AX8600R Software Manual

Operation Command Reference Vol. 2

For Version 12.1

AX86R-S008X

AlaxalA

■ Relevant products

This manual applies to the models in the AX8600R series of devices. It also describes the functionality of version 12.1 of the software for the AX8600R series of devices.

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■ Reading and storing this manual

Before you use the equipment, carefully read the manual and make sure that you understand all safety precautions.

After reading the manual, keep it in a convenient place for easy reference.

■ Notes

Information in this document is subject to change without notice.

■ Editions history

August 2013 (Edition 1) AX86R-S008X

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Preface

Applicable products and software versions

This manual applies to the models in the AX8600R series of devices. It also describes the functionality of version 12.1 of the software for the AX8600R series of devices.

Before you operate the equipment, carefully read the manual and make sure that you understand all instructions and cautionary notes. After reading the manual, keep it in a convenient place for easy reference.

Corrections to the manual

Corrections to this manual might be contained in the *Release Notes* and *Manual Corrections* that come with the software.

Intended readers

This manual is intended for system administrators who wish to configure and operate a network system that uses the Device.

Readers must have an understanding of the following:

- The basics of network system management

Manual URL

You can view this manual on our website at:

http://www.alaxala.com/en/

Reading sequence of the manuals

The following shows the manuals you need to consult according to your requirements determined from the following workflow for installing, setting up, and starting regular operation of the Device.

- **Unpacking the Device and the basic settings for initial installation**

  Quick Start Guide (AX86R-Q001X)

- **Determining the hardware setup requirements and how to handle the hardware**

  Hardware Instruction Manual (AX86R-H001X)

- **Understanding the software functions, configuration settings, and operation commands**

  ▽ First, see the following guides to check the functions or capacity limits.

  - Capacity limits
  - Basic operations (e.g. logging in)
  - Ethernet
  - Filters and QoS
  - Network management
  - IP packet forwarding
  - Unicast routing
  - Multicast routing

  Configuration Guide Vol. 1 (AX86R-S001X)
  Configuration Guide Vol. 2 (AX86R-S002X)
  Configuration Guide Vol. 3 (AX86R-S003X)

  ▽ If necessary, see the following references.

  - Learning the syntax of commands and the details of command parameters

  Configuration Command Reference Vol. 1 (AX86R-S004X)
  Configuration Command Reference Vol. 2 (AX86R-S005X)
  Configuration Command Reference Vol. 3 (AX86R-S006X)

  Operation Command Reference Vol. 1 (AX86R-S007X)
  Operation Command Reference Vol. 2 (AX86R-S008X)
  Operation Command Reference Vol. 3 (AX86R-S009X)

  - Understanding system messages and logs

  Message and Log Reference (AX86R-S010X)

  - Understanding MIBs

  MIB Reference (AX86R-S011X)

- **How to troubleshoot when a problem occurs**

  Troubleshooting Guide (AX86R-T001X)

Conventions: The terms "Device" and "device"

The term Device (upper-case "D") is an abbreviation for the following:

AX8600R series device

The term device (lower-case "d") might refer to a Device, another type of device from the current vendor, or a device from another vendor. The context decides the meaning.

Abbreviations used in the manual

AC	Alternating Current
ACK	ACKnowledge
ARP	Address Resolution Protocol
AS	Autonomous System
AUX	Auxiliary
BCU	Basic Control Unit

BEQ	Best Effort Queueing
BGP	Border Gateway Protocol
BGP4	Border Gateway Protocol - version 4
BGP4+	Multiprotocol Extensions for Border Gateway Protocol - version 4
bit/s	bits per second (can also appear as bps)
BOOTP	Bootstrap Protocol
BPDU	Bridge Protocol Data Unit
CC	Continuity Check
CCM	Continuity Check Message
CFM	Connectivity Fault Management
CFP	C Form-factor Pluggable
CIDR	Classless Inter-Domain Routing
CoS	Class of Service
CRC	Cyclic Redundancy Check
CSMA/CD	Carrier Sense Multiple Access with Collision Detection
DA	Destination Address
DC	Direct Current
DCE	Data Circuit terminating Equipment
DHCP	Dynamic Host Configuration Protocol
DHCPv6	Dynamic Host Configuration Protocol for IPv6
DNS	Domain Name System
DR	Designated Router
DSAP	Destination Service Access Point
DSCP	Differentiated Services Code Point
DTE	Data Terminal Equipment
E-mail	Electronic mail
EAP	Extensible Authentication Protocol
EAPOL	EAP Over LAN
EFM	Ethernet in the First Mile
ETH-AIS	Ethernet Alarm Indicator Signal
ETH-LCK	Ethernet Locked Signal
FAN	Fan Unit
FCS	Frame Check Sequence
GSRP	Gigabit Switch Redundancy Protocol
HMAC	Keyed-Hashing for Message Authentication
IANA	Internet Assigned Numbers Authority
ICMP	Internet Control Message Protocol
ICMPv6	Internet Control Message Protocol version 6
ID	Identifier
IEEE	Institute of Electrical and Electronics Engineers, Inc.
IETF	the Internet Engineering Task Force
IGMP	Internet Group Management Protocol
IP	Internet Protocol
IPv4	Internet Protocol version 4
IPv6	Internet Protocol version 6
IPX	Internetwork Packet Exchange
ISO	International Organization for Standardization
ISP	Internet Service Provider
LAN	Local Area Network
LCD	Liquid Crystal Display
LED	Light Emitting Diode
LLC	Logical Link Control
LLDP	Link Layer Discovery Protocol
LLQ	Low Latency Queueing
LSA	Link State Advertisement
MA	Maintenance Association
MAC	Media Access Control
MC	Memory Card
MD5	Message Digest 5
MDI	Medium Dependent Interface
MDI-X	Medium Dependent Interface crossover
MEG	Maintenance Entity Group
MEP	Maintenance association End Point/Maintenance entity group End Point
MIB	Management Information Base
MIP	Maintenance domain Intermediate Point
MP	Maintenance Point

MRU	Maximum Receive Unit
MTU	Maximum Transfer Unit
NAK	Not AcKnowledge
NAS	Network Access Server
NBMA	Non-Broadcast Multiple-Access
NDP	Neighbor Discovery Protocol
NIF	Network Interface
NLA ID	Next-Level Aggregation Identifier
NSAP	Network Service Access Point
NSSA	Not So Stubby Area
NTP	Network Time Protocol
OAM	Operations,Administration,and Maintenance
OSPF	Open Shortest Path First
OUI	Organizationally Unique Identifier
PA	Protocol Accelerator
packet/s	packets per second (can also appear as pps)
PAD	PADding
PC	Personal Computer
PDU	Protocol Data Unit
PID	Protocol IDentifier
PIM	Protocol Independent Multicast
PIM-SM	Protocol Independent Multicast-Sparse Mode
PIM-SSM	Protocol Independent Multicast-Source Specific Multicast
PQ	Priority Queueing
PRU	Packet Routing Unit
PS	Power Supply
PSINPUT	Power Supply Input
QoS	Quality of Service
RA	Router Advertisement
RADIUS	Remote Authentication Dial In User Service
RDI	Remote Defect Indication
RFC	Request For Comments
RIP	Routing Information Protocol
RIPng	Routing Information Protocol next generation
RMON	Remote Network Monitoring MIB
RPF	Reverse Path Forwarding
RR	Round Robin
RQ	ReQuest
SA	Source Address
SD	Secure Digital
SFD	Start Frame Delimiter
SFP	Small Form factor Pluggable
SFP+	Small Form factor Pluggable Plus
SFU	Switch Fabric Unit
SMTP	Simple Mail Transfer Protocol
SNAP	Sub-Network Access Protocol
SNMP	Simple Network Management Protocol
SNPA	Subnetwork Point of Attachment
SOP	System Operational Panel
SPF	Shortest Path First
SSAP	Source Service Access Point
TA	Terminal Adapter
TACACS+	Terminal Access Controller Access Control System Plus
TCP/IP	Transmission Control Protocol/Internet Protocol
TLV	Type, Length, and Value
TOS	Type Of Service
TPID	Tag Protocol Identifier
TTL	Time To Live
UDP	User Datagram Protocol
URL	Uniform Resource Locator
uRPF	unicast Reverse Path Forwarding
VLAN	Virtual LAN
VPN	Virtual Private Network
VRF	Virtual Routing and Forwarding/Virtual Routing and Forwarding Instance
VRRP	Virtual Router Redundancy Protocol
WAN	Wide Area Network

```
WFQ          Weighted Fair Queueing
WWW          World-Wide Web
```

Conventions: KB, MB, GB, and TB

This manual uses the following conventions: 1 KB (kilobyte) is 1024 bytes. 1 MB (megabyte) is 1024^2 bytes. 1 GB (gigabyte) is 1024^3 bytes. 1 TB (terabyte) is 1024^4 bytes.

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Chapter 1. Reading the Manual

Command description format
Specifiable values for parameters
List of character codes
Error messages displayed by the entry-error location detection functionality

Command description format

Each command is described in the following format:

Function

Describes the purpose of the command.

Syntax

Defines the input format of the command. The format is governed by the following rules:

1. Parameters for setting values or character strings are enclosed in angle brackets (<>).
2. Characters that are not enclosed in angle brackets (<>) are keywords that must be typed exactly as they appear.
3. {A|B} indicates that either A or B must be selected.
4. Parameters or keywords enclosed in square brackets ([]) are optional and can be omitted.
5. For details on the parameter input format, see *Specifiable values for parameters*.

Input mode

Indicates the mode required to enter the command.

Parameters

Describes in detail the parameters that can be set by the command. For details on the behavior of a command when all omissible parameters are omitted, see *Operation when all parameters are omitted*.

For details on the behavior when only a specific parameter is omitted, see *Operation when this parameter is omitted*. For details on the behavior when each parameter is omitted, see *Operation when each parameter is omitted*.

Example

Provides examples of appropriate command usage.

Display items

Describes the display items generated by the example.

The following table describes the Date display items displayed immediately after the command in the example is executed.

Table 1-1: Display of the time the command was received

Item	Displayed information
Date	*yyyy/mm/dd hh:mm:ss timezone* year/month/day hour:minute:second time zone The time the command was accepted is displayed.

The Device assigns names to corresponding interfaces set by configuration. When displaying the execution results of a command, the Device uses the port name to display information for Layer 1 or 2, and uses the Layer 3 interface name to display information for Layer 3. If <*interface name*> is shown in *Display items*, the Device displays any of the interface names shown in the following table.

Table 1-2: List of interface names assigned for input format

Input format	Interface name *<interface name>*		
	Port name	**Layer 3 interface name**	**Numeric value**
interface gigabitethernet	geth1/1	Eth1/1	*<nif no.>/<port no.>*
interface tengigabitethernet	tengeth1/1	Eth1/1	*<nif no.>/<port no.>*
interface hundredgigabitethernet	hndgeth1/1	Eth1/1	*<nif no.>/<port no.>*
interface gigabitethernet (subinterface)	--	Eth2/1.5	*<nif no.>/<port no.>.<subinterface index>*
interface tengigabitethernet (subinterface)	--	Eth2/1.5	*<nif no.>/<port no.>.<subinterface index>*
interface hundredgigabitethernet (subinterface)	--	Eth2/1.5	*<nif no.>/<port no.>.<subinterface index>*
interface port-channel	ChGr10		*<channel group number>*
interface port-channel (subinterface)	--	ChGr10.1	*<channel group number>.<subinterface index>*
interface loopback	loopback0		0 or *<loopback id>*
interface null 0	null0		0
interface mgmt 0	MGMT0		0
interface async 1	ASYNC1		1

Impact on communication

If a setting has an impact on communication, such as interruptions to communication, that impact is described here.

Response messages

Lists the response messages that can be displayed after execution of the command.

Note that error messages displayed by the entry-error location detection functionality are not described here. For details on these messages, see *Error messages displayed by the entry-error location detection functionality*.

The Device assigns names to corresponding interfaces set by configuration. If *<interface name>* is shown in *Response messages*, the Device displays the interface names listed in *Table 1-2: List of interface names assigned for input format*.

Notes

Provides cautionary information on using the command.

Specifiable values for parameters

The following table describes the values that can be specified for parameters.

Table 1-3: Specifiable values for parameters

Parameter type	Description	Input example
Name	Alphabetic characters can be used for the first character, and alphanumeric characters, hyphens (-), underscores (_), and periods (.) can be used for the second and subsequent characters. Note that if the command input format permits specification of either a name, or a command name and parameters (or keywords), and you specify a name that is identical to a command name or a parameter (or keyword), the system assumes that the command or the parameter (or keyword) has been entered.	show ip bgp peer-group office1
Access list name, QoS flow list name, policer entry name, policy-based routing list name	Alphabetic characters can be used for the first character, and alphanumeric characters, hyphens (-), underscores (_), and periods (.) can be used for the second and subsequent characters. Note that if the command input format permits specification of either a name, or a command name and parameters (or keywords), and you specify a name that is identical to a command name or a parameter (or keyword), the system assumes that the command or the parameter (or keyword) has been entered.	only-http1 01_user
MAC address, MAC address mask	Specify these items in hexadecimal format, separating 2-byte hexadecimal values by periods (.).	1234.5607.08ef 0000.00ff.ffff
IPv4 address, subnet mask	Specify these items in decimal format, separating 1-byte decimal values by periods (.).	192.168.0.14 255.255.255.0
Wildcard mask	The same input format as IPv4 addresses. The set bits in an IPv4 address represent an arbitrary value.	255.255.0.0
IPv6 address	Specify this item in hexadecimal format, separating 2-byte hexadecimal values by colons (:).	2001:db8:1234:5678:9abc:def0:1234:5678 fe80::1
IPv6 address with an interface name (for a link-local address only)	Specify a percent (%) between an IPv6 address and an interface name. Only link-local IPv6 addresses can be used as this parameter type.	fe80::212:e2ff:fe86:5300%Eth1/1

How to specify an interface

The following table describes how to specify the parameters <*interface type*> and <*interface number*> that correspond to each interface type group.

Table 1-4: How to specify an interface

Interface type group	Interface name to specify for *<interface type>*	Interface number to specify for *<interface number>*
Ethernet interface	gigabitethernet	*<nif no.>*/*<port no.>*
	tengigabitethernet	*<nif no.>*/*<port no.>*
	hundredgigabitethernet	*<nif no.>*/*<port no.>*
Ethernet subinterface	gigabitethernet	*<nif no.>*/*<port no.>*.*<subinterface index>*
	tengigabitethernet	*<nif no.>*/*<port no.>*.*<subinterface index>*
	hundredgigabitethernet	*<nif no.>*/*<port no.>*.*<subinterface index>*
Port channel interface	port-channel	*<channel group number>*
Port channel subinterface	port-channel	*<channel group number>*.*<subinterface index>*
Loopback interface	loopback	0 or *<loopback id>*
Null interface	null	0
Management port	mgmt	0
AUX port	async	1

How to specify multiple interfaces

Use this method to specify the same information for multiple interfaces at one time. From among the groups shown in *Table 1-4: How to specify an interface*, you can specify the interface names and interface numbers that correspond to the following interface type groups.

- Ethernet interface
- Ethernet subinterface
- Port channel interface
- Port channel subinterface

When specifying multiple interfaces, you can specify interfaces that belong to the same interface type group, but you cannot specify interfaces that belong to different interface groups.

Syntax

```
interface range <interface type> <interface number>
```

You can specify no more than 16 of the input formats, separating each by a comma (,).

Input example

```
show qos-flow interface range gigabitethernet 1/1-3
show qos-flow interface range gigabitethernet 1/1-3, tengigabitethernet 3/1
show qos-flow interface range port-channel 2.10-20, port-channel 3.100,
port-channel 5.200
```

Range of <sfu no.>

The following table lists the range of *<sfu no.>* values.

Table 1-5: Range of <sfu no.> values

No.	Model	Range of *<sfu no.>* values
1	All models	1 to 4

Range of <pru no.>

The following table lists the range of <*pru no.*> values.

Table 1-6: Range of <pru no.> values

No.	Model	Range of <*pru no.*> values
1	AX8616R	1 to 4
2	AX8632R	1 to 8

Range of <nif no.> and <port no.>

The following tables list the range of <*nif no.*> and <*port no.*> values.

Table 1-7: Range of <nif no.> values

No.	Model	Range of <*nif no.*> values
1	AX8616R	1 to 16
2	AX8632R	1 to 32

Table 1-8: Range of <port no.> values

No.	NIF type name abbreviation	Range of <*port no.*> values
1	NL1G-12T	1 to 12
2	NL1G-12S	1 to 12
3	NLXG-6RS	1 to 6
4	NMCG-1C	1

Range of <channel group number>

The following table lists the range of <*channel group number*> values.

Table 1-9: Range of <channel group number> values

No.	Model	Range of <*channel group number*> values
1	AX8616R	1 to 192
2	AX8632R	1 to 384

Range of <subinterface index>

The range of <*subinterface index*> values is from 1 to 65535.

How to specify <port list>

For <*port list*>, you can specify multiple ports in the <*nif no.*>/<*port no.*> format by using a hyphen (`-`), comma (`,`), or asterisk (`*`). You can also specify one port in the same way as when specifying the parameter <*nif no.*>/<*port no.*>. The range of permitted values is the same as the range of <*nif no.*> and <*port no.*> in the above tables.

Example of a range specification that uses a hyphen (`-`) and comma (`,`):

1/1-3,5

Example of a range specification that uses asterisks (`*`):

`*/*`: Specify all ports on a device.

`1/*`: Specify all ports on a device whose NIF number is 1.

How to specify <channel group number list>

For <*channel group number list*>, you can specify multiple channel group numbers by using a hyphen (-) and comma (,). You can also specify one channel group number. The range of permitted values is all the channel group numbers set by the configuration command.

Example of a range specification that uses a hyphen (-) and comma (,):

1-3,5,10

How to specify <sequence list>

For <*sequence list*>, you can specify multiple sequence numbers by using a hyphen (-) and comma (,). You can also specify one sequence number. The range of permitted values is all the sequence numbers set by the configuration command.

Example of a range specification that uses a hyphen (-) and comma (,):

10-30,50,100

List of character codes

Character codes are listed in the following table.

Table 1-10: List of character codes

Character	Code	Character	Code	Character	Code	Character	Code	Character	Code	Character	Code
Space	0x20	0	0x30	@	0x40	P	0x50	`	0x60	p	0x70
!	0x21	1	0x31	A	0x41	Q	0x51	a	0x61	q	0x71
"	0x22	2	0x32	B	0x42	R	0x52	b	0x62	r	0x72
#	0x23	3	0x33	C	0x43	S	0x53	c	0x63	s	0x73
$	0x24	4	0x34	D	0x44	T	0x54	d	0x64	t	0x74
%	0x25	5	0x35	E	0x45	U	0x55	e	0x65	u	0x75
&	0x26	6	0x36	F	0x46	V	0x56	f	0x66	v	0x76
'	0x27	7	0x37	G	0x47	W	0x57	g	0x67	w	0x77
(	0x28	8	0x38	H	0x48	X	0x58	h	0x68	x	0x78
)	0x29	9	0x39	I	0x49	Y	0x59	i	0x69	y	0x79
*	0x2A	:	0x3A	J	0x4A	Z	0x5A	j	0x6A	z	0x7A
+	0x2B	;	0x3B	K	0x4B	[	0x5B	k	0x6B	{	0x7B
,	0x2C	<	0x3C	L	0x4C	\	0x5C	l	0x6C	|	0x7C
-	0x2D	=	0x3D	M	0x4D	]	0x5D	m	0x6D	}	0x7D
.	0x2E	>	0x3E	N	0x4E	^	0x5E	n	0x6E	~	0x7E
/	0x2F	?	0x3F	O	0x4F	_	0x5F	o	0x6F	---	---

Notes

To enter a question mark (?, or 0x3F), press **Ctrl** + **V**, and then type a question mark.

Error messages displayed by the entry-error location detection functionality

The following table describes error messages output by the entry-error location detection functionality (see *5.2.3 Entry-error location detection functionality* in the manual *Configuration Guide Vol. 1 For Version 12.1*).

Table 1-11: List of error messages output by the entry-error location detection functionality

No.	Message	Description	Conditions for occurrence
1	% The command or parameter at the ^ marker is invalid.	An invalid command or parameter is entered at '^'.	When an unsupported command or parameter is entered
2	% The parameter at the ^ marker is too long.	A parameter entered at '^' exceeds the limit for the number of digits.	When a parameter that exceeds the limit for the number of digits is entered
3	% The command at the ^ marker is invalid.	Some parameters are missing.	When some parameters are missing
4	% The parameter at the ^ marker is invalid.	An invalid parameter is entered at '^'.	When an invalid parameter is entered
5	% The value at the ^ marker is invalid.	An invalid numeric value is entered at '^'.	When an invalid numeric value is entered
6	% The name at the ^ marker is invalid.	An invalid name is entered at '^'.	When an invalid name is entered
7	% The value at the ^ marker is outside the valid range.	A numeric value entered at '^' is out of the valid range.	When a numeric value that is out of the valid range is entered
8	% The IP address format at the ^ marker is invalid.	An invalid IPv4 address or IPv6 address is entered at '^'.	When the input format of the IPv4 address or IPv6 address is invalid
9	% The combination with the already-entered parameter at the ^ marker is invalid.	A parameter entered at '^' has already been entered.	When a parameter that has already been entered is re-entered
10	% The format at the ^ marker is invalid.	A parameter entered at '^' is an invalid format.	When the input format of the parameter is invalid
11	% '<*word*>' is invalid in this location.	An invalid character '<*word*>' is entered. <*word*>: Invalid word	When '<*word*>' is entered at positions where a character cannot be entered
12	% The command is too long.	The number of characters exceeds the limit that can be entered per operation.	When the number of entered characters exceeds the limit that can be entered in one line

Chapter 2. Filters

show access-filter
clear access-filter

show access-filter

Displays statistics for frames that meet the flow detection conditions applied to the interface by access group commands (`ip access-group`, `ipv6 traffic-filter`, `mac access-group`, and `advance access-group`), and statistics for frames that meet the implicit discard condition.

Syntax

```
show access-filter
show access-filter interface <interface type> <interface number> [<access list name>]
[{in | out}] [sequence {<sequence list> [implicit-deny] | implicit-deny}]
```

Input mode

User mode and administrator mode

Parameters

interface <*interface type*> <*interface number*>

Displays statistics of the specified interface that can be displayed.

For <*interface type*> and <*interface number*>, an interface name and interface number that correspond to the following interface type groups can be specified. For details, see *How to specify an interface* in *Specifiable values for parameters*.

If you specify multiple interfaces, see *How to specify multiple interfaces* in *Specifiable values for parameters*.

- Ethernet interface
- Ethernet subinterface
- Port channel subinterface

<*access list name*>

Displays statistics of the specified access list name for the specified interface. For details about how to specify an access list name, see *Specifiable values for parameters*.

Operation when this parameter is omitted:

Displays statistics for all access lists applied to the specified interface.

{in | out}

Displays statistics for the receiving side or the sending side of the specified interface.

in

Specifies the receiving side.

out

Specifies the sending side.

Operation when this parameter is omitted:

Displays statistics for both the receiving and sending sides of the specified interface.

sequence {<*sequence list*> [implicit-deny] | implicit-deny}

Displays statistics for the specified sequence number in the access list. For details about how to specify <*sequence list*> and the specifiable range of values, see *Specifiable values for parameters*.

To display the statistics that match the implicit discard condition, specify `implicit-deny`.

Operation when this parameter is omitted:

Displays statistics for all access lists applied to the specified interface, and for the implicit discard.

Operation when all parameters are omitted:

Displays statistics for all access lists of all interfaces.

