



PRODUCT DOCUMENTATION

BTI SA-805, BTI SA-821, BTI SA-822 Carrier Ethernet Switch Command Line Reference Guide

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Preface

This preface explains who should read this guide, related documentation, documentation conventions, how to obtain documentation, and how to obtain technical support.

Equipment compliance

Agency compliance

Agency	Compliance information
FDA	This equipment is classified by the FDA under IEC 60825, parts 1 and 2, as a Class 1 laser product with a Class 1 hazard rating.
FCC	This equipment complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.
Industry Canada	This Class A digital apparatus complies with Canadian ICES-003.

The BTI Service Access 800 Series is suitable for installation in a Common Bonding Network.



The BTI Service Access 800 Series is suitable for installation in Network Telecommunication Facilities and in locations where the National Electrical Code (NEC) applies.


The DC power port shall be treated as DC-I (Isolated DC return).

Documentation suite

- *BTI SA-805, BTI SA-821, BTI SA-822 Carrier Ethernet Switch Release Notes*
- *BTI SA-805, BTI SA-821, BTI SA-822 Carrier Ethernet Switch Command Line Reference Guide*
- *BTI SA-805 Carrier Ethernet Switch Installation and System Configuration Guide*
- *BTI SA-821 Carrier Ethernet Switch Installation and System Configuration Guide*
- *BTI SA-822 Carrier Ethernet Switch Installation and System Configuration Guide*

Documentation conventions

Convention	Description
Note	Means reader take note. Notes contain helpful suggestions or background information.
 Caution	Means reader be careful. Equipment damage or loss of data can result from your actions.
	Means reader be careful. Harm to yourself or others can result from your actions.

Convention	Description
Warning	
<div> Laser Warning</div>	Invisible laser radiation can be emitted from the aperture ports of amplifier circuit packs when no fiber cable is connected. Avoid exposure and do not stare into open apertures to avoid permanent eye damage.

1.0 Introduction to the CLI Commands

This section covers the following topics :

- 1.1, “Logging in to the system, user sessions and common EXEC commands”
- 1.2, “Keystroke shortcuts”

1.1 Logging in to the system, user sessions and common EXEC commands

You can access the CLI via Telnet or SSHv2.

After powering up and connecting to the switch use the following default usernames and passwords to access the CLI :

'admin' and "btiadmin"

User sessions

A maximum of eight user logins are permitted.

Common Exec commands

Table 1-1 Common EXEC commands

Command	Function
clear	Reset functions
disable	Turn off privileged mode command
enable	Turn on privileged mode command
exit	Exit from the EXEC
ftp	Use FTP to transfer file
help	Description of the interactive help system
logout	Exit from the EXEC
mstat	Show statistics after multiple multicast traceroutes
mtrace	Trace multicast path from source to destination
no	Negate a command or set its defaults
ping	Send echo messages
quit	Exit from the EXEC
reboot	Halt and perform a cold restart
rtu	RTU Information
show	Show running system information
ssh	Open a secure shell client connection
start	Start vct function
telnet	Open a telnet connection
terminal	Set terminal line parameters
traceroute	Trace route to destination
update Update by FTP Server	Update by FTP Server
write (file memory terminal)	Write running configuration to Non Volatile (NV) memory, network, or terminal.

1.2 Keystroke shortcuts

The following table lists the keystroke shortcuts that are available and the actions they perform.

Keystroke Sequence	Common Name	Action
Backspace	Backspace	Backspace one character and delete
?	Question Mark	Provides help information
^A	Control+A	Position cursor to the start of the line
^B	Control+B	Position cursor left one character
^C	Control+C	Exits current mode and returns to previous mode.
^H	Control+H	Backspace one character and delete
^I	Tab	Complete current word
^L	Control+L	Redraw line
^N	Control+N	Delete line
^P	Control+P	Repeat last line in command history
^U	Control+U	Clears input and resets line buffer
^W	Control+W	Deletes word
^Z	Control+Z	Exits current mode and returns to previous mode. Clears input and resets line buffer

2.0 System Configuration Commands

This section covers the following topics :

- 2.1, “username”
- 2.2, “show usernames”
- 2.3, “show users”
- 2.5, “management ip address”
- 2.4, “show ip ssh server session”
- 2.6, “management route”
- 2.7, “show management ip address”
- 2.8, “system cpu-vlan”
- 2.9, “Inband IP address”
- 2.10, “ip route”
- 2.11, “show ip route”
- 2.12, “show system”
- 2.13, “clock set datetime, system time configuration”
- 2.14, “ update (t)ftp ”
- 2.15, “update (t)ftp file upload and download”
- 2.16, “ image set (pri|sec)”
- 2.17, “show image”
- 2.16, “ image set (pri|sec)”
- 2.17, “show image”

- [2.18, “show version”](#)

2.1 username

Use this command to add or delete users (save to local database) and set the user permissions.

Privilege Level Name	Privilege Level Value	Permission
1	Viewer	Retrieve current configurations.
2	Operator	Retrieve current configurations. Configure services.
3	Admin	Retrieve current configurations. Configure services. User management.

Command Syntax

[no] Username WORD Privilege <1-3> Password WORD

Command Mode

Global configuration mode.

Usage

None

Example

The following example shows how to add new users.

```
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# username newuser1 privilege 3 password newuser1
BTI SA-805,21,22(config)# username newuser2 privilege 2 password newuser2
BTI SA-805,21,22(config)#
BTI SA-805,21,22(config)# no username newuser2
BTI SA-805,21,22(config)#
```

Related Commands.

show usernames

2.2 show usernames

Use this command to display the user name, privilege and RSA key of each user.

Command Syntax

Show usernames

Command Mode

Privilege EXEC mode.

Usage

None

Example

The following example shows how to display the users.

```
BTI SA-805,21,22# show usernames
```

Number	User name	Privilege	Password	Rsa Key
1	admin	3	*	:1
2	newuser1	1	*	:2#

Related Commands

username

2.3 show users

Use this command to display the line, user type, host connection, idle time, location and mode of connected users.

Command Syntax

Show users

Show ip ssh server session

Command Mode

Privilege EXEC mode.

Usage

None

Example

The following example shows how to display the line, user type, host connection, idle time, location and mode of connected users.

```
BTI SA-805,21,22#show users
```

Line	User	Host(s)	Idle	Location	Mode
0 con 0		idle	00:57:07	127.0.0.1	login
*131 vty 1	admin	idle	00:00:00	192.168.31.1	exec

Related Commands

None

2.4 show ip ssh server session

Use this command to show the ssh server session details.

Command Syntax

Show ip ssh server session

Command Mode

Privilege EXEC mode.

Usage

None

Example

The following example shows how to display the ssh server session details.

```
BTI SA-805,21,22# show ip ssh server session
```

Version	Encryption	Hmac	User	IP	State
---------	------------	------	------	----	-------

=====

Related Commands

None

2.5 management ip address

Use this command to set the management IP address on the Switch. To remove the management IP address, use the no form of this command.

Command Syntax

management ip address {*A.B.C.D/M* /*A.B.C.D mask*}

no management ip address

A.B.C.D/M: The management IP address with mask length configured

A.B.C.D mask: The management IP address and mask configured

Command Mode

Global configuration

Usage

None

Example

The following example sets the management ip address.

```
BTI SA-805,21,22(config)# management ip address 192.168.100.100/24
```

The following example unsets the management ip address.

```
BTI SA-805,21,22(config)# no management ip address
```

Related Commands

None

2.6 management route

Use this command to set the gateway on the switch.

Command Syntax

management route { add | del } gateway *A.B.C.D*

add Add the route

del Del the route

gateway Add gateway

A.B.C.D: The IP address of the gateway

Command Mode

Global configuration

Usage

None

Example

The following example sets the gateway of the switch to 192.168.100.254.

```
BTI SA-805,21,22(config)# management route add gateway 192.168.100.254
```

Related Commands

None

2.7 show management ip address

Use this command to display the management ip address.

Command Syntax

show management ip address

Command Mode

Privileged Exec mode

Usage

None.

Example

```
BTI SA-805,21,22# show management ip address
```

```
Management IP address is: 192.168.100.100/24  
Gateway: 192.168.100.254
```

Related Commands

None

2.8 system cpu-vlan

Use this command to set the inband CPU VLAN inner and outer tag.

Note The switch supports untag for inner VLANs only.

Command Syntax

system cpu-vlan outer <1-4094> <0-7>

system cpu-vlan inner {<1-4094>|untag} <0-7>

<1-4094> VLAN ID range between 1 to 4094

untag Untag

<0-7> VLAN Priority range between 0 to 7

Command Mode

Global configuration

Usage

None

Example

The following example sets the inband CPU VLAN

```
BTI SA-805,21,22(config)# system cpu-vlan outer 1 7
(config)# system cpu-vlan inner 10 7
```

Related Commands

ip address {A.B.C.D/M |A.B.C.D mask}

2.9 Inband IP address

Use this command to set the inband IP address on the switch. To remove the inband IP address, use the no form of this command.

Command Syntax

ip address {A.B.C.D/M |A.B.C.D mask}

no ip address

A.B.C.D/M: The management IP address with mask length configured

A.B.C.D mask: The management IP address and mask configured

Command Mode

Interface configuration

Usage

None

Example

The following example sets the inband ip address to 192.168.41.188/16.

```
BTI SA-805,21,22(config)# interface vlan 1
BTI SA-805,21,22(config-if)# ip address 192.168.41.188/16
```

The following example deletes the inband ip address.

```
BTI SA-805,21,22(config-if)# no ip address
```

Related Commands

system cpu-vlan outer

system cpu-vlan inner

2.10 ip route

Use this command to set the inband IP address.

Command Syntax

`ip route { A.B.C.D | A.B.C.D/M | vrf } A.B.C.D A.B.C.D`

A.B.C.D :IP destination prefix

A.B.C.D/M :IP destination prefix (e.g. 10.0.0.0/8)

vrf :Establish static routes into VRF

A.B.C.D :IP destination prefix mask

A.B.C.D :IP gateway address

Command Mode

Global configuration

Usage

None

Example

The following example sets the inband gateway to 192.168.0.2.

```
BTI SA-805,21,22(config)# ip route 0.0.0.0 0.0.0.0 192.168.0.2
BTI SA-805,21,22(config)# exit
BTI SA-805,21,22# show ip route
```

Codes: K - kernel, C - connected, S - static, R - RIP, B - BGP
O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2
i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter
area
Dc - DHCP Client
[*] - [AD/Metric]
* - candidate default

Gateway of last resort is 192.168.0.2 to network 0.0.0.0

```
S*      0.0.0.0/0 [1/0] via 192.168.0.2, vlan1
C       192.168.0.0/16 is directly connected, vlan1
C       192.168.41.188/32 is in local loopback, vlan1
```

Related Commands

show ip route

2.11 show ip route

Use this command to show the status and connections details of the ip route.

Command Syntax

show ip route

Command Mode

Global configuration

Usage

None

Example

```
BTI SA-805,21,22# show ip route
```

Codes: K - kernel, C - connected, S - static, R - RIP, B - BGP

O - OSPF, IA - OSPF inter area

N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2

E1 - OSPF external type 1, E2 - OSPF external type 2

i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter

area

Dc - DHCP Client

[*] - [AD/Metric]

* - candidate default

Gateway of last resort is 192.168.0.2 to network 0.0.0.0

```
S*      0.0.0.0/0 [1/0] via 192.168.0.2, vlan1
```

```
C      192.168.0.0/16 is directly connected, vlan1
```

```
C      192.168.41.188/32 is in local loopback, vlan1
```

Related Commands

ip route

2.12 show system

Use this command to display system information.

Command Syntax

show system

Command Mode

Privileged Exec mode

Usage

None.

Example

```
BTI SA-805,21,22# show system
```

```
-----
                        Information
-----
ContactInfo           :
Location              :
-----

                        Product
-----
Product Name          :
System Name           :
-----

                        Release
-----
SW Release Version     :          1.0.0 Build1
SW Release Date & Time : Mar  6 2014 00:22:10
-----

                        MAC_&_IP
-----
IP Address(In-Band)    :          10.0.0.11
Netmask(In-Band)       :          255.255.255.0
Network Address(In-Band) :          10.0.0.0
MAC Address(In-Band)   :    00:19:6d:12:11:00
Mgmt VLAN ID(pri)      :              1(7)
Mgmt Inner VLAN ID     :          untagged
IP Address(OOB)        :          192.168.5.100
Netmask(OOB)           :          255.255.255.0
Network Address(OOB)   :          192.168.5.0
MAC Address(OOB)       :    00:19:6d:12:11:00
Default Gateway        :          -
-----

                        Time
-----
```

Auto Logout Time (Min) : 15
System up Time : Up 0(days) 0(h) 48(m) 26(s)
Last Save Time :

Related Commands

None

2.13 clock set datetime, system time configuration

Use this command to set the system time manually.

Note	At present, the switch does not support RTC (Real Time Clock) . It is recommended to set the system clock to use NTP protocol.
-------------	--

Command Syntax

clock set datetime HH :MM :SS <1-12> <1-31> <2000-2037>

clock set timezone (gmt|utc|ect|eet|art|eat|met|net|plt|ist|bst|vst|ctt|jst|kst|act|aet|sst|nst|mit|hst|ast|pst|pnt|mst|cst|est|iet|prt|edt|cnt|agt|bet|cat)

Command Mode

Privileged Exec mode

Usage

None.

Example

```
BTI SA-805,21,22(config)# clock set datetime 10:11:00 3 7 2014
BTI SA-805,21,22(config)# clock set timezone kst
```

Related Commands

None

2.14 update (t)ftp

Use this command to upgrade the system image.

Command Syntax

```
update tftp image A.B.C.D FILENAME (pri|sec)
update tftp image mgmt-if A.B.C.D FILENAME (pri|sec)
update ftp image A.B.C.D USER PASSWORD FILENAME (pri|sec)
update ftp image mgmt-if A.B.C.D USER PASSWORD FILENAME (pri|sec)
update ftp image A.B.C.D USER PASSWORD FILENAME
update ftp image mgmt-if A.B.C.D USER PASSWORD FILENAME
upgrade image
```

mgmt-if management ip address

USER User name of the FTP server

PASSWORD Password of the FTP server

A.B.C.D The IP address

FILENAME Image file name

Pri upgrade a image to Primary bank

Sec upgrade a image to Secondary bank

Command Mode

Privileged Exec mode

Usage

Note	If the (pri sec) option is omitted the system will download the image file to the primary image bank. After downloading the image, you must run the upgrade command.
-------------	--

Example

```
BTI SA-805,21,22# update tftp image mgmt-if 192.168.0.30 nid.img pri
```

Download from URL to temporary file.

```
Get file from tftp://192.168.0.30/nid.img
```

```
.....
.....
.....
```

```
Received 11485317 bytes in 11.6 seconds
```

```
Verifying Checksum
```

```
Verifying checksum Success
```

Copy the temporary file to its destination.

.....
.....
.....
11485317 bytes in 9.5 seconds, 1181 kbytes/second
BTI SA-805,21,22# update ftp image mgmt-if 192.168.33.38 config config
r15d805.img

Image Download Start!

Download from URL to temporary file.
Get file from ftp://config@192.168.33.38:21/r15d805.img
Connected to 192.168.33.38 (192.168.33.38).
Name (192.168.33.38:config):
331 Password required for config.
230 User config logged in.
Remote system type is UNIX.
Using binary mode to transfer files.
200 Type set to I.
local: /tmp/new_image remote: r15d805.img
200 Port command successful.
150 Opening data connection for r15d805.img.

.....
.....
.....
.....
226 File sent ok
12162661 bytes received in 7.9 secs (1.5e+03 Kbytes/sec)
Verifying Checksum
Verifying checksum Success
BTI SA-805,21,22# upgrade image

Image Upgrade Start

UPGRADE System Start.
Backup Image procedure progress..
Please wait.

Secondary Image Erasing...

Secondary Image Backup Image...

Secondary Image Checksum Start.

Verifying Checksum

Primary Image backup to secondary Success

Update Image to Flash..

Primary Image Checksum Start.

Verifying Checksum

Primary image checksum is Done!

Image Upgrade Done!

BTI SA-805,21,22#

Related Commands

Image set [pri|sec]

Show image

2.15 update (t)ftp file upload and download

Use this command to Upload and download a configuration file.

Command Syntax

update tftp config A.B.C.D FILENAME (upload|download)

update tftp config mgmt-if A.B.C.D FILENAME (upload|download)

update ftp config A.B.C.D USER PASSWORD FILENAME (upload|download)

update ftp config mgmt-if A.B.C.D USER PASSWORD FILENAME (upload|download)

mgmt-if management ip address

USER User name of the FTP server

PASSWORD Password of the FTP server

A.B.C.D The IP address

FILENAME Image file name

upload Upload a current configuration file to the server

download Download a configuration file from the server

Command Mode

Privileged Exec mode

Usage

None

Example

```
BTI SA-805,21,22# update tftp image mgmt-if 192.168.0.30 nid.img pri
```

```
Download from URL to temporary file.
```

```
Get file from tftp://192.168.0.30/nid.img
```

```
.....  
.....  
.....
```

```
Received 11485317 bytes in 11.6 seconds
```

```
Verifying Checksum
```

```
Verifying checksum Success
```

```
Copy the temporary file to its destination.
```

```
.....  
.....  
.....
```

```
11485317 bytes in 9.5 seconds, 1181 kbytes/second
```

```
BTI SA-805,21,22#
```

Related Commands

Image set (pri|sec)

Show image

2.16 image set (pri|sec)

Use this command to change the system image bank.

Command Syntax

image set (pri|sec)

pri = Change the image bank to primary bank

sec = Change the image bank to secondary bank

Command Mode

Privileged Exec mode

Usage

None.

Example

```
BTI SA-805,21,22# image set pri
BTI SA-805,21,22# image set sec
```

Related Commands

update tftp image A.B.C.D FILENAME (pri|sec)

update tftp image mgmt-if A.B.C.D FILENAME (pri|sec)

update ftp image A.B.C.D FILENAME (pri|sec)

update ftp image mgmt-if A.B.C.D FILENAME (pri|sec)

2.17 show image

This command shows the current primary and secondary image bank information.

Command Syntax

show image

Command Mode

Privileged Exec mode

Usage

None.

Example

```
BTI SA-805,21,22# show image
```

```
-----  
                        Image Information  
-----  
                        Primary Image  
-----  
Image_Version  : HA80x v1.1.1Build8  
Created       : Tue Sep  2 15:51:22 2014  
Data_Size     : 13542321 Bytes = 13224.92 kB = 12.91 MB  
-----  
                        Secondary Image  
-----  
Image_Version  : HA80x v1.1.1Build7  
Created       : Tue May 20 20:05:50 2014  
Data_Size     : 12936093 Bytes = 12632.90 kB = 12.34 MB  
-----  
Current Image  : Primary  
-----  
Next Image     : Primary  
-----
```

Related Commands

update tftp image A.B.C.D FILENAME (pri|sec)

update tftp image mgmt-if A.B.C.D FILENAME (pri|sec)

image set (pri|sec)

2.18 show version

This command shows the image version details.

Command Syntax

show version

Command Mode

Privileged Exec mode

Usage

None.

Example

```
BTI SA-805,21,22# show version
```

The current running image is 2.2.1Build4BTI SA-805,21,22# uptime is 30 days, 11 hours, 21 minutes

```
Hardware Type is Standalone NID/EAD
Hardware Version is 1.0
SDRAM size 512M
Flash size 128M
EPLD Version is 2.3
BootRom Version is 0.7
```

Related Commands

update tftp image A.B.C.D FILENAME (pri|sec)

update tftp image mgmt-if A.B.C.D FILENAME (pri|sec)

image set (pri|sec)

3.0 Interface Commands

This section covers the following topics :

- 3.1, “bandwidth”
- 3.2, “clear counters”
- 3.3, “cos”
- 3.4, “description”
- 3.5, “duplex”
- 3.6, “errdisable detect”
- 3.7, “errdisable recovery interval”
- 3.8, “errdisable recovery reason”
- 3.9, “errdisable flap”
- 3.10, “interface”
- 3.12, “interface range create vlan”
- 3.13, “media-type”
- 3.14, “port-policer”
- 3.16, “shutdown”
- 3.15, “replace dscp-exp”
- 3.17, “speed”
- 3.18, “ transceiver itu”
- 3.19, “trust”
- 3.20, “show interface”

- 3.21, “show interface status”
- 3.22, “show ip interface”
- 3.23, “Show errdisable detect”
- 3.24, “show errdisable recovery”
- 3.25, “show errdisable flap”
- 3.26, “show transceiver”

3.1 bandwidth

Use this command to set the bandwidth of the port. To return the bandwidth to the default value , use the no form of this command.

Command Syntax

bandwidth bandwidth

no bandwidth

bandwidth :<1-100000000> port bandwidth, in kilobits

Command Mode

Interface configuration

Usage

None

Example

The following example set the bandwidth of the port.

```
BTI SA-805,21,22(config)#interface eth-0-1
BTI SA-805,21,22(config-if)#bandwidth 1000
```

The following example returns the bandwidth to default value.

```
BTI SA-805,21,22(config-if)# no bandwidth
```

Related Commands

duplex

speed

3.2 clear counters

Use this command to clear the counters on the physical port interface.

Command Syntax

clear counters [interface]

interface: the interface name

Command Mode

Privileged Exec mode

Usage

The clear counters command clears all current interface counters from the interface unless you specify optional arguments that clear only a specific interface type from a specific interface number.

Example

The following example clears the counters on all interfaces.

```
BTI SA-805,21,22# clear counters
```

The following example clears the counters on the interface eth-0-1.

```
BTI SA-805,21,22# clear counters eth-0-1
```

The following example clears the counters on the aggl.

```
BTI SA-805,21,22# clear counters aggl
```

Related Commands

None

3.3 cos

Use this command to configure the default cos value for an interface. To cancel this setting, use the no form of this command.

Command Syntax

[no] cos <0-7>
<0-7>: cos value

Command Mode

Interface configuration

Defaults

The default CoS for each interface is 0.

Usage

The port cos value is used to map the priority and color assigned to all incoming packets, when the port trust state is set to trust port.

Examples

This example shows how to configure default cos value to 5.

```
BTI SA-805,21,22(config-if)# cos 5
```

This example shows how to delete the cos configuration.

```
BTI SA-805,21,22(config-if)# no cos
```

Related Commands

show qos interface

trust port

3.4 description

Use this command to set the description of the interface. To remove the description on the interface, use the **no** form of this command.

Command Syntax

description line

line: the description on the interface, should be no more than 20 characters. The characters must be "0-9A-Za-z.-_" with the alphabet as the prefix.

Command Mode

Interface configuration

Usage

None

Example

The following example sets the description on the interface.

```
BTI SA-805,21,22(config)#interface eth-0-1
```

```
BTI SA-805,21,22(config-if)# description Ethernet
```

The following example removes the description on the interface.

```
(config-if)# no description
```

Related Commands

None

3.5 duplex

Use the duplex interface configuration command to specify the duplex mode of operation for a port. Use the no form of this command to return the port to its default value.

Command Syntax

duplex [auto |full |half]

no duplex

auto: Enable automatic duplex configuration; port automatically detects whether it should run in full- or half-duplex mode, depending on the attached device mode.

full: Enable full-duplex mode.

half: Enable half-duplex mode (only for interfaces operating at 10 or 100 Mb/s).

You cannot configure half-duplex mode for interfaces operating at 1000 or 10,000 Mb/s.

Command Mode

Interface configuration

Defaults

Auto

Usage

The command is not permitted to be set on 10G ports or the optical mode of a combo port.

Example

The following example sets the duplex mode to auto.

```
BTI SA-805,21,22(config)#interface eth-0-1
BTI SA-805,21,22(config-if)# duplex auto
```

The following example sets the duplex mode to full.

```
(config-if)# duplex full
```

The following example returns the duplex mode to default.

```
(config-if)# no duplex
```

Related Commands

bandwidth

speed

3.6 errdisable detect

Use this command to enable errdisable detection. Use the no form of this command to disable errdisable detection.

Command Syntax

errdisable detect reason link-flap

no errdisable detect reason link-flap

link-flap: Enable detect Link flap error.

Command Mode

Global configuration

Defaults

Enabled

Usage

Note Only the link flap can be configured.

Example

This example shows how to enable errdisable detect link flap.

```
BTI SA-805,21,22(config)# errdisable detect reason link-flap
```

This example shows how to disable errdisable detect link flap.

```
BTI SA-805,21,22(config)# no errdisable detect reason link-flap
```

Related Commands

show errdisable detect

3.7 errdisable recovery interval

Use this command to editing the NNI's description.

Command Syntax

errdisable recovery interval <30-86400>

no errdisable recovery interval

Command Mode

Global configuration

Usage

Change the interval will not affect an errdisable recovery timer that is already started.

Example

This example shows how to set errdisable recovery to 30 seconds.

```
BTI SA-805,21,22(config)# errdisable recovery interval 30
```

This example shows how to set errdisable recovery to default values.

```
BTI SA-805,21,22(config)# no errdisable recovery interval 30
```

Related Commands

errdisable recovery reason

show errdisable recovery

3.8 errdisable recovery reason

Use this command to set the errdisable recovery reason.

Command Syntax

errdisable recovery reason [all|bpduguard | bpduloop| port-security|link-flap| link-monitor-failure | oam-remote-failure]

no errdisable recovery reason [all | bpduguard | bpduloop | port-security | link-flap | link-monitor-failure | oam-remote-failure]

all: Enable timer to recover from all reason.

bpduguard: Enable timer to recover from BPDU Guard error disable state.

bpduloop: Enable timer to recover from BPDU Loopback error disable state.

port-security: Enable timer to recover from Port security failure.

link-flap: Enable timer to recover from Link flap failure.

link-monitor-failure: Enable timer to recover from link monitoring failure.

oam-remote-failure: Enable timer to recover from OAM detected remote failure.

Command Mode

Global configuration

Defaults

disabled

Usage

Note	The change of interval will not affect the interfaces which have already entered the errdisable state.
-------------	--

Example

This example shows how to enable link flap errdisable recovery.

```
BTI SA-805,21,22(config)# errdisable recovery reason link-flap
```

This example shows how to disable link flap errdisable recovery.

```
BTI SA-805,21,22(config)# no errdisable recovery reason link-flap
```

Related Commands

errdisable recovery interval

show errdisable recovery

3.9 errdisable flap

Command Syntax

errdisable flap reason link-flap <1-100> <1-120>

no errdisable flap reason link-flap

link-flap: Configure link flap conditions.

<1-100>: Max flap count.

<1-120>: Flap count time in seconds.

Command Mode

Global configuration

Defaults

10, 10

Usage

Only the link flap can be detected. <1-100> is the threshold of flap count, and <1-120> is the count time in seconds for the flap count. If the errdisable detect link flap is enabled, this will result in the link flap errdisable. If the errdisable detect link flap is not enabled, a message will be printed in the log.

Example

This example shows how to set link flap conditions to 20 times in 60 seconds.

```
BTI SA-805,21,22(config)# errdisable flap reason link-flap 20 60
```

This example shows how to disable link flap conditions to default.

```
BTI SA-805,21,22(config)# no errdisable flap reason link-flap
```

Related Commands

show errdisable flap

3.10 interface

Use this command to set the interface mode.

Command Syntax

interface interface

interface: the name of interface, i.e. eth-0-1, agg1, vlan1 or loopback1

Command Mode

Global configuration

Usage

The interface name can be either a port name (i.e. eth-0-1) or link-agg name (i.e. agg1) or vlan name (i.e. vlan2) or loop-back name (i.e. loopback10)

Example

The following example enters the interface mode for eth-0-1.

```
BTI SA-805,21,22(config)# interface eth-0-1
```

The following example enters the interface mode for agg1.

```
BTI SA-805,21,22(config)# interface agg1
```

The following example enters the interface mode for vlan2.

```
BTI SA-805,21,22(config)# interface vlan2
```

Related Commands

exit

3.11 interface range

Use this command to operate a list of interfaces, the interface include physical port, vlan interface, linkagg interface and loopback interface.

Command Syntax

interface range IFNAME

IFNAME: interface range, can be separate by comma, dash

Command Mode

Global configuration

Usage

None

Example

The following example operate a list of physical interface.

```
BTI SA-805,21,22(config)# interface range eth-0-1 - 24
BTI SA-805,21,22(config-if-range)#shutdown
```

The following example operate a list of vlan interface.

```
BTI SA-805,21,22(config)# interface range vlan 1 - 20
BTI SA-805,21,22(config-if-range)#shutdown
```

The following example operate a list of linkagg interface.

```
BTI SA-805,21,22(config)# interface range agg 10 - 20
BTI SA-805,21,22(config-if-range)#shutdown
```

The following example operate a list of loopback interface.

```
BTI SA-805,21,22(config)# interface range loopback 0 - 5
BTI SA-805,21,22(config-if-range)#shutdown
```

Related Commands

None

3.12 interface range create vlan

Use this command to create a list of vlan interfaces.

Command Syntax

interface range create vlan vid-range

vid-range: VLAN ID range, can be separate by comma, dash

Command Mode

Global configuration

Usage

None

Example

The following example create vlan interface 10 to 20..

```
BTI SA-805,21,22(config)# interface range create vlan 10 - 20
```

```
BTI SA-805,21,22(config-if-range)#shutdown
```

Related Commands

None

3.13 media-type

Use the **media-type** interface configuration command to select a media type for an interface. Use the **no** form of this command to restore the default values.

Command Syntax

`media-type { auto-select|rj45|sfp }`

`no media-type`

`auto-select`: Enable the switch to dynamically select the type based on which one first links up

`rj45`: Select the RJ-45 interface

`sfp`: Select the small form-factor pluggable (SFP) module interface

Command Mode

Interface configuration

Usage

By default, the system is set to the auto-select mode.

Example

The following example shows how to configure the interface as a rj45 media.

```
BTI SA-805,21,22(config)#interface eth-0-1
```

```
BTI SA-805,21,22(config-if)# media-type rj45
```

The following example shows how to restore to default value.

```
BTI SA-805,21,22(config-if)# no media-type
```

Related Commands

None

3.14 port-policer

Use this command to set the rate-limit of the port. To return the Port Policer to the default value setting, use the no form of this command.

Command Syntax

port-policer (input|output) cir RATE cbs BURST-SIZE eir RATE ebs BURST-SIZE

no port-policer (input|output)

RATE :<1-10000000> rate-limit, in kilobits

BURST-SIZE :<0-1250000> bucket size, in bytes

Command Mode

Interface configuration

Usage

Use only CIR and CBS value. EIR and EBS values from SNMP are not supported.

Example

The following example set the rate-limit of the port.

```
BTI SA-805,21,22(config)#interface eth-0-1
```

```
BTI SA-805,21,22(config-if)# port-policer input cir 100000 cbs 12176 eir 0 ebs 0
```

```
BTI SA-805,21,22(config-if)# port-policer output cir 100000 cbs 12176 eir 0 ebs 0
```

The following example returns the rate-limit to default value.

```
BTI SA-805,21,22(config-if)# no port-policer input
```

```
BTI SA-805,21,22(config-if)# no port-policer output
```

Related Commands None

3.15 replace dscp-exp

Use this command to replace the dscp or exp field in packets on egress. To remove this setting, use the no form of this command.

Command Syntax

[no] replace dscp-exp

Command Mode

Interface configuration

Defaults

no replace dscp

Usage

This command is used to replace the dscp field for IP packets on egress, which is generated according to the Priority-Color-DSCP map from the internal priority color value, or replace the exp field for MPLS packets on egress, which is generated according to the Priority-Color-EXP map from the internal priority color value.

Examples

This example shows how to replace the dscp field on egress packets.

```
BTI SA-805,21,22(config-if)# replace dscp
```

This example shows how to delete the dscp field.

```
BTI SA-805,21,22(config-if)# no replace dscp
```

Related Commands

show qos interface

3.16 shutdown

Use the shutdown interface command to "admin down" an interface. Use the no form of this command to "admin up" an interface.

Command Syntax

shutdown

no shutdown

Command Mode

Interface configuration

Usage

None

Example

The following example shows how to shutdown a port.

```
BTI SA-805,21,22(config)#interface eth-0-1
```

```
BTI SA-805,21,22(config-if)# shutdown
```

The following example shows how to admin up a port.

```
BTI SA-805,21,22(config-if)# no shutdown
```

Related Commands

None

3.17 speed

Use the speed interface configuration command to specify the speed of a 10/100 Mb/s or 10/100/1000 Mb/s port. Use the no of this command to return the port to its default value.

Command Syntax

[no] speed (10 |100 |1000 |auto)

10: Port runs at 10 Mb/s.

100: Port runs at 100 Mb/s.

1000: Port runs at 1000 Mb/s.

auto: Port automatically detects the speed it should run.

Command Mode

Interface configuration

Usage

The command is not permitted to be set on a 10G port or the optical mode of combo port.

Example

This example shows how to set the speed on a port to 1000 Mb/s:

```
(config)#interface eth-0-1
(config-if)# speed 1000
```

This example shows how to enable auto-negotiation on the interface:

```
(config-if)# speed auto
```

This example shows how to disable auto-negotiation on the interface:

```
(config-if)# no speed auto
```

Related Commands

bandwidth

3.18 transceiver itu

This command is performed on interfaces provisioned with BP3AM6TL 10G Multi-Rate / Multi-Protocol Tunable DWDM single mode SFP+ transceiver.

Command Syntax

transceiver itu (wavelength |frequency |channel)

wavelength (1566.72 - 1528.77): wavelength

frequency (191.35 - 196.10) : frequency

channel (1-96) : channel number

Recommendation:

- SFP+ module wavelength is tuned to units of 0.05 nm. For example 1556.55 nm.
- SFP+ module frequency is tuned to units of 0.05 THz. For example 191.35 THz

Command Mode

Interface configuration

Usage

The transceiver when provisioned on the BTI SA-805, BTI SA-821, BTI SA-822 is mainly used on line interfaces and supports 10GE LAN on 96 channels. BTI SA-821 supports the transceiver on interfaces 25-28.

The following link type and span is supported:

- Transceiver link length for 9/125um single mode fiber: 80 km

The transceiver is provisioned automatically when installed on the interface. It cannot be manually provisioned. When installed, the transceiver wavelength, frequency or channel can be configured. You must remember to set the interface speed to 10G using the CLI interface command `speed`.

When the transceiver is provisioned with either the wavelength, frequency or channel value, the system will automatically select the associated values. For example, if the user provisions the transceiver ITU wavelength to 1556.50 nm, the system will automatically set the transmit and receive tunable channel number to 26 and the frequency to 192.60 THz.

The wavelength can be tuned up or down by 0.05nm. The tunable SFP+ will automatically align to the closest wavelength in the wavelength grid.

- Caution**
- The BP3AM6TL tunable DWDM SFP+ transceiver module should be provisioned in a bookend manner with the local and the remote transceiver provisioned with the same channel, frequency and wavelength. The remote transceiver may be another BP3AM6TL or a fixed C-band transceiver
 - All optical transceivers should perform within the calibrated thresholds for temperature, voltage, current and power alarms. The power received on the transceiver must be within the limits of the receiver sensitivity and below the receiver damage threshold. The transceivers are internally calibrated to fixed alarm / warning thresholds. Fixed thresholds are not provisionable. Do not admin up or transmit or receive traffic on the transceiver until the local and remote transmit and receive signals are tested and the fibers attenuated with pads accordingly. Failure to test the power levels before connecting the fiber connections to the transceiver may result in permanent damage to the receiver or cause the laser to shutdown during provisioning.

The transceiver should be provisioned to meet the specifications defined in the network design.

If you are changing the wavelength, frequency or channel, the optical power budget / optical link budget does not require to be re-calculated. There is no requirement to replace the transceiver. Changing the wavelength, frequency or channel will disrupt traffic, re-route traffic when possible.

For additional information see

- Installation and System Configuration Guide
 - Provisioning the Wavelength frequency on the 10G Multi-Rate / Multi-Protocol Tunable DWDM Transceiver
 - BP3AM6TL 10G Multi-Rate / Multi-Protocol Tunable DWDM single mode SFP+ transceiver specifications
- Command Line Reference Guide
 - [Appendix B, “ITU Wavelength Plan for C Band Tunable DWDM Transceiver”](#)
 - [Appendix C, “Wavelength Compatibility Table”](#)

Example

The transceiver is installed in eth-0-1. The following command shows examples of the:

- Transceiver auto provisioning settings
- Transceiver calibrated thresholds for temperature, voltage, current and power alarms
- Transceiver hardware, output wavelength and supported link length and type information.

```
BTI SA-805,21,22 # show transceiver detail
Port eth-0-1 transceiver info:
Transceiver Type: 10G Base-ER
Transceiver Vendor Name : JDSU
Transceiver PN          : JST01TMAC1CY5BTI
Transceiver S/N         : FD4055780070
Transceiver PEC Code    : BP3AM6TL
Transceiver Output Wavelength: N/A
```

Supported Link Type and Length:

Link Length for 9/125um single mode fiber: 80 km

Link Length for 9/125um single mode fiber: 25500 m

Transceiver Set for Tunable DWDM:

Transceiver Lasers First Frequency : 191.350000

Transceiver Lasers Last Frequency : 196.100000

Transceiver Lasers grid spacing : 0.050000

Tunable Wavelength Set : 1528.80 nm

Tunable Channel No. Set : 96

Wavelength : 1528.77 nm

Frequency : 196.10 THz

Transceiver is internally calibrated.

mA: milliamperes, dBm: decibels (milliwatts), NA or N/A: not applicable.

++ : high alarm, + : high warning, - : low warning, -- : low alarm.

The threshold values are calibrated.

Port	Temperature (Celsius)	High Alarm Threshold (Celsius)	High Warn Threshold (Celsius)	Low Warn Threshold (Celsius)	Low Alarm Threshold (Celsius)
eth-0-1 -7.00	41.77	72.00	70.00	-5.00	

Port	Voltage (Volts)	High Alarm Threshold (Volts)	High Warn Threshold (Volts)	Low Warn Threshold (Volts)	Low Alarm Threshold (Volts)
eth-0-1 2.97	3.30	3.63	3.46	3.13	

Threshold Port	Current (milliamperes)	High Alarm Threshold (mA)	High Warn Threshold (mA)	Low Warn Threshold (mA)	Low Alarm Threshold (mA)
eth-0-1 15.00	0.00 --	110.00	95.00	25.00	

Threshold Port	Optical Transmit Power (dBm)	High Alarm Threshold (dBm)	High Warn Threshold (dBm)	Low Warn Threshold (dBm)	Low Alarm Threshold (dBm)
eth-0-1 -3.00	-40.00 --	3.00	2.00	-2.00	

Alarm Port	Optical Receive Power (dBm)	High Alarm Threshold (dBm)	High Warn Threshold (dBm)	Low Warn Threshold (dBm)	Low Threshold (dBm)
---------------	-----------------------------------	----------------------------------	---------------------------------	--------------------------------	---------------------------

```
-----
eth-0-1      -40.00      --      -4.00      -6.00      -27.21
-29.21
-----
```

Port eth-0-3 transceiver info:

Transceiver Type: 1000BASE-LX

Transceiver Vendor Name : Optech

Transceiver PN : OP6E-S05-13-CM

Transceiver S/N : 8225259042

Transceiver PEC Code : EMELY COMPATIBLE

Transceiver Output Wavelength: 1310 nm

Supported Link Type and Length:

Link Length for 9/125um single mode fiber: 80 km

Link Length for 9/125um single mode fiber: 25500 m

The following example shows how to set the speed to 10G. (The media type will be auto provisioned if the default **auto** setting is provisioned in the interface media-type command.)

```
BTI SA-805,21,22(config)# interface eth-0-1
```

```
BTI SA-805,21,22(config-if)# speed 10G
```

```
BTI SA-805,21,22(config-if)#exit
```

```
BTI SA-805,21,22# show interface eth-0-1
```

Interface current state: UP

Hardware is Ethernet, address is 0014.d060.0012 (bia 0014.d060.0012)

Description: UNI-0-1

Bandwidth 10000000 kbits

Index 1 , Metric 1 , Encapsulation ARPA

Speed - 10Gb/s , Duplex - Full , Media type is 10GBASE_ER

Link speed type is force link, Link duplex type is force link

Admin input flow-control is off, output flow-control is off

Oper input flow-control is off, output flow-control is off

The Maximum Frame Size is 1522 bytes

VRF binding: not bound

Label switching is disabled

No Virtual private Wire service configured

ARP timeout 01:00:00, ARP retry interval 1s

0 packets input, 0 bytes

Received 0 unicast, 0 broadcast, 0 multicast

0 runts, 0 giants, 0 input errors, 0 CRC

0 frame, 0 overrun, 0 pause input

0 input packets with dribble condition detected

0 packets output, 0 bytes

Transmitted 0 unicast, 0 broadcast, 0 multicast

0 underruns, 0 output errors, 0 pause output

This example shows how to set the tunable SFP+module to 1556.50 nm wavelength:

```
BTI SA-805,21,22(config)# interface eth-0-1
```

```
BTI SA-805,21,22(config-if)# transceiver itu wavelength 1556.50
```

```
BTI SA-805,21,22(config-if)# end
```

```
BTI SA-805,21,22 # show transceiver eth-0-1
```

```
Port eth-0-1 transceiver info:
Transceiver Type: 10G Base-ER
  Transceiver Vendor Name : JDSU
  Transceiver PN          : JST01TMAC1CY5BTI
  Transceiver S/N         : FD405578008F
  Transceiver PEC Code    : BP3AM6TL
Transceiver Output Wavelength: N/A
Supported Link Type and Length:
  Link Length for 9/125um single mode fiber: 80 km
  Link Length for 9/125um single mode fiber: 25500 m
Transceiver Set for Tunable DWDM:
  Transceiver Lasers First Frequency : 191.350000
  Transceiver Lasers Last Frequency  : 196.100000
  Transceiver Lasers grid spacing    : 0.050000
    Tunable Wavelength Set   : 1556.50 nm
    Tunable Channel No. Set  : 26
      Wavelength             : 1556.55 nm
      Frequency              : 192.60 THz
```

This example shows how to set the tunable SFP+ module to a 193.50 THz frequency:

```
BTI SA-805,21,22(config)#interface eth-0-1
BTI SA-805,21,22(config-if)# transceiver itu frequency 193.50
BTI SA-805,21,22(config-if)# end
BTI SA-805,21,22# show transceiver eth-0-1
```

```
Port eth-0-1 transceiver info:
Transceiver Type: 10G Base-ER
  Transceiver Vendor Name : JDSU
  Transceiver PN          : JST01TMAC1CY5BTI
  Transceiver S/N         : FD405578008F
  Transceiver PEC Code    : BP3AM6TL
Transceiver Output Wavelength: N/A
Supported Link Type and Length:
  Link Length for 9/125um single mode fiber: 80 km
  Link Length for 9/125um single mode fiber: 25500 m
Transceiver Set for Tunable DWDM:
  Transceiver Lasers First Frequency : 191.350000
  Transceiver Lasers Last Frequency  : 196.100000
  Transceiver Lasers grid spacing    : 0.050000
    Tunable Wavelength Set   : 1549.35 nm
    Tunable Channel No. Set  : 44
      Wavelength             : 1549.32 nm
      Frequency              : 193.50 THz
```

This example shows how to set the tunable SFP+ module to ITU channel 42 :

```
(config)#interface eth-0-1
(config-if)# transceiver itu channel 42
(config-if)# end
# show transceiver eth-0-1
```

```
Port eth-0-1 transceiver info:
```

```
Transceiver Type: 10G Base-ER
Transceiver Vendor Name : JDSU
Transceiver PN          : JST01TMAC1CY5BTI
Transceiver S/N         : FD405578008F
Transceiver PEC Code    : BP3AM6TL
Transceiver Output Wavelength: N/A
Supported Link Type and Length:
    Link Length for 9/125um single mode fiber: 80 km
    Link Length for 9/125um single mode fiber: 25500 mm
Transceiver Set for Tunable DWDM:
Transceiver Lasers First Frequency : 191.350000
Transceiver Lasers Last Frequency  : 196.100000
Transceiver Lasers grid spacing    : 0.050000
    Tunable Wavelength Set   : 1550.10 nm
    Tunable Channel No. Set : 42
        Wavelength          : 1550.12 nm
        Frequency            : 193.40 THz
```

The following example shows the unprovisioned interface after the transceiver has been removed.

```
BTI SA-805,21,22# show transceiver eth-0-1
BTI SA-805,21,22#
```

Related Commands

show transceiver (interface_id | detail)

speed

3.19 trust

Use this command to configure the port trust state. To return to the default value, use the no form of this command.

