

match access-group

To configure the match criteria for a class map on the basis of the specified access control list (ACL), use the **match access-group** command in class-map configuration mode. To remove ACL match criteria from a class map, use the **no** form of this command.

match access-group { *access-group* | **name** *access-group-name* }

no match access-group *access-group*

Syntax Description

<i>access-group</i>	A numbered ACL whose contents are used as the match criteria against which packets are checked to determine if they belong to this class. An ACL number can be a number from 1 to 2699.
name <i>access-group-name</i>	A named ACL whose contents are used as the match criteria against which packets are checked to determine if they belong to this class. The name can be a maximum of 40 alphanumeric characters

Defaults

No match criteria are configured.

Command Modes

Class-map configuration

Command History

Release	Modification
12.0(5)T	This command was introduced.
12.0(5)XE	This command was integrated into Cisco IOS Release 12.0(5)XE.
12.0(7)S	This command was integrated into Cisco IOS Release 12.0(7)S.
12.1(1)E	This command was integrated into Cisco IOS Release 12.1(1)E.

Usage Guidelines

For class-based weighted fair queueing (CBWFQ), you define traffic classes based on match criteria including ACLs, protocols, input interfaces, QoS labels, and EXP field values. Packets satisfying the match criteria for a class constitute the traffic for that class.

The **match access-group** command specifies a numbered or named ACL whose contents are used as the match criteria against which packets are checked to determine if they belong to the class specified by the class map.

To use the **match access-group** command, you must first enter the **class-map** command to specify the name of the class whose match criteria you want to establish. After you identify the class, you can use one of the following commands to configure its match criteria:

- **match access-group**
- **match input-interface**
- **match mpls experimental**
- **match protocol**

If you specify more than one command in a class map, only the last command entered applies. The last command overrides the previously entered commands.

**Note**

The **match-access group** command specifies the numbered access list against whose contents packets are checked to determine if they match the criteria specified in the class map. Access lists configured with the optional **log** keyword of the **access-list** command are not supported when configuring match criteria. For more information about the **access-list** command, refer to the [Cisco IOS IP Command Reference, Volume 1 of 4: Addressing and Services](#), Release 12.3 T.

Examples

The following example specifies a class map called acl144 and configures the ACL numbered 144 to be used as the match criteria for this class:

```
class-map acl144
 match access-group 144
```

Related Commands

Command	Description
class-map	Creates a class map to be used for matching packets to a specified class.
match input-interface	Configures a class map to use the specified input interface as a match criterion.
match mpls experimental	Configures a class map to use the specified EXP field value as a match criterion.
match protocol	Configures the match criteria for a class map on the basis of the specified protocol.

match any

To configure the match criteria for a class map to be successful match criteria for all packets, use the **match any** command in class-map configuration mode. To remove all criteria as successful match criteria, use the **no** form of this command.

match any

no match any

Syntax Description This command has no arguments or keywords.

Defaults No match criteria are specified.

Command Modes Class-map configuration

Command History	Release	Modification
	12.0(5)XE	This command was introduced.
	12.0(5)T	This command was integrated into Cisco IOS Release 12.0(5)T.
	12.1(1)E	This command was integrated into Cisco IOS Release 12.1(1)E.

Examples In the following configuration, all packets leaving Ethernet interface 1/1 will be policed based on the parameters specified in policy-map class configuration mode.

```
Router(config)# class-map matchany
Router(config-cmap)# match any
Router(config-cmap)# exit

Router(config)# policy-map policy1
Router(config-pmap)# class class4
Router(config-pmap-c)# police 8100 1500 2504 conform-action transmit exceed-action
set-qos-transmit 4
Router(config-pmap-c)# exit

Router(config)# interface ethernet1/1
Router(config-if)# service-policy output policy1
```

■ match any

Related Commands	Command	Description
	class-map	Creates a class map to be used for matching packets to a specified class.
	match input-interface	Configures a class map to use the specified input interface as a match criterion.
	match protocol	Configures the match criteria for a class map on the basis of the specified protocol.

match class-map

To use a traffic class as a classification policy, use the **match class-map** command in class-map configuration mode. To remove a specific traffic class as a match criterion, use the **no** form of this command.

match class-map *class-map-name*

no match class-map *class-map-name*

Syntax Description	<i>class-map-name</i>	Specifies the name of the traffic class to use as a match criterion.
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Defaults	No match criteria are specified.
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Command Modes	Class-map configuration
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Command History	Release	Modification
	12.0(5)XE	This command was introduced.
12.1(1)E	This command was integrated into Cisco IOS Release 12.1(1)E.	
12.1(5)T	This command was integrated into Cisco IOS Release 12.1(5)T.	

Usage Guidelines	<p>The only method of including both match-any and match-all characteristics in a single traffic class is to use the match class-map command. To combine match-any and match-all characteristics into a single class, a traffic class created with the match-any instruction must use a class configured with the match-all instruction as a match criterion (through the match class-map command), or vice versa.</p>
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You can also use the **match class-map** command to nest traffic classes within one another, saving users the overhead of re-creating a new traffic class when most of the information exists in a previously configured traffic class.

Examples	<p>In the following example, the traffic class called class1 has the same characteristics as traffic class called class2, with the exception that traffic class class1 has added a destination address as a match criterion. Rather than configuring traffic class class1 line by line, a user can enter the match class-map class2 command. This command allows all of the characteristics in the traffic class called class2 to be included in the traffic class called class1, and the user can simply add the new destination address match criterion without reconfiguring the entire traffic class.</p>
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```
Router(config)# class-map match-any class2
Router(config-cmap)# match protocol ip
Router(config-cmap)# match qos-group 3
Router(config-cmap)# match access-group 2
Router(config-cmap)# exit
```

```
Router(config)# class-map match-all class1
Router(config-cmap)# match class-map class2
Router(config-cmap)# match destination-address mac 1.1.1
Router(config-cmap)# exit
```

The following example shows how to combine the characteristics of two traffic classes, one with match-any and one with match-all characteristics, into one traffic class with the **match class-map** command. The result of traffic class called class4 requires a packet to match one of the following three match criteria to be considered a member of traffic class called class 4: IP protocol *and* QoS group 4, destination MAC address 1.1.1, or access group 2.

In this example, only the traffic class called class4 is used with the service policy called policy1.