Example

Figure 2-1: Statistics displayed when an access list name is specified

```
> show access-filter interface port-channel 10.2000 only-telnet
Date 20XX/01/01 12:00:00 UTC
Using interface : port-channel 10.2000 in
IPv6 access-list : only-telnet
   remark "permit only telnet ipv6"
      10 permit ipv6 any host 2001:db8:811:ff00::1
                      Matched packets        Matched bytes
         Total  :           1052790224        1561801505844
         PRU 1  :            894321468        1251659505460
         PRU 3  :            158468756         310142000384
      Implicit-deny
                      Matched packets        Matched bytes
         Total  :                37125             69021100
         PRU 1  :                11225             26645100
         PRU 3  :                25900             42376000
>
```

Figure 2-2: Statistics displayed when a sequence number is specified

```
> show access-filter interface gigabitethernet 2/5 in sequence 5,10-11
implicit-deny
Date 20XX/01/01 12:00:00 UTC
Using interface : gigabitethernet 2/5 in
Standard IP access-list : pc-a1024
   remark "permit only pc-a1024"
      5 permit host 192.0.2.5
                      Matched packets        Matched bytes
         Total  :             74699826          14780788864
         PRU 1  :             74699826          14780788864
      10 permit host 192.0.3.10
                      Matched packets        Matched bytes
         Total  :               718235            145967040
         PRU 1  :               718235            145967040
      11 permit host 192.0.11.11
                      Matched packets        Matched bytes
         Total  :                 5810              1371840
         PRU 1  :                 5810              1371840
      Implicit-deny
                      Matched packets        Matched bytes
         Total  :                95198             24370688
         PRU 1  :                95198             24370688
>
```

Figure 2-3: Statistics displayed when all parameters are omitted

```
> show access-filter
Date 20XX/01/01 12:00:00 UTC
Using interface : port-channel 10.2000 in
IPv6 access-list : only-telnet
   remark "permit only telnet ipv6"
      10 permit ipv6 any host 2001:db8:811:ff00::1
                      Matched packets        Matched bytes
         Total  :           1052790224        1561801505844
         PRU 1  :            894321468        1251659505460
         PRU 3  :            158468756         310142000384
      Implicit-deny
                      Matched packets        Matched bytes
```

```
         Total  :                37125             69021100
         PRU 1  :                11225             26645100
         PRU 3  :                25900             42376000

Using interface : tengigabitethernet 1/3 out
Extended MAC access-list : only-ipv6
   remark "permit only ipv6"
      10 permit any any ipv6(0x86dd)
                        Matched packets        Matched bytes
         Total  :             74699826         104780788864
         PRU 1  :             74699826         104780788864
      20 permit any any 0x80f3
                        Matched packets        Matched bytes
         Total  :               718235             45967040
         PRU 1  :               718235             45967040
      Implicit-deny
                        Matched packets        Matched bytes
         Total  :                 2698              1172672
         PRU 1  :                 2698              1172672

Using interface : gigabitethernet 2/5 in
Standard IP access-list : pc-a1024
   remark "permit only pc-a1024"
      5 permit host 192.0.2.5
                        Matched packets        Matched bytes
         Total  :             74699826          14780788864
         PRU 1  :             74699826          14780788864
      10 permit host 192.0.3.10
                        Matched packets        Matched bytes
         Total  :               718235            145967040
         PRU 1  :               718235            145967040
      11 permit host 192.0.11.11
                        Matched packets        Matched bytes
         Total  :                 5810              1371840
         PRU 1  :                 5810              1371840
      20 permit host 192.168.0.224
                        Matched packets        Matched bytes
         Total  :              1699826           1740621824
         PRU 1  :              1699826           1740621824
      Implicit-deny
                        Matched packets        Matched bytes
         Total  :                95198             24370688
         PRU 1  :                95198             24370688
Advance access-list : only-http
   remark " permit only http "
    10 permit mac-ip 0012.e200.1234 ffff.ffff.0000 any tcp(6) any host 10.10.10.2
eq http(80)
                        Matched packets        Matched bytes
         Total  :            158468756          21551750816
         PRU 1  :            158468756          21551750816
      Implicit-deny
                        Matched packets        Matched bytes
         Total  :                37125             12376000
         PRU 1  :                37125             12376000

Using interface : gigabitethernet 2/5 out
IPv6 access-list : only-telnet
   remark "permit only telnet ipv6"
      10 permit ipv6 any host 2001:db8:811:ff00::1
                        Matched packets        Matched bytes
         Total  :            385496541         527755750952
         PRU 1  :            385496541         527755750952
      Implicit-deny
                        Matched packets        Matched bytes
         Total  :                56645            114501120
         PRU 1  :                56645            114501120
```

```
Using interface : tengigabitethernet 3/5.1000 in
Extended IP access-list : 128
      10 permit tcp(6) any host 10.10.10.2 eq http(80)
                       Matched packets        Matched bytes
         Total  :        6425800211584     1411251213541376
         PRU 1  :        6425800211584     1411251213541376
      Implicit-deny
                       Matched packets        Matched bytes
         Total  :              254178             32534784
         PRU 1  :              254178             32534784

Using interface : tengigabitethernet 3/5.1000 out
Standard IP access-list : 12
   remark "permit only host pc"
      10 permit host 10.10.10.1
                       Matched packets        Matched bytes
         Total  :            32156826          12058036864
         PRU 1  :            32156826          12058036864
      20 permit host 10.10.10.254
                       Matched packets        Matched bytes
         Total  :               23486             11503104
         PRU 1  :               23486             11503104
      Implicit-deny
                       Matched packets        Matched bytes
         Total  :                  45                 5760
         PRU 1  :                  45                 5760
>
```

Display items

Table 2-1: Information displayed by the show access-filter command

Item	Displayed information
Using interface : <*interface type*> <*interface number*> in	Information about an interface to which an access list has been applied on the receiving side
Using interface : <*interface type*> <*interface number*> out	Information about an interface to which an access list has been applied on the sending side
Extended MAC access-list : <*access list name*>	Extended MAC access list name
Standard IP access-list : <*access list name*>	Standard IPv4 access list name
Extended IP access-list : <*access list name*>	Extended IPv4 access list name
IPv6 access-list : <*access list name*>	IPv6 access list name
Advance access-list : <*access list name*>	Advance access list name
remark <*remark*>	Supplementary information set by access list commands
<*sequence*> {permit | deny} <*target flow*> <*action specification*>	Flow detection conditions and specified actions set by access list commands
Implicit-deny	Statistics for the implicit discard
Total : <*matched packets*> <*matched bytes*>	The number of packets and the number of bytes that meet the flow detection conditions in the access list#, or the number of packets and the number of bytes that meet the implicit discard condition# - is displayed if statistics cannot be displayed because the PRU status is not `active`, or filter entries are not set or are being set.

Item	Displayed information
PRU <*pru no.*> : <*matched packets*> <*matched bytes*>	The number of packets and the number of bytes that meet the flow detection conditions in the access list for each PRU for which an access list is set#, or the number of packets and the number of bytes that meet the implicit discard condition# `Not active` is displayed if the PRU status is not `active`. `Unset` is displayed if filter entries are not set or are being set.

#: The number of bytes from the MAC header to the FCS is displayed.

Impact on communication

None

Response messages

Table 2-2: List of response messages for the show access-filter command

Message	Description
The command cannot be executed in the standby system.	This command cannot be executed in the standby system.
The command cannot be executed. Try again.	The command cannot be executed. Try again.
The command is not authorized by the RADIUS/ TACACS+ server or the configuration.	This command is not authorized by the RADIUS server, the TACACS+ server, or the configuration.
The specified access-group does not exist.	The access group is not set for the specified interface. Make sure the specified parameter or access-group setting is correct, and then try again.
The specified access-list does not exist.	The access list of the specified access list name is not set. Make sure the specified parameter or access-list setting is correct, and then try again.
The specified interface does not exist.	The specified interface is not set. Make sure the specified parameter is correct, and then try again.
The specified interface type is incorrect.	The specified <*interface type*> is invalid. Make sure the specified parameter is correct, and then try again.
The specified sequence number does not exist.	An access list is not set for the specified sequence number. Make sure the specified parameter or access-list setting is correct, and then try again.

Notes

None

clear access-filter

Clears, to zero, the following statistics from the access lists displayed by the `show access-filter` command.

- Statistics for frames that meet the flow detection conditions (the values indicated in `Matched packets` and `Matched bytes`)
- Statistics for frames that meet the implicit discard condition (the values indicated in `Matched packets` under `Implicit-deny` and `Matched bytes` under `Implicit-deny`)

Syntax

```
clear access-filter
clear access-filter interface <interface type> <interface number> [<access list name>]
[{in | out}] [sequence {<sequence list> [implicit-deny] | implicit-deny}]
```

Input mode

User mode and administrator mode

Parameters

interface <*interface type*> <*interface number*>

Clears, to zero, the statistics of the specified interface if it can be cleared.

For <*interface type*> and <*interface number*>, you can specify an interface name and interface number that correspond to the following interface type groups. For details, see *How to specify an interface* in *Specifiable values for parameters*.

If you specify multiple interfaces, see *How to specify multiple interfaces* in *Specifiable values for parameters*.

- Ethernet interface
- Ethernet subinterface
- Port channel subinterface

<*access list name*>

Clears, to zero, the statistics of the specified access list name for the specified interface. For details about how to specify an access list name, see *Specifiable values for parameters*.

Operation when this parameter is omitted:

Clears, to zero, the statistics for all access lists applied to the specified interface.

{in | out}

Clears, to zero, the statistics for the receiving side or the sending side of the specified interface.

in

Specifies the receiving side.

out

Specifies the sending side.

Operation when this parameter is omitted:

Clears, to zero, the statistics for both the receiving and sending sides of the specified interface.

sequence {<*sequence list*> [implicit-deny] | implicit-deny}

Clears, to zero, the statistics for the specified sequence number in the access list. For details about how to specify <*sequence list*> and the specifiable range of values, see *Specifiable values for parameters*.

To clear, to zero, the statistics that match the implicit discard condition, specify `implicit-deny`.

Operation when this parameter is omitted:

Clears, to zero, the statistics for all access lists applied to the specified interface, and for the implicit discard.

Operation when all parameters are omitted:

Clears, to zero, the statistics for all access lists of all interfaces.

Example

Figure 2-4: Clearing statistics for an access list

```
> clear access-filter interface gigabitethernet 1/7
Date 20XX/01/01 12:00:00 UTC
>
```

Display items

None

Impact on communication

None

Response messages

Table 2-3: List of response messages for the clear access-filter command

Message	Description
No access filter entry is set.	Statistics cannot be cleared to zero because the target filter entry is not set or is being set.
The command cannot be executed in the standby system.	This command cannot be executed in the standby system.
The command cannot be executed. Try again.	The command cannot be executed. Try again.
The command is not authorized by the RADIUS/ TACACS+ server or the configuration.	This command is not authorized by the RADIUS server, the TACACS+ server, or the configuration.
The specified access-group does not exist.	The access group is not set for the specified interface. Make sure the specified parameter or access-group setting is correct, and then try again.
The specified access-list does not exist.	The access list of the specified access list name is not set. Make sure the specified parameter or access-list setting is correct, and then try again.
The specified interface does not exist.	The specified interface is not set. Make sure the specified parameter is correct, and then try again.
The specified interface type is incorrect.	The specified <*interface type*> is invalid. Make sure the specified parameter is correct, and then try again.
The specified sequence number does not exist.	An access list is not set for the specified sequence number. Make sure the specified parameter or access-list setting is correct, and then try again.
There is no operational PRU.	There is no operational PRU. Make sure the PRU status is `active`.

Notes

1. If you use this command to clear statistics to zero, statistics in the `axAccessFilterStats` group are also cleared.

Chapter 3. QoS

show qos-flow
clear qos-flow
show policer
clear policer
show qos queueing
clear qos queueing
show qos queueing bcu
clear qos queueing bcu
show qos queueing pru
clear qos queueing pru
show qos queueing port
clear qos queueing port
restart queue-control
dump queue-control

show qos-flow

Displays statistics for frames that meet the flow detection conditions in the QoS flow list applied to the interface by QoS flow group commands (`ip qos-flow-group`, `ipv6 qos-flow-group`, `mac qos-flow-group`, and `advance qos-flow-group` configuration commands).

To display statistics for a QoS flow list in which a policer entry is specified for the action, use the `show policer` command.

Syntax

```
show qos-flow
show qos-flow interface <interface type> <interface number> [<qos flow list name>] [{in | out}] [sequence <sequence list>]
```

Input mode

User mode and administrator mode

Parameters

interface <*interface type*> <*interface number*>

Displays statistics of the specified interface that can be displayed.

For <*interface type*> and <*interface number*>, you can specify an interface name and interface number that correspond to the following interface type groups. For details, see *How to specify an interface* in *Specifiable values for parameters*.

If you specify multiple interfaces, see *How to specify multiple interfaces* in *Specifiable values for parameters*.

- Ethernet interface
- Ethernet subinterface
- Port channel subinterface

<*qos flow list name*>

Displays statistics of the specified QoS flow list name for the specified interface. For details about how to specify a QoS flow list name, see *Specifiable values for parameters*.

Operation when this parameter is omitted:

Displays statistics for all QoS flow lists applied to the specified interface.

{in | out}

Displays statistics for the receiving side or the sending side of the specified interface.

in

Specifies the receiving side.

out

Specifies the sending side.

Operation when this parameter is omitted:

Displays statistics for both the receiving and sending sides of the specified interface.

sequence <*sequence list*>

Displays statistics for the specified sequence number in the QoS flow list. For details about how to specify <*sequence list*> and the specifiable range of values, see *Specifiable values for parameters*.

Operation when this parameter is omitted:

Displays statistics for all QoS flow lists applied to the specified interface.

Operation when all parameters are omitted:

Displays statistics for all QoS flow lists of all interfaces.

Example

Figure 3-1: Statistics displayed when a QoS flow list name is specified

```
> show qos-flow interface port-channel 10.2000 http-qos out
Date 20XX/01/01 12:00:00 UTC
Using interface : port-channel 10.2000 out
IP qos-flow-list : http-qos
   remark "QoS for http"
      10 tcp(6) any host 10.10.10.2 eq http(80) action priority-class 4
                        Matched packets        Matched bytes
         Total  :           3050990400        4387539310660
         PRU 1  :           1174699826        2190847093480
         PRU 3  :           1876290574        2196692217180
>
```

Figure 3-2: Statistics displayed when a policer entry is specified as the action

```
> show qos-flow interface gigabitethernet 3/5 out
Date 20XX/01/01 12:00:00 UTC
Using interface : gigabitethernet 3/5 out
IP qos-flow-list : ftp-qos
   remark "QoS for ftp"
      10 tcp(6) any any eq ftp(21) action priority-class 3 discard-class 1
                        Matched packets        Matched bytes
         Total  :           5488465101        1089412302036
         PRU 1  :           5488465101        1089412302036
      20 tcp(6) any host 10.10.10.2 eq http(80) action policer HTTP-QoS-POLICER
         refer to policer statistics
IPv6 qos-flow-list : telnet-qos
   remark "QoS for telnet"
     10 tcp(6) any host 2001:db8:811:ff00::1 eq telnet(23) action priority-class
6 discard-class 2
                        Matched packets        Matched bytes
         Total  :            387252415         612184432164
         PRU 1  :            387252415         612184432164
>
```

Figure 3-3: Statistics displayed when all parameters are omitted

```
> show qos-flow
Date 20XX/01/01 12:00:00 UTC
Using interface : port-channel 10.2000 out
IP qos-flow-list : http-qos
   remark "QoS for http"
      10 tcp(6) any host 10.10.10.2 eq http(80) action priority-class 4
                        Matched packets        Matched bytes
         Total  :           3050990400        4387539310660
         PRU 1  :           1174699826        2190847093480
         PRU 3  :           1876290574        2196692217180

Using interface : tengigabitethernet 1/3 out
MAC qos-flow-list : ipv6-qos
   remark "QoS for ipv6"
      10 any any ipv6(0x86dd) action priority-class 5 discard-class 2
                        Matched packets        Matched bytes
         Total  :                5642             10222540
         PRU 1  :                5642             10222540

Using interface : gigabitethernet 1/5 in
```

```
IP qos-flow-list : ftp-qos
   remark "QoS for ftp"
      10 tcp(6) any any eq ftp(21) action priority-class 3 discard-class 13
                        Matched packets        Matched bytes
         Total  :           1684236799         184002215840
         PRU 1  :           1684236799         184002215840
      20 tcp(6) any host 10.10.10.2 eq http(80) action policer HTTP-QoS-POLICER
         refer to policer statistics
IPv6 qos-flow-list : telnet-qos
   remark "QoS for telnet"
     10 tcp(6) any host 2001:db8:811:ff00::1 eq telnet(23) action priority-class
6 discard-class 2
                        Matched packets        Matched bytes
         Total  :           3454813846        5278421002544
         PRU 1  :           3454813846        5278421002544

Using interface : gigabitethernet 1/5 out
IP qos-flow-list : smtp-qos
   remark "QoS for smtp"
      10 tcp(6) any any eq smtp(25) action priority-class 5 discard-class 3
                        Matched packets        Matched bytes
         Total  :              5484365          12111254620
         PRU 1  :              5484365          12111254620

Using interface : gigabitethernet 1/12.2000 in
IP qos-flow-list : pc-a1024
   remark "ftp-http-qos"
      5 tcp(6) any any eq ftp(21) action priority-class 1
                        Matched packets        Matched bytes
         Total  :               146723            150244352
         PRU 1  :               146723            150244352
      10 tcp(6) any any eq http(80) action priority-class 3
                        Matched packets        Matched bytes
         Total  :                92720             34945280
         PRU 1  :                92720             34945280
      11 tcp(6) any any action priority-class 5
                        Matched packets        Matched bytes
         Total  :              7246485           2420400640
         PRU 1  :              7246485           2420400640
      20 ip any any action priority-class 7
                        Matched packets        Matched bytes
         Total  :              3445567           1677894556
         PRU 1  :              3445567           1677894556

Using interface : gigabitethernet 3/5 in
IPv6 qos-flow-list : telnet-qos
   remark "QoS for telnet"
     10 tcp(6) any host 2001:db8:811:ff00::1 eq telnet(23) action priority-class
6 discard-class 2
                        Matched packets        Matched bytes
         Total  :            612359745         334563628944
         PRU 1  :            612359745         334563628944
Advance qos-flow-list : telnet-qos-ad
   remark "QoS for mac-ipv6"
      10 mac-ipv6 0012.e200.1234 ffff.ffff.0000 any tcp any host
2001:db8:1:fe00::1 action priority-class 5 discard-class 1
                        Matched packets        Matched bytes
         Total  :            345356711         434125685660
         PRU 1  :            345356711         434125685660

Using interface : gigabitethernet 3/5 out
IP qos-flow-list : ftp-qos
   remark "QoS for ftp"
      10 tcp(6) any any eq ftp(21) action priority-class 3 discard-class 1
                        Matched packets        Matched bytes
         Total  :           5488465101        1089412302036
         PRU 1  :           5488465101        1089412302036
```

```
      20 tcp(6) any host 10.10.10.2 eq http(80) action policer HTTP-QoS-POLICER
         refer to policer statistics
IPv6 qos-flow-list : telnet-qos
   remark "QoS for telnet"
     10 tcp(6) any host 2001:db8:811:ff00::1 eq telnet(23) action priority-class
6 discard-class 2
                       Matched packets        Matched bytes
         Total  :            387252415         612184432164
         PRU 1  :            387252415         612184432164
>
```

Display items

Table 3-1: Information displayed by the show qos-flow command

Item	Displayed information
Using interface : <*interface type*> <*interface number*> in	Information about the interface to which a QoS flow list is applied on the receiving side
Using interface : <*interface type*> <*interface number*> out	Information about the interface to which a QoS flow list is applied on the sending side
MAC qos-flow-list : <*qos flow list name*>	MAC QoS flow list name
IP qos-flow-list : <*qos flow list name*>	IPv4 QoS flow list name
IPv6 qos-flow-list : <*qos flow list name*>	IPv6 QoS flow list name
Advance qos-flow-list : <*qos flow list name*>	Advanced QoS flow list name
remark <*remark*>	Supplementary information set by QoS flow commands
<*sequence*> <*target flow* > <*action specification*>	Flow detection conditions and specified actions set by access list commands
Total : <*matched packets*> <*matched bytes*>	The number of packets and the number of bytes that meet the flow detection conditions in the QoS flow list# - is displayed if statistics cannot be displayed because the PRU status is not `active`, or QoS flow entries are not set or are being set.
PRU <*pru no.*> : <*matched packets*> <*matched bytes*>	The number of packets and the number of bytes that meet the flow detection conditions in the QoS flow list for each PRU for which a QoS flow list is set# `Not active` is displayed if the PRU status is not `active`. `Unset` is displayed if QoS flow entries are not set or are being set.
refer to policer statistics	Refer to the statistics for the policer entry specified for the action in the QoS flow list. You can check statistics by using the `show policer` command.

#: The number of bytes from the MAC header to the FCS is displayed.

Impact on communication

None

Response messages

Table 3-2: List of response messages for the show qos-flow command

Message	Description
The command cannot be executed in the standby system.	This command cannot be executed in the standby system.

Message	Description
The command cannot be executed. Try again.	The command cannot be executed. Try again.
The command is not authorized by the RADIUS/ TACACS+ server or the configuration.	This command is not authorized by the RADIUS server, the TACACS+ server, or the configuration.
The specified interface does not exist.	The specified interface is not set. Make sure the specified parameter is correct, and then try again.
The specified interface type is incorrect.	The specified <*interface type*> is invalid. Make sure the specified parameter is correct, and then try again.
The specified qos-flow-group does not exist.	The QoS flow group is not set for the specified interface. Make sure the specified parameters and QoS flow group settings are correct, and then try again.
The specified qos-flow-list does not exist.	The QoS flow list of the specified QoS flow list name is not set. Make sure the specified parameters and QoS flow list settings are correct, and then try again.
The specified sequence number does not exist.	A QoS flow list is not set for the specified sequence number. Make sure the specified parameters and QoS flow list settings are correct, and then try again.

Notes

None

clear qos-flow

Clears, to zero, the statistics for frames that meet the flow detection conditions in the QoS flow list (the values indicated in `Matched packets` and `Matched bytes`), which are displayed by the `show qos-flow` command.

To clear, to zero, the statistics for a QoS flow list in which a policer entry is specified for the action, use the `clear policer` command.

Syntax

```
clear qos-flow
clear qos-flow interface <interface type> <interface number> [<qos flow list name>]
[{in | out}] [sequence <sequence list>]
```

Input mode

User mode and administrator mode

Parameters

interface <*interface type*> <*interface number*>

Clears, to zero, the statistics of the specified interface if it can be cleared.

For <*interface type*> and <*interface number*>, you can specify an interface name and interface number that correspond to the following interface type groups. For details, see *How to specify an interface* in *Specifiable values for parameters*.

If you specify multiple interfaces, see *How to specify multiple interfaces* in *Specifiable values for parameters*.

- Ethernet interface
- Ethernet subinterface
- Port channel subinterface

<*qos flow list name*>

Clears, to zero, the statistics of the specified QoS flow list name for the specified interface. For details about how to specify a QoS flow list name, see *Specifiable values for parameters*.

Operation when this parameter is omitted:

Clears, to zero, the statistics for all QoS flow lists applied to the specified interface.

{in | out}

Clears, to zero, the statistics for the receiving side or the sending side of the specified interface.

in

Specifies the receiving side.

out

Specifies the sending side.

Operation when this parameter is omitted:

Clears, to zero, the statistics for both the receiving and sending sides of the specified interface.

sequence <*sequence list*>

Clears, to zero, the statistics for the specified sequence number in the QoS flow list. For details

about how to specify <*sequence list*> and the specifiable range of values, see *Specifiable values for parameters*.

Operation when this parameter is omitted:

Clears, to zero, the statistics for all QoS flow lists applied to the specified interface.

Operation when all parameters are omitted:

Clears, to zero, the statistics for all QoS flow lists of all interfaces.