Command Syntax

trust (port | cos (inner |) | dscp-exp | ip-prec)

no trust

Trust port : all incoming packets will be assigned with the priority and color according to the port cos value.

Trust cos : all incoming packets will be assigned with the priority and color according to the packet outer CoS field, if that packet is not carried with CoS field, it will use the port cos to map a priority and color for the packet.

Trust cos inner : all incoming packets will be assigned with the priority and color according to the packet inner CoS field if the packet is double-tagged. If that packet is carried with only one VLAN tag or it is untagged, the behavior should be the same as that of trust cos.

Trust dscp-exp : all incoming IP packets will be assigned with the priority and color according to the packet DSCP field, MPLS packets will be assigned with the priority and color according to the packet EXP field, and for other packets, the priority and color of that packet will be mapped the same as trust cos.

Trust ip-prec : all incoming packets will be assigned with the priority and color according to the packet IP-Precedence field. If the packet is not an IP packet, the priority and color of that packet will be mapped the same as trust cos.

Command Mode

Interface configuration

Defaults

trust cos

Usage

The port trust state is the criteria for classifying incoming packets from the port. All classified packets will be indentified with a priority and color according to the trust state. The default port trust state is trust cos.

Example

This example shows how to configure the trust state.

```
BTI SA-805,21,22(config-if)# trust dscp-exp
```

Related Commands

show qos interface

3.20 show interface

Use this command to display the configurations and statistics on all interfaces or selected interfaces.

Command Syntax

show interface [IFNAME]

IFNAME: the name of interface.

Command Mode

Privileged Exec mode

Usage

None

Example

This example shows how to display the configurations and statistics on the interface eth-0-1.

```
BTI SA-805,21,22# show interface eth-0-1
```

```
Interface eth-0-1
  Interface current state: Administratively DOWN
  Hardware is Ethernet, address is bc3e.60b2.1601 (bia bc3e.60b2.1601)
  Bandwidth 1000000 kbits
  Index 1 , Metric 1 , Encapsulation ARPA
  Speed - 1000Mb/s , Duplex - Full , Media type is 1000BASE_T
  Link speed type is autonegotiation, Link duplex type is autonegotiation
  Input flow-control is off, output flow-control is off
  The Maximum Frame Size is 1534 bytes
  VRF binding: not bound
  Label switching is disabled
  No virtual circuit configured
  ARP timeout 01:00:00, ARP retry interval 1s
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
    0 packets input, 0 bytes
    Received 0 unicast, 0 broadcast, 0 multicast
    0 runts, 0 giants, 0 input errors, 0 CRC
    0 frame, 0 overrun, 0 pause input
    0 input packets with dribble condition detected
    0 packets output, 0 bytes
    Transmitted 0 unicast, 0 broadcast, 0 multicast
    0 underruns, 0 output errors, 0 pause output
```

Related Commands

show interface status

3.21 show interface status

Command Syntax

show interface [[IFNAME]] status

[[IFNAME]]: the name of the intrerface

Command Mode

Privileged Exec mode

Usage

This command will not show VLAN and tunnel interfaces' information.

Example

This command displays the brief information on all Ethernet and LAG interfaces.

```
BTI SA-805,21,22# show interface status
Port Status Duplex Speed Mode Type Description
```

```
-----
eth-0-1 down a-full a-1000 ACCESS 1000BASE_T
eth-0-2 down a-full a-1000 ACCESS 1000BASE_T
eth-0-3 admin down auto auto ACCESS 1000BASE_T
eth-0-4 admin down auto auto ACCESS 1000BASE_T
eth-0-5 up a-full a-1000 routed 1000BASE_T
eth-0-6 up a-full a-100 ACCESS 1000BASE_T
eth-0-7 admin down auto auto ACCESS 1000BASE_T
eth-0-8 admin down auto auto ACCESS 1000BASE_T
eth-0-9 down a-full a-1000 ACCESS 1000BASE_T
eth-0-10 down a-full a-1000 ACCESS 1000BASE_T
eth-0-11 admin down auto auto ACCESS 1000BASE_T
eth-0-12 admin down auto auto ACCESS 1000BASE_T
eth-0-13 admin down auto auto ACCESS 1000BASE_T
eth-0-14 admin down auto auto ACCESS 1000BASE_T
eth-0-15 admin down auto auto ACCESS 1000BASE_T
eth-0-16 admin down auto auto ACCESS 1000BASE_T
eth-0-17 admin down auto auto ACCESS 1000BASE_T
eth-0-18 admin down auto auto ACCESS 1000BASE_T
eth-0-19 admin down auto auto ACCESS 1000BASE_T
eth-0-20 admin down auto auto ACCESS 1000BASE_T
```

Related Commands

None

3.22 show ip interface

Command Syntax

show ip interface [IFNAME]

show ip interface brief

IFNAME: interface name, can be port, agg, loopbak or vlan interface

Command Mode

Privileged Exec mode

Usage

None

Example

This example shows the VLAN interface information.

```
BTI SA-805,21,22# show interface vlan10
Interface vlan10
Interface current state: DOWN
Hardware is VLAN, address is 8633.d260.6500 (bia 8633.d260.6500)
Bandwidth 1000000 kbits
Index 4098 , Metric 1 , Encapsulation ARPA
The maximum transmit unit (MTU) is 1500 bytes
VRF binding: not bound
Label switching is disabled
No virtual circuit configured
VRRP master of : VRRP is not configured on this interface
ARP timeout 01:00:00, ARP retry interval 1s
```

Related Commands

None

3.23 Show errdisable detect

Use this command to editing the NNI's description.

Command Syntax

show errdisable detect

Command Mode

Privileged Exec mode

Example

```
BTI SA-805,21,22# show errdisable detect
ErrDisable Reason Detection status
-----
bpduguard Enabled
bpduloop Enabled
link-monitor-failure Enabled
oam-remote-failure Enabled
port-security Enabled
link-flap Enabled
```

Related Commands

errdisable detect

3.24 show errdisable recovery

Command Syntax

show errdisable recovery

Command Mode

Privileged Exec mode

Example

```
BTI SA-805,21,22# show errdisable recovery
```

ErrDisable Reason	Timer Status
-----	-----
bpduguard	Disabled
bpduloop	Disabled
link-monitor-failure	Disabled
oam-remote-failure	Disabled
port-security	Disabled
link-flap	Enabled

Timer interval: 30 seconds

Related Commands

errdisable recovery interval

errdisable recovery reason

3.25 show errdisable flap

Command Syntax

show errdisable flap

Command Mode

Privileged Exec mode

Example

```
BTI SA-805,21,22# show errdisable flap
ErrDisable Reason      Flaps      Time (sec)
-----
link-flap              10         10
```

3.26 show transceiver

Use this command to display the transceiver information.

Command Syntax

show transceiver (interface_id | detail)

Command Mode

Privileged Exec mode

Usage

N/A

Example

This example displays the transceiver information on eth-0-1.

```
BTI SA-805,21,22 # show transceiver eth-0-1
Port eth-0-1 transceiver info:
Transceiver Type: 10G Base-ER
  Transceiver Vendor Name : JDSU
  Transceiver PN          : JST01TMAC1CY5BTI
  Transceiver S/N         : FD405578008F
  Transceiver PEC Code    : BP3AM6TL
Transceiver Output Wavelength: N/A
Supported Link Type and Length:
  Link Length for 9/125um single mode fiber: 80 km
  Link Length for 9/125um single mode fiber: 25500 m
Transceiver Set for Tunable DWDM:
  Transceiver Lasers First Frequency : 191.350000
  Transceiver Lasers Last Frequency  : 196.100000
  Transceiver Lasers grid spacing    : 0.050000
  Tunable Wavelength Set : 1556.50 nm
  Tunable Channel No. Set : 26
    Wavelength      : 1556.55 nm
    Frequency       : 192.60 THz
```

This example displays the detailed transceiver information on eth-0-1.

```
Port eth-0-1 transceiver info:
Transceiver Type: 10G Base-ER
  Transceiver Vendor Name : JDSU
  Transceiver PN          : JST01TMAC1CY5BTI
  Transceiver S/N         : FD4055780070
  Transceiver PEC Code    : BP3AM6TL
Transceiver Output Wavelength: N/A
Supported Link Type and Length:
  Link Length for 9/125um single mode fiber: 80 km
  Link Length for 9/125um single mode fiber: 25500 m
Transceiver Set for Tunable DWDM:
```

```

Transceiver Lasers First Frequency : 191.350000
Transceiver Lasers Last Frequency  : 196.100000
Transceiver Lasers grid spacing    : 0.050000
    Tunable Wavelength Set   : 1528.80 nm
    Tunable Channel No. Set  : 96
        Wavelength           : 1528.77 nm
        Frequency             : 196.10 THz

```

Transceiver is internally calibrated.

mA: milliamperes, dBm: decibels (milliwatts), NA or N/A: not applicable.

++ : high alarm, + : high warning, - : low warning, -- : low alarm.

The threshold values are calibrated.

Port	Temperature (Celsius)	High Alarm Threshold (Celsius)	High Warn Threshold (Celsius)	Low Warn Threshold (Celsius)	Low Alarm Threshold (Celsius)
eth-0-1 -7.00	41.77	72.00	70.00	-5.00	

Port	Voltage (Volts)	High Alarm Threshold (Volts)	High Warn Threshold (Volts)	Low Warn Threshold (Volts)	Low Alarm Threshold (Volts)
eth-0-1 2.97	3.30	3.63	3.46	3.13	

Threshold Port	Current (milliamperes)	High Alarm Threshold (mA)	High Warn Threshold (mA)	Low Warn Threshold (mA)	Low Alarm Threshold (mA)
eth-0-1 15.00	0.00 --	110.00	95.00	25.00	

Threshold Port	Optical Transmit Power (dBm)	High Alarm Threshold (dBm)	High Warn Threshold (dBm)	Low Warn Threshold (dBm)	Low Alarm Threshold (dBm)
eth-0-1 -3.00	-40.00 --	3.00	2.00	-2.00	

Alarm Port	Optical Receive Power (dBm)	High Alarm Threshold (dBm)	High Warn Threshold (dBm)	Low Warn Threshold (dBm)	Low Threshold (dBm)
eth-0-1 -29.21	-40.00 --	-4.00	-6.00	-27.21	

Related Commands

transceiver itu

4.0 VLAN Commands

This section covers the following topics :

- 4.1, “vlan database”
- 4.2, “vlan (vlan id)”
- 4.3, “vlan (vlan id list)”
- 4.4, “show vlan”
- 4.5, “show VLAN all”
- 4.6, “show vlan brief”
- 4.7, “vlan bridge disable”
- 4.8, “vlan mac-limit maximum”
- 4.9, “vlan mac-limit action”
- 4.10, “vlan mac learning (enable|disable)”
- 4.11, “show vlan-security”

4.1 vlan database

Use this command to enter VLAN configure mode.

Command Syntax

vlan database

Command Mode

Global configuration

Usage

When you try to create or remove a VLAN, you must use this command to enter VLAN configure mode first. To exit VLAN configure mode, use the **exit** command.

Example

This example shows how to enter VLAN configure mode:

```
BTI SA-805,21,22(config)# vlan database
```

```
BTI SA-805,21,22(config-vlan)#
```

This example shows how to exit VLAN configure mode:

```
BTI SA-805,21,22(config-vlan)# exit
```

```
BTI SA-805,21,22(config)#
```

Related Commands

exit

4.2 vlan (vlan id)

Use command to configure VLAN characteristics for a VLAN in the VLAN database. Use the **no** form of this command to delete a VLAN.

Command Syntax

[no] vlan (1-4094)(name string)(state (enable |disable))

name = the name for specific vlan, no more than 16 characters

enable = sets the operational state of the VLAN to enable

disable = sets the operational state of the VLAN to disable

default = enable

Command Mode

VLAN configuration

Usage

VLAN 1 is the default VLAN and all ports have been added to it by default. Default VLAN 1 can not be removed.

Example

This example shows how to create VLAN 11 and named it to "vlan11":

```
BTI SA-805,21,22(config-vlan)# vlan 11 name vlan11 state enable
```

This example shows how to remove VLAN 11:

```
BTI SA-805,21,22(config-vlan)# no vlan 11
```

Related Commands

vlan (VLAN list)

show vlan vlan

show vlan all

4.3 vlan (vlan id list)

Use this command to add a VLAN list to the VLAN database.

Command Syntax

[no] vlan (VLAN id list)

VLAN_LIST: vlan list connected with '-' and ',', for example, "1-10,15,20,30-40"

Command Mode

VLAN configuration

Usage

The vlan list should be connected with '-' and ',', the value should be in the range of <1-4094> and should be ascending order.

Vlan 1 is the default vlan and all ports have been added to it by default.

Note	Default VLAN 1 can not be removed.
-------------	------------------------------------

Example

This example shows how to add vlan range "100,200,300-400".

```
BTI SA-805,21,22(config-vlan)# vlan 100,200,300-400
```

This example shows how to remove vlans of "100,200,300-400".

```
BTI SA-805,21,22(config-vlan)# no vlan 100,200,300-400
```

Related Commands

vlan <1-4094>

show vlan vlan

show vlan all

4.4 show vlan

Use this command to display specific vlan information.

Command Syntax

show vlan vlan

vlan: <1-4094> vlan id

Command Mode

EXEC

Usage

This command is used to display VLAN details including name, state, stp id, DSCP, member ports.

Example

This example shows how to display the information on VLAN 2

```
BTI SA-805,21,22# show vlan 11
```

VLAN ID	Name	State	Traffic Channel	Member ports
				(u)-Untagged, (t)-Tagged
=====	=====	=====	=====	=====
2	VLAN0002	ACTIVE	1	eth-0-7(t) eth-0-25(t)

Related Commands

show vlan all

4.5 show VLAN all

Use this command to show the information of all the VLAN.

Command Syntax

show vlan all

Command Mode

EXEC

Usage

This command is used to display all VLAN property including name, state, stp id, DSCP, member ports.

Example

This example shows how to display the information on VLAN all:

```
BTI SA-805,21,22# show vlan all
VLAN ID  Name                State   Traffic Channel Member ports
=====  =====
1         default                 ACTIVE  1         eth-0-3(u) eth-0-4(u)
          eth-0-5(u) eth-0-6(u)
          eth-0-8(u) eth-0-9(u)
          eth-0-11(u) eth-0-12(u)
          eth-0-13(u) eth-0-14(u)
          eth-0-15(u) eth-0-16(u)
          eth-0-17(u) eth-0-18(u)
          eth-0-19(u) eth-0-20(u)
          eth-0-21(u) eth-0-22(u)
          eth-0-23(u) eth-0-24(u)
          eth-0-26(u) eth-0-27(u)
          eth-0-28(u)
2         VLAN0002                ACTIVE  1         eth-0-7(t) eth-0-25(t)
5         VLAN0005                ACTIVE  1         eth-0-7(t) eth-0-25(t)
7         VLAN0007                ACTIVE  1         eth-0-7(t) eth-0-25(t)
600      VLAN0600                ACTIVE  1         eth-0-7(t) eth-0-25(t)
888      VLAN0888                ACTIVE  1         eth-0-7(t) eth-0-25(t)
4080     VLAN4080                ACTIVE  1         eth-0-7(t) eth-0-25(t)
```

Related Commands

show vlan vlan

4.6 show vlan brief

Use this command to show the brief information on VLAN.

Command Syntax

show vlan brief

Command Mode

EXEC

Usage

This command is used to display all VLAN information for all bridges, including static and dynamic.

Example

This example shows how to display the brief information on VLAN:

```
# show vlan brief
VLAN ID  Name                State   Traffic Channel Member ports
=====  =====
1         default                ACTIVE  1         eth-0-3(u) eth-0-4(u)
          eth-0-5(u) eth-0-6(u)
          eth-0-8(u) eth-0-9(u)
          eth-0-11(u) eth-0-12(u)
          eth-0-13(u) eth-0-14(u)
          eth-0-15(u) eth-0-16(u)
          eth-0-17(u) eth-0-18(u)
          eth-0-19(u) eth-0-20(u)
          eth-0-21(u) eth-0-22(u)
          eth-0-23(u) eth-0-24(u)
          eth-0-26(u) eth-0-27(u)
          eth-0-28(u)
2         VLAN0002                ACTIVE  1         eth-0-7(t) eth-0-25(t)
5         VLAN0005                ACTIVE  1         eth-0-7(t) eth-0-25(t)
7         VLAN0007                ACTIVE  1         eth-0-7(t) eth-0-25(t)
600       VLAN0600                ACTIVE  1         eth-0-7(t) eth-0-25(t)
888       VLAN0888                ACTIVE  1         eth-0-7(t) eth-0-25(t)
4080      VLAN4080                ACTIVE  1         eth-0-7(t) eth-0-25(t)
```

Related Commands

show vlan vlan

4.7 vlan bridge disable

Use this command to disable the bridge function on specific VLANs. Use the no form of this command to enable the bridge function on soecific VLANs.

Command Syntax

[no] vlan (1-4094) bridge disable

vlan-id: = vlan-id

Command Mode

VLAN Configuration

Default

vlan bridge enable

Usage

None

Example

This example shows how to disable bridge function on VLAN 2:

```
BTI SA-805,21,22(config-vlan)# vlan 2 bridge disable
```

This example shows how to enable bridge function on VLAN 2:

```
BTI SA-805,21,22(config-vlan)# no vlan 2 bridge disable
```

Related Commands

None

4.8 vlan mac-limit maximum

Use this command to set or unset the maximum mac addresses in a specified vlan.

Command Syntax

[no] vlan (1-4094) mac-limit maximum maximum

maximum = maximum of mac addresses, between 1 and 65535.

Command Mode

Vlan configuration

Defaults

No mac-limit on all vlans.

Usage

The vlan must be created before this command is performed.

Example

This example shows how to set or unset maximum mac addresses for a specified vlan :

```
BTI SA-805,21,22# configure terminal
BTI SA-805,21,22(config)# vlan database
BTI SA-805,21,22(config-vlan)# vlan 2
BTI SA-805,21,22(config-vlan)# vlan 2 mac-limit maximum 1000
BTI SA-805,21,22(config-vlan)# no vlan 2 mac-limit maximum
```

Related Commands

show vlan-security

4.9 vlan mac-limit action

Use this command to set or unset the mac-limit action for a specified vlan.

Command Syntax

[no] vlan (1-4094) mac-limit action (discard|forward)

discard = If the count of the mac addresses reaches the maximum, packets with unknown source the mac address from this vlan will be discarded.

forward = If the count of the mac addresses reaches the maximum, all packets from this vlan will be forwarded without mac learning or a warning log.

Command Mode

Vlan configuration

Defaults

Forward

Usage

The vlan must be created before using this command.

Example

This example shows how to set or unset mac-limit action for a specified vlan :

```
BTI SA-805,21,22# configure terminal
BTI SA-805,21,22(config)# vlan database
BTI SA-805,21,22(config-vlan)# vlan 2
BTI SA-805,21,22(config-vlan)# vlan 2 mac-limit action discard
BTI SA-805,21,22(config-vlan)# no vlan 2 mac-limit action
```

Related Commands

show vlan-security

4.10 vlan mac learning (enable|disable)

Use this command to enable or disable mac learning for a specified vlan.

Command Syntax

vlan (1-4004) mac learning (enable|disable)

Command Mode

Vlan configuration

Usage

The vlan must be created before this command.

Defaults

Enable

Example

This example shows how to enable mac learning for a specified vlan :

```
BTI SA-805,21,22# configure terminal
BTI SA-805,21,22(config)# vlan database
BTI SA-805,21,22(config-vlan)# vlan 2
BTI SA-805,21,22(config-vlan)# vlan 2 mac learning enable
```

Related Commands

show vlan-security

4.11 show vlan-security

Use this command to show configuration about vlan security.

Command Syntax

show vlan-security (vlan *vlan-id*)

vlan-id: vlan id, between 1 and 4094.

Command Mode

EXEC mode

Usage

None

Example

This example shows to show the vlan security configuration :

```
BTI SA-805,21,22# configure terminal
BTI SA-805,21,22(config)# vlan database
BTI SA-805,21,22(config-vlan)# vlan 2
BTI SA-805,21,22(config-vlan)# vlan 2 mac-limit maximum 1000
BTI SA-805,21,22(config-vlan)# vlan 2 mac-limit action discard
BTI SA-805,21,22# show vlan-security
```

```
Vlan learning-en max-mac-count cur-mac-count action
```

```
-----
 2 Enable 1000 0 discard
```

Related Commands

vlan mac-limit maximum

vlan mac-limit action

vlan mac learnng

5.0 Monitor Commands

This section covers the following topics :

- 5.1, “[monitor destination interface](#)”
- 5.2, “[monitor source interface](#)”
- 5.3, “[show monitor](#)”

5.1 monitor destination interface

Use this command to set the mirror destination interface. To remove this setting, use the no form of this command.

Command Syntax

[no] monitor destination interface (interface id)

interface: mirror destination interface

Command Mode

Global configuration

Usage

The destination interface can only be physical port. It can be Aggregator interface.

Example

This example shows how to set the mirror destination port to eth-0-1 in session 1.

```
BTI SA-805,21,22(config)# monitor destination interface eth-0-1
```

This example shows how to remove this setting.

```
BTI SA-805,21,22(config)# no monitor destination
```

Related Commands

monitor source interface

show monitor

5.2 monitor source interface

Use this command to set mirror source interface. To remove this setting, use the no form of this command.

Command Syntax

[no] monitor source interface (interface id) (both | tx | rx)

interface: mirror source interface.

both: monitor received and transmitted traffic on that interface

rx: monitor received traffic only on that interface

tx: monitor transmitted traffic only on that interface

Command Mode

Global configuration

Usage

The mirror source interface can be either a physical port or an Aggregator interface. (e.g. eth-0-1, agg1). If the parameter for direction [both|tx|rx] is not specified, the default value is both.

Example

This example shows how to set the mirror source port to eth-0-11 in session 1.

```
BTI SA-805,21,22(config)# monitor source interface eth-0-11
```

This example shows how to remove this setting.

```
BTI SA-805,21,22(config)# no monitor source interface eth-0-11
```

Related Commands

monitor session destination

show monitor

5.3 show monitor

Use this command to information about monitor.

Command Syntax

show monitor

Command Mode

EXEC

Usage

If the session id is not specified, all configured sessions will be displayed..

Example

This example shows how to display the port monitor information.

```
BTI SA-805,21,22# show monitor
```

```
Session 1
```

```
-----
```

```
Status : Invalid(Destination port isn't specified)
```

```
Type : Local Session
```

```
Source Ports
```

```
Receive Only :
```

```
Transmit Only :
```

```
Both (Tx and Rx) : eth-0-1
```

```
Source VLANs
```

```
Receive Only :
```

```
Transmit Only :
```

```
Both (Tx and Rx) :
```

```
Destination Port : N/A show monitor
```

```
Session 1
```

```
-----
```

```
Status : Valid
```

```
Type : Local Session
```

```
Source Ports :
```

```
Receive Only :
```

```
Transmit Only :
```

```
Both : eth-0-2 eth-0-3
```

```
Source VLANs :
```

```
Receive Only :
```

```
Transmit Only :
```

```
Both :
```

```
Destination Port : eth-0-1
```

Related Commands

monitor source interface

monitor destination interface

6.0 MEF Ethernet Service Commands

This section covers the following topics :

- 6.1, “Ethernet Virtual Connection (EVC)”
- 6.2, “Operator Virtual Connection (OVC)”
- 6.3, “Network Network Interface (NNI)”
- 6.4, “External Network Network Interface (ENNI)”
- 6.5, “User Network Interface (UNI)”
- 6.6, “Ethernet Service Instance”
- 6.7, “Ethernet Access Instance (OVC EndPoint per UNI)”
- 6.8, “Ethernet Access Instance (OVC EndPoint per ENNI)”
- 6.9, “Bandwidth Profile Configuration”
- 6.10, “Layer 2 Control Protocol Configuration”

6.1 Ethernet Virtual Connection (EVC)

A fundamental aspect of Ethernet Services is the Ethernet Virtual Connection (EVC). An EVC is an association of two or more UNIs. These UNIs are said to be “in the EVC.” A given UNI can support more than one EVC via the Service Multiplexing attribute. An ingress Service Frame that is mapped to the EVC can be delivered to one or more of the UNIs in the EVC other than the ingress UNI. It **MUST NOT** be delivered back to the ingress UNI. It **MUST NOT** be delivered to a UNI not in the EVC. An EVC is always bi-directional in the sense that ingress Service Frames can originate at any UNI in an EVC.

- 6.1.1, “ethernet evc”
- 6.1.2, “service type”
- 6.1.3, “svlan”
- 6.1.4, “vlan preservation”
- 6.1.5, “cos preservation”
- 6.1.6, “max-uni”
- 6.1.7, “meg enable level”

6.1.1 ethernet evc

Create or delete the EVC instance that can be identified by given string "WORD".

Command Mode

Global configuration mode

Command Syntax

ethernet evc (add|del) WORD

WORD: EVC ID

Usage

The EVC ID is an arbitrary string administered by the Service Provider that is used to identify an EVC within the MEN. The EVC ID MUST be unique across all EVCs in the MEN. It is intended for management and control purposes. The EVC ID is not carried in any field in the Service Frame. As an example, a Service Provider might use "EPLINESERVICEPROVIDER-CUSTOMER1" to represent the EP-Line EVC in the MEN and the customer for the EVC.

Example

```
BTI SA-805,21,22# configuration commands, one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet evc add EPLINE-SERVICEPROVIDER1-CUSTOMER1
BTI SA-805,21,22(config-evc)# end# show ethernet evc
-----
EVC EPLINE-SERVICEPROVIDER1-CUSTOMER1:
Service Type : epline
EVC Type : None
Outer SVLAN ID : n/a
CE-VLAN Preservation : Yes
CoS Preservation : Yes
Maximum Number of UNI : 2
Number of UNI using this EVC : 0
-----
```

Related Commands

Global Configuration Mode	Description
show ethernet EVC [NAME]	Display the attributes of EVC instance

Command List for EVC Mode

Commands	Description
Service type (epline evpline)	Set the service type of EVC(A-EPLine,A- EVPLine)
svlan <1-4094>	Set the S-VLAN ID of the EVC

Commands	Description
vlan-preservation (enable disable)	Set the CE-VLAN ID preservation attribute
cos-preservation (enable disable)	Set the cos-preservation attribute
svlan-preservation (enable disable)	Set the S-VLAN ID preservation attribute
scos-preservation (enable disable)	Set the SVLAN cos-preservation attribute
svlan priority (copy-from-cvlan manual)	Set the svlan priority decide mode.
svlan priority <0-7>	Set the svlan priority value for manual selection
add delete) uni UNI-ID	Add or delete the UNI instance to the EVC Service
(add delete) nni NNI-ID	Add or delete the NNI instance to the EVC Service
(add delete) enni ENNI-ID	Add or delete the ENNI instance to the EVC Service
meg enable level <1-7> ccm-interval (300hz 10ms 100ms 1sec 10sec 1min 10min)	Create an OAM domain with the specified level and ccm-interval.

6.1.2 service type

Ethernet Service Types can be used to create a broad range of services. Each Ethernet Service Type has a set of Ethernet Service Attributes that define the service characteristics. These Ethernet Service Attributes in turn have a set of parameters associated with them that provide various options for the different Service Attributes. Two Ethernet Service Types have been defined. The first, Ethernet Line Service (E-Line Service), uses a Point-to-Point EVC. The second, Ethernet LAN Service (E-LAN Service), uses a Multipoint-to-Multipoint EVC.

Command Mode

EVC configuration mode

Command Syntax

service type (ep|eplan|eptree|evpl|evplan|evptree)

- -eline : Ethernet Private Line Service
- -eplan : Ethernet Private LAN Service
- -eptree : Ethernet Private Tree Service
- -evpline : Ethernet Virtual Private Line Service
- -evplan : Ethernet Virtual Private LAN Service
- -evptree : Ethernet Virtual Private Tree Service

Usage

Service type should be configured properly for service purpose.

Example

```
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet evc EPLINE-Customer1-TEST1
BTI SA-805,21,22(config-evc)# service type evpline
BTI SA-805,21,22(config-evc)# end
BTI SA-805,21,22# show ethernet evc EPLINE-Customer1-TEST1
```

```
-----
EVC EPLINE-Customer1-TEST1:
  Service Type           : evpline
  EVC Type                : Point-to-Point
  Outer SVLAN ID         : n/a
  CE-VLAN Preservation    : Yes
  CoS Preservation        : Yes
  Maximum Number of UNI   : 2
  Number of UNI using this EVC : 0
-----
```

Related Commands

UNI Configuration Mode	Possible Service combination
all-to-one-bundling (enable disable)	enable - epline, eplan, eptree services are can be supported
	disable - evpline, evplan, evptree services are can be supported
multiplex (enable disable)	enable - evpline, evplan, evptree services are can be supported
	disable - epline, eplan, eptree services are can be supported

6.1.3 svlan

In case of Provider Bridge, Provider network supports packet based on S-VLAN ID. The device should be supported attribute S-VLAN ID of EVC for the Provider Bridge network.

Command Mode

EVC configuration mode

Command Syntax

"svlan <1-4094>"

Usage

S-VLAN ID value MUST be unique in the Service Provider MEN..

Example

```
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet evc EPLINE-Customer1-TEST1
BTI SA-805,21,22(config-evc)# svlan 1000
BTI SA-805,21,22(config-evc)# end
BTI SA-805,21,22# show ethernet evc EPLINE-Customer1-TEST1
```

```
-----
EVC EPLINE-Customer1-TEST1:
  Service Type           : evpline
  EVC Type               : Point-to-Point
  Outer SVLAN ID         : 1000
  CE-VLAN Preservation   : Yes
  CoS Preservation       : Yes
  Maximum Number of UNI   : 2
  Number of UNI using this EVC : 0
-----
```

Related Commands

VLAN database mode	Description
vlan <1-4094>	VLAN Must be created to activate the EVC Service.

6.1.4 vlan preservation

When an EVC includes a UNI at which more than one CE-VLAN ID is mapped to the EVC by the CE-VLAN ID/EVC Map, the EVC **MUST** have the CE-VLAN ID Preservation Service Attribute.

Note that when the CE-VLAN ID configured for untagged and priority tagged Service Frames is mapped to an EVC with the CE-VLAN ID Preservation Service Attribute, ingress untagged and priority tagged Service Frames at this UNI are not mandated to have their CE-VLAN ID preserved except in the case of All to One Bundling.

Command Mode

EVC configuration mode

Command Syntax

"vlan-preservation (enable|disable)"

Usage

In case of UNI bundling state, vlan-preservation attribute should be enabled.

In case of EVC Service type is EPLINE and EPLAN, vlan-preservation attribute should be enabled.

Example

configure terminal

```
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet evc EPLINE-Test2-TEST1
BTI SA-805,21,22(config-evc)# vlan-preservation disable
BTI SA-805,21,22(config-evc)# end
BTI SA-805,21,22# show ethernet evc EPLINE-Test2-TEST1
```

```
-----
EVC EPLINE-Test2-TEST1:
  Service Type           : evpline
  EVC Type               : Point-to-Point
  Outer SVLAN ID         : 1000
  CE-VLAN Preservation   : No
  CoS Preservation       : Yes
  Maximum Number of UNI  : 2
  Number of UNI using this EVC : 0
-----
```

Related Commands

UNI configuration mode	Description
all-to-one-bundling (enable disable)	all-to-one-bundling enable : vlan-preservation

UNI configuration mode	Description
	MUST enabled all-to-one-bundling disable : don't care th vlan-preservation attribute
bundling (enable disable)	bundling enable : vlan-preservation MUST enabled bundling disable : don't care the vlan-preservation attribute

6.1.5 cos preservation

In an EVC with CE-VLAN CoS Preservation, an egress Service Frame resulting from an ingress Service Frame that contains a CE-VLAN CoS **MUST** have the identical CE-VLAN CoS.

Command Mode

EVC configuration mode

Command Syntax

"cos-preservation (enable|disable)"

Usage

Example

```
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet evc EPLINE-Test2-TEST1
BTI SA-805,21,22(config-evc)# cos-preservation disable
BTI SA-805,21,22(config-evc)# end
BTI SA-805,21,22# show ethernet evc EPLINE-Test2-TEST1
```

```
-----
EVC EPLINE-Test2-TEST1:
  Service Type           : evpline
  EVC Type               : Point-to-Point
  Outer SVLAN ID         : 1000
  CE-VLAN Preservation   : Yes
  CoS Preservation       : No
  Maximum Number of UNI  : 2
  Number of UNI using this EVC : 0
-----
```

Related Commands

None

6.1.6 max-uni

The Maximum Number of UNIs (MNU) service attribute specifies the maximum number of UNIs allowed in a EVC.

Command Mode

EVC configuration mode

Command Syntax

"max-uni <2-512>"

Usage

To support E-Service as EP-Line, EVP-Line, EP-LAN or EVP-LAN this "multiplex" attribute should be configured properly. In case of EP-Line or EP-LAN, MNU MUST be one and EVP-Line or EVP-LAN, MNU MUST be two or greater.

Example

```
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet evc EPLINE-test2-TEST1
BTI SA-805,21,22(config-evc)# service type evplan
BTI SA-805,21,22(config-evc)# max-uni 10
BTI SA-805,21,22(config-evc)# end
BTI SA-805,21,22# show ethernet evc EPLINE-test2-TEST1
```

```
-----
EVC EPLINE-test2-TEST1:
  Service Type           : evplan
  EVC Type               : Multipoint-to-Multipoint
  Outer SVLAN ID         : 1000
  CE-VLAN Preservation   : Yes
  CoS Preservation       : No
  Maximum Number of UNI   : 10
  Number of UNI using this EVC : 0
-----
```

Related Commands

EVC Configuration Mode	Possible max-uni values by Service Multiplexing of UNI
service type (epline eplan evpline evplan)	epline, evpline - 2 eplan, evplan - 2 or greater than 2

6.1.7 meg enable level

To monitor the service status, an OAM domain should be created to the service. The MEG attribute is used to create the OAM domain simply in the service activation stage.

Command Mode

EVC configuration mode

Command Syntax

meg enable level <1-7> ccm-interval (300hz|10ms|100ms|1sec|10sec|1min|10min)

Usage

To create an OAM domain within the service creation, MEP attribute of EPU or UNI are mandatorily required with the MEG attribute. The example below shows how to configure them.

Example

```
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet uni add uni3
BTI SA-805,21,22(config-uni)# map interface eth-0-3
BTI SA-805,21,22(config-uni)# all-to-one-bundling disable
BTI SA-805,21,22(config-uni)# multiplex enable
BTI SA-805,21,22(config-uni)# exit
BTI SA-805,21,22(config)# ethernet evc add CUSTOMER2
BTI SA-805,21,22(config-evc)# svlan 200
BTI SA-805,21,22(config-evc)# service type evpline
BTI SA-805,21,22(config-evc)# add nni nni1
BTI SA-805,21,22(config-evc)# add uni uni3
BTI SA-805,21,22(config-evc)# meg enable level 4 ccm-interval 1sec
BTI SA-805,21,22(config-evc)# exit
BTI SA-805,21,22(config)# do show ethernet epu
-----
EPU uni2-CUSTOMER1:
MEPID of EPU : 222* (MAC: 0019:6de1:e102)
Performance : disable
CE-VLAN map : All to One Bundling
-----
EPU uni3-CUSTOMER2:
Performance : disable
CE-VLAN map : Empty
-----
BTI SA-805,21,22(config)# ethernet epu uni3-CUSTOMER2
BTI SA-805,21,22(config-epu)# add vlan 1000
BTI SA-805,21,22(config-epu)# mep mepid 223
BTI SA-805,21,22(config-epu)# exit
BTI SA-805,21,22(config)# end
BTI SA-805,21,22# show ethernet evc status CUSTOMER2
```



```

-----
EVC name : CUSTOMER2(200) / evpline
EVC-MEG state : enable
OAM Domain Name : CUSTOMER2
MEG Level : 4
CCM Interval : 1sec
Service Status : Active
Local MEPs : uni3(223)*,
Remote MEPs : runi213(213),
-----

```

```
BTI SA-805,21,22# show ethernet evc CUSTOMER2
```

```

-----
EVC CUSTOMER2
Service Type : evpline
VC Type : Point-to-Point
SVLAN ID : 200
CE-VLAN ID Preservation : Yes
CE-VLAN CoS ID Preservation : Yes
Maximum Number of UNI : 2
Number of UNI : 1
Number of RUNI : 1
Number of ENNI : 0
EVC MEG state : enable
OAM Domain Name : CUSTOMER2
MEG Level : 4
CCM Interval : 1sec
Service Status : Active
Local UNI List -----
uni3,
Remote UNI List -----
runi213,
INNI List
nnil,
-----

```

```

BTI SA-805,21,22# show ethernet soam domain
[Global configuration]
- enable: enabled
[Domain configuration]
-----

```

```

-
domain(maid) learn aging md-type ma-type 1 vid int
-----

```

```

-
meg: CUSTOMER1 (01:02:06) dis 0 no-present string 4 100 1s
meg: CUSTOMER2 (01:02:05) en 0 no-present string 4 200 1s
BTI SA-805,21,22# show ethernet soam maintenance-point
*(dynamic maintenance-point)
xcon(cross connection mismatch), eoc(error of continuity),
loc(loss of continuity), mac(mac status defect), rdi(remote defect
indication)
[MEP]

```

```
-----
mepid vid 1 ifname mac-addr dir cci rdi fault domain
-----
222 100 4 eth-0-2 0019.6de1.e102 up en off none meg: CUSTOMER1
223 200 4 eth-0-3 0019.6de1.e103 up en off none meg: CUSTOMER2
[MIP]
-----
vid 1 ifname mac-addr domain
-----
[Remote MEP]
-----
rmepid mepid vid 1 mac-addr fault domain
-----
212 222 100 4 0019.6de1.e202 ---/---/--- meg: CUSTOMER1
213* 223 200 4 0019.6de1.e203 ---/---/--- meg: CUSTOMER2
```

Related Commands

UNI or EPU Configuration Mode	Description
mep mepid <1-8192>	Set the MEP of the OAM domain per UNI (per port) or EPU (per service point)

6.2 Operator Virtual Connection (OVC)

Any Ethernet service that is based on a Operator Virtual Connection (OVC) that associates at least one OVC End Point at a UNI, and at least one OVC End Point at an ENNI, is designated as an Ethernet Access (E-Access) Service type. The Ethernet services defined in the scope of this specification use a point-to-point OVC which associates one OVC End Point at an ENNI and one at a UNI.

This section covers the following topics :

- [6.2.1, “ethernet ovc”](#)
- [6.2.2, “service type”](#)
- [6.2.3, “s-vlan”](#)
- [6.2.4, “vlan preservation”](#)
- [6.2.5, “cos preservation”](#)
- [6.2.6, “svlan preservation”](#)
- [6.2.7, “cos preservation”](#)

6.2.1 ethernet ovc

Create or delete the EVC instance that can be identified by given string “WORD”

Command Mode

Global configuration mode

Command Syntax

ethernet ovc (add|del) WORD

WORD: OVC ID

Usage

The OVC ID is an arbitrary string administered by the Service Provider that is used to identify an EVC within the MEN. The OVC ID MUST be unique across all OVCs and OVCs in the MEN. It is intended for management and control purposes. The OVC ID is not carried in any field in the Service Frame. As an example, the AT&T Service Provider might use “EPLINE-SERVICEPROVIDER1-CUSTOMER1” to represent the EP-Line OVC in the MEN and the customer for the OVC is CUSTOMER1.

Example

```
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet ovc add AccessEPL-CUST
BTI SA-805,21,22(config-ovc)# end
BTI SA-805,21,22# show ethernet ovc
-----
OVC AccessEPL-CUST
Service Type : epline
VC Type : Point-to-Point
SVLAN ID : n/a
CE-VLAN ID Preservation : Yes
CE-VLAN CoS ID Preservation : Yes
S-VLAN ID Preservation : Yes
S-VLAN CoS ID Preservation : Yes
Color Forwarding : enable
Color Indicator : dei
Maximum Number of UNI : 1
Number of UNI : 0
Number of RUNI : 0
Number of ENNI : 0
EVC MEG state : disable
-----
```

Related Commands

Global Configuration Mode	Description
show ethernet OVC [NAME]	Display the attributes of OVC instance

Command List for OVC Mode

Commands	Description
Service type (epline evpline)	Set the service type of OVC(A-EPLine,A- EVPLine)
svlan <1-4094>	Set the S-VLAN ID of the OVC
vlan-preservation (enable disable)	Set the CE-VLAN ID preservation attribute
cos-preservation (enable disable)	Set the cos-preservation attribute
svlan-preservation (enable disable)	Set the S-VLAN ID preservation attribute
scos-preservation (enable disable)	Set the SVLAN cos-preservation attribute
svlan priority <0-7>	Set the svlan priority value for manual selection
add delete) uni UNI-ID	Add or delete the UNI instance to the OVC Service
(add delete) nni NNI-ID	Add or delete the NNI instance to the OVC Service
(add delete) enni ENNI-ID	Add or delete the ENNI instance to the OVC Service
meg enable level <1-7> ccm-interval (300hz 10ms 100ms 1sec 10sec 1min 10min)	Create an OAM domain with the specified level and ccm-interval.

6.2.2 service type

Ethernet Service Types can be used to create a broad range of services. Each Ethernet Service Type has a set of Ethernet Service Attributes that define the service characteristics. These Ethernet Service Attributes in turn have a set of parameters associated with them that provide various options for the different Service Attributes. Two Ethernet Service Types have been defined in the example below. The first, Ethernet Line Service (E-Line Service), uses a Point-to-Point EVC. The second, Ethernet LAN Service (E-LAN Service), uses a Multipoint-to-Multipoint EVC.

Command Mode

EVC configuration mode

Command Syntax

service type (epline| evpline)

- epline : Access Ethernet Private Line Service
- evpline : Access Ethernet Virtual Private Line Service

Usage

Service type should be configured properly for service purpose.

Example

```
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet ovc AccessEPL-CUST
BTI SA-805,21,22(config-ovc)# service type evpline
BTI SA-805,21,22(config-ovc)# end
BTI SA-805,21,22# show ethernet ovc AccessEPL-CUST
```

```
-----
OVC AccessEPL-CUST
Service Type : evpline
VC Type : Point-to-Point
SVLAN ID : n/a
CE-VLAN ID Preservation : Yes
CE-VLAN CoS ID Preservation : Yes
S-VLAN ID Preservation : Yes
S-VLAN CoS ID Preservation : Yes
Color Forwarding : enable
Color Indicator : dei
Maximum Number of UNI : 1
Number of UNI : 0
Number of RUNI : 0
Number of ENNI : 0
EVC MEG state : disable
-----
```

Related Commands

UNI Configuration Mode	Possible Service Combination
all-to-one-bundling (enable disable)	enable – epline, eplan, eptree services are can be supported disable – evpline, evplan, evptree services are can be supported
multiplex (enable disable)	enable – evpline, evplan, evptree services are can be supported disable – epline, eplan, eptree services are can be supported

6.2.3 s-vlan

In case of E-Access service, Operator network is supports packet switching based on S-VLAN ID. The S-VLAN ID should be the supported attribute S-VLAN ID of OVC for the Operators network.

Command Mode

OVC configuration mode

Command Syntax

svlan <1-4094>

Usage

S-VLAN ID value MUST be unique in the Operator MEN.