```
Router(config)# class-map match-all class3
Router(config-cmap)# match protocol ip
Router(config-cmap)# match qos-group 4
Router(config-cmap)# exit

Router(config)# class-map match-any class4
Router(config-cmap)# match class-map class3
Router(config-cmap)# match destination-address mac 1.1.1
Router(config-cmap)# match access-group 2
Router(config-cmap)# exit

Router(config)# policy-map policy1
Router(config-pmap)# class class4
Router(config-pmap-c)# police 8100 1500 2504 conform-action transmit exceed-action
set-qos-transmit 4
Router(config-pmap-c)# exit
```

Related Commands

Command	Description
class-map	Creates a class map to be used for matching packets to a specified class.

match cos

To match a packet based on a Layer 2 class of service (CoS) marking, use the **match cos** command in class-map configuration mode. To remove a specific Layer 2 CoS/Inter-Switch Link (ISL) marking, use the **no** form of this command:

```
match cos cos-value [cos-value cos-value cos-value]
```

```
no match cos cos-value [cos-value cos-value cos-value]
```

Syntax Description	<i>cos-value</i>	(Optional) Specific IEEE 802.1Q/ISL CoS value. The <i>cos-value</i> is from 0 to 7; up to four CoS values can be specified in one match cos statement.
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Defaults	No match criteria are specified.
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Command Modes	Class-map configuration
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Command History	Release	Modification
	12.1(5)T	This command was introduced.

Examples In the following example, the CoS-values of 1, 2, and 3 are successful match criteria for the interface containing the classification policy called cos:

```
Router(config)# class-map cos
Router(config-cmap)# match cos 1 2 3
```

In the following example, classes called voice and video-n-data are created to classify traffic based on the CoS values. QoS treatment is then given to the appropriate packets (in this case, the QoS treatment is priority 64 and bandwidth 512) in the CoS-based-treatment policy map.

```
Router(config)# class-map voice
Router(config-cmap)# match cos 7

Router(config)# class-map video-n-data
Router(config-cmap)# match cos 5

Router(config)# policy-map cos-based-treatment
Router(config-pmap)# class voice
Router(config-pmap-c)# priority 64
Router(config-pmap-c)# exit
Router(config-pmap)# class video-n-data
Router(config-pmap-c)# bandwidth 512
Router(config-pmap-c)# exit
Router(config-pmap)# exit
```

```
Router(config)# interface fastethernet0/0.1
Router(config-if)# service-policy output cos-based-treatment
```

The service policy configured in this section is attached to all packets leaving Fast Ethernet interface 0/0.1. The service policy can be attached to any interface that supports service policies.

Related Commands	Command	Description
	class-map	Creates a class map to be used for matching packets to a specified class.
	policy-map	Creates or modifies a policy map that can be attached to one or more interfaces to specify a service policy.
	service-policy	Attaches a policy map to an input interface or VC, or an output interface or VC, to be used as the service policy for that interface or VC.
	set cos	Sets the Layer 2 CoS value of an outgoing packet.
	show class-map	Displays all class maps and their matching criteria.

match destination-address mac

To use the destination MAC address as a match criterion, use the **match destination-address mac** command in class-map configuration mode. To remove a previously specified destination MAC address as a match criterion, use the **no** form of this command.

match destination-address mac *address*

no match destination-address mac *address*

Syntax Description	<i>address</i>	Specifies the specific destination MAC address to be used as a match criterion.
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Defaults	No destination MAC address is specified.
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Command Modes	Class-map configuration
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Command History	Release	Modification
	12.0(5)XE	This command was introduced.
12.1(1)E	This command was integrated into Cisco IOS Release 12.1(1)E.	
12.1(5)T	This command was integrated into Cisco IOS Release 12.1(5)T.	

Examples The following example specifies a class map called macaddress and specifies the destination MAC address to be used as the match criterion for this class:

```
class-map macaddress
  match destination-address mac 00:00:00:00:00:00
```

Related Commands	Command	Description
	class-map	Creates a class map to be used for matching packets to a specified class.

match discard-class

To match packets of a certain discard class, use the **match discard-class** command in class-map configuration mode.

match discard-class *class-number*

Syntax Description	<i>class-number</i>	Number of the discard class being matched. Valid values are 0 to 7.
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Defaults	Packets will not be classified as expected.
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Command Modes	Class-map configuration
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Command History	Release	Modification
	12.2(13)T	This command was introduced.

Examples	The following example shows that packets in discard class 2 are matched:
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```
match discard-class 2
```

Related Commands	Command	Description
	set discard-class	Marks a packet with a discard-class value.

match dscp

To identify a specific IP differentiated service code point (DSCP) value as a match criterion, use the **match dscp** command in class-map configuration mode. To remove a specific DSCP value from a class map, use the **no** form of this command.

```
match [ip] dscp dscp-value [dscp-value dscp-value dscp-value dscp-value dscp-value dscp-value dscp-value]
```

```
no match [ip] dscp dscp-value [dscp-value dscp-value dscp-value dscp-value dscp-value dscp-value dscp-value]
```

Syntax Description	ip	(Optional) Specifies that the match is for IPv4 packets only. If not used, the match is on both IPv4 and IPv6 packets.
	<i>dscp-value</i>	Specifies the exact value from 0 to 63 used to identify an IP DSCP value.

Defaults Matching on both IPv4 and IPv6 packets is the default.

Command Modes Class-map configuration

Command History	Release	Modification
	12.2(13)T	This command was introduced. This command replaces the match ip dscp command.

Usage Guidelines

DSCP Values

Up to eight DSCP values can be matched in one match statement. For example, if you wanted the DSCP values of 0, 1, 2, 3, 4, 5, 6, or 7 (note that only one of the IP DSCP values must be a successful match criterion, not all of the specified DSCP values), enter the **match dscp 0 1 2 3 4 5 6 7** command.

This command is used by the class map to identify a specific DSCP value marking on a packet. In this context, *dscp-value* arguments are used as markings only and have no mathematical significance. For instance, the *dscp-value* of 2 is not greater than 1. The value simply indicates that a packet marked with the *dscp-value* of 2 is different from a packet marked with the *dscp-value* of 1. The treatment of these marked packets is defined by the user through the setting of QoS policies in policy-map class configuration mode.

Match IPv6 Packets on DSCP Values

To match DSCP values for IPv6 packets only, the **match protocol ipv6** command must also be used. Without that command, the DSCP match defaults to match both IPv4 and IPv6 packets.

Match IPv4 Packets on DSCP Values

To match DSCP values for IPv4 packets only, use the **ip** keyword. Without the **ip** keyword, the match occurs on both IPv4 and IPv6 packets. Alternatively, the **match protocol ip** command can be used with the **match dscp** command to classify only IPv4 packets.

