P3NK-4452-01ENZ0

XG Series

User's Guide

FUJITSU

Preface

You have purchased the XG series, a compact, layer 2 switch that achieves unsurpassed

standards of high throughput and low-latency performance.

This guide describes the XG series (XG0224 / XG0448 / XG2600) functions, installation procedures, configuration operations, and maintenance procedures and should be read and understood before you start using your XG series.

First edition: February 2011

This manual contains the technology regulated by "Foreign Exchange and Foreign Trade Control Law."

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Screenshots are used according to the guidelines provided by Microsoft Corporation.

Contents

Organization and Usage of This Manual

This section describes target readers, contents, notations, etc. of this guide.

Target Readers and Required Knowledge

This guide was written for administrators, who are in charge of network construction, maintenance, and management.

To use this guide, the following knowledge is required.

- Basic knowledge of networks, the Internet, and intranets
- Basic knowledge of system security
  This guide omits explanations of network protocol terms.

Areas Covered

This guide to the XGseries is composed of the following chapters.

Chapter Titles	Contents
Chapter 1 Features and Functions	Describes the features and functions.
Chapter 2 Using the CLI	Describes operating environment of CLI and how to operate CLI.
Chapter 3 Installation	Describes the necessary installation procedures.
Chapter 4 Switch Functions and their Configuration	Describes how to use the console screen.
Chapter 5 Command Reference	Describes how to use the commands.
Chapter 6 Managing the Device	Describes the management of the device.
Chapter 7 Troubleshooting	Describes how to solve problems in the device.
Appendix A SNMP Traps	Describes message format of SNMP traps.
Appendix B List of MIBs	Describes the list of MIBs supported by the SNMP agent

About the Symbols

The symbols used in this guide have the following meanings.

Hint	Indicates useful information for using this device.
Precautions	Indicates precautions that must be taken when using this device.
Note	Indicates additional information to complement operating instructions.
Reference	Indicates related matters such as operation procedures, etc.
Available Model	Indicates the available model name when using functions of this device.
Warning	Indicates warning matters related to the Product Liability (P.L.) Law. Please follow them when using this device.
Caution	Indicates cautionary notes related to the Product Liability (P.L.) Law. Please follow them when using this device.

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Abbreviated Product Names

The product names used in this manual are abbreviated as follows.

Product name	Description in this manual
Microsoft® Windows® XP Professional operating system	Windows® XP
Microsoft® Windows® XP Home Edition operating system	
Microsoft® Windows® Millennium Edition operating system	Windows® Me
Microsoft® Windows® 98 operating system	Windows® 98
Microsoft® Windows® 95 operating system	Windows® 95
Microsoft® Windows® 2000 Server Network operating system	Windows® 2000
Microsoft® Windows® 2000 Professional operating system	
Microsoft® Windows NT® Server network operating system Version 4.0	Windows NT® 4.0
Microsoft® Windows NT® Workstation operating system Version 4.0	
Microsoft® Windows Server® 2003, Standard Edition	Windows Server® 2003
Microsoft® Windows Server® 2003 R2, Standard Edition	
Microsoft® Windows Server® 2003, Enterprise Edition	
Microsoft® Windows Server® 2003 R2, Enterprise Edition	
Microsoft® Windows Server® 2003, Datacenter Edition	
Microsoft® Windows Server® 2003 R2, Datacenter Edition	
Microsoft® Windows Server® 2003, Web Edition	
Microsoft® Windows Server® 2003, Standard x64 Edition	
Microsoft® Windows Server® 2003 R2, Standard x64 Edition	
Microsoft® Windows Server® 2003, Enterprise x64 Edition	
Microsoft® Windows Server® 2003 R2, Enterprise x64 Edition	
Microsoft® Windows Server® 2003, Enterprise Edition for Itanium-based systems	
Microsoft® Windows Server® 2003, Datacenter x64 Edition	
Microsoft® Windows Server® 2003 R2, Datacenter x64 Edition	
Microsoft® Windows Vista® Ultimate operating system	Windows Vista®
Microsoft® Windows Vista® Business operating system	
Microsoft® Windows Vista® Home Premium operating system	
Microsoft® Windows Vista® Home Basic operating system	
Microsoft® Windows Vista® Enterprise operating system	

How the Manuals for This Device Are Organized

The following are XG series related manuals. Use these manuals as necessary.

Manual Name	Description
Safety and Installation Guide	This manual describes the safety and installation.
Hardware Guide	Describes the hardware of the XG.
User’s Guide (This manual)	This manual describes a variety of operations and procedures, including the installation and maintenance of the XG Series.

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Chapter 1 Features and Functions

This chapter describes the features and functions of the device.

1.1 Hardware Specifications

This section explains the Hardware specifications for the device.

1.1.1 Switch Specifications

❍: supported, –: Not supported

item	specification		
model name	XG0224	XG0448	XG2600
Interface			
Console Port			
specifications	RS232C		
number of ports	1		
Baud rate (bps)	9600		
connector	RJ45 8-pin Modular		
ETHER port			
specifications	IEEE802.3		
10BASE-T interface	❍	❍	❍
100BASE-T interface	❍	❍	❍
1000BASE-T interface	❍	❍	–
number of ports			
10/100BASE-TX	–		1 (Management Port)
10/100/1000BASE-T	24 Port 21 to 24 are 10/100/1000Base-T and SFP combo ports.	48 Port 45 to 48 are 10/100/1000Base-T and SFP combo ports. (*1)	–
Baud rate (bps)			
10M	❍	❍	❍
100M	❍	❍	❍
1000M	❍	❍	–
connector	RJ45 8-pin Modular		
cable length (maximum) (m)	100		
SFP port			
specifications	IEEE802.3		–
number of ports	4 Port 21 to 24 are 10/100/1000Base-T and SFP combo ports. (*2)	4 Port 45 to 48 are 10/100/1000Base-T and SFP combo ports. (*1, *2)	–
connector	20-pin SFP		–
SFP+ Slot (*3)			
specifications	–		IEEE802.3
number of ports	–		26
connector			20-pin SFP+
CompactFlash Slot	❍	–	–
USB port			
specifications	–	USB2.0 Compliance	
number of ports	–	1	
connector	–	4-pin USB	
Expansion Slot	1	2 (*1)	–

item	specification		
model name	XG0224	XG0448	XG2600
Power Voltage/Frequencys	AC100V-240V (50/60Hz)		
Power code	for 3-pin socket (grounded) (125V13A)		AC:for 3-pin socket (grounded) (125V13A)
Power cable length (m)	3.0		
Maximum power consumption (W)	67	133.1	111
Dimensions (mm) (W×D×H)	441×388×44	441×430×44	430×600×43.5
Maximum weight (kg)	5.5	7.0	13
Ambient noise (dB)	45 or less		55 or less
Temperature/Humidity (°C/%RH)	Temperature condition: operating:0 to 40, storage:0 to 50 Humidity condition:operating:15 to 85, storage:8 to 90		

*1) When the network traffic between port1 to 24, 51, 52 and port25 to 50 exceeds 24Gbps, transfer speeds underrun Wire speed.

*2) 100BASE-FX, 1000BASE-SX, 1000BASE-LX, 1000BASE-ZX, 1000BASE-BX-D, 1000BASE-BX-U SFP SFP modules are available.

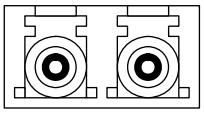
*3) 10GBASE-SR, 10GBASE-LR SFP+ modules are available.

1.1.2 Option

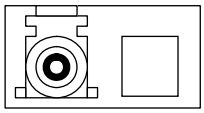
SFP Module

CLASS 1 LASER PRODUCT

Available Model ***XG0224 / XG0448***



100BASE-FX
1000BASE-SX
1000BASE-LX
1000BASE-ZX



1000BASE-BX-D
1000BASE-BX-U

item	specification			
Vendor PN	HFBR-5710L	FTLF8519P2BNL	HFCT-5710L	SCP6P44-F7-BMH
Vendor Name	AGILENT TECHNOLOGIES	FINISAR	AGILENT TECHNOLOGIES	SUMITOMO ELECTRIC
Interface				
specifications	IEEE802.3z (1000BASE-SX Interface)		IEEE802.3z (1000BASE-LX Interface)	
Baud rate (bps)	1000M			
connector	LC connector			
stressed receiver sensitivity	-17dBm or more		-20dBm or more	-19.5dBm or more
cable length (maximum) (*3)	500m (MMF:50μm), 300m (MMF:62.5μm)		550m (MMF:50μm, 62.5μm), 5km (SMF:10μm)	550m (MMF:50μm, 62.5μm), 10km (SMF:10μm)
CLASS 1 LASER PRODUCT specifications	EN60825-1:1994+A11, EN60825-2:1994+A1	EN60825-1:1994+A11+A2, EN60825-2:2004	EN60825-1:1994+A1+A2	IEC60825-1:2001

item	specification			
Vendor PN	SCP6P94-F7-BMH	SBP6F54-F1-BN-49	SBP6F54-F1-BT-31	HFBR-57E0P
Vendor Name	SUMITOMO ELECTRIC	SUMITOMO ELECTRIC	SUMITOMO ELECTRI	ABAGO TECHNOLOGIES
Interface				
specifications	– (1000BASE-ZX Interface)	IEEE802.3ah (1000BASE-BX-D Interface)	IEEE802.3ah (1000BASE-BX-U Interface)	IEEE802.3u (100BASE-FX Interface)
Baud rate (bps)	1000M			100M
connector	LC connector			
stressed receiver sensitivity	-24dBm or more	-21dBm or more		-31dBm or more
cable length (maximum) (*3)	70km (SMF:10μm)	20km (SMF:10μm)		2km (MMF:50μm)
CLASS 1 LASER PRODUCT specifications	IEC60825-1:2001			EN60825-1:1994+A1+A2

*1) Please make sure to use 1000BASE-BX-D SFP module and 1000BASE-BX-U SFP module in pairs.

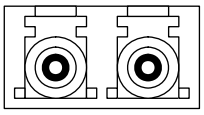
*2) Applicable to XG0224 only.

*3) Cable length (maximum) is under the condition that the stressed receiver sensitivity satisfy the permissible level.

SFP+ Module

CLASS 1 LASER PRODUCT

Available Model ***XG0448 / XG2600***



10GBASE-SR / LR

item	specification	
Vendor PN	FTLX8571D3BCL	FTLX1471D3BCL
Vendor Name	FINISAR	FINISAR
Interface		
specifications	IEEE802.3ae (10GBASE-SR)	IEEE802.3ae (10GBASE-LR)
Baud rate (bps)	10G	
connector	LC connector	
stressed receiver sensitivity	-7.5dBm or more	-10.3dBm or more
cable length (maximum) (*)	300m (MMF:50μm)	10km (SMF:10μm)
CLASS 1 LASER PRODUCT specifications	EN60825-1:1994+A1+A2, EN60825-2:2004	

*) Cable length (maximum) is under the condition that the stressed receiver sensitivity satisfy the permissible level.

Precautions

Cable length is as follows depending on the specifications of optical fiber cables.

Type	Core / Clad diameter	Minimum transmission band	cable length (maximum) (m)
MMF	62.5/125μm	160MHz/km	26
		200MHz/km	33
	50/125μm	400MHz/km	66
		500MHz/km	82
		2000MHz/km	300

Please use the most appropriate cable according to the environment of the installed place.

SFP+ Expansion Card

Available Model ***XG0224 / XG0448***

item	specification
Type name	SJ10GSFPZ
Interface (ETHER)	
specifications	IEEE802.3ae (10GBASE-R Interface)
number of ports	2
Baud rate (bps)	10G
connector	SFP connector

CX4 Expansion Card

Available Model ***XG0224 / XG0448***

item	specification
Type name	SJ10GCX4Z
Interface (ETHER)	
specifications	IEEE802.3ak (10GBASE-CX4 Interface)
number of ports	2
Baud rate (bps)	10G
connector	16pin, CX4connector
cable length (maximum) (m)	15

Compact Flash Card

Available Model ***XG0224***

item	specification
Capacity (MBytes)	256

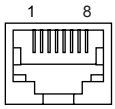
Power Cable (100V)

Available Model ***All models***

item	specification
cable length (m)	3

1.1.3 10/100/1000BASE-T Port Specifications

Available Model ***All models***



connector is RJ45 8 pin

- XG0224 / XG0448

–: Not supported

Pin numbering	Signal name (XG0224: 1 to 24 port) (XG0448: 1 to 48 port)			
	10/100BASE-TX		1000BASE-T	
	MDI	MDI-X	MDI	MDI-X
1	TD+	RD+	TP0+	TP1+
2	TD-	RD-	TP0-	TP1-
3	RD+	TD+	TP1+	TP0+
4	–	–	TP2+	TP3+
5	–	–	TP2-	TP3-
6	RD-	TD-	TP1-	TP0-
7	–	–	TP3+	TP2+
8	–	–	TP3-	TP2-

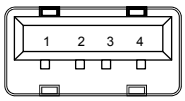
- XG2600

–: Not supported

Pin numbering	Signal name
	10/100BASE-TX
	MDI
1	TD+
2	TD-
3	RD+
4	–
5	–
6	RD-
7	–
8	–

1.1.4 USB Port Specifications

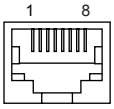
Available Model ***XG0448 / XG2600***



Pin numbering	Signal name
1	VBUS
2	D-
3	D+
4	GND

1.1.5 Console Port Specifications

Available Model ***All models***



connector is RJ45 8 pin
A straight cable is used.

–: Not supported

Pin numbering	Signal name	in / out	Content
1	–	–	–
2	ER	out	data terminal ready
3	TD	out	send data
4	GND	–	ground
5	GND	–	ground
6	RD	in	receive data
7	–	–	–
8	–	–	–

1.2 Software Specifications

This section explains the software specifications for the device.

1.2.1 Software Specifications

❍: Supported, –: Not supported

Item	Features		
	XG0224	XG0448	XG2600
Forwarding Mode	Store and Forward	Store and Forward	Selectable
VLAN			
Port VLAN	❍	❍	❍
Tag VLAN	❍	❍	❍
Protocol VLAN	❍	❍	❍
Link Down Relay	❍	❍	❍
Link aggregation			
Static	❍	❍	❍
LACP	❍	❍	❍
Back up port	❍	❍	❍
STP			
STP	❍	❍	❍
MSTP	❍	❍	❍
RSTP	❍	❍	❍
LLDP	❍	❍	❍
LLMNR	❍	❍	❍
QoS			
QoS sending algorithm			
strict	❍	❍	❍
DRR	–	–	❍
WRR	❍	❍	–
Assign the priority to the queue			
CoS	❍	❍	❍
IPv4 TOS (ip precedence)	❍ (with the use of ACL)	❍ (with the use of ACL)	❍ (with the use of ACL (*1))
IPv6 TC	❍ (with the use of ACL)	❍ (with the use of ACL)	–
IPv4 DSCP	❍ (with the use of ACL)	❍ (with the use of ACL)	❍ (with the use of ACL (*1))
IPv6 DSCP	❍ (with the use of ACL)	❍ (with the use of ACL)	–

Item	Features		
	XG0224	XG0448	XG2600
Rewrite the priority			
COS (user priority)	❍ (with the use of ACL)	❍ (with the use of ACL)	–
IPv4 TOS (ip precedence)	❍ (with the use of ACL)	❍ (with the use of ACL)	❍ (with the use of ACL (*1))
IPv4 DSCP	❍ (with the use of ACL)	❍ (with the use of ACL)	❍ (with the use of ACL (*1))
IPv6 DSCP	❍ (with the use of ACL)	❍ (with the use of ACL)	–
Security			
IP/MAC filtering	❍	❍	❍ (*1)
Log in password	❍	❍	❍
Application filtering (per application server)	❍	❍	❍
IPv4 filter	❍ (with the use of ACL)	❍ (with the use of ACL)	❍ (with the use of ACL)
IPv6 filter	❍ (with the use of ACL)	❍ (with the use of ACL)	–
RADIUS client	❍	❍	❍
Loop detection	❍	❍	❍
Broadcast/multicast storm control	❍	❍	❍
MAC table flash	❍	❍	–
Port mirroring	❍	❍	❍
ether L3 watch	❍	❍	❍
Output rate control	–	–	❍
Routing			
IPv4			
Static	❍	❍	❍
Multicast			
IGMP snoop (v1, v2)	❍	❍	❍
ProxyDNS			
DNS server	❍	❍	❍
DNS relaying	❍	❍	❍
URL filtering	❍	❍	❍
SNMP Agent (v1, v2c, v3)	❍	❍	❍
Means of configuration			
telnet	❍	❍	❍
ssh	❍	❍	❍
Serial (CLI)	❍	❍	❍
WWW browser (Web UI)	❍	❍	❍

Item	Features		
	XG0224	XG0448	XG2600
Logging			
System logging	❍	❍	❍
Error logging	❍	❍	❍
Automated time adjustment	❍	❍	❍
Scheduling	❍	❍	❍
Compact flash	❍	–	–
USB memory	–	❍	❍

*1) For the packets which applied MAC/IP filter, QoS function with the use of ACL become void.

1.2.2 Initial Values

–: Not supported

Item	Features							
	XG0224			XG0448			XG2600	
Port information								
ETHER port	1-20	21-24	25-26	1-44	45-48	49-52	1-26	Management port
Copper/Fiber	–	Auto-detect	–	–	Auto-detect	–	10Gbps (Fixed)	10/100Mbps (Auto-detect)
Full/half duplex	Auto-detect		–	Auto-detect		–	Full-duplex (Fixed)	Auto-detect
MDI/MDI-X	Auto-detect		–	Auto-detect		–	–	MDI (Fixed)
Flow control	tx: OFF, rx: ON							tx: OFF (Fixed) rx: ON (Fixed)
VLAN	VID 1 (no tag)							–
Protocol VLAN								
Predefined protocol	IPv4, IPv6, FNA							
Link aggregation								
Load balancing algorithm	tx MAC address XOR rx MAC address							
Back up port								
Port selection scheme	Master ports preferred							
STP information								
STP operating mode	STP used						Disabled	
LLDP	Disabled						Used	
LLMNR	Enabled (lan 0,vlan1)						Disabled	Enabled
Loop detection	Disabled							
Broadcast/Multicast storm control	Disabled							
Egress Rate Control	–						Disabled	
IGMP snoop	Disabled							

Item		Features		
		XG0224	XG0448	XG2600
IP interface		lan0 Interface:enable IPv6, enable LLMNR		oob Interface (Management port):enable IPv6, enable LLMNR
RADIUS client		Disabled		
Password information				
	User name	admin		
	Password	None		
ACL information		None		
ProxyDNS information		None		
SNMP		Disabled		
telnet/SSH auto logoff		5 min.		
Console auto logoff		8 hour		
Web browser auto logoff		10min (Fixed)		
System log information				
	Sending to the Server	Disabled		
	Facility	23 (local7)		
	Priority	error, warn, info		
	Security	proxydns		
Automatically current time Set		Disabled		
Schedule information		None		
Host database information		None		
Compact flash dump		Disabled	–	
USB memory dump		–	Disabled	–

1.2.3 System Maximum Values

–: Not supported

Item	Features		
	XG0224	XG0448	XG2600
Bridge information			
# of blocks registered (*1)	16000	32000	16000
# of static blocks registered	400		
VLAN definition			
# of VLANs (*2)	4094		
# of Protocol VLAN	unlimited		16 VLAN
User defined Protocol VLAN	8		
Link aggregation			
# of member ports	8		10
# of groups	13	26	10
Back up ports			
# of groups	13	26	13
STP information			
# of MSTP instances	16		
# of neighbor LLDP device information (*3)	26+364	52+728	26+364
MAC filters			
IPv4	128 (per device) (*4)		64 (per device) (*8)
IPv6	128 (per device) (*5)		–
Rewrite the priority			
IPv4			
COS (user priority)	128 (per device) (*6)		–
IPv4 TOS (ip precedence)	128 (per device) (*6)		64 (per device) (*8)
IPv4 DSCP	128 (per device) (*6)		64 (per device) (*8)
Assign the priority to the queue	128 (per device) (*6)		64 (per device) (*8)
IPv6			
IPv6 DSCP	128 (per device) (*7)		–
Assign the priority to the queue	128 (per device) (*7)		–
MAC table Flushing			
# of address group	4		–
# of VLAN for every address group	50		–
IGMP snoop			
# of multicast group addresses registered	200		2000
Port mirroring			
Target port	1		tx: 1, rx: 1 (*9)

Item	Features		
	XG0224	XG0448	XG2600
# of ARPs registered	8000		
static	200		–
# of IPv4 interfaces	100		100 (*10)
# of IPv6 interfaces	100		100 (*10)
RA information (IPv6)			
# of interface receiving RA	2		
# of Default Router for every interface	4		
# of IPv6 prefix for every interface	4		
# of Neighbor Cache entry	8000		
Routing table (IPv4)			
# of routes registered	200		
# of static routes registered	200		
Routing table (IPv6)			
# of routes registered	200		
# of RA routes registered	1		
# of static routes registered	200		
IP filtering information			
IPv4	128 (per device) (*4)		64 (per device) (*8)
IPv6	128 (per device) (*5)		–
DSCP rewrite information			
IPv4	128 (per device) (*6)		64 (per device) (*8)
IPv6	128 (per device) (*7)		–
# of ACL definitions	800		300
# of host database definitions	100		
AAA information			
# of groups	10		
# of defined authenticated users	1000		
# of defined RADIUS servers	4		
ProxyDNS	50		
SNMP information			
# of max. SNMP managers registered	8		
# of simultaneously connected telnet/ssh/WWW browser clients (*11)	8		
System logging			
# of displayed system log records	1024 or more		
Max. # of system log servers registered	3		
Automated time adjustment			
Max. # of SNTP servers registered	4		
# of schedules defined	20		
Application filtering information (per application server)	30		

*1) Includes own entries of the device and static entries.

*2) Includes system use of VLANs (number of ether ports + 1).

*3) First, the maximum number of neighbor LLDP device information is 15 times of the number of total ports including 1G and 10G. (XG0224: 390, XG0448: 780, XG2600: 390)
Second, each port including 1G and 10G must have at least one LLDP information. (XG0224: 26, XG0448: 52, XG2600: 26)
The remaining number of neighbor LLDP device information can be distributed to any ports. (XG0224: 364, XG0448: 728, XG2600: 364)

*4) Total number of MAC filter (IPv4) and IPv4 filter definitions.

*5) Total number of MAC filter (IPv6) and IPv6 filter definitions.

*6) Total number of Rewrite the priority (IPv4) and IPv4 DSCP rewrite definitions.

*7) Total number of Rewrite the priority (IPv6) and IPv6 DSCP rewrite definitions.

*8) The total number of MAC filter, IPv4 filter, MAC QoS and IPv4 DSCP rewrite definitions may be reduced as the number of ACL rules increase.

*9) Same port can't be used as a target port for tx and for rx.

*10) Includes Management Port Interface (oob).

*11) 4 sessions for Telnet, 1session fot WWW (http), 1session for console, 1session for ftp, 1session for ssh (sftp).

Chapter 2 Using the CLI

This chapter describes how to use the command line interface (CLI) to operate the device.

2.1 Overview of the CLI

This section describes how to use the command line interface (CLI) for the XG Series.

2.1.1 Operating Environment for the CLI

There are two ways to access the device to run commands.

- Serial connection
  Connect to the serial port of the device using RS232C cable via RJ45conversion cable.
  The available terminal emulation type is VT100.
  When initially connecting a terminal to the device, configure the serial port on the client side as shown below.

Item	Setting value
Baud rate	9600 bps
Character size	8 bit
Parity	None
Stop bits	1 bit
Flow control	None
Emulation	VT100
Character set	ASCII
Line feed code	Transmission: CR (carriage return) only Reception: LF is added

- Remote connection via LAN port
  Connect a terminal or host computer using a telnet client to the management LAN port of the device TCP port of 23
  Is used for the default telnet connection
  The following tables list the factory defaults.

  Management-LAN [XG2600] and LAN Interface initial settings

Item	Setting value
IP address	None (must be set before using the LAN interface)
Subnet address	None (must be set before using the LAN interface)

  Telnet server initial settings

Item	Setting value
Use telnet	Enable
Port number	23 (TCP)
Emulation	VT100/VT200/xterm
BackSpace key	Delete
Character set	ASCII

  To use the remote connection via the management-LAN port, use the "oob ip" command to configure the management-LAN port for the device as below. [XG2600]

```
XG2600(config)# oob ip 192.168.1.1/24 3
XG2600(config)# commit
XG2600(config)# save
```

  To use the remote connection via the LAN port 1, use the "lan ip" command to configure the management-LAN port

for the device as below.

```
XG2600(config)# ether 1 vlan untag 1
XG2600(config)# lan 0 vlan 1
XG2600(config)# lan 0 ip 192.168.1.1/24 3
XG2600(config)# commit
XG2600(config)# save
```

A VT100, VT200, or xterm can be used as a terminal.

2.1.2 Command Modes and Mode Switching

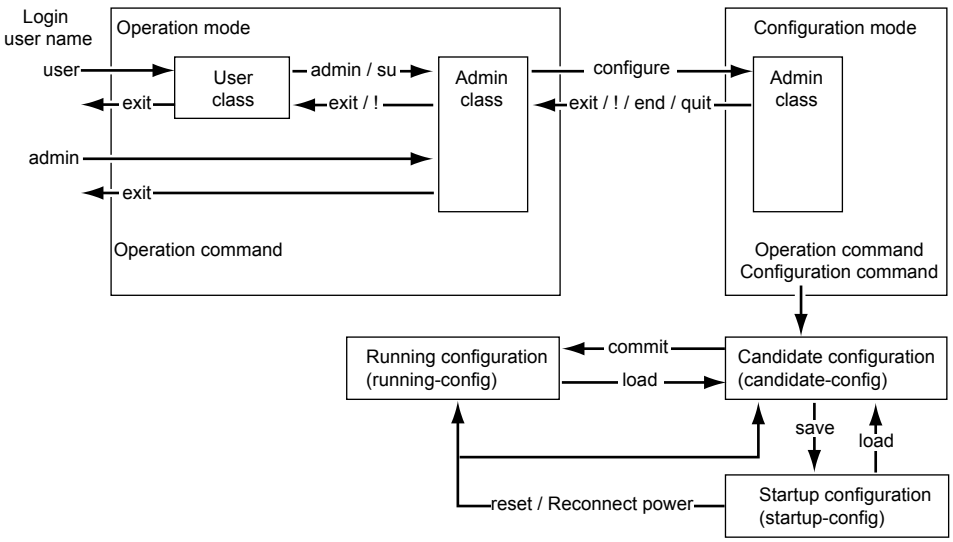
The following table shows a hierarchy of command modes and mode switching.

2.1.2.1 Command Operation Procedure

The flow of system operation via command execution is as follows:

1) Login to the device.
2) Run an operation command to manage system operations.
3) Run a configure command to move to configuration mode.
4) Run a configuration command to set candidate configuration (candidate-config).
5) Run a commit command to apply the candidate configuration as a running configuration (running-config).
6) Run a save command to save the candidate configuration as a startup configuration (startup-config).
7) Run an exit or similar command to return to operation mode.
8) Repeat steps 2) through 7)
9) Run an exit command to log out.

☛ Reference " Login to the device" (pg.40), "2.1.2.2 Executable commands" (pg.42)



Login to the device

When you connect to the device via a console port, telnet, or ssh connection (*1), a login prompt like the following one appears:

```
Login:                    Enter user name (*1)
Password:                 Enter password.
<WARNING> weak admin's password:set the password (*2)
#                         Commands can be run. (*3)
```

By entering the user name and password, you can run commands.

Only the administrator can log into the system for the first time. For the first time, enter "admin" for the user name, and press ENTER for the password.

*1) For ssh connections, "Login:" does not appear. Specify the user name at the ssh client.

*2) This message warns you that system security is weak because the password is not set. This message will not appear after you set a password with 8 or more alphanumeric characters and symbols.

*3) The model name is also shown in the prompt by default. When a prompt character string is configured, the configured prompt is displayed.

User name and password

The user name and password are different for the administrator and general users.

- User name
  The username for the administrator is "admin" and the user name for the general user is "user" (fixed user names). By using a password aaa command and specifying use of AAA user information (aaa user id command) or RADIUS server user information as the login user information, you can add user names as an administrator or general user.
- Password
  No password is configured by default. Be sure to configure the password when you log into the system for the first time. Use the password admin set command to configure the administrator password and the password user set command to configure the general user password. When configuring password aaa command settings, set the administrator and user passwords in the AAA user information stored in the system (aaa user password command) or in the user information for the RADIUS server.

☛ Reference "5.14 Password Information" (pg.257)

Privilege classes (admin class and user class)

Two privilege classes are available; admin class (login as admin) and user class (login as user).

- admin class
  All commands can be run.
  However, admin commands and su commands cannot be run because it is not necessary to run them in admin class.
- user class
  Only a portion of operation commands can be run. Configuration commands cannot be run. You can run an admin command to transfer to admin class.

If a password aaa command has been used to specify use of the AAA user information (aaa user id command) or RADIUS server user information as the login user information, the user name privilege class is determined as follows:

- When using RADIUS server
  Determined according to the Filter-ID attribute information configured in the RADIUS server.

RADIUS attribute (number)	Setting
Filter-ID (11)	For admin class : ”administrator” For user class : ”user”

- When using user information on the device
  Determined according to aaa user user-role command settings.

Use modes (operation mode and configuration mode)

Two use modes are available; operation mode and configuration mode.

- Operation mode
  Only operation commands can be run.
- Configuration mode
  Both configuration commands and operation commands can be run.

The use mode immediately after logging into the system is operation mode.

The table below displays user names and corresponding passwords, as well as privilege class and use mode after login.

Login user name	Default password information	Password configuration command	Login privilege class	Login use mode
admin	None (blank) (Hit ENTER)	password admin set	admin class	Operation mode
user	Not set (login not possible [*])	password user set	user class	Operation mode

*) To log into the system as user, configure password information for the user.

2.1.2.2 Executable commands

Command execution is restricted according to the following conditions:

- Command type
- Privilege class
- Use mode

☛ Reference " Privilege classes (admin class and user class)" (pg.41),
" Use modes (operation mode and configuration mode)" (pg.41)

Command type (operation commands and configuration commands)

Two command types are available; operation commands and configuration commands.

Since the use mode after logging into the system is operation mode, you can only run operation commands.

By running a configure command, the use mode changes to configuration mode and you will be able to run configuration commands as well as operation commands.

However, since you cannot run a configure command in user class, run an admin command to change to admin class before running the configure command.

The following table lists command types and functions.

Command type	Command function
Operation command	Display and manipulate device status, operation status, and network status, display or delete stored information, etc.
Configuration command	Operating information settings and network configuration, etc.

The following table lists commands and operations.

Command	Operation
Configuration command	Sets to candidate configuration (candidate-config). These are basically not reflected in running operations; however, as in password information configuration, there are commands to reflect settings immediately.
commit command	The candidate configuration is reflected in the running configuration (running-config) and active operations change. ☛ Reference "5.48 Effect by "commit" Command Execution" (pg.543)
save command	Saves candidate configuration to startup configuration (startup-config).
Run reset command or reconnect power	Applies candidate configuration to the running configuration.
show candidate-config command	Displays candidate configuration settings.
show running-config command	Displays active configuration settings.
show startup-config command	Displays startup configuration settings.
delete command	Deletes configuration settings.

Precautions

If you run a reset command or reconnect power without first running a save command, the running configuration and candidate configuration will return to the state they were in before running a configuration command.

2.2 Using the CLI

2.2.1 Using the Shell Function

The shell function supports the following features in order to assist command entry:

- Command execution function
- Entry editing function
- Command name autocomplete function
- Command argument autocomplete function
- Abbreviated command entry function
- Command alias function
- Configuration hierarchy function
- Time of command execution display function
- Command history function

The following describes each function.

2.2.1.1 Command execution function

The command execution function allows you to enter a command string and hit ENTER or RETURN to run the command. You can enter ASCII characters, EUC kanji, or Shift JIS kanji characters for the command string.
To enter a kanji character, specify its code using a terminal charset command.
The maximum length of a command string is 1,022 characters (including the prompt string) for ASCII characters. A single kanji character is equivalent to two ASCII characters.

2.2.1.2 Entry editing function

The entry editing function allows you to move the cursor, insert or delete characters, and delete, cut, and paste words within an entered command string.

Refer to "2.2.1.10 List of shell key bindings" (pg.52) for keys used with the entry editing function.

The entry editing function uses the VT100 terminal escape sequence to move the cursor and perform other functions. When cursor movement or other functions do not work correctly, check that the terminal software being used supports VT100 terminal emulation. In addition, if the screen display is not set to 24 lines and 80 columns, use the terminal window command to configure the screen correctly.

☛ Reference "2.2.1.10 List of shell key bindings" (pg.52)

2.2.1.3 Command name autocomplete function

The command name autocomplete function allows you to display a list of command names without entering anything by pressing the TAB key or CTRL + I. In addition, if you press the TAB key or CTRL + I after entering part of a command, the command string will be automatically completed. Automatically completed character strings differ depending on conditions.

The following table details autocomplete operations for entered characters.

Command name beginning with entered characters	Operation
When nothing is entered	A list of all command names is displayed.
When a single command applies	The applicable command name is automatically completed along with a single blank character.
When multiple commands apply, with the same string following the entered characters	The identical character string portion is completed.
When multiple commands apply, with different strings following the entered characters	A list of possible commands is displayed.
When no command applies	Nothing is displayed.

When you use autocomplete without entering anything, a list of commands with the command-type lines shown below is displayed.

- --Exec commands-
  Operation commands and alias commands
- -- Exec commands (config mode)--
  Operation commands and aliases for configuration mode
- --Config commands--
  Configuration commands
- --Config commands (current directory)--
  Configuration command arguments (when the configuration hierarchy function is enabled and you are not in the top hierarchy)

The command name autocomplete function works differently according to the number of times you hit the TAB key or CTRL + I.

The table below lists the autocomplete operation for each number of times the TAB key or CTRL + I are hit.

Note that descriptions are displayed in Japanese (kanji characters). If they are not displayed correctly, use a terminal charset command to specify a kanji character code which is displayed correctly.

Number of times the TAB key or CTRL + I are hit	Operation
One time	A list of command names is displayed or the entered command string is automatically completed.
Two times	Command and argument names corresponding to the use mode and their descriptions are displayed. In operation mode, the operation command names and descriptions, and the names of commands registered using an alias command as well as their registration content are displayed. In configuration mode when the configuration hierarchy function is disabled, the configuration command names and their descriptions are displayed. In configuration mode, when the configuration hierarchy function is enabled and you are at the top hierarchy level, the configuration command names and descriptions are displayed. In configuration mode, when the configuration hierarchy function is enabled and you are not at the top hierarchy level, the command argument names available for the current hierarchy level and their descriptions are displayed.

Number of times the TAB key or CTRL + I are hit	Operation
Three times	Command forms are displayed. In operation mode, simplified command forms are displayed. In configuration mode, when the configuration hierarchy function is disabled, simplified command forms are displayed. In configuration mode, when the configuration hierarchy function is enabled and you are at the top hierarchy level, simplified command forms are displayed. In configuration mode, when the configuration hierarchy function is enabled and you are not at the top hierarchy, command forms for the current hierarchy level and simplified command forms are displayed.
Four times	Returns to the operation for hitting the TAB key or CTRL + I one time.

2.2.1.4 Command argument autocomplete function

While entering configuration command arguments, the command argument autocomplete function allows you to display a list of arguments and candidate arguments without entering anything by pressing the TAB key or CTRL + I. In addition, if you press the TAB key or CTRL + I after entering part of an argument, the remaining character string will be automatically completed.

The argument autocomplete function works differently according to the number of times you hit the TAB key or CTRL + I.

The table below lists the autocomplete operation for each number of times the TAB key or CTRL + I are hit.

Note that descriptions are displayed in Japanese (kanji characters). If they are not displayed correctly, use a terminal charset command to specify a kanji character code which is displayed correctly.

Number of times the TAB key or CTRL + I are hit	Operation
One time	A list of arguments and argument candidates is displayed or the entered argument string is autocompleted. This works in the same way as command name autocomplete.
Two times	Descriptions of arguments and argument candidates are displayed.
Three times	The command syntax following the current argument is displayed.
Four times	Returns to the operation for hitting the TAB key or CTRL + I one time.

Note For some command arguments, you can specify multiple arguments separated by a comma (,), or specify a range of values delimited by a hyphen (-). The argument autocomplete function assumes that all arguments allow specifying multiple arguments and value range, and if you autocomplete an argument after entering "," or "-", all the argument candidates will be given.

2.2.1.5 Abbreviated command entry function

The abbreviated command entry function allows you to run a command with its name and argument entered only partway.

For each command name and command argument entered, the command name autocomplete and command argument autocomplete are performed and the command is executed. When there are multiple candidates, enter characters until candidates are narrowed to one, and then execute the command. If you execute the command while there are still multiple candidates, the command is not autocompleted and an error occurs.

2.2.1.6 Command alias function

The command alias function allows you to register a command name and its argument(s) as a single command.

Use the alias command to register, delete, and display command aliases.

Note that commands registered with a command alias cannot be autocompleted by the abbreviated command entry function, and you must enter the complete command name and arguments when registering them.When a command alias is registered correctly, it will be included for command name and argument autocomplete.

2.2.1.7 Configuration hierarchy function

The configuration hierarchy function interprets common portions of executed configuration command names and arguments as a hierarchy level, and allows you to move between hierarchy levels.

When you execute a configuration command and the command completes successfully, in general the portion from the command name to the argument two arguments before an argument specifying a variable value becomes a hierarchy level. This may differ depending on the command.

Ex.)

```
                              (argument with variable value)
(configure)# lan 0 ip address 192.168.0.1/24 3
                    (Move hierarchy level to the argument two before the variable value argument)
(configure-lan-0-ip)#
```

Even in cases where an error occurs because the number of arguments is less than required, the configuration hierarchy function assumes the entered command name and arguments to be a hierarchy level. Depending on the command, even if arguments are incorrect the configuration hierarchy function may judge that there are not enough arguments and interpret the entry as a hierarchy level. The portion assumed to be a hierarchy level is displayed at the command prompt. However, if you have used a terminal prompt command to change the entry prompt string to exclude the configuration hierarchy, it is not displayed.

After moving to a hierarchy level, you can only enter command arguments following the current level to execute the command. When the number of arguments is still not enough, a further hierarchy level is displayed. When you have omitted an optional argument, without moving to another hierarchy level the command is executed correctly, following which you will move to a higher hierarchy level. Be sure to enter optional arguments as a group. To execute a command other than at the hierarchy level you have moved to, enter it beginning with the command name.

However, in a hierarchy level for an argument which allows for arbitrary character strings, any strings other than the commands below will be entered as configuration command arguments. To enter one of the following commands as an argument for a configuration command, move to a higher level, and then enter so that strings matching these commands are the second argument or following.

exit, !, end, quit, up, top, delete, show, clear, commit, discard, save, load, reset,

Comment line beginning with #

Ex.)

```
(configure)# acl 0 ip                 (Moves to another level because there are not enough arguments.)
(configure-acl-0-ip)# any             (Moves to another level because there are not enough arguments.)
(configure-acl-0-ip-any)# any (Moves to higher level because command can complete successfully
                                      without specifying an optional argument.)
(configure-acl-0)#
```

If you run the show command with no arguments after moving hierarchy levels, a list of configuration commands for that level and following is displayed.

You can move to a higher hierarchy level or to the top level using an up command or top command respectively.

The configuration hierarchy function is disabled by default. Even when it has been enabled, this function is disabled after you log out of the system. In this case, no message is displayed to indicate that the function has been disabled.

The following explains how to enable and disable the configuration hierarchy function.

- To enable the configuration hierarchy function: Press CTRL + O in configuration mode.
  The following message is displayed and the configuration hierarchy function is enabled. Information which has been partially entered will not be discarded.

  ```
  <NOTICE> The configuration directory mode is enabled. To disable, type Ctrl+G.
  ```

- To disable the configuration hierarchy function: Press CTRL + G.
  The following message is displayed and the configuration hierarchy function is disabled. Information which has been partially entered will be discarded.

  <NOTICE> The configuration directory mode is disabled.

A command execution example is shown below.

● **Command**

```
# configure                                  (Change to configuration mode.)
(config)# lan 0 ip address 192.168.1.1/24 3  (Run configuration command.)
(config-lan-0-ip)#                           (Hierarchy level is displayed at the command prompt.)
(config-lan-0-ip)# show                      (Display configuration following the current level.)
address 192.168.1.1/24 3
service server
info address 192.168.1.100/24 32
(config-lan-0-ip)# save                      (Enter the command name and run the command.)
(config-lan-0-ip)# top                       (Move to the top level.)
(config)#
```

2.2.1.8 Time of command execution display function

The time of command execution display function allows you to display the time when the execution of a command starts. This function is useful when a command execution log is being recorded during operations.

To enable the time of command execution display function, use the terminal timestamp command.

Although you can check command execution time with the show logging command, execution time is only displayed for commands recorded in the command execution history. You can also use the terminal prompt command to display the date and time in the prompt string However, this is not the time when a command was executed but the time when the prompt was displayed.

2.2.1.9 Command history function

The command history function allows you to record command execution history and re-execute commands using this history. You can also redisplay commands and replace commands in the history.

You can set the number of lines in the command history using a terminal logging command.

Note You can also press CTRL + P and CTRL + N to sequentially display the command history items, and re-execute or re-edit and execute a displayed command.

☛ Reference "2.2.1.10 List of shell key bindings" (pg.52)

The following explains how to re-execute and redisplay commands.

You can use the history specifier and display specifier together with command character string replacement.

Re-executing commands

You can enter a history specifier at the beginning of the command string to re-execute the command. The command will be executed after the command string for re-execution is displayed. In addition, command history and history numbers can be viewed with the history command. Note that you can enter the history specifier only once at the beginning of the command line. Any history specifiers entered thereafter will be treated as normal characters.

History specifier	Operation
!!	Re-execute the last command run.
! history number	Re-execute the command with the specified history number.
!-number in history	Re-execute the command run the specified number of commands before in the history. Ex.) !-3 (The third command from the newest in the history is re-executed.)
! string	The last run command beginning with the specified string is re-executed. Ex.) !net (The last run command beginning with "net" is re-executed.)

When you enter a string following the history specifier, it will be added to end of the command string invoked from the history.

The following shows an example.

● Command

```
# show ip route
(The execution results of show ip route are displayed.)

# !! all                    (Add "all" to the last command and execute it.)
show ip route all           (Display the command string to re-execute.)
(The execution results of show ip route all are displayed.)
```

Redisplaying commands

You can redisplay a previously run command by entering a display specifier (:p) following a history specifier. Note that the displayed command is not re-executed yet.

Since the displayed command string is recorded as a new command history item, you can re-execute it by entering !! after checking the command string.

Display specifier	Operation
:p	Redisplays a command. Ex.) !net:p (The last run command beginning with "net" is redisplayed.)

When you enter a string following the display specifier, it will be added to end of the command string invoked from the history.

A command execution example is shown below.

● Command

```
# show ip route
(The execution results of show ip route are displayed.)

# !!:p all                  (Add "all" to the last command executed and display it.)
show ip route al            (Display the command string.)

# !!                        (Re-execute the previous command.)
show ip route all           (Display the command string to re-execute.)
(The execution results of show ip route all are displayed.)
```

Replacing the last command string

By entering a replacement specifier (^), replacement target string, and replacement string at the beginning of a command string, you can re-execute the last command with the specified string replaced with a new string.

If no replacement string is specified, the target string will be deleted.

The table below lists specifiers and operations. (A: replacement target string, B: replacement string, C: additional string)

Command	Operation
^A^B^	Replace A with B and execute the command string.
^A^B^:p	Replace A with B and display the command string.
^A^B^C	Replace A with B, add C to the command string, and execute it.
^A^B^:pC	Replace A with B, add C to the command string, and display it.
^A^^	Delete A and execute the command string.
^A^^:p	Delete A and display the command string.
^A^^C	Delete A, add C to the command string, and execute it.
^A^^:pC	Delete A, add C to the command string, and display it.

A command execution example is shown below.

● Command

```
# show running-config lan 0 ip address
(Display the IP address for lan 0.)

# ^addr^rout^:p                    (Replace addr with rout and display the command string.)
show running-config lan 0 ip routess

# ^ess^e^                          (replace ess with e and execute the command string.)
show running-config lan 0 ip route  (Display the command and execute it.)
(Display the static route information for lan 0.)
```

Replacing command strings

By entering a single-replacement specifier (:s) or all-replacement specifier (:gs) following a history specifier and replacement specifier, you can replace the target string and re-execute the command string.

A single-replacement specifier replaces the first matching string only, while an all-replacement specifier replaces all matching strings.

The replacement target string and replacement string are specified as with string replacement for the preceding command; however, arbitrary characters (@, #, %, &, ~, =, _, etc.) may be used as delimiters. You can successively enter a single-replacement specifier, all-replacement specifier, and display specifier.

The table below lists specifiers and operations. This example uses "/" as a delimiter.

(A: replacement target string, B: replacement string, C: additional string)

Command	Operation
:s/A/B/	Replace only the first instance of A with B and execute the command string.
:ps/A/B/	Replace only the first instance of A with B and display the command string.
:s/A/B/C	Replace only the first instance of A with B, add C to the command string, and execute it.
:ps/A/B/C	Replace only the first instance of A with B, add C to the command string, and display it.
:gs/A/B/	Replace all instances of A with B and execute the command string.
:pgs/A/B/	Replace all instances of A with B and display the command string.
:gs/A/B/C	Replace all instances of A with B, add C to the command string, and execute it.
:pgs/A/B/C	Replace all instances of A with B, add C to the command string, and display it.
:s/A//	Delete only the first instance of A and execute the command string.
:ps/A//	Delete only the first instance of A and display the command string.
:s/A//C	Delete only the first instance of A, add C to the command string, and execute it.
:ps/A//C	Delete only the first instance of A, add C to the command string, and display it.
:gs/A//	Delete all instances of A and execute the command string.
:pgs/A//	Delete all instances of A and display the command string.
:gs/A//C	Delete all instances of A, add C to the command string, and execute it.
:pgs/A//C	Delete all instances of A, add C to the command string, and display it.
:s/A1/B1/:gs/A2/B2/:p	Replace only the first instance of A1 with B1, replace all instances of A2 with B2, and display the command string.

A command execution example is shown below.

● Command

```
# lan 0 ip address 192.168.0.1/24 3

# !!:gs/0/1/:p                    (Replace all instances of 0 with 1 and display the command string.)
lan 1 ip address 192.168.1.1/24 3

# !!                              (Re-execute the last command to run.)
lan 1 ip address 192.168.1.1/24 3
```

Note When entering a command with the command history function, you can omit the last delimiter (/, ^, etc.) at the end of the command line. However, when the last delimiter is omitted, you cannot specify a display specifier (:p), additional history specifier, or additional string.

2.2.1.10 List of shell key bindings

The following table shows the key bindings for using the shell.

Key combination (note)	Single key	Operation
Ctrl+A		Moves the cursor to the top.
Ctrl+B	← (Note)	Moves the cursor to the left by one character.
Ctrl+C		Interrupts input.
Ctrl+D		Deletes one character if any are input. Logs off if there are no characters entered.
Ctrl+E		Moves the cursor to the end.
Ctrl+F	→ (Note)	Moves the cursor to the right by one character.
Ctrl+G		Disables the configuration hierarchy function.
Ctrl+H	BS	BACKSPACE Moves the cursor one character to the left deleting one character.
Ctrl+I	Tab	Autocomplete/displays autocomplete candidate list/displays argument descriptions/ displays argument syntax
Ctrl+J	Return	Input complete
Ctrl+K		Cuts from the cursor position to the end.
Ctrl+L		Updates the screen.
Ctrl+M		Input complete
Ctrl+N	↓ (Note)	Shows the next history item.
Ctrl+O		Enables the configuration hierarchy function.
Ctrl+P	↑ (Note)	Shows the previous history item.
Ctrl+R		Redisplays input.
Ctrl+T		Converts one character.
Ctrl+U		Cuts from the cursor position to the top.
Ctrl+W		Cuts from the cursor position one word to the left.
Ctrl+X		Cuts from the cursor position to the top.
Ctrl+Y		Paste
ESC Ctrl+H	ESC BS	Cuts from the cursor position one word to the left.
ESC Ctrl+I	ESC TAB	Displays argument description.
ESC Ctrl+K		Cuts from the cursor position one word to the right.
ESC b		Moves the cursor to the left by one word.
ESC f		Moves the cursor to the right by one word.
ESC n		Shows the next history item beginning with the string prior to the cursor position.
ESC p		Shows the previous history item beginning with the string prior to the cursor position.
ESC <		Shows the oldest history item.
ESC >		Shows the newest history item.

Notes)

- "Ctrl+α" indicates pressing CTRL and α at the same time.
- "ESC α" indicates pressing ESC followed by α.
- The arrow keys (↑,↓,← ,→) do not work properly on the hyper terminal. Use key combinations instead.
- When using with terminal software or telnet commands, some key combinations with CTRL may not work. Refer to the terminal software or telnet command manual to configure the device so that so that key combinations with CTRL work properly.

2.2.2 Error Messages Common to All Commands

The table below lists error messages common to all commands and displayed when autocompleting or executing commands.

Note that the argument position shown in these error messages indicates the place of the erroneous argument, counted from the command name as "1."

Common error message	Meaning
<ERROR> Command name: Unknown command	An unknown command. Cannot be executed in the current use mode. Cannot be executed with the current privilege class.
<ERROR> Command name: Operation not permitted	Execution of this command is not permitted.
<ERROR>: 0: missing argument	The argument specification is insufficient.
<ERROR>: 0: too many argument(s)	The argument specification is excessive.
<ERROR>: Argument position: format error	The argument syntax is not correct. Unknown command for configuration hierarchy.
<ERROR>: Argument position: value out of range	The argument value is out of the valid range (too small, too large, too long, etc.).
<ERROR>: Argument position: lack of table	The number of arguments has reached the defined upper limit.
<ERROR>: Argument position: no such table	Specified definition cannot be found.
<ERROR>: Argument position: duplicate value	Already defined.
<ERROR>: Argument position: fail to request	Could not execute the command.
<ERROR>: Argument position: unique password	Not a unique password. Cannot be changed from the unique format.
<ERROR>: detected HARD ERROR, cannot execute	Cannot execute the command due to a hardware error.

2.2.3 Characters that can be entered

- Any letter (A-Z, a-z) and digit (0-9)
- Space (ASCII code: 0x20)
- Symbols: !, #, $, %, `, ', (,), _, -, ~, ^, \, {, }, :, +, ,, ., @, =, [,], &, *, ;, /, ?, |, >

  Command and option separators are recognized as one or more space characters (ASCII code: 0x20).
  Don't enclose a parameter in quotes (") but for instructions to use quotes (") to contain a blank space.
  The commands are case-sensitive.

Chapter 3 Installation

This chapter describes the installation procedures for the device.

Reference

Refer to "chapter 2 Using the CLI" (pg.37) for details on using the CLI.
Refer to "chapter 5 Command Reference" (pg.85) for details on commands.

3.1 Workflow for Initial Setup of the Device

This section describes the procedures to setup the device.

1) Prepare a terminal
   Prepare a terminal for the initial configuration.
2) "Besic Setting Up"
   Connect the device and terminal with an RS232C cable. The band rate setting is 9,600 bps.
   To configure the Device basically, carry out the following procedure.

Command	Task
Login:admin Password:	Login to the device from the serial terminal. The user name is "admin". The default password is not set.
XG2600# configure	Switch to Configuration mode.
XG2600(config)# sysname HOST-NAME	Set the device name (HOST-NAME).
XG2600(config)# time zone -0500	Set time zone.
XG2600(config)# date YYYY/MM/DD.hh:mm:ss	Set date and time.
XG2600(config)# password admin set Password: Retype password:	Set the password for user "admin". Type password. Retype password.
XG2600(config)# save	Save the configuration.
XG2600(config)# reset	Reset the device.

3) Turn on the device to start the system.
   Turn on the terminal and the device to start the system.
4) "Configure LAN Interface"
   The initial setting of the LAN interface is for only IPv6 link-local address.
   To use the following functions, set up the LAN interface:
   - Telnet connection
   - SNMP manager connection
   - System log transmission
   - Time synchronization using an NTP/SNTP server
   - Configuration file upload/download
   - Firmware update
   - Collection of maintenance information
5) "Telnet Connection via the LAN Interface (Optional)"
   The initial setting of the Telnet connection via the management LAN interface is disabled.
   Enable telnet connection if necessary.
6) "SNMP Configuration (Optional)"
   Initially, the SNMP agent configuration is not set.
   Set the SNMP configuration as needed.
7) This is the end of the preparation procedure
   Proceed with configuring the switch.

3.1.1 Configure LAN Interface

The initial setting of the LAN interface is for only IPv6 link-local address.

To use the following functions, configure the LAN interface.

- Telnet connection
- SNMP manager connection
- System log transmission
- Time synchronization using an NTP/SNTP server
- Configuration file upload/download
- Firmware update
- Collection of maintenance information

To configure the LAN interface, carry out the following procedure.

Command	Task
Login:admin Password:	Login to the device from the serial terminal. The user name is "admin". Type the password for uset "admin".
XG2600# configure	Switch to Configuration mode.
XG2600(config)# oob ip address A.B.C.D/M 3	Set the IP address, subnet, and default gateway of the LAN interface for management port. (XG2600 only)
XG2600(config)# lan 0 ip address A.B.C.D/M 3 XG2600(config)# lan 0 vlan 1	Set the IP address, subnet, and default gateway of the LAN interface for VLAN ID 1.
XG2600(config)# proxydns domain 0 any * any static A.B.C.D	(Optional) Set up DNS servers.
XG2600(config)# commit	Apply the configuration.
XG2600(config)# save	Save the configuration.
XG2600(config)# exit	Switch to Operation mode.

3.1.2 Telnet Connection via the LAN Interface (Optional)

The "Telnet server function" is initially enabled.

The telnet session timeout period is initially 5 minutes.

To change the telnet session timeout period, carry out the following procedure in "admin" Operation mode.

Command	Task
XG2600# configure	Switch to Configuration mode.
XG2600(config)# telnetinfo autologout 30m	Set the Telnet session timeout period (30 minutes). If the Telnet session timeout period expires the telne connection is terminated.
XG2600(config)# commit	Apply the configuration.
XG2600(config)# save	Save the configuration.
XG2600(config)# exit	Switch to Operation mode.

3.1.3 SNMP Configuration (Optional)

To operate in conjunction with an SNMP manager, the SNMP agent must be configured.

To configure the SNMP agent, carry out the following procedures in "admin" Operation mode.

Command	Task
XG2600# configure	Switch to Configuration mode.
XG2600(config)# snmp service on	Enable SNMP function.
XG2600(config)# snmp agent contact SYSTEM-CONTAC	Set the swith's contact (SYSTEM-CONTACT).
XG2600(config)# snmp agent location SYSTEM-LOCATION	Set the swith's location (SYSTEM-LOCATION).
XG2600(config)# snmp agent address A.B.C.D	Set the SNMP agent address. This setting is also used for the local address at trap transmission. Make sure to set it when using the SNMP agent function
XG2600(config)# snmp manager 0 A.B.C.D COMMUNIT-YNAME v2c disable	Set the IP address (host name) of the SNMP manager, the community name, sending SNMPv2 traps, and disabling writing. if the SNMP trap notification is enabled.
XG2600(config)# commit	Apply the configuration.
XG2600(config)# save	Save the configuration.
XG2600(config)# exit	Switch to Operation mode.
XG2600# configure	Switch to Configuration mode.
XG2600(config)# snmp service on	Enable SNMP function.

Chapter 4 Switch Functions and their Configuration

This chapter describes the functions of the device and how to configure them.

☛ Reference

Refer to "2.1.1 Operating Environment for the CLI" (pg.38) for details on using the CLI.
Refer to "chapter 5 Command Reference" (pg.85) for details on commands.

4.1 Basic Switch Functions

This section describes the basic switch functions.

4.1.1 Switching Mode (XG2600)

XG2600 provides the following two switching modes.
XG0224 and XG0448 provide store-and-forward switching modes only.

- Store-and-forward switching mode
  After the device finishes receiving a frame, it checks the FCS (Frame Check Sequence) and performs a validity check (on packet size, etc.) before forwarding the frame. If the switch receives a frame with an error frame, it discards it.
- Cut-through switching mode
  The device transmits the frame to the destination as soon as the first 64 bytes of the frame are received with no errors. Since the device starts transmitting the frame before it receives the entire frame, this mode allows forwarding at low latency.

To change the switching modes, carry out the following procedures in "admin" Operation mode.

Command	Task
XG2600# configure	Switch to Configuration mode.
XG2600(config)# forwardingmode cut-through	Select the (cut-through) for the switching mode.
XG2600(config)# forwardingmode store-and-forward	Select the (store-and-forward) for the switching mode.
XG2600(config)# commit	Apply the configuration.
XG2600(config)# save	Save the configuration.
XG2600(config)# exit	Switch to Operation mode.

4.1.2 MAC Address Table Management

The MAC address table is a database used for managing the association between address information and destination ports.

XG0224 and XG2600 can learn up to 16000 entries of MAC addresses.
XG0448 can learn up to 32000 entries of MAC addresses.

- Dynamic MAC address learning
  The device dynamically learns MAC addresses from received frames. If MAC addresses are not refreshed before the aging time expires, they will be removed frame MAC address table.
  To disable the dynamic learning, carry out the following procedures in "admin" Operation mode.

Command	Task
XG2600# configure	Switch to Configuration mode.
XG2600(config)# mac learning off	Disable the dynamic MAC address learning.
XG2600(config)# commit	Apply the configuration.
XG2600(config)# save	Save the configuration.
XG2600(config)# exit	Switch to Operation mode.

To change aging time period of MAC address learning table, carry out the following procedures in "admin" Operation mode..

Command	Task
XG2600# configure	Switch to Configuration mode.
XG2600(config)# mac age 1000	Change aging time period of MAC address learning table.
XG2600(config)# commit	Apply the configuration.
XG2600(config)# save	Save the configuration.
XG2600(config)# exit	Switch to Operation mode.

- Static unicast address
  By registering a unicast MAC address with the MAC address table, unicast frames are forwarded to a specified port. Static unicast addresses are not subject to MAC address removal controlled by the aging function.
  To register, change or delete a static unicast address, carry out the following procedures in "admin" Operation mode.

Command	Task
XG2600# configure	Switch to Configuration mode.
XG2600(config)# vlan <vid> forward <count> <dst_addr> <port>	Register a static unicast address, destination port and vlan with the MAC address table (or remove them from it).
XG2600(config)# delete vlan <vid> forward	
XG2600(config)# commit	Apply the configuration.
XG2600(config)# save	Save the configuration.
XG2600(config)# exit	Switch to Operation mode.

4.1.3 Jumbo Frame Support

The device can transmit jumbo frames of up to 9KB (9216 bytes). (XG0224,XG0448)

The device can transmit jumbo frames of up to 16KB (16128 bytes). (XG2600)

4.1.4 Flow Control

Flow control is a function that prevents frame loss when the receive buffer in the switch overflows due to temporary traffic overload by using a PAUSE frame.

When the device receives a PAUSE frame, it temporarily stops sending frames at the receive port. If the receive buffer overflows, it is possible to restrict frame transmission from the connected device by sending a PAUSE frame.

For each port, it is possible to select whether or not to send a PAUSE frame. Select the mode depending on whether the destination responds to a PAUSE frame or not.

To change the flow control mode, carry out the following procedures in "admin" Operation mode.

Command	Task
XG2600# configure	Switch to Configuration mode.
XG2600(config)# ether 1-3 flowctl off on	Set the flow control mode disable send flow control packets and enable receive flow control packets.
XG2600(config)# commit	Apply the configuration.
XG2600(config)# save	Save the configuration.
XG2600(config)# exit	Switch to Operation mode.

4.1.5 Storm Control

The device discards broadcast/multicast frames when the number of received broadcast frames are over a given threshold to prevent unnecessary waste of bandwidth due to retained broadcast frames on the network. This function is called "Storm Control".

For each port, it is possible to configure storm control.

When broadcast/multicast frames are discarded by storm control, system logs are output.

To configure storm control, carry out the following procedures in "admin" Operation mode.

- XG2600

Command	Task
XG2600# configure	Switch to Configuration mode.
XG2600(config)# ether 1-5 mac storm 7000000k 8000000k discard	Enable storm control, set broadcast threshold 7000000k bps, multicast threshold 8000000k bps, and set "discard" when broadcast and multicast traffic exceeds the threshold.
XG2600(config)# commit	Apply the configuration.
XG2600(config)# save	Save the configuration.
XG2600(config)# exit	Switch to Operation mode.

- XG0224/XG0448

Command	Task
XG0224# configure	Switch to Configuration mode.
XG0224(config)# ether 1-5 mac storm 20000000 discard close	Enable storm control, set threshold 20000000 pps, set "discard" when broadcast traffic exceeds the threshold, set "close" when multicast traffic exceeds the threshold.
XG0224(config)# commit	Apply the configuration.
XG0224(config)# save	Save the configuration.
XG0224(config)# exit	Switch to Operation mode.

4.1.6 Egress Rate Control (XG2600 Only)

It is possible to set an egress rate-limiting value for each port in approximately 40Mbps increments.

To set an egress rate-limiting value, carry out the following procedures in "admin" Operation mode.

Command	Task
XG2600# configure	Switch to Configuration mode.
XG2600(config)# ether 1-5 ratecontrol 8000m	Specify an egress rate limiting value by 8000M bps for port 1-5.

4.2 Port Mirroring

It is possible to monitor the traffic by mirroring the frames sent or received by a port to another port.
Multiple ports may not be mirrored to one port. However, multiple ports may be mirrored.

To configure port mirroring, carry out the following procedure in "admin" Operation mode.

- XG2600

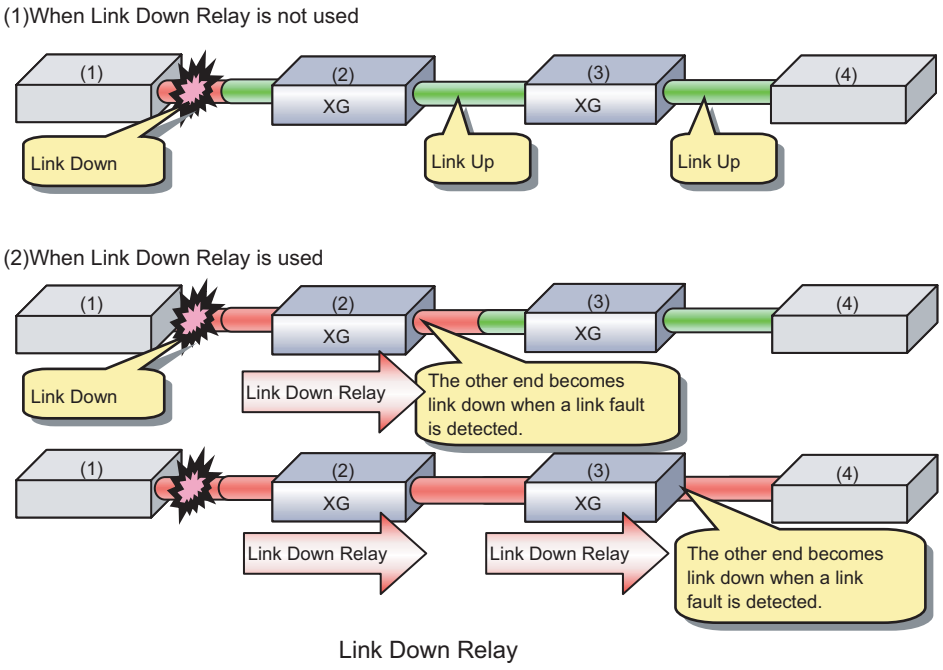
Command	Task
XG2600# configure	Switch to Configuration mode.
XG2600(config)# ether 10 type mirror 0 1 rx	Configure the port 10 to be destination port and the receive frames of the source port (port 1) are mirrored.
XG2600(config)# ether 11 type mirror 0 2 tx	Configure the port 11 to be destination port and the send frames of the source port (port 2) are mirrored.
XG2600(config)# commit	Apply the configuration.
XG2600(config)# save	Save the configuration.
XG2600(config)# exit	Switch to Operation mode.

- XG0224/XG0448

Command	Task
XG0224# configure	Switch to Configuration mode.
XG0224(config)# ether 10 type mirror 0 1 both	Configure the port 10 to be destination port and the receive/send frames of the source port (port 1) are mirrored.
XG0224(config)# ether 10 type mirror 10 2 tx	Configure the port 10 to be destination port and the send frames of the source port (port 2) are mirrored.
XG0224(config)# commit	Apply the configuration.
XG0224(config)# save	Save the configuration.
XG0224(config)# exit	Switch to Operation mode.

4.3 Link Down Relay

Link Down Relay is a function that monitors the status of a specified port link, if a link down detected the device notifies the device force to link down the relay port.



Link Down Relay

To configure Link Down Relay, carry out the following procedure in "admin" Operation mode.

Command	Task
XG2600# configure	Switch to Configuration mode.
XG2600(config)# ether 10 downrelay port 11,12	Set port 11,12 go linkdown when the port 10 linkdown.
XG2600(config)# ether 10 downrelay recovery mode auto	Set port 11,12 go linkup when the port 10 linkup.
XG2600(config)# commit	Apply the configuration.
XG2600(config)# save	Save the configuration.
XG2600(config)# exit	Switch to Operation mode.

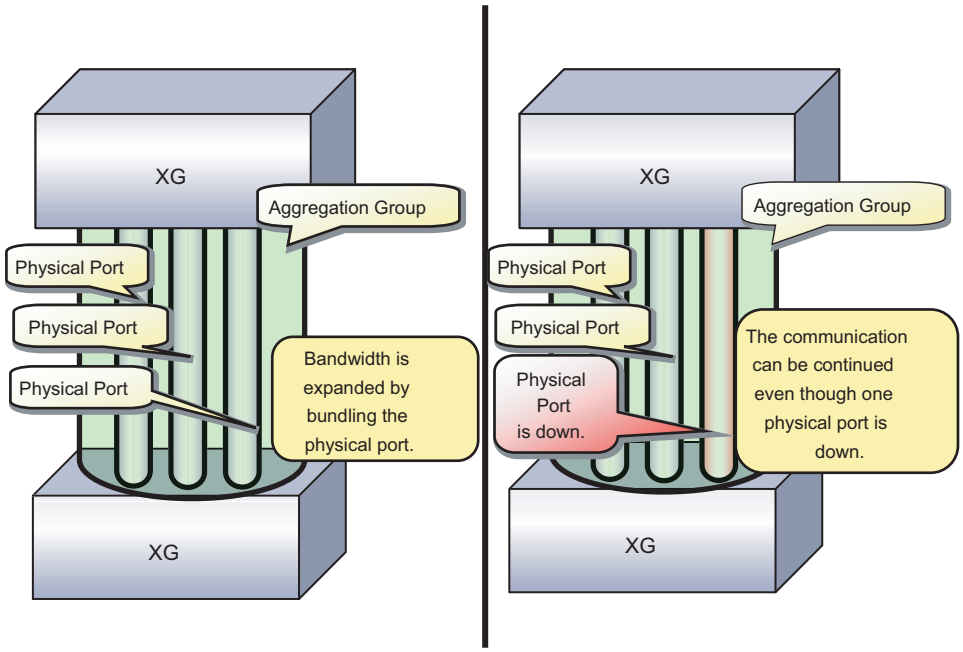
4.4 Link Aggregation

Link aggregation is a function that combines multiple ports into a single logical link. A set of ports that comprise a logical link are called an aggregation group.

Link aggregation provides:

- Increased bandwidth
  By grouping multiple physical ports into a single logical link (an aggregation group), network traffic (data sent and received) will be balanced across the physical ports, thereby providing increased bandwidth.
- Redundancy
  Multiplexing ports allows uninterrupted network operations should one of the multiple links fail. Since the link status of the logical aggregation groups remains unchanged, there are no fluctuations in network traffic, the effect of a fault having been minimized.

Up to 10 ports can be used to create a single link aggregation group using link aggregation. Up to 10 aggregation groups can be created.



Link Aggregation

4.4.1 Configuring Link Aggregation

Either static or dynamic (also known as LACP) configuration can be selected for Link Aggregation.

- Static configuration
  Configures aggregation groups statically.
- LACP
  Configures link aggregation using Link Aggregation Control Protocol (LACP). The LACP is a switch-to-switch control protocol that enables dynamic configuration of aggregation groups and is standardized by the IEEE802.3ad. The LACP facilitates load balancing across the individual links aggregated between the devices connected.
  Either "active" or "passive" LACP mode can be selected.
  - active
    The device starts LACP negotiation. Since the active mode allows the reception of LACP control frames, it is possible to direct the device in "active" mode.
  - passive
    The device responds to LACP control frames but does not start LACP negotiation.

To configure static link aggregation, carry out the following procedure in "admin" Operation mode.

Command	Task
XG2600# configure	Switch to Configuration mode.
XG2600(config)# ether 1-8 type linkaggregation 1	Set port 1-8 to be linkaggregation group 1.
XG2600(config)# linkaggregation 1 mode static	Set linkaggregation group 1 to be static.
XG2600(config)# commit	Apply the configuration.
XG2600(config)# save	Save the configuration.
XG2600(config)# exit	Switch to Operation mode.

To configure LACP link aggregation, carry out the following procedure in "admin" Operation mode.

Command	Task
XG2600# configure	Switch to Configuration mode.
XG2600(config)# ether 1-8 type linkaggregation 1	Set port 1-8 to be linkaggregation group 1.
XG2600(config)# ether 11-18 type linkaggregation 2	Set port 11-18 to be linkaggregation group 2.
XG2600(config)# linkaggregation 1 mode active	Set linkaggregation group 1 to be active.
XG2600(config)# linkaggregation 2 mode passive	Set linkaggregation group 2 to be passive.
XG2600(config)# commit	Apply the configuration.
XG2600(config)# save	Save the configuration.
XG2600(config)# exit	Switch to Operation mode.

4.4.2 Frame Distribution Methods in Link Aggregation

How frames are distributed across physical ports that make up an aggregation group are determined by the contents of a frame (source and destination MAC addresses).

There are 6 ways to specify how frames are distributed:

- Frame distribution based on destination MAC address (da-mac)
  The destination port is determined based on the destination MAC address of the frames.
- Frame distribution based on source MAC address (sa-mac)
  The destination port is determined based on the source MAC address of the frames.
- Frame distribution based on destination and source MAC addresses (both-mac)
  The destination port is determined based on the destination and source MAC addresses of the frames.
- Frame distribution based on destination IP address (da-ip)
  The destination port is determined based on the destination IP address of the frames.
- Frame distribution based on source IP address (sa-ip)
  The destination port is determined based on the source IP address of the frames.
- Frame distribution based on destination and source IP addresses (both-ip)
  The destination port is determined based on the destination and source IP addresses of the frames.

To set a distribution method, carry out the following procedure in "admin" Operation mode.

Command	Task
XG2600# configure	Switch to Configuration mode.
XG2600(config)# ether 1-8 type linkaggregation 1	Set port 1-8 to be linkaggregation group 1.
XG2600(config)# linkaggregation 1 algorithm both-mac	Set linkaggregation group 1 uses frame distribution based on destination and source IP address.
XG2600(config)# commit	Apply the configuration.
XG2600(config)# save	Save the configuration.
XG2600(config)# exit	Switch to Operation mode.

4.4.3 The Number of Ports That Require Linkup

It is possible to specify the number of ports that enable a linkup state for an aggregation group. If the number of active ports that make up an aggregation group in a linkup state is less than the specified number of ports, the aggregation group changes to a linkdown state.

- For static link aggregation
  If the number of ports that make up an aggregation group in a linkup state no longer satisfies the specified number of ports, the aggregation group changes to a linkdown state.
- For LACP link aggregation
  If the number of ports that make up an established LACP aggregation group changes, the aggregation group reverts to a linkdown state.

To set the number of ports in the aggregation group, carry out the following procedure in "admin" Operation mode.

Command	Task
XG2600# configure	Switch to Configuration mode.
XG2600(config)# ether 1-8 type linkaggregation 1	Set port 1-8 to be linkaggregation group 1.
XG2600(config)# linkaggregation 1 collecting minimum 3	Set the minimum number of member ports for aggregation group 1 to 3.
XG2600(config)# commit	Apply the configuration.
XG2600(config)# save	Save the configuration.
XG2600(config)# exit	Switch to Operation mode.

4.4.4 Notes on Link Aggregation

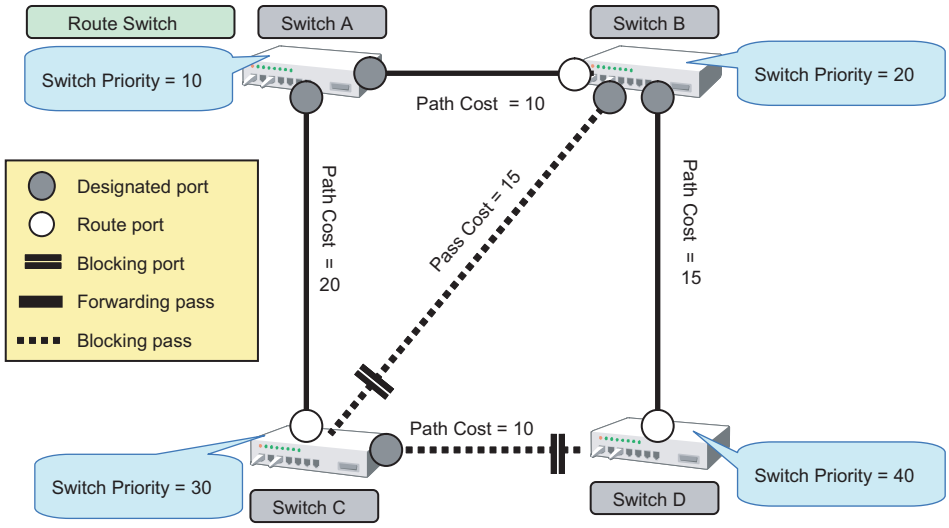
- No link aggregation can be used if the half-duplex link mode has been set by the "ether duplex" command.
- All ports in the link aggregation group must be set with the same link speed.
- All ports in the link aggregation group must be set to belong to the same VLAN.
- Specify the link aggregation group in sequential ports.
  No link aggregation can be used for the non-sequentially numbered port configuration.
  The member ports of a link aggregation group must be specified to have the sequentially numbered ports.
- If the Ethernet port type has been set as a link aggregation port and if the definition conflict as described above has occurred, the relevant port is not linked up and it cannot be used. Change the settings by referring to the log messages.

4.5 Spanning Tree Protocol (STP)

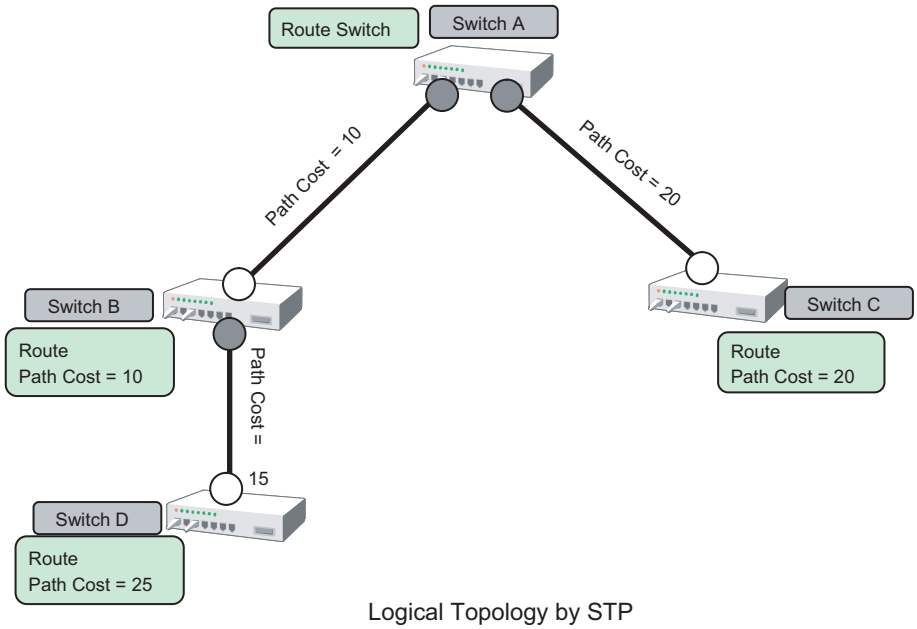
The Spanning Tree Protocol (STP) is a function that prevents loops from occurring on a network. It is also possible to provide network redundancy by intentionally creating a loop.

STP exclusively uses only one active path between network devices, and shuts out other paths, to avoid network loops. An active path is selected by comparing path costs defined on each path. After the comparison, the lowest cost path will be selected. If the selected path becomes disabled, STP will activate the lowest cost path amongst the paths remaining.

The device supports IEEE802.1w RSTP (Rapid Spanning Tree Protocol). The RSTP is upward compatible with IEEE802.1D STP (Spanning Tree Protocol) and serves as a STP if the destination device only supports STP.



Physical Topology



Logical Topology by STP

4.5.1 Port Roles Based on Spanning Tree

RSTP assigns one of these port roles to individual ports:

- Root port
  Provides the best path (lowest cost) when the switch forwards packets to the root switch.
- Designated port
  Connects to the designated switch toward the leaves of the spanning tree. The port specified connecting to the designated port serves as a root port.
- Alternate Port
  The alternative port with the second lowest path cost. In the event that the root port goes to a linkdown state, the alternate port serves as the root port. It does not always send or receive frames while in the blocking state.
- Backup Port
  Provides an alternative path to that specified. In the event that the specified port goes into a linkdown state, the backup port serves as the new designated port. It does not always send or receive frames while it is in the blocking state.
- Disabled Port
  Disabled port, it does not send or receive any frames.

4.5.2 Spanning Tree Protocol Port States

The port states defined by the STP are:

- Discard
  The port is in a "discarding state. BPDUs are only received.
- Learn
  The port is in a "learning" state. A port in the learning state learns the destination MAC address of the received frames but does not participate in frame forwarding.
- Forward
  The port is ready to transmit data traffic.

The STP states "blocking" and "listening" have been merged into a unique RSTP "discarding" state. The correspondence between STP port states and RSTP port states are shown below.

Display Format	STP (IEEE802.1D)	RSTP (IEEE802.1w)
Discard	Blocking	Discarding
Discard	Listening	Discarding
Learn	Learning	Learning
Forward	Forwarding	Forwarding

4.5.3 Configuring Spanning Tree

To configure the spanning tree protocol, carry out the following procedure in "admin" Operation mode.

Command	Task
XG2600# configure	Switch to Configuration mode.
XG2600(config)# stp mode stp	Enable Spanning Tree Protocol.

XG2600(config)# stp domain 0 priority (0-61440)
XG2600(config)# stp hello (1s-10s)
XG2600(config)# stp age (6s-40s)
XG2600(config)# stp delay (4s-30s)
	Configure Spanning Tree Protocol parameters on the device.
	• Switch priority
	• Hello time
	• Maximum aging time (max-age)
	• Forward delay time (forward-time)

XG2600(config)# ether 1-8 stp use on	Enable Spanning Tree Protocol on port 1-8.
XG2600(config)# ether 9-20 stp use off	Disable Spanning Tree Protocol on port 9-20.

XG2600(config)# ether 1-8 stp domain 0 priority (0-240)
XG2600(config)# ether 1-8 stp domain 0 cost (1-200000000)
	Configure the following parameters related to the spanning tree topology:
	• Port priority
	• Path cost

XG2600(config)# commit	Apply the configuration.
XG2600(config)# save	Save the configuration.
XG2600(config)# exit	Switch to Operation mode.

4.6 VLAN

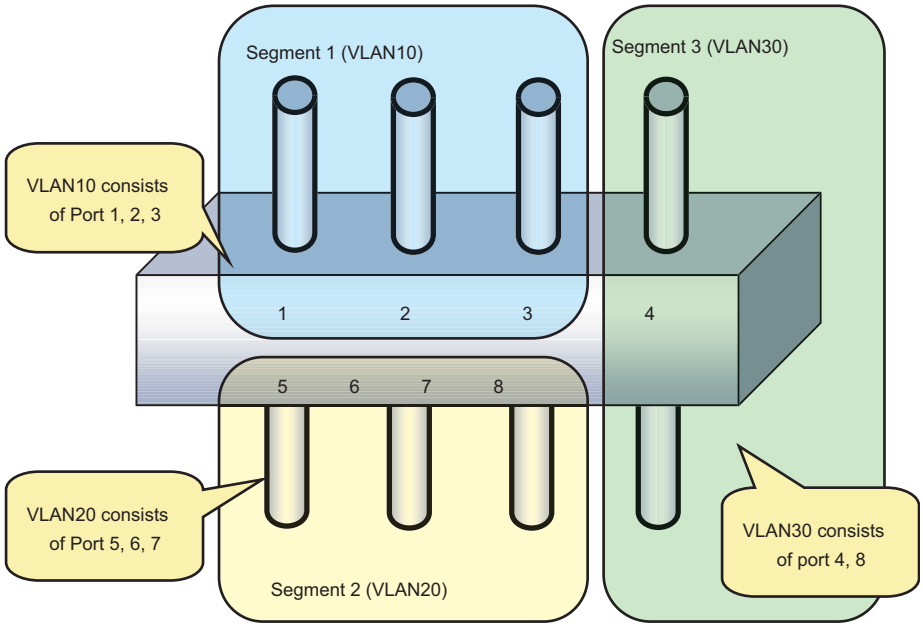
VLAN (Virtual LAN) is a technology that divides a single network into virtually separated networks.

VLANs are separate logical networks within one physical network. A VLAN capable switch can change and define new LAN network configurations without changing physical cable connections. This creates a flexible and extensible network system.

The device provides for port-based or Tag-based (IEEE802.1Q) VLANs.

4.6.1 Port-Based VLAN

Port-based VLAN is a method for configuring VLAN membership on a port basis. Forwarding is based on the destination MAC addresses and related port.



Port Base VLAN

To configure a port-based VLAN, carry out the following procedures in "admin" Operation mode.

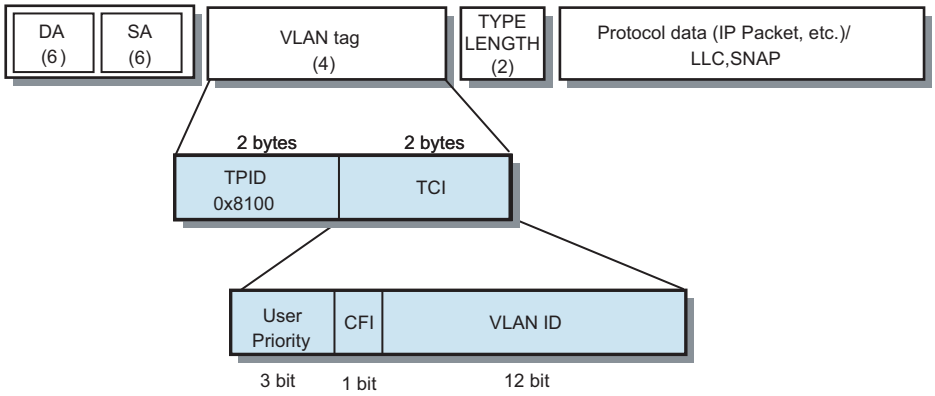
Command	Task
XG2600# configure	Switch to Configuration mode.
XG2600(config)# ether 1-3 vlan untag 10	Set the default port VLAN ID 10 for port 1-3.
XG2600(config)# ether 5-7 vlan untag 20	Set the default port VLAN ID 20 for port 5-7.
XG2600(config)# ether 4,8 vlan untag 30	Set the default port VLAN ID 30 for port 4,8.
XG2600(config)# commit	Apply the configuration.
XG2600(config)# save	Save the configuration.
XG2600(config)# exit	Switch to Operation mode.

4.6.2 Tag-Based (IEEE802.1Q) VLAN

Tag-based VLAN is a method of configuring VLANs so that the frame forwarding decision is based on a tag in the MAC header identifying the VLAN membership. 4 bytes of additional data in the header, called a VLAN tag, identifies the VLAN frame ownership. Using a VLAN tag enables configuring a single physical link that shares multiple VLANs.

The device's tag-based VLAN function is based on the IEEE 802.1Q standard.

The following figure shows an Ethernet frame format including a VLAN tag as specified by the IEEE 802.1Q standard.



- TPID (Tag Protocol Identifier) (0x8100)
- TCI (Tag Control Information)
  - User Priority(3bit): Priority of Frames (Higher priority to larger number from 0 to 7)
  - CFI (Canonical Format Indicator)(1bit): "1" when RIF field exists. Normally "0".
  - VLAN ID(12bit):VLAN identifier (0 to 4095. 0 and 4095 are reserved ID)

Tag VLAN Frame Format

To configure a tag-based VLAN, carry out the following procedures in "admin" Operation mode.

Command	Task
XG2600# configure	Switch to Configuration mode.
XG2600(config)# ether 1-8 vlan tag 100-300	Set the tag-based VLAN ID 100-300 for port 1-8.
XG2600(config)# commit	Apply the configuration.
XG2600(config)# save	Save the configuration.
XG2600(config)# exit	Switch to Operation mode.

4.7 Quality of Service (QoS)

The device provides Quality of Service (QoS) that is based on the IEEE802.1p standard.
The device QoS determines the priority of frames at the ingress side using VLAN tag (including priority tag) or a port's default priority. Their priorities are mapped to 8 output queues.
The queues are processed in the order of the QoS priority precedence.

The device priorities available are:

- Default priority
  Set a default priority of 0 to 7 for each port.
  For frames whose priority was not set (VLAN-untagged frames), the default priority is assigned according to the value of the frame.
- Mapping to output queues
  The device is equipped with 8 output queues with different levels (0 to 7). Frames are transmitted in order of output queue priority.
  Each priority is mapped to a specified output queue.

To set the default priority and output queue mapping, carry out the following procedure in "admin" Operation mode.

- XG2600

Command	Task
XG2600# configure	Switch to Configuration mode.
XG2600(config)# ether 1-8 qos priority (0-7)	Set a default priority for frames whose priority was not set (VLANuntagged frame) when received.
XG2600(config)# ether 1-8 qos prioritymap (0-7) (0-7)	Set the level of output queue to map to each frame that has a priority value.
XG2600(config)# save	Save the configuration.
XG2600(config)# reset	Reset the device.

- XG0224/XG0448

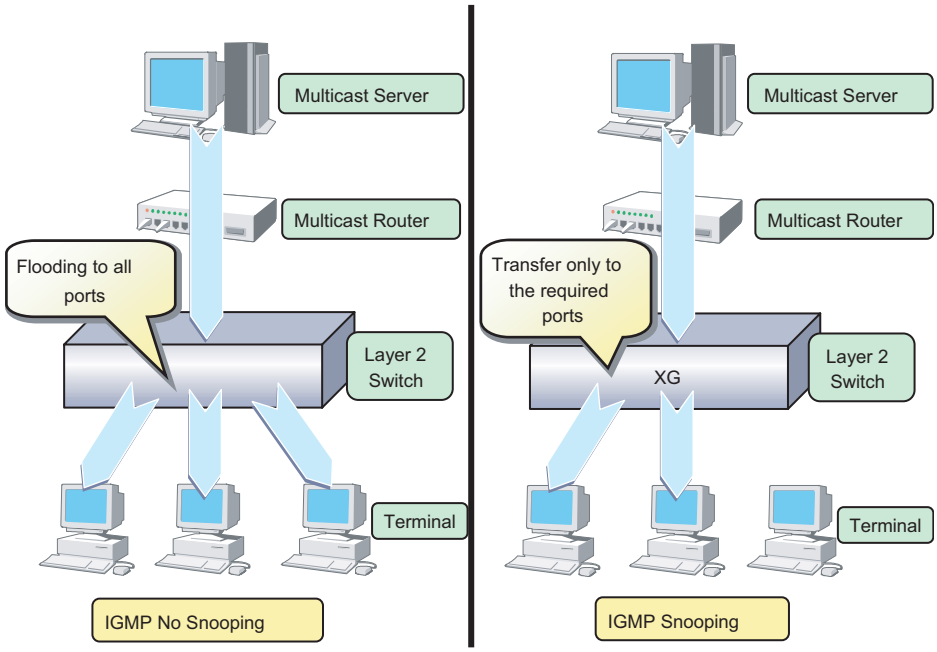
Command	Task
XG0224# configure	Switch to Configuration mode.
XG0224(config)# ether 1-8 qos priority (0-7)	Set a default priority for frames whose priority was not set (VLANuntagged frame) when received.
XG0224(config)# qos cosmap (0-7) (0-7)	Set the level of output queue to map to each frame that has a priority value.
XG0224(config)# save	Save the configuration.
XG2600(config)# reset	Reset the device.

4.8 IGMP Snooping

IP multicast is often used to distribute multimedia data, including video and voice, over a network.

A layer 2 switch floods multicast frames, absorbing unnecessary network bandwidth. A layer 3 switch that supports Internet Group Management Protocol (IGMP) manages multicast groups using IGMP packets. The device controls how IP multicast packets are forwarded to required ports by monitoring IGMP packets generated by layer 3 switches, thereby preventing unnecessary flooding. This function is called "IGMP Snooping".

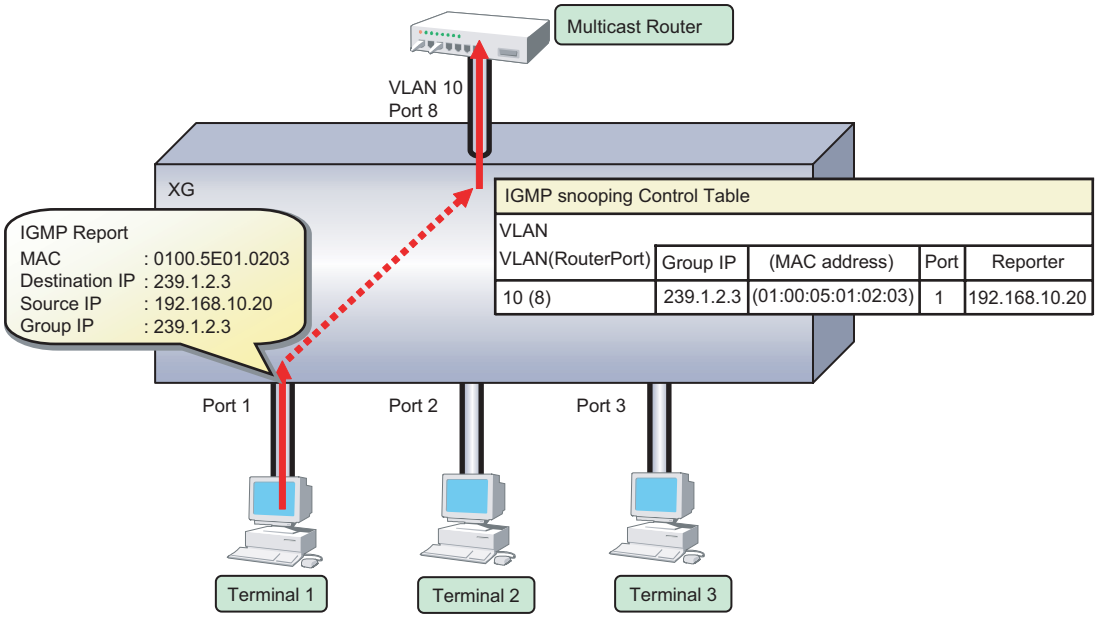
The device supports IGMP snooping for IGMP v1/v2.



IGMP Snooping

4.8.1 Registering Group Members

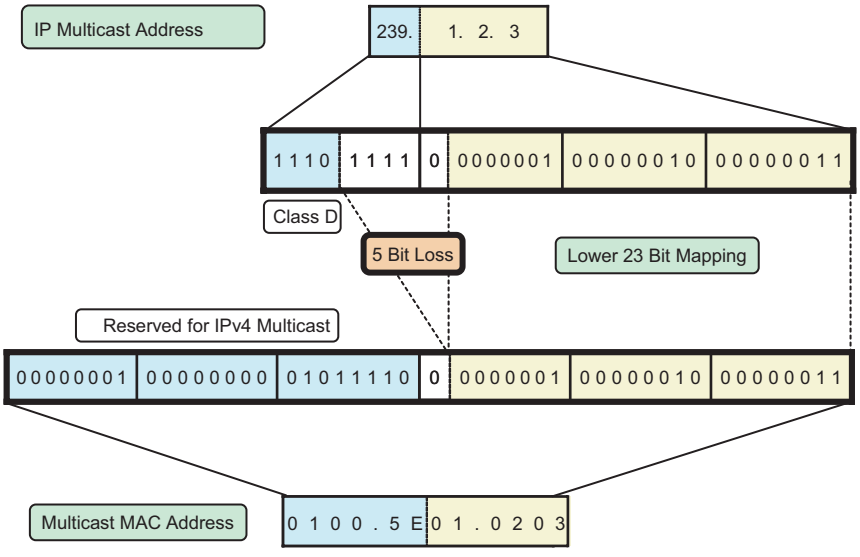
On receiving an IGMP Report message, the device registers a multicast MAC address to the IGMP snooping control table for the port that received the IGMP Report message and the connecting multicast router port.



Registering Group Members

Note
- The device can register multicast groups up to a maximum value (Reference "1.2.3 System Maximum Values" (pg.34)). Multicast packets that cannot be registered are those flooding all ports belonging to the same VLAN.
- If "igmpsnoop unknown flooding off" command is set, Multicast packets that cannot be registered are those not flooding all ports belonging to the same VLAN (XG0224, XG0448).

The following figure shows the relationship between the registered IP multicast address and the multicast MAC address. MAC addresses that are registered with IGMP snooping are between 0100.5E00.0000 and 0100.5E7F.FFFF. An IP multicast address is 32 bits. The first 4 bits are always 1110 followed by 28 bits that represent the IP multicast address information. Of these 28 bits, the lower order 23 bits are mapped to a MAC address and the data in the higher order 5 bits is not used.
Therefore 32 IP multicast addresses are mapped to the same single MAC address.

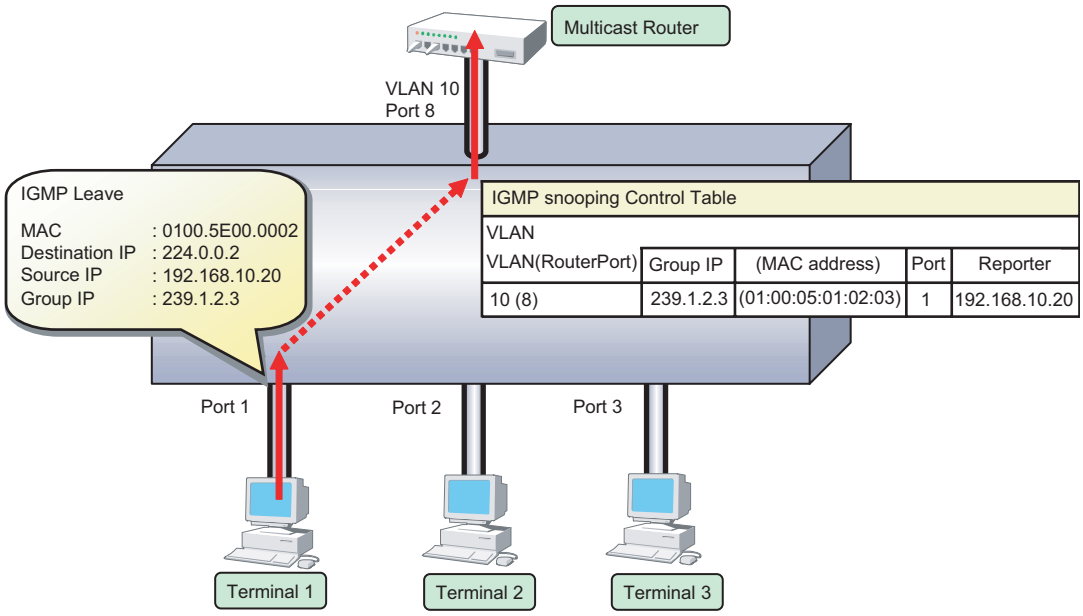


Multicast Address

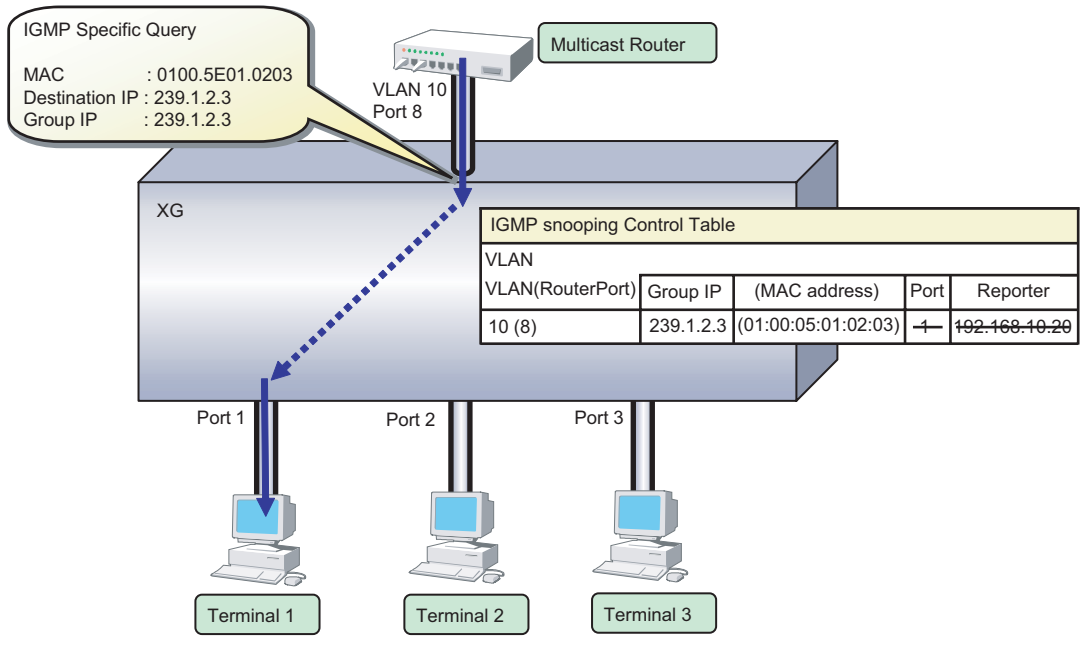
4.8.2 Removing Group Members

The group members registered by IGMP snooping are removed under the following status.

- If after receiving an IGMP Report message for group registration, the group member interval expires before the device receives another IGMP Report message, the switch removes the host from the group member. The setting for the group member interval is 260 seconds.
- If an IGMP Leave message is sent from a host, the multicast router sends out an IGMP Specific Query (GSQ) message to determine whether that the host has left the group.
- If after receiving the IGMP Leave message, the last member interval expires before the device receives another IGMP Report message, the switch removes the host from the group member. The setting for the last member interval is 2 seconds.



Removing Group Members (1)



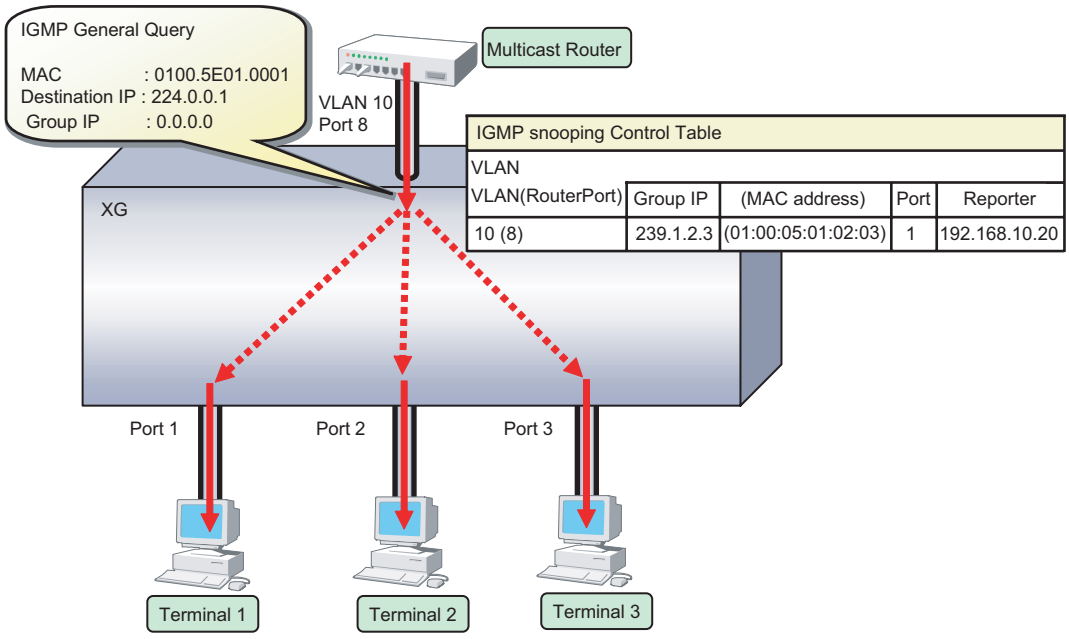
Removing Group Members (2)

Note The registered Multicast Group IP is not detete form the IGMP snooping Control Table automatically. Please use "clear igmpsnoop group" command to delete it.

