History

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

This example shows how to configure a dynamic attribute map on an SLDAP server:

```
Device# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Device(config)# ldap attribute-map map1
Device(config-attr-map)# map type department supplicant-group
Device(config-attr-map)# exit
```

ldap server

To configure secure LDAP, use the **ldap server** command.

ldap server *name*

Syntax Description

name	Server name.

Command Default

None

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 secure LDAP:

```
Device# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Device(config)# ldap server server1
Device(config-ldap-server)# ipv4 9.4.109.20
Device(config-ldap-server)# timeout retransmit 20
Device(config-ldap-server)# bind authenticate root-dn
CN=ldapipv6user,CN=Users,DC=ca,DC=ssh2,DC=com password Cisco12345
Device(config-ldap-server)# base-dn CN=Users,DC=ca,DC=ssh2,DC=com
Device(config-ldap-server)# mode secure no- negotiation
Device(config-ldap-server)# 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

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

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 features and functions, 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_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_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

custom_id *ID*	Although available on the CLI, this option is not supported.
enable	Although visible on the CLI, configuring this keyword has no effect. Smart licensing is always enabled.
privacy { **all** | **hostname** | **version** }	Enables you to *leave out* certain information from the usage reports that are send to CSSM. Choose from the following options: • **all**: Sends only the minimal licensing information in any communication. • **hostname**: Excludes the hostname from any communication. • **version**: Excludes the product instance agent version from any communication.

proxy { **address** *address_hostname* | **port** *port* }	Configures a proxy. You can use this option to configure a proxy only if the transport mode is **license smart transport smart**, or **license smart transport cslu**. When a proxy is configured, messages are sent to the proxy along with the final destination URL (CSSM). The proxy sends the message on to CSSM. Configure the following options: • **address** *address_hostname*: Configures the proxy address. For *address_hostname*, enter the 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. • **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/oddce/services/DDCEService`
	The **no license smart url** *url* command reverts to the default URL.
	• **cslu** *cslu_url*: If you have configured the transport mode as **cslu**, configure this option. Enter the CSLU 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_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 smart***smart_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 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	The following keywords and variables were introduced with Smart Licensing Using Policy: • Under the **url**keyword, these options were introduced: { **cslu** *cslu_url* | **smart** *smart_url* } • Under the **transport** keyword, these options were introduced: { **cslu** | **off** } Further, the default transport type was changed from **callhome**, to **cslu**. • **usage** { **customer-tags** { **tag1** | **tag2** | **tag3** | **tag4** } *tag_value* | **interval** *interval_in_days* } The following keywords and variables under the **license smart** command are deprecated and no longer available on the CLI: **enable**and **conversion automatic**.

Usage Guidelines

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 communicatin 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*.

Examples

- Examples for Data Privacy, on page 83
- Examples for Transport Type and URL, on page 84
- Examples for Usage Reporting Options, on page 85

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.

No private information is sent:

```
Device# configure terminal
Device(config)# license smart privacy all
Device(config)# license smart transport callhome
Device(config)# license smart url
https://tools.cisco.com/its/service/oddce/services/DDCEService
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>
```

Agent version on the product instance is not sent:

```
Device# configure terminal
Device(config)# license smart privacy version
Device(config)# license smart transport callhome
Device(config)# license smart url
https://tools.cisco.com/its/service/oddce/services/DDCEService
Device(config)# exit
Device# show license status
<output truncated>
Data Privacy:
  Sending Hostname: yes
    Callhome hostname privacy: DISABLED
    Smart Licensing hostname privacy: DISABLED
  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 files 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), 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** } *feature_name* { **all** | **local** } | **return** { **all** | **local** } { **offline** [*path*] | **online** } } | **clear eventlog** | **export return** { **all** | **local** } *feature_name* | **factory reset** | **import** *file_path* | **save** { **trust-request** *filepath_filename* | **usage** { **all** | **days** *days* | **rum-id** *rum-ID* | **unreported** } { **file** *file_path* } } | **sync** { **all** | **local** } | **trust idtoken** *id_token_value* { **local** | **all** } [{ **force** }] }

Syntax Description

smart	Provides options for Smart Licensing.
authorization	Provides the option to request for, or return, authorization codes. Authorization codes are required *only* if you use licenses with enforcement type: export-controlled or enfored.
request	Requests an authorization code from CSSM or CSLU (CSLU in-turn fetches it from CSSM) and installs it on the product instance.
add	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.
replace	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.
feature_name	Name of the license for which you are requesting an authorization code.
all	Performs the action for all product instances in a High Availability configuration.
local	Performs the action for the *active* product instance. This is the default option.
return	Returns an authorization code back to the license pool in CSSM.
offline *file_path*	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. Optionally, you can also specify a path to save the file. The file format can be any readable format, such as `.txt` 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.

online	Means that the product instance is in a connected mode. The authorization code is returned to CSLU or CSSM directly.
clear eventlog	Clears all event log files from the product instance.
export return	Returns the authorization key for an export-controlled license.
factory reset	Clears all saved licensing information from the product instance.
import *filepath_filename*	Imports a file on to the product instance. The file may be that of an authorization code, a trust code, or, or a policy. For *filepath_filename*, specify the location, including the filename.
save	Provides options to save RUM reports or trust code requests.
trust-request *filepath_filename*	Saves the trust code request for the active product instance in the specified location. For *filepath_filename*, specify the absolute path to the file, including the filename.
usage { **all** | **days** *days* | **rum-id** *rum-ID* | **unreported** } { **file** *file_path* }	Saves RUM reports (license usage information) in the specified location. You must specify one of these options: • **all**: Saves all RUM reports. • **days** *days*: Saves RUM report for the last *n* 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. • **rum-Id** *rum-ID*: Saves a specified RUM ID. The valid value range is 0 to 18446744073709551615. • **unreported**: Saves all unreported RUM reports. **file** *filepath_filename*: Saves the specified usage information to a file. Specify the absolute path to the file, including the filename.
sync { **all** | **local** }	Synchronizes with CSLU or CSSM, 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.
Cisco IOS XE Amsterdam 17.3.2a	The following keywords and variables were introduced with Smart Licensing Using Policy: • **authorization** { **request** { **add** | **replace** } *feature_name* { **all** | **local** } | **return** { **all** | **local** } { **offline** [*path*] | **online** } } • **import** *file_path* • **save** { **trust-request** *filepath_filename* | **usage** { **all** | **days** *days* | **rum-id** *rum-ID* | **unreported** } { **file** *file_path* } } • **sync** { **all** | **local** } • **trust idtoken** *id_token_value* { **local** | **all** } [**force**] The following keywords and variables under the **license smart** command are deprecated and no longer available on the CLI: • **register idtoken** *token_id* [**force**] • **renew id** { **ID** | **auth** } • **debug** { **error** | **debug** | **trace** | **all** } • **reservation** { **cancel** [**all** | **local**] | **install** [**file**] *key* | **request** { **all** | **local** | **universal** } | **return** [**all** | **authorization** { *auth_code* | **file** *filename* } | **Local**] *key* } • **mfg reservation** { **request** | **install** | **install file** | **cancel** } • **conversion** { **start** | **stop** }

Usage Guidelines

Smart Licensing Using Policy is enabled by default.

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.

Entering the **licence 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 Authrization, 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.

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** } *feature_name* { **all** | **local** }
  - **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 89
- Example for Installing a Trust Code, on page 90
- Example for Returning an SLR Authorization Code, on page 90

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 offlline
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.

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*

Syntax Description

profile-name	Enter eap-fast profile name.

Command Default

None

Command Modes

config-wireless-flex-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 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

Syntax Description

local-site	Configure this site as local site.

Command Default

None

Command Modes

config-site-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.

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

calibrating-client	Timeout value for calibrating clients.
client	Timeout value for clients.
tags	Timeout value for RFID tags.
timeout-duration	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

client	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.
rogue-aps	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.
tags	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.
db	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 16.10.1	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
```

lsc-only-auth (mesh)

To configure mesh security to Locally Significant Certificate (LSC) only MAP authentication, use the **lsc-only-auth** command.

lsc-only-auth

Syntax Description

This command has no keywords or arguments.

Command Default

LSC only authentication is enabled.

Command Modes

config-wireless-mesh-profile

Command History

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

Example

The following example shows how to configure mesh security to LSC only MAP authentication:

```
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)# lsc-only-auth
```

mab request format attribute

To configure the delimiter while configuring MAC filtering on a WLAN, use the mab request format attribute command.

mab request format attribute *username password nas-identifier]*

Syntax Description

username	Username format used for MAB requests
password	Global Password used for all MAB requests
Nas-identifier	NAS-Identifier attribute

Command Default

Global Configuration

Command Modes

MAC is sent without any delimiter.

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

MAC is sent without any delimiter.

Example

The following example shows how to configure 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
```

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
```

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** {*namenumber*} [{*namenumber*}] [{*namenumber*}]. . . | **ipv6 address** {*namenumber*} [{*namenumber*}] [{*namenumber*}]. . . | **mac address** {*name*} [{*name*}] [{*name*}]. . . }
no match {**ip address** {*namenumber*} [{*namenumber*}] [{*namenumber*}]. . . | **ipv6 address** {*namenumber*} [{*namenumber*}] [{*namenumber*}]. . . | **mac address** {*name*} [{*name*}] [{*name*}]. . . }

Syntax Description

ip address	Sets the access map to match packets against an IP address access list.
ipv6 address	Sets the access map to match packets against an IPv6 address access list.
mac address	Sets the access map to match packets against a MAC address access list.
name	Name of the access list to match packets against.
number	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 16.10.1	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, 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:

```
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 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*

Syntax Description

template-name	Name of a configured service template as defined by the **service-template** 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)

Command History

Release	Modification
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
```

Related Commands

Command	Description
activate (policy-map action)	Activates a control policy or service template on a subscriber session.
class	Associates a control class with one or more actions in a control policy.
match service-template	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 application name

To configure the use of the application name as a key field for a flow record, use the **match application name** command in flow record configuration mode. To disable the use of the application name as a key field for a flow record, use the **no** form of this command.

match application name
no match application name

Syntax Description

This command has no arguments or keywords.

Command Default

The application name is not configured as a key field.

Command Modes

Flow record configuration (config-flow-record)

Command History

Release	Modification
15.0(1)M	This command was introduced.
15.2(2)T	This command was integrated into Cisco IOS Release 15.2(2)T for Cisco Performance Monitor.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S for Cisco Performance Monitor.

Usage Guidelines

This command can be used with both Flexible NetFlow and Performance Monitor. These products use different commands to enter the configuration mode in which you issue this command, however the mode prompt is the same for both products. For Performance Monitor, you must first enter the **flow record type performance-monitor** command before you can use this command.

Because the mode prompt is the same for both products, here we refer to the command mode for both products as flow record configuration mode. However, for Flexible NetFlow, the mode is also known as Flexible NetFlow flow record configuration mode; and for Performance Monitor, the mode is also known as Performance Monitor flow record configuration mode.

A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

Examples

The following example configures the application name as a key field:

```
Router(config)# flow record FLOW-RECORD-1
Router(config-flow-record)# match application name
```

Cisco Performance Monitor in Cisco IOS Release 15.2(2)T and XE 3.5S

The following example configures the application name as a key field:

```
Router(config)# flow record type performance-monitor RECORD-1
Router(config-flow-record)# match application name
```

Related Commands

Command	Description
collect application name	Configures the use of application name as a nonkey field for a Flexible NetFlow flow record.
flow record	Creates a flow record, and enters Flexible NetFlow flow record configuration mode.
flow record type performance-monitor	Creates a flow record, and enters Performance Monitor flow record configuration mode.

match day

To perform a match using day, days, or a generic grouping of days (weekends or weekdays), use the **match day** command.

match day *day-string*

Command Default

None

Command Modes

Filter Control Classmap Configuration (config-filter-control-classmap)

Command History

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

Usage Guidelines

You should also disable AAA override for this command to work.

Examples

The following example shows how to perform a match using day:

```
Device# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Device(config)# class-map type control subscriber match-all class-map-name
Device(config-filter-control-classmap)# match day day-string
```

match device-type

To perform a match using device type, use the **match device-type** command.

match device-type*device-type*

Command Default

None

Command Modes

Filter Control Classmap Configuration (config-filter-control-classmap)

Command History

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

Usage Guidelines

You should enable device classifier for the device list to be populated.

Examples

The following example shows how to perform a match using device type:

```
Device# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Device(config)# class-map type control subscriber match-allclass-map-name
Device(config-filter-control-classmap)# match device-type device-type
```

match eap-type

To perform a match using Extensible Authentication Protocol (EAP), use the **match eap-type** command.

match eap-type {**fast** | **gtc** | **leap** | **md5** | **mschapv2** | **peap** | **tls**}

Syntax Description

fast	Flexible authentication through secure tunneling.
gtc	Generic token card.
leap	Lightweight extensible authentication protocol.
md5	MD5-tunneled authentication protocol.
mschapv2	MSCHAPV2 authentication mechanism.
peap	Protected extensible authentication protocol.
tls	Transport layer security.

Command Default

None

Command Modes

Filter Control Classmap Configuration (config-filter-control-classmap)

Command History

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

Usage Guidelines

You should also disable AAA override for this command to work.

Examples

The following example shows how to perform a match using the eap-type PEAP:

```
Device# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Device(config)# class-map type control subscriber match-all class-map-name
Device(config-filter-control-classmap)# match eap-type  peap
```

match interface

To configure the input and output interfaces as key fields for a flow record, use the **match interface** command in flow record configuration mode. To disable the use of the input and output interfaces as key fields for a flow record, use the **no** form of this command.

match interface {**input** | **output**}
no match interface {**input** | **output**}

Syntax Description

input	Configures the input interface as a key field.
output	Configures the output interface as a key field.

Command Default

The input and output interfaces are not configured as key fields.

Command Modes

Flow record configuration

Command History

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

Usage Guidelines

A flow record requires at least one key field before it can be used in a flow monitor. The key fields distinguish flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

The following example configures the input interface as a key field:

```
Device(config)# flow record FLOW-RECORD-1
Device(config-flow-record)# match interface input
```

The following example configures the output interface as a key field:

```
Device(config)# flow record FLOW-RECORD-1
Device(config-flow-record)# match interface output
```

match ipv4

To configure one or more of the IPv4 fields as a key field for a flow record, use the **match ipv4** command in flow record configuration mode. To disable the use of one or more of the IPv4 fields as a key field for a flow record, use the **no** form of this command.

match ipv4 {**destination address** | **protocol** | **source address** | **tos** | **version**}
no match ipv4 {**destination address** | **protocol** | **source address** | **tos** | **version**}

Syntax Description

destination address	Configures the IPv4 destination address as a key field. For more information see match ipv4 destination address, on page 112.
protocol	Configures the IPv4 protocol as a key field.
source address	Configures the IPv4 destination address as a key field. For more information see match ipv4 source address, on page 114.
tos	Configures the IPv4 ToS as a key field.
version	Configures the IP version from IPv4 header as a key field.

Command Default

The use of one or more of the IPv4 fields as a key field for a user-defined flow record is not enabled.

Command Modes

Flow record configuration

Command History

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

Usage Guidelines

A flow record requires at least one key field before it can be used in a flow monitor. The key fields distinguish flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

The following example configures the IPv4 protocol as a key field:

```
Device(config)# flow record FLOW-RECORD-1
Device(config-flow-record)# match ipv4 protocol
```

match ipv4

To configure one or more of the IPv4 fields as a key field for a flow record, use the **match ipv4** command in flow record configuration mode. To disable the use of one or more of the IPv4 fields as a key field for a flow record, use the **no** form of this command.

match ipv4 {**destination address** | **protocol** | **source address** | **tos** | **version**}
no match ipv4 {**destination address** | **protocol** | **source address** | **tos** | **version**}

Syntax Description

destination address	Configures the IPv4 destination address as a key field. For more information see match ipv4 destination address, on page 112.
protocol	Configures the IPv4 protocol as a key field.
source address	Configures the IPv4 destination address as a key field. For more information see match ipv4 source address, on page 114.
tos	Configures the IPv4 ToS as a key field.
version	Configures the IP version from IPv4 header as a key field.

Command Default

The use of one or more of the IPv4 fields as a key field for a user-defined flow record is not enabled.

Command Modes

Flow record configuration

Command History

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

Usage Guidelines

A flow record requires at least one key field before it can be used in a flow monitor. The key fields distinguish flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

The following example configures the IPv4 protocol as a key field:

```
Device(config)# flow record FLOW-RECORD-1
Device(config-flow-record)# match ipv4 protocol
```

match ipv4 destination address

To configure the IPv4 destination address as a key field for a flow record, use the **match ipv4 destination address** command in flow record configuration mode. To disable the IPv4 destination address as a key field for a flow record, use the **no** form of this command.

match ipv4 destination address
no match ipv4 destination address

Syntax Description

This command has no arguments or keywords.

Command Default

The IPv4 destination address is not configured as a key field.

Command Modes

Flow record configuration

Command History

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

Usage Guidelines

A flow record requires at least one key field before it can be used in a flow monitor. The key fields distinguish flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

To return this command to its default settings, use the **no match ipv4 destination address** or **default match ipv4 destination address** flow record configuration command.

The following example configures the IPv4 destination address as a key field for a flow record:

```
Device(config)# flow record FLOW-RECORD-1
Device(config-flow-record)# match ipv4 destination address
```

match ipv4 destination address

To configure the IPv4 destination address as a key field for a flow record, use the **match ipv4 destination address** command in flow record configuration mode. To disable the IPv4 destination address as a key field for a flow record, use the **no** form of this command.

match ipv4 destination address
no match ipv4 destination address

Syntax Description

This command has no arguments or keywords.

Command Default

The IPv4 destination address is not configured as a key field.

Command Modes

Flow record configuration

Command History

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

Usage Guidelines

A flow record requires at least one key field before it can be used in a flow monitor. The key fields distinguish flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

To return this command to its default settings, use the **no match ipv4 destination address** or **default match ipv4 destination address** flow record configuration command.

The following example configures the IPv4 destination address as a key field for a flow record:

```
Device(config)# flow record FLOW-RECORD-1
Device(config-flow-record)# match ipv4 destination address
```

match ipv4 source address

To configure the IPv4 source address as a key field for a flow record, use the **match ipv4 source address** command in flow record configuration mode. To disable the use of the IPv4 source address as a key field for a flow record, use the **no** form of this command.

match ipv4 source address
no match ipv4 source address

Syntax Description

This command has no arguments or keywords.

Command Default

The IPv4 source address is not configured as a key field.

Command Modes

Flow record configuration

Command History

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

Usage Guidelines

A flow record requires at least one key field before it can be used in a flow monitor. The key fields distinguish flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

To return this command to its default settings, use the **no match ipv4 source address** or **default match ipv4 source address** flow record configuration command.

The following example configures the IPv4 source address as a key field:

```
Device(config)# flow record FLOW-RECORD-1
Device(config-flow-record)# match ipv4 source address
```

match ipv4 source address

To configure the IPv4 source address as a key field for a flow record, use the **match ipv4 source address** command in flow record configuration mode. To disable the use of the IPv4 source address as a key field for a flow record, use the **no** form of this command.

match ipv4 source address
no match ipv4 source address

Syntax Description

This command has no arguments or keywords.

Command Default

The IPv4 source address is not configured as a key field.

Command Modes

Flow record configuration

Command History

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

Usage Guidelines

A flow record requires at least one key field before it can be used in a flow monitor. The key fields distinguish flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

To return this command to its default settings, use the **no match ipv4 source address** or **default match ipv4 source address** flow record configuration command.

The following example configures the IPv4 source address as a key field:

```
Device(config)# flow record FLOW-RECORD-1
Device(config-flow-record)# match ipv4 source address
```

match ipv4 ttl

To configure the IPv4 time-to-live (TTL) field as a key field for a flow record, use the **match ipv4 ttl** command in flow record configuration mode. To disable the use of the IPv4 TTL field as a key field for a flow record, use the **no** form of this command.

match ipv4 ttl
no match ipv4 ttl

Syntax Description

This command has no arguments or keywords.

Command Default

The IPv4 time-to-live (TTL) field is not configured as a key field.

Command Modes

Flow record configuration

Command History

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

Usage Guidelines

A flow record requires at least one key field before it can be used in a flow monitor. The key fields distinguish flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match ipv4 ttl** command.

The following example configures IPv4 TTL as a key field:

```
Device(config)# flow record FLOW-RECORD-1
Device(config-flow-record)# match ipv4 ttl
```

match ipv4 ttl

To configure the IPv4 time-to-live (TTL) field as a key field for a flow record, use the **match ipv4 ttl** command in flow record configuration mode. To disable the use of the IPv4 TTL field as a key field for a flow record, use the **no** form of this command.

match ipv4 ttl
no match ipv4 ttl

Syntax Description

This command has no arguments or keywords.

Command Default

The IPv4 time-to-live (TTL) field is not configured as a key field.

Command Modes

Flow record configuration

Command History

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

Usage Guidelines

A flow record requires at least one key field before it can be used in a flow monitor. The key fields distinguish flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match ipv4 ttl** command.

The following example configures IPv4 TTL as a key field:

```
Device(config)# flow record FLOW-RECORD-1
Device(config-flow-record)# match ipv4 ttl
```

match ipv6

To configure one or more of the IPv6 fields as a key field for a flow record, use the **match ipv6** command in flow record configuration mode. To disable the use of one or more of the IPv6 fields as a key field for a flow record, use the **no** form of this command.

match ipv6 {**destination address** | **protocol** | **source address** | **traffic-class** | **version**}
no match ipv6 {**destination address** | **protocol** | **source address** | **traffic-class** | **version**}

Syntax Description

destination address	Configures the IPv4 destination address as a key field. For more information see match ipv6 destination address, on page 120.
protocol	Configures the IPv6 protocol as a key field.
source address	Configures the IPv4 destination address as a key field. For more information see match ipv6 source address, on page 124.

Command Default

The IPv6 fields are not configured as a key field.

Command Modes

Flow record configuration

Command History

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

Usage Guidelines

A flow record requires at least one key field before it can be used in a flow monitor. The key fields distinguish flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

The following example configures the IPv6 protocol field as a key field:

```
Device(config)# flow record FLOW-RECORD-1
Device(config-flow-record)# match ipv6 protocol
```

match ipv6

To configure one or more of the IPv6 fields as a key field for a flow record, use the **match ipv6** command in flow record configuration mode. To disable the use of one or more of the IPv6 fields as a key field for a flow record, use the **no** form of this command.

match ipv6 {**destination address** | **protocol** | **source address** | **traffic-class** | **version**}
no match ipv6 {**destination address** | **protocol** | **source address** | **traffic-class** | **version**}

Syntax Description

destination address	Configures the IPv4 destination address as a key field. For more information see match ipv6 destination address, on page 120.
protocol	Configures the IPv6 protocol as a key field.
source address	Configures the IPv4 destination address as a key field. For more information see match ipv6 source address, on page 124.

Command Default

The IPv6 fields are not configured as a key field.

Command Modes

Flow record configuration

Command History

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

Usage Guidelines

A flow record requires at least one key field before it can be used in a flow monitor. The key fields distinguish flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

The following example configures the IPv6 protocol field as a key field:

```
Device(config)# flow record FLOW-RECORD-1
Device(config-flow-record)# match ipv6 protocol
```

match ipv6 destination address

To configure the IPv6 destination address as a key field for a flow record, use the **match ipv6 destination address** command in flow record configuration mode. To disable the IPv6 destination address as a key field for a flow record, use the **no** form of this command.

match ipv6 destination address
no match ipv6 destination address

Syntax Description

This command has no arguments or keywords.

Command Default

The IPv6 destination address is not configured as a key field.

Command Modes

Flow record configuration

Command History

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

Usage Guidelines

A flow record requires at least one key field before it can be used in a flow monitor. The key fields distinguish flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

To return this command to its default settings, use the **no match ipv6 destination address** or **default match ipv6 destination address** flow record configuration command.

The following example configures the IPv6 destination address as a key field:

```
Device(config)# flow record FLOW-RECORD-1
Device(config-flow-record)# match ipv6 destination address
```

match ipv6 destination address

To configure the IPv6 destination address as a key field for a flow record, use the **match ipv6 destination address** command in flow record configuration mode. To disable the IPv6 destination address as a key field for a flow record, use the **no** form of this command.

match ipv6 destination address
no match ipv6 destination address

Syntax Description

This command has no arguments or keywords.

Command Default

The IPv6 destination address is not configured as a key field.

Command Modes

Flow record configuration

Command History

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

Usage Guidelines

A flow record requires at least one key field before it can be used in a flow monitor. The key fields distinguish flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

To return this command to its default settings, use the **no match ipv6 destination address** or **default match ipv6 destination address** flow record configuration command.

The following example configures the IPv6 destination address as a key field:

```
Device(config)# flow record FLOW-RECORD-1
Device(config-flow-record)# match ipv6 destination address
```

match ipv6 hop-limit

To configure the IPv6 hop limit as a key field for a flow record, use the **match ipv6 hop-limit** command in flow record configuration mode. To disable the use of a section of an IPv6 packet as a key field for a flow record, use the **no** form of this command.

match ipv6 hop-limit
no match ipv6 hop-limit

Syntax Description

This command has no arguments or keywords.

Command Default

The use of the IPv6 hop limit as a key field for a user-defined flow record is not enabled by default.

Command Modes

Flow record configuration

Command History

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

Usage Guidelines

A flow record requires at least one key field before it can be used in a flow monitor. The key fields distinguish flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

The following example configures the hop limit of the packets in the flow as a key field:

```
Device(config)# flow record FLOW-RECORD-1
Device(config-flow-record)# match ipv6 hop-limit
```

match ipv6 hop-limit

To configure the IPv6 hop limit as a key field for a flow record, use the **match ipv6 hop-limit** command in flow record configuration mode. To disable the use of a section of an IPv6 packet as a key field for a flow record, use the **no** form of this command.

match ipv6 hop-limit
no match ipv6 hop-limit

Syntax Description

This command has no arguments or keywords.

Command Default

The use of the IPv6 hop limit as a key field for a user-defined flow record is not enabled by default.

Command Modes

Flow record configuration

Command History

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

Usage Guidelines

A flow record requires at least one key field before it can be used in a flow monitor. The key fields distinguish flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

The following example configures the hop limit of the packets in the flow as a key field:

```
Device(config)# flow record FLOW-RECORD-1
Device(config-flow-record)# match ipv6 hop-limit
```

match ipv6 source address

To configure the IPv6 source address as a key field for a flow record, use the **match ipv6 source address** command in flow record configuration mode. To disable the use of the IPv6 source address as a key field for a flow record, use the **no** form of this command.

match ipv6 source address
no match ipv6 source address

Syntax Description

This command has no arguments or keywords.

Command Default

The IPv6 source address is not configured as a key field.

Command Modes

Flow record configuration

Command History

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

Usage Guidelines

A flow record requires at least one key field before it can be used in a flow monitor. The key fields distinguish flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

To return this command to its default settings, use the **no match ipv6 source address** or **default match ipv6 source address** flow record configuration command.

The following example configures a IPv6 source address as a key field:

```
Device(config)# flow record FLOW-RECORD-1
Device(config-flow-record)# match ipv6 source address
```

match ipv6 source address

To configure the IPv6 source address as a key field for a flow record, use the **match ipv6 source address** command in flow record configuration mode. To disable the use of the IPv6 source address as a key field for a flow record, use the **no** form of this command.

match ipv6 source address
no match ipv6 source address

Syntax Description

This command has no arguments or keywords.

Command Default

The IPv6 source address is not configured as a key field.

Command Modes

Flow record configuration

Command History

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

Usage Guidelines

A flow record requires at least one key field before it can be used in a flow monitor. The key fields distinguish flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

To return this command to its default settings, use the **no match ipv6 source address** or **default match ipv6 source address** flow record configuration command.

The following example configures a IPv6 source address as a key field:

```
Device(config)# flow record FLOW-RECORD-1
Device(config-flow-record)# match ipv6 source address
```

match join-time-of-day

To perform a match using time of the day, use the **match join-time-of-day** command.

match join-time-of-day *start-time end-time*

Command Default

None

Command Modes

Filter Control Classmap Configuration (config-filter-control-classmap)

Command History

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

Usage Guidelines

Join time is considered for matching. For example, if the match filter is set from 11:00 a.m. to 2:00 p.m., a device joining at 10:59 a.m. is not considered, even if it acquires credentials after 11:00 a.m.

You should also disable AAA override for the command to work.

Examples

The following example shows how to perform a match using the joining time:

```
Device# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Device(config)# class-map type control subscriber match-all class-map-name
Device(config-filter-control-classmap)# match join-time-of-day start-time end-time
```

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

announcement	Allows only service advertisements or announcements for the Device.
any	Allows any match type.
query	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 16.10.1	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

Syntax Description

This command has no arguments or keywords.

Command Default

None

Command Modes

Class-map

Command History

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

Usage Guidelines

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

protocol-name	Name of the protocol (for example, bgp) used as a matching criterion.
category-name	Name of the application category used as a matching criterion.
sub-category-name	Name of the application subcategory used as a matching criterion.
application-group-name	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 16.10.1	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*

Syntax Description

line	Regular expression to match the service instance in packets.

Command Default

None

Command Modes

Service list configuration

Command History

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

Usage Guidelines

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 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*

Syntax Description

line	Regular expression to match the service type in packets.

Command Default

None

Command Modes

Service list configuration

Command History

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

Usage Guidelines

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 value of the mDNS service type string to match:

```
Device(config-mdns-sd-sl)# match service-type _ipp._tcp
```

match transport

To configure one or more of the transport fields as a key field for a flow record, use the **match transport** command in flow record configuration mode. To disable the use of one or more of the transport fields as a key field for a flow record, use the **no** form of this command.

Syntax Description

destination-port	Configures the transport destination port as a key field.
source-port	Configures the transport source port as a key field.

Command Default

The transport fields are not configured as a key field.

Command Modes

Flow record configuration

Command History

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

Usage Guidelines

A flow record requires at least one key field before it can be used in a flow monitor. The key fields distinguish flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

The following example configures the destination port as a key field:

```
Device(config)# flow record FLOW-RECORD-1
Device(config-flow-record)# match transport destination-port
```

The following example configures the source port as a key field:

```
Device(config)# flow record FLOW-RECORD-1
Device(config-flow-record)# match transport source-port
```

match transport

To configure one or more of the transport fields as a key field for a flow record, use the **match transport** command in flow record configuration mode. To disable the use of one or more of the transport fields as a key field for a flow record, use the **no** form of this command.

Syntax Description

destination-port	Configures the transport destination port as a key field.
source-port	Configures the transport source port as a key field.

Command Default

The transport fields are not configured as a key field.

Command Modes

Flow record configuration

Command History

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

Usage Guidelines

A flow record requires at least one key field before it can be used in a flow monitor. The key fields distinguish flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

The following example configures the destination port as a key field:

```
Device(config)# flow record FLOW-RECORD-1
Device(config-flow-record)# match transport destination-port
```

The following example configures the source port as a key field:

```
Device(config)# flow record FLOW-RECORD-1
Device(config-flow-record)# match transport source-port
```

match transport icmp ipv4

To configure the ICMP IPv4 type field and the code field as key fields for a flow record, use the **match transport icmp ipv4** command in flow record configuration mode. To disable the use of the ICMP IPv4 type field and code field as key fields for a flow record, use the **no** form of this command.

match transport icmp ipv4 {**code** | **type**}
no match transport icmp ipv4 {**code** | **type**}

Syntax Description

code	Configures the IPv4 ICMP code as a key field.
type	Configures the IPv4 ICMP type as a key field.

Command Default

The ICMP IPv4 type field and the code field are not configured as key fields.

Command Modes

Flow record configuration

Command History

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

Usage Guidelines

A flow record requires at least one key field before it can be used in a flow monitor. The key fields distinguish flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

The following example configures the IPv4 ICMP code field as a key field:

```
Device(config)# flow record FLOW-RECORD-1
Device(config-flow-record)# match transport icmp ipv4 code
```

The following example configures the IPv4 ICMP type field as a key field:

```
Device(config)# flow record FLOW-RECORD-1
Device(config-flow-record)# match transport icmp ipv4 type
```

match transport icmp ipv4

To configure the ICMP IPv4 type field and the code field as key fields for a flow record, use the **match transport icmp ipv4** command in flow record configuration mode. To disable the use of the ICMP IPv4 type field and code field as key fields for a flow record, use the **no** form of this command.

match transport icmp ipv4 {**code** | **type**}
no match transport icmp ipv4 {**code** | **type**}

Syntax Description

code	Configures the IPv4 ICMP code as a key field.
type	Configures the IPv4 ICMP type as a key field.

Command Default

The ICMP IPv4 type field and the code field are not configured as key fields.

Command Modes

Flow record configuration

Command History

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

Usage Guidelines

A flow record requires at least one key field before it can be used in a flow monitor. The key fields distinguish flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

The following example configures the IPv4 ICMP code field as a key field:

```
Device(config)# flow record FLOW-RECORD-1
Device(config-flow-record)# match transport icmp ipv4 code
```

The following example configures the IPv4 ICMP type field as a key field:

```
Device(config)# flow record FLOW-RECORD-1
Device(config-flow-record)# match transport icmp ipv4 type
```

match transport icmp ipv6

To configure the ICMP IPv6 type field and the code field as key fields for a flow record, use the **match transport icmp ipv6** command in flow record configuration mode. To disable the use of the ICMP IPv6 type field and code field as key fields for a flow record, use the **no** form of this command.

match transport icmp ipv6 {**code** | **type**}
no match transport icmp ipv6 {**code** | **type**}

Syntax Description

code	Configures the IPv6 ICMP code as a key field.
type	Configures the IPv6 ICMP type as a key field.

Command Default

The ICMP IPv6 type field and the code field are not configured as key fields.

Command Modes

Flow record configuration

Command History

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

Usage Guidelines

A flow record requires at least one key field before it can be used in a flow monitor. The key fields distinguish flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

The following example configures the IPv6 ICMP code field as a key field:

```
Device(config)# flow record FLOW-RECORD-1
Device(config-flow-record)# match transport icmp ipv6 code
```

The following example configures the IPv6 ICMP type field as a key field:

```
Device(config)# flow record FLOW-RECORD-1
Device(config-flow-record)# match transport icmp ipv6 type
```

match transport icmp ipv6

To configure the ICMP IPv6 type field and the code field as key fields for a flow record, use the **match transport icmp ipv6** command in flow record configuration mode. To disable the use of the ICMP IPv6 type field and code field as key fields for a flow record, use the **no** form of this command.

match transport icmp ipv6 {**code** | **type**}
no match transport icmp ipv6 {**code** | **type**}

Syntax Description

code	Configures the IPv6 ICMP code as a key field.
type	Configures the IPv6 ICMP type as a key field.

Command Default

The ICMP IPv6 type field and the code field are not configured as key fields.

Command Modes

Flow record configuration

Command History

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

Usage Guidelines

A flow record requires at least one key field before it can be used in a flow monitor. The key fields distinguish flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

The following example configures the IPv6 ICMP code field as a key field:

```
Device(config)# flow record FLOW-RECORD-1
Device(config-flow-record)# match transport icmp ipv6 code
```

The following example configures the IPv6 ICMP type field as a key field:

```
Device(config)# flow record FLOW-RECORD-1
Device(config-flow-record)# match transport icmp ipv6 type
```

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

username	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
class	Associates a control class with one or more actions in a control policy.
policy-map type control subscriber	Defines a control policy for subscriber sessions

match wireless ssid (wireless)

To configure the SSID of the wireless network as a key field for a flow record, use the **match wireless ssid** command in flow record configuration mode. To disable the use of the SSID of the wireless network as a key field for a flow record, use the **no** form of this command

match wireless ssid
no match wireless ssid

Syntax Description

This command has no arguments or keywords.

Command Default

The SSID of the wireless network is not configured as a key field.

Command Modes

Flow record configuration

Command History

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

Usage Guidelines

A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

The following example configures the SSID of the wireless network as a key field:

```
Device(config)# flow record FLOW-RECORD-1
Device(config-flow-record)# match wireless ssid
```

match wireless ssid (wireless)

To configure the SSID of the wireless network as a key field for a flow record, use the **match wireless ssid** command in flow record configuration mode. To disable the use of the SSID of the wireless network as a key field for a flow record, use the **no** form of this command

match wireless ssid
no match wireless ssid

Syntax Description

This command has no arguments or keywords.

Command Default

The SSID of the wireless network is not configured as a key field.

Command Modes

Flow record configuration

Command History

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

Usage Guidelines

A flow record requires at least one key field before it can be used in a flow monitor. The key fields differentiate flows, with each flow having a unique set of values for the key fields. The key fields are defined using the **match** command.

The following example configures the SSID of the wireless network as a key field:

```
Device(config)# flow record FLOW-RECORD-1
Device(config-flow-record)# match wireless ssid
```

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

ip address	Set the access map to match packets against an IP address access list.
mac address	Set the access map to match packets against a MAC address access list.
name	Name of the access list to match packets against.
number	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 16.10.1	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

access-group	Specifies an access group.
name *acl-name*	Specifies the name of an IP standard or extended access control list (ACL) or MAC ACL.
acl-index	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.
class-map *class-map-name*	Uses a traffic class as a classification policy and specifies a traffic class name to use as the match criterion.
cos *cos-value*	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 **match cos** statement, separated by a space.
dscp *dscp-value*	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.

ip dscp *dscp-list*	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.
ip precedence *ip-precedence-list*	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.
precedence *precedence-value1...value4*	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.
qos-group *qos-group-value*	Identifies a specific QoS group value as a match criterion. The range is 0 to 31.
vlan *vlan-id*	Identifies a specific VLAN as a match criterion. The range is 1 to 4094.
mpls *experimental-value*	Specifies Multi Protocol Label Switching specific values.
non-client-nrt	Matches a non-client NRT (non-real-time).
protocol *protocol-name*	Specifies the type of protocol.
wlan *wlan-id*	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 16.10.1	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*]

Syntax Description

wlan-value	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.

Command Default

None

Command Modes

Class-map configuration (config-cmap)

Command History

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

Usage Guidelines

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*

Syntax Description

bandwidth	Maximum Expected Stream Bandwidth in Kbps. Valid range is 1 to 35000 Kbps.

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 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.
gateway	Configures mDNS gateway.
service-definition	Configures mDNS service definition.
service-definition-name	Specifies the mDNS service definition name.
service-list	Configures mDNS service list.
service-list-name	Specifies the mDNS service definition name.
IN	Specifies the inbound filtering.
OUT	Specifies the outbound filtering.
service-policy	Configures mDNS service policy.
service-policy-name	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 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*

Syntax Description

mdns-sd flex-profile	Configures the mDNS service discovery flex profile.
flex-profile-name	Specifies the mDNS flex profile 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 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*

Syntax Description

mdns-sd profile	Configures the mDNS flex profile in the wireless flex profile.
flex-profile-name	Specifies the mDNS flex profile name.

Command Default

None

Command Modes

Wireless flex profile 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 apply the mDNS flex profile to the wireless flex profile:

```
Device(config-wireless-flex-profile)# mdns-sd profile mdns-flex-profile
```

method (mesh)

To configure authentication and authorization method for a mesh AP profile, use the **method** command.

method {**authentication** | **authorization** }*method*

Syntax Description

authentication	AAA method for mesh AP authentication.
authorization	AAA method for mesh AP authorization.
method	Named method list.

Command Default

Authentication and authorization method is not configured.

Command Modes

config-wireless-mesh-profile

Command History

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

Example

The following example shows how to configure authentication 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)# method authentication auth1
```

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

username	Enter a username for AP management.
0	Specifies an UNENCRYPTED password.
8	Specifies an AES encrypted password.
password	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
```

mobility anchor

To configure mobility sticky anchoring, use the **mobility anchor sticky** command. To disable the sticky anchoring, use the **no** form of the command.

To configure guest anchoring, use the **mobility anchor** *ip-address* command.

To delete the guest anchor, use the **no** form of the command.

To configure the device as an auto-anchor, use the **mobility anchor** command.

mobility anchor {*ip-address* | **sticky**}
no mobility anchor {*ip-address* | **sticky**}

Syntax Description

sticky	The client is anchored to the first switch that it associates. **Note** This command is by default enabled and ensures low roaming latency. This ensures that the point of presence for the client does not change when the client joins the mobility domain and roams within the domain.
ip-address	Configures the IP address for the guest anchor device to this WLAN.

Command Default

Sticky configuration is enabled by default.

Command Modes

WLAN Configuration

Command History

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

Usage Guidelines

- The wlan_id or guest_lan_id must exist and be disabled.
- Auto-anchor mobility is enabled for the WLAN or wired guest LAN when you configure the first mobility anchor.
- Deleting the last anchor disables the auto-anchor mobility feature and resumes normal mobility for new associations.
- Mobility uses the following ports, that are allowed through the firewall:
  - 16666
  - 16667
  - 16668

This example shows how to enable the sticky mobility anchor:

```
Device(config-wlan)# mobility anchor sticky
```

This example shows how to configure guest anchoring:

```
Device(config-wlan)# mobility anchor 209.165.200.224
```

This example shows how to configure the device as an auto-anchor:

```
Device(config-wlan)# mobility anchor
```

mop enabled

To enable an interface to support the Maintenance Operation Protocol (MOP), use the **mopenabled** command in interface configuration mode. To disable MOP on an interface, use the **no** form of this command.

mop enabled
no mop enabled

Syntax Description

This command has no arguments or keywords.

Command Default

Enabled on Ethernet interfaces and disabled on all other interfaces.

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.

Examples

The following example enables MOP for serial interface 0:

```
Router(config)# interface serial 0
Router(config-if)# mop enabled
```

Related Commands

Command	Description
mop retransmit-timer	Configures the length of time that the Cisco IOS software waits before sending boot requests again to a MOP server.
mop retries	Configures the number of times the Cisco IOS software will send boot requests again to a MOP server.
mop sysid	Enables an interface to send out periodic MOP system identification messages.

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
mop device-code	Identifies the type of device sending MOP sysid messages and request program messages.
mop enabled	Enables an interface to support the MOP.

multicast

To configure mesh multicast mode, use the **multicast** command.

multicast { **in-only** | **in-out** | **regular** }

Syntax Description

in-only	Configures mesh multicast In Mode.
in-out	Configures mesh multicast In-Out Mode.
regular	Configures mesh multicast Regular Mode.

Command Default

in-out

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 the multicast In Mode 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)# multicast in-only
```

nac

To enable RADIUS Network Admission Control (NAC) support for a WLAN, use the **nac** command. To disable NAC out-of-band support, use the **no** form of this command.

nac
no nac

Syntax Description

This command has no keywords or arguments.

Command Default

NAC is disabled.

Command Modes

WLAN configuration

Command History

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

Usage Guidelines

You should enable AAA override before you enable the RADIUS NAC state.

This example shows how to configure RADIUS NAC on the WLAN:

```
Device# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Device(config)# wlan wlan1
Device(config-wlan)# aaa-override
Device(config-wlan)# nac
```

This example shows how to disable RADIUS NAC on the WLAN:

```
Device# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Device(config)# wlan wlan1
Device(config-wlan)# no nac
Device(config-wlan)# no aaa-override
```

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** }

Syntax Description

sys-ip	System IP Address.
sys-name	System Name.
sys-mac	System MAC address.

Command Default

None

Command Modes

config-aaa-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 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
```

nmsp cloud-services enable

To configure NMSP cloud services, use the **nmsp cloud-services enable** command.

nmsp 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)# nmsp 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

proxy-server	Enter the hostname or the IP address of the proxy server for NMSP cloud services.
port	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
```

nmsp cloud-services server token

To configure the NMSP cloud services server parameters, use the **nmsp cloud-services server token** command.

nmsp cloud-services server token *token*

Syntax Description

token	Authentication token for the NMSP cloud services.

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 for the NMSP cloud services server parameters:

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

nmsp notification interval

To modify the Network Mobility Services Protocol (NMSP) notification interval value on the controller to address latency in the network, use the **nmsp notification interval** command in global configuration mode.

nmsp notification interval { **attachment** | **location** | **rssi** {**clients** | **rfid** | **rogues** {**ap** | **client** } } }

Syntax Description

attachment	Specifies the time used to aggregate attachment information.
location	Specifies the time used to aggregate location information.
rssi	Specifies the time used to aggregate RSSI information.
clients	Specifies the time interval for clients.
rfid	Specifies the time interval for rfid tags.
rogues	Specifies the time interval for rogue APs and rogue clients .
ap	Specifies the time used to aggregate rogue APs .
client	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 16.10.1	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)# nmsp 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)# nmsp 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
```

nmsp strong-cipher

To enable the new ciphers, use the **nmsp strong-cipher** command in global configuration mode. To disable, use the **no** form of this command.

nmsp strong-cipher
no nmsp 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 **nmsp 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)# nmsp strong-cipher
```

Related Commands

Command	Description
show nmsp status	Displays the status of active NMSP connections.

office-extend

To enable the OfficeExtend AP mode for a FlexConnect AP, use the **office-extend** command.

office-extend

Command Default

None

Command Modes

config-wireless-flex-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 the OfficeExtend AP mode for a FlexConnect AP:

```
Device# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Device(config)# wireless profile flex flex-profile-name
Device(config-wireless-flex-profile)# office-extend
```

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

exporter-stats	Configures the exporter statistics option for flow exporters.
interface-table	Configures the interface table option for flow exporters.
sampler-table	Configures the export sampler table option for flow exporters.
timeout *seconds*	(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 16.10.1	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
```

packet-capture

To enable packet capture on the AP profile, use the **packet-capture** command.

packet-capture *profile-name*

Command Default

None

Command Modes

config-ap-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 packet capture on the AP profile:

```
Device# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Device(config)# ap profile demo-profile-name
Device(config-ap-profile)# packet capture demo-profile
```

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*

Syntax Description

attribute-to-service	Name the attribute to service.
parameter-map-name	Name of the parameter map. The map name is limited to 33 characters.

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 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
```

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
```

Syntax Description

password	Configures the encryption password (key).
encryption	Encrypts system passwords.
aes	Enables stronger (AES) password encryption.

Command Default

None

Command Modes

Global configuration mode.

Command History

Release	Modification
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

drop	Specifies the device to discard the packets.
forward-upstream	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. **Note** The **forward-upstream** option is not supported for Flex local switching. Traffic is dropped even if this option is configured. Also, peer to peer blocking for local switching SSIDs are available only for the clients on the same AP.

Command Default

Peer blocking is disabled.

Command Modes

WLAN configuration

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	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
```

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**]

Syntax Description

rate-bps	Specify the average traffic rate in bits per second (b/s). The range is 1000000 to 1000000000.
burst-byte	Specify the normal burst size in bytes. The range is 8000 to 1000000.
conform-action transmit	(Optional) When less than the specified rate, specify that the switch transmits the packet.

Command Default

No policers are defined.

Command Modes

Policy-map class configuration

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	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>*

Syntax Description

police cir	Polices committed information rate.
8000-10000000000	Sets the target bit rate at bits per second. The range is between 8000 and 10000000000.

Command Default

None

Command Modes

Policy map class configuration

Command History

Release	Modification
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-tag

To map a policy tag to the AP, use the **policy-tag**command.

policy-tag *policy-tag-name*

Syntax Description

policy-tag-name	Name of the policy tag.

Command Default

None

Command Modes

config-ap-tag

Command History

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

Usage Guidelines

The AP will disconnect and rejoin after running this command.

Example

The following example shows how to configure a policy tag:

```
Device(config-ap-tag)# policy-tag policytag1
```

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 16.10.1	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
Deviceconfig-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 16.10.1	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
Deviceconfig-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*

Syntax Description

priority-value	Media stream priority value. Valid range is 1 to 8, with 1 being lowest priority and 8 being highest priority.

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 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
```

priority-queue

To enable the egress expedite queue on a port, use the **priority-queue** command in interface configuration mode. Use the **no** form of this command to return to the default setting.

priority-queue out
no priority-queue out

Syntax Description

out	Enable the egress expedite queue.

Command Default

The egress expedite queue is disabled.

Command Modes

Interface configuration

Command History

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

Usage Guidelines

When you configure the **priority-queue out** command, the shaped round robin (SRR) weight ratios are affected because there is one fewer queue participating in SRR. This means that *weight1* in the **srr-queue bandwidth shape** or the **srr-queue bandwidth shape** interface configuration command is ignored (not used in the ratio calculation). The expedite queue is a priority queue, and it is serviced until empty before the other queues are serviced.

Follow these guidelines when the expedite queue is enabled or the egress queues are serviced based on their SRR weights:

- If the egress expedite queue is enabled, it overrides the SRR shaped and shared weights for queue 1.
- If the egress expedite queue is disabled and the SRR shaped and shared weights are configured, the shaped mode overrides the shared mode for queue 1, and SRR services this queue in shaped mode.
- If the egress expedite queue is disabled and the SRR shaped weights are not configured, SRR services the queue in shared mode.

Examples

This example shows how to enable the egress expedite queue when the SRR weights are configured. The egress expedite queue overrides the configured SRR weights.

```
Device(config)# interface gigabitethernet1/0/2
Device(config-if)# srr-queue bandwidth shape 25 0 0 0
Device(config-if)# srr-queue bandwidth share 30 20 25 25
Device(config-if)# priority-queue out
```

This example shows how to disable the egress expedite queue after the SRR shaped and shared weights are configured. The shaped mode overrides the shared mode.

```
Device(config)# interface gigabitethernet1/0/2
Device(config-if)# srr-queue bandwidth shape 25 0 0 0
Device(config-if)# srr-queue bandwidth share 30 20 25 25
Device(config-if)# no priority-queue out
```

You can verify your settings by entering the **show mls qos interface** *interface-id* **queueing** or the **show running-config** privileged EXEC command.

Related Commands

Command	Description
show mls qos interface queueing	Displays the queueing strategy (SRR, priority queueing), the weights corresponding to the queues, and the CoS-to-egress-queue map.
srr-queue bandwidth shape	Assigns the shaped weights and enables bandwidth shaping on the four egress queues mapped to a port.
srr-queue bandwidth share	Assigns the shared weights and enables bandwidth sharing on the four egress queues mapped to a port.

priority

To assign priority to a class of traffic belonging to a policy map, use the **priority** command in policy-map class configuration mode. To remove a previously specified priority for a class, use the **no** form of this command.

priority [*Kbps* [*burst -in-bytes*] | **level** *level-value* [*Kbps* [*burst -in-bytes*]] | **percent** *percentage* [*Kb/s* [*burst -in-bytes*]]]
no priority [*Kb/s* [*burst -in-bytes*] | **level** *level value* [*Kb/s* [*burst -in-bytes*]] | **percent** *percentage* [*Kb/s* [*burst -in-bytes*]]]

Syntax Description

Command Default

No priority is set.

Command Modes

Policy-map class configuration (config-pmap-c)

Command History

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

Usage Guidelines

The priority command allows you to set up classes based on a variety of criteria (not just User Datagram Ports [UDP] ports) and assign priority to them, and is available for use on serial interfaces and permanent virtual circuits (PVCs). A similar command, the **ip rtp priority** command, allows you to stipulate priority flows based only on UDP port numbers and is not available for PVCs.

The bandwidth and priority commands cannot be used in the same class, within the same policy map. However, these commands can be used together in the same policy map.

Within a policy map, you can give one or more classes priority status. When multiple classes within a single policy map are configured as priority classes, all traffic from these classes is queued to the same, single, priority queue.

When the policy map containing class policy configurations is attached to the interface to stipulate the service policy for that interface, available bandwidth is assessed. If a policy map cannot be attached to a particular interface because of insufficient interface bandwidth, the policy is removed from all interfaces to which it was successfully attached.

Example

The following example shows how to configure the priority of the class in policy map policy1:

```
Device(config)# class-map cm1
Device(config-cmap)#match precedence 2
Device(config-cmap)#exit

Device(config)#class-map cm2
Device(config-cmap)#match dscp 30
Device(config-cmap)#exit

Device(config)# policy-map policy1
Device(config-pmap)# class cm1
Device(config-pmap-c)# priority level 1
Device(config-pmap-c)# police 1m
Device(config-pmap-c-police)#exit
Device(config-pmap-c)#exit
Device(config-pmap)#exit

Device(config)#policy-map policy1
Device(config-pmap)#class cm2
Device(config-pmap-c)#priority level 2
Device(config-pmap-c)#police 1m
```

protocol (IPv6 snooping)

To specify that addresses should be gleaned with Dynamic Host Configuration Protocol (DHCP) or Neighbor Discovery Protocol (NDP), or to associate the protocol with an IPv6 prefix list, use the **protocol** command. To disable address gleaning with DHCP or NDP, use the **no** form of the command.

protocol {**dhcp** | **ndp**}
no protocol {**dhcp** | **ndp**}

Syntax Description

dhcp	Specifies that addresses should be gleaned in Dynamic Host Configuration Protocol (DHCP) packets.
ndp	Specifies that addresses should be gleaned in Neighbor Discovery Protocol (NDP) packets.

Command Default

Snooping and recovery are attempted using both DHCP and NDP.

Command Modes

IPv6 snooping configuration mode

Command History

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

Usage Guidelines

If an address does not match the prefix list associated with DHCP or NDP, then control packets will be dropped and recovery of the binding table entry will not be attempted with that protocol.

- Using the **no protocol** {**dhcp** | **ndp**} command indicates that a protocol will not be used for snooping or gleaning.
- If the **no protocol dhcp** command is used, DHCP can still be used for binding table recovery.
- Data glean can recover with DHCP and NDP, though destination guard will only recovery through DHCP.

This example shows how to define an IPv6 snooping policy name as policy1, place the switch in IPv6 snooping policy configuration mode, and configure the port to use DHCP to glean addresses:

```
Device(config)# ipv6 snooping policy policy1
Device(config-ipv6-snooping)# protocol dhcp
```

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 queue-softmax-multiplier

To increase the value of softmax buffer, use the **qos queue-softmax-multiplier** command in the global configuration mode.

qos queue-softmax-multiplier *range-of-multiplier*
no qos queue-softmax-multiplier *range-of-multiplier*

Syntax Description

range-of-multiplier	You can specify a value in the range of 100 to 1200. The default value is 100.

Command Default

None

Command Modes

Global configuration (config)

Command History

Release	Modification
	This command was introduced.

Usage Guidelines

Note This command would take effect only on the ports where a policy-map is attached. If configured as 1200, the softmax for non-priority queues and non-primary priority queue (!=level 1) are multiplied by 12 with their default values. This command is not applicable for priority queue level 1.

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
```

qos wireless-default untrust

To configure the default trust behavior to untrust wireless packets, use the **qos wireless-default untrust** command. To configure the default trust behavior of wireless traffic to trust, use the **no** form of the command.

qos wireless-default-untrust
no qos wireless-default-untrust

Syntax Description

This command has no arguments or keywords.

Command Default

To check the trust behavior on the device, use the **show running-config | sec qos** or the **show run | include untrust** command.

Command Modes

Configuration

Command History

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

The following command changes the default behavior for trusting wireless traffic to untrust.

```
Device(config)# qos wireless-default-untrust
```

queue-buffers ratio

To configure the queue buffer for the class, use the **queue-buffers ratio** command in policy-map class configuration mode. Use the **no** form of this command to remove the ratio limit.

queue-buffers ratio *ratio limit*
no queue-buffers ratio *ratio limit*

Syntax Description

ratio limit	(Optional) Configures the queue buffer for the class. Enter the queue buffers ratio limit (0-100).

Command Default

No queue buffer for the class is defined.

Command Modes

Policy-map class configuration (config-pmap-c)

Command History

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

Usage Guidelines

Either the **bandwidth**, **shape**, or **priority** command must be used before using this command. For more information about these commands, see *Cisco IOS Quality of Service Solutions Command Reference* available on Cisco.com

The allows you to allocate buffers to queues. If buffers are not allocated, then they are divided equally amongst all queues. You can use the queue-buffer ratio to divide it in a particular ratio. The buffers are soft buffers because Dynamic Threshold and Scaling (DTS) is active on all queues by default.