Example

```
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet ovc AccessEPL-CUST
BTI SA-805,21,22(config-ovc)# svlan 1000
BTI SA-805,21,22(config-ovc)# end
BTI SA-805,21,22# show ethernet ovc AccessEPL-CUST
```

```
-----
OVC AccessEPL-CUST
Service Type : evpline
VC Type : Point-to-Point
SVLAN ID : 1000
SVLAN Priority Mode : copy-from-cvlan
CE-VLAN ID Preservation : Yes
CE-VLAN CoS ID Preservation : Yes
S-VLAN ID Preservation : Yes
S-VLAN CoS ID Preservation : Yes
Color Forwarding : enable
Color Indicator : dei
Maximum Number of UNI : 1
Number of UNI : 0
Number of RUNI : 0
Number of ENNI : 0
EVC MEG state : disable
-----
```

Related Commands

VLAN Database Mode	Possible Service Combination
vlan <1-4094>	VLAN Must be created to activate the EVC Service.

6.2.4 vlan preservation

When an OVC includes a UNI at which more than one CE-VLAN ID is mapped to the OVC by the CE-VLAN ID/OVC Map, the OVC MUST have the CE-VLAN ID Preservation Service Attribute. Note that when the CE-VLAN ID configured for untagged and priority tagged Service Frames is mapped to an OVC with the CE-VLAN ID Preservation Service Attribute, ingress untagged and priority tagged Service Frames at this UNI are not mandated to have their CE-VLAN ID preserved except in the case of All to One Bundling.

Command Mode

OVC configuration mode

Command Syntax

vlan-preservation (enable|disable)

Usage

In case of UNI bundling state, vlan-preservation attribute should be enabled.

In case of OVC Service type is EPLINE and EPLAN, vlan-preservation attribute should be enabled.

Example

```
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet ovc AccessEPL-CUST
BTI SA-805,21,22(config-ovc)# vlan-preservation disable
BTI SA-805,21,22(config-ovc)# end
BTI SA-805,21,22# show ethernet ovc AccessEPL-CUST
-----
OVC AccessEPL-CUST
Service Type : evpline
VC Type : Point-to-Point
SVLAN ID : 1000
SVLAN Priority Mode : copy-from-cvlan
CE-VLAN ID Preservation : No
CE-VLAN CoS ID Preservation : Yes
S-VLAN ID Preservation : Yes
S-VLAN CoS ID Preservation : Yes
Color Forwarding : enable
Color Indicator : dei
Maximum Number of UNI : 1
Number of UNI : 0
Number of RUNI : 0
Number of ENNI : 0
EVC MEG state : disable
-----
```

Related Commands

UNI Configuration Mode	Description
all-to-one-bundling (enable disable)	all-to-one-bundling enable : vlan-preservation MUST enabled all-to-one-bundling disable : don't care th vlan-preservation attribute
bundling (enable disable)	bundling enable : vlan-preservation MUST enabled bundling disable : don't care the vlan-preservation attribute

6.2.5 cos preservation

In an OVC with CE-VLAN CoS Preservation, an egress Service Frame resulting from an ingress Service Frame that contains a CE-VLAN CoS **MUST** have the identical CE-VLAN CoS.

Command Mode

OVC configuration mode

Command Syntax

"cos-preservation (enable|disable)"

Example

```
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet OVC EPLINE-Test2-TEST1
BTI SA-805,21,22(config-OVC)# cos-preservation disable
BTI SA-805,21,22(config-OVC)# end
BTI SA-805,21,22# show ethernet OVC EPLINE-Test2-TEST1
```

```
-----
OVC EPLINE-Test2-TEST1:
  Service Type           : evpline
  OVC Type               : Point-to-Point
  Outer SVLAN ID         : 1000
  CE-VLAN Preservation   : Yes
  CoS Preservation       : No
  Maximum Number of UNI  : 2
  Number of UNI using this OVC : 0
-----
```

Related Commands

None

6.2.6 svlan preservation

S-VLAN ID Preservation describes a relationship between the S-VLAN ID value of a frame at one ENNI and the S-VLAN ID value of the corresponding frame at another ENNI supported by the Operator MEN where each ENNI has an OVC End Point that is associated by the OVC. The possible values of the S-VLAN ID Preservation attribute are Yes or No. When an OVC has the S-VLAN ID Preservation attribute with a value of Yes, an egress ENNI Frame at an ENNI resulting from an ingress ENNI Frame at a different ENNI MUST have an S-VLAN ID value identical to the S-VLAN ID value of the ingress ENNI Frame.

Command Mode

OVC configuration mode

Command Syntax

svlan-preservation (enable|disable)

Usage

N/A

Example

```
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet ovc AccessEPL-CUST
BTI SA-805,21,22(config-ovc)# svlan-preservation disable
BTI SA-805,21,22(config-ovc)# end
BTI SA-805,21,22# show ethernet ovc AccessEPL-CUST
```

```
-----
OVC AccessEPL-CUST
Service Type : evpline
VC Type : Point-to-Point
SVLAN ID : 1000
SVLAN Priority Mode : copy-from-cvlan
CE-VLAN ID Preservation : Yes
CE-VLAN CoS ID Preservation : Yes
S-VLAN ID Preservation : No
S-VLAN CoS ID Preservation : Yes
Color Forwarding : enable
Color Indicator : dei
Maximum Number of UNI : 1
Number of UNI : 0
Number of RUNI : 0
Number of ENNI : 0
EVC MEG state : disable
-----
```

Related Commands

OPN Configuration Mode	Description
(add del) <1-4094>	SVLAN mapping command at the OVC EndPoint per ENNI.

6.2.7 cos preservation

S-VLAN CoS Preservation describes a relationship between the S-VLAN PCP value of a frame at one ENNI and the S-VLAN ID of the corresponding frame at another ENNI supported by the Operator MEN where each ENNI has an OVC End Point that is associated by the OVC. The possible values of the S -VLAN CoS Preservation attribute are Yes or No.

Command Mode

OVC configuration mode

Command Syntax

cos-preservation (enable|disable)

Usage

Example

```
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet ovc AccessEPL-CUST
BTI SA-805,21,22(config-ovc)# scos-preservation disable
BTI SA-805,21,22(config-ovc)# end
BTI SA-805,21,22# show ethernet ovc AccessEPL-CUST-
-----
OVC AccessEPL-CUST
Service Type : evpline
VC Type : Point-to-Point
SVLAN ID : 1000
CE-VLAN ID Preservation : Yes
CE-VLAN CoS ID Preservation : Yes
S-VLAN ID Preservation : Yes
S-VLAN CoS ID Preservation : No
Color Forwarding : enable
Color Indicator : dei
Maximum Number of UNI : 1
Number of UNI : 0
Number of RUNI : 0
Number of ENNI : 0
EVC MEG state : disable
-----
```

Related Commands

None

6.3 Network Network Interface (NNI)

This section covers the following topics :

- [6.3.1, “ethernet nni \(add|del\)”](#)
- [6.3.2, “description”](#)
- [6.3.3, “mtu”](#)
- [6.5.4, “tpid”](#)
- [6.3.5, “map interface”](#)
- [6.3.6, “add | delete evc”](#)

6.3.1 ethernet nni (add|del)

This command creates or deletes the NNI.

Command Mode

Global configuration mode

Command Syntax

ethernet nni (add|del) (NNI ID)

Usage

Use this command to creation of logical interface used for Network interface between two devices in provider network. This logical interface is referenced by EVC to make a connection with provider network.

Example

```
BTI SA-805,21,22# ethernet nni add NNI-0-1
BTI SA-805,21,22(config-nni)# end
BTI SA-805,21,22# show ethernet nni
```

```
-----
NNI NNI-0-1:
Mapped Interface : N/A
Maximum Number of VC : 512
Number of using this NNI : 0
-----
```

Related Commands

Global Configuration Mode	Description
show ethernet nni NNI-ID	Display the attributes of NNI instance

6.3.2 description

Use this command to editing the NNI's description.

Command Mode

NNI configuration mode

Command Syntax

description WORD

- WORD : character string

Usage

Example

```
BTI SA-805,21,22# show ethernet nni nn1l
```

```
-----  
NNI nn1l  
Description : eth-0-4  
Mapped Interface : eth-0-4  
TPID Value : 0x88a8  
MTU Size : 1526  
Number of VC : 0  
-----
```

```
BTI SA-805,21,22# configure terminal  
Enter configuration commands, one per line. End with CNTL/Z.  
BTI SA-805,21,22(config)# ethernet nni nn1l  
BTI SA-805,21,22(config-nni)# description RING-A-TORONTO-OTAWA  
BTI SA-805,21,22(config-nni)# end  
BTI SA-805,21,22# show ethernet nni nn1l
```

```
-----  
NNI nn1l  
Description : RING-A-TORONTO-OTAWA  
Mapped Interface : eth-0-4  
TPID Value : 0x88a8  
MTU Size : 1526  
Number of VC : 0  
-----
```

Related Commands

UNI Configuration Mode	Description
Description WORD	Set description of UNI instance

6.3.3 mtu

Use this command to make association with Interface.

Command Mode

NNI configuration mode

Command Syntax

mtu <1526-9608>

- <1526-9608> integer value of MTU size

Usage

Use this command to change the MTU size on the NNI instance.

Default MTU value of NNI is 1526.

Example

```
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line. End with CNTL/Z
BTI SA-805,21,22# show ethernet nni nni1
-----
NNI nni1
Description : eth-0-4
Mapped Interface : eth-0-4
TPID Value : 0x88a8
MTU Size : 1526
Number of VC : 0
-----
configure terminal
Enter configuration commands, one per line. End with CNTL/Z
BTI SA-805,21,22(config)# ethernet nni nni1
BTI SA-805,21,22(config-enni)# mtu 9600
BTI SA-805,21,22(config-enni)# end
BTI SA-805,21,22# show ethernet nni nni1
-----
NNI nni1
Description : eth-0-4
Mapped Interface : eth-0-4
TPID Value : 0x88a8
MTU Size : 9600
Number of VC : 0
-----
```

Related Commands

UNI Configuration Mode	Description
mtu <1522-9604>	Set MTU size of UNI instance

6.3.4 tpid

Use this command to set the TPID value.

Command Mode

NNI configuration mode

Command Syntax

TPID (8100|88a8|9100|9200)

Usage

Use this command to change the TPID of NNI interface.

Default TPID value of UNI is '88a8'.

Note	800 Series supports four types of TPID 8100, 88a8, 9100 and 9200. However, only two TPID are supported simultaneously in a system.
-------------	--

Example

```
BTI SA-805,21,22# show ethernet nni nni1
-----
NNI nni1
Description : eth-0-4
Mapped Interface : eth-0-4
TPID Value : 0x88a8
MTU Size : 1526
Number of VC : 0
-----

BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet nni nni1
BTI SA-805,21,22(config-nyi)# tpid 8100
BTI SA-805,21,22(config-nyi)# end
BTI SA-805,21,22# show ethernet nni nni1
-----

NNI nni1
Description : eth-0-4
Mapped Interface : eth-0-4
TPID Value : 0x8100
MTU Size : 1526
Number of VC : 0
-----
```

Related Commands

UNI Configuration Mode	Description
tpid (8100 88a8 9100 9200)	Set TPID value of UNI instance.

6.3.5 map interface

Use this command to make NNI association with Interface.

Command Mode

NNI configuration mode

Command Syntax

"(no) map interface WORD"

- WORD: Interface name

Usage

Use this command to make association with interface "eth-0-1"

Interface should be configured to "Trunk" mode before make association with NNI.

Example

```
BTI SA-805,21,22(config)# ethernet nni NNI-0-1
BTI SA-805,21,22(config)# map interface eth-0-1
BTI SA-805,21,22(config-nni)# end
BTI SA-805,21,22# show ethernet nni
```

```
-----
NNI NNI-0-1:
  Mapped Interface           : eth-0-1
  Maximum Number of VC      : 512
  Number of using this NNI   : 0
-----
```

Related Commands

None

6.3.6 add | delete evc

Command Mode

NNI configuration mode

Command Syntax

"(add|del) evc EVC-ID"

Usage

Even if E-Service is activated, the traffic cannot be forwarded to the Provider Network.

This command supports to make a connection with EVC for E-Service instance.

Example

```
BTI SA-805,21,22(config)# ethernet nni NNI-0-1
  BTI SA-805,21,22(config-nni)# map interface eth-0-1
BTI SA-805,21,22(config-nni)# end
BTI SA-805,21,22# show ethernet nni
-----
NNI NNI-0-1:
  Mapped Interface           : eth-0-1
  Maximum Number of VC      : 512
  Number of using this NNI  : 0
-----
BTI SA-805,21,22# configure terminal Enter configuration commands,
one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet nni NNI-0-1
BTI SA-805,21,22(config-nni)# add evc EPLINE-Test2-test1
BTI SA-805,21,22(config-nni)# end
BTI SA-805,21,22# show ethernet nni
-----
NNI NNI-0-1:
  Mapped Interface           : eth-0-1
  Maximum Number of VC      : 512
  Number of using this NNI  : 1
  EVC List
-----
  EPLINE-Test2-TEST1,
-----
```

Related Commands

None

6.4 External Network Network Interface (ENNI)

In this section, two commands are explained. Other ENNI commands have the same syntax as NNI commands. Refer to Chapter 6.3 Network Network Interface (NNI) for a complete list of commands.

- 6.4.1, “ethernet enni (add|delete)”
- 6.4.2, “(add|delete) ovc”

6.4.1 ethernet enni (add|delete)

Create or delete the ENNI instance that can be identified by given string “WORD”.

Command Mode

Global configuration mode

Command Syntax

ethernet enni (add|del)(ENNI id)

Usage

Use this command to creation of logical interface used for Network interface between two different Operator network. This logical interface is referenced by OVC to make a connection with Operator network.

Example

```
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet enni add ENNI-0-1
BTI SA-805,21,22(config-enni)# end
BTI SA-805,21,22# show ethernet enni ENNI-0-1
-----
ENNI ENNI-0-1
Description : N/A
Mapped Interface : N/A
TPID Value : 0x88a8
MTU Size : 1526
Local MEP ID : 0
Number of OVC : 0
-----
```

Related Commands

Global Configuration Mode	Description
show ethernet enni ENNI-ID	Display the attributes of ENNI instance.

6.4.2 (add|delete) ovc

In an EVC with CE-VLAN CoS Preservation, an egress Service Frame resulting from an ingress Service Frame that contains a CE-VLAN CoS **MUST** have the identical CE-VLAN CoS.

Command Mode

ENNI configuration mode

Command Syntax

(add|del) ovc (OVC id)

Usage

Even if E-Access is activated, the user traffic can't be forwarded to Provider Network.

This command makes a connection with OVC for E-Access instance.

Example

```
BTI SA-805,21,22# ethernet enni ENNI-0-1
BTI SA-805,21,22(config-enni)# map interface eth-0-1
BTI SA-805,21,22(config-enni)# end
BTI SA-805,21,22# show ethernet enni
-----
ENNI ENNI-0-1
Description : eth-0-1
Mapped Interface : eth-0-1
TPID Value : 0x88a8
MTU Size : 1526
Local MEP ID : 0
Number of OVC : 0
-----
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet enni ENNI-0-1
BTI SA-805,21,22(config-enni)# add ovc AccessEPL-CUST
BTI SA-805,21,22(config-enni)# end
BTI SA-805,21,22# show ethernet enni ENNI-0-1
-----
ENNI ENNI-0-1
Description : eth-0-1
Mapped Interface : eth-0-1
TPID Value : 0x88a8
MTU Size : 1526
Local MEP ID : 0
Number of OVC : 1
OVC List -----
AccessEPL-CUST,
-----
```

Related Commands

None

6.5 User Network Interface (UNI)

This section covers the following topics :

- 6.5.1, “ethernet uni (add|delete)”
- 6.5.2, “description”
- 6.5.3, “mtu”
- 6.5.4, “tpid”
- 6.5.5, “all-to-one-bundling (enable|disable)”
- 6.5.6, “bundling (enable|disable)”
- 6.5.7, “multiplexing (enable|disable)”
- 6.5.8, “max-evc ”
- 6.5.9, “default ce-vlan”
- 6.5.10, “default priority ”
- 6.5.11, “map interface”
- 6.5.12, “(add|delete) evc”
- 6.5.13, “(add|delete) ovc”
- 6.5.14, “mep mepid”

6.5.1 ethernet uni (add|delete)

User Network Interface (UNI)

The UNI Identifier attribute is independent of the EVCs at the UNI. It is assigned to the UNI by the Service Provider. It **MUST** be a string and the string **MAY** have any value. The UNI Identifier **MUST** be unique among all UNIs for the MEN. As an example, the Service Provider might use "SCPOP1-Node3-Slot2-Port1" as a UNI Identifier and this could signify Port 1 in Slot 2 of Node 3 in Santa Clara POP1.

Create or delete the UNI instance that can be identified by given string "WORD"

Command Mode

Global configuration mode

Command Syntax

ethernet uni (add|del)(UNI id)

Usage

Use this command to creation of logical interface used for Network interface between customer devices and boundary of provider network. This logical interface is referenced by EVC to make a connection with customer network.

Example

```
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet uni add CUSTOMER-A
BTI SA-805,21,22(config-uni)# end
BTI SA-805,21,22# show ethernet uni
```

```
-----
UNI CUSTOMER-A:
Mapped Interface           : N/A
Default CVLANID           : 0
Default SVLAN Priority     : 0
All-to-One Bundling       : Yes
Bundling                   : No
Service Multiplexing       : No
Maximum Number of EVC     : 1
Number of EVC using this UNI : 0
-----
```

Related Commands

Global Configuration Mode	Description
- show ethernet uni UNI-ID	Display the attributes of UNI instance

6.5.2 description

Use this command to editing the UNI's description.

Command Mode

UNI configuration mode

Command Syntax

description WORD

- WORD : character string

Usage

Example

```
BTI SA-805,21,22# show ethernet uni nn1l
-----
UNII uni1
Description : eth-0-4
Mapped Interface : eth-0-4
TPID Value : 0x88a8
MTU Size : 1526
Number of VC : 0
-----
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet uni nn1l
BTI SA-805,21,22(config-uni)# description RING-A-TORONTO-OTAWA
BTI SA-805,21,22(config-uni)# end
BTI SA-805,21,22# show ethernet uni uni1
-----
NNI nn1l
Description : RING-A-TORONTO-OTAWA
Mapped Interface : eth-0-4
TPID Value : 0x88a8
MTU Size : 1526
Number of VC : 0
-----
```

Related Commands

UNI Configuration Mode	Description
Description WORD	Set description of UNI instance

6.5.3 mtu

Use this command to make association with Interface.

Command Mode

UNI configuration mode

Command Syntax

“mtu <1526-9608>”

- <1526-9608> integer value of MTU size

Usage

Use this command to change the MTU size on the UNI instance.

Default MTU value of UNI is 1522.

Example

```
BTI SA-805,21,22# show ethernet uni uni1
```

```
-----
UNI uni1
Description           : OTAWA-BZI-7F
Mapped Interface      : eth-0-1
TPID Value            : 0x8100
MTU Size              : 1522
Default CVLANID       : 0
Default SVLAN Priority : 0
All to One Bundling   : No
Bundling               : No
Service Multiplexing   : Yes
Maximum Number of EVC : 512
Number of EVC          : 1
Number of OVC          : 0
EVC List
-----
```

```
BTI SA-805,21,22# configure terminal
BTI SA-805,21,22(config)# ethernet uni uni1
BTI SA-805,21,22(config-uni)# mtu 3000
BTI SA-805,21,22(config-uni)# end
BTI SA-805,21,22# show ethernet uni uni1
```

```
-----
UNI uni1
Description           : OTAWA-BZI-7F
Mapped Interface      : eth-0-1
TPID Value            : 0x8100
MTU Size              : 3000
Default CVLANID       : 0
```

Default SVLAN Priority : 0
All to One Bundling : No
Bundling : No
Service Multiplexing : Yes
Maximum Number of EVC : 512
Number of EVC : 1
Number of OVC : 0
EVC List

6.5.4 tpid

Use this command to set the TPID value.

Command Mode

UNI configuration mode

Command Syntax

“TPID (8100|88a8|9100|9200)”

Usage

Use this command to change the TPID of UNI interface.

Default TPID value of UNI is ‘8100’.

Note : The switch supports four types of TPID 8100, 88a8, 9100 and 9200.

Only two TPID can support at the same time in the system.

Examples

```
BTI SA-805,21,22# show ethernet uni uni1
```

```
-----
UNI uni1
Description                : OTAWA-BQI-7F
Mapped Interface           : eth-0-1
TPID Value                  : 0x8100
MTU Size                    : 3000
Default CVLANID            : 0
Default SVLAN Priority      : 0
All to One Bundling        : No
Bundling                    : No
Service Multiplexing        : Yes
Maximum Number of EVC      : 512
Number of EVC               : 1
Number of OVC               : 0
```

```
EVC List -----
BTI SA-805,21,22# configure terminal
BTI SA-805,21,22(config)# ethernet uni uni1
BTI SA-805,21,22(config-uni)# tpid 88a8
BTI SA-805,21,22(config-uni)# end
BTI SA-805,21,22# show ethernet uni uni1
```

```
-----
UNI uni1
Description                : OTAWA-BQI-7F
Mapped Interface           : eth-0-1
TPID Value                  : 0x88a8
MTU Size                    : 3000
Default CVLANID            : 0
Default SVLAN Priority      : 0
```

All to One Bundling : No
Bundling : No
Service Multiplexing : Yes
Maximum Number of EVC : 512
Number of EVC : 1
Number of OVC : 0
EVC List
 evc1,

6.5.5 all-to-one-bundling (enable|disable)

Command List for UNI mode

Commands	Description
all-to-one-bundling (enable disable)	Set the All-to-One Bundling attributes of UNI
bundling (enable disable)	Set the Bundling attributes of UNI
default ce-vlan <0-4094>	Set the default CE-VLAN ID for untagged/priority tagged packet
default priority <0-7>	Set the default priority of SVLAN for untagged tagged packet
map interface WORD	Set the physical interface to make association with a UNI.
max-evc <1-512>	Set the maximum number of EVC can associated with a UNI.
multiplex (enable disable)	Set the Service Multiplexing attributes of UNI

When a UNI has the All to One Bundling attribute set to TRUE, all CE-VLAN IDs **MUST** map to a single EVC at the UNI. The All to One Bundling service attribute is independent of the EVCs at the UNI. The EVC at the UNI **MUST** have the CE-VLAN ID Preservation Service Attribute and the list of CE-VLAN IDs mapped to the EVC **MUST** include all CE-VLAN IDs and be the same at each UNI in the EVC. This means that:

- 1 -Such a UNI cannot have Service Multiplexing and
- 1 -All UNIs in the EVC must have the All to One Bundling Service Attribute

Command Mode

UNI configuration mode

Command Syntax

"all-to-one-bundling (enable|disable)"

Usage

To support E-Service as EP-Line, EVP-Line, EP-LAN or EVP-LAN this "all-to-one bundling" attribute should be configured properly. In the case of EP-LINE and EP-LAN service should be set to "enable" and EVP-LINE and EVP-LAN service should be set to "disable".

Example

```
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet uni CUSTOMER-A
BTI SA-805,21,22(config-uni)# all-to-one-bundling enable
BTI SA-805,21,22(config-uni)# end
```

```
BTI SA-805,21,22# show ethernet uni CUSTOMER-A
```

```
-----  
UNI CUSTOMER-A:
```

```
Mapped Interface           : eth-0-2  
Default CVLANID           : 0  
Default SVLAN Priority     : 0  
All-to-One Bundling       : Yes  
Bundling                   : No  
Service Multiplexing      : No  
Maximum Number of EVC     : 1  
Number of EVC using this UNI : 0  
-----
```

```
BTI SA-805,21,22# configure terminal
```

```
Enter configuration commands, one per line.  End with CNTL/Z.
```

```
BTI SA-805,21,22(config)# ethernet uni CUSTOMER-A  
BTI SA-805,21,22(config-uni)# all-to-one-bundling disable  
BTI SA-805,21,22(config-uni)# end  
BTI SA-805,21,22# show ethernet uni CUSTOMER-A  
-----
```

```
UNI CUSTOMER-A:
```

```
Mapped Interface           : eth-0-2  
Default CVLANID           : 0  
Default SVLAN Priority     : 0  
All-to-One Bundling       : No  
Bundling                   : No  
Service Multiplexing      : No  
Maximum Number of EVC     : 1  
Number of EVC using this UNI : 0  
-----
```

Related Commands

EVC Configuration Mode	Possible Service combination by all-to-one-bundling state
service type (ep eplan evpl evplan)	enable - epl, eplan services are can be supported disable - evpl, evplan services are can be supported

6.5.6 bundling (enable|disable)

When a UNI has the Bundling attribute, it **MUST** be configurable so that more than one CE-VLAN ID can map to a particular EVC at the UNI. The Bundling service attribute is independent of the EVCs at the UNI. An EVC with more than one CE-VLAN ID mapping to it **MUST** have the CE-VLAN ID Preservation Service Attribute and the list of CE-VLAN IDs mapped to the EVC **MUST** be the same at each UNI in the EVC.

Command Mode

UNI configuration mode

Command Syntax

bundling (enable|disable)

Usage

To support EVC with more than one CE-VLAN ID mapping this "bundling" attribute should be configured properly. In case of more than one CE-VLAN ID mapping should be set to "enable" and one CE-VLAN ID mapping should be set to "disable".

Example

```
BTI SA-805,21,22 configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet uni CUSTOMER-A
BTI SA-805,21,22(config-uni)# bundling enable
BTI SA-805,21,22(config-uni)# end
BTI SA-805,21,22# show ethernet uni CUSTOMER-A
```

```
-----
UNI CUSTOMER-A:
Mapped Interface           : eth-0-2
Default CVLANID           : 0
Default SVLAN Priority     : 0
All-to-One Bundling       : No
Bundling                   : Yes
Service Multiplexing       : No
Maximum Number of EVC     : 1
Number of EVC using this UNI : 0
-----
```

```
$BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
$BTI SA-805,21,22(config)# ethernet uni CUSTOMER-A
$BTI SA-805,21,22(config-uni)# bundling disable
$BTI SA-805,21,22(config-uni)# end
$BTI SA-805,21,22# show ethernet uni CUSTOMER-A
```

```
-----
UNI CUSTOMER-A:
Mapped Interface           : eth-0-2
Default CVLANID           : 0
-----
```

```
Default SVLAN Priority      : 0
All-to-One Bundling       : No
Bundling                   : No
Service Multiplexing       : No
Maximum Number of EVC      : 1
Number of EVC using this UNI : 0
```

Related Commands

EVC configuration mode	Description
vlan-preservation (enable disable)	In case of Bundling enabled state, vlan-preservation should be enabled.

6.5.7 multiplexing (enable|disable)

A UNI with the Service Multiplexing attribute **MUST** be configurable to support multiple EVCs. Point-to-Point EVCs and Multipoint EVCs **MAY** be multiplexed in any combination at a UNI.

Command Mode

UNI configuration mode

Command Syntax

multiplex (enable|disable)

Usage

To support E-Service as EP-Line, EVP-Line, EP-LAN or EVP-LAN this "multiplex" attribute should be configured properly. In the case of EP-LINE and EP-LAN service should be set to "disable" and EVP-LINE and EVP-LAN service should be set to "enable".

Example

```
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet uni CUSTOMER-A
BTI SA-805,21,22(config-uni)# multiplex enable
BTI SA-805,21,22(config-uni)# end
BTI SA-805,21,22# show ethernet uni CUSTOMER-A
-----
UNI CUSTOMER-A:
Mapped Interface: eth-0-2
Default CVLANID: 0
Default SVLAN Priority: 0
All-to-One Bundling: No
Bundling: No
Service Multiplexing: Yes
Maximum Number of EVC: 1
Number of EVC using this UNI : 0
-----

BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet uni CUSTOMER-A
BTI SA-805,21,22(config-uni)# multiplex disable
BTI SA-805,21,22(config-uni)# end
BTI SA-805,21,22# show ethernet uni CUSTOMER-A
-----
UNI CUSTOMER-A:
Mapped Interface : eth-0-2
```

```
Default CVLANID: 0
Default SVLAN Priority : 0
All-to-One Bundling : No
Bundling: No
Service Multiplexing: No
Maximum Number of EVC: 1
Number of EVC using this UNI: 0
```

Related Commands

EVC Configuration Mode	Possible Service combination by Service Multiplexing state
service type (epline eplan evpline evplan)	enable - evpl, evplan services are can be supported disable - epl, eplan services are can be supported

6.5.8 max-evc

The Maximum Number of EVCs (MNE) service attribute specifies the maximum number of EVCs allowed in the UNI.

Command Mode

UNI configuration mode

Command Syntax

"max-evc <1-512>"

Usage

To support E-Service as EP-Line, EVP-Line, EP-LAN or EVP-LAN this "multiplex" attribute should be configured properly. In the case of EP-Line or EP-LAN, MNE MUST be one and EVP-Line or EVP-LAN, MNE MUST be two or greater.

Example

```
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet uni CUSTOMER-A
BTI SA-805,21,22(config-uni)# multiplex enable
BTI SA-805,21,22(config-uni)# max-evc 10
BTI SA-805,21,22(config-uni)# end
BTI SA-805,21,22# show ethernet uni CUSTOMER-A
-----
UNI CUSTOMER-A:
  Mapped Interface: eth-0-2
  Default CVLANID : 0
  Default SVLAN Priority : 0
  All-to-One Bundling: No
  Bundling: No
  Service Multiplexing: Yes
  Maximum Number of EVC : 10
  Number of EVC using this UNI: 0
-----
```

Related Commands

EVC Configuration Mode	Possible max-evc values by Service type of EVC
service type (epl evplan evpl evplan)	evpl, evplan - 2 or greater than 2
	epl, evplan - 1

6.5.9 default ce-vlan

The Default CE-VLAN ID service attribute specifies the default CE-VLAN ID for untagged packet at the UNI port.

Command Mode

UNI configuration mode

Command Syntax

default ce-vlan (0-4094)

Usage

To support untagged packet at the UNI port this attribute **MUST** be set to none zero value. And this value **MUST** same with one of the CE-VLAN ID mapping list.

Example

```
BTI SA-805,21,22# configure terminal
  Enter configuration commands, one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet uni CUSTOMER-A
BTI SA-805,21,22(config-uni)# default ce-vlan 10
BTI SA-805,21,22(config-uni)# end
BTI SA-805,21,22# show ethernet uni CUSTOMER-A
-----
UNI CUSTOMER-A:
Mapped Interface: eth-0-2
Default CVLANID: 10
Default SVLAN Priority: 0
All-to-One Bundling: No
Bundling: No
Service Multiplexing: No
Maximum Number of EVC: 1
Number of EVC using this UNI : 0
-----
```

Related Commands

None

6.5.10 default priority

The Default Priority service attribute specifies the default priority of S-VLAN tag for untagged packet at the UNI port.

Command Mode

UNI configuration mode

Command Syntax

"default priority <0-7>"

Usage

To support untagged packet at the UNI port "Default ce-vlan" attribute **MUST** be set to none zero value. And this value **MUST** same with one of the CE-VLAN ID mapping list.

Example

```
BTI SA-805,21,22# configure terminal
  Enter configuration commands, one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet uni CUSTOMER-A
BTI SA-805,21,22(config-uni)# default priority 6
BTI SA-805,21,22(config-uni)# end
BTI SA-805,21,22# show ethernet uni CUSTOMER-A
-----
UNI CUSTOMER-A:
  Mapped Interface: eth-0-2
  Default CVLANID: 10
  Default SVLAN Priority: 6
  All-to-One Bundling: No
  Bundling: No
  Service Multiplexing: No
  Maximum Number of EVC: 1
  Number of EVC using this UNI: 0
-----
```

Related Commands

None

6.5.11 map interface

Use this command to make association with Interface.

Command Mode

UNI configuration mode

Command Syntax

"(no) map interface WORD"

1 -WORD: Interface name

Usage

Use this command to make association with interface "eth-0-1".

Interface should be configured to "Tunnel" mode before make association with UNI.

Example

```
BTI SA-805,21,22# configure terminal
  Enter configuration commands, one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet uni CUSTOMER-A
BTI SA-805,21,22(config-uni)# map interface eth-0-2
BTI SA-805,21,22(config-uni)# end
BTI SA-805,21,22# show ethernet uni CUSTOMER-A
-----
UNI CUSTOMER-A:
  Mapped Interface:eth-0-2
  Default CVLANID: 0
  Default SVLAN Priority: 0
  All-to-One Bundling: Yes
  Bundling: No
  Service Multiplexing: No
  Maximum Number of EVC: 1
  Number of EVC using this UNI: 0
-----
```

Related Commands

None

6.5.12 (add|delete) evc

Command Mode

UNI configuration mode

Command Syntax

(add|del) evc EVC-ID

Usage

To activate the Ethernet Service for the specific UNI, the UNI MUST have association with an EVC. This command supports to make a connection between UNI and EVC. This command can be rejected when UNI configuration does not adopted to the EVC Service attribute. The result of this command, E-Service instance is created automatically. Please refer the next section about “Ethernet Service Instance”.

Example

```
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet uni CUSTOMER-A
BTI SA-805,21,22(config-uni)# map interface eth-0-2
BTI SA-805,21,22(config-uni)# end
BTI SA-805,21,22# show ethernet uni CUSTOMER-A
-----
UNI CUSTOMER-A:
Mapped Interface : eth-0-2
Default CVLANID : 0
Default SVLAN Priority : 0
All-to-One Bundling : Yes
Bundling : No
Service Multiplexing : No
Maximum Number of EVC : 1
Number of EVC using this UNI : 0
-----
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet uni CUSTOMER-A
BTI SA-805,21,22(config-uni)# all-to-one-bundling disable
BTI SA-805,21,22(config-uni)# add evc EPLINE-Customer1-Customer2
BTI SA-805,21,22(config-uni)# end
BTI SA-805,21,22# show ethernet uni CUSTOMER-A
-----
UNI CUSTOMER-A:
Mapped Interface : eth-0-2
Default CVLANID : 0
Default SVLAN Priority : 0
All-to-One Bundling : No
```

```
Bundling : No
Service Multiplexing : No
Maximum Number of EVC : 1
Number of EVC using this UNI : 1
EVC List
EPLINE-Customer1-Customer2,
```

```
-----
BTI SA-805,21,22# show ethernet epu
-----
```

```
E-Service CUSTOMER-A-EPLINE-Customer1-Customer2:
CE-VLAN map : Empty
-----
```

Related Commands

UNI Configuration Mode	Description
all-to-one-bundling (enable disable)	These three attributes should be configured properly to meet the E-Service frame work. E-Service is defined by command "service type (eline evline eplan evplan eptree evptree)".
multiplex (enable disable)	
max-vc <1-512>	

6.5.13 (add|delete) ovc

Use this command to add or delete the OVC.

Command Mode

UNI configuration mode

Command Syntax

(add|del) ovc (OVC id)

Usage

To activate the Ethernet Service for the specific UNI, the UNI MUST have association with an EVC. This command supports to make a connection between UNI and EVC. This command can be rejected when UNI configuration does not adopted to the EVC Service attribute. The result of this command, E-Access instance is created automatically. Please refer the next section about “Ethernet Access Instance”.

Example

```
BTI SA-805,21,22#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet uni add CUSTOMER-A
BTI SA-805,21,22(config-uni)# map interface eth-0-2
BTI SA-805,21,22(config-uni)# end
BTI SA-805,21,22# show ethernet uni CUSTOMER-A
```

```
-----
UNI CUSTOMER-A
Description : eth-0-2
Mapped Interface : eth-0-2
TPID Value : 0x8100
MTU Size : 1522
Default CVLANID : 0
Default SVLAN Priority : 0
All to One Bundling : Yes
Bundling : No
Service Multiplexing : No
Maximum Number of EVC : 1
Number of EVC : 0
Number of OVC : 0
-----
```

```
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet uni CUSTOMER-A
BTI SA-805,21,22(config-uni)# all-to-one-bundling disable
BTI SA-805,21,22(config-uni)# add ovc AccesEPL-CUST
BTI SA-805,21,22(config-uni)# end
BTI SA-805,21,22# show ethernet uni CUSTOMER-A
```

```
UNI CUSTOMER-A
Description : eth-0-2
Mapped Interface : eth-0-2
TPID Value : 0x8100
MTU Size : 1522
Default CVLANID : 0
Default SVLAN Priority : 0
All to One Bundling : No
Bundling : No
Service Multiplexing : No
Maximum Number of EVC : 1
Number of EVC : 0
Number of OVC : 1
OVC List
AccessePL-CUST,
```

```
-----
BTI SA-805,21,22# show ethernet opu
-----
```

```
OPU CUSTOMER-A-AccessePL-CUST:
Performance : disable
CE-VLAN map : Empty
-----
```

Related Commands

UNI Configuration Mode	Description
all-to-one-bundling (enable disable)	These three attributes should be configured properly to meet the E-Service frame work. E-Service is defined by command "service type (eline evline eplan evplan eptree evptree)".
multiplex (enable disable)	
max-evc <1-512>	

6.5.14 mep mepid

To monitor the service status, an OAM domain should be created to the service. The MEP attribute is used to create the OAM domain simply in the service activation stage. This MEP attribute is able to be assigned to UNI or EPU (Service instance). When the MEP attribute is configured to an UNI, all MEPs located to the UNI have the same MEPID.

Command Mode

UNI configuration mode

Command Syntax

mep mepid <1-8192>

Usage

To create an OAM domain within the service creation, MEP attribute of EPU or UNI are mandatorily required with the MEG attribute. The example below shows how to configure them.

Example

```
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
$BTI SA-805,21,22(config)# ethernet uni add uni3
$BTI SA-805,21,22(config-uni)# map interface eth-0-3
$BTI SA-805,21,22(config-uni)# all-to-one-bundling disable
$BTI SA-805,21,22(config-uni)# multiplex enable
$BTI SA-805,21,22(config-uni)# exit
$BTI SA-805,21,22(config)# ethernet evc add CUSTOMER2
$BTI SA-805,21,22(config-evc)# svlan 200
$BTI SA-805,21,22(config-evc)# service type evpline
$BTI SA-805,21,22(config-evc)# add nni nn1
$BTI SA-805,21,22(config-evc)# add uni uni3
$BTI SA-805,21,22(config-evc)# meg enable level 4 ccm-interval 1sec
$BTI SA-805,21,22(config-evc)# exit
$BTI SA-805,21,22(config)# do show ethernet epu
-----
EPU uni2-CUSTOMER1:
MEPID of EPU : 222* (MAC: 0019:6de1:e102)
Performance : disable
CE-VLAN map : All to One Bundling
-----
EPU uni3-CUSTOMER2:
Performance : disable
CE-VLAN map : Empty
-----
BTI SA-805,21,22(config)# ethernet epu uni3-CUSTOMER2
BTI SA-805,21,22(config-epu)# add vlan 1000
BTI SA-805,21,22(config-epu)# mep mepid 223
BTI SA-805,21,22(config-epu)# exit
```

```
BTI SA-805,21,22(config)# end
BTI SA-805,21,22# show ethernet evc status CUSTOMER2
```

```
-----
EVC name : CUSTOMER2(200) / evpline
EVC-MEG state : enable
OAM Domain Name : CUSTOMER2
MEG Level : 4
CCM Interval : 1sec
Service Status : Active
Local MEPS : uni3(223)*,
Remote MEPS : runi213(213),
-----
```

```
BTI SA-805,21,22# show ethernet evc CUSTOMER2
```

```
-----
EVC CUSTOMER2
Service Type : evpline
VC Type : Point-to-Point
SVLAN ID : 200
CE-VLAN ID Preservation : Yes
CE-VLAN CoS ID Preservation : Yes
Maximum Number of UNI : 2
Number of UNI : 1
Number of RUNI : 1
Number of ENNI : 0
EVC MEG state : enable
OAM Domain Name : CUSTOMER2
MEG Level : 4
CCM Interval : 1sec
Service Status : Active
Local UNI List -----
uni3,
Remote UNI List
runi213,
INNI List
nnil,
-----
```

```
BTI SA-805,21,22# show ethernet soam domain
[Global configuration]
- enable: enabled
[Domain configuration]
-----
```

```
-
domain(maid) learn aging md-type ma-type 1 vid int
-----
```

```
-
meg: CUSTOMER1 (01:02:06) dis 0 no-present string 4 100 1s
meg: CUSTOMER2 (01:02:05) en 0 no-present string 4 200 1s
BTI SA-805,21,22# show ethernet soam maintenance-point
*(dynamic maintenance-point)
xcon(cross connection mismatch), eoc(error of continuity),
loc(loss of continuity), mac(mac status defect), rdi(remote defect)
-----
```

```
indication)
```

```
[MEP]
```

```
-----
mepid vid 1 ifname mac-addr dir cci rdi fault domain
-----
```

```
222 100 4 eth-0-2 0019.6de1.e102 up en off none meg: CUSTOMER1
```

```
223 200 4 eth-0-3 0019.6de1.e103 up en off none meg: CUSTOMER2
```

```
[MIP]
```

```
-----
vid 1 ifname mac-addr domain
-----
```

```
[Remote MEP]
```

```
-----
rmepid mepid vid 1 mac-addr fault domain
-----
```

```
212 222 100 4 0019.6de1.e202 ---/---/--- meg: CUSTOMER1
```

```
213* 223 200 4 0019.6de1.e203 ---/---/--- meg: CUSTOMER2
```

Related Commands

UNI Configuration Mode	Description
mep mepid <1-8192>	Set the MEP of the OAM domain per UNI (per port) or EPU (per service point)

6.6 Ethernet Service Instance

This section covers the following topics :

- [6.6.1, “show ethernet epu”](#)
- [6.6.2, “add vlan”](#)
- [6.6.3, “mep mepid ”](#)

6.6.1 show ethernet epu

E-Service instance is automatically created by command "add uni UNI-ID" of EVC configuration mode. E-Service instance ID is formed by the concatenation of the UNI ID and the EVC ID.

Command Mode

E-Service mode

Command Syntax

ethernet epu WORD

- WORD: E-Service ID

Usage

The E-Service ID is a string that formed by the concatenation of the UNI ID and the EVC ID

Command List for ESERVICE mode

Commands	Description
(add delete) vlan VLAN-ID	Add or delete to the CE-VLAN map with specified VLAN-ID.
(add delete) vlan all-others	Add or delete to the CE-VLAN map about all CE-VLAN except already mapped to other EVC in a UNI.

Example

```
BTI SA-805,21,22(config)# ethernet uni CUSTOMER-A
BTI SA-805,21,22(config-uni)# all-to-one-bundling disable
BTI SA-805,21,22(config-uni)# add evc EPLINE-Test2-Test1
BTI SA-805,21,22(config-uni)# end
BTI SA-805,21,22# show ethernet uni CUSTOMER-A
-----
UNI CUSTOMER-A:
Mapped Interface           : eth-0-2
Default CVLANID           : 0
Default SVLAN Priority     : 0
All-to-One Bundling       : No
Bundling                   : No
Service Multiplexing       : No
Maximum Number of EVC     : 1
Number of EVC using this UNI : 1
EVC List -----
  EPLINE-Test2-Test1,
-----
```

```
BTI SA-805,21,22# show ethernet epu
```

```
-----  
E-Service CUSTOMER-A-EPLINE-Test2-Test1:  
CE-VLAN map : Empty  
-----
```

Related Commands

UNI Configuration Mode	Description
(add delete) evc EVC-ID	E-Service instance is created by this command

6.6.2 add vlan

Command Mode

E-Service configuration mode

Command Syntax

"add vlan (VLAN-ID|all-others)"

1 -VLAN-ID : 1-4095

1 -all-others : all VLANs that is not mapped to other EVC in a UNI.

Usage

Except All-to-One-bundling case, E-Service MUST have one or more CE-VLAN ID map.