4.8.3 Managing Group Members

When network congestion causes Leave message loss or there is a host that uses IGMPv1, the multicast router does not receive Leave messages. The multicast router sends out an IGMP General Query message to all hosts (IP address: 224.0.0.1) at intervals (query interval) to determine membership information.

Upon reception of an IGMP General Query message, the host, a member of the group, returns an IGMP Report message to maintain membership in the group.



Managing Group Members

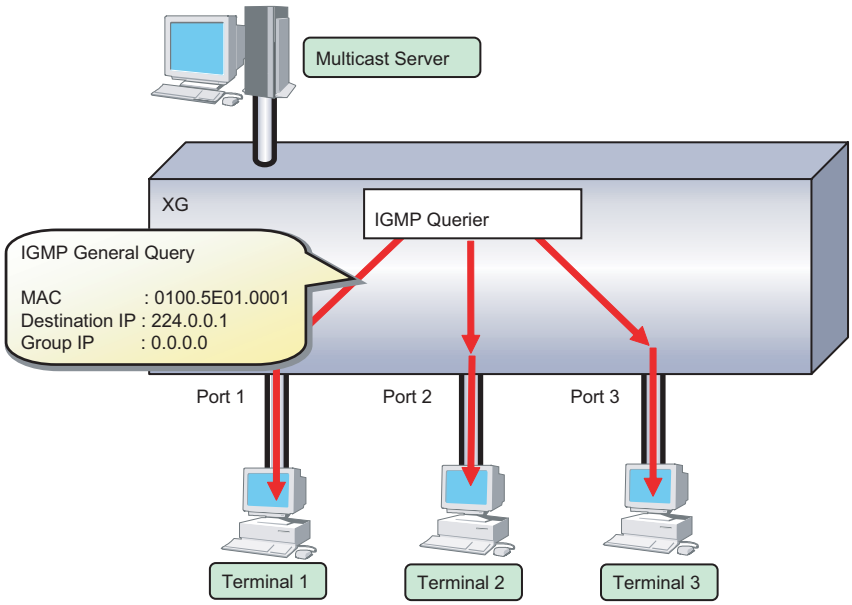
In consideration of General Query or Report message loss caused by network congestion, since RFC 2236 defines the default query interval for multicast routers as 125 seconds, this device uses 126 seconds for the group member interval when it works as a Querier.

4.8.4 IGMP Querier

In a typical network configuration, the multicast router periodically sends out an IGMP General Query message to determine if any of the hosts on the network are members of any multicast groups. Receiving a response from a host ascertains its membership in a multicast group.

IGMP Querier is a function that acts as a proxy for a multicast router when one is not available in a network segment to send an IGMP General Query message to all hosts.

The Query interval is 126 seconds.



IGMP Querier

Upon reception of an IGMP Leave message, the device sends an IGMP Specific Query (GSQ) message to determine that the host is interested in leaving the group.

If an IGMP Specific Query message is sent 2 times and the host does not respond with an IGMP Report message, that host is removed.

Note

- Generally, IGMP Querier uses "0.0.0.0" for the source IP address when sending a Query message. Since some client software does not return a response for a Query message with the source IP address being set to "0.0.0.0", it is recommended that an address other than "0.0.0.0" be used.
- If a multicast router exists on the network segment, the device does not send Query message even if IGMP Querier is valid.

4.8.5 Configuring IGMP Snooping

To configure IGMP snooping, carry out the following procedure in "admin" Operation mode.

Command	Task
XG2600# configure	Switch to Configuration mode.
XG2600(config)# igmpsnoop use on	Enable global IGMP snooping on the device.
XG2600(config)# vlan 10 igmpsnoop router yes 15,16	Specify the multicast router port statically with VLAN.
XG2600(config)# commit	Apply the configuration.
XG2600(config)# save	Save the configuration.
XG2600(config)# exit	Switch to Operation mode.

To enable IGMP query, carry out the following procedure in "admin" Operation mode.

Command	Task
XG2600# configure	Switch to Configuration mode.
XG2600(config)# igmpsnoop use on	Enable global IGMP snooping on the device.
XG2600(config)# vlan 20 igmpsnoop querier on	Specify the Querier operation mode if no multicast router exists.
XG2600(config)# commit	Apply the configuration.
XG2600(config)# save	Save the configuration.
XG2600(config)# exit	Switch to Operation mode.

4.9 Network Management

4.9.1 Traffic Statistics

The device can display traffic statistics to analyze network operations such as traffic bytes, errors, etc.
The following are the Traffic Statistics the device provides.

- Displays traffic information on outgoing and incoming frames for each port.
- Displays traffic information on incoming frames by frame size range for each port.
- Displays traffic information on incoming frames for each VLAN.
- Displays incoming traffic information by QoS priority for each port.
- Displays information related to data flow for each port.
- Displays information about errors that occur during transmission/reception for each port.

To display traffic statistics, monitor and show commands are provided.

- "show ether utilization" command
  Display the usage ratio (or utilization) information of Ethernet physical ports.
- "show ether statistics" (show ether statistics detail) command
  Display the statistics of Ethernet physical ports.

4.9.2 SNMP Agent

SNMP (Simple Network Management Protocol) is a protocol that monitors and manages devices on a network.
The device supports the SNMP (v1/v2c/v3) function to collect management information blocks (MIBs) from a remote network manager (SNMP manager).
For the MIBs supported, refer to Appendix B. The device can be configured for up to 16 SNMP managers and up to 16 SNMP trap destinations (8 for v1/v2c, 8 for v3).
To configure the SNMP agent, carry out the following procedures in "admin" Operation mode.

Command	Task
XG2600# configure	Switch to Configuration mode.
XG2600(config)#snmp service on	Enable SNMP function.
XG2600(config)#snmp agent contact SYSTEM-CONTAC	Set the swith's contact (SYSTEM-CONTACT).
XG2600(config)#snmp agent location SYSTEM-LOCATION	Set the swith's location (SYSTEM-LOCATION).
XG2600(config)#snmp agent address A.B.C.D	Set the SNMP agent address. This setting is also used for the local address at trap transmission. Make sure to set it when using the SNMP agent function.
XG2600(config)# snmp manager 0 A.B.C.D COMMUNIT-YNAME v2c disable	Set the IP address (host name) of the SNMP manager, the community name, sending SNMPv2 traps, and disabling writing. if the SNMP trap notification is enabled.
XG2600(config)# snmp user 0 name USERNAME XG2600(config)# snmp user 0 address 0 A.B.C.D	Set a SNMP v3 user name. Set a SNMP v3 host address.
XG2600(config)# snmp user 0 notification 0 A.B.C.D	Set a SNMP v3 trap notification host address.
XG2600(config)# snmp user 0 auth md5 auth_password	Set the authentication protocol and password for SNMP v3.
XG2600(config)# snmp user 0 priv des priv_password	Set the encryption protocol and password for SNMP v3.

Command	Task
XG2600(config)# snmp user 0 read view 0	Set MIB read permission view for SNMP v3.
XG2600(config)# snmp user 0 notify view 0	Set trap notification permission view for SNMP v3.
XG2600(config)# commit	Apply the configuration.
XG2600(config)# save	Save the configuration.
XG2600(config)# exit	Switch to Operation mode.

4.9.3 RMON

Remote Monitoring (RMON) is a function provided to monitor communications over a network, such as traffic and errors. RMON, used in conjunction with the SNMP agent, allows the remote monitoring of traffic on a LAN segment.
The device supports 2 RMON groups (Statistics, History).

- Statistics group
  Collects traffic statistics for each port.
- History group
  Records traffic statistics for each port at specified time intervals.

To configure RMON, carry out the following procedure in "admin" Operation mode.

Command	Task
XG2600# configure	Switch to Configuration mode.
XG2600(config)#snmp rmon <on|off>	Specify whether to enable or disable the RMON function.
XG2600(config)# commit	Apply the configuration.
XG2600(config)# save	Save the configuration.
XG2600(config)# exit	Switch to Operation mode.

Chapter 5 Command Reference

This chapter explains about Command Reference.

5.1 Port Information Settings

This section explains about port information settings.

Allowed range of port definition numbers

The Ethernet definition serial number (decimal value), which is to be specified in <number> ("ether" port definition number) of the [Option] described in each command of this section, shall be within the range of each model as shown below.

Range	Model
1 to 26	XG0224
1 to 52	XG0448
1 to 26	XG02600

Configuration of port types for each model

The following provides the configuration of port types according to the "ether" port definition number.

Model	1000BASE-X/SerDes (downlink)	10/100/1000BASE-T (uplink)	1000BASE-X/SerDes (interlink)
XG0224	ether 1 to 20	ether 21 to 24	ether 25 to 26
XG0448	ether 1 to 44	ether 45 to 48	ether 49 to 52
XG2600			ether 1 to 26

Specifying the range of port numbers

A range of multiple ports can be specified in <number> ("ether" port definition number) shown in the [Options] of each command in this section.

- Examples of multiple ports range specification for XG2600/XG0224/XG0448.

```
1             = port1
1-20          = port1 to port20
21-24         = port21 to port24
-4            = port1 to port4
```

5.1.1 Ethernet Common Information

This section explains about the commands related to ethernet common information.

5.1.1.1 forwardingmode

Function forwardingmode <mode>

Available Model XG2600

Syntax forwardingmode <mode>

Options

<mode>

- store-and-forward
  store and forward mode is used
- cut-through
  cut through mode (default) is used

Use Mode Configuration mode (admin class)

Explanation Set the switching mode of 10GbE ports.

Caution

- In cut-through mode, 65 byte and over error frames and 16129 byte and over frames are forwarded. 64 byte and below frames are not forwarded.
  It is forwarded as FCS error frame at the frame relay of 16129 or more.
- In store and forward mode, Error frames and 16129 byte and over frames are not forwarded.
- Statistics for 10GbE ports is cleared when you change the switching mode.

Default It is assumed that cut through mode is used.

```
forwardingmode cut-through
```

5.1.1.2 ether use

Function Set the port use.

Available Model XG0224 / XG0448 / XG2600

Syntax ether <number> use <mode>

Options

<number>

- ether port number
  Set a port number to use with a decimal value.
  When setting multiple port numbers, separate them with commas (,).
  When setting sequential numbers, separate them with hyphens (-). (Example: "1-8")

<mode>

Specify a port operation mode.

- on
  Use the Ethernet port.
- off
  Do not use the Ethernet port.

Use Mode Configuration mode (admin class)

Explanation Set to use the Ethernet port.

Default It is assumed that the Ethernet port is used.

```
ether <number> use on
```

5.1.1.3 ether media

Function Sets media type for Ethernet ports.

Available Model XG0224 / XG0448

Syntax ether <number> media <type>

Options

<number>

- Ethernet port number(s)
  Configure Ethernet port number(s) to be used as base 10 value(s).
  If configuring multiple port numbers, separate them with a comma.
  Use hyphens to specify a range of port numbers. (ex: "1-8")
  Refer to the beginning of this chapter for details on how to specify port numbers.

Range	Model
21 to 24	XG0224
45 to 48	XG0448

<type>

Media type.

- metal
  Use 10/100/1000BASE-T ports (RJ45)
- fiber
  Use SFP Ports.
  *The 100BASE-FX module can be used by XG0224 / XG0448.
- auto
  Automatically selects media type.
  *However, if both Ethernet and SFP ports are connected the SFP ports are used.

Use Mode Configuration mode (admin class)

Explanation Sets the type of media to be used by the Ethernet port.

Caution

- If auto is selected and cables are connected to 10/100/1000BASE-T ports as well as to SFP ports, the SFP ports will be selected.
- Similarly, with the auto setting, if 10/100/1000BASE-T port(s) are in a link up state and SFP slot(s) are put into a link up state by connecting a cable to them, operation changes to the SFP slot(s) and the 10/100/1000BASE-T port(s) change to a link down state.
- Use the fiber setting if using the 100BASE-FX module.
  (The 100BASE-FX module cannot be used with the auto setting.)

Default If unset, automatic selection of media type will be the default.

```
ether <number> media auto
```

5.1.1.4 ether mode

Function Set the link speed.

Available Model XG0224 / XG0448

Syntax ether <number> mode <speed>

Options

<number>

- ether port number
  Set a port number to use with a decimal value. When setting multiple port numbers, separate them with commas (,). When setting sequential numbers, separate them with hyphens (-). (Example: "11-16")

Range	Model
1 to 24	XG0224
1 to 48	XG0448

<speed>

Link speed

- auto
  Determine the link speed through auto negotiation.
- 1000
  Set the 1Gbps fixed link speed.
- 100
  Set the 100Mbps fixed link speed.
- 10
  Set the 10Mbps fixed link speed.

Use Mode Configuration mode (admin class)

Explanation Set the link speed at the Ethernet port.

Caution Use the 100Mbps fixed link speed setting if using the 100BASE-FX module.

Default It is assumed that Auto Negotiation mode has been specified.

```
ether <number> mode auto
```

5.1.1.5 ether duplex

Function Set the full-duplex or half-duplex link mode.

Available Model XG0224 / XG0448

Syntax ether <number> duplex <duplex>

Options

<number>

- ether port number
  Set a port number to use with a decimal value. When setting multiple port numbers, separate them with commas (,). When setting sequential numbers, separate them with hyphens (-). (Example: "11-16")

Range	Model
1 to 24	XG0224
1 to 48	XG0448

<duplex>

Full-duplex or half-duplex link mode.

- full
  Operates in full-duplex fixed link mode.
- half
  Operates in half-duplex fixed link mode.
  This option can be specified only when a fixed link speed has been specified by the "ether mode" command. (This option setting is made invalid if the link speed has been set to "auto".)

Use Mode Configuration mode (admin class)

Explanation Set the full-duplex or half-duplex link mode on the Ethernet port.

Caution

- If "1000" is specified in the "ether mode" command, this command setting is disabled and the system operates in full-duplex link mode.
- If "auto" is specified in the "ether mode" command, this command setting is disabled and the system operates depending on the result autonegotiated with the connected device.

Default It is assumed that full-duplex link mode has been specified.

```
ether <number> duplex full
```

5.1.1.6 ether mdi

Function Set the MDI.

Available Model XG0224 / XG0448

Syntax ether <number> mdi <mode>

Options

<number>

- ether port number
  Set a port number to use with a decimal value. When setting multiple port numbers, separate them with commas (,). When setting sequential numbers, separate them with hyphens (-). (Example: "11-16")

Range	Model
1 to 24	XG0224
1 to 48	XG0448

<mode>

Specify the MDI mode.

- auto
  Set the MDI or MDI-X auto detection mode.
- mdi
  Set the fixed MDI mode.
- mdix
  Set the fixed MDI-X mode.

Use Mode Configuration mode (admin class)

Explanation Set the MDI mode for the Ethernet port.

Caution

- The auto mode is enabled only when "auto" or "1000M fixed" is specified in the "ether mode" command.
  If anything other than "auto" is specified in the "ether mode" command, the port operates as MDI-X port.
- If "1000M" is set in the "ether mode" command, the MDI-X fixed mode or the Auto Detect mode setting is disabled. The port operates as MDI port.
- If "auto" is set in the "ether mode" command for the 10/100/1000BASE-T port, the MDI-X fixed mode setting is disabled. The port always operates as MDI port.

Default It is assumed that MDI/MDI-X Auto Detect mode has been specified.

```
ether <number> mdi auto
```

5.1.1.7 ether flowctl

Function Set the flow control function.

Available Model XG0224 / XG0448 / XG2600

Syntax ether <number> flowctl <send> <receive>

Options

<number>

- ether port number
  Set a port number to use with a decimal value.
  When setting multiple port numbers, separate them with commas (,).
  When setting sequential numbers, separate them with hyphens (-). (Example: "1-8")

<send>

- on
  Send flow control packets.
- off
  Do not send flow control packets.

<receive>

- on
  Controls the flow when flow control packets are received.
- off
  Do not control the flow even when flow control packets are received.

Use Mode Configuration mode (admin class)

Explanation Set the operation of flow control function on the Ethernet port using the transmission and reception functions. The backpressure function is enabled in half-duplex link mode. The flow control function is enabled independently of the link speed being set by the "ether mode" command.

Default It is assumed to have been specified to take the flow control only when a flow control packet is received.

```
ether <number> flowctl off on
```

5.1.1.8 ether type

Function Set a port type.

Available Model XG0224 / XG0448 / XG2600

Syntax
ether <number> type normal
ether <number> type mirror <count> <source> <mode>
ether <number> type linkaggregation <group>
ether <number> type backup <group> <priority>

Options

<number>

- ether port number
  Set a port number to use with a decimal value. When setting multiple port numbers, separate them with commas (,). When setting sequential numbers, separate them with hyphens (-). (Example: "11-16")
  normal : Normal port
  mirror : Target mirroring port
  linkaggregation : Link aggregation port
  backup : Backup port

<count>

- Definition number
  Specify the source port number with a decimal number.

Range	Model
0 to 25	XG0224
0 to 51	XG0448
0 to 25	XG2600

<source>

- Source port number
  Set the source port number with a decimal number if mirroring has been specified.

Range	Model
1 to 26	XG0224
0 to 52	XG0448
0 to 26	XG2600

<mode>

- Mirroring mode
  Set one of the following operation modes if mirroring has been specified.
  rx : The receive frames of the source port are mirrored.
  tx : The send frames of the source port are mirrored.
  both : Both the send and receive frames of the source port are mirrored. [XG0224/XG0448]

<group>

- Group number
  Set a link aggregation group number with a decimal number.

Range	Model
1 to 13	XG0224
1 to 26	XG0448
1 to 10	XG2600

Set a backup group number with a decimal number.

Range	Model
1 to 13	XG0224
1 to 26	XG0448
1 to 13	XG2600

<priority>

- Priority of port
  Set the master port or backup port if "type backup" has been specified.
  master: Master port
  backup: Backup port

Use Mode

Configuration mode (admin class)

Explanation

Set an Ethernet port type.
Select the normal port, the mirror port, the link aggregation port, or the backup port.

Caution

Cautions on linkaggregation settings

- All ports in the link aggregation group must be set to belong to the same VLAN.
- No link aggregation can be used for the non-sequentially numbered port configuration. The member ports of a link aggregation group must be specified to have the sequentially numbered ports.
- No link aggregation can be used if the half-duplex link mode has been set by the "ether duplex" command.

Cautions on mirror setting

[XG2600]

- Only one target port can be configured for tx and rx respectively.
- Target ports for tx and rx can not be configured to a same port.
- Target port is the dedicated port for the mirror of source port.
- When target ports are used for tx and rx, the specified source ports are applied to both target ports.
  e.c.
  #ether 1 type mirror 0 10 tx
  #ether 2 type mirror 0 11 rx
  In above configuration, Tx frames of source port ether10 and ether11 are mirrored to target port ether1.
  Rx frames of source port ether10 and ether11 are mirrored to the target port ether2.
- The port which has been configured to target port can not be configured to source port.
- The packet to exceed the band of the target port when there are two or more source ports of the mirror for the target port is abandoned.
- The storm control to the port set as a mirror target port becomes invalid.

- The mirror traffic is as follows according to the state of STP/RSTP/MSTP of the source port.
  When the mirror of two or more sources is possible, traffic corresponding to each state is mirror.
  STP, RSTP, state of MSTP, and mirror frame

Source port (in object VLAN in case of MSTP)	Frame kind	Target port forwarding
disable	Excluding BPDU	It is not forwarded
	BPDU	It is not forwarded
Blocking and listening (Discarding in RSTP/MSTP)	Excluding BPDU	It is not forwarded
	BPDU	It is forwarded
Learning	Excluding	It is not forwarded
	BPDU	It is forwarded
Forwarding	Excluding	It is forwarded
	BPDU	It is forwarded

- The presence of the VLAN tag of the packet output to the target port: about the mirroring of the transmission frame.
  It agrees to the tagging setting of the address source port of the packet. The VLAN tag attaches to the packet output to the target port only when there is the one of the setting with the VLAN tag in the address source port when there are two or more addresses of the packet like the multicast, the broadcast, and the flooding, etc., and the packet is output from two or more source ports. The content of tag becomes tag that should be applied to the destination.
- As for the mirroring of the reception frame, presence and the content of the VLAN tag of the packet output to the target port are corresponding to the packet when inputting it.
- When the reception frame mirroring is done rewriting DSCP and ip precedence, the frame not the reception frame but after it changes is mirror.
- When STP and LLDP are defined in the target port of the mirror, the port cannot be used.
- The storm control to the same port where the mirror target port was set becomes invalid.

[XG0224/XG0448]

- Only a single port can be set as the mirrored target port on the device.
- The port which is set to be target port, can be used for forwarding.
- The destination MAC address, the source MAC address, and the presence or absence of VLAN tag together with its contents sent to the target port may differ from those of the packet actually sent from or received at the source port.

Cautions on backup setting

- If multiple ports defined as master or backup exist in the same backup group, the port with a smaller number is enabled, and the port with a larger number is not linked up and it cannot be used.
- If the master or backup port is undefined in the same backup group, the relevant port is not linked up and it cannot be used.

Default It is assumed that the normal port has been specified.

```
ether <number> type normal
```

5.1.1.9 ether vlan tag

Function Set the tagged VLAN.

Available Model XG0224 / XG0448 / XG2600

Syntax ether <number> vlan tag <tagged_vidlist>

Options

<number>

- ether port number
  Set a port number to use with a decimal value.
  When setting multiple port numbers, separate them with commas (,).
  When setting sequential numbers, separate them with hyphens (-). (Example: "1-8")

<tagged_vidlist>

- Tagged VLAN ID list
  Set a tagged VLAN ID.
  When setting multiple IDs, separate them with commas (,).

Use Mode Configuration mode (admin class)

Explanation Set a tagged VLAN ID.

Caution To add a VLAN, specify the VLAN ID list including already registered VLANs.
The M1 port internally uses maximum VLAN ID in unused.
Therefore, the communication of the M1 port is temporarily interrupted when VLAN ID allocated in the M1 port is specified by the vlan tag command, and the TCP session is cut. (Only XG2600)

Default N/A

5.1.1.10 ether vlan untag

Function Set the untagged VLAN.

Available Model XG0224 / XG0448 / XG2600

Syntax ether <number> vlan untag <untagged_vidlist>

Options

<number>

- ether port number
  Set a port number to use with a decimal value.
  When setting multiple port numbers, separate them with commas (,).
  When setting sequential numbers, separate them with hyphens (-). (Example: "1-8")

<untagged_vidlist>

- Untagged VLAN ID list
  Set an untagged VLAN ID.
  When setting multiple IDs, separate them with commas (,).

Use Mode Configuration mode (admin class)

Explanation Set an untagged VLAN ID.

Caution

- To add a VLAN, specify the VLAN ID list including already registered VLANs.
- Although multiple vid numbers can be specified in the "untagged_vidlist", the following conditions must be satisfied.
  - Only a single port can be defined as a port VLAN.
    If multiple VLANs with no protocol VLAN settings have been specified, only the VLAN with the smallest number will be enabled.
  - The protocol VLANs of up to 11 protocols (system definition protocol (ipv4/ipv6/fna) or user definition (up to 8 definitions)) can be defined.

The M1 port internally uses maximum VLAN ID in unused.
Therefore, the communication of the M1 port is temporarily interrupted when VLAN ID allocated in the M1 port is specified by the vlan untag command, and the TCP session is cut. (Only XG2600)

Default On occasions when "ether vlan tag" command is not defined:
It is assumed that 1 has been specified as the default VLAN ID.

```
ether <number> vlan untag 1
```

On occasions when "ether vlan tag" command is defined:
It is assumed that "ether vlan untag" command has not been specified.

5.1.1.11 ether egress permission

Function Set the forwarding permission port list information.

Available Model XG0224 / XG0448 / XG2600

Syntax ether <number> egress permission <portlist>

Options

<number>

- ether port number
  Set a port number to use with a decimal value.
  When setting multiple port numbers, separate them with commas (,).
  When setting sequential numbers, separate them with hyphens (-). (Example: "1-8")

<portlist>

- Forwarding permitted port list
  Specify a list of the Ethernet ports that are permitted to forward data.
  When setting multiple port numbers, separate them with commas (,).
  When setting sequential numbers, separate them with hyphens (-). (Example: "1-8")

Use Mode Configuration mode (admin class)

Explanation Set a port list to allow forwarding via the ports.
If a link aggregation port or a backup port is specified on the port list, forwarding is allowed via all ports of the link aggregation or backup group.

Default It is assumed that forwarding has been permitted for all ports.

5.1.1.12 ether loopdetect use

Function Set to use the Loop Detection function.

Available Model XG0224 / XG0448 / XG2600

Syntax ether <number> loopdetect use <mode>

Options

<number>

- ether port number
  Set a port number to use with a decimal value.
  When setting multiple port numbers, separate them with commas (,).
  When setting sequential numbers, separate them with hyphens (-). (Example: "1-8")

<mode>

- on
  Enable the Loop Detection function.
- off
  Disable the Loop Detection function.

Use Mode Configuration mode (admin class)

Explanation Set whether or not to enable the loop detection function.
Disable if the system is stopped by the "loopdetect use" definition even if this mode is set to be effective.

Default It is assumed that the loop detection function is enabled.

```
ether <number> loopdetect use on
```

5.1.1.13 ether loopdetect frame

Function Enable the Loop Detection Frame sender.

Available Model XG0224 / XG0448 / XG2600

Syntax ether <number> loopdetect frame <target>

Options

<number>

- ether port number
  Set a port number to use with a decimal value.
  When setting multiple port numbers, separate them with commas (,).
  When setting sequential numbers, separate them with hyphens (-). (Example: "1-8")

<target>

Set the sender of loopdetect-frame.

- own
  A Loop is detected when receiving a Loop Detection frame from this device.
- any
  A Loop is detected when receiving a Loop Detection frame from any device.

Use Mode Configuration mode (admin class)

Explanation Specify the sender of Loop Detection frames used to detect a loop.
The following is the port which is blocked/offlined when a loop is detected.

<target>	Sender of Loop Detection frame	The port which is blocked/offlined
own	This device	The port reporting the Loop Detection frame
any	This device	The port reportinging the Loop Detection frame
	Other device	The port receiving the Loop Detection frame

Default It is assumed that set the sender as own.

```
ether <number> loopdetect frame own
```

5.1.1.14 ether startup

Function Set the offline status when it is started up.

Available Model XG0224 / XG0448 / XG2600

Syntax ether <number> startup <mode>

Options

<number>

- ether port number
  Set a port number to use with a decimal value.
  When setting multiple port numbers, separate them with commas (,).
  When setting sequential numbers, separate them with hyphens (-). (Example: "1-8")

<mode>

- online
  The port starts operation in the online state during device startup or during dynamic definition reflection.
- offline
  The port starts operation in the offline state during device startup or during dynamic definition reflection. Also, wait for an offline release instruction from operator.

Use Mode Configuration mode (admin class)

Explanation Set the port in offline state during device startup or during reflection of dynamic definitions.
During device startup or during change of dynamic definitions, the relationship between the Ethernet port state and the port offline state is as follows.

<mode>	Ether port state during device startup or dynamic definitions change		
	Linkup possible	Linkup impossible	Port offline
online	Linkup or Communication possible	Linkdown or Communication impossible	Communication impossible staying in offline state
offline	Communication impossible entering offline state	Communication impossible entering offline state	Communication impossible staying in offline state

Caution If ports are offline, release them with the "online" command with port releasing.

Default It is assumed that forcible offline processing to the port is not performed during device startup or during reflection of dynamic definitions.

```
ether startup online
```

5.1.1.15 ether recovery limit

Function Set the upper limit number of linkdown times.

Available Model XG0224 / XG0448 / XG2600

Syntax ether <number> recovery limit <limit>

Options

<number>

- ether port number
  Set a port number to use with a decimal value.
  When setting multiple port numbers, separate them with commas (,).
  When setting sequential numbers, separate them with hyphens (-). (Example: "1-8")

<limit>

- Number of linkdown times
  Set the upper limit number of linkdown times, for the ports to go offline, with a decimal value from 1 to 10.

Use Mode Configuration mode (admin class)

Explanation Set the number of times for linkdown as the upper limit for the relevant ports to go offline. When the upper limit has been exceeded, the log is output to the SYSLOG and the ports are offline.

Caution

- If ports are offline, release them with the "online" command with port releasing.
- When offline ports are released by with "online" command, the number of times for linkdown is reset to zero again.

Default The ports are not offline during linkdown, assuming that there is no upper limit.

5.1.1.16 ether downrelay port

Function Set the linked port list information about the Linkdown Relay function.

Available Model XG0224 / XG0448 / XG2600

Syntax ether <number> downrelay port <portlist>

Options

<number>

- ether port number
  Set a port number to use with a decimal value.
  When setting multiple port numbers, separate them with commas (,).
  When setting sequential numbers, separate them with hyphens (-). (Example: "1-8")

<portlist>

- Relay port list
  Set a list of the Ethernet ports that go offline (linkdown) together with the linked Ethernet port that has been set by this definition when the linkdown of the linked Ethernet port occurs.
  When setting multiple port numbers, separate them with commas (,).
  When setting sequential numbers, separate them with hyphens (-). (Example: "1-8")

Use Mode Configuration mode (admin class)

Explanation Set a list of the Ethernet ports that go offline (linkdown) together with the linked Ethernet port that has been set by this definition when the linkdown of the Ethernet port occurs. If the linkdown relay operation occurs, the linked port goes offline, and the log is output to the SYSLOG.

Caution

- If ports are offline, release them by the "online" command with port releasing.
- The definition is applied normally even if the set port is included on the relay operation port list. However, if the set only port is included on the list, no relay operation occurs but only the set port goes offline.
- When the Ethernet port type is a linkaggregation port, and linked port list information for the Linkdown Relay function of the linkaggregation is set, the Linkdown Relay function of the linkaggregation becomes enable and this definition is ignored.
- The linked port does not go offline at the Linkdown operation during the dynamic definition change on the Ethernet port where this command is set.

Default The linkdown relay function is not executed, assuming that port list information has not been set.

5.1.1.17 ether downrelay recovery mode

Function Set offline state release operation on the Linkdown Relay function of the Ethernet port.

Available Model XG0224 / XG0448 / XG2600

Syntax ether <number> downrelay recovery mode <mode>

Options

<number>

- The Ethernet port number
  Set a port number to use with a decimal value.
  When setting multiple port numbers, separate them with commas (,).
  When setting sequential numbers, separate them with hyphens (-). (Example: "1-8")

<mode>

Set offline state release operation on the linked port list.

- manual
  Specify offline state release with command.
- auto
  Specify offline state release with linkup.

Use Mode Configuration mode (admin class)

Explanation Set offline state release operation from the offline port set on the linked port list information of the Linkdown Relay function.
Setting "manual" for the releasing operation enables the releasing operation of the linked port by "online" command or dynamic definition change.
If the release setting is "auto", the linked ports offline release is possible with the linkdown relay function setting port's linkup as well as the "online" command and a dynamic definition change.
When the releasing offline operation by linkup is executed when "auto" is set, the system log is output.

Caution

- When the Ethernet port where the Linkdown Relay function is set is in an offline state, release the offline state with the "online" command, setting "auto" does not change the state to be linked up.
- Even if the linked port is in an offline state due to something other than the Linkdown Relay, set the parameters with "linkaggregation downrelay recovery cause" command when releasing the offline state.
- When the Ethernet port type is a linkaggregation port, and the linked port list information for the Linkdown Relay function of the linkaggregation is set, the Linkdown Relay function of the linkaggregation becomes enable and this definition is ignored.
- Even if "auto" is set for release operation, offline state release operation will not be executed to the ether ports still in a linkup state since some ports are already shifting to online or offline state.
- Linkdown Relay function operates by ether port or by linkaggregation, but not by backup port.
  For this reason, when the same link operation port is set on an ether or linkaggregation port in the same backup group, and "auto" is set for offline state release operation, the release operation may not be executed because the operation is performed by one port at a time.

Default It is assumed that "manual" was specified for the linked port list offline state release operation.

```
ether <number> downrelay recovery mode manual
```

5.1.1.18 ether downrelay recovery cause

Function

Set the target parameters for releasing the offline state on the Linkdown Relay function of the Ethernet port.

Available Model

XG0224 / XG0448 / XG2600

Syntax

ether <number> downrelay recovery cause <cause>

Options

<number>

- The Ethernet port number
  Set a port number to use with a decimal value.
  When setting multiple port numbers, separate them with commas (,).
  When setting sequential numbers, separate them with hyphens (-). (Example: "1-8")

<cause>

Specify the offline parameters targeted for releasing the offline state of linked port from the following.

- downrelay
  Specify when offline parameters with the Linkdown Relay function are targeted for release.
- all
  Release all the parameters offline states.

Use Mode

Configuration mode (admin class)

Explanation

Set the offline parameters targeted to releasing offline state lead by linkup when "auto" was specified on "ether downrelay recovery" command.
Set the parameters assigned for releasing of offline state during the releasing operation.

Caution

- This command is enabled only when "auto" is specified in "ether downrelay recovery mode" command. The definition is ignored when "manual" is specified.
- The offline state is released without depending on this command definition when the "online" command in the linked port is executed, or during dynamic definition change accompanied by releasing of the offline state.

Default

It is assumed that "downrelay" was specified for the target parameters of offline state release of the linked port list.

```
ether <number> downrelay recovery cause downrelay
```

5.1.1.19 ether description

Function Define the text description for a ether port

Available Model XG0224 / XG0448 / XG2600

Syntax ether <number> description <description>

Options

<number>

- The Ethernet port number
  Set a port number to use with a decimal value.
  When setting multiple port numbers, separate them with commas (,).
  When setting sequential numbers, separate them with hyphens (-). (Example: "1-8")

<description>

- Description
  Define the description for a ether port with up to 50 characters from 0x21, 0x23 to 0x7e of ASCII code.

Use Mode Configuration mode (admin class)

Explanation Defines the description text for each ether port.

Caution This description is used also for the SNMP agent function.
The SNMP agent function sets this description to ifAlias MIB (OID:1.3.6.1.2.1.31.1.1.1.18).

Default No ether port descriptions are defined.

5.1.1.20 linkaggregation algorithm

Function Set the load distribution algorithm of link aggregation.

Available Model XG0224 / XG0448 / XG2600

Syntax linkaggregation <group> algorithm <type>

Options

<group>

- Link aggregation group number
  Set a link aggregation group number with a decimal number.

Range	Model
1 to 13	XG0224
1 to 26	XG0448
1 to 10	XG2600

<type>

Specify the load distribution algorithm.

- sa-mac
  Distribute frames based on the source MAC address.
- da-mac
  Distribute frames based on the destination MAC address.
- both-mac
  Distribute frames based on the exclusively ORed (XORed) source and destination MAC addresses.
- sa-ip
  Distribute frames based on the source IP address.
- da-ip
  Distribute frames based on the destination IP address.
- both-ip
  Distribute frames based on the exclusively ORed (XORed) source and destination IP addresses.

Use Mode Configuration mode (admin class)

Explanation Set an algorithm for each link aggregation group.

Default It is assumed that "both-mac" has been set for the load distribution algorithm of the link aggregation.

```
linkaggregation <group> algorithm both-mac
```

5.1.1.21 linkaggregation mode

Function Set the link aggregation operation mode.

Available Model XG0224 / XG0448 / XG2600

Syntax linkaggregation <group> mode <la_mode>

Options

<group>

- Link aggregation group number
  Set a link aggregation group number with a decimal number.

Range	Model
1 to 13	XG0224
1 to 26	XG0448
1 to 10	XG2600

<la_mode>

- Link aggregation operation mode
  Set the following operation mode.
  static : Static operation
  active : Dynamic operation with LACP enabled by "active".
  passive : Dynamic operation with LACP enabled by "passive".

Use Mode Configuration mode (admin class)

Explanation Set an operation mode of the link aggregation.
If static is specified, the static link aggregation without LACP is configured.
If active or passive is specified, the dynamic link aggregation that uses the LACP is set.
If the active mode is specified, the LACPDU's cyclic transmission is automatically sent to the remote LACP device.
If the passive mode is specified, the LACPDU's cyclic transmission starts only when an LACPDU is received from the remote LACP. In other words, no link aggregation is configured if both devices are in the passive mode.

Default It is assumed that the static operation mode has been set for the link aggregation.

```
linkaggregation <group> mode static
```

5.1.1.22 linkaggregation type

Function Set a link aggregation type.

Available Model XG0224 / XG0448 / XG2600

Syntax
linkaggregation <group> type normal
linkaggregation <group> type backup <backup_group> <priority>

Options

<group>

- Link aggregation group number
  Set a link aggregation group number with a decimal number.

Range	Model
1 to 13	XG0224
1 to 26	XG0448
1 to 10	XG2600

normal : Normal link aggregation
Multiplexed multiple ports are used as a normal ports.
backup : Backup link aggregation.
Multiplexed multiple ports are used as a backup ports.

<backup_group>

- Backup group number
  Set a backup group number with a decimal number.

Range	Model
1 to 13	XG0224
1 to 26	XG0448
1 to 13	XG2600

<priority>

- Priority of backup port
  It is a priority of the link aggregation used as a backup port.
  Set the master port or backup port if "type backup" has been specified.
  master: Master port
  backup: Backup port

Use Mode Configuration mode (admin class)

Explanation
Set a link aggregation type.
Select the normal link aggregation or the backup link aggregation.
The backup link aggregation can also be used for backup of broadband ports.

Caution

Cautions on "type backup" setting

- If a link aggregation, that has the same priority as the port defined as "master" or "backup", exists in the same backup group, the port will be enabled as a backup port but the link aggregation will be disabled.
- If more than one master or backup link aggregation exists in the same backup group, the link aggregation with a smaller link aggregation group number will be enabled. The backup link aggregation with a larger link aggregation group number will be disabled.
- If the master or backup link aggregation is undefined in the same backup group, its settings are disabled.

- If definition conditions such as described above are contradictory, the relevant ports are not linked up for use.
  Change the settings referring to the system log message.

Default It is assumed that the normal link aggregation has been specified.

```
linkaggregation <group> type normal
```

5.1.1.23 linkaggregation collecting minimum

Function Set the minimum number of member ports for link aggregation.

Available Model XG0224 / XG0448 / XG2600

Syntax linkaggregation <group> collecting minimum <count>

Options

<group>

- Link aggregation group number
  Set a link aggregation group number with a decimal number.

Range	Model
1 to 13	XG0224
1 to 26	XG0448
1 to 10	XG2600

<count>

- Minimum number of member ports
  Set the minimum number of member ports with a decimal number from 1 to 8, where communication with link aggregation is allowed. However, the communication of link aggregation is disabled if the number of ports connected to the link aggregation is less than the minimum number of member ports.
  Also, the communication of link aggregation is disabled if the number of connected ports decreases below the minimum number of member ports due to failure or other reasons.

Use Mode Configuration mode (admin class)

Explanation Set the minimum number of member ports to allow communication of the link aggregation.
This command is used to stop communication until the link aggregation is assigned the specific bandwidth in redundant configuration or other. If it is under the specific bandwidth, the link aggregation communication is disabled.

Caution If a number larger than the number of member ports effective for the setting is specified as the minimum number of member ports, the communication of this link aggregation is disabled.

Default It is assumed that 1 has been specified as the minimum number of member ports for the link aggregation.

```
linkaggregation <group> collecting minimum 1
```

5.1.1.24 linkaggregation icmpwatch address

Function Set the destination address for "ether" L3 monitoring of link aggregation.

Available Model XG0224 / XG0448 / XG2600

Syntax linkaggregation <group> icmpwatch address <dst_addr>

Options

<group>

- Link aggregation group number
  Set a link aggregation group number with a decimal number.

Range	Model
1 to 13	XG0224
1 to 26	XG0448
1 to 10	XG2600

<dst_addr>

- Destination IP address to be monitored
  Specify the destination IP address to be monitored.
  The allowable range is as follows:
  1.0.0.1 to 126.255.255.254
  128.0.0.1 to 191.255.255.254
  192.0.0.1 to 223.255.255.254

Use Mode Configuration mode (admin class)

Explanation Set the operation information for destination monitoring.
This command sends an ICMP ECHO packet from the specified link aggregation group to the destination IP address, specified by <dst_addr>, and checks the presence of the destination by receiving a response.

Caution Do not set the IP address of the local device in <dst_addr>. Also, make sure that the specified IP address is included in the same subnet.
If any of the above three addresses is specified, the Ethernet L3 monitoring function will not operate normally.

Default It is assumed that the Ethernet L3 monitoring function is not used for the link aggregation.

5.1.1.25 linkaggregation icmpwatch interval

Function Set various types of "ether" L3 monitoring intervals for link aggregation.

Available Model XG0224 / XG0448 / XG2600

Syntax linkaggregation <group> icmpwatch interval <interval> <timeout> [<retry>]

Options

<group>

- Link aggregation group number
  Set a link aggregation group number with a decimal number.

Range	Model
1 to 13	XG0224
1 to 26	XG0448
1 to 10	XG2600

<interval>

- Transmission interval of normal ICMP ECHO packets
  Specify the transmission interval of normal ICMP ECHO packets to be within the range of 1 to 60 seconds (or 1 minute).
  The unit shall be m (minute) or s (second).

<timeout>

- Monitoring timeout
  Specify the monitoring timeout period as between 5 to 180 seconds (or 3 minutes). If the time exceeds, this monitoring is considered as failed.
  The unit should be in m (minute) or s (second).

<retry>

- Retransmission interval of ICMP ECHO packets
  Specify the retransmission interval of ICMP ECHO packets between 1 to <timeout>-1 seconds if the normal ICMP ECHO packet transmission is not acknowledged.
  The unit should be in m (minute) or s (second).
  The default is 1s.

Use Mode Configuration mode (admin class)

Explanation Set the operation information for destination monitoring.
The destination is monitored in the interval specified by <interval> while the response to ICMP ECHO packet is being received normally. If the response to ICMP ECHO packet is not received, the packet transmission is repeated at the intervals specified in <retry>. If no response is returned within the time period specified by <timeout>, a communication failure is assumed and an abnormal detection is reported. Accordingly, all the member ports specified in <group> are offline.

Caution If ports are offline, release them by the "online" command.

Default It is assumed that the 10-second transmission interval during normal communication, the 5-second timeout for monitoring, and the 1-second retransmission interval have been specified.

```
linkaggregation <group> icmpwatch interval 10s 5s 1s
```

5.1.1.26 linkaggregation downrelay port

Function Set the linked port list information about the linkaggregation Linkdown Relay function.

Available Model XG0224 / XG0448 / XG2600

Syntax linkaggregation <group> downrelay port <portlist>

Options

<group>

- Link aggregation group number
  Set a link aggregation group number with a decimal number.

Range	Model
1 to 13	XG0224
1 to 26	XG0448
1 to 10	XG2600

<portlist>

- Relay port list
  Set a list of the Ethernet ports that places the linked port offline (linkdown) by linkdown where this definition has been set.
  When setting multiple port numbers, separate them with commas (,).
  When setting sequential numbers, separate them with hyphens (-). (Example: "1-8")

Use Mode Configuration mode (admin class)

Explanation If a linkdown occurs in the linkaggregation set with this definition, set a list of the Ethernet ports that will also linkdown (port linkdown).
If a linkdown relay operation occurs, its linked port goes to an offline state, and a system log is output.

Caution

- If ports are offline, release them with the "online" command in port releasing.
- The definition is applied normally even if a port set with linkaggregation is included on the relay operation port list.
- When the Ethernet port type is a linkaggregation port, and this definition is set in the linkaggregation settings, this definition becomes enabled and the Linkdown Relay function is ignored.
- The linked port does not change to offline status during the dynamic definition change Linkdown operation on the Ethernet port where this command is set.

Default The Linkdown Relay function is not executed, assuming that port list information has not been set.

5.1.1.27 linkaggregation downrelay recovery mode

Function Set offline state release operation on the Linkdown Relay function of linkaggregation.

Available Model XG0224 / XG0448 / XG2600

Syntax linkaggregation <group> downrelay recovery mode <mode>

Options

<group>

- Link aggregation group number
  Set a link aggregation group number with a decimal number.

Range	Model
1 to 13	XG0224
1 to 26	XG0448
1 to 10	XG2600

<mode>

Set the releasing offline state operation on the linked port list.

- manual
  Specify offline state release with command.
- auto
  Specify offline state release with linkup.

Use Mode Configuration mode (admin class)

Explanation Set offline state release operation from the offline port set in the linked port list information of the Linkdown Relay function.
Setting "manual" for the release operation enables the release operation of the linked port with the "online" command or dynamic definition change.
If the release setting is "auto", the linked ports offline release is possible with the linkdown relay function setting port's linkup as well as the "online" command and a dynamic definition change.
If the offline release operation with linkup is executed when "auto" is set, the system log is output.

Caution

- When the linkaggregation port where the Linkdown Relay function is set is in its offline state, release the offline state with the "online" command because setting "auto" does not change the linked state.
- Even if the linked port is in its offline state due to something other than the Linkdown Relay, set the parameters with the "linkaggregation downrelay recovery cause" command when releasing the offline state.
- Even if "auto" is set for release operation, offline state release operation will not be executed to the ether ports still in a linkup state since some ports are already shifting to online or offline state.
- Linkdown Relay function operates by ether port or by linkaggregation, but not by backup port.
  For this reason, when the same link operation port is set on an ether or linkaggregation port in the same backup group, and "auto" is set for offline state release operation, the release operation may not be executed because the operation is performed by one port at a time.

Default It is assumed that "manual" was specified for releasing the offline state operation of the linked port list.

```
linkaggregation <group> downrelay recovery mode manual
```

5.1.1.28 linkaggregation downrelay recovery cause

Function Set the target parameters for offline state release in the Linkdown Relay function of the linkaggregation.

Available Model XG0224 / XG0448 / XG2600

Syntax linkaggregation <group> downrelay recovery cause <cause>

Options

<group>

- Link aggregation group number
  Set a link aggregation group number with a decimal number.

Range	Model
1 to 13	XG0224
1 to 26	XG0448
1 to 10	XG2600

<cause>

Specify the offline parameters targeted to offline state release of the linked port from the following.

- downrelay
  Specify when offline parameters by the Linkdown Relay function are targeted for release.
- all
  Release offline state of all parameters.

Use Mode Configuration mode (admin class)

Explanation Set the offline parameters lead by linkup assigned for releasing the offline state when "auto" is specified in the "ether downrelay recovery" command.

Caution

- This command is enabled only when "auto" is set for offline state release operation ("ether downrelay recovery mode" command) lead by linkup.
  The definition is ignored when "manual" is specified.
- The offline state is released independent of this command definition when the "online" command in the linked port is executed, or during dynamic definition change accompanied by releasing the offline state.

Default It is assumed that "downrelay" was specified as the target parameters for offline state release of the linked port list.

```
linkaggregation <group> downrelay recovery cause downrelay
```

5.1.1.29 linkaggregation description

Function Define the text description for a link aggregation group.

Available Model XG0224 / XG0448 / XG2600

Syntax linkaggregation <group> description <description>

Options

<group>

- Link aggregation group number
  Set a link aggregation group number with a decimal number.

Range	Model
1 to 13	XG0224
1 to 26	XG0448
1 to 10	XG2600

<description>

- Description
  Define the description for a link aggregation group with up to 50 characters from 0x21, 0x23 to 0x7e of ASCII code.

Use Mode Configuration mode (admin class)

Explanation Defines the description text for each link aggregation group.

Caution This description is used also for the SNMP agent function.
The SNMP agent function sets this description to ifAlias MIB (OID:1.3.6.1.2.1.31.1.1.1.18).

Default No link aggregation group descriptions are defined.

5.1.1.30 backup mode

Function Set the backup port selection method.

Available Model XG0224 / XG0448 / XG2600

Syntax backup <group> mode <mode>

Options

<group>

- Backup group number
  Set a backup group number with a decimal number.

Range	Model
1 to 13	XG0224
1 to 26	XG0448
1 to 13	XG2600

<mode>

Set a port selection mode if both master and backup ports can be used.

- master
  Use the master port first.
- earlier
  Use the port that has been linked up first and enabled for use.

Use Mode Configuration mode (admin class)

Explanation Set how to select a method of port selection for each backup group.

Default It is assumed that the master port is set to be used first as backup switching mode.

```
backup <group> mode master
```

5.1.1.31 backup standby

Function Set the standby status of backup ports.

Available Model XG0224 / XG0448 / XG2600

Syntax backup <group> standby <mode>

Options

<group>

- Backup group number
  Set a backup group number with a decimal number.

Range	Model
1 to 13	XG0224
1 to 26	XG0448
1 to 13	XG2600

<mode>

Set the standby status of backup ports.

- online
  The backup port in standby status does not go offline.
- offline
  The backup port in standby status goes offline.

Use Mode Configuration mode (admin class)

Explanation Set the standby status of backup ports.
If the standby state is specified to offline, the backup port in standby status goes offline.
The offline port is in the same state as when the "offline" command for the Ethernet port control is executed.
If the currently operating backup port goes down, the offline port is released.
The released port is switched unless it is still offline due to another function or has an error.

Caution

- When the backup port selection method is set as a "master", backup priority port is not offline even it is set to be offline in standby status.
  If the backup priority port must be offline, set the backup port selection method as "earlier".
- When backup port is set to be offline in standby status, offline port cannot be released automatically by any function other than backup port function. The same is true for the offline port set by "offline" command.

Default It is assumed that "online" has been specified as the standby status of backup ports.

```
backup <group> standby online
```

5.1.2 MAC Information

This section explains about the commands related to MAC information.

5.1.2.1 ether mac storm

Function Set the broadcast and multicast storm control information.

Available Model XG0224 / XG0448 / XG2600

Syntax

XG2600

ether <number> mac storm <threshold_broadcast> <threshold_multicast> <action>

XG0224/XG0448

ether <number> mac storm <threshold> <broadcast> <multicast>

Options

<number>

- ether port number
  Set a port number to use with a decimal value.
  When setting multiple port numbers, separate them with commas (,).
  When setting sequential numbers, separate them with hyphens (-). (Example: "1-8")

<threshold_broadcast>

- Threshold of broadcast traffic
  Set the threshold value for broadcast storm traffic with Kbit/s, Mbit/s or Gbit/s
  8k - 8000000k
  1m - 8000m
  1g - 8g
  (Storm monitoring does not start if the threshold is set to 0.)

<threshold_multicast>

- Threshold of multicast traffic
  Set the threshold value for multicast storm traffic with Kbit/s, Mbit/s or Gbit/s
  8k - 8000000k
  1m - 8000m
  1g - 8g
  (Storm monitoring does not start if the threshold is set to 0.)

<action>

Set the action which occurs if the traffic exceeds the threshold.

- discard
  Discard the packets which exceed the threshold
- close
  Close the port (offline)

<threshold>

- Threshold
  Set the traffic threshold value for the broadcast or multicast storm.
  Set the number of packets per second in the following range.
  (Storm monitoring does not start if the threshold is set to 0.)

Range	Model
0 to 30,000,000	XG0224 / XG0448

<broadcast>

<multicast>

Set the operation that occurs if the traffic exceeds the threshold.

- off
  The guard function is disabled.
- discard
  Discard the packets that exceed the threshold.
- close
  Close the port (offline).

Use Mode Configuration mode (admin class)

Explanation

XG0224 / XG0448

Set the broadcast or multicast storm control information.
If "discard" or "close" is specified, the systemlog is output when the threshold value is exceeded or the device is restored.

XG2600

Set the broadcast or multicast storm control information.
If "discard" or "close" is specified, the systemlog is output when the threshold value is exceeded or the device is restored.
Storm monitoring doesn't start If the threshold of both broadcast and multicast is set to 0.

Caution

XG0224 / XG0448

It might be considered that broadcast/multicast roughhouse control information is set, and "clear statistics" is restored from the state of the roughhouse once when it retreats and the statistical information of correspondence port is cleared with the reception rate exceeds the threshold.

Default N/A

5.1.3 STP Information

This section explains about the commands related to STP information.

5.1.3.1 ether stp use

Function Set the STP availability.

Available Model XG0224 / XG0448 / XG2600

Syntax ether <number> stp use <mode>

Options

<number>

- ether port number
  Set a port number to use with a decimal value.
  When setting multiple port numbers, separate them with commas (,).
  When setting sequential numbers, separate them with hyphens (-). (Example: "1-8")

<mode>

- on
  Specify it when STP is used.
- off
  Specify it when STP is not used.

Use Mode Configuration mode (admin class)

Explanation Set whether or not to enable the STP.

Caution If the STP operation mode of the device is OFF (stp mode disabled), the "stp use on" setting is ignored and disabled.
If the STP operation mode of the bridge is case except OFF (stp mode disabled), the communication on the port may temporarily fail by the change of topology.
Set "stp use off" for the port where the STP is not used.

Default It is assumed that the STP is used in the ether port.

```
ether <number> stp use on
```

5.1.3.2 ether stp domain cost

Function Set the path cost.

Available Model XG0224 / XG0448 / XG2600

Syntax ether <number> stp domain <instance-id> cost {auto|<path_cost>}

Options

<number>

- ether port number
  Set a port number to use with a decimal value.
  When setting multiple port numbers, separate them with commas (,).
  When setting sequential numbers, separate them with hyphens (-). (Example: "1-8")

<instance-id>

- STP instance ID number
  Specify a decimal value from 0 to 15.
  For non-MSTP operation mode, entering a value from 1 to 15 makes it invalid, although the allowable range is set with a value from 0 to 15.

auto

Determine the cost automatically.

<path_cost>

- Path cost
  Set the path cost with a decimal value from 1 to 200000000.

Use Mode Configuration mode (admin class)

Explanation Set a path cost of the STP port.

Caution The cost specified by the instance ID 1 to 15 is valid only when the device is in the MSTP operation mode (stp mode mstp), but the set value is ignored when the device is in the non-MSTP operation mode.

Default It is assumed that automatic setting is used for the ether port path cost.

```
ether <number> stp domain 0 cost auto
```

5.1.3.3 ether stp domain priority

Function Set the priority.

Available Model XG0224 / XG0448 / XG2600

Syntax ether <number> stp domain <instance-id> priority <priority>

Options

<number>

- ether port number
  Set a port number to use with a decimal value.
  When setting multiple port numbers, separate them with commas (,).
  When setting sequential numbers, separate them with hyphens (-). (Example: "1-8")

<instance-id>

- Instance ID number
  Specify a decimal value from 0 to 15.
  For non-MSTP operation mode, entering a value from 1 to 15 makes it invalid, although the allowable range is set with a value from 0 to 15.

<priority>

- Priority
  Set the port priority with a decimal value from 0 to 240.
  A smaller value has a higher priority.

Use Mode Configuration mode (admin class)

Explanation Set the port priority.

Caution Specify an integer (valid value) that can be divided by 16 in <priority>.
Valid values: 0, 16, 32, 48, 64, 80, 96, 112, 128, 144, 160, 176, 192, 208, 224, 240
If an integer other than the valid values is specified, this setting is disabled.
The priority specified by the instance ID 1 to 15 is valid only when the device is in the MSTP operation mode (stp mode mstp), but the set value is ignored when the device is in the non-MSTP operation mode.

Default It is assumed that 128 is used for the STP port priority.

```
ether <number> stp domain 0 priority 128
```

5.1.3.4 ether stp force-version

Function Set the STP Force Protocol Version.

Available Model XG0224 / XG0448 / XG2600

Syntax ether <number> stp force-version <version>

Options

<number>

- ether port number
  Set a port number to use with a decimal value.
  When setting multiple port numbers, separate them with commas (,).
  When setting sequential numbers, separate them with hyphens (-). (Example: "1-8")

<version>

- STP Force protocol version
  Set it with a decimal value from 0 to 3.

Use Mode Configuration mode (admin class)

Explanation Set the STP Force protocol version.
STP Force protocol version (0: STP, 1: Unsupported, 2: RSTP, 3: MSTP)

Caution If the device is in the MSTP operation mode (stp mode mstp), the STP Force protocol version can be set within the range of 0 to 3 and the STP, RSTP or MSTP is operable.
If the device is in the RSTP operation mode (stp mode rstp), the STP Force protocol version can be set within the range of 0 to 2 and the STP or RSTP is operable.
If the device is in the STP operation mode (stp mode stp), the STP Force protocol version can be set to 0 only.
If a version outside of the valid range is set, this setting will be disabled.

Default The Ethernet port operates based on the device's operation mode (stp mode).

5.1.4 LLDP Information

This section explains about the commands related to LLDP Information.

5.1.4.1 ether lldp mode

Function Set LLDP function

Available Model XG0224 / XG0448 / XG2600

Syntax ether <number> lldp mode <mode>

Options

<number>

- ether port number
  Set a port number to use with a decimal value.
  When setting multiple port numbers, separate them with commas (,).
  When setting sequential numbers, separate them with hyphens (-). (Example: "1-8")

<mode>

- LLDP function mode
  disable : Not work LLDP function.
  enable : Send and receive LLDP information
  send : Send LLDP information
  receive : receive LLDP information

Use Mode Configuration mode (admin class)

Explanation Set LLDP mode of the specified ether port.

Default It is assumed that the LLDP function is disabled.

```
ether lldp mode disable
```

5.1.4.2 ether lldp info

Function Set LLDP information which is sent

Available Model XG0224 / XG0448 / XG2600

Syntax

ether <number> lldp info port-description <mode>
ether <number> lldp info system-name <mode>
ether <number> lldp info system-description <mode>
ether <number> lldp info system-capabilities <mode>
ether <number> lldp info management-address <mode>
ether <number> lldp info port-vlan-id <mode>
ether <number> lldp info port-and-protocol-vlan-id <mode>
ether <number> lldp info vlan-name <mode>
ether <number> lldp info protocol-identity <mode>
ether <number> lldp info mac-phy-configuration-status <mode>
ether <number> lldp info power-via-mdi <mode>
ether <number> lldp info link-aggregation <mode>
ether <number> lldp info maximum-frame-size <mode>

Options

<number>

- ether port number
  Set a port number to use with a decimal value.
  When setting multiple port numbers, separate them with commas (,).
  When setting sequential numbers, separate them with hyphens (-). (Example: "1-8")

port-description

system-name

system-description

system-capabilities

management-address

port-vlan-id

port-and-protocol-vlan-id

vlan-name

protocol-identity

mac-phy-configuration-status

power-via-mdi

link-aggregation

maximum-frame-size

- LLDP Information Name
  Specify LLDP Information Name (TLV of 802.1AB)

port-description	: Port Description Information (Port Description TLV)
system-name	: System Name Information (System Name TLV)
system-description	: Sysrem description Information (System Description TLV)
system-capabilities	: System Capabilities Information (System Capabilities TLV)
management-address	: Management Address Information (Management Address TLV)
port-vlan-id	: Port VLAN ID Information (IEEE802.1 Port VLAN ID TLV)
port-and-protocol-vlan-id	: Prootocol VLAN ID Information (IEEE802.1 Port And Protocol VLAN ID TLV)
vlan-name	: VLAN Name Information (IEEE802.1 VLAN Name TLV)
protocol-identity	: Protocol VLAN Identitiy Information (IEEE802.1 Protocol Identity TLV)
mac-phy-configuration-status	: MAC/PHY Configuration /Status Infomation (IEEE802.3 MAC/PHY Configuration/Status TLV)
power-via-mdi	: MDI Power Information (IEEE802.3 Power Via MDI TLV)
link-aggregation	: Link Aggregation Information (IEEE802.3 Link Aggregation TLV)
maximum-frame-size	: Maximum Frame Size Information (IEEE802.3 Maximum Frame Size TLV)

<mode>

- Send mode
  Set whether LLDP information is sent or not
  enable: send LLDP information
  disable: not send LLDP information

Use Mode Configuration mode (admin class)

Explanation Set whether LLDP information is sent or not

Default It is assumed that Send mode of all LLDP Information is "enable".

```
ether <number> lldp info port-description enable
ether <number> lldp info system-name enable
ether <number> lldp info system-description enable
ether <number> lldp info system-capabilities enable
ether <number> lldp info management-address enable
ether <number> lldp info port-vlan-id enable
ether <number> lldp info port-and-protocol-vlan-id enable
ether <number> lldp info vlan-name enable
ether <number> lldp info protocol-identity enable
ether <number> lldp info mac-phy-configuration-status enable
ether <number> lldp info power-via-mdi enable
ether <number> lldp info link-aggregation enable
ether <number> lldp info maximum-frame-size enable
```

5.1.4.3 ether lldp vlan

Function Set VLAN for sending LLDP information

Available Model XG0224 / XG0448 / XG2600

Syntax ether <number> ldp vlan <vlanidlist>

Options

<number>

- ether port number
  Set a port number to use with a decimal value.
  When setting multiple port numbers, separate them with commas (,).
  When setting sequential numbers, separate them with hyphens (-). (Example: "1-8")

vlan <vlanidlist>

Set VLAN ID for port-and-protocol-vlan-id, vlan-name,protocol-identity transmission.

Use Mode Configuration mode (admin class)

Explanation Set VLAN ID for ort-and-protocol-vlan-id, vlan-name, protocol-identitytransmission.

Default All VLAN information is sent.

5.1.4.4 ether lldp notification

Function Set SNMP Notification Trap transmission information

Available Model XG0224 / XG0448 / XG2600

Syntax ether <number> lldp notification <mode>

Options

<number>

- ether port number
  Set a port number to use with a decimal value.
  When setting multiple port numbers, separate them with commas (,).
  When setting sequential numbers, separate them with hyphens (-). (Example: "1-8")

<mode>

- SNMP Notification Trap Transmission Mode
  Set whether SNMP Notification Trap is sent or not when LLDP information of the specified physical port is changed.
  enable: Send SNMP Notification Trap
  disable: Not send SNMP Notification Trap

Use Mode Configuration mode (admin class)

Explanation Set whether SNMP Notification Trap is sent or not when LLDP information of the specified physical port is changed.

Caution When snmp service command is disabled or snmp traplldpremtableschange coomad is disabled, SNMP Notification Trap (lldpRemTablesChange Trap) is not sent.

Default lldp notification disable.

```
ether <number> lldp notification disable
```

5.1.5 Filter Information

This section explains about the commands related to filter information.

5.1.5.1 ether macfilter

Function Set the MAC filter.

Available Model XG0224 / XG0448 / XG2600

Syntax ether <number> macfilter <count> <action> <acl>

Options

<number>

- ether port number
  Set a port number to use with a decimal value.
  When setting multiple port numbers, separate them with commas (,).
  When setting sequential numbers, separate them with hyphens (-). (Example: "1-8")

<count>

- Priority
  Set the filtering priority to be set with a decimal value.
  A smaller value has a higher priority.
  The specified value is sorted and renumbered in sequence. If a filtering definition with the same value already exists, the existing one will be changed.

Range	Model
0 to 511	XG0224 / XG0448
0 to 63	XG2600

<action>

- pass
  Transmit the packets that match the "acl mac", "acl vlan", "acl ip", "acl icmp", "acl tcp" or "acl udp" definition of access control list.
- reject
  Discard the packets that match the "acl mac", "acl vlan", "acl ip", "acl icmp", "acl tcp", or "acl udp" definition of access control list.

<acl>

- ACL definition number
  Specify the ACL definition number of the access control list where the packet pattern to be filtered has been defined.

Use Mode Configuration mode (admin class)

Explanation Set the MAC filtering for each Ethernet port.
For the ingress packets that match the "acl mac", "acl vlan", "acl ip", "acl icmp", "acl tcp", or "acl udp" definitions of the access control list which has been specified by <acl>, the filter processing is executed in the way as specified by <action>.

Caution

Note 1.
If none of "acl mac", "acl vlan" and "acl ip" definitions exist on the access control list which has been specified by <acl> or if the access control list specified by <acl> does not exist, the packets are not filtered.

Note 2.
The packet filtering default value is "pass".
No packets are filtered if only "pass" is set in <action>.

[XG2600]

Note 3.

"acl mac llc" definitions can not filter llc frames with the VLAN tag.

Note 4.

This command is unavailable if the allowable upper limit for the device is exceeded.
The allowable upper limits are as follows.

- Upper limit based on "commands"
  64 commands for the entire device.
  Up to 64 commands can be set for the entire device, including the "ether macfilter", "vlan macfilter", "lan ip filter", "ether qos aclmap", "vlan qos aclmap", "lan ip dscp" commands.
  The priority for each command is as follows.

  1) "ether macfilter" command
     A smaller Ethernet port number has a higher priority among Ethernet ports.

  2) "vlan macfilter" command
     A smaller VLAN ID has a higher priority among VLANs.

  3) "lan ip filter" command
     A smaller lan definition number has a higher priority among lans.

  4) "ether qos aclmap" command
     A smaller Ethernet port number has a higher priority among Ethernet ports.

  5) "vlan qos aclmap" command
     A smaller VLAN ID has a higher priority among VLANs.

  6) "lan ip dscp" command
     A smaller lan definition number has a higher priority among lans.

- Upper limit based on "masks"
  64 masks for the entire device.
  Up to 64 masks can be set for the entire device, including the "ether macfilter", "vlan macfilter", "lan ip filter", "ether qos aclmap", "vlan qos aclmap", "lan ip dscp", "vlan protocol" commands.
  The priority for each command is as follows.

  1) "vlan protocol" commands

  2) "ether macfilter" command
     A smaller Ethernet port number has a higher priority among Ethernet ports.

  3) "vlan macfilter" command
     A smaller VLAN ID has a higher priority among VLANs.

  4) "lan ip filter" command
     A smaller lan definition number has a higher priority among lans.

  5) "ether qos aclmap" command
     A smaller Ethernet port number has a higher priority among Ethernet ports.

  6) "ether qos aclmap" command
     A smaller VLAN ID has a higher priority among VLANs.

  7) "lan ip dscp" command
     A smaller lan definition number has a higher priority among lans.

The number of masks that each command use depends on applied ACL.
When Multiple ACL are applied, the number of masks amount to sum total, and depends on ACLs the number of masks amount to less than sum total.

The following is the number of masks for ACL.

ACL	number of masks
"acl mac"	
define LSAP of llc	3
not define LSAP of llc	1
"acl vlan"	1
not define src IP address	
not define tos/dscp value	1
not define tos/dscp value	3
define src IP address	
not define dst IP address	1
define dst IP address	
use same netmask for src and dst IP address	
not define tos/dscp value	1
not define tos/dscp value	3
use different netmask for src and dst IP address	3

The following is the number of masks for "vlan protocol" command.

"vlan protocol" definition	number of masks
define vlan protocol ipv4	3
define vlan protocol ipv6	1
define vlan protocol <count> ether	1
define vlan protocol <count> llc	1

- Upper limit based on "actions"
  16 actions for the entire device.
  Up to16 actions can be set for the entire device, including the "ether qos aclmap", "vlan qos aclmap", "lan ip dscp", "vlan protocol" commands.
  The following commands spend 1 action regardless of multiple use.

  1) "vlan protocol" commands

  2) "ether qos aclmap" command
     A smaller Ethernet port number has a higher priority among Ethernet ports.

  3) "vlan qos aclmap" command
     A smaller VLAN ID has a higher priority among VLANs.

  4) "lan ip dscp" command
     A smaller lan definition number has a higher priority among lans.

  The following commands spend 1 action regardless of multiple use.
  - vlan <vid> protocol ipv4
  - vlan <vid> protocol ipv6

The following commands spend 1 action for each.
If same <tos_value> is used, the commands use 1 action for them.
If same <dscp_value> is used, the commands use 1 action for them.
If same <queue_value> is used, the commands use 1 action for them.
- ether <number> qos aclmap <count> tos <tos_value> <acl>
- ether <number >qos aclmap <count> dscp <dscp_value> <acl>
- ether <number> qos aclmap <count> queue <queue_value> <acl>
- vlan <vid> qos aclmap <count> tos <tos_value> <acl>
- vlan <vid> qos aclmap <count> dscp <dscp_value> <acl>
- vlan <vid> qos aclmap <count> queue <queue_value> <acl>
- lan <number> ip dscp <count> acl <acl_count> <dscp_value>

The following commands spend 1 action for each.
If same <vid> is used, the commands use 1 action for them.
- vlan <vid> protocol <count> ether
- vlan <vid> protocol <count> llc

Note 5.
When the port type of the Ethernet port is a link aggregation, the same setting is needed in all the member ports where the link aggregation is composed.

[XG0224/XG0448]

Note 3.
This command is unavailable if the allowable upper limit for the device is exceeded.
The allowable upper limits are as follows.

- Upper limit based on "commands"
  128 commands for the entire device.
  Up to 128 commands can be set for the entire device, including the "ether macfilter", "vlan macfilter" and "lan ip filter" commands.
  The priority for each command is as follows.

  1) "ether macfilter" command
     A smaller Ethernet port number has a higher priority among Ethernet ports.

  2) "vlan macfilter" command
     A smaller VLAN ID has a higher priority among VLANs.

  3) "lan ip filter" command
     A smaller lan definition number has a higher priority among lans.

  If up to 128 of "ether macfilter" commands have been defined for port ether1, the subsequent "vlan macfilter" and "lan ip filter" command will be no longer applied.

- Upper limit based on rule
  128 rules for the entire device.
  For the "ether macfilter", "vlan macfilter" and "lan ip filter" commands, the number of rules to be used varies depending on the contents of the specified acl as shown below.
  The number of rules for each ACL is as follows.
  - For ACL to set TCP or UDP
    Result of multiplication between the number of source ports and the number of destination ports for TCP or UDP
  - For ACL to set ICMP
    Result of multiplication between the number of ICMP TYPEs and the number of ICMP CODEs for ICMP
  - For ACL not to set TCP, UDP, or ICMP
    1

You can expand the upper limit to use "resource filter distribution" command and change resource distribution.

Note 4.
Up to 700 commands can be set for the entire device, including the definitions which It is assumed that this option has not been set.refer to ACL such as "ether macfilter", "ether qos aclmap", "vlan macfilter", "vlan ip6filter", "vlan qos aclmap", "vlan ip6qos aclmap", "lan ip filter", "lan ip dscp", "lan ip6 filter", "lan ip6 dscp" and "serverinfo filter" commands.

Note 5.
When the port type of the Ethernet port is a link aggregation, set it only to the anchor port where the link aggregation is composed.

Default It is assumed that this option has not been set.

5.1.5.2 ether macfilter move

Function Change the priority of MAC filter.

Available Model XG0224 / XG0448 / XG2600

Syntax ether <number> macfilter move <count> <new_count>

Options

<number>

- ether port number
  Set a port number to use with a decimal value.
  When setting multiple port numbers, separate them with commas (,).
  When setting sequential numbers, separate them with hyphens (-). (Example: "1-8")

<count>

- Source priority
  Set the source priority with a decimal value.

<new_count>

- Destination priority
  Set the destination priority with a decimal value.

Range	Model
0 to 511	XG0224 / XG0448
0 to 63	XG2600

Use Mode Configuration mode (admin class)

Explanation Change the priority of MAC filtering for each Ethernet port.
If the current priority is set as <count>, change the priority of this definition to <new_count>.
When the definition is changed, the priority is renumbered.

Default N/A due to an edit command.

5.1.6 QoS Information

This section explains about the commands related to QoS information.

5.1.6.1 ether qos aclmap

Function Set the Quality of Service (QoS) conversion.

Available Model XG0224 / XG0448 / XG2600

Syntax ether <number> qos aclmap <count> <action> <value> <acl>

Options

<number>

- ether port number
  Set a port number to use with a decimal value.
  When setting multiple port numbers, separate them with commas (,).
  When setting sequential numbers, separate them with hyphens (-). (Example: "1-8")

<count>

- Priority
  Set the QoS conversion priority with a decimal value.
  A smaller value has a higher priority.
  If multiple <action> are executed for the same packet and if they conflict with each other, the <action> with a higher priority is executed.
  The specified value is sorted and renumbered in sequence. If a filtering definition with the same value already exists, the existing one will be changed.

Range	Model
0 to 511	XG0224 / XG0448
0 to 63	XG2600

<action>

- cos [XG0224/XG0448]
  Rewrite the "cos" value (the "user priority" value in the Tag Control Information (TCI) field of the Tagged VLAN) of packets that match the "acl mac", "acl vlan", "acl ip", "acl icmp", "acl tcp", or "acl udp" definition of access control list.
- dscp
  Rewrite the "dscp" value (the high-order 6 bits in the TOS field of IP header), if packets that match the "acl mac", "acl vlan", "acl ip", "acl icmp", "acl tcp", or "acl udp" definition of access control list are IP packets.
- tos
  Rewrite the "ip precedence" value (the high-order 3 bits in the TOS field of IP header), if packets that match the "acl mac", "acl vlan", "acl ip", "acl icmp", "acl tcp", or "acl udp" definition of access control list are IP packets.
- queue
  Change the queue at the output port that is used to output the input packets that match the "acl mac", "acl vlan", "acl ip", "acl icmp", "acl tcp", or "acl udp" definition of access control list.

<value>

- Replacing value

  If "cos" is selected in <action>:

  - <cos_value>
    Set the replaced "cos" value with a decimal value from 0 to 7.
  - tos
    Replace the "cos" value with the "ip precedence" value in the packet.

  If "dscp" is selected in <action>:

  - <dscp_value>
    Set the replaced "dscp" value with a decimal value from 0 to 63.

  If "tos" is selected in <action>:

  - <tos_value>
    Set the replaced "ip precedence" value with a decimal value from 0 to 7.
  - cos
    Replace the "ip precedence" value with the "cos" value.

  If "queue" is selected in <action>:

  - <queue_value>
    Specify a queue number of the output port to be used.
    A larger value indicates a queue with a higher output priority.

Range	Model
0 to 7	XG0224 / XG0448 / XG2600

<acl>

- ACL definition number
  Specify the ACL definition number of the access control list where the packet pattern to configure QoS conversion has been defined.

Use Mode

Configuration mode (admin class)

Explanation

Set the QoS (quality of service) of each Ethernet port.
For the ingress packets that match the "acl mac", "acl vlan", "acl ip", "acl icmp", "acl tcp", or "acl udp" definitions of the access control list which has been specified by <acl>, the QoS processing is executed in the way as specified by <action>.

Caution

Note 1.

If none of "acl mac", "acl vlan" and "acl ip" definitions exist on the access control list which has been specified by <acl> or if the access control list specified by <acl> does not exist, the packets are not filtered.

[XG2600]

Note 2.

If a queue is selected by <action> and if this queue has not been associated with the cos value by the "ether qos prioritymap" command, the QoS processing is not executed.

Note 3.

"acl mac llc" definitions can not filter llc frames with the VLAN tag.

Note 4.
This command is unavailable if the allowable upper limit for the device is exceeded.
The allowable upper limits are as follows.

- Upper limit based on "commands"
  64 commands for the entire device.
  Up to 64 commands can be set for the entire device, including the "ether macfilter", "vlan macfilter", "lan ip filter", "ether qos aclmap", "vlan qos aclmap", "lan ip dscp" commands.
  The priority for each command is as follows.

  1) "ether macfilter" command
     A smaller Ethernet port number has a higher priority among Ethernet ports.

  2) "vlan macfilter" command
     A smaller VLAN ID has a higher priority among VLANs.

  3) "lan ip filter" command
     A smaller lan definition number has a higher priority among lans.

  4) "ether qos aclmap" command
     A smaller Ethernet port number has a higher priority among Ethernet ports.

  5) "vlan qos aclmap" command
     A smaller VLAN ID has a higher priority among VLANs.

  6) "lan ip dscp" command
     A smaller lan definition number has a higher priority among lans.

- Upper limit based on "masks"
  64 masks for the entire device.
  Up to 64 masks can be set for the entire device, including the "ether macfilter", "vlan macfilter", "lan ip filter", "ether qos aclmap", "vlan qos aclmap", "lan ip dscp", "vlan protocol" commands.
  The priority for each command is as follows.

  1) "vlan protocol" commands

  2) "ether macfilter" command
     A smaller Ethernet port number has a higher priority among Ethernet ports.A smaller Ethernet port number has a higher priority among Ethernet ports.

  3) "vlan macfilter" command
     A smaller VLAN ID has a higher priority among VLANs.

  4) "lan ip filter" command
     A smaller lan definition number has a higher priority among lans.

  5) "ether qos aclmap" command
     A smaller Ethernet port number has a higher priority among Ethernet ports.

  6) "vlan qos aclmap" command
     A smaller VLAN ID has a higher priority among VLANs.

  7) "lan ip dscp" command
     A smaller lan definition number has a higher priority among lans.

  The number of masks that each command use depends on applied ACL.
  When Multiple ACL are applied, the number of masks amount to sum total, and depends on ACLs the number of masks amount to less than sum total.

The following is the number of masks for ACL..

ACL	number of masks
"acl mac"	
define LSAP of llc	3
not define LSAP of llc	1
"acl vlan"	1
not define src IP address	
not define tos/dscp value	1
not define tos/dscp value	3
define src IP address	
not define dst IP address	1
define dst IP address	
use same netmask for src and dst IP address	
not define tos/dscp value	1
not define tos/dscp value	3
use different netmask for src and dst IP address	3

The following is the number of masks for "vlan protocol" command.

"vlan protocol" definition	number of masks
define vlan protocol ipv4	3
define vlan protocol ipv6	1
define vlan protocol <count> ether	1
define vlan protocol <count> llc	1

- Upper limit based on "actions"
  16 actions for the entire device.
  Up to16 actions can be set for the entire device, including the"ether qos aclmap", "vlan qos aclmap", "lan ip dscp", "vlan protocol" commands.
  The priority for each command is as follows.

  1) "vlan protocol" commands

  2) "ether qos aclmap" command
     A smaller Ethernet port number has a higher priority among Ethernet ports.

  3) "vlan qos aclmap" command
     A smaller VLAN ID has a higher priority among VLANs.

  4) "lan ip dscp" command
     A smaller lan definition number has a higher priority among lans.

  The following commands spend 1 action regardless of multiple use.
  - vlan <vid> protocol ipv4
  - vlan <vid> protocol ipv6

The following commands spend 1 action for each.
If same <tos_value> is used, the commands use 1 action for them.
If same <dscp_value> is used, the commands use 1 action for them.
If same <queue_value> is used, the commands use 1 action for them.
- ether <number> qos aclmap <count> tos <tos_value> <acl>
- ether <number >qos aclmap <count> dscp <dscp_value> <acl>
- ether <number> qos aclmap <count> queue <queue_value> <acl>
- vlan <vid> qos aclmap <count> tos <tos_value> <acl>
- vlan <vid> qos aclmap <count> dscp <dscp_value> <acl>
- vlan <vid> qos aclmap <count> queue <queue_value> <acl>
- lan <number> ip dscp <count> acl <acl_count> <dscp_value>

The following commands spend 1 action for each.
If same <vid> is used, the commands use 1 action for them.
- vlan <vid> protocol <count> ether
- vlan <vid> protocol <count> llc

Note 5.
When the port type of the Ethernet port is a link aggregation, the same setting is needed in all the member ports where the link aggregation is composed.

[XG0224/XG0448]

Note 2.
If a queue is selected by <action> and if this queue has not been associated with the cos value by the "qos cosmap" command, the QoS processing is not executed.

Note 3.
This command is unavailable if the allowable upper limit for the device is exceeded.
The allowable upper limits are as follows.

- Upper limit based on "commands"
  128 commands for the entire device.
  Up to 128 commands can be set for the entire device, including the "ether qos aclmap", "vlan qos aclmap" and "lan ip dscp" commands.

  1) "ether qos aclmap" command
     A smaller Ethernet port value has a higher priority among Ethernet ports.

  2) "vlan qos aclmap" command
     A smaller VLAN ID has a higher priority among VLANs.

  3) "lan ip dscp" command
     A smaller lan definition number has a higher priority among lans.

  If up to 128 of "ether qos aclmap" commands have been defined for port ether1, the subsequent "vlan qos aclmap" and "lan ip dscp" command will be no longer applied.

- Upper limit based on rule
  128 rules for the entire device.
  For the "ether qos aclmap", "vlan qos aclmap" and "lan ip dscp" commands, the number of rules to be used varies depending on the contents of the specified acl as shown below.
  The number of rules for each ACL is as follows.
  - For ACL to set TCP or UDP
    Result of multiplication between the number of source ports and the number of destination ports for TCP or UDP
  - For ACL to set ICMP
    Result of multiplication between the number of ICMP TYPEs and the number of ICMP CODEs for ICMP

- For ACL not to set TCP, UDP, or ICMP
  1

You can expand the upper limit to use "resource filter distribution" command and change resource distribution.

Note 4.
Up to 700 commands can be set for the entire device, including the definitions which refer to ACL such as "ether macfilter", "ether qos aclmap", "vlan macfilter", "vlan ip6filter", "vlan qos aclmap", "vlan ip6qos aclmap", "lan ip filter", "lan ip dscp", "lan ip6 filter", "lan ip6 dscp" and "serverinfo filter" commands.

Note 5.
When the port type of the Ethernet port is a link aggregation, set it only to the anchor port where the link aggregation is composed.

Default It is assumed that this option has not been set.

5.1.6.2 ether qos aclmap move

Function Change the QoS conversion priority of the Ethernet port.

Available Model XG0224 / XG0448 / XG2600

Syntax ether <number> qos aclmap move <count> <new_count>

Options

<number>

- ether port number
  Set a port number to use with a decimal value.
  When setting multiple port numbers, separate them with commas (,).
  When setting sequential numbers, separate them with hyphens (-). (Example: "1-8")

<count>

- Source priority
  Set the source priority with a decimal value.

<new_count>

- Destination priority
  Set the destination priority with a decimal value.

Range	Model
0 to 511	XG0224 / XG0448
0 to 63	XG2600

Use Mode Configuration mode (admin class)

Explanation Change the priority of QoS definition for each Ethernet port.
If the current priority is set as <count>, change the priority of this definition to <new_count>.
When the definition is changed, the priority is renumbered.

Default N/A due to an edit command.

5.1.6.3 ether qos priority

Function Set the priority.

Available Model XG0224 / XG0448 / XG2600

Syntax ether <number> qos priority <queue_priority>

Options

<number>

- ether port number
  Set a port number to use with a decimal value.
  When setting multiple port numbers, separate them with commas (,).
  When setting sequential numbers, separate them with hyphens (-). (Example: "1-8")

<queue_priority>

- Queue priority
  Set the default queue priority with a decimal value from 0 to 7.

Use Mode Configuration mode (admin class)

Explanation Set a tag priority value to be assigned to the untagged receive packet.

Default It is assumed that 0 has been specified as the queue priority.

```
ether <number> qos priority 0
```

5.1.6.4 ether qos mode

Function Set the QoS sending algorithm.

Available Model XG0224 / XG0448 / XG2600

Syntax ether <number> qos mode <mode> [<q0> <q1> <q2> <q3> <q4> <q5> <q6> <q7>]

Options

<number>

- ether port number
  Set a port number to use with a decimal value.
  When setting multiple port numbers, separate them with commas (,).
  When setting sequential numbers, separate them with hyphens (-). (Example: "1-8")

<mode>

- mode
  strict : Use the strict priority scheduling.
  drr [XG2600] : Use the deficit round robin scheduling.
  wrr [XG0224/XG0448] : Use the weighted round robin scheduling.

<q0> <q1> <q2> <q3> <q4> <q5> <q6> <q7>

- Bandwidth of queues [XG2600]
  Set bandwidth of 8 queues as the guaranteed minimum bandwidth if "drr" is specified in <mode>.
  Set each of them from 800m to 4000m or 1g to 4g (bps).
- Weight of queues [XG0224/XG0448]
  Set the weight of 8 queues as the number of packets to send if "wrr" is specified in <mode>.
  Set each of them with a decimal number from 0 to 15.
  If 0 is specified, this COS queue will be Strict Priority operation.

Use Mode Configuration mode (admin class)

Explanation Set the QoS sending algorithm.

Caution

[XG2600]

- Sum total of bandwidth in drr mode should be maximum band of port (10Gbps).
- "ether qos mode drr" command and "ether ratecontrol" command can not use at the same time and same port.

[XG0224/XG0448]

If a queue is specified to be weighted to 0 in the wrr mode, it operates in the same way as the strict mode, and the operation precedes the wrr operation.

Default It is assumed that the strict mode has been specified in the QoS sending algorithm.

```
ether <number> qos mode strict
```

5.1.6.5 ether qos prioritymap

Function Assign the priority to the queue

Available Model XG2600

Syntax ether <number> qos prioritymap <priority> <queue>

Options

<number>

- ether port number
  Set a port number to use with a decimal value.
  When setting multiple port numbers, separate them with commas (,).
  When setting sequential numbers, separate them with hyphens (-). (Example: "1-8")

<priority>

Specify the priority of packets with a decimal value from 0 to 7.

<queue>

Specify the queue for the priority specified in <priority> with a decimal value from 0 to 7.

Use Mode Configuration mode (admin class)

Explanation assign packets of priority specified with <priority> to queue specified with <queue>

Default

```
ether <number> qos prioritymap 0 2
ether <number> qos prioritymap 1 0
ether <number> qos prioritymap 2 1
ether <number> qos prioritymap 3 3
ether <number> qos prioritymap 4 4
ether <number> qos prioritymap 5 5
ether <number> qos prioritymap 6 6
ether <number> qos prioritymap 7 7
```

5.1.7 LACP Information

This section explains about the commands related to LACP information.

5.1.7.1 ether lacp port-priority

Function Set the LACP port priority.

Available Model XG0224 / XG0448 / XG2600

Syntax ether <number> lacp port-priority <priority>

Options

<number>

- ether port number
  Set a port number to use with a decimal value.
  When setting multiple port numbers, separate them with commas (,).
  When setting sequential numbers, separate them with hyphens (-). (Example: "1-8")

<priority>

- Priority of LACP port
  Set the port priority with a decimal value from 1 to 65535.
  A smaller value has a higher priority.

Use Mode Configuration mode (admin class)

Explanation Set the priority of LACP port. The LACP port priority is used as the priority for the connection port to be selected by the link aggregation group. A smaller value has a higher priority. If the priority is the same, the port with a smaller number has the higher priority in port selection.
It indicates the priority of port selection in the local device. The final port selection for the final connection depends on the LACP system priority.
However, this definition is no use if the active or passive is not specified for the linkaggregation operation mode of "the linkaggregation mode".

Default It is assumed that 32768 has been specified as the LACP port priority.

```
ether <number> lacp port-priority 32768
```

5.1.8 ether L3 Monitor Information

This section explains about the commands related to ether L3 monitor information.

5.1.8.1 ether icmpwatch address

Function Set the destination address for Ethernet L3 monitoring.

Available Model XG0224 / XG0448 / XG2600

Syntax ether <number> icmpwatch address <dst_addr>

Options

<number>

- ether port number
  Set a port number to use with a decimal value.
  When setting multiple port numbers, separate them with commas (,).
  When setting sequential numbers, separate them with hyphens (-). (Example: "1-8")

<dst_addr>

- Destination IP address of ICMP ECHO packets
  Specify the destination IP address to be monitored.
  The allowable range is as follows:
  1.0.0.1to 126.255.255.254
  128.0.0.1 to 191.255.255.254
  192.0.0.1 to 223.255.255.254

Use Mode Configuration mode (admin class)

Explanation Set the operation information for destination monitoring.
The ICMP ECHO packet is sent from the specified Ethernet port to the destination IP address specified by <dst_addr>, and its presence is checked by receiving a response.

Caution

Do not set the IP address of the local device in <dst_addr>. Also, make sure that the specified IP address is included in the same subnet.
If any of the above three addresses are specified, the Ethernet L3 monitoring function will not operate normally.

If the ether type is linkaggregation
The Ethernet L3 monitoring definition that has been set for the Ethernet port is disabled.
Set the Ethernet L3 monitoring definition for the "linkaggregation icmpwatch".

When using both the backup port function and the Ethernet L3 monitoring function
The active port is monitored.
When a port is first linked up, it is used as the operation port in the earlier mode.
Therefore, set the port monitoring for both the master and backup ports.

Default It is assumed that the Ethernet L3 monitoring function is not used.

5.1.8.2 ether icmpwatch interval

Function Set various types of "ether" L3 monitoring intervals.

Available Model XG0224 / XG0448 / XG2600

Syntax ether <number> icmpwatch interval <interval> <timeout> [<retry>]

Options

<number>

- ether port number
  Set a port number to use with a decimal value.
  When setting multiple port numbers, separate them with commas (,).
  When setting sequential numbers, separate them with hyphens (-). (Example: "1-8")

<interval>

- Transmission interval of normal ICMP ECHO packets
  Specify the transmission interval of normal ICMP ECHO packets to be within the range of 1 to 60 seconds (or 1 minute).
  The unit shall be m (minute) or s (second).

<timeout>

- Monitoring timeout
  Specify the monitoring timeout period as between 5 to 180 seconds (or 3 minutes). If the time exceeds, the monitoring is considered as failed.
  The unit should be in m (minute) or s (second).

<retry>

- Retransmission interval of ICMP ECHO packets
  Specify the retransmission interval of ICMP ECHO packets between 1 to <timeout>-1 seconds if the normal ICMP ECHO packet transmission is not acknowledged.
  The unit should be in m (minute) or s (second).
  The default is 1s.

Use Mode Configuration mode (admin class)

Explanation Set the operation information for destination monitoring.
The destination is monitored in <interval> when the response of ICMP ECHO packet is normally received.
If the response to ICMP ECHO packet is not received, the packet is resent by the <retry>.
If no response is returned within the time period specified in the <timeout>, an error is detected assuming that any fault occurs and the Ethernet port specified in the <number> goes offline.

Caution If ports go offline, release them with the "online" command.

Default It is assumed that the 10-second transmission interval during normal communication, the 5-second timeout for monitoring, and the 1-second retransmission interval have been specified.

```
ether <number> icmpwatch interval 10s 5s 1s
```

5.1.9 ether SNMP Information

This section explains about the commands related to ether SNMP Information.

5.1.9.1 ether snmp trap linkdown

Function Enable/disable a linkdown trap for a specified ether port.

Available Model XG0224 / XG0448 / XG2600

Syntax ether <number> snmp trap linkdown <mode>

Options

<number>

- ether port number
  Set a port number to use with a decimal value.
  When setting multiple port numbers, separate them with commas (,).
  When setting sequential numbers, separate them with hyphens (-). (Example: "1-8")

<mode>

Enable or disable linkdown trapping for the specified port(s).

- enable
  Enable trapping.
- disable
  Disable trapping.

Use Mode Configuration mode (admin class)

Explanation Enable or disable the linkdown trap for the specified ether port(s).

Caution The "snmp trap linkdown" command has a priority over this command.

Default It is assumed that the linkdown trap is enabled for all ports.

```
ether <number> snmp trap linkdown enable
```

5.1.9.2 ether snmp trap linkup

Function Enable/disable a linkup trap for a specified ether port.

Available Model XG0224 / XG0448 / XG2600

Syntax ether <number> snmp trap linkup <mode>

Options

<number>

- ether port number
  Set a port number to use with a decimal value.
  When setting multiple port numbers, separate them with commas (,).
  When setting sequential numbers, separate them with hyphens (-). (Example: "1-8")

<mode>

Enable or disable linkup trapping for the specified port(s).

- enable
  Enable trapping.
- disable
  Disable trapping.

Use Mode Configuration mode (admin class)

Explanation Enable or disable the linkup trap for the specified ether port(s).

Caution The "snmp trap linkup" command has a priority over this command.

Default It is assumed that the linkup trap is enabled.

```
ether <number> snmp trap linkup enable
```

5.1.10 ether output rate control information

This section explains about the commands related to ether output rate control information.

5.1.10.1 ether ratecontrol

Function Set output rate limit of ether port

Available Model XG2600

Syntax ether <number> ratecontrol <rate>

Options

<number>

- ether port number
  Set a port number to use with a decimal value.
  When setting multiple port numbers, separate them with commas (,).
  When setting sequential numbers, separate them with hyphens (-). (Example: "1-8")

<rate>

- Output rate
  Specify output rate which is limited in the ether port with Mbps or Gbps
  40m to 10000m
  1g to 10g
  If "10000m" or "10g" is set, packets are not limited.

Use Mode Configuration mode (admin class)

Explanation Set output rate control.

Caution "ether qos mode drr" command and "ether ratecontrol" command can not use at the same time and same port.

Default It is assumed that the output rate limit function is not used.

5.2 LACP Information Settings

This section explains about LACP information settings.

5.2.1 LACP Information

This section explains about the commands related to LACP information.

5.2.1.1 lacp system-priority

Function Set the LACP system priority.

Available Model XG0224 / XG0448 / XG2600

Syntax lacp system-priority <priority>

Options

<priority>

- Priority of LACP system
  Set the device priority with a decimal value from 1 to 65535.
  A smaller value has a higher priority.

Use Mode Configuration mode (admin class)

Explanation Set the priority of LACP system. The LACP system priority is used to determine which has a higher priority for the information exchange between a link aggregation group and another remote link aggregation group. If the priority is same, the system ID (the designated MAC address +1) with a smaller number has the higher priority.
However, this definition is meaningless if the active or passive is not set for the linkaggregation operation mode of the "linkaggregation mode".

Default It is assumed that 32768 has been specified as the LACP system priority.

```
lacp system-priority 32768
```

5.2.1.2 lacp bpdu

Function Set the BPDU forwarding mode of the LACP.

Available Model XG0224 / XG0448 / XG2600

Syntax lacp bpdu <mode>

Options

<mode>

- on
  Specify the BPDU forwarding mode.
- off
  Specify the BPDU discarding mode.

Use Mode Configuration mode (admin class)

Explanation Set the BPDU forwarding mode of the LACP.
Set whether or not to forward a BPDU frame when the LACP function has been disabled. However, the BPDU frame forwarding is disabled if the link aggregation is not set for the device.

Caution The BPDU frame, which is not provided with the VLAN tag, is forwarded based on the receive port setting without the VLAN tag if the BPDU forwarding mode is specified.

Default It is assumed that discarding mode is specified as BPDU forwarding mode of LACP.

```
lacp bpdu off
```

5.3 VLAN Information Settings

This section explains about VLAN information settings.

VLAN ID allowed range

The VLAN ID, which is to be specified in <vid> of [Options] described in each command of this section, shall be within the range specified as shown below.

Range	Model
1 to 4094	XG0224 / XG0448 / XG2600

5.3.1 VLAN Common Information

This section explains about the commands related to VLAN common information.

5.3.1.1 vlan name

Function Set the VLAN name.

Available Model XG0224 / XG0448 / XG2600

Syntax vlan <vid> name <name>

Options

<vid>

- VLAN ID
  Specify a VLAN ID with a decimal value.
  VLAN1 has been defined as the default port VLAN during device startup, and it has been registered as the "default" VLAN name.

<name>

- VLAN name
  Specify the VLAN name using up to 32 characters from the 0x21, 0x23 to 0x7e ASCII set.

Use Mode Configuration mode (admin class)

Explanation Set a VLAN name.
If this command is omitted, VLAN1 is set to the "default".
If a VLAN other than VLAN1 is created, it is set in the 'v'+<vid> format.
(Example: If vid=5, "v5" is set.)

Caution If "delete vlan <vid> name" is specified, the VLAN name is initialized but the VLAN itself is not deleted. (The VLAN can be deleted by the "ether vlan" command.)

Default

When VLAN ID is 1

```
vlan 1 name default
```

When VLAN ID is other than 1

```
vlan <vid> name 'v'+<vid>
```

5.3.1.2 vlan protocol

Function Set the protocol VLAN.

Available Model XG0224 / XG0448 / XG2600

Syntax
vlan <vid> protocol <protocol-type>
vlan <vid> protocol <count> <frame-type> <ether-type>

Options

<vid>

- VLAN ID
  Specify a decimal VLAN ID from 2 to 4094.

<protocol-type>

Select a system-defined protocol type.

- ipv4 : EthernetII Ethertype=0800,0806,8035
- ipv6 : EthernetII Ethertype=86dd
- fna : 802.3LLC LSAP=8080,0000,0001
  [XG2600] The fna protocol can be assigned only untagged frames.

<count>

- Protocol definition number
  Specify a decimal protocol definition value from 0 to 7 if the protocol is defined by the user.

[XG2600]

<frame-type>

Specify it if the protocol is defined by the user.

- ethertype
  Ethernet II or IEEE 802.3s with SNAP format frames
- llc
  IEEE 802.3 with LLC format frames

<ether-type>

Specify the Ethertype or LLC value if the protocol is defined by the user.

- Specify the Ethertype value for Ethernet II format or IEEE 802.3 SNAP format frames, or specify an LLC value (DSAP or SSAP) for IEEE 802.3 LLC format frames, using a 4-digit hexadecimal value (from 0000 to ffff).
  Setting example)
  ipx : ethertype=8137,8138
  appletalk : ethertype=809b,80f3
- This device can't appreciate Ethernet II format from IEEE 802.3 SNAP format.
  If you use appletalk (SNAP format) protocol, please check on there is no Ethernet II format frame using same ether-type of appletalk.

[XG0224/XG0448]

<frame-type>

Specify it if the protocol is defined by the user.

- ethertype
  Ethernet II format frames
- snap
  IEEE 802.3s with SNAP format frames
- llc
  IEEE 802.3 with LLC format frames

<ether-type>

Specify the Ethertype or LLC value if the protocol is defined by the user.

- Specify the Ethertype value for Ethernet II format or IEEE 802.3 SNAP format frames, or specify an LLC value (DSAP or SSAP) for IEEE 802.3 LLC format frames, using a 4-digit hexadecimal value (from 0000 to ffff).
  Setting example)
  ipx : ethertype=8137,8138
  appletalk : ethertype=809b,80f3
- If EthernetII format was specified, the EtherType value = 0000 to 05ff setting is disabled.

Use Mode

Configuration mode (admin class)

Explanation

Set the protocol VLAN conditions using this command.
The protocol can be set by one of the following two methods.

- Selecting a system-defined protocol (ipv4/ipv6/fna).
- Directly specifying a protocol type in the user definition.

Caution

- No protocol VLANs can be set for the default VLAN (VLAN ID=1).
- Up to 8 definitions can be given to set the user-defined protocol conditions for the entire device.
- Both the system-defined <protocol-type> definition and the user definition cannot be specified in the same VLAN all together.
- The same protocol definition as the system-defined <protocol-type> definition can be used as the user definition.
  However, if these definitions compete against each other on the same port, only the VLAN with a smaller identification number will be enabled. For example, the following can be set:
  ether 1 vlan untag 10
  ether 2 vlan untag 20
  vlan 10 protocol ipv4
  vlan 20 protocol 0 ethertype 0800
  However, if "ether 1 vlan untag 10,20" is set for the Ethernet port, the ether1 port is included in VLAN10 but not included in VLAN20.
- The same protocol definition can be used for multiple different VLANs.
  However, if those VLANs compete against each other on the same port, only the VLAN with a smaller identification number will be enabled. For example, the following can be set:
  ether 1 vlan untag 10
  ether 2 vlan untag 20
  vlan 10 protocol ipv4
  vlan 20 protocol ipv4
  However, if "ether 1 vlan untag 10,20" is set for the Ethernet port, the ether1 port is included in VLAN10 but not included in VLAN20.
- If the protocol type differs, multiple protocol VLANs can be set on the same port. For example, the following can be set:
  ether 1 vlan untag 10,20
  vlan 10 protocol ipv4
  vlan 20 protocol ipv6
- If "delete vlan <vid> protocol" is set, all VLAN protocol conditions are deleted, but the VLAN itself is not deleted. (The VLAN can be deleted by the "ether vlan" command.)

[XG2600]

- The Max definition number of "vlan protocol" definitions is 16.
- If there are "vlan protocol" definitions over 16, the definition, the VLAN and the ports belong to the VLAN are invalid.
- The "vlan protocol" definition uses the ACL resources,please refer "ether macfilter", "ether qos aclmap", "vlan macfilter", "vlan qos aclmap", "lan ip filter", "lan ip dscp".
- The fna protocol can be assigned only untagged frames.

Default N/A

5.3.1.3 vlan forward

Function Set static forwarding rules setting.