Examples**Priority50 Service Policy Matching DSCP Value**

The following example shows how to configure the service policy called “priority50” and attach service policy “priority50” to an interface. In this example, the class map called “ipdscp15” will evaluate all packets entering interface Fast Ethernet 1/0/0 for an IP DSCP value of 15. If the incoming packet has been marked with the IP DSCP value of 15, the packet will be treated as priority traffic and will be allocated with bandwidth of 50 kbps.

```
Router(config)# class-map ipdscp15
Router(config-cmap)# match ip dscp 15
Router(config)# exit
Router(config)# policy-map priority50
Router(config-pmap)# class ipdscp15
Router(config-pmap-c)# priority 50
Router(config-pmap-c)# exit
Router(config-pmap)# exit
Router(config)# interface fastethernet1/0/0
Router(config-if)# service-policy output priority50
```

Related Commands

Command	Description
class-map	Creates a class map to be used for matching packets to a specified class.
policy-map	Creates or modifies a policy map that can be attached to one or more interfaces to specify a service policy.
service-policy	Attaches a policy map to an input interface or VC, or an output interface or VC, to be used as the service policy for that interface or VC.
set dscp	Marks the DSCP value for packets within a traffic class.
show class-map	Displays all class maps and their matching criteria.

match fr-dlci

To specify the Frame Relay data-link connection identifier (DLCI) number as a match criterion in a class map, use the **match fr-dlci** command in class-map configuration mode. To remove a previously specified DLCI number as a match criterion, use the **no** form of this command.

match fr-dlci *dlci-number*

no match fr-dlci *dlci-number*

Syntax Description	<i>dlci-number</i>	Number of the DLCI associated with the packet.
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Defaults	No DLCI number is specified.
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Command Modes	Class-map configuration
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Command History	Release	Modification
	12.2(13)T	This command was introduced.

Usage Guidelines	This match criterion can be used in main interfaces and point-to-multipoint subinterfaces in Frame Relay networks, and it can also be used in hierarchical policy maps.
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Examples	In the following example a class map called “class1” has been created and the Frame Relay DLCI number of 500 has been specified as a match criterion. Packets matching this criterion are placed in class1.
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```
Router(config)# class-map class1
Router(config-cmap)# match fr-dlci 500
Router(config-cmap)# end
```

Related Commands	Command	Description
	show class-map	Displays all class maps and their matching criteria.
	show policy-map interface	Displays the packet statistics of all classes that are configured for all service policies either on the specified interface or subinterface or on a specific PVC on the interface.

match input-interface

To configure a class map to use the specified input interface as a match criterion, use the **match input-interface** command in class-map configuration mode. To remove the input interface match criterion from a class map, use the **no** form of this command.

match input-interface *interface-name*

no match input-interface *interface-name*

Syntax Description

<i>interface-name</i>	Name of the input interface to be used as match criteria.
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Defaults

No match criteria are specified.

Command Modes

Class-map configuration

Command History

Release	Modification
12.0(5)T	This command was introduced.
12.0(5)XE	This command was integrated into Cisco IOS Release 12.0(5)XE.
12.0(7)S	This command was integrated into Cisco IOS Release 12.0(7)S.
12.1(1)E	This command was integrated into Cisco IOS Release 12.1(1)E.

Usage Guidelines

For class-based weighted fair queueing (CBWFQ), you define traffic classes based on match criteria including input interfaces, access control lists (ACLs), protocols, QoS labels, and EXP field values. Packets satisfying the match criteria for a class constitute the traffic for that class.

The **match input-interface** command specifies the name of an input interface to be used as the match criterion against which packets are checked to determine if they belong to the class specified by the class map.

To use the **match input-interface** command, you must first enter the **class-map** command to specify the name of the class whose match criteria you want to establish. After you identify the class, you can use one of the following commands to configure its match criteria:

- **match access-group**
- **match input-interface**
- **match mpls experimental**
- **match protocol**

If you specify more than one command in a class map, only the last command entered applies. The last command overrides the previously entered commands.

Examples

The following example specifies a class map called eth1 and configures the input interface named ethernet1 to be used as the match criterion for this class:

```
class-map ethernet1
 match input-interface ethernet1
```

Related Commands

Command	Description
class-map	Creates a class map to be used for matching packets to a specified class.
match access-group	Configures the match criteria for a class map based on the specified ACL.
match mpls experimental	Configures a class map to use the specified EXP field value as a match criterion.
match protocol	Configures the match criteria for a class map on the basis of the specified protocol.

match ip dscp

The **match ip dscp** command is replaced by the **match dscp** command. See the **match dscp** command for more information.

match ip precedence

The **match ip precedence** command is replaced by the **match precedence** command. See the **match precedence** command for more information.

match ip rtp

To configure a class map to use the Real-Time Protocol (RTP) protocol port as the match criterion, use the **match ip rtp** command in class-map configuration mode. To remove the RTP protocol port match criterion, use the **no** form of this command.

match ip rtp *starting-port-number port-range*

no match ip rtp

Syntax Description

<i>starting-port-number</i>	The starting RTP port number. Values range from 2000 to 65535.
<i>port-range</i>	The RTP port number range. Values range from 0 to 16383.

Defaults

No match criteria are specified.

Command Modes

Class-map configuration

Command History

Release	Modification
12.1(2)T	This command was introduced.

Usage Guidelines

This command is used to match IP RTP packets that fall within the specified port range. It matches packets destined to all even User Datagram Port (UDP) port numbers in the range <starting port range> <starting port range + port range>.

Use of an RTP port range as the match criterion is particularly effective for applications that use RTP, such as voice or video.

Examples

The following example specifies a class map called eth1 and configures the RTP port number 2024 and range 1000 to be used as the match criteria for this class:

```
class-map ethernet1
 match ip rtp 2024 1000
```

Related Commands

Command	Description
ip rtp priority	Reserves a strict priority queue for a set of RTP packet flows belonging to a range of UDP destination ports.
match access-group	Configures the match criteria for a class map based on the specified ACL number.

match mpls experimental

To configure a class map to use the specified value of the experimental (EXP) field as a match criterion, use the **match mpls experimental** command in class-map configuration mode. To remove the EXP field match criterion from a class map, use the **no** form of this command.

match mpls experimental *number*

no match mpls experimental *number*

Syntax Description

<i>number</i>	EXP field value (any number from 0 through 7) to be used as a match criterion. Numbers can be space delimited (for example, 3 4 7).
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Defaults

No match criteria are specified.

Command Modes

Class-map configuration

Command History

Release	Modification
12.0(7)XE1	This command was introduced.
12.1(1)E	This command was integrated into Cisco IOS Release 12.1(1)E.
12.1(5)T	This command was integrated into Cisco IOS Release 12.1(5)T.
12.2(4)T	This command was implemented on the Cisco MGX 8850 switch and the MGX 8950 switch with a Cisco MGX RPM-PR card.
12.2(4)T2	This command was implemented on the Cisco 7500 series.

Usage Guidelines

For class-based weighted fair queueing (CBWFQ), you define traffic classes based on match criteria including input interfaces, access control lists (ACLs), protocols, quality of service (QoS) labels, and EXP field values. Packets satisfying the match criteria for a class constitute the traffic for that class.

The **match mpls experimental** command specifies the name of an EXP field value to be used as the match criterion against which packets are checked to determine if they belong to the class specified by the class map.

To use the **match mpls experimental** command, you must first enter the **class-map** command to specify the name of the class whose match criteria you want to establish. After you identify the class, you can use one of the following commands to configure its match criteria:

- **match access-group**
- **match input-interface**
- **match mpls experimental**
- **match protocol**

If you specify more than one command in a class map, only the last command entered applies. The last command overrides the previously entered commands.

Examples

The following example specifies a class map called eth1 and configures the Multiprotocol Label Switching (MPLS) experimental values of 1 and 2 to be used as the match criterion for this class:

```
Router(config)# class-map ethernet1
Router(config-cmap)# match mpls experimental 1 2
```

Related Commands

Command	Description
class-map	Creates a class map to be used for matching packets to a specified class.
match access-group	Configures the match criteria for a class map based on the specified ACL.
match input-interface	Configures a class map to use the specified input interface as a match criterion.
match protocol	Matches traffic by a particular protocol.
match qos-group	Configures the match criteria for a class map based on the specified protocol.

match mpls experimental topmost

To match the experimental (EXP) value in the topmost label, use the **match mpls experimental topmost** command in class-map configuration mode.

match mpls experimental topmost *value*

Syntax Description

<i>value</i>	Value of the Multiprotocol Label Switching (MPLS) EXP field in the topmost label header. Valid values are 0 to 7.
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Defaults

Packets will not be classified as expected.

Command Modes

Class-map configuration

Command History

Release	Modification
12.2(13)T	This command was introduced.

Usage Guidelines

You can enter this command on the input and the output interfaces. It will match only on MPLS packets.

Examples

The following example shows that the EXP value 3 in the topmost label is matched:

```
match mpls experimental topmost 3
```

Related Commands

Command	Description
set mpls experimental topmost	Sets the MPLS EXP field value in the topmost MPLS label header at the input and/or output interfaces.

match not

To specify the single match criterion value to use as an unsuccessful match criterion, use the **match not** command in class-map configuration mode. To remove a previously specified source value to not use as a match criterion, use the **no match not** form of this command.

match not *match-criteria*

no match not *match-criteria*

Syntax Description

<i>match-criteria</i>	Specifies the match criterion value that is an unsuccessful match criterion. All other values of the specified match criterion will be considered successful match criteria.
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Defaults

No default behavior or values

Command Modes

Class-map configuration

Command History

Release	Modification
12.0(5)XE	This command was introduced.
12.0(5)T	This command was integrated into Cisco IOS Release 12.0(5)T.
12.1(1)E	This command was integrated into Cisco IOS Release 12.1(1)E.

Usage Guidelines

The **match not** command is used to specify a QoS policy value that is not used as a match criterion. When the **match not** command is used, all other values of that QoS policy become successful match criteria.

For instance, if the **match not qos-group 4** command is issued in class-map configuration mode, the specified class will accept all QoS group values except 4 as successful match criteria.

Examples

In the following traffic class, all protocols except IP are considered successful match criteria:

```
Router(config)# class-map noip
Router(config-cmap)# match not protocol ip
Router(config-cmap)# exit
```

Related Commands

Command	Description
class-map	Creates a class map to be used for matching packets to a specified class.

match packet length (class-map)

To specify the Layer 3 packet length in the IP header as a match criterion in a class map, use the **match packet length** command in class-map configuration mode. To remove a previously specified Layer 3 packet length as a match criterion, use the **no** form of this command.

match packet length {**max** *maximum-length-value* [**min** *minimum-length-value*] | **min** *minimum-length-value* [**max** *maximum-length-value*]}

no match packet length {**max** *maximum-length-value* [**min** *minimum-length-value*] | **min** *minimum-length-value* [**max** *maximum-length-value*]}

Syntax Description

max	Maximum. Indicates that a maximum value for the Layer 3 packet length is to be specified.
<i>maximum-length-value</i>	Specifies the maximum length value of the Layer 3 packet length, in bytes. The range is from 1 to 2000.
min	Minimum. Indicates that a minimum value for the Layer 3 packet length is to be specified.
<i>minimum-length-value</i>	Specifies the minimum length value of the Layer 3 packet length, in bytes. The range is from 1 to 2000.

Defaults

If only the minimum value is specified, a packet with a Layer 3 length greater than the minimum is viewed as matching the criterion.

If only the maximum value is specified, a packet with a Layer 3 length less than the maximum is viewed as matching the criterion.

Command Modes

Class-map configuration

Command History

Release	Modification
12.2(13)T	This command was introduced.

Usage Guidelines

This command considers only the Layer 3 packet length in the IP header. It does not consider the Layer 2 packet length in the IP header.

When using this command, you must at least specify the maximum or minimum value. However, you do have the option of entering both values.

Examples

In the following example a class map called “class 1” has been created, and the Layer 3 packet length has been specified as a match criterion. In this example, packets with a minimum Layer 3 packet length of 100 and a maximum Layer 3 packet length of 300 are viewed as meeting the match criteria.

```
Router(config)# class map match-all class1
Router(config-cmap)# match packet length min 100 max 300
```

■ match packet length (class-map)

Related Commands	Command	Description
	show class-map	Displays all class maps and their matching criteria.
	show policy-map interface	Displays the packet statistics of all classes that are configured for all service policies either on the specified interface or subinterface or on a specific PVC on the interface.

match precedence

To identify IP precedence values as match criteria, use the **match precedence** command in class-map configuration mode. To remove IP precedence values from a class map, use the **no** form of this command.

```
match [ip] precedence precedence-value [precedence-value precedence-value precedence-value]
```