Example

Figure 3-4: Clearing statistics for a QoS flow list

```
> clear qos-flow interface gigabitethernet 1/7 http-qos
Date 20XX/01/01 12:00:00 UTC
>
```

Display items

None

Impact on communication

None

Response messages

Table 3-3: List of response messages for the clear qos-flow command

Message	Description
No qos flow entry is set.	Statistics cannot be cleared to zero because the target QoS flow entry is not set or is being set.
The command cannot be executed in the standby system.	This command cannot be executed in the standby system.
The command cannot be executed. Try again.	The command cannot be executed. Try again.
The command is not authorized by the RADIUS/ TACACS+ server or the configuration.	This command is not authorized by the RADIUS server, the TACACS+ server, or the configuration.
The specified interface does not exist.	The specified interface is not set. Make sure the specified parameter is correct, and then try again.
The specified interface type is incorrect.	The specified <*interface type*> is invalid. Make sure the specified parameter is correct, and then try again.
The specified qos-flow-group does not exist.	The QoS flow group is not set for the specified interface. Make sure the specified parameters and QoS flow group settings are correct, and then try again.
The specified qos-flow-list does not exist.	The QoS flow list of the specified QoS flow list name is not set. Make sure the specified parameters and QoS flow list settings are correct, and then try again.
The specified sequence number does not exist.	A QoS flow list is not set for the specified sequence number. Make sure the specified parameters and QoS flow list settings are correct, and then try again.
There is no operational PRU.	There is no operational PRU. Make sure the PRU status is `active`.

Notes

1. If you use this command to clear statistics to zero, statistics in the `axQosFlowStats` group are also cleared.

show policer

Displays the specifications for bandwidth monitoring set by the policer entry command (`policer` configuration command), and statistics for frames subject to bandwidth monitoring.

Syntax

```
show policer [{<policer name> | in | out}]
```

Input mode

User mode and administrator mode

Parameters

{<*policer name*> | in | out}

<*policer name*>

Displays statistics of the specified policer entry name. For details about how to specify a policer entry name, see *Specifiable values for parameters*.

in

Displays statistics for all policer entries set on the receiving side.

out

Displays statistics for all policer entries set on the sending side.

Operation when this parameter is omitted:

Displays statistics for all policer entries.

Example

Figure 3-5: Information displayed when a policer entry name is specified

```
> show policer http-user-1
Date 20XX/01/01 12:00:00 UTC
policer http-user-1 in
   max-rate 100M max-burst 32k penalty-user-priority 1 discard-class 1
      Total                    Matched packets
         Max-rate over  :              146723
         Max-rate under :          2118673486
      PRU 1                    Matched packets
         Max-rate over  :              146723
         Max-rate under :          2118673486
>
```

Figure 3-6: Information displayed when the receiving side is specified

```
> show policer in
Date 20XX/01/01 12:00:00 UTC
policer http-user-1 in
   max-rate 100M max-burst 32k discard-class 1
      Total                    Matched packets
         Max-rate over  :              146723
         Max-rate under :          2118673486
      PRU 1                    Matched packets
         Max-rate over  :              146723
         Max-rate under :          2118673486

policer tcp-user-2 in
   min-rate 200M min-burst 64k penalty-user-priority 3 discard-class 2
      Total                    Matched packets
         Min-rate over  :             6262576
         Min-rate under :           754354716
```

```
      PRU 2                    Matched packets
         Min-rate over  :              5747324
         Min-rate under :            745681230
      PRU 3                    Matched packets
         Min-rate over  :               515252
         Min-rate under :              8673486
>
```

Figure 3-7: Information displayed when all parameters are omitted

```
> show policer
Date 20XX/01/01 12:00:00 UTC
policer http-user-1 in
   max-rate 100M max-burst 32k discard-class 1
      Total                    Matched packets
         Max-rate over  :               146723
         Max-rate under :           2118673486
      PRU 1                    Matched packets
         Max-rate over  :               146723
         Max-rate under :           2118673486

policer tcp-user-2 in
   min-rate 200M min-burst 64k penalty-user-priority 3 discard-class 2
      Total                    Matched packets
         Min-rate over  :              6262576
         Min-rate under :            754354716
      PRU 2                    Matched packets
         Min-rate over  :              5747324
         Min-rate under :            745681230
      PRU 3                    Matched packets
         Min-rate over  :               515252
         Min-rate under :              8673486

policer utp-user-2 out
   max-rate 150M max-burst 64k min-rate 30M min-burst 32k penalty-dscp af11(10)
replace-dscp cs3(24)
      Total                    Matched packets
         Max-rate over  :               475657
         Min-rate over  :             64582358
         Min-rate under :            765135484
      PRU 3                    Matched packets
         Max-rate over  :               475657
         Min-rate over  :             64582358
         Min-rate under :            765135484
>
```

Display items

Table 3-4: Information displayed by the show policer command

Item	Displayed information
policer <*policer name*> in	Name of the policer entry applied on the receiving side
policer <*policer name*> out	Name of the policer entry applied on the sending side
<*bandwidth policy*> <*action specification*>	Policer entry set by the policer entry command
Total	Statistics for the total number of policer entries that are operating for each PRU
PRU <*pru no.*>	Statistics for the PRU for which the policer entry is set

Item	Displayed information
Max-rate over : <*packets*>	Number of packets that violate the maximum bandwidth monitoring `Not active` or - is displayed if the PRU status is not `active`. `Unset` or - is displayed if policer entries are not set or are being set.
Max-rate under : <*packets*>	Number of packets that conform to the maximum bandwidth monitoring `Not active` or - is displayed if the PRU status is not `active`. `Unset` or - is displayed if policer entries are not set or are being set.
Min-rate over : <*packets*>	Number of packets that violate the minimum bandwidth monitoring `Not active` or - is displayed if the PRU status is not `active`. `Unset` or - is displayed if policer entries are not set or are being set.
Min-rate under : <*packets*>	Number of packets that conform to the minimum bandwidth monitoring `Not active` or - is displayed if the PRU status is not `active`. `Unset` or - is displayed if policer entries are not set or are being set.

Impact on communication

None

Response messages

Table 3-5: List of response messages for the show policer command

Message	Description
The command cannot be executed in the standby system.	This command cannot be executed in the standby system.
The command cannot be executed. Try again.	The command cannot be executed. Try again.
The command is not authorized by the RADIUS/ TACACS+ server or the configuration.	This command is not authorized by the RADIUS server, the TACACS+ server, or the configuration.
The targeted policer entry does not exist.	The target policer entry is not set. Make sure the specified parameters and policer entry settings are correct, and then try again.

Notes

None

clear policer

Clears, to zero, the statistics for frames that meet the bandwidth monitoring in a policer entry (the value indicated in `Matched packets`), which is displayed by the `show policer` command.

Syntax

```
clear policer [{<policer name> | in | out}]
```

Input mode

User mode and administrator mode

Parameters

{<*policer name*> | in | out}

<*policer name*>

Clears, to zero, the statistics of the specified policer entry name. For details about how to specify a policer entry name, see *Specifiable values for parameters*.

in

Clears, to zero, the statistics for policer entries set on the receiving side.

out

Clears, to zero, the statistics for policer entries set on the sending side.

Operation when this parameter is omitted:

Clears, to zero, the statistics for all policer entries.

Example

Figure 3-8: Clearing statistics for policer entries

```
> clear policer
Date 20XX/01/01 12:00:00 UTC
>
```

Display items

None

Impact on communication

None

Response messages

Table 3-6: List of response messages for the clear policer command

Message	Description
No policer entry is set.	Statistics cannot be cleared to zero because the target policer entry is not set or is being set.
The command cannot be executed in the standby system.	This command cannot be executed in the standby system.
The command cannot be executed. Try again.	The command cannot be executed. Try again.
The command is not authorized by the RADIUS/ TACACS+ server or the configuration.	This command is not authorized by the RADIUS server, the TACACS+ server, or the configuration.

Message	Description
The targeted policer entry does not exist.	The target policer entry is not set. Make sure the specified parameters, policer entry settings, and QoS flow group settings are correct, and then try again.
There is no operational PRU.	There is no operational PRU. Make sure the PRU status is `active`.

Notes

None

show qos queueing

Displays all the queue information displayed by the following commands:

- `show qos queueing bcu`
- `show qos queueing pru`
- `show qos queueing port`

Syntax

```
show qos queueing
```

Input mode

User mode and administrator mode

Parameters

None

Example

Figure 3-9: Displaying all queue information

```
> show qos queueing
Date 20XX/01/01 12:00:00 UTC
BCU-CPU (Out)
 Max-queue=8
  Queue1   : Qlen=0, Limit-Qlen=256
                 Send packets       Discard packets            Send bytes
   Total                    0                     0                     0
                              :
                              :
BCU-PA (From-PRU)
 Max-queue=8
  Queue-total
                 Send packets       Discard packets
   Total              5616123                     0
PRU1-SSW (From-FE Unicast to PRU1)
 Max-queue=8
  Queue1   : Qlen=0, Limit-Qlen=16384
                 Send packets       Discard packets            Send bytes
   Total              3203665                     0            6562233640
                              :
                              :
PRU8-FE (To-SSW Control)
 Max-queue=8
  Queue1   : Qlen=0, Peak-Qlen=0, Limit-Qlen=255
   Discard       Send packets       Discard packets            Send bytes
   1                        0                     0                     -
   2                        0                     0                     -
   3                        0                     0                     -
   4                        0                     0                     -
   Total                    0                     0                     0
                              :
                              :
  Queue8   : Qlen=0, Peak-Qlen=35, Limit-Qlen=255
   Discard       Send packets       Discard packets            Send bytes
   1                   489012                     0                     -
   2                        0                     0                     -
   3                        0                     0                     -
   4                        0                     0                     -
   Total                489012                     0              18874544
NIF1/Port1 (In)
 Max-queue=1
  Queue1   : Qlen=0, Peak-Qlen=68, Limit-Qlen=127
```

```
   Discard        Send packets       Discard packets            Send bytes
   1                   8451361                     0                     -
   2                         0                     0                     -
   3                         0                     0                     -
   4                         0                     0                     -
   Total               8451361                     0            5813143900
                               :
                               :
NIF32/Port12 (Out)
 Max-queue=8, Schedule-mode=pq
 Port-rate-limit=100Mbps, Active-rate=100Mbps
  Queue1   : Qlen=0, Peak-Qlen=51, Limit-Qlen=1023
             Drop-mode=tail-drop
   Discard        Send packets       Discard packets            Send bytes
   1                   3203665                     0                     -
   2                         0                     0                     -
   3                         0                     0                     -
   4                         0                     0                     -
   Total               3203665                     0           46256815552
                               :
                               :
  Queue8   : Qlen=0, Peak-Qlen=65, Limit-Qlen=1023
             Drop-mode=tail-drop
   Discard        Send packets       Discard packets            Send bytes
   1                    156165                     0                     -
   2                         0                     0                     -
   3                         0                     0                     -
   4                         0                     0                     -
   Total                156165                     0             546461560
>
```

Display items

Table 3-7: Information displayed by the show qos queueing command

Item	Displayed information
BCU queue information	See *Display items* for the `show qos queueing bcu` command.
PRU queue information	See *Display items* for the `show qos queueing pru` command.
Ethernet interface queue information	See *Display items* for the `show qos queueing port` command.

Impact on communication

None

Response messages

Table 3-8: List of response messages for the show qos queueing command

Message	Description
The command cannot be executed. Try again.	The command cannot be executed. Try again.
The command is not authorized by the RADIUS/ TACACS+ server or the configuration.	This command is not authorized by the RADIUS server, the TACACS+ server, or the configuration.

Notes

1. If this command is executed in the standby BCU, only BCU queue information is displayed.

clear qos queueing

Clears, to zero, the following statistics displayed by the `show qos queueing` command.

- Maximum number of packet buffers used by queues in the past
- Number of packets accumulated in queues
- Number of packets discarded without being accumulated in queues
- Number of bytes of the packets accumulated in queues

Syntax

```
clear qos queueing
```

Input mode

User mode and administrator mode

Parameters

None

Example

Figure 3-10: Clearing statistics

```
> clear qos queueing
Date 20XX/01/01 12:00:00 UTC
>
```

Display items

None

Impact on communication

None

Response messages

Table 3-9: List of response messages for the clear qos queueing command

Message	Description
The command cannot be executed. Try again.	The command cannot be executed. Try again.
The command is not authorized by the RADIUS/ TACACS+ server or the configuration.	This command is not authorized by the RADIUS server, the TACACS+ server, or the configuration.

Notes

1. If you use this command to clear statistics to zero, statistics in the `axPortQueue` group and the maximum number of packet buffers used by queues in the past are also cleared.
2. If this command is executed in the standby BCU, only BCU queue statistics are cleared to zero.

show qos queueing bcu

Displays BCU queue information.

Syntax

```
show qos queueing bcu
show qos queueing bcu cpu [{out | from-pa}]
show qos queueing bcu pa [from-pru]
```

Input mode

User mode and administrator mode

Parameters

cpu

Displays BCU-CPU queue information.

{out | from-pa}

out

Displays information about BCU-CPU send queues.

from-pa

Displays information about BCU-CPU PA receive queues.

Operation when this parameter is omitted:

Displays all queue information of the BCU-CPU.

pa

Displays BCU-PA queue information.

from-pru

Displays information about BCU-PA PRU receive queues.

Operation when this parameter is omitted:

Displays all queue information of the BCU-PA.

Operation when all parameters are omitted:

Displays all BCU queue information.

Example 1

Figure 3-11: Displaying BCU-CPU send queue information

```
> show qos queueing bcu cpu out
Date 20XX/01/01 12:00:00 UTC
BCU-CPU (Out)
 Max-queue=8
  Queue1   : Qlen=0, Limit-Qlen=256
                Send packets       Discard packets            Send bytes
   Total                 0                     0                     0
                              :
                              :
  Queue8   : Qlen=147, Limit-Qlen=256
                Send packets       Discard packets            Send bytes
   Total              8974655                     0            2297566580
>
```

Display items in Example 1

Table 3-10: Displayed information about BCU-CPU send queues

Item	Displayed information
BCU-CPU (Out)	BCU-CPU send queues
Max-queue=<*number of queue*>	Number of queues
Queue<*queue no.*>	Queue number
Qlen=<*queue length*>	Number of packet buffers used by the queue
Limit-Qlen=<*queue length*>	Limit value for the number of packet buffers used by the queue
Send packets	Number of packets accumulated in the queue
Discard packets	Number of packets discarded without being accumulated in the queue
Send bytes	Number of bytes of the packets accumulated in the queue#
Total	Queue statistics

#: This item displays the number of bytes from the MAC header to the payload length.

Example 2

Figure 3-12: Displaying information about BCU-CPU PA receive queues

```
> show qos queueing bcu cpu from-pa
Date 20XX/01/01 12:00:00 UTC
BCU-CPU (From-PA)
 Max-queue=8
  Queue1   : Qlen=0, Limit-Qlen=1024
                 Send packets       Discard packets
   Total                    0                    0
                          :
                          :
  Queue8   : Qlen=32, Limit-Qlen=1024
                 Send packets       Discard packets
   Total               8237689                    0
>
```

Display items in Example 2

Table 3-11: Displayed information about BCU-CPU PA receive queues

Item	Displayed information
BCU-CPU (From-PA)	BCU-CPU PA receive queues
Max-queue=<*number of queue*>	Number of queues
Queue<*queue no.*>	Queue number
Qlen=<*queue length*>	Number of packet buffers used by the queue
Limit-Qlen=<*queue length*>	Limit value for the number of packet buffers used by the queue
Send packets	Number of packets accumulated in the queue
Discard packets	Number of packets discarded without being accumulated in the queue

Item	Displayed information
Total	Queue statistics

Example 3

Figure 3-13: Displaying information about BCU-PA PRU receive queues

```
> show qos queueing bcu pa from-pru
Date 20XX/01/01 12:00:00 UTC
BCU-PA (From-PRU)
 Max-queue=8
  Queue-total
                  Send packets       Discard packets
   Total               5616123                     0
>
```

Display items in Example 3

Table 3-12: Displayed information about BCU-PA PRU receive queues

Item	Displayed information
BCU-PA (From-PRU)	BCU-PA PRU receive queues
Max-queue=<*number of queue*>	Number of queues
Queue-total	Overall queue statistics
Send packets	Number of packets accumulated in the queues
Discard packets	Number of packets discarded without being accumulated in the queues
Total	Queue statistics

Impact on communication

None

Response messages

Table 3-13: List of response messages for the show qos queueing bcu command

Message	Description
The command cannot be executed. Try again.	The command cannot be executed. Try again.
The command is not authorized by the RADIUS/ TACACS+ server or the configuration.	This command is not authorized by the RADIUS server, the TACACS+ server, or the configuration.

Notes

None

clear qos queueing bcu

Clears, to zero, the following statistics displayed by the `show qos queueing bcu` command.

- Number of packets accumulated in queues
- Number of packets discarded without being accumulated in queues
- Number of bytes of the packets accumulated in queues

Syntax

```
clear qos queueing bcu
clear qos queueing bcu cpu [{out | from-pa}]
clear qos queueing bcu pa [from-pru]
```

Input mode

User mode and administrator mode

Parameters

cpu

Clears, to zero, the BCU-CPU queue statistics.

{out | from-pa}

out

Clears, to zero, the statistics on BCU-CPU send queues.

from-pa

Clears, to zero, the statistics on BCU-CPU PA receive queues.

Operation when this parameter is omitted:

Clears, to zero, all the BCU-CPU queue statistics.

pa

Clears, to zero, the BCU-PA queue statistics.

from-pru

Clears, to zero, the statistics on BCU-PA PRU receive queues.

Operation when this parameter is omitted:

Clears, to zero, all the BCU-PA queue statistics.

Operation when all parameters are omitted:

Clears, to zero, all the BCU queue statistics.

Example

Figure 3-14: Clearing statistics on BCU-CPU send queues

```
> clear qos queueing bcu cpu out
Date 20XX/01/01 12:00:00 UTC
>
```

Display items

None

Impact on communication

None

Response messages

Table 3-14: List of response messages for the clear qos queueing bcu command

Message	Description
The command cannot be executed. Try again.	The command cannot be executed. Try again.
The command is not authorized by the RADIUS/ TACACS+ server or the configuration.	This command is not authorized by the RADIUS server, the TACACS+ server, or the configuration.

Notes

None

show qos queueing pru

Displays PRU queue information.

Syntax

```
show qos queueing pru [<pru no.>]
show qos queueing pru <pru no.> ssw [{from-fe [{unicast [to-pru <pru no.>] |
multicast}] | to-fe [{unicast | multicast}]}]
show qos queueing pru <pru no.> fe [{to-cpu | {from-ssw | to-ssw} [{forward |
control}]}]
```

Input mode

User mode and administrator mode

Parameters

<*pru no.*>

Displays queue information of the specified PRU number. For the specifiable range of values for the PRU number, see *Specifiable values for parameters*.

ssw

Displays PRU-SSW queue information.

from-fe

Displays information about PRU-SSW FE receive queues.

{unicast [to-pru <*pru no.*>] | multicast}

unicast [to-pru <*pru no.*>]

Displays information about unicast queues.

If `to-pru` <*pru no.*> is specified, queue information of the specified destination PRU number is displayed. For the specifiable range of values for the PRU number, see *Specifiable values for parameters*.

multicast

Displays information about multicast queues.

to-fe

Displays information about PRU-SSW FE send queues.

{unicast | multicast}

unicast

Displays information about unicast queues.

multicast

Displays information about multicast queues.

fe

Displays PRU-FE queue information.

to-cpu

Displays information about CPU send queues.

{from-ssw | to-ssw}

from-ssw

Displays information about SSW receive queues.

to-ssw

Displays information about SSW send queues.

{forward | control}

forward

Displays information about forward queues.

control

Displays information about control queues.

Operation when each parameter is omitted:

Using this command, you can specify a parameter and display only the information corresponding to that condition. If you do not specify a parameter, information is displayed with no condition applied. If you specify multiple parameters, the information conforming to those conditions will be displayed.

Operation when all parameters are omitted:

Displays all queue information of all PRUs.

Example 1

Figure 3-15: Displaying information about PRU-SSW FE receive (unicast) queues

```
> show qos queueing pru 1 ssw from-fe unicast to-pru 1
Date 20XX/01/01 12:00:00 UTC
PRU1-SSW (From-FE Unicast to PRU1)
 Max-queue=8
  Queue1   : Qlen=0, Limit-Qlen=16384
                  Send packets       Discard packets            Send bytes
   Total               3203665                     0            6562233640
                               :
                               :
  Queue8   : Qlen=0, Limit-Qlen=16384
                  Send packets       Discard packets            Send bytes
   Total                 65684                     0              88714364
>
```

Display items in Example 1

Table 3-15: Displayed information about PRU-SSW FE receive queues

Item	Displayed information
PRU <*pru no.*>-SSW (<*queue name*>)	From-FE Unicast to PRU<*pru no.*> PRU-SSW FE receive (unicast) queues From-FE Multicast PRU-SSW FE receive (multicast) queues
Max-queue=<*number of queue*>	Number of queues
Queue<*queue no.*>	Queue number
Qlen=<*queue length*>	Number of packet buffers used by the queue
Limit-Qlen=<*queue length*>	Limit value for the number of packet buffers used by the queue
Send packets	Number of packets accumulated in the queue
Discard packets	Number of packets discarded without being accumulated in the queue

Item	Displayed information
Send bytes	Number of bytes of the packets accumulated in the queue#
Total	Queue statistics

#: This item displays the value obtained by adding 28 bytes to the number of bytes from the MAC header to the payload length.

Example 2

Figure 3-16: Displaying information about PRU-SSW FE send (multicast) queues

```
> show qos queueing pru 1 ssw to-fe multicast
Date 20XX/01/01 12:00:00 UTC
PRU1-SSW (To-FE Multicast)
 Max-queue=8
  Queue1   : Qlen=0, Peak-Qlen=102, Limit-Qlen=1024
   Discard        Send packets       Discard packets            Send bytes
   1                     23155                     0              11855360
   2                         0                     0                     0
   3                         0                     0                     0
   4                         0                     0                     0
   Total                 23155                     0              11855360
                               :
                               :
  Queue8   : Qlen=0, Peak-Qlen=220, Limit-Qlen=1024
   Discard        Send packets       Discard packets            Send bytes
   1                     68198123                  0           17458719488
   2                         0                     0                     0
   3                         0                     0                     0
   4                         0                     0                     0
   Total                 68198123                  0           17458719488
>
```

Display items in Example 2

Table 3-16: Displayed information about PRU-SSW FE receive queues

Item	Displayed information
PRU <*pru no.*>-SSW (<*queue name*>)	To-FE Unicast PRU-SSW FE receive (unicast) queues To-FE Multicast PRU-SSW FE send (multicast) queues
Max-queue=<*number of queue*>	Number of queues
Queue<*queue no.*>	Queue number
Qlen=<*queue length*>	Number of packet buffers used by the queue
Peak-Qlen=<*queue length*>	Maximum number of packet buffers used by the queue in the past
Limit-Qlen=<*queue length*>	Limit value for the number of packet buffers used by the queue
Discard	Queuing priority
Send packets	Number of packets accumulated in the queue
Discard packets	Number of packets discarded without being accumulated in the queue
Send bytes	Number of bytes of the packets accumulated in the queue#

Item	Displayed information
Total	Queue statistics

#: This item displays the value obtained by adding 28 bytes to the number of bytes from the MAC header to the payload length.