Available Model XG0224 / XG0448 / XG2600

Syntax vlan <vid> forward <count> <dst_addr> <port>

Options

<vid>

- VLAN ID
  Specify a VLAN ID with a decimal value.

<count>

- Definition number
  Specify it with a decimal value from 0 to 399.

<dst_addr>

- Destination MAC address
  Specify the MAC address to be added statically to the learning table.
  (It must be in the xx:xx:xx:xx:xx:xx format, where "xx" is a 2-digit hexadecimal value.)

<port>

- ether port number
  Specify the Ethernet port number using a decimal value.

Use Mode Configuration mode (admin class)

Explanation Set static forwarding rules.

Caution

- Address 00:00:00:00:00:00, the broadcast address, or multicast address, option cannot be specified in <dst_addr>.
- This setting is disabled if VLAN specified in <vid> is not registered.
- This setting is disabled if the port specified by <port> is not set in the VLAN specified by <vid>.
- If the port specified by <port> is a member of link aggregation ports, set it to forward packets to the link aggregation ports.
- If the port specified by <port> is a backup port, set it to forward packets to the port used for the backup port.

Default N/A

5.3.1.4 vlan description

Function Set description for VLAN

Available Model XG0224 / XG0448 / XG2600

Syntax vlan <vid> description <description>

Options

<vid>

- VLAN ID
  Specify VLAN ID with a decimal value from 0 to 4094

<description>

- Description
  Specify the VLAN description using up to 32 characters from the 0x21, 0x23 to 0x7e ASCII set.

Use Mode Configuration mode (admin class)

Explanation Set description for VLAN

Default N/A

5.3.2 IGMP Snooping Information

This section explains about the commands related to IGMP snooping information.

5.3.2.1 vlan igmpsnoop router

Function Set the multicast router port.

Available Model XG0224 / XG0448 / XG2600

Syntax vlan <vid> igmpsnoop router <mode> [<portlist>]

Options

<vid>

- VLAN ID
  Specify a VLAN ID with a decimal value.

<mode>

Specify how to determine the multicast router port.

- auto
  Determine the multicast router port dynamically.
- yes
  Specify the multicast router port statically.
  Only the ports specified by <portlist> are set as the router ports.
  The <portlist> option must be specified if this mode is selected.

<portlist>

Specify a list of multicast router ports. This option can be specified only if the static mode has been selected.
When specifying multiple port numbers, separate them with commas (,). Also, when specifying a range of values, separate them with hyphens (-). (Example:"1-3")
The available description format is as follows:

- To specify 1, 2, 3, 5 and 7 as the portlist:
  Example: 1-3,5,7
- To specify 1, 3 and 5 as the portlist:
  Example: 1,3,5

Use Mode Configuration mode (admin class)

Explanation Specify the multicast router connection port.

Caution

- This setting is enabled only when IGMP snooping is set to use.
  This setting is ignored if IGMP snooping is not used.
- If multicast routers are connected to two or more ports of the same VLAN, set it statically without fail. If "auto" is defined, the communication may fail.
- When connecting multiple devices to each other when IGMP snooping is enabled for the devices, set the port as the multicast router port.

Default It is assumed that the multicast router port is determined dynamically.

```
vlan <vid> igmpsnoop router auto
```

5.3.2.2 vlan igmpsnoop querier

Function Set the Querier operations.

Available Model XG0224 / XG0448 / XG2600

Syntax vlan <vid> igmpsnoop querier <mode>

Options

<vid>

- VLAN ID
  Specify a VLAN ID with a decimal value.

<mode>

- on
  Specify the Querier operation mode if no multicast router exists.
- off
  Do not operate as the Querier regardless of whether the multicast router exists or not.

Use Mode Configuration mode (admin class)

Explanation Specify the querier operation mode.

Caution

- If the querier operation is disabled and the multicast router does not exist, multicast forwarding is stopped.
- This setting is enabled only when IGMP snooping is used.
  This setting is ignored if IGMP snooping is not used.

Default It is operated as Querier if no multicast router exists.

```
vlan <vid> igmpsnoop querier on
```

5.3.2.3 vlan igmpsnoop source

Function Set the IP address to be used for IGMP snooping.

Available Model XG0224 / XG0448 / XG2600

Syntax vlan <vid> igmpsnoop source <address>

Options

<vid>

- VLAN ID
  Specify a VLAN ID with a decimal value.

<address>

Specify the source IP address to be used for IGMP snooping.
This IP address is used as the source address for all IGMP packets.

Use Mode Configuration mode (admin class)

Explanation Specify the source address of IGMP packets sent by IGMP snooping.

Caution

- This setting is enabled only when IGMP snooping is set to use.
  This setting is ignored if IGMP snooping is not used.
- When IGMP snooping is used, set the Querier IP address.
- To make the querier operation enabled, set an address whose value is greater than the multicast router address.
- When connecting multiple IGMP snooping devices, do not set the addresses of two or more devices within the same VLAN.

Default IGMP packets are sent with the source address 0.0.0.0.

```
vlan <vid> igmpsnoop source 0.0.0.0
```

5.3.2.4 vlan igmpsnoop proxy

Function Set the IGMP proxy mode.

Available Model XG0224 / XG0448 / XG2600

Syntax vlan <vid> igmpsnoop proxy <mode>

Options

<vid>

- VLAN ID
  Specify a VLAN ID with a decimal value.

<mode>

Specify the proxy response mode.

- off
  Do not respond any IGMP packet.
- on
  Proxy responds to a querier.

Use Mode Configuration mode (admin class)

Explanation Specify the IGMP proxy's response transmission mode. If a device that uses IGMP v1 exists, specify "off".

Caution This setting is enabled only when IGMP snooping is set to use.
This setting is ignored if IGMP snooping is not used.

Default The proxy response "off" mode is applied.

```
vlan <vid> igmpsnoop proxy off
```

5.3.3 Filter Information

This section explains about the commands related to filter information.

5.3.3.1 vlan macfilter

Function Set the MAC filter for VLAN.

Available Model XG0224 / XG0448 / XG2600

Syntax vlan <vid> macfilter <count> <action> <acl>

Options

<vid>

- VLAN ID
  Specify a VLAN ID with a decimal value.

<count>

- Priority
  Set the filtering priority to be specified with a decimal value.
  A smaller value has a higher priority.
  The specified value is sorted and renumbered in sequence. If a filtering definition with the same value already exists, the existing one will be changed.

Range	Model
0 to 511	XG0224 / XG0448
0 to 63	XG2600

<action>

- pass
  Transmit the packets that match the "acl mac", "acl vlan", "acl ip", "acl icmp", "acl tcp" or "acl udp" definition of access control list.
- reject
  Discard the packets that match the "acl mac", "acl vlan", "acl ip", "acl icmp", "acl tcp", or "acl udp" definition of access control list.

<acl>

- ACL definition number
  Specify the ACL definition number of the access control list where the packet pattern to be filtered has been defined.

Use Mode Configuration mode (admin class)

Explanation Set MAC filtering for each VLAN.
For the input packets that match the "acl mac", "acl vlan", "acl ip", "acl icmp", "acl tcp", or "acl udp" definitions of the access control list which has been specified by <acl>, the filter processing is executed in the way as specified by <action>.

Caution

Note 1.
If none of "acl mac", "acl vlan" and "acl ip" definitions exist on the access control list which has been specified by <acl> or if the access control list specified by <acl> does not exist, the packets are not filtered.

Note 2.
The packet filtering default value is "pass".
No packets are filtered if only "pass" is set in <action>.

[XG2600]

Note 3.
"acl mac llc" definitions can not filter llc frames with the VLAN tag.

Note 4.
This command is unavailable if the allowable upper limit for the device is exceeded.
The allowable upper limits are as follows.

- Upper limit based on "commands"
  64 commands for the entire device.
  Up to 64 commands can be set for the entire device, including the"ether macfilter"", "vlan macfilter", "lan ip filter", "ether qos aclmap", "vlan qos aclmap", "lan ip dscp" commands.
  The priority for each command is as follows.

  1) "ether macfilter" command
     A smaller Ethernet port number has a higher priority among Ethernet ports.

  2) "vlan macfilter" command
     A smaller VLAN ID has a higher priority among VLANs.

  3) "lan ip filter" command
     A smaller lan definition number has a higher priority among lans.

  4) "ether qos aclmap" command
     A smaller Ethernet port number has a higher priority among Ethernet ports.

  5) "vlan qos aclmap" command
     A smaller VLAN ID has a higher priority among VLANs.

  6) "lan ip dscp" command
     A smaller lan definition number has a higher priority among lans.
- Upper limit based on "masks"
  64 masks for the entire device.
  Up to 64 masks can be set for the entire device, including the "ether macfilter", "vlan macfilter", "lan ip filter", "ether qos aclmap", "vlan qos aclmap", "lan ip dscp", "vlan protocol" commands.
  The priority for each command is as follows.

  1) "vlan protocol" commands

  2) "ether macfilter" command
     A smaller Ethernet port number has a higher priority among Ethernet ports.

  3) "vlan macfilter" command
     A smaller VLAN ID has a higher priority among VLANs.

  4) "lan ip filter" command
     A smaller lan definition number has a higher priority among lans.

5) "ether qos aclmap" command
A smaller Ethernet port number has a higher priority among Ethernet ports.

6) "vlan qos aclmap" command
A smaller VLAN ID has a higher priority among VLANs.

7) "lan ip dscp" command
A smaller lan definition number has a higher priority among lans.

The number of masks that each command use depends on applied ACL.
When Multiple ACL are applied, the number of masks amount to sum total, and depends on ACLs the number of masks amount to less than sum total.

The following is the number of masks for ACL.

ACL	number of masks
"acl mac"	
define LSAP of llc	3
not define LSAP of llc	1
"acl vlan"	1
not define src IP address	
not define tos/dscp value	1
not define tos/dscp value	3
define src IP address	
not define dst IP address	1
define dst IP address	
use same netmask for src and dst IP address	
not define tos/dscp value	1
not define tos/dscp value	3
use different netmask for src and dst IP address	3

The following is the number of masks for "vlan protocol" command.

"vlan protocol" definition	number of masks
define vlan protocol ipv4	3
define vlan protocol ipv6	1
define vlan protocol <count> ether	1
define vlan protocol <count> llc	1

- Upper limit based on "actions"
  16 actions for the entire device.
  Up to16 actions can be set for the entire device, including the "ether qos aclmap", "vlan qos aclmap", "lan ip dscp", "vlan protocol" commands.

  The following commands spend 1 action regardless of multiple use.

  1) "vlan protocol" commands

  2) "ether qos aclmap" command
  A smaller Ethernet port number has a higher priority among Ethernet ports.

  3) "vlan qos aclmap" command
  A smaller VLAN ID has a higher priority among VLANs.

4) "lan ip dscp" command
A smaller lan definition number has a higher priority among lans.

The following commands spend 1 action regardless of multiple use.
- vlan <vid> protocol ipv4
- vlan <vid> protocol ipv6

The following commands spend 1 action for each.
If same <tos_value> is used, the commands use 1 action for them.
If same <dscp_value> is used, the commands use 1 action for them.
If same <queue_value> is used, the commands use 1 action for them.
- ether <number> qos aclmap <count> tos <tos_value> <acl>
- ether <number >qos aclmap <count> dscp <dscp_value> <acl>
- ether <number> qos aclmap <count> queue <queue_value> <acl>
- vlan <vid> qos aclmap <count> tos <tos_value> <acl>
- vlan <vid> qos aclmap <count> dscp <dscp_value> <acl>
- vlan <vid> qos aclmap <count> queue <queue_value> <acl>
- lan <number> ip dscp <count> acl <acl_count> <dscp_value>

The following commands spend 1 action for each.
If same <vid> is used, the commands use 1 action for them.
- vlan <vid> protocol <count> ether
- vlan <vid> protocol <count> llc

[XG0224/XG0448]

Note 3.
This command is unavailable if the allowable upper limit for the device is exceeded.
The allowable upper limits are as follows.

- Upper limit based on "commands"
  128 commands for the entire device.
  Up to 128 commands can be set for the entire device, including the "ether macfilter", "vlan macfilter" and "lan ip filter" commands.
  The priority for each command is as follows.

  1) "ether macfilter" command
  A smaller Ethernet port number has a higher priority among Ethernet ports.

  2) "vlan macfilter" command
  A smaller VLAN ID has a higher priority among VLANs.

  3) "lan ip filter" command
  A smaller lan definition number has a higher priority among lans.

  If up to 128 of "ether macfilter" commands have been defined for port ether1, the subsequent "vlan macfilter" and "lan ip filter" command will be no longer applied.

- Upper limit based on rule
  128 rules for the entire device.
  For the "ether macfilter", "vlan macfilter" and "lan ip filter" commands, the number of rules to be used varies depending on the contents of the specified acl as shown below.
  The number of rules for each ACL is as follows.
  - For ACL to set TCP or UDP
    Result of multiplication between the number of source ports and the number of destination ports for TCP or UDP

- For ACL to set ICMP
  Result of multiplication between the number of ICMP TYPEs and the number of ICMP CODEs for ICMP
- For ACL not to set TCP, UDP, or ICMP
  1

You can expand the upper limit to use "resource filter distribution" command and change resource distribution.

Note 4.
Up to 700 commands can be set for the entire device, including the definitions which It is assumed that this option has not been set.refer to ACL such as "ether macfilter", "ether qos aclmap", "vlan macfilter", "vlan ip6filter", "vlan qos aclmap", "vlan ip6qos aclmap", "lan ip filter", "lan ip dscp", "lan ip6 filter", "lan ip6 dscp" and "serverinfo filter" commands.

Default It is assumed that this option has not been set.

5.3.3.2 vlan macfilter move

Function Change the priority of VLAN MAC filter.

Available Model XG0224 / XG0448 / XG2600

Syntax vlan <vid> macfilter move <count> <new_count>

Options

<vid>

- VLAN ID
  Specify a VLAN ID with a decimal value.

<count>

- Source priority
  Set the source priority with a decimal value.

<new_count>

- Destination priority
  Set the destination priority with a decimal value.

Range	Model
0 to 511	XG0224 / XG0448 / XG2600

Use Mode Configuration mode (admin class)

Explanation Change the priority of MAC filtering for each VLAN.
If the current priority is set as <count>, change the priority of this definition to <new_count>.
When the definition is changed, the priority is renumbered.

Default N/A due to an edit command.

5.3.3.3 vlan ip6filter

Function Set VLAN IPv6 filter

Available Model XG0224 / XG0448

Syntax vlan <vid> ip6filter <count> <action> <acl>

Options

<vid>

- VLAN ID
  Specify the VLAN ID with a decimal value from 1 to 4094.

<count>

- Priority
  Set the filtering priority with a decimal value
  A smaller value has a higher priority.

Range	Model
0 to 511	XG0224 / XG0448

<action>

- pass
  Pass the packets which match "acl ip6", "acl icmp", "acl tcp" and "acl udp"
- reject
  Discard the packets which match "acl ip6", "acl icmp", "acl tcp" and "acl udp"

<acl>

- ACL definition number
  Specify the ACL definition number which is used for the filter

Use Mode Configuration mode (admin class)

Explanation Set IPv6 filtering per VLAN
Action specified in <action> works packets which match access control list which is defined in "acl ip6", "acl icmp", "acl tcp" and "acl udp"

Caution

Note 1.
If none of "acl ip6" definition exist on the access control list which has been specified by <acl> or if the access control list specified by <acl> does not exist, the packets are not filtered.

Note 2.
The packet filtering default value is "pass".
No packets are filtered if only "pass" is set in <action>.

Note 3.
This command is unavailable if the allowable upper limit for the device is exceeded.
The allowable upper limits are as follows.

- Upper limit based on "commands"
  128 commands for the entire device.
  Up to 128 commands can be set for the entire device, including the "vlan ip6filter" and "lan ip6 filter" commands.
  The priority for each command is as follows.

1) "vlan ip6filter" command
A smaller VLAN ID has a higher priority among VLANs.

2) "lan ip6 filter" command
A smaller lan definition number has a higher priority among lans.

If up to 128 of "vlan ip6filter" commands have been defined, the subsequent "lan ip6 filter" command will be no longer applied.

- Upper limit based on rule
  128 rules for the entire device.
  For the "vlan ip6filter" and "lan ip6 filter" commands, the number of rules to be used varies depending on the contents of the specified acl as shown below.
  The number of rules for each ACL is as follows.
  - For ACL to set TCP or UDP
    Result of multiplication between the number of source ports and the number of destination ports for TCP or UDP
  - For ACL to set ICMP
    Result of multiplication between the number of ICMP TYPEs and the number of ICMP CODEs for ICMP
  - For ACL not to set TCP, UDP, or ICMP
    1

You can expand the upper limit to use "resource filter distribution" command and change resource distribution.

Note 4.
Up to 700 commands can be set for the entire device, including the definitions which refer to ACL such as "ether macfilter", "ether qos aclmap", "vlan macfilter", "vlan ip6filter", "vlan qos aclmap", "vlan ip6qos aclmap", "lan ip filter", "lan ip dscp", "lan ip6 filter", "lan ip6 dscp" and "serverinfo filter" commands.

Default N/A

5.3.3.4 vlan ip6filter move

Function Change the priority of VLAN IPv6 filter

Available Model XG0224 / XG0448

Syntax vlan <vid> ip6filter move <count> <new_count>

Options

<vid>

- VLAN ID
  Specify VLAN ID with a decimal value from 1 to 4094

<count>

- Priority
  Specify the priority with a decimal value

<new_count>

- New Priority
  Specify the new priority with a decimal value

Range	Model
0 to 511	XG0224 / XG0448

Use Mode Configuration mode (admin class)

Explanation Change the priority of IPv6 filter per VLAN

Default N/A

5.3.4 QoS Information

This section explains about the commands related to QoS information.

5.3.4.1 vlan qos aclmap

Function Set the QoS conversion of the VLAN.

Available Model XG0224 / XG0448 / XG2600

Syntax vlan <vid> qos aclmap <count> <action> <value> <acl>

Options

<vid>

- VLAN ID
  Specify a VLAN ID with a decimal value.

<count>

- Priority
  Set the QoS conversion priority with a decimal value.
  A smaller value has a higher priority.
  If multiple <action> are executed for the same packet and if they conflict with each other, the <action> with a higher priority is executed.
  The specified value is sorted and renumbered in sequence. If a filtering definition with the same value already exists, the existing one will be changed.

Range	Model
0 to 511	XG0224 / XG0448
0 to 63	XG2600

<action>

- cos [XG0224/XG0448]
  Rewrite the "cos" value (the "user priority" value in the Tag Control Information (TCI) field of the Tagged VLAN) of packets that match the "acl mac", "acl vlan", "acl ip", "acl icmp", "acl tcp", or "acl udp" definition of access control list.
- dscp
  Rewrite the "dscp" value (the high-order 6 bits in the TOS field of IP header), if packets that match the "acl mac", "acl vlan", "acl ip", "acl icmp", "acl tcp", or "acl udp" definition of access control list are IP packets.
- tos
  Rewrite the "ip precedence" value (the high-order 3 bits in the TOS field of IP header), if packets that match the "acl mac", "acl vlan", "acl ip", "acl icmp", "acl tcp", or "acl udp" definition of access control list are IP packets.
- queue
  Change the queue at the output port that is used to output the input packets that match the "acl mac", "acl vlan", "acl ip", "acl icmp", "acl tcp", or "acl udp" definition of access control list.

<value>

- Replacing value

If "cos" is selected in <action>:

- <cos_value>
  Set the replaced "cos" value with a decimal value from 0 to 7.
- tos
  Replace the "cos" value with the "ip precedence" value in the packet.

If "dscp" is selected in <action>:
- <dscp_value>
  Set the replaced "dscp" value with a decimal value from 0 to 63.

If "tos" is selected in <action>:
- <tos_value>
  Set the replaced "ip precedence" value with a decimal value from 0 to 7.
- cos
  Replace the "ip precedence" value with the "cos" value.

If "queue" is selected in <action>:
- <queue_value>
  Specify a queue number of the output port to be used.
  A larger value indicates a queue with a higher output priority.

Range	Model
0 to 7	XG0224 / XG0448 / XG2600

<acl>

- ACL definition number
  Specify the ACL definition number of the access control list where the packet pattern to configure QoS conversion has been defined.

Use Mode

Configuration mode (admin class)

Explanation

Set the QoS (quality of service) of each Ethernet port.
For the ingress packets that match the "acl mac", "acl vlan", "acl ip", "acl icmp", "acl tcp", or "acl udp" definitions of the access control list which has been specified by <acl>, the QoS processing is executed in the way as specified by <action>.

Caution

Note 1.
If none of "acl mac", "acl vlan" and "acl ip" definitions exist on the access control list which has been specified by <acl> or if the access control list specified by <acl> does not exist, the packets are not filtered.

[XG2600]

Note 2.
If a queue is selected by <action> and if this queue has not been associated with the cos value by the "ether qos prioritymap" command, the QoS processing is not executed.

Note 3.
"acl mac llc" definitions can not filter llc frames with the VLAN tag.

Note 4.
This command is unavailable if the allowable upper limit for the device is exceeded.
The allowable upper limits are as follows.

- Upper limit based on "commands"
  64 commands for the entire device.
  Up to 64 commands can be set for the entire device, including the "ether macfilter", "vlan macfilter", "lan ip filter", "ether qos aclmap", "vlan qos aclmap", "lan ip dscp" commands.
  The priority for each command is as follows.

1) "ether macfilter" command
A smaller Ethernet port number has a higher priority among Ethernet ports.

2) "vlan macfilter" command
A smaller VLAN ID has a higher priority among VLANs.

3) "lan ip filter" command
A smaller lan definition number has a higher priority among lans.

4) "ether qos aclmap" command
A smaller Ethernet port number has a higher priority among Ethernet ports.

5) "vlan qos aclmap" command
A smaller VLAN ID has a higher priority among VLANs.

6) "lan ip dscp" command
A smaller lan definition number has a higher priority among lans.

- Upper limit based on "masks"
  64 masks for the entire device.
  Up to 64 masks can be set for the entire device, including the "ether macfilter", "vlan macfilter", "lan ip filter", "ether qos aclmap", "vlan qos aclmap", "lan ip dscp", "vlan protocol" commands.
  The priority for each command is as follows.

1) "vlan protocol" commands

2) "ether macfilter" command
A smaller Ethernet port number has a higher priority among Ethernet ports.A smaller Ethernet port number has a higher priority among Ethernet ports.

3) "vlan macfilter" command
A smaller VLAN ID has a higher priority among VLANs.

4) "lan ip filter" command
A smaller lan definition number has a higher priority among lans.

5) "ether qos aclmap" command
A smaller Ethernet port number has a higher priority among Ethernet ports.

6) "vlan qos aclmap" command
A smaller VLAN ID has a higher priority among VLANs.

7) "lan ip dscp" command
A smaller lan definition number has a higher priority among lans.

The number of masks that each command use depends on applied ACL.
When Multiple ACL are applied, the number of masks amount to sum total, and depends on ACLs the number of masks amount to less than sum total.
The following is the number of masks for ACL..

ACL	number of masks
"acl mac"	
define LSAP of llc	3
not define LSAP of llc	1
"acl vlan"	1
not define src IP address	
not define tos/dscp value	1
not define tos/dscp value	3
define src IP address	
not define dst IP address	1
define dst IP address	
use same netmask for src and dst IP address	
not define tos/dscp value	1
not define tos/dscp value	3
use different netmask for src and dst IP address	3

The following is the number of masks for "vlan protocol" command.

"vlan protocol" definition	number of masks
define vlan protocol ipv4	3
define vlan protocol ipv6	1
define vlan protocol <count> ether	1
define vlan protocol <count> llc	1

- Upper limit based on "actions"
  16 actions for the entire device.
  Up to16 actions can be set for the entire device, including the "ether qos aclmap", "vlan qos aclmap", "lan ip dscp", "vlan protocol" commands.
  The priority for each command is as follows.

1) "vlan protocol" commands

2) "ether qos aclmap" command
   A smaller Ethernet port number has a higher priority among Ethernet ports.

3) "vlan qos aclmap" command
   A smaller VLAN ID has a higher priority among VLANs.

4) "lan ip dscp" command
   A smaller lan definition number has a higher priority among lans.

The following commands spend 1 action regardless of multiple use.
- vlan <vid> protocol ipv4
- vlan <vid> protocol ipv6

The following commands spend 1 action for each.
If same <tos_value> is used, the commands use 1 action for them.
If same <dscp_value> is used, the commands use 1 action for them.
If same <queue_value> is used, the commands use 1 action for them.
- ether <number> qos aclmap <count> tos <tos_value> <acl>
- ether <number >qos aclmap <count> dscp <dscp_value> <acl>
- ether <number> qos aclmap <count> queue <queue_value> <acl>
- vlan <vid> qos aclmap <count> tos <tos_value> <acl>
- vlan <vid> qos aclmap <count> dscp <dscp_value> <acl>
- vlan <vid> qos aclmap <count> queue <queue_value> <acl>
- lan <number> ip dscp <count> acl <acl_count> <dscp_value>

The following commands spend 1 action for each.
If same <vid> is used, the commands use 1 action for them.
- vlan <vid> protocol <count> ether
- vlan <vid> protocol <count> llc

[XG0224/XG0448]

Note 2.
If a queue is selected by <action> and if this queue has not been associated with the cos value by the "qos cosmap" command, the QoS processing is not executed.

Note 3.
This command is unavailable if the allowable upper limit for the device is exceeded.
The allowable upper limits are as follows.

- Upper limit based on "commands"
  128 commands for the entire device.
  Up to 128 commands can be set for the entire device, including the "ether qos aclmap", "vlan qos aclmap" and "lan ip dscp" commands.

  1) "ether qos aclmap" command
     A smaller Ethernet port value has a higher priority among Ethernet ports.

  2) "vlan qos aclmap" command
     A smaller VLAN ID has a higher priority among VLANs.

  3) "lan ip dscp"command
     A smaller lan definition number has a higher priority among lans.

  If up to 128 of "ether qos aclmap" commands have been defined for port ether1, the subsequent "vlan qos aclmap" and "lan ip dscp" command will be no longer applied.

- Upper limit based on rule
  128 rules for the entire device.
  For the "ether qos aclmap", "vlan qos aclmap" and "lan ip dscp" commands, the number of rules to be used varies depending on the contents of the specified acl as shown below.
  The number of rules for each ACL is as follows.
  - For ACL to set TCP or UDP
    Result of multiplication between the number of source ports and the number of destination ports for TCP or UDP
  - For ACL to set ICMP
    Result of multiplication between the number of ICMP TYPEs and the number of ICMP CODEs for ICMP
  - For ACL not to set TCP, UDP, or ICMP
    1

You can expand the upper limit to use "resource filter distribution" command and change resource distribution.

Note 4.
Up to 700 commands can be set for the entire device, including the definitions which refer to ACL such as "ether macfilter", "ether qos aclmap", "vlan macfilter", "vlan ip6filter", "vlan qos aclmap", "vlan ip6qos aclmap", "lan ip filter", "lan ip dscp", "lan ip6 filter", "lan ip6 dscp" and "serverinfo filter" commands.

Default It is assumed that this option has not been set.

5.3.4.2 vlan ip6qos aclmap

Function Set IPv6 QoS of VLAN

Available Model XG0224 / XG0448

Syntax vlan <vid> ip6qos aclmap <count> <action> <value> <acl>

Options

<vid>

- VLAN ID
  Specify the VLAN ID with a decimal value from 1 to 4094

<count>

- Prioruty
  Specify the priority of the QoS definition with a decimal value
  A smaller value is a higher priority
  If multiple <action> are executed for the same packet and if they conflict with each other, the <action> with a higher priority is executed.
  The specified value is sorted and renumbered in sequence. If a filtering definition with the same value already exists, the existing one will be changed.

Range	Model
0 to 511	XG0224 / XG0448

<action>

- dscp
  Rewrite the "dscp" value (the high-order 6 bits in the Traffic class field of IPv6 header), if packets thatmatch the "acl ip6", "acl icmp", "acl tcp", or "acl udp" definition of access control list are IP packets.
- queue
  Change the queue at the output port that is used to output the input packets that match the"acl ip6", "acl icmp", "acl tcp", or "acl udp" definition of access control list.

<value>

- Rewrite Value
  If dscp is selected in <action>:
- <dscp_value>
  Set the rewrite "dscp" value with a decimal value from 0 to 63
  If queue is selected in <action>:
- <queue_value>
  Specify a queue number of the output port to be used. A larger value indicates a queue with a higher output priority.

Range	Model
0 to 7	XG0224 / XG0448

<acl>

- ACL definition number
  Specify the ACL definition number of the access control list where the packet pattern to configure QoS conversion has been defined.

Use Mode Configuration mode (admin class)

Explanation Set IPv6 QoS per VLAN
For the input packets that match the "acl ipv6", "acl icmp", "acl tcp", or "acl udp" definitions of the access control list which has been specified by <acl>, the QoS processing is executed in the way as specified by <action>.

Caution

Note1.
If none of "acl ip6" definition exist on the access control list which has been specified by <acl> or if the access control list specified by <acl> does not exist, the QoS processing is not applied to those packets.

Note2.
If a queue is selected in <action> and if this queue has not been associated with the priority by the "qos cosmap" command, the QoS processing is not executed.

Note 3.
This command is unavailable if the allowable upper limit for the device is exceeded.
The allowable upper limits are as follows.

- Upper limit based on "commands"
  128 commands for the entire device.
  Up to 128 commands can be set for the entire device, including the "vlan ip6qos aclmap" and "lan ip6 dscp" commands.

  1) "vlan ip6qos aclmap" command
     A smaller VLAN ID has a higher priority among VLANs.

  2) "lan ip6 dscp" command
     A smaller lan definition number has a higher priority among lans.

If up to 128 of "vlan ip6qos aclmap" commands have been defined, the subsequent "lan ip6 dscp"command will be no longer applied.

- Upper limit based on rule
  128 rules for the entire device.
  For the "vlan ip6qos aclmap" and "lan ip6 dscp" commands, the number of rules to be used varies depending on the contents of the specified acl as shown below.
  The number of rules for each ACL is as follows.
  - For ACL to set TCP or UDP
    Result of multiplication between the number of source ports and the number of destination ports for TCP or UDP
  - For ACL to set ICMP
    Result of multiplication between the number of ICMP TYPEs and the number of ICMP CODEs for ICMP
  - For ACL not to set TCP, UDP, or ICMP
    1

You can expand the upper limit to use "resource filter distribution" command and change resource distribution.

Note 4.
Up to 700 commands can be set for the entire device, including the definitions which refer to ACL such as "ether macfilter", "ether qos aclmap", "vlan macfilter", "vlan ip6filter", "vlan qos aclmap", "vlan ip6qos aclmap", "lan ip filter", "lan ip dscp", "lan ip6 filter", "lan ip6 dscp" and "serverinfo filter" commands.

Default N/A

5.3.4.3 vlan ip6qos aclmap move

Function Change the priority of IPv6 QoS for VLAN

Available Model XG0224 / XG0448

Options

<vid>

- VLAN ID
  Specify the VLAN ID with a decimal value from 1 to 4094

<count>

- Priority
  Specify the priority with a decimal value

<new_count>

- New Priority
  Specify the new priority with a decimal value

Range	Model
0 to 511	XG0224 / XG0448

Use Mode Configuration mode (admin class)

Explanation Change the priority of IPv6 QoS definition per VLAN
If the current priority is set as <count>, change the priority of this definition to <new_count>. When the definition is changed, the priority is renumbered.

Default N/A

5.4 MAC Information

This section explains about MAC information.

5.4.1 MAC Information

This section explains about the commands related to MAC information.

5.4.1.1 mac learning

Function Set the MAC address learning.

Available Model XG0224 / XG0448 / XG2600

Syntax mac learning <mode>

Options

<mode>

- on
  Enable automatic learning of the MAC address.
- off
  Disable automatic learning of the MAC address.

Use Mode Configuration mode (admin class)

Explanation Set to enable or disable the automatic MAC address learning.

Default It is assumed that MAC address learning is specified as enable.

```
mac learning on
```

5.4.1.2 mac age

Function Set the aging-out time of MAC address learning table.

Available Model XG0224 / XG0448 / XG2600

Syntax mac age <time>

Options

<time>

- Aging-out time
  Set the aging-out time of MAC address learning table in seconds.

Range	Model
10 to 1,000,000	XG0224 / XG0448
10 to 3,500	XG2600

- Values can be set within the range of 10 to 1,000,000 seconds. (Default value is set to 300 seconds.)

Use Mode Configuration mode (admin class)

Explanation Set the aging-out time of MAC address learning table.

Default It is assumed that the aging-out time of MAC address learning table is set to 300sec.

```
mac age 300
```

5.5 LAN Information Settings

This section explains about LAN information settings.

Allowed range of lan definition numbers

The lan definition serial number (decimal value), which is to be specified in <number> ("lan" definition number) of [Options] described in each command of this section, shall be within the range for each model as shown below.

Range	Model
0 to 99	XG0224 / XG0448 / XG2600

5.5.1 IPv4 Related Information

This section explains about the commands related to IPv4 related information.

5.5.1.1 lan description

Function Define the text description for a lan interface.

Available Model XG0224 / XG0448 / XG2600

Syntax lan <number> description <description>

Options

<number>

- lan definition number
  Specify a lan definition serial number with a decimal value.
  The default is 0.

<description>

- Description
  Define the description text for a lan with up to 50 characters from 0x21, 0x23 to 0x7e of ASCII code.

Use Mode Configuration mode (admin class)

Explanation Defines the description for a lan interface.

Caution This description is used also for the SNMP agent function.
The SNMP agent function sets this description to ifAlias MIB (OID:1.3.6.1.2.1.31.1.1.1.18).

Default No lan interface description is defined.

5.5.1.2 lan ip address

Function Set the IP address.

Available Model XG0224 / XG0448 / XG2600

Syntax lan [<number>] ip address <address>/<mask> <broadcast>

Options

<number>

- lan definition number
  Specify a lan definition serial number with a decimal value.
  The default is 0.

<address>/<mask>

- IP address/number of mask bits (or mask value)
  Specify a combination of the IP address and the number of mask bits to be assigned to the LAN interface. For the mask value, specify successive 1s following the most significant bit (MSB).
  The allowable range of IP addresses is as follows:
  0.0.0.0
  1.0.0.1 to 126.255.255.254
  128.0.0.1 to 191.255.255.254
  192.0.0.1 to 223.255.255.254

For the number of mask bits, specify a decimal value from 2 to 30.
For the mask value, specify a number 192.0.0.0 to 255.255.255.252.
The available description format is as follows:

- IP address/number of mask bits (Example: 192.168.1.1/24)
- IP address/mask value (Example: 192.168.1.1/255.255.255.0)

<broadcast>

Specify a broadcast address.

- 0
  Specify it for 0.0.0.0.
- 1
  Specify it for 255.255.255.255.
- 2
  Specify it when "network address + all 1s" is obtained from "<address>/<mask>".
- 3
  Specify it when "network address + all 1s" is obtained from "<address>/<mask>".

Use Mode Configuration mode (admin class)

Explanation Set the IP address, number of mask bits (or mask value), and broadcast address for the LAN interface on this device.

Default It is assumed that the IP address is not specified.

```
lan <number> ip address 0.0.0.0/0 0
```

5.5.1.3 lan ip route

Function Set the IPv4 static route information.

Available Model XG0224 / XG0448 / XG2600

Syntax lan [<number>] ip route <count> <address>/<mask> <next_hop> [<distance>]

Options

<number>

- lan definition number
  Specify a lan definition serial number with a decimal value.
  The default is 0.

<count>

- Static route information definition number
  Specify a static route information definition number with a decimal value.

Range	Model
0 to 199	XG0224 / XG0448 / XG2600

<address>/<mask>

- IPv4 address/number of mask bits (or mask value)
  Specify a destination network with a combination of the IPv4 address and the number of mask bits.
  For the mask value, specify successive 1s following the most significant bit (MSB).
  The available description format is as follows:
  - IPv4 address/number of mask bits (Example: 192.168.1.0/24)
  - IPv4 address/mask value (Example: 192.168.1.0/255.255.255.0)
- default
  Specify it when the default route is set as a destination network.
  Specifying 0.0.0.0/0(0.0.0.0/0.0.0.0) has the same meaning.

<next_hop>

- IPv4 address of next_hop router
  Specify the IPv4 address of the next_hop router to send packets to the destination network.

<distance>

- Priority
  Specify the static route information priority with a decimal value from 1 to 254.
  A smaller value has a higher priority.
  The default is 1.

Use Mode Configuration mode (admin class)

Explanation

Set the IPv4 static route information.
Up to 4 IPv4 static route information can be defined for the product as a whole.

Max definition number	Model
200	XG0224 / XG0448 / XG2600

Caution Default routes can not be set with same priority.

Default It is assumed that the IPv4 static route information is not used.

5.5.1.4 lan ip filter

Function Set the IP filter.

Available Model XG0224 / XG0448 / XG2600

Syntax lan [<number>] ip filter <count> <action> acl <acl_count>

Options

<number>

- lan definition number
  Specify a lan definition serial number with a decimal value.
  The default is 0.

<count>

- Filtering definition number
  Specify a definition number, which indicates a filtering priority, with a decimal value.
  The specified value is sorted and renumbered in sequence. If a filtering definition with the same value already exists, the existing one will be changed.

Range	Model
0 to 511	XG0224 / XG0448
0 to 63	XG2600

<action>

Set whether or not to transmit the packet to be filtered.

- pass
  Transmit the relevant packet.
- reject
  Block the relevant packet.

<acl_count>

- ACL definition number
  Specify the required ACL definition number with a decimal value.
  If the ACL specified in <acl_count> is not defined, the filtering definition will be disabled and ignored.
  Use the following ACL definition for IP filter.
  - ip
    If the ip value is not set, the filtering definition will be disabled and ignored.
  - tcp
    Available only when "6" is set in <protocol> of ip.
    Otherwise, the set value is ignored.
    If the tcp value is not set while "6" is set in <protocol> of ip, each value of tcp will be assumed to be "any".
  - udp
    Available only when "17" is set in <protocol> of ip.
    Otherwise, the set value is ignored.
    If the udp value is not set while "17" is set in <protocol> of ip, each value of udp is assumed to be "any".
  - icmp
    Available only when "1" is set in <protocol> of ip.
    Otherwise, the set value is ignored.
    If the icmp value is not set while "1" is set in <protocol> of ip, each value of icmp will be assumed to be "any".

Use Mode Configuration mode (admin class)

Explanation

Set the IP filter for the LAN interface.
The IP filter is used to transmit or reject packets that have matched the address, protocol, TOS or DSCP value, port number, ICMP TYPE, and ICMP CODE specified in ACL.
Checking whether the conditions are satisfied or not according to the set priority, if a packet that has satisfied those conditions is found, it is filtered, and the subsequent setting will be ignored.
A packet that has not satisfied any conditions will be transmitted.

Caution

Note 1.
If none of "acl ip" definition exist on the access control list which has been specified by <acl> or if the access control list specified by <acl> does not exist, the packets are not filtered.

Note 2.
The packet filtering default value is "pass".
No packets are filtered if only "pass" is set in <action>.

[XG2600]

Note 3.
This command is unavailable if the allowable upper limit for the device is exceeded.
The allowable upper limits are as follows.

- Upper limit based on "commands"
  64 commands for the entire device.
  Up to 64 commands can be set for the entire device, including the "ether macfilter", "vlan macfilter", "lan ip filter", "ether qos aclmap", "vlan qos aclmap", "lan ip dscp" commands.
  The priority for each command is as follows.

  1) "ether macfilter" command
     A smaller Ethernet port number has a higher priority among Ethernet ports.

  2) "vlan macfilter" command
     A smaller VLAN ID has a higher priority among VLANs.

  3) "lan ip filter" command
     A smaller lan definition number has a higher priority among lans.

  4) "ether qos aclmap" command
     A smaller Ethernet port number has a higher priority among Ethernet ports.

  5) "vlan qos aclmap" command
     A smaller VLAN ID has a higher priority among VLANs.

  6) "lan ip dscp" command
     A smaller lan definition number has a higher priority among lans.

- Upper limit based on "masks"
  64 masks for the entire device.
  Up to 64 masks can be set for the entire device, including the "ether macfilter", "vlan macfilter", "lan ip filter", "ether qos aclmap", "vlan qos aclmap", "lan ip dscp", "vlan protocol" commands.
  The priority for each command is as follows.

  1) "vlan protocol" commands

2) "ether macfilter" command
A smaller Ethernet port number has a higher priority among Ethernet ports.

3) "vlan macfilter" command
A smaller VLAN ID has a higher priority among VLANs.

4) "lan ip filter" command
A smaller lan definition number has a higher priority among lans.

5) "ether qos aclmap" command
A smaller Ethernet port number has a higher priority among Ethernet ports.

6) "vlan qos aclmap" command
A smaller VLAN ID has a higher priority among VLANs.

7) "lan ip dscp" command
A smaller lan definition number has a higher priority among lans.

The number of masks that each command use depends on applied ACL.
When Multiple ACL are applied, the number of masks amount to sum total, and depends on ACLs the number of masks amount to less than sum total.

The following is the number of masks for ACL.

ACL	number of masks
"acl mac"	
define LSAP of llc	3
not define LSAP of llc	1
"acl vlan"	1
not define src IP address	
not define tos/dscp value	1
not define tos/dscp value	3
define src IP address	
not define dst IP address	1
define dst IP address	
use same netmask for src and dst IP address	
not define tos/dscp value	1
not define tos/dscp value	3
use different netmask for src and dst IP address	3

The following is the number of masks for "vlan protocol" command.

"vlan protocol" definition	number of masks
define vlan protocol ipv4	3
define vlan protocol ipv6	1
define vlan protocol <count> ether	1
define vlan protocol <count> llc	1

- Upper limit based on "actions"
  16 actions for the entire device.
  Up to16 actions can be set for the entire device, including the "ether qos aclmap", "vlan qos aclmap", "lan ip dscp", "vlan protocol"commands.
  The priority for each command is as follows.

  1) "vlan protocol" commands

  2) "ether qos aclmap" command
     A smaller Ethernet port number has a higher priority among Ethernet ports.

  3) "vlan qos aclmap" command
     A smaller VLAN ID has a higher priority among VLANs.

  4) "lan ip dscp" command
     A smaller lan definition number has a higher priority among lans.

  The following commands spend 1 action regardless of multiple use.
  - vlan <vid> protocol ipv4
  - vlan <vid> protocol ipv6

  The following commands spend 1 action for each.
  If same <tos_value> is used, the commands use 1 action for them.
  If same <dscp_value> is used, the commands use 1 action for them.
  If same <queue_value> is used, the commands use 1 action for them.
  - ether <number> qos aclmap <count> tos <tos_value> <acl>
  - ether <number >qos aclmap <count> dscp <dscp_value> <acl>
  - ether <number> qos aclmap <count> queue <queue_value> <acl>
  - vlan <vid> qos aclmap <count> tos <tos_value> <acl>
  - vlan <vid> qos aclmap <count> dscp <dscp_value> <acl>
  - vlan <vid> qos aclmap <count> queue <queue_value> <acl>
  - lan <number> ip dscp <count> acl <acl_count> <dscp_value>

  The following commands spend 1 action for each.
  If same <vid> is used, the commands use 1 action for them.
  - vlan <vid> protocol <count> ether
  - vlan <vid> protocol <count> llc

[XG0224/XG0448]

Note 3.

This command is unavailable if the allowable upper limit for the device is exceeded.
The allowable upper limits are as follows.

- Upper limit based on "commands"
  128 commands for the entire device.
  Up to 128 commands can be set for the entire device, including the "ether macfilter", "vlan macfilter" and "lan ip filter" commands.
  The priority for each command is as follows.

  1) "ether macfilter" command
     A smaller Ethernet port number has a higher priority among Ethernet ports.

  2) "vlan macfilter" command
     A smaller VLAN ID has a higher priority among VLANs.

  3) "lan ip filter" command
     A smaller lan definition number has a higher priority among lans.

If up to 128 of "ether macfilter" commands have been defined for port ether1, the subsequent "vlan macfilter" and "lan ip filter" command will be no longer applied.

- Upper limit based on rule
  128 rules for the entire device.
  For the "ether macfilter", "vlan macfilter" and "lan ip filter" commands, the number of rules to be used varies depending on the contents of the specified acl as shown below.
  The number of rules for each ACL is as follows.
  - For ACL to set TCP or UDP
    Result of multiplication between the number of source ports and the number of destination ports for TCP or UDP
  - For ACL to set ICMP
    Result of multiplication between the number of ICMP TYPEs and the number of ICMP CODEs for ICMP
  - For ACL not to set TCP, UDP, or ICMP
    1

You can expand the upper limit to use "resource filter distribution" command and change resource distribution.

Note 4.
Up to 700 commands can be set for the entire device, including the definitions which refer to ACL such as "ether macfilter", "ether qos aclmap", "vlan macfilter", "vlan ip6filter", "vlan qos aclmap", "vlan ip6qos aclmap", "lan ip filter", "lan ip dscp", "lan ip6 filter", "lan ip6 dscp" and "serverinfo filter" commands.

Default Transmit all packets, assuming that the IP filter is not set.

5.5.1.5 lan ip filter move

Function Change the IP filter priority.

Available Model XG0224 / XG0448 / XG2600

Syntax lan [<number>] ip filter move <count> <new_count>

Options

<number>

- lan definition number
  Specify a lan definition serial number with a decimal value.
  The default is 0.

<count>

- Target filtering definition number
  Specify a filtering definition number to change the priority.

<new_count>

- Destination filtering definition number
  Specify a new priority for <count> with a decimal value.
  If any definition with the same definition number exists, it will be inserted before the existing one.

Range	Model
0 to 511	XG0224 / XG0448
0 to 63	XG2600

Use Mode Configuration mode (admin class)

Explanation Change the IP filter priority.

5.5.1.6 lan ip dscp

Function Set the DSCP value rewriting conditions.

Available Model XG0224 / XG0448 / XG2600

Syntax lan [<number>] ip dscp <count> acl <acl_count> <new_dscp>

Options

<number>

- lan definition number
  Specify a lan definition serial number with a decimal value.
  The default is 0.

<count>

- DSCP value rewriting definition number
  Specify a definition number, which indicates the priority of DSCP value rewriting conditions, with a decimal value.
  The specified value is sorted and renumbered forward when setting was completed.
  If any DSCP value rewriting definition with the same definition number exists, the value of the existing definition will be changed.

Range	Model
0 to 511	XG0224 / XG0448
0 to 63	XG2600

<acl_count>

- ACL definition number
  Specify the required ACL definition number with a decimal value.
  If the ACL specified in <acl_count> is not defined, the DSCP value rewriting definition will be disabled and ignored.
  Use the following ACL definition for DSCP value rewriting.
  - ip
    If the ip value is not set, the DSCP value rewriting definition will be disabled and ignored.
  - tcp
    Available only when "6" is set in <protocol> of ip.
    Otherwise, the set value is ignored.
    If the tcp value is not set while "6" is set in <protocol> of ip, each value of tcp will be assumed to be "any".
  - udp
    Available only when "17" is set in <protocol> of ip.
    Otherwise, the set value is ignored.
    If the udp value is not set while "17" is set in <protocol> of ip, each value of udp is assumed to be "any".
  - icmp
    Available only when "1" is set in <protocol> of ip.
    Otherwise, the set value is ignored.
    If the icmp value is not set while "1" is set in <protocol> of ip, each value of icmp will be assumed to be "any".

<new_dscp>

- DSCP value
  Specify the DSCP value to be rewritten with a decimal value from 0 to 63.

Use Mode Configuration mode (admin class)

Explanation

Set DSCP value rewriting conditions.
Rewrite the DSCP value of a packet, which has satisfied conditions, to the specified DSCP value.

Caution

Note 1.

If none of "acl ip" definition exist on the access control list which has been specified by <acl> or if the access control list specified by <acl> does not exist, the packets are not filtered.

[XG2600]

Note 2.

This command is unavailable if the allowable upper limit for the device is exceeded.
The allowable upper limits are as follows.

- Upper limit based on "commands"
  64 commands for the entire device.
  Up to 64 commands can be set for the entire device, including the "ether macfilter", "vlan macfilter", "lan ip filter", "ether qos aclmap", "vlan qos aclmap", "lan ip dscp" commands.
  The priority for each command is as follows.

  1) "ether macfilter" command
     A smaller Ethernet port number has a higher priority among Ethernet ports.
  2) "vlan macfilter" command
     A smaller VLAN ID has a higher priority among VLANs.
  3) "lan ip filter" command
     A smaller lan definition number has a higher priority among lans.
  4) "ether qos aclmap" command
     A smaller Ethernet port number has a higher priority among Ethernet ports.
  5) "vlan qos aclmap" command
     A smaller VLAN ID has a higher priority among VLANs.
  6) "lan ip dscp" command
     A smaller lan definition number has a higher priority among lans.

- Upper limit based on "masks"
  64 masks for the entire device.
  Up to 64 masks can be set for the entire device, including the "ether macfilter", "vlan macfilter", "lan ip filter", "ether qos aclmap", "vlan qos aclmap", "lan ip dscp", "vlan protocol" commands.
  The priority for each command is as follows.

  1) "vlan protocol" commands
  2) "ether macfilter" command
     A smaller Ethernet port number has a higher priority among Ethernet ports.
  3) "vlan macfilter" command
     A smaller VLAN ID has a higher priority among VLANs.
  4) "lan ip filter" command
     A smaller lan definition number has a higher priority among lans.

5) "ether qos aclmap" command
A smaller Ethernet port number has a higher priority among Ethernet ports.

6) "vlan qos aclmap" command
A smaller VLAN ID has a higher priority among VLANs.

7) "lan ip dscp" command
A smaller lan definition number has a higher priority among lans.

The number of masks that each command use depends on applied ACL.
When Multiple ACL are applied, the number of masks amount to sum total, and depends on ACLs the number of masks amount to less than sum total.

The following is the number of masks for ACL.

ACL	number of masks
"acl mac"	
define LSAP of llc	3
not define LSAP of llc	1
"acl vlan"	1
not define src IP address	
not define tos/dscp value	1
not define tos/dscp value	3
define src IP address	
not define dst IP address	1
define dst IP address	
use same netmask for src and dst IP address	
not define tos/dscp value	1
not define tos/dscp value	3
use different netmask for src and dst IP address	3

The following is the number of masks for "vlan protocol" command.

"vlan protocol" definition	number of masks
define vlan protocol ipv4	3
define vlan protocol ipv6	1
define vlan protocol <count> ether	1
define vlan protocol <count> llc	1

- Upper limit based on "actions"
16 actions for the entire device.
Up to16 actions can be set for the entire device, including the "ether qos aclmap", "vlan qos aclmap", "lan ip dscp", "vlan protocol" commands.
The priority for each command is as follows.

1) "vlan protocol" commands

2) "ether qos aclmap" command
A smaller Ethernet port number has a higher priority among Ethernet ports.

3) "vlan qos aclmap" command
A smaller VLAN ID has a higher priority among VLANs.

4) "lan ip dscp" command
A smaller lan definition number has a higher priority among lans.

The following commands spend 1 action regardless of multiple use.
- vlan <vid> protocol ipv4
- vlan <vid> protocol ipv6

The following commands spend 1 action for each.
If same <tos_value> is used, the commands use 1 action for them.
If same <dscp_value> is used, the commands use 1 action for them.
If same <queue_value> is used, the commands use 1 action for them.
- ether <number> qos aclmap <count> tos <tos_value> <acl>
- ether <number >qos aclmap <count> dscp <dscp_value> <acl>
- ether <number> qos aclmap <count> queue <queue_value> <acl>
- vlan <vid> qos aclmap <count> tos <tos_value> <acl>
- vlan <vid> qos aclmap <count> dscp <dscp_value> <acl>
- vlan <vid> qos aclmap <count> queue <queue_value> <acl>
- lan <number> ip dscp <count> acl <acl_count> <dscp_value>

The following commands spend 1 action for each.
If same <vid> is used, the commands use 1 action for them.
- vlan <vid> protocol <count> ether
- vlan <vid> protocol <count> llc

[XG0224/XG0448]

Note 2.
This command is unavailable if the allowable upper limit for the device is exceeded.
The allowable upper limits are as follows.

- Upper limit based on "commands"
  128 commands for the entire device.
  Up to 128 commands can be set for the entire device, including the "ether qos aclmap", "vlan qos aclmap" and "lan ip dscp" commands.

  1) "ether qos aclmap" command
  A smaller Ethernet port value has a higher priority among Ethernet ports.

  2) "vlan qos aclmap" command
  A smaller VLAN ID has a higher priority among VLANs.

  3) "lan ip dscp" command
  A smaller lan definition number has a higher priority among lans.

  If up to 128 of "ether qos aclmap" commands have been defined for port ether1, the subsequent "vlan qos aclmap" and "lan ip dscp"command will be no longer applied.

- Upper limit based on rule
  128 rules for the entire device.
  For the "ether qos aclmap", "vlan qos aclmap" and "lan ip dscp" commands, the number of rules to be used varies depending on the contents of the specified acl as shown below.
  The number of rules for each ACL is as follows.
  - For ACL to set TCP or UDP
    Result of multiplication between the number of source ports and the number of destination ports for TCP or UDP

- For ACL to set ICMP
  Result of multiplication between the number of ICMP TYPEs and the number of ICMP CODEs for ICMP
- For ACL not to set TCP, UDP, or ICMP
  1

You can expand the upper limit to use "resource filter distribution" command and change resource distribution.

Note 4.
Up to 700 commands can be set for the entire device, including the definitions which refer to ACL such as "ether macfilter", "ether qos aclmap", "vlan macfilter", "vlan ip6filter", "vlan qos aclmap", "vlan ip6qos aclmap", "lan ip filter", "lan ip dscp", "lan ip6 filter", "lan ip6 dscp" and "serverinfo filter" commands.

Default It is assumed that DSCP value rewriting is not performed.

5.5.1.7 lan ip dscp move

Function Change the priority of DSCP value rewriting conditions.

Available Model XG0224 / XG0448 / XG2600

Syntax lan [<number>] ip dscp move <count> <new_count>

Options

<number>

- lan definition number
  Specify a lan definition serial number with a decimal value.
  The default is 0.

<count>

- Target DSCP value rewriting definition number
  Specify a DSCP value rewriting definition number before the priority was changed.

<new_count>

- Destination DSCP value rewriting definition number
  Specify a new priority for <count> with a decimal value.
  If any definition with the same definition number exists, it will be inserted before the existing one.

Range	Model
0 to 511	XG0224 / XG0448
0 to 63	XG2600

Use Mode Configuration mode (admin class)

Explanation Change the priority of DSCP value rewriting conditions.

5.5.1.8 lan ip arp static

Function Sets static ARP.

Available Model XG0224 / XG0448

Syntax lan [<number>] ip arp static <count> <dst> <mac>

Options

<number>

- Defined LAN number
  The sequential number of a LAN definition expressed in base 10.
  Default is 0.

<count>

- Static ARP table entry number
  The static ARP table entry number, expressed as a base 10 number from 0-199.
  If an entry already exists in the table at the entry number specified, the command will modify the existing entry.

<dst>

- Destination IP address
  Specifies the destination IP address to be registered in the static ARP table.
  Below are the ranges of IP addresses that may be specified.

<mac>

- MAC address
  Specifies the MAC address to use when sending packets to the destination IP address.
  Specify in the format xx:xx:xx:xx:xx:xx (where xx is a two-digit, base 16 value).

Use Mode Configuration mode (admin class)

Explanation Sets static ARP entries in the ARP table.

Caution Multiple ARP entries may not be made for the same destination IP address.
The static ARP function will not operate for interfaces in which the IP address is not set.
MAC addresses cannot be set to broadcast or multicast.

Default If unset, the static ARP function will not be used.

5.5.2 IPv6 Related Information

This section explains about the commands related to IPv6 Related Information.

5.5.2.1 lan ip6 use

Function Set IPv6 function

Available Model XG0224 / XG0448 / XG2600

Syntax lan [<number>] ip6 use <mode>

Options

<number>

- lan definition number
  Specify lan definition number with a decimal value

<mode>

Specify whether to send and receive IPv6 packets

- on
  Enable IPv6
- off
  Disable Ipv6

Use Mode Configuration mode (admin class)

Explanation Set IPv6 function

Default It is assumed that the IPv6 server function is not used.

```
lan <number> ip6 use off
```

5.5.2.2 lan ip6 ifid

Function Set IPv6 interface ID

Available Model XG0224 / XG0448 / XG2600

Syntax lan [<number>] ip6 ifid <interfaceID>

Options

<number>

- lan definition number
  Specify lan definition number with a decimal value

<interfaceID>

Specify ID for this interface

- auto
  ID with EUI-64 format is created from MAC address
- interface ID
  Specify ID for this interface with a hexadecimal number

Use Mode Configuration mode (admin class)

Explanation Set IPv6 interface ID

Default It is assumed that "auto" has been set.

```
lan <number> ip6 ifid auto
```

5.5.2.3 lan ip6 address

Function Set IPv6 address

Available Model XG0224 / XG0448 / XG2600

Syntax lan [<number>] ip6 address [<count>] <address>/<prefixlen>

Options

<number>

- lan definition number
  Specify lan definition number with a decimal value

<count>

- IPv6 address definition number
  Specify IPv6 address definition number with a decimal value from 0 to 3

<address>/<prefixlen>

- IPv6 address/prefix length
  Specify IPv6 address and prefix length. Link local address can not be specified.
  Specify 64 for prefix length.
- auto
  Address is automatically set with prefix of received RA (Router Advertisement) message.
  "lan ip6 ra mode recv" need to be set

Use Mode Configuration mode (admin class)

Explanation Set IPv6 address for this interface

Default It is assumed that IPv6 function use only IPv6 link-local addresses.

5.5.2.4 lan ip6 ra mode

Function Set RA (Router Advertisement) message mode

Available Model XG0224 / XG0448 / XG2600

Syntax lan [<number>] ip6 ra mode <mode>

Options

<number>

- lan definition number
  Specify lan definition number with a decimal value

<mode>

- off
  Disable RA message send/receive function
- recv
  Enable RA message receive function

Use Mode Configuration mode (admin class)

Explanation Set RA message function mode

- RA message receive function
  When it is enabled, ND (Neighbor Discovery) parameter, default route, global address are configured automatically based on RA message

Default It is assumed that RA message send/receive function is disabled.

```
lan <number> ip6 ra mode off
```

5.5.2.5 lan ip6 route

Function Set IPv6 static route information

Available Model XG0224 / XG0448 / XG2600

Syntax lan [<number>] ip6 route <count> <address>/<prefixlen> <next_hop> [<distance>]

Options

<number>

- lan definition number
  Specify lan definition number with a decimal value

<count>

- Static route information definition number
  Specify static route information definition number with a decimal value

Range	Model
0 to 199	XG0224 / XG0448 / XG2600

<address>/<prefixlen>

- IPv6 address/prefix length
  Specify the destination network with IPv6 address and prefix length.
  Link local address can not be specified.
- default
  Specify this when default route is set as the destination network

<next_hop>

- Next hop router IPv6 address
  Set IPv6 address of next hop router

<distance>

- Priority
  Set priority of this static route information with a decimal value from 1 to 254

Use Mode Configuration mode (admin class)

Explanation Set IPv6 static route information.

Default It is assumed that the IPv6 static route information is not used.

5.5.2.6 lan ip6 filter

Function Set IPv6 filter

Available Model XG0224 / XG0448

Syntax lan [<number>] ip6 filter <count> <action> acl <acl_count>

Options

<number>

- lan definition number
  Specify lan definition number with a decimal number

<count>

- filtering definition number
  Set the filtering priority with a decimal value
  A smaller value has a higher priority.

Range	Model
0 to 511	XG0224 / XG0448

<action>

- pass
  Pass the packets which match
- reject
  Discard the packets which match

<acl_count>

- ACL definition number
  Specify ACL definition number with a decimal value.
  - ip
    If ip value is not configured, that filter definition is ignored
  - tcp
    This is enabled when ip6 <protocol> value is 6
  - udp
    This is enabled when ip6 <protocol> value is 17
  - icmp
    This is enabled when ip6 <protocol> value is 58

Use Mode Configuration mode (admin class)

Explanation Set IPv6 filter for LAN interface

Caution

Note 1.
If none of "acl ip6" definition exist on the access control list which has been specified by <acl> or if the access control list specified by <acl> does not exist, the packets are not filtered.

Note 2.
The packet filtering default value is "pass".
No packets are filtered if only "pass" is set in <action>.

Note 3.

This command is unavailable if the allowable upper limit for the device is exceeded.
The allowable upper limits are as follows.

- Upper limit based on "commands"
  128 commands for the entire device.
  Up to 128 commands can be set for the entire device, including the "vlan ip6filter" and "lan ip6 filter"commands.
  The priority for each command is as follows.

  1) "vlan ip6filter" command
     A smaller VLAN ID has a higher priority among VLANs.

  2) "lan ip6 filter" command
     A smaller lan definition number has a higher priority among lans.

  If up to 128 of "vlan ip6filter" commands have been defined, the subsequent "lan ip6 filter" command will be no longer applied.

- Upper limit based on rule
  128 rules for the entire device.
  For the "vlan ip6filter" and "lan ip6 filter" commands, the number of rules to be used varies depending on the contents of the specified acl as shown below.
  The number of rules for each ACL is as follows.
  - For ACL to set TCP or UDP
    Result of multiplication between the number of source ports and the number of destination ports for TCP or UDP
  - For ACL to set ICMP
    Result of multiplication between the number of ICMP TYPEs and the number of ICMP CODEs for ICMP
  - For ACL not to set TCP, UDP, or ICMP
    1

You can expand the upper limit to use "resource filter distribution" command and change resource distribution.

Note 4.

Up to 700 commands can be set for the entire device, including the definitions which refer to ACL such as "ether macfilter", "ether qos aclmap", "vlan macfilter", "vlan ip6filter", "vlan qos aclmap", "vlan ip6qos aclmap", "lan ip filter", "lan ip dscp", "lan ip6 filter", "lan ip6 dscp" and "serverinfo filter" commands.

Default It is assumed that the IPv6 filter is not set.

5.5.2.7 lan ip6 filter move

Function Change priority of IPv6 filter

Available Model XG0224 / XG0448

Syntax lan [<number>] ip6 filter move <count> <new_count>

Options

<number>

- lan definition number
  Specify lan definition number with a decimal value

<count>

- Filterling definition number
  Specify filtering definition number

<new_count>

- New filtering definition number
  Specify with a decimal value

Range	Model
0 to 511	XG0224 / XG0448

Use Mode Configuration mode (admin class)

Explanation Change priority of IPv6 filter

Default N/A

5.5.2.8 lan ip6 dscp

Function Set DSCP value rewrite condition

Available Model XG0224 / XG0448

Syntax lan [<number>] ip6 dscp <count> acl <acl_count> <new_dscp>

Options

<number>

- lan definition number
  Specify lan definition number with a decimal value

<count>

- DSCP rewrite definition number
  Specify priority of DSCP rewrite condition with a decimal value.

Range	Model
0 to 511	XG0224 / XG0448

<acl_count>

- ACL definition number
  Specify ACL definition number with a decimal value
  - ip6
    If ip6 value is not configured, that filter definition is ignored
  - tcp
    This is enabled when ip6 <protocol> value is 6
  - udp
    This is enabled when ip6 <protocol> value is 17
  - icmp
    This is enabled when ip6 <protocol> value is 58

<new_dscp>

- DSCP value
  Specify Rewrite DSCP value with a decimal value from 0 to 63

Use Mode Configuration mode (admin class)

Explanation Set DSCP value rewrite condition

Caution

Note1.
If none of "acl ip6" definition exist on the access control list which has been specified by <acl> or if the access control list specified by <acl> does not exist, the QoS processing is not applied to those packets.

Note2.
If a queue is selected in <action> and if this queue has not been associated with the priority by the "qos cosmap" command, the QoS processing is not executed.

Note 3.
This command is unavailable if the allowable upper limit for the device is exceeded. The allowable upper limits are as follows.

- Upper limit based on "commands"
  128 commands for the entire device.
  Up to 128 commands can be set for the entire device, including the "vlan ip6qos aclmap" and "lan ip6 dscp" commands.

1) "vlan ip6qos aclmap" command
A smaller VLAN ID has a higher priority among VLANs.

2) "lan ip6 dscp" command
A smaller lan definition number has a higher priority among lans.

If up to 128 of "vlan ip6qos aclmap" commands have been defined, the subsequent "lan ip6 dscp"command will be no longer applied.

- Upper limit based on rule
  128 rules for the entire device.
  For the "vlan ip6qos aclmap" and "lan ip6 dscp" commands, the number of rules to be used varies depending on the contents of the specified acl as shown below.
  The number of rules for each ACL is as follows.
  - For ACL to set TCP or UDP
    Result of multiplication between the number of source ports and the number of destination ports for TCP or UDP
  - For ACL to set ICMP
    Result of multiplication between the number of ICMP TYPEs and the number of ICMP CODEs for ICMP
  - For ACL not to set TCP, UDP, or ICMP
    1

You can expand the upper limit to use "resource filter distribution" command and change resource distribution.

Note 4.
Up to 700 commands can be set for the entire device, including the definitions which refer to ACL such as "ether macfilter", "ether qos aclmap", "vlan macfilter", "vlan ip6filter", "vlan qos aclmap", "vlan ip6qos aclmap", "lan ip filter", "lan ip dscp", "lan ip6 filter", "lan ip6 dscp" and "serverinfo filter" commands.

Default It is assumed that DSCP value rewriting is not performed.

5.5.2.9 lan ip6 dscp move

Function Change priority of DSCP value rewrite condition

Available Model XG0224 / XG0448

Syntax lan [<number>] ip6 dscp move <count> <new_count>

Options

<number>

- lan definition number
  Specify lan definition number with a decimal value

<count>

- DSCP value rewrite definition number
  Specify DSCP value rewrite definition number

<new_count>

- New DSCP value rewrite definition number
  Specify new DSCP value rewrite definition number

Range	Model
0 to 511	XG0224 / XG0448

Use Mode Configuration mode (admin class)

Explanation Change priority of DSCP value rewrite condition

Default N/A

5.5.3 VLAN Related Information

This section explains about the commands related to VLAN related information.

5.5.3.1 lan vlan

Function Set a VLAN ID.

Available Model XG0224 / XG0448 / XG2600

Syntax lan [<number>] vlan <vid>

Options

<number>

- lan definition number
  Specify a lan definition serial number with a decimal value.
  The default is 0.

<vid>

Set a decimal VLAN ID from 1 to 4094.

Use Mode Configuration mode (admin class)

Explanation Associate a VLAN ID with a lan definition number.

Caution

- This setting is disabled if VLAN specified in <vid> is not registered.
- If VLAN specified in <vid> is set at multiple lan interfaces, only the lowest lan definition will be enabled.

Default N/A

5.5.4 LLMNR Related Information

This section explains about the commands related to LLMNR Related Information.

5.5.4.1 lan llmnr use

Function Set to use the LLMNR function.

Available Model XG0224 / XG0448 / XG2600

Syntax lan [<number>] llmnr use <mode>

Options

<number>

- lan definition number
  Specify a lan definition serial number with a decimal value.
  The default is 0.

<mode>

- on
  Enable LLMNR function.
- off
  Disable LLMNR function.

Use Mode Configuration mode (admin class)

Explanation Set whether or not to enable the LLMNR function on this interface.
If enabled, this device answers LLMNR Query for hostname of this device.
Sender The LLMNR function to
The hostname of this device is set by "sysname" command, and the default hostname is Model name (e.c. XG0224).

Caution

- "lan llmnr use" (lan llmnr use on) and "oob llmnr use" (oob llmnr use on) definitions can be set only 2 definitions for the entire device.
- Up to 2 commands can be set for the entire device, including the "lan llmnr use" (lan llmnr use on) and "oob llmnr use" (oob llmnr use on) commands.
- If none of "lan ip address" and "lan ip6 use on" definition exist on the lan interface LLMNR function dosn't work.

Default It is assumed that the LLMNR function is not used on the lan interface.

5.5.5 Management LAN port IPv4 Related Information

This section explains about the commands related to Management LAN port IPv4 Related Information.

5.5.5.1 oob ip address

Function Set IP address of oob port

Available Model XG2600

Syntax oob ip address <address>/<mask> <broadcast>

Options

<address>/<mask>

- IP address/number of mask bits (or mask value)
  Sepcify a combination of the IP address and mask to be assigned to Out of Band port
  The allowable range of IPaddress is as follows.
  0.0.0.0
  1.0.0.1 - 126.255.255.254
  128.0.0.1 - 191.255.255.254
  192.0.0.1 - 223.255.255.254
  The available description format is as follows.
- IP address/number of mask bits (Example: 192.168.1.1/24)
- IP address/mask value (Example: 192.168.1.1/255.255.255.0)

<broadcast>

Specify a broadcast address

- 0
  Specify it for 0.0.0.0
- 1
  Specify it for 255.255.255.255
- 2
  Specify it when "network address + all 0" is obtained from <address>/<mask>
- 3
  Specify it when "network address + all 1" is obtained from <address>/<mask>

Use Mode Configuration mode (admin class)

Explanation Set the IP address.

Default It is assumed that the IP address is not specified.

```
oob ip address 0.0.0.0/0 0
```

5.5.5.2 oob ip route

Function Set the IPv4static route information

Available Model XG2600

Syntax oob ip route <count> <address>/<mask> <next_hop> [<distance>]

Options

<count>

- Static route information definition number
  Specify a static route information definition number with a decimal value.

Range	Model
0 to 199	XG2600

<address>/<mask>

- IPv4 address/number of mask bits (or mask value)
  Specify a destination network with a combination of the IPv4 address and the number of mask bits. For the mask value, specify successive 1s following the most significant bit (MSB). The available description format is as follows:
  - IPv4 address/number of mask bits (Example: 192.168.1.0/24)
  - IPv4 address/mask value (Example: 192.168.1.0/255.255.255.0)
- default
  Specify default when the default route is set as a destination network.
  It's same as specifying 0.0.0.0/0(0.0.0.0/0.0.0.0)

<next_hop>

- IPv4 address of next hop router
  Specify the IPv4 address of the next hop router

<distance>

- Priority
  Specify the static route information priority with a decimal value from 1 to 254.
  A smallr value has a higher priority.
  The default is 1.

Use Mode Configuration mode (admin class)

Explanation Set the IPv4 static route information

Max definition number	Model
200	XG2600

Caution When the same destination as static route is set, be careful about the following.

- Multiple default routes can not be cofigured with the same priority.

Default N/A

5.5.6 Management LAN port IPv6 Related Information

This section explains about the commands related to Management LAN port IPv6 Related Information.

5.5.6.1 oob ip6 use

Function Set IPv6 function of oob port

Available Model XG2600

Syntax oob ip6 use <mode>

Options

<mode>
Specify wheter or not to receive and send IPv6 packets

- on
  Enable IPc6 function
- off
  Disable IPv6 function

Use Mode Configuration mode (admin class)

Explanation Specify wheter or not to receive and send IPv6 packets

Default It is assumed that the IPv6 server function is not used.

```
oob ip6 use off
```

5.5.6.2 oob ip6 ifid

Function Set IPv6 interface ID

Available Model XG2600

Syntax oob ip6 ifid <interfaceID>

Options

<interfaceID>
Specify ID for this interafce

- auto
  Automatically generated ID (EUI-64 format) from MAC address is used
- Interface ID
  Specify ID for this interface with a hexadecimal value. Separate 4 degits with " "(colon)
  Normally specify "auto".

Use Mode Configuration mode (admin class)

Explanation Set IPv6 interface ID

Default It is assumed that "auto" has been set.

```
oob ip6 ifid auto
```

5.5.6.3 oob ip6 address

Function Set IPv6 address

Available Model XG2600

Syntax oob ip6 address [<count>] <address>/<prefixlen>

Options

<count>

- IPv6 address definition number
  Specify IPv6 address definition number with a decimal value from 0 to 3.

<address>/<prefixlen>

- IPv6 address/prefix length
  Specify IPv6 address and prefix length. Link local address can not be specified.
  Specify 64 for prefix length.
- auto
  Address is automatically set with prefix of received RA (Router Advertisement) message.
  "lan ip6 ra mode recv" need to be set

Use Mode Configuration mode (admin class)

Explanation Set IPv6 address for this interface

Default It is assumed that IPv6 function use only IPv6 link-local addresses.

5.5.6.4 oob ip6 ra mode

Function Set RA (Router Advertisement) message mode

Available Model XG2600

Syntax oob ip6 ra mode <mode>

Options

<mode>

- off
  Disable RA message send/receive function
- recv
  Enable RA message receive function

Use Mode Configuration mode (admin class)

Explanation Set RA message function mode

- RA message receive function
  When it is enabled, ND (Neighbor Discovery) parameter, default route, global address are configured automatically based on RA message

Default It is assumed that RA message send/receive function is disabled.

```
lan <number> ip6 ra mode off
```

5.5.6.5 oob ip6 route

Function Set IPv6 static route information

Available Model XG2600

Syntax oob ip6 route <count> <address>/<prefixlen> <next_hop> [<distance>]

Options

<count>

- Static route information definition number
  Specify static route information definition number with a decimal value

Range	Model
0 to 199	XG2600

<address>/<prefixlen>

- IPv6 address/prefix length
  Specify the destination network with IPv6 address and prefix length.
  Link local address can not be specified.
- default
  Specify this when default route is set as the destination network

<next_hop>

- Next hop router IPv6 address
  Set IPv6 address of next hop router

<distance>

- Priority
  Set priority of this static route information with a decimal value from 1 to 254

Use Mode Configuration mode (admin class)

Explanation Set IPv6 static route information.

Default It is assumed that the IPv6 static route information is not used.

5.5.7 Management LAN port LLMNR Related Information

This section explains about the commands related to Management LAN port LLMNR Related Information.

5.5.7.1 oob llmnr use

Function Set to use the LLMNR function of oob interace.

Available Model XG2600

Syntax oob llmnr use <mode>

Options

<mode>

- on
  Enable LLMNR function.
- off
  Disable LLMNR function.

Use Mode Configuration mode (admin class)

Explanation Set whether or not to enable the LLMNR function on the oob interface.
If enabled, this device answers LLMNR Query for hostname of this device.
Sender The LLMNR function to
The hostname of this device is set by "sysname" command, and the default hostname is Model name (e.c. XG0224).

Caution

- "lan llmnr use" (lan llmnr use on) and "oob llmnr use" (oob llmnr use on) definitions can be set only 2 definitions for the entire device/
- Up to 2 commands can be set for the entire device, including the ""lan llmnr use" (lan llmnr use on) and "oob llmnr use" (oob llmnr use on) commands.
- If none of "lan ip address" and "lan ip6 use on" definition exist on the lan interface LLMNR function dosn't work.

Default It is assumed that the LLMNR function is not used on the oob interface.

5.6 IPv4 Related Information

This section explains about IPv4 related information.

5.6.1 IPv4 Related Information

This section explains about the commands related to IP related information.

5.6.1.1 ip arp age

Function Set a valid time of ARP entry.

Available Model XG0224 / XG0448 / XG2600

Syntax ip arp age <time>

Options

<time>
Set a valid time (minutes) of ARP entry with a decimal value from 1 to 240.

Use Mode Configuration mode (admin class)

Explanation Set a valid time of ARP entry.

Default It is assumed that 20 minutes has been set.

```
ip arp age 20
```

5.7 QoS Information Settings

This section explains about QoS information settings.

5.7.1 QoS Information

This section explains about the commands related to QoS information.

5.7.1.1 qos cosmap

Function Set the correspondence between the COS value and storage queue for a specific packet.

Available Model XG0224 / XG0448

Syntax qos cosmap <cos> <queue>

Options

<cos>

- cos value
  Set a cos value (user priority value in the Tag Control Information (TCI) field of Tagged VLAN) of the packet where the specified queue is to be stored, with a decimal value from 0 to 7.

<queue>

- Queue number
  Set the number of a queue to store the packet, which has the cos value specified in <cos>, with a decimal value.
  A larger value has a higher priority.

Range	Model
0 to 7	XG0224 / XG0448

Use Mode Configuration mode (admin class)

Explanation This product has 8 keys.
Packets are queued in multiple queues of an output port (including a port for the local device). Which queues are to be selected is determined by the COS value of an output packet.
Store the packet, which has the cos value specified in <cos>, in the queue specified in <queue>.
A larger queue number has a higher output priority.
A queue with no cos value is unavailable.

Default

```
qos cosmap 0 2
qos cosmap 1 0
qos cosmap 2 1
qos cosmap 3 3
qos cosmap 4 4
qos cosmap 5 5
qos cosmap 6 6
qos cosmap 7 7
```

5.8 STP Information

This section explains about STP information.

5.8.1 STP Information

This section explains about the commands related to STP information.

5.8.1.1 stp mode

Function Set the STP (Spanning Tree Protocol) operation mode.

Available Model XG0224 / XG0448 / XG2600

Syntax stp mode {disable | stp | rstp | mstp }

Options

disable

- Specify when STP is not used.

stp

- Specify when STP (dot1d) is used.

rstp

- Specify when RSTP (dot1w) is used.

mstp

- Specify when MSTP (dot1s) is used.

Use Mode Configuration mode (admin class)

Explanation Set the STP (Spanning Tree Protocol) operation mode.

Default It is assumed that the STP is set for STP operation mode.

```
stp mode stp
```

5.8.1.2 stp age

Function Set a maximum valid time of bridge configuration.

Available Model XG0224 / XG0448 / XG2600

Syntax stp age <max_age>

Options

<max_age>

- Maximum valid time
  Specify a valid time of the BPDU information sent from the root bridge within the range of 6 to 40 seconds.
  The unit will be s (second).

Use Mode Configuration mode (admin class)

Explanation Set a valid time for the BPDU that the root bridge sends.
Receiving no BPDU frame from the root bridge within the max age time will lead this device to begin sending BPDU as a root bridge.

Caution <max_age> checks the relationship between the definition values of stp delay <delay_time> and stp hello <time>.

- Check with forward delay time
  max age time <= 2 × (forward delay time - 1.0 seconds)
- Check with hello time
  max age time >= 2 × (hello time + 1.0 seconds)

If one or both of the above definition value is invalid, the set values of <max_age>, <delay_time>, and <time> will be disabled.
The following shows definition conditions that are available for checking the relationship between <max age>, <delay_time>, and <time>.
2 × (forward delay time - 1.0 second) >= max age time >= 2 × (hello time + 1.0 second)

Default It is assumed that 20 seconds are set for the valid time of the BPDU sent by the root bridge.

```
stp age 20s
```

5.8.1.3 stp delay

Function Set a maximum forward delay time.

Available Model XG0224 / XG0448 / XG2600

Syntax stp delay <delay_time>

Options

<delay_time>

- Maximum forward delay time
  Specify a maximum forward delay time within the range of 4 to 30 seconds.
  The unit will be s (second).

Use Mode Configuration mode (admin class)

Explanation Set a maximum forwarding delay time.
This setting is disabled when this device does not function as a root bridge even if it uses an STP.
Specify the time period required to change from the listening state to the learning state or from the leaning state to the forwarding state via an STP.

Caution <delay_time> checks the relationship with the definition value of stp age <max_age>.

- Check with max age time
  max age time <= 2 × (forward delay time - 1.0 second)

If the definition value is invalid, the set values of <max_age>, <delay_time>, and <time> will be disabled.
The following shows definition conditions that are available for checking the relationship between <max age>, <delay_time>, and <time>.
2 × (forward delay time - 1.0 second) >= max age time >= 2 × (hello time + 1.0 second)

Default It is assumed that 15 seconds are set for a maximum forwarding delay time.

```
stp delay 15s
```

5.8.1.4 stp hello

Function Set a Hello message transmission interval.

Available Model XG0224 / XG0448 / XG2600

Syntax stp hello <time>

Options

<time>

- Transmission interval
  Specify a transmission interval of configuration BPDU to be sent periodically after this device becomes a root bridge, within the range of 1 to 10 seconds. The unit will be s (second).

Use Mode Configuration mode (admin class)

Explanation Specify a transmission interval of configuration BPDU to be sent when this device functions as a root bridge.
This setting is disabled when this device does not function as a root bridge even if it uses an STP.

Caution <time> checks the relationship with the definition value of stp age <max_age>.

- Check with max age time
  max age time > = 2 × (hello time + 1.0 second)

If the definition value is invalid, the set values of <max_age>, <delay_time>, and <time> will be disabled.
The following shows definition conditions that are available for checking the relationship between <max age>, <delay_time>, and <time>.
2 × (forward delay time - 1.0 second) >= max age time >= 2 × (hello time + 1.0 second)

Default It is assumed that 2 seconds are set for a transmission interval of configuration BPDU.

```
stp hello 2s
```

5.8.1.5 stp bpdu

Function Set the BPDU forwarding mode.

Available Model XG0224 / XG0448 / XG2600

Syntax stp bpdu <mode>

Options

<mode>

- on
  Specify the BPDU flooding mode.
- off
  Specify the BPDU unflooding mode.

Use Mode Configuration mode (admin class)

Explanation Set the BPDU flooding mode.
Set whether or not to forward a BPDU frame when the STP function has been disabled.

Caution The BPDU frame, which is not provided with the VLAN tag, is forwarded based on the receive port setting without the VLAN tag if the BPDU flooding mode is specified.

Default It is assumed that discarding mode is specified as the BPDU forwarding mode.

```
stp bpdu off
```

5.8.1.6 stp domain priority

Function Set the bridge priority.

Available Model XG0224 / XG0448 / XG2600

Syntax stp domain <instance-id> priority <priority>

Options

<instance-id>

- STP instance ID number
  Specify a decimal value from 0 to 15.
  For non-MSTP operation mode, entering a value from 1 to 15 makes it invalid, although the allowable range is set with a value from 0 to 15.

<priority>

- Priority
  Specify the priority of this device in the bridge network with a decimal value from 0 to 61440. A smaller value has a higher priority.

Use Mode Configuration mode (admin class)

Explanation Specify the priority of the bridge used for the algorithm for determining the root bridge. Specify the minimum value for a bridge to be used as a root bridge.

Caution <priority> must be an integer (valid value) that is divisible by 4096.

- Valid values
  0, 4096, 8192, 12288, 16384, 20480, 24576, 28672, 32768, 36864, 40960, 45056, 49152, 53248, 57344, 61440

If an integer other than the valid values is specified, this setting is disabled.

Default It is assumed that 32768 is set for the entire instance priority.

```
stp domain 0 priority 32768
```

5.8.1.7 stp config_id

Function Set the MST configuration.

Available Model XG0224 / XG0448 / XG2600

Syntax stp config_id <region_name> <revision_level>

Options

<region_name>

- Region name (Configuration name)
  Specify a configuration name using up to 32 characters from 0x21, 0x23 to 0x7e ASCII set.

<revision_level>

- Revision level
  Specify a decimal value from 0 to 255.

Use Mode Configuration mode (admin class)

Explanation Set MST configuration (MST region name and revision level).

Caution This command is enabled only in the MSTP operation mode.

Default It is assumed that MST for MST configuration information, "region1" for region name, and "0" for revision level are set.

```
stp config_id region1 0
```

5.8.1.8 stp domain vlan

Function Set the VLAN assignment to the MSTP instance.

Available Model XG0224 / XG0448 / XG2600

Syntax stp domain <instance-id> vlan <vidlist>

Options

<instance-id>

- Instance ID number
  Specify a decimal value from 1 to 15.

<vidlist>

- VLAN ID
  Specify a decimal VLAN ID from 1 to 4094.
  When setting multiple VLAN IDs, separate them with commas (,).
  When setting sequential numbers, separate them with hyphens (-). (Example: "1-10,100,200")

Use Mode Configuration mode (admin class)

Explanation Set VLAN assignment to an MSTP instance.

Caution This command is enabled only in the MSTP operation mode.
The definition is disabled when vlan assigned to an instance is not set to the Ethernet port.

Default N/A

5.8.1.9 stp max-hops

Function Set a maximum hop count of bridge configuration.

Available Model XG0224 / XG0448 / XG2600

Syntax stp max-hops <hop_count>

Options

<hop_count>

- Maximum hop count
  Specify a decimal value from 1 to 40.

Use Mode Configuration mode (admin class)

Explanation This command is used instead of the Message Age and Max Age parameters in the MST region.
It indicates the valid hop count for the BPDU that the root bridge sends.
When the hop count of the received BPDU is 0, this device begins to send BPDU with the maximum hop count as a root bridge.

Caution This command is enabled only in the MSTP operation mode.
The hop count is reduced each time BPDU is forwarded via a neighboring device. If this device functions as a root bridge with the hop count set to 1, a spanning tree will be created only between this device and a neighboring device.

Default It is assumed that 20 is set for hop count.

```
stp max-hops 20
```

5.9 LLDP Information Settings

This section explains about Loop Detection information settings.

5.9.1 LLDP Information

This section explains about the commands related to LLDP Information.

5.9.1.1 lldp send interval

Function Set LLDP send interval

Available Model XG0224 / XG0448 / XG2600

Syntax lldp send interval <interval> <delay>

Options

<interval>

- LLDP send interval
  Specify LLDP send interval with a decimal value with h (hours), m (minutes), s (seconds) It can be specified from 5 seconds to 32768 seconds.
  This setting corresponds to msgTxInterval in 802.1AB

<delay>

- LLDP send miimal interval
  Specify LLDP send minimal interval with a decimal value with h (hours), m (minutes), s (seconds) It can be specified from 1 second to 0.25 x <interval>seconds (Max is 8192 sec).
  This setting corresponds to TxDelay in 802.1AB

Use Mode Configuration mode (admin class)

Explanation Specify LLDP send interval which this device sends LLDP information periodically with and LLDP send minimal interval which this device sends LLDP information when LLDP information is changed

Default It is assumed that 30sec is set for LLDP send interval and 2sec is set for LLDP send miimal interval.

```
lldp send interval 30s 2s
```

5.9.1.2 lldp send hold

Function Set LLDP hold times

Available Model XG0224 / XG0448 / XG2600

Syntax lldp send hold <count>

Options

<count>

- LLDP hold times
  Specify LLDP hold time which neighbor device holds LLDP information of this device.
  Specify LLDP hold times with a decimal value from 2 times to 10 times.
  This setting corresponds to msgTxInterval in 802.1AB
  This setting corresponds to msgTxHold in 802.1AB

Use Mode Configuration mode (admin class)

Explanation Specify LLDP hold time which neighbor device holds LLDP information of this device.

Default It is assumed that 4 is set for LLDP hold times.

```
lldp send hold 4
```

5.9.1.3 lldp reinit delay

Function Set LLDP reinit delay time

Available Model XG0224 / XG0448 / XG2600

Syntax lldp reinit delay <delay>

Options

<delay>

- LLDP reinit delay time
  When LLDP send function is disabled, this device sends LLDP information with TTL=0 and after <delay> time, this device reinitializes the internal status.
  This setting corresponds to reinitDelay in 802.1AB

Use Mode Configuration mode (admin class)

Explanation When LLDP send function is disabled, this device sends LLDP information with TTL=0 and after <delay> time, this device reinitializes the internal status.

Default It is assumed that 2sec is set for LLDP reinit delay time.

```
lldp reinit delay 2s
```

5.9.1.4 lldp notification interval

Function Set minimal interval of SNMP Notification Trap

Available Model XG0224 / XG0448 / XG2600

Syntax lldp notification interval <interval>

Options

<interval>

- Trap minimal interval
  Specify minimal interval of SNMP Notification Trap with a decimal value with h (hours), m (minutes), s (seconds) from 5 seconds to 3600 seconds.
  This setting corresponds to NotificationInterval in 802.1AB

Use Mode Configuration mode (admin class)

Explanation Specify minimal interval between SNMP Notification Traps

Caution When snmp service command is disabled or snmp trap lldpremtableschange is disabled SNMP Notification Trap (lldpRemTablesChange Trap) is not sent

Default It is assumed that 5sec is set for Trap minimal interval.

```
lldp notification interval 5s
```

5.10 IGMP Snooping Information Settings

This section explains about IGMP snooping information settings.

5.10.1 IGMP Snooping Information

This section explains about the commands related to IGMP snooping information.

5.10.1.1 igmpsnoop use

Function Set the IGMP snooping function.

Available Model XG0224 / XG0448 / XG2600

Syntax igmpsnoop use <mode>

Options

<mode>
Specify the IGMP snooping mode.

- on
  Enable IGMP snooping.
- off
  Disable IGMP snooping.

Use Mode Configuration mode (admin class)

Explanation Specify the IGMP snooping mode.

Default It is assumed that the IGMP snooping function is not used.

```
igmpsnoop use off
```

5.10.1.2 igmpsnoop localgroup

Function Set the local group of IGMP snooping function.

Available Model XG0224 / XG0448 / XG2600

Syntax igmpsnoop localgroup <mode>

Options

<mode>
Specify the local group of IGMP snooping function.

- join
  The packets are forwarded when membership report is recived for local group.
- auto
  The packets are forwarded when multicast packets to local group are received.

Use Mode Configuration mode (admin class)

Explanation Specify local group behavior of IGMP snooping.

Default It is assumed that the packets are forwarded when multicast packets to local group are received.

```
igmpsnoop localgroup auto
```

5.10.1.3 igmpsnoop unknown flooding

Function Set the unknown multicast packets handling in IGMP snooping function.

Available Model XG0224 / XG0448

Syntax igmpsnoop unknown flooding <mode>

Options

<mode>
Specify flooding mode for unknown multicast packets.

- off
  Discard unknown multicast packets.
- on
  Flooding to the same VLAN.

Use Mode Configuration mode (admin class)

Explanation Set the unknown multicast packets handling in IGMP snooping function.

Caution This command is valid when IGMP snooping function is enabled.
If IGMP snooping function is disabled, unknown multicast packets are flooded not depending on this definition.

Default It is assumed that "Discard unknown multicast packets".

```
igmpsnoop unknown flooding off
```

5.11 Loop Detection Information Settings

This section explains about Loop Detection information settings.

5.11.1 Loop Detection Information

This section explains about the commands related to Loop Detection information.

5.11.1.1 loopdetect use

Function Set the Loop Detection function.

Available Model XG0224 / XG0448 / XG2600

Syntax loopdetect use <mode>

Options

<mode>

- on
  Enable the Loop Detection function.
- off
  Disable the Loop Detection function.

Use Mode Configuration mode (admin class)

Explanation Set whether or not to enable the loop detection function.

Default It is assumed that the loop detection function is disabled.

```
loopdetect use off
```

5.11.1.2 loopdetect portdisable

Function Set the port offline mode.

Available Model XG0224 / XG0448 / XG2600

Syntax loopdetect portdisable <mode>

Options

<mode>

- yes
  Place the port offline automatically.
- no
  Do not place the port offline.

Use Mode Configuration mode (admin class)

Explanation Set whether or not to place the relevant port offline when a loop is detected.

Caution If ports are placed offline, release them by the "online" command with port releasing.

Default It is assumed that the ports are not placed offline.

```
loopdetect portdisable no
```

5.11.1.3 loopdetect portblock

Function Set the port blocking behavior after the Loop detected.

Available Model XG0224 / XG0448 / XG2600

Syntax loopdetect portblock <mode>

Options

<mode>

- yes
  If the Loop detected, the ether port is blocking (without linkdown).
- no
  After the Loop detected, the ether port is non-blocking.

Use Mode Configuration mode (admin class)

Explanation Specify the port blocking behavior after the Loop detected.
The blocking port will be non-blocking, if no Loop is detected while recovery monitoring works on.
The recovery monitoring counter specified by "loopdetect recovery"command and the monitoring interval is specified by "loopdetect interval"command.

Caution

- When the "loopdetect portdisable" (loopdetect portdisable yes) command is set, this port blocking function is not work.
- When the STP function is enabled, this port blocking function is not work.

Default It is assumed that port blocking function is disabled.

```
loopdetect portblock no
```

5.11.1.4 loopdetect interval

Function Set a transmission interval of the Loop Detection frame.

Available Model XG0224 / XG0448 / XG2600

Syntax loopdetect interval <time>

Options

<time>

- Transmission interval
  Specify a transmission interval of the loop detection frame with a value from 1 to 32767 seconds.
  The unit shall be h (hour), m (minute), or s (second).

Use Mode Configuration mode (admin class)

Explanation Specify a transmission interval of the Loop Detection frame.

Default It is assumed that 10 seconds have been specified.

```
loopdetect interval 10s
```

5.11.1.5 loopdetect recovery

Function Set the upper limit of monitoring counter for blocking port recovery.

Available Model XG0224 / XG0448 / XG2600

Syntax loopdetect recovery <count>

Options

<count>

- Upper limit of monitoring counter for blocking port recovery, with a decimal value from 1 to 65535.
  If the counter is expired without detecting the Loop, the blocking port is set non-blocking again.

Use Mode Configuration mode (admin class)

Explanation Set the upper limit of monitoring counter for blocking port recovery.
If the counter is expired without detecting the Loop, the blocking port is set non-blocking again.
If the the Loop is detected, the counter is set 0 agein.
The monitoring interval is specified by "loopdetect interval"command.

Default It is assumed 60 has been specified as the upper limit of monitoring counter.

```
loopdetect recovery 60
```

5.12 ACL Information Settings

This section explains about ACL information settings.

5.12.1 ACL Information

This section explains about the commands related to ACL information.

Specifying range for ACL definition number

Model	ACL definition number
XG0224/XG0448	Specify a range between 0 to 799 for ACL definition number (in a decimal number) to specify "acl_count" written in the [Option] in command in this section.
XG2600	Specify a range between 0 to 299 for ACL definition number (in a decimal number) to specify "acl_count" written in the [Option] in command in this section.

5.12.1.1 acl mac

Function Set the definition of the ACL MAC.

Available Model XG0224 / XG0448 / XG2600

Syntax
acl <acl_count> mac <src_mac> <dst_mac> llc <value>
acl <acl_count> mac <src_mac> <dst_mac> ether <value>
acl <acl_count> mac <src_mac> <dst_mac> any

Options

<acl_count>

- ACL definition number
  Specify an ACL definition serial number with a decimal value.

<src_mac>

Specify the source MAC address for ACL.

- any
  Specify it when targeting all MAC addresses.
- bcast
  Specify it when targeting a broadcast MAC address.
- mcast
  Specify it when targeting a multicast MAC address.
- Other than those above
  Specify the target MAC address. Specify the source MAC address for ACL in the xx:xx:xx:xx:xx:xx format, where "xx" is a 2-digit hexadecimal value.

<dst_mac>

Specify the destination MAC address for ACL.

- any
  Specify it when targeting all MAC addresses.
- bcast
  Specify it when targeting a broadcast MAC address.
- mcast
  Specify it when targeting a multicast MAC address.

- Messages other than those above
  Specify the target MAC address. Specify the source MAC address for ACL in the xx:xx:xx:xx:xx:xx format, where "xx" is a 2-digit hexadecimal value.

<format> <value>

- llc
  Specify it when targeting the LLC-format frame in which the value of <value> matches LSAP. In <value>, specify a hexadecimal value from 0 to ffff.
  To target all LLC-format frames, specify "any" in <value>.
- ether
  Specify it when targeting the Ethernet-format frame in which the value of <value> matches the type. In <value>, specify a hexadecimal value from 5dd to ffff.
  To target all Ethernet-format frames, specify "any" in <value>.
- any
  Specify it when targeting all frames. <value> is not necessary.

Use Mode Configuration mode (admin class)

Explanation Specify the etherframe pattern in the ACL definition.

Default Any etherframe pattern can be specified in the ACL definition.

5.12.1.2 acl vlan

Function Set the definition of the ACL VLAN.

Available Model XG0224 / XG0448 / XG2600

Syntax acl <acl_count> vlan <vid> <cos>

Options

<acl_count>

- ACL definition number
  Specify an ACL definition serial number with a decimal value.

<vid>

Specify the source VID address for ACL.

- any
  Specify when targeting all VID addresses.
- Other than those above
  Specify the target VID. The allowable range of VID addresses for ACL is 1 to 4094.

<cos>

Specify COS for ACL.

- any
  Specify it when targeting all COS.
- Other than those above
  Specify the target COS. The allowable range of COS for ACL is 0 to 7.

Use Mode Configuration mode (admin class)

Explanation Specify VLAN in the ACL definition.

Default Any VLAN ID can be specified in the ACL definition.

5.12.1.3 acl ip

Function Set the definition of the ACL IPv4.

Available Model XG0224 / XG0448 / XG2600

Syntax
acl <acl_count> ip <src_addr>/<mask> <dst_addr>/<mask> [<protocol> [any]]
acl <acl_count> ip <src_addr>/<mask> <dst_addr>/<mask> [<protocol> [tos <value>]]
acl <acl_count> ip <src_addr>/<mask> <dst_addr>/<mask> [<protocol> [dscp <value>]]

Options

<acl_count>

- ACL definition number
  Specify an ACL definition serial number with a decimal value.

<src_addr>/<mask>

Specify the source IP address for ACL and the number of mask bits.

- IP address/number of mask bits (or mask value)
  Specify a combination of the source IP address for ACL and the number of mask bits.
  For the mask value, specify successive 1s following the most significant bit (MSB).
  The available description format is as follows:
  - IP address/number of mask bits (Example: 192.168.1.1/24)
- any
  Specify it when all source IP addresses are subject to ACL.
  The default is 0.0.0.0/0.

<dst_addr>/<mask>

Specify the destination IP address for ACL and the number of mask bits.

- IP address/number of mask bits (or mask value)
  Specify a combination of the destination IP address for ACL and the number of mask bits.
  The description format is identical to for <src_addr>/<mask>.
- any
  Specify it when all destination IP addresses are subject to ACL.
  The default is 0.0.0.0/0.

<protocol>

Specify a protocol number for ACL.

- Protocol number
  Specify the protocol number for ACL with a decimal value from 1 to 255. (Example: ICMP:1, TCP:6, UDP:17, etc.)
- any
  Specify it when all protocol numbers are subject to ACL.
  The default is "any".

<type>

Specify how to identify QoS for ACL.

- tos
  Specify it when identifying the ACL target with the TOS value.
- dscp
  Specify it when identifying the ACL target with the DSCP value.
- any
  Specify it when identifying the ACL target with all TOS and DSCP values.

<value>

Specify the TOS or DSCP value used to identify the ACL target.

- TOS value
  Specify the TOS value used to identify the ACL target with a hexadecimal value from 0 to ff.
- DSCP value
  Specify the DSCP value used to identify the ACL target with a decimal value from 0 to 63.

Use Mode Configuration mode (admin class)

Explanation Specify the IPv4 packet pattern in the ACL definition.

Caution Make sure to define the acl ip when using L3 protocols such as TCP, UDP, or ICMP.

Default Any IP packet pattern can be specified in the ACL definition.
(The ACL definition is disabled if "all any" is specified or undefined.)

5.12.1.4 acl ip6

Function Set ACL IPv6 definition

Available Model XG0224 / XG0448 / XG2600

Syntax
acl <acl_count> ip6 <src_addr>/<prefixlen> <dst_addr>/<prefixlen> [<protocol> [any]]
acl <acl_count> ip6 <src_addr>/<prefixlen> <dst_addr>/<prefixlen> [<protocol> [tc <value>]]
acl <acl_count> ip6 <src_addr>/<prefixlen> <dst_addr>/<prefixlen>
[<protocol> [dscp <value>]]

Options

<acl_count>

- ACL definition number
  Specify ACL definition number with a decimal number

<src_addr>/<prefixlen>

Specify source IPv6 and prefix length

- IPv6 address/prefix length
  Specify IPv6 address and prefix length
- any
  Any source IPv6 address

<dst_addr>/<prefixlen>

Specify destination IPv6 and prefix length

- IPv6 address/prefix length
  Specify destination IPv6 and prefix length
- any
  Any destination IPv6 address

<protocol>

Specify protocol number

- protocol number
  Specify protocol number
- any
  Any protocol number

<type>

- tc
  Specify Traffic Class value value
- dscp
  Specify DSCP value
- any
  Specify TOS value, DSCP value

<value>

- Traffic Class value
  Specify traffic class value
- DSCP value
  Specify DSCP value with a decimal number from 0 to 63

Use Mode Configuration mode (admin class)

Explanation Set ACL IPv6 definition

Default N/A

5.12.1.5 acl tcp

Function Set the definition of the ACL TCP.

Available Model XG0224 / XG0448 / XG2600

Syntax acl <acl_count> tcp <src_port> <dst_port>

Options

<acl_count>

- ACL definition number
  Specify an ACL definition serial number with a decimal value.

<src_port>

Specify a source port number for ACL.