```
no match [ip] precedence precedence value [precedence-value precedence-value precedence-value]
```

Syntax Description	ip	(Optional) Specifies that the match is for IPv4 packets only. If not used, the match is on both the IPv4 and IPv6 packets.
	<i>precedence-value</i>	Specifies the exact value from 0 to 7 used to identify a precedence value.

Defaults Matching on both IPv4 and IPv6 packets is the default.

Command Modes Class-map configuration

Command History	Release	Modification
	12.2(13)T	This command was introduced.

Usage Guidelines

Precedence Value Arguments

Up to four precedence values can be matched in one match statement. For example, if you wanted the precedence values of 0, 1, 2, or 3 (note that only one of the precedence values must be a successful match criterion, not all of the specified precedence values), enter the **match ip precedence 0 1 2 3** command. The *precedence-value* arguments are used as markings only. In this context, the IP precedence values have no mathematical significance. For instance, the *precedence-value* of 2 is not greater than 1. The value simply indicates that a packet marked with the *precedence-value* of 2 is different from a packet marked with the *precedence-value* of 1. The treatment of these different packets is defined by the user through the setting of QoS policies in policy-map class configuration mode.

Match on Precedence for IPv6 Only

To match on precedence values for IPv6 packets only, the **match protocol ipv6** command must also be used. Without that command, the precedence match defaults to match both IPv4 and IPv6 packets.

Match on Precedence for IPv4 Packets Only

To match on precedence values for IPv4 packets only, use the **ip** keyword. Without the **ip** keyword, the match occurs on both IPv4 and IPv6 packets.

Examples

IPv4-Specific Traffic Match

The following example shows how to configure the service policy called “priority50” and attach service policy “priority50” to an interface, matching for IPv4 traffic only. In a network where both IPv4 and IPv6 are running, you might find it necessary to distinguish between the protocols for matching and traffic segregation. In this example, the class map called “ipprec5” will evaluate all IPv4 packets entering Fast Ethernet interface 1/0/0 for a precedence value of 5. If the incoming IPv4 packet has been marked with the precedence value of 5, the packet will be treated as priority traffic and will be allocated with bandwidth of 50 kbps.

```
Router(config)# class-map ipprec5
Router(config-cmap)# match ip precedence 5
Router(config)# exit
Router(config)# policy-map priority50
Router(config-pmap)# class ipprec5
Router(config-pmap-c)# priority 50
Router(config-pmap-c)# exit
Router(config-pmap)# exit
Router(config)# interface fastethernet1/0/0
Router(config-if)# service-policy input priority50
```

IPv6-Specific Traffic Match

The following example shows the same service policy matching on precedence for IPv6 traffic only. Notice that the **match protocol** command with the **ipv6** keyword precedes the **match precedence** command. The **match protocol** command is required to perform matches on IPv6 traffic alone.

```
Router(config)# class-map ipprec5
Router(config-cmap)# match protocol ipv6
Router(config-cmap)# match precedence 5
Router(config)# exit
Router(config)# policy-map priority50
Router(config-pmap)# class ipprec5
Router(config-pmap-c)# priority 50
Router(config-pmap-c)# exit
Router(config-pmap)# exit
Router(config)# interface fastethernet1/0/0
Router(config-if)# service-policy input priority50
```

Related Commands

Command	Description
class-map	Creates a class map to be used for matching packets to a specified class.
policy-map	Creates or modifies a policy map that can be attached to one or more interfaces to specify a service policy.
service-policy	Attaches a policy map to an input interface or VC, or an output interface or VC, to be used as the service policy for that interface or VC.
set ip precedence	Sets the precedence value in the IP header.
show class-map	Displays all class maps and their matching criteria, or a specified class map and its matching criteria.

match protocol

To configure the match criteria for a class map on the basis of the specified protocol, use the **match protocol** command in class-map configuration mode. To remove protocol-based match criteria from a class map, use the **no** form of this command.

match protocol *protocol-name*

no match protocol *protocol-name*

Syntax Description	<i>protocol-name</i>	Name of the protocol used as a matching criterion. Supported protocols include the following:
		<ul style="list-style-type: none"> • aarp—AppleTalk Address Resolution Protocol • arp—IP Address Resolution Protocol (ARP) • bridge—bridging • bstun—Block Serial Tunneling • cdp—Cisco Discovery Protocol • clns—ISO Connectionless Network Service • clns_es—ISO CLNS End System • clns_is—ISO CLNS Intermediate System • cmns—ISO Connection-Mode Network Service • compressedtcp—compressed TCP • decnet—DECnet • decnet_node—DECnet Node • decnet_router-I1—DECnet Router L1 • decnet_router-I2—DECnet Router L2 • dls—data-link switching • ip—IP • ipv6—IPv6 • ipx—Novell IPX • llc2—llc2 • pad—packet assembler/disassembler links • qlc—Qualified Logical Link Control protocol • rsrb—remote source-route bridging • snapshot—snapshot routing support • stun—serial tunnel

Defaults No default behavior or values

Command Modes Class-map configuration

Command History	Release	Modification
	12.0(5)T	This command was introduced.
	12.0(5)XE	This command was integrated into Cisco IOS Release 12.0(5)XE.
	12.0(7)S	This command was integrated into Cisco IOS Release 12.0(7)S.
	12.1(1)E	This command was integrated into Cisco IOS Release 12.1(1)E.
	12.1(13)E	This command was implemented on Catalyst 6000 family switches without FlexWAN modules.
	12.2(8)T	This command was integrated into Cisco IOS Release 12.2(8)T.
	12.2(13)T	This command was modified to remove apollo, vines, and xns from the list of protocols used as matching criteria. These protocols were removed because Apollo Domain, Banyan VINES, and Xerox Network Systems (XNS) were removed in Release 12.2(13)T. In addition, the ipv6 keyword was added to support protocol matching on IPv6 packets.

Usage Guidelines For class-based weighted fair queueing (CBWFQ), you define traffic classes based on match criteria including protocols, access control lists (ACLs), input interfaces, QoS labels, and EXP field values. Packets satisfying the match criteria for a class constitute the traffic for that class.

The **match protocol** command specifies the name of a protocol to be used as the match criteria against which packets are checked to determine if they belong to the class specified by the class map.

To use the **match protocol** command, you must first enter the **class-map** command to specify the name of the class whose match criteria you want to establish. After you identify the class, you can use one of the following commands to configure its match criteria:

- **match access-group**
- **match input-interface**
- **match mpls experimental**
- **match protocol**

If you specify more than one command in a class map, only the last command entered applies. The last command overrides the previously entered commands.

This command can be used to match protocols that are known to the network-based application recognition (NBAR) feature. For a list of protocols currently supported by NBAR, refer to the “Classification” section of the *Cisco IOS Quality of Service Solutions Configuration Guide*.

Examples The following example specifies a class map called ipx and configures the Internetwork Packet Exchange (IPX) protocol as a match criterion for it:

```
class-map ipx
  match protocol ipx
```

The following example configures NBAR to match FTP traffic:

```
match protocol ftp
```

Related Commands

Command	Description
class-map	Creates a class map to be used for matching packets to a specified class.
match access-group	Configures the match criteria for a class map based on the specified ACL.
match input-interface	Configures a class map to use the specified input interface as a match criterion.
match qos-group	Configures a class map to use the specified EXP field value as a match criterion.

match protocol citrix

To configure network-based application recognition (NBAR) to match Citrix traffic, use the **match protocol citrix** command in class-map configuration mode. To disable NBAR from matching Citrix traffic, use the **no** form of this command.

match protocol citrix [**app** *application-name-string*]

no match protocol citrix [**app** *application-name-string*]

Syntax Description

app	(Optional) Specifies matching of an application name string.
<i>application-name-string</i>	(Optional) Specifies string to be used as the subprotocol parameter.

Defaults

No match criteria are specified.

Command Modes

Class-map configuration

Command History

Release	Modification
12.1(2)E	This command was introduced.
12.1(5)T	This command was integrated into Cisco IOS Release 12.1(5)T.
12.1(13)E	This command was implemented on Catalyst 6000 family switches without FlexWAN modules.

Usage Guidelines

Entering the **match protocol citrix** command without the **app** keyword establishes all Citrix traffic as successful match criteria.

Examples

The following example configures NBAR to match all Citrix traffic:

```
match protocol citrix
```

The following example configures NBAR to match Citrix traffic with the application name of packet1:

```
match protocol citrix app packet1
```

match protocol http

To configure network-based application recognition (NBAR) to match HTTP traffic by URL, HOST, or Multipurpose Internet Mail Extension (MIME)-type, use the **match protocol http** command in class-map configuration mode. To disable NBAR from matching HTTP traffic by URL, HOST, or MIME-type, use the **no** form of this command.