Example

The following example sets the queue buffers ratio to 10 percent:

```
Device(config)# policy-map policy_queuebuf01
Device(config-pmap)# class-map class_queuebuf01
Device(config-cmap)# exit
Device(config)# policy policy_queuebuf01
Device(config-pmap)# class class_queuebuf01
Device(config-pmap-c)# bandwidth percent 80
Device(config-pmap-c)# queue-buffers ratio 10
Device(config-pmap)# end
```

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

queue-limit

To specify or modify the maximum number of packets the queue can hold for a class policy configured in a policy map, use the **queue-limit** policy-map class configuration command. To remove the queue packet limit from a class, use the **no** form of this command.

queue-limit *queue-limit-size* [{**packets**}] {**cos** *cos-value* | **dscp** *dscp-value*} **percent** *percentage-of-packets*
no queue-limit *queue-limit-size* [{**packets**}] {**cos** *cos-value* | **dscp** *dscp-value*} **percent** *percentage-of-packets*

Syntax Description

queue-limit-size	The maximum size of the queue. The maximum varies according to the optional unit of measure keyword specified (bytes, ms, us, or packets).
cos *cos-value*	Specifies parameters for each cos value. CoS values are from 0 to 7.
dscp *dscp-value*	Specifies parameters for each DSCP value. You can specify a value in the range 0 to 63 specifying the differentiated services code point value for the type of queue limit .
percent *percentage-of-packets*	A percentage in the range 1 to 100 specifying the maximum percentage of packets that the queue for this class can accumulate.

Command Default

None

Command Modes

Policy-map class configuration (policy-map-c)

Command History

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

Usage Guidelines

Although visible in the command line help-strings, the **packets** unit of measure is not supported; use the **percent** unit of measure.

Note This command is supported only on wired ports in the egress direction.

Weighted fair queuing (WFQ) creates a queue for every class for which a class map is defined. Packets satisfying the match criteria for a class accumulate in the queue reserved for the class until they are sent, which occurs when the queue is serviced by the fair queuing process. When the maximum packet threshold you defined for the class is reached, queuing of any further packets to the class queue causes tail drop.

You use queue limits to configure Weighted Tail Drop (WTD). WTD ensures the configuration of more than one threshold per queue. Each class of service is dropped at a different threshold value to provide for QoS differentiation.

You can configure the maximum queue thresholds for the different subclasses of traffic, that is, DSCP and CoS and configure the maximum queue thresholds for each subclass.

Example

The following example configures a policy map called port-queue to contain policy for a class called dscp-1. The policy for this class is set so that the queue reserved for it has a maximum packet limit of 20 percent:

```
Device(config)# policy-map policy11
Device(config-pmap)# class dscp-1
Device(config-pmap-c)# bandwidth percent 20
Device(config-pmap-c)# queue-limit dscp 1 percent 20
```

queue-set

To map a port to a queue set, use the **queue-set** command in interface configuration mode. Use the **no** form of this command to return to the default setting.

queue-set *qset-id*
no **queue-set** *qset-id*

Syntax Description

qset-id	Queue-set ID. Each port belongs to a queue set, which defines all the characteristics of the four egress queues per port. The range is 1 to 2.

Command Default

The queue set ID is 1.

Command Modes

Interface configuration

Command History

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

Examples

This example shows how to map a port to queue-set 2:

```
Device(config)# interface gigabitethernet2/0/1
Device(config-if)# queue-set 2
```

You can verify your settings by entering the **show mls qos interface** [*interface-id*] **buffers** privileged EXEC command.

Related Commands

Command	Description
mls qos queue-set output buffers	Allocates buffers to a queue set.
mls qos queue-set output threshold	Configures the weighted tail-drop (WTD) thresholds, guarantees the availability of buffers, and configures the maximum memory allocation to a queue set.

radius server

To configure the RADIUS server, use the **radius server** command in global configuration mode.

radius server *server-name*

Syntax Description

server-name	RADIUS server name.

Command Default

None

Command Modes

Global configuration

Command History

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

Usage Guidelines

None

The following example shows how to configure a radius server:

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

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

ap-ethmac-only	Sets the call station identifier type to be AP's radio MAC address.
ap-ethmac-ssid	Sets the call station identifier type AP's radio MAC address with SSID.
ap-ethmac-ssid-flexprofilename	Sets the call station identifier type AP's radio MAC address with SSID and flex profile name.
ap-ethmac-ssid-policytagname	Sets the call station identifier type AP's radio MAC address with SSID and policy tag name.
ap-ethmac-ssid-sitetagname	Sets the call station identifier type AP's radio MAC address with SSID and site tag name.
ap-group-name	Sets the call station identifier type to use the AP group name.
ap-label-address	Sets the call station identifier type to the AP's radio MAC address that is printed on the AP label.
ap-label-address-ssid	Sets the call station identifier type to the AP's radio MAC address and SSID that is printed on the AP label.
ap-location	Sets the call station identifier type to the AP location.
ap-macaddress	Sets the call station identifier type to the AP's radio MAC address.
ap-macaddress-ssid	Sets the call station identifier type to the AP's radio MAC address with SSID.
ap-macaddress-ssid-flexprofilename	Sets the call station identifier type to the AP's radio MAC address with SSID and flex profile name.
ap-macaddress-ssid-policytagname	Sets the call station identifier type to the AP's radio MAC address with SSID and policy tag name.
ap-macaddress-ssid-sitetagname	Sets the call station identifier type to the AP's radio MAC address with SSID and site tag name.
ap-name	Sets the call station identifier type to the AP name.

ap-name-ssid	Sets the call station identifier type to the AP name with SSID.
flex-profile-name	Sets the call station identifier type to the flex profile name.
ipaddress	Sets the call station identifier type to the IP address of the system.
macaddress	Sets the call station identifier type to the MAC address of the system.
policy-tag-name	Sets the call station identifier type to the policy tag name.
site-tag-name	Sets the call station identifier type to the site tag name.
vlan-id	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 **policy-tag-name**, **flex-profile-name**, **ap-macaddress-ssid-flexprofilename**, **ap-macaddress-ssid-policytagname**, **ap-macaddress-ssid-sitetagname**, **ap-ethmac-ssid-flexprofilename**, **ap-ethmac-ssid-policytagname**, and **ap-ethmac-ssid-sitetagname** 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

ap-ethmac-only	Sets the call station identifier type to be AP's radio MAC address.
ap-ethmac-ssid	Sets the call station identifier type AP's radio MAC address with SSID.
ap-ethmac-ssid-flexprofilename	Sets the call station identifier type AP's radio MAC address with SSID and flex profile name.
ap-ethmac-ssid-policytagname	Sets the call station identifier type AP's radio MAC address with SSID and policy tag name.
ap-ethmac-ssid-sitetagname	Sets the call station identifier type AP's radio MAC address with SSID and site tag name.
ap-group-name	Sets the call station identifier type to use the AP group name.
ap-label-address	Sets the call station identifier type to the AP's radio MAC address that is printed on the AP label.
ap-label-address-ssid	Sets the call station identifier type to the AP's radio MAC address and SSID that is printed on the AP label.
ap-location	Sets the call station identifier type to the AP location.
ap-macaddress	Sets the call station identifier type to the AP's radio MAC address.
ap-macaddress-ssid	Sets the call station identifier type to the AP's radio MAC address with SSID.
ap-macaddress-ssid-flexprofilename	Sets the call station identifier type to the AP's radio MAC address with SSID and flex profile name.
ap-macaddress-ssid-policytagname	Sets the call station identifier type to the AP's radio MAC address with SSID and policy tag name.
ap-macaddress-ssid-sitetagname	Sets the call station identifier type to the AP's radio MAC address with SSID and site tag name.
ap-name	Sets the call station identifier type to the AP name.

ap-name-ssid	Sets the call station identifier type to the AP name with SSID.
flex-profile-name	Sets the call station identifier type to the flex profile name.
ipaddress	Sets the call station identifier type to the IP address of the system.
macaddress	Sets the call station identifier type to the MAC address of the system.
policy-tag-name	Sets the call station identifier type to the policy tag name.
site-tag-name	Sets the call station identifier type to the site tag name.
vlan-id	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 **policy-tag-name**, **flex-profile-name**, **ap-macaddress-ssid-flexprofilename**, **ap-macaddress-ssid-policytagname**, **ap-macaddress-ssid-sitetagname**, **ap-ethmac-ssid-flexprofilename**, **ap-ethmac-ssid-policytagname**, and **ap-ethmac-ssid-sitetagname** 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*

Syntax Description

range-in-feet	Configure the range value in terms of feet. Valid range is from 150 feet to 132000 feet.

Command Default

1200

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 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
```

reanchor class

To configure classmap with protocols for the selective reanchoring feature, use the **reanchor class** command.

reanchor class *class-name*

Syntax Description

class-name	AVC reanchor class name.

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 an AVC reanchor classname:

```
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)# reanchor class AVC-Reanchor-Class
```

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
```

redundancy revertive

To set redundancy model as revertive, use the **redundancy revertive** command.

redundancy revertive

Syntax Description

This command has no keywords or arguments.

Command Default

None

Command Modes

EoGRE domain configuration

Command History

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

Example

This example shows how to set redundancy model as revertive:

```
Device(config-eogre-domain)# redundancy revertive
```

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

for-login	To login, redirect to this URL.
on-failure	If login fails, redirect to this URL.
on-success	If login is sucessful, redirect to this URL.
redirect-url-name	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-span

To configure a VLAN as a Remote Switched Port Analyzer (RSPAN) VLAN, use the **remote-span** command in VLAN configuration mode on the switch stack or on a standalone switch. To remove the RSPAN designation from the VLAN, use the **no** form of this command.

remote-span
no remote-span

Syntax Description

This command has no arguments or keywords.

Command Default

No RSPAN VLANs are defined.

Command Modes

VLAN configuration (config-VLAN)

Command History

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

Usage Guidelines

If VLAN Trunking Protocol (VTP) is enabled, the RSPAN feature is propagated by VTP for VLAN IDs that are lower than 1005. If the RSPAN VLAN ID is in the extended range, you must manually configure intermediate switches (those in the RSPAN VLAN between the source switch and the destination switch).

Before you configure the RSPAN **remote-span** command, use the **vlan** (global configuration) command to create the VLAN.

The RSPAN VLAN has these characteristics:

- No MAC address learning occurs on it.
- RSPAN VLAN traffic flows only on trunk ports.
- Spanning Tree Protocol (STP) can run in the RSPAN VLAN, but it does not run on RSPAN destination ports.

When an existing VLAN is configured as an RSPAN VLAN, the VLAN is first deleted and then recreated as an RSPAN VLAN. Any access ports are made inactive until the RSPAN feature is disabled.

This example shows how to configure a VLAN as an RSPAN VLAN:

```
Device(config)# vlan 901
Device(config-vlan)# remote-span
```

This example shows how to remove the RSPAN feature from a VLAN:

```
Device(config)# vlan 901
Device(config-vlan)# no remote-span
```

You can verify your settings by entering the **show vlan remote-span** user EXEC command.

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*

Syntax Description

remote-lan-profile-name	Remote LAN profile name.
rlan-policy-profile-name	Remote LAN policy profile name.
port-id	Port ID.

Command Default

None

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 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

To archive all the trace logs relevant to all the processes running on a system since the last reload on the chassis and to save this in the specified location, use the **request platform software trace archive** command in privileged EXEC or user EXEC mode.

request platform software trace archive [**last** *number-of-days* [**days** [**target** *location*]] | **target** *location*]

Syntax Description

last *number-of-days*	Specifies the number of days for which the trace files have to be archived.
target *location*	Specifies the location and name of the archive file.

Command Modes

User EXEC (>)

Privileged EXEC (#)

Command History

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

Usage Guidelines

This archive file can be copied from the system, using the tftp or scp commands.

Examples

This example shows how to archive all the trace logs of the processes running on the chassis since the last 5 days:

```
Device# request platform software trace archive last 5 days target flash:test_archive
```

rf tag

To configure an RF tag to the AP, use the **rf tag**command.

rf tag *rf-tag-name*

Syntax Description

rf-tag-name	RF tag name.

Command Default

None

Command Modes

config-ap-tag

Command History

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

Usage Guidelines

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
```

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 protcol 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
auth-list-name	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

over-the-ds	(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.
reassociation-timeout	(Optional) Configures the reassociation timeout interval.
timeout-in-seconds	(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 16.10.1	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 level (IPv6 snooping)

To specify the level of security enforced, use the **security-level** command in IPv6 snooping policy configuration mode.

security level {**glean** | **guard** | **inspect**}

Syntax Description

glean	Extracts addresses from the messages and installs them into the binding table without performing any verification.
guard	Performs both glean and inspect. Additionally, RA and DHCP server messages are rejected unless they are received on a trusted port or another policy authorizes them.
inspect	Validates messages for consistency and conformance; in particular, address ownership is enforced. Invalid messages are dropped.

Command Default

The default security level is guard.

Command Modes

IPv6 snooping configuration

Command History

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

This example shows how to define an IPv6 snooping policy name as policy1, place the device in IPv6 snooping configuration mode, and configure the security level as inspect:

```
Device(config)# ipv6 snooping policy policy1
Device(config-ipv6-snooping)# security-level inspect
```

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

association-comeback	Configures the 802.11w association comeback time.
association-comeback-time-seconds	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.
mandatory	Specifies that clients are required to negotiate 802.1w PMF protection on the WLAN.
optional	Specifies that the WLAN does not mandate 802.11w support on clients. Clients with no 802.11w capability can also join.
saquery-retry-time	Time interval identified before which the SA query response is expected. If the device does not get a response, another SA query is tried.
saquery-retry-time-milliseconds	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 16.10.1	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

open	Open system authentication.
sharedkey	Shared key authentication.
0	Specifies an UNENCRYPTED password is used.
8	Specifies an AES encrypted password is used.
wep-key	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

authentication-list *authentication-list-name*	Sets the authentication list for IEEE 802.1x.
on-macfilter-failure	Enables web authentication on MAC failure.
parameter-map *parameter-map-name*	Configures the parameter map.

Command Default

Web authentication is disabled.

Command Modes

WLAN configuration

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	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** | **tikp**}]}]
no security wpa [{**akm** {**cckm** | **dot1x** | **ft** | **pmf** | **psk**} | **wpa1** [**ciphers** {**aes** | **tkip**}] | **wpa2** [**ciphers** {**aes** | **tikp**}]}]

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

Command History

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

Example

The following example shows how to configure CCKM on the WLAN.

```
Device(config-wlan)#security wpa akm cckm
```

service-policy (Wired)

To apply a policy map to a physical port or a switch virtual interface (SVI), use the **service-policy** command in interface configuration mode. Use the **no** form of this command to remove the policy map and port association.

service-policy {**input** | **output**} *policy-map-name*
no service-policy {**input** | **output**} *policy-map-name*

Syntax Description

input *policy-map-name*	Apply the specified policy map to the input of a physical port or an SVI.
output *policy-map-name*	Apply the specified policy map to the output of a physical port or an SVI.

Command Default

No policy maps are attached to the port.

Command Modes

WLAN interface configuration

Command History

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

Usage Guidelines

A policy map is defined by the **policy map** command.

Only one policy map is supported per port, per direction. In other words, only one input policy and one output policy is allowed on any one port.

You can apply a policy map to incoming traffic on a physical port or on an SVI. .

Note Though visible in the command-line help strings, the **history** keyword is not supported, and you should ignore the statistics that it gathers.

Examples

This example shows how to apply plcmap1 to an physical ingress port:

```
Device(config)# interface gigabitethernet2/0/1
Device(config-if)# service-policy input plcmap1
```

This example shows how to remove plcmap2 from a physical port:

```
Device(config)# interface gigabitethernet2/0/2
Device(config-if)# no service-policy input plcmap2
```

The following example displays a VLAN policer configuration. At the end of this configuration, the VLAN policy map is applied to an interface for QoS:

```
Device# configure terminal
Device(config)# class-map vlan100
Device(config-cmap)# match vlan 100
Device(config-cmap)# exit
Device(config)# policy-map vlan100
Device(config-pmap)# policy-map class vlan100
Device(config-pmap-c)# police 100000 bc conform-action transmit exceed-action drop
Device(config-pmap-c-police)# end
Device# configure terminal
Device(config)# interface gigabitEthernet1/0/5
Device(config-if)#  service-policy input vlan100
```

You can verify your settings by entering the **show running-config** privileged EXEC command.

service-policy (WLAN)

To configure the WLAN quality of service (QoS) service policy, use the **service-policy** command. To disable a QoS policy on a WLAN, use the **no** form of this command.

service-policy [**client**] {**input** | **output**} *policy-name*
no service-policy [**client**] {**input** | **output**} *policy-name*

Syntax Description

client	(Optional) Assigns a policy map to all clients in the WLAN.
input	Assigns an input policy map.
output	Assigns an output policy map.
policy-name	The policy name.

Command Default

No policies are assigned and the state assigned to the policy is None.

Command Modes

WLAN configuration

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	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.

Examples

This example shows how to configure the input QoS service policy on a WLAN:

```
Device# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Device(config)# wlan wlan1
Device(config-wlan)# service-policy input policy-test
```

This example shows how to disable the input QoS service policy on a WLAN:

```
Device# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Device(config)# wlan wlan1
Device(config-wlan)# no service-policy input policy-test
```

This example shows how to configure the output QoS service policy on a WLAN to platinum (precious metal policy):

```
Device# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Device(config)# wlan wlan1
Device(config-wlan)# service-policy output platinum
```

service-policy qos

To configure a QoS service policy, use the **service-policy qos** command.

service-policy qos {**input** | **output**}*policy-name*

Syntax Description

input	Input QoS policy.
output	Output QoS policy.
policy-name	Policy name.

Command Default

None

Command Modes

config-service-template

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 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

service-template-name	Name of the service template.
acl_list	Access list name to be applied.
vlan_id	VLAN ID. The VLAN ID value ranges from 1 to 4094.
seconds	Session timeout value for service template. The session timeout value ranges from 1 to 65535 seconds.
service-policy qos {**input** | **output**	QoS policies for client.

Command Default

None

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	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***localtimemsecshow-timezoneyear*}
no service timestamps **debuglog**

Syntax Description

debug	Debug as the timestamp message type.
log	Log as the timestamp message type.
datetime	**datetime**
uptime	(Optional) Time stamp with time since the system was rebooted.
localtime	(Optional) Time stamp relative to the local time zone.
msec	(Optional) Include milliseconds in the date and time stamp.
show-timezone	(Optional) Include the time zone name in the time stamp.
year	(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 debugdatetime** 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 disable a session timeout for clients that are associated to a WLAN, use the **no** form of this command.

session-timeout **seconds**
no **session-timeout**

Syntax Description

seconds	Timeout or session duration in seconds. The range is from 300 to 86400. Configuring 86400 is equivalent to max timeout. And value 0 is not recommended.

Command Default

The client timeout is set to 1800 seconds for WLANs that are configured with dot1x security. The client timeout is set to 0 for open WLANs.

Command Modes

WLAN configuration

Command History

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

This example shows how to configure a session timeout to 300 seconds:

```
Device# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Device(config)# wlan wlan1
Device(config-wlan)# session-timeout 300
```

This example shows how to disable a session timeout:

```
Device# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Device(config)# wlan wlan1
Device(config-wlan)# no session-timeout
```

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	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced.
	The **cos**, **dscp**, **qos-group**, **wlantable** *table-map-name*, keywords were added.

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.

set trace capwap ap ha

To trace the control and provisioning of wireless access point high availability, use the **set trace capwap ap ha** command.

set trace capwap ap ha [{**detail** | **event** | **dump** | {**filter** [{**none** [**switch** *switch*] | *filter_name* [*filter_value* [**switch** *switch*]]}] | **filtered***switch***level** {**default***trace_level*} [**switch** *switch*]}}]

Syntax Description

detail	(Optional) Specifies the wireless CAPWAP HA details.
event	(Optional) Specifies the wireless CAPWAP HA events.
dump	(Optional) Specifies the wireless CAPWAP HA output.
filter *mac*	Specifies the MAC address.
switch switch number	Specifies the switch number.
none	(Optional) Specifies the no filter option.
switch *switch*	(Optional) Specifies the device number.
filter name	Trace adapted flag filter name.
filter_value	(Optional) Value of the filter.
switch *switch*	(Optional) Specifies the device number.
filtered	Specifies the filtered traces messages.
switch	Specifies the switch number.
level	Specifies the trace level.
default	Specifies the unset trace level value.
trace_level	Specifies the trace level.
switch *switch*	(Optional) Specifies the device number.

Command Default

None

Command History

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

This example shows how to display the wireless CAPWAP HA:

```
Device# set trace capwap ap ha detail filter mac WORD switch number
```

set trace mobility ha

To debug the wireless mobility high availability in the , use the **set trace mobility ha** command.

set trace mobility ha [{**event** | **detail** | **dump**}] {**filter**[**mac** *WORD switch switch number*] [{**none** [**switch** *switch*] | *filter_name* [*filter_value* [**switch** *switch*]]}] | **level** {**default***trace_level*} [**switch** *switch*]{**filtered***switch*}}

Syntax Description

event	(Optional) Specifies the wireless mobility high availability events.
detail	(Optional) Specifies the wireless mobility high availability details.
dump	(Optional) Specifies the wireless mobility high availability output.
filter	Specifies to trace adapted flag filter.
mac	Specifies the MAC address.
WORD switch	Specifies the switch.
switch number	Specifies the switch number. The value ranges from one to four.
none	Specifies no trace adapted flag filter.
switch *switch*	(Optional) Specifies the device number.
filter_name	Trace adapted flag filter name.
filter_value	Trace adapted flag filter value.
switch *switch*	Specifies the device number.
level	Specifies the trace level value.
default	Specifies the un-set trace level value.
trace_level	Specifies the trace level value.
switch *switch*	Specifies the device number.
filtered	Specifies the filtered trace messages.
switch	Specifies the switch.

Command Default

None

Command History

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

This example shows how to display wireless mobility high availability details:

```
Device# set trace mobility ha detail filter mac WORD
[08/27/13 10:38:35.349 UTC 1 8135] Invalid src ip: 169.254.1.1
[08/27/13 10:38:35.349 UTC 2 8135] Invalid sysIp: Skip plumbing MC-MA
tunnels.
[08/27/13 10:38:54.393 UTC 3 8135] Mobility version mismatch, v10 received,
 or m
sglen mismatch msglen=74 recvBytes=0, dropping
```

set trace qos ap ha

To trace wireless Quality of Service (QoS) high availability, use the **set trace qos ap ha** command.

set trace QOS ap ha [{**event**|**error**}] {**filter** [{**MACnone** [**switch** *switch*]|*filter_name* [*filter_value* [**switch** *switch*]]}]|**level** {**default***trace_level*} [**switch** *switch*]}

Syntax Description

event	(Optional) Specifies trace QoS wireless AP event.
event *mac*	Specifies the MAC address of the AP.
event *none*	Specifies no MAC address value.
error	(Optional) Specifies trace QoS wireless AP errors.
error *mac*	Specifies the MAC address of the AP.
error *none*	Specifies no value.
filter	Specifies the trace adapted flag filter.
filter *mac*	Specifies the MAC address of the AP.
filter *none*	Specifies no value.
switch *switch*	Specifies the switch number.
filter_name	(Optional) Specifies the switch filter name.
filter_value	(Optional) Specifies the switch filter value. Value is one.
switch *switch*	(Optional) Specifies the switch number. Value is one.
level	Specifies the trace level.
default	Specifies the trace QoS wireless AP default.
trace_level	Trace level.
switch *switch*	(Optional) Specifies the switch number. Value is one.

Command Default

None

Command History

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

This example shows how to trace wireless QoS high availability:

```
Device# set trace QOS ap ha
```

sgt-tag

To SGT tag for a fabric profile, use the **sgt-tag** command.

sgt-tag *value*

Syntax Description

value	SGT tag value. Valid range is 2 to 65519.

Command Default

The default SGT tag value is 0.

Command Modes

config-wireless-fabric

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 SGT tag value:

```
Device# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Device(config)# wireless profile fabric fabric-profile-name
Device(config-wireless-fabric)# sgt tag 8
```

site-tag

To map a site tag to the AP, use the **site-tag**command.

site-tag *site-tag-name*

Syntax Description

site-tag-name	Name of the site tag.

Command Default

None

Command Modes

config-ap-tag

Command History

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

Usage Guidelines

The AP will disconnect and rejoin after running this command.

Example

The following example shows how to configure a site tag:

```
Device(config-ap-tag)# site-tag sitetag1
```

snmp-server group

To configure a new Simple Network Management Protocol (SNMP) group, use the **snmp-server group** command in global configuration mode. To remove a specified SNMP group, use the **no** form of this command.

snmp-server group *group-name* {**v1** | **v2c** | **v3** } [**access** [**ipv6** *named-access-list*] [{*acl-numberacl-name*}]] [**context** *context-name*] [**notify** *notify-view*] [**read** *read-view*] [**write** *write-view*]
no snmp-server group *group-name* {**v1** | **v2c** | **v3** {**auth** | **noauth** | **priv**}} [**context** *context-name*]

Syntax Description

group-name	Name of the group.
v1	Specifies that the group is using the SNMPv1 security model. SNMPv1 is the least secure of the possible SNMP security models.
v2c	Specifies that the group is using the SNMPv2c security model. The SNMPv2c security model allows informs to be transmitted and supports 64-character strings.
v3	Specifies that the group is using the SNMPv3 security model. SMNPv3 is the most secure of the supported security models. It allows you to explicitly configure authentication characteristics.
context	(Optional) Specifies the SNMP context to associate with this SNMP group and its views.
context-name	(Optional) Context name.
read	(Optional) Specifies a read view for the SNMP group. This view enables you to view only the contents of the agent.
read-view	(Optional) String of a maximum of 64 characters that is the name of the view. The default is that the read-view is assumed to be every object belonging to the Internet object identifier (OID) space (1.3.6.1), unless the **read** option is used to override this state.
write	(Optional) Specifies a write view for the SNMP group. This view enables you to enter data and configure the contents of the agent.
write-view	(Optional) String of a maximum of 64 characters that is the name of the view. The default is that nothing is defined for the write view (that is, the null OID). You must configure write access.
notify	(Optional) Specifies a notify view for the SNMP group. This view enables you to specify a notify, inform, or trap.

notify-view	(Optional) String of a maximum of 64 characters that is the name of the view. By default, nothing is defined for the notify view (that is, the null OID) until the **snmp-server host** command is configured. If a view is specified in the **snmp-server group** command, any notifications in that view that are generated will be sent to all users associated with the group (provided a SNMP server host configuration exists for the user). Cisco recommends that you let the software autogenerate the notify view. See the “Configuring Notify Views” section in this document.
access	(Optional) Specifies a standard access control list (ACL) to associate with the group.
ipv6	(Optional) Specifies an IPv6 named access list. If both IPv6 and IPv4 access lists are indicated, the IPv6 named access list must appear first in the list.
named-access-list	(Optional) Name of the IPv6 access list.
acl-number	(Optional) The *acl-number*argument is an integer from 1 to 99 that identifies a previously configured standard access list.
acl-name	(Optional) The *acl-name* argument is a string of a maximum of 64 characters that is the name of a previously configured standard access list.

Command Default

No SNMP server groups are configured.

Command Modes

Global configuration (config)

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

When a community string is configured internally, two groups with the name public are autogenerated, one for the v1 security model and the other for the v2c security model. Similarly, deleting a community string will delete a v1 group with the name public and a v2c group with the name public.

No default values exist for authentication or privacy algorithms when you configure the **snmp-server group** command. Also, no default passwords exist. For information about specifying a Message Digest 5 (MD5) password, see the documentation of the **snmp-server user** command.

Configuring Notify Views

The notify-view option is available for two reasons:

- If a group has a notify view that is set using SNMP, you may need to change the notify view.
- The **snmp-server host** command may have been configured before the **snmp-server group** command. In this case, you must either reconfigure the **snmp-server host** command, or specify the appropriate notify view.

Specifying a notify view when configuring an SNMP group is not recommended, for the following reasons:

- The **snmp-server host** command autogenerates a notify view for the user, and then adds it to the group associated with that user.

- Modifying the group's notify view will affect all users associated with that group.

Instead of specifying the notify view for a group as part of the **snmp-server group** command, use the following commands in the order specified:

1. **snmp-server user** --Configures an SNMP user.
2. **snmp-server group** --Configures an SNMP group, without adding a notify view .
3. **snmp-server host** --Autogenerates the notify view by specifying the recipient of a trap operation.

SNMP Contexts

SNMP contexts provide VPN users with a secure way of accessing MIB data. When a VPN is associated with a context, that VPN's specific MIB data exists in that context. Associating a VPN with a context enables service providers to manage networks with multiple VPNs. Creating and associating a context with a VPN enables a provider to prevent the users of one VPN from accessing information about users of other VPNs on the same networking device.

Use this command with the **context** *context-name* keyword and argument to associate a read, write, or notify SNMP view with an SNMP context.

Create an SNMP Group

The following example shows how to create the SNMP server group "public," allowing read-only access for all objects to members of the standard named access list "lmnop":

```
Device(config)# snmp-server group public v2c access lmnop
```

Remove an SNMP Server Group

The following example shows how to remove the SNMP server group "public" from the configuration:

```
Device(config)# no snmp-server group public v2c
```

Associate an SNMP Server Group with Specified Views

The following example shows SNMP context "A" associated with the views in SNMPv2c group "GROUP1":

```
Device(config)# snmp-server context A
Device(config)# snmp mib community commA
Device(config)# snmp mib community-map commA context A target-list commAVpn
Device(config)# snmp-server group GROUP1 v2c context A read viewA write viewA notify viewB
```

static-ip-mobility

To configure static IP mobility, use the **static-ip-mobility** command in wireless-policy configuration mode. To disable the configuration, use the **no** form of this command.

static-ip-mobility

Syntax Description

This command has no arguments or keywords.

Command Default

None

Command Modes

wireless-policy configuration mode

Command History

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

Example

This example shows how to enable static IP mobility:

```
Device# configure terminal
Device(config)# wireless profile policy test-policy
Device(config-wireless-policy)# static-ip-mobility
```

switchport

To put an interface that is in Layer 3 mode into Layer 2 mode for Layer 2 configuration, use the **switchport** command in interface configuration mode. To put an interface in Layer 3 mode, use the **no** form of this command.

switchport
no switchport

Syntax Description

This command has no arguments or keywords.

Command Default

By default, all interfaces are in Layer 2 mode.

Command Modes

Interface configuration

Command History

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

Usage Guidelines

Use the **no switchport** command (without parameters) to set the interface to the routed-interface status and to erase all Layer 2 configurations. You must use this command before assigning an IP address to a routed port.

Note This command is not supported on devices running the LAN Base feature set.

Entering the **no switchport** command shuts the port down and then reenables it, which might generate messages on the device to which the port is connected.

When you put an interface that is in Layer 2 mode into Layer 3 mode (or the reverse), the previous configuration information related to the affected interface might be lost, and the interface is returned to its default configuration.

Note If an interface is configured as a Layer 3 interface, you must first enter the **switchport** command to configure the interface as a Layer 2 port. Then you can enter the **switchport access vlan** and **switchport mode** commands.

The **switchport** command is not used on platforms that do not support Cisco-routed ports. All physical ports on such platforms are assumed to be Layer 2-switched interfaces.

You can verify the port status of an interface by entering the **show running-config** privileged EXEC command.

Examples

This example shows how to cause an interface to cease operating as a Layer 2 port and become a Cisco-routed port:

```
Device(config-if)# no switchport
```

This example shows how to cause the port interface to cease operating as a Cisco-routed port and convert to a Layer 2 switched interface:

```
Device(config-if)# switchport
```

switchport access vlan

To configure a port as a static-access port, use the **switchport access vlan** command in interface configuration mode. To reset the access mode to the default VLAN mode for the device, use the **no** form of this command.

switchport access vlan {*vlan-id* }
no switchport access vlan

Syntax Description

vlan-id	VLAN ID of the access mode VLAN; the range is 1 to 4094.

Command Default

The default access VLAN and trunk interface native VLAN is a default VLAN corresponding to the platform or interface hardware.

Command Modes

Interface configuration

Command History

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

Usage Guidelines

The port must be in access mode before the **switchport access vlan** command can take effect.

If the switchport mode is set to **access vlan** *vlan-id*, the port operates as a member of the specified VLAN. An access port can be assigned to only one VLAN.

The **no switchport access** command resets the access mode VLAN to the appropriate default VLAN for the device.

Examples

This example shows how to change a switched port interface that is operating in access mode to operate in VLAN 2 instead of the default VLAN:

```
Device(config-if)# switchport access vlan 2
```

switchport mode

To configure the VLAN membership mode of a port, use the **switchport mode** command in interface configuration mode. To reset the mode to the appropriate default for the device, use the **no** form of this command.

switchport mode {**access** | **dynamic** | {**auto** | **desirable**} | **trunk**}
noswitchport mode {**access** | **dynamic** | {**auto** | **desirable**} | **trunk**}

Syntax Description

access	Sets the port to access mode (either static-access or dynamic-access depending on the setting of the **switchport access vlan** interface configuration command). The port is set to access unconditionally and operates as a nontrunking, single VLAN interface that sends and receives nonencapsulated (non-tagged) frames. An access port can be assigned to only one VLAN.
dynamic auto	Sets the port trunking mode dynamic parameter to auto to specify that the interface convert the link to a trunk link. This is the default switchport mode.
dynamic desirable	Sets the port trunking mode dynamic parameter to desirable to specify that the interface actively attempt to convert the link to a trunk link.
trunk	Sets the port to trunk unconditionally. The port is a trunking VLAN Layer 2 interface. The port sends and receives encapsulated (tagged) frames that identify the VLAN of origination. A trunk is a point-to-point link between two devices or between a device and a router.

Command Default

The default mode is **dynamic auto**.

Command Modes

Interface configuration

Command History

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

Usage Guidelines

Note Although visible in the CLI, the **dot1q-tunnel** keyword is not supported.

A configuration that uses the **access**,or **trunk** keywords takes effect only when you configure the port in the appropriate mode by using the **switchport mode** command. The static-access and trunk configuration are saved, but only one configuration is active at a time.

When you enter **access** mode, the interface changes to permanent nontrunking mode and negotiates to convert the link into a nontrunk link even if the neighboring interface does not agree to the change.

When you enter **trunk** mode, the interface changes to permanent trunking mode and negotiates to convert the link into a trunk link even if the interface connecting to it does not agree to the change.

When you enter **dynamic auto** mode, the interface converts the link to a trunk link if the neighboring interface is set to **trunk** or **desirable** mode.

When you enter **dynamic desirable** mode, the interface becomes a trunk interface if the neighboring interface is set to **trunk**, **desirable**, or **auto** mode.

To autonegotiate trunking, the interfaces must be in the same VLAN Trunking Protocol (VTP) domain. Trunk negotiation is managed by the Dynamic Trunking Protocol (DTP), which is a point-to-point protocol. However, some internetworking devices might forward DTP frames improperly, which could cause misconfigurations. To avoid this problem, configure interfaces connected to devices that do not support DTP to not forward DTP frames, which turns off DTP.

- If you do not intend to trunk across those links, use the **switchport mode access** interface configuration command to disable trunking.
- To enable trunking to a device that does not support DTP, use the **switchport mode trunk** and **switchport nonegotiate** interface configuration commands to cause the interface to become a trunk but to not generate DTP frames.

Access ports and trunk ports are mutually exclusive.

The IEEE 802.1x feature interacts with switchport modes in these ways:

- If you try to enable IEEE 802.1x on a trunk port, an error message appears, and IEEE 802.1x is not enabled. If you try to change the mode of an IEEE 802.1x-enabled port to trunk, the port mode is not changed.
- If you try to enable IEEE 802.1x on a port set to **dynamic auto** or **dynamic desirable**, an error message appears, and IEEE 802.1x is not enabled. If you try to change the mode of an IEEE 802.1x-enabled port to **dynamic auto** or **dynamic desirable**, the port mode is not changed.
- If you try to enable IEEE 802.1x on a dynamic-access (VLAN Query Protocol [VQP]) port, an error message appears, and IEEE 802.1x is not enabled. If you try to change an IEEE 802.1x-enabled port to dynamic VLAN assignment, an error message appears, and the VLAN configuration is not changed.

You can verify your settings by entering the **show interfaces** *interface-id* **switchport** privileged EXEC command and examining information in the *Administrative Mode* and *Operational Mode* rows.

Examples

This example shows how to configure a port for access mode:

```
Device(config)# interface gigabitethernet2/0/1
Device(config-if)# switchport mode access
```

This example shows how set the port to dynamic desirable mode:

```
Device(config)# interface gigabitethernet2/0/1
Device(config-if)# switchport mode dynamic desirable
```

This example shows how to configure a port for trunk mode:

```
Device(config)# interface gigabitethernet2/0/1
Device(config-if)# switchport mode trunk
```

tag rf

To configure a policy tag for an AP filter, use the **tag rf** command.

tag rf *rf-tag*

Syntax Description

rf-tag	RF tag name.

Command Default

None

Command Modes

config-ap-filter

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 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*

Syntax Description

site-tag	Name of the site tag.

Command Default

None

Command Modes

config-ap-filter

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 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
```

trusted-port

To configure a port to become a trusted port, use the **trusted-port** command in IPv6 snooping policy mode or ND inspection policy configuration mode. To disable this function, use the **no** form of this command.

trusted-port
no trusted-port

Syntax Description

This command has no arguments or keywords.

Command Default

No ports are trusted.

Command Modes

ND inspection policy configuration

IPv6 snooping configuration

Command History

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

Usage Guidelines

When the **trusted-port** command is enabled, limited or no verification is performed when messages are received on ports that have this policy. However, to protect against address spoofing, messages are analyzed so that the binding information that they carry can be used to maintain the binding table. Bindings discovered from these ports will be considered more trustworthy than bindings received from ports that are not configured to be trusted.

This example shows how to define an NDP policy name as policy1, place the switch in NDP inspection policy configuration mode, and configure the port to be trusted:

```
Device(config)# ipv6  nd inspection  policy1
Device(config-nd-inspection)# trusted-port
```

This example shows how to define an IPv6 snooping policy name as policy1, place the switch in IPv6 snooping policy configuration mode, and configure the port to be trusted:

```
Device(config)# ipv6 snooping policy policy1
Device(config-ipv6-snooping)# trusted-port
```

tunnel eogre source

To configure tunnel source interface when a specific per-tunnel configuration of tunnel source is not present, use the **tunnel eogre source** command.

tunnel eogre source {**gigabitethernet** | **loopback** | **vlan**} *interface-number*

Syntax Description

interface-number	Interface number.