- Port number
  Specify the source port number for ACL with a decimal value from 1 to 65535.
  When specifying multiple port numbers, separate them with commas (,).
  Using a comma (,) enables you to specify up to 10 port numbers, including <src_port> and <dst_port>.
  The available description format is as follows:
  - Decimal number from 1 to 65535 (Example: 65535 = Port 65535)
  - Port number, port number, ... (Example: 10,20,30 = Ports 10, 20, and 30)
- any
  Specify it when all source port numbers are subject to ACL.

<dst_port>

Specify a destination port number for ACL.

- Port number
  Specify the destination port number for ACL with a decimal value from 1 to 65535.
  The same is true with the description format in <src_port>.
- any
  Specify it when all destination port numbers are subject to ACL.

Use Mode Configuration mode (admin class)

Explanation Specify the TCP packet pattern in the ACL definition.

Caution When using this command, be sure to specify protocol (tcp 6) in the "acl ip" or "acl ip6" command.

Default Any TCP packet pattern can be specified in the ACL definition.

5.12.1.6 acl udp

Function Set the definition of the ACL UDP.

Available Model XG0224 / XG0448 / XG2600

Syntax acl <acl_count> udp <src_port> <dst_port>

Options

<acl_count>

- ACL definition number
  Specify an ACL definition serial number with a decimal value.

<src_port>

Specify a source port number for ACL.

- Port number
  Specify the source port number for ACL with a decimal value from 1 to 65535.
  When specifying multiple port numbers, separate them with commas (,).
  Using a comma (,) enables you to specify up to 10 port numbers, including <src_port> and <dst_port>.
  The available description format is as follows:
  - Decimal number from 1 to 65535 (Example: 65535 = Port 65535)
  - Port number, port number, ... (Example: 10,20,30 = Ports 10, 20, and 30)
- any
  Specify it when all source port numbers are subject to ACL.

<dst_port>

Specify a destination port number for ACL.

- Port number
  Specify the destination port number for ACL with a decimal value from 1 to 65535.
  The same is true with the description format in <src_port>.
- any
  Specify it when all destination port numbers are subject to ACL.

Use Mode Configuration mode (admin class)

Explanation Specify the UDP packet pattern in the ACL definition.

Caution When using this command, be sure to specify protocol (udp 17) in the "acl ip" or "acl ip6" command.

Default Any UDP packet pattern can be specified in the ACL definition.

5.12.1.7 acl icmp

Function Set the definition of the ACL ICMP.

Available Model XG0224 / XG0448 / XG2600

Syntax acl <acl_count> icmp <icmptype> <icmpcode>

Options

<acl_count>

- ACL definition number
  Specify an ACL definition serial number with a decimal value.

<icmptype>

Specify ICMP TYPE for ACL.

- ICMP TYPE
  Specify the source ICMP TYPE for ACL with a decimal value from 0 to 255.
  When specifying multiple ICMP TYPEs, separate them with commas (,).
  Using a comma (,) enables you to specify up to 10 ICMP TYPEs.
  The available description format is as follows:
  - Decimal number from 0 to 255 (Example: 8 = ICMP TYPE 8)
  - ICMP TYPE, ICMP TYPE, ... (Example: 0, 8, 30 = ICMP TYPEs 0, 8, and 30)
- any
  Specify it when all ICMP TYPEs are subject to ACL.

<icmpcode>

Specify ICMP CODE for ACL.

- ICMP CODE
  Specify the source ICMP CODE for ACL with a decimal value from 0 to 255.
  When specifying multiple ICMP CODEs, separate them with commas (,).
  Using a comma (,) enables you to specify up to 10 ICMP CODEs.
  The available description format is as follows:
  - Decimal number from 0 to 255 (Example: 8 = ICMP CODE 8)
  - ICMP CODE, ICMP CODE, ... (Example: 0, 8, 30 = ICMP CODEs 0, 8, and 30)
- any
  Specify it when all ICMP CODEs are subject to ACL.

Use Mode Configuration mode (admin class)

Explanation Specify the ICMP packet pattern in the ACL definition.

Caution When using this command, be sure to specify <protocol> (icmp 1) using the "acl ip" or (icmpv6 58) using the "acl ip6" command.

Default Any ICMP packet pattern can be specified in the ACL definition.

5.12.1.8 acl description

Function Set the definition of the ACL description.

Available Model XG0224 / XG0448 / XG2600

Syntax acl <acl_count> description <description>

Options

<acl_count>

- ACL definition number
  Specify an ACL definition serial number with a decimal value.

<description>

- Description of setting
  Describe settings with this ACL definition number, using up to 50 characters from 0x21, 0x23 to 0x7e ASCII set.

Use Mode Configuration mode (admin class)

Explanation Describe settings with this ACL definition number.

Default It is assumed that no setting is described.

5.13 AAA Information Settings

This section explains about AAA Information Settings.

Allowed range of group IDs

The group serial number (decimal value), which is to be specified in [<group_id>] (group ID) described in [Options] of each command, shall be within the range as shown below.

Range	Model
0 to 9	XG0224 / XG0448 / XG2600

Allowed range of AAA user information definition number

The group serial number (decimal value), which is to be specified in [<number>] (AAA user information definition number) described in [Options] of each command, shall be within the range as shown below.

Range	Model
0 to 999	XG0224 / XG0448 / XG2600

Allowed range of RADIUS server definition number

The group serial number (decimal value), which is to be specified in [<number>] (RADIUS server definition number) described in [Options] of each command, shall be within the range as shown below.

Range	Model
0 to 3	XG0224 / XG0448 / XG2600

5.13.1 Group ID Information

This section explains about the commands related to group ID information.

5.13.1.1 aaa name

Function Set a group name.

Available Model XG0224 / XG0448 / XG2600

Syntax aaa [<group_id>] name <group_name>

Options

<group_id>

- Group ID
  Specify a group ID with a serial decimal value.
  The default is 0.

<group_name>

- Group name
  Specify a group name using up to 32 characters from 0x21, 0x23 to 0x7e ASCII set.

Use Mode Configuration mode (admin class)

Explanation Set a group name.

Caution This command will fail if the same group name is already registered.

Default It is assumed that no group name is set.

5.13.2 AAA User Information

This section explains about the commands related to AAA user information.

5.13.2.1 aaa user id

Function Set the authentication information (user ID).

Available Model XG0224 / XG0448 / XG2600

Syntax aaa [<group_id>] user [<number>] id <id>

Options

<group_id>

- Group ID
  Specify a group ID with a serial decimal value.
  The default is 0.

<number>

- AAA user information definition number
  Specify a group serial number with a decimal value
  The default is 0.

<id>

- User ID
  Specify a user ID using up to 128 characters from 0x21, 0x23 to 0x7e ASCII set.

Use Mode Configuration mode (admin class)

Explanation Set the authentication information (user ID) for authentication protocol.

Default It is assumed that no authentication information (user ID) is set.

5.13.2.2 aaa user password

Function Set the authentication information (password).

Available Model XG0224 / XG0448 / XG2600

Syntax aaa [<group_id>] user [<number>] password <password> [encrypted]

Options

<group_id>

- Group ID
  Specify a group ID with a serial decimal value.
  The default is 0.

<number>

- AAA user information definition number
  Specify a group serial number with a decimal value.
  The default is 0.

<password>

- Authentication password
  Specify the authentication password using up to 128 characters from 0x21, 0x23 to 0x7e ASCII set.
  Specify the encrypted authentication password together with "encrypted" to be displayed with the "show" command.
  Correctly specify the character string displayed in the "show" command.

encrypted

- Specify the encrypted authentication password
  Specify it when setting the encrypted authentication password in <password>.

Use Mode Configuration mode (admin class)

Explanation Set the authentication information (authentication password) for authentication protocol.

Caution With the "show" command, the encrypted authentication password is displayed together with "encrypted".

Default It is assumed that no authentication information (password) is specified.

5.13.2.3 aaa user user-role

Function Sets user privilege class.

Available Model XG0224 / XG0448 / XG2600

Syntax aaa [<group_id>] user [<number>] user-role <class>

Options

<group_id>

- Group ID
  Set group IDs using a base 10 sequential serial number.
  Default is 0.

<number>

- AAA User ID
  Serial number within the group, expressed as a base 10 value.
  Default is 0.

<class>

Sets privilege class.

- administrator
  Sets privilege class to administrator class.
- user
  Sets privilege class to user class.
- none
  No privilege class specified.

Use Mode Configuration mode (admin class)

Explanation When used for login user information, sets user privilege class.

Default If unset, privilege class is unspecified.

5.13.3 RADIUS Information Settings

This section explains about the commands related to RADIUS information.

5.13.3.1 aaa radius service

Function Set the RADIUS service.

Available Model XG0224 / XG0448 / XG2600

Syntax aaa [<group_id>] radius service <service> [<type>]

Options

<group_id>

- Group ID
  Specify a group ID with a serial decimal value.
  The default is 0.

<service>

- client
  Use it as the RADIUS client function.
- off
  Do not use the RADIUS function.

<type>

This parameter is available when "client" is specified in<service>.

- auth
  Enable the RADIUS authentication function.

Use Mode Configuration mode (admin class)

Explanation Set the RADIUS function used for the local device.

Default It is assumed that the RADIUS authentication function is not used.

```
aaa [<group_id>] radius service off
```

5.13.3.2 aaa radius auth source

Function Set the local IP address of the RADIUS authentication device.

Available Model XG0224 / XG0448 / XG2600

Syntax aaa [<group_id>] radius auth source <address>

Options

<group_id>

- Group ID
  Specify a group ID with a serial decimal value.

<address>

- Local IP address
  Specify the IPv4 or IPv6 address of the remote RADIUS authentication device.
  The allowable range is as follows:
  - IPv4
    1.0.0.1 to 126.255.255.254
    128.0.0.1 to 191.255.255.254
    192.0.0.1 to 223.255.255.254
  - IPv6
    ::2 to fe7f:ffff:ffff:ffff:ffff:ffff:ffff:ffff
    fec0:: to feff:ffff:ffff:ffff:ffff:ffff:ffff:ffff

Use Mode Configuration mode (admin class)

Explanation Set the IP address of the local RADIUS authentication device.
When using this device as a RADIUS authentication client, set the local IP address used for communication with the RADIUS authentication server.

Default It is assumed that the local IP address used for communication with the remote RADIUS authentication device is automatically selected.

5.13.3.3 aaa radius auth message-authenticator

Function Set the Message-Authenticator.

Available Model XG0224 / XG0448 / XG2600

Syntax aaa [<group_id>] radius auth message-authenticator <mode>

Options

<group_id>

- Group ID
  Specify a group ID with a serial decimal value.

<mode>

- off
  Disable Message-Authenticator.
- on
  Enable Message-Authenticator.

Use Mode Configuration mode (admin class)

Explanation Set whether to enable Message-Authenticator for authentication.
For EEE802.1x authentication, enable Message-Authenticator regardless of this setting.
This command is available only for authentication request messages in this device.

Default Disable Message-Authenticator.

```
aaa [<group_id>] radius auth message-authenticator off
```

5.13.3.4 aaa radius client server-info auth secret

Function Set the shared key (RADIUS secret) for the RADIUS authentication server.

Available Model XG0224 / XG0448 / XG2600

Syntax aaa [<group_id>] radius client server-info auth [<number>] secret <secret> [encrypted]

Options

<group_id>

- Group ID
  Specify a group ID with a serial decimal value.
  The default is 0.

<number>

- Server definition number
  Specify the definition number of the remote device with a decimal value.
  The default is 0.

<secret>

- Shared key (RADIUS secret)
  Specify the shared key (RADIUS secret), which has been determined between this device and the RADIUS authentication server, using up to 64 characters from 0x21, 0x23 to 0x7e ASCII set.
- Encrypted shared-key (RADIUS secret)
  Specify the encrypted shared-key (RARIUS secret) together with "encrypted" to be displayed with the "show" command.

encrypted

- Specify the encrypted shared-key (RADIUS secret)
  Specify it when setting the encrypted shared-key (RADIUS secret) in <secret>.

Use Mode Configuration mode (admin class)

Explanation Set the shared key (RADIUS secret) used between this device and RADIUS authentication server.
With the "show" command, the encrypted shared-key (RADIUS secret) is displayed together with "encrypted".

Default It is assumed that the shared key (RADIUS secret) is not set.

5.13.3.5 aaa radius client server-info auth address

Function Set the IP address of the remote RADIUS authentication server.

Available Model XG0224 / XG0448 / XG2600

Syntax aaa [<group_id>] radius client server-info auth [<number>] address <address>

Options

<group_id>

- Group ID
  Specify a group ID with a serial decimal value.

<number>

- Server definition number
  Specify the definition number of the remote device with a decimal value.
  The default is 0.

<address>

- Remote IP address
  Specify the IPv4 or IPv6 address of the remote RADIUS authentication device.
  The allowable range is as follows:
  - IPv4
    1.0.0.1 to 126.255.255.254
    128.0.0.1 to 191.255.255.254
    192.0.0.1 to 223.255.255.254
  - IPv6
    ::2 to fe7f:ffff:ffff:ffff:ffff:ffff:ffff:ffff
    fec0:: to feff:ffff:ffff:ffff:ffff:ffff:ffff:ffff

Use Mode Configuration mode (admin class)

Explanation Set the IP address of the RADIUS authentication server that communicates with this device.
Multiple servers cannot be specified.

Default The IP address of the remote RADIUS authentication device is not set. Be sure to set this command when using the RADIUS authentication function.

5.13.3.6 aaa radius client server-info auth port

Function Specify UDP port of the authentication server (the old RFC specifications compatible).

Available Model XG0224 / XG0448 / XG2600

Syntax aaa [<group_id>] radius client server-info auth [<number>] port <port>

Options

<group_id>

- Group ID
  Specify a group ID with a serial decimal value.

<number>

- Server definition number
  Specify the definition number of the remote device with a decimal value.
  The default is 0.

<port>

- 1812
  The UDP port number that has been assigned to the RADIUS authentication server in the latest RFC specifications.
- 1645
  The UDP port number that has been assigned to the RADIUS authentication server in the old RFC specifications.

Use Mode Configuration mode (admin class)

Explanation Set the UDP port number of the RADIUS authentication server for which a RADIUS authentication client requests authentication.
If the RADIUS authentication server for which the authentication is requested is installed with a UDP port based on the old RFC specifications, set the port number to 1645.

Default It is assumed that the UDP port number of the RADIUS accounting server is set to 1812.

```
aaa radius client server-info auth port 1812
```

5.13.3.7 aaa radius client server-info auth deadtime

Function Set a recovery standby time.

Available Model XG0224 / XG0448 / XG2600

Syntax aaa [<group_id>] radius client server-info auth [<number>] deadtime <deadtime>

Options

<group_id>

- Group ID
  Specify a group ID with a serial decimal value.

<number>

- Server definition number
  Specify the definition number of the remote device with a decimal value.
  The default is 0.

<deadtime>

- Recovery standby time
  Specify a time period required to automatically restore the RADIUS server to the alive state after it was placed into the dead state.
  The unit shall be d (day), h (hour), m (minute), or s (second).
  The allowable range is as follows:
  0 to 86400 (seconds):
  Specifying "0s" will not automatically restore the RADIUS server to the alive state.

Use Mode Configuration mode (admin class)

Explanation If the RADIUS server does not respond after the response wait time set in the "aaa radius client retry" command lapsed, it will be placed in the dead state and set to the lowest priority. Once the RADIUS server is placed in the dead state, it will remain disabled as long as an alive server is active. Set a wait time to automatically recover the server from the dead state to the alive state according to the priority setting.
To recover from the dead state to the alive state, one of the following conditions must be satisfied.

- When the set time has elapsed:
- When a response has been returned from the RADIUS server in the dead state, to which some packets were sent, after all the available servers were placed into the dead state; or
- When the dead state has been manually recovered with the "radius recovery" command.

Default It is assumed that the server is not recovered automatically.

```
aaa radius client server-info auth deadtime 0s
```

5.13.3.8 aaa radius client server-info auth priority

Function Set the priority.

Available Model XG0224 / XG0448 / XG2600

Syntax aaa [<group_id>] radius client server-info auth [<number>] priority <priority>

Options

<group_id>

- Group ID
  Specify a group ID with a serial decimal value.

<number>

- Server definition number
  Specify the definition number of the remote device with a decimal value.
  The default is 0.

<priority>

- Priority
  Specify the priority required to enable the RADIUS server in the same group.
  A smaller value has a higher priority, where "0" is assumed to be the highest priority level and "255" to be the lowest priority level.
  0 to 255:
  Specifying "255" will always place the RADIUS server into the dead state.

Use Mode Configuration mode (admin class)

Explanation Specify the priority used to determine the RADIUS server for accounting among multiple RADIUS servers in the same group. A RADIUS server with the highest priority, which is not in the dead state, is used in the same group. If there are multiple RADIUS servers which have the highest priority, the target RADIUS server will be determined randomly.

Default It is assumed that the highest priority has been specified.

```
aaa radius client server-info auth priority 0
```

5.13.3.9 aaa radius client server-info auth source

Function Set the local IP address.

Available Model XG0224 / XG0448 / XG2600

Syntax aaa [<group_id>] radius client server-info auth [<number>] source <address>

Options

<group_id>

- Group ID
  Specify a group ID with a serial decimal value.

<number>

- Server definition number
  Specify the definition number of the remote device with a decimal value.
  The default is 0.

<address>

- Local IP address
  Specify the IPv4 or IPv6 address of the local RADIUS authentication server.
  The allowable range is as follows:
  - IPv4
    1.0.0.1 to 126.255.255.254
    128.0.0.1 to 191.255.255.254
    192.0.0.1 to 223.255.255.254
  - IPv6
    ::2 to fe7f:ffff:ffff:ffff:ffff:ffff:ffff:ffff
    fec0:: to feff:ffff:ffff:ffff:ffff:ffff:ffff:ffff

Use Mode Configuration mode (admin class)

Explanation Set the IP address of the local RADIUS authentication device. The IP address setting of this definition supersedes that of the local RADIUS authentication device set by "aaa radius auth source".

Default It is assumed that the IP address setting of the local RADIUS authentication device set by "aaa radius auth source" is applied.

5.13.3.10 aaa radius client retry

Function Set a RADIUS packet retry count and a transmission interval.

Available Model XG0224 / XG0448 / XG2600

Syntax aaa [<group_id>] radius client retry <interval> <retry>

Options

<group_id>

- Group ID
  Specify a group ID with a serial decimal value.

<interval>

- Transmission interval
  Set a packet transmission interval when the RADIUS server returns no response.
  The allowable range is as follows:
  1 to 10 (seconds)

<retry>

- Retry count value
  Set a packet retry count value when the RADIUS server returns no response.
  The allowable range is as follows:
  1 to 10 (times)

Use Mode Configuration mode (admin class)

Explanation Set a number of times for retransmission and a transmission interval for packet when no response has been returned from the RADIUS server.
The time period to wait for a response from the server is transmission interval x (number of transmission + 1) seconds.

Default Operate assuming that the transmission interval is 5 seconds and the number of times for retransmission is 2.
In this case, the time period to wait for a response from the server is 15 seconds after the first packet transmission was completed.

```
aaa 0 client radius retry 5 2
```

5.13.3.11 aaa radius client security

Function Set security Level when RADIUS server doesn’t respond

Available Model XG0224 / XG0448 / XG2600

Syntax aaa [<group_id>] radius client security <level>

Options

<group_id>

- Group ID
  Specify group ID with a decimal value.

<level>

- high
  Set security level to high
- normal
  Set security level to normal

Use Mode Configuration mode (admin class)

Explanation Set security Level when RADIUS server doesn’t respond

Default aaa <group_id> client radius security high

5.14 Password Information

This section explains about password information.

5.14.1 password format

Function Sets format for encrypted password strings.

Available Model XG0224 / XG0448 / XG2600

Syntax password format <format>

Options

<format>
Format for encrypted password strings

- common
  Common password format
  Encrypted password strings that can be used by other devices.
- unique
  Device-specific password format
  Encrypted password strings that can only be used by this device.

Use Mode Configuration mode (admin class)

Explanation When plain text passwords are set in the configuration they are converted to encrypted password strings. When the show or save command is executed, encrypted passwords are displayed or stored with the word "encrypted" appended.
This command configures the format in which encrypted password strings are shown and stored. This setting applies to all passwords in the configuration.
This command takes effect immediately upon configuration.
If the Common option is set, password strings will be encrypted in the same common password format for all devices. If a device is replaced due to failure or other circumstances, a configuration that has been saved using the common password format can be restored to the new device after replacement. While the common option is in effect, passwords may be set in plain text or in the common password format. Passwords may not be set in a device-specific format.
If the unique option is set, encrypted password strings will be in a device-specific password format, unique to each device. A configuration shown or stored using a device-specific password format can only be set or restored to that specific device. If the device is replaced due to failure or other circumstances, the configuration saved in the device-specific password format cannot be restored, so please be sure to reset the new device with plain text passwords after replacement. While the unique option is in effect, passwords may be set in plain text, the common password format, or the device-specific password format displayed on the device.
If the unique option is set on devices implementing Trusted Platform Module (TPM), the device-specific password format will use the TPM chip. In addition, when the unique option is set, a check is run to see if the TPM chip is working properly, and if a hardware error is detected the message below is output and the option is set to common.

Caution If set to unique, this setting cannot be re-set to common or canceled. If you wish to reset this setting to common, run the reset clear command to restore to factory settings, then re-set the configuration.
When the unique option has been set, all preexisting passwords will be converted to the device-specific password format, displayed and saved.

Default If unset, the common setting will be the default.

```
password format common
```

5.14.2 password admin set

Function Set an administrator password.

Available Model XG0224 / XG0448 / XG2600

Syntax password admin set [<password> [encrypted]]

Options

<password>

- Password
  Specify a password using up to 64 characters from, 0x21,0x23 to 0x3e,0x40 to 0x7e ASCII set.
- Encrypted password
  Specify the encrypted password together with "encrypted" to be displayed with the "show candidate-config", "show running-config", or "show startup-config" command.
  Correctly specify the character string displayed in the "show candidate-config", "show running-config", or "show startup-config" command.

encrypted

- Specify the encrypted password
  Specify it when setting the encrypted password in <password>.

Use Mode Configuration mode (admin class)

Explanation Set a password for the administrator to login this device. When changing to the administrator with the "admin" command, the administrator password set in this command is required.
To make the password secure, it shall be set with eight or more alphanumeric characters and symbols mixed.
If the <password> option is not set, the password is required interactivery.
This command becomes valid just after it is set.
Entering "admin" for the user name and this password for "password" makes it possible to login as the admin class and also to use admin-class commands.

Caution Be sure to set an administrator password. When not setting the administrator password, you can login without entering any password.
When not setting the administrator password, you can't use AAA user information (see "aaa user id" command) and user information in RADIUS-server.
When setting a password that consists of seven or fewer characters, only alphabetic characters, or only numeric characters, and also when deleting a setting, the setting and the deletion are performed, but a warning message will be displayed notifying that the password is vulnerable.
With the "show candidate-config", "show running-config", and "show startup-config" commands, the encrypted password is displayed together with "encrypted".

Message

```
Password:
```

The <password> option is not set.
Type the password for administrator interactivery.

```
Retype password:
```

The <password> option is not set.
Retype the password for administrator interactivery.

```
<WARNING> weak admin password: set the password
```

The administrator password is not set.
Set an administrator password.

```
<WARNING> weak admin password: contain at least 8 characters
```

The administrator password is seven or fewer characters in length.
Set an administrator password with eight or more characters.

```
<WARNING> weak admin password: contain a different kind of character
```

The administrator password consists of only alphabetic characters or only numeric characters.
Set an administrator password with alphanumeric characters and symbols mixed.
This message is also displayed at login or execution of the "admin", "load", or "discard" command.

Default An administrator password is not set.

5.14.3 password user set

Function Set a general user password.

Available Model XG0224 / XG0448 / XG2600

Syntax password user set <password> [encrypted]

Options

<password>

- Password
  Specify a password using up to 64 characters from 0x21, 0x23 to 0x7e ASCII set.
- Encrypted password
  Specify the encrypted password together with "encrypted" to be displayed with the "show candidate-config", "show running-config", or "show startup-config" command.
  Correctly specify the character string displayed in the "show candidate-config", "show running-config", or "show running-config" command.

encrypted

- Specify the encrypted password
  Specify it when setting the encrypted password in <password>.

Use Mode Configuration mode (admin class)

Explanation Set a password for general users to login this device.
To make the password secure, it shall be set with eight or more alphanumeric characters and symbols mixed.
This command becomes valid just after it is set.
Entering "admin" for the user name and this password for "password" makes it possible to login as the user class and also to use user-class commands.

Caution When not setting the user password, you cannot login as the user class. When setting a password that consists of seven or fewer characters, only alphabetic characters, or only numeric characters, and also when deleting a setting, the setting and the deletion are performed, but a warning message will be displayed notifying that the password is vulnerable.
At ftp connection, a user password cannot be used for login.
If you login with a user password, the contents that were set at logout or execution of the "admin" command will be discarded without storing the contents that were set with the "terminal" or "alias" command.
With the "show logging" command, history numbers are discontinuous without displaying the commands that were executed by the administrator.
With the "show candidate-config", "show running-config", and "show startup-config" commands, the encrypted password is displayed together with "encrypted".

Message

```
<WARNING> weak user password: contain at least 8 characters
```

The user password is seven or fewer characters in length.
Set a user password with eight or more characters.

```
<WARNING> weak user password: contain a different kind of character
```

The user password consists of only alphabetic characters or only numeric characters.
Set a user password with alphanumeric characters and symbols mixed.
This message is also displayed at login or execution of the "admin", "load", or "discard" command.

Default A general user password is not set.

5.14.4 password aaa

Function Set AAA information of login user

Available Model XG0224 / XG0448 / XG2600

Syntax password aaa <group_id>

Options

<group_id>

- AAA Group ID
  Specify AAA group ID with a decimal value

Use Mode Configuration mode (admin class)

Explanation Specify AAA group ID refered when logging in

- When using RADIUS server
  Specify Filter-ID attribute registered in RADIUS server
  "administrator" is admin class, "user" is user class
- When using local user information
  It is diced by class (aaa user user-role) registered in AAA information

Default N/A

5.14.5 password authtype

Function Set authentication protocol for login user authentication

Available Model XG0224 / XG0448 / XG2600

Syntax password authtype <authtype>

Options

<authtype>

- chap_md5
  Use MD5-CHAP as authentication protocol
- pap
  Use PAP as authentication protocol

Use Mode Configuration mode (admin class)

Explanation Set authentication protocol for login user authentication

Default It is assumed to use MD5-CHAP as authentication protocol.

```
password authtype chap_md5
```

5.15 Device Information Settings

This section explains about device information settings.

5.15.1 SNMP Information

This section explains about the commands related to SNMP information.

5.15.1.1 snmp service

Function Set the SNMP agent and SNMP trap functions.

Available Model XG0224 / XG0448 / XG2600

Syntax snmp service <mode>

Options

<mode>

- on
  Enable SNMP agent and SNMP trap functions.
- off
  Disable SNMP agent and SNMP trap functions.

Use Mode Configuration mode (admin class)

Explanation Set whether to enable SNMP agent and SNMP trap functions.

Default It is assumed that the SNMP agent function is stopped.

```
snmp service off
```

5.15.1.2 snmp agent contact

Function Set the administrator name for the SNMP agent function.

Available Model XG0224 / XG0448 / XG2600

Syntax snmp agent contact <syscontact>

Options

<syscontact>

- Administrator name (sysContact value)
  Specify the MIB variable, sysContact, which indicates an administrator name of this device, with up to 40 characters.

Use Mode Configuration mode (admin class)

Explanation Set the administrator name for the SNMP agent function.

Default It is assumed that the administrator name is not set.

5.15.1.3 snmp agent sysname

Function Set the equipment name for the SNMP agent function.

Available Model XG0224 / XG0448 / XG2600

Syntax snmp agent sysname <sysname>

Options

<sysname>

- Equipment name (sysName value)
  Specify the MIB variable, sysName, which indicates an equipment name of this device, with up to 32 characters.

Use Mode Configuration mode (admin class)

Explanation Set the equipment name for the SNMP agent function.

Default It is assumed that the equipment name is not set.

5.15.1.4 snmp agent location

Function Set where to install the equipment for the SNMP agent function.

Available Model XG0224 / XG0448 / XG2600

Syntax snmp agent location <syslocation>

Options

<syslocation>

- Location to install the equipment in (sysLocation value)
  Specify the MIB variable, sysLocation, which indicates where to install this device, with up to 72 characters.

Use Mode Configuration mode (admin class)

Explanation Set where to install the equipment for the SNMP agent function.

Default It is assumed that the location to install the equipment is not set.

5.15.1.5 snmp agent address

Function Set the SNMP agent address.

Available Model XG0224 / XG0448 / XG2600

Syntax snmp agent address <address>

Options

<address>

- Agent address
  Set the agent address of this device.
  Specifying 0.0.0.0 will delete the SNMP agent address.
  The allowable range is as follows:
  1.0.0.1 to 126.255.255.254
  128.0.0.1 to 191.255.255.254
  192.0.0.1 to 223.255.255.254

Use Mode Configuration mode (admin class)

Explanation Set the SNMP agent address. This setting is also used for the local address at trap transmission.
Make sure to set it when using the SNMP agent function.

Default It is assumed that the agent address is not set. The local IP address of trap packet is undefined.

5.15.1.6 snmp agent engineid

Function Set a SNMP engine ID name.

Available Model XG0224 / XG0448 / XG2600

Syntax snmp agent engineid <engineID>

Options

<engineID>

- SNMP engine ID
  Specify a SNMP engine ID with up to 27 characters.

Use Mode Configuration mode (admin class)

Explanation Set a SNMP engine ID under SNMPv3. In this device, the SNMP engine ID is as follows.

- When setting this command;
  Octets 1 to 5: 0x800000d304 fixed
  Octet 6 and above: Engine ID set in this command
- When not setting this command;
  Octets 1 to 5: 0x800000d304 fixed
  Octet 6 and above: Random value

Default A SNMP engine ID is generated automatically.

5.15.1.7 snmp manager

Function Set the SNMP host information.

Available Model XG0224 / XG0448 / XG2600

Syntax snmp manager <manager_number> <address> <community> <trap> [<write>]

Options

<manager_number>

- SNMP host definition number
  Specify a serial number of SNMP host definition with a decimal value from 0 to 7.

<address>

- Access permission/trap sending address
  Specify an IP address to permit access and to send a trap to, in the XXX.XXX.XXX.XXX format, where "XXX" indicates a 3-digit decimal value.
  Specifying 0.0.0.0 will permit access by all hosts without trap sending.
  The allowable range is as follows:
  1.0.0.1 to 126.255.255.254
  128.0.0.1 to 191.255.255.254
  192.0.0.1 to 223.255.255.254

<community>

Specify the community name.

- Community name
  Specify the community name for trap sending with up to 32 characters.
- public
  Specify it when communicating with any of the SNMP managers.

<trap>

Specify whether or not to perform trap transmission.

- off
  Specify it when not performing trap transmission.
- v1
  Specify it when performing SNMPv1 trap transmission.
- v2c
  Specify it when performing SNMPv2 trap transmission.

<write>

Specify whether or not to permit writing from the SNMP manager.

- enable
  Specify it when enabling writing from the SNMP manager.
- disable
  Specify it when disabling writing from the SNMP manager.

The default is "disable".

Use Mode Configuration mode (admin class)

Explanation Set the SNMP host information.

Default It is assumed that no SNMP host information is set.

5.15.1.8 snmp trap coldstart

Function Set the coldStart trap.

Available Model XG0224 / XG0448 / XG2600

Syntax snmp trap coldstart <mode>

Options

<mode>
Specify whether to enable or disable trapping.

- enable
  Enable trapping.
- disable
  Disable trapping.

Use Mode Configuration mode (admin class)

Explanation Set whether to enable or disable the coldStart trap.

Default It is assumed that the coldStart trap is enabled.

```
snmp trap coldstart enable
```

5.15.1.9 snmp trap linkdown

Function Set the linkDown trap.

Available Model XG0224 / XG0448 / XG2600

Syntax snmp trap linkdown <mode>

Options

<mode>
Specify whether to enable or disable trapping.

- enable
  Enable trapping.
- disable
  Disable trapping.

Use Mode Configuration mode (admin class)

Explanation Set whether to enable or disable the linkDown trap.

Default It is assumed that the linkDown trap is enabled.

```
snmp trap linkdown enable
```

5.15.1.10 snmp trap linkup

Function Set the linkUp trap.

Available Model XG0224 / XG0448 / XG2600

Syntax snmp trap linkup <mode>

Options

<mode>
Specify whether to enable or disable trapping.

- enable
  Enable trapping.
- disable
  Disable trapping.

Use Mode Configuration mode (admin class)

Explanation Set whether to enable or disable the linkUp trap.

Default It is assumed that the linkUp trap is enabled.

```
snmp trap linkup enable
```

5.15.1.11 snmp trap authfail

Function Set the authenticationFailure trap.

Available Model XG0224 / XG0448 / XG2600

Syntax snmp trap authfail <mode>

Options

<mode>
Specify whether to enable or disable trapping.

- enable
  Enable trapping.
- disable
  Disable trapping.

Use Mode Configuration mode (admin class)

Explanation Set whether to enable or disable the authenticationFailure trap.

Default It is assumed that the authenticationFailure trap is enabled.

```
snmp trap authfail enable
```

5.15.1.12 snmp trap newroot

Function Set the newRoot trap.

Available Model XG0224 / XG0448 / XG2600

Syntax snmp trap newroot <mode>

Options

<mode>
Specify whether to enable or disable trapping.

- enable
  Enable trapping.
- disable
  Disable trapping.

Use Mode Configuration mode (admin class)

Explanation Set whether to enable or disable the newRoot trap.

Default It is assumed that the newRoot trap is enabled.

```
snmp trap newroot enable
```

5.15.1.13 snmp trap topologychange

Function Set the topologyChange trap.

Available Model XG0224 / XG0448 / XG2600

Syntax snmp trap topologychange <mode>

Options

<mode>
Specify whether to enable or disable trapping.

- enable
  Enable trapping.
- disable
  Disable trapping.

Use Mode Configuration mode (admin class)

Explanation Set whether to enable or disable the topologyChange trap.

Default It is assumed that the topologyChange trap is enabled.

```
snmp trap topologychange enable
```

5.15.1.14 snmp trap noserror

Function Set the nosError trap.

Available Model XG0224 / XG0448 / XG2600

Syntax snmp trap noserror <mode>

Options

<mode>
Specify whether to enable or disable trapping.

- enable
  Enable trapping.
- disable
  Disable trapping.

Use Mode Configuration mode (admin class)

Explanation Set whether to enable or disable the nosError trap.

Default It is assumed that the nosError trap is enabled.

```
snmp trap noserror enable
```

5.15.1.15 snmp trap lldpremtableschange

Function Set lldpRemTablesChange trap

Available Model XG0224 / XG0448 / XG2600

Syntax snmp trap lldpremtableschange <mode>

Options

<mode>
Set trap mode

- enable
  Enable trap
- disable
  Disable trap

Use Mode Configuration mode (admin class)

Explanation Set whether to enable or not lldpRemTablesChange tra

Default It is assumed that the lldpRemTablesChange trap is enabled.

```
snmp trap lldpremtableschange enable
```

5.15.1.16 snmp rmon

Function Set the RMON function.

Available Model XG0224 / XG0448 / XG2600

Syntax snmp rmon <mode>

Options

<mode>

Specify whether to enable or disable the RMON function.

- on
  Use the RMON function.
- off
  Do not use the RMON function.

Use Mode Configuration mode (admin class)

Explanation Set whether to use the RMON function. When not using this function, the RMON-MIB cannot be obtained.

Default It is assumed that the RMON function is used.

```
snmp rmon on
```

5.15.1.17 snmp user name

Function Set a SNMP user name.

Available Model XG0224 / XG0448 / XG2600

Syntax snmp user [<number>] name <user_name>

Options

<number>

- User definition number
  Specify a user definition number with a decimal value from 0 to 7.
  The default is 0.

<user_name>

- SNMP user name
  Specify a SNMP user name with up to 32 characters.

Use Mode Configuration mode (admin class)

Explanation Set a SNMP user name under SNMPv3. Be sure to set it when using the SNMPv3 function.

Default It is assumed that a SNMP user name is not set.

5.15.1.18 snmp user address

Function Set a SNMP host address.

Available Model XG0224 / XG0448 / XG2600

Syntax snmp user [<number>] address [<addr_number>] <address>

Options

<number>

- User definition number
  Specify a user definition number with a decimal value from 0 to 7.
  The default is 0.

<addr_number>

- SNMP host definition number
  Specify a SNMP host definition number with a decimal value from 0 to 7.
  The default is 0.

<address>

- SNMP host address
  Specify an IP address of the host, which permits SNMPv3 access, in the XXX.XXX.XXX.XXX format, where "XXX" indicates a 3-digit decimal value.
  The allowable range is as follows:
  1.0.0.1 to 126.255.255.254
  128.0.0.1 to 191.255.255.254
  192.0.0.1 to 223.255.255.254

Use Mode Configuration mode (admin class)

Explanation Set a SNMP host address under SNMPv3. Up to eight addresses can be defined for this device, including ones set in the "snmp user notification" command.

Default It is assumed that no SNMP host address is set.

5.15.1.19 snmp user notification

Function Set a trap notification host address.

Available Model XG0224 / XG0448 / XG2600

Syntax snmp user [<number>] notification [<addr_number>] <address>

Options

<number>

- User definition number
  Specify a user definition number with a decimal value from 0 to 7.
  The default is 0.

<addr_number>

- Trap notification host definition number
  Specify a trap notification host definition number with a decimal value from 0 to 7.
  The default is 0.

<address>

- Trap notification host address
  Specify an IP address of the host, which is subject to trap notification, in the XXX.XXX.XXX.XXX format, where "XXX" indicates a 3-digit decimal value.
  The allowable range is as follows:
  1.0.0.1 to 126.255.255.254
  128.0.0.1 to 191.255.255.254
  192.0.0.1 to 223.255.255.254

Use Mode Configuration mode (admin class)

Explanation Set a trap notification host address under SNMPv3. Up to eight addresses can be defined for this device, including the ones set in the "snmp user address" command.

Default It is assumed that no trap notification host address is set.

5.15.1.20 snmp user auth

Function Set the authentication protocol

Available Model XG0224 / XG0448 / XG2600

Syntax snmp user [<number>] auth <protocol> [<password> [encrypted]]

Options

<number>

- User definition number
  Specify the user definition number with a decimal value from 0 to 7.
  The default is 0

<protocol>

Specify the authentication protocol

- none
  Specify it when unusing authentication protocol.
- md5
  Specify it when using MD5(HMAC-MD5-96)
- sha
  Specify it when using SHA (HMAC-SHA-96)

<password>

Set the authentication password

- In the case of specifying unencryption password

Authentication Protocol	Password length
md5	8-16 characters
sha1	8-20 characters

- In the case of specifying encryption password
  Specify the encrypted authentication password shown by show command with "encrypted"
  Specify the characters which is shown by show command

encrypted

- Specify encrypted authentication password
  Specify it when specifying encrypted authentication password in <password>

Use Mode Configuration mode (admin class)

Explanation Set authentication protocol for SNMPv3

Default It is assumed that the authentication protocol is not use.

```
snmp user <number> auth none
```

5.15.1.21 snmp user priv

Function Set encryption protocol

Available Model XG0224 / XG0448 / XG2600

Syntax snmp user [<number>] priv <protocol> [<password> [encrypted]]

Options

<number>

- User definition number
  Specify the user definition number with a decimal value from 0 to 7.
  The default is 0

<protocol>

Specify the encryption protocol

- none
  Specify it when unusing encryption protocol.
- des
  Specify when using DES (CBC-DES) as encryption protocol

<password>

Specify encrypted password

- In the case of specifying unencryption password

Encryption Protocol	Password length
des	8 to 16 characters

- In the case of specifying encryption password
  Specify the encrypted encryption password shown by show command with "encrypted"
  Specify the characters which is shown by show command

encrypted

- Specify encrypted encryption password
  Specify it when specifying encrypted authentication password in <password>

Use Mode Configuration mode (admin class)

Explanation Set the encryption protocol for SNMPv3

Caution Specify authentication protocol when using encryption protocol

Default It is assumed that encryption protocol is not use.

```
snmp user <number> priv none
```

5.15.1.22 snmp user write

Function Set the MIB write-enable view.

Available Model XG0224 / XG0448 / XG2600

Syntax snmp user [<number>] write <view_name>

Options

<number>

- User definition number
  Specify a user definition number with a decimal value from 0 to 7.
  The default is 0.

<view_name>

Specify the view name that indicates whether or not to permit to write in the write enabled MIB.

- none
  Specify it when not permitting all.
- all
  Specify it when permitting all.

Use Mode Configuration mode (admin class)

Explanation Specify the MIB write enabled view name under SNMPv3.

Default It is assumed that nothing is permitted.

5.15.1.23 snmp user read

Function Sets MIB read permission view.

Available Model XG0224 / XG0448 / XG2600

Syntax snmp user [<number>] read <access> [<view_number>]

Options

<number>

- User ID
  User ID expressed as a base 10 value from 0 to 7. Default is 0.

<access>

Sets MIB read permission view.

- all
  Read permission is granted on all supported MIBs.
- none
  MIB read permission is not granted.
- view
  Use the MIB view information set with the "snmp view subtree" command.

<view_number>

Specifies the "snmp view subtree" command's MIB view ID number, expressed as a base 10 value from 0 to 7. The view ID can only be set when view is specified for the <access> option.

Use Mode Configuration mode (admin class)

Explanation Sets MIB read permission view in SNMPv3.
If a "snmp view subtree" command definition corresponding to the view ID set does not exist, MIB read permission is not granted.

Default If unset, read permission is granted on all supported MIBs.

```
snmp user <number> read all
```

5.15.1.24 snmp user notify

Function Sets trap notification permission view.

Available Model XG0224 / XG0448 / XG2600

Syntax snmp user [<number>] notify <access> [<view_number>]

Options

<number>

- User ID
  User ID expressed as a base 10 value from 0 to 7. Default is 0.

<access>

Indicates trap notification permission view.

- all
  Permission is granted for all supported trap notifications.
- none
  Trap notification permission is not granted.
- view

Use the MIB view information set with the "snmp view subtree" command.

<view_number>

Specifies the "snmp view subtree" command's MIB view ID number, expressed as a base 10 value from 0 to 7. The view ID can only be set when view is specified for the <access> option.

Use Mode Configuration mode (admin class)

Explanation Sets trap notification permission view in SNMPv3.
If a "snmp view subtree" command definition corresponding to the view ID set does not exist, trap notification permission is not granted.

Default If unset, trap notification permission is granted on all supported trap notifications.

```
snmp user <number> notify all
```

5.15.1.25 snmp view subtree

Function SNMP MIB view information

Available Model XG0224 / XG0448 / XG2600

Syntax snmp view [<view_number>] subtree [<subtree_number>] <view_type> <subtree_name>

Options

<view_number>

- View definition number
  Specify the view definition number with a decimal value from 0 to 7
  The default is 0.

<subtree_number>

- Subtree definition number
  Specify the subtree definition number with a decimal value from 0 to 15
  The default is 0

<view_type>

Specify whether including <subtree_name> in MIB view or not

- include
  Include <subtree_name> in MIB view
- exclude
  Exclude <subtree_name> from MIB view

<subtree_name>

- Subtree name
  Specify subtree name

Subtree	name Object ID	Remark
MIB Group name		
iso	1	
internet	1.3.6.1	
mib2	1.3.6.1.2.1	
system	1.3.6.1.2.1.1	
interfaces	1.3.6.1.2.1.2	
at	1.3.6.1.2.1.3	
ip	1.3.6.1.2.1.4	
icmp	1.3.6.1.2.1.5	
tcp	1.3.6.1.2.1.6	
udp	1.3.6.1.2.1.7	
transmission	1.3.6.1.2.1.10	
snmp	1.3.6.1.2.1.11	
rmon	1.3.6.1.2.1.16	
dot1dBridge	1.3.6.1.2.1.17	
ifMIB	1.3.6.1.2.1.31	
radiusMIB	1.3.6.1.2.1.67	
enterprises	1.3.6.1.4.1	
lldpMIB	1.0.8802.1.1.2	

Subtree		name Object ID	Remark
Trap name			
	coldstart	1.3.6.1.6.3.1.1.5.1	
	linkdown	1.3.6.1.6.3.1.1.5.3	
	linkup	1.3.6.1.6.3.1.1.5.4	
	authfail	1.3.6.1.6.3.1.1.5.5	
	newroot	1.3.6.1.2.1.17.0.1	
	topologychange	1.3.6.1.2.1.17.0.2	
	noserror	1.3.6.1.4.1.211.1.127.1.0.1	
	lldpremtableschange	1.0.8802.1.1.2.0.0.1	

Use Mode Configuration mode (admin class)

Explanation Set MIB view information in SNMPv3

Default N/A

5.15.2 System Log Information

This section explains about the commands related to system log information.

5.15.2.1 syslog server address

Function Set the server IP address that receives system log information.

Available Model XG0224 / XG0448 / XG2600

Syntax syslog server <number> address <address>

Options

<number>

- Definition number
  Specify the definition number of the server that receives system log information (message) with a decimal value from 0 to 2.

<address>

- IP address
  Specify the IP address of the server that receives system log information (message).
  The allowable range is as follows:
  1.0.0.1 to 126.255.255.254
  128.0.0.1 to 191.255.255.254
  192.0.0.1 to 223.255.255.254

Use Mode Configuration mode (admin class)

Explanation Set the server IP address that receives system log information (message).
The following describes the procedure for outputting system log information.

1) Send information to a server the host with the IP address set in syslog server <address>.
2) Display information with the "show logging syslog" command.

Caution If STP is used, it takes a long time for transmission to be enabled after device startup. During this time, some messages are discarded before reaching the server.
When transferring system logs to a Linux server, be sure to enable remote logging by using the "-syslogd -r" command or editing the syslog init file to include the "-r" qualifier.

Default It is assumed that the server that receives system log information is not specified.

5.15.2.2 syslog server pri

Function Set the severity level for syslog information sent to the syslog servers.

Available Model XG0224 / XG0448 / XG2600

Syntax syslog server <number> pri <mode>

Options

<number>

- Definition number
  Specify the definition number of the server that receives system log information (message) with a decimal value from 0 to 2.

<mode>

- Priority
  Specify the severity level for syslog output. When specifying multiple parameters, separate them with commas (,).
  - error
    Specifies a severity level of LOG_ERROR events will be output to the syslog servers.
  - warn
    Specifies a severity level of LOG_WARNING will be output to the syslog servers.
  - notice
    Specifies a severity level of LOG_NOTICE will be output to the syslog servers.
  - info
    Specifies a severity of LOG_INFO will be output to the syslog servers.

Use Mode Configuration mode (admin class)

Explanation Specify severity levels to output to each syslog server from among those specified by "syslog server address" command.

Default It is assumed that "error", "warn" and "info" are specified.

5.15.2.3 syslog pri

Function Set the severity level output to the switch syslog.

Available Model XG0224 / XG0448 / XG2600

Syntax syslog pri <mode>

Options

<mode>

- Priority
  Specify the priority to output system log information from the following. When specifying multiple numbers, separate them with commas (,).
  - error
    Specifies a severity level of LOG_ERROR will be output to the switch syslog.
  - warn
    Specifies a severity level of LOG_WARNING will be output to the switch syslog.
  - notice
    Specifies a severity level of LOG_NOTICE will be output to the switch syslog.
  - info
    Specifies a severity level of LOG_INFO will be output to the switch syslog.

Use Mode Configuration mode (admin class)

Explanation Specify the severity level output to the switch syslog.

Default It is assumed that "error", "warn" and "info" are specified.

5.15.2.4 syslog facility

Function Set a system log information facility.

Available Model XG0224 / XG0448 / XG2600

Syntax syslog facility <num>

Options

<num>

- Facility
  Set a system log information facility with a decimal value from 0 to 23.

Use Mode Configuration mode (admin class)

Explanation Specify a system log information facility.

Default It is assumed that 0 has been specified.

```
syslog facility 0
```

5.15.2.5 syslog security

Function Set the security to output the system log information.

Available Model XG0224 / XG0448 / XG2600

Syntax syslog security <securetype>

Options

<securetype>

- Security type
  Select one of the followings to output the security log information.
  When specifying multiples, separate them with commas (,).
  proxydns : Specify it when the Proxy DNS module is subject to output.
  none : Specify it when all modules are out of subject to output.

Use Mode Configuration mode (admin class)

Explanation Specify the security used to output the system log information.

Default It is assumed all options have been specified.

```
syslog security proxydns
```

5.15.2.6 syslog dupcut

Function Set the duplicated message output of system log information.

Available Model XG0224 / XG0448 / XG2600

Syntax syslog dupcut <cut>

Options

<cut>

- yes
  Do not output the previous output message if duplicated.
- no
  Output all messages without checking for duplication.

Use Mode Configuration mode (admin class)

Explanation Specify whether to output a message, which was duplicated with the previously output message, to the system log.

Default It is assumed that duplication check is not performed.

```
syslog dupcut no
```

5.15.2.7 syslog command-logging

Function Set command execution history output of system log information

Available Model XG0224 / XG0448 / XG2600

Syntax syslog command-logging <mode>

Options

<mode>

- enable
  Output command execution history to system log
- disable
  Do not Output command execution history to system log

Use Mode Configuration mode (admin class)

Explanation Specify whether to output command history to system log

Default It is assumed that the command execution history is not output to the system log.

```
syslog command-logging disable
```

5.15.2.8 syslog header

Function Set the RFC3164 Header information of the system log information.

Available Model XG0224 / XG0448 / XG2600

Syntax syslog header <mode>

Options

<mode>

- enable
  ADD the RFC3164 Header to the system log information sent to the syslog servers.
- disable
  Do not add the RFC3164 Header to the system log information sent to the syslog servers.

Use Mode Configuration mode (admin class)

Explanation Specify whether to add the RFC3164 Header to the system log information sent to the syslog servers.

Default It is assumed that the RFC3164 Header is not added.

```
syslog header disable
```

5.15.2.9 syslog source address

Function Set the source IP address of the system log information.

Available Model XG0224 / XG0448 / XG2600

Syntax syslog source address <address>

Options

<address>
Specify the source IPv4 address that is used for sending the system log information.
The allowable range is as follows:
1.0.0.1 to 126.255.255.254
128.0.0.1 to 191.255.255.254
192.0.0.1 to 223.255.255.254

Use Mode Configuration mode (admin class)

Explanation Specify the source IPv4 address that is used for sending the system log information.
If the IPv4 address is not set, the IPv4 address of the sending interface is used.

Default It is assumed that use the IPv4 address of the sending interface in used.

5.15.3 Automatic Time Setting Information

This section explains about the commands related to automatic time setting information.

5.15.3.1 time auto server

Function Specify the IP address, protocol, and priority of server(s) that supply time information.

Available Model XG0224 / XG0448 / XG2600

Syntax time auto server <count> address <address> <protocol> [<interface>]

Options

<count>

- Priority
  Set the server priority with a decimal value from 0 to 3.
  A smaller value has a higher priority.

<address>

- IPv4 address
  Specify the IPv4 address of the server that supplies time information.
  Specifying 0.0.0.0 will delete the set value.
  The allowable range is as follows:
  1.0.0.1 to 126.255.255.254
  128.0.0.1 to 191.255.255.254
  192.0.0.1 to 223.255.255.254
  224.0.0.1 to 239.255.255.254 (Multicast address)
  255.255.255.255 (Broadcast address)
- IPv6 address
  Specify the IPv6 address of the server that supplies time information.
  Specifying 0:0: 0 will delete the set value.
  The allowable range is as follows:
  ::2 to fe7f:ffff:ffff:ffff:ffff:ffff:ffff:ffff
  fec0:: to feff:ffff:ffff:ffff:ffff:ffff:ffff:ffff

<protocol>

Specify the desireded protocol.

- time
  Specify the TIME protocol (TCP).
- sntp
  Specify the simple NTP protocol (UDP).

<interface>

Specify the target interface.
[Note]
This option can be specified only when the <address> has been specified as an IPv4 multicast address or IPv4 broadcast address and the <protocol> has been specified as sntp.

Use Mode Configuration mode (admin class)

Explanation Specify the working parameters for the time information server(s).
The switch clock is automatically synchronized to the time information server(s) specified.

Default It is assumed that the time is not set automatically.

5.15.3.2 time auto interval

Function Set an automatic setting interval of time information.

Available Model XG0224 / XG0448 / XG2600

Syntax time auto interval <time>

Options

<time>

Specify the interval to set time information.

- start
  Specify when setting time information only once at device power-on or restart.
- Interval
  Specify the interval to set time information within the range of 0 second up to 10 days.
  The unit shall be d (day), h (hour), m (minute), or s (second).

Use Mode Configuration mode (admin class)

Explanation Set an interval to automatically set the time.

Default It is assumed that time information is set only once at device power-on or restart when using the time supply server.

```
time auto interval start
```

5.15.3.3 time zone

Function Set the time zone of time information.

Available Model XG0224 / XG0448 / XG2600

Syntax time zone <offset>

Options

<offset>

- Difference
  Specify the time zone of this device.
  Specify the time differences from Greenwich Mean Time (GMT).

Use Mode Configuration mode (admin class)

Explanation Set the timezone.

Default It is assumed that Greenwich Mean Time (GMT) is set for the time zone.

```
time zone 0
```

5.15.3.4 time summer-time

Function Sets summer time/daylight saving time.
Use the no form to return to the default setup.

Available Model XG0224 / XG0448 / XG2600

Syntax time summer-time <start_day> <end_day> [<offset>]

Options

<start_day>

- Specifies the day/time to start Daylight Saving Time in any form of "Mm.w.d/hhmm," "Jn/hhmm," or "n/hhmm."
  - Mm.w.d
    Specifies the day to start Daylight Saving Time in m, w, and d.
    Specify month for m (1 to 12), week for w (1 to 5), and the day of the week for d (0 to 6).
    w = 1 means the first week where d exists, and w = 5 means the last week.
    d = 0 means Sunday, d = 6 means Saturday.
  - Jn
    Specifies the day to start Daylight Saving Time in day-of-year (Julian day).
    In leap years, February 29th is not counted.
    Specify a number in the range of 1 to 365 for n.
  - n
    Specifies the day to start Daylight Saving Time in day-of-year.
    In leap years, February 29th is counted.
    Specify a number in the range of 1 to 366 for n.
  - hh
    Specifies the hour to start Daylight Saving Time.
  - mm
    Specifies the minute to start Daylight Saving Time.

Specifies the following values, for the first day of each month in "Jn" specification and "n" specification.

Month/Day	Jn specification	specification	
		Common year	Leap year
January 1st	J1	1	1
February 1st	J32	32	32
March 1st	J60	60	61
April 1st	J91	91	92
May 1st	J121	121	122
June 1st	J152	152	153
July 1st	J182	182	183
August 1st	J213	213	213
September 1st	J244	244	245
October 1st	J274	274	275
November 1st	J305	305	306
December 1st	J335	335	336

<end_day>

- Specifies the day/time to end Daylight Saving Time.
  The description format is the same as <start_day>.

<offset>

- pecifies the time set forward during Daylight Saving Time in the form of "hhmm."
  - hh
    Specifies the hour set forward during Daylight Saving Time with a two-digit number.
    It can be set in the range of 00 to 23.
  - mm
    Specifies the minute set forward during Daylight Saving Time with a two-digit number.
    It can be set in the range of 00 to 59.

"0000" can not set as <offset>.
When this parameter is omitted, "0100" (an hour) is specified.

Use Mode Configuration mode (admin class)

Explanation Sets summer time/daylight saving time.

Default It is assumed that the daylight saving time is not set.

5.15.4 ProxyDNS Information

This section explains about the commands related to proxyDNS information.

5.15.4.1 proxydns domain

Function Set the forward lookup conditions for proxy DNS.

Available Model XG0224 / XG0448 / XG2600

Syntax proxydns domain <count> <qtype> <qname> <address>/<mask> reject
(Discard the request to forward)
proxydns domain <count> <qtype> <qname> <address>/<mask> static <ipaddress>
(Specify the fixed DNS server)

Options

<count>

- Destination definition number
  Specify a destination definition number with a decimal value from 0 to 49.
  The specified values are sorted and renumbered forward when setting was completed.
  If any destination definition with a same number exists, it will be inserted before the existing one.

<qtype>

- Query type number
  Specify a decimal value from 1 to 11 or from 13 to 65535.
  The following shows some part of the query types.

Name	Number	Description
A	1	Host address
NS	2	An authoritative name server
CNAME	5	Canonical name for an alias
SOA	6	Start of a zone of authority
PTR	12	A domain name pointer
HINFO	13	Host information
MX	15	A mail exchanger
SRV	33	Service

- any
  Specify it for all types, excluding PTR (12).

<qname>

- Host name
  Specify a host name used as a condition with up to 80 characters.
  For the host name, the following wild cards are usable.
  - * (Asterisk)
    This is considered to be an arbitrary character string of 0 character or more.
  - ? (Question mark)
    This is considered to be an arbitrary character.

For the host name, the following wild cards are usable.
An execution example is given below.

Execution example	Matching Character String
www.*.com	This is considered to match all of the following character strings. • www.testa.com • www.test1.test.com
test	This is considered to match all of the following character strings. • www.test.com • test.com • test.co.jp
www.test?.com	This is considered to match all of the following character strings. • www.test1.com • www.test2.com • www.testA.com

The host name is checked without case sensitivity.

<address>/<mask>

Specify the target source IPv4 address/number of mask bits.

- Source IPv4 address/number of mask bits (or mask value)
  Specify a combination of the target source IPv4 address and the number of mask bits.
  For the mask value, specify successive 1s following the most significant bit (MSB).
- any
  Specify it when targeting all addresses.
  The default is 0.0.0.0/0 (0.0.0.0/0.0.0.0).

<ipaddress>

- DNS server IP address
  Specify the IPv4 address of the DNS server that forwards a request.
  The allowable range is as follows:
  1.0.0.1 to 126.255.255.254
  128.0.0.1 to 191.255.255.254
  192.0.0.1 to 223.255.255.254

Use Mode

Configuration mode (admin class)

Explanation

Set forward lookup conditions for proxy DNS. The explanation for each command is as follows.

- Discard the requirement for forwarding
  proxydns domain <count> <qtype> <qname> <address>/<mask> reject
  Set the filter that disables forwarding the specified DNS request.
  The host name to be specified in <qname> is available when limiting the access to the specified host (group) even if it is registered in the DNS database. A host name that has satisfied filtering conditions will be discarded.
- Specify static DNS server
  proxydns domain <count> <qtype> <qname> <address>/<mask> static
  Set the IP address to which the specified DNS request is to be forwarded.

Default

It is assumed that no forward lookup conditions for proxy DNS are set.

5.15.4.2 proxydns domain move

Function Change the forward lookup conditions for proxy DNS.

Available Model XG0224 / XG0448 / XG2600

Syntax proxydns domain move <count> <new_count>

Options

<count>

- Destination definition number before changes
  Specify a destination definition number to change its order.

<new_count>

- New destination definition number
  Specify a new order for <count>.
  If any definition with the same definition number exists, it will be inserted before the existing one.

Use Mode Configuration mode (admin class)

Explanation Change the order of forward lookup conditions for proxy DNS.
If a same definition number which has already existed is specified, it will be inserted before the specified definition.

5.15.4.3 proxydns address

Function Set the reverse lookup conditions for proxy DNS.

Available Model XG0224 / XG0448 / XG2600

Syntax proxydns address <count> <address>/<mask> reject
(Discard the request to forward)
proxydns address <count> <address>/<mask> static <ipaddress>
(Specify the fixed DNS server)

Options

<count>

- Destination definition number
  Specify the destination definition number with a decimal value from 0 to 49.
  The specified value is sorted and renumbered forward when setting was completed.
  If any destination definition with a same definition number exists, it will be inserted before the existing one.

<address>/<mask>

Specify the IPv4 address for reverse lookup and the number of mask bits.

- IPv4 address for reverse lookup/number of mask bits (or mask value)
  Specify a combination of the IPv4 address for reverse lookup and the number of mask bits.
  For the mask value, specify successive 1s following the most significant bit (MSB).
- any
  Specify it when all addresses are subject to reverse lookup.

<ipaddress>

- DNS server IP address
  Specify the IPv4 address of the DNS server that forwards a request.
  The allowable range is as follows:
  1.0.0.1 to 126.255.255.254
  128.0.0.1 to 191.255.255.254
  192.0.0.1 to 223.255.255.254

Use Mode Configuration mode (admin class)

Explanation Set the reverse lookup conditions for proxy DNS.
The explanation for each command is as follows.

- Discard the requirement for forwarding
  proxydns address <count> <address>/<mask> reject
  Set the filter that disables forwarding the specified DNS request.
  The host name to be specified in <qname> is available when limiting the access to the specified host (group) even if it is registered in the DNS database. A host name that has satisfied filtering conditions will be discarded.
- Specify static DNS server
  proxydns address <count> <address>/<mask> static <ipaddress>
  Specify the IP address to which the specified DNS request is to be forwarded.
  The route leading to the destination is determined based on IP routing.

Default It is assumed that no reverse lookup conditions for proxy DNS are set.

5.15.4.4 proxydns address move

Function Change the reverse lookup conditions for proxy DNS.

Available Model XG0224 / XG0448 / XG2600

Syntax proxydns address move <count> <new_count>

Options

<count>

- Destination definition number before changes
  Specify a destination definition number to change its order.

<new_count>

- New destination definition number
  Specify a new order for <count>.
  If any definition with the same definition number exists, it will be inserted before the existing one.

Use Mode Configuration mode (admin class)

Explanation Change the order of reverse lookup conditions for proxy DNS.
If a same destination definition number which has already existed is specified, it will be inserted before the specified definition.

5.15.4.5 proxydns unicode

Function Set the query packets for proxy DNS.

Available Model XG0224 / XG0448 / XG2600

Syntax proxydns unicode <action>

Options

<action>

Specify whether or not to transmit packets.

- pass
  Specify it when transmitting the relevant packet.
- reject
  Specify it when discarding the relevant packet.

Use Mode Configuration mode (admin class)

Explanation Set whether or not to transmit a query packet that contains hidden characters in the query name (QNAME) of proxy DNS.

Default It is assumed that the relevant packet is discarded.

```
proxydns unicode reject
```

5.15.5 Host Database Information

This section explains about the commands related to host database information.

5.15.5.1 host name

Function Set the host name of the host database information.

Available Model XG0224 / XG0448 / XG2600

Syntax host <number> name <name>

Options

<number>

- Definition number
  Specify the definition number of the host database information with a decimal value from 0 to 99.

<name>

- Host name
  Specify the host name using up to 80 ASCII characters, which consist of alphanumeric characters, hyphens (-), and periods (.).

Use Mode Configuration mode (admin class)

Explanation Set the name of the host connected under this device in the host database.
This command is available from the simple DNS server function.

Default It is assumed that the host database is not set.

5.15.5.2 host ip address

Function Set the IP address of the host database information.

Available Model XG0224 / XG0448 / XG2600

Syntax host <number> ip address <ip_address>

Options

<number>

- Definition number
  Specify the definition number of the host database information with a decimal value from 0 to 99.

<ip_address>

- IP address
  Specify the IP address of the host.

Use Mode Configuration mode (admin class)

Explanation Set the IP address of the host connected under this device in the host database.
This command is available from the simple DNS server function.

Default It is assumed that the host database is not set.

5.15.5.3 host ip6 address

Function Set the IPv6 address of the host database information

Available Model XG0224 / XG0448 / XG2600

Syntax host <number> ip6 address <ip6_address>

Options

<number>

- definition number
  Set the definition number of host database information with a decimal value

<ip6_address>

- IPv6 address
  Specify IPv6 address of the host

Use Mode Configuration mode (admin class)

Explanation Set the IPv6 address of the host connected under this device in the host database.
This command is available from the simple DNS server function.

Default N/A

5.15.6 Schedule Information

This section explains about the commands related to schedule information.

5.15.6.1 schedule at

Function Set the command to specify day and time in the system schedule.

Available Model XG0224 / XG0448 / XG2600

Syntax schedule <number> at <day> <time> <command>

Options

<number>

Specify a schedule definition.

- Schedule definition number
  Specify a schedule definition number with a decimal value from 0 to 19.
- any
  Define by using unused schedule definition number.

<day>

- Day
  Specify a schedule execution day or starting day with a decimal value from 1 to 31.
- Day of the week
  Select a schedule execution day or starting day from the following.
  sun : Sunday
  mon : Monday
  tue : Tuesday
  wed : Wednesday
  thu : Thursday
  fri : Friday
  sat : Saturday
  When specifying multiple days, separate them with commas (,).
- any
  Specify it when setting the schedule execution day or starting day to be every day.
  Specify this option at system power-on or restart.

<time>

- Execution time
  Specify an execution time with a 4-digit decimal value from 0 to 9.
  (Example: 0635 = 06:35 a.m., 2330 = 11:30 p.m.)
- pwon
  Specify it when executing the schedule at device power-on.
- rset
  Specify it when executing the schedule at device restart or power-on.

<command>

Specify a command character string to be executed.

- reset
  Specify when rebooting the device.
- reset config1
  Specify it when switching to the configuration 1 at device restart.
- reset config2
  Specify it when switching to the configuration 2 at device restart.

Specifying other commands will not assure normal operations.

Use Mode Configuration mode (admin class)

Explanation Set the system schedule.
Based on the schedule, the command is executed at the specified time.

Default It is assumed that no schedule information is set.

5.15.6.2 schedule syslog

Function Set the system log in the system schedule.

Available Model XG0224 / XG0448 / XG2600

Syntax schedule <number> syslog <syslog>

Options

<number>
Specify the schedule definition.

- Schedule definition number
  Specify a schedule definition number with a decimal value from 0 to 19.
- any
  Define by using unused schedule definition number.

<syslog>

- yes
  Specify it when outputting command execution using the system log.
- no
  Specify it when outputting command execution without using the system log.

Use Mode Configuration mode (admin class)

Explanation Specify whether or not to write a message, which was output by the command to be activated in the schedule, to the system log.
This command is enabled only when the command activated in the schedule is specified.

Default It is assumed that no data is output to system log at a command execution.

```
schedule <number> syslog no
```

5.15.7 Filter/QoS Resource Information

This section explains about the commands related to Filter/QoS Resource Information.

5.15.7.1 resource filter distribution

Function Set the distribution of filter and QoS resources.

Available Model XG0224 / XG0448

Syntax resource filter distribution <function> <protocol>

Options

<function>

- all
  Filter and QoS resources are distributed over Filter and QoS.
- filter
  Filter and QoS resources are distributed to only Filter.
- qos
  Filter and QoS resources are distributed to only QoS.

<protocol>

- all
  Filter and QoS resources are distributed over IPv4 and IPv6.
- ipv4
  Filter and QoS resources are distributed to only IPv4.
- ipv6
  Filter and QoS resources are distributed to only IPv6.

Use Mode Configuration mode (admin class)

Explanation Set the distribution of filter and QoS resources.

Default Filter and QoS resources are distributed evenly.

```
resource filter distribution all all
```

5.15.8 Other

This section explains about other commands.

5.15.8.1 addact

Function Set the command execution reservation.

Available Model XG0224 / XG0448 / XG2600

Syntax addact <index> <date> <command>

Options

<index>

- Registration number
  Specify the registration number of the command execution reservation information.
  Make sure to specify "0".

<date>

- Execution date and time
  Specify a command execution date and time in the yymmddHHMM format.
  yy : Specify the last two digits of the year, up to 2036.
  mm : Specify month with a decimal value from 1 to 12.
  dd : Specify date with a decimal value from 1 to 31.
  HH : Specify hour with a decimal value from 0 to 23.
  MM : Specify minutes with a decimal value from 0 to 59.

<command>

Specify a command character string to be executed.

- reset
  Specify it when rebooting the device.
- reset config1
  Specify it when switching to the configuration 1 at device restart.
- reset config2
  Specify it when switching to the configuration 2 at device restart.

Use Mode Configuration mode (admin class)

Explanation Set the command execution reservation.

Caution The following shows the cautions when executing a command using the schedule function.

- Set the device time correctly.
- Make sure that the device has been turned on before the command is executed.

Execution Example

The following shows a setting example to restart the device at 02:00 a.m. in January 1, 1999 switching to configuration 2.

```
# addact 0 9901010200 reset config2
# show addact
0 9901010200 reset config2
#
```

Default It is assumed that no reservation is set to execute a command.

5.15.8.2 watchdog service

Function Sets watchdog reset.

Available Model XG0224 / XG0448 / XG2600

Syntax watchdog service <mode>

Options

<mode>

- on
  Initiates watchdog reset function.
- off
  Suspends watchdog reset function.

Use Mode Configuration mode (admin class)

Explanation Initiates or suspends watchdog reset function.
If <mode> is set to on, if the device hangs it will reset within 16 to 48 seconds and restart.

Explanation If <mode> is set to off, it will not reset even if it hangs.
This setting will be reflected after saving the configuration and resetting or reconnecting the power of the device.

Default If unset, the watchdog reset function will be initiated.

```
watchdog service on
```

5.15.8.3 consoleinfo

Function Set the serial console connection service.

Available Model XG0224 / XG0448 / XG2600

Syntax consoleinfo autologout <time>

Options

<time>

- Forced logout time
  Specify a time period (from 0 to 86400 seconds (one day)) for the user to be forcibly logged out if no commands have been executed while logging in on the serial console.
  The unit shall be d (day), h (hour), m (minute), or s (second).
  Specifying 0 seconds will not perform forced logout.

Use Mode Configuration mode (admin class)

Explanation Set to log out forcibly if no command was executed within the time specified in <time> while login via serial console.

Default It is assumed that forced logout is not set.

```
consoleinfo autologout 0s
```

5.15.8.4 telnetinfo

Function Set the TELNET connection service.

Available Model XG0224 / XG0448 / XG2600

Syntax telnetinfo autologout <time>

Options

<time>

- Automatic disconnection time
  Specify a time period (from 0 to 86400 seconds (one day)) for the user to be automatically disconnected when no command input/output processing has been performed by the client while connected through telnet.
  The unit shall be d (day), h (hour), m (minute), or s (second).

Use Mode Configuration mode (admin class)

Explanation Set a time period to disconnect the TELNET connection when no data is input and output.

Default It is assumed that TELNET connection input/output is not monitored.

```
telnetinfo autologout 0s
```

5.15.8.5 mflag

Function Set the CE maintenance login.

Available Model XG0224 / XG0448 / XG2600

Syntax mflag <mode>

Options

<mode>

- on
  Specify it when enabling login using a CE-dedicated password.
- off
  Specify it when disabling login using a CE-dedicated password.

Use Mode Configuration mode (admin class)

Explanation Set whether or not to permit CE maintenance login.

Default It is assumed that login with a CE-dedicated password is rejected.

```
mflag off
```

5.15.8.6 dumpswitch

Function Allows/disallows dumping of data to external media.

Available Model XG0224 / XG0448

Syntax dumpswitch <mode>

Options

<mode>

- enable
  Allows dumping of data to external media via a dump switch.
- disable
  Disallows dumping of data to external media via a dump switch.

Use Mode Configuration mode (admin class)

Explanation Allows/disallows dumping of data to external media via a dump switch.

Default If unset, dumping of data to external media via a dump switch will be allowed.

```
dumpswitch enable
```

5.15.8.7 sysname

Function Set a name of this device.

Available Model XG0224 / XG0448 / XG2600

Syntax sysname <name>

Options

<name>

- Name
  Specify a name of this device using up to 32 characters from 0x21, 0x23 to 0x7e ASCII set.

Use Mode Configuration mode (admin class)

Explanation Set a name of this device.
The name set in this command can be used as the MIB variable, sysName, which is used for SNMP. In this case, by deleting the sysName value set in the "snmp agent sysname" command, the host name set in this command can be used as sysName.
This command is not directly associated with the "snmp agent sysname" command regarding the behavior on the network. However, their names should be identical for network control purposes.

Caution When you use LLMNR function, please start "sysname" at alphabetic characters, and use only alphameric characters, "-" and "_". Some LLMNR client can't use some symbols and string start at numeric characters.

Default It is assumed that a name of this device is not set.

5.15.8.8 serverinfo ftp

Function Set the FTP server function.

Available Model XG0224 / XG0448 / XG2600

Syntax serverinfo ftp ip <mode>

Options

<mode>

- on
  Enable the FTP server function.
- off
  Disable the FTP server function.

Use Mode Configuration mode (admin class)

Explanation Set whether or not to enable the FTP server function.

Default It is assumed that the FTP server function is enabled.

```
serverinfo ftp ip on
```

5.15.8.9 serverinfo ftp ip6

Function Set the IPv6 FTP server function FTP

Available Model XG0224 / XG0448 / XG2600

Syntax serverinfo ftp ip6 <mode>

Options

<mode>

- on
  Enable IPv6 FTP server function
- off
  Disable IPv6 FTP server function

Use Mode Configuration mode (admin class)

Explanation Set whether or not to enable IPv6 FTP server function

Default It is assumed that the IPv6 FTP server function is enabled.

```
serverinfo ftp ip6 on
```

5.15.8.10 serverinfo ftp filter

Function Set the application filter for the FTP server function.

Available Model XG0224 / XG0448 / XG2600

Syntax serverinfo ftp filter <count> <action> acl <acl_count>

Options

<count>

- Filtering definition number
  Specify a definition number, which indicates a filtering priority, with a decimal value from 0 to 29.
  A smaller value has a higher priority.

<action>

Specify an operation when filtering conditions are satisfied.

- accept
  Transmit the relevant packet.
- reject
  Block the relevant packet.

<acl_count>

- ACL definition number
  Set the required ACL definition number with a decimal value.
  If the ACL specified in <acl_count> is not set, the filtering definition will be disabled and ignored.
  The following ACL definition is available for application filtering.
- ip
  Set only the source IP address and the number of mask bits.
  If the ip value is not set, the filtering definition will be disabled and ignored.

Use Mode Configuration mode (admin class)

Explanation Set the application filter for the FTP server function.

Default It is assumed that the application filter is not set for the FTP server function.

5.15.8.11 serverinfo ftp filter move

Function Change the priority of the application filter for the FTP server function.

Available Model XG0224 / XG0448 / XG2600

Syntax serverinfo ftp filter move <count> <new_count>

Options

<count>

- Target filtering definition number
  Specify a filtering definition number of which the priority is to be changed.

<new_count>

- Destination filtering definition number
  Specify a new priority for <count> with a decimal value from 0 to 29.
  If any definition with the same definition number exists, it will be inserted before the existing one.

Use Mode Configuration mode (admin class)

Explanation Change the priority of the application filter for the FTP server function.

5.15.8.12 serverinfo ftp filter default

Function Set the default operation of the application filter for the FTP server function.

Available Model XG0224 / XG0448 / XG2600

Syntax serverinfo ftp filter default <action>

Options

<action>

Specify how to handle a packet that did not match any application filter table for the FTP server function.

- accept
  Transmit the relevant packet.
- reject
  Block the relevant packet.

Use Mode Configuration mode (admin class)

Explanation Set how to handle a packet that did not match any application filter table for the FTP server function.

Default A packet that did not match any application filter table is transmitted.

```
serverinfo ftp filter default accept
```

5.15.8.13 serverinfo sftp

Function Set the SSH FTP server function.

Available Model XG0224 / XG0448 / XG2600

Syntax serverinfo sftp ip <mode>

Options

<mode>

- on
  Enable the SSH FTP server function.
- off
  Disable the SSH FTP server function.

Use Mode Configuration mode (admin class)

Explanation Set whether or not to enable the SSH FTP server function.
Setting this command OFF and the "serverinfo ssh" command Off will reject a connection request using the IPv4 address from the sftp client.
Setting this command OFF and the "serverinfo ssh" command On will reject a connection request using the IPv4 address from the sftp client after the password was entered.

Caution Enabling this command generates an SSH host authentication key at device power-on and execution of the "reset" command, and it takes several tens of seconds to several minutes for the processing time.
sftp connection is enabled after the SSH host authentication key generation was completed.
If this device has been started to enable this function while all the ssh and sftp functions were Off, it also takes several tens of seconds to several minutes for the processing time to generate an SSH host authentication key. Note that other processes may be affected; session monitoring timeout may occur, for example.

Default It is assumed that the SSH FTP server function is enabled.

```
serverinfo sftp ip on
```

5.15.8.14 serverinfo sftp ip6

Function Set the IPv6 SSH FTP server function

Available Model XG0224 / XG0448 / XG2600

Syntax serverinfo sftp ip6 <mode>

Options

<mode>

- on
  Enable IPv6 SSH FTP server function
- off
  Disable IPv6 SSH FTP server function

Use Mode Configuration mode (admin class)

Explanation Set whether or not to enable IPv6 SSH FTP server function
Setting this command OFF and the"serverinfo ssh ip6" command OFF will reject a connection request using the IPv6 address from the sftp client.
Setting this command OFF and the "serverinfo ssh ip6" command ON will reject a connection request using the IPv6 address from the sftp client after the password was entered.

Caution Enabling this command generates an SSH host authentication key at device power-on or execution of the "reset" command, and it takes several tens of seconds to several minutes for the processing time. sftp connection is enabled after the SSH host authentication key generation was completed.
If this device has been started to enable this function while all the ssh and sftp functions were Off, it also takes several tens of seconds to several minutes for the processing time to generate an SSH host authentication key. Note that other processes may be affected; session monitoring timeout may occur, for example.

Default It is assumed that the IPv6 SSH FTP server function is enabled.

```
serverinfo sftp ip6 on
```

5.15.8.15 serverinfo telnet

Function Set the TELNET server function.

Available Model XG0224 / XG0448 / XG2600

Syntax serverinfo telnet ip <mode>

Options

<mode>

- on
  Enable the TELNET server function.
- off
  Disable the TELNET server function.

Use Mode Configuration mode (admin class)

Explanation Set whether or not to enable the TELNET server function.

Default It is assumed that the TELNET server function is enabled.

```
serverinfo telnet ip on
```

5.15.8.16 serverinfo telnet ip6

Function Set the IPv6 telnet server function

Available Model XG0224 / XG0448 / XG2600

Syntax serverinfo telnet ip6 <mode>

Options

<mode>

- on
  Enable telnet server function
- off
  Disable telnet server function

Use Mode Configuration mode (admin class)

Explanation Set the IPv6 telnet server function

Default It is assumed that the IPv6 TELNET server function is enabled.

```
serverinfo telnet ip6 on
```

5.15.8.17 serverinfo telnet filter

Function Set the application filter for the TELNET server function.

Available Model XG0224 / XG0448 / XG2600

Syntax serverinfo telnet filter <count> <action> acl <acl_count>

Options

<count>

- Filtering definition number
  Specify a definition number, which indicates a filtering priority, with a decimal value from 0 to 29.
  A smaller value has a higher priority.

<action>

Specify an operation when filtering conditions are satisfied.

- accept
  Transmit the relevant packet.
- reject
  Block the relevant packet.

<acl_count>

- ACL definition number
  Specify the required ACL definition number with a decimal value.
  If the ACL specified in <acl_count> is not specified, the filtering definition will be disabled and ignored.
  The following ACL definition is available for application filtering.
- ip
  Set only the source IP address and the number of mask bits.
  If the ip value is not set, the filtering definition will be disabled and ignored.

Use Mode Configuration mode (admin class)

Explanation Set the application filter for the TELNET server function.

Default It is assumed that the application filter is not set for the TELNET server function.

5.15.8.18 serverinfo telnet filter move

Function Change the priority of the application filter for the TELNET server function.

Available Model XG0224 / XG0448 / XG2600

Syntax serverinfo telnet filter move <count> <new_count>

Options

<count>

- Target filtering definition number
  Specify a filtering definition number of which the priority is to be changed.

<new_count>

- Destination filtering definition number
  Specify a new priority for <count> with a decimal value from 0 to 29.
  If any definition with the same definition number exists, it will be inserted before the existing one.

Use Mode Configuration mode (admin class)

Explanation Change the priority of the application filter for the TELNET server function.

5.15.8.19 serverinfo telnet filter default

Function Set the default operation of the application filter for the TELNET server function.

Available Model XG0224 / XG0448 / XG2600

Syntax serverinfo telnet filter default <action>

Options

<action>

Specify how to handle a packet that did not match any application filter table for the TELNET server function.

- accept
  Transmit the relevant packet.
- reject
  Block the relevant packet.

Use Mode Configuration mode (admin class)

Explanation Set how to handle a packet that did not match any application filter table for the TELNET server function.

Default A packet that did not match any application filter table is transmitted.

```
serverinfo telnet filter default accept
```

5.15.8.20 serverinfo ssh

Function Set the SSH login server function.

Available Model XG0224 / XG0448 / XG2600

Syntax serverinfo ssh ip <mode>

Options

<mode>

- on
  Enable the SSH login server function.
- off
  Disable the SSH login server function.

Use Mode Configuration mode (admin class)

Explanation Set whether or not to enable the SSH login server function.
Setting this command Off and the "serverinfo sftp" command Off will reject a connection request using the IPv4 address from the ssh client.
Setting this command Off and the "serverinfo sftp" command On will reject a connection request using the IPv4 address from the ssh client after the password was entered.

Caution Enabling this command generates an SSH host authentication key at device power-on and execution of the "reset" command, and it takes several tens of seconds to several minutes for the processing time.
ssh connection is enabled after the SSH host authentication key generation was completed.
If this device has been started to enable this function while all the ssh and sftp functions were Off, it also takes several tens of seconds to several minutes for the processing time to generate an SSH host authentication key. Note that other processes may be affected; session monitoring timeout may occur, for example.

Default It is assumed that the SSH login server function is enabled.

```
serverinfo ssh ip on
```

5.15.8.21 serverinfo ssh ip6

Function Set the IPv6 SSH login server function

Available Model XG0224 / XG0448 / XG2600

Syntax serverinfo ssh ip6 <mode>

Options

<mode>

- on
  Enable IPv6 SSH login server function
- off
  Disable IPv6 SSH login server function

Use Mode Configuration mode (admin class)

Explanation Set whether or not to enable the IPv6 SSH login server function.Setting this command Off and the "serverinfo sftp ip6" command Off will reject a connection request using the IPv6 address from the ssh client. Setting this command Off and the "serverinfo sftp ip6" command On will reject a connection request using the IPv6 address from the ssh client after the password was entered.

Caution Enabling this command generates an SSH host authentication key at device power-on and execution of the "reset" command, and it takes several tens of seconds to several minutes for the processing time. ssh connection is enabled after the SSH host authentication key generation was completed.If this device has been started to enable this function while all the ssh and sftp functions were Off, it also takes several tens of seconds to several minutes for the processing time to generate an SSH host authentication key. Note that other processes may be affected; session monitoring timeout may occur, for example.

Default It is assumed that the IPv6 SSH login server function is enabled.

```
serverinfo ssh ip6 on
```

5.15.8.22 serverinfo ssh filter

Function Set the application filter for the SSH server function.

Available Model XG0224 / XG0448 / XG2600

Syntax serverinfo ssh filter <count> <action> acl <acl_count>

Options

<count>

- Filtering definition number
  Specify a definition number, which indicates a filtering priority, with a decimal value from 0 to 29.
  A smaller value has a higher priority.

<action>

Specify an operation when filtering conditions are satisfied.

- accept
  Transmit the relevant packet.
- reject
  Block the relevant packet.

<acl_count>

- ACL definition number
  Specify the required ACL definition number with a decimal value.
  If the ACL specified in <acl_count> is not specified, the filtering definition will be disabled and ignored.
  The following ACL definition is available for application filtering.
- ip
  Set only the source IP address and the number of mask bits.
  If the ip value is not set, the filtering definition will be disabled and ignored.

Use Mode Configuration mode (admin class)

Explanation Set the application filter for the SSH server function.
This definition is enabled for both the SSH login and SSH FTP server functions.
Each different filter cannot be set for the SSH login and SSH FTP server functions separately.

Default It is assumed that the application filter is not set for the SSH server function.

5.15.8.23 serverinfo ssh filter move

Function Change the priority of the application filter for the SSH server function.

Available Model XG0224 / XG0448 / XG2600

Syntax serverinfo ssh filter move <count> <new_count>

Options

<count>

- Target filtering definition number
  Specify a filtering definition number of which the priority is to be changed.

<new_count>

- Destination filtering definition number
  Specify a new priority for <count> with a decimal value from 0 to 29.
  If any definition with the same definition number exists, it will be inserted before the existing one.

Use Mode Configuration mode (admin class)

Explanation Set the priority of the application filter for the SSH server function.

5.15.8.24 serverinfo ssh filter default

Function Set the default operation of the application filter for the SSH server function.

Available Model XG0224 / XG0448 / XG2600

Syntax serverinfo ssh filter default <action>

Options

<action>

Specify how to handle a packet that did not match any application filter table for the SSH server function.

- accept
  Transmit the relevant packet.
- reject
  Block the relevant packet.

Use Mode Configuration mode (admin class)

Explanation Set how to handle a packet that did not match any application filter table for the SSH server function.

Default A packet that did not match any application filter table is transmitted.

```
serverinfo ssh filter default accept
```

5.15.8.25 serverinfo http

Function Set the HTTP server function

Available Model XG0224 / XG0448 / XG2600

Syntax serverinfo http ip <mode>

Options

<mode>

- on
  Enable HTTP server function
- off
  Disable HTTP server function

Use Mode Configuration mode (admin class)

Explanation Set whether or not to enable HTTP server function

Default It is assumed that the HTTP server function is enabled.

```
serverinfo http ip on
```

5.15.8.26 serverinfo http ip6

Function Set the IPv6 HTTP server function

Available Model XG0224 / XG0448 / XG2600

Syntax serverinfo http ip6 <mode>

Options

<mode>

- on
  Enable IPv6 HTTP server function
- off
  Disable IPv6 HTTP server function

Use Mode Configuration mode (admin class)

Explanation Set whether or not to enable IPv6 HTTP server function

Default It is assumed that the IPv6 HTTP server function is enabled.

```
serverinfo http ip6 on
```

5.15.8.27 serverinfo http filter

Function Set the application filter for HTTP server function

Available Model XG0224 / XG0448 / XG2600

Syntax serverinfo http filter <count> <action> acl <acl_count>

Options

<count>

- Filtering definition number
  Specify a definition number, which indicates a filtering priority, with a decimal value from 0 to 29.
  A smaller value has a higher priority

<action>

Specify the action when the packets match the filter.

- accept
  Accept the packets
- reject
  Reject the packets

<acl_count>

- ACL definition number
  Set the required ACL definition number with a decimal value.
  If the ACL specified in <acl_count> is not set, the filtering definition will be disabled and ignored.
  The following ACL definition is available for application filtering.
  - ip
    Source IP address and the number of mask bits are used for the filter.
    If IP value has not been set, the filtering definition will be disabled and ignored.
  - ip6
    Source IPv6 address and the prefix length are used for the filter.
    If IPv6 value has not been set, the filtering definition will be disabled and ignored.

Use Mode Configuration mode (admin class)

Explanation Set the application filter for HTTP server function

Default N/A

5.15.8.28 serverinfo http filter move

Function Change the priority of the application filter for the HTTP server function

Available Model XG0224 / XG0448 / XG2600

Syntax serverinfo http filter move <count> <new_count>

Options

<count>

- Filering definition number
  Specify a filtering definition number of which the priority is to be changed

<new_count>

- Destination filtering definition number
  Specify a new priority for <count> with a decimal value from 0 to 29.
  If any definition with the same definition number exists, it will be inserted before the existing one.

Use Mode Configuration mode (admin class)

Explanation Change the priority of the application filter for the HTTP server function

5.15.8.29 serverinfo http filter default

Function Set the default action of the application filter for the HTTP server function

Available Model XG0224 / XG0448 / XG2600

Syntax serverinfo http filter default <action>

Options

<action>

Specify how to handle a packet that did not match any application filter table for the HTTP server function.

- accept
  Accept the packets
- reject
  Reject the packets

Use Mode Configuration mode (admin class)

Explanation Specify how to handle a packet that did not match any application filter table for the HTTP server function.

Default A packet that did not match any application filter table is transmitted.

```
serverinfo http filter default accept
```

5.15.8.30 serverinfo dns

Function Set the DNS server function.

Available Model XG0224 / XG0448 / XG2600

Syntax serverinfo dns ip <mode>

Options

<mode>

- on
  Enable the DNS server function.
- off
  Disable the DNS server function.

Use Mode Configuration mode (admin class)

Explanation Set whether to enable the DNS server (static) and ProxyDNS functions.

Default It is assumed that the DNS server function is enabled.

```
serverinfo dns ip on
```

5.15.8.31 serverinfo dns ip6

Function Set the IPv6 DNS server function.

Available Model XG0224 / XG0448 / XG2600

Syntax serverinfo dns ip6 <mode>

Options

<mode>

- on
  Enable the DNS server function.
- off
  Disable the DNS server function.

Use Mode Configuration mode (admin class)

Explanation Set whether to enable the IPv6 DNS server (static) and ProxyDNS functions.

Default It is assumed that the IPv6 DNS server function is enabled.

```
serverinfo dns ip6 on
```

5.15.8.32 serverinfo dns filter

Function Set the application filter for the DNS server function.

Available Model XG0224 / XG0448 / XG2600

Syntax serverinfo dns filter <count> <action> acl <acl_count>

Options

<count>

- Filtering definition number
  Specify a definition number, which indicates a filtering priority, with a decimal value from 0 to 29.
  A smaller value has a higher priority.

<action>

Specify an operation when filtering conditions are satisfied.

- accept
  Transmit the relevant packet.
- reject
  Block the relevant packet.

<acl_count>

- ACL definition number
  Specify the required ACL definition number with a decimal value.
  If the ACL specified in <acl_count> is not specified, the filtering definition will be disabled and ignored.
  The following ACL definition is available for application filtering.
- ip
  Set only the source IP address and the number of mask bits.
  If the ip value is not set, the filtering definition will be disabled and ignored.

Use Mode Configuration mode (admin class)

Explanation Set the application filter for the DNS server function.

Default It is assumed that the application filter is not set for the DNS server function.

5.15.8.33 serverinfo dns filter move

Function Change the priority of the application filter for the DNS server function.

Available Model XG0224 / XG0448 / XG2600

Syntax serverinfo dns filter move <count> <new_count>

Options

<count>

- Target filtering definition number
  Specify a filtering definition number of which the priority is to be changed.

<new_count>

- Destination filtering definition number
  Specify a new priority for <count> with a decimal value from 0 to 29.
  If any definition with the same definition number exists, it will be inserted before the existing one.

Use Mode Configuration mode (admin class)

Explanation Change the priority of the application filter for the DNS server function.

5.15.8.34 serverinfo dns filter default

Function Set the default operation of the application filter for the DNS server function.

Available Model XG0224 / XG0448 / XG2600

Syntax serverinfo dns filter default <action>

Options

<action>

Specify how to handle a packet that did not match any application filter table for the DNS server function.

- accept
  Transmit the relevant packet.
- reject
  Block the relevant packet.

Use Mode Configuration mode (admin class)

Explanation Set how to handle a packet that did not match any application filter table for the DNS server function.

Default A packet that did not match any application filter table is transmitted.

```
serverinfo dns filter default accept
```

5.15.8.35 serverinfo sntp

Function Set the SNTP server.

Available Model XG0224 / XG0448 / XG2600

Syntax serverinfo sntp ip <mode>

Options

<mode>

- on
  Enable the SNTP server function.
- off
  Disable the SNTP server function.

Use Mode Configuration mode (admin class)

Explanation Set whether or not to enable the SNTP server function.

Default It is assumed that the SNTP server function is enabled.

```
serverinfo sntp ip on
```

5.15.8.36 serverinfo sntp ip6

Function Set the IPv6 SNTP Server function

Available Model XG0224 / XG0448 / XG2600

Syntax serverinfo sntp ip6 <mode>

Options

<mode>

- on
  Enable IPv6 SNTP server function
- off
  Disable IPv6 SNTP server function

Use Mode Configuration mode (admin class)

Explanation Set whether or not to enable IPv6 SNTP server function

Default It is assumed that the IPv6 SNTP server function is enabled.

```
serverinfo sntp ip6 on
```

5.15.8.37 serverinfo sntp filter

Function Set the application filter for the SNTP server function.

Available Model XG0224 / XG0448 / XG2600

Syntax serverinfo sntp filter <count> <action> acl <acl_count>

Options

<count>

- Filtering definition number
  Specify a definition number, which indicates a filtering priority, with a decimal value from 0 to 29.
  A smaller value has a higher priority.

<action>

Specify an operation when filtering conditions are satisfied.

- accept
  Transmit the relevant packet.
- reject
  Block the relevant packet.

<acl_count>

- ACL definition number
  Specify the required ACL definition number with a decimal value.
  If the ACL specified in <acl_count> is not specified, the filtering definition will be disabled and ignored.
  The following ACL definition is available for application filtering.
- ip
  Set only the source IP address and the number of mask bits.
  If the ip value is not set, the filtering definition will be disabled and ignored.

Use Mode Configuration mode (admin class)

Explanation Set the application filter for the SNTP server function.

Default It is assumed that the application filter is not set for the SNTP server function.

5.15.8.38 serverinfo sntp filter move

Function Change the priority of the application filter for the SNTP server function.

Available Model XG0224 / XG0448 / XG2600

Syntax serverinfo sntp filter move <count> <new_count>

Options

<count>

- Target filtering definition number
  Specify a filtering definition number of which the priority is to be changed.

<new_count>

- Destination filtering definition number
  Specify a new priority for <count> with a decimal value from 0 to 29.
  If any definition with the same definition number exists, it will be inserted before the existing one.

Use Mode Configuration mode (admin class)

Explanation Change the priority of the application filter for the SNTP server function.

5.15.8.39 serverinfo sntp filter default

Function Set the default operation of the application filter for the SNTP server function.

Available Model XG0224 / XG0448 / XG2600

Syntax serverinfo sntp filter default <action>

Options

<action>

Specify how to handle a packet that did not match any application filter table for the SNTP server function.

- accept
  Transmit the relevant packet.
- reject
  Block the relevant packet.

Use Mode Configuration mode (admin class)

Explanation Set how to handle a packet that did not match any application filter table for the SNTP server function.

Default A packet that did not match any application filter table is transmitted.

```
serverinfo sntp filter default accept
```

5.15.8.40 serverinfo time ip tcp

Function Set the TIME server function by TCP.

Available Model XG0224 / XG0448 / XG2600

Syntax serverinfo time ip tcp <mode>

Options

<mode>

- on
  Enable the TIME server function by TCP.
- off
  Disable the TIME server function by TCP.

Use Mode Configuration mode (admin class)

Explanation Set whether or not to enable the TCP-based TIME server function.

Default It is assumed that the TCP-based TIME server function is enabled.

```
serverinfo time ip tcp on
```

5.15.8.41 serverinfo time ip6 tcp

Function Set the IPv6 TIME Server function by TCP

Available Model XG0224 / XG0448 / XG2600

Syntax serverinfo time ip6 tcp <mode>

Options

<mode>

- on
  Enable IPv6 TIME server function by TCP
- off
  Disable IPv6 TIME server function by TCP

Use Mode Configuration mode (admin class)

Explanation Set whether or not to enable IPv6 TIME server function by TCP

Default It is assumed that the TCP-based IPv6 TIME server function is enabled.

```
serverinfo time ip6 tcp on
```

5.15.8.42 serverinfo time ip udp

Function Set the TIME server function by UDP.

Available Model XG0224 / XG0448 / XG2600

Syntax serverinfo time ip udp <mode>

Options

<mode>

- on
  Enable the TIME server function by UDP.
- off
  Disable the TIME server function by UDP.

Use Mode Configuration mode (admin class)

Explanation Set whether or not to enable the UDP-based TIME server function.

Default It is assumed that the UDP-based TIME server function is enabled.

```
serverinfo time ip udp on
```

5.15.8.43 serverinfo time ip6 udp

Function Set the IPv6 TIME Server function by UDP

Available Model XG0224 / XG0448 / XG2600

Syntax serverinfo time ip6 udp <mode>

Options

<mode>

- on
  Enable IPv6 TIME server function by UDP
- off
  Disable IPv6 TIME server function by UDP

Use Mode Configuration mode (admin class)

Explanation Set whether or not to enable IPv6 TIME server function by UDP

Default It is assumed that the UDP-based IPv6 TIME server function is enabled.

```
serverinfo time ip6 udp on
```

5.15.8.44 serverinfo time filter

Function Set the application filter for the TIME server function.

Available Model XG0224 / XG0448 / XG2600

Syntax serverinfo time filter <count> <action> acl <acl_count>

Options

<count>

- Filtering definition number
  Specify a definition number, which indicates a filtering priority, with a decimal value from 0 to 29.
  A smaller value has a higher priority.

<action>

Specify an operation when filtering conditions are satisfied.

- accept
  Transmit the relevant packet.
- reject
  Block the relevant packet.

<acl_count>

- ACL definition number
  Specify the required ACL definition number with a decimal value.
  If the ACL specified in <acl_count> is not specified, the filtering definition will be disabled and ignored.
  The following ACL definition is available for application filtering.
- ip
  Set only the source IP address and the number of mask bits.
  If the ip value is not set, the filtering definition will be disabled and ignored.

Use Mode Configuration mode (admin class)

Explanation Set the application filter for the TIME server function.

Default It is assumed that the application filter is not set for the TIME server function.

5.15.8.45 serverinfo time filter move

Function Change the priority of the application filter for the TIME server function.

Available Model XG0224 / XG0448 / XG2600

Syntax serverinfo time filter move <count> <new_count>

Options

<count>

- Target filtering definition number
  Specify a filtering definition number of which the priority is to be changed.

<new_count>

- Destination filtering definition number
  Specify a new priority for <count> with a decimal value from 0 to 29.
  If any definition with the same definition number exists, it will be inserted before the existing one.

Use Mode Configuration mode (admin class)

Explanation Change the priority of the application filter for the TIME server function.

5.15.8.46 serverinfo time filter default

Function Set the default operation of the application filter for the TIME server function.

Available Model XG0224 / XG0448 / XG2600

Syntax serverinfo time filter default <action>

Options

<action>
Specify how to handle a packet that did not match any application filter table for the TIME server function.

- accept
  Transmit the relevant packet.
- reject
  Block the relevant packet.

Use Mode Configuration mode (admin class)

Explanation Set how to handle a packet that did not match any application filter table for the TIME server function.

Default A packet that did not match any application filter table is transmitted.

```
serverinfo time filter default accept
```

5.16 Login banner Settings

This section explains about Login banner settings.

5.16.1 Login banner Information

This section explains about the commands related to Login banner information.

5.16.1.1 login banner telnet

Function Turn on or off the telnet login banner.

Available Model XG0224 / XG0448 / XG2600

Syntax login banner telnet <mode>

Options

<mode>
Specify the desired mode.

- on
  Specify "on" to enable the login banner.
- off
  Specify "off" to disable the login banner.

Use Mode Configuration mode (admin class)

Explanation Enables use of the telnet login banner.

Default The telnet login banner is disabled.

5.16.1.2 login banner ftp

Function Turn on or off the ftp login banner.

Available Model XG0224 / XG0448 / XG2600

Syntax login banner ftp <mode>

Options

<mode>
Specify the desired mode.

- on
  Specify "on" to enable the login banner.
- off
  Specify "off" to disable the login banner.

Use Mode Configuration mode (admin class)

Explanation Enables use of the ftp login banner.

Default The ftp login banner is disabled.

5.16.1.3 login banner ssh

Function Turn on or off the ssh login banner.

Available Model XG0224 / XG0448 / XG2600

Syntax login banner ssh <mode>

Options

<mode>
Specify the desired mode.

- on
  Specify "on" to enable the ssh login banner.
- off
  Specify "off" to disable the ssh login banner.

Use Mode Configuration mode (admin class)

Explanation Enables use of the ssh login banner.

Default The ssh login banner is disabled.

5.16.1.4 login banner description

Function Define the login banner text.

Available Model XG0224 / XG0448 / XG2600

Syntax login banner description <count> <description>

Options

<count>
Set the definition number of login banner with a decimal value from 0 to 9.

<description>
Define the login banner text with up to 80 ASCII characters. The allowable characters are 0x20,0x21,0x23 to 0x7e.
When using blank spaces, enclose the text string with quotes(").
(Example: "this is private network system").

Use Mode Configuration mode (admin class)

Explanation Define the login banner text.

Default No login banner text is defined.

5.17 Mode and Terminal Operation Commands

This section explains about mode and terminal operation commands.

5.17.1 Mode Operation Commands

This section explains about mode operation commands.