```
match protocol http [url url-string | host hostname-string | mime MIME-type]
```

```
no match protocol http [url url-string | host hostname-string | mime MIME-type]
```

Syntax Description		
url	(Optional)	Specifies matching by a URL.
<i>url-string</i>	(Optional)	User-specified URL of HTTP traffic to be matched.
host	(Optional)	Specifies matching by a host name.
<i>hostname-string</i>	(Optional)	User-specified host name to be matched.
mime	(Optional)	Specifies matching by MIME text string.
<i>MIME-type</i>	(Optional)	User-specified MIME text string to be matched.

Defaults No match criteria are specified.

Command Modes Class-map configuration

Command History	Release	Modification
	12.0(5)XE2	This command was introduced.
	12.1(1)E	This command was integrated into Cisco IOS Release 12.1(1)E.
	12.1(2)E	The <i>hostname-string</i> argument was added.
	12.1(5)T	This command was integrated into Cisco IOS Release 12.1(5)T.
	12.1(13)E	This command was implemented on Catalyst 6000 family switches without FlexWAN modules.

Usage Guidelines When matching by MIME-type, the MIME-type can contain any user-specified text string. Refer to the the Internet Assigned Numbers Authority (IANA) web page (www.iana.com) for a list of the IANA-registered MIME types.

When matching by MIME-type is performed, NBAR matches a packet containing the MIME-type and all subsequent packets until the next HTTP transaction.

When matching by HOST is performed, NBAR performs a regular expression match on the host field contents inside an HTTP GET packet and classifies all packets from that host.

HTTP URL matching supports GET, PUT, HEAD, POST, DELETE, and TRACE. When matching by URL, NBAR recognizes the HTTP packets containing the URL, and then matches all packets that are part of the HTTP request. When specifying a URL for classification, include only the portion of the URL following `www.hostname.domain` in the match statement. For example, in the URL `www.anydomain.com/latest/whatsnew.html` include only `/latest/whatsnew.html`.

To match the `www.anydomain.com` portion, use the host name matching feature. The URL or host specification strings can take the form of a regular expression with options shown in [Table 7](#).

Table 7 URL or HOST Specification String Options

Options	Description
*	Match any zero or more characters in this position.
?	Match any one character in this position.
	Match one of a choice of characters.
()	Match one of a choice of characters in a range. For example, <code>xyz.(gif jpg)</code> matches either <code>xyz.gif</code> or <code>xyz.jpg</code> .
[]	Match any character in the range specified, or one of the special characters. For example, <code>[0-9]</code> is all of the digits; <code>[*]</code> is the “*” character, and <code>[[]</code> is the “[“ character.

Examples

The following example classifies, within the class map called “class1,” HTTP packets based on any URL containing the string “whatsnew/latest” followed by zero or more characters:

```
class-map class1
match protocol http url whatsnew/latest*
```

The following example classifies, within the class map called “class2,” packets based on any host name containing the string “cisco” followed by zero or more characters:

```
class-map class2
match protocol http host cisco*
```

The following example classifies, within the class map called “class3,” packets based on the Joint Photographic Experts Group (JPEG) MIME type:

```
class-map class3
match protocol http mime "*jpeg"
```

match protocol rtp

To configure network-based application recognition (NBAR) to match Real-Time Transfer Protocol (RTP) traffic, use the **match protocol rtp** command in class-map configuration mode. To disable NBAR from matching RTP traffic, use the **no** form of this command.

match protocol rtp [**audio** | **video** | **payload-type** *payload-string*]

no match protocol rtp [**audio** | **video** | **payload-type** *payload-string*]

Syntax Description

audio	(Optional) Specifies matching by audio payload-type values in the range of 0 to 23. These payload-type values are reserved for audio traffic.
video	(Optional) Specifies matching by video payload-type values in the range of 24 to 33. These payload-type values are reserved for video traffic.
payload-type	(Optional) Specifies matching by a specific payload-type value, providing more granularity than is available with the audio or video keywords.
<i>payload-string</i>	(Optional) User-specified string that contains the specific payload-type values. A <i>payload-string</i> argument can contain commas to separate payload-type values and hyphens to indicate a range of payload-type values. A <i>payload-string</i> argument can be specified in hexadecimal (prepend 0x to the value) and binary (prepend b to the value) notation in addition to standard number values.

Defaults

No match criteria are specified.

Command Modes

Class-map configuration

Command History

Release	Modification
12.2(8)T	This command was introduced.
12.1(11b)E	This command was incorporated into the Cisco IOS Release 12.1(11b)E.
12.1(13)E	This command was implemented on Catalyst 6000 family switches without FlexWAN modules.

Usage Guidelines

Entering the **match protocol rtp** command without any other keywords establishes all RTP traffic as successful match criteria.

RTP is a packet format for multimedia data streams. It can be used for media-on-demand as well as interactive services such as Internet telephony. RTP consists of a data and a control part. The control part is called Real-Time Transport Control Protocol (RTCP). It is important to note that the NBAR RTP Payload Classification feature does not identify RTCP packets and that RTCP packets run on odd-numbered ports while RTP packets run on even-numbered ports.

The payload type field of an RTP packet identifies the format of the RTP payload and is represented by a number. NBAR matches RTP traffic on the basis of this field in the RTP packet. A working knowledge of RTP and RTP payload types is helpful if you want to configure NBAR to match RTP traffic. For more information about RTP and RTP payload types, refer to RFC 1889, *RTP: A Transport Protocol for Real-Time Applications*.

Examples

The following example configures NBAR to match all RTP traffic:

```
class-map class1
  match protocol rtp
```

The following example configures NBAR to match RTP traffic with the payload-types 0, 1, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, and 64:

```
class-map class2
  match protocol rtp payload-type "0, 1, 4-0x10, 10001b-10010b, 64"
```

match qos-group

To identify a specific quality of service (QoS) group value as a match criterion, use the **match qos-group** command in class-map configuration mode. To remove a specific QoS group value from a class map, use the **no** form of this command.

match qos-group *qos-group-value*

no match qos-group *qos-group-value*

Syntax Description	<i>qos-group-value</i>	Specifies the exact value from 0 to 99 used to identify a QoS group value.
---------------------------	------------------------	--

Defaults	No match criteria are specified.
-----------------	----------------------------------

Command Modes	Class-map configuration
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Command History	Release	Modification
	11.1 CC	This command was introduced.
12.05(XE)	This command was incorporated into Cisco IOS Release 12.0(5)XE.	
12.2(13)T	This command was integrated into Cisco IOS Release 12.2(13)T. This command can be used with the random-detect discard-class-based command.	

Usage Guidelines	<p>The match qos-group command is used by the class map to identify a specific QoS group value marking on a packet. This command can also be used to convey the received Multiprotocol Label Switching (MPLS) experimental (EXP) field value to the output interface.</p>
-------------------------	--

The *qos-group-value* arguments are used as markings only. The QoS group values have no mathematical significance. For instance, the *qos-group-value* of 2 is not greater than 1. The value simply indicates that a packet marked with the *qos-group-value* of 2 is different than a packet marked with the *qos-group-value* of 1. The treatment of these packets is defined by the user through the setting of QoS policies in policy-map class configuration mode.

The QoS group value is local to the router, meaning that the QoS group value that is marked on a packet does not leave the router when the packet leaves the router. If you need a marking that resides in the packet, use IP precedence setting, IP differentiated services code point (DSCP) setting, or another method of packet marking.

Examples	<p>The following example shows how to configure the service policy called “priority50” and attach service policy “priority50” to an interface. In this example, the class map called “qosgroup5” will evaluate all packets entering Fast Ethernet interface 1/0/0 for a QoS group value of 5. If the incoming packet has been marked with the QoS group value of 5, the packet will be treated with a priority level of 50.</p>
-----------------	---

```
Router(config)# class-map qosgroup5
Router(config-cmap)# match qos-group 5
```

```

Router(config)# exit
Router(config)# policy-map priority50
Router(config-pmap)# class qosgroup5
Router(config-pmap-c)# priority 50
Router(config-pmap-c)# exit
Router(config-pmap)# exit
Router(config)# interface fastethernet1/0/0
Router(config-if)# service-policy output priority50

```

The following example shows that the packet named “qos-group 1” belongs to a particular class:

```
match qos-group 1
```

Related Commands

Command	Description
class-map	Creates a class map to be used for matching packets to a specified class.
policy-map	Creates or modifies a policy map that can be attached to one or more interfaces to specify a service policy.
service-policy	Attaches a policy map to an input interface or VC, or an output interface or VC, to be used as the service policy for that interface or VC.
set precedence	Specifies an IP precedence value for packets within a traffic class.
set qos-group	Sets a group ID that can be used later to classify packets.

match source-address mac

To use the source MAC address as a match criterion, use the **match source-address mac** command in class-map configuration mode. To remove a previously specified source MAC address as a match criterion in class-map configuration mode, use the **no** form of this command.

match source-address mac *address-destination*

no match source-address mac *address-destination*

Syntax Description	<i>address-destination</i>	Specifies the source destination MAC address to be used as a match criterion.
---------------------------	----------------------------	---

Defaults	No default behavior or values
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Command Modes	Class-map configuration
----------------------	-------------------------

Command History	Release	Modification
	12.0(5)XE	This command was introduced.
12.1(1)E	This command was integrated into Cisco IOS Release 12.1(1)E.	
12.1(5)T	This command was integrated into Cisco IOS Release 12.1(5)T.	

Usage Guidelines	<p>This command can be used only on an input interface with a MAC address. These interfaces include Fast Ethernet and Ethernet interfaces.</p> <p>This command cannot be used on output interfaces with no MAC address, such as serial and ATM interfaces.</p>
-------------------------	--

Examples	The following example uses the MAC address mac 0.0.0 as a match criterion:
-----------------	--

```
class-map matchsrcmac
  match source-address mac 0.0.0
```

Related Commands	Command	Description
	class-map	Creates a class map to be used for matching packets to a specified class.

max-reserved-bandwidth

To change the percent of interface bandwidth allocated for Resource Reservation Protocol (RSVP), class-based weighted fair queueing (CBWFQ), low latency queueing (LLQ), IP RTP Priority, Frame Relay IP RTP Priority, and Frame Relay PVC Interface Priority Queueing (PIPQ), use the **max-reserved-bandwidth** command in interface configuration mode. To restore the default value, use the **no** form of this command.

max-reserved-bandwidth *percent*

no max-reserved-bandwidth

Syntax Description	<i>percent</i>	Percent of interface bandwidth allocated for RSVP, CBWFQ, LLQ, IP RTP Priority, Frame Relay IP RTP Priority, and Frame Relay PIPQ.
---------------------------	----------------	--

Defaults	75 percent
-----------------	------------

Command Modes	Interface configuration
----------------------	-------------------------

Command History	Release	Modification
	12.0(5)T	This command was introduced.

Usage Guidelines

The sum of all bandwidth allocation on an interface should not exceed 75 percent of the available bandwidth on an interface. The remaining 25 percent of bandwidth is used for overhead, including Layer 2 overhead, control traffic, and best-effort traffic.

If you need to allocate more than 75 percent for RSVP, CBWFQ, LLQ, IP RTP Priority, Frame Relay IP RTP Priority, and Frame Relay PIPQ, you can use the **max-reserved-bandwidth** command. The *percent* argument specifies the maximum percentage of the total interface bandwidth that can be used.

If you do use the **max-reserved-bandwidth** command, make sure that not too much bandwidth is taken away from best-effort and control traffic.

Examples

In the following example, the policy map called policy1 is configured for three classes with a total of 8 Mbps configured bandwidth, as shown in the output from the **show policy-map** command:

```
Router# show policy-map policy1

Policy Map policy1
  Weighted Fair Queueing
    Class class1
      Bandwidth 2500 (kbps) Max Threshold 64 (packets)
    Class class2
      Bandwidth 2500 (kbps) Max Threshold 64 (packets)
    Class class3
      Bandwidth 3000 (kbps) Max Threshold 64 (packets)
```

When you enter the **service-policy** command in an attempt to attach the policy map on a 10-Mbps Ethernet interface, an error message such as the following is produced:

```
I/f Ethernet1/1 class class3 requested bandwidth 3000 (kbps) Available only 2500 (kbps)
```

The error message is produced because the default maximum configurable bandwidth is 75 percent of the available interface bandwidth, which in this example is 7.5 Mbps. To change the maximum configurable bandwidth to 80 percent, use the **max-reserved-bandwidth** command in interface configuration mode, as follows:

```
max-reserved-bandwidth 80
service output policy1
end
```

To verify that the policy map was attached, enter the **show policy-map interface** command:

```
Router# show policy-map interface e1/1

Ethernet1/1 output :policy1
  Weighted Fair Queueing
    Class class1
      Output Queue:Conversation 265
        Bandwidth 2500 (kbps) Packets Matched 0 Max Threshold 64 (packets)
        (discards/tail drops) 0/0
    Class class2
      Output Queue:Conversation 266
        Bandwidth 2500 (kbps) Packets Matched 0 Max Threshold 64 (packets)
        (discards/tail drops) 0/0
    Class class3
      Output Queue:Conversation 267
        Bandwidth 3000 (kbps) Packets Matched 0 Max Threshold 64 (packets)
        (discards/tail drops) 0/0
```

Virtual Template Configuration Example

The following example configures a strict priority queue in a virtual template configuration with CBWFQ. The **max-reserved-bandwidth** command changes the maximum bandwidth allocated between CBWFQ and IP RTP Priority from the default (75 percent) to 80 percent.

```
multilink virtual-template 1
interface virtual-template 1
  ip address 172.16.1.1 255.255.255.0
  no ip directed-broadcast
  ip rtp priority 16384 16383 25
  service-policy output policy1
  ppp multilink
  ppp multilink fragment-delay 20
  ppp multilink interleave
  max-reserved-bandwidth 80
end

interface Serial0/1
  bandwidth 64
  ip address 10.1.1.2 255.255.255.0
  no ip directed-broadcast
  encapsulation ppp
  ppp multilink
end
```

**Note**

To make the virtual access interface function properly, do not configure the **bandwidth** command on the virtual template. Configure it on the actual interface, as shown in the example.

Related Commands

Command	Description
bandwidth (policy-map class)	Specifies or modifies the bandwidth allocated for a class belonging to a policy map.
ip rtp priority	Reserves a strict priority queue for a set of RTP packet flows belonging to a range of UDP destination ports.
service-policy	Attaches a policy map to an input interface or VC, or an output interface or VC, to be used as the service policy for that interface or VC.
show policy-map	Displays the configuration of all classes comprising the specified service policy map or all classes for all existing policy maps.
show policy-map interface	Displays the configuration of all classes configured for all service policies on the specified interface or displays the classes for the service policy for a specific PVC on the interface.

mpls experimental

To configure Multiprotocol Label Switching (MPLS) experimental (EXP) levels for a virtual circuit (VC) class that can be assigned to a VC bundle and thus applied to all VC members of that bundle, use the **mpls experimental** command in `vc-class` configuration mode. To remove the MPLS EXP levels from the VC class, use the **no** form of this command.

To configure the MPLS EXP levels for a VC member of a bundle, use the **mpls experimental** command in `bundle-vc` configuration mode. To remove the MPLS EXP levels from the VC, use the **no** form of this command.

mpls experimental [**other** | *range*]

no mpls experimental

Syntax Description	other	(Optional) Any MPLS EXP levels that are not explicitly configured.
	<i>range</i>	(Optional) A single MPLS EXP level specified as a number from 0 to 7, or a range of levels, specified as a hyphenated range.

Defaults

Defaults to **other**, that is, any MPLS EXP levels that are not explicitly configured.

Command Modes

VC-class configuration (for a VC class)

Bundle-vc configuration (for ATM VC bundle members)

Command History

Release	Modification
12.2(8)T	This command was introduced.

Usage Guidelines

Assignment of MPLS EXP levels to VC bundle members allows you to create differentiated service because you can distribute the MPLS EXP levels over the different VC bundle members. You can map a single level or a range of levels to each discrete VC in the bundle, thereby enabling VCs in the bundle to carry packets marked with different levels. Alternatively, you can configure a VC with the **mpls experimental other** command to indicate that it can carry traffic marked with levels not specifically configured for it. Only one VC in the bundle can be configured with the **mpls experimental other** command to carry all levels not specified. This VC is considered the default one.

To use this command in `vc-class` configuration mode, enter the **vc-class atm** global configuration command before you enter this command. This command has no effect if the VC class that contains the command is attached to a standalone VC, that is, if the VC is not a bundle member.

To use this command to configure an individual bundle member in `bundle-vc` configuration mode, first enter the **bundle** command to enact bundle configuration mode for the bundle to which you want to add or modify the VC member to be configured. Then, use the **pvc-bundle** command to specify the VC to be created or modified and enter `bundle-vc` configuration mode.

VCs in a VC bundle are subject to the following configuration inheritance guidelines (listed in order of next highest MPLS EXP level):

- VC configuration in bundle-vc mode
- Bundle configuration in bundle mode (with the effect of assigned vc-class configuration)
- Subinterface configuration in subinterface mode

**Note**

If you are using an ATM interface, you must configure all MPLS EXP levels (ranging from 0 to 7) for the bundle. To do this, Cisco recommends configuring one member of the bundle with the **mpls experimental other** command. The **other** keyword defaults to any MPLS EXP levels in the range from 0 to 7 that are not explicitly configured.

Examples

The following example configures a class called “control-class” that includes the **mpls experimental** command that, when applied to a bundle, configures all VC members of that bundle to carry MPLS EXP level 7 traffic. Note, however, that VC members of that bundle can be individually configured with the **mpls experimental** command at the bundle-vc level, which would supervene.

```
vc-class atm control-class
  mpls experimental 7
```

The following example configures permanent virtual circuit (PVC) 401 (with the name “control-class”) to carry traffic with MPLS EXP levels in the range of 4 to 2, overriding the level mapping set for the VC through vc-class configuration:

```
pvc-bundle control-class 401
  mpls experimental 4-2
```

Related Commands

Command	Description
bump	Configures the bumping rules for a VC class that can be assigned to a VC bundle.
bundle	Creates a bundle or modifies an existing bundle to enter bundle configuration mode.
class-vc	Assigns a VC class to an ATM PVC, SVC, or VC bundle member.
protect	Configures a VC or PVC class with protected group or protected VC/PVC status for application to a VC/PVC bundle member.
pvc-bundle	Adds a PVC to a bundle as a member of the bundle and enters bundle-vc configuration mode in order to configure that PVC bundle member.
ubr	Configures UBR QoS and specifies the output PCR for an ATM PVC, PVC range, SVC, VC class, or VC bundle member.
vbr-nrt	Configures the VBR-NRT QoS and specifies output peak cell rate, output sustainable cell rate, and output maximum burst cell size for an ATM PVC, SVC, VC class, or VC bundle member.
vc-class atm	Configures a VC class for an ATM VC or interface.