Example

```
BTI SA-805,21,22# show ethernet uni
```

```
-----  
UNI CUSTOMER-A:  
Mapped Interface           : eth-0-2  
Default CVLANID           : 0  
Default SVLAN Priority     : 0  
All-to-One Bundling       : No  
Bundling                   : No  
Service Multiplexing       : No  
Maximum Number of EVC     : 1  
Number of EVC using this UNI : 1  
EVC List -----  
EPLINE-Test2-Test1,  
-----
```

```
BTI SA-805,21,22# configure terminal
```

Enter configuration commands, one per line. End with CNTL/Z.

```
BTI SA-805,21,22(config)# ethernet epu CUSTOMER-A-EPLINE-Test2-Test1
```

```
BTI SA-805,21,22(config-epu)# add vlan 10
```

```

BTI SA-805,21,22(config-epu)# add vlan 20
% uni is not bundling mode (Note :Because Bundling option is not enabled at a
UNI.)
BTI SA-805,21,22(config-epu)# end
BTI SA-805,21,22# show ethernet epu
-----
E-Service CUSTOMER-A-EPLINE-Test2-Test1:
  CE-VLAN map : 10
-----

** Change Bundling mode to enable on UNI
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet uni CUSTOMER-A
BTI SA-805,21,22(config-uni)# bundling enable
BTI SA-805,21,22(config-uni)# end
BTI SA-805,21,22# show ethernet uni CUSTOMER-A
-----
UNI CUSTOMER-A:
  Mapped Interface           : eth-0-2
  Default CVLANID            : 0
  Default SVLAN Priority      : 0
  All-to-One Bundling        : No
  Bundling                   : Yes
  Service Multiplexing        : No
  Maximum Number of EVC       : 1
  Number of EVC using this UNI : 1
  EVC List -----
    EPLINE-Test2-Test1,
-----

BTI SA-805,21,22# configure terminal
  Enter configuration commands, one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet epu CUSTOMER-A-EPLINE-Test2-Test1
BTI SA-805,21,22(config-epu)# add vlan 20
BTI SA-805,21,22(config-epu)# add vlan 30-35 ç Able to adding multiple CE-VLAN
BTI SA-805,21,22(config-epu)# end
-----
E-Service CUSTOMER-A-EPLINE-Test2-Test1:
  CE-VLAN map : 10, 20, 30:35
-----

```

Related Commands

UNI Configuration Mode	Possible Service combination
all-to-one-bundling (enable disable)	enable - epl, eplan, eptree services are can be supported

UNI Configuration Mode	Possible Service combination
	disable - evpl, evplan, evptree services are can be supported
multiplex (enable disable)	enable - evpl, evplan, evptree services are can be supported
	disable - epl, eplan, eptree services are can be supported

6.6.3 mep mepid

To monitor the service status, an OAM domain should be created to the service. The MEP attribute is used to create the OAM domain simply in the service activation stage. This MEP attribute is able to be assigned to UNI or EPU (Service instance). When the MEP attribute is configured to an EPU, all MEPs located to the UNI can be configured with different MEPIDs.

Command Mode

UNI configuration mode

Command Syntax

mep mepid <1-8192>

Usage

To create an OAM domain within the service creation, MEP attribute of EPU or UNI are mandatorily required with the MEG attribute. The example below shows how to configure them.

Example

```
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet uni add uni3
BTI SA-805,21,22(config-uni)# map interface eth-0-3
BTI SA-805,21,22(config-uni)# all-to-one-bundling disable
BTI SA-805,21,22(config-uni)# multiplex enable
BTI SA-805,21,22(config-uni)# exit
BTI SA-805,21,22(config)# ethernet evc add CUSTOMER2
BTI SA-805,21,22(config-evc)# svlan 200
BTI SA-805,21,22(config-evc)# service type evpline
BTI SA-805,21,22(config-evc)# add nni nn1
BTI SA-805,21,22(config-evc)# add uni uni3
BTI SA-805,21,22(config-evc)# mep enable level 4 ccm-interval 1sec
BTI SA-805,21,22(config-evc)# exit
BTI SA-805,21,22(config)# do show ethernet epu
-----
EPU uni2-CUSTOMER1:
MEPID of EPU : 222* (MAC: 0019:6de1:e102)
Performance : disable
CE-VLAN map : All to One Bundling
-----
```



```

EPU uni3-CUSTOMER2:
Performance : disable
CE-VLAN map : Empty
-----
BTI SA-805,21,22(config)# ethernet epu uni3-CUSTOMER2
BTI SA-805,21,22(config-epu)# add vlan 1000
BTI SA-805,21,22(config-epu)# mep mepid 223
BTI SA-805,21,22(config-epu)# exit
BTI SA-805,21,22(config)# end
BTI SA-805,21,22# show ethernet evc status CUSTOMER2
-----EVC name :
CUSTOMER2(200) / evpline
EVC-MEG state : enable
OAM Domain Name : CUSTOMER2
MEG Level : 4
CCM Interval : 1sec
Service Status : Active
Local MEPS : uni3(223)*,
Remote MEPS : runi213(213),
-----
BTI SA-805,21,22# show ethernet evc CUSTOMER2
-----
EVC CUSTOMER2
Service Type : evpline
VC Type : Point-to-Point
SVLAN ID : 200
CE-VLAN ID Preservation : Yes
CE-VLAN CoS ID Preservation : Yes
Maximum Number of UNI : 2
Number of UNI : 1
Number of RUNI : 1
Number of ENNI : 0
EVC MEG state : enable
OAM Domain Name : CUSTOMER2
MEG Level : 4
CCM Interval : 1sec
Service Status : Active
Local UNI List -----
uni3,
Remote UNI List -----
runi213,
INNI List -----
nni1,
-----
BTI SA-805,21,22# show ethernet soam domain
[Global configuration]
- enable: enabled
[Domain configuration]
-----
-
domain(maid) learn aging md-type ma-type 1 vid int

```

```
-----  
-  
meg: CUSTOMER1 (01:02:06) dis 0 no-present string 4 100 1s  
meg: CUSTOMER2 (01:02:05) en 0 no-present string 4 200 1s  
BTI SA-805,21,22# show ethernet soam maintenance-point  
*(dynamic maintenance-point)  
xcon(cross connection mismatch), eoc(error of continuity),  
loc(loss of continuity), mac(mac status defect), rdi(remote defect  
indication)  
[MEP]  
-----  
mepid vid 1 ifname mac-addr dir cci rdi fault domain  
-----  
222 100 4 eth-0-2 0019.6de1.e102 up en off none meg: CUSTOMER1  
223 200 4 eth-0-3 0019.6de1.e103 up en off none meg: CUSTOMER2  
[MIP]  
-----  
vid 1 ifname mac-addr domain  
-----  
[Remote MEP]  
-----  
rmepid mepid vid 1 mac-addr fault domain  
-----  
212 222 100 4 0019.6de1.e202 ---/---/--- meg: CUSTOMER1  
213* 223 200 4 0019.6de1.e203 ---/---/--- meg: CUSTOMER2
```

Related Commands

None

6.7 Ethernet Access Instance (OVC EndPoint per UNI)

This section covers the following topics :

- [6.7.1, “show ethernet opu”](#)

6.7.1 show ethernet opu

E-Access instance is automatically created by command “add uni UNI-ID” of OVC configuration mode. E-Access instance ID is formed by the concatenation of the UNI ID and the OVC ID.

Command Mode

OPU mode

Command Syntax

ethernet opu WORD

- WORD : E-Access ID

Usage

The E-Access ID is a string that is formed by the concatenation of the UNI ID and the OVC ID.

Command List for OPU Mode

Commands	Description
(add delete) vlan VLAN-ID	Add or delete to the CE-VLAN map with specified VLAN-ID.
(add delete) vlan all-others	Add or delete to the CE-VLAN map about all CE-VLAN except already mapped to other EVC in a UNI.

Example

```
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet uni CUSTOMER-A
BTI SA-805,21,22(config-uni)# all-to-one-bundling disable
BTI SA-805,21,22(config-uni)# add ovc AccessEPL-CUST
BTI SA-805,21,22(config-uni)# end
BTI SA-805,21,22# show ethernet uni CUSTOMER-A
```

```
-----
UNI CUSTOMER-A
Description : eth-0-2
Mapped Interface : eth-0-2
TPID Value : 0x8100
MTU Size : 1522
Default CVLANID : 0
Default SVLAN Priority : 0
All to One Bundling : No
Bundling : No
Service Multiplexing : No
Maximum Number of EVC : 1
```

```
Number of EVC : 0
Number of OVC : 1
OVC List -----
AccessEPL-CUST,
-----
BTI SA-805,21,22# show ethernet opu
-----
OPU CUSTOMER-A-AccessEPL-CUST:
Performance : disable
CE-VLAN map : Empty
-----
```

Related Commands

UNI Configuration Mode	Description
add delete) ovc EVC-ID	E-Access instance is created by this command

6.8 Ethernet Access Instance (OVC EndPoint per ENNI)

This section covers the following topics:

- 6.8.1, “service instance configuration mode”
- 6.8.2, “add vlan”

6.8.1 service instance configuration mode

E-Access instance is automatically created by command “add enni ENNI-ID” of OVC configuration mode. E-Access instance ID is formed by the concatenation of the ENNI ID and the OVC ID

Command Mode

OPN mode

Command Syntax

ethernet opn WORD

- WORD : E-Access ID

Usage

The E-Access ID is a string that formed by the concatenation of the ENNI ID and the OVC ID
S-VLAN map is automatically added when E-Access instance is created with OVC’s SVLAN ID.

Command List for OPU Mode

Commands	Description
(add delete) vlan VLAN-ID	Add or delete to the S-VLAN map with specified VLAN-ID.

Example

```
BTI SA-805,21,22# show ethernet enni
-----
ENNI ENNI-0-1
Description : InterConnectToCustomer1
Mapped Interface : N/A
TPID Value : 0x88a8
MTU Size : 1526
Local MEP ID : 0
Number of OVC : 0
-----

BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet enni ENNI-0-1
BTI SA-805,21,22(config-enni)# add ovc AccessEPL-CUST
BTI SA-805,21,22(config-enni)# end
BTI SA-805,21,22# show ethernet opn
-----

OPN ENNI-0-1-AccessEPL-CUST:
Performance : disable
```

S-VLAN map : 1000

Related Commands

ENNI Configuration Mode	Description
(add delete) ovc OVC-ID	E-Access instance is created by this command

6.8.2 add vlan

Use this command to add s-vlan to map.

Command Mode

E-Service configuration mode

Command Syntax

add vlan (VLAN-ID|all-others)

- VLAN-ID : 1-4095

- all-others : all VLANs that is not mapped to other EVC in a UNI.

Usage

Except All-to-One-bundling case, E-Access MUST have single S-VLAN ID map.

Example

```
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet ovc AccessEPL-CUST
BTI SA-805,21,22(config-ovc)# svlan-preservation disable
BTI SA-805,21,22(config-ovc)# end
BTI SA-805,21,22# show ethernet ovc
-----
OVC AccessEPL-CUST
Service Type : evpline
VC Type : Point-to-Point
SVLAN ID : 1000
SVLAN Priority Mode : manual
SVLAN Priority Value : 0
CE-VLAN ID Preservation : Yes
CE-VLAN CoS ID Preservation : Yes
S-VLAN ID Preservation : No
S-VLAN CoS ID Preservation : Yes
Color Forwarding : enable
Color Indicator : dei
Maximum Number of UNI : 1
Number of UNI : 1
Number of RUNI : 0
Number of ENNI : 1
EVC MEG state : disable
Local UNI List -----
CUSTOMER-A,
ENNI List -----
ENNI-0-1,
-----
BTI SA-805,21,22# show ethernet opn
```

OPN ENNI-0-1-AccessEPL-CUST:

Performance : disable

S-VLAN map : 1000

BTI SA-805,21,22# configure terminal

Enter configuration commands, one per line. End with CNTL/Z.

BTI SA-805,21,22(config)# ethernet opn ENNI-0-1-AccessEPL-CUST

BTI SA-805,21,22(config-opn)# del vlan 1000

BTI SA-805,21,22(config-opn)# end

BTI SA-805,21,22# show ethernet opn

OPN ENNI-0-1-AccessEPL-CUST:

Performance : disable

S-VLAN map : Empty

BTI SA-805,21,22# configure terminal

Enter configuration commands, one per line. End with CNTL/Z.

BTI SA-805,21,22(config)# ethernet opn ENNI-0-1-AccessEPL-CUST

BTI SA-805,21,22(config-opn)# add vlan 2000

BTI SA-805,21,22(config-opn)# end

BTI SA-805,21,22# show ethernet opn

OPN ENNI-0-1-AccessEPL-CUST:

Performance : disable

S-VLAN map : 2000

Related Commands

UNI Configuration Mode	Possible Service Combination
all-to-one-bundling (enable disable)	enable – epl, eplan, eptree services are can be supported disable – evpl, evplan, evptree services are can be supported
multiplex (enable disable)	enable – evpl, evplan, evptree services are can be supported disable – epl, eplan, eptree services are can be supported

6.9 Bandwidth Profile Configuration

This section covers the following topics :

- [6.9.1, “ethernet cos”](#)
- [6.9.2, “ethernet bwp”](#)
- [6.9.3, “bandwidth-profile”](#)
- [6.9.4, “apply bandwidth profile to e-service”](#)

6.9.1 ethernet cos

Class of Service Profile (CoS) is used for Class of Service bandwidth profile for E-Service.

Command Mode

CoS mode

Command Syntax

ethernet cos (add|del) WORD

- *WORD* : Class of Service Profile ID

Usage

The Class of Service Profile ID is a string.

Example

```
BTI SA-805,21,22# configure terminal
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
BTI SA-805,21,22(config)# eth cos add gold
```

```
BTI SA-805,21,22(config-cos)# add pcp 5-7
```

```
BTI SA-805,21,22(config-cos)# exit
```

```
BTI SA-805,21,22(config)# eth cos add silver
```

```
BTI SA-805,21,22(config-cos)# add pcp 2-4
```

```
BTI SA-805,21,22(config-cos)# exit
```

```
BTI SA-805,21,22(config)# eth cos add bronz
```

```
BTI SA-805,21,22(config-cos)# add pcp 0-1
```

```
BTI SA-805,21,22(config-cos)# end
```

```
BTI SA-805,21,22# show ethernet cos
```

Index	Identifier	Type	Identifier-List
1	gold	pcp	5-7
2	silver	pcp	2-4
3	bronz	pcp	0-1

```
BTI SA-805,21,22# configure terminal
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
BTI SA-805,21,22(config)# ethernet cos add high
```

```
BTI SA-805,21,22(config-cos)# type dscp
```

```
BTI SA-805,21,22(config-cos)# add dscp 40-63
```

```
BTI SA-805,21,22(config-cos)# exit
```

```

BTI SA-805,21,22(config)# ethernet cos add medium
BTI SA-805,21,22(config-cos)# type dscp
BTI SA-805,21,22(config-cos)# add dscp 16-39
BTI SA-805,21,22(config-cos)# exit
BTI SA-805,21,22(config)# ethernet cos add low
BTI SA-805,21,22(config-cos)# type dscp
BTI SA-805,21,22(config-cos)# add dscp 0-15
BTI SA-805,21,22(config-cos)# end
BTI SA-805,21,22# show ethernet cos

```

Index	Identifier	Type	Identifier-List
1	gold	pcp	5-7
2	silver	pcp	2-4
3	bronz	pcp	0-1
4	high	dscp	40-63
5	medium	dscp	16-39
6	low	dscp	0-15

Related Commands

BWP Configuration Mode	Description
ethernet bwp NAME cos COS-ID	Bandwidth profile creation with Class of Service Profile

Command List for COS mode

Commands	Description
Type (pcp dscp)	Select Class of Service Identifier Type PCP or DSCP.
(add del) pcp <0-7>	Add or delete Class of Service Identifier value. Possible format : 0,1,3-4
(add del) dscp <0-63>	Add or delete Class of Service Identifier value. Possible format : 0,1,3-4

6.9.2 ethernet bwp

Command Mode

Bandwidth Profile Management [BWP] mode

Command Syntax

ethernet bwp (add|del) WORD (cos COS-ID|)

- *WORD* : Bandwidth Profile ID
- *COS -ID* : Class of Service Profile ID

Usage

The Class of Service Profile ID is a string.

Example

```
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet bwp add unil
BTI SA-805,21,22(config-bwp)# cir 10000 cbs 12176 eir 0 ebs 0
BTI SA-805,21,22(config-bwp)# exit
BTI SA-805,21,22(config)# ethernet bwp add evcl
BTI SA-805,21,22(config-bwp)# cir 15000 cbs 12176 eir 0 ebs 0
BTI SA-805,21,22(config-bwp)# exit
BTI SA-805,21,22(config)# ethernet bwp add evc-cos cos gold
BTI SA-805,21,22(config-bwp)# cir 5000 cbs 12176 eir 0 ebs 0
BTI SA-805,21,22(config-bwp)# exit
BTI SA-805,21,22(config)# ethernet bwp add evc-cos cos silver
BTI SA-805,21,22(config-bwp)# cir 10000 cbs 12176 eir 5000 ebs 12176
BTI SA-805,21,22(config-bwp)# exit
BTI SA-805,21,22(config-bwp)# cir 20000 cbs 12176 eir 10000 ebs 12176
BTI SA-805,21,22(config-bwp)# end
BTI SA-805,21,22# show ethernet bwp
-----
---
Group: 0001, Name: unil
-- cir----- cbs----- eir----- ebs----- color
CoS-----
  1 10000      12176      0          0          blind ----
-----
---
Group: 0002, Name: evcl
```

```
-- cir----- cbs----- eir----- ebs----- color
CoS-----
 1 15000      12176      0          0          blind ----
```

```
---
Group: 0003, Name: evc-cos
-- cir----- cbs----- eir----- ebs----- color
CoS-----
 1 5000       12176      0          0          blind gold
 2 10000      12176      5000       12176     blind silver
 3 20000      12176     10000      12176     blind bronze
```

Related Commands

COS Configuration Mode	Description
ethernet cos COS-ID	Class of Service Profile management

Command List for BWP mode

Commands	Description
cir <0-10000000>	Committed Information Rate. Unit is Kbps, upto 10Gbps
cbs <0-1250000>	Committed Burst Size. Unit is byte, upto 1250000byte
eir <0-10000000>	Excess Information Rate. Unit is Kbps, upto 10Gbps
ebs <0-1250000>	Excess Burst Size. Unit is byte, upto 1250000byte
color (aware blind)	Color Aware mode or Coloe blind mode, Default is Color Blind mode.

6.9.3 bandwidth-profile

Before apply bandwidth profile to UNI, bandwidth profile **MUST** be created.

Command Mode

UNI mode

Command Syntax

ethernet uni WORD

- *WORD* : UNI ID

Usage

Entering the UNI configuration mode to apply the bandwidth profile.

Example

```
BTI SA-805,21,22# show ethernet uni
```

```
-----
UNI CUSTOMER-A:
Mapped Interface           : eth-0-2
Default CVLANID           : 0
Default SVLAN Priority     : 0
All-to-One Bundling       : Yes
Bundling                   : No
Service Multiplexing       : No
Maximum Number of EVC     : 1
Number of EVC using this UNI : 1
EVC List -----
  EPLINE-Test2-Test1,
-----
```

```
# configure terminal
```

Enter configuration commands, one per line. End with CNTL/Z.

```
(config)# ethernet uni CUSTOMER-A
(config-uni)# bandwidth-profile ingress uni1
(config-uni)# end
# show ethernet uni
```

```
-----
UNI CUSTOMER-A:
Mapped Interface           : eth-0-2
Default CVLANID           : 0
Default SVLAN Priority     : 0
All-to-One Bundling       : Yes
Bundling                   : No
Service Multiplexing       : No
Maximum Number of EVC     : 1
Ingress Bandwidth Profile  : uni1
-----
```

Number of EVC using this UNI : 1

EVC List -----
EPLINE-Test2-Test1,

Related Commands

BWP Configuration Mode	Description
ethernet bwp BWP-ID	Bandwidth Profile configuration. Bandwidth Profile MUST be created before apply UNI bandwidth Profile

Command List for UNI mode

Commands	Description
bandwidth-profile (ingress egress) BWP-ID	Apply bandwidth profile to UNI for ingress/egress direction.
no bandwidth-profile (ingress egress)	Remove bandwidth profile from UNI.

6.9.4 apply bandwidth profile to e-service

Before apply bandwidth profile to E-Service, bandwidth profile **MUST** be created.

Command Mode

E-Service mode

Command Syntax

ethernet epu WORD

- *-WORD* : E-SERVICE ID

Usage

Entering the E-SERVICE configuration mode to apply the bandwidth profile.

Note	Do not add the bandwidth profile for UNI in case of E-Service bandwidth profile is applied. The switch does not support UNI and EVC bandwidth profiles simultaneously. All bandwidth profiles are related to Policy-maps, except EVC Ingress Bandwidth Profile. Therefore, do not detach the policy-map from the Interface.
-------------	---

Example

```
BTI SA-805,21,22# show ethernet epu
-----
E-Service CUSTOMER-A-EPLINE-Test2-Test1:
  CE-VLAN map : All to One Bundling
-----

BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet epu CUSTOMER-A-EPLINE-Test2-Test1
BTI SA-805,21,22(config-epu)# bandwidth-profile ingress evc1
BTI SA-805,21,22(config-epu)# end
BTI SA-805,21,22# show ethernet epu
-----
E-Service CUSTOMER-A-EPLINE-Test2-Test1:
  Ingress BWP : evc1
  CE-VLAN map : All to One Bundling
-----

BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet ban
BTI SA-805,21,22(config)# ethernet epu CUSTOMER-A-EPLINE-Test2-Test1
BTI SA-805,21,22(config-epu)# no bandwidth-profile ingress [Note: This
command removes EVC bandwidth Profile
```

```
BTI SA-805,21,22(config-epu)# bandwidth-profile ingress evc-cos [Note: This  
command adds CoS Bandwidth Profile
```

```
BTI SA-805,21,22(config-epu)# end
```

```
BTI SA-805,21,22# show ethernet epu
```

```
-----  
E-Service CUSTOMER-A-EPLINE-Test2-Test1:
```

```
  Ingress BWP : evc-cos
```

```
  CE-VLAN map : All to One Bundling  
-----
```

Related Commands

BWP Configuration Mode	Description
ethernet bwp BWP-ID	Bandwidth Profile configuration. Bandwidth Profile MUST be created before apply UNI bandwidth Profile
Ethernet bwp BWP-ID cos COS-ID	

Command List for SERVICE mode

Commands	Description
bandwidth-profile (ingress egress) BWP-ID	Apply bandwidth profile to UNI for ingress/egress direction.
no bandwidth-profile (ingress egress)	Remove bandwidth profile from UNI.

6.10 Layer 2 Control Protocol Configuration

This section covers the following topics :

- [6.10.1, “l2protocol mac”](#)
- [6.10.4, “ethernet l2cp”](#)
- [6.10.2, “l2protocol encapsulation \(enable|disable\)”](#)
- [6.10.3, “l2protocol tunnel-dmac”](#)
- [6.10.5, “applying L2CP profile to UNI and EVC”](#)
- [6.10.6, “ethernet l2cp default”](#)
- [6.10.7, “show l2protocol tunnel-dmac ”](#)

6.10.1 l2protocol mac

L2CP MAC address is used for the L2CP profile for E-Service.

Command Mode

Config mode

Command Syntax

- l2protocol mac <1-2> MAC mask MASK
 - MAC: 0180.C200.0000 – 0180.C2FF.FFFF
 - MASK:FFFF.FF00.0000-FFFF.FFFF.FFFF
- l2protocol mac <3-9> MAC
 - MAC: 0180.C200.0000 – 0180.C2FF.FFFF
- l2protocol mac full-mac MAC
 - MAC: 0000.0000.0000-FFFF.FFFF.FFFF

Pre-requisites

The L2CP MAC address should be registered before making the L2CP Profile.

Example

```
BTI SA-805,21,22# show l2protocol list
Index PDU Address MASK
=====
11    stp                ffff.ffff.ffff
12    slow-proto          ffff.ffff.ffff
13    dot1x               ffff.ffff.ffff
14    cfm                 ffff.ffff.ffff

BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# l2protocol mac 1 0180.c200.0000 mask ffff.ffff.fff0
BTI SA-805,21,22(config)# l2protocol mac 3 0180.c200.0001
BTI SA-805,21,22(config)# l2protocol full-mac 0180.e000.000f
BTI SA-805,21,22(config)# end

BTI SA-805,21,22# show l2protocol list
Index PDU Address MASK
=====
1     0180.c200.0000    ffff.ffff.fff0
3     0180.c200.0001    ffff.ffff.ffff
10    0180.e000.000f    ffff.ffff.ffff
11    stp               ffff.ffff.ffff
12    slow-proto        ffff.ffff.ffff
```

13	dot1x	ffff.ffff.ffff
14	cfm	ffff.ffff.ffff

Related Commands

BWP Configuration Mode	Description
ethernet l2cp (add) NAME	L2CP Profile creation or action configuration

Command List for L2Protocol MAC address

Commands	Description
l2protocol mac <1-2> MAC mask MASK	L2CP multiple MAC address entry is supported by this command. Two entries are supported for multiple MAC address. .
l2protocol mac <3-9> MAC	L2CP single MAC address entry is supported by this command. Seven entries are supported for single MAC address.
l2protocol mac full-mac MAC	User can add the specific MAC for L2CP processing. One entry is supported for specific MAC address.
show l2protocol list	Display the L2CP MAC address list.

6.10.2 l2protocol encapsulation (enable|disable)

Use this command to enable the Layer 2 Control Protocol Destination MAC address encapsulation.

Command Mode

Config mode

Command Syntax

`l2protocol encapsulation (enable|disable)`

Usage

This command enables or disables the encapsulation of the L2CP frame with a new MAC address. The Default encapsulation MAC address is .0100.0CCD.CDD0. Use the `l2protocol tunnel-dmac` command to change the default MAC address.

Example

```
BTI SA-805,21,22(config)# l2protocol encapsulation enable
BTI SA-805,21,22(config)# end
BTI SA-805,21,22# show l2protocol tunnel-dmac
```

Layer2 protocols tunnel destination MAC address is 0100.0ccd.cdd0

Related Commands

Commands	Description
<code>l2protocol tunnel-dmac</code>	L2CP multiple MAC address entry is supported by this command. Two entries are supported for multiple MAC address.
<code>show l2protocol tunnel-dmac</code>	Displays the L2CP MAC address list.

6.10.3 l2protocol tunnel-dmac

Command Mode

Config mode

Command Syntax

`l2protocol tunnel-dmac (0100.0CCD.CDD0|0100.0CCD.CDD1|0100.0CCD.CDD2|010F.E200.0003)`

Pre-requisites

The Layer 2 Control Protocol Destination MAC address encapsulation should be enabled using the `l2protocol encapsulation (enable|disable)` command.

Usage

L2CP multiple MAC address entry is supported by this command. Two entries are supported for multiple MAC address.

Example

```
BTI SA-805,21,22(config)# l2protocol tunnel-dmac?
```

```
MAC  0100.0CCD.CDD0-D2 or 010F.E200.0003
```

```
BTI SA-805,21,22(config)# l2protocol tunnel-dmac 0100.0ccd.cdd2
```

```
BTI SA-805,21,22(config)# end
```

```
BTI SA-805,21,22# show l2protocol tunnel-dmac
```

```
Layer2 protocols tunnel destination MAC address is 0100.0ccd.cdd2
```

Related Commands

Commands	Description
<code>l2protocol encapsulation (enable disable)</code>	Enables or disables Layer 2 Control Protocol Destination MAC address encapsulation
<code>show l2protocol tunnel-dmac</code>	Displays the L2CP MAC address list.

6.10.4 ethernet l2cp

The L2CP (Layer2 Control Protocol) is used for L2CP processing in UNI and EVC.

Command Mode

L2CP mode

Command Syntax

ethernet l2cp (add|) NAME

- -NAME : L2CP Profile ID

Usage

L2CP action value is one of 'discard', 'tunnel', 'pass-to-evc' and 'peer'.

Example

BTI SA-805,21,22# configure terminal

Enter configuration commands, one per line. End with CNTL/Z.

BTI SA-805,21,22(config)# l2protocol mac 3 0180.C200.000b

BTI SA-805,21,22(config)# l2protocol mac 3 0180.C200.000b

BTI SA-805,21,22(config)# l2protocol mac 4 0180.C200.000c

BTI SA-805,21,22(config)# l2protocol mac 4 0180.C200.000c

BTI SA-805,21,22(config)# l2protocol mac 5 0180.C200.000d

BTI SA-805,21,22(config)# l2protocol mac 5 0180.C200.000d

BTI SA-805,21,22(config)# l2protocol mac 6 0180.C200.000f

BTI SA-805,21,22(config)# l2protocol mac 6 0180.C200.000f

BTI SA-805,21,22# show l2protocol list

Index	PDU Address	MASK
1	0180.c200.0000	ffff.ffff.fff0
2	0180.c200.0020	ffff.ffff.fff0
3	0180.c200.000b	ffff.ffff.ffff
4	0180.c200.000c	ffff.ffff.ffff
5	0180.c200.000d	ffff.ffff.ffff
6	0180.c200.000f	ffff.ffff.ffff
11	stp	ffff.ffff.ffff
12	slow-proto	ffff.ffff.ffff
13	dot1x	ffff.ffff.ffff
14	cfm	ffff.ffff.ffff

BTI SA-805,21,22(config)# ethernet l2cp add evc-epl

BTI SA-805,21,22(config-l2cp)# action 1 discard

BTI SA-805,21,22(config-l2cp)# action 2 tunnel

BTI SA-805,21,22(config-l2cp)# action 3 tunnel

```
BTI SA-805,21,22(config-l2cp)# action 4 tunnel
BTI SA-805,21,22(config-l2cp)# action 5 tunnel
BTI SA-805,21,22(config-l2cp)# action 6 tunnel
BTI SA-805,21,22(config-l2cp)# action 11 tunnel
BTI SA-805,21,22# show ethernet l2cp evc-epl
```

```
-----
Name: evc-epl
```

Index	PDU Address	MASK	Action
-----	-----	-----	-----
1	0180.c200.0000	ffff.ffff.fff0	discard
2	0180.c200.0020	ffff.ffff.fff0	tunnel
3	0180.c200.000b	ffff.ffff.ffff	tunnel
4	0180.c200.000c	ffff.ffff.ffff	tunnel
5	0180.c200.000d	ffff.ffff.ffff	tunnel
6	0180.c200.000f	ffff.ffff.ffff	tunnel
11	stp	ffff.ffff.ffff	tunnel
12	slow-proto	ffff.ffff.ffff	discard
13	dot1x	ffff.ffff.ffff	discard

```
-----
```

```
BTI SA-805,21,22(config)# ethernet l2cp add uni-epl
BTI SA-805,21,22(config-l2cp)# action 1 pass-to-evc
BTI SA-805,21,22(config-l2cp)# action 2 pass-to-evc
BTI SA-805,21,22(config-l2cp)# action 3 pass-to-evc
BTI SA-805,21,22(config-l2cp)# action 4 pass-to-evc
BTI SA-805,21,22(config-l2cp)# action 5 pass-to-evc
BTI SA-805,21,22(config-l2cp)# action 6 pass-to-evc
BTI SA-805,21,22(config-l2cp)# action 11 pass-to-evc
BTI SA-805,21,22# show ethernet l2cp uni-epl
```

```
-----
Name: evc-epl
```

Index	PDU Address	MASK	Action
-----	-----	-----	-----
1	0180.c200.0000	ffff.ffff.fff0	discard
2	0180.c200.0020	ffff.ffff.fff0	tunnel
3	0180.c200.000b	ffff.ffff.ffff	tunnel
4	0180.c200.000c	ffff.ffff.ffff	tunnel
5	0180.c200.000d	ffff.ffff.ffff	tunnel
6	0180.c200.000f	ffff.ffff.ffff	tunnel
11	stp	ffff.ffff.ffff	tunnel
12	slow-proto	ffff.ffff.ffff	discard
13	dot1x	ffff.ffff.ffff	discard

```
-----
```

Related Commands

UNI/EVC Configuration	Description
ethernet uni (add) NAME	UNI creation or attribute configuration
ethernet evc (add) NAME	EVC creation or attribute configuration

Command List for L2CP mode

Commands	Description
action <1-13> (discard pass-to-evc peer tunnel)	L2CP action config for specific L2Protocol MAC address entry.
show l2cp (NAME)	Display the L2CP profile.

6.10.5 applying L2CP profile to UNI and EVC

The L2CP profile **MUST** be created, before applying the bandwidth profile to the UNI and EVC

Command Mode

UNI/EVC mode

Command Syntax

ethernet uni NAME

- *NAME* : UNI-ID

ethernet evc NAME

- *NAME* : EVC-ID

Usage

Enter the UNI / EVC configuration mode to apply the L2CP profile.

Example

```
BTI SA-805,21,22# show ethernet uni
Local UNI
```

```
-----
UNI uni1
Description                : N/A
Mapped Interface            : eth-0-2
TPID Value                  : 0x8100
MTU Size                    : 1522
Default CVLANID             : 0
Default SVLAN Priority       : 0
All to One Bundling         : Yes
Bundling                    : No
Service Multiplexing        : No
Maximum Number of EVC       : 1
Number of EVC               : 1
Number of OVC               : 0
EVC List -----
  evc1,
-----
```

```
BTI SA-805,21,22# configure terminal
```

```
  Enter configuration commands, one per line. End with CNTL/Z.
```

```
BTI SA-805,21,22(config)# ethernet uni uni1
```

```
BTI SA-805,21,22(config-uni)# l2cp uni-epl    Note : This command applies the
L2CP Profile
```

```
BTI SA-805,21,22(config-uni)# exit
```

```
BTI SA-805,21,22(config)# exit
```

BTI SA-805,21,22# show ethernet uni

Local UNI

```
-----
UNI uni1
  Description           : N/A
  Mapped Interface      : eth-0-2
  TPID Value           : 0x8100
  MTU Size              : 1522
  Default CVLANID       : 0
  Default SVLAN Priority : 0
  All to One Bundling   : Yes
  Bundling              : No
  Service Multiplexing   : No
  Maximum Number of EVC : 1
  L2CP Profile          : uni-epl   Note : The L2CP is created
  Number of EVC         : 1
  Number of OVC         : 0
  EVC List -----
    evc1,
  -----
```

BTI SA-805,21,22# show ethernet evc

```
-----
EVC evc1
  Service Type          : epline
  VC Type               : Point-to-Point
  SVLAN ID              : 1000
  VLAN Preservation     : Yes
  CoS Preservation      : Yes
  Maximum Number of UNI : 1
  Number of UNI         : 1
  Number of RUNI        : 0
  L2CP Profile          : evc-epl
  EVC MEG state         : disable
  Local UNI List -----
    uni1,
  NNI List -----
    nnil,
  -----
```

BTI SA-805,21,22# configure terminal

Enter configuration commands, one per line. End with CNTL/Z

BTI SA-805,21,22(config)# ethernet evc evc1

BTI SA-805,21,22(config-evc)# l2cp evc-epl Note: This command applies L2CP Profile in EVC

BTI SA-805,21,22(config-evc)# exit

BTI SA-805,21,22(config)# exit

BTI SA-805,21,22# show ethernet evc

```
-----
EVC evc1
  Service Type          : epline
  VC Type               : Point-to-Point
  -----
```

```
SVLAN ID                : 1000
VLAN Preservation       : Yes
CoS Preservation        : Yes
Maximum Number of UNI   : 1
Number of UNI           : 1
Number of RUNI          : 0
L2CP Profile            : evc-epl  Note: L2CP is created
EVC MEG state           : disable
Local UNI List -----
    unil,
NNI List -----
    nnil,
```

Related Commands

L2CP Profile Configuration Mode	Description
ethernet l2cp (add del) NAME	L2CP Profile configuration. L2CP Profile MUST be created before apply UNI bandwidth Profile

Command List for UNI/EVC mode

Commands	Description
l2cp NAME	Apply L2CP profile to UNI or EVC.
no l2cp	Remove L2CP profile from UNI or EVC.

6.10.6 ethernet l2cp default

Default profiles are applied by the commands “system default” or “system factory-default”.

Command Mode

Config mode

Command Syntax

- ethernet l2cp default (uni|evc|ovc) (ep-service|evp-service) NAME
 - NAME: L2CP Profile Identifier
- no ethernet l2cp default (uni|evc|ovc) (ep-service|evp-service)
 - Remove default profile from UNI, EVC and OVC object

Usage

L2CP default profile set for UNI, EVC and OVC for Ethernet Private Service and Ethernet Virtual Private Service.

Example

```
/* Default Profile List */
BTI SA-805,21,22# show ethernet l2cp
-----
Name: uni-epl-option1
Index PDU Address MASK Action
-----
1 0180.c200.0000 ffff.ffff.fff0 discard
2 0180.c200.0020 ffff.ffff.fff0 pass-to-evc
3 0180.c200.0007 ffff.ffff.ffff discard
4 0180.c200.000b ffff.ffff.ffff pass-to-evc
5 0180.c200.000c ffff.ffff.ffff pass-to-evc
6 0180.c200.000d ffff.ffff.ffff pass-to-evc
7 0180.c200.000e ffff.ffff.ffff discard
8 0180.c200.000f ffff.ffff.ffff pass-to-evc
11 stp ffff.ffff.ffff pass-to-evc
12 slow-proto ffff.ffff.ffff discard
13 dot1x ffff.ffff.ffff discard
---Name: uni-epl-option2
Index PDU Address MASK Action
-----
1 0180.c200.0000 ffff.ffff.fff0 discard
2 0180.c200.0020 ffff.ffff.fff0 pass-to-evc
3 0180.c200.0007 ffff.ffff.ffff pass-to-evc
4 0180.c200.000b ffff.ffff.ffff pass-to-evc
5 0180.c200.000c ffff.ffff.ffff pass-to-evc
6 0180.c200.000d ffff.ffff.ffff pass-to-evc
7 0180.c200.000e ffff.ffff.ffff pass-to-evc
```

```
8 0180.c200.000f ffff.ffff.ffff pass-to-evc
11 stp ffff.ffff.ffff pass-to-evc
12 slow-proto ffff.ffff.ffff pass-to-evc
13 dot1x ffff.ffff.ffff discard
```

Name: uni-evpl

Index PDU Address MASK Action

```
-----
1 0180.c200.0000 ffff.ffff.fff0 discard
2 0180.c200.0020 ffff.ffff.fff0 pass-to-evc
3 0180.c200.0007 ffff.ffff.ffff discard
4 0180.c200.000b ffff.ffff.ffff discard
5 0180.c200.000c ffff.ffff.ffff discard
6 0180.c200.000d ffff.ffff.ffff discard
7 0180.c200.000e ffff.ffff.ffff discard
8 0180.c200.000f ffff.ffff.ffff discard
11 stp ffff.ffff.ffff discard
12 slow-proto ffff.ffff.ffff discard
13 dot1x ffff.ffff.ffff discard
-----
```

Name: evc-epl-option1

Index PDU Address MASK Action

```
-----
1 0180.c200.0000 ffff.ffff.fff0 discard
2 0180.c200.0020 ffff.ffff.fff0 tunnel
3 0180.c200.0007 ffff.ffff.ffff discard
4 0180.c200.000b ffff.ffff.ffff tunnel
5 0180.c200.000c ffff.ffff.ffff tunnel
6 0180.c200.000d ffff.ffff.ffff tunnel
7 0180.c200.000e ffff.ffff.ffff discard
8 0180.c200.000f ffff.ffff.ffff tunnel
11 stp ffff.ffff.ffff tunnel
12 slow-proto ffff.ffff.ffff discard
13 dot1x ffff.ffff.ffff discard
-----
```

Name: evc-epl-option2

Index PDU Address MASK Action

```
-----
1 0180.c200.0000 ffff.ffff.fff0 discard
2 0180.c200.0020 ffff.ffff.fff0 tunnel
3 0180.c200.0007 ffff.ffff.ffff tunnel
4 0180.c200.000b ffff.ffff.ffff tunnel
5 0180.c200.000c ffff.ffff.ffff tunnel
6 0180.c200.000d ffff.ffff.ffff tunnel
-----
7 0180.c200.000e ffff.ffff.ffff tunnel
8 0180.c200.000f ffff.ffff.ffff tunnel
11 stp ffff.ffff.ffff tunnel
12 slow-proto ffff.ffff.ffff tunnel
13 dot1x ffff.ffff.ffff discard
-----
```


Name: evc-evpl

Index PDU Address MASK Action

```
-----
1 0180.c200.0000 ffff.ffff.fff0 discard
2 0180.c200.0020 ffff.ffff.fff0 discard
3 0180.c200.0007 ffff.ffff.ffff discard
4 0180.c200.000b ffff.ffff.ffff discard
5 0180.c200.000c ffff.ffff.ffff discard
6 0180.c200.000d ffff.ffff.ffff discard
7 0180.c200.000e ffff.ffff.ffff discard
8 0180.c200.000f ffff.ffff.ffff discard
11 stp ffff.ffff.ffff discard
12 slow-proto ffff.ffff.ffff discard
13 dot1x ffff.ffff.ffff discard
```

BTI SA-805,21,22#

/* Default Profile for UNI, EVC and OVC for EP-Service and EVP-Service */

BTI SA-805,21,22# show ethernet l2cp default

```
-----
Layer2 Protocol Default profile
```

```
-----
EPLine/EPLAN for UNI : uni-epl-option1
EVPLine/EVPLAN for UNI : uni-evpl
EPLine/EPLAN for EVC : evc-epl-option1
EVPLine/EVPLAN for EVC : evc-evpl
EPLine/EPLAN for OVC : evc-epl-option1
EVPLine/EVPLAN for OVC : evc-evpl
-----
```

BTI SA-805,21,22# configure terminal

Enter configuration commands, one per line. End with CNTL/Z.

BTI SA-805,21,22(config)# ethernet l2cp default uni ep-service uni-epl-option2

BTI SA-805,21,22(config)# ethernet l2cp default evc ep-service evc-epl-option2

BTI SA-805,21,22(config)# end

BTI SA-805,21,22# show ethernet l2cp default

```
-----
Layer2 Protocol Default profile
```

```
-----
EPLine/EPLAN for UNI : uni-epl-option2
EVPLine/EVPLAN for UNI : uni-evpl
EPLine/EPLAN for EVC : evc-epl-option2
EVPLine/EVPLAN for EVC : evc-evpl
EPLine/EPLAN for OVC : evc-epl-option1
EVPLine/EVPLAN for OVC : evc-evpl
-----
```

BTI SA-805,21,22# configure terminal

Enter configuration commands, one per line. End with CNTL/Z.