5.17.1.1 admin

Function Switch to the admin class.

Available Model XG0224 / XG0448 / XG2600

Syntax admin

Options N/A

Use Mode Operation mode (user class)

Explanation Switch from the user class to the admin class.
This command has the same function as the "su" command.
Before switching, enter the administrator password, when asked.
To return from the admin class to the user class, execute the "exit", "end", "quit", or "!" command.

Caution The settings of the "terminal" and "alias" commands will not be inherited by the administrator mode.

Message

```
Password:
```

Enter an administrator password.

```
<ERROR> Authentication failed
```

Switching to the admin class was failed due to the incorrect administrator password.
Enter the correct administrator password.

```
<WARNING> weak admin password: set the password
```

The administrator password is not set.
Set an administrator password.

```
<WARNING> weak admin password: contain at least 8 characters
```

The administrator password is seven or fewer characters in length.
Set an administrator password with eight or more characters.

```
<WARNING> weak admin password: contain a different kind of character
```

The administrator password consists of only alphabetic characters or only numeric characters.
Set an administrator password with alphanumeric characters and symbols mixed.

Execution Example

```
> admin
Password:
# exit
>
```

5.17.1.2 su

Function Switch to the admin class.

Available Model XG0224 / XG0448 / XG2600

Syntax su

Options N/A

Use Mode Operation mode (user class)

Explanation Switch from the user class to the admin class.
This command has the same function as the "admin" command.
Before switching, enter the administrator password, when asked.
To return from the admin class to the user class, execute the "exit", "end", "quit", or "!" command.

Caution The settings of the "terminal" and "alias" commands will not be inherited by the administrator mode.

Message

```
Password:
```

Enter the administrator password.

```
<ERROR> Authentication failed
```

Switching to the admin class was failed due to the incorrect administrator password.
Enter the correct administrator password.

```
<WARNING> weak admin password: set the password
```

The administrator password is not set.
Set an administrator password.

```
<WARNING> weak admin password: contain at least 8 characters
```

The administrator password is seven or fewer characters in length.
Set an administrator password with eight or more characters.

```
<WARNING> weak admin password: contain a different kind of character
```

The administrator password consists of only alphabetic characters or only numeric characters.
Set an administrator password with alphanumeric characters and symbols mixed.

Execution Example

```
> su
Password:
#
```

5.17.1.3 exit

Function Return to the class, mode or configuration directory, or logout.

Available Model XG0224 / XG0448 / XG2600

Syntax exit

Options N/A

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation In the operation mode, the Use Mode class returns to the user class if it has been switched from the user class to the admin class using the "admin" command. Otherwise logout occurs.
In the configuration mode, the current directory will be moved up to the next higher one when the configuration directory function is enabled in a directory other than the top directory. Otherwise, if the configuration has not been changed, the configuration mode returns to the operation mode, but if the configuration has been changed, the configuration mode still remains unreturned with an error message.
For the configuration directory function, refer to "5.17.1.4 configure" (pg.333).

Caution The settings by the "terminal" and "alias" commands will be discarded at logout.

Message

```
<ERROR> The candidate-config has been changed but not committed.
```

The configuration is not reflected.
Reflect the configuration. When returning to the operation mode without reflecting the configuration, use the "end" or "quit" command.

Execution Example

```
(config)# exit
<ERROR> The candidate-config has been changed but not committed.
(config)# end
<WARNING> The candidate-config has been changed but not committed.
# exit
Login:
```

5.17.1.4 configure

Function Switch to the configuration mode.

Available Model XG0224 / XG0448 / XG2600

Syntax configure

Options N/A

Use Mode Configuration mode (admin class)

Explanation Switch from the operation mode to the configuration mode.
Pressing the [Ctrl+O] keys after switching to the configuration mode will enable the configuration directory function.
When the configuration directory function is enabled, it looks as if moved to another directory according to the input configuration command, therefore, the configuration command can be executed simply by entering arguments that follow the configuration layer. A normal command also can be executed by entering its command name even while moving between the layers.
The configuration directory is displayed at entry prompt.
To disable the configuration layer function, press the [Ctrl+G] keys.
To return to the operation mode from the configuration mode, execute the "exit", "end", "quit", or "!" command.

Caution If the configuration has been changed, it is not possible to return to the operation mode with the "exit" or "!" command. Using the "end" or "quit" command will makes it possible to forcibly return to the operation mode.
When the configuration directory function is enabled, if the entry prompt character string is changed with the "terminal prompt" command without including the configuration directory, the configuration directory will not be displayed at entry prompt.

Execution Example

```
# configure
(config)#            (Press the [CTRL+O] keys to enable the configuration directory function.)
<NOTICE> Directory mode is enabled. To disable, type Ctrl+G.
(config)# lan 0 ip
(config-lan-0-ip)# address 192.168.0.1/24 3
(config-lan-0-ip)# show
address 192.168.0.1/24 3
(config-lan-0-ip)# show candidate-config
lan 0 ip address 192.168.0.1/24 3
(config-lan-0-ip)#    (Press the [Ctrl+g] keys to disable the configuration directory function.)
<NOTICE> Directory mode is disabled.
(config)#
```

5.17.1.5 end

Function Return to the operation mode.

Available Model XG0224 / XG0448 / XG2600

Syntax end

Options N/A

Use Mode Configuration mode (admin class)

Explanation Return from the configuration mode to the operation mode.
If the configuration has been changed, the Use Mode returns to the operation mode with a message.
This command has the same function as the "quit" command.

Default

```
<WARNING> The candidate-config has been changed but not committed.
```

The Use Mode has returned to the operation mode without reflecting the configuration.
The changed or added configuration remains unchanged.
Check whether you need to reflect the configuration.

Execution Example

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

5.17.1.6 quit

Function Return to the operation mode.

Available Model XG0224 / XG0448 / XG2600

Syntax quit

Options N/A

Use Mode Configuration mode (admin class)

Explanation Return from the configuration mode to the operation mode.
If the configuration has been changed, the Use Mode returns to the operation mode with a message.
This command has the same function as the "end" command.

Message

```
<WARNING> The candidate-config has been changed but not committed.
```

The Use Mode has returned to the operation mode without reflecting the configuration.
The changed or added configuration remains unchanged.
Check whether you need to reflect the configuration.

Execution Example

```
(config)# quit
#
```

5.17.1.7 top

Function Switch to the highest configuration directory.

Available Model XG0224 / XG0448 / XG2600

Syntax top

Options N/A

Use Mode Configuration mode (admin class)

Explanation If the configuration directory function is enabled in the configuration mode, move up to the top directory.
Staying already in the top directory still remains unmoved.
If the configuration directory function is disabled, nothing occurs.
For the configuration directory function, refer to the "5.17.1.4 configure" (pg.333).

Execution Example

```
(config-lan-0-ip)# top          (Execute in the "lan 0 ip" directory)
(config)#
```

5.17.1.8 up

Function Switch to the next upper configuration directory.

Available Model XG0224 / XG0448 / XG2600

Syntax up

Options N/A

Use Mode Configuration mode (admin class)

Explanation If the configuration directory function is enabled in the configuration mode, move up to the next configuration directory. Staying already in the top directory still remains unmoved.
If the configuration directory function is disabled, nothing occurs.
For the configuration directory function, refer to the "5.17.1.4 configure" (pg.333).

Execution Example

```
(config-lan-0-ip)# up           (Execute in the "lan 0 ip" directory)
(config-lan-0)#
```

5.17.1.9 !

Function Return to the previous class, mode or configuration directory.

Available Model XG0224 / XG0448 / XG2600

Syntax !

Options N/A

Use Mode Operation mode (admin class)
Configuration mode (admin class)

Explanation In the operation mode, the Use Mode class returns to the user class if it has been switched from the user class to the admin class using the "admin" command. Otherwise the operation mode still remains unchanged without logout.
In the configuration mode, the current directory will be moved up to the next higher one when the configuration directory function is enabled in a directory other than the top directory. Otherwise, if the configuration has not been changed, the configuration mode returns to the operation mode, but if the configuration has been changed, the configuration mode still remains unreturned with an error message.
For the configuration directory function, refer to the "5.17.1.4 configure" (pg.333).
This command is almost the same as for the "exit" command except that logout does not occur in the operation mode.

Execution Example

```
# configure                    (Switch to the configuration mode)
(config)# !                    (Return to the operation mode)
# !                            (Still remain without logout)
#
```

5.17.2 Terminal Operation Commands

This section explains about terminal operation commands.

5.17.2.1 terminal pager

Function Set the pager functions.

Available Model XG0224 / XG0448 / XG2600

Syntax terminal pager {enable|disable}

Options

enable
Use the pager functions.

disable
Do not use the pager functions.

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Specify whether or not to use the pager function.
When using the pager function, the device is placed in the key-in wait state if one screen becomes full of output from the executed command. Pressing any keys makes it possible to display the continued data or redisplay the previous data. If one screen does not become full of command output, the command will exit without being placed in the key-in wait state.
Some commands have too much output data and cannot be redisplayed back or will be displayed up to the end without being placed in the key-in wait state.
The pager function is enabled only for command execution, but not for command completion output (to display an argument list, argument description, and command format).
The default screen size of the terminal is 24 lines x 80 columns. For other screen sizes, set the number of lines and columns with the "terminal window" command. Omitting the screen size will result in a picture distortion. When you log in with the telnet or ssh, the number of lines and columns will be set automatically. If a picture distortion occurs, use the "terminal window" command to adjust the number of lines and columns.
The following prompt will appear in the key-in wait state.
MORE (xx%): (xx indicates the ratio of the number of displayed bytes to the total number of bytes.)
or
MORE: (when data cannot be redisplayed backward)
The following lists the keys and operations in the key-in wait state. ^x means pressing the [x] key while holding down the [CTRL] key; M-x means pressing the [x] key after pressing the [ESC] key.

Key inputs	Operations
1 2 3 4 5 6 7 8 9 0	Number of lines, Line number, Number of times (Specify it before entering the following keys)
c	Show up to the end
f ^F ^V SPACE	Skip one screen forward or specified number of lines forward (omit all of the skipped lines)
b ^B M-v BS	Skip one screen backward or specified number of lines backward (omit all of the skipped lines) *1
z	Skip one screen forward after specifying the number of lines for one screen

Key inputs	Operations
w	Skip one screen backward after specifying the number of lines for one screen *1
j ^J e ^E ^N ↓ RETURN	Skip one screen forward or specified number of lines forward (show all of the skipped lines)
k ^K y ^Y ^P ↑	Skip one screen backward or specified number of lines backward (show all of the skipped lines) *1
d ^D	Skip half screen forward after specifying the number of lines for half screen
u ^U	Skip half screen backward after specifying the number of lines for half screen *1
g <	Show the first screen or all of the lines that follow the specified line number *1
G >	Show the last screen or all of the lines that follow the specified line number
/search pattern	Search forward (specified number of times) *1
?search pattern	Search backward (specified number of times) *1
n	Search forward again *1
N	Search backward again *1
M-x	Execute x (any command) without exit after showing to the end
r ^R ^L	Show screen again *1
^G	Show information (number of lines, number of bytes, ratio)
h H	Show help (list for key bind)
q Q ^C	Exit

*1: Display that cannot be retraced is invalid.

When specifying a line number, specify the line number on the screen. If a one-line command output exceeds the specified number of columns on the screen, it is handled as multiple lines on the screen. The line number begins with 1.
The search prompt is expressed by a slash (/) or question mark (?), which makes it possible to enter a search pattern. The allowable search pattern is 76 or fewer characters in length. When the allowable number of screen columns is less than 80, a search pattern input with 80 or over 80 columns results in a picture distortion. In this case, redisplay the screen.
The following lists the special characters available for search pattern. For other characters, the characters themselves are subject to searching.

Special characters	Search target
.	An arbitrary character
^	Head of line (Use with a combination of other characters)
$	End of line (Use with a combination of other characters)
\<	Start word (Use with a combination of other characters)
\>	Quit word (Use with a combination of other characters)
\x	x (x shall be any character except < >)

If the target character string is found in the search process, it is highlighted.
If not found, the following prompt will appear. Press the [RETURN] key. Pressing [CTRL+C] will halt the display of command output.

```
MORE: pattern not found (press RETURN)
```

If information is displayed, the following prompt will appear.

```
MORE(line 1-22/515 lines, 1428/33473 bytes, 4%):
          - -- ---         ---- -----        -
           a b  c            d     e            f
```

If it cannot be displayed backward, the following prompt will appear.

```
MORE(line 1-22 lines):
            - --
            a b
```

Description:
a: Top line number on screen
b: Bottom line number on screen
c: Total number of lines
d: Number of displayed bytes
e: Total number of bytes
f: Ratio of total number of bytes to number of displayed bytes (d / e x 100)
When a help is displayed, the prompt below will appear following the help. Press the [RETURN] key. Pressing [CTRL+C] will halt the display of command output.
MORE: help (press RETURN)

Caution When the allowable number of screen lines is less than 3, pager function will not work. In addition, when the allowable number of screen columns is less than character string prompt results in a picture distortion.
This command is an operation command; however, the contents specified in the admin class can be saved as the configuration by executing the "save" command. This command setting can be deleted using the "delete" command in the configuration mode. The contents set in the user class are discarded at logout or execution of the "admin" command, and they cannot be saved.

Default It is assumed that the pager function is not used.

```
terminal pager disable
```

5.17.2.2 terminal window

Function Set the terminal screen size.

Available Model XG0224 / XG0448 / XG2600

Syntax terminal window [column <column>] [line <line>]

Options

column <column>
Specify the number of digits of the terminal screen with a decimal value.

line <line>
Specify the number of lines of the terminal screen with a decimal value.

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Specify the screen size of the terminal.
For telnet or ssh connection, the screen size of the terminal reported from a telnet or ssh client is used at connection or changing the screen size.
If the screen size is changed after reported, this setting value will be used.

Caution This command is an operation command; however, the contents specified in the admin class can be saved as the configuration by executing the "save" command. This command setting can be deleted using the "delete" command in the configuration mode. The contents set in the user class are discarded at logout or execution of the "admin" command, and they cannot be saved.
Specifying incorrect screen size may cause a display distortion when a command is input or executed.

Default It is assumed that the screen size of the terminal is set to 80 columns x 24 lines.

```
terminal window column 80 line 24
```

5.17.2.3 terminal charset

Function Set the Japanese Kanji character codes.

Available Model XG0224 / XG0448 / XG2600

Syntax terminal charset {EUC|SJIS}

Options

EUC
Use the EUC Japanese Kanji character codes on the terminal.

SJIS
Use the Shift-JIS Japanese Kanji character codes on the terminal.

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Specify the Japanese Kanji character codes to be used on the terminal.

Caution This command is an operation command; however, the contents specified in the admin class can be saved as the configuration by executing the "save" command. This command setting can be deleted using the "delete" command in the configuration mode. The contents set in the user class are discarded at logout or execution of the "admin" command, and they cannot be saved.

Default It is assumed that the EUC Japanese Kanji character codes are used on the terminal.

```
terminal charset EUC
```

5.17.2.4 terminal prompt

Function Set the input prompt.

Available Model XG0224 / XG0448 / XG2600

Syntax
terminal prompt login "<prompt>"
terminal prompt user "<prompt>"
terminal prompt admin "<prompt>"

Options

login
Set the input prompt during login.

user
Set the input command prompt to be used during login with the user class.

admin
Set the input command prompt to be used during login with the admin class.

<prompt>
Specify a character string of the input prompt. Up to 80 characters are allowed.

Use Mode
Operation mode (user class/admin class) (user option)
Operation mode (admin class) (login or admin option)
Configuration mode (admin class)

Explanation
Specify a character string for login prompt or command input prompt.
If a space is included in a character string, enclose it in double quotation marks (").
If the prompt character string contains a special character beginning with a back slash as shown below, it will be replaced with an expanded character string.

Special character	Expanded character string
\c	"config2" only if the configuration file name is config2
\C	Number of file name for the configuration file (1 or 2)
\d	Date (month/date format)
\h	Host name or Model name (character string before ".")
\H	Host name or Model name (all character string)
\m	Model name
\p	Prompt character string according to the class (including space)
\t	Time (hour:minute:second format, 24 hour time system)
\T	Time (hour:minute:second format, 12 hour time system)
\@	Time (hour:minute NN format, 12 hour time system, NN:am or pm)
\v	Firmware version
\w	Configuration directory
\!	History number
\\	A single backslash character

If this device is running with bank0 configuration, "\c" displays no information, including a space before or after "\c".
If the device is running with bank1 configuration, "\c" displays "bank1".
"\h" or "\H" displays the host name which is set with the "sysname" command.

If the host name is not set, the model name will be displayed instead.
The following shows the standard prompts of "\p" and "\$".

State	Standard prompt
Before login	:
When user login	>
When administrator login	#

Caution This command is an operation command; however, the contents specified in the admin class can be saved as the configuration by executing the "save" command. This command setting can be deleted using the "delete" command in the configuration mode. The contents set in the user class are discarded at logout or execution of the "admin" command, and they cannot be saved.

Default It is assumed that the following is set.

```
terminal prompt login "Login: "
terminal prompt user "\h \c\w\p"
terminal prompt admin "\h \c\w\p"
```

Execution Example

```
# terminal prompt login "Welcome: "
# terminal prompt user "[\!]\h\w\p"
# terminal prompt admin "\h bank/\C\w\p"
#
```

5.17.2.5 terminal timestamp

Function Set the command execution date and time display function.

Available Model XG0224 / XG0448 / XG2600

Syntax terminal timestamp {enable|disable}

Options

enable
Display the date and time when command is executed.

disable
Do not display the date and time when command is executed.

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Specify whether or not to display the date and time on which execute the command.

Caution This command is an operation command; however, the contents specified in the admin class can be saved as the configuration by executing the "save" command. This command setting can be deleted using the "delete" command in the configuration mode. The contents set in the user class are discarded at logout or execution of the "admin" command, and they cannot be saved.

Default It is assumed that the date and time is not displayed when the command is executed.

```
terminal timestamp disable
```

5.17.2.6 terminal bell

Function Set the bell function to sound in the case of an operation error.

Available Model XG0224 / XG0448 / XG2600

Syntax terminal bell {enable|disable}

Options

enable
Sound a terminal bell in the case of an operation error.

disable
Do not sound a terminal bell in the case of an operation error.

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Set whether or not to sound the terminal bell when:

- an attempt has been made to enter characters over the maximum number (1022 characters);
- data has been pasted over the maximum number of characters (1022 characters); or
- no implementation candidate has been found.

Caution This command is an operation command; however, the contents specified in the admin class can be saved as the configuration by executing the "save" command. This command setting can be deleted using the "delete" command in the configuration mode. The contents set in the user class are discarded at logout or execution of the "admin" command, and they cannot be saved.

Default It is assumed that the terminal bell is sounded.

```
terminal bell enable
```

5.17.2.7 terminal logging

Function Set the command execution history log.

Available Model XG0224 / XG0448 / XG2600

Syntax terminal logging line <line>

Options

line <line>
Specify a number for the lines of the command execution history to be logged with a decimal value from 0 to 100.
No command history is logged if zero (0) is specified.

Use Mode Operation mode (admin class)
Configuration mode (admin class)

Explanation Specify the number of command execution history lines.
If the number of lines is changed, the history number and history contents are inherited; however, if the number of lines has been increased from 0, the history number will begin with 1.

Caution This command is an operation command; however, the contents specified in the admin class can be saved as the configuration by executing the "save" command. This command setting can be deleted using the "delete" command in the configuration mode. The contents set in the user class are discarded at logout or execution of the "admin" command, and they cannot be saved.

Default It is assumed that the number of command execution history lines is set to 24.

```
terminal logging line 24
```

5.17.2.8 show terminal

Function Display the terminal information.

Available Model XG0224 / XG0448 / XG2600

Syntax show terminal

Options N/A

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display the terminal information.

Caution This command is an operation command; however, it can be displayed as the configuration, where "candidate-config" and "running-config" are displayed with the same values.
If this command is displayed as the configuration, only the set values other than the defaults are displayed without being digit-aligned.

Execution Example

```
# show terminal
pager     enable
window    column 80 line 24
charset   EUC
prompt    login "\p"
prompt    user  "\u@\h \c\p"
prompt    admin "\u@\h \c\w\p"
timestamp disable
bell      enable
logging   line 24
#
```

5.17.3 Command Execution History

This section explains about command execution history.

5.17.3.1 show logging command

Function Display the command execution history.

Available Model XG0224 / XG0448 / XG2600

Syntax show logging command [brief] [all]

Options

N/A
Display detailed the command execution history on the current login line.

brief
Display a brief command execution history.

all
Display the command execution history on the all login line.

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display the command execution history.
The operation mode displays the history of the commands that have been executed in the operation mode.
The configuration mode displays the history of the commands that have been executed in the configuration mode.
The user class displays only the history of the commands that have been executed in the user class, with history numbers in a discontinuous manner.
The admin class displays the history of the commands that have been executed in the user and admin classes.
On a line where the command is not yet executed because the history was being edited, an asterisk (*) is displayed following the history number.
If "*" is displayed, it can be deleted by:

- pressing the [Ctrl+P] or [Up] key to display the line and pressing the [RETURN] key to execute the command;
- pressing the [Ctrl+P] or [Up] key to display the line and pressing the [Ctrl+C] key to discard the entry contents; or
- pressing the [Ctrl+P] or [Up] key to display the line, pressing the [Ctrl+U] key to blank the line, and moving to another history.

"show logging command all" command displays asterisk (*) before the current login line.

Caution If the history number exceeds 32767, it returns to an appropriate lower history number.

Execution Example

```
# show logging command
01/24 08:48:54 * console 0  admin       1  show system information
01/24 08:49:02 * console 0  admin       2  show date
01/24 08:49:11 * console 0  admin       3  show logging commandDec 01 15:58:55 1
show system information
# show logging command brief
1  show date
2  show logging command
3  show logging command brief
# show logging command all
01/24 08:42:21 * console 0  admin              1  show logging
01/24 08:42:24 * console 0  admin              1  show logging command
01/24 08:42:32 * console 0  admin              3  exit
01/24 08:42:34 * console 0  admin              4  exit
01/24 08:42:47 * console 0  admin              5  show logging command
01/24 08:42:59   vty 1      admin              82  show logging command
01/24 08:43:02   vty 1      admin              83  show
01/24 08:43:10   vty 1      admin              84  show users
01/24 08:43:12   vty 1      admin              85  exit
01/24 08:43:22   vty 1      admin              86  show logging command
01/24 08:51:00 * console 0  admin              6  show logging command all
# show logging command all
XG2600# show logging command brief all
   86  show logging command
   87  show logging command
   88  !
   89  show logging command
   90  show system information
   91  show date
   92  show logging command
   93  show logging command brief
   94  show logging command all
   95  show logging command brief all
```

5.17.3.2 clear logging command

Function Clear the command execution history.

Available Model XG0224 / XG0448 / XG2600

Syntax clear logging command [all]

Options

N/A
Clear the command execution history on the current login login.

all
Clear the command execution history on the all login login.

Use Mode Operation mode (admin class)
Configuration mode (admin class)

Explanation Erase the command execution history in the operation and configuration modes.
The command execution history number returns to 1.

Execution Example

```
# clear logging command
#
```

5.17.4 Command Alias

This section explains about commands related to command alias.

5.17.4.1 alias

Function Set the command alias information.

Available Model XG0224 / XG0448 / XG2600

Syntax alias <alias> "<command>"

Options

<alias>
Specify a command alias name to be assigned, with up to 80 characters.
This name must begin with an alphabetical character, and it can be followed by alphanumeric characters and hyphens (-).

<command>
Specify a command name and command options, to be replaced during execution of command alias, using a pair of double quotation marks.
If no name or option is enclosed by a pair of double quotation marks (""), the definition is deleted.

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Combine the command name and some command options, and set them as a new command. Up to 30 commands can be set.
Specifying the set command alias will delete the previously registered command and the specified one is set.
The set command alias is reflected immediately, and it can be used promptly.
The set command alias, if executed, will be replaced with the set command name and command options to execute the command.
When executing the command, the options that were input following the command alias are assumed to be input succeeding the command name and command options that were replaced with the command alias.
An input line remains in the command execution history without being replaced with a command alias.

Caution The following command alias names cannot be registered.

- "exit", "end", "quit", "up", "top", "delete", "show", "clear", "commit", "discard", "save", "load", "reset", "moff"

Other normal command names can be registered as command aliases; however, note that the operations of the registered normal commands are changed.
This command is an operation command; however, the contents specified in the admin class can be saved as the configuration by executing the "save" command. This command setting can be deleted using the "delete" command in the configuration mode.
The contents set in the user class are discarded at logout or execution of the "admin" command, and they cannot be saved.

Default It is assumed that no data is registered.

Execution Example

```
# alias history "show logging command brief"
# history
    1  alias history "show logging command brief"
    2  history
#
```

5.17.4.2 show alias

Function Display the command alias information.

Available Model XG0224 / XG0448 / XG2600

Syntax show alias [<name>]

Options

N/A
Display all command alias information.

<name>
Display the information about the specified command alias name.

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display command alias information.

Caution This command is an operation command; however, it can be displayed as the configuration, where "candidate-config" and "running-config" are displayed with the same values.

Default

```
# show alias
history "show logging command brief"
dsplog "show logging syslog"
# show alias history
"show logging command brief"
#
```

5.17.4.3 clear alias

Function Clear the command alias information.

Available Model XG0224 / XG0448 / XG2600

Syntax clear alias [<name>]

Options

N/A
Delete all command alias information.

<name>
Delete the information of the specified command alias name.

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Delete command alias information.

Caution This command is an operation command, but it can be deleted with the "delete" command in the configuration mode.

Execution Example

```
# clear alias history
# clear alias
#
```

5.17.5 Command Output

This section explains about commands related to command output operations.

5.17.5.1 more

Function Display the command output one screen at a time on a display screen.

Available Model XG0224 / XG0448 / XG2600

Syntax <command> | more

Options

<command>
Specify a command to execute.

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display the command output result on each screen.
This command acts in the same way as when the "terminal pager enable" command has been specified.
For details on the description, key operations, and cautions, refer to the "5.17.2.1 terminal pager" (pg.337).

Execution Example

```
# show running-config | more
# show running-config | more
  (snip)
telnetinfo autologout 5m
MORE(86%):      (Enter "q" to quit display)
#
```

5.17.5.2 tail

Function Display the last part of command output.

Available Model XG0224 / XG0448 / XG2600

Syntax <command> | tail [<lines>]

Options

<command>
Specify a command to execute.

<lines>
Specify the number of lines to be displayed with a decimal number from 1 to 1000.
The default is 10 lines.

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Execute the specified command, and display the last output of the command by the specified number of lines.
If the output of the specified command does not reach the specified number of lines, all output will be displayed.
If the pager "5.17.2.1 terminal pager" (pg.337) is enabled, the pager will act for the output (the last output part of the specified command) of this command.

Caution Enter a space character before and after a command pipe character ("|"). A command pipe character can be specified only once, and the "tail" command can be specified only once.
A sentence up to a new-line character is assumed to be one line. A statement that is too long is divided into multiple lines on the screen, and the number of lines specified in the argument may not match that of lines on the screen.
Specifying a command that requires a long time to execute, may result in a long wait time until the command output.
This command acts for a "display" command such as the "show" command.
It displays all the command output for a control command such as the "telnet" command.

Execution Example

```
# show logging syslog | tail 3
Dec 08 15:19:27 192.168.1.1 XG2600: mstpd: Topology Change detected
Dec 08 15:19:47 192.168.1.1 XG2600: sshd: generated public/private host key pair.
Dec 08 15:19:52 192.168.1.1 XG2600: logon: login admin on console
#
```

5.18 System Operations and Display Commands

This sectionexplains about system operations and display commands.

5.18.1 System Operations and Display Commands

This section explains about system operations and display commands.

5.18.1.1 show system information

Function Display the system information.

Available Model XG0224 / XG0448 / XG2600

Syntax show system information

Options

N/A
Display the system information.

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display the system status and information of the device.

Execution Example

```
# show system information
Current time : Fri Jan 14 14:00:45 2011                        ---(1)
Startup time : Fri Jan 14 08:40:05 2011                        ---(2)
System : XG2600                                                ---(3)
Serial No. : 00000123                                          ---(4)
ROM Ver. : 1.3                                                 ---(5)
ASIC Firm Ver. : 090203PL1                                     ---(6)
Firm Ver. : V01.00 NY0001 Tue Nov 14 17:52:15 JST 2006         ---(7)
Startup-config : Sat Jan 01 13:08:04 2011 config1              ---(8)
Running-config : Sat Jan 01 13:08:04 2011                      ---(9)
MAC : 000b5d89011                                              ---(10)
Memory : 256MB                                                 ---(11)
```

1) Current time
   Displays the current date and time.

2) Startup time
   Displays the date and time when the device started up.

3) System
   Displays the device name.

4) Serial No.
   Displays the device serial number.

5) ROM Ver.
   Displays the ROM version number in the xx.yy format. xx.yy is indicated by a decimal value.

6) ASIC Firm Ver. (XG2600 Only)
Displays the ASIC firmware version number in the yymmddPLn format.
yymmdd is indicated by date (year-month-day).
PLn shows patch level and n is indicated by digit decimal value.

7) Firm Ver.
Displays the firmware version number in the Vxx.yy format.
"xx.yy is indicated by a two-digit decimal value.

8) Startup-config
Displays the date and time when you have saved the configuration to be read during device startup, as well as the file name.

9) Running-config
Displays the date and time, when you applied the configuration that is currently active.

10) MAC
Displays the MAC address with a 12-digit hexadecimal value.

11) Memory
Displays the memory size installed in the device.

5.18.1.2 show system status

Function Display the system status.

Available Model XG0224 / XG0448 / XG2600

Syntax show system status

Options

N/A
Display the system status.

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display the dynamic system information of the device.

Execution Example

XG0224
When no Expansion Card is installed.

```
# show system status
Current-time          : Wed Dec 10 06:07:43 2008          ---(1)
Startup-time          : Wed Dec 10 06:05:05 2008          ---(2)
restart_cause         : power on                          ---(3)
machine_state         : RUNNING                           ---(4)
power0_state          : NORMAL                            ---(5)
fan0_state            : NORMAL                            ---(6)
inspiration_state     : NORMAL                            ---(7)
phy_state             : NORMAL
slot1_state           : UNKNOWN
inspiration_temp      : 26 C                              ---(8)
phy_temp              : 40 C
slot1_temp            : -- C
Slot Information
  slot1               : NO_PRESENT                        ---(9)
```

When a CX4 Card is installed.

```
# show system status
Current-time           : Wed Dec 10 05:55:40 2008          ---(1)
Startup-time           : Wed Dec 10 05:52:11 2008          ---(2)
restart_cause          : power on                          ---(3)
machine_state          : RUNNING                           ---(4)
power0_state           : NORMAL                            ---(5)
fan0_state             : NORMAL                            ---(6)
inspiration_state      : NORMAL                            ---(7)
phy_state              : NORMAL
slot1_state            : UNKNOWN
inspiration_temp       : 25 C                              ---(8)
phy_temp               : 40 C
slot1_temp             : -- C
Slot Information
  slot1                : SJ10GCX4Z                         ---(9)
```

When a SFP+ Card is installed.

```
# show system status
Current-time           : Wed Dec 10 06:03:04 2008          ---(1)
Startup-time           : Wed Dec 10 06:02:19 2008          ---(2)
restart_cause          : reset                             ---(3)
machine_state          : RUNNING                           ---(4)
power0_state           : NORMAL                            ---(5)
fan0_state             : NORMAL                            ---(6)
inspiration_state      : NORMAL                            ---(7)
phy_state              : NORMAL
slot1_state            : NORMAL
inspiration_temp       : 25 C                              ---(8)
phy_temp               : 39 C
slot1_temp             : 39 C
Slot Information
  slot1                : SJ10GSFPZ                         ---(9)
```

1) Current time
   Present date and time.

2) Startup time
   Date and time when the system started up.

3) restart_cause
   Cause for the system startup.
   The following system startup causes are displayed:
   power on : The power has been turned on.
   reset : The reset command has been issued.
   reset switch : The [RESET] switch has been pressed.
   system down : System-down has occurred.

4) machine_state
   State of the device
   RUNNING : The device is active.

5) power0_state
   State of the power unit.
   NORMAL : The power unit works normally.
   NO_PRESENT : The power unit is not installed.
   FAIL : The power unit has been turned off.
   UNKNOWN : The power unit is invalid state.

6) fan0_state
   State of the fan 0.
   NORMAL : The fan works normally.
   ABNORMAL : The fan has been abnormal.
   UNKNOWN : The fan is invalid state.

7) inspiration_state
State of environment temperature monitor.
phy_state
State of temperature monitor around PHY.
slot1_state
State of Expansion Card temperature monitor (SLOT1).
NORMAL : The temperature is normal.
HIGHWARNING : The device changes to a high temperature state.
HIGHALARM : Thermal alarm occurs in the device.
UNKNOWN : There are three following states.
The Expantion Card without Thermal Sensor is installed. (CX4).
The Invalid Expantion Card is installed.
The Expantion Card is not installed.

8) inspiration_temp
Environment temperature.
phy_temp
temperature around PHY.
slot1_temp
temperature around Expansion Card (SLOT1).
At the time of three following states, "--" is displayed.
The Expantion Card without Thermal Sensor is installed. (CX4)
The Invalid Expantion Card is installed.
The Expantion Card is not installed.

9) Slot Information
The type of Expansion Card.
SJ10GCX4Z : Installed Expansion Card is SJ10GCX4Z. (CX4)
SJ10GSFPZ : Installed Expansion Card is SJ10GSFPZ. (SFP+)
NO_PRESENT : The Expantion Card is not installed.
UNKNOWN : Installed Expansion Card is Invalid Card.

XG0448

When a CX4 Card is installed in Slot 1 and a SFP+ Card is installed in Slot 2.

```
# show system status
Current-time          : Tue Dec  9 20:43:01 2008          ---(1)
Startup-time          : Tue Dec  9 20:42:48 2008          ---(2)
restart_cause         : power on                          ---(3)
machine_state         : RUNNING                           ---(4)
power0_state          : NORMAL                            ---(5)
power_consumption     : 79 W                              ---(10)
fan0_state            : NORMAL                            ---(6)
fan1_state            : NORMAL
fan2_state            : NORMAL
inspiration_state     : NORMAL                            ---(7)
phy_state             : NORMAL
slot1_state           : UNKNOWN
slot2_state           : NORMAL
inspiration_temp      : 31 C                              ---(8)
phy_temp              : 38 C
slot1_temp            : -- C
slot2_temp            : 29 C
Slot Information
  slot1               : SJ10GCX4Z                         ---(9)
  slot2               : SJ10GSFPZ
```

1) Current time
Present date and time.

2) Startup time
Date and time when the system started up.

3) restart_cause
Cause for the system startup.
The following system startup causes are displayed:
power on : The power has been turned on.
reset : The reset command has been issued.
reset switch : The [RESET] switch has been pressed.
system down : System-down has occurred.

4) machine_state
State of the device
RUNNING: The device is active.

5) power0_state
State of the power unit.
NORMAL : The power unit works normally.
NO_PRESENT : The power unit is not installed.
FAIL : The power unit has been turned off.
UNKNOWN : The power unit is invalid state.

6) fan0_state
State of the fan 0.
fan1_state
State of the fan 1.
fan2_state
State of the fan 2.
NORMAL : The fan works normally.
ABNORMAL : The fan has been abnormal.
UNKNOWN : The fan is invalid state.

7) inspiration_state
State of environment temperature monitor.
phy_state
State of temperature monitor around PHY.
slot1_state
State of Expansion Card temperature monitor (SLOT1).
slot2_state
State of Expansion Card temperature monitor (SLOT2).
NORMAL : The temperature is normal.
HIGHWARNING : The device changes to a high temperature state.
HIGHALARM : Thermal alarm occurs in the device.
UNKNOWN : There are three following states.
The Expantion Card without Thermal Sensor is installed. (CX4).
The Invalid Expantion Card is installed.
The Expantion Card is not installed.

8) inspiration_temp
Environment temperature.
phy_temp
temperature around PHY.
slot1_temp
temperature around Expansion Card (SLOT1).
At the time of three following states, "--" is displayed.
The Expantion Card without Thermal Sensor is installed. (CX4)
The Invalid Expantion Card is installed.
The Expantion Card is not installed.
slot2_temp
temperature around Expansion Card (SLOT2).
At the time of three following states, "--" is displayed.
The Expantion Card without Thermal Sensor is installed. (CX4)
The Invalid Expantion Card is installed.
The Expantion Card is not installed.

9) Slot Information
The type of Expansion Card.
SJ10GCX4Z : Installed Expansion Card is SJ10GCX4A. (CX4)
SJ10GSFPZ : Installed Expansion Card is SJ10GSFPA. (SFP+)
NO_PRESENT : The Expantion Card is not installed.
UNKNOWN : Installed Expansion Card is Invalid Card.

10) power_consumption
Power consumption of the device.

XG2600

```
# show system status
Current-time          : Thu Dec 21 16:04:50 2008          ---(1)
Startup-time          : Thu Dec 21 16:04:36 2008          ---(2)
restart_cause         : power on                          ---(3)
machine_state         : RUNNING                           ---(4)
access_direction      : front access                      ---(5)
power_redundancy      : redundant                         ---(6)
PSU1 state            : NORMAL                            ---(7)
PSU2 state            : NORMAL
PSU1 type             : AC                                ---(8)
PSU2 type             : AC
power_consumption     : 75 W                              ---(9)
FAN1 state            : NORMAL                            ---(10)
FAN2 state            : NORMAL
inspiration_state     : NORMAL
inspiration_temp      : NORMA                             ---(11)
   warning time     : Fri Dec 26 14:00:45 2008           ---(12)
   recover time     : Fri Dec 26 14:12:30 2008
internal_state        : NORMAL
inspiration_temp      : 35 C                              ---(13)
internal_temp         : 32 C
```

1) Current time
Present date and time.

2) Startup time
Date and time when the system started up.

3) restart_cause
Cause for the system startup.
The following system startup causes are displayed:
power on : The power has been turned on.
reset : The reset command has been issued.
reset switch : The [RESET] switch has been pressed.
system down : System-down has occurred.

4) machine_state
State of the device
RUNNING : The device is active.
FALLBACK : The device is into fallback state.

5) access_direction
Direction where a device is installed in.
front access : The device should be installed forward.
rear access : The device should be installed backward.

6) power_redundancy
State of the redundant power unit.
single : The device has no redundant power unit.
redundant : The device has a redundant power unit.

7) PSU1 state
State of the power unit (PSU1).
PSU2 state
Type of the power unit (PSU2).
NORMAL : The power unit works normally.
NO PRESENT : The power unit is not installed.
NO POWER : The power unit has been turned off.
FAIL : The power unit has been abnormal.
UNKNOWN : The power unit is invalid type.
WARNING : The power unit has been incorrectly mounted.

8) PSU1 type
Type of the power unit (PSU1).
PSU2 type
Type of the power unit (PSU2).
AC : The power unit is AC.
-- : The power unit is not installed or invalid type.

9) power_consumption
Power consumption of the device.

10) FAN1 state
State of the fan module 1.
FAN2 state
State of the fan module 2.
NORMAL : The fan module works normally.
FAIL : The fan module has been abnormal.
NO PRESENT : The fan module is not installed.
UNKNOWN : The fan module is invalid direction.
WARNING : The fan module has been incorrectly mounted.

11) inspiration_state
State of environment temperature monitor.
internal_state
State of device inside temperature monitor.
NORMAL : The temperature is normal.
WARNING : The device changes to a high temperature state.
ALARM : Thermal alarm occurs in the device.

12) State of changing thermal state
warning time : The time when a device changed in a high temperature state.
recover time : The time when a device returned to a normal state.

13) inspiration_temp
Environment temperature.
internal_temp
Device inside temperature.

5.18.1.3 show tech-support

Function Display all the analysis information.

Available Model XG0224 / XG0448 / XG2600

Syntax show tech-support [detail] [save]

Options

N/A
Display the result of the analysis.

detail
Display or save detail report.

save
Save the result of the analysis to the external media.

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation The analysis information such as settings and statuses of this device is collectively displayed.
Use the output capture function of the terminal software to save the output contents of this command, or save the result of the analysis to the external media.

Caution The output of this command is displayed constantly even when the pager function "5.17.2.1 terminal pager" (pg.337) is enabled.

5.18.1.4 show logging error

Function Display the error log.

Available Model XG0224 / XG0448 / XG2600

Syntax show logging error

Options N/A

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display the error log information about system down and hardware diagnosis errors due to ROM or input/output driver.

Caution "Logging time:" indicates GMT (Greenwich Mean Time) if the timezone (time zone <offset>) is not specified in the configuration.

Execution Example

```
# show logging error
Error Logs on FLASH:

[0] Error Log:
flag=80,mode=00,unit=10,regsp=00000000
Firm information:
XG2600 V01.00 PTF:NY0010
Error information:
error code [85020000]
Logging time:
2011/01/01(Sat) 11:51:17
Hardware diagnostic error information:
Detail [00142224 00142228 00000080 0000341f]
       [00000000 00000000 00000000 00000000]
       [00000000 00000000 00000000 00000000]
       [00000000 00000000 00000000 00000000]
       [00000000 00000000 00000000 00000000]
       [00000000 00000000 00000000 00000000]

Extended Error Logs:

[1] Error Log:
flag=80,mode=00,unit=10,regsp=00000000
Firm information:
XG2600 V01.00 PTF:NY0010
Error information:
error code [85020000]
Logging time:
2011/01/01(Sat) 11:59:37
Hardware diagnostic error information:
Detail [00142224 00142228 00000080 00003520]
       [00000000 00000000 00000000 00000000]
       [00000000 00000000 00000000 00000000]
       [00000000 00000000 00000000 00000000]
       [00000000 00000000 00000000 00000000]
       [00000000 00000000 00000000 00000000]

Error Logs on DRAM:

[0] Error Log:
flag=80,mode=00,unit=80,regsp=04ae9e60
Firm information:
XG2600 V01.00 PTF:NY0010
System down information:
down code [00000080:00000002]
Logging time:
2011/01/01(Sat) 13:05:23
Register:
    srr0    [0086dab4] srr1    [0002d000] csrr0   [00000000] csrr1   [00000000]
    mcsrr0  [00000000] mcsrr1  [00000000] mcar    [00000000] mcsr    [00000000]
    lr      [00886d74] dear    [0087a01c] esr     [00000000] tsr     [00000000]
    gpr00   [00000000] gpr01   [04ae9f60] gpr02   [00000005] gpr03   [01124844]
    gpr04   [0087a01c] gpr05   [00000005] gpr06   [010cf924] gpr07   [a2c9bdbc]
    gpr08   [c1bcb0a1] gpr09   [00000005] gpr10   [d8c4eab7] gpr11   [00000000]
    gpr12   [aca5a4a5] gpr13   [00000000] gpr14   [00000000] gpr15   [00000000]
    gpr16   [00000000] gpr17   [00000000] gpr18   [00000000] gpr19   [00000000]
    gpr20   [00000000] gpr21   [00000000] gpr22   [00000000] gpr23   [00000000]
    gpr24   [04aea1e0] gpr25   [04aea1f0] gpr26   [0121ff74] gpr27   [00000000]
    gpr28   [00000000] gpr29   [ffffffff] gpr30   [0121ff7c] gpr31   [04aea174]
Peripheral Register:
    err_det [00000000] l2errdet[00000000] eedr    [00000000] ltesr   [00000000]
```

(To be continued)

(Continued)

```
User Stack:
          +0       +4       +8       +C         +0  +4  +8  +C
04ae9f60  04aea1d0 00886d58 04ae9fb8 04ae9fa0   ......mX........
04ae9f70  00c6fcbb fea4cebb d8c4eab7 c1bcb0a1   ................
04ae9f80  a2c9bdbc a8b7c1bc b0a4f2a5 aca5a4a5   ................
04ae9f90  c9a5e9a5 a4a5f3a4 cba4a2a4 efa4bba4   ................
04ae9fa0  eba1a30a 00000000 00000000 00000000   ................
04ae9fb0  04aea1c0 00000000 00000000 00000000   ................
04ae9fc0  85004100 04aea0b0 0000000a 00000000   ..A.............
04ae9fd0  04ae9ff0 04ae9fb0 04ae9fb0 00000100   ................
04ae9fe0  00000000 85004100 00000100 04aea068   ......A........h
04ae9ff0  04aea020 00000000 00000000 00000000   ... ............
04aea000  00000000 04aea0f0 00000007 00000000   ................
04aea010  00000001 04ae9ff0 04aea000 2066696c   ............ fil
04aea020  73666572 000002bf 5472616e 01e89be0   sfer....Tran....
04aea030  42000082 00000000 00000000 00000000   B...............
04aea040  00000000 00000000 00000000 00000000   ................
04aea050  00000000 00000000 00000000 00000000   ................
04aea060  010b0000 04b22114 0000005d 00000000   ......!....]....
04aea070  04aea148 0124269c ffffffff ffffffff   ...H.$&.........
04aea080  00405cfc 0002d000 ffffffff ffffffff   .@\.............
04aea090  0087b9dc 00000000 00000000 42002088   ............B. .
04aea0a0  00000001 00000000 00000000 42002088   ............B. .
04aea0b0  00000001 0002d000 00000100 00000001   ................
04aea0c0  0087b6d4 00000000 00000000 42000084   ............B...
04aea0d0  00000001 00000100 00000002 035fc300   ............._..
04aea0e0  04aea110 01260af0 00004e43 00000020   .....&....NC...
04aea0f0  04aea100 01260af0 00004e43 00000020   .....&....NC...
04aea100  04aea130 0087b810 01261d28 035fcdc0   ...0.....&.(._..
04aea110  04aea140 01260af0 00004e43 42000082   ...@.&....NCB...
04aea120  04aea140 00000022 00000000 035fcdc0   ...@..."....._..
04aea130  04aea140 0087b8c0 00000000 035fcdc0   ...@........._..
04aea140  04aea170 0087a23c 00000022 01230168   ...p...<...".#.h
04aea150  04aea1d0 04b11152 00769eec 01230168   .......R.v...#.h
04aea160  00000000 00000022 04b22114 0000005d   .......".."!....]
04aea170  00000000 0087a01c 00000000 00000200   ................
04aea180  04b71ee0 04b22114 01230168 00000022   ......!..#.h..."
04aea190  04aea1a0 00869238 00000000 00000000   .......8........
04aea1a0  04aea1c0 00867cd8 00000000 00000000   ......|.........
04aea1b0  010b0000 04b11152 00769eec 01230168   .......R.v...#.h
04aea1c0  04b71ee0 01240000 010ed184 01230168   .....$.......#.h
04aea1d0  04aea210 00768d20 00000000 00000000   .....v. ........
04aea1e0  04b71ee0 04aea220 01230168 0121fd30   ....... .#.h.!.0
04aea1f0  04aea210 007697d4 00769eec 01230168   .....v...v...#.h
04aea200  04b71ee0 01240000 01230168 01240000   .....$...#.h.$..
04aea210  04aea330 007685d4 04aea200 fffffffb   ...0.v..........
04aea220  4649524d 57415245 2d494e46 4f000000   FIRMWARE-INFO...
04aea230  53522d53 37313643 32000000 00000000   XG2600..........
04aea240  00000000 00000000 00000000 00000000   ................
04aea250  4e593030 31302056 30322e30 30000000   NY0010 V01.00...
04aea260  00000000 00000000 00000000 00000000   ................
04aea270  4d6f6e20 46656220 20372031 343a3239   Thu Jan  1 14:29
04aea280  3a353920 4a535420 32303035 00000000   :59 JST 2011....
```

(To be continued)

(Continued)

```
04aea290  00000000 00000000 00000000 00000000   ................
04aea2a0  00000000 00000000 00000000 00000000   ................
04aea2b0  00000000 00000000 00000000 000001d4   ................
04aea2c0  00000000 00000000 00000000 00000000   ................
04aea2d0  00000000 00000000 00000000 00000000   ................
04aea2e0  00000000 00000000 00000000 00000000   ................
04aea2f0  00000000 00000000 00000000 00000000   ................
04aea300  00000000 00000000 00000000 00000000   ................
04aea310  00000000 00000000 00000000 00000000   ................
04aea320  011395e0 00000004 01240000 01240000   .........$...$..
04aea330  04aea360 00769fe4 00000000 035fcdc0   ...`.v......._..
04aea340  04aea360 0087a23c 7ffffff0 01230168   ...`...<.....#.h
04aea350  00000004 04aea370 01240000 04b71ee0   .......p.$......

Interrupt Stack:
          +0       +4       +8       +C         +0  +4  +8  +C
04ae9e60  00000000 04aea1f0 0121ff74 00000000   .........!.t....
04ae9e70  00000000 04ae9f60 00000005 01124844   .......`......HD
04ae9e80  0087a01c 00000005 010cf924 a2c9bdbc   ...........$....
04ae9e90  c1bcb0a1 00000005 d8c4eab7 00000000   ................
04ae9ea0  aca5a4a5 00000000 00000000 00000000   ................
04ae9eb0  00000000 00000000 00000000 00000000   ................
04ae9ec0  00000000 00000000 00000000 00000000   ................
04ae9ed0  04aea1e0 04aea1f0 0121ff74 00000000   .........!.t....
04ae9ee0  00000000 ffffffff 0121ff7c 04aea174   .........!.|...t
04ae9ef0  0086dab4 0002d000 00000000 00000000   ................
04ae9f00  00886d74 00000005 00000000 42000082   ..mt........B...
04ae9f10  00000001 0087a01c 00000000 00000000   ................
04ae9f20  00000000 00000000 00000000 00000000   ................
04ae9f30  00000000 00000000 00000000 00000000   ................
04ae9f40  00000000 00000000 00000000 04aea170   ...............p
04ae9f50  04ae9f60 01260af0 00004e43 00000008   ...`.&....NC....
# exit
```

5.18.1.5 clear logging error

Function Clear the error log.

Available Model XG0224 / XG0448 / XG2600

Syntax clear logging error

Options N/A

Use Mode Operation mode (admin class)
Configuration mode (admin class)

Explanation Clear all the error logs.

Execution Example

```
# clear logging error
#
```

5.18.1.6 show logging syslog

Function Display the system log information.

Available Model XG0224 / XG0448 / XG2600

Syntax show logging syslog

Options N/A

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display system log information. This command can display &syslognum; pieces or more of information in the chronological order, most recent first.

Caution Turning the device power Off or executing the clear logging syslog command will clear system log information.
System log information is not cleared by executing the "reset" command or pressing the [RESET] switch to reset this device; however, by way of exception, if the system is reset after firmware was updated, system log information will be cleared.

Execution Example

```
# show logging syslog
Dec 13 15:52:31 192.168.1.1 XG2600: init: system startup now.
Dec 13 15:52:31 192.168.1.1 XG2600: sshd: generating public/private host key pair.
Dec 13 15:52:40 192.168.1.1 XG2600: protocol: ether 1 link up
Dec 13 15:52:40 192.168.1.1 XG2600: protocol: lan 0 link up
```

5.18.1.7 clear logging syslog

Function Clear the system log information.

Available Model XG0224 / XG0448 / XG2600

Syntax clear logging syslog

Options N/A

Use Mode Operation mode (admin class)
Configuration mode (admin class)

Explanation Clear all the system log information.

Execution Example

```
# clear logging syslog
#
```

5.18.1.8 clear statistics

Function Clear all the statistics.

Available Model XG0224 / XG0448 / XG2600

Syntax clear statistics

Options N/A

Use Mode Operation mode (admin class)
Configuration mode (admin class)

Explanation Clear all the statistics.

Execution Example

```
# clear statistics
#
```

5.18.1.9 show date

Function Display the current date and time of the device.

Available Model XG0224 / XG0448 / XG2600

Syntax show date

Options N/A

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display the current device date and time of the device.

Execution Example

```
# show date
Sat Jan 01 14:26:00 2011  ---(1)
```

1) Displays the current date and time.

5.18.1.10date

Function Display and set the current date and time of the device.

Available Model XG0224 / XG0448 / XG2600

Syntax date [YYYY/MM/DD.hh:mm:ss]

Options

N/A
Display the current device date and time of the device.

YYYY/MM/DD.hh:mm:ss
Set the specified date and time. (Effective for admin class only)

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display and set the current date and time of the device.

Execution Example

To display the date and time

```
# date
Sat Jan 01 14:26:00 2011
#
```

To set the date and time

```
# date 2011/01/01.14:26:00
#
```

5.18.1.11rdate

Function Set the date and time of the remote host into this device.

Available Model XG0224 / XG0448 / XG2600

Syntax rdate

Options

N/A
Set the date and time of the remote host in this device.

Use Mode Operation mode (admin class)
Configuration mode (admin class)

Explanation Obtain the date and time of the remote host (time server) specified in the time auto server, and set them as the date and time of this device.

Execution Example

```
# rdate
Sat Jan 01 14:26:00 2011
#
```

5.18.1.12reset

Function Restart the device.

Available Model XG0224 / XG0448 / XG2600

Syntax reset [<filename>]
reset clear

Options

N/A
Restart the device.

<filename>
Specify the "startup-config" file to be read during startup.

- config1
  Read configuration 1.
- config2
  Read configuration 2.

clear
Initialize the settings and restart the device.

Use Mode Operation mode (admin class)
Configuration mode (admin class)

Explanation Restart the device in about 6 seconds.

Execution Example

```
# reset
#
```

5.19 Configuration Display, Delete and Operation Commands

This section explains about commands related to configuration definition information.

5.19.1 Configuration Display Commands

This section explains about commands related to configuration display.

5.19.1.1 show candidate-config

Function Display the configuration being edited.

Available Model XG0224 / XG0448 / XG2600

Syntax show candidate-config [all] [<config>]

Options

all
Display all configuration including default values.
If omitted, only the modified configuration is displayed.

<config>
Display the configuration beginning with <config>.
The <config> section is NOT included in the configuration to be displayed.
If omitted, all configurations are displayed.

Use Mode Operation mode (admin class)
Configuration mode (admin class)

Explanation Display the currently edited configuration.

Execution Example

```
# show candidate-config lan 0
ip address 192.168.0.1/24 3
ip rip use v1 v1 0 off
#
```

5.19.1.2 show running-config

Function Display the configuration during operation.

Available Model XG0224 / XG0448 / XG2600

Syntax show running-config [all] [<config>]

Options

all
Display all configuration including default values.
If omitted, only the modified configuration is displayed.

<config>
Display the configuration beginning with <config>.
The <config> section is NOT included in the configuration to be displayed.
If omitted, all configurations are displayed.

Use Mode Operation mode (admin class)
Configuration mode (admin class)

Explanation Display the currently running configuration.

Execution Example

```
# show running-config lan 1
ip address 192.168.1.1/24 3
ip rip use v1 v1 0 off
```

5.19.1.3 show startup-config

Function Display the configuration to be used for device startup.

Available Model XG0224 / XG0448 / XG2600

Syntax show startup-config [<config>]

Options

<config>
Display the configuration beginning with <config>.
The character string, containing all options, characters and digits, without changing, displayed by the "show running-config" or "show candidate-config" command must be specified in the <config> option.
The <config> section is not included in the configuration to be displayed.
If omitted, all configurations are displayed.

Use Mode Operation mode (admin class)
Configuration mode (admin class)

Explanation Display the configuration that was used at startup or the saved startup configuration.

Execution Example

```
# show startup-config
lan 0 ip address 192.168.0.1/24 3
lan 0 vlan 1
syslog pri error,warn,info
syslog facility 23
telnetinfo autologout 5m
time zone 0900
```

5.19.1.4 diff

Function Display the configuration difference.

Available Model XG0224 / XG0448 / XG2600

Syntax diff <src_filename> <dst_filename>

Options

<src_filename>
Specify the name of the compare source file.

<dst_filename>
Specify the name of the compare target file.

Use Mode Operation mode (admin class)
Configuration mode (admin class)

Explanation Display only the differences between the specified files. The information only in <src_filename> begins with "<" and one only in <filename2> begins with ">".
The following file names can be specified.
candidate-config : Currently edited configuration file
running-config : Running configuration file
startup-config : Startup configuration file
config1 : Configuration 1 file
config2 : Configuration 2 file

Execution Example

```
# diff candidate-config running-config
===
> vlan 1 name rmt1
===
< vlan 3 name rmt3
< vlan 4 name rmt4
< vlan 5 name rmt5
< vlan 6 name rmt6
---
> vlan 3 name inter3
===
< vlan 8 name rmt8
< vlan 9 name rmt9
< vlan 10 name rmt10
< syslog server 192.168.33.63
#
```

5.19.2 Configuration Delete Commands

This section explains about commands related to configuration delete.

5.19.2.1 delete

Function Delete the configuration being edited.

Available Model XG0224 / XG0448 / XG2600

Syntax delete <config>

Options

<config>

- Configuration command

Specify the name and arguments of the configuration command to be deleted.

Use Mode Configuration mode (admin class)

Explanation Delete the specified configuration to return to the default state.
All the commands that begin with the command name and arguments specified in <config> are subject to deletion.
Specifying only the command name deletes all the configuration beginning with the specified command name. The number of arguments that can be specified in the config command varies depending on commands; in most cases, it is possible to specify up to the argument that precedes a variable value.

Caution Login password information cannot be deleted unless up to "set" is specified as shown below.
delete password set
delete password user set

Execution Example

The following shows an execution example when deleting all IPv4 address information of lan 0.

```
(config)# delete lan 0 ip address
```

5.19.3 Configuration Operation Commands

This section explains about commands related to configuration definition information operations.

5.19.3.1 load

Function Read (or load) the configuration.

Available Model XG0224 / XG0448 / XG2600

Syntax load <filename>

Options

<filename>
Specify the name of the file to be read (or loaded).

Use Mode Configuration mode (admin class)

Explanation Read the specified configuration.
All the data being set will be invalid.
The following file names can be specified.
running-config : Running configuration file
startup-config : Startup configuration file
config1 : Configuration 1 file
config2 : Configuration 2 file

Message

```
load failed: config read error
```

Since the device has a high communication load, it failed in reading the configuration.
Stop the communication load, and execute the command again.

```
<WARNING> weak admin password: set the password
```

The administrator password is not set.
Set an administrator password.

```
<WARNING> weak admin password: contain at least 8 characters
```

The administrator password is seven or fewer characters in length.
Set an administrator password with eight or more characters.

```
<WARNING> weak admin password: contain a different kind of character
```

The administrator password consists of only alphabetic characters or only numeric characters.
Set an administrator password with alphanumeric characters and symbols mixed.

```
<WARNING> weak user password: contain at least 8 characters
```

The user password is seven or fewer characters in length.
Set a user password with eight or more characters.

```
<WARNING> weak user password: contain a different kind of character
```

The user password consists of only alphabetic characters or only numeric characters.
Set a user password with alphanumeric characters and symbols mixed.

Execution Example

```
# load config1
#
```

5.19.3.2 save

Function Save the configuration.

Available Model XG0224 / XG0448 / XG2600

Syntax save [<filename>]

Options

N/A
Overwrite the existing "startup-config" file with the "candidate-config" file contents.

<filename>
Overwrite the file specified with the "candidate-config" file contents.

Use Mode Configuration mode (admin class)

Explanation Overwrite the file specified with the "candidate-config" file contents.
Omitting options will overwrite the contents on the current startup-config file.
The following file names can be specified.
startup-config : Startup configuration file
config1 : Configuration 1 file
config2 : Configuration 2 file

Execution Example

```
# save
#
```

5.19.3.3 commit

Function Commit (or dynamically activate) the configuration.

Available Model XG0224 / XG0448 / XG2600

Syntax commit

Options N/A

Use Mode Configuration mode (admin class)

Explanation Apply the configuration that was set or changed with the configuration command, without device restart.

Caution Changing the configuration may cause the communication interface to come down once in order to apply address information in the device, resulting in a communication interrupt.

☛ Reference "5.48 Effect by "commit" Command Execution" (pg.543)

Message

```
<ERROR> Need to do reset after execute the save command.
```

Since unallowable configuration was added or changed, it cannot be applied.
Execute the "reset" command after the "save" command, and restart the device.

```
<WARNING> The candidate-config is not changed.
```

No configuration is added or changed.
It is not necessary to execute the commit command.

Execution Example

```
# commit
#
```

5.19.3.4 commit try time

Function Try to commit (dynamically activate) the candidate config, or re-commit the startup-config if the try time period expires.

Available Model XG0224 / XG0448 / XG2600

Syntax commit try time <time>

Options

<time>
Specify a time period (from 1m to 24h) until retrieving the startup-config.
The unit shall be d (day), h (hour), or m (minute).

Use Mode Configuration mode (admin class)

Explanation Apply the configuration that was set or changed with the configuration command, without device restart, and retrieve the startup-config in the specified time.

Caution

During commit try time period the following cannot be executed:

- "commit"
- commit try time
- "save"

If you want to execute these commands, please cancel retrieving the startup-config, using "commit try cancel" command.

When the configuration is retrieved, complete the cancellation with this command sequence:

load startup-config
commit

If the startup-config (config0 or config1) is not same the configuration before editing for try, Old configuration would be lost.

☛ Reference "5.48 Effect by "commit" Command Execution" (pg.543)

Message

```
<ERROR> Need to do reset after execute the save command.
```

Since "commit try time" command already working, it cannot be applied.
Execute after canceling retrieving the startup-config by the "commit try cancel" command.

```
<ERROR> Waiting switch-back to old configuration
```

An unallowable configuration was created and cannot be applied.
Execute the "reset" command after the "save" command to restart the device.

```
<WARNING> The candidate-config is not changed.
```

No configuration is added or changed.
It is not necessary to execute the commit command.

Execution Example

```
# commit try time 10m commit
#
```

5.19.3.5 commit try cancel

Function Cancel retrieving the startup-config after using the "commit try time" command.

Available Model XG0224 / XG0448 / XG2600

Syntax commit try cancel

Options N/A

Use Mode Configuration mode (admin class)

Explanation Cancel retrieving the startup-config after using the "commit try time" command.

Message

```
<ERROR> Not waiting switch-back
```

The command is not applicable. A "commit try time" command was not previously invoked.

Execution Example

```
# commit try cancel
#
```

5.19.3.6 discard

Function Discard the changes of configuration.

Available Model XG0224 / XG0448 / XG2600

Syntax discard

Options N/A

Use Mode Configuration mode (admin class)

Explanation Discard changes of candidate-config, and return to the same contents as for running-config.

Message

```
<WARNING> weak admin password: set the password
```

The administrator password is not set.
Set an administrator password.

```
<WARNING> weak admin password: contain at least 8 characters
```

The administrator password is seven or fewer characters in length.
Set an administrator password with eight or more characters.

```
<WARNING> weak admin password: contain a different kind of character
```

The administrator password consists of only alphabetic characters or only numeric characters.
Set an administrator password with alphanumeric characters and symbols mixed.

```
<WARNING> weak user password: contain at least 8 characters
```

The user password is seven or fewer characters in length.
Set a user password with eight or more characters.

```
<WARNING> weak user password: contain a different kind of character
```

The user password consists of only alphabetic characters or only numeric characters.
Set a user password with alphanumeric characters and symbols mixed.

Execution Example

```
# discard
```

5.19.4 File Operation Commands

This section explains about commands related to File Operation Commands.

5.19.4.1 dir

Function Displays a list of files.

Available Model XG0224 / XG0448 / XG2600

Syntax dir [<filename>]

Options

<filename>
Specifies the name of the file or directory to be displayed. The dir command will only display files or directories that match this parameter. If a directory is specified, the files inside that directory will be displayed. Wildcards may be used with this option. Valid wildcards are listed below.

- *
  matches all character strings, regardless of length.
- ?
  matches any single character.
- [<char>]
  matches a target including any of the characters in <char>.

Use Mode Operation mode (admin class)
Configuration mode (admin class)

Explanation Displays a list of files on external media.

Execution Example

```
# dir
Directory of /cf0                    ---(1)

    (2)                (3)       (4)     (5)
2011/01/15 11:55                 1445 CONFIG2.TXT
2011/01/15 11:55                 1445 CONFIG3.TXT
2011/01/15 11:55                 1445 CONFIG4.TXT
2011/01/15 11:55                 1445 CONFIG11.TXT
2011/01/15 11:55                 1445 CONFIG1.TXT
2011/01/17 03:16                 2337531 FIRM
2011/01/17 01:58       <DIR>             TEST

                      total file 6
                      total directory 1
# dir test/*.*
Directory of /cf0/test

2011/01/16 10:23                 3142 CONFIG2.TXT
2011/01/17 01:58       <DIR> BKUP

                      total file 1
                      total directory 1
```

1) If CompactFlash /cf0, if USB memory /um0

2) Displays file last modified date.

3) Displays <DIR> if directory.

4) If a regular file, displays file size in bytes.

5) Displays file or directory name.

5.19.4.2 copy

Function Copies a file.

Available Model XG0224 / XG0448 / XG2600

Syntax copy <src_filename> <dst_filename>

Options

<src_filename>
The source file to be copied.

<dst_filename>
The target file name.

Use Mode Operation mode (admin class)
Configuration mode (admin class)

Explanation Copies a file.
Filenames can be any of the below.
Filenames that can be used for <src_filename>:

candidate-config	: candidate configuration file
running-config	: Running configuration file
startup-config	: Startup configuration file
config1	: Configuration 1 file
config2	: Configuration 2 file
firmware	: Firmware
/cf0/anyfilename	: A file on CompactFlash media
/um0/anyfilename	: A file on USB memory

Filenames that can be used for <dst_filename>:

startup-config	: Startup configuration file
config1	: Configuration 1 file
config2	: Configuration 2 file
firmware	: Firmware
/cf0/anyfilename	: A file on CompactFlash media
/um0/anyfilename	: A file on USB memory

Execution Example

```
# copy conifg1 startup-config
#
```

5.19.4.3 remove

Function Deletes a file.

Available Model XG0224 / XG0448 / XG2600

Syntax remove <filename>

Options

<filename>
Name of file to be deleted.

Use Mode Operation mode (admin class)
Configuration mode (admin class)

Explanation Displays a list of files on external media.

Execution Example

```
# remove config1_cf
#
```

5.19.4.4 rename

Function Renames a file.

Available Model XG0224 / XG0448 / XG2600

Syntax rename <old_filename> <new_filename>

Options

<old_filename>
The name of the file to be renamed.

<new_filename>
The new file name.

Use Mode Operation mode (admin class)
Configuration mode (admin class)

Explanation Renames a file on external media.

Execution Example

```
# rename config1_cf config1_cf_old
#
```

5.19.4.5 format

Function Formats.

Available Model XG0224 / XG0448 / XG2600

Syntax format

Options N/A

Use Mode Operation mode (admin class)
Configuration mode (admin class)

Explanation Formats external media, restoring to factory state.

Execution Example

```
# format
#
```

5.20 Ethernet Counter, Log, Statistics, and Status Display and Clear Operation Commands

This section explains commands related to Ethernet.

5.20.1 Ethernet Counter, Log, Statistics, and Status Display Commands

This section explains the commands related to Ethernet counter, log, statistics, and status display commands.

5.20.1.1 show ether

Function Display the Ethernet physical port information.

Available Model XG0224 / XG0448 / XG2600

Syntax show ether [line <line>]

Options

N/A
Display all information.

line <line>

- Display the specified port information.
  No information is displayed if the specified port number is invalid.

Range	Model
1 to 26	XG0224
1 to 52	XG0448
1 to 26,m1	XG02600

When specifying multiple port numbers, separate them with commas (,).
When specifying sequential numbers, separate them with hyphens (-). (Examples: "1-8")

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display the specified Ethernet port information.
If the "line" option is specified, the information of the target port is displayed.

Execution Example

```
B9F# show ether line 1-7
[ETHER PORT-1]
status          : down                                  ---(1)
flow control    : -                                     ---(2)
type            : Normal                                ---(3)
since           : Jan  1 00:00:02 GMT 1970              ---(4)
config          : -                                     ---(5)
linkcontrol     : online, recovery(-), downrelay(-)     ---(6)

[ETHER PORT-2]
status          : down
flow control    : -
type            : Normal
since           : Jan  1 00:00:02 GMT 1970
config          : -
linkcontrol     : online, recovery(-), downrelay(-)

[ETHER PORT-3]
status          : down
flow control    : -
type            : Normal
since           : Jan  1 00:00:02 GMT 1970
config          : -
linkcontrol     : online, recovery(-), downrelay(-)

[ETHER PORT-4]
status          : down
flow control    : -
type            : Normal
since           : Jan  1 00:00:02 GMT 1970
config          : -
linkcontrol     : online, recovery(-), downrelay(-)

[ETHER PORT-5]
status          : down
flow control    : -
type            : Normal
since           : Jan  1 00:00:02 GMT 1970
config          : -
linkcontrol     : online, recovery(-), downrelay(-)

[ETHER PORT-6]
status          : down
flow control    : -
type            : Normal
since           : Jan  1 00:00:02 GMT 1970
config          : -
linkcontrol     : online, recovery(-), downrelay(-)

[ETHER PORT-7]
status          : down
flow control    : -
type            : Normal
since           : Jan  1 00:00:02 GMT 1970
config          : -
linkcontrol     : online, recovery(-), downrelay(-)

XG2600#
```

1) Port state

Displays the speed and state when the connection has been completed.

disable: Indicates that the port is not used based on the definition.

offline：Indicates that the port is in the offline state.

Offline also indicates the following states depending on the cause:

offline (loopdetect): Port offline by loop detection function

offline (storm): Port offline by storm control function

offline (startup): Port offline by startup-time block function

offline (recovery):

Port offline by automatic recovery stop function

offline (downrelay): Port offline by linkdown relay function

offline (backup): Port offline by backup port function
offline (icmpwatch):
Port offline by ether L3 monitoring function
down : Indicates that the port is in the linkdown state.
auto : Indicates that automatic negotiation is enabled.
10M/100M/1000M/10G:
Indicates the baud rate (10Mbps, 100Mbps, 1000Mbps or 10Gbps) of the currently linked Ethernet port.
Full/Half:
Indicates the full duplex or half duplex mode of the currently linked port.
MDI/MDI-X:
Indicates the type of the currently linked MDI.

2) Flow control state
Displays in the sending or receiving order of the flow control.
on : Indicates that the flow control is enabled.
off : Indicates that the flow control is disabled.
- : Indicates that the port is undefined because it is not in the linkup state.

3) Port type
Indicates the port type.
Normal: Indicates that the port is used as a normal port.
Mirror : Indicates that the port is used as a target port for mirroring.
LinkAggregation:
Indicates that the port is used as a link aggregation port.
This parameter also indicates the number of the link aggregation group that the port belongs to.
"*LinkAggregation" is displayed when the link aggregation port is not linked up as a multiplexed link in the linkup state.
Backup:
Indicates that the port is used as a backup port.
This parameter also indicates the number of the backup group that the port belongs to as well as the master or backup type.
"Standby" is displayed to a standby port.
Backup LA:
Indicates that the port is used as a backup link aggregation port.
This parameter also indicates the number of the link aggregation group that the port belongs to.
It further indicates the number of the backup group that the port belongs to as well as the master or backup type.
"Standby" is displayed to a standby port.
"*standby" is displayed when the port is not established (not switched) as a link aggregation standby port in the linkup state.
"*LA" is displayed when the link aggregation port is not linked up as a multiplexed link in the linkup state.
– : Indicate indetermination by unused port or definition contradiction.

4) State transition time
Displays the time when the port has changed to the current state.

5) Configuration

Indicates setting value of "ether mode" command and "ether mdi" command.

mode (setting value):

Indicates the setting value of "ether mode" as mode (auto).

mdi (setting value):

Indicates the setting value of "ether mdi" as mdi (auto).

- : For the server port "-" will be displayed because it only supports 1000M fixed operation.

6) Link control information

Indicates link control information.

online : Indicates that the port runs in the online state during device startup or during dynamic definition reflection.

offline : Indicates that the port runs in the offline state during device startup or during dynamic definition reflection.

recovery (Upper limit: Current value):

Indicates the upper limit of the linkdown count specified in "ether recovery limit" as well as the current linkdown count.

If the upper limit of the linkdown count is not set, the upper limit and current value are indicated by hyphens (-) respectively.

downrelay (Link port list):

Displays link port list information when using the linkdown relay function.

The linkdown relay function, if not used, is indicated by a hyphen (-).

5.20.1.2 show ether brief

Function Display the information about Ethernet physical ports briefly.

Available Model XG0224 / XG0448 / XG2600

Syntax show ether brief

Options

N/A
Display all information.

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display the Ethernet port information briefly.

Execution Example

```
# show ether brief

port  status   type                media   mdi   speed  duplex  flow
----- -------- ------------------- ------ ----- ------ ------- -----
(1)   (2)      (3)                  (4)    (5)   (6)    (7)     (8)
1     up       normal              metal  MDIX  1000M  full    TxRx
2     up       normal              metal  MDI   1000M  full    Rx
3     up       linkaggregation1    metal  -     1000M  full    TxRx
4     up       linkaggregation1    metal  -     1000M  full    TxRx
5     up       linkaggregation1    metal  -     1000M  full    TxRx
6     up       linkaggregation1    metal  -     1000M  full    TxRx
7     offline  normal              -      -     -      -       -
8     up       backup1             metal  MDIX  1000M  full    -
9     standby  backup1             metal  MDIX  1000M  full    -
10    down     normal              -      -     -      -       -
11    down     normal              -      -     -      -       -
12    up       linkaggregation4    metal  MDIX  1000M  full    Tx
13    up       linkaggregation4    metal  MDIX  1000M  full    Tx
14    disable  normal              -      -     -      -       -
15    disable  normal              -      -     -      -       -
16    down     mirror              -      -     -      -       -
17    up       normal              metal  MDIX  1000M  full    Rx
18    up       normal              metal  MDIX  1000M  full    Rx
19    up       normal              metal  MDIX  1000M  full    Rx
20    up       normal              metal  MDIX  1000M  full    Rx
21    up       normal              metal  -     1000M  full    Rx
22    up       normal              metal  -     1000M  full    Rx
23    up       normal              metal  -     1000M  full    Rx
24    up       normal              metal  -     1000M  full    Rx
25    up       normal              metal  -     1000M  full    Rx
26    up       normal              metal  -     1000M  full    Rx

#
```

1) Port number

2) Port state
   - up : Indicates that the port is in the linkup state.
   - down : Indicates that the port is in the linkdown state.
   - standby : Indicates that the port is in the standby state. (backup port only) "*standby" is displayed when the port is not established (not switched) as a standby port in the linkup state.
   - offline : Indicates that the port is in the offline state.
   - disable : Indicates that the port is not used based on the definition.

3) Port type
   - normal : Indicates that the port is used as a normal port.
   - mirror : Indicates that the port is used as a target port for mirroring.

linkaggregation:
Indicates that the port is used as a link aggregation port.
This parameter also indicates the number of the link aggregation group that the port belongs to.
"*linkaggregation" is displayed when the link aggregation port is not linked up as a multiplexed link in the linkup state.

backup : Indicates that the port is used as a backup port.
It further indicates the number of the backup group that the port belongs to.

backup LA : Indicates that the port is used as a backup link aggregation port.
This parameter also indicates the number of the link aggregation group that the port belongs to.
It further indicates the number of the backup group that the port belongs to.
"*LA" is displayed when the link aggregation port is not linked up as a multiplexed link in the linkup state.

4) Media type of the Ethernet port
Indicates that the 10/100/1000BASE-T port or 10/100BASE-TX is used.
-: Indicates that the port is undefined because it is not in the linkup state.

5) MDI state of the Ethernet port
MDI/MDIX:
Indicates the type of the currently linked MDI. (When the media type is metal)
-: Indicates that the port is undefined because it is not in the linkup state.
[Note]
For the server port, even it is in the linkup state the state stays in "-".

6) Link speed of the Ethernet port
10M/100M/1000M/10G:
Indicates the baud rate (10Mbps, 100Mbps, 1000Mbps or 10Gbps) of the currently linked Ethernet port.
-: Indicates that the port is undefined because it is not in the linkup state.

7) Duplex state of the Ethernet port
full/half:
Indicates the full duplex or half duplex mode of the currently linked port.
-: Indicates that the port is undefined because it is not in the linkup state, or that the port is a Fiber port.

8) Flow control state of the Ethernet port
Tx: Indicates that the flow control sending function is enabled.
Rx: Indicates that the flow control receiving function is enabled.
-: Indicates that the port is undefined because it is not in the linkup state, and that the flow control function is disabled.

5.20.1.3 show ether statistics

Function Display the statistics of Ethernet physical ports.

Available Model XG0224 / XG0448 / XG2600

Syntax show ether statistics [line <line>] [detail]

Options

N/A
Display all the statistics.

line <line>

- Display the statistics of the specified port.
  No statistics are displayed if the specified port number is invalid.
  The management port is specified by "m1".
  The port for an internal connection that ties each switch device is specified by "C1".

Range	Model
1 to 26	XG0224
1 to 52, c1 to c4	XG0448
1 to 26,m1	XG02600

When specifying multiple port numbers, separate them with commas (,).
The specification of the port simultaneously other than m1 and m1 are also possible.
The specification of the port simultaneously other than c1 to c4 and c1 to c4 are also possible.
When specifying sequential numbers, separate them with hyphens (-). (Example: "1-8")

detail
Display the statistics of the Ethernet ports together with related detailed information.
Even if detail is specified, the content of the display is not added for the m1 port.

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display the statistics of the Ethernet physical port.
Specifying only the "line" option will display the statistics of the target port.
The relation between the port number and the switch device of XG0448 is shown.

Range	switch device
1 to 24,51,52	switch device 0
25 to 50	switch device 1

Connected port between switch devices is called an "internal connection port".
The relation between the internal connected port number and the switch device is shown.

Range	switch device
c1,c2	switch device 0
c3,c4	switch device 1

C1 is connected with C3. C2 is connected with c4.

Caution The statistics are cleared if this device is restarted.

Execution Example

Example of executing XG0224

```
#show ether statistics line 1

[ETHER PORT-1 STATISTICS]
[Input Statistics]
 Octets                    : 0                    ---(1)
  bits/sec                 : 0                    ---(2)
 Frames                    : 0                    ---(3)
  frames/sec               : 0                    ---(4)
 Unicast                   : 0                    ---(5)
  frames/sec               : 0                    ---(6)
 Multicast                 : 0                    ---(7)
  frames/sec               : 0                    ---(8)
 Broadcast                 : 0                    ---(9)
  frames/sec               : 0                    ---(10)
 Pause frames              : 0                    ---(11)

 Discards
  All DiscardsPkts         : 0                    ---(12)
 Errors
  Undersize                : 0                    ---(13)
  FCSErrors                : 0                    ---(14)
  AlignmentErrors          : 0                    ---(15)
  FragmentErrors           : 0                    ---(16)
  Jabbers                  : 0                    ---(17)
  SymbolErrors             : 0                    ---(18)
  UnknownOpcodes           : 0                    ---(19)

[Output Statistics]
 Octets                    : 0                    ---(20)
  bits/sec                 : 0                    ---(21)
 Frames                    : 0                    ---(22)
  frames/sec               : 0                    ---(23)
 Unicast                   : 0                    ---(24)
 Multicast                 : 0                    ---(25)
  frames/sec               : 0                    ---(26)
 Broadcast                 : 0                    ---(27)
  frames/sec               : 0                    ---(28)
 Pause frames              : 0                    ---(29)

 Discards
  DelayExceededDiscards    : 0                    ---(30)
  Queue Full Discards      : 0                    ---(31)
 Errors
  FCSErrors                : 0                    ---(32)
  FragmentErrors           : 0                    ---(33)
  CarrierSenseErrors       : 0                    ---(34)
  ExcessiveCollisions      : 0                    ---(35)
  LateCollisions           : 0                    ---(36)

 SingleCollisionFrames     : 0                    ---(37)
 MultipleCollisionFrames   : 0                    ---(38)
 DeferredTransmissions     : 0                    ---(39)
```

Execution example when detail of XG0224 (Giga port) is specified

```
# show ether statistics line 1 detail

[ETHER PORT-1 STATISTICS]
[Input Statistics]
 Octets                    : 0
  bits/sec                 : 0
 Frames                    : 0
  frames/sec               : 0
 Unicast                   : 0
  frames/sec               : 0
 Multicast                 : 0
  frames/sec               : 0
 Broadcast                 : 0
  frames/sec               : 0
 Pause frames              : 0
 Mac Control frames        : 0                        ---(42)

 Discards
  All DiscardsPkts         : 0
  Resource Full            : 0                        ---(43)
  Discards by Filter       : 0                        ---(44)
  Port In Discards         : 0                        ---(45)
  Policy Discards          : 0                        ---(46)
  VLAN dropped             : 0                        ---(47)
  Input Discards           : 0                        ---(48)
 Errors
  Undersize                : 0
  FCSErrors                : 0
  AlignmentErrors          : 0
  FragmentErrors           : 0
  Jabbers                  : 0
  SymbolErrors             : 0
  UnknownOpcodes           : 0

[Output Statistics]
 Octets                    : 0
  bits/sec                 : 0
 Frames                    : 0
  frames/sec               : 0
 Unicast                   : 0
 Multicast                 : 0
  frames/sec               : 0
 Broadcast                 : 0
  frames/sec               : 0
 Pause frames              : 0
 Mac Control frames        : 0                        ---(49)
 Jabbers                   : 0                        ---(50)

 Discards
  DelayExceededDiscards    : 0
  Internal Discards        : 0                        ---(51)
  Queue Full Discards      : 0
 Errors
  FCSErrors                : 0
  FragmentErrors           : 0
  CarrierSenseErrors       : 0
  ExcessiveCollisions      : 0
  LateCollisions           : 0
  InternalCellErrors       : 0

 SingleCollisionFrames     : 0
 MultipleCollisionFrames   : 0
 DeferredTransmissions     : 0
```

(To be continued)

(Continued)

```
[Input Detail Statistics]
  Frame size                frames      frames/sec
        64                : 0           0            ---(52)
        65-127            : 0           0            ---(53)
        128-255           : 0           0            ---(54)
        256-511           : 0           0            ---(55)
        512-1023          : 0           0            ---(56)
        1024-1518         : 0           0            ---(57)
        1519-2047         : 0           0            ---(58)
        2048-4095         : 0           0            ---(59)
        4096-9216         : 0           0            ---(60)
[Output Detail Statistics]
  Frame size                frames      frames/sec
        64                : 0           0            ---(61)
        65-127            : 0           0            ---(62)
        128-255           : 0           0            ---(63)
        256-511           : 0           0            ---(64)
        512-1023          : 0           0            ---(65)
        1024-1518         : 0           0            ---(66)
        1519-2047         : 0           0            ---(67)
        2048-4095         : 0           0            ---(68)
        4096-9216         : 0           0            ---(69)
```

Execution example when detail of XG0224 (10Giga port) is specified

```
# show ether statistics line 26 detail

[ETHER PORT-26 STATISTICS]
[Input Statistics]
 Octets                   : 0
  bits/sec                : 0
 Frames                   : 0
  frames/sec              : 0
 Unicast                  : 0
  frames/sec              : 0
 Multicast                : 0
  frames/sec              : 0
 Broadcast                : 0
  frames/sec              : 0
 Pause frames             : 0
 Mac Control frames       : 0

 Discards
  All DiscardsPkts        : 0
  Resource Full           : 0
  Discards by Filter      : 0
  Port In Discards        : 0
  Policy Discards         : 0
  VLAN dropped            : 0
  Input Discards          : 0
 Errors
  Undersize               : 0
  FCSErrors               : 0
  AlignmentErrors         : 0
  FragmentErrors          : 0
  Jabbers                 : 0
  SymbolErrors            : 0
  UnknownOpcodes          : 0
```

(To be continued)

(Continued)

```
[Output Statistics]
 Octets                   : 0
  bits/sec                : 0
 Frames                   : 0
  frames/sec              : 0
 Unicast                  : 0
 Multicast                : 0
  frames/sec              : 0
 Broadcast                : 0
  frames/sec              : 0
 Pause frames             : 0
 Mac Control frames       : 0

 Discards
  DelayExceededDiscards   : 0
  Internal Discards       : 0
  Queue Full Discards     : 0
 Errors
  FCSErrors               : 0
  FragmentErrors          : 0
  CarrierSenseErrors      : 0
  ExcessiveCollisions     : 0
  LateCollisions          : 0
  InternalCellErrors      : 0

 SingleCollisionFrames    : 0
 MultipleCollisionFrames  : 0
 DeferredTransmissions    : 0

[Input Detail Statistics]
  Frame size                frames      frames/sec
        64                : 0           0
        65-127            : 0           0
        128-255           : 0           0
        256-511           : 0           0
        512-1023          : 0           0
        1024-1518         : 0           0
        1519-2047         : 0           0
        2048-4095         : 0           0
        4096-9216         : 0           0
        9217-16383        : 0           0            ---(70)
[Output Detail Statistics]
  Frame size                frames      frames/sec
        64                : 0           0
        65-127            : 0           0
        128-255           : 0           0
        256-511           : 0           0
        512-1023          : 0           0
        1024-1518         : 0           0
        1519-2047         : 0           0
        2048-4095         : 0           0
        4096-9216         : 0           0
        9217-16383        : 0           0            ---(71)
```

Execution Example (XG0448)

```
XG0448(config)# show ether statistics line 1

[ETHER PORT-1 STATISTICS]
[Input Statistics]
 Octets                    : 0                    ---(1)
  bits/sec                 : 0                    ---(2)
 Frames                    : 0                    ---(3)
  frames/sec               : 0                    ---(4)
 Unicast                   : 0                    ---(5)
  frames/sec               : 0                    ---(6)
 Multicast                 : 0                    ---(7)
  frames/sec               : 0                    ---(8)
 Broadcast                 : 0                    ---(9)
  frames/sec               : 0                    ---(10)
 Pause frames              : 0                    ---(11)

 Discards
  All DiscardsPkts         : 0                    ---(12)
 Errors
  Undersize                : 0                    ---(13)
  FCSErrors                : 0                    ---(14)
  AlignmentErrors          : 0                    ---(15)
  FragmentErrors           : 0                    ---(16)
  Jabbers                  : 0                    ---(17)
  SymbolErrors             : 0                    ---(18)
  UnknownOpcodes           : 0                    ---(19)

[Output Statistics]
 Octets                    : 0                    ---(20)
  bits/sec                 : 0                    ---(21)
 Frames                    : 0                    ---(22)
  frames/sec               : 0                    ---(23)
 Unicast                   : 0                    ---(24)
 Multicast                 : 0                    ---(25)
  frames/sec               : 0                    ---(26)
 Broadcast                 : 0                    ---(27)
  frames/sec               : 0                    ---(28)
 Pause frames              : 0                    ---(29)

 Discards
  DelayExceededDiscards    : 0                    ---(30)
  Queue Full Discards      : 0                    ---(31)
 Errors
  FCSErrors                : 0                    ---(32)
  FragmentErrors           : 0                    ---(33)
  CarrierSenseErrors       : 0                    ---(34)
  ExcessiveCollisions      : 0                    ---(35)
  LateCollisions           : 0                    ---(36)

 SingleCollisionFrames     : 0                    ---(37)
 MultipleCollisionFrames   : 0                    ---(38)
 DeferredTransmissions     : 0                    ---(39)
```

Example of executing internal connection port of XG0448

```
XG0448(config)# show ether statistics line 1c1

[INTERNAL CONNECTION PORT-1 STATISTICS]
 Packets from              : line 1 to 24           ---(40)
                           : line 51 to 52          ---(41)
 Connected to              : C3

[Input Statistics]
 Octets                    : 0
  bits/sec                 : 0
 Frames                    : 0
  frames/sec               : 0
 Unicast                   : 0
  frames/sec               : 0
 Multicast                 : 0
  frames/sec               : 0
 Broadcast                 : 0
  frames/sec               : 0
 Pause frames              : 0

 Discards
  All DiscardsPkts         : 0
 Errors
  Undersize                : 0
  FCSErrors                : 0
  AlignmentErrors          : 0
  FragmentErrors           : 0
  Jabbers                  : 0
  SymbolErrors             : 0
  UnknownOpcodes           : 0

[Output Statistics]
 Octets                    : 0
  bits/sec                 : 0
 Frames                    : 0
  frames/sec               : 0
 Unicast                   : 0
 Multicast                 : 0
  frames/sec               : 0
 Broadcast                 : 0
  frames/sec               : 0
 Pause frames              : 0

 Discards
  DelayExceededDiscards    : 0
  Queue Full Discards      : 0
 Errors
  FCSErrors                : 0
  FragmentErrors           : 0
  CarrierSenseErrors       : 0
  ExcessiveCollisions      : 0
  LateCollisions           : 0

 SingleCollisionFrames     : 0
 MultipleCollisionFrames   : 0
 DeferredTransmissions     : 0
```

Execution example when detail of XG0448 (Giga port) is specified

```
# show ether statistics line 1 detail

[ETHER PORT-1 STATISTICS]
[Input Statistics]
 Octets                    : 0
  bits/sec                 : 0
 Frames                    : 0
  frames/sec               : 0
 Unicast                   : 0
  frames/sec               : 0
 Multicast                 : 0
  frames/sec               : 0
 Broadcast                 : 0
  frames/sec               : 0
 Pause frames              : 0
 Mac Control frames        : 0

 Discards
  All DiscardsPkts         : 0
  Resource Full            : 0
  Discards by Filter       : 0
  Policy Discards          : 0
  Port In Discards         : 0
  Input Discards           : 0
 Errors
  Undersize                : 0
  FCSErrors                : 0
  AlignmentErrors          : 0
  FragmentErrors           : 0
  Jabbers                  : 0
  SymbolErrors             : 0
  UnknownOpcodes           : 0

[Output Statistics]
 Octets                    : 0
  bits/sec                 : 0
 Frames                    : 0
  frames/sec               : 0
 Unicast                   : 0
 Multicast                 : 0
  frames/sec               : 0
 Broadcast                 : 0
  frames/sec               : 0
 Pause frames              : 0
 Mac Control frames        : 0
 Jabbers                   : 0

 Discards
  DelayExceededDiscards    : 0
  Internal Discards        : 0
  Queue Full Discards      : 0
 Errors
  FCSErrors                : 0
  FragmentErrors           : 0
  CarrierSenseErrors       : 0
  ExcessiveCollisions      : 0
  LateCollisions           : 0
  InternalCellErrors       : 0

 SingleCollisionFrames     : 0
 MultipleCollisionFrames   : 0
 DeferredTransmissions     : 0
```

(To be continued)

(Continued)

```
[Input Detail Statistics]
  Frame size                frames      frames/sec
        64                : 0           0
        65-127            : 0           0
        128-255           : 0           0
        256-511           : 0           0
        512-1023          : 0           0
        1024-1518         : 0           0
        1519-2047         : 0           0
        2048-4095         : 0           0
        4096-9216         : 0           0
[Output Detail Statistics]
  Frame size                frames      frames/sec
        64                : 0           0
        65-127            : 0           0
        128-255           : 0           0
        256-511           : 0           0
        512-1023          : 0           0
        1024-1518         : 0           0
        1519-2047         : 0           0
        2048-4095         : 0           0
        4096-9216         : 0           0
```

Execution example when detail of XG0448 (10Giga port) is specified

```
# show ether statistics line 50 detail

[ETHER PORT-50 STATISTICS]
[Input Statistics]
 Octets                    : 0
  bits/sec                 : 0
 Frames                    : 0
  frames/sec               : 0
 Unicast                   : 0
  frames/sec               : 0
 Multicast                 : 0
  frames/sec               : 0
 Broadcast                 : 0
  frames/sec               : 0
 Pause frames              : 0
 Mac Control frames        : 0

 Discards
  All DiscardsPkts         : 0
  Resource Full            : 0
  Discards by Filter       : 0
  Policy Discards          : 0
  Port In Discards         : 0
  Input Discards           : 0
 Errors
  Undersize                : 0
  FCSErrors                : 0
  AlignmentErrors          : 0
  FragmentErrors           : 0
  Jabbers                  : 0
  SymbolErrors             : 0
  UnknownOpcodes           : 0
```

(To be continued)

(Continued)

```
[Output Statistics]
 Octets                    : 0
  bits/sec                 : 0
 Frames                    : 0
  frames/sec               : 0
 Unicast                   : 0
 Multicast                 : 0
  frames/sec               : 0
 Broadcast                 : 0
  frames/sec               : 0
 Pause frames              : 0
 Mac Control frames        : 0

 Discards
  DelayExceededDiscards    : 0
  Internal Discards        : 0
  Queue Full Discards      : 0
 Errors
  FCSErrors                : 0
  FragmentErrors           : 0
  CarrierSenseErrors       : 0
  ExcessiveCollisions      : 0
  LateCollisions           : 0
  InternalCellErrors       : 0

 SingleCollisionFrames     : 0
 MultipleCollisionFrames   : 0
 DeferredTransmissions     : 0

[Input Detail Statistics]
  Frame size                frames      frames/sec
        64                : 0           0
        65-127            : 0           0
        128-255           : 0           0
        256-511           : 0           0
        512-1023          : 0           0
        1024-1518         : 0           0
        1519-2047         : 0           0
        2048-4095         : 0           0
        4096-9216         : 0           0
        9217-16383        : 0           0
[Output Detail Statistics]
  Frame size                frames      frames/sec
        64                : 0           0
        65-127            : 0           0
        128-255           : 0           0
        256-511           : 0           0
        512-1023          : 0           0
        1024-1518         : 0           0
        1519-2047         : 0           0
        2048-4095         : 0           0
        4096-9216         : 0           0
        9217-16383        : 0           0
```

1) Number of octets of received data

2) Number of bits received per second (Bits/sec.)

3) Total number of received frames

4) Number of frames received per second (Frames/sec.)

5) Number of received unicast frames

6) Number of unicast frames received per second (Frames/sec.)

7) Number of received multicast frames

8) Number of multicast frames received per second (Frames/sec.)

9) Number of received broadcast frames

10) Number of broadcast frames received per second (Frames/sec.)

11) Number of received PAUSE frames (MAC control frames)

12) Number of discarded frames out of all the received frames

13) Number of received shortsized frames (less than 64 bytes)

14) Number of frames in which FCS error is detected in 64 data size bytes or more

15) Number of received frames in which an alignment error was detected

16) Number of shortsized frames (less than 64 bytes) in which an FCS or alignment error was detected

17) Number of oversized frames (1519 bytes or more without tag, 1523 bytes or more with tag) in which an FCS or FCS alignment error was detected

18) Number of detected symbol errors

19) Number of unsupported MAC control frames that were received

20) Total number of sent octets

21) Number of bits sent per second (Bits/sec.)

22) Number of sent frames

23) Number of frames sent per second (Frames/sec.)

24) Number of sent unicast frames

25) Number of sent multicast frames

26) Number of multicast frames sent per second (Frames/sec.)

27) Number of sent broadcast frames

28) Number of broadcast frames sent per second (Frames/sec.)

29) Number of sent pause frames (MAC control frames)

30) Number of frames that were discarded due to an excessive delay

31) Number of frames that entered full state of cue and were abandoned

32) Number of FCS error frame transmissions of 64 data size bytes or more

33) Number of sent frames in which an FCS or FCS alignment error was detected in the shortsized frames

34) Career undetection error generation frequency

35) Number of frames in which transmission fails by frequent occurrence of collision

36) Number of occurrences of late collisions

37) Number of frames that could be sent after a single collision occurred

38) Number of frames that could be sent after multiple collisions occurred

39) Number of frames that got into a transmission deferment because the transmissionpath was busy

The following information is displayed only for an internal connected port of XG0448

40) External port in which it belongs to internal, connected port

41) Opposed internal, connected port.
The counter of an internal, connected port becomes a frame that has been forwarded from the Giga/10Giga port with the value to which the header for an internal control in 12 bytes is added.

42) Number of received MAC control frames

43) Number of reception frames abandoned by resource shortage or Back Pressure

44) Number of reception frames abandoned by filtering

45) Number of reception frames abandoned by be not of STP in state of forwarding.
The number of reception frames abandoned because it doesn't belong to set VLAN is contained for XG0448.

46) Number of reception frames annulled by reception annulment setting

47) Number of reception frames abandoned because it doesn't belong to set VLAN.

48) Number of reception frames abandoned by other reasons
- When the MAC header or the IP header is the following values
All ..TTL.. ..Destination IP address 0, Source.. 0 etc. abnormal checksum and abnormal length
- For a not corresponding frame to the entry of the IP multicast table
- For the internal control frame not forwarded to an external port in case of an internal, connected port
- When it is annulled without being output among frames that the flooding is done without being recognized an abnormal frame in the input port

49) Number of sent MAC control frames

50) Number of frames in which FCS error or FCS alignment error is detected with over size (1519 bytes or more) frame

51) Number of frames abandoned in chip

52) Number of frames (with 64 byte data size) received and number of frame (with 64byte data size) received per second (Frames/sec.)

53) Number of frames (with data size of 65 to 127 bytes) sent and number of frame (with data size of 65 to 127 bytes) sent per second (Frames/sec.)

54) Number of frames (with data size of 128 to 255 bytes) received and number of frame (with data size of 128 to 255 bytes) received per second (Frames/sec.)

55) Number of frames (with data size of 256 to 511 bytes) received and number of frame (with data size of 256 to 511 bytes) received per second (Frames/sec.)

56) Number of frames (with data size of 512 to 1023 bytes) received and number of frame (with data size of 512 to 1023 bytes) received per second (Frames/sec.)

57) Number of frames (with data size of 1024 to 1518 bytes) received and number of frame (with data size of 1024 to 1518bytes) received per second (Frames/sec.)

58) Number of frames (with data size of 1519 to 2047 bytes) received and number of frame (with data size of 1519 to 1522bytes) received per second (Frames/sec.)

59) Number of frames (with data size of 2048 to 4095 bytes) received and number of frame (with data size of 2048 to 4095 bytes) received per second (Frames/sec.)

60) Number of frames (with data size of 4096 to 9216 bytes) received and number of frame (with data size of 4096 to 9216 bytes) received per second (Frames/sec.)

61) Number of frames (with 64 byte data size) sent and number of frame (with 64 byte data size) sent per second (Frames/sec.)

62) Number of frames (with data size of 65 to 127 bytes) sent and number of frame (with data size of 65 to 127 bytes) sent per second (Frames/sec.)

63) Number of frames (with data size of 128 to 255 bytes) sent and number of frame (with data size of 128 to 255 bytes) sent per second (Frames/sec.)

64) Number of frames (with data size of 256 to 511 bytes) sent and number of frame (with data size of 256 to 511 bytes) sent per second (Frames/sec.)

65) Number of frames (with data size of 512 to 1023 bytes) sent and number of frame (with data size of 512 to 1023 bytes) sent per second (Frames/sec.)

66) Number of frames (with data size of 1024 to 1518 bytes) sent and number of frame (with data size of 1024 to 1518bytes) sent per second (Frames/sec.)

67) Number of frames (with data size of 1519 to 2047 bytes) sent and number of frame (with data size of 1519 to 1522bytes) sent per second (Frames/sec.)

68) Number of frames (with data size of 2048 to 4095 bytes) sent and number of frame (with data size of 2048 to 4095 bytes) sent per second (Frames/sec.)

69) Number of frames (with data size of 4096 to 9216 bytes) sent and number of frame (with data size of 4096 to 9216 bytes) sent per second (Frames/sec.)

70) Number of frame receptions of 9217-16383 data size bytes. And, it is numerical of the frame reception of 9217-16383 size of data a second bytes (frames/sec). However, the frame forwarding more than 9217 byte length is a unsupport.

71) Number of frame transmissions of 9217-16383 data size bytes. And, Number of frame transmissions of 9217-16383 size of data a second bytes (frames/sec). However, the frame forwarding more than 9217 byte length is a unsupport.