Command Default

None

Command Modes

Global configuration

Command History

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

Usage Guidelines

If a specific per-tunnel configuration of tunnel source is present, that one will be used.

Example

This example shows how to configure tunnel source interface:

```
Device(config)# tunnel eogre source vlan 21
```

tunnel eogre heartbeat

To configure tunnel keepalive heartbeat ping parameters, use the **tunnel eogre heartbeat** command.

tunnel eogre heartbeat {**interval** *interval* | **max-skip-count** *tolerable-heartbeats*}

Syntax Description

interval	Heartbeat interval, in seconds.
tolerable-heartbeats	Tolerable dropped heartbeats.

Command Default

None

Command Modes

Global configuration

Command History

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

Example

This example shows how to configure tunnel keepalive heartbeat ping parameters:

```
Device(config)# tunnel eogre heartbeat 80
```

tunnel mode ethernet

To configure tunnel encapsulation method as Ethernet over GRE, use the **tunnel mode ethernet** command.

tunnel mode ethernet {**gre** {**ipv4** | **ipv6**} [**p2p**] | **manual**}

Syntax Description

gre	Ethernet over GRE.
l2tpv3	L2TPv3 encapsulation.
p2p	Provides point-to-point encapsulation over IPv4 or IPv6.
manual	Manually configures L2TP parameters.

Command Default

None

Command Modes

Interface 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.
Cisco IOS XE Gibraltar 16.11.1	The **p2p** keyword was introduced.

Example

This example shows how to configure tunnel encapsulation method as Ethernet over GRE:

```
Device(config-if)# tunnel mode ethernet gre ipv4 p2p
```

tunnel eogre domain

To configure EoGRE redundancy domain, use the **tunnel eogre domain** command.

tunnel eogre domain *domain-name*

Syntax Description

domain-name	Domain name.

Command Default

None

Command Modes

Global configuration

Command History

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

Example

This example shows how to configure EoGRE redundancy domain:

```
Device(config)# tunnel eogre domain domain1
```

tunnel eogre interface tunnel

To set the AAA-proxy key for the EoGRE tunnel interface, use the **tunnel eogre interface tunnel** command.

tunnel eogre interface tunnel *tunnel-inft-number* **aaa proxy key** {**0** | **8**} *key-string*

Syntax Description

tunnel-inft-number	Tunnel interface number.
aaa	AAA configuration.
proxy	AAA proxy configuration.
key	AAA proxy key configuration. 0-Specifies the string as an UNENCRYPTED key. 8-Specifies the string as an AES encrypted key.
key-string	String for the key.

Command Default

None

Command Modes

Global configuration

Command History

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

Example

This example shows how to set the proxy key for the EoGRE tunnel interface:

```
Device(config)# tunnel eogre interface tunnel 21 aaa proxy key 0 test
```

type

To display the contents of one or more files, use the **type** command in boot loader mode.

type *filesystem:/file-url...*

Syntax Description

filesystem:	Alias for a file system. Use **flash:** for the system board flash device; use **usbflash0:** for USB memory sticks.
/file-url...	Path (directory) and name of the files to display. Separate each filename with a space.

Command Default

No default behavior or values.

Command Modes

Boot loader

Command History

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

Usage Guidelines

Filenames and directory names are case sensitive.

If you specify a list of files, the contents of each file appear sequentially.

Examples

This example shows how to display the contents of a file:

```
Device: type flash:image_file_name
version_suffix: universal-122-xx.SEx
version_directory: image_file_name
image_system_type_id: 0x00000002
image_name: image_file_name.bin
ios_image_file_size: 8919552
total_image_file_size: 11592192
image_feature: IP|LAYER_3|PLUS|MIN_DRAM_MEG=128
image_family: family
stacking_number: 1.34
board_ids: 0x00000068 0x00000069 0x0000006a 0x0000006b
info_end:
```

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_wl
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*

Syntax Description

umbrella-name

Command Default

None

Command Modes

config-wireless-policy

Command History

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.
service-cache *<1-100>*	Specifies the mDNS update service-cache timer for flex profile. The default value is one minute,
statistics *<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.

Usage Guidelines

None

Example

The following example shows how to configure the mDNS update timers for flex profile:

```
Device(config-mdns-flex-prof)# update-timer service-cache 20
```

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

username	You should enter only one word which can include hyphen (-), underscore (_) and period (.). **Note** Only alphanumeric characters are allowed at an initial setup.
password	The command to use specify password and user role.
password	Password character length up to 40 alphanumeric characters. You must specify the password for all new users.
hash | plain	Type of password. Up to 34 alphanumeric characters.
role admin | user	Sets the privilege level for the user.
disabled	Disables the user according to the user’s email address.
email *email-address*	The user’s email address. For example, user1@example.com.
wlan-profile-name	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)#
```

vnid

To add a VXLAN network identifier (VNID) under the service template, use the **vnid** command.

vnid *vnid-name*

Syntax Description

vnid-name	Name of the VNID.

Command Default

VNID is not configured.

Command Modes

Service Template Configuration (config-service-template)

Command History

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

Examples

The following example shows how to configure a VNID:

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

violation

To configure stream violation policy on periodic reevaluation, use the **violation** command.

violation {**drop** | **fallback**}

Syntax Description

Parameter	Description
drop	Stream will be dropped on periodic reevaluation.
fallback	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
```

vlan

To add a VLAN and to enter the VLAN configuration mode, use the **vlan** command in global configuration mode. To delete the VLAN, use the **no** form of this command.

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

Syntax Description

vlan-id	ID of the VLAN to be added and configured. The range is 1 to 4094. You can enter a single VLAN ID, a series of VLAN IDs separated by commas, or a range of VLAN IDs separated by hyphens.

Command Default

None

Command Modes

Global configuration

Command History

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

Usage Guidelines

You can use the **vlan** *vlan-id* global configuration command to add normal-range VLANs (VLAN IDs 1 to 1005) or extended-range VLANs (VLAN IDs 1006 to 4094). Configuration information for normal-range VLANs is always saved in the VLAN database, and you can display this information by entering the **show vlan** privileged EXEC command. If the VTP mode is transparent, VLAN configuration information for normal-range VLANs is also saved in the device running configuration file. VLAN IDs in the extended range are not saved in the VLAN database, but they are stored in the switch running configuration file, and you can save the configuration in the startup configuration file.

VTP version 3 supports propagation of extended-range VLANs. VTP versions 1 and 2 propagate only VLANs 1 to 1005.

When you save the VLAN and VTP configurations in the startup configuration file and reboot the device, the configuration is selected as follows:

- If the VTP mode is transparent in the startup configuration and the VLAN database and the VTP domain name from the VLAN database matches that in the startup configuration file, the VLAN database is ignored (cleared), and the VTP and VLAN configurations in the startup configuration file are used. The VLAN database revision number remains unchanged in the VLAN database.
- If the VTP mode or domain name in the startup configuration do not match the VLAN database, the domain name and VTP mode and configuration for VLAN IDs 1 to 1005 use the VLAN database information.

If you enter an invalid VLAN ID, you receive an error message and do not enter VLAN configuration mode.

Entering the **vlan** command with a VLAN ID enables VLAN configuration mode. When you enter the VLAN ID of an existing VLAN, you do not create a new VLAN, but you can modify VLAN parameters for that VLAN. The specified VLANs are added or modified when you exit the VLAN configuration mode. Only the **shutdown** command (for VLANs 1 to 1005) takes effect immediately.

Note Although all commands are visible, the only VLAN configuration command that is supported on extended-range VLANs is **remote-span**. For extended-range VLANs, all other characteristics must remain at the default state.

These configuration commands are available in VLAN configuration mode. The **no** form of each command returns the characteristic to its default state:

- **are** *are-number*—Defines the maximum number of all-routes explorer (ARE) hops for this VLAN. This keyword applies only to TrCRF VLANs. The range is 0 to 13. The default is 7. If no value is entered, 0 is assumed to be the maximum.
- **backupcrf**—Specifies the backup CRF mode. This keyword applies only to TrCRF VLANs.
  - **enable**—Backup CRF mode for this VLAN.
  - **disable**—Backup CRF mode for this VLAN (the default).
- **bridge** {*bridge-number* | **type**}—Specifies the logical distributed source-routing bridge, the bridge that interconnects all logical rings that have this VLAN as a parent VLAN in FDDI-NET, Token Ring-NET, and TrBRF VLANs. The range is 0 to 15. The default bridge number is 0 (no source-routing bridge) for FDDI-NET, TrBRF, and Token Ring-NET VLANs. The **type** keyword applies only to TrCRF VLANs and is one of these:
  - **srb**—Ssource-route bridging
  - **srt**—Source-route transparent) bridging VLAN
- **exit**—Applies changes, increments the VLAN database revision number (VLANs 1 to 1005 only), and exits VLAN configuration mode.
- **media**—Defines the VLAN media type and is one of these:

  Note The device supports only Ethernet ports. You configure only FDDI and Token Ring media-specific characteristics for VLAN Trunking Protocol (VTP) global advertisements to other devices. These VLANs are locally suspended.

  - **ethernet**—Ethernet media type (the default).
  - **fd-net**—FDDI network entity title (NET) media type.
  - **fddi**—FDDI media type.
  - **tokenring**—Token Ring media type if the VTP v2 mode is disabled, or TrCRF if the VTP Version 2 (v) mode is enabled.
  - **tr-net**—Token Ring network entity title (NET) media type if the VTP v2 mode is disabled or TrBRF media type if the VTP v2 mode is enabled.

  See the table that follows for valid commands and syntax for different media types.
- **name** *vlan-name*—Names the VLAN with an ASCII string from 1 to 32 characters that must be unique within the administrative domain. The default is VLANxxxx where xxxx represents four numeric digits (including leading zeros) equal to the VLAN ID number.

- **no**—Negates a command or returns it to the default setting.
- **parent** *parent-vlan-id*—Specifies the parent VLAN of an existing FDDI, Token Ring, or TrCRF VLAN. This parameter identifies the TrBRF to which a TrCRF belongs and is required when defining a TrCRF. The range is 0 to 1005. The default parent VLAN ID is 0 (no parent VLAN) for FDDI and Token Ring VLANs. For both Token Ring and TrCRF VLANs, the parent VLAN ID must already exist in the database and be associated with a Token Ring-NET or TrBRF VLAN.
- **remote-span**—Configures the VLAN as a Remote SPAN (RSPAN) VLAN. When the RSPAN feature is added to an existing VLAN, the VLAN is first deleted and is then recreated with the RSPAN feature. Any access ports are deactivated until the RSPAN feature is removed. If VTP is enabled, the new RSPAN VLAN is propagated by VTP for VLAN IDs that are lower than 1024. Learning is disabled on the VLAN.
- **ring** *ring-number*—Defines the logical ring for an FDDI, Token Ring, or TrCRF VLAN. The range is 1 to 4095. The default for Token Ring VLANs is 0. For FDDI VLANs, there is no default.
- **said** *said-value*—Specifies the security association identifier (SAID) as documented in IEEE 802.10. The range is 1 to 4294967294, and the number must be unique within the administrative domain. The default value is 100000 plus the VLAN ID number.
- **shutdown**—Shuts down VLAN switching on the VLAN. This command takes effect immediately. Other commands take effect when you exit VLAN configuration mode.
- **state**—Specifies the VLAN state:
  - **active** means the VLAN is operational (the default).
  - **suspend** means the VLAN is suspended. Suspended VLANs do not pass packets.
- **ste** *ste-number*—Defines the maximum number of spanning-tree explorer (STE) hops. This keyword applies only to TrCRF VLANs. The range is 0 to 13. The default is 7.
- **stp type**—Defines the spanning-tree type for FDDI-NET, Token Ring-NET, or TrBRF VLANs. For FDDI-NET VLANs, the default STP type is ieee. For Token Ring-NET VLANs, the default STP type is ibm. For FDDI and Token Ring VLANs, the default is no type specified.
  - **ieee**—IEEE Ethernet STP running source-route transparent (SRT) bridging.
  - **ibm**—IBM STP running source-route bridging (SRB).
  - **auto**—STP running a combination of source-route transparent bridging (IEEE) and source-route bridging (IBM).
- **tb-vlan1** *tb-vlan1-id* and **tb-vlan2** *tb-vlan2-id*—Specifies the first and second VLAN to which this VLAN is translationally bridged. Translational VLANs translate FDDI or Token Ring to Ethernet, for example. The range is 0 to 1005. If no value is specified, 0 (no transitional bridging) is assumed.

Table 1: Valid Commands and Syntax for Different Media Types

Media Type	Valid Syntax
Ethernet	**name** *vlan-name*, **media ethernet**, **state** {**suspend** | **active**}, **said** *said-value*, **remote-span**, **tb-vlan1** *tb-vlan1-id*, **tb-vlan2** *tb-vlan2-id*

Media Type	Valid Syntax
FDDI	**name** *vlan-name*, **media fddi**, **state** {**suspend | active**}, **said** *said-value*, **ring** *ring-number*, **parent** *parent-vlan-id*, **tb-vlan1** *tb-vlan1-id*, **tb-vlan2** *tb-vlan2-id*
FDDI-NET	**name** *vlan-name*, **media fd-net** , **state** {**suspend | active**}, **said** *said-value*, **bridge** *bridge-number*, **stp type** {**ieee | ibm | auto**}, **tb-vlan1** *tb-vlan1-id*, **tb-vlan2** *tb-vlan2-id* If VTP v2 mode is disabled, do not set the **stp type** to **auto.**
Token Ring	VTP v1 mode is enabled. **name** *vlan-name*, **media tokenring**, **state** {**suspend | active**}, **said** *said-value*, **ring** *ring-number*, **parent** *parent-vlan-id*, **tb-vlan1** *tb-vlan1-id*, **tb-vlan2** *tb-vlan2-id*
Token Ring concentrator relay function (TrCRF)	VTP v2 mode is enabled. **name** *vlan-name*, **media tokenring**, **state** {**suspend | active**}, **said** *said-value*, **ring** *ring-number*, **parent** *parent-vlan-id*, **bridge type** {**srb | srt**}, **are** *are-number*, **ste** *ste-number*, **backupcrf** {**enable | disable**}, **tb-vlan1** *tb-vlan1-id*, **tb-vlan2** *tb-vlan2-id*
Token Ring-NET	VTP v1 mode is enabled. **name** *vlan-name*, **media tr-net**, **state** {**suspend | active**}, **said** *said-value*, **bridge** *bridge-number*, **stp type** {**ieee | ibm**}, **tb-vlan1** *tb-vlan1-id*, **tb-vlan2** *tb-vlan2-id*
Token Ring bridge relay function (TrBRF)	VTP v2 mode is enabled. **name** *vlan-name*, **media tr-net**, **state** {**suspend | active**}, **said** *said-value*, **bridge** *bridge-number*, **stp type** {**ieee | ibm | auto**}, **tb-vlan1** *tb-vlan1-id*, **tb-vlan2** *tb-vlan2-id*

The following table describes the rules for configuring VLANs:

Table 2: VLAN Configuration Rules

Configuration	Rule
VTP v2 mode is enabled, and you are configuring a TrCRF VLAN media type.	Specify a parent VLAN ID of a TrBRF that already exists in the database. Specify a ring number. Do not leave this field blank. Specify unique ring numbers when TrCRF VLANs have the same parent VLAN ID. Only one backup concentrator relay function (CRF) can be enabled.
VTP v2 mode is enabled, and you are configuring VLANs other than TrCRF media type.	Do not specify a backup CRF.
VTP v2 mode is enabled, and you are configuring a TrBRF VLAN media type.	Specify a bridge number. Do not leave this field blank.
VTP v1 mode is enabled.	No VLAN can have an STP type set to auto. This rule applies to Ethernet, FDDI, FDDI-NET, Token Ring, and Token Ring-NET VLANs.
Add a VLAN that requires translational bridging (values are not set to zero).	The translational bridging VLAN IDs that are used must already exist in the database. The translational bridging VLAN IDs that a configuration points to must also contain a pointer to the original VLAN in one of the translational bridging parameters (for example, Ethernet points to FDDI, and FDDI points to Ethernet). The translational bridging VLAN IDs that a configuration points to must be different media types than the original VLAN (for example, Ethernet can point to Token Ring). If both translational bridging VLAN IDs are configured, these VLANs must be different media types (for example, Ethernet can point to FDDI and Token Ring).

This example shows how to add an Ethernet VLAN with default media characteristics. The default includes a *vlan-name* of VLAN *xxxx*, where *xxxx* represents four numeric digits (including leading zeros) equal to the VLAN ID number. The default media is ethernet; the state is active. The default said-value is 100000 plus the VLAN ID; the mtu-size variable is 1500; the stp-type is ieee. When you enter the **exit** VLAN configuration command, the VLAN is added if it did not already exist; otherwise, this command does nothing.

This example shows how to create a new VLAN with all default characteristics and enter VLAN configuration mode:

```
Device(config)# vlan 200
Device(config-vlan)# exit
Device(config)#
```

This example shows how to create a new extended-range VLAN with all the default characteristics, to enter VLAN configuration mode, and to save the new VLAN in the device startup configuration file:

```
Device(config)# vlan 2000
Device(config-vlan)# end
Device# copy running-config startup config
```

You can verify your setting by entering the **show vlan** privileged EXEC command.

vlan configuration

To enter the VLAN configuration mode to configure VLAN features, use the **vlan configuration** command.

vlan configuration

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 enter the VLAN configuration mode to configure VLAN features, with the VLAN ID being 2:

```
Device# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Device(config)# vlan configuration 2
```

vlan access-map

To create or modify a VLAN map entry for VLAN packet filtering, and change the mode to the VLAN access-map configuration, use the **vlan access-map** command in global configuration mode on the switch stack or on a standalone switch. To delete a VLAN map entry, use the **no** form of this command.

vlan access-map *name* [*number*]
no vlan access-map *name* [*number*]

Note This command is not supported on switches running the LAN Base feature set.

Syntax Description

name	Name of the VLAN map.
number	(Optional) The sequence number of the map entry that you want to create or modify (0 to 65535). If you are creating a VLAN map and the sequence number is not specified, it is automatically assigned in increments of 10, starting from 10. This number is the sequence to insert to, or delete from, a VLAN access-map entry.

Command Default

There are no VLAN map entries and no VLAN maps applied to a VLAN.

Command Modes

Global configuration

Command History

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

Usage Guidelines

In global configuration mode, use this command to create or modify a VLAN map. This entry changes the mode to VLAN access-map configuration, where you can use the **match** access-map configuration command to specify the access lists for IP or non-IP traffic to match and use the **action** command to set whether a match causes the packet to be forwarded or dropped.

In VLAN access-map configuration mode, these commands are available:

- **action**—Sets the action to be taken (forward or drop).
- **default**—Sets a command to its defaults.
- **exit**—Exits from VLAN access-map configuration mode.
- **match**—Sets the values to match (IP address or MAC address).
- **no**—Negates a command or set its defaults.

When you do not specify an entry number (sequence number), it is added to the end of the map.