Example 3

Figure 3-17: Displaying information about PRU-FE SSW receive (control) queues

```
> show qos queueing pru 1 fe from-ssw control
Date 20XX/01/01 12:00:00 UTC
PRU1-FE (From-SSW Control)
 Max-queue=8
  Queue1   : Qlen=0, Peak-Qlen=0, Limit-Qlen=31
   Discard        Send packets       Discard packets            Send bytes
   1                         0                     0                     -
   2                         0                     0                     -
   3                         0                     0                     -
   4                         0                     0                     -
   Total                     0                     0                     0
                             :
                             :
  Queue8   : Qlen=0, Peak-Qlen=7, Limit-Qlen=31
   Discard        Send packets       Discard packets            Send bytes
   1                      2023                     0                     -
   2                         0                     0                     -
   3                         0                     0                     -
   4                         0                     0                     -
   Total                  2023                     0               1151320
>
```

Display items in Example 3

Table 3-17: Displayed information about PRU-FE CPU send queues and PRU-FE SSW send and receive queues

Item	Displayed information
PRU <*pru no.*>-FE (<*queue name*>)	To-CPU PRU-FE CPU send queues From-SSW Forward PRU-FE SSW receive (forward) queues From-SSW Control PRU-FE SSW receive (control) queues To-SSW Forward PRU-FE SSW send (forward) queues To-SSW Control PRU-FE SSW send (control) queues
Max-queue=<*number of queue*>	Number of queues
Queue<*queue no.*>	Queue number
Qlen=<*queue length*>	Number of packet buffers used by the queue[#1]
Peak-Qlen=<*queue length*>	Maximum number of packet buffers used by the queue in the past[#1]
Limit-Qlen=<*queue length*>	Limit value for the number of packet buffers used by the queue
Discard	Queuing priority
Send packets	Number of packets accumulated in the queue

Item	Displayed information
Discard packets	Number of packets discarded without being accumulated in the queue
Send bytes	Number of bytes of the packets accumulated in the queue#2#3
Total	Queue statistics

#1: The number of used packet buffers might not be cleared to zero even if the `clear qos queueing` or `clear qos queueing pru` command is executed to clear statistics to zero by a health-check frame in the device.

#2: - is displayed if statistics are not collected.

#3: This item displays the number of bytes from the MAC header to the FCS.

Impact on communication

None

Response messages

Table 3-18: List of response messages for the show qos queueing pru command

Message	Description
The command cannot be executed in the standby system.	This command cannot be executed in the standby system.
The command cannot be executed. Try again.	The command cannot be executed. Try again.
The command is not authorized by the RADIUS/ TACACS+ server or the configuration.	This command is not authorized by the RADIUS server, the TACACS+ server, or the configuration.
The specified PRU number is invalid. (PRU number = <*pru no.*>)	The specified PRU number is invalid. Make sure the specified parameter is correct, and then try again. <*pru no.*>: Indicates the PRU number.
There is no operational PRU.	There is no operational PRU. Make sure the status of the specified PRU is `active`, and then try again.

Notes

None

clear qos queueing pru

Clears, to zero, the following statistics displayed by the `show qos queueing pru` command.

- Maximum number of packet buffers used by queues in the past
- Number of packets accumulated in queues
- Number of packets discarded without being accumulated in queues
- Number of bytes of the packets accumulated in queues

Syntax

```
clear qos queueing pru [<pru no.>]
clear qos queueing pru <pru no.> ssw [{from-fe [{unicast [to-pru <pru no.>] |
multicast}] | to-fe [{unicast | multicast}]}]
clear qos queueing pru <pru no.> fe [{to-cpu | {from-ssw | to-ssw} [{forward |
control}]}]
```

Input mode

User mode and administrator mode

Parameters

<pru no.>

Clears, to zero, the queue statistics of the specified PRU number. For the specifiable range of values for the PRU number, see *Specifiable values for parameters*.

ssw

Clears, to zero, the PRU-SSW queue statistics.

from-fe

Clears, to zero, the statistics on PRU-SSW FE receive queues.

{unicast [to-pru *<pru no.>*] | multicast}

unicast [to-pru *<pru no.>*]

Clears, to zero, the statistics on unicast queues.

If `to-pru` *<pru no.>* is specified, queue statistics of the specified destination PRU number are cleared to zero. For the specifiable range of values for the PRU number, see *Specifiable values for parameters*.

multicast

Clears, to zero, the statistics on multicast queues.

to-fe

Clears, to zero, the statistics on PRU-SSW FE send queues.

{unicast | multicast}

unicast

Clears, to zero, the statistics on unicast queues.

multicast

Clears, to zero, the statistics on multicast queues.

fe

Clears, to zero, the PRU-FE queue statistics.

to-cpu

Clears, to zero, the statistics on CPU send queues.

{from-ssw | to-ssw}

from-ssw

Clears, to zero, the statistics on SSW receive queues.

to-ssw

Clears, to zero, the statistics on SSW send queues.

{forward | control}

forward

Clears, to zero, the statistics on forward queues.

control

Clears, to zero, the statistics on control queues.

Operation when each parameter is omitted:

Using this command, you can specify a parameter and clear, to zero, only the information corresponding to that condition. If you do not specify a parameter, information is cleared to zero without being limited by any conditions. If you specify multiple parameters, the information conforming to the conditions will be cleared to zero.

Operation when all parameters are omitted:

Clears, to zero, all the queue statistics of all PRUs.

Example

Figure 3-18: Clearing statistics on PRU-FE SSW receive queues

```
> clear qos queueing pru 1 fe from-ssw
Date 20XX/01/01 12:00:00 UTC
>
```

Display items

None

Impact on communication

None

Response messages

Table 3-19: List of response messages for the clear qos queueing pru command

Message	Description
The command cannot be executed in the standby system.	This command cannot be executed in the standby system.
The command cannot be executed. Try again.	The command cannot be executed. Try again.
The command is not authorized by the RADIUS/ TACACS+ server or the configuration.	This command is not authorized by the RADIUS server, the TACACS+ server, or the configuration.
The specified PRU number is invalid. (PRU number = <*pru no.*>)	The specified PRU number is invalid. Make sure the specified parameter is correct, and then try again. <*pru no.*>: Indicates the PRU number.
There is no operational PRU.	There is no operational PRU. Make sure the status of the specified PRU is `active`, and then try again.

Notes

None

show qos queueing port

Displays Ethernet interface queue information.

Syntax

```
show qos queueing port <port list> [{in | out}]
```

Input mode

User mode and administrator mode

Parameters

<port list>

Displays queue information of the specified Ethernet interfaces.

Specify port numbers in list format. Of the Ethernet interfaces specified in the list, all the queue information that can be displayed is displayed. For details about how to specify *<port list>* and the specifiable range of values, see *Specifiable values for parameters*.

{in | out}

Displays queue information for the receiving side or the sending side of the specified Ethernet interface.

in

Specifies the receiving side.

out

Specifies the sending side.

Operation when this parameter is omitted:

Displays queue information for both the receiving and sending sides of the specified Ethernet interface.

Example 1

Figure 3-19: Displaying information about port receive queues

```
> show qos queueing port 1/1 in
Date 20XX/01/01 12:00:00 UTC
NIF1/Port1 (In)
 Max-queue=1
  Queue1   : Qlen=0, Peak-Qlen=68, Limit-Qlen=127
   Discard        Send packets       Discard packets            Send bytes
   1                   8451361                     0                     -
   2                         0                     0                     -
   3                         0                     0                     -
   4                         0                     0                     -
   Total               8451361                     0            5813143908
>
```

Display items in Example 1

Table 3-20: Displayed information about port receive queues

Item	Displayed information
NIF<*nif no.*>/Port<*port no.*> (In)	Port receive queues
Max-queue=<*number of queue*>	Number of queues
Queue<*queue no.*>	Queue number

Item	Displayed information
Qlen=<*queue length*>	Number of packet buffers used by the queue#1
Peak-Qlen=<*queue length*>	Maximum number of packet buffers used by the queue in the past#1
Limit-Qlen=<*queue length*>	Limit value for the number of packet buffers used by the queue#1
Discard	Queuing priority
Send packets	Number of packets accumulated in the queue#1
Discard packets	Number of packets discarded without being accumulated in the queue#1
Send bytes	Number of bytes of the packets accumulated in the queue#1#2
Total	Queue statistics

#1: - is displayed if the value cannot be collected or statistics are not collected.

#2: This item displays the number of bytes from the MAC header to the FCS.

Example 2

Figure 3-20: Displaying information about port send queues

```
> show qos queueing port 1/1 out
Date 20XX/01/01 12:00:00 UTC
NIF1/Port1 (Out)
 Max-queue=8, Schedule-mode=pq
 Port-rate-limit=100Mbps, Active-rate=100Mbps
  Queue1   : Qlen=0, Peak-Qlen=51, Limit-Qlen=511
             Drop-mode=tail-drop
   Discard        Send packets       Discard packets            Send bytes
   1                   3203665                     0                     -
   2                         0                     0                     -
   3                         0                     0                     -
   4                         0                     0                     -
   Total             3203665                       0             256815552
                                  :
                                  :
  Queue8   : Qlen=0, Peak-Qlen=31, Limit-Qlen=511
             Drop-mode=tail-drop
   Discard        Send packets       Discard packets            Send bytes
   1                   1102665                     0                     -
   2                         0                     0                     -
   3                         0                     0                     -
   4                         0                     0                     -
   Total             1102665                       0             287868456
>
```

Display items in Example 2

Table 3-21: Displayed information about port send queues

Item	Displayed information
NIF<*nif no.*>/Port<*port no.*> (Out)	Port send queues
Max-queue=<*number of queue*>	Number of queues
Schedule-mode=<*schedule mode*>	Scheduling mode For details about scheduling, see *7.1.3 Scheduling* in the manual *Configuration Guide Vol. 2 For Version 12.1.*

Item	Displayed information
Port-rate-limit=<*rate*>#1	Value set for port bandwidth control - is displayed when the value is not set.
Active-rate=<*rate*>#1	Value set for port bandwidth control operating on the target port, or line speed • When the value set for port bandwidth control is less than the line speed The value set for port bandwidth control is displayed. • When the value set for port bandwidth control is more than the line speed The line speed is displayed. • When port bandwidth control is not set The line speed is displayed. - is displayed if the line status is not `UP`, or auto-negotiation is unresolved (including when processing is in progress).
Queue<*queue no.*>	Queue number
Qlen=<*queue length*>	Number of packet buffers used by the queue#2
Peak-Qlen=<*queue length*>	Maximum number of packet buffers used by the queue in the past#2
Limit-Qlen=<*queue length*>	Limit value for the number of packet buffers used by the queue#2
Drop-mode=<*drop mode*>	Drop control mode#2 `Tail drop`: Indicates the tail drop.
Discard	Queuing priority For details about the queuing priority, see *7.1.2 Drop control* in the manual *Configuration Guide Vol. 2 For Version 12.1*.
Send packets	Number of packets accumulated in the queue#2
Discard packets	Number of packets discarded without being accumulated in the queue#2
Send bytes	Number of bytes of the packets accumulated in the queue#2#3
Total	Queue statistics

#1: The unit `k` represents 1000, `M` represents 1000^2, and `G` represents 1000^3.

#2: - is displayed if the value cannot be collected or statistics are not collected.

#3: This item displays the number of bytes from the MAC header to the FCS.

Impact on communication

None

Response messages

Table 3-22: List of response messages for the show qos queueing port command

Message	Description
The command cannot be executed in the standby system.	This command cannot be executed in the standby system.
The command cannot be executed. Try again.	The command cannot be executed. Try again.
The command is not authorized by the RADIUS/ TACACS+ server or the configuration.	This command is not authorized by the RADIUS server, the TACACS+ server, or the configuration.

Message	Description
The specified NIF number is invalid. (NIF number = <*nif no.*>)	The specified NIF number is invalid. Make sure the specified parameter is correct, and then try again. <*nif no.*>: Indicates the NIF number.
The specified port number is invalid. (port number = <*port no.*>)	The specified port number is invalid. Make sure the specified parameter is correct, and then try again. <*port no.*>: Indicates the port number.
There is no operational NIF.	There is no operational NIF. Make sure the status of the specified NIF is `active`, and then try again.

Notes

1. If the target Ethernet interface is not in a normal operating state, the port shaper configuration does not take effect. To check the status of the target Ethernet interface, use the `show port` command.

clear qos queueing port

Clears, to zero, the following statistics displayed by the `show qos queueing port` command.

- Maximum number of packet buffers used by queues in the past
- Number of packets accumulated in queues
- Number of packets discarded without being accumulated in queues
- Number of bytes of the packets accumulated in queues

Syntax

```
clear qos queueing port <port list> [{in | out}]
```

Input mode

User mode and administrator mode

Parameters

<port list>

Clears, to zero, the queue statistics of the specified Ethernet interface.

Specify port numbers in list format. Of the Ethernet interfaces specified in the list, all the queue statistics that can be cleared are cleared to zero. For details about how to specify *<port list>* and the specifiable range of values, see *Specifiable values for parameters*.

{in | out}

Clears, to zero, the queue statistics for the receiving side or the sending side of the specified Ethernet interface.

in

Specifies the receiving side.

out

Specifies the sending side.

Operation when this parameter is omitted:

Clears, to zero, the statistics for both the receiving and sending sides of the specified Ethernet interface.

Example

Figure 3-21: Clearing statistics on port send queues

```
> clear qos queueing port 1/1 out
Date 20XX/01/01 12:00:00 UTC
>
```

Display items

None

Impact on communication

None

Response messages

Table 3-23: List of response messages for the clear qos queueing port command

Message	Description
The command cannot be executed in the standby system.	This command cannot be executed in the standby system.
The command cannot be executed. Try again.	The command cannot be executed. Try again.
The command is not authorized by the RADIUS/ TACACS+ server or the configuration.	This command is not authorized by the RADIUS server, the TACACS+ server, or the configuration.
The specified NIF number is invalid. (NIF number = <*nif no.*>)	The specified NIF number is invalid. Make sure the specified parameter is correct, and then try again. <*nif no.*>: Indicates the NIF number.
The specified port number is invalid. (port number = <*port no.*>)	The specified port number is invalid. Make sure the specified parameter is correct, and then try again. <*port no.*>: Indicates the port number.
There is no operational NIF.	There is no operational NIF. Make sure the status of the specified NIF is `active`, and then try again.

Notes

1. If you use this command to clear statistics to zero, statistics in the `axPortQueue` group and the maximum number of packet buffers used by queues in the past are also cleared.

restart queue-control

Restarts the queue control program.

Syntax

```
restart queue-control [-f] [core-file]
```

Input mode

User mode and administrator mode

Parameters

-f

Restarts the queue control program without displaying a confirmation message.

Operation when this parameter is omitted:

A confirmation message is displayed.

core-file

When the queue control program restarts, the core file of the program is output.

Operation when this parameter is omitted:

A core file is not output.

Operation when all parameters are omitted:

Displays a confirmation message and then restarts the queue control program.

Example

Figure 3-22: Restarting the queue control program

```
> restart queue-control
Do you want to restart the queue control program? (y/n): y
>
```

Display items

None

Impact on communication

None

Response messages

Table 3-24: List of response messages for the restart queue-control command

Message	Description
The command cannot be executed. Try again.	The command cannot be executed. Try again.
The command is not authorized by the RADIUS/ TACACS+ server or the configuration.	This command is not authorized by the RADIUS server, the TACACS+ server, or the configuration.

Notes

1. If the core file already exists, the existing file is overwritten unconditionally. Therefore, if the existing file is necessary, back it up in advance. The output destination and the name of the file are as follows:
   - Directory: `/usr/var/core/`

- File name: `quectld.core`

dump queue-control

Outputs the control information collected by the queue control program to a file.

Syntax

```
dump queue-control
```

Input mode

User mode and administrator mode

Parameters

None

Example

Figure 3-23: Collecting a dump of the queue control program

```
> dump queue-control
>
```

Display items

None

Impact on communication

None

Response messages

Table 3-25: List of response messages for the dump queue-control command

Message	Description
The command cannot be executed. Try again.	The command cannot be executed. Try again.
The command is not authorized by the RADIUS/ TACACS+ server or the configuration.	This command is not authorized by the RADIUS server, the TACACS+ server, or the configuration.

Notes

1. If the specified file already exists, the existing file is overwritten unconditionally. Therefore, if the existing file is necessary, back it up in advance. The output destination and the name of the file are as follows:
   - Directory: `/usr/var/quectl/`
   - File name: `quectld_dump.gz`

Chapter

4. Common to Filters and QoS

restart filter-qosflow
dump filter-qosflow

restart filter-qosflow

Restarts the filter and QoS flow control program.

Syntax

```
restart filter-qosflow [-f] [core-file]
```

Input mode

User mode and administrator mode

Parameters

-f

Restarts the filter and QoS flow control program without displaying a confirmation message.

Operation when this parameter is omitted:

A confirmation message is displayed.

core-file

Outputs the core file of the filter and QoS flow control program when the program is restarted.

Operation when this parameter is omitted:

A core file is not output.

Operation when all parameters are omitted:

Displays a restart confirmation message, and then restarts the filter and QoS flow control program.

Example

```
> restart filter-qosflow
Do you want to restart the filter and qosflow program? (y/n): y
>
```

Display items

None

Impact on communication

None

Response messages

Table 4-1: List of response messages for the restart filter-qosflow command

Message	Description
The command cannot be executed. Try again.	The command cannot be executed. Try again.
The command is not authorized by the RADIUS/ TACACS+ server or the configuration.	This command is not authorized by the RADIUS server, the TACACS+ server, or the configuration.

Notes

1. If the core file already exists, the existing file is overwritten unconditionally. Therefore, if the existing file is necessary, back it up in advance. The output destination and the name of the file are as follows:
   - Directory: `/usr/var/core/`
   - File name: `flowctld.core`

dump filter-qosflow

Outputs the control information collected by the filter and QoS flow control program to a file.

Syntax

```
dump filter-qosflow
```

Input mode

User mode and administrator mode

Parameters

None

Example

```
> dump filter-qosflow
>
```

Display items

None

Impact on communication

None

Response messages

Table 4-2: List of response messages for the dump filter-qosflow command

Message	Description
The command cannot be executed. Try again.	The command cannot be executed. Try again.
The command is not authorized by the RADIUS/ TACACS+ server or the configuration.	This command is not authorized by the RADIUS server, the TACACS+ server, or the configuration.

Notes

1. If the specified file already exists, the existing file is overwritten unconditionally. Therefore, if the existing file is necessary, back it up in advance. The output destination and the name of the file are as follows:
   - Directory: `/usr/var/flowctl/`
   - File name: `flowctld_dump.gz`

Chapter 5. sFlow statistics

show sflow
clear sflow statistics
restart sflow
dump sflow

show sflow

Displays the configuration setting status and operating status of sFlow statistics.

Syntax

```
show sflow [detail]
```

Input mode

User mode and administrator mode

Parameters

detail

Displays detailed information about the setting status and the operating status of sFlow statistics.

Example

Figure 5-1: Displaying the setting status and the operating status of sFlow statistics

```
> show sflow
Date 20XX/07/19 12:00:00 UTC
sFlow service status: enable
Elapsed time from the last statistics clearance:  8:00:05
sFlow agent data :
  sFlow service version  : 4
  CounterSample interval rate: 60 seconds
  Received sFlow samples : 37269  Dropped sFlow samples :    2093
  Exported sFlow samples : 37269  Non-exported sFlow Samples         :       0
sFlow collector data :
  Collector IP address: 192.168.1.20  UDP:6343  Source IP address: 192.168.1.1
   Send FlowSample UDP packets   : 12077  Send failed packets:     0
   Send CounterSample UDP packets:   621  Send failed packets:     0
  Collector IP address: 192.168.1.21  UDP:65535  Source IP address: 192.168.1.1
   Send FlowSample UDP packets   : 12077  Send failed packets:     0
   Send CounterSample UDP packets:   621  Send failed packets:     0
sFlow sampling data :
  Configured rate(actual rate)  : 1 per 2048 packets(1 per 2048 packets)
   Configured sFlow ingress ports: 1/2-4
```

Figure 5-2: Displaying detailed information about the setting status and the operating status of sFlow statistics

```
> show sflow detail
Date 20XX/07/19 12:00:00 UTC
sFlow service status: enable
Elapsed time from the last statistics clearance:  8:00:05
sFlow agent data :
  sFlow service version  : 4
  CounterSample interval rate: 60 seconds
  Received sFlow samples : 37269  Dropped sFlow samples :    2093
  Exported sFlow samples : 37269  Non-exported sFlow Samples         :       0
sFlow collector data :
  Collector IP address: 192.168.1.20  UDP:6343  Source IP address: 192.168.1.1
   Send FlowSample UDP packets   : 12077  Send failed packets:     0
   Send CounterSample UDP packets:   621  Send failed packets:     0
  Collector IP address: 192.168.1.21  UDP:65535  Source IP address: 192.168.1.1
   Send FlowSample UDP packets   : 12077  Send failed packets:     0
   Send CounterSample UDP packets:   621  Send failed packets:     0
sFlow sampling data :
  Configured rate(actual rate)  : 1 per 2048 packets(1 per 2048 packets)
   Configured sFlow ingress ports: 1/2-4
Detail data :
  Max packet size: 1400 bytes
```

```
Packet information type: header
Max header size: 256 bytes
Extended information type: router,gateway,user,url
URL port number: 80,8080
Sampling mode: random-number
Target ports for CounterSample: 1/2-4
```

Display items

Table 5-1: Displayed sFlow statistics

Item	Displayed information
sFlow service status	Indicates the current operating status of sFlow statistics. (`disable` is displayed if the target port is not specified.)
Elapsed time from the last statistics clearance	Indicates the time elapsed after sFlow statistics has started or the time elapsed after the `clear sflow statistics` command was last executed. *hh*:*mm*:*ss* (when the elapsed time is 24 hours or less: *hh* = hours, *mm* = minutes, *ss* = seconds) *D* `day`: (when the elapsed time is over 24 hours: *D* = number of days)
sFlow service version	Version of the sFlow packet.
CounterSample interval rate	Sending interval (in seconds) between counter samples
Received sFlow samples	Total number of packets that were sampled correctly
Dropped sFlow samples	Total number of flow sample packets that were discarded within the device
Exported sFlow samples	Total number of sample packets contained in UDP packets sent to the collector
Non-exported sFlow Samples	Total number of sample packets contained in UDP packets that could not be sent
Collector IP address	IP address of the collector set in the configuration
UDP	UDP port number
Source IP address	Address used as an agent IP when packets are sent to the collector
Send FlowSample UDP packets	Number of UDP packets for flow samples sent to the collector
Send failed packets	Number of UDP packets that could not be sent to the collector
Send CounterSample UDP packets	Number of UDP packets for counter samples sent to the collector
Configured rate	Sampling interval set in the configuration
(actual rate)	Sampling interval that is actually being used
Configured sFlow ingress ports	Ports for which the `sflow forward ingress` configuration command is set and on which sFlow statistics are collected
Max packet size	Maximum sFlow packet size
Packet information type	Basic data format for flow samples
Max header size	The maximum size of the header length when the header type is used as the basic data format
Extended information type	Extended data format for flow samples
URL port number	Port number used to determine if a packet is an HTTP packet when URL information is used for the extended data format
Sampling mode	Sampling method

Item	Displayed information
random-number	Collection at a rate (random numbers) according to the sampling interval
Target ports for CounterSample	Target port for counter samples

Impact on communication

None

Response messages

Table 5-2: List of response messages for the show sflow command

Message	Description
The command cannot be executed in the standby system.	This command cannot be executed in the standby system.
The command cannot be executed. Try again.	The command cannot be executed. Try again.
The command is not authorized by the RADIUS/ TACACS+ server or the configuration.	This command is not authorized by the RADIUS server, the TACACS+ server, or the configuration.
The flow statistics program(flowd) is not running.	This command failed because the flow statistics program is not running. If this message appears when sFlow statistics are enabled, wait until the flow statistics program is restarted, and then try again.

Notes

1. If the number of packets or the statistics counter exceeds the maximum value (32 bit counter), the value is reset to 0.
2. If no IP addresses or ports are set in the configuration, `----` is displayed.

clear sflow statistics

Clears, to zero, the statistics managed by sFlow statistics.

Syntax

```
clear sflow statistics
```

Input mode

User mode and administrator mode

Parameters

None

Example

```
>clear sflow statistics
>
```

Display items

None

Impact on communication

None

Response messages

Table 5-3: List of response messages for the clear sflow statistics command

Message	Description
The command cannot be executed in the standby system.	This command cannot be executed in the standby system.
The command cannot be executed. Try again.	The command cannot be executed. Try again.
The command is not authorized by the RADIUS/ TACACS+ server or the configuration.	This command is not authorized by the RADIUS server, the TACACS+ server, or the configuration.
The flow statistics program(flowd) is not running.	This command failed because the flow statistics program is not running. If this message appears when sFlow statistics are enabled, wait until the flow statistics program is restarted, and then try again.