Example of executing 10Giga port of XG2600

```
# show ether statistics line 1

[ETHER PORT-1 STATISTICS]
[Input Statistics]
 Octets                    : 1493377360              ---(1)
  bits/sec                 : 0                       ---(2)
 Frames                    : 6706618                 ---(3)
  frames/sec               : 0                       ---(4)
 Unicast                   : 6704279                 ---(5)
  frames/sec               : 0                       ---(6)
 Multicast                 : 15                      ---(7)
  frames/sec               : 0                       ---(8)
 Broadcast                 : 0                       ---(9)
  frames/sec               : 0                       ---(10)
 Pause frames              : 0                       ---(11)

 Discards
  All DiscardsPkts         : 94732                   ---(12)
 Errors
  Undersize                : 0                       ---(13)
  FCSErrors                : 0                       ---(14)
  AlignmentErrors          : 0                       ---(15)
  FragmentErrors           : 2324                    ---(16)
  Jabbers                  : 0                       ---(17)
  SymbolErrors             : 0                       ---(18)
  UnknownOpcodes           : 0                       ---(19)

[Output Statistics]
 Octets                    : 804468332               ---(20)
  bits/sec                 : 0                       ---(21)
 Frames                    : 5109155                 ---(22)
  frames/sec               : 0                       ---(23)
 Unicast                   : 5109152                 ---(24)
 Multicast                 : 0                       ---(25)
  frames/sec               : 0                       ---(26)
 Broadcast                 : 3                       ---(27)
  frames/sec               : 0                       ---(28)
 Pause frames              : 0                       ---(29)

 Discards
  DelayExceededDiscards    : 0                       ---(30)
 Errors
  Undersize                : 0                       ---(31)
  FCSErrors                : 0                       ---(32)
  FragmentErrors           : 0                       ---(33)
```

Example of executing m1 port of XG2600 (management port)

```
# show ether statistics line m1

[ETHER PORT-1 STATISTICS]
[Input Statistics]
 Octets                    : 148231
  bits/sec                 : 511
 Frames                    : 897
  frames/sec               : 0
 Unicast                   : 45
  frames/sec               : 0
 Multicast                 : 852                    ---(34)
  frames/sec               : 0                      ---(35)

 Discards
  DiscardsPkts             : 0                      ---(36)
 Errors
  Oversize                 : 0
  FCSErrors                : 0
  AlignmentErrors          : 0

[Output Statistics]
 Octets                    : 4317
  bits/sec                 : 0
 Frames                    : 32
  frames/sec               : 0
 Unicast                   : 30
 Multicast                 : 2                      ---(37)
  frames/sec               : 0                      ---(38)

 Discards
  DiscardsPkts             : 0                      ---(39)
 Errors
  CarrierSenseErrors       : 0                      ---(40)
  ExcessiveCollisions      : 0                      ---(41)
  LateCollisions           : 0                      ---(42)
  SingleCollisionFrames    : 0                      ---(43)
  MultipleCollisionFrames  : 0                      ---(44)
  DeferredTransmissions    : 0                      ---(45)
```

1) Number of octets of received data

2) Number of bits received per second (Bits/sec.)

3) Total number of received frames

4) Number of frames received per second (Frames/sec.)

5) Number of received unicast frames
   It doesn't contain the error frame.

6) Number of unicast frames received per second (Frames/sec.)
   It doesn't contain the error frame.

7) Number of received multicast frames
   It doesn't contain the error frame.

8) Number of multicast frames received per second (Frames/sec.)
   It doesn't contain the error frame.

9) Number of received broadcast frames
   It doesn't contain the error frame.

10) Number of broadcast frames received per second (Frames/sec.)
    It doesn't contain the error frame.

11) Number of received PAUSE frames (MAC control frames)

12) Number of discarded frames out of all the received frames

13) Number of received shortsized frames (less than 64 bytes)

14) Number of frames in which FCS error is detected in 64 data size bytes or more

15) Number of received frames in which an alignment error was detected

16) Number of shortsized frames (less than 64 bytes) in which an FCS or alignment error was detected

17) Number of oversized frames (1519 bytes or more without tag, 1523 bytes or more with tag) in which an FCS or FCS alignment error was detected

18) Number of detected symbol errors

19) Number of unsupported MAC control frames that were received

20) Total number of sent octets

21) Number of bits sent per second (Bits/sec.)
The number of transmission bits of error frames is not counted at the "cut-through mode".

22) Number of sent frames
The number of frames in which the transmission discontinuance is done because the error detection was done in the reception port after it begins to transmit is contained at the "cut-through" mode.
It doesn't contain the error frame.

23) Number of frames sent per second (Frames/sec.)
The number of frames in which the transmission discontinuance is done because the error detection was done in the reception port after it begins to transmit is contained at the "cut-through" mode.
It doesn't contain the error frame.

24) Number of sent unicast frames
It doesn't contain the error frame.

25) Number of sent multicast frames
It doesn't contain the error frame.

26) Number of multicast frames sent per second (Frames/sec.)
It doesn't contain the error frame.

27) Number of sent broadcast frames
It doesn't contain the error frame.

28) Number of broadcast frames sent per second (Frames/sec.)
It doesn't contain the error frame.

29) Number of sent pause frames (MAC control frames)

30) Number of frames that were discarded due to an excessive delay

31) Number of short size (less than 64 bytes) frame transmissions

32) Number of FCS error frame transmissions of 64 data size bytes or more
The number of frames in which the error detection is done to the "cut-through" mode in the reception port after it begins to transmit and the transmission discontinuance is done is contained.

33) Number of sent frames in which an FCS or FCS alignment error was detected in the shortsized frames (less than 64 bytes)

34) Received multicast and number of broadcast frames

35) Received multicast and number of broadcast frames a second (frames/sec)

36) Number of discarded frames out of all the received frames

37) Number of sent multicast frames or broadcast frames

38) Transmitted multicast and number of broadcast frames a second (frames/sec)

39) Number of frames abandoned when transmitting

40) Career undetection error generation frequency

41) Number of frames in which transmission fails by frequent occurrence of collision

42) Number of occurrences of late collisions

43) Number of frames that could be sent after a single collision occurred

44) Number of frames that could be sent after multiple collisions occurred

45) Number of frames that got into a transmission deferment because the transmission path was busy

Execution example when detail of XG2600 (10Giga port) is specified

```
# show ether statistics line 1 detail

[ETHER PORT-1 STATISTICS]
[Input Statistics]
 Octets                    : 1493377360
  bits/sec                 : 0
 Frames                    : 6706618
  frames/sec               : 0
 Unicast                   : 6704279
  frames/sec               : 0
 Multicast                 : 15
  frames/sec               : 0
Broadcast                  : 0
 frames/sec                : 0
Pause frames               : 0
Mac Control frames         : 0                        ---(46)

 Discards
  All DiscardsPkts         : 94732
 Errors
  Undersize                : 0
  FCSErrors                : 0
  AlignmentErrors          : 0
  FragmentErrors           : 2324
  Jabbers                  : 0
  SymbolErrors             : 0
  UnknownOpcodes           : 0

[Output Statistics]
 Octets                    : 804468332
  bits/sec                 : 0
 Frames                    : 5109155
  frames/sec               : 0
 Unicast                   : 5109152
 Multicast                 : 0
  frames/sec               : 0
 Broadcast                 : 3
  frames/sec               : 0
 Pause frames              : 0
 Mac Control frames        : 0                        ---(47)

 Discards
  DiscardsPkts             : 0                        ---(48)
  DelayExceededDiscards    : 0
 Errors
  Undersize                : 0
  FCSErrors                : 0
  FragmentErrors           : 0

[Detail Statistics]
Frame size                frames          frames/sec
      64                : 0                    0          ---(49)
      65-127            : 0                    0          ---(50)
      128-255           : 0                    0          ---(51)
      256-511           : 0                    0          ---(52)
      512-1023          : 0                    0          ---(53)
      1024-1518         : 0                    0          ---(54)
      1519-16128        : 0                    0          ---(55)
```

The following information is also displayed when "detail" is specified.

46) Number of received MAC control frames

47) Number of sent MAC control frames

48) Number of frames abandoned when transmitting

49) Number of frame sending and receiving of 64 data size bytes.
And, it is numerical of the frame sending and receiving of (with data size of 65 to 127 bytes) size of data a second bytes. (frames/sec)

50) Number of frame sending and receiving of (with data size of 65 to 127 bytes) data size bytes. And, it is numerical of the frame sending and receiving of (with data size of 65 to 127 bytes) size of data a second bytes. (frames/sec)

51) Number of frame sending and receiving of (with data size of 128 to 255 bytes) data size bytes. And, it is numerical of the frame sending and receiving of (with data size of 128 to 255 bytes) size of data a second bytes. (frames/sec)

52) Number of frame sending and receiving of (with data size of 256 to 511 bytes) data size bytes. And, it is numerical of the frame sending and receiving of (with data size of 256 to 511 bytes) size of data a second bytes. (frames/sec)

53) Number of frame sending and receiving of (with data size of 512 to 1023 bytes) data size bytes. And, it is numerical of the frame sending and receiving of (with data size of 512 to 1023 bytes) size of data a second bytes. (frames/sec)

54) Number of frame sending and receiving of (with data size of 1024 to 1518 bytes) data size bytes. And, it is numerical of the frame sending and receiving of (with data size of 1024 to 1518 bytes) size of data a second bytes. (frames/sec)

55) Number of frame sending and receiving of (with data size of 1519 to 16128 bytes) data size bytes. And, it is numerical of the frame sending and receiving of (with data size of 1519 to 16128 bytes) size of data a second bytes. (frames/sec)

5.20.1.4 show ether media-info

Function Display Media information of Ethernet physical port

Available Model XG0224 / XG0448 / XG2600

Syntax show ether media-info [line <line>]

Options

N/A
Display the information of all SFP+,CX4 ports and SFP ports

line <line>
Display the information of the specified port.

Range	Model
21 to 26	XG0224
45 to 52	XG0448
1 to 26	XG2600

When specifying multiple port numbers, separate them with commas (,).
When specifying sequential numbers, separate them with hyphens (-). (Examples: "1-8")

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display Media information

Execution Example

Execution Example (XG0224)

```
# show ether media-info

Port media type Vendor PN
---- ---------- ----------------
 (1)  (2)         (3)
 21   SFP(SX)     HFBR-5710L
 22   SFP(ZX)     SCP6P94-F7-BMH
 23   SFP(LX)     SCP6P44-F7-BMH
 24   SFP(FX)     HFBR-57E0P
 25   SFP+(LR)    FTLX1471D3BCL
 26   SFP+(SR)    TRS2000EN-S002
```

Execution Example (XG0448)

```
# show ether media-info

Port media type Vendor PN
---- ---------- ----------------
 (1)  (2)         (3)
 45   NONE
 46   NONE
 47   SFP(LX)     SCP6P44-F7-BMH
 48   NONE
 49   SFP+(LR)    FTLX1471D3BCL
 50   SFP+(SR)    TRS2000EN-S002
 51   SFP+(SR)    TRS2000EN-S002
 52   NONE
```

Execution Example (XG2600)

```
# show ether media-info

Port media type Vendor PN
---- ---------- ----------------
 (1)  (2)         (3)
 1    SFP+(SR)    FTLX8571D3BCL
 2    SFP+(SR)    FTLX8571D3BCL
 3    SFP+(SR)    FTLX8571D3BCL
 4    SFP+(SR)    FTLX8571D3BCL
 5    SFP+(SR)    FTLX8571D3BCL
 6    SFP+(SR)    FTLX8571D3BCL
 7    SFP+(SR)    FTLX8571D3BCL
 8    SFP+(SR)    FTLX8571D3BCL
 9    SFP+(SR)    FTLX8571D3BCL
 10   SFP+(SR)    FTLX8571D3BCL
 11   SFP+(SR)    FTLX8571D3BCL
 12   SFP+(SR)    FTLX8571D3BCL
 13   SFP+(SR)    FTLX8571D3BCL
 14   SFP+(SR)    FTLX8571D3BCL
 15   SFP+(SR)    FTLX8571D3BCL
 16   SFP+(SR)    FTLX8571D3BCL
 17   SFP+(SR)    FTLX8571D3BCL
 18   SFP+(SR)    FTLX8571D3BCL
 19   SFP+(SR)    FTLX8571D3BCL
 20   SFP+(SR)    FTLX8571D3BCL
 21   SFP+(SR)    FTLX8571D3BCL
 22   SFP+(SR)    FTLX8571D3BCL
 23   SFP+(SR)    FTLX8571D3BCL
 24   SFP+(SR)    FTLX8571D3BCL
 25   NONE
 26   NONE
```

1) Port number

2) Media information

The type of the installed module is displayed

SFP(SX)	SFP (1000BASE-SX) module is installed
SFP(LX)	SFP (1000BASE-LX) module is installed
SFP(FX)	SFP (1000BASE-FX) module is installed
SFP(BX-D)	SFP (1000BASE-BX-D) module is installed
SFP(BX-U)	SFP (1000BASE-BX-U) module is installed
SFP(ZX)	SFP (1000BASE-ZX) module is installed
CX4	The CX4 expansion card is mounted. (Only for XG0448/XG0224.)
SFP+(SR)	SFP+(10GBASE-SR) module is installed
SFP+(LR)	SFP+(10GBASE-LR) module is installed
UNKNOWN	Type of the installed module is unknown
NONE	SFP+ module is not installed or the module of the unsupport is mounted.

3) Vendor Part Number

Vendor part number of the installed module is displayed.

The information is displayed even if the type of the module is unknown.

5.20.1.5 show ether utilization

Function Display the usage ratio (or utilization) information of Ethernet physical ports.

Available Model XG0224 / XG0448 / XG2600

Syntax show ether utilization

Options

N/A
Display the utilization information of all Ethernet ports.

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display the usage ratio of the Ethernet physical port.

Caution The usage ratio is cleared if this device is restarted.

Execution Example

Execution Example (XG0224)

```
# show ether utilization
Port    TX/sec      Util      RX/sec      Util
------  ----------  --------  ----------  -------
(1)     (2)         (3)       (4)         (5)
     1           0         0           0         0
     2           0         0           0         0
     3           0         0           0         0
     4           0         0           0         0
     5           0         0           0         0
     6           0         0           0         0
     7           0         0           0         0
     8           0         0           0         0
     9           0         0           0         0
    10           0         0           0         0
    11           0         0           0         0
    12           0         0           0         0
    13           0         0           0         0
    14           0         0           0         0
    15           0         0           0         0
    16           0         0           0         0
    17           0         0           0         0
    18           0         0           0         0
    19           0         0           0         0
    20           0         0           0         0
    21           0         0           0         0
    22           0         0           0         0
    23           0         0           0         0
    24           0         0           0         0
    25           0         0           0         0
    26           0         0           0         0
#
```

Execution Example (XG0448)

```
# show ether utilization
Port    TX/sec      Util      RX/sec      Util
------  ----------  -------   ----------  -------
(1)     (2)         (3)       (4)         (5)
     1           0         0           0         0
     2           0         0           0         0
     3           0         0           0         0
     4           0         0           0         0
     5           0         0           0         0
     6           0         0           0         0
     7           0         0           0         0
     :
     :
    48           0         0           0         0
    49           0         0           0         0
    50           0         0           0         0
    51           0         0           0         0
    52           0         0           0         0
    C1           0         0           0         0
    C2           0         0           0         0
    C3           0         0           0         0
    C4           0         0           0         0
```

Execution Example (XG2600)

```
# show ether utilization
Port    TX/sec      Util      RX/sec      Util
------  ----------  -------   ----------  -------
(1)     (2)         (3)       (4)         (5)
     1           0         0           0         0
     2           0         0           0         0
     3           0         0           0         0
     4           0         0           0         0
     5      710227        50           0         0
     6           0         0           0         0
     7           0         0           0         0
     8           0         0           0         0
     9           0         0           0         0
    10           0         0           0         0
    11           0         0           0         0
    12           0         0           0         0
    13           0         0     1420457       100
    14           0         0           0         0
    15     1420454       100           0         0
    16           0         0           0         0
    17           0         0           0         0
    18           0         0           0         0
    19           0         0           0         0
    20           0         0           0         0
    21           0         0           0         0
    22           0         0           0         0
    23           0         0           0         0
    24           0         0           0         0
    25           0         0           0         0
    26           0         0           0         0
    M1           0         0           0         0
#
```

1) Port : Ethernet physical port number
   The management port is displayed with M1. (Only XG2600)
   An "internal connected port" is displayed with C1-C4. (Only XG0448)

2) TX/sec : Number of frames that were sent in 1 second (pps)

3) Util : Sending usage ratio (%) of physical port

4) RX/sec : Number of frames that were received in 1 second (pps)

5) Util : Receiving usage ratio (%) of physical port

5.20.1.6 show ether queue

Function Display the number of packets placed in the COS queue of Ethernet physical ports.

Available Model XG0224 / XG0448 / XG2600

Syntax show ether queue [line <line>]

Options

N/A
Display the number of packets placed in the COS queue of all ports.

line <line>
Display the number of packets placed in the COS queue of the specified port.
No information is displayed if the specified port number is invalid.

Range	Model
1 to 26	XG0224
1 to 52, c1 to c4	XG0448
1 to 26	XG2600

When specifying multiple port numbers, separate them with commas (,).
When specifying sequential numbers, separate them with hyphens (-). (Example: "1-8")

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display the number of packets remaining in the COS queue of Ethernet physical ports.
If the "line" option is specified, the information of the target port is displayed.

Caution The number of packets remaining in the COS queue is cleared if this device is restarted.

Execution Example

Execution Example (XG0224 / XG0448 / XG2600)

```
# show ether queue
[ETHER PORT-1]
  CoS Queue 0      : 0       ---(1)
  CoS Queue 1      : 0
  CoS Queue 2      : 238
  CoS Queue 3      : 0
  CoS Queue 4      : 0
  CoS Queue 5      : 0
  CoS Queue 6      : 0
  CoS Queue 7      : 0

[ETHER PORT-2]
  CoS Queue 0      : 0
  CoS Queue 1      : 0
  CoS Queue 2      : 0
  CoS Queue 3      : 0
  CoS Queue 4      : 0
  CoS Queue 5      : 0
  CoS Queue 6      : 0
  CoS Queue 7      : 0
#
```

1) CoS Queue 0
   Number of packets remaining in the hardware COS queue 0

5.20.2 Ethernet Counter, Log, and Statistics Clear Commands

This section explains the commands related to Ethernet counter, log, statistics,
and statistics clear commands.

5.20.2.1 clear ether statistics

Function Clear the statistics of Ethernet physical ports.

Available Model XG0224 / XG0448 / XG2600

Syntax clear ether statistics [line <line>]

Options

N/A
Clear all the statistics.

line <line>
Clear the statistics of the specified port.
No statistics are not cleared if the specified port number is invalid.
The management port is specified by "m1".

Range	Model
1 to 26	XG0224
1 to 52, c1 to c4	XG0448
1 to 26, m1	XG02600

When specifying multiple port numbers, separate them with commas (,).
The specification of the port simultaneously other than m1 and m1 are also possible.
The specification of the port simultaneously other than c1-4 and c1-4 are also possible.
When specifying sequential numbers, separate them with hyphens (-). (Example: "1-8")

Use Mode Operation mode (admin class)
Configuration mode (admin class)

Explanation Clear the statistics of the Ethernet physical port.
Specifying only the "line" option will clear the statistics of the target port.

Caution

XG0224 / XG0448
It might be considered that it restores it from the state of the roughhouse once when broadcast/multicast roughhouse control information is set, and the statistical information of "clear ether statistics" pertinent port is cleared with the reception rate exceeds the threshold.

Execution Example

```
# clear ether statistics
#
```

5.21 USB connection Counter, Log, Statistics, and Status Display and Clear Operation Commands

This section explains about USB connection Counter, Log, Statistics, and Status Display and Clear Operation Commands.

5.21.1 USB connection Counter, Log, and Statistics Clear Commands

This section explains commands related to USB connection Counter, Log, and Statistics Clear Commands.

5.21.1.1 show usb hcd status

Function Displays USB port blocking status.

Available Model XG0448 / XG2600

Syntax show usb hcd status

Options N/A

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Displays blocking status of USB ports.

Default

```
# show usb hcd status

[USB HCD STATUS]
status        : enable                    --- (1)
```

1) Blocking state
Displays USB port blocking status
disable: blocked
enable: unblocked

5.21.1.2 show usb storage status

Function Displays USB mass storage controller status.

Available Model XG0448 / XG2600

Syntax show usb storage status

Options N/A

Use Mode Operation mode (user class /admin class/CE class)
Configuration mode (admin class/CE class)

Explanation Displays current status for USB mass storage controller.

Default

```
# show usb storage status

[Thread]
Status                  : Active                                          ---(1)

[Device #1]
Status                  : Idle                                            ---(2)
Speed                   : Full                                            ---(3)
Geometry probing        : Success                                         ---(4)
 Test unit ready        : Success                                         ---(5)
 Inquiry                : Success
 Mode sense             : Success
 Read capacity          : Success
 Read format capacities : ----
Hold data               : Not exist                                       ---(6)
Error status            : Get device specs [5/5] (Read format capacities) ---(7)
 Error reason           : Transfer URB failure                            ---(8)
 Error event            : 0x3200000d                                      ---(9)
 Request sense code     : (02, 10, 00)                                    ---(10)
[Storage specs]
Vendor                  : FUJITSU                                         ---(11)
Product                 : USB PortableDrive                               ---(12)
Product Rev.            : 3.96                                            ---(13)
Total sectors           : 500400                                          ---(14)
Cylinders               : 695                                             ---(15)
Heads                   : 15                                              ---(16)
Sectors per track       : 48                                              ---(17)
[USB specs]
Speed                   : Full                                            ---(18)
Max LUN                 : 3                                               ---(19)
[USB configuration]
Device address          : 1                                               ---(20)
Interface               : 0                                               ---(21)
Sub class               : 6                                               ---(22)
LUN                     : 0                                               ---(23)
BulkInEP                : 0x82                                            ---(24)
BulkOutEP               : 0x02                                            ---(25)
```

1) USB mass storage controller thread status
   Status is displayed via the following messages:
   Uninit: not initialized
   Waiting for USBD active
   Waiting for entry class completed
   Active
   The information below is displayed only when a connected USB device has been detected.

2) USB device controller status
Status is displayed via the following messages:
Uninit: not initialized
Initializing [1/2] (Set configuration)
Initializing [2/2] (Get max lun)
Get device specs [1/5] (Test unit ready)
Get device specs [2/5] (Inquiry)
Get device specs [3/5] (Mode sense)
Get device specs [4/5] (Read capacity)
Get device specs [5/5] (Read format capacities)
Idle: waiting for transfer request
Transferring
Waiting for unplugging: failure detection
Unplugging

3) Speed
Status is displayed via the following messages.
Warning : The speed displayed is the transfer rate of the USB device, and is not the transfer throughput.
High : high speed mode (480Mbps)
Full : full speed mode (12Mbps)
Low : low speed mode (1.5Mbps)

4) Geometry probing status
Geometry refers to the total number of sectors, cylinders, heads, and the number of sectors per track on the mass storage device.
Status is displayed via the following messages:
Success : Success (partly guessed)
Failed : Not yet detection has not yet occurred

5) Detailed display of geometry probing status
Geometry is detected via SCSI commands (TEST_UNIT_READY, INQUIRY, MODE SENSE(6), READ CAPACITY, READ FORMAT CAPACITIES).
The execution status of each command is displayed via the following messages.
Success
Failed (no data)
Failed (retry out)
Failed
----: not executed

6) Hold data
Displays the presence or absence of transfer requests received from the file system.
Status is displayed via the following messages:
Exists
Not exists
Items 7), 8), 9), and 10) below are displayed only when an error occurs in which transfer processing cannot continue.

7) Error status
When an error occurs the USB device controller status, (2) above, is displayed.

8) Error reason
The reason transfer cannot continue is displayed.

9) Error event
Internal information is displayed.

10) Request sense code
When an error is detected by the USB device the error data established on the USB device is displayed.

11) Vendor
Vendor information for the USB device is displayed.

12) Product
Product information for the USB device is displayed.

13) Product Rev.
Product revision information for the USB device is displayed.

14) Total sectors
The total number of sectors held on the USB device is displayed.

15) Cylinders
The number of cylinders on the USB device is displayed.

16) Heads
The number of heads on the USB device is displayed.

17) Sectors per track
The number of sectors per track (per head, per cylinder) on the USB device is displayed.

18) Speed
The USB protocol speed is displayed. Same as (3) above.

19) Max LUN
The maximum LUN value for the USB device. This switch does not support devices that do not have LUN=0.

20) Device address
The device number allocated by USBD in order to uniquely identify devices on the USB bus is displayed.

21) Interface
The interface number selected by the USB mass storage controller thread is displayed.

22) Sub class
The subclass for the USB device is displayed. Class information is 0(=mass storage class).

23) LUN
The LUN number selected by the USB mass storage controller thread is displayed.

24) BulkInEP
The bulk-in endpoint number selected by the USB mass storage controller thread is displayed.

25) BulkOutEP
The bulk-out endpoint number selected by the USB mass storage controller thread is displayed.

5.22 LACP Counter, Log, Statistics, and Status Display and Clear Operation Commands

This section explains the commands related to LACP.

5.22.1 LACP Counter, Log, Statistics, and Status Display Commands

This section explains the commands related to LACP counter, log, statistics, and status display commands.

5.22.1.1 show lacp

Function Display LACP information briefly.

Available Model XG0224 / XG0448 / XG2600

Syntax show lacp

Options

N/A
Display all information.

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display the LACP information in a simple format.
The information is sorted by port numbers, and separated for each group.

Execution Example

```
# show lacp
[group  2]
 (1)  (2)      (3)     (4)     (5)                         (6)
 port          mode    state   LAG-ID                      port-parameter
 ----          ------- ------- --------------------------- ----------
 2    Actor  : passive  ASCD   8000,00-0b-5d-89-02-ba,0002 8000,2
      Partner: active   ASCD   8000,00-0b-5d-89-01-22,0001 8000,3

 3    Actor  : passive  ASCD   8000,00-0b-5d-89-02-ba,0002 8000,3
      Partner: active   ASCD   8000,00-0b-5d-89-01-22,0001 8000,2

[group  1]
 port          mode    state   LAG-ID                      port-parameter
 ----          ------- ------- --------------------------- ----------
 4    Actor  : passive  ASCD   8000,00-0b-5d-89-02-ba,0001 8000,4
      Partner: active   ASCD   8000,00-0b-5d-89-01-22,0002 8000,4

 5    Actor  : passive  ASCD   8000,00-0b-5d-89-02-ba,0001 8000,5
      Partner: active   ASCD   8000,00-0b-5d-89-01-22,0002 8000,5

#
```

1) Port number

2) Indicates that the information display at the right side is for this device (Actor) or the remote device (Partner).

3) Indicates that the LACP mode is active or passive.
The passive is displayed if the valid LACP remote system information has not been obtained.

4) Indicates the LACP state as follows.
T (LACP_Timeout):
The LACPDU's receive timeout has been set to Short Timeout (3 seconds).
If not shown, the Long Timeout (90 seconds) has been set.
A (Aggregation):
The links can be aggregated. If not shown, they are separate links.
S (Synchronization):
The link has been synchronized with the aggregator.
C (Collecting):
A frame is ready to receive.
D (Distributing):
A frame is ready to send.
d (defaulted):
The default parameters have been applied to the LACP remote system (Partner) information being held by this device.
E (Expired):
The receiver of LACP remote system has expired.

5) Indicates the link aggregation ID.
All 0's indicates that the valid LACP remote system information has not been obtained.

(a) (b) (c) (d) (e)
8000,00-0b-5d-89-02-ba,0002 8000,2
a) System priority
b) System ID (MAC address)
c) Aggregation key
d) Port priority
e) Port number

6) A value at left shows the port priority, and a value at right shows the port number.
These values are equivalent to port priority (d) and port number (e) of Item (5).

5.22.1.2 show lacp statistics

Function Display the LACP statistics.

Available Model XG0224 / XG0448 / XG2600

Syntax show lacp statistics

Options

N/A
Display all statistics.

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display the LACP statistics.

Caution The statistics are cleared if the device is restarted or the valid LACP definition is not found in the device.
The item is not displayed if its counter is zero (0). If the LACP is not operating on a port, the item is displayed when its counter is not zero.

Execution Example

```
# show lacp statistics
LACP statistics information:
[ETHER PORT-1]                                              --- (1)
          45  transmitted lacpdu                            --- (2)
          46  received lacpdu                               --- (3)
          12  start collecting/distributing                 --- (4)
          13  stop collecting/distributing                  --- (5)
           5  receive timeout lacpdu                        --- (6)
           1  transmitted marker pdu                        --- (7)
           1  received marker pdu                           --- (8)
          21  received lacpdu no link                       --- (9)
           1  transmission error                            --- (10)
           1  received error                                --- (11)
[ETHER PORT-3]
          53  transmitted lacpdu
          52  received lacpdu
           4  start collecting/distributing
           3  stop collecting/distributing
#
```

1) Port number
2) Number of sent lacpdu packets
3) Number of received lacpdu packets
4) Number of times the aggregation link is disabled, changing from the enabled state, to send or receive packets
5) Number of times the aggregation link is disabled to send or receive packets
6) Number of times the lacpdu packet reception was timed out
7) Number of times the marker pdu packet was sent
8) Number of times the marker pdu packet was received
9) Number of lacpdu or marker pdu packets received when the LACP was disabled
10) Number of times the packet sending has failed
11) Number of times the packet reception has failed

5.22.2 LACP Counter, Log, Statistics, and Status Clear Commands

This section explains the commands related to LACP counter, log, statistics, and status clear commands.

5.22.2.1 clear lacp statistics

Function Clear the LACP statistics.

Available Model XG0224 / XG0448 / XG2600

Syntax clear lacp statistics

Options N/A

Use Mode Operation mode (admin class)
Configuration mode (admin class)

Explanation Clear the LACP statistics.

Execution Example

```
# clear lacp statistics
#
```

5.23 M1 port Status Display command

This section explains the commands related to oob.

5.23.1 M1 port Status Display command

This section explains the commands related to M1 port Status Display command.

5.23.1.1 show oob

Function Display of M1 port information

Available Model XG2600

Syntax show oob

Options N/A

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation M1 port information is displayed.

Execution Example

```
#show oob
IP Address      : 192.168.3.1                ---(1)
Subnet Mask     : 255.255.255.0              ---(2)
IPv6 Address    : fe80::217:42ff:fed1:a80/64  ---(3)
MAC Address     : 00:17:42:d1:0a:80          ---(4)
#
```

1) The IPv4 address in the M1 port is displayed.

2) The subnet mask in the IPv4 address in the M1 port is displayed.

3) The IPv6 address in the M1 port is displayed. When IPv6 is not used, it is not displayed.

4) The MAC address in the M1 port is displayed.

5.24 Interface Counter, Log, Statistics, and Status Display Commands

This section explains the commands related to the interface.

5.24.1 Interface Counter, Log, Statistics, and Status Display Commands

This section explains the commands related to interface counter, log, statistics, and status display commands.

5.24.1.1 show interface

Function Display the interface information.

Available Model XG0224 / XG0448 / XG2600

Syntax show interface [interface <interface_name>]

Options

N/A
Display the status and type of all interfaces.

interface <interface_name>
Display the status and type of the specified interface.

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display the interface information.

Execution Example

```
# show interface
lan0               MTU 1500    <UP,BROADCAST,RUNNING,SIMPLEX,MULTICAST>
-(1)-                  -(2)-   ------------------(3)-------------------
    Type: port vlan                                                    +
    VLAN ID is 20                                                      |
    MAC address: 00:00:0e:f1:41:dc                                     |
    Status: up since Jan  1 19:23:45 2011                             (4)
    IP address/masklen:                                                |
      192.168.1.1/24       Broadcast 192.168.1.255                     +
lan1               MTU 1500    <UP,BROADCAST,RUNNING,SIMPLEX,MULTICAST>
    Type: protocol vlan                                                +
    VLAN ID is 30                                                      |
    MAC address: 00:00:0e:f1:41:dc                                     |
    Status: up since Jan  1 19:23:45 2011                             (4)
    IP address/masklen:                                                |
      192.168.3.1/24       Broadcast 192.168.3.255                     +

lo0                MTU 16384   <UP,LOOPBACK,RUNNING,MULTICAST>
    Type: loopback                                                     +
    Status: up since Jan  1 19:23:45 2011                              |
    IP address/masklen:                                               (4)
      127.0.0.1/32                                                     +
      192.168.1.1/32
```

1) Interface name

2) MTU size

3) Interface flag

4) Type

The interface type is displayed by any of the following character strings.

port vlan : Port VLAN
protocol vlan : Protocol VLAN
loopback : Loopback interface

VLAN ID: The VLAN ID is displayed.
MAC address:The MAC address used for the interface is displayed.
Status :The interface status and the clock time when the interface entered in this status are displayed.
up : Available
down : Unavailable
IP address/masklen:
The IPv4 address of the interface is displayed.

5.24.1.2 show interface brief

Function Display the interface information.

Available Model XG0224 / XG0448 / XG2600

Syntax Display interface information briefly.

Options

N/A
Display all interfaces briefly.

interface <interface_name>
Display the specified interface briefly.

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display the interface information in a simple format.

Execution Example

```
# show interface brief
Interface         Status      Type
-------------     --------    -----------------
(1)               (2)         (3)
lan0              up          port vlan
lan1              up          protocol vlan
lo0               up          loopback
#
```

1) Interface
   The interface name is displayed.

2) Status
   The interface status is displayed.
   up : Available
   down : Unavailable

3) Type
   The interface type is displayed.
   port vlan : Port VLAN
   protocol vlan : Protocol VLAN
   loopback : Loopback interface

5.24.1.3 show interface summary

Function Display the number of interface entries (the interface summary).

Available Model XG0224 / XG0448 / XG2600

Syntax show interface summary

Options N/A

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display the number of interface entries.

Execution Example

```
# show interface summary
There are 4 interfaces (up status 4 interfaces)
    Loopback interface      :    1 (up status    1 interfaces) ---(1)
    Port VLAN interface     :    2 (up status    2 interfaces) ---(2)
    Protocol VLAN interface :    1 (up status    1 interfaces) ---(3)
#
```

1) Loopback interface
2) Port VLAN
3) Protocol VLAN

5.25 ARP Entry Display and Clear Operation Commands

This section explains the commands related to ARP entry.

5.25.1 ARP Entry Display Commands

This section explains the commands related to ARP entry.

5.25.1.1 show arp

Function Display the ARP entries.

Available Model XG0224 / XG0448 / XG2600

Syntax show arp [<ip_address>]
show arp summary

Options

N/A
Display the details of all ARP entries.

<ip_address>
Display the ARP entries of the specified IP address only.

summary
Display the number of ARP entries.

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display the ARP table entries.

Execution Example

```
# show arp
IP Address      MAC Address       F  Rest  Interface Port
--------------- ----------------- -- ----- --------- ----
   (1)               (2)        (3)  (4)    (5)       (6)
20.0.0.1        00:00:e2:08:57:89    01146 lan0      12
20.0.0.2        (incomplete)              lan0
20.0.0.255      00:00:02:01:14:00 P  perm  lan0
    Entry:3       ---(7)

# show arp summary
    Entry:3

# show arp 20.0.0.1
IP Address      MAC Address       F  Rest  Interface Port
--------------- ----------------- -- ----- --------- ----
20.0.0.1        00:00:e2:08:57:89    01146 lan0      12
    Entry:1

#
```

1) IP Address
The IP address of ARP entry is displayed.

2) MAC Address
The MAC address of ARP entry is displayed.
If not resolved, "incomplete" is displayed.

3) F
An entry type is displayed. The details are as follows.
P: A permanent entry

4) Rest
The time to live of the ARP entry is indicated in seconds. For the permanent entry, "perm" is shown.

5) Interface
The ARP entry interface is displayed.

6) Port
The Ethernet port number used for transmission is displayed.

7) Entry
The number of ARP entries is displayed.

5.25.2 ARP Entry Clear Commands

This section explains the commands related to ARP entry clear.

5.25.2.1 clear arp

Function Clear the ARP entries.

Available Model XG0224 / XG0448 / XG2600

Syntax clear arp [<ip_address>]

Options

N/A
Clear all ARP entries.

<ip_address>
Clear the ARP entries of the specified IP address.

Use Mode Operation mode (admin class)
Configuration mode (admin class)

Explanation Clear the entries from the ARP table.

Execution Example

```
# clear arp
#
```

5.26 Routing Table Entry Display Commands

This section explains the commands related to routing table.

5.26.1 IPv4 Routing Table Entry Display Commands

This section explains the commands related to the IPv4 routing table counter, log, statistics, and status display commands.

5.26.1.1 show ip route

Function Display the routing table information.

Available Model XG0224 / XG0448 / XG2600

Syntax
show ip route [all]
show ip route connected [all]
show ip route static [all]
show ip route destination <ip_address>/<mask> [all]
show ip route destination <ip_address>/<mask> longer-prefixes [all]

Options

N/A
Display the route information that has been registered on the routing table.

all
Display all route information including route information not registered on the routing table.

connected
Display interface route information only.

static
Display static route information only.

destination <ip_address>/<mask>
Display only the route information whose address and mask match the specified ones. <mask> must be a number of mask bits or a mask value. For the mask value, specify successive 1s following the most significant bit (MSB).

destination <ip_address>/<mask> longer-prefixes
Display all route information included in the specified route information.
<mask> must be a number of mask bits or a mask value. For the mask value, specify successive 1s following the most significant bit (MSB).

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display the routing table information that routing manager registered.

Execution Example

Display of the entire route information

```
# show ip route all
FP  Destination/Mask   Gateway         Distance  UpTime    Interface
--- ---------------    --------------  --------  --------  ---------
(1)  (2)                (3)               (4)     (5)      (6)
*C  192.168.10.0/24    192.168.10.50          0  00:00:01  lan0
*O  192.168.11.0/24    192.168.10.20        110  00:00:01  lan0
```

1) FP

The kernel flag and the protocol type are displayed.

The following shows the kernel flags that may be displayed.

* : Indicates the route registered in the IP kernel.

Blank:

Indicates the route not registered in the IP kernel.

x : Indicates the route that cannot be registered in the IP kernel.
(The route count limit has been exceeded.)

The following shows the protocol types that may be displayed.

S : Indicates static route information.

C : Indicates the interface route information.

2) Destination/Mask

The destination address or mask length is displayed.

3) Gateway

The gateway address is displayed.

4) Distance

The routing priority is displayed.

5) UpTime

The elapsed time after the last update of route information is displayed.

01:23:45

1 hour, 23 minutes and 45 seconds have passed (if the elapsed time is within 24 hours).

6d23h45m

6 days, 23 hours and 45 minutes have passed (if the elapsed time is within 7 days).

3w6d23h

3 weeks, 6 days and 23 hours have passed.

6) Interface

The interface name through which the gateway can be reached is displayed. If status of the interface is invalid, its name is followed by (inactive).

5.26.1.2 show ip route summary

Function Display the number of routing table information entries.

Available Model XG0224 / XG0448 / XG2600

Syntax show ip route summary [all]

Options

N/A
Display the number of route information sets that have been registered on the routing table.

all
Display the number of all route information sets including route information not registered on the routing table.

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display the number of routing table information entries that routing manager registered.

Execution Example

Display of the number of route

```
# show ip route summary
Route Source    Networks
------------    --------
 (1)             (2)
Static                3
Connected             7
Total                10
```

1) Route Source
   The routing protocol type is displayed.
   Static : Indicates the static route information.
   Connected : Indicates the interface route information.

2) Networks
   The number of route is displayed.

5.26.1.3 show ip route kernel

Function Display the routing table of the IP kernel.

Available Model XG0224 / XG0448 / XG2600

Syntax
show ip route kernel
show ip route kernel longest-match <ip_address>
show ip route kernel summary

Options

N/A
Display the current entries on the routing table of the IP kernel.

longest-match <ip_address>
Display the entries that match the specified address on the routing table of IP kernel by longest match.

summary
Display the number of entries (the summary) on the routing table of the IP kernel.

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display the current status of IP kernel's routing table.

Execution Example

```
# show ip route kernel
Routing Tables for Internet

Destination/Masklen Gateway           Flag   Interface       ---(1)
------------------- ----------------- ------ ---------
10.0.0.0/8          192.168.1.5       UGS    lan0
127.0.0.1           127.0.0.1         UH     lo0
192.168.1.0/24      link#1            U      lan0
192.168.1.5         link#1            UH     lan0
192.168.1.11        00:a0:c9:d8:90:4e UH     lan0
224.0.0.0/4         127.0.0.1         UG     lo0
    Entry:6                                                  ---(2)

# show ip route kernel longest-match 10.0.0.1
Routing Tables for Internet

Destination/Masklen Gateway           Flag   Interface
------------------- ----------------- ------ ---------
10.0.0.0/8          192.168.1.5       UGS    lan0
    Entry:1

# show ip route kernel longest-match 20.0.0.1
Routing Tables for Internet

Destination/Masklen Gateway           Flag   Interface
------------------- ----------------- ------ ---------
    Entry:0

# show ip route kernel summary
    Entry:6

#
```

1) Destination/Masklen
The destination network address and the mask value are displayed.
If routed via the host, no mask value is displayed.
Gateway : The gateway address is displayed.
The direct route indicates the MAC address of the gateway. If the gateway address is not resolved, link#x is shown (where, x is an interface index number that the system automatically assigns to each interface).

Flag : The entry type is displayed. The details are as follows.
U (Up): Indicates that the route is enabled.
G (Gateway): Indicates the route which requires an intermediate routing such as gateway.
H (Host): Indicates the host entry.
S (Static): Indicates the static route.
R (Reject): Indicates the discarded route (with ICMP unreach transmission).
B (Blackhole): Indicates the discarded route (without ICMP unreach transmission).
Interface : The destination interface is shown.

2) Entry
The number of entries, excluding the route entries used inside the device, is displayed.

5.26.2 IPv6 Routing Table Entry Display Commands

This section explains the commands related to IPv6 routing table.

5.26.2.1 show ipv6 route

Function Display IPv6 routing table information

Available Model XG0224 / XG0448 / XG2600

Syntax
show ipv6 route [all]
show ipv6 route connected [all]
show ipv6 route static [all]
show ipv6 route ra [all]
show ipv6 route destination <prefix>/<prefixlen> [all]
show ipv6 route destination <prefix>/<prefixlen> longer-prefixes [all]

Options

N/A
Display route IPv6 kernel routing table

all
Display all route information

connected
Display interface route information

static
Display static route information

ra
Display only RA receive route information

destination <prefix>/<prefixlen>
Display route which matched specified prefix /prefix length

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display IPv6 routing table information

Execution Example

```
# show ipv6 route all

FP    Destination/Prefixlen                    UpTime        Distance
(1)   (2)                                      (4)           (5)
          Gateway                                            Interface
          (3)                                                (6)
-- ------------------------------------------- --------- ------------------
*RA ::/0                                       00:00:01          12
          fe80::2                                            lan0
*C 2001:db8:ffff:1000::/64                     00:00:01           0
          2001:db8:ffff:1000::1                              lan0
*C 11:11::/64                                  00:00:08           0
          11:11::22                                          oob0
```

1) FP
   The kernel flag and the protocol type are displayed.
   The following shows the kernel flags that may be displayed.
   * : Indicates the route registered in the IPv6 kernel.
   Blank : Indicates the route not registered in the IPv6 kernel.
   The following shows the protocol types that may be displayed.
   RA : Indicates default route by receiving Router Advertisement (RA).
   S : Indicates static route information.
   C : Indicates the interface route information.

2) Destination/Prefixlen
   The destination IPv6 network address and the Prefix length are displayed.
   IPv6 link-local addresses are not displayed.

3) Gateway
   The gateway address is displayed.
   If the default route by receiving Router Advertisement (RA) is not registered in the IPv6 kernel, the gateway address is not displayed.

4) UpTime
   The elapsed time after the last update of route information is displayed.
   01:23:45 : 1 hour, 23 minutes and 45 seconds have passed (if the elapsed time is within 24 hours).
   6d23h45m : 6 days, 23 hours and 45 minutes have passed (if the elapsed time is within 7 days).
   3w6d23h : 3 weeks, 6 days and 23 hours have passed.

5) Distance
   The routing priority is displayed.

6) Interface
   The interface name through which the gateway can be reached is displayed.
   If status of the interface is invalid, its name is followed by (inactive).
   If the default route by receiving Router Advertisement (RA) is not registered in the IPv6 kernel, the interface name is not displayed.

5.26.2.2 show ipv6 route summary

Function Display number of routes registered in IPv6 routing table

Available Model XG0224 / XG0448 / XG2600

Syntax show ipv6 route summary [all]

Options

N/A
Display number of routes registered in IPv6 routing table

all
Display all IPv6 route information

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display number of routes registered in IPv6 routing table

Execution Example

```
# show ipv6 route summary
Route Source    Networks
(1)               (2)
------------    --------
Static 3
RA                 0
Connected          7
Total             10
```

1) Route Source
The routing protocol type is displayed.
Static : Indicates the static route information.
RA : Indicates the default route by receiving Router Advertisement (RA).
Connected : Indicates the interface route information.
Total : Indicates the total number.

2) Networks
The number of route is displayed.

5.26.2.3 show ipv6 route kernel

Function Display routing table of IPv6 kernel

Available Model XG0224 / XG0448 / XG2600

Syntax
show ipv6 route kernel
show ipv6 route kernel summary

Options

N/A
Display the current entry of IPv6 kernel routing table

longest-match <ipv6_address>
Display longestmatch IPv6 entry

summary
Display number of IPv6 kernel routing table entry

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display IPv6 kernel routing table information

Execution Example

```
# show ipv6 route kernel
Routing Tables for Internet6

Destination/Masklen                           Flag   Interface    ---(1)
      Gateway
------------------------------------------- ------ ---------
::1                                           UH     lo0
      ::1
2001:db8:ffff:1000::/48                       UGS    lan0
      fe80::2a0:c9ff:fed8:904e%lan0
2001:db8:ffff:2000::/64                       U      lan0
      link#1
fe80::2a0:c9ff:fed8:904e%lan0                 UH     lan0
      00:a0:c9:d8:90:4e
fe80::%lo0/64                                 U      lo0
      fe80::1%lo0
ff01::/32                                     U      lo0
      ::1
ff02::%lan0/32                                UC     lan0
      link#1
ff02::%lo0/32                                 UC     lo0
      fe80::1%lo0
      Entry:8                                                    ---(2)

# show ipv6 route kernel longest-match 2001:db8:ffff:1000::1
Routing Tables for Internet6

Destination/Masklen                           Flag   Interface
      Gateway
------------------------------------------- ------ ---------
2001:db8:ffff:1000::/48                       UGS    lan0
      fe80::2a0:c9ff:fed8:904e%lan0
      Entry:1
# show ipv6 route kernel longest-match 2001:db8:ffff:3000::1
Routing Tables for Internet6
Destination/Masklen                           Flag   Interface
      Gateway
------------------------------------------- ------ ---------
      Entry:0
# show ipv6 route kernel summary
      Entry:8

#
```

1) Destination/Masklen

The destination network address and the mask value are displayed.
If routed via the host, no mask value is displayed.

Gateway: The gateway address is displayed.
The direct route indicates the MAC address of the gateway. If the gateway address is not resolved, link#x is shown (where, x is an interface index number that the system automatically assigns to each interface).

Flag : The entry type is displayed. The details are as follows.

U (Up)	: Indicates that the route is enabled.
G (Gateway)	: Indicates the route which requires an intermediaterouting such as gateway.
H (Host)	: Indicates the host entry.
S (Static)	: Indicates the static route.
R (Reject)	: Indicates the discarded route (with ICMP unreach transmission).
B (Blackhole)	: Indicates the discarded route (without ICMP unreach transmission).

Interface: The destination interface is shown.

2) Entry

The number of entries, excluding the route entries used inside the device, is displayed.

5.26.2.4 show ipv6 ra default-router-list

Function Display default router list

Available Model XG0224 / XG0448 / XG2600

Syntax show ipv6 ra default-router-list

Options

N/A
Display default router list

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display default router list

Execution Example

```
# show ipv6 ra default-router-list
lan0:
  Advertise Router               Lifetime     Time
  (1)                           (2)          (3)
  fe80::1                       1800         300

The number of entries : 1                          ---(4)
```

1) Advertise Router
   Indicates the source address which sending Router Advertisement (RA).

2) Lifetime
   Indicates the Router Lifetime (sec) in the Router Advertisement (RA).

3) Time
   Indicates the remaining time (sec) before expiry of the Router Lifetime.

4) The number of entries
   Indicates the number of default router entries.

5.26.2.5 show ipv6 ra prefix-list

Function Display prefix list

Available Model XG0224 / XG0448 / XG2600

Syntax show ipv6 ra prefix-list

Options

N/A
Display prefix list

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display prefix list

Execution Example

```
# show ipv6 ra prefix-list
Prefix/Prefixlen              Flag      Preferred Lifetime        Valid Lifetime
(1)                           (2)             (3)                 (4)
  Advertise Router                      Interface
  (5)                                   (6)
1000::/64                     LA          602800(604800)            2590000(2592000)
  fe80::1                               lan0
2000::/64                     LA          0(604800)                 3599(2592000)
  fe80::2                               lan0
2000:2000:2000:2000::/64      -A          4800(604800)              1992000(2592000)
  fe80::1000:1000:1000:1001             lan0
2001::/64                     LA       infinity         infinity
  fe80::10                    oob0

The number of entries : 4                                           ---(7)
```

1) Prefix/Prefixlen
The IPv6 network prefix and the length in the Router Advertisement (RA).

2) Flag
The status of On-link flag and Auto Config flag in the Router Advertisement (RA).
L : On-link flag is 1
A : Auto Config flag is 1
- : flag is 0

3) Preferred Lifetime
The remaining time (sec) before expiry of the Preferred Lifetime.
The Preferred Lifetime (sec) in parentheses.

4) Valid Lifetime
The remaining time (sec) before expiry of the Valid Lifetime.
The Valid Lifetime (sec) in parentheses.
If the Valid Lifetime expire, the enrty is deleted.

5) Advertise Router
The IPv6 address of the router sending the Router Advertisement (RA).

6) Interface
The interface name through which the Router Advertisement (RA) was received.

7) The number of entries
Indicates the number of prefix entries.

5.27 Packet Statistics Display and Clear Operation Commands

This section explains the commands related to packet statistics information.

5.27.1 IPv4 Packet Statistics Display Commands

This section explains the commands related to IPv4 packet statistics display.

5.27.1.1 show ip traffic

Function Display the IP-related statistics.

Available Model XG0224 / XG0448 / XG2600

Syntax
show ip traffic
show ip traffic { tcp | udp | ip | icmp | igmp | pim }

Options

N/A
Display all IP statistics.

tcp
Display the TCP packet statistics.

udp
Display the UDP packet statistics.

ip
Display the IP packet statistics.

icmp
Display the ICMP packet statistics.

Use Mode
Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display the IP statistics.

Execution Example

```
# show ip traffic
tcp:
    170 packets sent
              145 data packets (29694 bytes)
              1 data packet (18 bytes) retransmitted
              0 resends initiated by MTU discovery
              19 ack-only packets (10 delayed)
              0 URG only packets
              0 window probe packets
              0 window update packets
              5 control packets
    217 packets received
              145 acks (for 29706 bytes)
              1 duplicate ack
              0 acks for unsent data
              121 packets (14492 bytes) received in-sequence
              0 completely duplicate packets (0 bytes)
              0 old duplicate packets
              0 packets with some dup. data (0 bytes duped)
              3 out-of-order packets (42 bytes)
              0 packets (0 bytes) of data after window
              0 window probes
              0 window update packets
              0 packets received after close
              0 discarded for bad checksums
              0 discarded for bad header offset fields
              0 discarded because packet too short
    3 connection requests
    4 connection accepts
    0 bad connection attempts
    0 listen queue overflows
    6 connections established (including accepts)
    2 connections closed (including 1 drop)
              1 connection updated cached RTT on close
              1 connection updated cached RTT variance on close
              0 connections updated cached ssthresh on close
    1 embryonic connection dropped
    145 segments updated rtt (of 145 attempts)
    1 retransmit timeout
              0 connections dropped by rexmit timeout
    0 persist timeouts
              0 connections dropped by persist timeout
    22 keepalive timeouts
              0 keepalive probes sent
              0 connections dropped by keepalive
    22 correct ACK header predictions
    64 correct data packet header predictions
udp:
    250 datagrams received
    0 with incomplete header
    0 with bad data length field
    0 with bad checksum
    0 dropped due to no socket
    224 broadcast/multicast datagrams dropped due to no socket
    0 dropped due to full socket buffers
    0 not for hashed pcb
    26 delivered
    0 tunneling packets that can't find gif
```

(to be continued)

(continued)

```
    26 datagrams output
ip:
    467 total packets received
    0 bad header checksums
    0 with size smaller than minimum
    0 with data size < data length
    0 with ip length > max ip packet size
    0 with header length < data size
    0 with data length < header length
    0 with bad options
    0 with incorrect version number
    0 fragments received
    0 fragments dropped (dup or out of space)
    0 fragments dropped after timeout
    0 packets reassembled ok
    467 packets for this host
    0 packets for unknown/unsupported protocol
    0 packets forwarded
    0 packets not forwardable
    0 redirects sent
    197 packets sent from this host
    0 packets sent with fabricated ip header
    0 output packets dropped due to no bufs, etc.
    0 output packets discarded due to no route
    0 output datagrams fragmented
    0 fragments created
    0 datagrams that can't be fragmented
    0 tunneling packets that can't find gif
icmp:
    0 calls to icmp_error
    0 errors not generated because old message was icmp
    0 messages with bad code fields
    0 messages < minimum length
    0 bad checksums
    0 messages with bad length
    0 message responses generated
#
```

5.27.2 IPv4 Packet Statistics Clear Commands

This section explains the commands related to IPv4 packet statistics clearing.

5.27.2.1 clear ip traffic

Function Clear the IP-related statistics.

Available Model XG0224 / XG0448 / XG2600

Syntax clear ip traffic

Options

N/A
Clear the IP-related statistics.
However, the IP packet statistics are not cleared.

Use Mode Operation mode (admin class)
Configuration mode (admin class)

Explanation Clear the IP-related statistics.
However, the IP packet statistics are not cleared.

Execution Example

```
# clear ip traffic
#
```

5.27.3 IPv6 Packet Statistics Display Commands

This section explains the commands related to IPv6 packet statistics display.

5.27.3.1 show ipv6 traffic

Function Display IPv6 packets statistics information

Available Model XG0224 / XG0448 / XG2600

Syntax
show ipv6 traffic
show ipv6 traffic { tcp | udp | ip | icmp }

Options

N/A
Display all the IPv6 statistics information

tcp
Display TCP packets statistics information

udp
Display UDP packets statistics information

ip
Display IPv6 packets statistics information

icmp
Display ICMP packets statistics information

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display IPv6 packets statistics information

Execution Example

```
# show ipv6 traffic
tcp6:
         0 packets sent
                  0 data packets (0 bytes)
                  0 data packets (0 bytes) retransmitted
                  0 ack-only packets (0 delayed)
                  0 URG only packets
                  0 window probe packets
                  0 window update packets
                  0 control packets
         0 packets received
                  0 acks (for 0 bytes)
                  0 duplicate acks
                  0 acks for unsent data
                  0 packets (0 bytes) received in-sequence
                  0 completely duplicate packets (0 bytes)
                  0 old duplicate packets
                  0 packets with some dup. data (0 bytes duped)
                  0 out-of-order packets (0 bytes)
                  0 packets (0 bytes) of data after window
                  0 window probes
                  0 window update packets
                  0 packets received after close
                  0 discarded for bad checksums
                  0 discarded for bad header offset fields
                  0 discarded because packet too short
```

(To be continued)

(Continued)

```
          0 connection requests
          0 connection accepts
          0 bad connection attempts
          0 connections established (including accepts)
          0 connections closed (including 0 drops)
          0 embryonic connections dropped
          0 segments updated rtt (of 0 attempts)
          0 retransmit timeouts
                  0 connections dropped by rexmit timeout
          0 persist timeouts
          0 connections timed out in persist
          0 keepalive timeouts
                  0 keepalive probes sent
                  0 connections dropped by keepalive
          0 correct ACK header predictions
          0 correct data packet header predictions
          0 PCB cache misses
udp6:
          0 datagrams received
          0 with incomplete header
          0 with bad data length field
          0 with bad checksum
          0 with no checksum
          0 dropped due to no socket
          0 multicast datagrams dropped due to no socket
          0 dropped due to full socket buffers
          0 delivered
          0 datagrams output
ip6:
          24 total packets received
          0 with size smaller than minimum
          0 with data size < data length
          0 with bad options
          0 with incorrect version number
          0 fragments received
          0 fragments dropped (dup or out of space)
          0 fragments dropped after timeout
          0 fragments that exceeded limit
          0 packets reassembled ok
          24 packets for this host
          0 packets forwarded
          0 packets not forwardable
          0 redirects sent
          17 packets sent from this host
          0 packets sent with fabricated ip header
          0 output packets dropped due to no bufs, etc.
          0 output packets discarded due to no route
          0 output datagrams fragmented
          0 fragments created
          0 datagrams that can't be fragmented
          0 packets that violated scope rules
          0 multicast packets which we don't join
          Input histogram:
                  ICMP6: 24
          Mbuf statistics:
                  0 one mbuf
                  24 one ext mbuf
                  0 two or more ext mbuf
          0 packets whose headers are not continuous
          0 tunneling packets that can't find gif
          0 packets discarded due to too many headers
          0 failures of source address selection
          source addresses on an outgoing I/F
                  11 link-locals
          source addresses of same scope
                  11 link-locals
          11 forward cache hit
          0 forward cache miss
```

(To be continued)

(Continued)

```
icmp6:
         0 calls to icmp6_error
         0 errors not generated because old message was icmp6 error or so
         0 errors not generated because rate limitation
         Output histogram:
                  echo: 5
                  echo reply: 5
                  multicast listener report: 1
                  neighbor solicitation: 4
                  neighbor advertisement: 2
         0 messages with bad code fields
         0 messages < minimum length
         0 bad checksums
         0 messages with bad length
         Input histogram:
                  echo: 5
                  echo reply: 15
                  neighbor solicitation: 2
                  neighbor advertisement: 2
         Histogram of error messages to be generated:
                  0 no route
                  0 administratively prohibited
                  0 beyond scope
                  0 address unreachable
                  0 port unreachable
                  0 packet too big
                  0 time exceed transit
                  0 time exceed reassembly
                  0 erroneous header field
                  0 unrecognized next header
                  0 unrecognized option
                  0 redirect
                  0 unknown
         5 message responses generated
         0 messages with too many ND options
#
```

5.27.4 IPv6 Packet Statistics Clear Commands

This section explains the commands related to IPv6 packet statistics clearing.

5.27.4.1 clear ipv6 traffic

Function Clear IPv6 packet statistics information

Available Model XG0224 / XG0448 / XG2600

Syntax clear ipv6 traffic

Options

N/A
Clear all IPv6 statistics information

Use Mode Operation mode (user or admin class
Configuration mode (admin class)

Explanation Clear IPv6 packet statistics information

Execution Example

```
# clear ipv6 traffic
#
```

5.28 Bridge Counter, Log, Statistics, and Status Display and Clear Operation Commands

This section explains the commands related to bridge.

5.28.1 Bridge Counter, Log, Statistics, and Status Display Commands

This section explains the commands related to bridge counter, log, statistics, and status display.

5.28.1.1 show bridge

Function Display the learning table status and statistics.

Available Model XG0224 / XG0448 / XG2600

Syntax
show bridge
show bridge summary

Options

N/A
Display the contents of the learning table.

summary
Display the assignment status of the learning table.

Use Mode
Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display the bridge status and statistics.

Execution Example

Display of learning table contents

```
# show bridge
Codes: D - Dynamic entry, S - Static entry
Address            VLAN  Interface          Status
------------------ ----- ------------------ ------
(1)                (2)   (3)                (4)
00:00:0e:58:a5:dc  100   linkaggregation8   D
00:0b:5d:89:00:77  10    self               S
00:0b:5d:89:00:77  100   self               S
00:e0:00:ad:a9:76  100   linkaggregation1   D
08:00:46:6f:19:3b  10    ether7             S
08:00:46:70:84:e4  10    ether8             D
```

1) MAC address registered on the learning table

2) VLAN ID

3) Name of the interface where the entry terminal exists
ether: Ethernet port
linkaggregation: Link aggregation port
self : Device address

4) Status of learning table
   One of the following is displayed.
   D : Dynamic learning table
   S : Static learning table

Display of learning table assignment

```
#show bridge summary
Registered station blocks :     6                          --- (1)
    Dynamic entry         :     3                          --- (2)
    Static entry          :     1                          --- (3)
    System entry          :     2                          --- (4)
Free station blocks       : 16378                          --- (5)
```

1) Number of learning tables currently used

2) Number of dynamically learned tables

3) Number of statically learned tables

4) Number of learned tables used inside the device

5) Number of unused learning tables

5.28.2 Bridge Counter, Log, Statistics, and Status Clear Commands

This section explains the commands related to bridge counter, log, statistics, and status clearing.

5.28.2.1 clear bridge

Function Initialize the dynamically learned MAC address from the learning table.

Available Model XG0224 / XG0448 / XG2600

Syntax
clear bridge
clear bridge port <portlist>
clear bridge mac <macaddr> <vid>

Options

N/A
Delete all dynamically learned MAC addresses from the learning table.

- port
  Specify to delete port by port.
- mac
  Specify to delete MAC address by MAC address.

<portlist>

- port list
  Specify a list of physical port numbers to initialize learning table.
  When specifying multiple port numbers, separate them with commas (,).
  When setting sequential numbers, separate them with hyphens (-). (Example: "1-8").

<macaddr>

- MAC address
  Specify the MAC address to be deleted from the learning table.
  (It must be in the xx:xx:xx:xx:xx:xx format, where "xx" is a 2-digit hexadecimal value.)

<vid>

- VLAN ID
  Specify a decimal VLAN ID from 1 to 4094.

Use Mode
Operation mode (admin class)
Configuration mode (admin class)

Explanation Delete dynamically learned MAC address from the learning table.

Caution

- The address statically learned by the "vlan forward" command definition is not initialized.
- If a member port of link aggregation is specified, all learning addresses of the link aggregation are deleted.

Execution Example

```
# clear bridge
#
```

5.28.3 Spanning Tree Counter, Log, Statistics, and Status Display Commands

This section explains the commands related to spanning tree counter, log, statistics, and status display.

5.28.3.1 show spanning-tree

Function Display the spanning tree information.

Available Model XG0224 / XG0448 / XG2600

Syntax
show spanning-tree
show spanning-tree root
show spanning-tree bridge
show spanning-tree active
show spanning-tree interface <interface_name>
show spanning-tree detail

Options

N/A
Display all spanning tree information briefly.

root
Display the spanning tree information of the root bridge only.

bridge
Display the spanning tree bridge information of the device only.

active
Display the spanning tree information of the active interface only.

interface <interface_name>
Display the spanning tree information of the specified interface only.

detail
Display all spanning tree information in detail.

Use Mode
Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display the status of the spanning tree function.

Execution Example

Display of all spanning tree information in a simple format

```
# show spanning-tree
Spanning tree enabled protocol IEEE
Root ID    Priority    32768                                          ---(1)
           Address     00:00:e2:08:57:89                              ---(2)
           Cost        200000                                         ---(3)
           Port        1 (eth1)                                       ---(4)
           Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec
           ----------------  --------------  --------------------
                 (5)              (6)               (7)

Bridge ID  Priority    32768                                          ---(8)
           Address     00:0b:5d:89:00:aa                              ---(9)
           Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec
           ----------------  --------------  --------------------
                 (10)              (11)              (12)
           BPDU Mode off
           -------------
                (13)
           STP Mode stp
           ------------
                (14)

Interface       Port ID  Cost        Status(Role)            Sent
                                     Designated Bridge ID    Received
--------------- -------- ----------- ----------------------- ----------
eth1            128.1        200000* Forwarding(Root)                 5
----            -----        ------- -----------------              ---
(15)             (16)          (17)       (18)                      (19)
                128.1             0  32768 00:00:e2:08:57:89         24
                -----          ---- ----------------------         ---
                 (20)           (21)          (22)                 (23)
eth2            128.2        200000* Forwarding(Designated)           25
----            -----        ------- ----------------------         ---
(15)             (16)          (17)       (18)                      (19)
                128.2        200000  32768 00:0b:5d:89:00:aa          0
                -----        ------- ----------------------         ---
                 (20)           (21)          (22)                 (23)
```

1) Priority of root bridge
   The priority of the bridge identified by the root bridge ID is displayed.

2) MAC address of the root bridge
   The MAC address identified by the root bridge ID is displayed.

3) Root path cost
   The path cost to the root bridge is displayed.

4) Port number and interface name
   The port number and the interface name are displayed.
   If this device operates as the root bridge, the following is displayed.
   Port 0 (This bridge is the root)

5) Configuration BPDU send interval
   The configuration BPDU send interval (in seconds) is displayed.

6) Maximum wait time
   The maximum wait time (in seconds) of configuration BPDUs is displayed.

7) Maximum forwarding delay time
   The maximum forwarding delay time (in seconds) is displayed.

8) Bridge priority of local device
   The bridge priority used for the bridge identifier of this device is displayed.

9) MAC address of local device
   The MAC address used for the bridge identifier of this device is displayed.

10) Configuration BPDU send interval
The configuration BPDU send interval (in seconds) is displayed.

11) Maximum wait time
The maximum wait time (in seconds) of configuration BPDUs is displayed.

12) Maximum forwarding delay time
The maximum forwarding delay time (in seconds) is displayed.

13) BPDU forwarding function
The BPDU forwarding function (on or off) defined on this device is displayed.

14) STP operation mode
The STP operation mode (disable/stp/rstp/mstp) of this device is displayed.

15) Interface name
The interface name is displayed.

16) Port ID
The Port ID is displayed.

17) Port path cost
The path cost of the port is displayed (the cost value is followed by an asterisk (*) if calculated automatically).

18) Port status and roles
One of the following is displayed for the port status.
Disabled : The STP is disabled.
Discarding : The port is in the discarding state (it is displayed only when RSTP or MSTP is active).
Blocking : The port is in the blocking state.
Listening : The port is in the listening state.
Learning : The port is in the learning state.
Forwarding : The port is in the forwarding state.
One of the following is displayed for the port role.
Disabled : The STP is disabled.
Root : Root port
Designated Designated port
Blocking : Blocking port
Alternate : Alternate port (It is displayed only when RSTP or MSTP is active.)
Backup : Backup port (It is displayed only when RSTP or MSTP is active.)

19) Number of BPDU send times
The number of BPDU send times (the total value of all BPDU types) is displayed.

20) Port ID of designated bridge
The port ID of the designated bridge is displayed.

21) Designated path cost of configuration BPDU
The designated path cost of the configuration BPDU is displayed.

22) Designated bridge ID
The designated bridge ID (the priority and MAC address) is displayed.

23) Number of BPDU receive times
The number of BPDU receive times (the total value of all BPDU types) is displayed.

Display of spanning tree information of the root bridge

```
# show spanning-tree root
Root ID    Priority    32768                                    ---(1)
           Address     00:00:e2:08:57:89                        ---(2)
           Cost        200000                                   ---(3)
           Port        1 (eth1)                                 ---(4)
           Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec
           ----------------  --------------  --------------------
                 (5)              (6)               (7)
```

1) Bridge priority
   The priority of the root bridge is displayed.

2) MAC address
   The MAC address of the root bridge is displayed.

3) Root path cost
   The path cost to the root bridge is displayed.

4) Root port
   The interface name of the root port is displayed.
   If this device operates as the root bridge, the following is displayed.
   Port 0 (This bridge is the root)

5) Configuration BPDU send interval
   The configuration BPDU send interval (in seconds) is displayed.

6) Maximum wait time (in seconds)
   The maximum wait time (in seconds) of configuration BPDUs is displayed.

7) Maximum forwarding delay time (in seconds)
   The maximum forwarding delay time (in seconds) is displayed.

Display of spanning tree bridge information of this device

```
# show spanning-tree bridge
Bridge ID  Priority    32768                                    ---(1)
           Address     00:0b:5d:89:00:aa                        ---(2)
           Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec
           ----------------  --------------  --------------------
                 (3)              (4)               (5)
           BPDU Mode off
           -------------
                 (6)
           STP Mode stp
           ------------
                 (7)
```

1) Bridge priority
   The bridge priority used for the bridge identifier of this device is displayed.

2) MAC address
   The MAC address used for the bridge identifier of this device is displayed.

3) Configuration BPDU send interval
   The configuration BPDU send interval (in seconds) is displayed.

4) Maximum wait time
   The maximum wait time (in seconds) of configuration BPDUs is displayed.

5) Maximum forwarding delay time
   The maximum forwarding delay time (in seconds) is displayed.

6) BPDU forwarding function
The BPDU forwarding function (on or off) defined on this device is displayed.

7) STP operation mode
The STP operation mode (disable/stp/rstp/mstp) of this device is displayed.

Display of only spanning tree information of the active interface

```
# show spanning-tree interface active
eth1 is Forwarding  Port Version 0(STP)
------------------  -------------------
       (1)                  (2)
    Port path cost 200000(auto), Port priority 128, Port Identifier 128.1
    --------------------------  -----------------  ----------------------
              (3)                       (4)                 (5)
    Port role is Root
    -----------------
           (6)
    Designated root has priority 32768, address 00:00:e2:08:57:89
    ---------------------------------  -------------------------
             (7)                                    (8)
    Designated bridge has priority 32768, address 00:00:e2:08:57:89
    ----------------------------------  -------------------------
             (9)                                    (10)
    Designated port id is 128.1, Designated path cost 0
    --------------------------  ----------------------
             (11)                      (12)
    BPDU statistics:
      Config BPDU: sent 3, sent error 0
                   ------  ------------
                    (13)       (14)
                   received 112, discarded 0
                  -------------  -----------
                      (15)          (16)
      TCN BPDU:    sent 2, sent error 0
                   ------  ------------
                    (17)       (18)
                   received 0, discarded 0
                   ----------  -----------
                      (19)         (20)
      Other error: bad protocol 0, bad version 0
                   --------------  -------------
                       (21)            (22)
                   bad BPDU type 0
                   ---------------
                        (23)

eth2 is Forwarding  Port Version 0(STP)
------------------  -------------------
       (1)                  (2)
    Port path cost 200000(auto), Port priority 128, Port Identifier 128.2
    --------------------------  -----------------  ----------------------
              (3)                       (4)                 (5)
    Port role is Designated
    -----------------------
             (6)
    Designated root has priority 32768, address 00:00:e2:08:57:89
    ---------------------------------  -------------------------
             (7)                                    (8)
    Designated bridge has priority 32768, address 00:0b:5d:89:00:aa
    ----------------------------------  -------------------------
             (9)                                    (10)
    Designated port id is 128.2, Designated path cost 200000
    --------------------------  --------------------------
             (11)                        (12)
```

(To be continued)

(Continued)

```
BPDU statistics:
  Config BPDU: sent 292, sent error 0
               --------- ------------
                (13)       (14)
               received 0, discarded 0
              -----------  -----------
                  (15)          (16)
  TCN BPDU:    sent 0, sent error 0
               ------  ------------
                (17)       (18)
               received 0, discarded 0
               ----------  -----------
                  (19)         (20)
  Other error: bad protocol 0, bad version 0
               --------------  -------------
                   (21)            (22)
               bad BPDU type 0
               ---------------
                    (23)
```

1) Interface name and port status
   One of the following is displayed for the port status.
   Disabled : The STP is disabled.
   Discarding : The port is in the discarding state (it is displayed only when RSTP or MSTP is active).
   Blocking : The port is in the blocking state.
   Listening : The port is in the listening state.
   Learning : The port is in the learning state.
   Forwarding : The port is in the forwarding state.

2) STP version of port
   One of the following is displayed for the STP version.
   - (OFF) : STP unused port
   0 (STP) : 802.1d STP
   2 (RSTP) : 802.1w RSTP
   3 (MSTP) : 802.1s MSTP

3) Port path cost
   The path cost of the relevant port is displayed.

4) Port priority
   The priority of the relevant port is displayed.

5) Port ID
   The port ID (the port priority and port number) is displayed.

6) Port role
   One of the following is displayed for the port role.
   Disabled : The STP is disabled.
   Root : Root port
   Designated : Designated port
   Blocking : Blocking port
   Alternate : Alternate port (It is displayed only when RSTP or MSTP is active.)
   Backup : Backup port (It is displayed only when RSTP or MSTP is active.)

7) Priority of root bridge
   The priority of the root bridge is displayed.

8) MAC address of root bridge
   The MAC address of the root bridge is displayed.

9) Designated bridge priority
The priority of the designated bridge is displayed.

10) MAC address of designated bridge
The MAC address of the designated bridge is displayed.

11) Designated port ID
The designated port ID (the port priority and port number) is displayed.

12) Designated port path cost
The path cost of the designated port is displayed.

13) Number of configuration BPDU send times
The number of configuration BPDU send times is displayed.

14) Number of configuration BPDU send error times
The number of configuration BPDU send error times is displayed.

15) Number of configuration BPDU receive times
The number of configuration BPDU receive times is displayed.

16) Number of configuration BPDU receive discarding times
The number of configuration BPDU receive discarding times is displayed.

17) Number of TCN BPDU send times
The number of TCN BPDU send times is displayed.

18) Number of TCN BPDU send error times
The number of TCN BPDU send error times is displayed.

19) Number of TCN BPDU receive times
The number of TCN BPDU receive times is displayed.

20) Number of TCN BPDU receive discarding times
The number of TCN BPDU receive discarding times is displayed.

21) Number of protocol version error times
The number of discarding times due to protocol version error is displayed.

22) Number of version error times
The number of discarding times due to version error is displayed.

23) Number of BPDU type error times
The number of discarding times due to BPDU type error is displayed.

Display of spanning tree information of the specified interface

```
# show spanning-tree interface 1
eth1 is Forwarding  Port Version 0(STP)
------------------  -------------------
       (1)                  (2)
    Port path cost 200000(auto), Port priority 128, Port Identifier 128.1
    --------------------------  -----------------  ----------------------
               (3)                      (4)                 (5)
    Port role is Root
    -----------------
           (6)
    Designated root has priority 32768, address 00:00:e2:08:57:89
    --------------------------------  -------------------------
             (7)                               (8)
    Designated bridge has priority 32768, address 00:00:e2:08:57:89
    ----------------------------------  -------------------------
             (9)                               (10)
    Designated port id is 128.1, Designated path cost 0
    -------------------------  ----------------------
             (11)                     (12)
    BPDU statistics:
      Config BPDU: sent 3, sent error 0
                   ------  ------------
                    (13)       (14)
                   received 112, discarded 0
                  -------------  -----------
                      (15)          (16)
      TCN BPDU:    sent 2, sent error 0
                   ------  ------------
                    (17)       (18)
                   received 0, discarded 0
                   ----------  -----------
                      (19)         (20)
      Other error: bad protocol 0, bad version 0
                   --------------  -------------
                       (21)            (22)
                   bad BPDU type 0
                   ---------------
                        (23)
```

1) Interface name and port status
   One of the following is displayed for the port status.
   - Disabled : The STP is disabled.
   - Discarding : The port is in the discarding state (it is displayed only when RSTP or MSTP is active).
   - Blocking : The port is in the blocking state.
   - Listening : The port is in the listening state.
   - Learning : The port is in the learning state.
   - Forwarding : The port is in the forwarding state.

2) STP version of port
   One of the following is displayed for the STP version.
   - - (OFF) : STP unused port
   - 0 (STP) : 802.1d STP
   - 2 (RSTP) : 802.1w RSTP
   - 3 (MSTP) : 802.1s MSTP

3) Port path cost
   The path cost of the relevant port is displayed.

4) Port priority
   The priority of the relevant port is displayed.

5) Port ID
   The port ID (the port priority and port number) is displayed.

6) Port role
One of the following is displayed for the port role.
Disabled : The STP is disabled.
Root : Root port
Designated : Designated port
Blocking : Blocking port
Alternate : Alternate port (It is displayed only when RSTP or MSTP is active.)
Backup : Backup port (It is displayed only when RSTP or MSTP is active.)

7) Priority of root bridge
The priority of the root bridge is displayed.

8) MAC address of root bridge
The MAC address of the root bridge is displayed.

9) Designated bridge priority
The priority of the designated bridge is displayed.

10) MAC address of designated bridge
The MAC address of the designated bridge is displayed.

11) Designated port ID
The designated port ID (the port priority and port number) is displayed.

12) Designated port path cost
The path cost of the designated port is displayed.

13) Number of configuration BPDU send times
The number of configuration BPDU send times is displayed.

14) Number of configuration BPDU send error times
The number of configuration BPDU send error times is displayed.

15) Number of configuration BPDU receive times
The number of configuration BPDU receive times is displayed.

16) Number of configuration BPDU receive discarding times
The number of configuration BPDU receive discarding times is displayed.

17) Number of TCN BPDU send times
The number of TCN BPDU send times is displayed.

18) Number of TCN BPDU send error times
The number of TCN BPDU send error times is displayed.

19) Number of TCN BPDU receive times
The number of TCN BPDU receive times is displayed.

20) Number of TCN BPDU receive discarding times
The number of TCN BPDU receive discarding times is displayed.

21) Number of protocol version error times
The number of discarding times due to protocol version error is displayed.

22) Number of version error times
The number of discarding times due to version error is displayed.

23) Number of BPDU type error times
The number of discarding times due to BPDU type error is displayed.

To display all spanning tree information in detail

```
# show spanning-tree detail
IEEE compatible spanning tree protocol is being executed.
  Bridge Identifier has priority 32768, address 00:0b:5d:89:00:aa
  ----------------------------------  -------------------------
            (1)                                 (2)
  Configured hello time 2, max age 20, forward delay 15
  ----------------------  ----------  ----------------
            (3)              (4)            (5)
  Current root has priority 32768, address 00:00:e2:08:57:89
  ------------------------------  -------------------------
            (6)                                 (7)
  Root port is eth1, cost of root path is 200000
  -----------------  ---------------------------
        (8)                  (9)
  STP Mode stp, BPDU Mode off
  ------------  -------------
      (38)           (39)
  Topology changes 2  Detected date 2011/01/01(Sat) 05:30:28
  ------------------  ---------------------------------------
        (33)                  (34)
                       (time since 05:30:28)
                        -------------------
                                (35)

eth1 is Forwarding  Port Version 0(STP)  STP-Compatible(-)
------------------  -------------------  -----------------
       (10)                (11)                (36)
    Port path cost 200000(auto), Port priority 128, Port Identifier 128.1
    --------------------------  -----------------  ----------------------
             (12)                      (13)                (14)
    Port role is Root
    -----------------
           (15)
    Designated root has priority 32768, address 00:00:e2:08:57:89
    ---------------------------------  -------------------------
             (16)                                  (17)
    Designated bridge has priority 32768, address 00:00:e2:08:57:89
    ----------------------------------  -------------------------
             (18)                                 (19)
    Designated port id is 128.1, Designated path cost 0
    --------------------------  ----------------------
             (20)                      (21)
    BPDU statistics:
      Config BPDU: sent 3, sent error 0
                   ------  ------------
                    (22)       (23)
                   received 901, discarded 0
                  -------------  -----------
                      (24)          (25)
      TCN BPDU:    sent 0, sent error 0
                   ------  ------------
                    (26)       (27)
                   received 0, discarded 0
                   ----------  -----------
                      (28)         (29)
      Other error: bad protocol 0, bad version 0
                   --------------  -------------
                       (30)            (31)
                   bad BPDU type 0
                   ---------------
                        (32)
```

(To be continued)

(Continued)

```
    Other statistics:
      changed to forwarding state 1
                                  ---
                                  (37)
eth2 is Forwarding  Port Version 0(STP)  STP-Compatible(-)
------------------  --------------------  -----------------
       (10)                (11)                 (36)
    Port path cost 200000(auto), Port priority 128, Port Identifier 128.2
    ---------------------------  -----------------  ----------------------
             (12)                       (13)               (14)
    Port role is Designated
    -----------------------
           (15)
    Designated root has priority 32768, address 00:00:e2:08:57:89
    ---------------------------------  -------------------------
             (16)                                  (17)
    Designated bridge has priority 32768, address 00:0b:5d:89:00:aa
    ---------------------------------  -------------------------
             (18)                                 (19)
    Designated port id is 128.2, Designated path cost 20000
    ---------------------------  -------------------------
             (20)                       (21)

    BPDU statistics:
      Config BPDU: sent 902, sent error 0
                   --------- ------------
                     (22)       (23)
                   received 0, discarded 0
                   -------------  -----------
                      (24)          (25)
      TCN BPDU:    sent 0, sent error 0
                   ------  ------------
                     (26)       (27)
                   received 0, discarded 0
                   ----------  -----------
                      (28)         (29)
      Other error: bad protocol 0, bad version 0
                   --------------  -------------
                       (30)            (31)
                   bad BPDU type 0
                   ---------------
                        (32)
    Other statistics:
      Changed to forwarding state 1
                                  ---
                                  (37)
```

1) Bridge priority
   The bridge priority used for the bridge identifier of this device is displayed.

2) MAC address
   The MAC address used for the bridge identifier of this device is displayed.

3) Configuration BPDU send interval
   The configuration BPDU send interval (in seconds) is displayed.

4) Maximum wait time
   The maximum wait time (in seconds) of configuration BPDUs is displayed.

5) Maximum forwarding delay time
   The maximum forwarding delay time (in seconds) is displayed.

6) Priority of root bridge
   The priority of the root bridge is displayed.

7) MAC address of root bridge
   The MAC address of the root bridge is displayed.

8) Root port
The interface name of the root port is displayed.
If this device operates as the root bridge, the root port (Item (8)) and root path cost (Item (9)) are not displayed. Only the following message is displayed.
This bridge is the root

9) Root path cost
The path cost to the root bridge is displayed.

10) Interface name and port status
One of the following is displayed for the port status.
Disabled : The STP is disabled.
Discarding : The port is in the discarding state (it is displayed only when RSTP or MSTP is active).
Blocking : The port is in the blocking state.
Listening : The port is in the listening state.
Learning : The port is in the learning state.
Forwarding : The port is in the forwarding state.

11) STP version of port
One of the following is displayed for the STP version.
- (OFF) : STP unused port
0 (STP) : 802.1d STP
2 (RSTP) : 802.1w RSTP
3 (MSTP) : 802.1s MSTP

12) Port path cost
The path cost of the relevant port is displayed.

13) Port priority
The priority of the relevant port is displayed.

14) Port ID
The port ID (the port priority and port number) is displayed.

15) Port role
One of the following is displayed for the port role.
Disabled : The STP is disabled.
Root : Root port
Designated : Designated port
Blocking : Blocking port
Alternate : Alternate port (It is displayed only when RSTP or MSTP is active.)
Backup : Backup port (It is displayed only when RSTP or MSTP is active.)

16) Priority of root bridge
The priority of the root bridge is displayed.

17) MAC address of root bridge
The MAC address of the root bridge is displayed.

18) Designated bridge priority
The priority of the designated bridge is displayed.

19) MAC address of designated bridge
The MAC address of the designated bridge is displayed.

20) Designated port ID
The designated port ID (the port priority and port number) is displayed.

21) Designated port path cost
The path cost of the designated port is displayed.

22) Number of configuration BPDU send times
The number of configuration BPDU send times is displayed.

23) Number of configuration BPDU send error times
The number of configuration BPDU send error times is displayed.

24) Number of configuration BPDU receive times
The number of configuration BPDU receive times is displayed.

25) Number of configuration BPDU receive discarding times
The number of configuration BPDU receive discarding times is displayed.

26) Number of TCN BPDU send times
The number of TCN BPDU send times is displayed.

27) Number of TCN BPDU send error times
The number of TCN BPDU send error times is displayed.

28) Number of TCN BPDU receive times
The number of TCN BPDU receive times is displayed.

29) Number of TCN BPDU receive discarding times
The number of TCN BPDU receive discarding times is displayed.

30) Number of protocol version error times
The number of discarding times due to protocol version error is displayed.

31) Number of version error times
The number of discarding times due to version error is displayed.

32) Number of BPDU type error times
The number of discarding times due to BPDU type error is displayed.

33) Number of topology change detection times
The number of topology change detection times is displayed.

34) Topology change detection time
The clock time when the topology change was lastly detected.

35) Elapsed time after topology change detection
The elapsed time after the topology change was lastly detected.

36) STP (IEEE802.1D) compatibility mode
One of the following is displayed for the STP (IEEE802.1D) compatible mode operation of the port.
STP : The port is active in the STP compatible mode when the port version is RSTP or MSTP.
\- : The port is not active in the compatible mode (but operating in the port's operation version).

37) Number of forwarding status transition times
The number of times when the port was changed to the forwarding state is displayed.

38) STP operation mode
The STP operation mode (disable/stp/rstp/mstp) of this device is displayed.

39) BPDU forwarding function
The BPDU forwarding function (on or off) defined on this device is displayed.

5.28.3.2 show spanning-tree instance

Function Display the spanning tree information.

Available Model XG0224 / XG0448 / XG2600

Syntax show spanning-tree instance <instance_id> [detail]

Options

<instance_id>
Display the spanning tree information of the specified instance only.

detail
Display the spanning tree information of the specified instance in detail.

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display the status of the MSTP spanning tree function.

Execution Example

Display of spanning tree information of instance 0

```
# show spanning-tree instance 0
MSTP Configuration Information
Region Name : region1  Revision Level : 0
---------------------  ------------------
         (1)                  (2)
Instance ID 0
-------------
     (3)
Vlans 20-30
------------------------
          (4)
Root ID     Priority    32768                                    ---(5)
            Address     00:00:e2:08:57:89                        ---(6)
            Cost        200000                                   ---(7)
            Port        1 (eth1)                                 ---(8)
            Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec
            ----------------  --------------  --------------------
                  (9)              (10)               (11)
            Remaining Hops 20
            -----------------
                 (12)
Bridge ID   Priority    32768                                    ---(13)
            Address     00:0b:5d:89:00:aa                        ---(14)
            Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec
            ----------------  --------------  --------------------
                 (15)              (16)               (17)
            Hop count 20
            -------------
                 (18)
            BPDU Mode off
            -------------
                 (19)
            STP Mode mstp
            -------------
                 (20)
```

(To be continued)

(Continued)

```
Interface       Port ID  Cost        Status(Role)            Sent
                                     Designated Bridge ID    Received
--------------- -------- ----------- ----------------------- ----------
eth1              128.1      20000* Forwarding(Root)               137
----              -----    -------  -----------------              ---
(21)               (22)       (23)          (24)                 (25)
                  128.1          0  0 00:00:e2:08:57:89           137
                   -----      ----  ----------------------        ---
                   (26)       (27)          (28)                 (29)
eth2              128.2      20000* Forwarding(Designated)        137
                  128.2          0  0 00:0b:5d:89:00:bb           135
eth3              128.3          0  Discarding(Disabled)            0
                    0.0          0  0 00:00:00:00:00:00             0
eth4              128.4      20000* Forwarding(Designated)        137
                  128.4          0  0 00:0b:5d:89:00:bb           137
eth5              128.5      20000* Discarding(Backup)            137
                  128.4          0  0 00:0b:5d:89:00:bb           136
eth6              128.6          0  Discarding(Disabled)            0
                    0.0          0  0 00:00:00:00:00:00             0
eth7              128.7          0  Discarding(Disabled)            0
                    0.0          0  0 00:00:00:00:00:00             0
eth8              128.8          0  Discarding(Disabled)            0
                    0.0          0  0 00:00:00:00:00:00             0
eth9              128.9          0  Discarding(Disabled)            0
                    0.0          0  0 00:00:00:00:00:00             0
eth10            128.10          0  Discarding(Disabled)            0
                    0.0          0  0 00:00:00:00:00:00             0
eth11            128.11          0  Discarding(Disabled)            0
                    0.0          0  0 00:00:00:00:00:00             0
eth12            128.12          0  Discarding(Disabled)            0
                    0.0          0  0 00:00:00:00:00:00             0
eth13            128.13      20000* Discarding(Backup)            138
                  128.2          0  0 00:0b:5d:89:00:bb           137
eth14            128.14          0  Discarding(Disabled)            0
                    0.0          0  0 00:00:00:00:00:00             0
eth15            128.15          0  Discarding(Disabled)            0
                    0.0          0  0 00:00:00:00:00:00             0
eth16            128.16          0  Discarding(Disabled)            0
                    0.0          0  0 00:00:00:00:00:00             0
```

1) Region Name
   The region name is displayed.

2) Revision Level
   The revision level is displayed.

3) Instance ID
   The instance ID is displayed.

4) Vlans
   The VLAN ID belonging to the instance is displayed.

5) Bridge priority
   The priority of MSTI root bridge is displayed.

6) MAC address
   The MAC address of MSTI root bridge is displayed.

7) Root path cost
   The path cost to the MSTI root bridge is displayed.

8) Root port
   The interface name of the root port is displayed.

9) Configuration BPDU send interval
   The configuration BPDU send interval (in seconds) is displayed.

10) Maximum wait time (in seconds)
The maximum wait time (in seconds) of configuration BPDUs is displayed.

11) Maximum forwarding delay time (in seconds)
The maximum forwarding delay time (in seconds) is displayed.

12) Remaining hop count from root bridge
The remaining hop count from the root bridge is displayed.

13) Bridge priority
The bridge priority used for the bridge identifier of this device is displayed.

14) MAC address
The MAC address used for the bridge identifier of this device is displayed.

15) Configuration BPDU send interval
The configuration BPDU send interval (in seconds) is displayed.

16) Maximum wait time
The maximum wait time (in seconds) of configuration BPDUs is displayed.

17) Maximum forwarding delay time
The maximum forwarding delay time (in seconds) is displayed.

18) Hop count of maximum forwarding delay
The maximum forwarding delay time is displayed by hop counting.

19) BPDU forwarding function
The BPDU forwarding function (on or off) defined on this device is displayed.

20) STP operation mode
The STP operation mode (disable/stp/rstp/mstp) of this device is displayed.

21) Interface name
The interface name is displayed.

22) Port ID
The Port ID is displayed.

23) Port path cost
The path cost of the port is displayed (the cost value is followed by an asterisk (*) if calculated automatically).

24) Port status and roles
One of the following is displayed for the port status.

Disabled	: The STP is disabled.
Discarding	: The port is in the discarding state (it is displayed only when RSTP or MSTP is active).
Blocking	: The port is in the blocking state.
Listening	: The port is in the listening state.
Learning	: The port is in the learning state.
Forwarding	: The port is in the forwarding state.

One of the following is displayed for the port role.

Disabled	: The STP is disabled.
Root	: Root port
Designated	: Designated port
Blocking	: Blocking port
Alternate	: Blocking port
Backup	: Backup port

25) Number of BPDU send times
The number of BPDU send times (the total value of all BPDU types) is displayed.

26) Port ID of designated bridge
The port ID of the designated bridge is displayed.

27) Designated path cost of configuration BPDU
The designated path cost of the configuration BPDU is displayed.

28) Designated bridge ID
The designated bridge ID (the priority and MAC address) is displayed.

29) Number of BPDU receive times
The number of BPDU receive times (the total value of all BPDU types) is displayed.

Display of spanning tree information of the specified instance other than instance 0

```
# show spanning-tree instance 1
MSTP Configuration Information
Region Name : region1  Revision Level : 0
Instance ID 1
Vlans 120-130
Root ID     Priority    32768
            Address     00:00:e2:08:57:89
            Cost        200000
            Port        1 (eth1)
            Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec
            Remaining Hops 20
Bridge ID   Priority    32768
            Address     00:0b:5d:89:00:aa
            Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec
            Hop count 20
            BPDU Mode off
            STP Mode mstp
Interface       Port ID  Cost        Status(Role)            Enable
                                     Designated Bridge ID
--------------- -------- ----------- ----------------------- ----------
eth1               128.1      20000* Forwarding(Root)         *
----               -----    -------  -----------------        ---
 (1)                (2)        (3)          (4)                (5)
                   128.1          0  0 00:00:e2:08:57:89
                   -----       ----  ----------------------
                    (6)        (7)          (8)
eth2               128.2      20000* Forwarding(Designated)   *
                   128.2          0  32769 00:0b:5d:89:00:bb
eth4               128.4      20000* Forwarding(Designated)   *
                   128.4          0  32769 00:0b:5d:89:00:bb
eth5               128.5      20000* Discarding(Backup)       *
                   128.4          0  32769 00:0b:5d:89:00:bb
eth8               128.8          0  Discarding(Disabled)
                     0.0          0  0 00:00:00:00:00:00
eth13             128.13      20000* Discarding(Backup)       *
                   128.2          0  32769 00:0b:5d:89:00:bb
```

1) Interface name
Only the active instances are displayed.

2) Port ID of each instance
The port ID of the specified instance is displayed.

3) Port path cost of each instance
The path cost of the port of the specified instance is displayed (the cost value is followed by an asterisk (*) if calculated automatically).

4) Port status and role of the specified instance
One of the following is displayed for the port status.

Disabled : The STP is disabled.
Discarding : The port is in the discarding state (it is displayed only when RSTP or MSTP is active).
Blocking : The port is in the blocking state.
Listening : The port is in the listening state.
Learning : The port is in the learning state.
Forwarding : The port is in the forwarding state.
One of the following is displayed for the port role.
Disabled : The STP is disabled.
Root : Root port
Designated : Designated port
Blocking : Blocking port
Alternate : Master port
Backup : Backup port

5) Port operation status
The operation status of the port is displayed (an asterisk (*) is displayed when enabled).

6) Port ID of designated bridge
The port ID of the designated bridge of the specified instance is displayed.

7) Designated path cost of BPDU
The designated path cost of BPDU of the specified instance is displayed.

8) Designated bridge ID
The designated bridge ID of the specified instance (the priority and MAC address) is displayed.

Display of detailed spanning tree information of instance 0

```
# show spanning-tree instance 0 detail
MSTP Configuration Information
Region Name : region1  Revision Level : 0
Instance ID 1
Vlans 20-30
Root ID     Priority    32768
            Address     00:00:e2:08:57:89
            Cost        200000
            Port        1 (eth1)
            Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec
            Remaining Hops 20
Bridge ID   Priority    32768
            Address     00:0b:5d:89:00:aa
            Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec
            Hop count 20
            BPDU Mode off
            STP Mode mstp
Topology changes 2  Detected date 2011/01/01(Sat) 05:30:28
------------------  ------------------------------------
       (27)                  (28)
                    (time since 05:30:28)
                     --------------------
                              (29)

eth1 is Forwarding  Port Version 3(MSTP)  STP-Compatible(-)  Boundary(*)
------------------  --------------------  ------------------  ----------
       (1)                  (2)                  (30)             (31)
    Port path cost 20000(auto), Port priority 128, Port Identifier 128.2
    --------------------------  -----------------  ----------------------
            (3)                       (4)                 (5)
    Port role is Designated
    -----------------------
            (6)
    Designated root has priority 0, address 00:0b:5d:89:00:bb
    ------------------------------  -------------------------
            (7)                               (8)
    Designated bridge has priority 0, address 00:0b:5d:89:00:bb
    -------------------------------  -------------------------
            (9)                               (10)
    Designated port is  128.2, Designated path cost 0
    -------------------------  ------------------------
            (11)                           (12)
    Port info type is Mine
                       ---- (13)
    Remaining Hops 20
                   --- (14)
    This port is external region
                 --------------- (15)
```

(To be continued)

(Continued)

```
    BPDU statistics:
      Config BPDU: sent 141, sent error 0
                   --------  ------------
                    (16)           (17)
                   received 138, discarded 1
                   ------------  -----------
                    (18)           (19)
      TCN BPDU:    sent 0, sent error 0
                   ------  ------------
                    (20)        (21)
                   received 0, discarded 0
                   ----------  -----------
                    (22)        (23)
      Other error: bad protocol 0, bad version 0
                   --------------  -------------
                       (24)            (25)
                   bad BPDU type 0
                   ---------------
                        (26)
    Other statistics:
      changed to forwarding state 1
                                ---
                                (32)
eth2 is Forwarding  Port Version 3(MSTP)  STP-Compatible(-)  Boundary(-)
    Port path cost 20000(auto), Port priority 128, Port Identifier 128.2
    Port role is Designated
    Designated root has priority 0, address 00:0b:5d:89:00:bb
    Designated bridge has priority 0, address 00:0b:5d:89:00:bb
    Designated port is  128.2, Designated path cost 0
    Port info type is Mine
    Remaining Hops 20
    This port is internal region
    BPDU statistics:
      Config BPDU: sent 141, sent error 0
                   received 138, discarded 1
      TCN BPDU:    sent 0, sent error 0
                   received 0, discarded 0
      Other error: bad protocol 0, bad version 0
                   bad BPDU type 0
    Other statistics:
      Changed to forwarding state 1
```

1) Interface name and port status

One of the following is displayed for the port status.

Disabled	: The STP is disabled.
Discarding	: The port is in the discarding state (it is displayed only when RSTP or MSTP is active).
Blocking	: The port is in the blocking state.
Listening	: The port is in the listening state.
Learning	: The port is in the learning state.
Forwarding	: The port is in the forwarding state.

2) STP version of port

One of the following is displayed for the STP version.

- (OFF)	: STP unused port
0 (STP)	: 802.1d STP
2 (RSTP)	: 802.1w RSTP
3 (MSTP)	: 802.1s MSTP

3) Port path cost

The path cost of the relevant port is displayed.

4) Port priority

The priority of the relevant port is displayed.

5) Port ID

The port ID (the port priority and port number) is displayed.

6) Port role
One of the following is displayed for the port role.
Disabled : The STP is disabled.
Root : Root port
Designated : Designated port
Blocking : Blocking port
Alternate : Master port
Backup : Backup port

7) Priority of root bridge
The priority of the root bridge is displayed.

8) MAC address of root bridge
The MAC address of the root bridge is displayed.

9) Designated bridge priority
The priority of the designated bridge is displayed.

10) MAC address of designated bridge
The MAC address of the designated bridge is displayed.

11) Designated port ID
The designated port ID (the port priority and port number) is displayed.

12) Designated port path cost
The path cost of the designated port is displayed.

13) Port processing type
One of the following is displayed for the port processing type to be set by the sent or received BPDU.
Disabled: Disabled port
Aged : The MSTP BPDU receive timeout detection port
Mine : MSTP BPDU packets sending port considered having high port priority
Received : MSTP BPDU packets receiving port considered having low port priority
Unknown : The port in the processing state other than above

14) Remaining hop count from root bridge
The remaining hop count from the root bridge is displayed.

15) MST region status
If the port is in a state other than "disabled", the connection status of MST region is displayed.
internal region : Indicates the connection between the same region.
external region : Indicates the connection between different regions.

16) Number of configuration BPDU send times
The number of configuration BPDU send times is displayed.

17) Number of configuration BPDU send error times
The number of configuration BPDU send error times is displayed.

18) Number of configuration BPDU receive times
The number of configuration BPDU receive times is displayed.

19) Number of configuration BPDU receive discarding times
The number of configuration BPDU receive discarding times is displayed.

20) Number of TCN BPDU send times
The number of TCN BPDU send times is displayed.

21) Number of TCN BPDU send error times
The number of TCN BPDU send error times is displayed.

22) Number of TCN BPDU receive times
The number of TCN BPDU receive times is displayed.

23) Number of TCN BPDU receive discarding times
The number of TCN BPDU receive discarding times is displayed.

24) Number of protocol version error times
The number of discarding times due to protocol version error is displayed.

25) Number of version error times
The number of discarding times due to version error is displayed.

26) Number of BPDU type error times
The number of discarding times due to BPDU type error is displayed.

27) Number of topology change detection times
The number of topology change detection times is displayed.

28) Topology change detection time
The clock time when the topology change was lastly detected.

29) Elapsed time after topology change detection
The elapsed time after the topology change was lastly detected.

30) STP (IEEE802.1D) compatibility mode
One of the following is displayed for the STP (IEEE802.1D) compatible mode operation of the port.
STP : The port is active in the STP compatible mode when the port version is RSTP or MSTP.
- : The port is not active in the compatible mode (but operating in the port's operation version).

31) Boundary port status
The boundary port status of the region is displayed as follows.
However, if the port role at the opposite device is an alternate or backup, that port may never receive the "BPDU". In such cases, the boundary port status is not displayed.
* : Indicates that the port is active as the boundary port.
- : Indicates that the port is NOT active as the boundary port.

32) Number of forwarding status transition times
The number of times when the port was changed to the forwarding state is displayed.