BTI SA-805,21,22(config)# no ethernet l2cp default uni evp-service

BTI SA-805,21,22(config)# end

BTI SA-805,21,22# show ethernet l2cp default

Layer2 Protocol Default profile

```
EPLine/EPLAN for UNI : uni-epl-option2
EVPLine/EVPLAN for UNI : None
EPLine/EPLAN for EVC : evc-epl-option2
EVPLine/EVPLAN for EVC : evc-evpl
EPLine/EPLAN for OVC : evc-epl-option1
EVPLine/EVPLAN for OVC : evc-evpl
```

```
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet l2cp default uni ep-service uni-epl-
option1
BTI SA-805,21,22(config)# ethernet l2cp default uni evp-service uni-evpl
BTI SA-805,21,22(config)# ethernet l2cp default evc ep-service evc-epl-
option1
BTI SA-805,21,22(config)# end
BTI SA-805,21,22# show ethernet l2cp default
```

Layer2 Protocol Default profile

```
EPLine/EPLAN for UNI : uni-epl-option1
EVPLine/EVPLAN for UNI : uni-evpl
EPLine/EPLAN for EVC : evc-epl-option1
EVPLine/EVPLAN for EVC : evc-evpl
EPLine/EPLAN for OVC : evc-epl-option1
EVPLine/EVPLAN for OVC : evc-evpl
```

```
BTI SA-805,21,22(config)# ethernet uni add uni1
BTI SA-805,21,22(config-uni)# map interface eth-0-2
BTI SA-805,21,22(config-uni)# end
BTI SA-805,21,22# show ethernet uni uni1
```

```
UNI uni1
Description : eth-0-2
Mapped Interface : eth-0-2
TPID Value : 0x8100
MTU Size : 1522
Default CVLANID : 0
Default SVLAN Priority : 0
All to One Bundling : Yes /* All to One Bundling is enabled */
Bundling : No
Service Multiplexing : No
Maximum Number of EVC : 1
L2CP Profile : uni-epl-option1 /* Applied with UNI EP-Service default */
Number of EVC : 0
Number of OVC : 0
Efpsd : disabled(LBM with LIS disabled)
```

```
BTI SA-805,21,22# configure terminal
```

```
Enter configuration commands, one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet evc add evc1
BTI SA-805,21,22(config-evc)# svlan 1000
BTI SA-805,21,22# show ethernet l2cp default
-----
Layer2 Protocol Default profile
-----
EPLine/EPLAN for UNI : uni-epl-option2
EVPLine/EVPLAN for UNI : None
EPLine/EPLAN for EVC : evc-epl-option2
EVPLine/EVPLAN for EVC : evc-evpl
EPLine/EPLAN for OVC : evc-epl-option1
EVPLine/EVPLAN for OVC : evc-evpl
-----
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet l2cp default uni ep-service uni-epl-
option1
BTI SA-805,21,22(config)# ethernet l2cp default uni evp-service uni-evpl
BTI SA-805,21,22(config)# ethernet l2cp default evc ep-service evc-epl-
option1
BTI SA-805,21,22(config)# end
BTI SA-805,21,22# show ethernet l2cp default
-----
Layer2 Protocol Default profile
-----
EPLine/EPLAN for UNI : uni-epl-option1
EVPLine/EVPLAN for UNI : uni-evpl
EPLine/EPLAN for EVC : evc-epl-option1
EVPLine/EVPLAN for EVC : evc-evpl
EPLine/EPLAN for OVC : evc-epl-option1
EVPLine/EVPLAN for OVC : evc-evpl
-----
BTI SA-805,21,22(config)# ethernet uni add uni1
BTI SA-805,21,22(config-uni)# map interface eth-0-2
BTI SA-805,21,22(config-uni)# end
BTI SA-805,21,22# show ethernet uni uni1
-----
UNI uni1
Description : eth-0-2
Mapped Interface : eth-0-2
TPID Value : 0x8100
MTU Size : 1522
Default CVLANID : 0
Default SVLAN Priority : 0
All to One Bundling : Yes /* All to One Bundling is enabled */
Bundling : No
Service Multiplexing : No
Maximum Number of EVC : 1
L2CP Profile : uni-epl-option1 /* Applied with UNI EP-Service default */
Number of EVC : 0
```

```
Number of OVC : 0
Efpsd : disabled(LBM with LIS disabled)
-----
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet evc add evc1
BTI SA-805,21,22(config-evc)# svlan 1000
-----
EVC evc2
Service Type : evpline /* Service type is EVP-Service */
VC Type : Point-to-Point
SVLAN ID : 4000
CE-VLAN ID Preservation : Yes
CE-VLAN CoS ID Preservation : Yes
Maximum Number of UNI : 2
Number of UNI : 1
Number of RUNI : 0
Number of ENNI : 0
L2CP Profile : evc-evpl /* Applied with EVC EVP-Service default */
EVC MEG state : disable
Local UNI List -----
uni2,
-----
BTI SA-805,21,22#
```

Related Commands

BWP Configuration Mode	Description
ethernet l2cp (add) NAME	L2CP Profile creation or action configuration

Command List for L2Protocol MAC address

Commands	Description
l2protocol mac <1-2> MAC mask MASK	L2CP multiple MAC address entry is supported by this command. Two entries are supported for multiple MAC address. .
l2protocol mac <3-9> MAC	L2CP single MAC address entry is supported by this command. Seven entries are supported for single MAC address.
l2protocol mac full-mac MAC	User can add the specific MAC for L2CP processing. One entry is supported for specific MAC address.
show l2protocol list	Display the L2CP MAC address list.

6.10.7 show l2protocol tunnel-dmac

This command displays the Layer 2 Control Protocol Destination MAC address encapsulation information.

Command Mode

Config mode

Command Syntax

Pre-requisites

The Layer 2 Control Protocol Destination MAC address encapsulation should be enabled using the `l2protocol encapsulation (enable|disable)` command.

Example

```
BTI SA-805,21,22# show l2protocol tunnel-dmac
```

```
Layer2 protocols tunnel destination MAC address is 0100.0ccd.cdd2
```

Related Commands

Commands	Description
<code>l2protocol encapsulation (enable disable)</code>	Enables or disables Layer 2 Control Protocol Destination MAC address encapsulation
<code>l2protocol tunnel-dmac</code>	L2CP multiple MAC address entry is supported by this command. Two entries are supported for multiple MAC address.

7.0 Access Control List (ACL) Commands

This section covers the following topics :

- [7.1, “mac access list”](#)
- [7.2, “sequence-num”](#)
- [7.3, “denysrc-mac”](#)
- [7.4, “permitsrc-mac”](#)
- [7.5, “remark”](#)
- [7.6, “show access-list mac”](#)
- [7.7, “ipaccess-list”](#)
- [7.8, “deny”](#)
- [7.9, “deny tcp”](#)
- [7.10, “deny udp”](#)
- [7.11, “deny icmp”](#)
- [7.12, “deny igmp”](#)
- [7.13, “permit”](#)
- [7.14, “permit tcp”](#)
- [7.15, “permit udp”](#)
- [7.16, “permit icmp”](#)
- [7.17, “permit igmp”](#)
- [7.18, “show access-list ip”](#)

7.1 mac access list

Use this command to create MAC ACL and then enter MAC ACL in global configuration mode.

Command Syntax

mac access-list ACL-NAME

no mac access-list ACL-NAME

Input	Description and range
SEQUENCE-NUM	The name of the MAC ACL

Command Mode

Global Configuration

Default

None

Usage

If the system already has a MAC ACL with the same name, this command will enter the MAC ACL configuration mode. However, if the ACL name is used by other type of ACL, an prompt message will be shown. When the name is not used by any ACL, this command is to create the MAC ACL firstly and then enter the MAC ACL configuration mode.

Example

This example shows how to create a MAC ACL named list_mac_1 and then enter the MAC ACL configuration mode.

```
BTI SA-805,21,22(config)# mac access-list list_mac_1
$BTI SA-805,21,22(config-mac-acl)#an
```

This example shows how to remove the MAC ACL named list_mac_1.

```
BTI SA-805,21,22 (config)# no mac access-list list_mac_1
```

Related Commands

match access-group

7.2 sequence-num

Use this command to remove a filter from the MAC ACL.

Command Syntax

no sequence-num (SEQUENCE-NUM)

Input	Description and range
SEQUENCE-NUM	The sequence number of a MAC filter, the range is 1 to 131071

Command Mode

MAC ACL Configuration or IP ACL configuration

Default

None

Usage

None

Example

This example shows how to remove a filter with the sequence-num 10 from MAC ACL.

```
BTI SA-805,21,22(config-mac-acl)# no sequence-num 10
```

Related Commands

BWP Configuration Mode	Description
deny	deny tcp, udp, icmp, igmp
deny tcp	deny tcp
deny udp	deny udp
deny icmp	deny icmp
deny igmp	deny igmp
permit	permit tcp, udp, icmp, igmp
permit tcp	permit tcp
permit udp	permit udp
permit icmp	permit icmp
permit igmp	permit igmp

7.3 denysrc-mac

Use this command to create a MAC filter to discard ingoing packets matching the filter rule.

Command Syntax

```
(SEQUENCE-NUM | ) deny src-mac (any| MAC MASK |host MAC) ( dest-mac (any |MAC MASK | host MAC) | ) ( ( vlan VLAN | ) ( cos VALUE | ) ( inner-vlan VLAN | ) ( inner-cos VALUE| ) ) ((protocol (arp ((arp-request|arp-reply|) (sender-ip (ip MASK |any|host ip)|) (target-ip (ip MASK |any|host ip)|)|rarp((rarp-request|rarp-reply|) (sender-ip (ip MASK |any|host ip)|) (target-ip (ip MASK |any|host ip)|)|ETH-TYPE mask MASK)|" | ) ( time-range TIME-RANGE-NAME | )
```

Syntax	Description
<i>SEQUENCE-NUM</i>	The sequence number of the filter in MAC ACL. An auto-generated sequence number will be assigned to the filter if this field is not presented.The range is 1 to 131071
any	Any host
<i>MAC MASK</i>	The MAC address and its wildcard bits
host <i>MAC</i>	The host with a specified MAC address
dest-mac	Destination MAC address
vlan <i>VLAN</i>	VLAN-ID, the range is 1 to 4094
cos <i>VALUE</i>	CoS, the range is 0 to 7
inner-vlan <i>VLAN</i>	Inner VLAN-ID, the range is 1 to 4094
inner-cos <i>VALUE</i>	Inner CoS, the range is 0 to 7
protocol	The protocol type which including ARP, RARP or Ether type
arp	ARP
arp-request	Arp request ,opcode is 1
arp-reply	Arp reply □ opcode is 2
Sender ip	Sendip
ip mask	The sender ip and its wildcard bits
any	any sender ip
host ip	a specified sender ip
target-ip	target-ip
ip mask	The target ip and its wildcard bits
any	Any target ip
host ip	a specified target ip
rarp	RARP protocol
rarp-request	rarp-request □ opcode is 3
rarp-reply	rarp-reply □ opcode is 4
Sender ip	sendip

Syntax	Description
ip mask	The sender ip and its wildcard bits
any	Any sender ip
host ip	a specified sender ip
target-ip	target-ip
ip mask	The target ip and its wildcard bits
any	Any target ip
host ip	a specified target ip
ETH-TYPE	a specified ether type
Mask	The ether type and its wildcard bits
time-range <i>TIME-RANGE-NAME</i>	The time-range used by the MAC filter

Command Mode

MAC ACL Configuration

Default

None

Usage

An auto-generated sequence number will be assigned to the filter if the sequence-num field is not presented. The auto-generated sequence number is incremented by 10 on the maximum existing sequence number in the MAC ACL. i.e. when the maximum existing sequence number is 100, the sequence number of subsequent created MAC filter is 110.

Example

This example shows how to create a filter in MAC ACL to deny the packets with source MAC address 001A.A02C.A1DF.

```
BTI SA-805,21,22(config-mac-acl)# 1 deny src-mac host 001A.A02C.A1DF
```

This example shows how to create a filter in MAC ACL to deny all packets.

```
BTI SA-805,21,22(config-mac-acl)# 2 deny src-mac any
```

This example shows how to create a filter in MAC ACL to deny the packets with a source MAC address between the ranges 001A.A02C.A1DF - 001A.A02C.0000 .

```
BTI SA-805,21,22(config-mac-acl)# 3 deny src-mac 001A.A02C.A1DF 001A.A02C.0000
```

Related Commands

None

7.4 permitsrc-mac

Use this command to create a MAC filter to allow packets matching the filter rule to be delivered.

Command Syntax

```
(SEQUENCE-NUM | ) permit src-mac (any| MAC MASK |host MAC) ( dest-mac (any |MAC MASK | host MAC) | ) ( ( vlan VLAN | ) ( cos VALUE | ) ( inner-vlan VLAN | ) ( inner-cos VALUE| ) ) ((protocol (arp ((arp-request|arp-reply|) (sender-ip (ip MASK |any|host ip|)) (target-ip (ip MASK |any|host ip|)))|rarp((rarp-request|rarp-reply|) (sender-ip (ip MASK |any|host ip|)) (target-ip (ip MASK |any|host ip|)))|ETH-TYPE mask MASK)|" | ) ( time-range TIME-RANGE-NAME | )
```

Syntax	Description
<i>SEQUENCE-NUM</i>	The sequence number of the filter in MAC ACL. An auto-generated sequence number will be assigned to the filter if this field is not presented.The range is 1 to 131071
any	Any host
<i>MAC MASK</i>	The MAC address and its wildcard bits
host <i>MAC</i>	The host with a specified MAC address
dest-mac	Destination MAC address
vlan <i>VLAN</i>	VLAN-ID, the range is 1 to 4094
cos <i>VALUE</i>	CoS, the range is 0 to 7
inner-vlan <i>VLAN</i>	Inner VLAN-ID, the range is 1 to 4094
inner-cos <i>VALUE</i>	Inner CoS, the range is 0 to 7
protocol	The protocol type which including ARP, RARP or Ether type
arp	ARP
arp-request	Arp request ,opcode is 1
arp-reply	Arp reply □ opcode is 2
Sender ip	Sendip
ip mask	The sender ip and its wildcard bits
any	any sender ip
host ip	a specified sender ip
target-ip	target-ip
ip mask	The target ip and its wildcard bits
any	Any target ip
host ip	a specified target ip
rarp	RARP protocol
rarp-request	rarp-request □ opcode is 3
rarp-reply	rarp-reply □ opcode is 4
Sender ip	sendip

Syntax	Description
ip mask	The sender ip and its wildcard bits
any	Any sender ip
host ip	a specified sender ip
target-ip	target-ip
ip mask	The target ip and its wildcard bits
any	Any target ip
host ip	a specified target ip
ETH-TYPE	a specified ether type
Mask	The ether type and its wildcard bits
time-range <i>TIME-RANGE-NAME</i>	The time-range used by the MAC filter

Command Mode

MAC ACL Configuration

Default

None

Usage

An auto-generated sequence number will be assigned to the filter if the sequence-num field is not presented. The auto-generated sequence number is incremented by 10 on the maximum existing sequence number in the MAC ACL. i.e. when the maximum existing sequence number is 105, the sequence number of subsequent created MAC filter is 115.

Example

This example shows how to create a filter in MAC ACL to permit packets with source MAC address 001A.A02C.A1DF.

```
BTI SA-805,21,22(config-mac-acl)# 1 permit src-mac host 001A.A02C.A1DF
```

This example shows how to create a filter in MAC ACL to permit all packets.

```
BTI SA-805,21,22(config-mac-acl)# 2 permit src-mac any
```

This example shows how to create a filter in MAC ACL to permit the packets with source MAC address between the ranges 001A.A02C.A1DF - 001A.A02C.0000.

```
BTI SA-805,21,22(config-mac-acl)# 3 permit src-mac 001A.A02C.A1DF 001A.A02C.0000
```

Related Commands

no sequence-num

7.5 remark

Use this command to add remarks to the MAC ACL. To remove remarks, use the no form of this command.

Command Syntax

remark REMARK

no remark

Syntax	Description
REMARK	The remarks of the MAC ACL

Command Mode

MAC ACL Configuration or IP ACL configuration

Default

None

Usage

The remarks can be up to 100 characters in length. Any text that exceeds 100 characters will not be stored and will be truncated.

Example

This example shows how to add a remark to describe the MAC ACL.

```
BTI SA-805,21,22(config-mac-acl)# remark remark of List for mac
```

This example shows how to remove the remark of the MAC ACL.

```
BTI SA-805,21,22(config-mac-acl)# no remark
```

Related Commands

mac access-list

7.6 show access-list mac

Use this command to show the MAC ACL information.

Command Syntax

show access-list mac (ACL-NAME)

Syntax	Description
ACL-NAME	The name of the MAC ACL

Command Mode

Privileged EXEC

Default

None

Usage

If no mac acl is specified, all mac access-lists in the system will be shown.

Example

This example shows how to show the MAC ACL information.

```
BTI SA-805,21,22# show access-list mac
mac access-list list_mac_1
  10 deny src-mac host 0000.0001.0002
  20 permit src-mac any
```

Related Commands

mac access-list

7.7 ipaccess-list

Use this command to create the IP ACL and then enter the IP ACL configuration mode. To remove the IP ACL, use the no form of this command.

Command Syntax

```
ip access-list ACL-NAME
no ip access-list ACL-NAME
```

Syntax	Description
ACL-NAME	The name of an IP ACL

Command Mode

Global Configuration

Default

None

Usage

If the system already has an IP ACL with the same name, this command will enter the IP ACL configuration mode. However, if the ACL name is used by other type of ACL, an prompt message will be shown.

When the name is not used by any ACL, this command creates the IP ACL and then enters the IP ACL configuration mode.

Example

This example shows how to create an IP ACL named list_ipv4_1 and then enter the IP ACL configuration mode.

```
BTI SA-805,21,22(config)# ip access-list list_ipv4_1
BTI SA-805,21,22(config-ip-acl)#
```

This example shows how to remove the IP ACL named list_ipv4_1.

```
BTI SA-805,21,22(config)# no ip access-list list_ipv4_1
```

Related Commands

```
match access-group
```


7.8 deny

Use this command to discard ongoing IP packets matching the IP filter.

Command Syntax

(SEQUENCE-NUM |) deny (PROTO-NUM | any) (SOURCE SOURCE-MASK | any | host SOURCE) (DESTINATION DESTINATION-MASK | any | host DESTINATION) (ip-precedence PRECEDENCE | dscp DSCP |) (non-fragment|first-fragment|non-or-first-fragment|small-fragment|non-first-fragment) (routed-packet |) (options |) (time-range TIME-RANGE-NAME |)

Syntax	Description
<i>SEQUENCE-NUM</i>	The sequence number of the filter in IP ACL. An auto-generated sequence number will be assigned to the filter if this field is not presented. The range is 1 to 131071
<i>PROTO-NUM</i>	An IP protocol number, the range is 0 to 255
any	Any IP protocol
<i>SOURCE SOURCE-MASK</i>	The source IP address and its wildcard bits
any	Any source host
host <i>SOURCE</i>	The source IP address of a host
<i>DESTINATION DESTINATION-MASK</i>	The destination IP address and its wildcard bits
any	Any destination host
host <i>DESTINATION</i>	The destination IP address of a host
ip-precedence <i>PRECEDENCE</i>	Match packets with given precedence value, the range is 0 to 7
dscp <i>DSCP</i>	Match packets with given dscp value, the range is 0 to 63
non-fragment	Match packets with non fragment
first-fragment	Match packets with first fragment
non-or-first-fragment	Match packets with non first fragment
small-fragment	Match packets with small fragment
non-first-fragment	Match packets with non first fragment
routed-packet	Match routed packet
options	Match packets with IP options
time-range <i>TIME-RANGE-NAME</i>	The time-range used by the IP filter

Command Mode

IP ACL configuration

Default

None

Usage

Note the following wildcard example : If 10.10.10.0 0.0.0.255 is provisioned then IP addresses from 10.10.10.0 to 10.10.10.255 are matched.

An auto-generated sequence number will be assigned to the filter if the sequence-num field is not presented. The auto-generated sequence number is incremented by 10 on the maximum existing sequence number in the IP ACL. i.e. when the maximum existing sequence number is 100, the sequence number of subsequent created IP filter is 110.

Example

This example shows how to create a filter in IP ACL to deny any IP packets.

```
BTI SA-805,21,22(config-ip-acl)# 1 deny any any any
```

This example shows how to create a filter in IP ACL to deny the fragment packets with the source IP address 1.1.1.1.

```
BTI SA-805,21,22(config-ip-acl)# 2 deny any host 1.1.1.1 any fragments
```

This example shows how to create a filter in IP ACL to deny any routed packets.

```
BTI SA-805,21,22(config-ip-acl)# 3 deny any any any routed-packet
```

Related Commands

no sequence-num

7.9 deny tcp

Use this command to reject TCP packets matching the IP filter.

Command Syntax

```
(SEQUENCE-NUM | ) deny tcp ( SOURCE SOURCE-MASK | any | host SOURCE ) ( src-port
OPERATOR PORT | )(DESTINATION DESTINATION-MASK | any | host DESTINATION)
( dst-port OPERATOR PORT | ) ( ip-precedence PRECEDENCE | dscp DSCP | ) ( established |
( match-any | match-all FLAG-NAME | ) ) ( non-fragment|first-fragment|non-or-first-fragment|
small-fragment|non-first-fragment) ( routed-packet | ) ( options | ) ( time-range TIME-RANGE-
NAME | )
```

Syntax	Description
<i>SEQUENCE-NUM</i>	The sequence number of the filter in IP ACL. An auto-generated sequence number will be assigned to the filter if this field is not presented. the range is 1 to 131071
<i>SOURCE SOURCE-MASK</i>	The source IP address and its wildcard bits
any	Any source host
host <i>SOURCE</i>	The source IP address of a host
src-port <i>OPERATOR PORT</i>	Source port, the range is 0 to 65535. Including eq (equal to), lt (less than), gt (greater than), neq (not equal to) and range
<i>DESTINATION DESTINATION-MASK</i>	The destination IP address and its wildcard bits
any	Any destination host
host <i>DESTINATION</i>	The destination IP address of a host
dst-port <i>OPERATOR PORT</i>	Destination port, the range is 0 to 65535. Including eq (equal to), lt (less than), gt (greater than), neq (not equal to) and range
ip-precedence <i>PRECEDENCE</i>	Match packets with given precedence value, the range is 0 to 7
dscp <i>DSCP</i>	Match packets with given dscp value, the range is 0 to 63
established	Match established connections
match-any	Match any of the flag-name
match-all <i>FLAG-NAME</i>	Match all the flag-name, including ack, fin, psh, rst, syn and urg
non-fragment	Match packets with non fragment
first-fragment	Match packets with first fragment
non-or-first-fragment	Match packets with non first fragment
small-fragment	Match packets with small fragment
non-first-fragment	Match packets with non first fragment
routed-packet	Match routed packet
options	Match packets with IP options
time-range <i>TIME-RANGE-NAME</i>	The time-range used by the IP filter

Command Mode

IP ACL configuration

Default

None

Usage

The fragments will be invalid when the layer 4 information is specified (i.e. src-port).

Example

This example shows how to create a filter in IP ACL to deny any TCP packets.

```
BTI SA-805,21,22(config-ip-acl)# 1 deny tcp any any
```

This example shows how to create a filter in IP ACL to deny the TCP packets with the source IP address 1.1.1.1, source port 0-100.

```
BTI SA-805,21,22(config-ip-acl)# 2 deny tcp host 1.1.1.1 src-port range 0 100  
any
```

This example shows how to create a filter in IP ACL to deny any TCP packets in established TCP streams.

```
BTI SA-805,21,22(config-ip-acl)# 3 deny tcp any any established
```

This example shows how to create a filter in IP ACL to deny the TCP ACK packets with the source IP address 1.1.1.1.

```
BTI SA-805,21,22(config-ip-acl)# 4 deny tcp 10.10.10.0 0.0.0.0 any match-any  
ack
```

Related Commands

nosequence-num

7.10 deny udp

Use this command to reject UDP packets matching the IP filter.

Command Syntax

```
( SEQUENCE-NUM | ) deny udp ( SOURCE SOURCE-MASK | any | host SOURCE ) ( src-port
OPERATOR PORT | )(DESTINATION DESTINATION-MASK | any | host DESTINATION)
( dst-port OPERATOR PORT | ) ( ip-precedence PRECEDENCE | dscp DSCP | ) (non-fragment|
first-fragment|non-or-first-fragment|small-fragment|non-first-fragment) ( routed-packet | )
( options | ) ( time-range TIME-RANGE-NAME | )
```

Syntax	Description
<i>SEQUENCE-NUM</i>	The sequence number of the filter in IP ACL. An auto-generated sequence number will be assigned to the filter if this field is not presented. the range is 1 to 131071
<i>SOURCE SOURCE-MASK</i>	The source IP address and its wildcard bits
any	Any source host
host <i>SOURCE</i>	The source IP address of a host
src-port <i>OPERATOR PORT</i>	Source port, the range is 0 to 65535. Including eq (equal to), lt (less than), gt (greater than), neq (not equal to) and range
<i>DESTINATION DESTINATION-MASK</i>	The destination IP address and its wildcard bits
any	Any destination host
host <i>DESTINATION</i>	The destination IP address of a host
dst-port <i>OPERATOR PORT</i>	Destination port, the range is 0 to 65535. Including eq (equal to), lt (less than), gt (greater than), neq (not equal to) and range
ip-precedence <i>PRECEDENCE</i>	Match packets with given precedence value, the range is 0 to 7
dscp <i>DSCP</i>	Match packets with given dscp value, the range is 0 to 63
established	Match established connections
match-any	Match any of the flag-name
match-all <i>FLAG-NAME</i>	Match all the flag-name, including ack, fin, psh, rst, syn and urg
non-fragment	Match packets with non fragment
first-fragment	Match packets with first fragment
non-or-first-fragment	Match packets with non first fragment
small-fragment	Match packets with small fragment
non-first-fragment	Match packets with non first fragment
routed-packet	Match routed packet
options	Match packets with IP options
time-range <i>TIME-RANGE-NAME</i>	The time-range used by the IP filter

Command Mode

IP ACL configuration

Default

None

Usage

The fragments will be invalid when the layer 4 information is specified (i.e. src-port).

Example

This example shows how to create a filter in IP ACL to deny any UDP packets.

```
BTI SA-805,21,22(config-ip-acl)# 1 deny udp any any
```

This example shows how to create a filter in IP ACL to deny the UDP packets with the source IP 1.1.1.1, source port 10, and destination port less than 2000.

```
BTI SA-805,21,22(config-ip-acl)# 2 deny udp host 1.1.1.1 src-port eq 10 any  
dst-port lt 2000
```

Related Commands

nosequence-num

7.11 deny icmp

Use this command to reject ICMP packets matching the IP filter.

Command Syntax

(SEQUENCE-NUM |) deny icmp (SOURCE SOURCE-MASK | any | host SOURCE) (DESTINATION DESTINATION-MASK | any | host DESTINATION) (icmp-type TYPE-NUM (icmp-code CODE-NUM |) |) (ip-precedence PRECEDENCE | dscp DSCP |) (non-fragment|first-fragment|non-or-first-fragment|small-fragment|non-first-fragment) (routed-packet |) (options |) (time-range TIME-RANGE-NAME |)

Syntax	Description
icmp-type TYPE-NUM	ICMP message type, the range is 0 to 255
icmp-code CODE-NUM	ICMP message code, the range is 0 to 255

Reference “deny” command for the parameters.

Command Mode

IP ACL configuration

Default

None

Usage

This type of filter is used to reject IGMP packets.

Example

This example shows how to create a filter in IP ACL to deny any ICMP packets.

```
BTI SA-805,21,22(config-ip-acl)# 1 deny icmp any any
```

This example shows how to create a filter in IP ACL to deny the ICMP packets with the icmp-type 3 and icmp-code 3.

```
BTI SA-805,21,22(config-ip-acl)# 2 deny icmp any any icmp-type 3 icmp-code 3
```

Related Commands

no sequence-num

7.12 deny igmp

Use this command to reject IGMP packets matching the IP filter.

Command Syntax

```
(SEQUENCE-NUM | ) deny igmp ( SOURCE SOURCE-MASK | any | host SOURCE )
(DESTINATION DESTINATION-MASK | any | host DESTINATION) ( IGMP-TYPE | ) ( ip-
precedence PRECEDENCE | dscp DSCP | ) (non-fragment|first-fragment|non-or-first-fragment|
small-fragment|non-first-fragment) ( routed-packet | ) ( options | ) ( time-range TIME-RANGE-
NAME | )
```

Syntax	Description
<i>IGMP-TYPE</i>	IGMP type, including dvmrp, host-query, host-report, mtrace, mtrace-response, pim, precedence, trace, v2-leave, v2-report, v3-report

Syntax	Description
<i>SEQUENCE-NUM</i>	The sequence number of the filter in IP ACL. An auto-generated sequence number will be assigned to the filter if this field is not presented. the range is 1 to 131071
<i>SOURCE SOURCE-MASK</i>	The source IP address and its wildcard bits
any	Any source host
host <i>SOURCE</i>	The source IP address of a host
src-port <i>OPERATOR PORT</i>	Source port, the range is 0 to 65535. Including eq (equal to), lt (less than), gt (greater than), neq (not equal to) and range
<i>DESTINATION DESTINATION-MASK</i>	The destination IP address and its wildcard bits
any	Any destination host
host <i>DESTINATION</i>	The destination IP address of a host
dst-port <i>OPERATOR PORT</i>	Destination port, the range is 0 to 65535. Including eq (equal to), lt (less than), gt (greater than), neq (not equal to) and range
ip-precedence <i>PRECEDENCE</i>	Match packets with given precedence value, the range is 0 to 7
dscp <i>DSCP</i>	Match packets with given dscp value, the range is 0 to 63
established	Match established connections
match-any	Match any of the flag-name
match-all <i>FLAG-NAME</i>	Match all the flag-name, including ack, fin, psh, rst, syn and urg
non-fragment	Match packets with non fragment
first-fragment	Match packets with first fragment
non-or-first-fragment	Match packets with non first fragment
small-fragment	Match packets with small fragment

Syntax	Description
non-first-fragment	Match packets with non first fragment
routed-packet	Match routed packet
options	Match packets with IP options
time-range <i>TIME-RANGE-NAME</i>	The time-range used by the IP filter

Command Mode

IP ACL configuration

Default

None

Usage

This type of filter is used to reject IGMP packets.

Example

This example shows how to create a filter in IP ACL to deny any IGMP packets.

```
BTI SA-805,21,22(config-ip-acl)# 1 deny igmp any any
```

This example shows how to create a filter in IP ACL to deny the IGMP packets with the source IP address 1.1.1.1, any destination IP address and the igmp-type pim.

```
BTI SA-805,21,22(config-ip-acl)# 2 deny igmp host 1.1.1.1 any pim
```

Related Commands

nosequence-num

7.13 permit

Use this command to permit packets matching the IP filter.

Command Syntax

```
(SEQUENCE-NUM | ) permit (PROTO-NUM | any ) ( source SOURCE-MASK | any | host
SOURCE ) (destination DESTINATION-MASK | any | host DESTINATION) ( ip-precedence
PRECEDENCE | dscp DSCP | ) (non-fragment|first-fragment|non-or-first-fragment|small-
fragment|non-first-fragment) ( routed-packet | ) ( options | ) ( time-range TIME-RANGE-NAME
| )
```

Syntax	Description
<i>SEQUENCE-NUM</i>	The sequence number of the filter in IP ACL. An auto-generated sequence number will be assigned to the filter if this field is not presented. the range is 1 to 131071
<i>SOURCE SOURCE-MASK</i>	The source IP address and its wildcard bits
any	Any source host
host <i>SOURCE</i>	The source IP address of a host
src-port <i>OPERATOR PORT</i>	Source port, the range is 0 to 65535. Including eq (equal to), lt (less than), gt (greater than), neq (not equal to) and range
<i>DESTINATION DESTINATION-MASK</i>	The destination IP address and its wildcard bits
any	Any destination host
host <i>DESTINATION</i>	The destination IP address of a host
dst-port <i>OPERATOR PORT</i>	Destination port, the range is 0 to 65535. Including eq (equal to), lt (less than), gt (greater than), neq (not equal to) and range
ip-precedence <i>PRECEDENCE</i>	Match packets with given precedence value, the range is 0 to 7
dscp <i>DSCP</i>	Match packets with given dscp value, the range is 0 to 63
established	Match established connections
match-any	Match any of the flag-name
match-all <i>FLAG-NAME</i>	Match all the flag-name, including ack, fin, psh, rst, syn and urg
non-fragment	Match packets with non fragment
first-fragment	Match packets with first fragment
non-or-first-fragment	Match packets with non first fragment
small-fragment	Match packets with small fragment
non-first-fragment	Match packets with non first fragment
routed-packet	Match routed packet
options	Match packets with IP options
time-range <i>TIME-RANGE-NAME</i>	The time-range used by the IP filter

Command Mode

IP ACL configuration

Default

None

Usage

Note the following wildcard bits example: If 10.10.10.0 0.0.0.255 is provisioned the ip addresses from 10.10.10.0 to 10.10.10.255 are matched.

An auto-generated sequence number will be assigned to the filter if the sequence-num field is not presented. The auto-generated sequence number is incremented by 10 on the maximum existing sequence number in the IP ACL. i.e. when the maximum existing sequence number is 105, the sequence number of subsequent created IP filter is 115.

Example

This example shows how to create a filter in IP ACL to permit any IP packets.

```
BTI SA-805,21,22(config-ip-acl)# 10 permit any any any
```

This example shows how to create a filter in IP ACL to permit the fragment packets with the source IP address 1.1.1.1 and any destination IP address.

```
BTI SA-805,21,22(config-ip-acl)# 20 permit tcp host 1.1.1.1 any fragments
```

This example shows how to create a filter in IP ACL to permit any routed packets.

```
BTI SA-805,21,22(config-ip-acl)# 30 permit any any any routed-packet
```

Related Commands

nosequence-num

7.14 permit tcp

Use this command to permit TCP packets matching the IP filter.

Command Syntax

```
(SEQUENCE-NUM | ) permit tcp (source SOURCE-MASK | any | host SOURCE ) ( src-port
OPERATOR PORT | )(DESTINATION DESTINATION-MASK | any | host DESTINATION)
( dst-port OPERATOR PORT | ) ( ip-precedence PRECEDENCE | dscp DSCP | ) ( established |
( match-any | match-all FLAG-NAME | ) ) ( non-fragment|first-fragment|non-or-first-fragment|
small-fragment|non-first-fragment) ( routed-packet | ) ( options | ) ( time-range TIME-RANGE-
NAME | )
```

Syntax	Description
<i>SEQUENCE-NUM</i>	The sequence number of the filter in IP ACL. An auto-generated sequence number will be assigned to the filter if this field is not presented. the range is 1 to 131071
<i>SOURCE SOURCE-MASK</i>	The source IP address and its wildcard bits
any	Any source host
host <i>SOURCE</i>	The source IP address of a host
src-port <i>OPERATOR PORT</i>	Source port, the range is 0 to 65535. Including eq (equal to), lt (less than), gt (greater than), neq (not equal to) and range
<i>DESTINATION DESTINATION-MASK</i>	The destination IP address and its wildcard bits
any	Any destination host
host <i>DESTINATION</i>	The destination IP address of a host
dst-port <i>OPERATOR PORT</i>	Destination port, the range is 0 to 65535. Including eq (equal to), lt (less than), gt (greater than), neq (not equal to) and range
ip-precedence <i>PRECEDENCE</i>	Match packets with given precedence value, the range is 0 to 7
dscp <i>DSCP</i>	Match packets with given dscp value, the range is 0 to 63
established	Match established connections
match-any	Match any of the flag-name
match-all <i>FLAG-NAME</i>	Match all the flag-name, including ack, fin, psh, rst, syn and urg
non-fragment	Match packets with non fragment
first-fragment	Match packets with first fragment
non-or-first-fragment	Match packets with non first fragment
small-fragment	Match packets with small fragment
non-first-fragment	Match packets with non first fragment
routed-packet	Match routed packet
options	Match packets with IP options
time-range <i>TIME-RANGE-NAME</i>	The time-range used by the IP filter

Command Mode

IP ACL configuration

Default

None

Usage

The fragments will be invalid when the layer 4 information is specified (i.e. src-port).

Example

This example shows how to create a filter in IP ACL to permit any TCP packets.

```
BTI SA-805,21,22(config-ip-acl)# 10 permit tcp any any
```

This example shows how to create a filter in IP ACL to permit the TCP packets with the source IP address 1.1.1.1, and source port ranges from 0 to 100.

```
BTI SA-805,21,22(config-ip-acl)# 20 permit tcp host 1.1.1.1 src-port range 0 100 any
```

This example shows how to create a filter in IP ACL to permit any TCP packets in established TCP streams.

```
BTI SA-805,21,22(config-ip-acl)# 30 permit tcp any any established
```

This example shows how to create a filter in IP ACL to permit the TCP ACK packets with the source IP address 10.10.10.0.

```
BTI SA-805,21,22(config-ip-acl)# 4 permit tcp 10.10.10.0 0.0.0.0 any match-any ack
```

Related Commands

nosequence-num

7.15 permit udp

Use this command to permit UDP packets matching the the ACL filter.

Command Syntax

(SEQUENCE-NUM |) permit udp (source SOURCE-MASK | any | host SOURCE) (src-port OPERATOR PORT |)(destination DESTINATION-MASK | any | host DESTINATION) (dst-port OPERATOR PORT |) (ip-precedence PRECEDENCE | dscp DSCP |) (non-fragment|first-fragment|non-or-first-fragment|small-fragment|non-first-fragment) (routed-packet |) (options |) (time-range TIME-RANGE-NAME |)

Syntax	Description
<i>SEQUENCE-NUM</i>	The sequence number of the filter in IP ACL. An auto-generated sequence number will be assigned to the filter if this field is not presented. the range is 1 to 131071
<i>SOURCE SOURCE-MASK</i>	The source IP address and its wildcard bits
any	Any source host
host <i>SOURCE</i>	The source IP address of a host
src-port <i>OPERATOR PORT</i>	Source port, the range is 0 to 65535. Including eq (equal to), lt (less than), gt (greater than), neq (not equal to) and range
<i>DESTINATION DESTINATION-MASK</i>	The destination IP address and its wildcard bits
any	Any destination host
host <i>DESTINATION</i>	The destination IP address of a host
dst-port <i>OPERATOR PORT</i>	Destination port, the range is 0 to 65535. Including eq (equal to), lt (less than), gt (greater than), neq (not equal to) and range
ip-precedence <i>PRECEDENCE</i>	Match packets with given precedence value, the range is 0 to 7
dscp <i>DSCP</i>	Match packets with given dscp value, the range is 0 to 63
established	Match established connections
match-any	Match any of the flag-name
match-all <i>FLAG-NAME</i>	Match all the flag-name, including ack, fin, psh, rst, syn and urg
non-fragment	Match packets with non fragment
first-fragment	Match packets with first fragment
non-or-first-fragment	Match packets with non first fragment
small-fragment	Match packets with small fragment
non-first-fragment	Match packets with non first fragment
routed-packet	Match routed packet
options	Match packets with IP options
time-range <i>TIME-RANGE-NAME</i>	The time-range used by the IP filter

Command Mode

IP ACL Configuration

Default

None

Usage

The fragments will be invalid when the layer 4 information is specified (i.e. src-port).

Example

This example shows how to create a filter in IP ACL to deny any UDP packets.

```
BTI SA-805,21,22(config-ip-acl)# 1 permit udp any any
```

This example shows how to create a filter in IP ACL to deny the UDP packets with the source IP address 1.1.1.1, source port 10, and destination port less than 2000.

```
BTI SA-805,21,22(config-ip-acl)# 2 permit udp host 1.1.1.1 src-port eq 10 any  
dst-port lt 2000
```

Related Commands

nosequence-num

7.16 permit icmp

Use this command to permit ICMP packets matching the IP filter.

Command Syntax

```
(SEQUENCE-NUM | ) permit icmp (source SOURCE-MASK | any | host SOURCE )
(destination DESTINATION-MASK | any | host DESTINATION ) ( icmp-type TYPE-NUM
( icmp-code CODE-NUM | ) | ) ( ip-precedence PRECEDENCE | dscp DSCP | ) (non-fragment|
first-fragment|non-or-first-fragment|small-fragment|non-first-fragment) ( routed-packet | )
( options | ) ( time-range TIME-RANGE-NAME | )
```

Syntax	Description
<i>SEQUENCE-NUM</i>	The sequence number of the filter in IP ACL. An auto-generated sequence number will be assigned to the filter if this field is not presented. the range is 1 to 131071
<i>SOURCE SOURCE-MASK</i>	The source IP address and its wildcard bits
any	Any source host
host <i>SOURCE</i>	The source IP address of a host
src-port <i>OPERATOR PORT</i>	Source port, the range is 0 to 65535. Including eq (equal to), lt (less than), gt (greater than), neq (not equal to) and range
<i>DESTINATION DESTINATION-MASK</i>	The destination IP address and its wildcard bits
any	Any destination host
host <i>DESTINATION</i>	The destination IP address of a host
dst-port <i>OPERATOR PORT</i>	Destination port, the range is 0 to 65535. Including eq (equal to), lt (less than), gt (greater than), neq (not equal to) and range
ip-precedence <i>PRECEDENCE</i>	Match packets with given precedence value, the range is 0 to 7
dscp <i>DSCP</i>	Match packets with given dscp value, the range is 0 to 63
established	Match established connections
match-any	Match any of the flag-name
match-all <i>FLAG-NAME</i>	Match all the flag-name, including ack, fin, psh, rst, syn and urg
non-fragment	Match packets with non fragment
first-fragment	Match packets with first fragment
non-or-first-fragment	Match packets with non first fragment
small-fragment	Match packets with small fragment
non-first-fragment	Match packets with non first fragment
routed-packet	Match routed packet
options	Match packets with IP options
time-range <i>TIME-RANGE-NAME</i>	The time-range used by the IP filter

Command Mode

IP ACL Configuration

Default

None

Usage

This type of filter is used to permit ICMP packets.

Example

This example shows how to create a filter in IP ACL to permit any ICMP packets.

```
BTI SA-805,21,22(config-ip-acl)# 1 permit icmp any any
```

This example shows how to create a filter in IP ACL to permit the ICMP packets with the icmp-type 3 and icmp-code 3.

```
BTI SA-805,21,22(config-ip-acl)# 2 permit icmp any any icmp-type 3 icmp-code 3
```

Related Commands

deny icmp

no sequence-num

7.17 permit igmp

Use this command to permit IGMP packets matching the IP filter.

Command Syntax

(SEQUENCE-NUM |) permit igmp (SOURCE SOURCE-MASK | any | host SOURCE) (DESTINATION DESTINATION-MASK | any | host DESTINATION) (IGMP-TYPE |) (ip-precedence PRECEDENCE | dscp DSCP |) (non-fragment|first-fragment|non-or-first-fragment|small-fragment|non-first-fragment) (routed-packet |) (options |) (time-range TIME-RANGE-NAME |)

Syntax	Description
<i>SEQUENCE-NUM</i>	The sequence number of the filter in IP ACL. An auto-generated sequence number will be assigned to the filter if this field is not presented. the range is 1 to 131071
<i>SOURCE SOURCE-MASK</i>	The source IP address and its wildcard bits
any	Any source host
host <i>SOURCE</i>	The source IP address of a host
src-port <i>OPERATOR PORT</i>	Source port, the range is 0 to 65535. Including eq (equal to), lt (less than), gt (greater than), neq (not equal to) and range
<i>DESTINATION DESTINATION-MASK</i>	The destination IP address and its wildcard bits
any	Any destination host
host <i>DESTINATION</i>	The destination IP address of a host
dst-port <i>OPERATOR PORT</i>	Destination port, the range is 0 to 65535. Including eq (equal to), lt (less than), gt (greater than), neq (not equal to) and range
ip-precedence <i>PRECEDENCE</i>	Match packets with given precedence value, the range is 0 to 7
dscp <i>DSCP</i>	Match packets with given dscp value, the range is 0 to 63
established	Match established connections
match-any	Match any of the flag-name
match-all <i>FLAG-NAME</i>	Match all the flag-name, including ack, fin, psh, rst, syn and urg
non-fragment	Match packets with non fragment
first-fragment	Match packets with first fragment
non-or-first-fragment	Match packets with non first fragment
small-fragment	Match packets with small fragment
non-first-fragment	Match packets with non first fragment
routed-packet	Match routed packet
options	Match packets with IP options
time-range <i>TIME-RANGE-NAME</i>	The time-range used by the IP filter

Command Mode

IP ACL Configuration

Default

None

Usage

This type of filter is mostly used to permit IGMP packets.

Example

This example shows how to create a filter in IP ACL to permit any IGMP packets.

```
BTI SA-805,21,22(config-ip-acl)# 1 permit igmp any any
```

This example shows how to create a filter in IP ACL to permit the IGMP packets with the source IP address 1.1.1.1, any destination IP address and the igmp-type pim.

```
BTI SA-805,21,22(config-ip-acl)# 2 permit igmp host 1.1.1.1 any pim
```

Related Commands

nosequence-num

7.18 show access-list ip

Use this command to show the information of IP ACL.