Notes

None

restart sflow

Restarts the flow statistics program.

Syntax

```
restart sflow [-f] [core-file]
```

Input mode

User mode and administrator mode

Parameters

-f

Restarts the flow statistics program without displaying a confirmation message.

Operation when this parameter is omitted:

A confirmation message is displayed.

core-file

Outputs the core file of the flow statistics program (`flowd.core`) when the program is restarted.

Operation when this parameter is omitted:

A core file is not output.

Example

```
>restart sflow
Are you sure you want to restart the flow statistics program(flowd)? (y/n): y
>
```

Display items

None

Impact on communication

None

Response messages

Table 5-4: List of response messages for the restart sflow command

Message	Description
The command cannot be executed. Try again.	The command cannot be executed. Try again.
The command is not authorized by the RADIUS/ TACACS+ server or the configuration.	This command is not authorized by the RADIUS server, the TACACS+ server, or the configuration.
The flow statistics program(flowd) is not running.	This command failed because the flow statistics program is not running. If this message appears when sFlow statistics are enabled, wait until the flow statistics program is restarted, and then try again.

Notes

1. The counter value for statistics is cleared when the flow statistics program is restarted.
2. If the core file already exists, the existing file is overwritten unconditionally. Therefore, if the existing file is necessary, back it up in advance. The output destination and the name of the file are as follows:

- Directory: `/usr/var/core/`
- File name: `flowd.core`

dump sflow

Outputs the control information collected by the flow statistics program to a file.

Syntax

```
dump sflow
```

Input mode

User mode and administrator mode

Parameters

None

Example

```
>dump sflow
>
```

Display items

None

Impact on communication

None

Response messages

Table 5-5: List of response messages for the dump sflow command

Message	Description
The command cannot be executed. Try again.	The command cannot be executed. Try again.
The command is not authorized by the RADIUS/ TACACS+ server or the configuration.	This command is not authorized by the RADIUS server, the TACACS+ server, or the configuration.
The flow statistics program(flowd) is not running.	This command failed because the flow statistics program is not running. If this message appears when sFlow statistics are enabled, wait until the flow statistics program is restarted, and then try again.

Notes

1. If the specified file already exists, the existing file is overwritten unconditionally. Therefore, if the existing file is necessary, back it up in advance. The output destination and the name of the file are as follows:
   - Directory: `/usr/var/flowd/`
   - File name: `sflow.trc`

Chapter 6. CFM

l2ping
l2traceroute
show cfm
show cfm remote-mep
show cfm fault
show cfm l2traceroute-db
show cfm statistics
clear cfm remote-mep
clear cfm fault
clear cfm l2traceroute-db
clear cfm statistics
restart cfm
dump protocols cfm

l2ping

This command can be used to determine whether the MEP of the Device can communicate with a remote MEP or MIP.

Syntax

```
l2ping {remote-mac <mac address> | remote-mep <mepid>} domain-level <level> ma
<no.> mep <mepid> [count <count>] [timeout <seconds>] [framesize <size>] [cos
<cos>]
l2ping {remote-mac <mac address> | remote-mep <mepid>} mel <level> meg <no.> mep
<mepid> [count <count>] [timeout <seconds>] [framesize <size>] [cos <cos>]
l2ping multicast mel <level> meg <no.> mep <mepid> [count <count>] [timeout
<seconds>] [framesize <size>] [cos <cos>]
```

Input mode

User mode and administrator mode

Parameters

{remote-mac <*mac address*> | remote-mep <*mepid*>}

remote-mac <*mac address*>

Specifies the MAC address of the remote MEP or MIP whose reachability you want to verify. For details about how to specify a MAC address, see *Specifiable values for parameters*.

remote-mep <*mepid*>

Specifies the remote MEP ID whose reachability you want to verify. For this parameter, you can specify a remote MEP that can be checked by a CC. The specifiable values are from 1 to 8191.

domain-level <*level*> (for the IEEE 802.1ag standard)

Specifies the domain level whose reachability you want to verify. For this parameter, you can specify a domain level that was set by a configuration command. The specifiable values are from 0 to 7.

ma <*no.*> (for the IEEE 802.1ag standard)

Specifies the MA ID number whose reachability you want to verify. For this parameter, you can specify an MA ID number that was set by a configuration command. The specifiable values are from 0 to 65535.

mel <*level*> (for the ITU-T Y.1731 standard)

Specifies the MEG level whose reachability you want to verify. For this parameter, you can specify an MEG level that was set by a configuration command. The specifiable values are from 0 to 7.

meg <*no.*> (for the ITU-T Y.1731 standard)

Specifies the MEG ID number whose reachability you want to verify. For this parameter, you can specify an MEG ID number that was set by a configuration command. The specifiable values are from 0 to 65535.

mep <*mepid*>

Specifies the MEP ID of the Device that will become the source for confirming reachability. For this parameter, you can specify an MEP ID that was set by a configuration command. The specifiable values are from 1 to 8191.

count <*count*>

Sends loopback messages for the number of times specified. The specifiable values are from 1 to 5.

Operation when this parameter is omitted:

Loopback messages are sent five times. However, if the `multicast` parameter is specified, a loopback message is sent only once.

timeout <*seconds*>

Specifies the response wait time in seconds. The specifiable values are from 1 to 60.

Operation when this parameter is omitted:

The response wait time is 5 seconds.

framesize <*size*>

Specifies the number of bytes of data to be added to the loopback message to be sent. The specifiable values are from 1 to 9192.

Operation when this parameter is omitted:

40 bytes are added, and the loopback message that is sent is 64 bytes.

cos <*cos*>

Specifies the CoS value of the loopback message to be sent. The specifiable values are from 0 to 7.

Operation when this parameter is omitted:

The CoS value of the loopback message that is sent is 7.

multicast (for the ITU-T Y.1731 standard)

Verifies the reachability for all remote MEPs.

Operation when all parameters are omitted:

Operation proceeds as described for each *Operation when this parameter is omitted* section.

Example

Figure 6-1: Verifying reachability by specifying an MA ID number

```
> l2ping remote-mep 1010 domain-level 7 ma 1000 mep 1020 count 3
L2ping to MP:1010(0012.e220.00a3) on Level:7  MA: 1000 MEP:1020
Time:20XX/04/01 12:00:00 UTC
1: L2ping Reply from 0012.e220.00a3  64bytes  Time=   21 ms
2: L2ping Reply from 0012.e220.00a3  64bytes  Time=   22 ms
3: L2ping Reply from 0012.e220.00a3  64bytes  Time=   23 ms

--- L2ping Statistics ---
  Tx L2ping Request :    3  Rx L2ping Reply :    3  Lost Frame  :   0%
  Round-trip Min/Avg/Max : 21/22/23 ms
>
```

Figure 6-2: Verifying reachability by specifying an MEG ID number

```
> l2ping remote-mep 1020 mel 7 meg 1001 mep 1021 count 3
L2ping to MP:1020(0012.e220.0a21) on Level:7 MEG: 1001 MEP:1021
Time:20XX/04/01 12:00:00 UTC
1: L2ping Reply from 0012.e220.0a21  64bytes  Time=   21 ms
2: L2ping Reply from 0012.e220.0a21  64bytes  Time=   22 ms
3: L2ping Reply from 0012.e220.0a21  64bytes  Time=   23 ms

--- L2ping Statistics ---
  Tx L2ping Request :    3  Rx L2ping Reply :    3  Lost Frame  :   0%
```

```
  Round-trip Min/Avg/Max : 21/22/23 ms
>
```

Figure 6-3: Verifying reachability for all remote MEPs

```
> l2ping multicast mel 7 meg 1012 mep 1040
L2ping on Level:7 MEG: 1012 MEP:1040
Time:20XX/04/01 12:00:00 UTC
1: L2ping Reply from 0012.e220.1224  64bytes  Time=   21 ms
1: L2ping Reply from 0012.e220.00a5  64bytes  Time=   22 ms
1: L2ping Reply from 0012.e220.01a1  64bytes  Time=   23 ms
1: L2ping Reply from 0012.e220.055a  64bytes  Time=   22 ms

--- L2ping Statistics ---
  Tx L2ping Request :    1  Rx L2ping Reply :    4  Lost Frame  : -
  Round-trip Min/Avg/Max :  21/-/23 ms
>
```

Display items

Table 6-1: Information displayed by the l2ping command

Item	Displayed information	Displayed detailed information
L2ping	MAC address of the destination remote MEP or MIP	`to MP:`<*remote mac address*>: When the MAC address of the destination remote MEP or MIP is specified. `to MP:`<*remote mep id*> `(`<*remote mac address*>`)`: When the destination remote MEP ID is specified. If the `multicast` parameter is specified, the MAC address of the destination remote MEP or MIP is not displayed.
Level	Domain level or MEG level	Domain level or MEG level set in the configuration 0 to 7
MA	MA ID number	MA ID number set in the configuration 0 to 65535
MEG	MEG ID number	MEG ID number set in the configuration 0 to 65535
MEP	MEP ID for the Device	MEP ID set in the configuration 1 to 8191
Time	Send time	*yyyy*/*mm*/*dd hh*:*mm*:*ss timezone* year/month/day hour:minute:second time zone
<*count*>	Test count	Count value
L2ping Reply from	MAC address of the replying MP	MAC address of the remote MEP or MIP that replied
bytes	Number of received bytes	Number of bytes starting from the common CFM header and ending with End TLV of the loopback message
Time	Response time	The time from the transmission of a loopback message until a loopback reply is received
Request Timed Out.	Response wait timeout	--
Transmission failure.	An attempt to send a loopback message failed.	--
Tx L2ping Request	Number of sent loopback messages	--

Item	Displayed information	Displayed detailed information
Rx L2ping Reply	Number of received loopback replies	Number of replies that were received normally from the remote MEP or MIP
Lost Frame	Percentage of lost frames (%)	- is displayed if the `multicast` parameter is specified.
Round-trip Min/Avg/Max	Response time (minimum, average, and maximum)	- is displayed for the average time if the `multicast` parameter is specified.

Impact on communication

None

Response messages

Table 6-2: List of response messages for the l2ping command

Message	Description
The command cannot be executed in the standby system.	This command cannot be executed in the standby system.
The command cannot be executed. Try again.	The command cannot be executed. Try again.
The command is not authorized by the RADIUS/ TACACS+ server or the configuration.	This command is not authorized by the RADIUS server, the TACACS+ server, or the configuration.
The specified CFM is not configured.	The CFM is not configured. Check the configuration.
The specified domain level is not configured.	The specified domain level is not configured. Make sure the specified parameter is correct, and then try again.
The specified MA is not configured.	The specified MA ID number is not configured. Make sure the specified parameter is correct, and then try again.
The specified MEG is not configured.	The specified MEG ID number is not configured. Make sure the specified parameter is correct, and then try again.
The specified MEL is not configured.	The specified MEG level is not configured. Make sure the specified parameter is correct, and then try again.
The specified MEP ID is not configured.	The specified MEP ID is not configured. Make sure the specified parameter is correct, and then try again.
The specified remote MEP is unknown.	The specified remote MEP is unknown. Make sure the specified parameter is correct, and then try again.

Notes

1. To halt execution of this command, press **Ctrl** + **C**.
2. If you want to specify a value that is more than 1476 bytes for the `framesize` parameter, use the `mtu` or `system mtu` configuration command to set the maximum frame length to a value that is more than 1518 bytes.
3. If the `multicast` parameter and the `count` parameter are specified, the next loopback message is sent after the response wait time expires.

l2traceroute

Verifies the route from the Device's MEP to a remote MEP or MIP.

Syntax

```
l2traceroute {remote-mac <mac address> | remote-mep <mepid>} domain-level
<level> ma <no.> mep <mepid> [timeout <seconds>] [ttl <ttl>] [cos <cos>]
l2traceroute {remote-mac <mac address> | remote-mep <mepid>} mel <level> meg
<no.> mep <mepid> [timeout <seconds>] [ttl <ttl>] [cos <cos>]
```

Input mode

User mode and administrator mode

Parameters

{remote-mac <*mac address*> | remote-mep <*mepid*>}

remote-mac <*mac address*>

Specifies the MAC address of the destination remote MEP or MIP whose route you want to verify. For details about how to specify a MAC address, see *Specifiable values for parameters*.

remote-mep <*mepid*>

Specifies the destination remote MEP ID whose route you want to verify. For this parameter, you can specify a remote MEP ID that can be checked by a CC. The specifiable values are from 1 to 8191.

domain-level <*level*> (for the IEEE 802.1ag standard)

Specifies the domain level whose route you want to verify. For this parameter, you can specify a domain level that was set by a configuration command. The specifiable values are from 0 to 7.

ma <*no.*> (for the IEEE 802.1ag standard)

Specifies the MA ID number whose route you want to verify. For this parameter, you can specify an MA ID number that was set by a configuration command. The specifiable values are from 0 to 65535.

mel <*level*> (for the ITU-T Y.1731 standard)

Specifies the MEG level whose route you want to verify. For this parameter, you can specify an MEG level that was set by a configuration command. The specifiable values are from 0 to 7.

meg <*no.*> (for the ITU-T Y.1731 standard)

Specifies the MEG ID number whose route you want to verify. For this parameter, you can specify an MEG ID number that was set by a configuration command. The specifiable values are from 0 to 65535.

mep <*mepid*>

Specifies the MEP ID of the Device that will become the source for verifying the route. For this parameter, you can specify an MEP ID that was set by a configuration command. The specifiable values are from 1 to 8191.

timeout <*seconds*>

Specify the response wait time in seconds. The specifiable values are from 1 to 60.

Operation when this parameter is omitted:

The response wait time is 5 seconds.

ttl <*ttl*>

Specify the maximum time-to-live (the maximum number of hops) for the linktrace message. The specifiable values are from 1 to 255.

Operation when this parameter is omitted:

The maximum number of hops is 64.

cos <*cos*>

Specifies the CoS value of the linktrace message to be sent. The specifiable values are from 0 to 7.

Operation when this parameter is omitted:

The CoS value of the linktrace message that is sent is 7.

Operation when all parameters are omitted:

Operation proceeds as described for each *Operation when this parameter is omitted* section.

Example

Figure 6-4: Verifying the route by specifying an MA ID number

```
>l2traceroute remote-mep 1010 domain-level 7 ma 1000 mep 1020 ttl 255
L2traceroute to MP:1010(0012.e220.00a3) on Level:7 MA:1000 MEP:1020
Time:20XX/04/01 12:00:00 UTC
254  0012.e220.00c2  Forwarded
253  0012.e210.000d  Forwarded
252  0012.e220.00a3  NotForwarded  Hit
>
```

Figure 6-5: Verifying the route by specifying an MEG ID number

```
>l2traceroute remote-mep 1020 mel 7 meg 1011 mep 1071 ttl 255
L2traceroute to MP:1020(0012.e220.0014) on Level:7 MEG: 1011 MEP:1071
Time:20XX/04/01 12:00:00 UTC
254  0012.e220.002d  Forwarded
253  0012.e220.0014  NotForwarded  Hit
>
```

Display items

Table 6-3: Information displayed by the l2traceroute command

Item	Displayed information	Displayed detailed information
L2traceroute	MAC address of the destination remote MEP or MIP	`to MP:`<*remote mac address*>: When the MAC address of the destination remote MEP or MIP is specified. `to MP:`<*remote mep id*> `(`<*remote mac address*>`)`: When the destination remote MEP ID is specified.
Level	Domain level or MEG level	Domain level or MEG level set in the configuration 0 to 7
MA	MA ID number	MA ID number set in the configuration 0 to 65535
MEG	MEG ID number	MEG ID number set in the configuration 0 to 65535
MEP	MEP ID for the Device	MEP ID set in the configuration 1 to 8191

Item	Displayed information	Displayed detailed information
Time	Send time	*yyyy*/*mm*/*dd hh*:*mm*:*ss timezone* year/month/day hour:minute:second time zone
<*ttl*>	Time to Live	0 to 254
<*remote mac address*>	MAC address of the replying MP	MAC address of the MEP or MIP that replied
Forwarded/NotForwarded	Forwarding status of the replying MP	Whether the replying MP forwarded the linktrace message `Forwarded`: Forwarded `NotForwarded`: Not forwarded
Hit	Reply from the destination remote MEP or MIP	--
Transmission failure.	An attempt to send a linktrace message failed.	--

Impact on communication

None

Response messages

Table 6-4: List of response messages for the l2traceroute command

Message	Description
The command cannot be executed in the standby system.	This command cannot be executed in the standby system.
The command cannot be executed. Try again.	The command cannot be executed. Try again.
The command is not authorized by the RADIUS/ TACACS+ server or the configuration.	This command is not authorized by the RADIUS server, the TACACS+ server, or the configuration.
The specified CFM is not configured.	The CFM is not configured. Check the configuration.
The specified domain level is not configured.	The specified domain level is not configured. Make sure the specified parameter is correct, and then try again.
The specified MA is not configured.	The specified MA ID number is not configured. Make sure the specified parameter is correct, and then try again.
The specified MEG is not configured.	The specified MEG ID number is not configured. Make sure the specified parameter is correct, and then try again.
The specified MEL is not configured.	The specified MEG level is not configured. Make sure the specified parameter is correct, and then try again.
The specified MEP ID is not configured.	The specified MEP ID is not configured. Make sure the specified parameter is correct, and then try again.
The specified remote MEP is unknown.	The specified remote MEP is unknown. Make sure the specified parameter is correct, and then try again.

Notes

1. To halt execution of this command, press **Ctrl** + **C**.
2. If you execute this command multiple times for the same remote MP, only the last execution result is retained in the linktrace database.
3. Information about some replies is not displayed if those replies are received after being forwarded by a number of devices that exceeds the number of devices on the routes that can be registered in the linktrace database.

4. The MAC address of the remote MP is used to verify the route. Even when `remote-mep` is specified, the route is verified by using the MAC address that corresponds to the MEP ID. Therefore, even when the specified MEP ID does not exist, due to a configuration change or another reason, a reply is sent if an MEP has that MAC address.

show cfm

Displays the configuration information for domains and MPs, and the CFM information related to detected failures.

Syntax

```
show cfm [{[domain-level <level>] [ma <no.>] [mep <mepid>] [detail] | summary}]
show cfm [{[mel <level>] [meg <no.>] [mep <mepid>] [detail] | summary}]
```

Input mode

User mode and administrator mode

Parameters

domain-level <*level*> (for the IEEE 802.1ag standard)

Displays CFM information for the specified domain level. The specifiable values are from 0 to 7.

ma <*no.*> (for the IEEE 802.1ag standard)

Displays CFM information for the specified MA ID number. The specifiable values are from 0 to 65535.

mel <*level*> (for the ITU-T Y.1731 standard)

Displays CFM information for the specified MEG level. The specifiable values are from 0 to 7.

meg <*no.*> (for the ITU-T Y.1731 standard)

Displays CFM information for the specified MEG ID number. The specifiable values are from 0 to 65535.

mep <*mepid*>

Displays CFM information for the specified MEP ID. The specifiable values are from 1 to 8191.

detail

Displays detailed CFM information.

summary

Displays the number of MPs and CFM ports that can be accommodated.

Operation when each parameter is omitted:

This command can display only the information relevant to the condition applied by a parameter that has been set. If the parameter has not been set, information is displayed with no condition applied. If multiple parameters are specified, information conforming to the conditions will be displayed.

Operation when all parameters are omitted:

Displays all CFM information.

Example 1

Figure 6-6: Displaying CFM information

```
>show cfm
Date 20XX/04/01 12:00:00 UTC
Domain Level:3   MA:  100
  Domain Name(str ):ProviderDomain_3
  MA     Name(str ):Kanagawa_to_Nagoya
```

```
  CC:Enable   Interval:1min     CoS:7
  Alarm Priority:2  Start Time: 2500ms  Reset Time:10000ms
  MEP Information
    ID:6110  DownMEP  (Up  )  Port:1/1.1000        Status:PortState
Domain Level:3   MA:  300
  Domain Name(str ):ProviderDomain_3
  MA     Name(str ):Tokyo_to_Osaka
  CC:Enable   Interval:1min     CoS:7
  Alarm Priority:2  Start Time: 2500ms  Reset Time:10000ms
  MEP Information
    ID:7110  DownMEP  (Down)  Port:ChGr:16         Status:-
MEL:1   MEG:  400
  MEG ID  ICC:342612  UMC:TtoO
  CC:Enable   Interval:1min     CoS:7
  MEP Information
    ID:8110  DownMEP  (Up  )  Port:ChGr:768.4000   Status:UnexpPeriod
>
```

Figure 6-7: Displaying detailed CFM information

```
>show cfm detail
Date 20XX/04/01 12:00:00 UTC
Domain Level:3   MA:  100
  Domain Name(str ):KansaiDomain_3
  MA     Name(str ):Tokyo_to_Osaka
  CC:Enable   Interval:1min     CoS:7
  Alarm Priority:2  Start Time: 2500ms  Reset Time:10000ms
  MEP Information
    ID:6110  DownMEP  (Down)  Port:1/1.1000        Status:PortState
             MAC:0012.e200.0001  Tag:-
             Admin State:Enable  CoS:7
Domain Level:3   MA:  300
  Domain Name(str ):TohokuDomain_3
  MA     Name(str ):Tokyo_to_Sendai
  CC:Enable   Interval:1min     CoS:7
  Alarm Priority:2  Start Time: 2500ms  Reset Time:10000ms
  MEP Information
    ID:7110  DownMEP  (Down)  Port:ChGr:16         Status:-
             MAC:0012.e200.0003  Tag:2000
             Admin State:Disable  CoS:7
MEL:1   MEG:  400
  MEG ID  ICC:342612  UMC:TtoO
  CC:Enable   Interval:1min     CoS:7
  MEP Information
    ID:8110  DownMEP  (Down)  Port:ChGr:768.4000   Status:UnexpPeriod
             MAC:0012.e200.0005  Tag:3000
             Admin State:Enable   CoS:7  AIS:On   LCK:-
>
```

Display items in Example 1

Table 6-5: Displayed CFM information

Item	Displayed information	Displayed detailed information
Domain Level	Domain level	0 to 7
MEL	MEG level	0 to 7
MA	MA ID number	0 to 65535
MEG	MEG ID number	0 to 65535

Item	Displayed information	Displayed detailed information
Domain Name	Domain name	(-): Indicates that the domain name is not used. (str): Indicates that a character string is used for the domain name. (dns): Indicates that the domain name server name is used for the domain name. (mac): Indicates that the MAC address and ID are used for the domain name.
MA Name	MA name	(str): Indicates that a character string is used for the MA name. (id): Indicates that a numeric value is used for the MA name. (vlan): Indicates that the VLAN ID is used for the MA name.
MEG ID	MEG ID name	ICC: Indicates the ITU carrier code. UMC: Indicates the unique MEG ID code.
CC	Operating status of the CC	Enable: In operation Disable: Not in operation
Interval	Sending interval of CCMs	1sec: 1 second 10sec: 10 seconds 1min: 1 minute 10min: 10 minutes -: Indicates that CC is disabled.
CoS	CoS value for the sent CCM	Default CoS value for the CCM sent at the MEP 0 to 7 -: Indicates that CC is disabled.
Alarm Priority	Failure detection priority	Priority of failures for which alarms are generated. If a failure whose level is equal to or higher than the priority that has been set is detected, an alarm is reported. 0: Indicates that no alarms are reported. 1: Indicates that a failure was detected on the remote MEP. 2: Indicates a port failure on the remote MEP. 3: Indicates CCM timeout. 4: Indicates that an invalid CCM was received from the remote MEP in the MA. 5: Indicates that a CCM was received from another MA. -: Indicates that CC is disabled.
Start Time	Time from the detection of a failure until an alarm is generated	2500-10000ms: The time elapsed from the detection of a failure until an alarm is generated. -: Indicates that CC is disabled.
Reset Time	Time from the detection of a failure until an alarm is canceled	2500-10000ms: The time elapsed from the detection of a failure until an alarm is canceled. -: Indicates that CC is disabled.
MEP Information	MEP information	--
ID	MEP ID for the Device	1 to 8191
DownMEP	Down MEP	MEP facing the line
Up/Down	MEP status	Up: In operation Down: Not in operation

Item	Displayed information	Displayed detailed information
Port	MEP port number	For an Ethernet interface *NIF number*/*port number* For an Ethernet subinterface *NIF number*/*port number*.*subinterface index* For a port channel interface *Channel group number* For a port channel subinterface *channel group number*.*subinterface index*
Status	Status of failure detection on the MEP	A failure with the highest priority detected by MEP. For the IEEE 802.1ag standard: `OtherCCM`: Indicates that a CCM was received from another MA. `ErrorCCM`: Indicates that a CCM that contains an invalid MEP ID, or a CCM with an invalid sending interval, was received. `Timeout`: Indicates CCM timeout. `PortState`: Indicates that a CCM reporting a port failure was received. `RDI`: Indicates a CCM reporting failure detection was received. `-`: Indicates that no failure has been detected. For the ITU-T Y.1731 standard: `UnexpMEL`: Indicates that a CCM with an invalid MEL was received. `Mismerge`: Indicates that a CCM was received from another MEG. `UnexpMEP`: Indicates that a CCM that contains an invalid MEP ID was received. `UnexpPeriod`: Indicates that a CCM with an invalid sending interval was received. `UnexpPriority`: Indicates that a CCM that contains an invalid CoS value was received. `LOC`: Indicates CCM timeout. `RDI`: Indicates a CCM reporting failure detection was received. `-`: Indicates that no failure has been detected.
MAC	MAC address of the MEP	`-`: Indicates that the status of the port to which the MEP belongs is Down.
Tag	VLAN Tag	`1` to `4095`: Indicates the source VLAN tag. `-`: Indicates that no tag is set.
Admin State	Operating status of CFM on a port	The operating status set by the `ethernet cfm enable` configuration command `Enable`: In operation `Disable`: Not in operation
CoS	CoS value for the sent CCM	CoS value for the CCM sent at the MEP 0 to 7
AIS	Whether an AIS is received	`On`: An AIS frame was received. `Off`: No AIS frame was received. `-`: ETH-AIS is not in operation.
LCK	Whether an LCK is received	`On`: An LCK frame was received. `Off`: No LCK frame was received. `-`: ETH-LCK is not in operation.