Display of detailed spanning tree information of the specified instance other than instance 0

```
# show spanning-tree instance 1 detail
MSTP Configuration Information
Region Name : region1  Revision Level : 0
Instance ID 1
Vlans 120-130
Root ID     Priority    32768
            Address     00:00:e2:08:57:89
            Cost        200000
            Port        1 (eth1)
            Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec
            Remaining Hops 20
Bridge ID   Priority    32768
            Address     00:0b:5d:89:00:aa
            Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec
            Hop count 20
            BPDU Mode off
            STP Mode mstp
Topology changes 2  Detected date 2011/01/01(Sat) 05:30:28
------------------  ------------------------------------
       (15)                   (16)
                    (time since 05:30:28)
                     --------------------
                              (17)

eth2 is Forwarding  Port Version 3(MSTP)
------------------  --------------------
       (1)                 (2)
    Port path cost 20000(auto), Port priority 128, Port Identifier 128.2
    --------------------------  -----------------  ----------------------
            (3)                        (4)                 (5)
    Port role is Designated
    -----------------------
            (6)
    Designated root has priority 40961, address 00:0b:5d:89:00:bb
    ---------------------------------  ------------------------
            (7)                                (8)
    Designated bridge has priority 40961, address 00:0b:5d:89:00:bb
    ---------------------------------  -------------------------
            (9)                                (10)
    Designated port is  128.2, Designated path cost 0
    ------------------------  ----------------------
            (11)                          (12)
    Port info type is Mine
                      -----
                       (13)
    Remaining Hops 20
                    --
                  (14)
    Other statistics:
      changed to forwarding state 1
                                  ---
                                  (18)
eth8 is Forwarding  Port Version 3(MSTP)
    Port path cost 20000(auto), Port priority 128, Port Identifier 128.8
    Port role is Designated
    Designated root has priority 40961, address 00:0b:5d:89:00:bb
    Designated bridge has priority 40961, address 00:0b:5d:89:00:bb
    Designated port is  128.8, Designated path cost 0
    Port info type is Mine
    Remaining Hops 20
    Other statistics:
      changed to forwarding state 1
```

1) Interface name and port status of the specified instance
   One of the following is displayed for the port status of the specified instance.
   Disabled : The STP is disabled.
   Discarding : The port is in the discarding state (it is displayed only when RSTP or MSTP is active).
   Blocking : The port is in the blocking state.
   Listening : The port is in the listening state.
   Learning : The port is in the learning state.
   Forwarding : The port is in the forwarding state.

2) STP version of port
   One of the following is displayed for the STP version.
   - (OFF) : STP unused port
   0 (STP) : 802.1d STP
   2 (RSTP) : 802.1w RSTP
   3 (MSTP) : 802.1s MSTP

3) Port path cost
   The path cost of the relevant port of the specified instance is displayed.

4) Port priority
   The priority of the relevant port of the specified instance is displayed.

5) Port ID
   The port ID of the specified instance (the port priority and port number) is displayed.

6) Port role
   One of the following is displayed for the port role of the specified instance.
   Disabled : The STP is disabled.
   Root : Root port
   Designated : Designated port
   Blocking : Blocking port
   Alternate : Master port
   Backup : Backup port
   Master : Master port

7) Priority of root bridge
   The priority of root bridge of the specified instance is displayed.

8) MAC address of root bridge
   The MAC address of root bridge of the specified instance is displayed.

9) Designated bridge priority
   The priority of the designated bridge of the specified instance is displayed.

10) MAC address of designated bridge
   The MAC address of the designated bridge of the specified instance is displayed.

11) Designated port ID
   The designated port ID of the specified instance (the port priority and port number) is displayed.

12) Designated port path cost
   The path cost of the designated port of the specified instance is displayed.

13) Port processing type of the specified instance
One of the following is displayed for the port processing type to be set by the sent or received BPDU.
Disabled : Disabled port
Aged : The MSTP BPDU receive timeout detection port
Mine : MSTP BPDU packets sending port considered having high port priority
Received : MSTP BPDU packets receiving port considered having low port priority
Unknown : The port in the processing state other than above

14) Remaining hop count from root bridge
The remaining hop count from the root bridge of the specified instance is displayed.

15) Number of topology change detection times
The number of topology change detection times is displayed.

16) Topology change detection time
The clock time when the topology change was lastly detected.

17) Elapsed time after topology change detection
The elapsed time after the topology change was lastly detected.

18) Number of forwarding status transition times
The number of times when the port was changed to the forwarding state is displayed.

5.28.4 Spanning Tree Counter, Log, Statistics, and Status Clear Commands

This section explains the commands related to spanning tree counter, log, statistics, and status clearing.

5.28.4.1 clear spanning-tree statistics

Function Clear the statistics relating to the spanning tree.

Available Model XG0224 / XG0448 / XG2600

Syntax clear spanning-tree statistics

Options N/A

Use Mode Operation mode (admin class)
Configuration mode (admin class)

Explanation Clear the spanning tree related statistics.

Execution Example

```
# clear spanning-tree statistics
#
```

5.29 LLDP Counter, Log, Statistics, and Status Display and Clear Operation Commands

This section explains about commands related to LLDP Counter, Log, Statistics, and Status Display and Clear Operation Commands.

5.29.1 LLDP Counter, Log, Statistics, and Status Display Commands

This section explains about commands related to LLDP Counter, Log, Statistics, and Status Display Commands.

5.29.1.1 show lldp

Function Display LLDP Information

Available Model XG0224 / XG0448 / XG2600

Syntax show lldp [port <portlist>] [detail]

Options

N/A
Disokay all LLDP information of the ports which LLDP function is enabled on

port <portlist>

- Port list
  Specify the port list to display LLDP information
  When setting multiple port numbers, separate them with commas (,).
  When setting sequential numbers, separate them with hyphens (-).
  (Example: "1-8")

detail
Display detailed LLDP information

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display LLDP information

Execution Example

```
# show lldp
Send Interval Time                  : 30 seconds                          ---(1)
Send Hold Count                     : 4 times                             ---(2)
Send Delay                          : 2 seconds                           ---(3)
Reinit Delay                        : 2 seconds                           ---(4)
Notification Interval Time          : 5 seconds                           ---(5)

 Port  Mode    Size    Info P N D C A     P p N I    M P L F   T
 ----  ------- ----    --------------     -------    -------   -
 (6)   (7)     (8)     (9)                (10)       (11)      (12)
 1     enable 274     P N D C A          P p N I    M P L F   -
 2     receive 0
 8     send   179     P - D C A          P p N -    M - - -   -
Entry:3 ---(30)
#
# show lldp port 1,8 detail
Send Interval Time                  : 30 seconds                          ---(1)
Send Hold Count                     : 4 times                             ---(2)
Send Delay                          : 2 seconds                           ---(3)
Reinit Delay                        : 2 seconds                           ---(4)
Notification Interval Time          : 5 seconds                           ---(5)

[PORT 1]                                                                  ---(6)
Configuration Mode           : enable                                     ---(7)
Send LLDPDU size             : 274 octets                                 ---(8)
Chassis ID                   : subtype=4(MAC) info=00:0b:5d:fd:05:b2      ---(13)
Port ID                      : subtype=5(ifName) info="1"                 ---(14)
Time To Live(TTL)            : 120 seconds                                ---(15)
Port Description             : info="EthernetPort(ether1)"                ---(16)
System Name                  : info=""                                    ---(17)
System Description           : info="'SBAX2' '1.2 V01.00' 'Wed Feb 13 15:23:07
JST
2008'"                                                                    ---(18)
System Capabilities          : info=Bridge,Router                         ---(19)
enabled=Bridge
Management Address           : address subtype=1(IPv4) info=192.168.2.1  ---(20)
                               interface number subtype=2(ifIndex) info=3
                               oid=""
Management Address           : address subtype=6(MAC) info=00:0b:5d:fd:05:b3
                               interface number subtype=2(ifIndex) info=7001
                               oid=""
IEEE802.1
  Port VLAN ID                     : PVID=10                              ---(21)
  Port And Protocol VLAN ID        : flags=supported,enabled              ---(22)
                                     PPVID=20
Port And Protocol VLAN ID : flags=supported,enabled
                                     PPVID=21
  VLAN Name                        : VID=10                               ---(23)
                                     name="portvlan10"
  VLAN Name                        : VID=20
                                     name="protocolvlan20"
  VLAN Name                        : VID=21
                                     name="protocolvlan21"
   VLAN Name                       : VID=30
                                     name="taggedvlan30"
IEEE802.3
  MAC/PHY Configuration/Status : support/status=supported,enabled  ---(25)
                                 capability=1(10BASE-T half duplex mode),
                                            2(10BASE-T full duplex mode),
                                            4(100BASE-TX half duplex mode),
                                            5(100BASE-TX full duplex mode),
                                            8(PAUSE for full-duplex links),
                                            11(Asymmetric and Symmetric PAUSE
for full-duplex links),
                                           15(1000BASE-T full duplex mode)
                                 type=16(100BASE-TX full duplex mode)
   Power Via MDI              : support=PSE,not supported                 ---(26)
   Link Aggregation           : status=capable,not in aggregation         ---(27)
   Maximum Frame Size         : size=9216                                 ---(28)
SNMP Notification Trap Send   : disable                                   ---(29)
```

(To be continued)

(Continued)

```
[PORT 8]
Configuration Mode           : send
Send LLDPDU size             : 179 octets
Chassis ID                   : subtype=4(MAC) info=00:0b:5d:fd:05:b2Ñ†
Port ID                      : subtype=5(ifName) info="8"
Time To Live(TTL)            : 120 seconds
Port Description             : info="EthernetPort(ether8)"
System Description           : info="'SBAX2' '1.2 V01.00' 'Wed Feb 13 15:23:07 JST
2008'"
System Capabilities          : info=Bridge,Router
                               enabled=Bridge
Management Address           : address subtype=1(IPv4) info=192.168.1.1
interface number subtype=2(ifIndex) info=1
                               oid=""
Management Address           : address subtype=6(MAC) info=00:0b:5d:fd:05:ba
                               interface number subtype=2(ifIndex) info=7008
                               oid=""
IEEE802.1
Port VLAN ID                      : PVID=1
Port And Protocol VLAN ID         : flags=supported,disabled
PPVID=0
VLAN Name                         : VID=1
name="default"
IEEE802.3
MAC/PHY Configuration/Status     : support/status=supported,enabled
                                  capability=1(10BASE-T half duplex mode),
                                             2(10BASE-T full duplex mode),
                                             4(100BASE-TX half duplex mode),
                                             5(100BASE-TX full duplex mode),
                                             8(PAUSE for full-duplex links),
                                             11(Asymmetric and Symmetric PAUSE
for full-duplex links),
                                             15(1000BASE-T full duplex mode)
                                  type=16(100BASE-TX full duplex mode)
SNMP Notification Trap Send : disable
    Entry:2                                                          ---(30)
```

1) LLDPDU send interval time(s)
   Setting value by lldp send interval command

2) LLDP hold count (times)
   Setting value by lldp send hold command

3) LLDP Send delay time(s)
   Setting value by lldp send interval command

4) LLDP Reinit delay time(s)
   Seting value by lldp reinit delay command

5) LLDP SNMP Notification Trap interval time (s)
   Setting value by lldp notification interval command

6) Physical port number
   Ether port number

7) Mode
   Setting value by lldp mode command
   enable : send and recive
   send : send only
   receive : recive only
   When mode is receive, information from (8) to (28) is not displayed.

8) LLDPDU (LLDP Protocol Data Unit) Size
   LLDPDU size (octets)

9) LLDP send information
Setting value by lldp info command
P : Send Port Description TLV
N : Send System Name TLV
D : Send System Description TLV
C : Send System Capabilities TLV
A : Send Management Address TLV
- : disable

10) IEEE802.1 LLDP send information
P : Port VLAN ID
p : Port And Protocol VLAN ID
N : VLAN Name
I : Protocol Identity
- : disable

11) IEEE802.3 LLDP send information
M : MAC/PHY Configuration/Status
P : Power Via MDI
L : Link Aggregation
F : Maximum Frame Size
- : disable

12) SNMP Trap notification
T : SNMP Notification Trap
- : disable

13) Chassis ID information
Value which is sent with Chassis ID TLV
subtype= : subtype value (4 is MAC address)
info= : representative MAC address

14) Port ID information
Value which is sent with Port ID TLV

15) LLDP TTL information (s) information
Value which is sent with Time To Live (TTL) TLV

16) Port description information
Value which is sent with Port Description TLV
When port-description is disabled by lldp info command, this value is not displayed.

17) System name informationiweowqerwuwqurwqrqwr
Value which is sent with System Name TLV
When system-name is disabled by lldp info command, this value is not displayed.

18) System description information
Value which is sent with System Description TLV
When system-description is disabled by lldp info command, this value is not displayed.

19) System Capabilities information
Value which is sent with System Capabilities TLV
info= : Available function
enabled= : Enabled function
Bridge : Bridge functon
Router : Router function
When system-description is disabled by lldp info command, this value is not displayed.

20) Management address information
Value which is sent with Management Address TLV
When SNMP agent address is set, IPv4 address and MAC address are displayed.
When management-address is disabled by lldp info command, this value is not displayed.

21) Port VLAN ID information
Value which is sen with ID TLV
When port-vlan-id is disabled by lldp info command, this value is not displayed.

22) Protocol information
Value which is sent with ocol VLAN ID TLV
When port-and-protocol-vlan-id is disabled by lldp info command, this value is not displayed.

23) VLAN name information
Value which is sent with IEEE802.1 VLAN Name TLV
When vlan-name is disabled by lldp info command, this value is not displayed.

24) Protocol ID information
Value which is sent with IEEE802.1 Protocol Identity TLV
This value is not displayed.

25) MAC/PHY Configuration/Status information
Value which is sent with IEEE802.3 MAC/PHY Configuration/Status TLV.
When mac-phy-configuration-status is disabled by lldp info command, this value is not displayed.

26) Power via MDI information
Value which is sent with IEEE802.3 Power Via MDI TLV
support= : Function Information
PSE : Power supply function
PD : Power demand function
not supported : No function
supported : Supported
disabled : Disable function
enabled : Enable function
When power-via-mdi is disabled by lldp info command,
this value is not displayed.

27) Linkaggregation information
Value which is sent with linkaggregation TLV
When link-aggregation is disabled by lldp info command, this value is not displayed.

28) Maximum Frame length Size
Value which is sent with IEEE802.3 Maximum Frame Size TLV
When maximum-frame-size is disabled by lldp info command, this value is not displayed.

29) SNMP Notification Trap
SNMP Notification Trap setting

30) Number of ports which LLDP function is enabled in
When port option is not specified, Number of port which LLDP function is enabled
in is displayed.

5.29.1.2 show lldp summary

Function Display LLDP summary information

Available Model XG0224 / XG0448 / XG2600

Syntax show lldp summary

Options N/A

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display the number of ports which is LLDP function is enabled in

Execution Example

```
# show lldp summary
        Send Entry : 2       ---(1)
       Receive Entry : 2     ---(2)
#
```

1) Number of ports which LLDP send is enabled in

2) Number of ports which LLDP receive is enabled in

5.29.1.3 show lldp neighbors

Function Display neighbor LLDP device information

Available Model XG0224 / XG0448 / XG2600

Syntax show lldp neighbors [port <portlist>] [detail]

Options

N/A
Display all neighbor LLDP device information

port <portlist>

- port list
  Specify the port list to display neignbor LLDP device information.
  When setting multiple port numbers, separate them with commas (,).
  When setting sequential numbers, separate them with hyphens (-).
  (Example: "1-8")

detail
Display the detailed neighbor LLDP device information

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display neighbor LLDP device information

Execution Example

```
# show lldp neighbors
Port Neighbor Counts
---- ---------------
(1)   (2)
 1     1
 2     0

#
# show lldp neighbors port 1-2 detail
[PORT 1]                                                              ---(1)
Neighbor Counts : 1                                                   ---(2)
Neighbor 1                                                            ---(3)
  Chassis ID              : subtype=4(MAC) info=02:00:0e:d1:47:80     ---(4)
  Port ID                 : subtype=5(ifName) info="MB/0"             ---(5)
  Time To Live(TTL)       : 120 seconds                               ---(6)
  Port Description        : info="EthernetPort(MB/line0)"             ---(7)
  System Name             : info=""                                   ---(8)
  System Description      : info="'Si-R180B' '128.0 V34.00' 'Wed Feb 13 13:11:14 J
ST 2008'"
  System Capabilities     : info=Router                               ---(10)
                            enabled=Router
  Management Address      : address subtype=1(IPv4) info=192.168.1.181  ---(11)
                            interface number subtype=2(ifIndex) info=10000
                            oid=""
  Management Address      : address subtype=6(MAC) info=02:00:0e:d1:47:80
                            interface number subtype=2(ifIndex) info=1
                            oid=""
IEEE802.1
  Port VLAN ID                  : PVID=0                              ---(12)
  Port And Protocol VLAN ID     : flags=not supported,disabled        ---(13)
                                  PPVID=0
  VLAN Name                     : VID=30                              ---(14)
                                  name="lan9"
IEEE802.3
  MAC/PHY Configuration/Status      : support/status=supported,enabled   ---(16)
                                      capability=1(10BASE-T half duplex mode),
                                                 2(10BASE-T full duplex mode),
                                                 4(100BASE-TX half duplex mode),
                                                 5(100BASE-TX full duplex mode)
                                      type=16(100BASE-TX full duplex mode)
  Power Via MDI                     : support=PSE,not supported       ---(17)
  Link Aggregation                  : status=not capable              ---(18)
  Maximum Frame Size                : size=1500                       ---(19)

[PORT 2]
Neighbor Counts : 0
#
```

1) Physical port number
   Ether port number

2) Number of neighbor devices
   Number of neighbor devices information which is received

3) Neighbor ID
   Neighbor ID

4) Chassis ID
   Value which is received with Chassis ID TLV
   subtype= : subtype value (4 is MAC address)
   info= : representative MAC address

5) Port ID information
   Value which is recived with Port ID TLV

6) LLDP TTL information (s) information
   Value which is received with Time To Live (TTL) TLV

7) Port description information
   Value which is sent with Port Description TLV

8) System name informationiweowqerwuwqurwqrqwr
   Value which is received with System Name TLV

9) System description information
   Value which is received with System Description TLV

10) System Capabilities information
   Value which is received with System Capabilities TLV
   info= : Available function
   enabled= : Enabled function
   Bridge : Bridge functon
   Router : Router function

11) Management address information
   Value which is received with Management Address TLV

12) Port VLAN ID information
   Value which is received with ID TLV

13) Protocol information
   Value which is received with ocol VLAN ID TLV

14) VLAN name information
   Value which is received with IEEE802.1 VLAN Name TLV

15) Protocol ID information
   Value which is received with IEEE802.1 Protocol Identity TLV

16) MAC/PHY Configuration/Status information
   Value which is received with IEEE802.3 MAC/PHY Configuration/Status TLV.

17) Power via MDI information
   Value which is received with IEEE802.3 Power Via MDI TLV

18) Linkaggregation information
   Value which is received with linkaggregation TLV

19) Maximum Frame length Size
   Value which is received with IEEE802.3 Maximum Frame Size TLV

5.29.1.4 show lldp statistics

Function Display LLDP statistics information

Available Model XG0224 / XG0448 / XG2600

Syntax show lldp statistics [port <portlist>] [detail]

Options

N/A

Display LLDP statistics information of all ports which LLDP function is enabled in

port <portlist>

- port list
  Specify the port to display LLDP statistics information
  When setting multiple port numbers, separate them with commas (,).
  When setting sequential numbers, separate them with hyphens (-).
  (Example: "1-8")

detail

Display the detailed LLDP informatuion

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display LLDP statistics information

Execution Example

```
# show lldp statistics
Port Sent packets Received packets
---- ------------ ----------------
 (1)   (2)             (3)
 1      76              82
 2      -               0
 8      48              -
```

1) physical port number

2) Number of times of send

3) Number of times of receive

```
# show lldp statistics detail
[Neighbor tables statistics]
  Last changed time          : Wed Feb 13 16:09:01 2008              ---(1)
  Tables inserts             :                  3                    ---(2)
  Tables deletes             :                  0                    ---(3)
  Tables drops               :                  0                    ---(4)
  Tables ageouts             :                  2                    ---(5)

[PORT 1] ---(6)
Sent packets                 :                 77                    ---(7)
Received packets             :                 82                    ---(8)
  Packets discarded total    :                  0                    ---(9)
  Packets errors             :                  0                    ---(10)
  TLVs discarded total       :                  0                    ---(11)
  TLVs unrecognized total    :                  0                    ---(12)
  Ageouts total              :                  2                    ---(13)

[PORT 2]                                                             ----(6)
Sent packets                 :                  -                    ----(7)
Received packets             :                  0                    ----(8)
  Packets discarded total    :                  0                    ----(9)
  Packets errors             :                  0                    ---(10)
  TLVs discarded total       :                  0                    ---(11)
  TLVs unrecognized total    :                  0                    ---(12)
  Ageouts total              :                  0                    ---(13)

[PORT 8]                                                             ----(6)
Sent packets                 :                 49                    ----(7)
Received packets             :                  -                    ----(8)
```

1) Time which neighbor information is changed at
   lldpStatsRemTablesLastChangeTime

2) Number of times which neighbor information is registered
   lldpStatsRemTablesInserts

3) Number of times which neighbor device information is deleted
   lldpStatsRemTablesDeletes

4) Number of times which neighbor device information is discarded
   lldpStatsRemTablesDrops

5) Number of times which neighbor device information is aged out
   lldpStatsRemTablesAgeouts

6) Physical port number
   lldpStatsTxPortNum, lldpStatsRxPortNum

7) Number of LLDP frames which are sent
   lldpStatsTxPortFramesTotal

8) Number of LLDP frames which are received
   lldpStatsRxPortFramesTotal

9) Number of LLDP frames are discarded after receive
   lldpStatsRxPortFramesDiscardedTotal

10) Number of Error LLDP frames
    lldpStatsRxPortFramesErrors

11) Nymber of TLVs are discarded after receive
    lldpStatsRxPortTLVsDiscardedTotal

12) Number of unknown TLVs
    lldpStatsRxPortTLVsUnrecognizedTotal

13) Number of neighbor device information is aged out
    lldpStatsRxPortAgeoutsTotal

5.29.2 LLDP Counter, Log, Statistics, and Status Clear Commands

This section explains about commands related to LLDP Counter, Log, Statistics, and Status Clear Commands.

5.29.2.1 clear lldp neighbors

Function Clear LLDP neighbor information

Available Model XG0224 / XG0448 / XG2600

Syntax clear lldp neighbors

Options N/A

Use Mode Operation mode (admin class)
Configuration mode (admin class)

Explanation Clear LLDP neighbor information

Execution Example

```
# clear lldp neighbors
#
```

5.29.2.2 clear lldp statistics

Function Clear LLDP statistics information

Available Model XG0224 / XG0448 / XG2600

Syntax clear lldp statistics

Options N/A

Use Mode Operation mode (admin class)
Configuration mode (admin class)

Explanation Clear LLDP statistics information

Execution Example

```
# clear lldp statistics
#
```

5.30 VLAN Counter, Log, Statistics, and Status Display Commands

This section explains the commands related to VLAN.

5.30.1 VLAN Counter, Log, Statistics, and Status Display Commands

This section explains the commands related to VLAN counter, log, statistics, and status display.

5.30.1.1 show vlan

Function Display the VLAN setting Information.

Available Model XG0224 / XG0448 / XG2600

Syntax
show vlan
show vlan summary
show vlan interface
show vlan vid <vlan_id>

Options

N/A
Display all VLAN information and the number of VLANs of the registered VLAN configuration.

summary
Display only the number of VLANs of the registered VLAN configuration.

interface
Display all VLAN information about the registered VLAN configuration.

vid
Display VLAN configuration specified by the VLAN ID option.

<vlan_id>
VLAN ID: Specify it with a decimal number from 1 to 4094.

Use Mode
Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display the VLAN setting information.

Execution Example

```
# show vlan

VID  Interface          Tag           Type     Description
---- ---------------- ------------ -------- ----------------------
(1)  (2)                (3)           (4)      (5)
1    ether5             untagged      port     default
     ether6             untagged
10   ether7             dot1q-tagged  port     v10
     linkaggregation1   dot1q-tagged
100  ether8             untagged      port     v100
200  ether13            untagged      protocol v200
     ether14            untagged
300  ether15            untagged      ipv4     v300
     ether16            untagged
1000 linkaggregation8   untagged      port     v1000
4000 ether11            dot1q-tagged  port     v4000
     ether12            untagged

Category          Count
----------------- -----
                  (6)
Port VLAN             5
Protocol VLAN         2
----------------- -----
Total                 7

#
```

Display of only the number of registered VLAN

```
# show vlan interface

VID  Interface          Tag           Type     Description
---- ---------------- ------------ -------- ----------------------
1    ether5             untagged      port     default
     ether6             untagged
10   ether7             dot1q-tagged  port     v10
     linkaggregation1   dot1q-tagged
100  ether8             untagged      port     v100
200  ether13            untagged      protocol v200
     ether14            untagged
300  ether15            untagged      ipv4     v300
     ether16            untagged
1000 linkaggregation8   untagged      port     v1000
4000 ether11            dot1q-tagged  port     v4000
     ether12            untagged

#
```

Display of the registered VLAN configuration only

```
# show vlan vid 10

VID  Interface          Tag           Type     Description
---- ---------------- ------------ -------- ----------------------
10   ether7             dot1q-tagged  port     v10
     linkaggregation1   dot1q-tagged

#
```

1) VLAN number

2) Interface
   ether : Ethernet port number
   linkaggregation : Link aggregation port number

3) Tag type
   untagged : Untagged vlan
   dot1q-tagged : Tagged vlan

4) VLAN type
   por : Port VLAN
   ipv4 : IPv4 protocol VLAN
   ipv6 : IPv6 protocol VLAN
   fna : FNA protocol VLAN
   protocol : Protocol VLAN

5) VLAN number

6) Number of entries of each VLAN type, and total number of VLAN entries

5.30.1.2 show vlan brief

Function Display the VLAN setting Information briefly.

Available Model XG0224 / XG0448 / XG2600

Syntax show vlan brief

Options N/A

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display the VLAN setting information briefly.

Execution Example

```
# show vlan brief

Codes: U - Untagged, P - Untagged(Protocol VLAN), T - Tagged
VID  1      8 9      16 17    24 25 26
---- -------- -------- -------- -- --
(1) (2)
10  UUUUUUUU  -------- -------- T  T
11  --------  UUUUUUUU -------- T  T
12  --------  -------- PPPPPPPP T  T

#
```

1) VLAN number

2) Tag type
   U: Untagged VLAN
   P: Untagged VLAN(Protocol VLAN)
   T: Tagged VLAN
   -: Not in use

5.31 QoS Counter, Log, Statistics, and Status Display Commands

This section explains commands related to COS queue.

5.31.1 COS Queue Counter, Log, Statistics, and Status Display Commands

This section explains commands related to COS queue counter, log, statistics, and status display.

5.31.1.1 show qos cosmap

Function Display the correspondence between the COS value and storage queue for a packet.

Available Model XG0224 / XG0448

Syntax show qos cosmap

Options N/A

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display the relationship between packet COS values and their storage queues.

Execution Example

```
# show qos cosmap
COSvalue Queue
-------- -----
(1)       (2)
0         2
1         0
2         1
3         3
4         4
5         5
6         6
7         7
```

1) COSvalue
   COS value of packet

2) Queue
   Storage queue

5.31.1.2 show qos prioritymap

Function Display the correspondence between the COS value and storage queue for a packet.

Available Model XG2600

Syntax show qos prioritymap [line <line>]

Options N/A
Display the relationship between packet COS values and their storage queues of all ports.

line <line>

- Display the relationship between packet COS values and their storage queues of the specified port.

Range	Model
1 to 26	XG02600

When specifying multiple port numbers, separate them with commas (,).
When specifying sequential numbers, separate them with hyphens (-). (Example: "1-8")

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display the relationship between packet COS values and their storage queues.

Execution Example

```
# show qos prioritymap line 1-5
Port Priority value : Queue, ...
---- ---------------------------------------
(1)  (2)
   1 0:1, 1,0, 2:1, 3:3, 4:4, 5:5, 6:6, 7:7
   2 0:1, 1,0, 2:1, 3:3, 4:4, 5:5, 6:7, 7:6
   3 0:1, 1,0, 2:1, 3:3, 4:4, 5:5, 6:5, 7:5
   4 0:1, 1,0, 2:1, 3:3, 4:5, 5:4, 6:6, 7:7
   5 0:1, 1,0, 2:1, 3:3, 4:4, 5:5, 6:6, 7:7
```

1) Port : Ethernet physical port number

2) Priority value : Queue
COS value of packet :Storage queue

5.32 SSH Counter, Log, Statistics, and Status Display Commands

This section explains about commands related to SSH.

5.32.1 SSH Counter, Log, Statistics, and Status Display Commands

This section explains about commands related to SSH counter, log, statistics, and status display commands.

5.32.1.1 show ssh server key

Function Display the public key for SSH host authentication.

Available Model XG0224 / XG0448 / XG2600

Syntax show ssh server key {dsa|rsa}

Options

dsa
Display the DSA public key for SSH host authentication of this device.

rsa
Display the RSA public key for SSH host authentication of this device.

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display the public key for SSH host authentication of this device.
This key is used for SSH protocol version 2 (SSH2) host authentication.
As the DSA public key encryption system or the RSA public key encryption system is used for SSH host authentication, specify either of the public key.
If the host authentication public key needs to be set in the ssh client or sftp client in advance, set the information displayed by this command.

Caution If all of the SSH-related functions are disabled by the "serverinfo ssh" and "serverinfo sftp" commands, the SSH host authentication public key is not created. Therefore, nothing is displayed.
However, if those functions are enabled and then disabled, a public key for SSH host authentication is created and displayed.

Execution Example

Display of the DSA public key

```
# show ssh server key dsa
ssh-dss AzaCJB5CpVUXI1LXjzNVo1kt/LHGhWlOleJQDj11tGeeAAAFKoNjMatP
i8JWtZhrgldtxVVmBAIAB3Nc3MAAAAAkgFa0nu7HMPdQAAAIA4sIwVzNfTpxNtjJ
Qx1gJHrDjybKeBMmpnJ/RtGTJfvZW5T/aDc/aoB7PdF+appeXx9U8FsQF+EaMNfq
P3lK2u3XAEoAzLa0JQCo6VjoDQh15YIzKFo2AVaK4lCeS3q81q8A4+jttJ0Dt0U0
rVucQoOq+BdIgaCMDuaqmJQAotGvZvZQ/RMTSh6pMh+z9DdB1DLnPNxEyt61Sftz
Vk+rjgZ29In2V7ai4yuOfIhNL61ybOrrfoZ9YQW4P9rJuDxhvn2xvZQ/RMTSh6pM
6WIwA9mlzAst/YBxbb9JcO7uPVhN8M624q8yKsQaMClW1AAAWOO+ZkaqccWLy9GU
xPksjfC+N7O22akmykT8V6iMh4+7iAIBJYE6pWpsQU5nFP9rJuDx5R/QV4Ql77od
96vNtgwv/hSseRFjyqrGxKewMb11FNjzWSAUyzW0p+GLR/mqBCFavMRl4toxEsP3
UDNRpGpFdw== root@localhost    --- (1)
#
```

1) The DSA public key for host authentication of this device

Display of the RSA public key

```
# show ssh server key rsa
ssh-rsa AA94UAATdVfYAAxsAArx3AAIF7QAsTsTwAEeKogAFAlNoAA0OAAAAj3F
AAD3C1yc2EAAAABIwAAAHsMXKAAB+shGQAHDmIABBSpjAARVYAAERAAJZ/IAAAAB
0AB9QAB+2kSY6AAUAygACvAAB3NzaA7wtAAJ/kAADRQgABwmQAThHAAUtOySgAEJ
JMBAAX4= root@localhost    --- (1)
#
```

1) The RSA public key for host authentication of this device

5.33 IGMP Snooping Counter, Log, Statistics, and Status Display and Clear Operation Commands

This section explains commands related to IGMP snooping.

5.33.1 IGMP Snooping Counter, Log, Statistics, and Status Display Commands

This section explains commands related to IGMP snooping counter, log, statistics, and status display.

5.33.1.1 show igmpsnoop brief

Function Display the brief information on IGMP snooping.

Available Model XG0224 / XG0448 / XG2600

Syntax show igmpsnoop brief

Options

N/A
Display the number of groups held by IGMP snooping.

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display IGMP snooping information in a simple format.

Execution Example

```
# show igmpsnoop brief
IGMP snoop briefing information:
(1) total registered entries: 0
```

1) The number of group address held by IGMP snooping

5.33.1.2 show igmpsnoop mrouter

Function Display the multicast router port information.

Available Model XG0224 / XG0448 / XG2600

Syntax show igmpsnoop mrouter [<vidlist>]

Options

N/A
Display information about all VLANs with the valid IGMP snooping.

<vidlist>
Specify a VID of VLAN to display the IGMP snooping information.
When specifying multiple VLANs, separate them with commas (,).
Also, when specifying the range, specify them with hyphens (-). (Example: 1-3)
The available description format is as follows:

- To specify values 1, 2, 3, 5 and 7 in the "vidlist"
  Example: 1-3, 5, 7
- To specify values 1, 3 and 5 in the "vidlist"
  Example: 1, 3, 5

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display the multicast router port information held by IGMP snooping.

Execution Example

```
# show igmpsnoop mrouter
VLAN  querier     port
----  ----------  --------
(1)   (2)         (3)
1     other(off)  1
2     other       5
3     me          5
4     me          -
```

1) VLAN ID

2) Querier operation display
   One of the following is displayed.
   me : Indicates that the port is operating as the querier.
   other : Indicates that the port is NOT operating as the querier.
   other (off) : Indicates that the port is NOT operating as the querier due to the settings.

3) Number of the multicast router connection port
   A hyphen (-) shows that no router port exists.

5.33.1.3 show igmpsnoop reporter

Function Display the multicast listener information.

Available Model XG0224 / XG0448 / XG2600

Syntax show igmpsnoop reporter [<vidlist>]

Options

N/A
Display information about all VLANs with the valid IGMP snooping.

<vidlist>
Specify a VID of VLAN to display the IGMP snooping information.
When specifying multiple VLANs, separate them with commas (,).
Also, when specifying the range, specify them with hyphens (-). (Example: 1-3)
The available description format is as follows:

- To specify values 1, 2, 3, 5 and 7 in the "vidlist"
  Example: 1-3, 5, 7
- To specify values 1, 3 and 5 in the "vidlist"
  Example: 1, 3, 5

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display the multicast listener information being held by IGMP snooping.

Execution Example

```
# show igmpsnoop reporter 1-3
IGMP Snooping statistics: VLAN 1
#sources: 0          (1)
#hosts:   4          (2)

Source/Group                    Port Reporter        Join
------------------------------- ---- --------------- --------
(3)                             (4)  (5)             (6)
0.0.0.0   /239.1.1.1            1    10.5.20.18       1:10:00
                                2    10.5.20.31       1:10:02
0.0.0.0   /239.1.1.2            3    10.5.20.22       1:10:03
0.0.0.0   /239.1.1.3            3    10.5.20.25       1:10:03
0.0.0.0   /239.1.1.10           -    -                -
```

1) The number of source address information

2) The number of registered listener information

3) Source address and multicast group address

4) Port number
   A hyphen (-) shows a group where no listener exists.

5) IP address to which the Membership-Report has been sent
   A hyphen (-) shows a group where no listener exists.

6) The elapsed time after participation in the multicast group
   If no listener exists, a hyphen (-) is shown.

5.33.1.4 show igmpsnoop statistics

Function Display the IGMP snooping statistics.

Available Model XG0224 / XG0448 / XG2600

Syntax show igmpsnoop statistics [<vidlist>]

Options

N/A
Display information about all VLANs with the valid IGMP snooping.

<vidlist>
Specify a VID of VLAN to display the IGMP snooping information.
When specifying multiple VLANs, separate them with commas (,).
Also, when specifying the range, specify them with hyphens (-). (Example: 1-3)
The available description format is as follows:

- To specify values 1, 2, 3, 5 and 7 in the "vidlist"
  Example: 1-3, 5, 7
- To specify values 1, 3 and 5 in the "vidlist"
  Example: 1, 3, 5

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display IGMP snooping statistics.

Caution The statistics are cleared if the device is restarted.

Execution Example

```
# show igmpsnoop statistics 4094
VLAN 4094                                                          ---(1)
---------------------------------------   --------------------
  IGMP V1/V2 query packet received count : 4                       ---(2)
   IGMP V1/V2 query packet ignored count : 0                       ---(3)
     IGMP V3 query packet received count : 0                       ---(4)
      IGMP V3 query packet ignored count : 0                       ---(5)
IGMP V1 membership report received count : 0                       ---(6)
IGMP V2 membership report received count : 16                      ---(7)
IGMP V3 membership report received count : 0                       ---(8)
               IGMP leave received count : 0                       ---(9)
                 membership joined count : 0                       ---(10)
                   membership left count : 0                       ---(11)
     IGMP checksum error detected count : 0                        ---(12)
        malformed packet detected count : 0                        ---(13)
  failure to register count(limit over) : 0                        ---(14)
  failure to register count(other cause) : 0                       ---(15)
```

1) VLAN ID to be displayed

2) Number of received IGMP V1 or IGMP V2 Query packets

3) Number of IGMP V1 or IGMP V2 Query packets which were ignored due to packet formatting errors or other errors

4) Number of received IGMP V3 Query packets

5) Number of IGMP V3 Query packets which were ignored due to packet formatting errors or other errors

6) Number of received IGMP V1 Membership report packets

7) Number of received IGMP V2 Membership report packets

8) Number of received IGMP V3 Membership report packets

9) Number of received IGMP Leave packets

10) Number of registration times of group address entries

11) Number of deletion times of group address entries

12) Number of header received checksum error packets of IGMP packet

13) Number of received packet-format error packets, except for checksum errors

14) Number of unsuccessful registration times due to an excess of the upper limit on the number of entries

15) Number of unsuccessful registration times due to reasons other than the excess of the upper limit on the number of entries

5.33.2 IGMP Snooping Counter, Log, Statistics, and Status Clear Commands

This section explains commands related to IGMP snooping counter, log, statistics, and status clear.

5.33.2.1 clear igmpsnoop statistics

Function Clear the IGMP snooping statistics.

Available Model XG0224 / XG0448 / XG2600

Syntax clear igmpsnoop statistics [<vidlist>]

Options

N/A
Clear the statistics of all VLANs with the valid IGMP snooping.

<vidlist>
Specify a VID of VLAN to clear the IGMP snooping statistics.
When specifying multiple VLANs, separate them with commas (,). Also, when specifying the range, specify them with hyphens (-). (Example: 1-3)
The available description format is as follows:

- To specify values 1, 2, 3, 5 and 7 in the "vidlist"
  Example: 1-3, 5, 7
- To specify values 1, 3 and 5 in the "vidlist"
  Example: 1, 3, 5

Use Mode Operation mode (admin class)
Configuration mode (admin class)

Explanation Clear IGMP snooping statistics.

Execution Example

```
# clear igmpsnoop statistics
#
```

5.33.2.2 clear igmpsnoop group

Function Clear the IGMP snooping entries.

Available Model XG0224 / XG0448 / XG2600

Syntax clear igmpsnoop group <vid> <address>

Options

<vid>
Specify an ID of VLAN with the entries to clear. If "all" is specified, all VLANs are selected.

<address>
Specify an address to clear the entry.

Use Mode Operation mode (admin class)
Configuration mode (admin class)

Explanation Clear listener information held by IGMP snooping.

Execution Example

```
# clear igmpsnoop group 2048 01:00:5e:01:81:19
#
```

Caution Specify "all" or the MAC address whose entry is to be cleared. If "all" is specified, then all group addresses other than the group address entries in the range 01:00:5e:00:00:00 - ff will be cleared. If a particular MAC address is specified, the all group address entries using the specified address will be cleared. This means that all entries with the same lower bytes in their group address will be cleared. To calculate the MAC address, take the group address (A.B.C.D), convert the lower 23bits (B'.C.D) to 2-digit hexadecimal numbers, and prepend "01:00:5e" to get "01:00:5e:B':C:D".
For example, if you would like to clear 224.129.1.1 (0e.81.01.01), please set 01:00:5e:01:01:01 as MAC address.
You can't clear 01:00:5e:00:00:01-01:00:5e:00:00:ff for 224.0.0.0-224.0.0.255.

5.34 Loopdetection Counter, Log, Statistics, and Status Display and Clear Operation Commands

This section explains about commands related to Loopdetection.

5.34.1 Loopdetection Counter, Log, Statistics, and Status Display Commands

5.34.1.1 show loopdetect

Function Displays loop detection status.

Available Model XG0224 / XG0448 / XG2600

Syntax show loopdetect

Options N/A

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Displays loop detection status.

Execution Example

XG0224 example:

```
# show loopdetect

 interval : 10s                    ---(1)
 recovery : 60                     ---(2)

port    status                    count
----- ---------------------- ------------
(3)    (4)                        (5)
1      undetected                 -
2      undetected                 -
3      undetected                 -
4      undetected                 -
5      undetected                 -
6      undetected                 -
7      undetected                 -
8      detected(portblock)        0/60
9      detected(portblock)        0/60
10     undetected                 -
11     undetected                 -
12     undetected                 -
13     undetected                 -
14     undetected                 -
15     undetected                 -
16     undetected                 -
```

1) Frame transmission interval for loop detection.

2) Recovery monitor count for loop detection status.

3) Ethernet port number.

4) Loop detection status

undetected : Loop has not been detected.

detected : Loop has been detected (the loop detection frame sent by this port has been received by a port on this device).
*If the port has been disabled, "(portdisable)" is displayed.
*If the port has been blocked, "(portblock)" is displayed.

\- : Loop detection on an invalid port.

5) Monitor status during loop detection

The monitor status after a loop has been detected is displayed as follows: (consecutive number of times no loop has been detected) / (recovery monitor count)

5.35 AAA Status Display and Clear Operation Commands

This section explains about commands related to AAA status display.

5.35.1 AAA Status Display Commands

This section explains commands related to AAA status display.

5.35.1.1 show aaa radius client server-info

Function Display the RADIUS server information.

Available Model XG0224 / XG0448 / XG2600

Syntax show aaa radius client server-info [group <group_id>]

Options

N/A
Display all server information of the AAA group.

group <group_id>
Display the server information of the specified group.

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display the RADIUS server status.

Execution Example

```
# show aaa radius client server-info group 0
[aaa group 0]
Type No.  Server Address                      Port  Pri  State  recover
---- ---- ---------------------------------- ----  ---  -----  -------
 (1)  (2)    (3)                              (4)   (5)   (6)    (7)
Auth   0  192.168.0.101                      1812   10  dead   293/300
Auth   1  192.168.0.100                      1812   20  alive     -
Acct   0  192.168.0.100                      1813    0  alive     -
```

1) Server type
   Auth : Authentication server
   Acct : Accounting server

2) Server definition number

3) Server IP address

4) Server port number

5) Priority

6) Server status
   alive : Available
   dead : Unavailable due to failure of response

7) Unavailable due to failure of response
   Displayed with a hyphen (-) when server status is usable.

5.36 NETTIME (time/sntp) Server and Client Statistics Display and Clear Operation Commands

This section explains about commands related to NETTIME statistics information.

5.36.1 NETTIME (time/sntp) Statistics Display Commands

This section explains commands related to NETTIME (time/sntp) statistics information display.

5.36.1.1 show nettime status

Function	Display the status with the NETTIME (time/sntp) function.
Available Model	XG0224 / XG0448 / XG2600
Syntax	show nettime status
Options	N/A
Use Mode	Operation mode (user class/admin class) Configuration mode (admin class)
Explanation	Display the NETTIME (time/sntp) status.
Caution	Use of the "rdate" command is not reflected in the display of NETTIME (time/sntp) status.

Execution Example

```
# show nettime status
Server Status  Server Address            Protocol  Last Update Time
  (1)              (2)                     (3)          (4)
Active       172.16.0.1                  SNTP UDP   Wed Jan  5 14:51:45 2011
```

1) status of the time information server
   Active : The switch clock has been automatically synchronized.
   Inactive : The switch clock has not been automatically synchronized.

2) IP address of the time information server
   The IP address of the time information server is displayed.
   When Server Status is Inactive, "-" is displayed.

3) Time protocol
   TIME TCP : TIME protocol
   TIME TCP6 : TIME protocol (IPv6)
   SNTP UDP : simple NTP protocol
   SNTP UDP6 : simple NTP protocol (IPv6)
   When Server Status is Inactive, "-" is displayed.

4) Last update time
   The time recorded when the swtich clock was last synchronized.

5.36.1.2 show nettime statistics

Function Display the statistics with the NETTIME (time/sntp) function.

Available Model XG0224 / XG0448 / XG2600

Syntax show nettime statistics [<mode> [<protocol>]]

Options

N/A
Display all the currently operating device information.

<mode>
Specify the display mode.

- server
  Display the information of the server function (the clock data provider).
- client
  Display the information of the client function (the clock data receiver).

<protocol>
Specify the protocol to display.

- time
  Display the TIME protocol information.
- sntp
  Display the simple NTP protocol information.

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display the NETTIME (time/sntp) statistics.

Caution The time acquisition from this product by "rdate" command is not included in the NETTIME (time/sntp) statistics.

Execution Example

The following gives an example of a command execution with each option.

<mode> <protocol>
Only the active protocol in the specified mode is displayed.

```
# show nettime statistics client time
NETTIME client statistics information:
[time tcp]
           0  request transmission error
           0  transmitted synchronized request
           0  received response
           0    received invalid packet
           0      received clock not synchronized
           0  local clock updated
#
```

No option

If options are omitted, all NETTIME information running on this device is displayed.

```
# show nettime statistics
NETTIME server statistics information:
 [sntp udp]
           0 received synchronized request                   --- (1)
           0   received invalid packet                      --- (2)
           0 request discard (clock not synchronized)        --- (3)
           0 response transmission error                     --- (4)
           0 transmitted response                            --- (5)
 [sntp udp6]
           0 received synchronized request
           0   received invalid packet
           0 request discard (clock not synchronized)
           0 response transmission error
           0 transmitted response
 [time tcp]
           0 received synchronized request
           0   received invalid packet
           0 request discard (clock not synchronized)
           0 response transmission error
           0 transmitted response
 [time udp]
           0 received synchronized request
           0   received invalid packet
           0 request discard (clock not synchronized)
           0 response transmission error
           0 transmitted response
[time tcp6]
           0 received synchronized request
           0   received invalid packet
           0 request discard (clock not synchronized)
           0 response transmission error
           0 transmitted response
[time udp6]
           0 received synchronized request
           0   received invalid packet
           0 request discard (clock not synchronized)
           0 response transmission error
           0 transmitted response
NETTIME client statistics information:
 [sntp udp]
           0 request transmission error                      --- (6)
           0 transmitted synchronized request                --- (7)
           0 received response                               --- (8)
           0   received invalid packet                      --- (9)
           0     received clock not synchronized             --- (10)
           0 local clock updated                             --- (11)
[sntp udp6]
           0 request transmission error
           0 transmitted synchronized request
           0 received response
           0   received invalid packet
           0     received clock not synchronized
           0 local clock updated
[time tcp]
           0 request transmission error
           1 transmitted synchronized request
           1 received response
           0   received invalid packet
           0     received clock not synchronized
           1 local clock updated
[time tcp6]
           0 request transmission error
           0 transmitted synchronized request
           0 received response
           0   received invalid packet
           0     received clock not synchronized
           0 local clock updated
#
```

- server

1) Total number of received synchronized request packets
2) Total number of invalid packets among the synchronized request packets of Item (1)
3) Total number of discarded synchronized request packets due to the out of synchronized status of this device
4) Total number of unsuccessful response transmission packets
5) Total number of response transmission packets

- client

6) Total number of unsuccessfully transmitted synchronized request packets
7) Total number of forwarded synchronized request packets
8) Total number of response packets received from the server
9) Total number of invalid packets among the response packets of Item (8)
10) Total number of invalid response packets among those of Item (9) due to the out of synchronized status of the server
11) Total number of clock updating times of this device by response packets

5.36.2 NETTIME (time/sntp) Statistics Clear Commands

This section explains commands related to NETTIME (time/sntp) statistics information display.

5.36.2.1 clear nettime statistics

Function Clear the NETTIME (time/sntp) statistics.

Available Model XG0224 / XG0448 / XG2600

Syntax clear nettime statistics [<mode>]

Options

N/A
Clear all NETTIME (time/sntp) statistics.

<mode>
Specify the mode to clear.

- server
  Clear the server function statistics.
- client
  Clear the client function statistics.

Use Mode Operation mode (admin class)
Configuration mode (admin class)

Explanation Clear the NETTIME (time/sntp) statistics.

Execution Example

```
# clear nettime statistics
#
```

5.37 ProxyDNS Statistics Display and Clear Operation Commands

This section explains commands related to proxyDNS statistics information.

5.37.1 ProxyDNS Statistics Display Commands

This section explains commands related to proxyDNS statistics information display.

5.37.1.1 show proxydns statistics

Function Display the statistics with Proxy DNS function.

Available Model XG0224 / XG0448 / XG2600

Syntax show proxydns statistics

Options N/A

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display the proxy DNS statistics.

Execution Example

```
# show proxydns statistics
ProxyDNS statistics information:
         0 Total request packets                                --- (1)
         0   Send Query packets                                 --- (2)
         0   Send Query packets Error                           --- (3)
         0 Total reply packets                                  --- (4)
         0   Send Reply packets                                 --- (5)
         0   Send Reply packets Error                           --- (6)
         0   Send Error Reply packets                           --- (7)
         0   Send Error Reply packets Error                     --- (8)
         0 Total discard packets                                --- (9)
         0   QTYPE Unknown Char                                 --- (10)
         0   QNAME Filter                                       --- (11)
         0   Short header                                       --- (12)
#
```

1) Total number of transmitted DNS request messages
2) Total number of successful transmitted DNS inquiry messages
3) Total number of unsuccessful transmitted DNS inquiry messages
4) Total number of transmitted DNS response messages
5) Total number of successful transmitted DNS response messages
6) Total number of unsuccessful transmitted DNS response messages
7) Total number of successful transmitted DNS error response messages
8) Total number of unsuccessful transmitted DNS error response messages
9) Total number of discarded packets
10) Number of packets discarded due to invalid character codes

11) Number of packets discarded by the URL filtering function

12) Number of packets discarded due to insufficient header length

5.37.2 ProxyDNS Statistics Clear Commands

This section explains commands related to proxyDNS statistics information clear.

5.37.2.1 clear proxydns statistics

Function Clear the ProxyDNS statistics.

Available Model XG0224 / XG0448 / XG2600

Syntax clear proxydns statistics

Options N/A

Use Mode Operation mode (admin class)
Configuration mode (admin class)

Explanation Clear the proxy DNS statistics.

Execution Example

```
# clear proxydns statistics
#
```

5.38 SNMP Statistics Display and Clear Operation Commands

This section explains about commands related to SNMP statistic information.

5.38.1 SNMP Statistics Display Commands

This section explains commands related to the SNMP statistic information display.

5.38.1.1 show snmp statistics

Function Display the statistics with SNMP function.

Available Model XG0224 / XG0448 / XG2600

Syntax show snmp statistics

Options N/A

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display the SNMP statistics.

Execution Example

```
# show snmp statistics
SNMP statistics information:
           0 Input Packets                                --- (1)
           0 Output Packets                               --- (2)
           0 Input Bad Versions                           --- (3)
           0 Input Bad Community Names                    --- (4)
           0 Input Bad Community Uses                     --- (5)
           0 Input ASN Parse Errors                       --- (6)
           0 Input Too Bigs                               --- (7)
           0 Input No Such Names                          --- (8)
           0 Input Bad Values                             --- (9)
           0 Input Read Only                              --- (10)
           0 Input Gen Errors                             --- (11)
           0 Input Total Request Vars                     --- (12)
           0 Input Total Set Vars                         --- (13)
           0 Input Get Requests                           --- (14)
           0 Input Get Next                               --- (15)
           0 Input Set Requests                           --- (16)
           0 Input Get Responses                          --- (17)
           0 Input Traps                                  --- (18)
           0 Output Too Bigs                              --- (19)
           0 Output No Such Names                         --- (20)
           0 Output Bad Values                            --- (21)
           0 Output Gen Errors                            --- (22)
           0 Output Get Requests                          --- (23)
           0 Output Get Next                              --- (24)
           0 Output Set Requests                          --- (25)
           0 Output Get Responses                         --- (26)
           0 Output Traps                                 --- (27)
#
```

1) Total number of SNMP received messages

2) Total number of SNMP sent messages

3) Total number of unsupported SNMP received messages

4) Total number of SNMP received messages of the unused community
5) Total number of received messages that indicate the operations not allowed in the community
6) Total number of received messages with ASN.1 errors
7) Total number of receive PDU packets with the tooBig error status
8) Total number of receive PDU packets with the noSuchName error status
9) Total number of receive PDU packets with the badValue error status
10) Total number of receive PDU packets with the readOnly error status
11) Total number of receive PDU packets with the genErr error status
12) Total number of successfully collected MIB objects
13) Total number of successfully set MIB objects
14) Total number of received GetRequestPDU packets
15) Total number of received GetNextRequestPDU packets
16) Total number of received SetRequestPDU packets
17) Total number of received GetResponsePDU packets
18) Total number of received trap PDU packets
19) Total number of sent PDU packets with the tooBig error status
20) Total number of sent PDU packets with the noSuchNam error status
21) Total number of sent PDU packets with the badValue error status
22) Total number of sent PDU packets with the genErr error status
23) Total number of sent GetRequestPDU packets
24) Total number of sent GetNextRequestPDU packets
25) Total number of sent SetRequestPDU packets
26) Total number of sent GetResponsePDU packets
27) Total number of sent trap PDU packets

5.38.2 SNMP Statistics Clear Commands

This section explains commands related to the SNMP statistic clearing.

5.38.2.1 clear snmp statistics

Function Clear the SNMP statistics.

Available Model XG0224 / XG0448 / XG2600

Syntax clear snmp statistics

Options N/A

Use Mode Operation mode (admin class)
Configuration mode (admin class)

Explanation Clear the SNMP statistics.

Execution Example

```
# clear snmp statistics
#
```

5.39 Ethernet L3 Monitor Function Counter, Log, Statistics, and Status Display and Clear Operation Commands

This section explains about commands related to Ethernet L3 monitor function.

5.39.1 Ethernet L3 Monitor Function Counter, Log, Statistics, and Status Display Commands

This section explains about commands related to Ethernet L3 monitor function counter, log, statistics, and status display.

5.39.1.1 show icmpwatch

Function Display various information collected by the Ethernet L3 monitor function.

Available Model XG0224 / XG0448 / XG2600

Syntax show icmpwatch

Options N/A

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display the monitoring information provided by the Ethernet L3 monitor function.

Execution Example

```
# show icmpwatch
[PORT-1]                                                    ---(1)
icmpwatch status      : Normal                              ---(2)
port type             : Backup (group1, master)             ---(3)
destination address   : 192.168.2.1                        ---(4)

[PORT-2]
icmpwatch status      : Disable
port type             : Backup (group1, backup)
destination address   : 192.168.2.1

[PORT-4]
icmpwatch status      : Error
port type             : Normal
destination address   : 10.1.1.10

[LA GROUP-1]                                                ---(5)
icmpwatch status      : Normal
port type             : Normal
destination address   : 172.16.1.50
```

1) Ethernet port number

2) Monitoring status
   Normal: Indicates that the monitoring is normal.
   Error: Indicates that the monitoring is abnormal due to failure detection.
   Disable: Indicates that the monitoring function is disabled.

3) Port type
   Normal: Indicates that the port is used as the normal port.
   Backup: Indicates that the port is used as the backup port.
   The group number and the port type, master or backup, are displayed.

4) The address to be monitored

5) Link aggregation group number

5.39.1.2 show icmpwatch statistics

Function Display the statistics of Ethernet L3 monitor function.

Available Model XG0224 / XG0448 / XG2600

Syntax show icmpwatch statistics

Options

N/A
Display all statistics.

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display the statistics provided by the Ethernet L3 monitor function.
Information about the Ethernet ports where the Ethernet L3 monitor function is enabled, and the link aggregation group is displayed.

Execution Example

```
# show icmpwatch statistics
[PORT-1]                                                    ---(1)
        20 transmitted icmp echo request packets            ---(2)
         0 transmitted icmp echo request packets error      ---(3)
        19 received icmp echo reply packets                 ---(4)
         0 received error                                   ---(5)
         5 retransmitted icmp echo request packets          ---(6)
         1 icmpwatch timeout                                ---(7)

[PORT-3]
        37 transmitted icmp echo request packets
         0 transmitted icmp echo request packets error
        37 received icmp echo reply packets
         0 received error
         0 retransmitted icmp echo request packets
         0 icmpwatch timeout

[LA GROUP-1]                                                ---(8)
        14 transmitted icmp echo request packets
         1 transmitted icmp echo request packets error
        14 received icmp echo reply packets
         0 received error
         0 retransmitted icmp echo request packets
         0 icmpwatch timeout
#
```

1) Ethernet port number

2) Number of sent ICMP ECHO requests

3) Number of sent ICMP ECHO request errors

4) Number of received ICMP ECHO replies

5) Number of received errors

6) Number of retransmitted ICMP ECHO packets

7) The number of Timeouts

8) Link aggregation group number

5.39.2 Ethernet L3 Monitor Function Counter, Log, Statistics, and Status Clear Commands

This section explains about commands related to Ether L3 monitor function counter, log, statistics, and status clearing.

5.39.2.1 clear icmpwatch statistics

Function Clear the statistics of Ethernet L3 monitor function.

Available Model XG0224 / XG0448 / XG2600

Syntax clear icmpwatch statistics

Options N/A

Use Mode Operation mode (admin class)
Configuration mode (admin class)

Explanation Clear the statistics provided by the Ethernet L3 monitor function.

Execution Example

```
# clear icmpwatch statistics
#
```

5.40 Login Information Operations and Display Commands

This section explains about commands related to Login information.

5.40.1 Login Information Display Commands

This section explains the display command related to Login information.

5.40.1.1 show users

Function Display the login information.

Available Model XG0224 / XG0448 / XG2600

Syntax show users [all]

Options

N/A
Display current login user's information.

all
Display login information about all the lines.

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display login information.

Execution Example

```
XG2600# show users
U No  Line       User Name       Class Remote Host        Since       Idle
- --  ---------  --------------- ----- ------------------ ----------- ---------
(1)(2)  (3)        (4)            (5)     (6)              (7)          (8)
 *  1  console 0  admin           admin -                  01/20.10:28   0:00:00
    2  vty 0      admin           admin 192.168.10.100     01/20.11:58   0:00:09
```

```
XG2600# show users all
U No  Line       User Name       Class Remote Host        Since       Idle
- --  ---------  --------------- ----- ------------------ ----------- ---------
 *  1  console 0  admin           admin -                  01/20.10:28   0:00:00
    2  vty 0      admin           admin 192.168.10.100     01/20.11:58   0:00:58
    3  vty 1      -               -     -                  01/20.10:26   0:00:00
    4  vty 2      -               -     -                  01/20.10:26   0:00:00
    5  vty 3      -               -     -                  01/20.10:26   0:00:00
    6  ftp 0      -               -     -                  01/20.10:26   0:00:00
    7  ssh 0      -               -     -                  01/20.10:26   0:00:00
    8  sftp 0     -               -     -                  01/20.10:26   0:00:00
    9  http 0     -               -     -                  01/20.10:26   0:00:00
```

1) The line indicator
   *: Indicating the current line(executing this command).

2) The Login line number

3) The Login line name

4) The user name
   If the line isn't used, "-" is displayed.

5) The user class
   If the line isn't used, "-" is displayed.

6) The Remote Host
   The Host Ip address that the user login from.

7) The date of login or logout.

8) The idle time for the line.

5.40.2 Login Information Operation Commands

This section explains the operation command related to Login information.

5.40.2.1 clear line

Function Logout user forcibly.

Available Model XG0224 / XG0448 / XG2600

Syntax clear line <line_number>
clear line <line_name> <interface_number>

Options

<line_number>
Specify the line number to logout.
The line number is displayed by "show users" command.

<line_name>
Specify the name of the line to logout.
- Console
- vty
- ftp
- ssh
- sftp
- http

<interface_number>
Specify the interface number of the line.
If you'd like to logout the user via vty2, please specify "vty" as <line_name> and "2" as <interface_number>.

Use Mode Operation mode (admin class)
Configuration mode (admin class)

Explanation Logout user forcibly.

Execution Example

```
XG2600# clear line 2
```

```
XG2600# clear line vty 2
```

5.41 Socket Status Display Commands

This section explains about commands related to socket status display.

5.41.1 Socket Status Display Commands

This section explains commands related to socket status display.

5.41.1.1 show socket

Function Display the socket status.

Available Model XG0224 / XG0448 / XG2600

Syntax show socket

Options

N/A
Display the status of all sockets.

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display the status of sockets used by application layer software.

Execution Example

```
# show socket
Active sockets for IPv4 (including servers)
Proto Recv-Q Send-Q  Local Address          Foreign Address      State
----- ------ ------  -------------          ---------------      -------
 (1)   (2)    (3)    (4)                    (5)                  (6)
tcp        0      0  *.22                   *.*                   LISTEN
tcp        0      0  127.0.0.1.2600         127.0.0.1.1025        ESTABLISHED
tcp        0      0  127.0.0.1.1025         127.0.0.1.2600        ESTABLISHED
tcp        0      0  *.37                   *.*                   LISTEN
tcp        0      0  *.21                   *.*                   LISTEN
tcp        0      0  *.80                   *.*                   LISTEN
tcp        0      0  *.23                   *.*                   LISTEN
tcp        0      0  127.0.0.1.61225        *.*                   LISTEN
tcp        0      0  127.0.0.1.2600         *.*                   LISTEN
udp        0      0  127.0.0.1.2611         *.*
udp        0      0  *.68                   *.*
udp        0      0  *.68                   *.*
udp        0      0  *.68                   *.*
udp        0      0  *.68                   *.*
udp        0      0  *.68                   *.*
udp        0      0  *.68                   *.*
udp        0      0  *.68                   *.*
udp        0      0  *.68                   *.*
udp        0      0  *.68                   *.*
udp        0      0  *.68                   *.*
udp        0      0  *.68                   *.*
udp        0      0  *.68                   *.*
udp        0      0  *.68                   *.*
udp        0      0  *.68                   *.*
udp        0      0  *.68                   *.*
```

(To be continued)

(Continued)

```
udp        0      0  *.68                   *.*
udp        0      0  *.68                   *.*
udp        0      0  *.68                   *.*
udp        0      0  *.68                   *.*
udp        0      0  *.68                   *.*
udp        0      0  *.67                   *.*
udp        0      0  *.67                   *.*
udp        0      0  *.67                   *.*
udp        0      0  *.67                   *.*
udp        0      0  *.67                   *.*
udp        0      0  *.67                   *.*
udp        0      0  *.67                   *.*
udp        0      0  *.67                   *.*
udp        0      0  *.67                   *.*
udp        0      0  *.67                   *.*
udp        0      0  *.67                   *.*
udp        0      0  *.67                   *.*
udp        0      0  *.67                   *.*
udp        0      0  *.67                   *.*
udp        0      0  *.67                   *.*
udp        0      0  127.0.0.1.2645         *.*
udp        0      0  *.67                   *.*
udp        0      0  *.53                   *.*
udp        0      0  *.67                   *.*
udp        0      0  127.0.0.1.52000        *.*
udp        0      0  *.67                   *.*
udp        0      0  *.67                   *.*
udp        0      0  127.0.0.1.2642         *.*
udp        0      0  *.37                   *.*
udp        0      0  *.67                   *.*
udp        0      0  127.0.0.1.2639         *.*
udp        0      0  127.0.0.1.2638         *.*
udp        0      0  127.0.0.1.161          *.*
udp        0      0  127.0.0.1.8900         *.*
udp        0      0  127.0.0.1.2631         *.*
udp        0      0  *.123                  *.*
udp        0      0  *.67                   *.*
udp        0      0  127.0.0.1.2633         *.*
udp        0      0  127.0.0.1.2632         *.*
udp        0      0  127.0.0.1.2634         *.*
udp        0      0  127.0.0.1.2635         *.*
udp        0      0  127.0.0.1.2637         *.*
udp        0      0  *.500                  *.*
udp        0      0  127.0.0.1.2628         *.*
udp        0      0  127.0.0.1.2629         *.*
udp        0      0  127.0.0.1.2621         *.*
udp        0      0  127.0.0.1.2623         *.*
udp        0      0  127.0.0.1.2627         *.*
udp        0      0  127.0.0.1.2624         *.*
udp        0      0  127.0.0.1.2625         *.*
udp        0      0  127.0.0.1.2622         *.*
#
```

1) Protocol
   tcp or udp is displayed.

2) Amount of queued data awaiting readout
   The amount of data awaiting readout by the application layer software is displayed among the data received by the device.

3) Amount of data transmission awaiting acknowledgment
   The amount of data, whose transmission has not been acknowledged yet, is displayed among the data sent from application layer software.

4) Local address and port number
   The local address and its port number are displayed. If omitted, an asterisk (*) is displayed instead.

5) Remote address and port number
The remote address and its port number are displayed. If omitted, an asterisk (*) is displayed instead.

6) Internal status of protocol
For TCP protocol, one of the following is displayed.
CLOSED : No session is established yet.
CLOSE_WAIT : After the session was released, the close processing by the application layer software has been awaited.
CLOSING : After the close processing was requested by application layer software, and FIN was exchanged, an ACK reception has been awaited.
ESTABLISHED: The session has been established.
FIN_WAIT_1 : After a FIN was sent, an ACK reception has been awaited.
FIN_WAIT_2 : A FIN reception has been awaited.
LAST_ACK : After a FIN was exchanged, an ACK reception has been awaited.
LISTEN : A session can be received.
SYN_RCVD : After a SYN-ACK was sent, an ACK reception has been awaited.
SYN_SENT : After a SYN was sent, an SYN-ACK reception has been awaited.
TIME_WAIT : Holding after release of session

5.42 Trace Show and Clear Operation Commands

This section explains about commands related to trace information.

5.42.1 Trace Show Commands

This section explains about commands related to trace show.

5.42.1.1 show trace ssh

Function Show the information traced by the SSH server function.

Available Model XG0224 / XG0448 / XG2600

Syntax show trace ssh

Options N/A

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Display the trace information of SSH server function.

Caution The trace information of SSH server function is cleared when this device is restarted.

Execution Example

```
# show trace ssh
[1] sshd        Sat Jan 15 14:34:37 2011
--- ----        ------------------------
(1)  (2)                    (3)
This platform does not support both privilege separation and compression
------------------------------------------------------------------------
                            (4)

[2] sshd        Sat Jan 15 14:34:37 2011
        Compression disabled
[3] sshd        Sat Jan 15 14:34:37 2011
        info1: sshd version OpenSSH_3.9p1
[4] sshd        Sat Jan 15 14:34:37 2011
        info1: private host key: #0 type 0 RSA1
[5] sshd        Sat Jan 15 14:34:37 2011
        info1: read PEM private key done: type RSA
[6] sshd        Sat Jan 15 14:34:37 2011
        info1: private host key: #1 type 1 RSA
[7] sshd        Sat Jan 15 14:34:37 2011
        info1: read PEM private key done: type DSA
[8] sshd        Sat Jan 15 14:34:37 2011
        info1: private host key: #2 type 2 DSA
[9] sshd        Sat Jan 15 14:34:37 2011
        info1: Bind to port 22 on 0.0.0.0.
[10] sshd       Sat Jan 15 14:34:37 2011
        Server listening on 0.0.0.0 port 22.
[11] sshd       Sat Jan 15 14:34:37 2011
        info1: Bind to port 22 on ::.
[12] sshd       Sat Jan 15 14:34:37 2011
        Server listening on :: port 22.
[13] sshd       Sat Jan 15 14:34:37 2011
        Generating 768 bit RSA key.
[14] sshd       Sat Jan 15 14:34:38 2011
        RSA key generation complete.
```

1) Trace number
A decimal trace number is displayed.

2) Thread name
   The thread name is displayed.

3) Trace dump time
   The trace dump time is displayed.

4) Trace information
   The trace information is displayed.

5.42.2 Trace Clear Commands

This section explains about commands related to trace clear.

5.42.2.1 clear trace ssh

Function Clear the information traced by the SSH server function.

Available Model XG0224 / XG0448 / XG2600

Syntax clear trace ssh

Options N/A

Use Mode Operation mode (admin class)
Configuration mode (admin class)

Explanation Clear the trace information of SSH server function.

Caution The trace information of SSH server function is cleared when this device is restarted.

Execution Example

```
# clear trace ssh
#
```

5.43 Ethernet Port Control Commands

This section explains about commands related to Ethernet port control.

5.43.1 Ethernet Port Control Commands

This section explains commands related to Ethernet port control.

5.43.1.1 offline

Function Offline the Ethernet ports.

Available Model XG0224 / XG0448 / XG2600

Syntax offline ether [<port>]

Options

ether
Offline all ports (linkdown).

ether <port>
Offline the specified ports (linkdown).
When setting multiple port numbers, separate them with commas (,).
When setting sequential numbers, separate them with hyphens (-). (Example: "1-8")

Range	Model
1 to 26	XG0224
1 to 52	XG0448
1 to 26, m1	XG2600

Use Mode Operation mode (admin class)
Configuration mode (admin class)

Explanation Disconnect or place the port offline for communication.

Execution Example

```
# offline ether 1
#
```

5.43.1.2 online

Function Execute connecting or unblocking.

Available Model XG0224 / XG0448 / XG2600

Syntax online ether [<port>]

Options

ether
Online all ports.

ether <port>
Online the specified ports.
When setting multiple port numbers, separate them with commas (,).
When setting sequential numbers, separate them with hyphens (-). (Example: "1-8")

Range	Model
1 to 26	XG0224
1 to 52	XG0448
1 to 26, m1	XG2600

Use Mode Operation mode (admin class)
Configuration mode (admin class)

Explanation Connect or place the port online.

Execution Example

```
# online ether 1
#
```

5.44 RADIUS Control Commands

This section explains commands related to RADIUS control.

5.44.1 RADIUS Control Commands

This section explains RADIUS control commands.

5.44.1.1 radius recovery

Function Recover the RADIUS server.

Available Model XG0224 / XG0448 / XG2600

Syntax radius recovery group <group_id> auth <number>

Options

<group_id>

- Group ID
  Specify the ID of AAA group to be applied by the command.

auth <number>

- Authentication server definition number
  Specify the definition number of the authentication server to be applied by the command.

Use Mode Operation mode (admin class)
Configuration mode (admin class)

Explanation The RADIUS server can be recovered manually from dead state to alive state.
Even the RADIUS server recovers from dead state, server remains dead when it cannot communicate with the RADIUS server.

Execution Example

```
# radius recovery group 1 auth 2
#
```

5.45 USB Port Control Commands

This section explains about commands related to USB Port Control Commands.

5.45.1 USB Port Control Commands

5.45.1.1 usbctl

Function Disables or enables USB ports.

Available Model XG0224 / XG0448 / XG2600

Syntax usbctl <mode>

Options

<mode>

- enable
  Enable USB port.
- disable
  Disable USB port.

Use Mode Operation mode (admin class)
Configuration mode (admin class)

Explanation Enables/disables USB ports.
When enabled, if overcurrent status is detected, recommences supply of electricity and clears overcurrent detection status.
When disabled, connected USB memory will appear to be disconnected in order to cease supply of electricity.

Execution Example

```
# usbctl enable
#
```

5.46 I’m here Commands

This section explains about "I’m here" commands.

5.46.1 I’m here Commands

5.46.1.1 iamhere

Function Blink the READY LED and the CHECK LED alternately.

Available Model XG0224 / XG0448 / XG2600

Syntax iamhere <mode> [<time>]

Options

<mode>

- on
  Blink the READY LED and the CHECK LED alternately.
  - [<time>]
    Specify the LED blinking time (1s-86400s,1m-1440m,1h-24h,1d).
    The unit shall be d (day), h (hour), m (minute), or s (second).
- off
  Stop blinking.

Use Mode Operation mode (admin class)
Configuration mode (admin class)

Explanation Blink the READY LED and the CHECK LED alternately. This allows visually locating a switch quickly within a rack or series of racks.

During blinking, the following LEDs are turned off:

XG2600
STATUS LED, ERROR LED, FLASH LED, FAN LED.

XG0224/XG0448
ERROR LED, FLASH LED

Execution Example

```
# iamhere 0n 30m
```

5.47 Other Commands

This section explains commands not previously covered.

5.47.1 Other Commands

This section explains other commands.

5.47.1.1 ping

Function Sends ICMP echo request packets.

Available Model XG0224 / XG0448 / XG2600

Syntax
ping <ip_address> [source <ip_address>] [repeat [<count>]] [size <dec>] [tos <hex>] [ttl <dec>] [timeout <dec>] [df]
ping <host_name> [{v4|v6}] [source <ip_address>] [repeat [<count>]] [size <dec>] [tos <hex>] [ttl <dec>] [timeout <dec>] [df]

Options

<ip_address>

- Target IP address
  Specifies the target IPv4 or IPv6 address.
  If specifying a link-local IPv6 address, append "%<interface>" to the address, specifying which interface to use. For example: "fe80::1%lan0"
  Either <ip_address> or <host_name> must be specified.

<host_name>

- Target host name
  Specifies the target host name.
  If specifying a host name, the host name must be registered in the host database or the switch must have access to a DNS server.
  Either <ip_address> or <host_name> must be specified.

{v4|v6}

- Specifies the IP version of the target host name.
  When specifying the <host_name> parameter, this option specifies the version of the IP address that the target <host_name> resolves to. Default is v4. If the version of the resolved IP address does not match the specified version an error will occur.

source <ip_address>

- Source IP address
  Specifies the source IP address. Addresses not defined on the switch cannot be specified.
  If the version does not match with the target IP address an error will occur.

repeat [<count>]

- Number of times to repeat
  Specifies the number of times to repeat expressed as a base 10 value in the range of 0 to 65535. Default is 0.

size <dec>

- Data size
  Specifies the length (in bytes) of the ICMP data to send as a base 10 value in the range of 46 to 9600.
  Default is 46 bytes.

tos <hex>

- TOS value
  Specifies the TOS value as a hexadecimal value in the range of 0x00 to 0xff. Default is 0x00.
  Only valid for IPv4.

ttl <dec>

- TTL value
  Specifies the TTL value as a decimal value in the range of 0 to 255. Default is 128 for IPv4, 64 for IPv6.

timeout <dec>

- Time to wait for response
  Specifies the time to wait for a response (in seconds) as a base 10 value in the range of 1 to 300.
  Default is 20 seconds.

df

- Don't fragment
  Sets the Don't Fragment bit on the packets to be sent so they won't be fragmented en route.
  Only valid for IPv4.

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation Sends an ICMP ECHO_REQUEST to the specified host (IP address or host name), and confirms receipt of an ICMP ECHO_RESPONSE.

Execution Example

(a) Without options (only the IP address is specified)

```
# ping 192.168.1.1
192.168.1.1 is alive.
#
```

(b) Host name specified

```
# ping jp.fujitsu.com
192.168.1.2 is alive.
#
```

(c) Host name specified (IPv6)

```
# ping jp.fujitsu.com v6
fe80:::fffe:c100:e00:5555:80c2 is alive.
#
```

(b) Repeat (3 times specified)

```
# ping 192.168.1.1 repeat 3
PING 192.168.1.1: 56 data bytes.
64 bytes from 192.168.1.1: icmp_seq=0 ttl=255 time=0.768 ms
64 bytes from 192.168.1.1: icmp_seq=1 ttl=255 time=0.736 ms
64 bytes from 192.168.1.1: icmp_seq=2 ttl=255 time=0.736 ms

----192.168.1.1 PING Statistics----
3 packets transmitted, 3 packets received, 0% packet loss
round-trip (ms)  min/ave/max = 0.736/0.746/0.768
#
```

*When specifying options, do so in the order in which they appear in the syntax.

5.47.1.2 traceroute

Function Displays network route.

Available Model XG0224 / XG0448 / XG2600

Syntax traceroute <ip_address> [source <src_ip_address>] [size <data_size>] [timeout <timeout>] [mpls] [df]

Syntax traceroute <host_name> [{v4 | v6}] [source <src_ip_address>] [size <data_size>] [timeout <timeout>] [mpls] [df]

Options

<ip_address>

- Target IP address
  Specifies the target IPv4 or IPv6 address.
  Either <ip_address> or <host_name> must be specified.

<host_name>

- Target host name
  Specifies the target host name.
  If specifying a host name, the host name must be registered in the host database or the switch must have access to a DNS server.
  Either <ip_address> or <host_name> must be specified.

{ v4 | v6 }

- Specifies the IP version of the target host name.
  When specifying the <host_name> parameter, this option specifies the version of the IP address that the target <host_name> resolves to. Default is v4. If the version of the resolved IP address does not match the specified version an error will occur.

source <src_ip_address>

- Source IP address
  Specifies the source IP address. Addresses not defined on the switch cannot be specified.
  If the version does not match with the target IP address an error will occur.

size <data_size>

- Data size
  Specifies the length (in bytes) of the packet to be sent, including the IP header, as a base 10 value in the range of 46 to 9600. Default is 46 bytes.
  If the target IP is an IPv6 address, or if the target host name's IP version is specified as IPv6, values in the range of 46 to 59 will automatically be read as 60.

timeout <timeout>

- Time to wait for response
  Specifies the time to wait for a response (in seconds) as a base 10 value in the range of 1-300.
  Default is 20 seconds.

df

- Don't fragment
  Sets the Don't Fragment bit on the packets to be sent so they won't be fragmented en route.

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation

Displays network route.
Displays the route to the specified host (IP address or host name) by sending test packets to the host with the time-to-live value in the IP datagram header set to 1 at first, then incrementally increasing by 1, and analyzing the ICMP time exceeded packets and ICMP destination unreachable packets received.
The meanings of the letter codes displayed by traceroute are listed below.

[Destination is an IPv4 address]

xx.xxx ms
: Round trip time
!N : Destination unreachable (no route to network)
!H : Destination unreachable (no route to host)
!P : Destination unreachable (protocol unreachable)
!F : Destination unreachable (fragment needed)
!S : Source route error
! : Abnormal TTL value
* : Probe timeout

[Destination is an IPv6 address]

xx.xxx ms
: Round trip time
!N : Destination unreachable (no route to network)
!H : Destination unreachable (no route to address)
!P : Destination unreachable (not a neighbor)
!F : Festination unreachable (administrative reason)
!S : Source route error
! : Abnormal HopLimit value
* : probe timeout

In addition, traceroute reports the following errors.

```
traceroute: unknown host <host_name>
```

Cannot resolve destination IP address for <host_name> specified.

```
traceroute: can't assign source address
```

Assignment of source IP address failed.
(In cases such as when the specified address does not exist for the switch.)

Execution Example

Host is responding

```
# traceroute 192.168.1.1
traceroute to 192.168.1.1 from 192.168.5.2, 30 hops max, 46 byte packets
1     192.168.5.1             20.000 ms  20.000 ms  20.000 ms
2     192.168.1.1             41.000 ms  41.000 ms  41.000 ms
#
```

No response from host

```
# traceroute 192.168.1.1
traceroute to 192.168.1.1 from 192.168.5.2, 30 hops max, 46 byte packets
1    *  *  *
2    *  *  *
3    *  *  *
4    *  *  *
       :
30   *  *  *
#
```

5.47.1.3 telnet

Function Connects to a telnet server.

Available Model XG0224 / XG0448 / XG2600

Syntax telnet <host> [<port>] [{ipv4|ipv6}] [escape {<char>|none}] [srcaddr <srcaddr>] [tos <tos>]

Options

<host>
Target host (telnet server), specified in the format below.

- Host name
- IPv4 address
- IPv6 address
  If specifying a link-local address, append "%<interface>" to the address, specifying which interface to use. For example: "fe80::1%lan0"

<port>
Port number specified as a base 10 value in the range of 1 to 65535.
Default is the telnet port, 23.

ipv4
Specified when making a telnet connection to an IPv4 address.
If a host name is specified in <host> and that host has both IPv4 and IPv6 addresses, connect via the IPv4 address.

ipv6
Specified when making a telnet connection to an IPv6 address.
If a host name is specified in <host> and that host has both IPv4 and IPv6 addresses, use the IPv6 address.
If both ipv4 and ipv6 options are omitted, if an address is specified in <host> connection will be made via that address; if it is a host name connection will be made via IPv4 if it resolves to an IPv4 address or IPv6 if it resolves to an IPv6 address, or if both an IPv4 and IPv6 address are available connection will be made via the IPv6 address.

escape {<char>|none}
Specifies the escape character. For no escape character specify "none".
To force-disconnect while connected via telnet enter the escape character followed by "q".
To set a control character as an escape character, prefix the specified character with the "^" character. For example, to set CTRL+A as the escape character, specify "^A".
If a string of characters is specified (other than "none"), the first character in that string will be set as the escape character.
Default is "^]" (CTRL+]).

srcaddr <srcaddr>
Source address (the address of this router), specified in the format below.

- IPv4 address
- IPv6 address

Specify an address with the same version and scope as the address specified in <host>.
The appropriate address will be set by default.

tos <tos>
TOS value specified as a hexadecimal value in the range of 0 to ff.
Default is 0.

Use Mode Operation mode (user class/admin class)
Configuration mode (admin class)

Explanation

Allows connection to and remote operation of a host/router running a telnet server. If the telnet server demands the following information, enter the information for this device as listed within the parentheses.

- Terminal type (VT100)
- Terminal speed (9600bps)
- Screen size (number of lines, number of columns)

Execution Example

```
# telnet 192.168.1.2        Make a telnet connection to another router
Trying 192.168.1.2...       connecting
Connected to 192.168.1.2.   connected
Escape character is '^]'    Escape character is displayed
Login:                      Enter login for the connected router
Password:                   Enter password for the connected router
# exit                      Execute exit command on the connected router
Connection closed by foreign host.      Disconnection
#                                    Prompt for local router is displayed
```

5.48 Effect by "commit" Command Execution

The effects of running the commit command after changing the configuration via configuration commands are described for each command below. In addition, modification/addition/deletion of each configuration command has the same effect.

Type	Command Name	Effect of "commit"
Port	ether use	(3)
	ether media	(3)
	ether mode	(3)
	ether duplex	(3)
	ether mdia	(3)
	ether flowctl	(3)
	ether type mirror	(5):XG2600 (1):XG0224/XG0448
	ether type linkaggregation	(3)
	ether type backup	(3)
	ether vlan	(1) *1 *2:XG2600
	ether egress permission	(1)
	ether loopdetect	(1)
	ether startup	(3)-1
	ether recovery limit	(1)
	ether downrelay port	(1)
	ether description	(0)
	ether mac storm	(3)
	ether stp	(1) *3
	ether macfilter	(6):XG2600 (1):XG0224/XG0448
	ether qos aclmap	(6):XG2600 (1):XG0224/XG0448
	ether qos priority	(3)
	ether qos mode	(1)
	ether qos prioritymap	(1):XG2600 *4:XG2600
	ether lacp port-priority	(1)
	ether icmpwatch	(1)
	ether snmp trap	(6)
	ether ratecontrol	(1)
LINKAGGREGATION	linkaggregation	(3)
	linkaggregation mode	(3)-LA
	linkaggregation icmpwatch	(1)
	linkaggregation downrelay	(1)
	linkaggregation description	(0)
BACKUP	backup	(3)
LACP	lacp	(1)

Type	Command Name	Effect of "commit"
VLAN	vlan name	(0)
	vlan protocol	(1) *1 *5 *6:XG2600 (1) *1:XG0224/XG0448
	vlan forward	(1) *1
	vlan description	(0)
	vlan igmpsnoop	(1) *1
	vlan macfilter	(6):XG2600 (1):XG0224/XG0448
	vlan ip6filter	(1):XG0224/XG0448
	vlan qos aclmap	(6):XG2600 (1):XG0224/XG0448
	vlan ip6qos aclmap	(1):XG0224/XG0448
MAC	mac age	(1) *1
	mac learning	(1) *1
	mac flush	(1):XG0224/XG0448
LAN	lan description	(0)
	lan ip address	(1)
	lan ip route	(1)
	lan ip filter	(6):XG2600 (1):XG0224/XG0448
	lan ip dscp	(6):XG2600 (1):XG0224/XG0448
	lan ip arp static	(1)
	lan vlan	(1)
	lan ip6 use	(1)
	lan ip6 ifid	(1)
	lan ip6 address	(1)
	lan ip6 ra mode	(1)
	lan ip6 route	(1)
	lan ip6 filter	(1):XG0224/XG0448
	lan ip6 dscp	(1):XG0224/XG0448
	lan llmnr use	(1)
Management LAN port	oob ip address	(1):XG2600
	oob ip route	(1):XG2600
	oob ip6 use	(1):XG2600
	oob ip6 ifid	(1):XG2600
	oob ip6 address	(1):XG2600
	oob ip6 ra mode	(1):XG2600
	oob ip6 route	(1):XG2600
	oob llmnr use	(1):XG2600
IP	ip arp age	(1)
QoS	qos cosmap	(4):XG0224/XG0448
STP	stp	(1) *3
LLDP	lldp	(1)
Loop Detect	loopdetect	(1)

Type	Command Name	Effect of "commit"
ACL	acl	(6)*6:XG2600 (1):XG0224/XG0448
AAA	aaa	(1)
Device	snmp	(1)
	syslog	(1)
	time	(1)
	proxydns	(1)
	host	(1)
	password format	(0)
	password admin set	(0)
	password user set	(0)
	password aaa	(1)
	password authtype	(1)
	schedule	(1)
	resource	(4):XG0224/XG0448
	watchdog service	(4)
	consoleinfo	(1)
	telnetinfo	(1)
	mflag	(1)
	dumpswitch	(1):XG0224/XG0448
	sysname	(4)
	serverinfo	(1)
Login banner	login banner telnet	(1)
	login banner ftp	(1)
	login banner ssh	(1)
	login banner description	(1)

(0)

The settings are enabled immediately after the command has been executed.

(1)

Only the relevant function is stopped or restarted.

(1)-1

In addition to operation (1), the relevant route is added or deleted with the route change for this device and the neighboring routers.

(2)

The communication via the relevant logical interface is interrupted briefly.

(3)

The relevant Ethernet port is linked down or linked up.

(3)-LA

If changed from "static" to "passive" or "active" or vice versa, the relevant Ethernet port is linked down or linked up.
If changed from "passive" to "active" or vice versa, the operation is the same as (1).

(3)-1

If changed from "online" to "offline", the relevant Ethernet port is linked down or linked up.
If changed from "offline" to "online", the operation is the same as (1).

(4)

To enable the settings, the device needs to be restarted (or reset).

(5)

The port which is set to be target port, is used for monitoring function only, and can not be used for forwarding.

(6)

Forwarding frames is interrupted briefly.

*1

The registered learning table may be deleted.

*2

If changed the VLAN ID which used by system for the Management Port, the communication via the Management Port is interrupted briefly, and the TCP session is closed.

*3

If the bridge network configuration is changed, the registered learning table may be deleted or the communication via the relevant interface may be interrupted briefly.

*4

If configured to use ACL Filter/QoS, the forwarding frames is interrupted briefly.

*5

If there are "vlan protocol" definitions over 16, the definition, the VLAN and the ports belong to the VLAN are invalid.

*6

The system reconfigure the Protocol VLAN and the ACL Filter/QoS, the communication via the all ports is interrupted briefly.

Chapter 6 Managing the Device

This chapter describes the Managing the Device.

6.1 Verifying the Device Operations

This chapter describes the management of the device.

- Hardware status
- System status
- Log messages

6.1.1 Verifying Hardware Status

Verify the status of hardware by entering the "show system status" command and "show ether media-info" command in the operation mode (admin class) or the configuration mode (admin class).

The following example shows the information that is displayed when the "show system status" command is entered.

Execution Example

XG0224

When no Expansion Card is installed.

```
# show system status
Current-time           : Wed Dec 10 06:07:43 2008          ---(1)
Startup-time           : Wed Dec 10 06:05:05 2008          ---(2)
restart_cause          : power on                          ---(3)
machine_state          : RUNNING                           ---(4)
power0_state           : NORMAL                            ---(5)
fan0_state             : NORMAL                            ---(6)
inspiration_state      : NORMAL                            ---(7)
phy_state              : NORMAL
slot1_state            : UNKNOWN
inspiration_temp       : 26 C                              ---(8)
phy_temp               : 40 C
slot1_temp             : -- C
Slot Information
  slot1                : NO_PRESENT                        ---(9)
```

When a CX4 Card is installed.

```
# show system status
Current-time           : Wed Dec 10 05:55:40 2008          ---(1)
Startup-time           : Wed Dec 10 05:52:11 2008          ---(2)
restart_cause          : power on                          ---(3)
machine_state          : RUNNING                           ---(4)
power0_state           : NORMAL                            ---(5)
fan0_state             : NORMAL                            ---(6)
inspiration_state      : NORMAL                            ---(7)
phy_state              : NORMAL
slot1_state            : UNKNOWN
inspiration_temp       : 25 C                              ---(8)
phy_temp               : 40 C
slot1_temp             : -- C
Slot Information
  slot1                : SJ10GCX4Z                         ---(9)
```

When a SFP+ Card is installed.

```
# show system status
Current-time          : Wed Dec 10 06:03:04 2008          ---(1)
Startup-time          : Wed Dec 10 06:02:19 2008          ---(2)
restart_cause         : reset                             ---(3)
machine_state         : RUNNING                           ---(4)
power0_state          : NORMAL                            ---(5)
fan0_state            : NORMAL                            ---(6)
inspiration_state     : NORMAL                            ---(7)
phy_state             : NORMAL
slot1_state           : NORMAL
inspiration_temp      : 25 C                              ---(8)
phy_temp              : 39 C
slot1_temp            : 39 C
Slot Information
  slot1               : SJ10GSFPZ                         ---(9)
```

1) Current time
   Present date and time.

2) Startup time
   Date and time when the system started up.

3) restart_cause
   Cause for the system startup.
   The following system startup causes are displayed:
   power on : The power has been turned on.
   reset : The reset command has been issued.
   reset switch : The [RESET] switch has been pressed.
   system down : System-down has occurred.

4) machine_state
   State of the device
   RUNNING : The device is active.

5) power0_state
   State of the power unit.
   NORMAL : The power unit works normally.
   NO_PRESENT : The power unit is not installed.
   FAIL : The power unit has been turned off.
   UNKNOWN : The power unit is invalid state.

6) fan0_state
   State of the fan 0.
   NORMAL : The fan works normally.
   ABNORMAL : The fan has been abnormal.
   UNKNOWN : The fan is invalid state.

7) inspiration_state
   State of environment temperature monitor.
   phy_state
   State of temperature monitor around PHY.
   slot1_state
   State of Expansion Card temperature monitor (SLOT1).

NORMAL : The temperature is normal.
HIGHWARNING : The device changes to a high temperature state.
HIGHALARM : Thermal alarm occurs in the device.
UNKNOWN : There are three following states.
The Expantion Card without Thermal Sensor is installed. (CX4).
The Invalid Expantion Card is installed.
The Expantion Card is not installed.

8) inspiration_temp
Environment temperature.
phy_temp
temperature around PHY.
slot1_temp
temperature around Expansion Card (SLOT1).
At the time of three following states, "--" is displayed.
The Expantion Card without Thermal Sensor is installed. (CX4)
The Invalid Expantion Card is installed.
The Expantion Card is not installed.

9) Slot Information
The type of Expansion Card.
SJ10GCX4Z : Installed Expansion Card is SJ10GCX4Z. (CX4)
SJ10GSFPZ : Installed Expansion Card is SJ10GSFPZ. (SFP+)
NO_PRESENT : The Expantion Card is not installed.
UNKNOWN : Installed Expansion Card is Invalid Card.

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When a CX4 Card is installed in Slot 1 and a SFP+ Card is installed in Slot 2.

```
# show system status
Current-time          : Tue Dec  9 20:43:01 2008          ---(1)
Startup-time          : Tue Dec  9 20:42:48 2008          ---(2)
restart_cause         : power on                          ---(3)
machine_state         : RUNNING                           ---(4)
power0_state          : NORMAL                            ---(5)
power_consumption     : 79 W                              ---(10)
fan0_state            : NORMAL                            ---(6)
fan1_state            : NORMAL
fan2_state            : NORMAL
inspiration_state     : NORMAL                            ---(7)
phy_state             : NORMAL
slot1_state           : UNKNOWN
slot2_state           : NORMAL
inspiration_temp      : 31 C                              ---(8)
phy_temp              : 38 C
slot1_temp            : -- C
slot2_temp            : 29 C
Slot Information
  slot1               : SJ10GCX4Z                         ---(9)
  slot2               : SJ10GSFPZ
```

1) Current time
Present date and time.

2) Startup time
Date and time when the system started up.

3) restart_cause
Cause for the system startup.
The following system startup causes are displayed:
power on : The power has been turned on.
reset : The reset command has been issued.
reset switch : The [RESET] switch has been pressed.
system down : System-down has occurred.

4) machine_state
State of the device
RUNNING: The device is active.

5) power0_state
State of the power unit.
NORMAL : The power unit works normally.
NO_PRESENT : The power unit is not installed.
FAIL : The power unit has been turned off.
UNKNOWN : The power unit is invalid state.

6) fan0_state
State of the fan 0.
fan1_state
State of the fan 1.
fan2_state
State of the fan 2.
NORMAL : The fan works normally.
ABNORMAL : The fan has been abnormal.
UNKNOWN : The fan is invalid state.

7) inspiration_state
State of environment temperature monitor.
phy_state
State of temperature monitor around PHY.
slot1_state
State of Expansion Card temperature monitor (SLOT1).
slot2_state
State of Expansion Card temperature monitor (SLOT2).
NORMAL : The temperature is normal.
HIGHWARNING : The device changes to a high temperature state.
HIGHALARM : Thermal alarm occurs in the device.
UNKNOWN : There are three following states.
The Expantion Card without Thermal Sensor is installed. (CX4)
The Invalid Expantion Card is installed.
The Expantion Card is not installed.

8) inspiration_temp
Environment temperature.
phy_temp
temperature around PHY.
slot1_temp
temperature around Expansion Card (SLOT1).
At the time of three following states, "--" is displayed.
The Expantion Card without Thermal Sensor is installed. (CX4)
The Invalid Expantion Card is installed.
The Expantion Card is not installed.

slot2_temp
temperature around Expansion Card (SLOT2).
At the time of three following states, "--" is displayed.
The Expantion Card without Thermal Sensor is installed. (CX4)
The Invalid Expantion Card is installed.
The Expantion Card is not installed.

9) Slot Information
The type of Expansion Card.
SJ10GCX4Z : Installed Expansion Card is SJ10GCX4A. (CX4)
SJ10GSFPZ : Installed Expansion Card is SJ10GSFPA. (SFP+)
NO_PRESENT : The Expantion Card is not installed.
UNKNOWN : Installed Expansion Card is Invalid Card.

10) power_consumption
Power consumption of the device.