Command Syntax

show access-list ip (ACL-NAME |)

Syntax	Description
ACL-NAME	The name of the IP ACL

Command Mode

Privileged EXEC

Default

None

Usage

None

Example

This example shows how to show the information of IP ACL.

```
BTI SA-805,21,22# show access-list ip
BTI SA-805,21,22 show access-list ip
ip access-list list_ipv4_1
  2 permit tcp host 1.1.1.1 any
  3 deny icmp any any
12 permit tcp any any
```

Related Commands

ip access-list

8.0 Quality of Service (QoS) Commands

This section covers the following topics :

- 8.1, “qos domain ”
- 8.2, “qos domain map cos-pri-color”
- 8.3, “qos domain <0-7> map exp-pri-color”
- 8.4, “qos domain (0-7) map ip-prec-pri-color”
- 8.5, “qos domain (0-7) map pri-color-cos”
- 8.6, “qos domain (0-7) map pri-color-dscp”
- 8.7, “qos domain (0-7) map pri-color-exp”
- 8.8, “ qos domain (0-7) cfi enable”
- 8.9, “show qos domain (0-7) map-table all”
- 8.10, “show qos domain (0-7) map-table egress”
- 8.11, “show qos domain (0-7) map-table ingress”
- 8.12, “show qos map-table priority-color-qid-tid”
- 8.13, “show qos map-table phb-priority-color”
- 8.14, “qos domain”
- 8.15, “cos”
- 8.16, “trust ”
- 8.17, “replace dscp-exp”
- 8.18, “queue class”
- 8.19, “queue random-detect”

- 8.20, “queue random-detect drop-probability”
- 8.21, “queue random-detect max-threshold”
- 8.22, “queue random-detect min-threshold”
- 8.23, “queue tail-drop threshold”
- 8.24, “queue drr-weight”
- 8.25, “clear qos queue statistics”
- 8.26, “shape average percent”
- 8.27, “shape average rate”
- 8.28, “queue shape average percent”
- 8.29, “queue shape average rate”
- 8.30, “aggregate-policer”
- 8.31, “class-map”
- 8.32, “match access-group”
- 8.33, “policy-map”
- 8.34, “class ”
- 8.35, “class class-default”
- 8.36, “trust (config-pmap-c mode)”
- 8.37, “set priority color”
- 8.38, “policer”
- 8.39, “policer-aggregate”
- 8.40, “redirect”
- 8.41, “monitor to session”
- 8.42, “statistics enable”
- 8.43, “port-policer”
- 8.44, “service-policy”
- 8.45, “qos policer flow-first”
- 8.46, “qos statistics policer”
- 8.47, “clear qos aggregate-policer statistics”
- 8.48, “clear qos policy-map statistics interface”
- 8.49, “clear qos port-policer statistics”
- 8.50, “show running-config policy-map”
- 8.51, “show policy-map”
- 8.52, “show policy-map statistics interface”

- 8.53, “show running-config class-map”
- 8.54, “show class-map”
- 8.55, “show qos aggregator-policer”
- 8.56, “show qos interface ”
- 8.57, “ipg policer enable”
- 8.58, “ipg shaping enable”

8.1 qos domain

Use this command to modify the dscp-priority-color or dscp-phb map for a particular QoS domain. To return to the default value, use the no form of this command. The command of dscp-phb is an alias command for dscp-pri-color.

Command Syntax

```
qos domain <0-7> map dscp-pri-color <0-63> to <0-63> {green|red|yellow}
```

```
qos domain <0-7> map dscp-phb <0-63> to {af11| af12| af13| af21| af22| af23| af31| af32| af33| af41| af42| af43| ef|df| cs1| cs2| cs3| cs4| cs5| cs6| cs7}
```

```
no qos domain <0-7> map dscp-pri-color (<0-63>)
```

<0-7>: QoS domain

<0-63>: DSCP value

green: outgoing color value: green

yellow: outgoing color value: yellow

red: outgoing color value: red

af11: Assured forwarding class 1, low drop precedence, PHB of (priority 2, color green)

af12: Assured forwarding class 1, medium drop precedence, PHB of (priority 2, color yellow)

af13: Assured forwarding class 1, high drop precedence, PHB of (priority 2, color red)

af21: Assured forwarding class 2, low drop precedence, PHB of (priority 3, color green)

af22: Assured forwarding class 2, medium drop precedence, PHB of (priority 3, color yellow)

af23: Assured forwarding class 2, high drop precedence, PHB of (priority 3, color red)

af31: Assured forwarding class 3, low drop precedence, PHB of (priority 4, color green)

af32: Assured forwarding class 3, medium drop precedence, PHB of (priority 4, color yellow)

af33: Assured forwarding class 3, high drop precedence, PHB of (priority 4, color red)

af41: Assured forwarding class 4, low drop precedence, PHB of (priority 5, color green)

af42: Assured forwarding class 4, medium drop precedence, PHB of (priority 5, color yellow)

af43: Assured forwarding class 4, high drop precedence, PHB of (priority 5, color red)

ef: Expedited forwarding, PHB of (priority 12, color green)

df: Default forwarding, PHB of (priority 1, color green)

cs1: Class selector 1, PHB of (priority 0, color green)

cs2: Class selector 2, PHB of (priority 6, color green)

cs3: Class selector 3, PHB of (priority 7, color green)

cs4: Class selector 4, PHB of (priority 8, color green)

cs5: Class selector 5, PHB of (priority 9, color green)

cs6: Class selector 6, PHB of (priority 10, color green)

cs7: Class selector 7, PHB of (priority 11, color green)

Command Mode

Global configuration

Usage

The default map-table for each QoS domain is as follow.

QoS DOMAIN 0, DSCP map to PRIORITY & COLOR:

DSCP : 0 1 2 3 4 5 6 7
priority: 1 1 1 1 1 1 1 1
color : green green green green green green green green
PHB : df df df df df df df df

DSCP : 8 9 10 11 12 13 14 15
priority: 0 1 2 1 2 1 2 1
color : green green green green yellow green red green
PHB : cs1 df af11 df af12 df af13 df

DSCP : 16 17 18 19 20 21 22 23
priority: 6 1 3 1 3 1 3 1
color : green green green green yellow green red green
PHB : cs2 df af21 df af22 df af23 df

DSCP : 24 25 26 27 28 29 30 31
priority: 7 1 4 1 4 1 4 1
color : green green green green yellow green red green
PHB : cs3 df af31 df af32 df af33 df

DSCP : 32 33 34 35 36 37 38 39
priority: 10 1 5 1 5 1 5 1
color : green green green green yellow green red green

PHB : cs4 df af41 df af42 df af43 df

DSCP : 40 41 42 43 44 45 46 47

priority: 11 1 1 1 1 1 12 1

color : green green green green green green green green

PHB : cs5 df df df df df ef df

DSCP : 48 49 50 51 52 53 54 55

priority: 8 1 1 1 1 1 1 1

color : green green green green green green green green

PHB : cs6 df df df df df df df

DSCP : 56 57 58 59 60 61 62 63

priority: 9 1 1 1 1 1 1 1

color : green green green green green green green green

PHB : cs7 df df df df df df df

Examples

This example shows how to modify dscp-priority-color map to map incoming dscp value 63 to outgoing priority value 63, and to set the color value green for domain 1.

```
BTI SA-805,21,22(config)# qos domain 1 map dscp-pri-color 63 to 63 green
```

This example shows how to return to the default value.

```
BTI SA-805,21,22(config)#no qos domain 1 map dscp-pri-color
```

This example shows how to modify dscp-phb map to map incoming dscp value 63 to outgoing phb ef (same as priority 12, color green) for domain 1.

```
BTI SA-805,21,22(config)# qos domain 1 map dscp-phb 63 to ef
```

Related Commands

show qos domain <0-7> map-table

8.2 qos domain map cos-pri-color

Use this command to modify the COS-to-Priority/Color or COS-to-PHB map. To return to the default value, use the no form of this command. The command of cos-phb is an alias command for cos-pri-color.

Command Syntax

```
qos domain <0-7> map cos-pri-color cos <0-7> to <0-63> {green|red|yellow}
```

```
qos domain <0-7> map cos-phb cos <0-7> to {af11| af12| af13| af21| af22| af23| af31| af32| af33|
af41| af42| af43| ef|df| cs1| cs2| cs3| cs4| cs5| cs6| cs7}
```

```
no qos domain <0-7> map cos-pri-color (<0-7>)
```

<0-7>: QoS domain

<0-7>: selects which cos will be mapped

<0-63>: priority value

green: outgoing color value: green

yellow: outgoing color value: yellow

red: outgoing color value: red

af11: Assured forwarding class 1, low drop precedence, PHB of (priority 2, color green)

af12: Assured forwarding class 1, medium drop precedence, PHB of (priority 2, color yellow)

af13: Assured forwarding class 1, high drop precedence, PHB of (priority 2, color red)

af21: Assured forwarding class 2, low drop precedence, PHB of (priority 3, color green)

af22: Assured forwarding class 2, medium drop precedence, PHB of (priority 3, color yellow)

af23: Assured forwarding class 2, high drop precedence, PHB of (priority 3, color red)

af31: Assured forwarding class 3, low drop precedence, PHB of (priority 4, color green)

af32: Assured forwarding class 3, medium drop precedence, PHB of (priority 4, color yellow)

af33: Assured forwarding class 3, high drop precedence, PHB of (priority 4, color red)

af41: Assured forwarding class 4, low drop precedence, PHB of (priority 5, color green)

af42: Assured forwarding class 4, medium drop precedence, PHB of (priority 5, color yellow)

af43: Assured forwarding class 4, high drop precedence, PHB of (priority 5, color red)

ef: Expedited forwarding, PHB of (priority 12, color green)

df: Default forwarding, PHB of (priority 1, color green)

cs1: Class selector 1, PHB of (priority 0, color green)

cs2: Class selector 2, PHB of (priority 6, color green)

cs3: Class selector 3, PHB of (priority 7, color green)

cs4: Class selector 4, PHB of (priority 8, color green)
cs5: Class selector 5, PHB of (priority 9, color green)
cs6: Class selector 6, PHB of (priority 10, color green)
cs7: Class selector 7, PHB of (priority 11, color green)

Command Mode

Global configuration

Usage

The default map-table for each QoS domain is as follow.

QoS DOMAIN 0, CFI disable, COS map to PRIORITY & COLOR:

COS : 0 1 2 3 4 5 6 7
priority: 1 2 3 4 5 12 8 9
color : green green green green green green green green
PHB : df af11 af21 af31 af41 ef cs6 cs7

Examples

This example shows how to modify the cos-to-priority/color map to map cos 7 to outgoing priority value 63, and to set the color value green for a QoS domain.

```
BTI SA-805,21,22(config)# qos domain 1 map cos-pri-color cos 7 to 63 green
```

This example shows how to return to the default value.

```
BTI SA-805,21,22(config)#no qos domain 1 map cos-pri-color
```

This example shows how to modify the cos-to-phb map to map cos 5 to outgoing phb af11 for a QoS domain.

```
BTI SA-805,21,22(config)# qos domain 1 map cos-phb cos 5 to af11
```

Related Commands

show qos domain <0-7> map-table

8.3 qos domain <0-7> map exp-pri-color

Use this command to modify the exp-to-priority/color or exp-to-phb map. To return to the default value, use the no form of this command. The command of exp-phb is an alias command for exp-pri-color.

Command Syntax

```
qos domain <0-7> map exp-pri-color exp <0-7> to <0-63> {green|red|yellow}
```

```
qos domain <0-7> map exp-phb exp <0-7> to {af11| af12| af13| af21| af22| af23| af31| af32| af33| af41| af42| af43| ef|df| cs1| cs2| cs3| cs4| cs5| cs6| cs7}
```

```
no qos domain <0-7> map exp-pri-color (<0-7>)
```

<0-7>: QoS domain

<0-7>: select which exp will be mapped

<0-63>: priority value

green: outgoing color value: green

yellow: outgoing color value: yellow

red: outgoing color value: red

af11: Assured forwarding class 1, low drop precedence, PHB of (priority 2, color green)

af12: Assured forwarding class 1, medium drop precedence, PHB of (priority 2, color yellow)

af13: Assured forwarding class 1, high drop precedence, PHB of (priority 2, color red)

af21: Assured forwarding class 2, low drop precedence, PHB of (priority 3, color green)

af22: Assured forwarding class 2, medium drop precedence, PHB of (priority 3, color yellow)

af23: Assured forwarding class 2, high drop precedence, PHB of (priority 3, color red)

af31: Assured forwarding class 3, low drop precedence, PHB of (priority 4, color green)

af32: Assured forwarding class 3, medium drop precedence, PHB of (priority 4, color yellow)

af33: Assured forwarding class 3, high drop precedence, PHB of (priority 4, color red)

af41: Assured forwarding class 4, low drop precedence, PHB of (priority 5, color green)

af42: Assured forwarding class 4, medium drop precedence, PHB of (priority 5, color yellow)

af43: Assured forwarding class 4, high drop precedence, PHB of (priority 5, color red)

ef: Expedited forwarding, PHB of (priority 12, color green)

df: Default forwarding, PHB of (priority 1, color green)

cs1: Class selector 1, PHB of (priority 0, color green)

cs2: Class selector 2, PHB of (priority 6, color green)

cs3: Class selector 3, PHB of (priority 7, color green)

cs4: Class selector 4, PHB of (priority 8, color green)
cs5: Class selector 5, PHB of (priority 9, color green)
cs6: Class selector 6, PHB of (priority 10, color green)
cs7: Class selector 7, PHB of (priority 11, color green)

Command Mode

Global configuration

Usage

The default map-table for each QoS domain is as follow.

QoS DOMAIN 0, EXP map to PRIORITY & COLOR:

EXP : 0 1 2 3 4 5 6 7
priority: 1 2 3 4 5 12 8 9
color : green green green green green green green green
PHB : df af11 af21 af31 af41 ef cs6 cs7

Examples

This example shows how to modify the exp-to-priority/color map to map exp 7 to outgoing priority value 63, and to set the color value green for a QoS domain.

```
BTI SA-805,21,22(config)# qos domain 1 map exp-pri-color exp 7 to 63 green
```

This example shows how to return to the default value.

```
BTI SA-805,21,22(config)# no qos domain 1 map exp-pri-color
```

This example shows how to modify the exp-to-phb map to map exp 3 to outgoing phb af22 for a QoS domain.

```
BTI SA-805,21,22(config)# qos domain 1 map exp-phb exp 7 to af22
```

Related Commands

show qos domain <0-7> map-table

8.4 qos domain (0-7) map ip-prec-pri-color

Use this command to modify the IP Precedence to Pri/Color for PHB map. To return to the default value, use the no form of this command. The command of ip-prec-phb is an alias command for ip-prec-pri-color.

Command Syntax

```
qos domain (0-7) map ip-prec-pri-color ip-prec (0-7) to (0-63) {green|red|yellow}
```

```
qos domain (0-7) map ip-prec-pri-color ip-prec (0-7) to {af11| af12| af13| af21| af22| af23| af31| af32| af33| af41| af42| af43| ef|df| cs1| cs2| cs3| cs4| cs5| cs6| cs7}
```

```
no qos domain (0-7) map ip-prec-pri-color (0-7)
```

(0-7): QoS domain

(0-7): ip precedence

(0-63): Priority value

green: outgoing color value: green

yellow: outgoing color value: yellow

red: outgoing color value: red

af11: Assured forwarding class 1, low drop precedence, PHB of (priority 2, color green)

af12: Assured forwarding class 1, medium drop precedence, PHB of (priority 2, color yellow)

af13: Assured forwarding class 1, high drop precedence, PHB of (priority 2, color red)

af21: Assured forwarding class 2, low drop precedence, PHB of (priority 3, color green)

af22: Assured forwarding class 2, medium drop precedence, PHB of (priority 3, color yellow)

af23: Assured forwarding class 2, high drop precedence, PHB of (priority 3, color red)

af31: Assured forwarding class 3, low drop precedence, PHB of (priority 4, color green)

af32: Assured forwarding class 3, medium drop precedence, PHB of (priority 4, color yellow)

af33: Assured forwarding class 3, high drop precedence, PHB of (priority 4, color red)

af41: Assured forwarding class 4, low drop precedence, PHB of (priority 5, color green)

af42: Assured forwarding class 4, medium drop precedence, PHB of (priority 5, color yellow)

af43: Assured forwarding class 4, high drop precedence, PHB of (priority 5, color red)

ef: Expedited forwarding, PHB of (priority 12, color green)

df: Default forwarding, PHB of (priority 1, color green)

cs1: Class selector 1, PHB of (priority 0, color green)

cs2: Class selector 2, PHB of (priority 6, color green)

cs3: Class selector 3, PHB of (priority 7, color green)

cs4: Class selector 4, PHB of (priority 8, color green)
cs5: Class selector 5, PHB of (priority 9, color green)
cs6: Class selector 6, PHB of (priority 10, color green)
cs7: Class selector 7, PHB of (priority 11, color green)

Command Mode

Global configuration

Usage

The default map-table for each QoS domain is as follow.

QoS DOMAIN 0, IP PRECEDENCE map to PRIORITY & COLOR:

IP-prec : 0 1 2 3 4 5 6 7
priority: 1 0 6 7 10 11 8 9
color : green green green green green green green green
PHB : df cs1 cs2 cs3 cs4 cs5 cs6 cs7

Examples

This example shows how to modify the ip precedence to pri/color map to map ip prec 7 to outgoing priority value 63, and to set the color value green for a QoS domain.

```
BTI SA-805,21,22(config)# qos domain 1 map ip-prec-pri-color ip-prec 7 to 63  
green
```

This example shows how to return to the default value.

```
BTI SA-805,21,22(config)# no qos domain 1 map ip-prec-pri-color
```

This example shows how to modify the ip precedence to phb map to map ip prec 3 to outgoing phb cs3 for a QoS domain.

```
BTI SA-805,21,22(config)# qos domain 1 map ip-prec-phb ip-prec 7 to cs3
```

Related Commands

show qos domain <0-7> map-table

8.5 qos domain (0-7) map pri-color-cos

Use this command to modify the priority/color or PHB to CoS map. To return to the default value, use the no form of this command. The command of phb-cos is a alias command for pri-color-cos.

Command Syntax

```
qos domain (0-7) map pri-color-cos (0-63) { green|red|yellow } to (0-7)
```

```
qos domain (0-7) map phb-cos [af11] [af12] [af13] [af21] [af22] [af23] [af31] [af32] [af33]
[af41] [af42] [ af43] [ ef|df] [ cs1] [ cs2] [ cs3] [ cs4] [ cs5] [ cs6] [ cs7] to (0-7)
```

```
no qos domain (0-7) map pri-color-cos ((0-63) (green|red|yellow))
```

(0-7): QoS domain

(0-63): priority value

green: outgoing color value: green

yellow: outgoing color value: yellow

red: outgoing color value: red

(0-7): cos value

af11: Assured forwarding class 1, low drop precedence, PHB of (priority 2, color green)

af12: Assured forwarding class 1, medium drop precedence, PHB of (priority 2, color yellow)

af13: Assured forwarding class 1, high drop precedence, PHB of (priority 2, color red)

af21: Assured forwarding class 2, low drop precedence, PHB of (priority 3, color green)

af22: Assured forwarding class 2, medium drop precedence, PHB of (priority 3, color yellow)

af23: Assured forwarding class 2, high drop precedence, PHB of (priority 3, color red)

af31: Assured forwarding class 3, low drop precedence, PHB of (priority 4, color green)

af32: Assured forwarding class 3, medium drop precedence, PHB of (priority 4, color yellow)

af33: Assured forwarding class 3, high drop precedence, PHB of (priority 4, color red)

af41: Assured forwarding class 4, low drop precedence, PHB of (priority 5, color green)

af42: Assured forwarding class 4, medium drop precedence, PHB of (priority 5, color yellow)

af43: Assured forwarding class 4, high drop precedence, PHB of (priority 5, color red)

ef: Expedited forwarding, PHB of (priority 12, color green)

df: Default forwarding, PHB of (priority 1, color green)

cs1: Class selector 1, PHB of (priority 0, color green)

cs2: Class selector 2, PHB of (priority 6, color green)

cs3: Class selector 3, PHB of (priority 7, color green)

cs4: Class selector 4, PHB of (priority 8, color green)
cs5: Class selector 5, PHB of (priority 9, color green)
cs6: Class selector 6, PHB of (priority 10, color green)
cs7: Class selector 7, PHB of (priority 11, color green)

Command Mode

Global configuration

Usage

The default map-table for each QoS domain is as follow.

QoS DOMAIN 0, PRIORITY & COLOR map to COS:

| COLOR:

| none red yellow green

PRIORITY: 0 | 0 0 0 0

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 | 1 1 1 1

.....

55 | 6 6 6 6

56 | 7 7 7 7

57 | 7 7 7 7

58 | 7 7 7 7

59 | 7 7 7 7

60 | 7 7 7 7

61 | 7 7 7 7

62 | 7 7 7 7

63 | 7 7 7 7

COS value

QoS Domain 0, PHB map to CoS/EXP/DSCP:

PHB Name | CoS

cs1 | 0

df | 0

af11 | 1

af12 | 1

af13 | 1

af21 | 2

af22 | 2

af23 | 2

af31 | 3

af32 | 3

af33 | 3

af41 | 4

af42 | 4

af43 | 4

cs2 | 6

cs3 | 6

cs6 | 6

cs7 | 7

cs4 | 5

cs5 | 5

ef | 5

Examples

This example shows how to modify the priority/color to CoS map to map outgoing priority value 63 to the color value green and cos value 7.

```
BTI SA-805,21,22(config)# qos domain 1 map pri-color-cos 63 green to 7
```

This example shows how to return to the default value.

```
BTI SA-805,21,22(config)# no qos domain 1 map pri-color-cos
```

This example shows how to modify the PHB to CoS map to map outgoing PHB af33 to cos value 7.

```
BTI SA-805,21,22(config)# qos domain 0 map phb-cos af11 to 5
```

Related Commands

show qos domain (0-7) map-table

8.6 qos domain (0-7) map pri-color-dscp

Use this command to modify the priority/color or PHB to DSCP map. To return to the default value, use the no form of this command. The command of phb-dscp is a alias command for pri-color-dscp.

Command Syntax

qos domain (0-7) map pri-color-dscp (0-63) { green|red|yellow } to (0-63)

qos domain (0-7) map phb-dscp [af11] [af12] [af13] [af21] [af22] [af23] [af31] [af32] [af33] [af41] [af42] [af43] [ef|df] [cs1] [cs2] [cs3] [cs4] [cs5] [cs6] [cs7] to (0-63)

no qos domain (0-7) map pri-color-dscp ((0-63) (green|red|yellow))

(0-7): QoS domain

(0-63): priority value

green: outgoing color value: green

yellow: outgoing color value: yellow

red: outgoing color value: red

(0-63): dscp value

af11: Assured forwarding class 1, low drop precedence, PHB of (priority 2, color green)

af12: Assured forwarding class 1, medium drop precedence, PHB of (priority 2, color yellow)

af13: Assured forwarding class 1, high drop precedence, PHB of (priority 2, color red)

af21: Assured forwarding class 2, low drop precedence, PHB of (priority 3, color green)

af22: Assured forwarding class 2, medium drop precedence, PHB of (priority 3, color yellow)

af23: Assured forwarding class 2, high drop precedence, PHB of (priority 3, color red)

af31: Assured forwarding class 3, low drop precedence, PHB of (priority 4, color green)

af32: Assured forwarding class 3, medium drop precedence, PHB of (priority 4, color yellow)

af33: Assured forwarding class 3, high drop precedence, PHB of (priority 4, color red)

af41: Assured forwarding class 4, low drop precedence, PHB of (priority 5, color green)

af42: Assured forwarding class 4, medium drop precedence, PHB of (priority 5, color yellow)

af43: Assured forwarding class 4, high drop precedence, PHB of (priority 5, color red)

ef: Expedited forwarding, PHB of (priority 12, color green)

df: Default forwarding, PHB of (priority 1, color green)

cs1: Class selector 1, PHB of (priority 0, color green)

cs2: Class selector 2, PHB of (priority 6, color green)

cs3: Class selector 3, PHB of (priority 7, color green)

cs4: Class selector 4, PHB of (priority 8, color green)

cs5: Class selector 5, PHB of (priority 9, color green)

cs6: Class selector 6, PHB of (priority 10, color green)

cs7: Class selector 7, PHB of (priority 11, color green)

Command Mode

Global configuration

Usage

The default map-table for each QoS domain is as follow.

QoS DOMAIN 0, PRIORITY & COLOR map to DSCP:

| COLOR:

| none red yellow green

PRIORITY: 0 | 0 0 0 0

1 | 1 1 1 1

2 | 2 2 2 2

3 | 3 3 3 3

4 | 4 4 4 4

5 | 5 5 5 5

6 | 6 6 6 6

7 | 7 7 7 7

8 | 8 8 8 8

.....

55 | 55 55 55 55

56 | 56 56 56 56

57 | 57 57 57 57

58 | 58 58 58 58

59 | 59 59 59 59

60 | 60 60 60 60

61 | 61 61 61 61

62 | 62 62 62 62

63 | 63 63 63 63 DSCP value

QoS Domain 0, PHB map to CoS/EXP/DSCP:

PHB Name | DSCP

cs1 | 8

df | 0

af11 | 10

af12 | 12

af13 | 14

af21 | 18

af22 | 20

af23 | 22

af31 | 26

af32 | 28

af33 | 30

af41 | 34

af42 | 36

af43 | 38

cs2 | 16

cs3 | 24

cs6 | 48

cs7 | 56

cs4 | 32

cs5 | 40

ef | 46

Examples

This example shows how to modify the priority/color to DSCP map to map priority value 63 and the color value green to dscp 63.

```
BTI SA-805,21,22(config)# qos domain 1 map pri-color-dscp 63 green to 63
```

This example shows how to return to the default value.

```
BTI SA-805,21,22(config)# no qos domain 1 map pri-color-dscp
```

This example shows how to modify the PHB to DSCP map to map PHB ef to dscp 63.

```
BTI SA-805,21,22(config)# qos domain 0 map phb-dscp ef to 63
```

Related Commands

show qos domain (0-7) map-table

8.7 qos domain (0-7) map pri-color-exp

Use this command to modify the priority/color or PHB to EXP map. To return to the default value, use the no form of this command. The command of phb-exp is a alias command for pri-color-exp.

Command Syntax

```
qos domain (0-7) map pri-color-exp (0-63) {green|red|yellow} to (0-7)
```

```
qos domain (0-7) map phb-exp [af11] [af12] [af13] [af21] [af22] [af23] [af31] [af32] [af33]  
[af41] [af42] [ af43] [ ef|df] [ cs1] [ cs2] [ cs3] [ cs4] [ cs5] [ cs6] [ cs7] to (0-63)
```

```
no qos domain (0-7) map pri-color-exp ((0-63) (green|red|yellow)
```

(0-7): QoS domain

(0-63): priority value

green: outgoing color value: green

yellow: outgoing color value: yellow

red: outgoing color value: red

(0-7):exp value

af11: Assured forwarding class 1, low drop precedence, PHB of (priority 2, color green)

af12: Assured forwarding class 1, medium drop precedence, PHB of (priority 2, color yellow)

af13: Assured forwarding class 1, high drop precedence, PHB of (priority 2, color red)

af21: Assured forwarding class 2, low drop precedence, PHB of (priority 3, color green)

af22: Assured forwarding class 2, medium drop precedence, PHB of (priority 3, color yellow)

af23: Assured forwarding class 2, high drop precedence, PHB of (priority 3, color red)

af31: Assured forwarding class 3, low drop precedence, PHB of (priority 4, color green)

af32: Assured forwarding class 3, medium drop precedence, PHB of (priority 4, color yellow)

af33: Assured forwarding class 3, high drop precedence, PHB of (priority 4, color red)

af41: Assured forwarding class 4, low drop precedence, PHB of (priority 5, color green)

af42: Assured forwarding class 4, medium drop precedence, PHB of (priority 5, color yellow)

af43: Assured forwarding class 4, high drop precedence, PHB of (priority 5, color red)

ef: Expedited forwarding, PHB of (priority 12, color green)

df: Default forwarding, PHB of (priority 1, color green)

cs1: Class selector 1, PHB of (priority 0, color green)

cs2: Class selector 2, PHB of (priority 6, color green)

cs3: Class selector 3, PHB of (priority 7, color green)

cs4: Class selector 4, PHB of (priority 8, color green)
cs5: Class selector 5, PHB of (priority 9, color green)
cs6: Class selector 6, PHB of (priority 10, color green)
cs7: Class selector 7, PHB of (priority 11, color green)

Command Mode

Global configuration

Usage

The default map-table for each QoS domain is as follow.

QoS DOMAIN 0, PRIORITY & COLOR map to EXP:

| COLOR:

| none red yellow green

PRIORITY: 0 | 0 0 0 0

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 | 1 1 1 1

.....

55 | 6 6 6 6

56 | 7 7 7 7

57 | 7 7 7 7

58 | 7 7 7 7

59 | 7 7 7 7

60 | 7 7 7 7

61 | 7 7 7 7

62 | 7 7 7 7

63 | 7 7 7 7 EXP value

QoS Domain 0, PHB map to CoS/EXP/DSCP:

PHB Name | EXP

cs1 | 0

df | 0

af11 | 1

af12 | 1

af13 | 1

af21 | 2

af22 | 2

af23 | 2

af31 | 3

af32 | 3

af33 | 3

af41 | 4

af42 | 4

af43 | 4

cs2 | 6

cs3 | 6

cs6 | 6

cs7 | 7

cs4 | 5

cs5 | 5

ef | 5

Examples

This example shows how to modify the priority/color to EXP map to map priority value 32 and the color value green to exp 4.

```
BTI SA-805,21,22(config)# qos domain 1 map pri-color-exp 32 green to 4
```

This example shows how to return to the default value.

```
BTI SA-805,21,22(config)# no qos domain 1 map pri-color-exp
```

This example shows how to modify the PHB to EXP map to map PHB af33 to exp 2.

```
BTI SA-805,21,22(config)# qos domain 1 map phb-exp af33 to 2
```

Related Commands

show qos domain (0-7) map-table

8.8 qos domain (0-7) cfi enable

Use this command to enable canonical format indicator drop in the priority/color or PHB to COS map and COS to PHB or priority/color map. To return to the default value, use the no form of this command.

Command Syntax

qos domain (0-7) cfi enable

no qos domain (0-7) cfi enable

(0-7): QoS domain

Command Mode

Global configuration

Usage

The default canonical format indicator drop for each QoS domain is disabled.

Examples

This example shows how to enable canonical format indicator drop in the priority/color or PHB to COS map and COS to PHB or priority/color map.

```
BTI SA-805,21,22(config)# qos domain 1 cfi enable
```

This example shows how to return to the default value.

```
BTI SA-805,21,22(config)# no qos domain 1 cfi enable
```

Related Commands

show qos domain (0-7) map-table

8.9 show qos domain (0-7) map-table all

Use this command to display both the ingress and egress information of the QoS map-table.

Command Syntax

show qos domain (0-7) map-table all {default |running}

(0-7): QoS domain

default: default configuration

running: running configuration

Command Mode

Privileged EXEC

Examples

This example shows how to display the default information of map-table in QoS domain 1.

```
BTI SA-805,21,22# show qos domain 1 map-table all default
```

This example shows how to display the running information of map-table in QoS domain 1.

```
BTI SA-805,21,22# show qos domain 1 map-table all running
```

Related Commands

show qos domain (0-7) map-table egress

show qos domain (0-7) map-table ingress

8.10 show qos domain (0-7) map-table egress

Use this command to display the egress information of qos map-table.

Command Syntax

show qos domain (0-7) map-table egress {all |priority-color-cos | priority-color-dscp |priority-color-exp |phb-cos |phb-dscp |phb-exp |phb-all} {default |running}

(0-7): QoS domain

all: all egress map table

priority-color-cos: priority and color map to cos

priority-color-dscp: priority and color map to dscp

priority-color-exp: priority and color map to exp

phb-cos: PHB map to cos

phb-dscp: PHB map to dscp

phb-exp: PHB map to exp

default: default configuration

running: running configuration

Command Mode

Privilege EXEC

Examples

This example shows how to display the egress information of qos map-table.

```
BTI SA-805,21,22#show qos domain 1 map-table egress all default
```

Related Commands

show qos domain (0-7) map-table all

show qos domain (0-7) map-table ingress

8.11 show qos domain (0-7) map-table ingress

Use this command to display the ingress information of qos map-table.

Command Syntax

show qos domain (0-7) map-table ingress (all |cos-priority-color |dscp-priority-color |exp-priority-color |ip-prec-priority-color) (default |running)

(0-7): QoS domain

all: All ingress map table

cos-priority-color: cos map to priority and color

dscp-priority-color: dscp map to priority and color

exp-priority-color: exp map to priority and color

ip-prec-priority-color: ip precedence map to priority and color

default: default configuration

running: running configuration

Command Mode

Privileged EXEC

Examples

This example shows how to display the ingress information of qos map-table.

```
BTI SA-805,21,22# show qos domain 1 map-table ingress all default
```

Related Commands

show qos domain (0-7) map-table all

show qos domain (0-7) map-table egress

8.12 show qos map-table priority-color-qid-tid

Use this command to display mapping between priority/color and queueId/threshold of qos map-table.

Command Syntax

show qos map-table priority-color-qid-tid

show qos map-table phb-qid-tid

priority-color-qid-tid: priority and color map to queueId and threshold

phb-qid-tid: phb map to queueId and threshold

default: default configuration

running: running configuration

Command Mode

Privileged EXEC

Examples

This example shows how to display the default map for priority and color to queueId and threshold.

```
BTI SA-805,21,22# show qos map-table priority-color-qid-tid
```

This example shows how to display the default map for phb to queueId and threshold.

```
BTI SA-805,21,22# show qos map-table phb-qid-tid
```

Related Commands

show qos domain <0-7> map-table all

show qos domain <0-7> map-table egress

8.13 show qos map-table phb-priority-color

Use this command to display mapping between priority/color and phb. The mapping between priority/color and PHB is not configurable.

Command Syntax

show qos map-table phb-priority-color

phb-priority-color: PHB map to priority and color

Command Mode

Privileged EXEC

Examples

This example shows how to display the map for phb to priority and color.

```
BTI SA-805,21,22# show qos map-table phb-priority-color
```

QoS PHB map to priority/color:

PHB Name	Priority	Color

cs1	0	green
df	1	green
af11	2	green
af12	2	yellow
af13	2	red
af21	3	green
af22	3	yellow
af23	3	red
af31	4	green
af32	4	yellow
af33	4	red
af41	5	green
af42	5	yellow
af43	5	red
cs2	6	green
cs3	7	green
cs6	8	green
cs7	9	green
cs4	10	green
cs5	11	green
ef	12	green

Related Commands

None.

8.14 qos domain

Use this command to configure QoS domain for an interface. To return to the default value, use the no form of this command.

Command Syntax

qos domain <0-7>

no qos domain

<0-7>: QoS domain

Command Mode

Interface configuration

Usage

The default QoS domain for each interface is 0.

Examples

This example shows how to configure QoS domain for an interface.

```
BTI SA-805,21,22(config-if)# qos domain 5
```

This example shows remove the QoS domain configuration.

```
BTI SA-805,21,22(config-if)# no qos domain
```

Related Commands

show qos interface

8.15 cos

Use this command to configure the default cos value for an interface. To cancel this setting, use the no form of this command.

Command Syntax

[no] cos <0-7>
<0-7>: cos value

Command Mode

Interface configuration

Defaults

The default CoS for each interface is 0.

Usage

The port cos value is used to map the priority and color assigned to all incoming packets, when the port trust state is set to trust port.

Examples

This example shows how to configure default cos value to 5.

```
BTI SA-805,21,22(config-if)# cos 5
```

This example shows how to delete the cos configuration.

```
BTI SA-805,21,22(config-if)# no cos
```

Related Commands

show qos interface

trust port

8.16 trust

Use this command to configure the port trust state. To return to the default value, use the no form of this command.

Command Syntax

trust (port | cos (inner |) | dscp-exp | ip-prec)

no trust

Trust port : all incoming packets will be assigned with the priority and color according to the port cos value.

Trust cos : all incoming packets will be assigned with the priority and color according to the packet outer CoS field, if that packet is not carried with CoS field, it will use the port cos to map a priority and color for the packet.

Trust cos inner : all incoming packets will be assigned with the priority and color according to the packet inner CoS field if the packet is double-tagged. If that packet is carried with only one VLAN tag or it is untagged, the behavior should be the same as that of trust cos.

Trust dscp-exp : all incoming IP packets will be assigned with the priority and color according to the packet DSCP field, MPLS packets will be assigned with the priority and color according to the packet EXP field, and for other packets, the priority and color of that packet will be mapped the same as trust cos.

Trust ip-prec : all incoming packets will be assigned with the priority and color according to the packet IP-Precedence field. If the packet is not an IP packet, the priority and color of that packet will be mapped the same as trust cos.

Command Mode

Interface configuration

Defaults

trust cos

Usage

The port trust state is the criteria for classifying incoming packets from the port. All classified packets will be identified with a priority and color according to the trust state. The default port trust state is trust cos.

Example

This example shows how to configure the trust state.

```
BTI SA-805,21,22(config-if)# trust dscp-exp
```

Related Commands

show qos interface

8.17 replace dscp-exp

Use this command to replace the dscp or exp field in packets on egress. To remove this setting, use the no form of this command.

Command Syntax

[no] replace dscp-exp

Command Mode

Interface configuration

Defaults

no replace dscp

Usage

This command is used to replace the dscp field for IP packets on egress, which is generated according to the Priority-Color-DSCP map from the internal priority color value, or replace the exp field for MPLS packets on egress, which is generated according to the Priority-Color-EXP map from the internal priority color value.

Examples

This example shows how to replace the dscp field on egress packets.

```
BTI SA-805,21,22(config-if)# replace dscp
```

This example shows how to delete the dscp field.

```
BTI SA-805,21,22(config-if)# no replace dscp
```

Related Commands

show qos interface

8.18 queue class

Use this command to map the queue to a specified class. To return to the default setting, use the no form of this command.

Command Syntax

queue <0-7> class <0-7>

no queue <0-7> class

<0-7>: queue id

<0-7>: class id

Command Mode

Interface configuration

Defaults

The default queue-class map table is as follow.

Queue : 0 1 2 3 4 5 6 7

class : 0 1 2 3 4 5 6 7

Usage

Every queue belongs to a class. The class ranges from 0 to 7, with 7 being the highest priority. Several queues can be in the same class. Packets are scheduled by SP between classes and WDRR between queues in a class.

Examples

This example shows how to map the queue 1 to class 1.

```
BTI SA-805,21,22(config-if)# queue 1 class 1
```

This example shows how to return to the default setting.

```
BTI SA-805,21,22(config-if)# no queue 1 class
```

Related Commands

show qos interface

8.19 queue random-detect

Use this command to enable the random detect mode. Use the no form of this command to disable the random detect mode.

Command Syntax

queue <0-7> random-detect <0-10>

no queue <0-7> random-detect

<0-7>: queue id

<0-10>: WRED Exponential-Weighted-Moving-Average (EWMA) factor

Command Mode

Interface configuration

Defaults

no queue <0-7> random-detect (Tail Drop mode)

Usage

When the queue length is less than min-threshold, the packets will not be dropped.

When the queue length is between min-threshold and max-threshold, the packets will be dropped randomly according to the drop-probability. The drop ratio is (drop-probability)/256.

When the queue length is more than max-threshold, all the packets will be dropped.

Packets with different color will use different random-detect parameters.

The default random-detect EWMA factor is 9.

Examples

This example shows how to enable random detect mode.

```
BTI SA-805,21,22(config-if)# queue 1 random-detect
```

This example shows how to disable the random detect mode.

```
BTI SA-805,21,22(config-if)# no queue 1 random-detect
```

Related Commands

show qos interface

queue random-detect max-threshold

queue random-detect min-threshold

queue random-detect drop-probability

8.20 queue random-detect drop-probability

Use this command to configure the random detect mode drop probability. To return to default setting, use the no form of this command.

Command Syntax

queue <0-7> random-detect drop-probability <0-65535> <0-65535> <0-65535><0-65535>

no queue <0-7> random-detect drop-probability

<0-7>: queue id

<0-65535>: Random-detect threshold0 drop probability range

<0-65535>: Random-detect threshold1 drop probability range

<0-65535>: Random-detect threshold2 drop probability range

<0-65535>: Random-detect threshold3 drop probability range

Command Mode

Interface configuration

Defaults

1024

Usage

When the average queue length is less than min-threshold, the packets will not be dropped.

When the average queue length is between min-threshold and max-threshold, the packets will be dropped randomly according to the drop-probability.

The drop ratio is (drop-probability)/65536.

When the average queue length is more than max-threshold, all the packets will be dropped.

The packet with different threshold will use different random-detect parameters.

Examples

This example shows how to configure queue 1 random detect mode drop probability to 128 , 130 , and 132,134.

```
BTI SA-805,21,22(config-if)# queue 1 random-detect drop-probability 128 130  
132 134
```

This example shows how to return this setting to default.

```
BTI SA-805,21,22(config-if)# no queue 1 random-detect drop-probability
```

Related Commands

queue random-detect max-threshold

queue random-detect min-threshold

queue random-detect

8.21 queue random-detect max-threshold

Use this command to configure random detect mode max-threshold. To return this setting to default, use the no form of this command.

Command Syntax

[no] queue <0-7> random-detect max-threshold <1-9215> <1-9215> <1-9215>

<0-7>: queue id

<1-9215>: Random-detect threshold0 max threshold range

<1-9215>: Random-detect threshold1 max threshold range

<1-9215>: Random-detect threshold2 max threshold range

Command Mode

Interface configuration

Defaults

The default WRED maximum threshold is 464 480 496 for threshold0, threshold1, threshold2. The threshold unit buffer is (256 Bytes).

Usage

When the average queue length is less than min-threshold, the packets will not be dropped.

When the average queue length is between min-threshold and max-threshold, the packets will be dropped randomly according to the drop-probability.

The drop ratio is (drop-probability)/65536.

When the queue length is more than max-threshold, all the packets will be dropped.

The packet with different threshold will use different random-detect parameters.

Wred-drop min threshold must less than max threshold.

Examples

This example shows how to configure queue 1 random detect mode max-threshold to 90 , 92 and 94.

```
BTI SA-805,21,22(config-if)# queue 1 random-detect max-threshold 90 92 94
```

This example shows how to return to the default setting.

```
BTI SA-805,21,22(config-if)# no queue 1 random-detect max-threshold
```

Related Commands

queue random-detect drop-probability

queue random-detect min-threshold

queue random-detect

8.22 queue random-detect min-threshold

Use this command to configure the random detect mode min-threshold. To remove this setting, use the no form of this command.

Command Syntax

[no] queue <0-7> random-detect min-threshold <1-9214> <1-9214> <1-9214>

<0-7>: queue id

<0-9214>: Random-detect threshold0's min threshold range

<0-9214>: Random-detect threshold1's min threshold range

<0-9214>: Random-detect threshold2's min threshold range

Command Mode

Interface configuration

Defaults

The default WRED minimum threshold is 8 16 24 for threshold0, threshold1 and threshold2 respectively. The threshold buffer unit is (256 Bytes).

Usage

When the average queue length is less than min-threshold, the packets will not be dropped.

When the average queue length is between min-threshold and max-threshold, the packets will be dropped randomly according to the drop-probability. The dropping ratio is (drop-probability)/65536.

When the average queue length is more than max-threshold, all the packets will be dropped.

The packet with different threshold will use different random-detect parameters.

Wred-drop min threshold must less than max threshold.

Examples

This example shows how to configure queue 1 random detect mode min-threshold to 16, 20 and 28.

```
BTI SA-805,21,22(config-if)# queue 1 random-detect min-threshold 16 20 24
```

This example shows how to return to the default setting.

```
BTI SA-805,21,22(config-if)# no queue 1 random-detect min-threshold
```

Related Commands

queue random-detect drop-probability

queue random-detect max-threshold

queue random-detect

8.23 queue tail-drop threshold

Use this command to configure the interface queue threshold. To return this setting to default, use the no form of this command.