Example 2

Figure 6-8: Displaying the number of entities accommodated in the CFM configuration

```
>show cfm summary
Date 20XX/04/01 12:00:00 UTC
DownMEP Counts    :    2
>
```

Display items in Example 2

Table 6-6: Information displayed for the number of entities accommodated in the CFM configuration

Item	Displayed information	Displayed detailed information
DownMEP Counts	Number of Down MEPs	Number of Down MEPs set in the configuration

Impact on communication

None

Response messages

Table 6-7: List of response messages for the show cfm command

Message	Description
The command cannot be executed in the standby system.	This command cannot be executed in the standby system.
The command cannot be executed. Try again.	The command cannot be executed. Try again.
The command is not authorized by the RADIUS/ TACACS+ server or the configuration.	This command is not authorized by the RADIUS server, the TACACS+ server, or the configuration.
The specified CFM is not configured.	The CFM is not configured. Check the configuration.
The specified domain level is not configured.	The specified domain level is not configured. Make sure the specified parameter is correct, and then try again.
The specified MA is not configured.	The specified MA ID number is not configured. Make sure the specified parameter is correct, and then try again.
The specified MEG is not configured.	The specified MEG ID number is not configured. Make sure the specified parameter is correct, and then try again.
The specified MEL is not configured.	The specified MEG level is not configured. Make sure the specified parameter is correct, and then try again.
The specified MEP ID is not configured.	The specified MEP ID is not configured. Make sure the specified parameter is correct, and then try again.

Notes

None

show cfm remote-mep

Displays the configuration of a remote MEP that has been detected by the CC functionality of CFM, and the monitoring status of connection between the Device's MEP and the remote MEP.

Syntax

```
show cfm remote-mep [domain-level <level>] [ma <no.>] [mep <mepid>] [remote-mep <mepid>] [detail]
show cfm remote-mep [mel <level>] [meg <no.>] [mep <mepid>] [remote-mep <mepid>] [detail]
```

Input mode

User mode and administrator mode

Parameters

domain-level <*level*> (for the IEEE 802.1ag standard)

Displays the remote MEP information for the specified domain level. The specifiable values are from 0 to 7.

ma <*no.*> (for the IEEE 802.1ag standard)

Displays the remote MEP information for the specified MA ID number. The specifiable values are from 0 to 65535.

mel <*level*> (for the ITU-T Y.1731 standard)

Displays the remote MEP information for the specified MEG level. The specifiable values are from 0 to 7.

meg <*no.*> (for the ITU-T Y.1731 standard)

Displays the remote MEP information for the specified MEG ID number. The specifiable values are from 0 to 65535.

mep <*mepid*>

Displays the remote MEP information for the specified MEP ID. The specifiable values are from 1 to 8191.

remote-mep <*mepid*>

Displays information for the specified remote MEP ID. The specifiable values are from 1 to 8191.

detail

Displays the detailed remote MEP information.

Operation when each parameter is omitted:

This command can display only the information relevant to the condition applied by a parameter that has been set. If the parameter has not been set, information is displayed with no condition applied. If multiple parameters are specified, information conforming to the conditions will be displayed.

Operation when all parameters are omitted:

Displays summary information about all remote MEPs.

Example

Figure 6-9: Displaying remote MEP information

```
>show cfm remote-mep
```

```
Date 20XX/04/01 12:00:00 UTC
Total RMEP Counts:      6
Domain Level:3   MA:  100
  Domain Name(str ): ProviderDomain_3
  MA     Name(str ): Kanagawa_to_Nagoya
  MEP ID: 101  (Up  )  Port:ChGr: 16        Tag: 100  Status:Timeout
    RMEP Information  Counts:  2
    ID:   3  MAC:0012.e220.1224  Status:Timeout       20XX/04/01 07:55:20 UTC
    ID:  15  MAC:0012.e200.005a  Status:-             20XX/04/01 08:04:54 UTC
Domain Level:3   MA:  200
  Domain Name(str ): ProviderDomain_3
  MA     Name(str ): Tokyo_to_Osaka
  MEP ID:8012  (Up  )  Port: 1/1            Tag: 200  Status:-
    RMEP Information  Counts:  2
    ID:8003  MAC:0012.e20a.1241  Status:-             20XX/04/01 02:12:20 UTC
    ID:8004  MAC:0012.e20d.12a1  Status:-             20XX/04/01 02:12:15 UTC
MEL:1  MEG:  400
  MEG ID  ICC:342612  UMC:TtoO
  MEP ID: 201  (Up  )  Port: 1/21           Tag: 200  Status:-
    RMEP Information  Counts:  2
    ID:   5  MAC:0012.e230.1221  Status:-             20XX/04/01 04:21:30 UTC
    ID:   6  MAC:0012.e231.0091  Status:-             20XX/04/01 04:21:34 UTC
>
```

Figure 6-10: Displaying detailed remote MEP information

```
> show cfm remote-mep detail
Date 20XX/04/01 12:00:00 UTC
Total RMEP Counts:      4
Domain Level:3   MA:  100
  Domain Name(str ): ProviderDomain_3
  MA     Name(str ): Kanagawa_to_Nagoya
  MEP ID: 101  (Up  )  Port:ChGr:16         Tag: 100  Status:Timeout
    RMEP Information  Counts:  2
    ID:   3  MAC:0012.e220.1224  Status:-             20XX/04/01 07:55:20 UTC
      Interface:Up               Port:Forwarding    RDI:On
      Chassis ID Type:MAC        Info: 0012.e220.1220
    ID:   15 MAC:0012.e200.005a  Status:-             20XX/04/01 08:04:54 UTC
      Interface:Up               Port:Forwarding    RDI:-
      Chassis ID Type:MAC        Info: 0012.e200.0050
MEL:1  MEG:  400
  MEG ID  ICC:342612  UMC:TtoO
  MEP ID: 201  (Up  )  Port:1/21            Tag: 200  Status:-
    RMEP Information  Counts:  2
    ID:   5  MAC:0012.e230.1221  Status:LOC           20XX/04/01 04:21:30 UTC
      Interface:-                Port:-             RDI:On
      Chassis ID Type:-          Info:-
    ID:   6  MAC:0012.e231.0091  Status:-             20XX/04/01 04:21:34 UTC
      Interface:-                Port:-             RDI:-
      Chassis ID Type:-          Info:-
>
```

Display items

Table 6-8: Displayed remote MEP information

Item	Displayed information	Displayed detailed information
Total RMEP Counts	Total number of remote MEPs	--
Domain Level	Domain level	0 to 7
MEL	MEG level	0 to 7
MA	MA ID number	0 to 65535

Item	Displayed information	Displayed detailed information
MEG	MEG ID number	0 to 65535
Domain Name	Domain name	(-): Indicates that the domain name is not used. (str): Indicates that a character string is used for the domain name. (dns): Indicates that the domain name server name is used for the domain name. (mac): Indicates that the MAC address and ID are used for the domain name.
MA Name	MA name	(str): Indicates that a character string is used for the MA name. (id): Indicates that a numeric value is used for the MA name. (vlan): Indicates that the VLAN ID is used for the MA name.
MEG ID	MEG ID name	ICC: Indicates the ITU carrier code. UMC: Indicates the unique MEG ID code.
MEP ID	MEP ID for the Device	1 to 8191
Up/Down	MEP status	Up: In operation Down: Not in operation
Port	MEP port number	For an Ethernet interface *NIF number*/*port number* For an Ethernet subinterface *NIF number*/*port number*.*subinterface index* For a port channel interface *Channel group number* For a port channel subinterface *channel group number*.*subinterface index*
Tag	VLAN Tag	1 to 4095: Indicates the source VLAN tag. -: Indicates that no tag is set.

Item	Displayed information	Displayed detailed information
Status	The status of failure detection on the Device's MEP	A failure with the highest priority detected by the Device's MEP. For the IEEE 802.1ag standard: `OtherCCM`: Indicates that a CCM was received from another MA. `ErrorCCM`: Indicates that a CCM that contains an invalid MEP ID, or a CCM with an invalid sending interval, was received. `Timeout`: Indicates CCM timeout. `PortState`: Indicates that a CCM reporting a port failure was received. `RDI`: Indicates a CCM reporting failure detection was received. `-`: Indicates that no failure has been detected. For the ITU-T Y.1731 standard: `UnexpMEL`: Indicates that a CCM with an invalid MEL was received. `Mismerge`: Indicates that a CCM was received from another MEG. `UnexpMEP`: Indicates that a CCM that contains an invalid MEP ID was received. `UnexpPeriod`: Indicates that a CCM with an invalid sending interval was received. `UnexpPriority`: Indicates that a CCM that contains an invalid CoS value was received. `LOC`: Indicates CCM timeout. `RDI`: Indicates a CCM reporting failure detection was received. `-`: Indicates that no failure has been detected.
RMEP Information	Remote MEP information	--
Counts	Number of remote MEPs	--
ID	Remote MEP ID	1 to 8191
MAC	MAC address of the remote MEP	--

Item	Displayed information	Displayed detailed information
Status	The status of failure in the remote MEP	A remote MEP failure with the highest priority. For the IEEE 802.1ag standard: `OtherCCM`: Indicates that a CCM was received from another MA. `ErrorCCM`: Indicates that a CCM that contains an invalid MEP ID, or a CCM with an invalid sending interval, was received. `Timeout`: Indicates CCM timeout. `PortState`: Indicates that a CCM reporting a port failure was received. `RDI`: Indicates a CCM reporting failure detection was received. `-`: Indicates that no failure has been detected. For the ITU-T Y.1731 standard: `UnexpMEL`: Indicates that a CCM with an invalid MEL was received. `Mismerge`: Indicates that a CCM was received from another MEG. `UnexpMEP`: Indicates that a CCM that contains an invalid MEP ID was received. `UnexpPeriod`: Indicates that a CCM with an invalid sending interval was received. `UnexpPriority`: Indicates that a CCM that contains an invalid CoS value was received. `LOC`: Indicates CCM timeout. `RDI`: Indicates a CCM reporting failure detection was received. `-`: Indicates that no failure has been detected.
<*time*>	The time when a CCM was last received	*yyyy*/*mm*/*dd hh*:*mm*:*ss timezone* year/month/day hour:minute:second time zone
Interface	The status of the remote MEP interface	The status of InterfaceStatus in the CCM that was last received. `Up`: Indicates Up status. `Down`: Indicates Down status. `Testing`: Indicates that the test is being performed. `Unknown`: The status is unknown. `Dormant`: Waiting for an external event `NotPresent`: There is no component for the interface. `LowerLayerDown`: Indicates that the status of the lower-layer interface is Down. `-`: Indicates that this information was not found in the received CCM.
Port	The status of the remote MEP port	The status of PortStatus in the CCM that was last received. `Forwarding`: Indicates Forwarding status. `Blocked`: Indicates blocking status. `-`: Indicates that this information was not found in the received CCM.
RDI	The status of failure detection in the remote MEP	The status of the RDI field in the CCM that was last received. `On`: Indicates that a failure was detected. `-`: Indicates that no failure has been detected.
Chassis ID	Chassis ID of the remote MEP	The chassis ID information in the CCM that was last received.

Item	Displayed information	Displayed detailed information
Type	Type of the chassis ID	CHAS-COMP: Indicates the entPhysicalAlias of the Entity MIB. CHAS-IF: Indicates the ifAlias of the interface MIB. PORT: Indicates the portEntPhysicalAlias of the Entity MIB. MAC: Indicates the macAddress of the CFM MIB. NET: Indicates the networkAddress of the CFM MIB. NAME: Indicates the ifName of the interface MIB. LOCAL: Indicates the local of the CFM MIB. -: Indicates that this information is not found in the received CCM. MAC is displayed if the sender is the Device.
Info	Information about the chassis ID	-: Indicates that this information is not found in the received CCM. The device MAC address is displayed if the sender is the Device.

Impact on communication

None

Response messages

Table 6-9: List of response messages for the show cfm remote-mep command

Message	Description
The command cannot be executed in the standby system.	This command cannot be executed in the standby system.
The command cannot be executed. Try again.	The command cannot be executed. Try again.
The command is not authorized by the RADIUS/ TACACS+ server or the configuration.	This command is not authorized by the RADIUS server, the TACACS+ server, or the configuration.
The specified CFM is not configured.	The CFM is not configured. Check the configuration.
The specified domain level is not configured.	The specified domain level is not configured. Make sure the specified parameter is correct, and then try again.
The specified MA is not configured.	The specified MA ID number is not configured. Make sure the specified parameter is correct, and then try again.
The specified MEG is not configured.	The specified MEG ID number is not configured. Make sure the specified parameter is correct, and then try again.
The specified MEL is not configured.	The specified MEG level is not configured. Make sure the specified parameter is correct, and then try again.
The specified MEP ID is not configured.	The specified MEP ID is not configured. Make sure the specified parameter is correct, and then try again.
The specified remote MEP is unknown.	The specified remote MEP is unknown. Make sure the specified parameter is correct, and then try again.

Notes

None

show cfm fault

Displays the type of failure that has been detected by the CC functionality of CFM, and the information in the CCM that triggered the failure.

Syntax

```
show cfm fault [domain-level <level>] [ma <no.>] [mep <mepid>] [{fault | cleared}] [detail]
show cfm fault [mel <level>] [meg <no.>] [mep <mepid>] [{fault | cleared}] [detail]
```

Input mode

User mode and administrator mode

Parameters

domain-level <*level*> (for the IEEE 802.1ag standard)

Displays the failure information for the specified domain level. The specifiable values are from 0 to 7.

ma <*no.*> (for the IEEE 802.1ag standard)

Displays the failure information for the specified MA ID number. The specifiable values are from 0 to 65535.

mel <*level*> (for the ITU-T Y.1731 standard)

Displays the failure information for the specified MEG level. The specifiable values are from 0 to 7.

meg <*no.*> (for the ITU-T Y.1731 standard)

Displays the failure information for the specified MEG ID number. The specifiable values are from 0 to 65535.

mep <*mepid*>

Displays the failure information for the specified MEP ID. The specifiable values are from 1 to 8191.

{fault | cleared}

fault

Displays only the failure information being detected.

cleared

Displays only the failure information that has been cleared.

detail

Displays detailed information about a failure.

Operation when each parameter is omitted:

This command can display only the information relevant to the condition applied by a parameter that has been set. If the parameter has not been set, information is displayed with no condition applied. If multiple parameters are specified, information conforming to the conditions will be displayed.

Operation when all parameters are omitted:

Displays summary information about all failures.

Example

Figure 6-11: Displaying summary information about a CFM failure

```
> show cfm fault
Date 20XX/04/01 12:00:00 UTC
MD :7  MA :1000   MEP:1000  Fault    20XX/04/01 10:15:21 UTC
MD :7  MA :1010   MEP:1011  Cleared  20XX/04/01 09:37:33 UTC
MEL:6  MEG: 102   MEP:2010  Fault    20XX/03/31 23:19:30 UTC
>
```

Figure 6-12: Displaying detailed information about a CFM failure

```
>show cfm fault detail
Date 20XX/04/01 12:00:00 UTC
MD:7  MA:1000  MEP:1000  Fault  20XX/04/01 11:42:10 UTC
  OtherCCM     :-   RMEP:1001  MAC:0012.e220.11a1 20XX/04/01 11:22:17 UTC
  ErrorCCM     :-
  Timeout      :On  RMEP:1001  MAC:0012.e220.11a1 20XX/04/01 11:42:10 UTC
  PortState    :-
  RDI          :-
MD:7  MA:1010  MEP:1011  Cleared  Time 20XX/04/01 10:25:41
  OtherCCM     :-
  ErrorCCM     :-
  Timeout      :-   RMEP:1001  MAC:0012.e220.22a1 20XX/04/01 10:22:17 UTC
  PortState    :-
  RDI          :-
MEL:6  MEG:  102  MEP:2010  Fault  20XX/04/01 11:48:44 UTC
  UnexpMEL     :-
  Mismerge     :-
  UnexpMEP     :-
  UnexpPeriod  :On  RMEP: 101  MAC:0012.e220.21a2 20XX/04/01 11:40:04 UTC
  UnexpPriority:-
  LOC          :-
  RDI          :-
  AIS          :On  20XX/04/01 11:48:44 UTC
  LCK          :-
>
```

Display items

Table 6-10: Displayed CFM failure information

Item	Displayed information	Displayed detailed information
MD	Domain level	0 to 7
MEL	MEG level	0 to 7
MA	MA ID number	0 to 65535
MEG	MEG ID number	0 to 65535
MEP	MEP ID for the Device	1 to 8191
<*status*>	Failure status	`Fault`: A failure is being detected. `Cleared`: The failure has been recovered.

Item	Displayed information	Displayed detailed information
<*time*>	Time	*yyyy*/*mm*/*dd hh*:*mm*:*ss timezone* year/month/day hour:minute:second time zone When the failure status is `Fault` The time when a failure was detected by the MEP. If multiple failures were detected, the earliest time when a failure was detected is displayed. When the failure status is `Cleared` The time when a failure detected by the MEP was recovered. If multiple failures were detected, the time when all the failures were recovered is displayed. Note that, for the IEEE 802.1ag standard, this applies to the failures whose failure level is equal to or higher than that set by the `cc alarm-priority` configuration command.
OtherCCM	Failure level 5 A CCM was received from another MA.	A CCM was received from the remote MEP belonging to another MA. `On`: A failure was found. `-`: No failures were found.
ErrorCCM	Failure level 4 An invalid CCM was received.	An invalid CCM was received from the remote MEP belonging to the same MA. The MEP ID or CCM sending interval is incorrect. `On`: A failure was found. `-`: No failures were found.
Timeout	Failure level 3 CCM timeout	No CCMs were received from the remote MEP. `On`: A failure was found. `-`: No failures were found.
PortState	Failure level 2 Failure on the remote MEP port	A CCM reporting a port failure was received from the remote MEP. `On`: A failure was found. `-`: No failures were found.
RDI	Failure level 1 A failure was detected on the remote MEP.	A CCM reporting failure detection was received from the remote MEP. `On`: A failure was found. `-`: No failures were found.
UnexpMEL	A CCM with an invalid MEL was received.	A CCM with a different MEL was received from the remote MEP. `On`: A failure was found. `-`: No failures were found.
Mismerge	A CCM was received from another MEG.	A CCM was received from the remote MEP belonging to another MEG. `On`: A failure was found. `-`: No failures were found.
UnexpMEP	A CCM that contains an invalid MEP ID was received.	A CCM that contains the same MEP ID as the Device's MEP ID was received from the remote MEP belonging to the same MEG. `On`: A failure was found. `-`: No failures were found.
UnexpPeriod	A CCM with an invalid sending interval was received.	A CCM with a different sending interval was received from the remote MEP belonging to the same MEG. `On`: A failure was found. `-`: No failures were found.

Item	Displayed information	Displayed detailed information
UnexpPriority	A CCM that contains an invalid CoS value was received.	A CCM that contains a different CoS value was received from the remote MEP. On: A failure was found. -: No failures were found.
LOC	CCM timeout	No CCMs were received from the remote MEP. On: A failure was found. -: No failures were found.
AIS	A failure was detected at a lower level.	An AIS reporting failure detection was received from a lower-level MEG. On: A report was received. -: No report was received.
LCK	Communication stopped at a lower level.	An LCK reporting a stop of communication was received from a lower-level MEG. On: A report was received. -: No report was received.
RMEP	Remote MEP ID	The remote MEP ID of the CCM that triggered failure detection
MAC	MAC address of the remote MEP	--
<*time*>	Time	The time when a failure was detected. *yyyy*/*mm*/*dd hh*:*mm*:*ss timezone* year/month/day hour:minute:second time zone

Impact on communication

None

Response messages

Table 6-11: List of response messages for the show cfm fault command

Message	Description
The command cannot be executed in the standby system.	This command cannot be executed in the standby system.
The command cannot be executed. Try again.	The command cannot be executed. Try again.
The command is not authorized by the RADIUS/ TACACS+ server or the configuration.	This command is not authorized by the RADIUS server, the TACACS+ server, or the configuration.
The specified CFM is not configured.	The CFM is not configured. Check the configuration.
The specified domain level is not configured.	The specified domain level is not configured. Make sure the specified parameter is correct, and then try again.
The specified MA is not configured.	The specified MA ID number is not configured. Make sure the specified parameter is correct, and then try again.
The specified MEG is not configured.	The specified MEG ID number is not configured. Make sure the specified parameter is correct, and then try again.
The specified MEL is not configured.	The specified MEG level is not configured. Make sure the specified parameter is correct, and then try again.
The specified MEP ID is not configured.	The specified MEP ID is not configured. Make sure the specified parameter is correct, and then try again.

Notes

None

show cfm l2traceroute-db

Displays route information acquired by the `l2traceroute` command and information about the MP on the route. The information registered in the linktrace database is displayed.

Syntax

```
show cfm l2traceroute-db [{remote-mac <mac address> | remote-mep <mepid>}
domain-level <level> ma <no.>] [detail]
show cfm l2traceroute-db [{remote-mac <mac address> | remote-mep <mepid>} mel
<level> meg <no.>] [detail]
```

Input mode

User mode and administrator mode

Parameters

{remote-mac <*mac address*> | remote-mep <*mepid*>}

remote-mac <*mac address*>

Specify the MAC address of the destination remote MEP or MIP on the route that will be displayed. For details about how to specify a MAC address, see *Specifiable values for parameters*.

remote-mep <*mepid*>

Specify the destination remote MEP ID on the route that will be displayed. The specifiable values are from 1 to 8191.

domain-level <*level*> (for the IEEE 802.1ag standard)

Specify the domain level to which the destination remote MEP or MIP belongs. The specifiable values are from 0 to 7.

ma <*no.*> (for the IEEE 802.1ag standard)

Specify the MA ID number to which the destination remote MEP or MIP belongs. The specifiable values are from 0 to 65535.

mel <*level*> (for the ITU-T Y.1731 standard)

Specify the MEG level to which the destination remote MEP or MIP belongs. The specifiable values are from 0 to 7.

meg <*no.*> (for the ITU-T Y.1731 standard)

Specify the MEG ID number to which the destination remote MEP or MIP belongs. The specifiable values are from 0 to 65535.

detail

Displays detailed information about the route and the MP on the route.