There can be only one VLAN map per VLAN and it is applied as packets are received by a VLAN.

You can use the **no vlan access-map** *name* [*number*] command with a sequence number to delete a single entry.

Use the **vlan filter** interface configuration command to apply a VLAN map to one or more VLANs.

For more information about VLAN map entries, see the software configuration guide for this release.

This example shows how to create a VLAN map named vac1 and apply matching conditions and actions to it. If no other entries already exist in the map, this will be entry 10.

```
Device(config)# vlan access-map vac1
Device(config-access-map)# match ip address acl1
Device(config-access-map)# action forward
```

This example shows how to delete VLAN map vac1:

```
Device(config)# no vlan access-map vac1
```

vlan filter

To apply a VLAN map to one or more VLANs, use the **vlan filter** command in global configuration mode on the switch stack or on a standalone switch. To remove the map, use the **no** form of this command.

vlan filter *mapname* **vlan-list** {*list* | **all**}
no vlan filter *mapname* **vlan-list** {*list* | **all**}

Note This command is not supported on switches running the LAN Base feature set.

Syntax Description

mapname	Name of the VLAN map entry.
vlan-list	Specifies which VLANs to apply the map to.
list	The list of one or more VLANs in the form tt, uu-vv, xx, yy-zz, where spaces around commas and dashes are optional. The range is 1 to 4094.
all	Adds the map to all VLANs.

Command Default

There are no VLAN filters.

Command Modes

Global configuration

Command History

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

Usage Guidelines

To avoid accidentally dropping too many packets and disabling connectivity in the middle of the configuration process, we recommend that you completely define the VLAN access map before applying it to a VLAN.

For more information about VLAN map entries, see the software configuration guide for this release.

This example applies VLAN map entry map1 to VLANs 20 and 30:

```
Device(config)# vlan filter map1 vlan-list 20, 30
```

This example shows how to delete VLAN map entry mac1 from VLAN 20:

```
Device(config)# no vlan filter map1 vlan-list 20
```

You can verify your settings by entering the **show vlan filter** privileged EXEC command.

vlan group

To create or modify a VLAN group, use the **vlan group** command in global configuration mode. To remove a VLAN list from the VLAN group, use the **no** form of this command.

vlan group *group-name* **vlan-list** *vlan-list*
no vlan group *group-name* **vlan-list** *vlan-list*

Syntax Description

group-name	Name of the VLAN group. The group name may contain up to 32 characters and must begin with a letter.
vlan-list *vlan-list*	Specifies one or more VLANs to be added to the VLAN group. The *vlan-list* argument can be a single VLAN ID, a list of VLAN IDs, or VLAN ID range. Multiple entries are separated by a hyphen (-) or a comma (,).

Command Default

None

Command Modes

Global configuration

Command History

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

Usage Guidelines

If the named VLAN group does not exist, the **vlan group** command creates the group and maps the specified VLAN list to the group. If the named VLAN group exists, the specified VLAN list is mapped to the group.

The **no** form of the **vlan group** command removes the specified VLAN list from the VLAN group. When you remove the last VLAN from the VLAN group, the VLAN group is deleted.

A maximum of 100 VLAN groups can be configured, and a maximum of 4094 VLANs can be mapped to a VLAN group.

This example shows how to map VLANs 7 through 9 and 11 to a VLAN group:

```
Device(config)# vlan group group1 vlan-list 7-9,11
```

This example shows how to remove VLAN 7 from the VLAN group:

```
Device(config)# no vlan group group1 vlan-list 7
```

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*}

Syntax Description

standard_acl_value	Specifies the standard access list. Range is from 1 to 199.
extended_acl_value	Specifies the extended access list. Range is from 1300 to 2699.
acl_name	Specifies the named access list.

Command Default

None

Command Modes

ET-Analytics configuration

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	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

wired-vlan-range	Configures wired VLANs on which mDNS service discovery should take place.
wired-vlan-range-value	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.

Usage Guidelines

None

Example

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

neighbor-list	Configures an 802.11k neighbor list for a WLAN.
dual-list	Configures a dual band 802.11k neighbor list for a WLAN. The default is the band that the client is currently associated with.
prediction	Configures an assisted roaming optimization prediction for a WLAN.
enable	Enables the configuration on the WLAN.
disable	Disables the configuration on the WLAN.
wlan_id	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.

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*

Syntax Description

aaa-policy	Name of the wireless AAA policy.

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 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

autoqos	Configures wireless Auto QoS.
mode	Specifies the wireless AutoQoS mode.
enterprise-avc	Enables AutoQos wireless enterprise AVC policy.
clear	Clears the configured wireless policy.
fastlane	Enables the AutoQos fastlane policy. This will disable and enable the 2.4GHz or 5GHz 802.11 network.
guest	Enables AutoQos wireless guest policy.
voice	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*]

Syntax Description

vlan-id	(Optional) Specifies the VLAN ID to enable broadcast support to that VLAN. The value ranges from 1 to 4095.

Command Default

None

Command Modes

Global configuration mode

Command History

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

Usage Guidelines

Use this command in the global configuration mode only.

This example shows how to enable broadcasting on VLAN 20:

```
Device(config)# wireless broadcast vlan 20
```

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-mid-rssi** *rssi* | **client-rssi** *rssi* | **cycle-count** *count* | **cycle-threshold** *threshold* | **expire dual-band** *timeout* | **expire suppression** *timeout*} | **fast-ssid-change** | **max-user-login** *max-user-login* | **notification** {**interval** *time* | **join-failure aaathreshold***percentage* | **roam-failure threshold** *percentage*} | **timers auth-timeout** *seconds* | **user-timeout** *user-timeout*}

Syntax Description

association limit *assoc-number* **interval** *interval*	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.
band-select	Configures the band select options for the client.
client-mid-rssi *rssi*	Sets the client mid-rssi threshold for band select. The minimum dBm of a client RSSI to respond to probe is between -90 and -20.
client-rssi *rssi*	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.
cycle-count *count*	Sets the band select probe cycle count. You can configure the cycle count from 1 to 10.
cycle-threshold *threshold*	Sets the time threshold for a new scanning cycle. You can configure the cycle threshold from 1 to 1000 milliseconds.
expire dual-band *timeout*	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.
expire suppression *timeout*	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.
fast-ssid-change	Enables the fast SSID change for mobile stations.
max-user-login *max-user-login*	Configures the maximum number of login sessions for a user.

notification	Configures notifications.
interval *time*	Configures notifications for an interval. The valid time ranges from 1 to 1440 seconds.
join-failure aaa threshold *percentage*	Configures notifications for client join failures. You can configure the threshold percentage to trigger an alert. The valid threshold percentage ranges from 1 to 100.
roam-failure threshold *percentage*	Configures notifications for client roam failures. You can configure the threshold for notifications. The valid threshold percentage ranges from 1 to 100.
timers auth-timeout *seconds*	Configures the client timers.
user-timeout *user-timeout*	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.
Cisco IOS XE Gibraltar 16.10.1	This command was modified. The **client-mid-rssi, notification**, and **fast-ssid-change** keywords were added. The **user-timeout** keyword was deleted.

This example shows how to set the proble 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** {**any***profile-id*}}

Syntax Description

mac-addr	MAC address of the client.
ccx	Cisco client extension (CCX).
clear-reports	Clears the client reporting information.
clear-results	Clears the test results on the controller.
default-gw-ping	Sends a request to the client to perform the default gateway ping test.
dhcp-test	Sends a request to the client to perform the DHCP test.
dns-ping	Sends a request to the client to perform the Domain Name System (DNS) server IP address ping test.
dns-resolve hostname *host-name*	Sends a request to the client to perform the Domain Name System (DNS) resolution test to the specified hostname.
get-client-capability	Sends a request to the client to send its capability information.
get-manufacturer-info	Sends a request to the client to send the manufacturer's information.
get-operating-parameters	Sends a request to the client to send its current operating parameters.
get-profiles	Sends a request to the client to send its profiles.
log-request	Configures a CCX log request for a specified client device.
roam	(Optional) Specifies the request to specify the client CCX roaming log
rsna	(Optional) Specifies the request to specify the client CCX RSNA log.
syslog	(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.

stats-request *measurement-duration*	Senda a request for statistics.
dot11	Optional) Specifies dot11 counters.
security	(Optional) Specifies security counters.
test-abort	Sends a request to the client to abort the current test.
test-association *ssid bssid dot11 channel*	Sends a request to the client to perform the association test.
test-dot1x	Sends a request to the client to perform the 802.1x test.
profile-id	(Optional) Test profile name.
bssid	Basic SSID.
dot11	Specifies the 802.11a, 802.11b, or 802.11g network.
channel	Channel number.
test-profile	Sends a request to the client to perform the profile redirect test.
any	Sends a request to the client to perform the profile redirect test.
profile-id	Test profile name. **Note** 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 16.10.1	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
```

```
Device(config)# wireless client mac-address 00:1f:ca:cf:b6:60 ccx clear-reports
Device(config)# end
```

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 definitiondoes 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*

Syntax Description

country-code	Two-letter

Command Default

None

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE Amsterdam 17.3.1	This command was introduced.

Usage Guidelines

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):

```
(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**

Syntax Description

description *value*	Configures the entry description.

Command Default

None

Command Modes

Global Configuration

Command History

Cisco IOS XE Gibraltar 16.10.1	Modification
	This command was introduced in this release.

Usage Guidelines

If a client was added to the exclusion list dynamically, the command to remove it is **wireless client mac-address xxxx.xxxx.xxxx deauthenticate** from enable mode.

Example

This example shows how to manage exclusion entries:

```
Device(config)# wireless exclusion list xxxx.xxxx.xxxx
```

wireless fabric control-plane

To configure a control plane name applicable to the wireless fabric mode, use the **wireless fabric control-plane** command.

wireless fabric control-plane *control-plane-name*

Syntax Description

control-plane-name	Control plane name that is applicable to the wireless fabric mode.

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

If you do not provide a control plane name, the default-control-plane, which is auto-generated, is used.

Examples

The following example shows how to configure a control plane name:

```
Device# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Device(config)# wireless fabric control-plane test-control-plane
```

wireless fabric

To enable SD-Access Wireless globally on the controller, use the **wireless fabric** command.

wireless fabric

Command Default

None

Command Modes

Global configuration

Command History

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

This example shows how to enable SD-Access wireless globally on the controller:

```
Device# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Device(config)# wireless fabric
```

wireless fabric name

To configure wireless fabric name VXLAN ID (VNID) map, use the **wireless fabric name** command.

wireless fabric [**control-plane** *control-plane-name*] | [**name** *vnid-map-name* **l2-vnid** *id* {**control-plane** *control-plane-name* | **l3-vnid** *id* } **ip** {*ipv-addr netmask-addr* | *ipv6-addr netmask-addr*} [{**control-plane** *control-plane-name*] }]

Syntax Description

control-plane *control-plane-name*	Configure the control plane details.
name *vnid-map-name*	Configure the wireless fabric name
l2-vnid *id*	Configure the Layer 2 VNID. Valid range is 0 to 16777215.
l3-vnid *id*	Configure the Layer 3 VNID. Valid range is 0 to 16777215.
ip {*ipv4-addr netmask-addr* | *ipv6-addr netmask-addr*}	IP address and netmask address details.

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 MAP server per VNID for Layer 2 and Layer 3:

```
Device# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Device(config)# wireless fabric name vnid-map l2-vnid 2 l3-vnid 10 ip 209.165.200.224
255.255.255.224
```

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

nd	Configures wireless IPv6 ND parameters.
na-forward	Enables forwarding of Neighbor Advertisement to wireless clients.
ns-forward	Enable forwarding of Neighbor Solicitation to wireless clients.
ra	Configures wireless IPv6 Router Advertisement parameters.
wired	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*}

Syntax Description

denial *denial-count*	Specifies the number of association denials during load balancing. Maximum number of association denials during load balancing is from 1 to 10 and the default value is 3.
window *client-count*	Specifies the aggressive load balancing client window, with the number of clients needed to trigger aggressive load balancing on a given access point. Aggressive load balancing client window with the number of clients is from 0 to 20 and the default value is 5.

Command Default

Disabled.

Command Modes

Global configuration

Command History

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

Usage Guidelines

Load-balancing-enabled WLANs do not support time-sensitive applications like voice and video because of roaming delays.

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.

This example shows how to configure association denials during load balancing:

```
Device# configure terminal
Device(config)# wireless load-balancing denial 5
Device(config)# end
```

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

balancing-window	Active instance of the configuration in Route-processor slot 0.
client	Standby instance of the configuration in Route-processor slot 0.
number-clients	Valid range is 0 to 65535 clients.
macro-to-micro	Configures the macro to micro transition RSSI.
micro-to-macro	Configures micro-macro client load balancing window.
RSSI in dBm	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

aggressiveness	Configures probe cycles to be suppressed. The number of cycles range between 0 - 255.
hysteresis	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.
probe-auth	Enables mode to suppress probes and single auth
probe-only	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

auth-token	Authentication token.
token	Token name.
trust-hash	Trusted SSC hash list.
hash-key	SHA1 fingerprint.
0	Specifies an UNENCRYPTED token.
8	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.

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 media-stream

To configure various parameters, use the **wireless media-stream** command.

wireless media-stream group *groupName* [*startipAddr endipAddr*]

wireless media-stream group{ `avg-packet-size default exit max-bandwidth no policy qos`}

wireless media-stream {**multicast-direct** | **message** [{**phone** *phone* | **URL** *URL* | **Notes** *Notes* | **Email** *Email*}]}

Syntax Description

group *groupName*	Configure multicast-direct status for a group.
startipAddr	Specifies the start IP Address for the group.
endipAddr	Specifies the End IP Address for the group.
group *avg-packet-size*	Configure average packet size. The values can range between 100 to 1500.
group *default*	Set a command to its defaults.
group *exit*	Exit sub-mode.
group *max-bandwidth*	Configure maximum expected stream bandwidth in Kbps. The values can range between 1 to 35000 kbps.
group *no*	Negate a command or set its defaults.
group *policy*	Configure media stream admission policy. You can choose either of these options: • admit - Allow traffic for the media stream group. • deny - Deny traffic for the media stream group.
group *qos*	Configure over the air QoS class, <'video'> ONLY.
multicast-direct	Configure multicast-direct status.
message	Configure Session Announcement Message.
phone *phone*	Configure Session Announcement Phone number.
URL *URL*	Configure Session Announcement URL.
Notes *Notes*	Configure Session Announcement notes.
Email *Email*	Configure Session Announcement Email.

Command Default

Disabled

Command Modes

config

Command History

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

Usage Guidelines

Media-stream multicast-direct requires load-based Call Admission Control (CAC) to run.

Examples

The following example shows how to configure each media stream and its parameters like expected multicast destination addresses, stream bandwidth consumption and stream priority parameters.

```
Device#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Device(config)#wireless media-stream group GROUP1 231.1.1.1 231.1.1.10
```

wireless media-stream message

To configure session announcement message, use the **wireless media-stream message** command.

wireless media-stream message{**Email** | **Notes** | **URL** | **phone**}

Syntax Description

Email	Configure session announcement e-mail.
Notes	Configure session announcement notes.
URL	Configure session announcement URL.
phone	Configure session announcement phone 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.

Usage Guidelines

When a media stream is refused (due to bandwidth constraints), a message can be sent to the user. These parameters configure the messages to send IT support e-mail address, notes (message to display explaining why the stream was refused), URL to which the user can be redirected to and the phone number that the user can call about the refused stream.

Examples

The following example shows how to configure a session announcement URL:

```
Device# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Device(config)# wireless media-stream message URL www.example.com
```

wireless media-stream multicast-direct

To configure multicast-direct status, use the **media-stream multicast-direct** command. To remove the multicast-direct status, use the no form of the command.

no wireless media-stream multicast-direct

Command Default

None

Command Modes

config

Usage Guidelines

Media stream multicast-direct requires load based Call Admission Control (CAC) to run. WLAN quality of service (QoS) needs to be set to either gold or platinum.

Examples

The following example shows how to configure multicast-direct for a wireless LAN media stream.

```
Device#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Device(config)#wireless media-stream multicast-direct
```

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 vlaid 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*

Syntax Description

high-snr	Set the high-snr value. The valid range is between 31 and 100.

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 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*

Syntax Description

max-children	Set the mesh alarm max-children map parameter. The valid range is between 1 and 50.

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 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*

Syntax Description

max-children	Set the mesh alarm max-children rap parameter. The valid range is between 1 and 50.

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 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 paramter, use the **wireless mesh alarm max-hop** command.

wireless mesh alarm max-hop *max-hop*

Syntax Description

max-hop	Set the mesh alarm max-hop count. Valid range is between 1 and 16.

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 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*

Syntax Description

count	Set the max parent-change count value. 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 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

Syntax Description

bdomain-channels	Allows the Extended UNII B Domain channels for Outdoor mesh APs backhaul radio. The **[no]** form of the command disables the use of the Extended UNII B Domain channels by the mesh APs backhaul radio.

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 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**}

Syntax Description

backhaul	Configures the Mesh Backhaul.
bdomain-channels	Allows Extended UNII B Domain channels for Outdoor mesh APs backhaul radio.
rrm	Configures RRM for the mesh backhaul.

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 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

Syntax Description

cac	Configures the mesh CAC Mode.

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 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

Syntax Description

ethernet-bridging	Configure ethernet bridging.
allow-bdpu	Configures STP BPDUs towards wired MESH uplink.

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 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

provisioning	configuring mesh psk provisioning parameters.
default_psk	Set the mesh provisioning to the default-psk settings.
inuse	Configuring the psk inuse index
psk-index	Enter PSK key index. Valid range is between 1 and 5.
key	Configure a pre-shared-key
psk-index	Enter PSK key index. Valid range is between 1 and 5.
0	Choose to enter an UNENCRYPTED password.
8	Choose to enter an AES encrypted password.
enter-psk-name	Enter a name for the configured psk key.
psk-description	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

Syntax Description

subset-channel-sync	Configures the subset channel sync for mobility group

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 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 mobility

To configure the inter mobility manager, use the **wireless mobility** command.

wireless mobility {**dscp** *value* }

Syntax Description

dscp *value*	Configures the Mobility inter DSCP value.

Command Default

The default DSCP value is 48.

Command Modes

Global Configuration

Command History

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

This example shoes how to configure mobility inter DSCP with an value of 20:

```
Device(config)# wireless mobility dscp 20
```

wireless mobility controller peer-group

To configure mobility peer groups, use the **wireless mobility controller peer-group** command, to remove the configuration, use the **no** form of this command.

wireless mobility controller peer-group *peer-group* **member IP** *ip-address***mode centralized**

Syntax Description

peer group	Name of the peer group.
member IP	Adds a peer group member.
ip-address	IP address of the peer group member to be added.
mode centralized	Configures the management mode of the peer group member as centrally managed.

Command Default

The centralized mode is off.