Command Syntax

[no] queue <0-7> tail-drop threshold <0-9212> <1-9213><2-9214>

<0-7>: queue id

<0-9212> : Tail drop threshold0

<1-9213>: Tail drop threshold1, should greater than threshold0

<2-9214>Tail drop threshold2, should greater than threshold1

Command Mode

Interface configuration

Defaults

The default Tail-Drop threshold is 208, 224, 240, 256 for 1GE port for threshold0/ threshold1/ threshold2/ threshold3 respectively.

The default Tail-Drop threshold is 560 576 592 608 for 10GE port for threshold0/ threshold1/ threshold2/threshold3, respectively.

The threshold buffer unit is 256 Bytes.

Usage

The command is used to configure the tail drop threshold of different colored packets. Tail drop is the default congestion-avoidance technique on every egress queue. With tail drop, packets are queued until the thresholds are exceeded.

Examples

This example shows how to configure interface queue threshold to 160 320 480 620.

```
BTI SA-805,21,22(config-if)# queue 1 tail-drop threshold 160 320 480
```

This example shows how to return this setting to default.

```
BTI SA-805,21,22(config-if)# no queue 1 tail-drop threshold
```

Related Commands

queue random-detect max-threshold

queue random-detect min-threshold

queue random-detect drop-probability

8.24 queue drr-weight

Use this command to configure the WDRR scheduling weight for each queue. To return it to default value, use the no form of this command.

Command Syntax

[no] queue <0-7> drr-weight (<0-100>)

<0-7>: queue id

<0-100>: DRR weight range

Command Mode

Interface configuration

Defaults

Queue : 0 1 2 3 4 5 6 7

DRR weight: 1 1 1 1 1 1 1 1

Usage

Each queue DRR weight should not exceed 100.

Some DRR weight ratio, the queue threshold should be increased to ensure the DRR weight precision.

Examples

This example shows how to configure the WDRR scheduling weight for queue 2.

```
BTI SA-805,21,22(config-if)# queue 2 drr-weight 20
```

This example shows how to return the queue 2 bandwidth to default value.

```
BTI SA-805,21,22(config-if)# no queue 2 drr-weight
```

Related Commands

show qos interface

8.25 clear qos queue statistics

Use this command to clear the queue statistics on specified interface.

Command Syntax

clear qos statistics interface queue [queue]

interface: the interface name

queue: <0-7> queue id

Command Mode

Privileged EXEC mode

Examples

This example shows how to clear queue 0 statistics on interface eth-0-21.

```
BTI SA-805,21,22# clear qos statistics eth-0-21 queue 0
```

Related Commands

qos statistics queue

8.26 shape average percent

Use this command to provision shaping for a physical port. To remove port shaping, use the no form of this command.

Command Syntax

(no)shape average percent <0-99>

<0-99>: percent of interface link speed.

Command Mode

Interface configuration

Defaults

no shape

Usage

The sum of CIR of each queue should not be larger than the port shaping rate and port bandwidth. If IPG for shaping is disabled, the port bandwidth should be converted by IPG size. By default, the CIR of each queue is infinite.

Examples

This example shows how to configure shaping for a physical port.

```
BTI SA-805,21,22(config)# interface eth-0-1
```

```
BTI SA-805,21,22(config-if)# shape average percent 60
```

This example shows how to remove shape configuration

```
BTI SA-805,21,22(config-if)# no shape
```

Related Commands

8.27 shape average rate

Use this command to configure shape average rate for a physical port in absolute value mode. To remove port shaping, use the no form of this command.

Command Syntax

shape average rate <0-10000000>

no shape

<0-10000000>: The absolute port shape rate which measured in kbps.

Command Mode

Interface configuration

Defaults

no shape

Usage

The sum of CIR of each queue should not large than port shaping rate and port bandwidth. If IPG for shaping is disabled, the port bandwidth should be converted by IPG size. By default, the CIR of each queue is infinite.

Examples

This example shows how to configure shape average for a physical port.

```
BTI SA-805,21,22(config)# interface eth-0-1
```

```
BTI SA-805,21,22(config-if)# shape average rate 60000
```

This example shows how to remove shape configuration

```
BTI SA-805,21,22(config-if)# no shape
```

Related Commands

shape average percent

8.28 queue shape average percent

Use this command to configure queue shape average percent. To remove queue shape average percent for a physical port, use the no form of this command.

Command Syntax

queue <0-7> shape average percent <0-100>

no queue <0-7> shape

<0-7>: Queue ID

<0-100>: Percent value of interface max bandwidth for commit information rate.

<0-100>: Percent value of interface max bandwidth for peak information rate.

Command Mode

Interface configuration

Defaults

Queue 7 have enabled shaping, the percent is 30%;

Other queues no shape.

Usage

If configure two information mode, each queue should be configured shaping. The sum of CIR should not large than port shaping rate. By default, the cir of each queue is infinite.

Examples

This example shows how to configure queue shape average percent.

```
BTI SA-805,21,22(config)# interface eth-0-1
```

```
BTI SA-805,21,22(config-if)# queue 5 shape average percent 15
```

This example shows how to remove queue shape average percent

```
BTI SA-805,21,22(config-if)# no queue 5 shape
```

Related Commands

queue shape average rate

8.29 queue shape average rate

Use this command to configure queue shape average rate . To remove queue shape average rate, use the no form of this command.

Command Syntax

[no] queue <0-7> shape average rate <0-100000000>

<0-7>: Queue ID

<0-100000000>: Shape rate for commit information rate, kbps.

<0-100000000>: Shape rate for peak information rate, kbps.

Command Mode

Interface configuration

Defaults

no queue shape

Usage

The sum of CIR should not be larger than the port shaping rate. By default, the cir of each queue is infinite.

Examples

This example shows how to configure queue shape average rate.

```
BTI SA-805,21,22(config)# interface eth-0-1
```

```
BTI SA-805,21,22(config-if)# queue 5 shape average rate 150000
```

This example shows how to remove queue shape average rate.

```
BTI SA-805,21,22(config-if)# no queue 5 shape
```

Related Commands

queue shape average percent

8.30 aggregate-policer

Use this command to create an aggregate policer instance. The aggregate policer can be shared by multiple classes of traffic. To remove the aggregate policer instance, use the no form of this command.

Command Syntax

```
qos aggregate-policer NAME (color-blind|color-aware|) cir <1-10000000> (cbs <0-1250000>|) (eir <1-10000000> (ebs <0-1250000>|)|) (drop-color (red|yellow)|) (use-l3-length|) (stats|)
```

```
no qos aggregate-policer NAME
```

NAME: Specify an aggregate-policer name

color-blind: Color blind mode policer

color-aware: Color aware mode policer

cir: CIR - Committed Information Rate (kbps)

cbs: committed burst size (bytes)

eir: EIR - Excess Information Rate (kbps)

ebs: EBS - Excess Burst Size (bytes)

drop-color: drop color config

use-l3-length: Use l3 length for policing

stats: enable policer statistics

Command Mode

Global configuration

Usage

This command is used to create aggregate-policer instance. Color-blind or Color-aware, SRTCM or TRTCM can be configured.

The maximum of aggregate policer and flow policer(which is configured in policy-map) is 128 per linecard.

If qos statistics policer is configured, and stats is entered when the policer is created, policer statistics is working.

The statistics can not be modified after the policer is created.

Examples

This example shows how to create an aggregate-policer named "agg_plc" for SRTCM mode

```
BTI SA-805,21,22(config)# qos aggregate-policer agg_plc color-aware cir 10000  
cbs 40000 ebs 40000 drop-color red
```

Remove aggregate-policer

```
BTI SA-805,21,22(config)# no qos aggregate-policer agg_plc
```

Related Commands

show qos aggregator-policer (NAME|)

policer-aggregate

qos statistics policer

8.31 class-map

Use this command to create a class-map. To remove the class-map, use the no form of this command.

Command Syntax

class-map (match-all | match-any |) NAME

no class-map NAME

match-all: Logical-AND all matching statements under this class-map

match-any: Logical-OR all matching statements under this class-map

NAME: Specify a class-map name, the name of “class-default” is reserved.

Command Mode

Global configuration

Usage

This command is used to define the traffic class template.

Examples

Create a class-map

```
BTI SA-805,21,22(config)# class-map match-any cm1
```

Remove a class-map

```
BTI SA-805,21,22(config)# no class-map cm1
```

Related Commands

show class-map (NAME)

8.32 match access-group

Use this command to configure or match criteria by referencing an access list in a class-map. To remove the access-list from a class-map, use the no form of this command.

Command Syntax

match access-group NAME

no match access-group NAME

match: configure classification criteria

access-group: configure access list

NAME: Specify an access-list name

Command Mode

Class-map mode

Usage

Use access-list for match criterion in a class-map.

Examples

```
BTI SA-805,21,22(config)# class-map match-any cm2
```

Configure an access-list match criterion

```
BTI SA-805,21,22(config-cmap)# match access-group acl1
```

Remove an access-list match criterion

```
BTI SA-805,21,22(config-cmap)# no match access-group acl1
```

Related Commands

mac access-list

ip access-list

policy-map

8.33 policy-map

Use this command to create a policy map. To remove the policy-map, use the no form of this command.

Command Syntax

(no |) policy-map NAME

NAME: Specify a policy-map name

Command Mode

Global configuration

Usage

The policy-map can be attached to multiple physical ports at both ingress and egress directions.

Examples

Create a policy-map named pm1

```
BTI SA-805,21,22(config)# policy-map pm1
```

```
BTI SA-805,21,22(config-pmap)#quit
```

Delete a policy-map named pm1

```
BTI SA-805,21,22(config)# no policy-map pm1
```

```
BTI SA-805,21,22(config)#
```

Related Commands

show policy-map (NAME|)

8.34 class

Use this command to define the traffic class in policy-map by referencing a class-map. To remove the traffic class from the policy-map, use the no form of this command.

Command Syntax

(no) class NAME

NAME: specify a class-map NAME

Command Mode

Policy-map mode

Usage

A policy-map can include multiple class-maps.

Examples

Add and delete a class in a policy-map

```
BTI SA-805,21,22(config)# policy-map pml
BTI SA-805,21,22(config-pmap)# class cml
BTI SA-805,21,22(config-pmap-c)#quit
BTI SA-805,21,22(config-pmap)# no class cml
```

Related Commands

policy-map

show policy-map

8.35 class class-default

Use this command to create a default traffic class in a policy-map. To remove the default traffic class from a policy-map, use the no form of this command.

Command Syntax

(no) class class-default

Command Mode

Policy-map mode

Usage

If a packet does not match any traffic class in the policy-map, then the packet is classified into the default traffic class and corresponding actions configured for the default class will be performed on that packet.

Examples

Add and delete a default traffic class in a policy-map.

```
BTI SA-805,21,22(config)# policy-map pml
BTI SA-805,21,22(config-pmap)# class class-default
BTI SA-805,21,22(config-pmap-c)# quit
BTI SA-805,21,22(config-pmap)# no class class-default
```

Related Commands

policy-map

show policy-map

8.36 trust (config-pmap-c mode)

Use this command to set trust value for the traffic class in a policy-map. To remove the trust state, use the no form of this command.

Command Syntax

trust (dscp-exp|cos|ip-prec|port)

no trust

trust: set trust value for the class

dscp: trust dscp or exp value in classified packets

cos: trust cos value in classified packets

ip-prec: trust ip precedence in classified packets

port: trust port default cos value in classified packets

Command Mode

Config-pmap-c mode

Defaults

trust cos

Usage

This command is used to set the trust value for the traffic class.

Examples

```
BTI SA-805,21,22(config)# policy-map pml
BTI SA-805,21,22(config-pmap)# class cml
BTI SA-805,21,22(config-pmap-c)# trust cos
```

Related Commands

show policy-map

8.37 set priority color

Use this command to set the priority and color or PHB for traffic class in the policy-map. To remove this setting, use the no form of this command.

Command Syntax

```
set priority <0-63> color (red|yellow|green)
```

```
set phb { af11| af12| af13| af21| af22| af23| af31| af32| af33| af41| af42| af43| ef|df| cs1| cs2| cs3| cs4| cs5| cs6| cs7 }
```

```
no set priority color
```

<0-63>: the priority value range

af11: Assured forwarding class 1, low drop precedence, PHB of (priority 2, color green)

af12: Assured forwarding class 1, medium drop precedence, PHB of (priority 2, color yellow)

af13: Assured forwarding class 1, high drop precedence, PHB of (priority 2, color red)

af21: Assured forwarding class 2, low drop precedence, PHB of (priority 3, color green)

af22: Assured forwarding class 2, medium drop precedence, PHB of (priority 3, color yellow)

af23: Assured forwarding class 2, high drop precedence, PHB of (priority 3, color red)

af31: Assured forwarding class 3, low drop precedence, PHB of (priority 4, color green)

af32: Assured forwarding class 3, medium drop precedence, PHB of (priority 4, color yellow)

af33: Assured forwarding class 3, high drop precedence, PHB of (priority 4, color red)

af41: Assured forwarding class 4, low drop precedence, PHB of (priority 5, color green)

af42: Assured forwarding class 4, medium drop precedence, PHB of (priority 5, color yellow)

af43: Assured forwarding class 4, high drop precedence, PHB of (priority 5, color red)

ef: Expedited forwarding, PHB of (priority 12, color green)

df: Default forwarding, PHB of (priority 1, color green)

cs1: Class selector 1, PHB of (priority 0, color green)

cs2: Class selector 2, PHB of (priority 6, color green)

cs3: Class selector 3, PHB of (priority 7, color green)

cs4: Class selector 4, PHB of (priority 8, color green)

cs5: Class selector 5, PHB of (priority 9, color green)

cs6: Class selector 6, PHB of (priority 10, color green)

cs7: Class selector 7, PHB of (priority 11, color green)

Command Mode

Config-pmap-c mode

Defaults

no set priority color

Usage

This command is used to set priority and color of traffic matching this class-map.

Examples

```
BTI SA-805,21,22(config)# policy-map pml
BTI SA-805,21,22(config-pmap)# class cml
BTI SA-805,21,22(config-pmap-c)# set priority 34 color red
BTI SA-805,21,22(config-pmap-c)# no set priority color
```

Related Commands

show policy-map

8.38 policer

Use this command to rate-limit traffic matching this traffic class for a specified interface. To cancel the rate limit, use the no form of this command.

Command Syntax

```
policer (color-blind|color-aware|) cir <1-100000000> (cbs <0-1250000>|) (eir <1-100000000> (ebs
<0-1250000>|)|) (drop-color (red|yellow)|) (use-l3-length|) (stats|)
```

no policer

color-blind: color blind mode policer

color-aware: color aware mode policer

cir: committed Information Rate (kbps)

cbs: committed burst size (bytes)

eir: excess Information Rate (kbps)

ebs: excess burst size (bytes)

drop-color: drop color config

use-l3-length: use l3 length for policing

stats: enable policer statistics

Command Mode

Config-pmap-c mode

Usage

Define a policer for classified traffic. Color-blind or Color-aware, SRTCM or TRTCM can be configured.

The maxnum of aggregate policer and this flow policer is 128 per linecard.

If qos statistics policer is configured, and stats are entered when the policer is created, policer statistics is working.

The statistics can not be modified after the policer is created.

Examples

```
BTI SA-805,21,22(config)# policy-map pml
BTI SA-805,21,22(config-pmap)# class cml
BTI SA-805,21,22(config-pmap-c)# policer color-aware cir 5000000 cbs 40000 ebs
40000
drop-color red
BTI SA-805,21,22(config-pmap-c)# no policer
```

Related Commands

show policy-map

qos statistics policer

8.39 policer-aggregate

Use this command to rate-limit the aggregate traffic matching this traffic class for all interfaces in the same slot. To cancel rate limit, use the no form of this command.

Command Syntax

`policer-aggregate NAME`

`no policer`

NAME: Aggregate policer name.

Command Mode

Config-pmap-c mode

Usage

If a aggregate policer is applied on several interfaces, the aggregate traffic matching this traffic class for these interface is limited by the aggregate policer.

Examples

```
BTI SA-805,21,22(config)# policy-map pml
BTI SA-805,21,22(config-pmap)# class cml
BTI SA-805,21,22(config-pmap-c)# policer-aggregate agg_plc
BTI SA-805,21,22(config-pmap-c)# no policer
```

Related Commands

`aggregate-policer`

`show policy-map`

8.40 redirect

Use this command to redirect classified traffic to a specified interface. Use the no form of this command to cancel the redirection configuration.

Command Syntax

redirect to (interface INTERFACE)

no redirect

INTERFACE : Destination interface name

Command Mode

Config-pmap-c mode

Defaults

no redirect

Usage

The flow redirection is not effective when the policy-map is applied on output direction.

If a policy-map is applied on the input direction of several interfaces, all classified traffic coming into these interface will be redirected.

The traffic matching the deny rules in policy-map should not be redirected.

Examples

```
BTI SA-805,21,22(config)# policy-map pml
BTI SA-805,21,22(config-pmap)# class cml
BTI SA-805,21,22(config-pmap-c)# redirect to interface eth-0-1
BTI SA-805,21,22(config-pmap-c)# no redirect
```

Related Commands

show policy-map

8.41 monitor to session

Use this command to monitor a session . One session can be monitored. Use the no form of this command to cancel the mirror configuration.

Command Syntax

[no] monitor to session

Command Mode

Config-pmap-c mode

Defaults

no monitor

Usage

If a policy-map is applied on input(ouput, both) direction of many interfaces, all classified traffic coming into(leaving from, both) these interface will be monitored.

Examples

```
BTI SA-805,21,22(config)# policy-map pml
BTI SA-805,21,22(config-pmap)# class cml
BTI SA-805,21,22(config-pmap-c)# monitor to session 1
BTI SA-805,21,22(config)# monitor session 1 destination interface eth-0-1
BTI SA-805,21,22(config-pmap-c)# no monitor
```

Related Commands

show policy-map

8.42 statistics enable

Use this command to enable statistics for each ace in the class map. Use the no form of this command to disable statistics.

Command Syntax

(no) statistics enable

Command Mode

Config-pmap-c mode

Defaults

no statistics enable

Usage

If the class-map operator is match-all, only the total statistics of the class-map can be shown. If it fails to enable the statistics function a warning message will be displayed.

Examples

```
BTI SA-805,21,22(config)# policy-map pml
BTI SA-805,21,22(config-pmap)# class cml
BTI SA-805,21,22(config-pmap-c)# statistics enable
BTI SA-805,21,22(config-pmap-c)# no statistics enable
```

Note	The enable function is supported in “performance (enable disable) in the “ethernet epu” command mode.
-------------	---

Related Commands

show policy-map statistics interface
clear qos policy-map statistics interface

8.43 port-policer

Use this command to set the rate-limit of the port. To return the Port Policer to the default value setting, use the no form of this command.

Command Syntax

port-policer (input|output) cir RATE cbs BURST-SIZE eir RATE ebs BURST-SIZE

no port-policer (input|output)

RATE :<1-10000000> rate-limit, in kilobits

BURST-SIZE :<0-1250000> bucket size, in bytes

Command Mode

Interface configuration

Usage

Use only CIR and CBS value. EIR and EBS values from SNMP are not supported.

Example

The following example set the rate-limit of the port.

```
BTI SA-805,21,22(config)#interface eth-0-1
```

```
BTI SA-805,21,22(config-if)# port-policer input cir 100000 cbs 12176 eir 0 ebs 0
```

```
BTI SA-805,21,22(config-if)# port-policer output cir 100000 cbs 12176 eir 0 ebs 0
```

The following example returns the rate-limit to default value.

```
BTI SA-805,21,22(config-if)# no port-policer input
```

```
BTI SA-805,21,22(config-if)# no port-policer output
```

Related Commands None

8.44 service-policy

Use this command to apply a policy-map to an interface. To remove the policy-map from the interface, use the no form of this command.

Command Syntax

service-policy (input | output) NAME

no service-policy (input | output)

input: apply policy-map to the inbound of an interface

output: apply policy-map to the outbound of an interface

NAME: the policy-map name

Command Mode

Interface configuration

Usage

Use the service-policy interface configuration command to apply a policy map defined by the policy-map command to the input or output of a particular interface.

The interface can be physical interface, vlan interface, linkagg interface.

Examples

This example shows how to configure a policy to the ingress of a physical interface.

```
BTI SA-805,21,22(config)# interface eth-0-1
```

```
BTI SA-805,21,22(config-if)# service-policy input plc_map1
```

This example shows how to remove a policy from the ingress of a physical interface.

```
BTI SA-805,21,22(config-if)# no service-policy input
```

Note: This service policy function is used to support MEF Bandwidth profile. Do not detach the service policy from the interface.

Related Commands

show qos interface

policy-map

8.45 qos policer flow-first

Use this command to configure the order of execution between the port-policing and flow-policing. To return to the default policing execution sequence, use the no form of this command.

Command Syntax

(no) qos policer flow-first

Command Mode

Global configuration

Defaults

no qos policer flow-first

Usage

If policer and flow policer are configured on an interface, the default policing execution sequence is to do port policer first and then flow policer. Use this command the change that execution sequence.

Examples

```
BTI SA-805,21,22(config)# qos policer flow-first
```

Related Commands

no qos policer flow-first

8.46 qos statistics policer

Use this command enable the policer statistics. To disable it, use the no form of this command.

Command Syntax

qos statistics policer

no qos statistics policer

Command Mode

Global configuration

Defaults

no qos statistics policer

Examples

This example shows how to enable the policer statistics.

```
BTI SA-805,21,22(config)# qos statistics policer
```

This example shows how to disable the policer statistics.

```
BTI SA-805,21,22(config)# no qos statistics policer
```

Related Commands

clear qos flow-policer statistics

8.47 clear qos aggregate-policer statistics

Use this command to clear aggregate policing statistics.

Command Syntax

clear qos aggregate-policer NAME statistics

NAME: aggregate policer name

Command Mode

Privileged EXEC

Usage

This command is used to clear aggregate policing statistics.

Examples

```
BTI SA-805,21,22# clear qos aggregate-policer plc_agg statistics
```

Related Commands

qos statistics policer

8.48 clear qos policy-map statistics interface

Use this command to clear flow policing and ace matching statistics.

Command Syntax

clear qos policy-map NAME statistics interface (IFNAME)

NAME: policy-map name

IFNAME: interface name

Command Mode

Privileged EXEC

Usage

This command is used to clear flow policing and ace matching statistics.

Examples

```
BTI SA-805,21,22# clear qos policy-map plcy statistics interface eth-0-1
```

Related Commands

qos statistics policer

statistics enable

8.49 clear qos port-policer statistics

Use this command to clear port policing statistics.

Command Syntax

clear qos port-policer statistics IFNAME (input|output)

IFNAME: interface name

input: clear inbound port policing statistics.

output: clear outbound port policing statistics.

Command Mode

Privileged EXEC

Usage

None

Examples

```
BTI SA-805,21,22# clear qos port-policer statistics eth-0-1 input
```

Related Commands

qos statistics policer

8.50 show running-config policy-map

Use this command to show the running-config policy-map information.

Command Syntax

show running-config policy-map

Command Mode

Privileged EXEC

Usage

None

Examples

```
BTI SA-805,21,22# show running-config policy-map
policy-map pmap
  class cmap
    policer color-blind cir 1000 cbs 100000 eir 2000 ebs 100000 drop-color red
  class cmap2
    policer color-blind cir 2000 cbs 100000 eir 3000 ebs 100000 drop-color red
```

Related Commands

policy-map

show policy-map

8.51 show policy-map

show policy-map

Use this command to show policy-map information.

Command Syntax

show policy-map (NAME|)

NAME: policy-map name

Command Mode

Privileged EXEC

Usage

None

Examples

```
BTI SA-805,21,22# show policy-map plc_map
```

```
POLICY-MAP-NAME: pmap
```

```
State: detached
```

```
CLASS-MAP-NAME: cmap
```

```
match access-group: macacl
```

```
CIR 1000 kbps, CBS 100000 bytes, EIR 2000 kbps, EBS 100000 bytes, color  
blind mode, drop color is red
```

```
CLASS-MAP-NAME: cmap2
```

```
CIR 2000 kbps, CBS 100000 bytes, EIR 3000 kbps, EBS 100000 bytes, color  
blind mode, drop color is red
```

Related Commands

policy-map

show running-config policy-map

8.52 show policy-map statistics interface

Use this command to show the statistics of policy-map on interface.

Command Syntax

show policy-map statistics interface NAME (input|output) (ace-based|class-based|) (class CMAP-NAME)

NAME : interface name

input : The statistics of input direction will be shown.

output : The statistics of output direction will be shown.

ace-based: The statistics of matching ace will be shown.

class-based: The statistics of class-map will be shown.

CMAP -NAME: Only statistics of the specified class-map can be shown.

Command Mode

Privileged EXEC

Usage

The flow policer stats can be shown when class-based is specified and flow policer stats is enabled.

The statistics of ace-based and class-based results will be displayed only when the statistics is enabled.

Examples

```
BTI SA-805,21,22# show policy-map statistics interface eth-0-1 input ace-based
class cmap
  Interface: eth-0-1
  Ingress service policy: pmap
```

```
Class name: cmap, operator : match-any
  access-group ipacl
    10 permit any any any ( 1 match 64 bytes)
total 1 match 64 bytes
```

Related Commands

policy-map

show policy-map

show running-config policy-map

8.53 show running-config class-map

Use this command to the show running-config class-map information.

Command Syntax

show running-config class-map

Command Mode

Privileged EXEC

Usage

None

Examples

```
BTI SA-805,21,22# show running-config class-map
BTI SA-805,21,22# show running-config class-map
class-map match-any cmap
  match access-group macacl
class-map match-all cmap2
```

Related Commands

show class-map

8.54 show class-map

Use this command to show class-map information

Command Syntax

show class-map (NAME|)

NAME: class-map name

Command Mode

Privileged EXEC

Usage

None

Examples

```
BTI SA-805,21,22# show class-map
CLASS-MAP-NAME: class-default (match-any)
```

```
    CLASS-MAP-NAME: cmap (match-any)
        match access-group: macacl
```

```
    CLASS-MAP-NAME: cmap2 (match-all)
```

Related Commands

show running-config class-map

8.55 show qos aggregator-policer

show qos aggregator-policer

Use this command to show aggregator-policer information.

Command Syntax

show qos aggregator-policer (NAME|) (statistics|)

NAME: aggregate policer name

statistics :Show the statistics of the aggregator policer

Command Mode

Privileged EXEC

Usage

None

Examples

```
BTI SA-805,21,22# show qos aggregator-policer
  AGGREGATOR-POLICER-NAME: agg_plc
    CIR 40000 kbps, CBS 40000 bytes, EBS 40000 bytes, color aware mode, drop
color is red use-l3-length
```

Related Commands

policer-aggregate

aggregate-policer

8.56 show qos interface

Use this command to show QoS configurations for an interface.

Command Syntax

show qos interface NAME

NAME: interface name

Command Mode

Privileged EXEC

Usage

None

Examples

```
BTI SA-805,21,22#show qos interface eth-0-1
```

```
Interface QoS domain: 0
```

```
Interface trust state: cos
```

```
Interface default CoS value: 0
```

```
Schedule mode: SP(between Class), WDRR(between queue in the same Class)
```

```
The number of class on interface: 4
```

```
Strict priority class ID: 3 2 1 0
```

```
The number of egress queue: 8
```

```
Queue 0 class 1, DRR weight 1
```

```
Tail drop mode
```

```
Tail drop threshold(Tresh0 Tresh1 Tresh2 Tresh3): 208 224 240 256
```

```
Queue 1 class 1, DRR weight 25
```

```
Tail drop mode
```

```
Tail drop threshold(Tresh0 Tresh1 Tresh2 Tresh3): 208 224 240 256
```

```
Queue 2 class 1, DRR weight 4
```

```
Tail drop mode
```

```
Tail drop threshold(Tresh0 Tresh1 Tresh2 Tresh3): 208 224 240 256
```

```
Queue 3 class 1, DRR weight 10
```

```
Tail drop mode
```

```
Tail drop threshold(Tresh0 Tresh1 Tresh2 Tresh3): 208 224 240 256
```

```
Queue 4 class 1, DRR weight 10
```

```
Tail drop mode
```

```
Tail drop threshold(Tresh0 Tresh1 Tresh2 Tresh3): 208 224 240 256
```

```
Queue 5 class 1, DRR weight 10
```

```
Tail drop mode
```

```
Tail drop threshold(Tresh0 Tresh1 Tresh2 Tresh3): 208 224 240 256
```

```
Queue 6 class 1, DRR weight 10
```

```
Tail drop mode
```

```
Tail drop threshold(Tresh0 Tresh1 Tresh2 Tresh3): 208 224 240 256
```

```
Queue 7 class 3, DRR weight 1
```

```
Tail drop mode
```

```

    Tail drop threshold(Tresh0 Tresh1 Tresh2 Tresh3): 208 224 240 256
    Queue shape with CIR 300000 kbps, PIR 300000 kbps, burst size 4294967295
bytes
    Queue 8 class 3, DRR weight 1
    Tail drop mode
    Tail drop threshold(Tresh0 Tresh1 Tresh2 Tresh3): 208 224 240 256
    Queue 9 class 3, DRR weight 1
    Tail drop mode
    Tail drop threshold(Tresh0 Tresh1 Tresh2 Tresh3): 208 224 240 256
    Queue 10 class 3, DRR weight 1
    Tail drop mode
    Tail drop threshold(Tresh0 Tresh1 Tresh2 Tresh3): 208 224 240 256
    Queue 11 class 3, DRR weight 1
    Tail drop mode
    Tail drop threshold(Tresh0 Tresh1 Tresh2 Tresh3): 208 224 240 256
    Queue 12 class 3, DRR weight 1
    Tail drop mode
    Tail drop threshold(Tresh0 Tresh1 Tresh2 Tresh3): 208 224 240 256
    Queue 13 class 3, DRR weight 1
    Tail drop mode
    Tail drop threshold(Tresh0 Tresh1 Tresh2 Tresh3): 208 224 240 256
    Queue 14 class 3, DRR weight 1
    Tail drop mode
    Tail drop threshold(Tresh0 Tresh1 Tresh2 Tresh3): 208 224 240 256
    Queue 15 class 3, DRR weight 1
    Tail drop mode
    Tail drop threshold(Tresh0 Tresh1 Tresh2 Tresh3): 208 224 240 256

```

Related Commands

qos domain

trust

cos

queue class

queue random-detect

queue threshold

queue drr-weight

8.57 ipg policer enable

Use this command to enable the policer to calculate the IPG bytes. Use the no form of this command to return to the default setting.

Command Syntax

ipg policer enable
no ipg policer enable

Command Mode

Global configuration

Defaults

Disabled

Usage

None

Examples

This example shows how to configure policer to calculate the IPG bytes.

```
BTI SA-805,21,22(config)# ipg policer enable
```

This example shows how to disable policer to calculate the IPG bytes.

```
BTI SA-805,21,22(config)# no ipg policer enable
```

Related Commands

None

8.58 ipg shaping enable

Use the ipg shaping enable to enable storm control and calculation of the IPG bytes. Use the no form of this command to return to the default setting.

Command Syntax

ipg shaping enable
no ipg shaping enable

Command Mode

Global configuration

Defaults

Disabled

Usage

None

Examples

This example shows how to configure IPG shaping.

```
BTI SA-805,21,22(config)# ipg shaping enable
```

This example shows how to disable IPG shaping. .

```
BTI SA-805,21,22(config)# no ipg shaping enable
```

Related Commands

None

9.0 Service OAM (IEEE 802.1ag / Y.1731) Commands

This section covers the following topics :

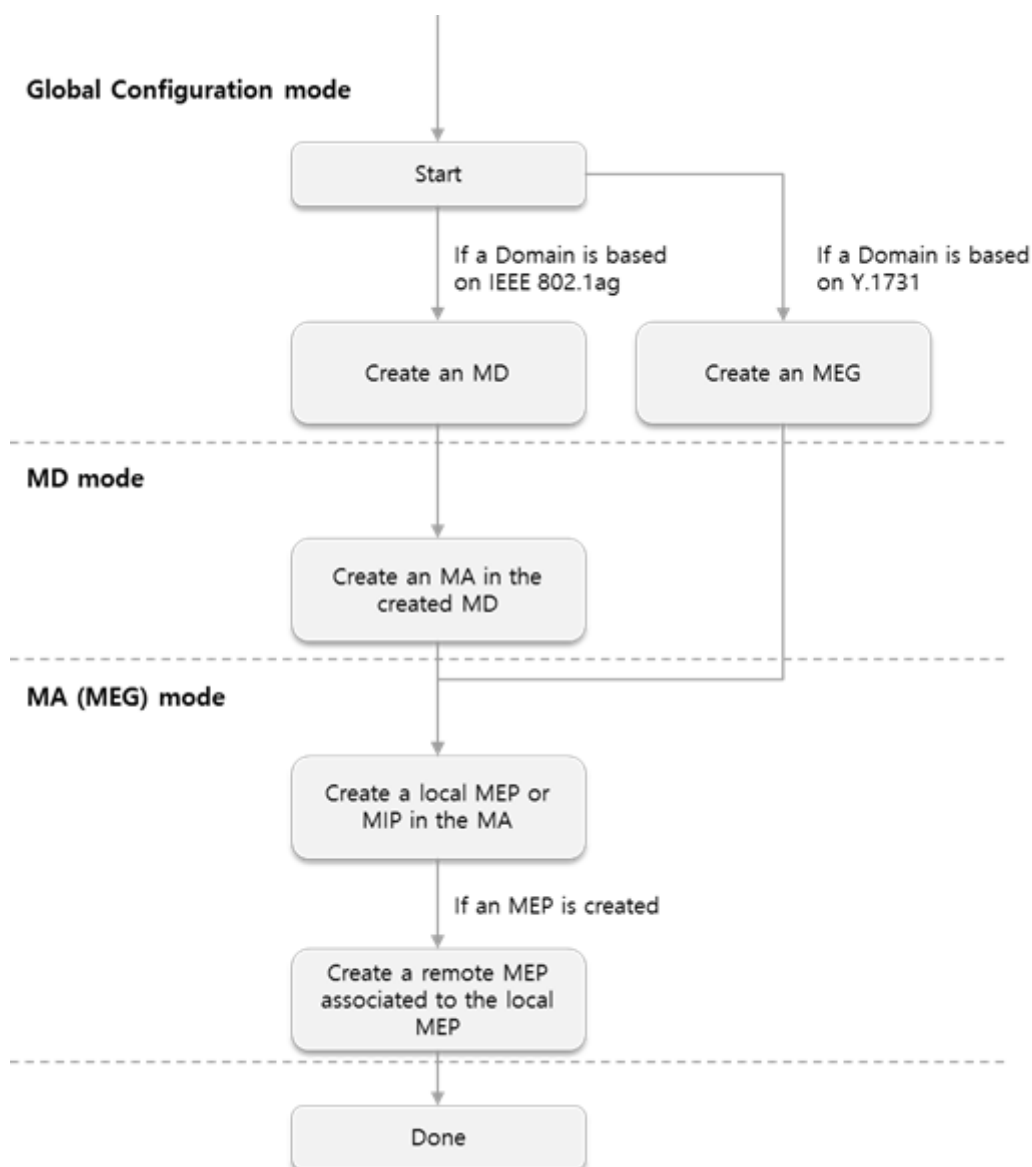
- 9.1, “Global configuration”
- 9.2, “Domain configuration”
- 9.3, “Maintenance point configuration”
- 9.4, “Continuity check”
- 9.5, “ethernet soam loopback ”
- 9.6, “ ethernet soam linktrace”
- 9.7, “ethernet soam delay-msmt”
- 9.8, “Loss-measurement ”
- 9.9, “Throughput-measurement”
- 9.10, “Fault history”
- 9.11, “mep mepid (mepid) interface (type) direction down different-maid ”
- 9.12, “mep mepid (mepid id) interface (interface id) direction up replication”

The user can create IEEE 802.1ag or Y.1731 OAM Domain and Maintenance Points, or a combination of IEEE 802.1ag and Y.1731 OAM Domain and Maintenance Points, in the network.

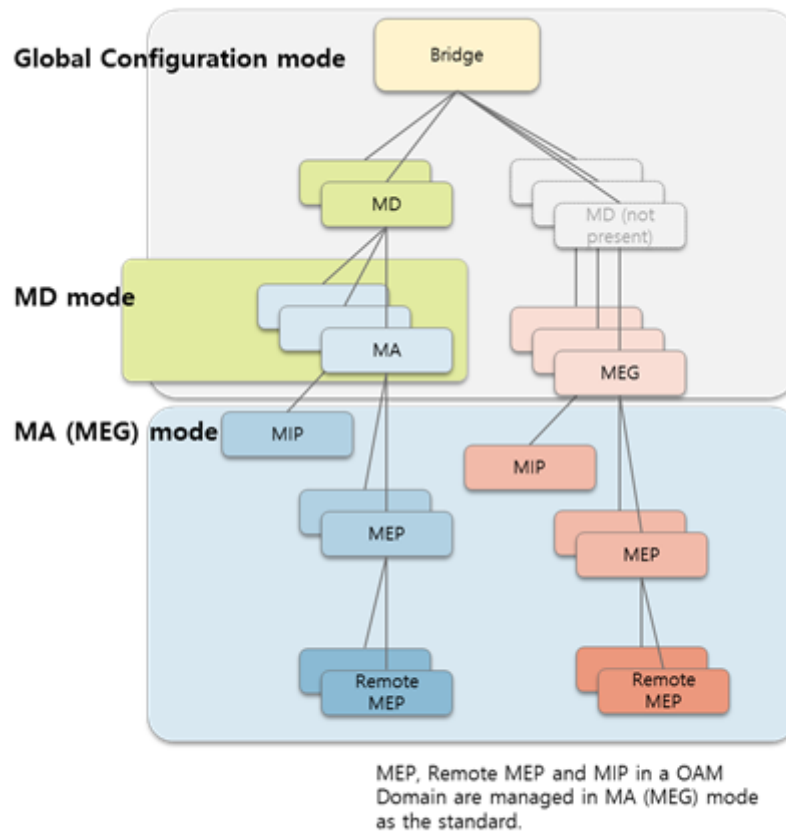
Note : BTI Systems also provide a ProNX Management Service web based intuitive tool to enable simplified Service OAM and provisioning, monitoring and troubleshooting within Optical and Ethernet metro networks.

Table 9-1 Service Operations, Administration and Maintenance (OAM) IEEE 802.1ag / Y.1731

CLI Mode	IEEE 802.1ag	Y.1731
Global configuration mode	Create the Maintenance Domain (MD) and Maintenance Association (MA) objects	create an Maintenance Entity Group (MEG) with its VLAN, Level, interval and MEGID
MD mode (Maintenance Domain mode)	Create a Maintenance Association (MA)	N/A
MA mode (Maintenance association mode = MEG)	Create Maintenance domain Intermediate Point (MIP) Create local and remote Maintenance End Point (MEP)	Maintenance domain Intermediate Point (MIP) Create local and remote Maintenance End Point (MEP)



The following diagram shows the relationship among the Service OAM entities. This is almost the same to the standard management plane to configure an OAM Domain.



9.1 Global configuration

This section covers the following topics :

- [9.1.1, “ethernet soam enable”](#)
- [9.1.2, “show ethernet soam global”](#)

9.1.1 ethernet soam enable

Command Syntax

ethernet soam enable

no ethernet soam enable

Command Mode

Global Configuration

Default

Disabled

Usage

This command is used to enable the Service OAM functionalities globally. Use the no parameter to disable the CFM function on the bridge.

Example

The following example shows how to enable and disable the Service OAM functionalities globally:

```
BTI SA-805,21,22# configure terminal
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
BTI SA-805,21,22(config)# ethernet soam enable
```

```
BTI SA-805,21,22(config)# no ethernet soam enable
```

Related Commands

None

9.1.2 show ethernet soam global

Command Syntax

show ethernet soam global

Command Mode

Privileged EXEC mode

Default

None

Usage

Use the command to retrieve the current global configuration and resource for the Service OAM. This command is available in Privileged EXEC mode.

Example

The following example shows how to perform this command.

```
BTI SA-805,21,22 show ethernet soam global
[Global configuration]
-----
- enable                               : enabled
- md (used)                           : 2
- ma (total)                          : 1365
- ma (used)                           : 2
- mep & rmep size (total)             : 8190
- mep size (used)                     : 2
- rmep size (used)                     : 3
- loss-measurement size (total)        : 256
- loss-measurement size (used)         : 0
```

Related Commands

None

9.2 Domain configuration

This section covers the following topics :

- 9.2.1, “ethernet soam md md-name”
- 9.2.2, “Maintenance Association (MA)”
- 9.2.3, “ethernet soam meg megid ”
- 9.2.4, “rmep-learning, rmep-aging ”
- 9.2.5, “mip auto-creation”
- 9.2.6, “show ethernet soam domain”
- 9.2.7, “show ethernet soam active-levels vlan”

9.2.1 ethernet soam md md-name

Command Syntax

ethernet soam md md-name MD-NAME (md-type (no-present| dns-based| char-str)) (level <0-7>|)

no ethernet soam md md-name MD-NAME

Syntax	Description
md-name MD-NAME	Maintenance Domain name defined in IEEE 802.1ag CFM
md-type (no-present dns-based char-str)	The type of the Maintenance Domain name; Default: char-str (character-string); MAC + two octets type is NOT supported.
level <0-7>	Maintenance Domain Level, the range is 0 to 7

Command Mode

Global Configuration

Default

None

Usage

Use this command to create a Maintenance Domain (MD) defined in IEEE 802.1ag CFM. This command is also used to enter Service OAM MD mode (SOAM_MD_MODE) that is a Service OAM CLI mode to configure the MD attributes or create the MA that belongs to the MD. Ensure you specify the level and the name type for each MD. MAC address + 2 octets MD name type is NOT supported.

The recommend levels are defined as follows:

0~2 (operator levels)

3~4 (provider levels)

5~7 (customer levels)

Example

The following example shows how to create and delete Service Maintenance Domain [IEEE 802.1ag]

```
BTI SA-805,21,22 #configure terminal
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
BTI SA-805,21,22(config)# ethernet soam md md-name le4 md-type no-present
level 4
```

```
BTI SA-805,21,22 # show ethernet soam domain
```

[Domain configuration]

```
-----  
-  
  domain(maid)          learn aging md-type    ma-type    1 vid  
  intvl  
  
-----  
-  
  meg: evc1001 (01:02:07)    en      5      no-present string    4 1001 1s  
  meg: evc2001 (01:02:07)    dis     0      no-present string    4 2001 1s  
  meg: evc2002 (01:02:07)    dis     0      no-present string    4 2002 1s  
  md-ma: le4-(no-ma)         no-present -        4 - -
```

Related Commands

None

9.2.2 Maintenance Association (MA)

Command Syntax

Service OAM MD mode [IEEE 802.1ag]

- `ma-name MA-NAME (ma-type (primary-vid|string|integer)) (vlan <1-4094>) (ccm-interval (300hz|10ms|100ms|1sec|10sec|1min|10min))`
- `ma ma-name MA-NAME`

In Global configuration mode [IEEE 802.1ag]

- `ethernet soam ma ma-name MA-NAME (ma-type (primary-vid|string|integer)) md-name MD-NAME (vlan <1-4094>)(ccm-interval (300hz|10ms|100ms|1sec|10sec|1min|10min))`
- `no ethernet soam ma ma-name MA-NAME md-name MD-NAME`

Syntax	Description
<code>ma-name MA-NAME</code>	Maintenance Association name defined in IEEE 802.1ag
<code>ma-type (primary-vid string integer)</code>	The type of the Maintenance Association name; Default: string (character-string); VPN-ID type is NOT supported
<code>vlan VLAN_ID</code>	Primary VLAN ID of the MA
<code>ccm-interval</code>	The transmission interval among CCMs of the MA

Command Mode

Global configuration mode

MD mode (SOAM_MD_MODE)

Default

None

Usage

Use this command to create a Maintenance Association (MA) defined in CFM in MD (SOAM_MD_MODE) or Global configuration mode. Ensure you specify the VLAN and the name type for each MA. VPN-ID MA name type is NOT supported.