Operation when each parameter is omitted:

This command can display only the information relevant to the condition applied by a parameter that has been set. If the parameter has not been set, information is displayed with no condition applied. If multiple parameters are specified, information conforming to the conditions will be displayed.

Operation when all parameters are omitted:

Displays all route information in the linktrace database.

Example

Figure 6-13: Displaying linktrace database information

```
> show cfm l2traceroute-db
Date 20XX/04/01 12:00:00 UTC
L2traceroute to MP:0012.e220.00a3 on Level:7  MA: 1000 MEP:1020
Time:20XX/03/14 17:42:20 UTC
254  0012.e220.00c0  Forwarded
253  0012.e210.000d  Forwarded
252  0012.e220.00a3  NotForwarded  Hit

L2traceroute to MP:2010(0012.e220.1040) on Level:7 MEG: 2000 MEP:2020
Time:20XX/03/14 17:37:55 UTC
63   0012.e220.10a9  Forwarded
62   0012.e220.10c8  NotForwarded
>
```

Figure 6-14: Displaying detailed linktrace database information

```
> show cfm l2traceroute-db detail
Date 20XX/04/01 12:00:00 UTC
L2traceroute to MP:0012.e220.00a3 on Level:7  MA: 1000 MEP:1020
Time:20XX/03/14 18:42:55 UTC
254  0012.e220.00c9  Forwarded
  Last Egress :0012.e220.24c0  Next Egress :0012.e220.00c0
  Relay Action:MacAdrTbl
  Chassis ID    Type:MAC        Info:0012.e220.00c0
  Ingress Port  MP Address:0012.e220.00c9  Action:OK
  Egress Port   MP Address:0012.e220.00ca  Action:OK
253  0012.e228.001d  Forwarded
  Last Egress :0012.e220.00c0  Next Egress :0012.e228.0010
  Relay Action:MacAdrTbl
  Chassis ID    Type:MAC        Info:0012.e228.0010
  Ingress Port  MP Address:0012.e228.001d  Action:OK
  Egress Port   MP Address:0012.e228.001c  Action:OK
252  0012.e220.00a3  NotForwarded  Hit
  Last Egress :0012.e228.0010  Next Egress :0012.e224.00a0
  Relay Action:RlyHit
  Chassis ID    Type:MAC        Info:0012.e224.00a0
  Ingress Port  MP Address:0012.e224.00a3  Action:OK
  Egress Port   MP Address:0012.e224.00aa  Action:Down

L2traceroute to MP:2010(0012.e220.1040) on Level:7 MEG: 2000 MEP:2020
Time:20XX/03/14 17:37:55 UTC
63   0012.e220.10a9  Forwarded
  Last Egress :0012.e210.2400  Next Egress :0012.e220.10a0
  Relay Action:-
  Chassis ID    Type:-          Info:-
  Ingress Port  MP Address:-              Action:-
  Egress Port   MP Address:-              Action:-
62   0012.e228.aa38  NotForwarded
  Last Egress :0012.e220.10a0  Next Egress :0012.e228.aa30
  Relay Action:-
  Chassis ID    Type:-         Info:-
  Ingress Port  MP Address:-              Action:-
  Egress Port   MP Address:-              Action:-
>
```

Display items

Table 6-12: Displayed linktrace database information

Item	Displayed information	Displayed detailed information
L2traceroute	MAC address of the destination remote MEP or MIP	`to MP:`<*remote mac address*>: When the MAC address of the destination remote MEP or MIP is specified. `to MP:`<*remote mep id*>`(`<*remote mac address*>`)`: When the destination remote MEP ID is specified.
Level	Domain level or MEG level	0 to 7
MA	MA ID number	0 to 65535
MEG	MEG ID number	0 to 65535
MEP	MEP ID for the Device	1 to 8191
Time	Send time	*yyyy*/*mm*/*dd hh*:*mm*:*ss timezone* year/month/day hour:minute:second time zone
<*ttl*>	Time to Live	0 to 254
<*remote mac address*>	MAC address of the replying MP	The MAC address of the MEP or MIP that replied
Forwarded/NotForwarded	Forwarding status of the MP that replied	Whether the replying MP forwarded the linktrace message `Forwarded`: Forwarded `NotForwarded`: Not forwarded
Hit	Reply from the destination remote MEP or MIP	--
Last Egress	ID of the forwarding source device	The MAC address that identifies the device that forwarded a linktrace message. `-`: Indicates that this information is not found in the received linktrace reply.
Next Egress	ID of the receiving device	The MAC address that identifies the device that received a linktrace message. `-`: Indicates that this information is not found in the received linktrace reply. The device MAC address is displayed if the sender is the Device and the receiver is another device.
Relay Action	Forwarding processing method	The processing method for forwarding a linktrace message. `RlyHit`: A linktrace message was not forwarded because it had reached the destination (the destination remote MEP or MIP). `MacAdrTbl`: A linktrace message was forwarded by using the MAC address table. `MPCCMDB`: A linktrace message was forwarded by using the `MIPCCMl` database. `-`: Indicates that a linktrace message was not forwarded for a response from a destination other than the MP, or that this information is not found in the received linktrace reply.
Chassis ID	Chassis ID of the replying MP	The chassis ID information of the MP that sent a linktrace reply

Item	Displayed information	Displayed detailed information
Type	Type of the chassis ID	CHAS-COMP: Indicates the entPhysicalAlias of the Entity MIB. CHAS-IF: Indicates the ifAlias of the interface MIB. PORT: Indicates the portEntPhysicalAlias of the Entity MIB. MAC: Indicates the macAddress of the CFM MIB. NET: Indicates the networkAddress of the CFM MIB. NAME: Indicates the ifName of the interface MIB. LOCAL: Indicates the local of the CFM MIB. -: Indicates that this information is not found in the received linktrace reply. MAC is displayed if the sender is the Device.
Info	Information about the chassis ID	-: Indicates that this information is not found in the received linktrace reply. The device MAC address is displayed if the sender is the Device.
Ingress Port	Port information for the MP that received a linktrace message	--
MP Address	MAC address	The MAC address of the MP that received a linktrace message -: Indicates that this information is not found in the received linktrace reply.
Action	Port status	The status of the MP port that received the linktrace message of each device. OK: Indicates normal status. Down: Indicates Down status. Blocked: Indicates Blocked status. NoVLAN: Indicates that there is no VLAN setting for linktrace messages. -: Indicates that this information is not found in the received linktrace reply.
Egress Port	Port information for the MP that forwarded a linktrace message	--
MP Address	MAC address	The MAC address of the MP that forwarded a linktrace message -: Indicates that this information is not found in the received linktrace reply.
Action	Port status	The status of the MP port that forwarded the linktrace message of each device. OK: Indicates normal status. Down: Indicates Down status. Blocked: Indicates Blocked status. NoVLAN: Indicates that there is no VLAN setting for linktrace messages. -: Indicates that this information is not found in the received linktrace reply.

Impact on communication

None

Response messages

Table 6-13: List of response messages for the show cfm l2traceroute-db command

Message	Description
The command cannot be executed in the standby system.	This command cannot be executed in the standby system.
The command cannot be executed. Try again.	The command cannot be executed. Try again.
The command is not authorized by the RADIUS/ TACACS+ server or the configuration.	This command is not authorized by the RADIUS server, the TACACS+ server, or the configuration.
The specified CFM is not configured.	The CFM is not configured. Check the configuration.

Notes

1. Information about some replies is not displayed if those replies are received after being forwarded by a number of devices that exceeds the number of devices on the routes that can be registered in the linktrace database.
2. The linktrace database is cleared when the `clear cfm l2traceroute-db` command is executed.

show cfm statistics

Displays CFM statistics.

Syntax

```
show cfm statistics [domain-level <level>] [ma <no.>] [mep <mepid>]
show cfm statistics [mel <level>] [meg <no.>] [mep <mepid>]
```

Input mode

User mode and administrator mode

Parameters

domain-level <*level*> (for the IEEE 802.1ag standard)

Displays the CFM statistics for the specified domain level. The specifiable values are from 0 to 7.

ma <*no.*> (for the IEEE 802.1ag standard)

Displays the CFM statistics for the specified MA ID number. The specifiable values are from 0 to 65535.

mel <*level*> (for the ITU-T Y.1731 standard)

Displays the CFM statistics for the specified MEG level. The specifiable values are from 0 to 7.

meg <*no.*> (for the ITU-T Y.1731 standard)

Displays the CFM statistics for the specified MEG ID number. The specifiable values are from 0 to 65535.

mep <*mepid*>

Displays the CFM statistics for the specified MEP ID. The specifiable values are from 1 to 8191.

Operation when each parameter is omitted:

This command can display only the information relevant to the condition applied by a parameter that has been set. If the parameter has not been set, information is displayed with no condition applied. If multiple parameters are specified, information conforming to the conditions will be displayed.

Operation when all parameters are omitted:

Displays all CFM statistics.

Example

Figure 6-15: Displaying CFM statistics

```
>show cfm statistics
Date 20XX/04/01 12:00:00 UTC
Domain Level:3  MA:  300
  Domain Name(str ): ProviderDomain_3
  MA     Name(str ): Tokyo_to_Osaka_300
  MEP ID:  10  (Up  )  Port: 1/41           Tag:-
    PDU              Tx Counts             Rx Counts      RxDiscard Counts
    CCM                  80155                   784                     6
    LBM                      2                    11                     1
    LBR                     12                     2                     0
    LTM                      0                     0                     0
    LTR                      0                     0                     0
    Other                                                                 0
```

```
MEL:3  MEG:  120
  MEG ID  ICC:342612  UMC:3-120
  MEP ID:  21  (Up  )  Port: 1/42.1000      Tag: 200
    PDU              Tx Counts             Rx Counts      RxDiscard Counts
    CCM                  10155                  1184                     9
    LBM                      3                    11                     0
    LBR                     10                     4                     0
    LTM                      0                     0                     0
    LTR                      0                     0                     0
    AIS                      3                     5                     0
    LCK                      3                     5                     0
    Other                                                                0
  MEP ID: 221  (Up  )  Port:ChGr:  1        Tag:-
    PDU              Tx Counts             Rx Counts      RxDiscard Counts
    CCM                  10155                  1184                     9
    LBM                      3                    11                     0
    LBR                     10                     4                     0
    LTM                      0                     0                     0
    LTR                      0                     0                     0
    AIS                      3                     5                     0
    LCK                      3                     5                     0
    Other                                                                0
>
```

Display items

Table 6-14: Displayed CFM statistics

Item	Displayed information	Displayed detailed information
Domain Level	Domain level	0 to 7
MEL	MEG level	0 to 7
MA	MA ID number	0 to 65535
MEG	MEG ID number	0 to 65535
Domain Name	Domain name	`(-)`: Indicates that the domain name is not used. `(str)`: Indicates that a character string is used for the domain name. `(dns)`: Indicates that the domain name server name is used for the domain name. `(mac)`: Indicates that the MAC address and ID are used for the domain name.
MA Name	MA name	`(str)`: Indicates that a character string is used for the MA name. `(id)`: Indicates that a numeric value is used for the MA name. `(vlan)`: Indicates that the VLAN ID is used for the MA name.
MEG ID	MEG ID name	`ICC`: Indicates the ITU carrier code. `UMC`: Indicates the unique MEG ID code.
MEP ID	MEP ID for the Device	1 to 8191
Up/Down	MEP status	`Up`: In operation `Down`: Not in operation

Item		Displayed information	Displayed detailed information
Port		MEP port number	For an Ethernet interface *NIF number*/*port number* For an Ethernet subinterface *NIF number*/*port number*.*subinterface index* For a port channel interface *Channel group number* For a port channel subinterface *channel group number*.*subinterface index*
Tag		VLAN Tag	`1` to `4095`: Indicates the source VLAN tag. `-`: Indicates that no tag is set.
PDU		CFM PDU	--
CCM	Tx Counts	Number# of sent CCMs	--
	Rx Counts	Number# of received CCMs	--
	RxDiscard Counts	Number# of discarded CCMs	CCMs are discarded in the following cases: • The format is invalid. • The CCM is for another MA. • The MEP ID is the same as the one set for the Device. • The sending interval is different from the Device's MA.
LBM	Tx Counts	Number# of sent loopback messages	--
	Rx Counts	Number# of received loopback messages	--
	RxDiscard Counts	Number# of discarded loopback messages	Loopback messages are discarded in the following cases: • The format is invalid. • The destination MAC address is not the MAC address for the receiving MP or the multicast address for CC. • The source MAC address is the multicast address for a CC or a linktrace.
LBR	Tx Counts	Number# of sent loopback replies	--
	Rx Counts	Number# of received loopback replies	--
	RxDiscard Counts	Number# of discarded loopback replies	Loopback replies are discarded in the following cases: • The format is invalid. • The destination MAC address is different from the MAC address of the MEP. • The source MAC address is the multicast address or broadcast address. • The `Loopback Transaction Identifier` value is different from that in the loopback message that was sent. • The reply was received after the response wait time that was set by an operation command expired.

Item		Displayed information	Displayed detailed information
LTM	Tx Counts	Number# of sent linktrace messages	--
	Rx Counts	Number# of received linktrace messages	--
	RxDiscard Counts	Number# of discarded linktrace messages	Linktrace messages are discarded in the following cases: • The format is invalid. • The TTL value is 0. • The destination MAC address is different from the multicast address for linktrace or the MAC address of the receiving MP. • The message cannot result in a linktrace reply.
LTR	Tx Counts	Number# of sent linktrace replies	--
	Rx Counts	Number# of received linktrace replies	--
	RxDiscard Counts	Number# of discarded linktrace replies	Linktrace replies are discarded in the following cases: • The format is invalid. • The destination MAC address is different from the MAC address of the receiving MEP. • The `Transaction Identifier` value is different from that in the linktrace message. • The reply was received after the response wait time that was set by an operation command expired.
AIS	Tx Counts	Number# of sent AISs	--
	Rx Counts	Number# of received AISs	--
	RxDiscard Counts	Number# of discarded AISs	AISs are discarded in the following cases: • The format is invalid. • The destination MAC address is different from the multicast address for AIS.
LCK	Tx Counts	Number# of sent LCKs	--
	Rx Counts	Number# of received LCKs	--
	RxDiscard Counts	Number# of LCKs discarded	LCKs are discarded in the following cases: • The format is invalid. • The destination MAC address is different from the multicast address for LCK.
Other RxDiscard		Number# of other CFM PDUs that were discarded	Unsupported CFM PDUs are discarded.

#: The value ranges from 0 to 18446744073709551615.

Impact on communication

None

Response messages

Table 6-15: List of response messages for the show cfm statistics command

Message	Description
The command cannot be executed in the standby system.	This command cannot be executed in the standby system.
The command cannot be executed. Try again.	The command cannot be executed. Try again.
The command is not authorized by the RADIUS/ TACACS+ server or the configuration.	This command is not authorized by the RADIUS server, the TACACS+ server, or the configuration.
The specified CFM is not configured.	The CFM is not configured. Check the configuration.
The specified domain level is not configured.	The specified domain level is not configured. Make sure the specified parameter is correct, and then try again.
The specified MA is not configured.	The specified MA ID number is not configured. Make sure the specified parameter is correct, and then try again.
The specified MEG is not configured.	The specified MEG ID number is not configured. Make sure the specified parameter is correct, and then try again.
The specified MEL is not configured.	The specified MEG level is not configured. Make sure the specified parameter is correct, and then try again.
The specified MEP ID is not configured.	The specified MEP ID is not configured. Make sure the specified parameter is correct, and then try again.

Notes

None

clear cfm remote-mep

Clears remote MEP information.

Syntax

```
clear cfm remote-mep [domain-level <level> [ma <no.> [mep <mepid> [remote-mep
<mepid>]]]]
clear cfm remote-mep [mel <level> [meg <no.> [mep <mepid> [remote-mep
<mepid>]]]]
```

Input mode

User mode and administrator mode

Parameters

domain-level <*level*> (for the IEEE 802.1ag standard)

Clears the remote MEP information for the specified domain level. The specifiable values are from 0 to 7.

ma <*no.*> (for the IEEE 802.1ag standard)

Clears the remote MEP information for the specified MA ID number. The specifiable values are from 0 to 65535.

mel <*level*> (for the ITU-T Y.1731 standard)

Clears the remote MEP information for the specified MEG level. The specifiable values are from 0 to 7.

meg <*no.*> (for the ITU-T Y.1731 standard)

Clears the remote MEP information for the specified MEG ID number. The specifiable values are from 0 to 65535.

mep <*mepid*>

Clears the remote MEP information for the specified MEP. The specifiable values are from 1 to 8191.

remote-mep <*mepid*>

Clears the information for the specified remote MEP ID. The specifiable values are from 1 to 8191.

Operation when each parameter is omitted:

This command can clear only the information relevant to the condition applied by a parameter that has been set. If no parameter is specified, information is cleared without being limited by any conditions. If multiple parameters are specified, the information conforming to the conditions will be cleared.

Operation when all parameters are omitted:

Clears all remote MEP information.

Example

Figure 6-16: Clearing remote MEP information

```
> clear cfm remote-mep
>
```

Display items

None

Impact on communication

None

Response messages

Table 6-16: List of response messages for the clear cfm remote-mep command

Message	Description
The command cannot be executed in the standby system.	This command cannot be executed in the standby system.
The command cannot be executed. Try again.	The command cannot be executed. Try again.
The command is not authorized by the RADIUS/ TACACS+ server or the configuration.	This command is not authorized by the RADIUS server, the TACACS+ server, or the configuration.
The specified CFM is not configured.	The CFM is not configured. Check the configuration.

Notes

None

clear cfm fault

Clears CFM failure information.

Syntax

```
clear cfm fault [domain-level <level> [ma <no.> [mep <mepid>]]]
clear cfm fault [mel <level> [meg <no.> [mep <mepid>]]]
```

Input mode

User mode and administrator mode

Parameters

domain-level <*level*> (for the IEEE 802.1ag standard)

Clears the failure information for the specified domain level. The specifiable values are from 0 to 7.

ma <*no.*> (for the IEEE 802.1ag standard)

Clears the failure information for the specified MA ID number. The specifiable values are from 0 to 65535.

mel <*level*> (for the ITU-T Y.1731 standard)

Clears the failure information for the specified MEG level. The specifiable values are from 0 to 7.

meg <*no.*> (for the ITU-T Y.1731 standard)

Clears the failure information for the specified MEG ID number. The specifiable values are from 0 to 65535.

mep <*mepid*>

Clears the failure information for the specified MEP ID. The specifiable values are from 1 to 8191.

Operation when each parameter is omitted:

This command can clear only the information relevant to the condition applied by a parameter that has been set. If no parameter is specified, information is cleared without being limited by any conditions. If multiple parameters are specified, the information conforming to the conditions will be cleared.

Operation when all parameters are omitted:

Clears all failure information.

Example

Figure 6-17: Clearing CFM failure information

```
> clear cfm fault
>
```

Display items

None

Impact on communication

None

Response messages

Table 6-17: List of response messages for the clear cfm fault command

Message	Description
The command cannot be executed in the standby system.	This command cannot be executed in the standby system.
The command cannot be executed. Try again.	The command cannot be executed. Try again.
The command is not authorized by the RADIUS/ TACACS+ server or the configuration.	This command is not authorized by the RADIUS server, the TACACS+ server, or the configuration.
The specified CFM is not configured.	The CFM is not configured. Check the configuration.

Notes

None

clear cfm l2traceroute-db

Clears CFM linktrace database information.

Syntax

```
clear cfm l2traceroute-db
```

Input mode

User mode and administrator mode

Parameters

None

Example

Figure 6-18: Clearing CFM linktrace database information

```
> clear cfm l2traceroute-db
>
```

Display items

None

Impact on communication

None

Response messages

Table 6-18: List of response messages for the clear cfm l2traceroute-db command

Message	Description
The command cannot be executed in the standby system.	This command cannot be executed in the standby system.
The command cannot be executed. Try again.	The command cannot be executed. Try again.
The command is not authorized by the RADIUS/ TACACS+ server or the configuration.	This command is not authorized by the RADIUS server, the TACACS+ server, or the configuration.
The specified CFM is not configured.	The CFM is not configured. Check the configuration.

Notes

None

clear cfm statistics

Clears CFM statistics.

Syntax

```
clear cfm statistics [domain-level <level> [ma <no.> [mep <mepid>]]]
clear cfm statistics [domain-level <level> [port <port list>] [channel-group-number
<channel group number list>]]
clear cfm statistics [mel <level> [meg <no.> [mep <mepid>]]]
clear cfm statistics [mel <level> [port <port list>] [channel-group-number <channel
group number list>]]
```

Input mode

User mode and administrator mode

Parameters

domain-level <*level*> (for the IEEE 802.1ag standard)

Clears CFM statistics for the specified domain level. The specifiable values are from 0 to 7.

ma <*no.*> (for the IEEE 802.1ag standard)

Clears CFM statistics for the specified MA ID number. The specifiable values are from 0 to 65535.

mel <*level*> (for the ITU-T Y.1731 standard)

Clears CFM statistics for the specified MEG level. The specifiable values are from 0 to 7.

meg <*no.*> (for the ITU-T Y.1731 standard)

Clears CFM statistics for the specified MEG ID number. The specifiable values are from 0 to 65535.

mep <*mepid*>

Clears CFM statistics for the specified MEP ID. The specifiable values are from 1 to 8191.

port <*port list*>

Clears CFM statistics for the specified port number. For details about how to specify <*port list*> and the specifiable range of values, see *Specifiable values for parameters*.

channel-group-number <*channel group number list*>

Clears CFM statistics for the channel groups specified in list format in the specified link aggregation. For details about how to specify <*channel group number list*>, see *Specifiable values for parameters*.

Operation when each parameter is omitted:

This command can clear only the information relevant to the condition applied by a parameter that has been set. If no parameter is specified, information is cleared without being limited by any conditions. If multiple parameters are specified, the information conforming to the conditions will be cleared.

Operation when all parameters are omitted:

Clears all CFM statistics.

Example

Figure 6-19: Clearing CFM statistics

```
> clear cfm statistics
```

>

Display items

None

Impact on communication

None

Response messages

Table 6-19: List of response messages for the clear cfm statistics command

Message	Description
The command cannot be executed in the standby system.	This command cannot be executed in the standby system.
The command cannot be executed. Try again.	The command cannot be executed. Try again.
The command is not authorized by the RADIUS/ TACACS+ server or the configuration.	This command is not authorized by the RADIUS server, the TACACS+ server, or the configuration.
The specified CFM is not configured.	The CFM is not configured. Check the configuration.

Notes

None

restart cfm

Restarts the CFM program.

Syntax

```
restart cfm [-f] [core-file]
```

Input mode

User mode and administrator mode

Parameters

-f

Restarts the CFM program without displaying a confirmation message.

Operation when this parameter is omitted:

A confirmation message is displayed.

core-file

Outputs the core file of the CFM program (`cfmd.core`) when the program is restarted.

Operation when this parameter is omitted:

A core file is not output.

Operation when all parameters are omitted:

Restarts the CFM program after displaying a confirmation message.

Example

Figure 6-20: Restarting the CFM program

```
> restart cfm
Are you sure you want to restart the CFM program? (y/n): y
>
```

Display items

None

Impact on communication

None

Response messages

Table 6-20: List of response messages for the restart cfm command

Message	Description
The command cannot be executed. Try again.	The command cannot be executed. Try again.
The command is not authorized by the RADIUS/ TACACS+ server or the configuration.	This command is not authorized by the RADIUS server, the TACACS+ server, or the configuration.
The specified CFM is not configured.	The CFM is not configured. Check the configuration.