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.7.0 E	This command was introduced.

```
Device enable
Device# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Device(config)# wireless mobility controller peer-group peer1 member ip 10.0.0.1 mode
centralized
```

wireless mobility group keepalive

To configure the mobility group parameter and keep alive its ping parameters, use the **wireless mobility group keepalive** command. To remove a mobility group parameter, use the **no** form of the command.

wireless mobility group keepalive {**count** *number* | **interval** *interval*}
no wireless mobility group keepalive {**count** *numbe r* | **interval** *interval*}

Syntax Description

count *number*	Number of times that a ping request is sent to a mobility group member before the member is considered unreachable. The range is from 3 to 20. The default is 3.
interval *interval*	Interval of time between each ping request sent to a mobility group member. The range is from 1 to 30 seconds. The default value is 10 seconds. **Note** For controllers connected through mobility tunnels, ensure that both controllers have the same keepalive interval value.

Command Default

3 seconds for count and 10 seconds for interval.

Command Modes

Global Configuration.

Command History

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

Usage Guidelines

The default values for *interval* is ten seconds and the default for *retries* is set to three.

This example shows how to specify the amount of time between each ping request sent to a mobility group member to 10 seconds:

```
Device(config)# wireless mobility group keepalive count 10
```

wireless mobility group mac-address

To configure the MAC address to be used in mobility messages, use the **wireless mobility group mac-address** command.

wireless mobility group mac-address *mac-addr*

Syntax Description

mac-addr	MAC address to be used in mobility messages.

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 MAC address to be used in mobility messages:

```
Device(config)# wireless mobility group mac-address 00:0d:ed:dd:25:82
```

wireless mobility group member ip

To add or delete users from mobility group member list, use the **wireless mobility group member ip** command. To remove a member from the mobility group, use the **no** form of the command.

wireless mobility group member ip *ip-address* [**public-ip** *public-ip-address*] [**group** *group-name*]
no wireless mobility group member ip *ip-address*

Syntax Description

ip-address	The IP address of the member controller.
public-ip *public-ip-address*	(Optional) Member controller public IP address. **Note** This command is used only when the member is behind a NAT. Only static IP NAT is supported.
group *group-name*	(Optional) Member controller group name. **Note** This command is used only when the member added in not in the same group as the local mobility controller.

Command Default

None.

Command Modes

Global Configuration.

Command History

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

Usage Guidelines

The mobility group is used when there is more than one Mobility Controller (MC) in a given deployment. The mobility group can be assigned with a name or it can use the default group name. The mobility group members need to be configured on all the members of the group to roam within the group.

This example shows how to add a member in a mobility group:

```
Device(config)# mobility group member ip 10.104.171.101 group TestDocGroup
```

wireless mobility group multicast-address

To configure the multicast IP address for a non-local mobility group, use the **wireless mobility group multicast-address** command.

wireless mobility group multicast-address *group-name* {**ipv4** | **ipv6**} *ip-addr*

Syntax Description

group-name	Name of the non-local mobility group.
ipv4	Option to enter the IPv4 address.
ipv6	Option to enter the IPv6 address.
ip-addr	IPv4 or IPv6 address of the non-local mobility group.

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 multicast IPv4 address of the non-local mobility group:

```
Device(config)# wireless mobility group multicast-address Mygroup ipv4 224.0.0.5
```

wireless mobility group name

To configure hte mobility domain name, use the **wireless mobility group name** command. To remove the mobility domain name, use the **no** form of the command.

Note If you are configuring the mobility group in a network where network address translation (NAT) is enabled, enter the IP address that is sent to the controller from the NAT device rather than the controller's management interface IP address. Otherwise, mobility will fail among controllers in the mobility group.

wireless mobility group name *domain-name*
no wireless mobility group name

Syntax Description

domain-name	Creates a mobility group by entering this command. The domain name can be up to 31 case-sensitive characters.

Command Default

Default.

Command Modes

Global Configuration.

Command History

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

This example shows how to configure a mobility domain name lab1:

```
Device(config)# mobility group domain lab1
```

wireless mobility multicast ipv4

To configure multicast IPv4 address for the local mobility group, use the **wireless mobility multicast ipv4** command.

wireless mobility multicast ipv4 *ipv4-addr*

Syntax Description

ipv4-addr	Enter the multicast IPv4 address for the local mobility group.

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 multicast IPv4 address for the local mobility group:

```
Device(config)# wireless mobility multicast ipv4 224.0.0.4
```

wireless mobility mac-address

To configure the MAC address to be used in mobility messages,, use the **wireless mobility mac-address** command.

wireless mobility mac-address *mac-address*

Syntax Description

mac-address	MAC address to be used in mobility messages.

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 MAC address to be used in mobility messages:

```
Device(config)# wireless mobility mac-address 00:0d:bd:5e:9f:00
```

wireless multicast

To configure Ethernet multicast parameters, use the **wireless multicast** command.

wireless multicast {*ipv4-address* | **ipv6** *ipv6-address* | **non-ip** [**vlan** *vlan-id*]}

Syntax Description

ipv4-address	Multicast IPv4 address.
ipv6 *ipv6-address*	Multicast IPv6 address.
non-ip	Configures non-IP multicast in all VLANs. Wireless multicast must be enabled for the traffic to pass.
non-ip vlan *vlan-id*	Configures non-IP multicast per VLAN. Both wireless multicast and wireless multicast non-IP must be enabled for traffic to pass. Valid range for VLAN ID is 1 to 4094.

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 non-IP multicast for a VLAN whose ID is 5:

```
Device(config)# wireless multicast non-ip vlan 5
```

wireless profile airtime-fairness

To create a new Cisco ATF policy, use the **wireless profile airtime-fairness** command.

wireless profile airtime-fairness *atf-policy-name atf-profile-id*

Syntax Description

atf-policy-name	Refers to the ATF profile name.
atf-profile-id	Refers to the ATF profile ID. The range is from 0 to 511.

Command Default

None

Command Modes

Global configuration (config)

Command History

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

This example shows how to create a new Cisco ATF policy:

```
Device# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Device(config)# wireless profile airtime-fairness <atf-policy-name> 1
Device(config-config-atf)# weight 5
Device(config-config-atf)# client-sharing
Device(config-config-atf)# end
```

wireless profile ap packet-capture

To configure the wireless AP packet capture profile, use the **wireless profile ap packet-capture** command.

wireless profile ap packet-capture *packet-capture-profile-name*

Syntax Description

packet-capture-profile-name	AP packet capture profile name.

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 the AP packet capture profile:

```
Device(config)# wireless profile ap packet-capture test1
```

wireless profile fabric

To configure the fabric profile parameters, use the **wireless profile fabric** command.

wireless profile fabric *fabric-profile-name*

Syntax Description

fabric-profile-name	Fabric profile name.
fabric	Configure Fabric profile parameters.
profile	Configure profile parameters.

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 fabric profile parameters:

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

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 tunnel

To configure tunnel profiles, use the **wireless profile tunnel** command.

wireless profile tunnel

Syntax Description

tunnel-profile-name	Name of the tunnel profile.
dhcp-opt82 format mac *raw|colon-delimited*	Configures the format of the MAC address in RID and CID field of option 82.

Command Default

None

Command Modes

Global configuration

Command History

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

Example

This example shows how to configure tunnel profiles:

```
Device(config)# wireless profile tunnel tun1
```

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*

Syntax Description

timeout	Configures the static RFID tag data timeout value.
timeout-value	RFID tag data timeout value. Valid values range from 60-7200.

Command Default

None

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 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

eapol-key	Configures eapol-key related parameters.
retries *retries*	(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.
timeout *milliseconds*	(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.
group-key interval *sec*	Configures EAP-broadcast key renew interval time in seconds (120 to 86400 seconds).
identity-request	Configures EAP ID request related parameters.
retries *retries*	(Optional) Specifies the maximum number of times (0 to 4 retries) that the controller request the EAP ID. The default value is 2.
timeout *seconds*	(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.
radius	Configures radius messages.
call-station-id	(Optional) Configures Call-Station Id sent in radius messages.
ap-macaddress	Sets Call Station Id Type to the AP's MAC Address.
ap-macaddress-ssid	Sets Call Station Id Type to 'AP MAC address':'SSID'.
ipaddress	Sets Call Station Id Type to the system's IP Address.
macaddress	Sets Call Station Id Type to the system's MAC Address.
request	Configures EAP request related parameters.

retries *retries*	(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.
timeout *seconds*	(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.
wep key	Configures 802.1x WEP related paramters.
index 0	Specifies the WEP key index value as 0
index 3	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 16.10.1	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

colon	Sets the delimiter to colon.
hyphen	Sets the delimiter to hyphen.
none	Disables delimiters.
single-hyphen	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

colon	Sets the delimiter to colon.
hyphen	Sets the delimiter to hyphen.
none	Disables delimiters.
single-hyphen	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 acounting 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**}

Syntax Description

lower	Sends all Call Station Ids to RADIUS in lowercase
upper	Sends all Call Station Ids to RADIUS in uppercase

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 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

ap-ethmac-only	Sets call station ID type to the AP Ethernet MAC address.
ap-ethmac-ssid	Sets call station ID type to the format 'AP Ethernet MAC address':'SSID'.
ap-group-name	Sets call station ID type to the AP Group Name.
ap-label-address	Sets call station ID type to the AP MAC address on AP Label.
ap-label-address-ssid	Sets call station ID type to the format 'AP Label MAC address': 'SSID'.
ap-location	Sets call station ID type to the AP Location.
ap-macaddress	Sets call station ID type to the AP Radio MAC Address.
ap-macaddress-ssid	Sets call station ID type to the 'AP radio MAC Address':'SSID'.
ap-name	Sets call station ID type to the AP name.
ap-name-ssid	Sets call station ID type to the format 'AP name':'SSID'.
ipaddress	Sets call station ID type to the system IP Address.
macaddress	Sets call station ID type to the system MAC Address.
vlan-id	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 E	This command was introduced.

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

colon	Sets the delimiter to colon.
hyphen	Sets the delimiter to hyphen.
none	Disables delimiters.
single-hyphen	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 securityweb-authretries*retries*
nowireless securityweb-authretries

Syntax Description

wireless security web-auth	Enables web authentication on a particular WLAN.
retries *retries*	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 16.10.1	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*

Syntax Description

policy-tag	Name of the wireless tag policy.

Command Default

The default policy tag is default-policy-tag.

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 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

To configure the access point neighbor authentication, use the **wireless wps ap-authentication** 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**]

Syntax Description

threshold *value*	Specifies that the WMM-enabled clients are on the wireless LAN. Threshold value (1 to 255).

Command Default

None.

Command Modes

config

Command History

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

Usage Guidelines

None.

This example shows how to set the threshold value for WMM-enabled clients.

```
Device#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Device(config)#wireless wps ap-authentication threshold 65
```

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*

Syntax Description

threshold *value*	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.

Command Default

None

Command Modes

Global Configuration mode

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 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** | **dot1x-timeout** | **ip-theft** | **web-auth**}
no wireless wps client-exclusion {**all** | **dot11-assoc** | **dot11-auth** | **dot1x-auth** | **dot1x-timeout** | **ip-theft** | **web-auth**}

Syntax Description

dot11-assoc	Specifies that the controller excludes clients on the sixth 802.11 association attempt, after five consecutive failures.
dot11-auth	Specifies that the controller excludes clients on the sixth 802.11 authentication attempt, after five consecutive failures.
dot1x-auth	Specifies that the controller excludes clients on the sixth 802.11X authentication attempt, after five consecutive failures.
dot1x-timeout	Enables exclusion on timeout and no response.
ip-theft	Specifies that the control excludes clients if the IP address is already assigned to another device. For more information, see the Usage Guidelines section.
web-auth	Specifies that the controller excludes clients on the fourth web authentication attempt, after three consecutive failures.
all	Specifies that the controller excludes clients for all of the above reasons.

Command Default

Enabled.

Command Modes

config

Command History

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

Usage Guidelines

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
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. 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.	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.

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

Syntax Description

ap-impersonation	Configures AP impersonation detection.

Command Default

None

Command Modes

Global Configuration mode

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 configure AP impersonation detection:

```
Device(config)# wireless wps mfp ap-impersonation
```

wireless wps rogue

To configure various rouge parameters, use the **wireless wps rogue** command.

wireless wps rogue {**adhoc** | **client**} [{**alert** *mac-addr* | **contain** *mac-addr* *no-of-aps*}]

Syntax Description

adhoc	Configures the status of an Independent Basic Service Set (IBSS or ad-hoc) rogue access point.
client	Configures rogue clients
alert *mac-addr*	Generates an SNMP trap upon detection of the ad-hoc rogue, and generates an immediate alert to the system administrator for further action for the MAC address of the ad-hoc rogue access point.
contain *mac-addr* *no-of-aps*	Contains the offending device so that its signals no longer interfere with authorized clients. Maximum number of Cisco access points assigned to actively contain the ad-hoc rogue access point (1 through 4, inclusive).

Command Default

None.

Command Modes

Global configuration

Command History

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

Usage Guidelines

None.

This example shows how to generate an immediate alert to the system administrator for further action for the MAC address of the ad-hoc rogue access point.

```
Device#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Device(config)#wireless wps rouge adhoc alert mac_addr
```

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

Syntax Description

network-assurance enable	Enables rogue WSA events.

Command Default

None

Command Modes

Global Configuration mode

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 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

Syntax Description

aaa	Configures the use of AAA or local database to detect valid AP MAC addresses.

Command Default

None

Command Modes

Global Configuration mode

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 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 configures 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

aaa	Sets the use of AAA or local database to detect valid AP MAC addresses.
polling-interval	Configures the rogue AP AAA validation interval.
60 - 86400	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 configures 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

Syntax Description

init-timer	Configures the init timer for rogue APs.

Command Default

None

Command Modes

Global Configuration mode

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 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

wps	Configures the WPS settings.
rogue	Configures the global rogue devices.
ap mac-address *<MAC Address>*	The MAC address of the APs.
rldp initiate	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

Syntax Description

notify-min-rssi	Configure the minimum RSSI notification threshold for rogue APs.

Command Default

None

Command Modes

Global Configuration mode

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 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

Syntax Description

notify-rssi-deviation	Configures the RSSI deviation notification threshold for rogue APs.

Command Default

None

Command Modes

Global Configuration mode

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 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

Syntax Description

alarm-only	Sets RLDP and alarm if rogue is detected.

Command Default

None

Command Modes

Global Configuration mode

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 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

Syntax Description

monitor-ap-only	Performs RLDP on monitor APs only.

Command Default

None

Command Modes

Global Configuration mode

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 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 rogueaprldp 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

Syntax Description

monitor-ap-only	Perform RLDP only on monitor AP

Command Default

None

Command Modes

Global Configuration

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced.
Cisco IOS XE 3.7.3E	The **no** form of the command was introduced.

Example

This example shows how to configure an alarm for a detected rogue.

```
Devicewireless 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

Syntax Description

retries	Configures RLDP retry times on rogue APs.

Command Default

None

Command Modes

Global Configuration mode

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 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

Syntax Description

schedule	Configures RLDP scheduling.

Command Default

None

Command Modes

Global Configuration mode

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 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]*

Syntax Description

day {**friday** | **monday** | **saturday** | **sunday** | **thursday** | **tuesday** | **wednesday**}	Configures the day of the week when RLDP scheduling is to be done.
start *[HH:MM:SS]*	Configures the start time for RLDP schedule for the day.
end *[HH:MM:SS]*	Configures the end time for RLDP schedule for the day.

Command Default

None

Command Modes

Global Configuration mode

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 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*

Syntax Description

rogue ap timeout	Configures the expiry time for rogue APs, in seconds.
240-3600	Specifies the number of seconds before rogue entries are flushed.

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 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

auto-contain	Configures auto contain for rogue devices.
level	Configures auto contain levels.
1 - 4	Specifies the auto containment levels.
monitor-ap-only	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

Syntax Description

aaa	Configures the use of AAA or local database to detect valid MAC addresses of rogue clients.

Command Default

None

Command Modes

Global Configuration mode

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 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

Syntax Description

mse	Configures the MSE to detect valid MAC addresses of rogue clients.

Command Default

None

Command Modes

Global Configuration mode

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 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*

Syntax Description

rogue client	Configures rogue clients.
client-threshold	Configures the rogue client per a rogue AP SNMP trap threshold.
0 - 256	Specifies the client threshold.

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 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

rogue clients	Configures rogue clients.
notify-min-rssi	Configures the minimum RSSI notification threshold for rogue clients.
-128 - -70	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*

Syntax Description

notify-rssi-deviation	Configures the RSSI deviation notification threshold for rogue clients.
0 - 10	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 RSSI deviation notification threshold for rogue clients:

```
Device(config)# wireless wps rogue client notify-rssi-deviation 6
```

wireless wps rogue detection

To configure various rouge detection parameters, use the **wireless wps rogue detection** command.

wireless wps rogue detection [{**min-rssi** *rssi* | **min-transient-time** *transtime*}]

Syntax Description

min-rssi *rssi*	Configures the minimum RSSI value that rogues should have for APs to detect and for rogue entry to be created in the device.
min-transient-time *transtime*	Configures the time interval at which rogues have to be consistently scanned for by APs after the first time the rogues are scanned.

Command Default

None.

Command Modes

Global configuration

Command History

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

Usage Guidelines

None.

This example shows how to configure rogue detection minimum RSSI value and minimum transient time:

```
Device# configure terminal
Device(config)# wireless wps rogue detection min-rssi 100
Device(config)# wireless wps rogue detection min-transient-time 500
Device(config)# end
```

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** | **rssi** | **ssid**} | **default** | **exit** | **match**{**all** | **any**} | **no** | **shutdown**}

Syntax Description

rule *rule-name*	Specifies a rule name.
priority *priority*	Changes the priority of a specific rule and shifts others in the list accordingly.
classify	Specifies the classification of a rule.
friendly	Classifies a rule as friendly.
malicious	Classifies a rule as malicious.
condition {**client-count number** | **duration** | **encryption** | **infrastructure** | **rssi** | **ssid**}	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: • client-count—Requires that a minimum number of clients be associated to a rogue access point. The valid range is 1 to 10 (inclusive). • duration—Requires that a rogue access point be detected for a minimum period of time. The valid range is 0 to 3600 seconds (inclusive). • encryption—Requires that the advertised WLAN does not have encryption enabled. • infrastructure—Requires the SSID to be known to the controller • rssi—Requires that a rogue access point have a minimum RSSI value. The range is from –95 to –50 dBm (inclusive). • ssid—Requires that a rogue access point have a specific SSID.
default	Sets the command to its default settings.
exit	Exits the sub-mode.
match {**all** | **any**}	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.
no	Negates a command or set its defaults.
shutdown	Shuts down the system.

Command Default

None.

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	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

rogue security-level	Configures the rogue detection security level.
critical	Specifies the rogue detection setup for highly sensitive deployments.
custom	Specifies the customizable security level.
high	Specifies the rogue detection setup for medium-scale deployments.
low	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*

Command Default

None

Command Modes

Global configuration (config)

Command History

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

Usage Guidelines

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.

Examples

The following example shows how to map a policy to an WLAN:

```
Device# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Device(config)# wireless tag policy demo-tag
Device(config-wireless-fabric)# wlan wlan1 policy policy1
```