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```
# show system status
Current-time          : Thu Dec 21 16:04:50 2008          ---(1)
Startup-time          : Thu Dec 21 16:04:36 2008          ---(2)
restart_cause         : power on                          ---(3)
machine_state         : RUNNING                           ---(4)
access_direction      : front access                      ---(5)
power_redundancy      : redundant                         ---(6)
PSU1 state            : NORMAL                            ---(7)
PSU2 state            : NORMAL
PSU1 type             : AC                                ---(8)
PSU2 type             : AC
power_consumption     : 75 W                              ---(9)
FAN1 state            : NORMAL                            ---(10)
FAN2 state            : NORMAL
inspiration_state     : NORMAL
inspiration_temp      : NORMA                             ---(11)
   warning time     : Fri Dec 26 14:00:45 2008           ---(12)
   recover time     : Fri Dec 26 14:12:30 2008
internal_state         : NORMAL
inspiration_temp      : 35 C                              ---(13)
internal_temp         : 32 C
```

1) Current time
Present date and time.

2) Startup time
Date and time when the system started up.

3) restart_cause
Cause for the system startup.
The following system startup causes are displayed:
power on : The power has been turned on.
reset : The reset command has been issued.
reset switch : The [RESET] switch has been pressed.
system down : System-down has occurred.

4) machine_state
State of the device
RUNNING : The device is active.
FALLBACK : The device is into fallback state.

5) access_direction
Direction where a device is installed in.
front access : The device should be installed forward.
rear access : The device should be installed backward.

6) power_redundancy
State of the redundant power unit.
single : The device has no redundant power unit.
redundant : The device has a redundant power unit.

7) PSU1 state
State of the power unit (PSU1).
PSU2 state
Type of the power unit (PSU2).
NORMAL : The power unit works normally.
NO_PRESENT : The power unit is not installed.
NO_POWER : The power unit has been turned off.
FAIL : The power unit has been abnormal.
UNKNOWN : The power unit is invalid type.
WARNING : The power unit has been incorrectly mounted.

8) PSU1 type
Type of the power unit (PSU1).
PSU2 type
Type of the power unit (PSU2).
AC : The power unit is AC.
-- : The power unit is not installed or invalid type.

9) power_consumption
Power consumption of the device.

10) FAN1 state
State of the fan module 1.
FAN2 state
State of the fan module 2.
NORMAL : The fan module works normally.
FAIL : The fan module has been abnormal.
NO_PRESENT : The fan module is not installed.
UNKNOWN : The fan module is invalid direction.
WARNING : The fan module has been incorrectly mounted.

11) inspiration_state
State of environment temperature monitor.
internal_state
State of device inside temperature monitor.
NORMAL : The temperature is normal.
WARNING : The device changes to a high temperature state.
ALARM : Thermal alarm occurs in the device.

12) State of changing thermal state
warning time : The time when a device changed in a high temperature state.
recover time : The time when a device returned to a normal state.

13) inspiration_temp
Environment temperature.
internal_temp
Device inside temperature.

The following example shows the information that is displayed when the "show ether media-info" command is entered.

Execution Example

Execution Example (XG0224)

```
# show ether media-info

Port media type Vendor PN
---- ---------- ----------------
 (1)  (2)         (3)
 21   SFP(SX)     HFBR-5710L
 22   SFP(ZX)     SCP6P94-F7-BMH
 23   SFP(LX)     SCP6P44-F7-BMH
 24   SFP(FX)     HFBR-57E0P
 25   SFP+(LR)    FTLX1471D3BCL
 26   SFP+(SR)    TRS2000EN-S002
```

Execution Example (XG0448)

```
# show ether media-info

Port media type Vendor PN
---- ---------- ----------------
 (1)  (2)         (3)
 45   NONE
 46   NONE
 47   SFP(LX)     SCP6P44-F7-BMH
 48   NONE
 49   SFP+(LR)    FTLX1471D3BCL
 50   SFP+(SR)    TRS2000EN-S002
 51   SFP+(SR)    TRS2000EN-S002
 52   NONE
```

Execution Example (XG2600)

```
# show ether media-info

Port media type Vendor PN
---- ---------- ----------------
 (1)  (2)         (3)
 1    SFP+(SR)    FTLX8571D3BCL
 2    SFP+(SR)    FTLX8571D3BCL
 3    SFP+(SR)    FTLX8571D3BCL
 4    SFP+(SR)    FTLX8571D3BCL
 5    SFP+(SR)    FTLX8571D3BCL
 6    SFP+(SR)    FTLX8571D3BCL
 7    SFP+(SR)    FTLX8571D3BCL
 8    SFP+(SR)    FTLX8571D3BCL
 9    SFP+(SR)    FTLX8571D3BCL
 10   SFP+(SR)    FTLX8571D3BCL
 11   SFP+(SR)    FTLX8571D3BCL
 12   SFP+(SR)    FTLX8571D3BCL
 13   SFP+(SR)    FTLX8571D3BCL
 14   SFP+(SR)    FTLX8571D3BCL
 15   SFP+(SR)    FTLX8571D3BCL
 16   SFP+(SR)    FTLX8571D3BCL
 17   SFP+(SR)    FTLX8571D3BCL
 18   SFP+(SR)    FTLX8571D3BCL
 19   SFP+(SR)    FTLX8571D3BCL
 20   SFP+(SR)    FTLX8571D3BCL
 21   SFP+(SR)    FTLX8571D3BCL
 22   SFP+(SR)    FTLX8571D3BCL
 23   SFP+(SR)    FTLX8571D3BCL
 24   SFP+(SR)    FTLX8571D3BCL
 25   NONE
 26   NONE
```

1) Port number

2) Media information

The type of the installed module is displayed

SFP(SX)	SFP (1000BASE-SX) module is installed
SFP(LX)	SFP (1000BASE-LX) module is installed
SFP(FX)	SFP (1000BASE-FX) module is installed
SFP(BX-D)	SFP (1000BASE-BX-D) module is installed
SFP(BX-U)	SFP (1000BASE-BX-U) module is installed
SFP(ZX)	SFP (1000BASE-ZX) module is installed
CX4	The CX4 expansion card is mounted. (Only for XG0448/XG0224.)
SFP+(SR)	SFP+ (10GBASE-SR) module is installed
SFP+(LR)	SFP+ (10GBASE-LR) module is installed
UNKNOWN	Type of the installed module is unknown
NONE	SFP+ module is not installed or the module of the unsupport is mounted.

3) Vendor Part Number

Vendor part number of the installed module is displayed.

The information is displayed even if the type of the module is unknown.

6.1.2 Verifying System Status

Verify the system status by entering the "show system information" command in the operation mode (admin class) or the configuration mode (admin class).

The following example shows the information that is displayed when the "show system information" command is entered.

Execution Example

```
# show system information
Current time : Fri Jan 14 14:00:45 2011                          ---(1)
Startup time : Fri Jan 14 08:40:05 2011                          ---(2)
System : XG2600                                                  ---(3)
Serial No. : 00000123                                            ---(4)
ROM Ver. : 1.3                                                   ---(5)
ASIC Firm Ver. : 090203PL1                                       ---(6)
Firm Ver. : V01.00 NY0001 Tue Nov 14 17:52:15 JST 2006           ---(7)
Startup-config : Sat Jan 01 13:08:04 2011 config1                ---(8)
Running-config : Sat Jan 01 13:08:04 2011                        ---(9)
MAC : 000b5d89011                                                ---(10)
Memory : 256MB                                                   ---(11)
```

1) Current time
   Displays the current date and time.

2) Startup time
   Displays the date and time when the device started up.

3) System
   Displays the device name.

4) Serial No.
   Displays the device serial number.

5) ROM Ver.
   Displays the ROM version number in the xx.yy format. xx.yy is indicated by a decimal value.

6) ASIC Firm Ver. (XG2600 Only)
   Displays the ASIC firmware version number in the yymmddPLn format. yymmdd is indicated by date (year-month-day). PLn shows patch level and n is indicated by digit decimal value.

7) Firm Ver.
   Displays the firmware version number in the Vxx.yy format. "xx.yy is indicated by a two-digit decimal value.

8) Startup-config
   Displays the date and time when you have saved the configuration to be read during device startup, as well as the file name.

9) Running-config
   Displays the date and time, when you applied the configuration that is currently active.

10) MAC
    Displays the MAC address with a 12-digit hexadecimal value.

11) Memory
    Displays the memory size installed in the device.

6.1.3 Reviewing Log Messages

6.1.3.1 Format of System Log Message

System log messages from the device are classified into 4 levels -- error, info, notice and warn.

In the default setting, 3 levels of system log messages (error,warn and info) are put.

To display system logs, run the "show logging syslog" command in the operation mode (admin class) or the configuration mode (admin class).

An example of the format of a system log message displayed by the "show logging syslog" command is shown below.

Execution Example

```
# show logging syslog
Dec 13 15:52:31 192.168.1.1 XG2600: init: system startup now.
Dec 13 15:52:31 192.168.1.1 XG2600: sshd: generating public/private host key pair.
Dec 13 15:52:40 192.168.1.1 XG2600: protocol: ether 1 link up
Dec 13 15:52:40 192.168.1.1 XG2600: protocol: lan 0 link up
```

6.1.3.2 Reviewing Error Logs

If a fault occurred, review the error log to check fault messages.

To review error logs, enter the "show logging error" command in the operation mode (admin class) or the configuration mode (admin class).

The following examples show the information that is displayed when the "show logging error" command is entered.

Execution Example

```
# show logging error
Error Logs on FLASH:

[0] Error Log:
flag=80,mode=00,unit=10,regsp=00000000
Firm information:
XG2600 V01.00 PTF:NY0010
Error information:
error code [85020000]
Logging time:
2011/01/01(Sat) 11:51:17
Hardware diagnostic error information:
Detail [00142224 00142228 00000080 0000341f]
       [00000000 00000000 00000000 00000000]
       [00000000 00000000 00000000 00000000]
       [00000000 00000000 00000000 00000000]
       [00000000 00000000 00000000 00000000]
       [00000000 00000000 00000000 00000000]

Extended Error Logs:

[1] Error Log:
flag=80,mode=00,unit=10,regsp=00000000
Firm information:
XG2600 V01.00 PTF:NY0010
Error information:
error code [85020000]
Logging time:
2011/01/01(Sat) 11:59:37
Hardware diagnostic error information:
Detail [00142224 00142228 00000080 00003520]
       [00000000 00000000 00000000 00000000]
       [00000000 00000000 00000000 00000000]
       [00000000 00000000 00000000 00000000]
       [00000000 00000000 00000000 00000000]
       [00000000 00000000 00000000 00000000]

Error Logs on DRAM:

[0] Error Log:
flag=80,mode=00,unit=80,regsp=04ae9e60
Firm information:
XG2600 V01.00 PTF:NY0010
System down information:
down code [00000080:00000002]
Logging time:
2011/01/01(Sat) 13:05:23
Register:
    srr0    [0086dab4] srr1    [0002d000] csrr0   [00000000] csrr1   [00000000]
    mcsrr0  [00000000] mcsrr1  [00000000] mcar    [00000000] mcsr    [00000000]
    lr      [00886d74] dear    [0087a01c] esr     [00000000] tsr     [00000000]
    gpr00   [00000000] gpr01   [04ae9f60] gpr02   [00000005] gpr03   [01124844]
    gpr04   [0087a01c] gpr05   [00000005] gpr06   [010cf924] gpr07   [a2c9bdbc]
    gpr08   [c1bcb0a1] gpr09   [00000005] gpr10   [d8c4eab7] gpr11   [00000000]
    gpr12   [aca5a4a5] gpr13   [00000000] gpr14   [00000000] gpr15   [00000000]
    gpr16   [00000000] gpr17   [00000000] gpr18   [00000000] gpr19   [00000000]
    gpr20   [00000000] gpr21   [00000000] gpr22   [00000000] gpr23   [00000000]
    gpr24   [04aea1e0] gpr25   [04aea1f0] gpr26   [0121ff74] gpr27   [00000000]
    gpr28   [00000000] gpr29   [ffffffff] gpr30   [0121ff7c] gpr31   [04aea174]
Peripheral Register:
    err_det [00000000] l2errdet[00000000] eedr    [00000000] ltesr   [00000000]
```

(To be continued)

(Continued)

```
User Stack:
          +0       +4       +8       +C         +0  +4  +8  +C
04ae9f60  04aea1d0 00886d58 04ae9fb8 04ae9fa0   ......mX........
04ae9f70  00c6fcbb fea4cebb d8c4eab7 c1bcb0a1   ................
04ae9f80  a2c9bdbc a8b7c1bc b0a4f2a5 aca5a4a5   ................
04ae9f90  c9a5e9a5 a4a5f3a4 cba4a2a4 efa4bba4   ................
04ae9fa0  eba1a30a 00000000 00000000 00000000   ................
04ae9fb0  04aea1c0 00000000 00000000 00000000   ................
04ae9fc0  85004100 04aea0b0 0000000a 00000000   ..A.............
04ae9fd0  04ae9ff0 04ae9fb0 04ae9fb0 00000100   ................
04ae9fe0  00000000 85004100 00000100 04aea068   ......A........h
04ae9ff0  04aea020 00000000 00000000 00000000   ... ............
04aea000  00000000 04aea0f0 00000007 00000000   ................
04aea010  00000001 04ae9ff0 04aea000 2066696c   ............ fil
04aea020  73666572 000002bf 5472616e 01e89be0   sfer....Tran....
04aea030  42000082 00000000 00000000 00000000   B...............
04aea040  00000000 00000000 00000000 00000000   ................
04aea050  00000000 00000000 00000000 00000000   ................
04aea060  010b0000 04b22114 0000005d 00000000   ......!....]....
04aea070  04aea148 0124269c ffffffff ffffffff   ...H.$&.........
04aea080  00405cfc 0002d000 ffffffff ffffffff   .@\.............
04aea090  0087b9dc 00000000 00000000 42002088   ............B. .
04aea0a0  00000001 00000000 00000000 42002088   ............B. .
04aea0b0  00000001 0002d000 00000100 00000001   ................
04aea0c0  0087b6d4 00000000 00000000 42000084   ............B...
04aea0d0  00000001 00000100 00000002 035fc300   ............._..
04aea0e0  04aea110 01260af0 00004e43 00000020   .....&....NC...
04aea0f0  04aea100 01260af0 00004e43 00000020   .....&....NC...
04aea100  04aea130 0087b810 01261d28 035fcdc0   ...0.....&.(._..
04aea110  04aea140 01260af0 00004e43 42000082   ...@.&....NCB...
04aea120  04aea140 00000022 00000000 035fcdc0   ...@..."....._..
04aea130  04aea140 0087b8c0 00000000 035fcdc0   ...@........._..
04aea140  04aea170 0087a23c 00000022 01230168   ...p...<...".#.h
04aea150  04aea1d0 04b11152 00769eec 01230168   .......R.v...#.h
04aea160  00000000 00000022 04b22114 0000005d   .......".."!....]
04aea170  00000000 0087a01c 00000000 00000200   ................
04aea180  04b71ee0 04b22114 01230168 00000022   ......!..#.h..."
04aea190  04aea1a0 00869238 00000000 00000000   .......8........
04aea1a0  04aea1c0 00867cd8 00000000 00000000   ......|.........
04aea1b0  010b0000 04b11152 00769eec 01230168   .......R.v...#.h
04aea1c0  04b71ee0 01240000 010ed184 01230168   .....$.......#.h
04aea1d0  04aea210 00768d20 00000000 00000000   .....v. ........
04aea1e0  04b71ee0 04aea220 01230168 0121fd30   ....... .#.h.!.0
04aea1f0  04aea210 007697d4 00769eec 01230168   .....v...v...#.h
04aea200  04b71ee0 01240000 01230168 01240000   .....$...#.h.$..
04aea210  04aea330 007685d4 04aea200 fffffffb   ...0.v..........
04aea220  4649524d 57415245 2d494e46 4f000000   FIRMWARE-INFO...
04aea230  53522d53 37313643 32000000 00000000   XG2600..........
04aea240  00000000 00000000 00000000 00000000   ................
04aea250  4e593030 31302056 30322e30 30000000   NY0010 V01.00...
04aea260  00000000 00000000 00000000 00000000   ................
04aea270  4d6f6e20 46656220 20372031 343a3239   Thu Jan  1 14:29
04aea280  3a353920 4a535420 32303035 00000000   :59 JST 2011....
```

(To be continued)

(Continued)

```
04aea290  00000000 00000000 00000000 00000000   ................
04aea2a0  00000000 00000000 00000000 00000000   ................
04aea2b0  00000000 00000000 00000000 000001d4   ................
04aea2c0  00000000 00000000 00000000 00000000   ................
04aea2d0  00000000 00000000 00000000 00000000   ................
04aea2e0  00000000 00000000 00000000 00000000   ................
04aea2f0  00000000 00000000 00000000 00000000   ................
04aea300  00000000 00000000 00000000 00000000   ................
04aea310  00000000 00000000 00000000 00000000   ................
04aea320  011395e0 00000004 01240000 01240000   .........$...$..
04aea330  04aea360 00769fe4 00000000 035fcdc0   ...`.v......._..
04aea340  04aea360 0087a23c 7ffffff0 01230168   ...`...<.....#.h
04aea350  00000004 04aea370 01240000 04b71ee0   .......p.$......

Interrupt Stack:
          +0       +4       +8       +C         +0  +4  +8  +C
04ae9e60  00000000 04aea1f0 0121ff74 00000000   .........!.t....
04ae9e70  00000000 04ae9f60 00000005 01124844   .......`......HD
04ae9e80  0087a01c 00000005 010cf924 a2c9bdbc   ...........$....
04ae9e90  c1bcb0a1 00000005 d8c4eab7 00000000   ................
04ae9ea0  aca5a4a5 00000000 00000000 00000000   ................
04ae9eb0  00000000 00000000 00000000 00000000   ................
04ae9ec0  00000000 00000000 00000000 00000000   ................
04ae9ed0  04aea1e0 04aea1f0 0121ff74 00000000   .........!.t....
04ae9ee0  00000000 ffffffff 0121ff7c 04aea174   .........!.|...t
04ae9ef0  0086dab4 0002d000 00000000 00000000   ................
04ae9f00  00886d74 00000005 00000000 42000082   ..mt........B...
04ae9f10  00000001 0087a01c 00000000 00000000   ................
04ae9f20  00000000 00000000 00000000 00000000   ................
04ae9f30  00000000 00000000 00000000 00000000   ................
04ae9f40  00000000 00000000 00000000 04aea170   ...............p
04ae9f50  04ae9f60 01260af0 00004e43 00000008   ...`.&....NC....
# exit
```

6.2 Saving/Restoring Configuration Information

This device allows you to save/restore configuration information using the following methods:

- Saving/restoring configuration information using FTP
- Saving/restoring configuration information using a CompactFlash card
- Saving/restoring configuration information using USB memory

6.2.1 Saving/restoring configuration information using FTP

Available Model ***All models***

This device provides FTP and SFTP server functions, and allows you to use PC or UNIXR system ftp and sftp commands to save/restore configuration information.

This section presents an example of using the XG2600's FTP server function with ftp commands.

To use the SFTP server function, sftp client software supporting SSH protocol version 2 is necessary. This would allow you to use sftp commands just as you use ftp commands.

Use the following user name and password with the FTP server function:

- User name : ftp-admin
- Password : Specify the password configured with the password command

Note When the password is not defined, the FTP server function works assuming that no password exists.

● Files for maintenance

The FTP server function maintains files with the following names:

- Configuration information 1 : config1
- Configuration information 2 : config2

● Restart method

Enter "get reset" as a subcommand for the ftp command to restart the device.

To switch the configuration information, use "get reset1" or "get reset2" to restart the device.

- When get reset" is entered : The current configuration information takes effect after restart.
- When "get reset1" is entered : Configuration information 1 takes effect after restart.
- When "get reset2" is entered : Configuration information 2 takes effect after restart.

Precautions

- It is strongly recommended to define the password to ensure security.
  While no password is defined, anyone can access to the device from the network, resulting in a very dangerous situation.

Reference "5.14 Password Information" (pg.257)

- The following error message may be displayed while using ftp commands:

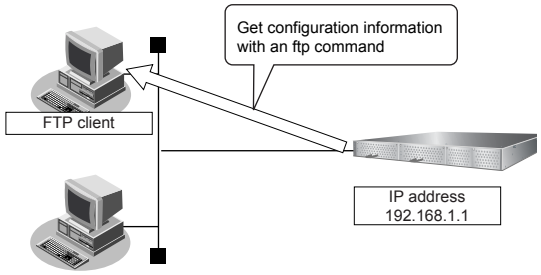
```
502 PASV command not implemented.
Passive mode regused.
```

If this error message is displayed, perform the following operation and retry the failed operation:

```
ftp> passive   : Change the passive mode.
Passive mode off.
```

Saving configuration information using the FTP server function

The following explains how to save configuration information using ftp commands on a PC.



Precautions

Be sure to observe the following precautions while performing maintenance operations:

- Do not cut power to the device.
- Ensure that no data communication is taking place on the device.
- Perform these operations only when no configuration is taking place on the console.

● Example of using an ftp command

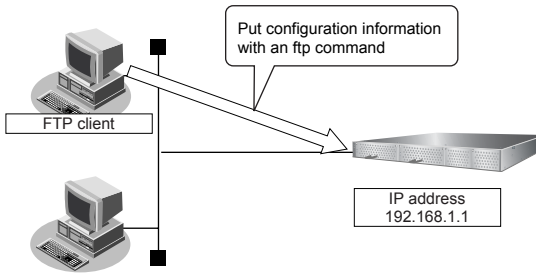
The following example saves configuration information 1 to the config1-1 file on the PC.

```
C:\>cd Directory in which to store configuration information
C:\tmp>ftp 192.168.1.1                    : Connect to the device.
Connected to 192.168.1.1.
220 XG2600 V01.00 FTP server (config1) ready.
Name(192.168.1.1:root): ftp-admin         : Enter the user name.

331 Password required for ftp-admin.
Password:                                 : Enter the password.

230 User ftp-admin logged in.
ftp>bin                                   : Enter binary mode.

200 Type set to I.
fftp>get config1 config1-1                : Save configuration information 1 (config1) to the config1-1 file.

local: config1 remote: config1-1
200 PORT command successful.
150 Opening BINARY mode data connection for 'config1'(2753 bytes)
                •
226- Transfer complete.
2857 bytes received in 1.10 seconds (2.44 Kbytes/s)
ftp>bye                                   : Finish

221 Goodbye.
C:\tmp>
```

☛ Reference "5.14 Password Information" (pg.257)

Restoring configuration information using the FTP server function

The following explains how to restore configuration information using ftp commands on a PC.



Precautions

Be sure to observe the following precautions while performing maintenance operations:

- Do not cut power to the device.
- Ensure that no data communication is taking place on the device.
- Perform only when no configuration is taking place on the console.

● Example of using an ftp command

The following example restores configuration information 1 from the config1-1 file on the PC.

```
C:\>cd Directory in which to store configuration information
C:\tmp>ftp 192.168.1.1                    : Connect to the device.
Connected to 192.168.1.1.
220 XG2600 V01.00 FTP server (config1) ready.
Name(192.168.1.1:root): ftp-admin         : Enter the user name.
331 Password required for ftp-admin.
Password:                                 : Enter the password.
230 User ftp-admin logged in.
ftp>bin                                   : Enter binary mode.
200 Type set to I.
ftp>put config1-1 config1                 : Write the config1-1 file as configuration information 1.
local: config1-1 remote: config1
200 PORT command successful.
150 Opening BINARY mode data connection for 'config1'
226- Transfer complete.
update : File information check now!
update : File information check ok.
                  •
                  •
226 Write complete.
2856 bytes sent in 1.10 seconds (2.44 Kbytes/s)
ftp>get reset                             : Restart the device.
local: reset remote: reset
200 PORT command successful.
421 Reset request ok. bye.
ftp>bye                                   : Finish
C:\tmp>
```

Note Be sure to restart the device to so that the restored configuration information can take effect.
Enter "get reset" as a subcommand for the ftp command to restart.
To switch the configuration information, enter "get reset1" or "get reset2" and restart the device.

- When "get reset" is entered : The current configuration information takes effect after restart.
- When "get reset1" is entered : Configuration information 1 takes effect after restart.
- When "get reset2" is entered : Configuration information 2 takes effect after restart.

6.2.2 Saving/restoring configuration information using a Compact Flash Card

Available Model ***XG0224***

You can save the device's configuration information on a CompactFlash card. If necessary, you can also restore the configuration information saved on a CompactFlash card.

● Configuration information which can be saved

- Configuration information 1 : config1
- Configuration information 2 : config2

The following explains how to save/restore configuration information using a CompactFlash card.

Saving configuration information using a Compact Flash Card

The following explains how to save the configuration information of this device to a CompactFlash card.

1. Insert a CompactFlash card on which you will save configuration information into the CompactFlash card slot of this device.

2. Save the configuration information to the CompactFlash card.

● Example

The following example saves configuration information 1 to the config1-1 file.

```
# copy config1 /cf0/config1-1
```

Restoring configuration information using a CompactFlash card

The following explains how to restore device configuration information that has been saved to a CompactFlash card.

1. Insert the CompactFlash card containing the configuration information into the device's CompactFlash card slot.

2. Restore configuration information from the CompactFlash card.

● **Example**

The following example restores configuration information 2 from the config2-1 file.

```
# copy /cf0/config2-1 config2
# reset                                  : Restart the device.
```

Note Be sure to restart the device to so that the restored configuration information can take effect.

6.2.3 Saving/restoring configuration information using USB memory

Available Model ***XG0448 / XG2600***

You can save the device's configuration information on USB memory. If necessary, you can also restore the configuration information saved on USB memory.

● **Configuration information which can be saved**

- Candidate configuration : candidate-config
- Running configuration : running-config
- Configuration information 1 : config1
- Configuration information 2 : config2

The following explains how to save/restore configuration information using USB memory.

Saving configuration information using USB memory

The following explains how to save the configuration information of this device to USB memory.

1. Insert USB memory on which you will save the configuration information into the USB port of the device.

2. Release the block status of the USB port.

```
# usbctl enable
```

3. Confirm that the block status of the USB port has been released.

Run a show usb hcd status command and ensure that the status displays "enable".

```
# show usb hcd status

[USB HCD STATUS]
status          : enable
```

4. Save configuration information to the USB memory.

● **Example**

The following example saves configuration information 1 to the config1-1 file.

```
# copy config1 /um0/config1-1
```

5. Block the USB port.

```
# usbctl disable
```

6. Confirm that the USB port has been blocked.

Run a show usb hcd status command and ensure that the status displays "disable".

```
# show usb hcd status

[USB HCD STATUS]
status          : disable
```

7. Remove the USB memory from the device.

Restoring configuration information using USB memory

The following explains how to restore device configuration information that has been saved to USB memory.

1. Insert USB memory containing the saved configuration information into the USB port of the device.

2. Release the block status of the USB port.

```
# usbctl enable
```

3. Confirm that the block status of the USB port has been released.

Run a show usb hcd status command and ensure that the status displays "enable".

```
# show usb hcd status

[USB HCD STATUS]
status          : enable
```

4. Restore configuration information from the USB memory.

● **Example**

The following example restores configuration information 2 from the config2-1 file.

```
# copy /um0/config2-1 config2
# reset                                  : Restart the device.
```

5. Block the USB port.

```
# usbctl disable
```

6. Confirm that the USB port has been blocked.

Run a show usb hcd status command and ensure that the status displays "disable".

```
# show usb hcd status

[USB HCD STATUS]
status          : disable
```

7. Remove the USB memory from the device.

Note Be sure to restart the device to so that the restored configuration information can take effect.

6.3 Updating Firmware

This section explains how to update the firmware and initialize the settings of the device.

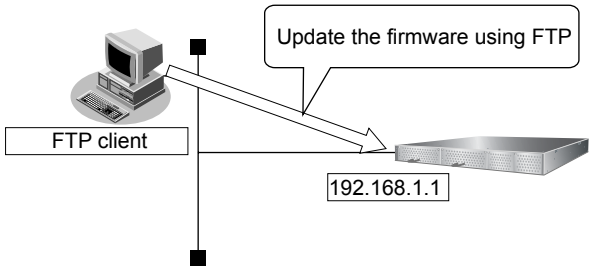
Precautions

- Before updating the firmware, do not connect the switch via the serial interface.
- While updating the firmware, do not power off or reset the device or the chassis main or remove the device from the chassis; otherwise the device will become inoperable.
- Verify that the device is not communicating.
- Verify that no configuration work using the CLI is in process.
- Before updating the firmware, back up the configuration data to an external device.

6.3.1 Updating Firmware Using FTP

Available Model ***All models***

The following is an example of updating the device firmware using a FTP client.



Connect the device and the Personal Computer Using LAN

Connect the device and the personal computer (FTP client) using LAN. Set an IP address which has the same network as the device for the personal computer. This section explains about the IP address of the device when set as "192.168.1.1", and the subnet mask when set as "255.255.255.0" as an example.

Update the Firmware

This section explains how to update the firmware using Windows command prompt.

1. Save the new firmware in a work folder of the PC.

The storing destination and file name are explained when they are set as "D:\FIRM\XG2600SOFT.ftp" as an example.

2. Open the command prompt.

1) Click "Start" menu → "Run".
2) Type "cmd" and press the [Enter] key.
   The command prompt is displayed.

3. Change the current directory to the one where the firmware is stored.

```
C:\> d:
D:\> cd \FIRM
```

4. Log in with the account name "ftp-admin".

Log in to the device using FTP command.

Login name: ftp-admin

Password: The password is the one made with the "password set" command.

If no password has been set, there is no need to enter one.

Confirm the password with the system administrator.

```
D:\FIRM>ftp 192.168.1.1                 : Connect the device
Connected to 192.168.1.1                (Specify IP address of the device)
220 XG2600 V01.00 FTP server ready.
User (192.168.1.1:(none)): ftp-admin    : Type login name
331 Password required for ftp-admin.
Password:                               : Type password
230 User ftp-admin logged in.
ftp>
```

5. Transfer the firmware to the device.

Transfer the firmware to the device in "binary" mode.

Input "put [the file name of the put personal computer (XG2600SOFT.ftp)] [the file name of the device (firmware)]" in the "put" command.

```
ftp>binary                              : Set "binary" mode
200 Type set to I.
ftp>put XG2600SOFT.ftp firmware         : Write the "XG2600SOFT.ftp" file as a firmware
local: XG2600SOFT.ftp remote: firmware
200 PORT command successful.
150 Opening BINARY mode data connection for `firmware´.
226- Transfer complete.
update : Transfer file check now!
update : Transfer file check ok.
                                                .
                                                .
```

Note When forwarding firmware to this product, the destination file name must be input as "firmware". Anything other than "firmware" cannot be input.

6. Check that the firmware is completely transferred.

When "Write complete" message is displayed, it indicates that the process is terminated successfully.

```
                                                .
                                                .
226 Write complete.
ftp>
```

7. Exit the ftp mode.

```
ftp> quit                               : Exit "ftp" command
221 Goodbye.
D:\FIRM>
```

8. Remove the device from the chassis, wait about 10 seconds, and reinsert the device to the chassis.

The power is turned on again, and the firmware is enabled.

9. Check that the firmware is successfully updated.

After restarting the device, log in to the device using the telnet or the terminal PC connected via the master management blade. Enter the "show system information" command to verify the firmware version.

```
# show system information
                                        :
System : XG2600
:
Firm Ver. : V01.00 (firmware version)
                                        :
```

6.3.2 Updating Firmware Using CompactFlash card

Available Model ***XG0224***

This section explains how to update the firmware using a compact flash card.

Firmware Update with a telnet or a console

Follow the instructions below to transfer the firmware saved in a compact flash card using the telnet command or a console.

1. Insert the compact flash card into the compact flash card slot on the back of this device.

2. Login as admin class (admin).

3. Transfer the firmware from the compact flash card to this device.

For <filename>, enter the filename of the firmware saved in the compact flash card.

```
copy / cf0 / <filename> firmware
```

4. Make sure that the prompt is displayed.

5. Pull out the power cable of this device and insert it again.

The power is turned on again and the firmware is enabled.

6. Check that the firmware is updated correctly.

After restarting this device, login to this device using telnet or console. Run the "show system information" command to check that the product name of this device and the firmware version are correctly displayed.

```
# show system information
                        :
System : XG2600 (product name)
                        :
Firm Ver. : V01.00 (firmware version)
                        :
```

Firmware Update with a WWW browser

Follow the instructions below to transfer the firmware saved in a compact flash card using the WWW browser.

1. Connect this device and a PC via LAN.

Set an IP address which has the same network as the device for the personal computer.

This section explains about the IP address of the device when set as "192.168.1.1", and the subnet mask when set as "255.255.255.0" as an example.

Precautions

- The IP address of the device is not set at the initial condition,please set the IP address via serial port.
- When someone login via serial port or via telnet, you can't connect from WWW browser.

☛ Reference "2.1.1 Operating Environment for the CLI"

2. Insert the compact flash card into the compact flash card slot on the back of this device.

3. Start the WWW browser.

4. Specify the URL [http://192.168.1.1/] of this device.

The top page of this device will be displayed.

5. Login as admin class (admin).

6. Click [Maintenance] tab on the left side of the top page screen.

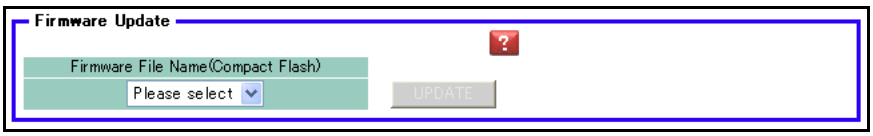
The login screen will be displayed.

7. Click [Compact flash] in the Maintenance menu.

[Compact flash] page will be displayed.

8. Click [Update Firmware].

[Update Firmware] page will be displayed.



9. Specify Firmware file name and click [Update].

Firmware will be updated.

6.3.3 Updating Firmware Using USB memory

Available Model ***XG0448 / X2600***

This section explains how to update the firmware using a compact USB memory.

Firmware Update with a telnet or a console

Follow the instructions below to transfer the firmware saved in a USB memory using the telnet command or a console.

1. Insert the USB memory into the USB port on the back of this device.

2. Login as admin class (admin).

3. Transfer the firmware from the USB memory to this device.

For <filename>, enter the filename of the firmware saved in the compact flash card.

```
# copy /um0/<filename> firmware
```

4. Make sure that the prompt is displayed.

5. Pull out the power cable of this device and insert it again.

The power is turned on again and the firmware is enabled.

6. Check that the firmware is updated correctly.

After restarting this device, login to this device using telnet or console. Run the "show system information" command to check that the product name of this device and the firmware version are correctly displayed.

```
# show system information
                    :
System : XG2600 (product name)
                    :
Firm Ver. : V01.00 (firmware version)
                    :
```

Firmware Update with a WWW browser

Follow the instructions below to transfer the firmware saved in a USB memory using the WWW browser.

1. Connect this device and a PC via LAN.

Set an IP address which has the same network as the device for the personal computer.

This section explains about the IP address of the device when set as "192.168.1.1", and the subnet mask when set as "255.255.255.0" as an example.

Precautions

- The IP address of the device is not set at the initial condition,please set the IP address via serial port.
- When someone login via serial port or via telnet, you can't connect from WWW browser.

☛ Reference "2.1.1 Operating Environment for the CLI"

2. Insert the USB memory into the USB port on the back of this device.

3. Start the WWW browser.

4. Specify the URL [http://192.168.1.1/] of this device.

The top page of this device will be displayed.

5. Login as admin class (admin).

6. Click [Maintenance] tab on the left side of the top page screen.

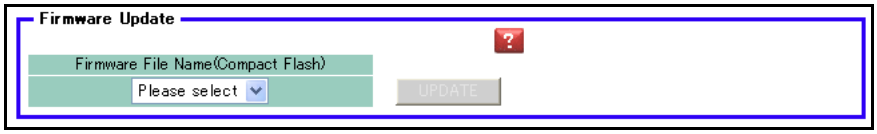
The login screen will be displayed.

7. Click [USB memory] in the Maintenance menu.

[USB memory] page will be displayed.

8. Click [Update Firmware].

[Update Firmware] page will be displayed.



9. Specify Firmware file name and click [Update].

Firmware will be updated.

6.4 Actions When Firmware Update Failes (Backup Firm Function)

If the firmware update fails due to power failure or some other reason and you cannot start this device, you can restore the device to its normal condition by starting the backup firmware and transferring the firmware with an FTP client on the network or by a compact flash card.

6.4.1 Preparing the Device

Precautions

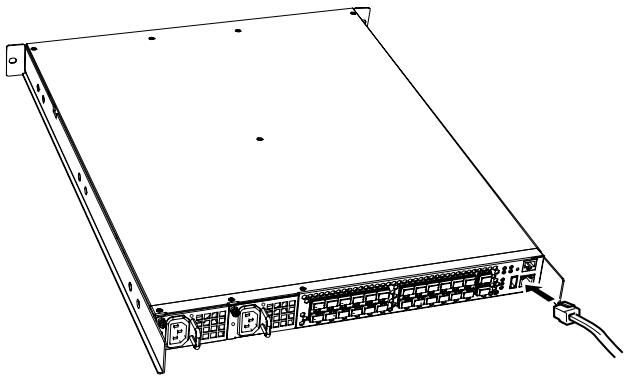
When the device boots up Backup Firm, the IP address of Management-port (XG2600) or LAN port (XG0224 / XG0448) is set 192.168.1.1.
A problem has come up, so please connect only this device and a PC.

1. Make sure that the power of this device is turned off.

2. Connect this device and a PC via LAN.

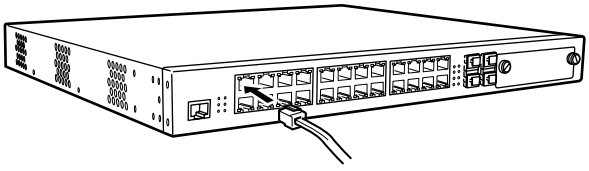
- XG2600
  Directly connect a cable to Management Port (10/100BASE-TX port) of this device and the PC instead of using a HUB in between.

Note Management-port of XG2600 (10/100BASE-TX) is MDI fixed.

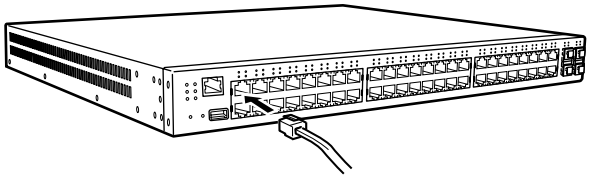


- XG0224 / XG0448
  Directly connect a cable to 10/100/1000BASE-T ports of this device and the PC instead of using a HUB in between.

[XG0224]

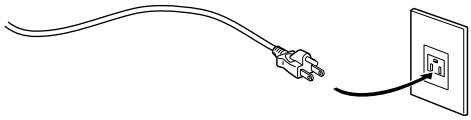


[XG0448]



Note As this device supports AutoMDI/MDI-X function, you can connect a cable to 10/100/1000BASE-T ports without being conscious of the PC and HUB.

3. Connect the power cable to the power outlet.



4. Insert the power cable into the power connector while pressing the reset switch on the back of this device using a pointed tool. After about five seconds, release the reset switch.

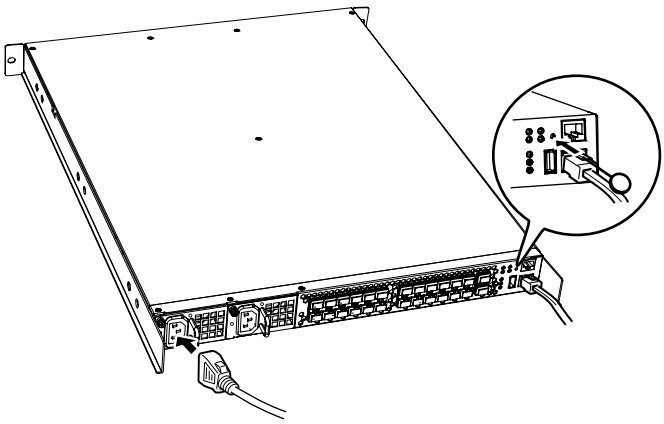
The power is turned on and the backup firmware is started.

Precautions

If you do not release the reset switch within 10 seconds after turning on the device, it is regarded as reset switch failure. Be sure release the reset switch within 10 seconds.

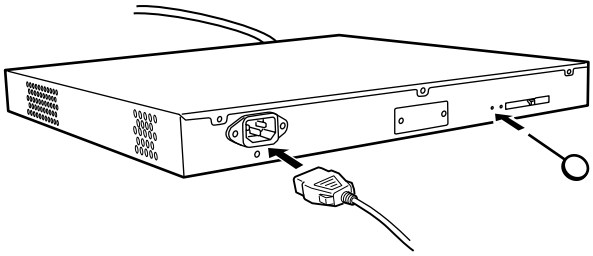
Note
- It takes about one minute to start the backup firmware.
- The Ready LED blinks in green when the backup firmware is running.
- If you start the backup firmware to logon with the console connected, the "backup#" message is displayed on the console screen.

- XG2600

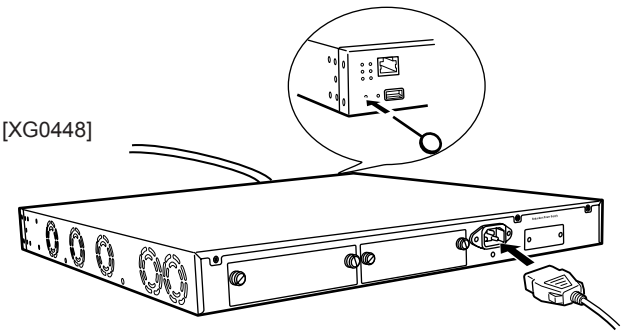


- XG0224/XG0448

[XG0224]



[XG0448]



6.4.2 Updating the Firmware

You can perform firmware update by transferring the firmware from an FTP client or a compact flash card.

Reference "6.3.1 Updating Firmware Using FTP" (pg.568), "6.3.2 Updating Firmware Using CompactFlash card" (pg.570), "6.3.3 Updating Firmware Using USB memory" (pg.572)

6.5 Extracting of Maintenance Information

If a fault occurred, maintenance information may be requested by the device sales representative to investigate the cause of the fault. This section provides procedures for extracting maintenance information.

6.5.1 Procedure for Extracting Maintenance Information when a System/Subsystem Failure Occurred

This section describes the procedures for extracting maintenance information when a system or subsystem failure occurred.

- Viewing maintenance information
  Using the "show tech-support" command, you can view maintenance information.
  Using the "show tech-support detail" command, you can view the detailed information.
- Saving maintenance information
  Using the "show tech-support save" command, you can save the maintenance information to the external media.
  Using the "show tech-support detail save" command, you can save the detailed information.

Chapter 7 Troubleshooting

This chapter describes the Troubleshooting.

7.1 To Return to the Initial Shipment Settings (Initializing Switch Configuration)

In case of incorrect settings or problems, this device status can be returned to its initial shipment settings.

When relocating this device, initialize the settings to the time of shipment before setting.

Note Initialization of the setting will erase all the set data. Back up the configuration data or note the contents of settings.

1. Connect to the device from the terminal PC via the master management blade using the serial connection.

   For the connecting method, refer to "6.3.1 Updating Firmware Using FTP" (pg.568).

2. Type user name and password to log in.

   User name: admin

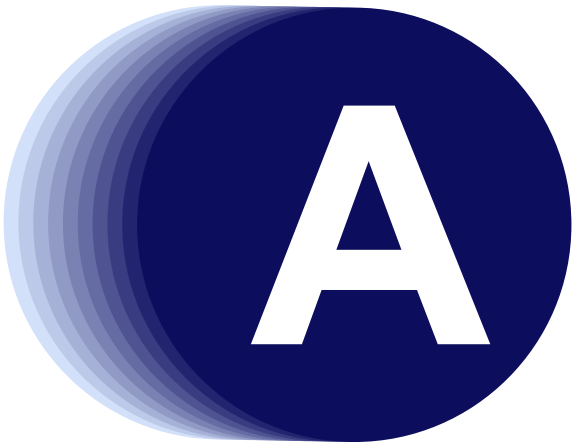
   Password: Confirm with the system administrator.

3. Type "reset clear", and press the [Return] or [Enter] key.

   The configuration of the device is initialized.

```
# reset clear <enter>
>
```

Appendix



This appendix explains the specification for the switch and technical information.

A SNMP Traps

This appendix lists the SNMP traps supported by the device.

A.1 Trap List

An SNMP agent can trap events and notify the SNMP manager asynchronously.

An SNMP agent sends trap when an event occurs.

The following is the list of supported traps.

- coldStart
  Notified once if the device starts or restarts.
- linkDown
  Notified if a link fails. May be notified at reboot or if the configuration becomes reactivated.
- linkUp
  Notified if a communication link of the device becomes activated.
- authenticationFailure
  Notified if SNMP authentication fails.
- newRoot
  Notified if the device becomes the root bridge.
- topologyChange
  Notified if a change in the bridge network configuration is detected, i.e., if the network status changes from learning to forwarding or from forwarding to blocking.
- nosError
  Notified if a hardware failure occurs. Only the occurrence of a failure is notified.
- lldpRemTablesChange
  Notified if the neighbor LLDP device information table changes.

B List of MIBs

This appendix lists the MIBs supported by the device.

B.1 Standard MIB Definitions

Available Model ***All models***

The following shows meaning of MIB ACCESS column.

RO :MIB can be read only.

RW :MIB can be read and written.

– :MIB can not be accessed.

B.1.1 system Group

No.	Name	Object identifier	MIB ACCESS
1	sysDescr	system.1	RO
2	sysObjectID	system.2	RO
3	sysUpTime	system.3	RO
4	sysContact	system.4	RW (*)
5	sysName	system.5	RW (*)
6	sysLocation	system.6	RW (*)
7	sysServices	system.7	RO

*) Written MIB works on until reset.

B.1.2 interfaces Group

No.	Name	Object identifier	MIB ACCESS
1	ifNumber	interfaces.1	RO
2	ifTable	interfaces.2	–
3	ifEntry	ifTable.1	–
4	ifIndex	ifEntry.1	RO
5	ifDescr	ifEntry.2	RO
6	ifType	ifEntry.3	RO
7	ifMtu	ifEntry.4	RO
8	ifSpeed	ifEntry.5	RO
9	ifPhysAddress	ifEntry.6	RO
10	ifAdminStatus	ifEntry.7	RW
11	ifOperStatus	ifEntry.8	RO
12	ifLastChange	ifEntry.9	RO
13	ifInOctets	ifEntry.10	RO
14	ifInUcastPkts	ifEntry.11	RO
15	ifInNUcastPkts	ifEntry.12	RO
16	ifInDiscards	ifEntry.13	RO
17	ifInErrors	ifEntry.14	RO
18	ifInUnknownProtos	ifEntry.15	RO
19	ifOutOctets	ifEntry.16	RO
20	ifOutUcastPkts	ifEntry.17	RO
21	ifOutNUcastPkts	ifEntry.18	RO
22	ifOutDiscards	ifEntry.19	RO
23	ifOutErrors	ifEntry.20	RO
24	ifOutQLen	ifEntry.21	RO
25	ifSpecific	ifEntry.22	RO

B.1.3 address translation Group

No.	Name	Object identifier	MIB ACCESS
1	atTable	at.1	–
2	atEntry	atTable.1	–
3	atIfIndex	atEntry.1	RO
4	atPhysAddress	atEntry.2	RO
5	atNetAddress	atEntry.3	RO

B.1.4 ip Group

ip Group

No.	Name	Object identifier	MIB ACCESS
1	ipForwarding	ip.1	RO
2	ipDefaultTTL	ip.2	RO
3	ipInReceives	ip.3	RO
4	ipInHdrErrors	ip.4	RO
5	ipInAddrErrors	ip.5	RO
6	ipForwDatagrams	ip.6	RO
7	ipInUnknownProtos	ip.7	RO
8	ipInDiscards	ip.8	RO
9	ipInDelivers	ip.9	RO
10	ipOutRequests	ip.10	RO
11	ipOutDiscards	ip.11	RO
12	ipOutNoRoutes	ip.12	RO
13	ipReasmTimeout	ip.13	RO
14	ipReasmReqds	ip.14	RO

No.	Name	Object identifier	MIB ACCESS
15	ipReasmOKs	ip.15	RO
16	ipReasmFails	ip.16	RO
17	ipFragOKs	ip.17	RO
18	ipFragFails	ip.18	RO
19	ipFragCreates	ip.19	RO
20	ipRoutingDiscards	ip.23	RO

ipAddr Group

No.	Name	Object identifier	MIB ACCESS
1	ipAddrTable	ip.20	–
2	ipAddrEntry	ipAddrTable.1	–
3	ipAdEntAddr	ipAddrEntry.1	RO
4	ipAdEntIfIndex	ipAddrEntry.2	RO
5	ipAdEntNetMask	ipAddrEntry.3	RO
6	ipAdEntBcastAddr	ipAddrEntry.4	RO
7	ipAdEntReasmMaxSize	ipAddrEntry.5	RO

ipRoute Group

No.	Name	Object identifier	MIB ACCESS
1	ipRouteTable	ip.21	–
2	ipRouteEntry	ipRouteTable.1	–
3	ipRouteDest	ipRouteEntry.1	RO
4	ipRouteIfIndex	ipRouteEntry.2	RO
5	ipRouteMetric1	ipRouteEntry.3	RO
6	ipRouteMetric2	ipRouteEntry.4	RO
7	ipRouteMetric3	ipRouteEntry.5	RO
8	ipRouteMetric4	ipRouteEntry.6	RO
9	ipRouteNextHop	ipRouteEntry.7	RO
10	ipRouteType	ipRouteEntry.8	RO
11	ipRouteProto	ipRouteEntry.9	RO
12	ipRouteAge	ipRouteEntry.10	RO
13	ipRouteMask	ipRouteEntry.11	RO
14	ipRouteMetric5	ipRouteEntry.12	RO
15	ipRouteInfo	ipRouteEntry.13	RO

ipNetToMedia Group

No.	Name	Object identifier	MIB ACCESS
1	ipNetToMediaTable	ip.22	–
2	ipNetToMediaEntry	ipNetToMediaTable.1	–
3	ipNetToMediaIfIndex	ipNetToMediaEntry.1	RO
4	ipNetToMediaPhysAddress	ipNetToMediaEntry.2	RO
5	ipNetToMediaNetAddress	ipNetToMediaEntry.3	RO
6	ipNetToMediaType	ipNetToMediaEntry.4	RO

ipCidrRoute Group

No.	Name	Object identifier	MIB ACCESS
1	ipCidrRouteNumber	ipForward.3	RO
2	ipCidrRouteTable	ipForward.4	–
3	ipCidrRouteEntry	ipCidrRouteTable.1	–
4	ipCidrRouteDest	ipCidrRouteEntry.1	RO
5	ipCidrRouteMask	ipCidrRouteEntry.2	RO
6	ipCidrRouteTos	ipCidrRouteEntry.3	RO
7	ipCidrRouteNextHop	ipCidrRouteEntry.4	RO
8	ipCidrRouteIfIndex	ipCidrRouteEntry.5	RO
9	ipCidrRouteType	ipCidrRouteEntry.6	RO
10	ipCidrRouteProto	ipCidrRouteEntry.7	RO
11	ipCidrRouteAge	ipCidrRouteEntry.8	RO
12	ipCidrRouteInfo	ipCidrRouteEntry.9	RO
13	ipCidrRouteNextHopAS	ipCidrRouteEntry.10	RO
14	ipCidrRouteMetric1	ipCidrRouteEntry.11	RO
15	ipCidrRouteMetric2	ipCidrRouteEntry.12	RO
16	ipCidrRouteMetric3	ipCidrRouteEntry.13	RO
17	ipCidrRouteMetric4	ipCidrRouteEntry.14	RO
18	ipCidrRouteMetric5	ipCidrRouteEntry.15	RO
19	ipCidrRouteStatus	ipCidrRouteEntry.16	RO

inetCidrRoute Group

No.	Name	Object identifier	MIB ACCESS
1	inetCidrRouteNumber	ipForward.6	RO
2	inetCidrRouteTable	ipForward.7	–
3	inetCidrRouteEntry	inetCidrRouteTable.1	–
4	inetCidrRouteDestType	inetCidrRouteEntry.1	–
5	inetCidrRouteDest	inetCidrRouteEntry.2	–
6	inetCidrRoutePfxLen	inetCidrRouteEntry.3	–
7	inetCidrRoutePolicy	inetCidrRouteEntry.4	–
8	inetCidrRouteNextHopType	inetCidrRouteEntry.5	–
9	inetCidrRouteNextHop	inetCidrRouteEntry.6	–
10	inetCidrRouteIfIndex	inetCidrRouteEntry.7	RO
11	inetCidrRouteType	inetCidrRouteEntry.8	RO
12	inetCidrRouteProto	inetCidrRouteEntry.9	RO
13	inetCidrRouteAge	inetCidrRouteEntry.10	RO
14	inetCidrRouteNextHopAS	inetCidrRouteEntry.11	RO
15	inetCidrRouteMetric1	inetCidrRouteEntry.12	RO
16	inetCidrRouteMetric2	inetCidrRouteEntry.13	RO
17	inetCidrRouteMetric3	inetCidrRouteEntry.14	RO
18	inetCidrRouteMetric4	inetCidrRouteEntry.15	RO
19	inetCidrRouteMetric5	inetCidrRouteEntry.16	RO
20	inetCidrRouteStatus	inetCidrRouteEntry.17	RO
21	inetCidrRouteDiscards	ipForward.8	RO

ipv6 Group

No.	Name	Object identifier	MIB ACCESS
1	ipv6IpForwarding	ip.25	RO
2	ipv6IpDefaultHopLimit	ip.26	RO

ipv4Interface Group

No.	Name	Object identifier	MIB ACCESS
1	ipv4InterfaceTableLastChange	ip.27	RO
2	ipv4InterfaceTable	ip.28	–
3	ipv4InterfaceEntry	ipv4InterfaceTable.1	–
4	ipv4InterfaceIfIndex	ipv4InterfaceEntry.1	–
5	ipv4InterfaceReasmMaxSize	ipv4InterfaceEntry.2	RO
6	ipv4InterfaceEnableStatus	ipv4InterfaceEntry.3	RO
7	ipv4InterfaceRetransmitTime	ipv4InterfaceEntry.4	RO

ipv6Interface Group

No.	Name	Object identifier	MIB ACCESS
1	ipv6InterfaceTableLastChange	ip.29	RO
2	ipv6InterfaceTable	ip.30	–
3	ipv6InterfaceEntry	ipv6InterfaceTable.1	–
4	ipv6InterfaceIfIndex	ipv6InterfaceEntry.1	–
5	ipv6InterfaceReasmMaxSize	ipv6InterfaceEntry.2	RO
6	ipv6InterfaceIdentifier	ipv6InterfaceEntry.3	RO
7	ipv6InterfaceEnableStatus	ipv6InterfaceEntry.5	RO
8	ipv6InterfaceReachableTime	ipv6InterfaceEntry.6	RO
9	ipv6InterfaceRetransmitTime	ipv6InterfaceEntry.7	RO
10	ipv6InterfaceForwarding	ipv6InterfaceEntry.8	RO

ipSystemStats Group

No.	Name	Object identifier	MIB ACCESS
1	ipSystemStatsTable	ipTrafficStats.1	–
2	ipSystemStatsEntry	ipSystemStatsTable.1	–
3	ipSystemStatsIPVersion	ipSystemStatsEntry.1	–
4	ipSystemStatsInReceives	ipSystemStatsEntry.3	RO
5	ipSystemStatsInHdrErrors	ipSystemStatsEntry.7	RO
6	ipSystemStatsInUnknownProtos	ipSystemStatsEntry.10	RO
7	ipSystemStatsInTruncatedPkts	ipSystemStatsEntry.11	RO
8	ipSystemStatsInForwDatagrams	ipSystemStatsEntry.12	RO
9	ipSystemStatsReasmReqds	ipSystemStatsEntry.14	RO
10	ipSystemStatsReasmOKs	ipSystemStatsEntry.15	RO
11	ipSystemStatsReasmFails	ipSystemStatsEntry.16	RO
12	ipSystemStatsInDelivers	ipSystemStatsEntry.18	RO
13	ipSystemStatsOutRequests	ipSystemStatsEntry.20	RO
14	ipSystemStatsOutNoRoutes	ipSystemStatsEntry.22	RO
15	ipSystemStatsOutForwDatagrams	ipSystemStatsEntry.23	RO
16	ipSystemStatsOutDiscards	ipSystemStatsEntry.25	RO
17	ipSystemStatsOutFragReqds	ipSystemStatsEntry.26	RO
18	ipSystemStatsOutFragOKs	ipSystemStatsEntry.27	RO
19	ipSystemStatsOutFragFails	ipSystemStatsEntry.28	RO
20	ipSystemStatsOutFragCreates	ipSystemStatsEntry.29	RO
21	ipSystemStatsOutTransmits	ipSystemStatsEntry.30	RO
22	ipSystemStatsDiscontinuityTime	ipSystemStatsEntry.46	RO
23	ipSystemStatsRefreshRate	ipSystemStatsEntry.47	RO

ipAddressPrefix Group

No.	Name	Object identifier	MIB ACCESS
1	ipAddressPrefixTable	ip.32	–
2	ipAddressPrefixEntry	ipAddressPrefixTable.1	–
3	ipAddressPrefixIfIndex	ipAddressPrefixEntry.1	–
4	ipAddressPrefixType	ipAddressPrefixEntry.2	–
5	ipAddressPrefixPrefix	ipAddressPrefixEntry.3	–
6	ipAddressPrefixLength	ipAddressPrefixEntry.4	–
7	ipAddressPrefixOrigin	ipAddressPrefixEntry.5	RO
8	ipAddressPrefixOnLinkFlag	ipAddressPrefixEntry.6	RO
9	ipAddressPrefixAutonomousFlag	ipAddressPrefixEntry.7	RO
10	ipAddressPrefixAdvPreferredLifetime	ipAddressPrefixEntry.8	RO
11	ipAddressPrefixAdvValidLifetime	ipAddressPrefixEntry.9	RO

ipAddress Group

No.	Name	Object identifier	MIB ACCESS
1	ipAddressTable	ip.34	–
2	ipAddressEntry	ipAddressTable.1	–
3	ipAddressAddrType	ipAddressEntry.1	–
4	ipAddressAddr	ipAddressEntry.2	–
5	ipAddressIfIndex	ipAddressEntry.3	RO
6	ipAddressType	ipAddressEntry.4	RO
7	ipAddressPrefix	ipAddressEntry.5	RO
8	ipAddressOrigin	ipAddressEntry.6	RO
9	ipAddressStatus	ipAddressEntry.7	RO
10	ipAddressCreated	ipAddressEntry.8	RO
11	ipAddressLastChanged	ipAddressEntry.9	RO
12	ipAddressRowStatus	ipAddressEntry.10	RO
13	ipAddressStorageType	ipAddressEntry.11	RO

ipNetToPhysical Group

No.	Name	Object identifier	MIB ACCESS
1	ipNetToPhysicalTable	ip.35	–
2	ipNetToPhysicalEntry	ipNetToPhysicalTable.1	–
3	ipNetToPhysicalIfIndex	ipNetToPhysicalEntry.1	–
4	ipNetToPhysicalNetAddressType	ipNetToPhysicalEntry.2	–
5	ipNetToPhysicalNetAddress	ipNetToPhysicalEntry.3	–
6	ipNetToPhysicalPhysAddress	ipNetToPhysicalEntry.4	RO
7	ipNetToPhysicalLastUpdated	ipNetToPhysicalEntry.5	RO
8	ipNetToPhysicalType	ipNetToPhysicalEntry.6	RO
9	ipNetToPhysicalState	ipNetToPhysicalEntry.7	RO
10	ipNetToPhysicalRowStatus	ipNetToPhysicalEntry.8	RO

B.1.5 icmp Group

icmp Group

No.	Name	Object identifier	MIB ACCESS
1	icmpInMsgs	icmp.1	RO
2	icmpInErrors	icmp.2	RO
3	icmpInDestUnreachs	icmp.3	RO
4	icmpInTimeExcds	icmp.4	RO
5	icmpInParmProbs	icmp.5	RO
6	icmpInSrcQuenchs	icmp.6	RO
7	icmpInRedirects	icmp.7	RO
8	icmpInEchos	icmp.8	RO
9	icmpInEchoReps	icmp.9	RO
10	icmpInTimestamps	icmp.10	RO
11	icmpInTimestampReps	icmp.11	RO
12	icmpInAddrMasks	icmp.12	RO
13	icmpInAddrMaskReps	icmp.13	RO
14	icmpOutMsgs	icmp.14	RO
15	icmpOutErrors	icmp.15	RO
16	icmpOutDestUnreachs	icmp.16	RO
17	icmpOutTimeExcds	icmp.17	RO
18	icmpOutParmProbs	icmp.18	RO
19	icmpOutSrcQuenchs	icmp.19	RO
20	icmpOutRedirects	icmp.20	RO
21	icmpOutEchos	icmp.21	RO
22	icmpOutEchoReps	icmp.22	RO
23	icmpOutTimestamps	icmp.23	RO
24	icmpOutTimestampReps	icmp.24	RO
25	icmpOutAddrMasks	icmp.25	RO
26	icmpOutAddrMaskReps	icmp.26	RO

icmpStat Group

No.	Name	Object identifier	MIB ACCESS
1	icmpStatsTable	icmp.29	–
2	icmpStatsEntry	icmpStatsTable.1	–
3	icmpStatsIPVersion	icmpStatsEntry.1	–
4	icmpStatsInMsgs	icmpStatsEntry.2	RO
5	icmpStatsInErrors	icmpStatsEntry.3	RO
6	icmpStatsOutMsgs	icmpStatsEntry.4	RO
7	icmpStatsOutErrors	icmpStatsEntry.5	RO

icmpMsgStats Group

No.	Name	Object identifier	MIB ACCESS
1	icmpMsgStatsTable	icmp.30	–
2	icmpMsgStatsEntry	icmpMsgStatsTable.1	–
3	icmpMsgStatsIPVersion	icmpMsgStatsEntry.1	–
4	icmpMsgStatsType	icmpMsgStatsEntry.2	–
5	icmpMsgStatsInPkts	icmpMsgStatsEntry.3	RO
6	icmpMsgStatsOutPkts	icmpMsgStatsEntry.4	RO

B.1.6 tcp Group

tcp Group

No.	Name	Object identifier	MIB ACCESS
1	tcpRtoAlgorithm	tcp.1	RO
2	tcpRtoMin	tcp.2	RO
3	tcpRtoMax	tcp.3	RO
4	tcpMaxConn	tcp.4	RO
5	tcpActiveOpens	tcp.5	RO
6	tcpPassiveOpens	tcp.6	RO
7	tcpAttemptFails	tcp.7	RO
8	tcpEstabResets	tcp.8	RO
9	tcpCurrEstab	tcp.9	RO
10	tcpInSegs	tcp.10	RO
11	tcpOutSegs	tcp.11	RO
12	tcpRetransSegs	tcp.12	RO
13	tcpInErrs	tcp.14	RO
14	tcpOutRsts	tcp.15	RO

tcpConn Group

No.	Name	Object identifier	MIB ACCESS
1	tcpConnTable	tcp.13	–
2	tcpConnEntry	tcpConnTable.1	–
3	tcpConnState	tcpConnEntry.1	RO
4	tcpConnLocalAddress	tcpConnEntry.2	RO
5	tcpConnLocalPort	tcpConnEntry.3	RO
6	tcpConnRemAddress	tcpConnEntry.4	RO
7	tcpConnRemPort	tcpConnEntry.5	RO

tcpConnection Group

No.	Name	Object identifier	MIB ACCESS
1	tcpConnectionTable	tcp.19	–
2	tcpConnectionEntry	tcpConnectionTable.1	–
3	tcpConnectionLocalAddressType	tcpConnectionEntry.1	–
4	tcpConnectionLocalAddress	tcpConnectionEntry.2	–
5	tcpConnectionLocalPort	tcpConnectionEntry.3	–
6	tcpConnectionRemAddressType	tcpConnectionEntry.4	–
7	tcpConnectionRemAddress	tcpConnectionEntry.5	–
8	tcpConnectionRemPort	tcpConnectionEntry.6	–
9	tcpConnectionState	tcpConnectionEntry.7	RO
10	tcpConnectionProcess	tcpConnectionEntry.8	RO

tcpListener Group

No.	Name	Object identifier	MIB ACCESS
1	tcpListenerTable	tcp.20	–
2	tcpListenerEntry	tcpListenerTable.1	–
3	tcpListenerLocalAddressType	tcpListenerEntry.1	–
4	tcpListenerLocalAddress	tcpListenerEntry.2	–
5	tcpListenerLocalPort	tcpListenerEntry.3	–
6	tcpListenerProcess	tcpListenerEntry.4	RO

B.1.7 udp Group

udp Group

No.	Name	Object identifier	MIB ACCESS
1	udpInDatagrams	udp.1	RO
2	udpNoPorts	udp.2	RO
3	udpInErrors	udp.3	RO
4	udpOutDatagrams	udp.4	RO

udpListener Group

No.	Name	Object identifier	MIB ACCESS
1	udpTable	udp.5	–
2	udpEntry	udpTable.1	–
3	udpLocalAddress	udpEntry.1	RO
4	udpLocalPort	udpEntry.2	RO

udpEndpoint Group

No.	Name	Object identifier	MIB ACCESS
1	udpEndpointTable	udp.7	–
2	udpEndpointEntry	udpEndpointTable.1	–
3	udpEndpointLocalAddressType	udpEndpointEntry.1	–
4	udpEndpointLocalAddress	udpEndpointEntry.2	–
5	udpEndpointLocalPort	udpEndpointEntry.3	–
6	udpEndpointRemoteAddressType	udpEndpointEntry.4	–
7	udpEndpointRemoteAddress	udpEndpointEntry.5	–
8	udpEndpointRemotePort	udpEndpointEntry.6	–
9	udpEndpointInstance	udpEndpointEntry.7	–
10	udpEndpointProcess	udpEndpointEntry.8	RO

B.1.8 dot3 Group

dot3Stats Group

No.	Name	Object identifier	MIB ACCESS
1	dot3StatsTable	dot3.2	–
2	dot3StatsEntry	dot3StatsTable.1	–
3	dot3StatsIndex	dot3StatsEntry.1	RO
4	dot3StatsAlignmentErrors	dot3StatsEntry.2	RO
5	dot3StatsFCSErrors	dot3StatsEntry.3	RO
6	dot3StatsSingleCollisionFrames	dot3StatsEntry.4	RO
7	dot3StatsMultipleCollisionFrames	dot3StatsEntry.5	RO
8	dot3StatsSQETestErrors	dot3StatsEntry.6	RO
9	dot3StatsDeferredTransmissions	dot3StatsEntry.7	RO
10	dot3StatsLateCollisions	dot3StatsEntry.8	RO
11	dot3StatsExcessiveCollisions	dot3StatsEntry.9	RO
12	dot3StatsInternalMacTransmitErrors	dot3StatsEntry.10	RO
13	dot3StatsCarrierSenseErrors	dot3StatsEntry.11	RO
14	dot3StatsFrameTooLongs	dot3StatsEntry.13	RO
15	dot3StatsInternalMacReceiveErrors	dot3StatsEntry.16	RO
16	dot3StatsEtherChipSet	dot3StatsEntry.17	RO
17	dot3StatsSymbolErrors	dot3StatsEntry.18	RO
18	dot3StatsDuplexStatus	dot3StatsEntry.19	RO
19	dot3StatsRateControlAbility	dot3StatsEntry.20	RO
20	dot3StatsRateControlStatus	dot3StatsEntry.21	RO

dot3Control Group

No.	Name	Object identifier	MIB ACCESS
1	dot3ControlTable	dot3.9	–
2	dot3ControlEntry	dot3ControlTable.1	–
3	dot3ControlFunctionsSupported	dot3ControlEntry.1	RO
4	dot3ControlInUnknownOpcodes	dot3ControlEntry.2	RO

dot3Pause Group

No.	Name	Object identifier	MIB ACCESS
1	dot3PauseTable	dot3.10	–
2	dot3PauseEntry	dot3PauseTable.1	–
3	dot3PauseAdminMode	dot3PauseEntry.1	RO
4	dot3PauseOperMode	dot3PauseEntry.2	RO
5	dot3InPauseFrames	dot3PauseEntry.3	RO
6	dot3OutPauseFrames	dot3PauseEntry.4	RO

B.1.9 snmp Group

No.	Name	Object identifier	MIB ACCESS
1	snmpInPkts	snmp.1	RO
2	snmpOutPkts	snmp.2	RO
3	snmpInBadVersions	snmp.3	RO
4	snmpInBadCommunityNames	snmp.4	RO
5	snmpInBadCommunityUses	snmp.5	RO
6	snmpInASNParseErrs	snmp.6	RO
7	snmpInTooBigs	snmp.8	RO
8	snmpInNoSuchNames	snmp.9	RO
9	snmpInBadValues	snmp.10	RO
10	snmpInReadOnlys	snmp.11	RO
11	snmpInGenErrs	snmp.12	RO
12	snmpInTotalReqVars	snmp.13	RO
13	snmpInTotalSetVars	snmp.14	RO
14	snmpInGetRequests	snmp.15	RO
15	snmpInGetNexts	snmp.16	RO
16	snmpInSetRequests	snmp.17	RO
17	snmpInGetResponses	snmp.18	RO
18	snmpInTraps	snmp.19	RO
19	snmpOutTooBigs	snmp.20	RO
20	snmpOutNoSuchNames	snmp.21	RO
21	snmpOutBadValues	snmp.22	RO
22	snmpOutGenErrs	snmp.24	RO
23	snmpOutGetRequests	snmp.25	RO
24	snmpOutGetNexts	snmp.26	RO
25	snmpOutSetRequests	snmp.27	RO
26	snmpOutGetResponses	snmp.28	RO
27	snmpOutTraps	snmp.29	RO
28	snmpEnableAuthenTraps	snmp.30	RO

B.1.10 rmon Group

rmonEthernetStatistics Group

No.	Name	Object identifier	MIB ACCESS
1	etherStatsTable	statistics.1	–
2	etherStatsEntry	etherStatsTable.1	–
3	etherStatsIndex	etherStatsEntry.1	RO
4	etherStatsDataSource	etherStatsEntry.2	RO
5	etherStatsDropEvents	etherStatsEntry.3	RO
6	etherStatsOctets	etherStatsEntry.4	RO
7	etherStatsPkts	etherStatsEntry.5	RO
8	etherStatsBroadcastPkts	etherStatsEntry.6	RO
9	etherStatsMulticastPkts	etherStatsEntry.7	RO
10	etherStatsCRCAlignErrors	etherStatsEntry.8	RO
11	etherStatsUndersizePkts	etherStatsEntry.9	RO
12	etherStatsOversizePkts	etherStatsEntry.10	RO
13	etherStatsFragments	etherStatsEntry.11	RO
14	etherStatsJabbers	etherStatsEntry.12	RO
15	etherStatsCollisions	etherStatsEntry.13	RO
16	etherStatsPkts64Octets	etherStatsEntry.14	RO / – (XG2600)
17	etherStatsPkts65to127Octets	etherStatsEntry.15	RO / – (XG2600)
18	etherStatsPkts128to255Octets	etherStatsEntry.16	RO / – (XG2600)
19	etherStatsPkts256to511Octets	etherStatsEntry.17	RO / – (XG2600)
20	etherStatsPkts512to1023Octets	etherStatsEntry.18	RO / – (XG2600)
21	etherStatsPkts1024to1518Octets	etherStatsEntry.19	RO / – (XG2600)
22	etherStatsOwner	etherStatsEntry.20	RO
23	etherStatsStatus	etherStatsEntry.21	RO

rmonHistoryControl Group

No.	Name	Object identifier	MIB ACCESS
1	historyControlTable	history.1	–
2	historyControlEntry	historyControlTable.1	–
3	historyControlIndex	historyControlEntry.1	RO
4	historyControlDataSource	historyControlEntry.2	RO
5	historyControlBucketsRequested	historyControlEntry.3	RO
6	historyControlBucketsGranted	historyControlEntry.4	RO
7	historyControlInterval	historyControlEntry.5	RO
8	historyControlOwner	historyControlEntry.6	RO
9	historyControlStatus	historyControlEntry.7	RO

rmonEthernetHistory Group

No.	Name	Object identifier	MIB ACCESS
1	etherHistoryTable	history.2	–
2	etherHistoryEntry	etherHistoryTable.1	–
3	etherHistoryIndex	etherHistoryEntry.1	RO
4	etherHistorySampleIndex	etherHistoryEntry.2	RO
5	etherHistoryIntervalStart	etherHistoryEntry.3	RO
6	etherHistoryDropEvents	etherHistoryEntry.4	RO
7	etherHistoryOctets	etherHistoryEntry.5	RO
8	etherHistoryPkts	etherHistoryEntry.6	RO
9	etherHistoryBroadcastPkts	etherHistoryEntry.7	RO
10	etherHistoryMulticastPkts	etherHistoryEntry.8	RO
11	etherHistoryCRCAlignErrors	etherHistoryEntry.9	RO
12	etherHistoryUndersizePkts	etherHistoryEntry.10	RO
13	etherHistoryOversizePkts	etherHistoryEntry.11	RO
14	etherHistoryFragments	etherHistoryEntry.12	RO
15	etherHistoryJabbers	etherHistoryEntry.13	RO
16	etherHistoryCollisions	etherHistoryEntry.14	RO
17	etherHistoryUtilization	etherHistoryEntry.15	RO

B.1.11 dot1dBridge Group

dot1dBase Group

No.	Name	Object identifier	MIB ACCESS
1	dot1dBaseBridgeAddress	dot1dBase.1	RO
2	dot1dBaseNumPorts	dot1dBase.2	RO
3	dot1dBaseType	dot1dBase.3	RO
4	dot1dBasePortTable	dot1dBase.4	–
5	dot1dBasePortEntry	dot1dBasePortTable.1	–
6	dot1dBasePort	dot1dBasePortEntry.1	RO
7	dot1dBasePortIfIndex	dot1dBasePortEntry.2	RO
8	dot1dBasePortCircuit	dot1dBasePortEntry.3	RO
9	dot1dBasePortDelayExceededDiscards	dot1dBasePortEntry.4	RO
10	dot1dBasePortMtuExceededDiscards	dot1dBasePortEntry.5	RO

dot1dStp Group

No.	Name	Object identifier	MIB ACCESS
1	dot1dStpProtocolSpecification	dot1dStp.1	RO
2	dot1dStpPriority	dot1dStp.2	RO
3	dot1dStpTimeSinceTopologyChange	dot1dStp.3	RO
4	dot1dStpTopChanges	dot1dStp.4	RO
5	dot1dStpDesignatedRoot	dot1dStp.5	RO
6	dot1dStpRootCost	dot1dStp.6	RO
7	dot1dStpRootPort	dot1dStp.7	RO
8	dot1dStpMaxAge	dot1dStp.8	RO
9	dot1dStpHelloTime	dot1dStp.9	RO
10	dot1dStpHoldTime	dot1dStp.10	RO
11	dot1dStpForwardDelay	dot1dStp.11	RO
12	dot1dStpBridgeMaxAge	dot1dStp.12	RO
13	dot1dStpBridgeHelloTime	dot1dStp.13	RO
14	dot1dStpBridgeForwardDelay	dot1dStp.14	RO
15	dot1dStpPortTable	dot1dStp.15	–
16	dot1dStpPortEntry	dot1dStpPortTable.1	–
17	dot1dStpPort	dot1dStpPortEntry.1	RO
18	dot1dStpPortPriority	dot1dStpPortEntry.2	RO
19	dot1dStpPortState	dot1dStpPortEntry.3	RO
20	dot1dStpPortEnable	dot1dStpPortEntry.4	RO
21	dot1dStpPortPathCost	dot1dStpPortEntry.5	RO
22	dot1dStpPortDesignatedRoot	dot1dStpPortEntry.6	RO
23	dot1dStpPortDesignatedCost	dot1dStpPortEntry.7	RO
24	dot1dStpPortDesignatedBridge	dot1dStpPortEntry.8	RO
25	dot1dStpPortDesignatedPort	dot1dStpPortEntry.9	RO
26	dot1dStpPortForwardTransitions	dot1dStpPortEntry.10	RO

dot1dTp Group

No.	Name	Object identifier	MIB ACCESS
1	dot1dTpLearnedEntryDiscards	dot1dTp.1	RO
2	dot1dTpAgingTime	dot1dTp.2	RO
3	dot1dTpFdbTable	dot1dTp.3	–
4	dot1dTpFdbEntry	dot1dTpFdbTable.1	–
5	dot1dTpFdbAddress	dot1dTpFdbEntry.1	RO
6	dot1dTpFdbPort	dot1dTpFdbEntry.2	RO
7	dot1dTpFdbStatus	dot1dTpFdbEntry.3	RO
8	dot1dTpPortTable	dot1dTp.4	–
9	dot1dTpPortEntry	dot1dTpPortTable.1	–
10	dot1dTpPort	dot1dTpPortEntry.1	RO
11	dot1dTpPortMaxInfo	dot1dTpPortEntry.2	RO
12	dot1dTpPortInFrames	dot1dTpPortEntry.3	RO
13	dot1dTpPortOutFrames	dot1dTpPortEntry.4	RO
14	dot1dTpPortInDiscards	dot1dTpPortEntry.5	RO

dot1dExtBase Group

No.	Name	Object identifier	MIB ACCESS
1	dot1dDeviceCapabilities	dot1dExtBase.1	RO
2	dot1dTrafficClassesEnabled	dot1dExtBase.2	RO
3	dot1dGmrpStatus	dot1dExtBase.3	RO
4	dot1dPortCapabilitiesTable	dot1dExtBase.4	–
5	dot1dPortCapabilitiesEntry	dot1dPortCapabilitiesTable.1	–
6	dot1dPortCapabilities	dot1dPortCapabilitiesEntry.1	RO

dot1dPriority Group

No.	Name	Object identifier	MIB ACCESS
1	dot1dPortPriorityTable	dot1dPriority.1	–
2	dot1dPortPriorityEntry	dot1dPortPriorityTable.1	–
3	dot1dPortDefaultUserPriority	dot1dPortPriorityEntry.1	RO
4	dot1dPortNumTrafficClasses	dot1dPortPriorityEntry.2	RO
5	dot1dTrafficClassTable	dot1dPriority.3	–
6	dot1dTrafficClassEntry	dot1dTrafficClassTable.1	–
7	dot1dTrafficClassPriority	dot1dTrafficClassEntry.1	–
8	dot1dTrafficClass	dot1dTrafficClassEntry.2	RO

B.1.12 qBridgeMIB Group

dot1qBase Group

No.	Name	Object identifier	MIB ACCESS
1	dot1qVlanVersionNumber	dot1qBase.1	RO
2	dot1qMaxVlanId	dot1qBase.2	RO
3	dot1qMaxSupportedVlans	dot1qBase.3	RO
4	dot1qNumVlans	dot1qBase.4	RO
5	dot1qGvrpStatus	dot1qBase.5	RO

dot1qVlan Group

No.	Name	Object identifier	MIB ACCESS
1	dot1qVlanNumDeletes	dot1qVlan.1	RO
2	dot1qVlanCurrentTable	dot1qVlan.2	–
3	dot1qVlanCurrentEntry	dot1qVlanCurrentTable.1	–
4	dot1qVlanTimeMark	dot1qVlanCurrentEntry.1	–
5	dot1qVlanIndex	dot1qVlanCurrentEntry.2	–
6	dot1qVlanCurrentEgressPorts	dot1qVlanCurrentEntry.4	RO
7	dot1qVlanCurrentUntaggedPorts	dot1qVlanCurrentEntry.5	RO
8	dot1qVlanStatus	dot1qVlanCurrentEntry.6	RO
9	dot1qVlanStaticTable	dot1qVlan.3	–
10	dot1qVlanStaticEntry	dot1qVlanStaticTable.1	–
11	dot1qVlanStaticName	dot1qVlanStaticEntry.1	RO
12	dot1qVlanStaticEgressPorts	dot1qVlanStaticEntry.2	RO
13	dot1qVlanForbiddenEgressPorts	dot1qVlanStaticEntry.3	RO
14	dot1qVlanStaticUntaggedPorts	dot1qVlanStaticEntry.4	RO
15	dot1qVlanStaticRowStatus	dot1qVlanStaticEntry.5	RO
16	dot1qNextFreeLocalVlanIndex	dot1qVlan.4	RO
17	dot1qPortVlanTable	dot1qVlan.5	–
18	dot1qPortVlanEntry	dot1qPortVlanTable.1	–
19	dot1qPvid	dot1qPortVlanEntry.1	RO
20	dot1qPortAcceptableFrameTypes	dot1qPortVlanEntry.2	RO
21	dot1qPortIngressFiltering	dot1qPortVlanEntry.3	RO
22	dot1qPortGvrpStatus	dot1qPortVlanEntry.4	RO

B.1.13 ifMIB Group

ifx Group

No.	Name	Object identifier	MIB ACCESS
1	ifXTable	ifMIBObjects.1	–
2	ifXEntry	ifXTable.1	–
3	ifName	ifXEntry.1	RO
4	ifInMulticastPkts	ifXEntry.2	RO
5	ifInBroadcastPkts	ifXEntry.3	RO
6	ifOutMulticastPkts	ifXEntry.4	RO
7	ifOutBroadcastPkts	ifXEntry.5	RO
8	ifHCInOctets	ifXEntry.6	RO
9	ifHCInUcastPkts	ifXEntry.7	RO
10	ifHCInMulticastPkts	ifXEntry.8	RO
11	ifHCInBroadcastPkts	ifXEntry.9	RO
12	ifHCOutOctets	ifXEntry.10	RO
13	ifHCOutUcastPkts	ifXEntry.11	RO

No.	Name	Object identifier	MIB ACCESS
14	ifHCOutMulticastPkts	ifXEntry.12	RO
15	ifHCOutBroadcastPkts	ifXEntry.13	RO
16	ifLinkUpDownTrapEnable	ifXEntry.14	RO
17	ifHighSpeed	ifXEntry.15	RO
18	ifPromiscuousMode	ifXEntry.16	RO
19	ifConnectorPresent	ifXEntry.17	RO
20	ifAlias	ifXEntry.18	RO
21	ifCounterDiscontinuityTime	ifXEntry.19	RO

ifStack Group

No.	Name	Object identifier	MIB ACCESS
1	ifStackTable	ifMIBObjects.2	–
2	ifStackEntry	ifStackTable.1	–
3	ifStackHigherLayer	ifStackEntry.1	–
4	ifStackLowerLayer	ifStackEntry.2	–
5	ifStackStatus	ifStackEntry.3	RO

ifMIB Group

No.	Name	Object identifier	MIB ACCESS
1	ifTableLastChange	ifMIBObjects.5	RO
2	ifStackLastChange	ifMIBObjects.6	RO

B.1.14 radiusMIB Group

radiusAuthClient Group

No.	Name	Object identifier	MIB ACCESS
1	radiusAuthClientInvalidServerAddresses	radiusAuthClient.1	RO
2	radiusAuthClientIdentifier	radiusAuthClient.2	RO
3	radiusAuthServerTable	radiusAuthClient.3	–
4	radiusAuthServerEntry	radiusAuthServerTable.1	–
5	radiusAuthServerIndex	radiusAuthServerEntry.1	–
6	radiusAuthServerAddress	radiusAuthServerEntry.2	RO
7	radiusAuthClientServerPortNumber	radiusAuthServerEntry.3	RO
8	radiusAuthClientRoundTripTime	radiusAuthServerEntry.4	RO
9	radiusAuthClientAccessRequests	radiusAuthServerEntry.5	RO
10	radiusAuthClientAccessRetransmissions	radiusAuthServerEntry.6	RO
11	radiusAuthClientAccessAccepts	radiusAuthServerEntry.7	RO
12	radiusAuthClientAccessRejects	radiusAuthServerEntry.8	RO
13	radiusAuthClientAccessChallenges	radiusAuthServerEntry.9	RO
14	radiusAuthClientMalformedAccessResponses	radiusAuthServerEntry.10	RO
15	radiusAuthClientBadAuthenticators	radiusAuthServerEntry.11	RO
16	radiusAuthClientPendingRequests	radiusAuthServerEntry.12	RO
17	radiusAuthClientTimeouts	radiusAuthServerEntry.13	RO
18	radiusAuthClientUnknownTypes	radiusAuthServerEntry.14	RO
19	radiusAuthClientPacketsDropped	radiusAuthServerEntry.15	RO

radiusAccClient Group

No.	Name	Object identifier	MIB ACCESS
1	radiusAccClientInvalidServerAddresses	radiusAccClient.1	RO
2	radiusAccClientIdentifier	radiusAccClient.2	RO
3	radiusAccServerTable	radiusAccClient.3	–
4	radiusAccServerEntry	radiusAccServerTable.1	–
5	radiusAccServerIndex	radiusAccServerEntry.1	–
6	radiusAccServerAddress	radiusAccServerEntry.2	RO
7	radiusAccClientServerPortNumber	radiusAccServerEntry.3	RO
8	radiusAccClientRoundTripTime	radiusAccServerEntry.4	RO
9	radiusAccClientRequests	radiusAccServerEntry.5	RO
10	radiusAccClientRetransmissions	radiusAccServerEntry.6	RO
11	radiusAccClientResponses	radiusAccServerEntry.7	RO
12	radiusAccClientMalformedResponses	radiusAccServerEntry.8	RO
13	radiusAccClientBadAuthenticators	radiusAccServerEntry.9	RO
14	radiusAccClientPendingRequests	radiusAccServerEntry.10	RO
15	radiusAccClientTimeouts	radiusAccServerEntry.11	RO
16	radiusAccClientUnknownTypes	radiusAccServerEntry.12	RO
17	radiusAccClientPacketsDropped	radiusAccServerEntry.13	RO

B.2 Fujitsu Extension MIB

Available Model ***XG0224 / XG0448 / XG2600***

The following shows meaning of MIB ACCESS column.

RO :MIB can be read only.

RW :MIB can be read and written.

– :MIB can not be accessed.

B.2.1 nonosSystem Group

No.	Name	Object identifier	MIB ACCESS
1	nosResetSystem	nonosSystem.1	RW

B.2.2 nonosSystemError Group

No.	Name	Object identifier	MIB ACCESS
1	nosSystemErrorPoint	nonosSystemError.1	RO
2	nosSystemErrorText1	nonosSystemError.2	RO
3	nosSystemErrorText2	nonosSystemError.3	RO
4	nosSystemErrorText3	nonosSystemError.4	RO
5	nosSystemErrorText4	nonosSystemError.5	RO
6	nosSystemErrorText5	nonosSystemError.6	RO
7	nosSystemErrorText6	nonosSystemError.7	RO
8	nosSystemErrorText7	nonosSystemError.8	RO
9	nosSystemErrorText8	nonosSystemError.9	RO
10	nosSystemErrorText9	nonosSystemError.10	RO
11	nosSystemErrorText10	nonosSystemError.11	RO
12	nosSystemErrorText11	nonosSystemError.12	RO
13	nosSystemErrorText12	nonosSystemError.13	RO
14	nosSystemErrorText13	nonosSystemError.14	RO
15	nosSystemErrorText14	nonosSystemError.15	RO
16	nosSystemErrorText15	nonosSystemError.16	RO
17	nosSystemErrorText16	nonosSystemError.17	RO
18	nosSystemErrorText17	nonosSystemError.18	RO
19	nosSystemErrorText18	nonosSystemError.19	RO
20	nosSystemErrorText19	nonosSystemError.20	RO
21	nosSystemErrorText20	nonosSystemError.21	RO

B.2.3 nonosLineset Group

Available Model ***XG0224 / XG0448***

No.	Name	Object identifier	MIB ACCESS
1	nosLineset	nonosLineset.1	–
2	nosLinesetTable	nosLineset.1	–
3	nosLinesetEntry	nosLinesetTable.1	–
4	nosLinesetIndex	nosLinesetEntry.1	RO
5	nosLinesetId	nosLinesetEntry.2	RO
6	nosLinesetStatus	nosLinesetEntry.4	RO

B.2.4 nosDualPower Group

Available Model ***XG2600***

No.	Name	Object identifier	MIB ACCESS
1	dualPowerBase	nosDualPower.1	–
2	dualPowerSet	dualPowerBase.1	RO
3	dualPowerState	nosDualPower.2	–
4	dualPowerStateTable	dualPowerState.1	–
5	dualPowerStateEntry	dualPowerStateTable.1	–
6	dualPowerStateUnitIndex	dualPowerStateEntry.1	RO
7	dualPowerStateUnit	dualPowerStateEntry.2	RO

B.3 IEEE802.1MIB

Available Model ***All models***

The following shows meaning of MIB ACCESS column.

RO :MIB can be read only.

RW :MIB can be read and written.

– :MIB can not be accessed.

B.3.1 lldpMIB Group

lldpConfiguration Group

No.	Name	Object identifier	MIB ACCESS
1	lldpMessageTxInterval	lldpConfiguration.1	RO
2	lldpMessageTxHoldMultiplier	lldpConfiguration.2	RO
3	lldpReinitDelay	lldpConfiguration.3	RO
4	lldpTxDelay	lldpConfiguration.4	RO
5	lldpNotificationInterval	lldpConfiguration.5	RO

lldpPortConfig Group

No.	Name	Object identifier	MIB ACCESS
1	lldpPortConfigTable	lldpConfiguration.6	–
2	lldpPortConfigEntry	lldpPortConfigTable.1	–
3	lldpPortConfigPortNum	lldpPortConfigEntry.1	–
4	lldpPortConfigAdminStatus	lldpPortConfigEntry.2	RO
5	lldpPortConfigNotificationEnable	lldpPortConfigEntry.3	RO
6	lldpPortConfigTLVsTxEnable	lldpPortConfigEntry.4	RO

lldpConfigManAddr Group

No.	Name	Object identifier	MIB ACCESS
1	lldpConfigManAddrTable	lldpConfiguration.7	–
2	lldpConfigManAddrEntry	lldpConfigManAddrTable.1	–
3	lldpConfigManAddrPortsTxEnable	lldpConfigManAddrEntry.1	RO

lldpStatistics Group

No.	Name	Object identifier	MIB ACCESS
1	lldpStatsRemTablesLastChangeTime	lldpStatistics.1	RO
2	lldpStatsRemTablesInserts	lldpStatistics.2	RO
3	lldpStatsRemTablesDeletes	lldpStatistics.3	RO
4	lldpStatsRemTablesDrops	lldpStatistics.4	RO
5	lldpStatsRemTablesAgeouts	lldpStatistics.5	RO

lldpStatsTxPort Group

No.	Name	Object identifier	MIB ACCESS
1	lldpStatsTxPortTable	lldpStatistics.6	–
2	lldpStatsTxPortTable	lldpStatsTxPortTable.1	–
3	lldpStatsTxPortNum	lldpStatsTxPortEntry.1	–
4	lldpStatsTxPortFramesTotal	lldpStatsTxPortEntry.2	RO

lldpStatsRxPort Group

No.	Name	Object identifier	MIB ACCESS
1	lldpStatsRxPortTable	lldpStatistics.7	–
2	lldpStatsRxPortEntry	lldpStatsRxPortTable.1	–
3	lldpStatsRxPortNum	lldpStatsRxPortEntry.1	–
4	lldpStatsRxPortFramesDiscardedTotal	lldpStatsRxPortEntry.2	RO
5	lldpStatsRxPortFramesErrors	lldpStatsRxPortEntry.3	RO
6	lldpStatsRxPortFramesTotal	lldpStatsRxPortEntry.4	RO
7	lldpStatsRxPortTLVsDiscardedTotal	lldpStatsRxPortEntry.5	RO
8	lldpStatsRxPortTLVsUnrecognizedTotal	lldpStatsRxPortEntry.6	RO
9	lldpStatsRxPortAgeoutsTotal	lldpStatsRxPortEntry.7	RO

lldpLocalSystemData Group

No.	Name	Object identifier	MIB ACCESS
1	lldpLocChassisIdSubtype	lldpLocalSystemData.1	RO
2	lldpLocChassisId	lldpLocalSystemData.2	RO
3	lldpLocSysName	lldpLocalSystemData.3	RO
4	lldpLocSysDesc	lldpLocalSystemData.4	RO
5	lldpLocSysCapSupported	lldpLocalSystemData.5	RO
6	lldpLocSysCapEnabled	lldpLocalSystemData.6	RO

lldpLocPort Group

No.	Name	Object identifier	MIB ACCESS
1	lldpLocPortTable	lldpLocalSystemData.7	–
2	lldpLocPortEntry	lldpLocPortTable.1	–
3	lldpLocPortNum	lldpLocPortEntry.1	–
4	lldpLocPortIdSubtype	lldpLocPortEntry.2	RO
5	lldpLocPortId	lldpLocPortEntry.3	RO
6	lldpLocPortDesc	lldpLocPortEntry.4	RO

lldpLocManAddr Group

No.	Name	Object identifier	MIB ACCESS
1	lldpLocManAddrTable	lldpLocalSystemData.8	–
2	lldpLocManAddrEntry	lldpLocManAddrTable.1	–
3	lldpLocManAddrSubtype	lldpLocManAddrEntry.1	–
4	lldpLocManAddr	lldpLocManAddrEntry.2	–
5	lldpLocManAddrLen	lldpLocManAddrEntry.3	RO
6	lldpLocManAddrIfSubtype	lldpLocManAddrEntry.4	RO
7	lldpLocManAddrIfId	lldpLocManAddrEntry.5	RO
8	lldpLocManAddrOID	lldpLocManAddrEntry.6	RO

lldpRem Group

No.	Name	Object identifier	MIB ACCESS
1	lldpRemTable	lldpRemoteSystemsData.1	–
2	lldpRemEntry	lldpRemTable.1	–
3	lldpRemTimeMark	lldpRemEntry.1	–
4	lldpRemLocalPortNum	lldpRemEntry.2	–
5	lldpRemIndex	lldpRemEntry.3	–
6	lldpRemChassisIdSubtype	lldpRemEntry.4	RO
7	lldpRemChassisId	lldpRemEntry.5	RO
8	lldpRemPortIdSubtype	lldpRemEntry.6	RO
9	lldpRemPortId	lldpRemEntry.7	RO
10	lldpRemPortDesc	lldpRemEntry.8	RO
11	lldpRemSysName	lldpRemEntry.9	RO
12	lldpRemSysDesc	lldpRemEntry.10	RO
13	lldpRemSysCapSupported	lldpRemEntry.11	RO
14	lldpRemSysCapEnabled	lldpRemEntry.12	RO

lldpRemManAddr Group

No.	Name	Object identifier	MIB ACCESS
1	lldpRemManAddrTable	lldpRemoteSystemsData.2	–
2	lldpRemManAddrEntry	lldpRemManAddrTable.1	–
3	lldpRemManAddrSubtype	lldpRemManAddrEntry.1	–
4	lldpRemManAddr	lldpRemManAddrEntry.2	–
5	lldpRemManAddrIfSubtype	lldpRemManAddrEntry.3	RO
6	lldpRemManAddrIfId	lldpRemManAddrEntry.4	RO
7	lldpRemManAddrOID	lldpRemManAddrEntry.5	RO

lldpRemUnknownTLV Group

No.	Name	Object identifier	MIB ACCESS
1	lldpRemUnknownTLVTable	lldpRemoteSystemsData.3	–
2	lldpRemUnknownTLVEntry	lldpRemUnknownTLVTable.1	–
3	lldpRemUnknownTLVType	lldpRemUnknownTLVEntry.1	–
4	lldpRemUnknownTLVInfo	lldpRemUnknownTLVEntry.2	RO

lldpRemOrgDefInfo Group

No.	Name	Object identifier	MIB ACCESS
1	lldpRemOrgDefInfoTable	lldpRemoteSystemsData.4	–
2	lldpRemOrgDefInfoEntry	lldpRemOrgDefInfoTable.1	–
3	lldpRemOrgDefInfoOUI	lldpRemOrgDefInfoEntry.1	–
4	lldpRemOrgDefInfoSubtype	lldpRemOrgDefInfoEntry.2	–
5	lldpRemOrgDefInfoIndex	lldpRemOrgDefInfoEntry.3	–
6	lldpRemOrgDefInfo	lldpRemOrgDefInfoEntry.4	RO

lldpXdot3PortConfig Group

No.	Name	Object identifier	MIB ACCESS
1	lldpXdot3PortConfigTable	lldpXdot3Config.1	–
2	lldpXdot3PortConfigEntry	lldpXdot3PortConfigTable.1	–
3	lldpXdot3PortConfigTLVsTxEnable	lldpXdot3PortConfigEntry.1	RO

lldpXdot3LocPort Group

No.	Name	Object identifier	MIB ACCESS
1	lldpXdot3LocPortTable	lldpXdot3LocalData.1	–
2	lldpXdot3LocPortEntry	lldpXdot3LocPortTable.1	–
3	lldpXdot3LocPortAutoNegSupported	lldpXdot3LocPortEntry.1	RO
4	lldpXdot3LocPortAutoNegEnabled	lldpXdot3LocPortEntry.2	RO
5	lldpXdot3LocPortAutoNegAdvertisedCap	lldpXdot3LocPortEntry.3	RO
6	lldpXdot3LocPortOperMauType	lldpXdot3LocPortEntry.4	RO

lldpXdot3LocPower Group

No.	Name	Object identifier	MIB ACCESS
1	lldpXdot3LocPowerTable	lldpXdot3LocalData.2	–
2	lldpXdot3LocPowerEntry	lldpXdot3LocPowerTable.1	–
3	lldpXdot3LocPowerPortClass	lldpXdot3LocPowerEntry.1	RO
4	lldpXdot3LocPowerMDISupported	lldpXdot3LocPowerEntry.2	RO
5	lldpXdot3LocPowerMDIEnabled	lldpXdot3LocPowerEntry.3	RO
6	lldpXdot3LocPowerPairControlable	lldpXdot3LocPowerEntry.4	RO
7	lldpXdot3LocPowerPairs	lldpXdot3LocPowerEntry.5	RO
8	lldpXdot3LocPowerClass	lldpXdot3LocPowerEntry.6	RO

lldpXdot3LocLinkAgg Group

No.	Name	Object identifier	MIB ACCESS
1	lldpXdot3LocLinkAggTable	lldpXdot3LocalData.3	–
2	lldpXdot3LocLinkAggEntry	lldpXdot3LocLinkAggTable.1	–
3	lldpXdot3LocLinkAggStatus	lldpXdot3LocLinkAggEntry.1	RO
4	lldpXdot3LocLinkAggPortId	lldpXdot3LocLinkAggEntry.2	RO

lldpXdot3LocMaxFrameSize Group

No.	Name	Object identifier	MIB ACCESS
1	lldpXdot3LocMaxFrameSizeTable	lldpXdot3LocalData.4	–
2	lldpXdot3LocMaxFrameSizeEntry	lldpXdot3LocMaxFrameSizeTable.1	–
3	lldpXdot3LocMaxFrameSize	lldpXdot3LocMaxFrameSizeEntry.1	RO

lldpXdot3RemPort Group

No.	Name	Object identifier	MIB ACCESS
1	lldpXdot3RemPortTable	lldpXdot3RemoteData.1	–
2	lldpXdot3RemPortEntry	lldpXdot3RemPortTable.1	–
3	lldpXdot3RemPortAutoNegSupported	lldpXdot3RemPortEntry.1	RO
4	lldpXdot3RemPortAutoNegEnabled	lldpXdot3RemPortEntry.2	RO
5	lldpXdot3RemPortAutoNegAdvertisedCap	lldpXdot3RemPortEntry.3	RO
6	lldpXdot3RemPortOperMauType	lldpXdot3RemPortEntry.4	RO

lldpXdot3RemPower Group

No.	Name	Object identifier	MIB ACCESS
1	lldpXdot3RemPowerTable	lldpXdot3RemoteData.2	–
2	lldpXdot3RemPowerEntry	lldpXdot3RemPowerTable.1	–
3	lldpXdot3RemPowerPortClass	lldpXdot3RemPowerEntry.1	RO
4	lldpXdot3RemPowerMDISupported	lldpXdot3RemPowerEntry.2	RO

No.	Name	Object identifier	MIB ACCESS
5	lldpXdot3RemPowerMDIEnabled	lldpXdot3RemPowerEntry.3	RO
6	lldpXdot3RemPowerPairControlable	lldpXdot3RemPowerEntry.4	RO
7	lldpXdot3RemPowerPairs	lldpXdot3RemPowerEntry.5	RO
8	lldpXdot3RemPowerClass	lldpXdot3RemPowerEntry.6	RO

lldpXdot3RemLinkAgg Group

No.	Name	Object identifier	MIB ACCESS
1	lldpXdot3RemLinkAggTable	lldpXdot3RemoteData.3	–
2	lldpXdot3RemLinkAggEntry	lldpXdot3RemLinkAggTable.1	–
3	lldpXdot3RemLinkAggStatus	lldpXdot3RemLinkAggEntry.1	RO
4	lldpXdot3RemLinkAggPortId	lldpXdot3RemLinkAggEntry.2	RO

lldpXdot3RemMaxFrameSize Group

No.	Name	Object identifier	MIB ACCESS
1	lldpXdot3RemMaxFrameSizeTable	lldpXdot3RemoteData.4	–
2	lldpXdot3RemMaxFrameSizeEntry	lldpXdot3RemMaxFrameSizeTable.1	–
3	lldpXdot3RemMaxFrameSize	lldpXdot3RemMaxFrameSizeEntry.1	RO

lldpXdot1ConfigPortVlan Group

No.	Name	Object identifier	MIB ACCESS
1	lldpXdot1ConfigPortVlanTable	lldpXdot1Config.1	–
2	lldpXdot1ConfigPortVlanEntry	lldpXdot1ConfigPortVlanTable.1	–
3	lldpXdot1ConfigPortVlanTxEnable	lldpXdot1ConfigPortVlanEntry.1	RO

lldpXdot1ConfigVlanName Group

No.	Name	Object identifier	MIB ACCESS
1	lldpXdot1ConfigVlanNameTable	lldpXdot1Config.2	–
2	lldpXdot1ConfigVlanNameEntry	lldpXdot1ConfigVlanNameTable.1	–
3	lldpXdot1ConfigVlanNameTxEnable	lldpXdot1ConfigVlanNameEntry.1	RO

lldpXdot1ConfigProtoVlan Group

No.	Name	Object identifier	MIB ACCESS
1	lldpXdot1ConfigProtoVlanTable	lldpXdot1Config.3	–
2	lldpXdot1ConfigProtoVlanEntry	lldpXdot1ConfigProtoVlanTable.1	–
3	lldpXdot1ConfigProtoVlanTxEnable	lldpXdot1ConfigProtoVlanEntry.1	RO

lldpXdot1ConfigProtocol Group

No.	Name	Object identifier	MIB ACCESS
1	lldpXdot1ConfigProtocolTable	lldpXdot1Config.4	–
2	lldpXdot1ConfigProtocolEntry	lldpXdot1ConfigProtocolTable.1	–
3	lldpXdot1ConfigProtocolTxEnable	lldpXdot1ConfigProtocolEntry.1	RO

lldpXdot1Loc Group

No.	Name	Object identifier	MIB ACCESS
1	lldpXdot1LocTable	lldpXdot1LocalData.1	–
2	lldpXdot1LocEntry	lldpXdot1LocTable.1	–
3	lldpXdot1LocPortVlanId	lldpXdot1LocEntry.1	RO

lldpXdot1LocProtoVlan Group

No.	Name	Object identifier	MIB ACCESS
1	lldpXdot1LocProtoVlanTable	lldpXdot1LocalData.2	–
2	lldpXdot1LocProtoVlanEntry	lldpXdot1LocProtoVlanTable.1	–
3	lldpXdot1LocProtoVlanId	lldpXdot1LocProtoVlanEntry.1	–
4	lldpXdot1LocProtoVlanSupported	lldpXdot1LocProtoVlanEntry.2	RO
5	lldpXdot1LocProtoVlanEnabled	lldpXdot1LocProtoVlanEntry.3	RO

lldpXdot1LocVlanName Group

No.	Name	Object identifier	MIB ACCESS
1	lldpXdot1LocVlanNameTable	lldpXdot1LocalData.3	–
2	lldpXdot1LocVlanNameEntry	lldpXdot1LocVlanNameTable.1	–
3	lldpXdot1LocVlanId	lldpXdot1LocVlanNameEntry.1	–
4	lldpXdot1LocVlanName	lldpXdot1LocVlanNameEntry.2	RO

lldpXdot1LocProtocol Group

No.	Name	Object identifier	MIB ACCESS
1	lldpXdot1LocProtocolTable	lldpXdot1LocalData.4	–
2	lldpXdot1LocProtocolEntry	lldpXdot1LocProtocolTable.1	–
3	lldpXdot1LocProtocolIndex	lldpXdot1LocProtocolEntry.1	–
4	lldpXdot1LocProtocolId	lldpXdot1LocProtocolEntry.2	RO

lldpXdot1Rem Group

No.	Name	Object identifier	MIB ACCESS
1	lldpXdot1RemTable	lldpXdot1RemoteData.1	–
2	lldpXdot1RemEntry	lldpXdot1RemTable.1	–
3	lldpXdot1RemPortVlanId	lldpXdot1RemEntry.1	RO

lldpXdot1RemProtoVlan Group

No.	Name	Object identifier	MIB ACCESS
1	lldpXdot1RemProtoVlanTable	lldpXdot1RemoteData.2	–
2	lldpXdot1RemProtoVlanEntry	lldpXdot1RemProtoVlanTable.1	–
3	lldpXdot1RemProtoVlanId	lldpXdot1RemProtoVlanEntry.1	–
4	lldpXdot1RemProtoVlanSupported	lldpXdot1RemProtoVlanEntry.2	RO
5	lldpXdot1RemProtoVlanEnabled	lldpXdot1RemProtoVlanEntry.3	RO

lldpXdot1RemVlanName Group

No.	Name	Object identifier	MIB ACCESS
1	lldpXdot1RemVlanNameTable	lldpXdot1RemoteData.3	–
2	lldpXdot1RemVlanNameEntry	lldpXdot1RemVlanNameTable.1	–
3	lldpXdot1RemVlanId	lldpXdot1RemVlanNameEntry.1	–
4	lldpXdot1RemVlanName	lldpXdot1RemVlanNameEntry.2	RO

lldpXdot1RemProtocol Group

No.	Name	Object identifier	MIB ACCESS
1	lldpXdot1RemProtocolTable	lldpXdot1RemoteData.4	–
2	lldpXdot1RemProtocolEntry	lldpXdot1RemProtocolTable.1	–
3	lldpXdot1RemProtocolIndex	lldpXdot1RemProtocolEntry.1	–
4	lldpXdot1RemProtocolId	lldpXdot1RemProtocolEntry.2	RO

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