Notes

1. If the core file already exists, the existing file is overwritten unconditionally. Therefore, if the existing file is necessary, back it up in advance. The output destination and the name of the file are as follows:

- Directory: `/usr/var/core/`
- File name: `cfmd.core`

dump protocols cfm

Outputs the control information collected by the CFM program to a file.

Syntax

```
dump protocols cfm
```

Input mode

User mode and administrator mode

Parameters

None

Example

Figure 6-21: Obtaining a CFM dump

```
> dump protocols cfm
>
```

Display items

None

Impact on communication

None

Response messages

Table 6-21: List of response messages for the dump protocols cfm command

Message	Description
The command cannot be executed. Try again.	The command cannot be executed. Try again.
The command is not authorized by the RADIUS/ TACACS+ server or the configuration.	This command is not authorized by the RADIUS server, the TACACS+ server, or the configuration.
The specified CFM is not configured.	The CFM is not configured. Check the configuration.

Notes

1. If the specified file already exists, the existing file is overwritten unconditionally. Therefore, if the existing file is necessary, back it up in advance. The output destination and the name of the file are as follows:
   - Directory: `/usr/var/cfm/`
   - File name: `cfmd_dump.tgz`

Chapter 7. LLDP

show lldp
show lldp statistics
clear lldp
clear lldp statistics
restart lldp
dump protocols lldp

show lldp

Displays the configuration and neighboring device information for LLDP.

Syntax

```
show lldp [port <port list>] [detail]
show lldp neighbors [port <port list>]
```

Input mode

User mode and administrator mode

Parameters

port <*port list*>

Displays LLDP information for the ports specified in list format.

For details about how to specify <*port list*> and the specifiable range of values, see *Specifiable values for parameters*.

Operation when this parameter is omitted:

Displays LLDP information for all ports.

detail

Displays the LLDP configuration information for the Device and the neighboring device information in detail.

Operation when this parameter is omitted:

Displays the LLDP configuration information for the Device and the neighboring device information in a simplified format.

neighbors

Displays summary information about the neighboring device.

Operation when this parameter is omitted:

Displays the LLDP configuration information for the Device and the neighboring device information.

Operation when all parameters are omitted:

Displays the LLDP configuration information for the Device and all neighboring device information in a simplified format.

Example 1

Figure 7-1: Displaying the LLDP configuration information and neighboring device information in a simplified format

```
> show lldp
Date 20XX/04/01 12:00:00 UTC
Status: Enabled     Chassis ID: Type=MAC          Info=0012.e2c8.3c31
Interval Time: 30       Hold Count: 4     TTL: 121
Port Counts=3
  1/ 1(CH:  10) Link: Up      Neighbor Counts:    1
  1/ 2          Link: Down    Neighbor Counts:    0
  1/ 3          Link: Up      Neighbor Counts:    1
>
```

Figure 7-2: Displaying detailed LLDP configuration information and neighboring device information

```
> show lldp detail
Date 20XX/04/01 12:00:00 UTC
Status: Enabled     Chassis ID: Type=MAC          Info=0012.e2c8.3c31
Interval Time: 30       Hold Count: 4     TTL: 121      Draft TTL: 120
System Name: LLDP1
System Description: ALAXALA AX8600R AX-8600-R16 [AX8616R] Routing software
 (including encryption) Ver. 12.1 [OS-RE]
Neighbor Counts=1
Draft Neighbor Counts=1
Port Counts=3
Port 1/1  (CH:  10)
  Link: Up      PortEnabled: TRUE     AdminStatus: enabledRxTx
  Neighbor Counts:   1    Draft Neighbor Counts:   0
  Port ID: Type=MAC          Info=0012.e238.4cc0
  Port Description: GigabitEther 1/1
  Neighbor 1      TTL: 100
    Chassis ID: Type=MAC          Info=0012.e2c8.3c85
    System Name: LLDP2
    System Description: ALAXALA AX8600R AX-8600-R16 [AX8616R] Routing software
 (including encryption) Ver. 12.1 [OS-RE]
    Port ID: Type=MAC          Info=0012.e238.4cd1
    Port Description: GigabitEther 1/24
Port 1/2
  Link: Down    PortEnabled: FALSE    AdminStatus: enabledRxTx
  Neighbor Counts:   0    Draft Neighbor Counts:   0
Port 1/3
  Link: Up      PortEnabled: TRUE     AdminStatus: enabledRxTx
  Neighbor Counts:   0    Draft Neighbor Counts:   1
  Port ID: Type=MAC          Info=0012.e238.4cc2
  Port Description: GigabitEther 1/3
  Tag ID: Tagged=1,10-20,4094
  IPv4 Address: Tagged: 10      192.168.248.240
  IPv6 Address: Tagged: 20      2001:db8:811:ff01:200:8798:5cc0:e7f4
  Draft Neighbor 1      TTL: 100
    Chassis ID: Type=MAC          Info=0012.e268.2c21
    System Name: LLDP3
    System Description: ALAXALA AX6300S AX-6300-S08 [AX6308S] Switching software
 Ver. 11.9 [OS-SE]
    Port ID: Type=MAC          Info=0012.e298.5cc4
    Port Description: GigabitEther 1/5
    Tag ID: Tagged=1,10-20,4094
    IPv4 Address: Tagged: 10      192.168.248.244
    IPv6 Address: Tagged: 20      2001:db8:811:ff01:200:8798:5cc0:e7f8
>
```

Display items in Example 1

Table 7-1: Displayed LLDP configuration information and neighboring device information

Item	Displayed information	Displayed detailed information
Status	Status of the LLDP functionality on the Device	`Enabled`: The LLDP functionality is enabled. `Disabled`: The LLDP functionality is disabled.
Chassis ID	Chassis ID of the Device	--
Type	Subtype for the chassis ID	`MAC`: Indicates that a MAC address is displayed for `Info`.
Info	Information about the chassis ID	MAC address of the Device
Interval Time	Interval for sending LLDPDUs that has been set on the Device (in seconds)	5 to 32768

Item	Displayed information	Displayed detailed information
Hold Count	Multiplier for `Interval Time`, used for calculating the LLDPDU retention time to be reported to neighboring devices	2 to 10
TTL	LDPDU retention time to be reported to neighboring devices (in seconds)	11 to 65535
Draft TTL	LDPDU retention time to be reported to neighboring devices that support Draft 6.0 (in seconds)	10 to 65535
System Name	System name of the Device#1	A character string set by the `hostname` configuration command
System Description	System description of the Device	The same character string as the string used for the MIB (sysDescr)
Neighbor Counts	Total number of neighboring devices to be displayed	The number of neighboring devices that support Draft 6.0 is not included when the `detail` parameter is specified.
Draft Neighbor Counts	Total number of neighboring devices to be displayed that support Draft 6.0	--
Port Counts	Number of ports	Number of ports for which the `lldp enable` configuration command is set
Port	Applicable port number	*<nif no.>/<port no.>*
CH	Channel group number	This item is displayed if the applicable port belongs to the channel group.
Link	Link status of the applicable port	`Up`: Indicates that the port status is Up. `Down`: Indicates that the port status is Down.
PortEnabled	Whether LLDP is operational	`TRUE`: LLDPDUs can be sent and received. `FALSE`: LLDPDUs cannot be sent or received.
AdminStatus	Management status of LLDP	Management status of whether LLDP is operational. `enabledRxTx`: LLDPDUs can be sent and received. This item is fixed at `enabledRxTx` because port information is displayed only for the ports for which the `lldp enable` configuration command was executed.
Neighbor Counts	Number of neighboring devices	Number of neighboring device information items that is retained by the applicable port The number of neighboring devices that support Draft 6.0 is not included.
Draft Neighbor Counts	Number of neighboring devices that support Draft 6.0	Number of information items for neighboring devices that support Draft 6.0 that is retained by the applicable port
Port ID	Port ID of the applicable port	--
Type	Subtype for the port ID	`MAC`: Indicates that a MAC address is displayed for `Info`.
Info	Information about the port ID	MAC address of the port

Item	Displayed information	Displayed detailed information
Port Description	Port description for the applicable port	The same character string as the string used for the MIB (ifDescr).
Tag ID	List of tag values used for Tag-VLAN linkage set for the port subinterface[#1#2]	Displays tag values used for Tag-VLAN linkage in a list format. `Untagged`: Untagged setting `Tagged`: Tag value in the range from 1 to 4095
IPv4 Address	IP address (IPv4) set for the port subinterface, and tag values used for Tag-VLAN linkage[#1#2]	`Untagged`: Untagged setting `Tagged`: Values in the range from 1 to 4095. If multiple tag values exists, the smallest tag value is displayed (the untagged setting has the highest priority). <*ip address*>: Indicates the IPv4 address.
IPv6 Address	IP address (IPv6) set for the port subinterface, and tag values used for Tag-VLAN linkage[#1#2]	`Untagged`: Untagged setting `Tagged`: Values in the range from 1 to 4095. If multiple tag values exists, the smallest tag value is displayed (the untagged setting has the highest priority). <*ip address*>: Indicates the IPv6 address.
Neighbor	Identification number of the neighboring device	A unique value for each port
Draft Neighbor	Identification number of the neighboring device that supports Draft 6.0	A unique value for each port
TTL	Remaining LLDPDU retention time (in seconds)	0 to 65535
Chassis ID	Chassis ID of the neighboring device	--
Type	Subtype for the chassis ID	`CHAS-COMP`: Indicates that the alias of the device is displayed for `Info`. `IF-ALIAS`: Indicates that the alias of the interface is displayed for `Info`. `PORT-COMP`: Indicates that the alias of the physical port is displayed for `Info`. `MAC`: Indicates that the MAC address is displayed for `Info`. `NET`: Indicates that the network address is displayed for `Info`. `IF-NAME`: Indicates that the interface name is displayed for `Info`. `LOCAL`: Indicates that the local setting value is displayed for `Info`.
Info	Information about the chassis ID	Information displayed for the subtype
System Name	System name of the neighboring device[#3]	--
System Description	System description of the neighboring device[#3]	--
Port ID	Port ID for the neighboring device	--

Item	Displayed information	Displayed detailed information
Type	Subtype for the port ID	`IF-ALIAS`: Indicates that the alias of the interface is displayed for `Info`. `PORT-COMP`: Indicates that the alias of the physical port is displayed for `Info`. `MAC`: Indicates that the MAC address is displayed for `Info`. `NET`: Indicates that the network address is displayed for `Info`. `IF-NAME`: Indicates that the interface name is displayed for `Info`. `AGENT`: Indicates that the agent ID is displayed for `Info`. `LOCAL`: Indicates that the local setting value is displayed for `Info`.
Info	Information about the port ID	Information displayed for the subtype
Port Description	Port description of the neighboring device[#3]	--
System Capabilities	Functionality supported by the neighboring device[#3]	`Repeater`: Repeater functionality `Bridge`: Bridge functionality `WLAN-AP`: Wireless LAN access point `Router`: Router functionality `Telephone`: Voice communication functionality `DOCSIS`: DOCSIS cable device `Station`: Dedicated for Station Only reception `C-VLAN`: C-VLAN Component of a VLAN Bridge `S-VLAN`: S-VLAN Component of a VLAN Bridge `TPMR`: Two-port MAC Relay `Other`: Others Multiple items are displayed if there were multiple notifications.
Enable Capabilities	Functionality running on the neighboring device[#3]	`Repeater`: Repeater functionality `Bridge`: Bridge functionality `WLAN-AP`: Wireless LAN access point `Router`: Router functionality `Telephone`: Voice communication functionality `DOCSIS`: DOCSIS cable device `Station`: Dedicated for Station Only reception `C-VLAN`: C-VLAN Component of a VLAN Bridge `S-VLAN`: S-VLAN Component of a VLAN Bridge `TPMR`: Two-port MAC Relay `Other`: Others Multiple items are displayed if there were multiple notifications.
Management Address	Management address of the neighboring device[#3]	--
Tag ID	List of tag values used for Tag-VLAN linkage set for the neighboring device port subinterface[#3#4]	Displays tag values used for Tag-VLAN linkage in a list format. `Untagged`: Untagged setting `Tagged`: Tag value in the range from 1 to 4095

Item	Displayed information	Displayed detailed information
IPv4 Address	IP address (IPv4) set for the neighboring device port subinterface, and tag values used for Tag-VLAN linkage#3#4	`Untagged`: Untagged setting `Tagged`: Values in the range from 1 to 4095. If multiple tag values exists, the smallest tag value is displayed (the untagged setting has the highest priority). <*ip address*>: Indicates the IPv4 address.
IPv6 Address	IP address (IPv6) set for the neighboring device port subinterface, and tag values used for Tag-VLAN linkage#3#4	`Untagged`: Untagged setting `Tagged`: Values in the range from 1 to 4095. If multiple tag values exists, the smallest tag value is displayed (the untagged setting has the highest priority). <*ip address*>: Indicates the IPv6 address.

#1: This item is not displayed if the information has not been set in the configuration.

#2: This item is displayed only when sending LLDPDUs for Draft 6.0.

#3: This item is not displayed if it has not been reported.

#4: This item is displayed for the neighboring device for Draft6.0 only.

Example 2

Figure 7-3: Displaying summary information about LLDP neighboring devices

```
> show lldp neighbors
Date 20XX/04/01 12:00:00 UTC
Neighbor Counts:   2
Neighbor Informations
                  Chassis                        Port
 1/ 1(CH:  10)    0012.e2c8.3c85                 GigabitEther 1/24
 1/ 3             0012.e268.2c21                 GigabitEther 1/5
>
```

Display items in Example 2

Table 7-2: Displayed summary information about LLDP neighboring devices

Item	Displayed information	Displayed detailed information
Neighbor Counts	Total number of retained neighboring devices to be displayed	--
Neighbor Informations	Information about neighboring devices	--
<*nif no.*>/<*port no.*>	Port number	NIF number and port number of the port whose information is to be displayed. Only ports that retain neighboring device information are displayed.
CH	Channel group number	This item is displayed if the applicable port belongs to the channel group.
Chassis	Chassis ID of the neighboring device	If the number of characters is 25 or more, only the first 24 characters are displayed. (. . . is displayed for the omitted part.)
Port	Port description of the neighboring device	If the number of characters is 25 or more, only the first 24 characters are displayed. (. . . is displayed for the omitted part.) This item is not displayed if it has not been reported.

Impact on communication

None

Response messages

Table 7-3: List of response messages for the show lldp command

Message	Description
LLDP is not configured.	LLDP is not configured. Check the configuration.
The command cannot be executed in the standby system.	This command cannot be executed in the standby system.
The command cannot be executed. Try again.	The command cannot be executed. Try again.
The command is not authorized by the RADIUS/ TACACS+ server or the configuration.	This command is not authorized by the RADIUS server, the TACACS+ server, or the configuration.
The connection with the LLDP program failed. Retry the command. If this problem occurs repeatedly, use 'restart lldp' to restart the program.	Communication with the LLDP program failed. Retry the command. If the failure occurs frequently, use the `restart lldp` command to restart the LLDP program.

Notes

None

show lldp statistics

Displays LLDP statistics.

Syntax

```
show lldp statistics [port <port list>]
```

Input mode

User mode and administrator mode

Parameters

port <*port list*>

Displays LLDP statistics for the ports specified in list format.

For details about how to specify <*port list*> and the specifiable range of values, see *Specifiable values for parameters*.

Operation when this parameter is omitted:

Displays statistics for all LLDP frames by port.

Example

Figure 7-4: Displaying LLDP statistics

```
> show lldp statistics
Date 20XX/04/01 12:00:00 UTC
Port Counts: 3
1/1    LLDPDUs    : Tx      =      1300  Rx      =      1294  Invalid=         0
                    Discard=         0  Ageouts=         0
       Discard TLV: TLVs    =         0  Unknown=         0
 Draft LLDPDUs    : Tx      =         0  Rx      =         0  Invalid=         0
       Discard TLV: TLVs    =         0  LLDPDUs=         0
1/2    LLDPDUs    : Tx      =       890  Rx      =       547  Invalid=         0
                    Discard=         0  Ageouts=         0
       Discard TLV: TLVs    =         0  Unknown=         0
 Draft LLDPDUs    : Tx      =         0  Rx      =         0  Invalid=         0
       Discard TLV: TLVs    =         0  LLDPDUs=         0
1/3    LLDPDUs    : Tx      =        20  Rx      =         0  Invalid=         0
                    Discard=         0  Ageouts=         0
       Discard TLV: TLVs    =         0  Unknown=         0
 Draft LLDPDUs    : Tx      =       869  Rx      =       870  Invalid=         0
       Discard TLV: TLVs    =         0  LLDPDUs=         0
>
```

Display items

Table 7-4: Displayed LLDP statistics

Item	Displayed information	Displayed detailed information
Port counts	Number of ports subject to this statistics	--
<*nif no.*>/<*port no.*>	Port number	NIF number and port number of the port whose statistics are to be displayed.
LLDPDUs	Statistics for frames	Statistics for frames in Draft 6.0 are not included.
Tx	Number of LLDPDUs sent	0 to 4294967295
Rx	Number of LLDPDUs received	0 to 4294967295
Invalid	Number of invalid LLDPDUs	0 to 4294967295

Item	Displayed information	Displayed detailed information
Discard	Number of LLDPDUs discarded	0 to 4294967295
Ageouts	Number of neighboring information items whose retention time expired	0 to 4294967295
Discard TLV	TLV statistics	TLV statistics in Draft 6.0 are not included.
TLVs	Number of TLVs discarded	0 to 4294967295
Unknown	Number of TLVs that cannot be recognized	0 to 4294967295
Draft	Statistics for Draft 6.0	--
LLDPDUs	Statistics for frames in Draft 6.0	--
Tx	Number of Draft 6.0 LLDPDUs sent	0 to 4294967295
Rx	Number of Draft 6.0 LLDPDUs received	0 to 4294967295
Invalid	Number of invalid Draft 6.0 LLDPDUs	0 to 4294967295
Discard TLV	Statistics for TLVs in Draft 6.0	--
TLVs	Number of Draft 6.0 TLVs discarded	0 to 4294967295
LLDPDUs	Number of LLDPDUs that includes the number of Draft 6.0 TLVs discarded	0 to 4294967295

Impact on communication

None

Response messages

Table 7-5: List of response messages for the show lldp statistics command

Message	Description
LLDP is not configured.	LLDP is not configured. Check the configuration.
The command cannot be executed in the standby system.	This command cannot be executed in the standby system.
The command cannot be executed. Try again.	The command cannot be executed. Try again.
The command is not authorized by the RADIUS/TACACS+ server or the configuration.	This command is not authorized by the RADIUS server, the TACACS+ server, or the configuration.
The connection with the LLDP program failed. Retry the command. If this problem occurs repeatedly, use 'restart lldp' to restart the program.	Communication with the LLDP program failed. Retry the command. If the failure occurs frequently, use the `restart lldp` command to restart the LLDP program.

Notes

None

clear lldp

Clears LLDP neighboring device information.

Syntax

```
clear lldp [port <port list>]
```

Input mode

User mode and administrator mode

Parameters

port <*port list*>

Clears neighboring device information for the ports specified in list format.

For details about how to specify <*port list*> and the specifiable range of values, see *Specifiable values for parameters*.

Operation when this parameter is omitted:

Clears information about all neighboring devices retained on the Device.

Example

Figure 7-5: Clearing LLDP neighboring device information

```
> clear lldp
>
```

Display items

None

Impact on communication

None

Response messages

Table 7-6: List of response messages for the clear lldp command

Message	Description
LLDP is not configured.	LLDP is not configured. Check the configuration.
The command cannot be executed in the standby system.	This command cannot be executed in the standby system.
The command cannot be executed. Try again.	The command cannot be executed. Try again.
The command is not authorized by the RADIUS/TACACS+ server or the configuration.	This command is not authorized by the RADIUS server, the TACACS+ server, or the configuration.
The connection with the LLDP program failed. Retry the command. If this problem occurs repeatedly, use 'restart lldp' to restart the program.	Communication with the LLDP program failed. Retry the command. If the failure occurs frequently, use the `restart lldp` command to restart the LLDP program.

Notes

None

clear lldp statistics

Clears LLDP statistics.

Syntax

```
clear lldp statistics [port <port list>]
```

Input mode

User mode and administrator mode

Parameters

port <*port list*>

Clears LLDP statistics for the ports specified in list format.

For details about how to specify <*port list*> and the specifiable range of values, see *Specifiable values for parameters*.

Operation when this parameter is omitted:

Clears all LLDP statistics for the Device.

Example

Figure 7-6: Clearing LLDP statistics

```
> clear lldp statistics
>
```

Display items

None

Impact on communication

None

Response messages

Table 7-7: List of response messages for the clear lldp statistics command

Message	Description
LLDP is not configured.	LLDP is not configured. Check the configuration.
The command cannot be executed in the standby system.	This command cannot be executed in the standby system.
The command cannot be executed. Try again.	The command cannot be executed. Try again.
The command is not authorized by the RADIUS/TACACS+ server or the configuration.	This command is not authorized by the RADIUS server, the TACACS+ server, or the configuration.
The connection with the LLDP program failed. Retry the command. If this problem occurs repeatedly, use 'restart lldp' to restart the program.	Communication with the LLDP program failed. Retry the command. If the failure occurs frequently, use the `restart lldp` command to restart the LLDP program.

Notes

None

restart lldp

Restarts the LLDP program.

Syntax

```
restart lldp [-f] [core-file]
```

Input mode

User mode and administrator mode

Parameters

-f

Restarts the LLDP program without displaying a confirmation message.

Operation when this parameter is omitted:

A confirmation message is displayed.

core-file

Outputs the core file of the LLDP program (`lldpd.core`) when the program is restarted.

Operation when this parameter is omitted:

A core file is not output.

Operation when all parameters are omitted:

Restarts the LLDP program after displaying a confirmation message.

Example

Figure 7-7: Restarting the LLDP program

```
> restart lldp
Are you sure you want to restart the LLDP program? (y/n): y
>
```

Display items

None

Impact on communication

None

Response messages

Table 7-8: List of response messages for the restart lldp command

Message	Description
The command cannot be executed. Try again.	The command cannot be executed. Try again.
The command failed because the LLDP program is not running.	The command failed because the LLDP program is not running. Wait until the LLDP program restarts, and then try again.
The command is not authorized by the RADIUS/TACACS+ server or the configuration.	This command is not authorized by the RADIUS server, the TACACS+ server, or the configuration.

Notes

1. If the core file already exists, the existing file is overwritten unconditionally. Therefore, if the existing file is necessary, back it up in advance. The output destination and the name of the

file are as follows:

- Directory: `/usr/var/core/`
- File name: `lldpd.core`

dump protocols lldp

Outputs the control information collected by the LLDP program to a file.

Syntax

```
dump protocols lldp
```

Input mode

User mode and administrator mode

Parameters

None

Example

Figure 7-8: Obtaining an LLDP dump

```
> dump protocols lldp
>
```

Display items

None

Impact on communication

None

Response messages

Table 7-9: List of response messages for the dump protocols lldp command

Message	Description
LLDP is not configured.	LLDP is not configured. Check the configuration.
The command cannot be executed. Try again.	The command cannot be executed. Try again.
The command is not authorized by the RADIUS/ TACACS+ server or the configuration.	This command is not authorized by the RADIUS server, the TACACS+ server, or the configuration.
The connection with the LLDP program failed. Retry the command. If this problem occurs repeatedly, use 'restart lldp' to restart the program.	Communication with the LLDP program failed. Retry the command. If the failure occurs frequently, use the `restart lldp` command to restart the LLDP program.
The dump file could not be opened.	An attempt to open or access a dump file failed. Try again later.

Notes

1. If the specified file already exists, the existing file is overwritten unconditionally. Therefore, if the existing file is necessary, back it up in advance. The output destination and the name of the file are as follows:
   - Directory: `/usr/var/lldp/`
   - File name: `lldpd_dump.tgz`

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