Example

The following example shows how to create a MA in Service OAM mode. The no command will delete the MA

```
BTI SA-805,21,22(config)# ethernet soam md md-name le4 level 4
```

```
BTI SA-805,21,22(config-soam-md)# ma ma-name v100 ma-type string vlan 100 ccm-interval 1sec
```

```
BTI SA-805,21,22(config-soam-ma)#
```

The following example shows how to create a MA in Global Configuration Mode

```
BTI SA-805,21,22(config)# ethernet soam ma ma-name vl00 ma-type string md-name  
le4 vlan 100 ccm-interval 1sec
```

```
BTI SA-805,21,22(config-soam-md)#
```

```
BTI SA-805,21,22(config-soam-ma)#
```

Related Commands

ethernet soam md md-name MD-NAME (md-type (no-present| dns-based| char-str)) (level <0-7>|)

9.2.3 ethernet soam meg megid

Command Syntax

ethernet soam meg megid (megid) ({level <0-7>| vlan <1-4094>| ccm-interval (300hz| 10ms| 100ms| 1sec| 10sec| 1min| 10min) | meg-type (primary-vid| string| integer| icc-based)})

Syntax	Description
megid MEGID	Maintenance Entity Group ID defined in Y.1731; This is equal to the MAID of IEEE 802.1ag. (MD name type should be "no-present")
meg-type (primary-vid string integer icc-based)	The type of the Maintenance Entity Group ID; Default: string (character-string); ICC-BASED MEGID is also configured in this command.
level <0-7>	MEG Level, the range is 0 to 7
vlan VLAN_ID	Primary VLAN ID of the MA
ccm-interval	The transmission interval among CCMs of the MEG

Command Mode

Global Configuration

Default

None

Usage

Use this command to create a Maintenance Entity Group (MEG) defined in Y.1731. The MEG is the same object to a Maintenance Association (MA) defined in IEEE 802.1ag. This command is also used to enter Service OAM MA mode (SOAM_MA_MODE) that is a Service OAM CLI mode to configure the MA's attributes or create the MEP or MIP that belongs to the MA. Ensure you specify the level, VLAN and the name type for each MEG. This command is available in Global Configuration.

Example

The following example shows how to create and remove MEG.

```
BTI SA-805,21,22# configure terminal
    Enter configuration commands, one per line. End with CNTL/Z
BTI SA-805,21,22(config)# ethernet soam meg megid evc3001 meg-type icc-based
level 4 vlan 3001 ccm-interval 1sec
BTI SA-805,21,22(config-soam-ma)# end
BTI SA-805,21,22# show ethernet soam domain
```

Domain configuration]

```
-----  
-  
  domain(maid)          learn aging md-type    ma-type    1 vid  
  intvl  
-----  
-  
  meg: evc1001 (01:02:07)    en      5      no-present string      4 1001 1s  
  meg: evc2001 (01:02:07)    dis     0      no-present string      4 2001 1s  
  meg: evc2002 (01:02:07)    en    100      no-present string      4 2002 1s  
  meg: evc3001 (01:20:0d)    dis     0      no-present icc-based  4 3001 1s
```

Related Commands

None

9.2.4 rmep-learning, rmep-aging

Command Syntax

continuity-check rmep-learning enable

no continuity-check rmep-learning enable

continuity-check rmep-aging <0-1440>

Syntax	Description
<i>rmep-learning enable</i>	<i>enable Remote MEP automatic learning</i>
<i>rmep-aging <0-1440></i>	<i>0: No Remote MEP aged out</i>

Command Mode

MA mode (SOAM_MA_MODE)

Default

None

Usage

Use these commands to configure the Remote MEP automatic learning and aging process on an MA or an MEG.

Example

The following example shows how to configure the Remote MEP learning and aging process.

```
BTI SA-805,21,22# show ethernet soam domain
Domain configuration]
```

```
-----
-
domain(maid)          learn aging md-type    ma-type    1 vid
intvl
-----
-
meg: evc1001 (01:02:07)    en    5    no-present string    4 1001 1s
meg: evc2001 (01:02:07)    dis   0    no-present string    4 2001 1s
meg: evc2002 (01:02:07)    dis   0    no-present string    4 2002 1s
```

```
BTI SA-805,21,22# configure terminal
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
BTI SA-805,21,22(config-soam-ma)# continuity-check
```

```
attribute enable rmep-aging rmep-learning
```

```
BTI SA-805,21,22(config-soam-ma)# continuity-check rmep-en
```

```
BTI SA-805,21,22(config-soam-ma)# continuity-check rmep-learning enable
```

```
BTI SA-805,21,22(config-soam-ma)# continuity-check rmep-aging 100
```

```
BTI SA-805,21,22(config-soam-ma)# end
```

```
BTI SA-805,21,22# show ethernet soam domain
```

```
[Domain configuration]
```

```
-----  
-  
  domain(maid)                learn aging md-type    ma-type    l vid  
intvl  
-----  
-  
meg: evc1001 (01:02:07)        en      5      no-present string    4 1001 1s  
meg: evc2001 (01:02:07)        dis      0      no-present string    4 2001 1s  
meg: evc2002 (01:02:07)        en     100      no-present string    4 2002 1s
```

Related Commands

None

9.2.5 mip auto-creation

This command configures the MIP auto provisioning function on a MA or a MEG to standards defined in IEEE 802.1Q 2011 section 22.23.

Command Syntax

mip auto-creation (default|explicit|none)

Syntax	Description
<i>default</i>	<i>MIP is created to the MA(MEG) automatically when there is no lower active MD level on the bridge port.</i>
<i>explicit</i>	<i>MIP is only created to the MA(MEG) automatically when a MEP is configured to the bridge port at a lower active MD level.</i>
<i>none</i>	Disables MIP auto provisioning.

Command Mode

MA mode (SOAM MA mode)

Usage

Use MA mode (SOAM MA mode) to configure the function and Privileged EXEC mode to retrieve the configuration and status.

Example

```
BTI SA-805,21,22# show ethernet soam maintenance-point
```

```
*(dynamic maintenance-point)
```

```
xcon(cross connection mismatch), eoc(error of continuity),
```

```
loc(loss of continuity), mac(mac status defect), rdi(remote defect  
indication)
```

```
[MEP]
```

```
-----  
mepid vid l ifname mac-addr dir cci rdi fault domain  
-----
```

```
4304 101 4 eth-0-4 0019.6d01.29ec up en off none meg: evc101
```

```
4303 102 4 eth-0-3 0019.6d01.29eb up en off none meg: evc102
```

```
[MIP]
```

```
-----  
vid l ifname mac-addr domain  
-----
```

```
[Remote MEP]
```

```
-----  
rmepid mepid vid l mac-addr fault domain  
-----
```

```
4403 4304 101 4 0019.6d3d.0003 ---/---/--- meg: evc101
```

4404 4303 102 4 0019.6d3d.0004 ---/---/--- meg: evc102

BTI SA-805,21,22#

BTI SA-805,21,22# show ethernet soam maintenance-point location vlan 101

*\d/: Down MEP, /u\: Up MEP, (I): MIP

[maintenance-points location]

vid	1	2	3	4	mip creation
101	7	---	---	---	-
101	6	---	---	---	-
101	5	---	---	---	-
101	4	---	---	/u\	none(manual)
101	3	---	---	---	-
101	2	---	---	---	-
101	1	---	---	---	-
101	0	---	---	---	-

BTI SA-805,21,22# configure terminal

Enter configuration commands, one per line. End with CNTL/Z.

BTI SA-805,21,22(config)# ethernet soam meg megid evc101

BTI SA-805,21,22(config-soam-ma)# **mip auto-creation default**BTI

SA-805,21,22(config-soam-ma)# end

BTI SA-805,21,22# show ethernet soam maintenance-point location vlan 101

*\d/: Down MEP, /u\: Up MEP, (I): MIP

[maintenance-points location]

vid	1	2	3	4	mip creation
101	7	---	---	---	-
101	6	---	---	---	-
101	5	---	---	---	-
101	4	(I)	(I)	/u\	default
101	3	---	---	---	-
101	2	---	---	---	-
101	1	---	---	---	-
101	0	---	---	---	-

BTI SA-805,21,22# show ethernet soam active-levels vlan 101

*m(mip created), a(active), -(inactive)

[active level]

vid	ifname	0	1	2	3	4	5	6	7
101	eth-0-1	-	-	-	-	M	-	-	-
101	eth-0-2	-	-	-	-	M	-	-	-
101	eth-0-4	-	-	-	-	A	-	-	-

BTI SA-805,21,22#

```
BTI SA-805,21,22# show ethernet soam maintenance-point
*(dynamic maintenance-point)
xcon(cross connection mismatch), eoc(error of continuity),
loc(loss of continuity), mac(mac status defect), rdi(remote defect
indication)
```

[MEP]

mepid	vid	l	ifname	mac-addr	dir	cci	rdi	fault	domain
4304	101	4	eth-0-4	0019.6d01.29ec	up	en	off	none	meg: evc101
4303	102	4	eth-0-3	0019.6d01.29eb	up	en	off	none	meg: evc102

[MIP]

vid	l	ifname	mac-addr	domain
101	4	eth-0-1	0019.6d01.29e9*	meg: evc101
101	4	eth-0-2	0019.6d01.29ea*	meg: evc101

[Remote MEP]

rmepid	mepid	vid	l	mac-addr	fault	domain
4403	4304	101	4	0019.6d3d.0003	---/---/---	meg: evc101
4404	4303	102	4	0019.6d3d.0004	---/---/---	meg: evc102

```
BTI SA-805,21,22#
```

Related Commands

```
show ethernet soam maintenance-point
```

```
show ethernet soam active-levels vlan
```

```
show mlag interface
```

9.2.6 show ethernet soam domain

Command Syntax

show ethernet soam domain

Command Mode

Privileged EXEC mode

Default

None

Usage

Use the command to retrieve the current domain configuration. This command is available in Privileged EXEC mode.

Example

The following example shows how to perform this command.

```
BTI SA-805,21,22# show ethernet soam domain
[Domain configuration]
```

```
-----
-
  domain(maid)                learn aging md-type    ma-type    l vid
  intvl
-----
-
meg: evc1001 (01:02:07)      en    5      no-present string    4 1001 1s
meg: evc2001 (01:02:07)      dis   0      no-present string    4 2001 1s
meg: evc2002 (01:02:07)      en   100     no-present string    4 2002 1s
meg: evc3001 (01:20:0d)      dis   0      no-present icc-based  4 3001 1s
```

Related Commands

ethernet soam meg megid MEGID ({level <0-7>| vlan <1-4094>| ccm-interval (300hz| 10ms| 100ms| 1sec| 10sec| 1min| 10min) | meg-type (primary-vid| string| integer| icc-based)}))

ethernet soam ma ma-name MA-NAME (ma-type (primary-vid|string|integer)) md-name MD-NAME (vlan <1-4094>|)(ccm-interval (300hz|10ms|100ms|1sec|10sec|1min|10min))

ethernet soam md md-name MD-NAME (md-type (no-present| dns-based| char-str)) (level <0-7>|)

ma ma-name MA-NAME (ma-type (primary-vid|string|integer))(vlan <1-4094>|) (ccm-interval (300hz|10ms|100ms|1sec|10sec|1min|10min))

9.2.7 show ethernet soam active-levels vlan

This command displays the active-levels vlan data as *m(mip created), a(active) and -(inactive).

Command Syntax

show ethernet soam active-levels vlan <1-4094> interface (IFPHYSICAL|IFAGG)

Command Mode

Privileged EXEC

Usage

N/A

Example

```
BTI SA-805,21,22# show ethernet soam active-levels vlan 101
*m(mip created), a(active), -(inactive)
```

[active level]

```
-----
vid  ifname  0 1 2 3 4 5 6 7
-----
101  eth-0-1  - - - - M - - -
101  eth-0-2  - - - - M - - -
101  eth-0-4  - - - - A - - -
BTI SA-805,21,22#
```

```
BTI SA-805,21,22# show ethernet soam maintenance-point
*(dynamic maintenance-point)
xcon(cross connection mismatch), eoc(error of continuity),
loc(loss of continuity), mac(mac status defect), rdi(remote defect
indication)
```

[MEP]

```
-----
mepid vid  l ifname  mac-addr  dir  cci rdi fault domain
-----
4304  101  4 eth-0-4  0019.6d01.29ec up   en  off none  meg: evc101
4303  102  4 eth-0-3  0019.6d01.29eb up   en  off none  meg: evc102
```

[MIP]

```
-----
vid  l ifname  mac-addr  domain
-----
101  4 eth-0-1  0019.6d01.29e9* meg: evc101
101  4 eth-0-2  0019.6d01.29ea* meg: evc101
```

[Remote MEP]

rmepid	mepid	vid	l	mac-addr	fault	domain
4403	4304	101	4	0019.6d3d.0003	---/---/---	meg: evc101
4404	4303	102	4	0019.6d3d.0004	---/---/---	meg: evc102

BTI SA-805,21,22#

Related Commands

show ethernet soam maintenance-point

show ethernet soam active-levels vlan

show mlag interface

9.3 Maintenance point configuration

This section covers the following topics :

- 9.3.1, “mep mepid”
- 9.3.2, “rmep rmepid”
- 9.3.3, “mip interface”
- 9.3.4, “show ethernet soam maintenance-point”
- 9.3.5, “show ethernet soam maintenance-point mep mepid”
- 9.3.6, “evc status-update”

9.3.1 mep mepid

Command Syntax

mep mepid <1-8191> interface IFNAME (direction (down|up)|)

no mep mepid <1-8191>

Syntax	Description
mepid <1-8191>	The MEPID should be unique within an MA.
interface IFNAME	Interface which in the MEP is located
direction (down up)	The direction of the MEP to be operated in Bridge port; Default: down

Command Mode

MA mode (SOAM_MA_MODE)

Default

None

Usage

Use this command to create or delete an MEP within an MA. Each MEP and remote MEP must have a unique ID within an MA. If two or more MEPs share the same ID, CFM raises an event indicating a duplicate MEP exists in the MA.

Example

The following example shows how to create a MEP.

```
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet soam meg mepid evc3001
BTI SA-805,21,22(config)# ethernet soam meg mepid evc3001 meg-type icc-based
level 4 vlan 3001 ccm-interval 1sec
BTI SA-805,21,22(config-soam-ma)# mep mepid 4443 interface eth-0-4 direction
up
BTI SA-805,21,22(config-soam-ma)# end
BTI SA-805,21,22# show ethernet soam maintenance-point
*(dynamic maintenance-point)
xcon(cross connection mismatch), eoc(error of continuity),
  loc(loss of continuity), mac(mac status defect), rdi(remote defect
indication)
[MEP]
```

```

-----
mepid vid l ifname mac-addr dir cci rdi fault domain
-----
4443 1001 4 eth-0-3 0019.6de1.e103 up en off none meg: evc1001
4444 2001 4 eth-0-4 0019.6de1.e104 up en off none meg: evc2001
4443 2002 4 eth-0-3 0019.6de1.e103 up en off none meg: evc2002
4443 3001 4 eth-0-4 0019.6de1.e104 up en off none meg: evc3001

```

[MIP]

```

-----
vid l ifname mac-addr domain
-----

```

[Remote MEP]

```

-----
rmepid mepid vid l mac-addr fault domain
-----
4433* 4443 1001 4 0019.6d91.8174 ---/---/--- meg: evc1001
4453* 4443 1001 4 0019.6de1.e203 ---/---/--- meg: evc1001
4454 4444 2001 4 0019.6de1.e204 ---/---/--- meg: evc2001
4453 4443 2002 4 0019.6de1.e203 ---/---/--- meg: evc2002

```

Related Commands

ethernet soam meg megid MEGID ({level <0-7>| vlan <1-4094>| ccm-interval (300hz| 10ms| 100ms| 1sec| 10sec| 1min| 10min) | meg-type (primary-vid| string| integer| icc-based)}))

ethernet soam ma ma-name MA-NAME (ma-type (primary-vid|string|integer)) md-name MD-NAME (vlan <1-4094>|)(ccm-interval (300hz|10ms|100ms|1sec|10sec|1min|10min))

ethernet soam md md-name MD-NAME (md-type (no-present| dns-based| char-str)) (level <0-7>|)

ma ma-name MA-NAME (ma-type (primary-vid|string|integer)) (vlan <1-4094>|) (ccm-interval (300hz|10ms|100ms|1sec|10sec|1min|10min))

9.3.2 rmep rmepid

The remote MEP is a MEP in a Far End NE (Network Equipment). To check the status of the Service OAM Domain, the remote MEP is required with its MEPID and MAC address. The following command is used to configure the remote MEP. The switch supports only the static remote MEP configuration. the dynamic remote MEP configuration (RMEP learning) will be implemented in the near future.

Command Syntax

rmep rmepid <1-8191> mepid <1-8191> remote-mac MACADDRESS

no rmep rmepid <1-8191> mepid <1-8191>

Syntax	Description
rmepid <1-8191>	The MEPID of the remote MEP; This rmepid should be unique in the MA.
mepid <1-8191>	The MEPID of the local MEP associated to this remote MEP in the MA; This mepid should be unique in the MA. This MEP should be already created in the MA before this remote MEP creation.
Remote-mac MACADDRESS	The MAC address of this remote MEP; This MAC address is used to other functions like Linktrace or Loopback.

Command Mode

MA mode (SOAM_MA_MODE)

Default

None

Usage

Use this command to define a remote MEP within a local MEP. Each MEP and remote MEP must have a unique ID within an MA. If two or more MEPs share the same ID, Service OAM module raises an event indicating a duplicate MEP exists in the MA.

Example

The following example shows how to create remote MEP:

```
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet soam meg megid evc3001
BTI SA-805,21,22(config-soam-ma)# rmep rmepid 4453 mepid 4443 remote-mac
0019.6de1.e204
BTI SA-805,21,22(config-soam-ma)# do show ethernet soam maintenance-point
*(dynamic maintenance-point)
xcon(cross connection mismatch), eoc(error of continuity),
loc(loss of continuity), mac(mac status defect), rdi(remote defect
indication)
```

[MEP]

mepid	vid	l	ifname	mac-addr	dir	cci	rdi	fault	domain
4443	1001	4	eth-0-3	0019.6de1.e103	up	en	off	none	meg: evc1001
4444	2001	4	eth-0-4	0019.6de1.e104	up	en	off	none	meg: evc2001
4443	2002	4	eth-0-3	0019.6de1.e103	up	en	off	none	meg: evc2002
4443	3001	4	eth-0-4	0019.6de1.e104	up	en	off	loc	meg: evc3001

[MIP]

vid	l	ifname	mac-addr	domain
-----	---	--------	----------	--------

[Remote MEP]

rmepid	mepid	vid	l	mac-addr	fault	domain
4433*	4443	1001	4	0019.6d91.8174	---/---/---	meg: evc1001
4453*	4443	1001	4	0019.6de1.e203	---/---/---	meg: evc1001
4454	4444	2001	4	0019.6de1.e204	---/---/---	meg: evc2001
4453	4443	2002	4	0019.6de1.e203	---/---/---	meg: evc2002
4453	4443	3001	4	0019.6de1.e204	loc/---/---	meg: evc3001

BTI SA-805,21,22(config-soam-ma)#

Related Commands

mep mepid <1-8191> interface IFNAME (direction (down|up)|)

no mep mepid <1-8191>

9.3.3 mip interface

A MIP in a MEG or MD/MA that is capable of reacting to some SOAM PDUs like Linktrace and Loopback message, but does not initiate SOAM PDUs. The switch supports the MIP to manage the layered Service OAM Domains.

Command Syntax

mip interface IFNAME

no mip interface IFNAME

Syntax	Description
interface IFNAME	Interface which in the MIP is located

Command Mode

MA mode (SOAM_MA_MODE)

Default

None

Usage

Use this command to define an MIP. The relative MD and MA should be configured before MIP is configured.

Example

The following example shows how to create an MIP.

```
BTI SA-805,21,22# configure terminal
  Enter configuration commands, one per line. End with CNTL/Z
BTI SA-805,21,22(config)#
BTI SA-805,21,22(config)# ethernet soam meg megid evc3001
BTI SA-805,21,22(config-soam-ma)# mip interface eth-0-1
BTI SA-805,21,22(config-soam-ma)# end
BTI SA-805,21,22# show ethernet soam maintenance-point
  *(dynamic maintenance-point)
  xcon(cross connection mismatch), eoc(error of continuity),
  loc(loss of continuity), mac(mac status defect), rdi(remote defect
indication)
[MEP]
-----
mepid vid  l ifname      mac-addr      dir  cci rdi fault domain
-----
4443  1001  4 eth-0-3  0019.6de1.e103 up    en  off none  meg: evc1001
```



```

4444 2001 4 eth-0-4 0019.6de1.e104 up en off none meg: evc2001
4443 2002 4 eth-0-3 0019.6de1.e103 up en off none meg: evc2002
4443 3001 4 eth-0-4 0019.6de1.e104 up en off loc meg: evc3001

```

[MIP]

```

-----
vid  l  ifname      mac-addr      domain
-----
3001 4  eth-0-1  0019.6de1.e101 meg: evc3001

```

[Remote MEP]

```

-----
rmepid mepid vid  l  mac-addr      fault      domain
-----
4433*  4443  1001 4  0019.6d91.8174 ---/---/--- meg: evc1001
4453*  4443  1001 4  0019.6de1.e203 ---/---/--- meg: evc1001
4454   4444  2001 4  0019.6de1.e204 ---/---/--- meg: evc2001
4453   4443  2002 4  0019.6de1.e203 ---/---/--- meg: evc2002
4453   4443  3001 4  0019.6de1.e204 loc/---/--- meg: evc3001

```

Related Commands

ethernet soam meg megid MEGID ({level <0-7>| vlan <1-4094>| ccm-interval (300hz| 10ms| 100ms| 1sec| 10sec| 1min| 10min) | meg-type (primary-vid| string| integer| icc-based)}))

ethernet soam ma ma-name MA-NAME (ma-type (primary-vid|string|integer)) md-name MD-NAME (vlan <1-4094>|)(ccm-interval (300hz|10ms|100ms|1sec|10sec|1min|10min))

ethernet soam md md-name MD-NAME (md-type (no-present| dns-based| char-str)) (level <0-7>|)

ma ma-name MA-NAME (ma-type (primary-vid|string|integer)) (vlan <1-4094>|) (ccm-interval (300hz|10ms|100ms|1sec|10sec|1min|10min))

9.3.4 show ethernet soam maintenance-point

Command Syntax

show ethernet soam maintenance-point (mep|mip|rmep|)

show ethernet soam maintenance-point domain (megid MEGID|ma-name MA-NAME md-name MD-NAME)

Command Mode

Privileged EXEC mode

Default

None

Usage

Use the command to retrieve the current maintenance-point information. This command is available in Privileged EXEC mode.

Example

The following example shows how to perform this command.

```
BTI SA-805,21,22# show ethernet soam maintenance-point
fault: xcon(cross connection mismatch), eoc(error of continuity),
       loc(loss of continuity), mac(mac status defect),
       rdi(remote defect indication)
```

[MEP]

mepid	vid	l	ifname	mac-addr	dir	cci	rdi	fault	domain
83	100	4	eth-0-3	0019.6de1.e203	up	en	off	none	meg: v100

[MIP]

vid	l	ifname	mac-addr	domain
100	6	eth-0-3	0019.6de1.e203	md-ma: 1e6-v100

[Remote MEP]

rmepid	mepid	vid	l	mac-addr	fault(loc/mac/rdi)	domain
73	83	100	4	0019.6de1.e103	(---/---/---)	meg: v100

```
BTI SA-805,21,22# show ethernet soam maintenance-point mep
fault: xcon(cross connection mismatch), eoc(error of continuity),
       loc(loss of continuity), mac(mac status defect),
```

```
rdi(remote defect indication)
```

```
[MEP]
```

```
-----
mepid vid 1 ifname mac-addr dir cci rdi fault domain
-----
83 100 4 eth-0-3 0019.6de1.e203 up en off none meg: v100
```

```
BTI SA-805,21,22# show ethernet soam maintenance-point mip
fault: xcon(cross connection mismatch), eoc(error of continuity),
       loc(loss of continuity), mac(mac status defect),
       rdi(remote defect indication)
```

```
[MIP]
```

```
-----
vid 1 ifname mac-addr domain
-----
100 6 eth-0-3 0019.6de1.e203 md-ma: 1e6-v100
```

```
BTI SA-805,21,22# show ethernet soam maintenance-point rmep
fault: xcon(cross connection mismatch), eoc(error of continuity),
       loc(loss of continuity), mac(mac status defect),
       rdi(remote defect indication)
```

```
[Remote MEP]
```

```
-----
rmepid mepid vid 1 mac-addr fault(loc/mac/rdi) domain
-----
73 83 100 4 0019.6de1.e103 (---/---/---) meg: v100
```

```
BTI SA-805,21,22# show ethernet soam maintenance-point domain megid v100
fault: xcon(cross connection mismatch), eoc(error of continuity),
       loc(loss of continuity), mac(mac status defect),
       rdi(remote defect indication)
```

```
[MEP]
```

```
-----
mepid vid 1 ifname mac-addr dir cci rdi fault domain
-----
83 100 4 eth-0-3 0019.6de1.e203 up en off none meg: v100
```

```
[MIP]
```

```
-----
vid 1 ifname mac-addr domain
-----
```

```
[Remote MEP]
```

```
-----
mepid vid 1 mac-addr fault(loc/mac/rdi) domain
-----
73 83 100 4 0019.6de1.e103 (---/---/---) meg: v100
```

Related Commands

None

9.3.5 show ethernet soam maintenance-point mep mepid

Command Syntax

show ethernet soam maintenance-point mep mepid <1-8191> (megid MEGID|ma-name MA-NAME md-name MD-NAME)

Command Mode

Privileged EXEC mode

Default

None

Usage

Use the command to retrieve the detailed information for a specific MEP.

Example

The following example shows how to perform this command.

```
BTI SA-805,21,22# show ethernet soam maintenance-point mep mepid 83 megid
v100
fault: xcon(cross connection mismatch), eoc(error of continuity),
      loc(loss of continuity), mac(mac status defect),
      rdi(remote defect indication)

[MEP attributes]

-----
-
domain          : meg: v100          level          : 4
vid             : 100               ccm-interval   : 1sec
-----
-
mepid           : 83                direction      : up
ifname          : eth-0-3           mac            : 0019.6de1.e203
cci(tx)         : en               ccm-ltm-priority: 7
fng-state       : reset            low-pri-defect  : mac/loc/eoc/xcon(2)
fng-alarm-time  : 2.50sec          fng-reset-time  : 10.00sec
rdi(tx)         : off              highest-defect   : none(0)
-----
-
defects         : ----/---/---/---/---
```

9.3.6 evc status-update

Use this command to map the created OAM domain to its service.

Command Syntax

[no] evc status-update enable

default : disabled

Command Mode

MA mode (SOAM MA mode)

Usage

The user must configure the MEG and MEP and Remote MEP before enabling the service status update.

Example

```
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet soam meg megid test
BTI SA-805,21,22(config-soam-ma)# evc status-update enable
BTI SA-805,21,22(config-soam-ma)# end
BTI SA-805,21,22# show ethernet evc
```

```
-----
EVC test
Service Type           : epline
VC Type                : Point-to-Point
SVLAN ID               : 100
SVLAN Priority Mode     : copy-from-cvlan
CE-VLAN ID Preservation : Yes
CE-VLAN CoS ID Preservation : Yes
Maximum Number of UNI   : 2
Number of UNI          : 1
Number of RUNI         : 1
Number of ENNI         : 0
EVC MEG state          : enable
OAM Domain Name        : test
MEG Level              : 4
CCM Interval           : 1sec
Service Status         : Active
Local UNI List
```

```
-----
uni2,Remote UNI List runi212,
INNI List nnil
-----
```

```
BTI SA-805,21,22# show ethernet epu
EPU uni2-test:
MEPID of EPU : 222* (MAC: 0019:6de1:e102)
```

```
Performance   : disable
CE-VLAN map   : All to One Bundling
```

```
-----
BTI SA-805,21,22# show ethernet repu
-----
```

```
EPU runi212-test:
MEPID          : 212* (MAC: 0019:6de1:e202)
-----
```

```
BTI SA-805,21,22#
BTI SA-805,21,22# show ethernet evc status
-----
```

```
EVC name       : test(100) / epline
EVC-MEG state  : enable
OAM Domain Name : test
MEG Level      : 4
CCM Interval   : 1sec
Service Status : Active
Local MEPS     : uni2(222)*,
Remote MEPS    : runi212(212),
-----
```

Related Commands

None

9.4 Continuity check

This section covers the following topics :

- [9.5, “ethernet soam loopback ”](#)
- [9.6, “ ethernet soam linktrace”](#)
- [9.7, “ethernet soam delay-msmt”](#)
- [9.4.4, “continuity-check tlv-included”](#)

9.4.1 continuity-check enable mepid

The CCM transmission control and other attributes related to the continuity-check message (CCM) per MEP is configured by these Continuity-check commands.

Upon the MEP creation, CCM (Continuity-Check Message) is enabled by default. If the CCM transmission is not required, use the following command to enable or disable the CCM transmission.

Command Syntax

continuity-check enable mepid <1-8191>

no continuity-check enable mepid <1-8191>

Syntax	Description
mepid <1-8191>	The MEPID should be unique within an MA.

Command Mode

MA mode (SOAM_MA_MODE)

Default

Continuity-check enable (CCM transmission) is basically configured upon MEP creation.

Usage

Use this command to configure the continuity-check function of the MEP within an MA in the MA mode. The CCM transmission control per MEP is configured by this command. The CCM transmission is basically enabled upon MEP creation.

Example

The following example shows how to enable or disable the continuity-check function (CCM transmission).

```
BTI SA-805,21,22(config)# ethernet soam meg megid v100 level 4 vlan 100 ccm-
interval 1sec
BTI SA-805,21,22(config-soam-ma)# mep mepid 83 interface eth-0-3 direction up
BTI SA-805,21,22(config-soam-ma)# continuity-check enable mepid 83
BTI SA-805,21,22(config-soam-ma)# do show ethernet soam maintenance-point mep
mepid 83 megid v100 fault: xcon(cross connection mismatch),
    eoc(error of continuity),
        loc(loss of continuity), mac(mac status defect),
        rdi(remote defect indication)

[MEP attributes]
```

```
-
domain          : meg: v100          level          : 4
vid             : 100                ccm-interval     : 1sec
-----
-
mepid           : 83                  direction       : up
ifname          : eth-0-3             mac             : 0019.6de1.e203
cci(tx)         : en                  ccm-ltm-priority: 6
fng-state       : unknown             low-pri-defect   : eoc/xcon(4)
fng-alarm-time  : 2.50sec             fng-reset-time  : 10.00sec
rdi(tx)         : off                 highest-defect   : none(0)
-----
-
defects         : ----/---/---/---/---
```

9.4.2 continuity-check attribute mepid

Command Syntax

continuity-check attribute mepid <1-8191> ccm-ltm-priority <0-7>

Syntax	Description
mepid <1-8191>	The MEPID should be unique within an MA.
ccm-ltm-priority <0-7>	Priority of continuity-check and linktrace messages

Command Mode

MA mode (SOAM_MA_MODE)

Default

The priority of CCM/LTM is 7 by default.

Usage

Use this command to configure the Continuity-Check attribute of the MEP within an MA in the MA mode. The CCM/LTM priority is configured by this command.

Example

The following example shows how to configure CCM/LTM priority.

```
BTI SA-805,21,22(config)# ethernet soam meg mepid v100 level 4 vlan 100 ccm-
interval 1sec
BTI SA-805,21,22(config-soam-ma)# mep mepid 83 interface eth-0-3 direction up
BTI SA-805,21,22(config-soam-ma)# continuity-check enable mepid 83
BTI SA-805,21,22(config-soam-ma)# continuity-check attribute mepid 83 ccm-ltm-
priority 6
BTI SA-805,21,22(config-soam-ma)# continuity-check attribute mepid 83 low-pri-
defect 4
BTI SA-805,21,22(config-soam-ma)# do show ethernet soam maintenance-point mep
mepid 83 megid v100fault:
  xcon(cross connection mismatch), eoc(error of continuity),
    loc(loss of continuity), mac(mac status defect),
    rdi(remote defect indication)
```

[MEP attributes]

```
-----
-
domain          : meg: v100          level          : 4
vid             : 100                ccm-interval     : 1sec
```

```
-----  
-  
mepid           : 83                direction      : up  
ifname          : eth-0-3           mac            : 0019.6de1.e203  
cci(tx)         : en               ccm-ltm-priority: 6  
fng-state       : unknown          low-pri-defect  : eoc/xcon(4)  
fng-alarm-time  : 2.50sec          fng-reset-time : 10.00sec  
rdi(tx)         : off              highest-defect  : none(0)  
-----  
-  
defects         : ----/---/---/-
```

9.4.3 low-pri-defect

The switch supports the following defect and defect priority. The Lowest-priority-defect attribute is used to manage the fault alarm generation upon detecting defects.

Defect in switch	Defect	Priority		
	Variable	Highest Defect (20.35.9)	Highest Defect (20.35.8)	Importance
Xcon (Cross Connection Error)	xconCCMdefect (20.23.3)	DefXonCCM	5	Most
eoc (Error of Continuity)	errorCCMdefect (20.21.3)	DefErrorCCM	4	
loc (Loss of Continuity)	someRMEPCCMdefect (20.35.3)	DefRemoteCCM	3	
mac (MAC status Defect)	someMACstatusDefect (20.35.6)	DefMACstatus	2	
rdi (Remote Defect Indication)	someRDId defect (20.35.7)	DefRDICCM	1	Least

Command Syntax

Continuity-check attribute configuration command

continuity-check attribute mepid <1-8191> low-pri-defect <1-6>

Syntax	Description
mepid <1-8191>	The MEPID should be unique within an MA.
low-pri-defect <1-6>	<p>The Lowest-priority-defect is used to filter the Service OAM Fault Alarm generation. This attribute should be one of the following values.</p> <p>all(1): The Fault Alarm is generated by all the defects (rdi/mac/loc/eoc/ xcon).</p> <p>mac/loc/eoc/xcon(2): RDI (Remote Defect Indication) does not generate the Fault Alarm.</p> <p>loc/eoc/xcon(3): RDI (rdi) and MAC-status defect (mac) does not generate the Fault Alarm.</p> <p>eoc/xcon(4): RDI (rdi), MAC-status (mac) and Loss of Continuity (loc) does not generate the Fault Alarm.</p> <p>xcon-only(5): RDI (rdi), MAC-status (mac), Loss of Continuity (loc) and Error of Continuity (eoc) does not generate the Fault Alarm.</p> <p>no-defect(6): All the defects does not generate the Fault Alarm.</p>

Command Mode

MA mode (SOAM_MA_MODE)

Default

Default value is 'mac/loc/eoc/xcon(2)'.

Usage

Use this command to configure the lowest-priority-defect attribute of the MEP within an MA in the MA mode.

Example

The following example shows how to configure the Lowest-priority-defect attribute.

```
BTI SA-805,21,22(config)# ethernet soam meg megid v100 level 4 vlan 100 ccm-
interval 1sec
BTI SA-805,21,22(config-soam-ma)# mep mepid 83 interface eth-0-3 direction up
BTI SA-805,21,22(config-soam-ma)# continuity-check enable mepid 83
    ccm-ltm-priority low-pri-defect
BTI SA-805,21,22(config-soam-ma)# continuity-check attribute mepid 83 ccm-ltm-
priority 6
BTI SA-805,21,22(config-soam-ma)# continuity-check attribute mepid 83 low-pri-
defect 4
BTI SA-805,21,22(config-soam-ma)# do show ethernet soam maintenance-point mep
mepid 83 megid v100
    fault: xcon(cross connection mismatch), eoc(error of continuity),
           loc(loss of continuity), mac(mac status defect),
           rdi(remote defect indication)

[MEP attributes]
```

```
-----
-
domain          : meg: v100          level          : 4
vid             : 100                ccm-interval    : 1sec
-----
-
mepid           : 83                  direction      : up
ifname          : eth-0-3             mac            : 0019.6de1.e203
cci(tx)         : en                  ccm-ltm-priority: 6
fng-state       : unknown             low-pri-defect  : eoc/xcon(4)
fng-alarm-time  : 2.50sec             fng-reset-time  : 10.00sec
rdi(tx)         : off                 highest-defect   : none(0)
-----
```

-
defects : ----/----/----/----/----

9.4.4 continuity-check tlv-included

The Port & Interface Status TLVs in CCM is used to inform the link down and port block status to the remote side on Up MEP. The switch supports the on demand transmission of the Port & Interface Status TLVs only on the Up MEP. (The reception of the TLVs is enabled and not changable.)

Command Syntax

continuity-check tlv-included (all-status | if-status-only | port-status-only | none)

all-status - Include Port and Interface Status TLVs

if-status-only- Only include Interface Status TLV

port-status-only - Only include Port Status TLV

none- TLVs are not included

Command Mode

MA mode (SOAM_MA_MODE)

Default

Continuity-check tlv-included (Port & Interface Status TLV Transmission) is configured to 'none'.

Examples

```
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.

BTI SA-805,21,22(config)# ethernet soam meg megid smeg2
BTI SA-805,21,22(config-soam-ma)# continuity-check tlv-included all-status
BTI SA-805,21,22(config-soam-ma)# end
BTI SA-805,21,22# show running-config
Building configuration...
!version 1.1.1Build3
!MODE HFR

ethernet soam meg megid smeg2
continuity-check rmep-learning enable
continuity-check tlv-included all-status
mep mepid 4 interface eth-0-3 direction up
```


9.5 ethernet soam loopback

On-demand Loopback is used to verify connectivity from local MEPs to remote MEPs or MIP in a MD/MA or MEG. Loopback is similar technique to ping request/reply function. A MEP sends a loopback request message to another MEP or MIP, which generates a subsequent LBR. For IEEE 802.1ag, loopback is a unicast OAM message. Y.1731 allows both unicast and multicast loopback.

MEP and RMEP (remote MEP) should be created before performing this command.

Command Syntax

ethernet soam loopback (multicast | unicast rmepid <1-8191> | unicast remote-mac MACADDRESS) mepid <1-8191> (megid MEGID|ma-name MA-NAME md-name MD-NAME) ({repeat <1-255> | timeout <1-65535> | priority <0-7> | data-tlv <1-1488> | drop (eligible|ineligible)}|)

Syntax	Description
multicast	Send multicast loopback message
unicast	Send unicast loopback message
rmepid <1-8191>	MEPID of the target RMEP (remote MEP)
remote-mac MACADDRESS	MAC address of the target RMEP
mepid <1-8191>	MEPID of Initiator MEP sending the loopback message
megid MEGID	If the Domain is based on Y.1731, use this parameter to designate the target Domain.
ma-name MA-NAME md-name MD-NAME	If the Domain is based on IEEE 802.1ag, use this parameter to designate the target Domain.
repeat <1-255>	The number of transmitting loopback messages
timeout <1-65535>	The waiting time for receiving loopback messages
priority <0-7>	The priority of the loopback message
data-tlv <1-1488>	The number of bytes for the Data-TLV in the loopback message
	Set / Clear Drop Eligible Indicator (DEI)

Command Mode

Privileged EXEC mode

Default

None

Usage

Use the command to issue loopback message to verify the remote MEPs are accessible. This command is available in Privileged EXEC mode.

Example

The following example shows how to perform the loopback test.

```
BTI SA-805,21,22 # ethernet soam loopback unicast rmepid 4453 mepid 4433 megid
evc1001 drop eligible repeat 10 priority 4
```

```
BTI SA-805,21,22 # show ethernet soam loopback mepid 4433 megid evc1001
Loopback (ETH-LB) function]
```

```
-----
- domain      : evc1001 (meg)
- mepid       : 4433
- status      : non-running
- frame-type  : unicast
- rmepid      : 4453
- remote-mac  : 0019.6de1.e203
- priority    : 4
- drop(dei)   : eligible
- timeout     : 5sec
-----
```

```
-----
- tx num (total) : 10
- tx num (remains): 0
- rx num (current): 10
- success rate   : 100%
-----
```

```
BTI SA-805,21,22# show ethernet soam maintenance-point
```

```
*(dynamic maintenance-point)
xcon(cross connection mismatch), eoc(error of continuity),
loc(loss of continuity), mac(mac status defect), rdi(remote defect
indication)
```

```
[MEP]
```

```
-----
mepid vid  l ifname  mac-addr      dir  cci rdi fault domain
-----
4431  4000  1 eth-0-1  0019.6d91.8172 down en  off none md-ma: raps-raps
4432  4000  1 eth-0-2  0019.6d91.8173 down en  off none md-ma: raps-raps
4433  1001  4 eth-0-3  0019.6d91.8174 up   en  off none meg: evc1001
-----
```

```
[MIP]
```

```
-----
vid  l ifname  mac-addr      domain
-----
```

```
[Remote MEP]
```

```
-----
rmepid mepid vid  l mac-addr      fault      domain
-----
4442*  4431  4000  1 0019.6de1.e102 ---/---/--- md-ma: raps-raps
4451*  4432  4000  1 0019.6de1.e201 ---/---/--- md-ma: raps-raps
4443*  4433  1001  4 0019.6de1.e103 ---/---/--- meg: evc1001
4453*  4433  1001  4 0019.6de1.e203 ---/---/--- meg: evc1001
-----
```

Related Commands

9.6 ethernet soam linktrace

On-demand Linktrace is used for fault isolation and to check the path to the target remote MEP. When a MIP or MEP receives a linktrace message, it generates a unicast LTR to the initiating MEP and forwards the linktrace to the target MEP destination MAC address.

MEP and RMEP (remote MEP) should be created before performing this command.

Command Syntax

ethernet soam linktrace (remote-mac MACADDRESS | rmepid <1-8191>) mepid <1-8191> (megid MEGID|ma-name MA-NAME md-name MD-NAME) ({ttl <1-255>}|)

Syntax	Description
rmepid <1-8191>	MEPID of the target RMEP (remote MEP)
remote-mac MACADDRESS	MAC address of the target RMEP
mepid <1-8191>	MEPID of Initiator MEP sending the Linktrace message
megid MEGID	If the Domain is based on Y.1731, use this parameter to designate the target Domain.
ma-name MA-NAME md-name MD-NAME	If the Domain is based on IEEE 802.1ag, use this parameter to designate the target Domain.
ttl <1-255>	Time To Live parameter of the Linktrace message;

Command Mode

Privileged EXEC mode

Default

None

Usage

Use the command to issue linktrace message to verify the path to the target MEP.

Example

The following example shows how to perform the linktrace test.

```
BTI SA-805,21,22# show ethernet soam linktrace mepid 4443 megid evc1001
[Linktrace (ETH-LT) function]
```

```
-----
- domain      : evc1001 (meg)
- mepid       : 4443
- status      : in-active
- ttl         : 64
- rmepid      : 4453
- remote-mac  : 0019.6de1.e203
- priority    : 7
```

```
-----  
ttl f t relay traced-node          traced-point  
-----  
63  x o hit    last:0019.6de1.e100  ing-none 0000.0000.0000  
                next:0019.6de1.e200  egr-down 0019.6de1.e203 ifname eth-0-3
```

Related Commands

9.7 ethernet soam delay-msmt

On-demand and Proactive Delay-measurement Test is used to measure frame delay and frame delay variation. Frame delay and frame delay variation measurements are performed by sending periodic delay-measurement frames to a peer MEP and receiving the frames from the peer MEP during proactive measurement session and/or the diagnostic interval. The switch supports two types of the delay-measurement test. One is a two-way delay-measurement test that measures the delay using the round-trip time with the assumption for the symmetric network delay. The other is a one-way delay-measurement that requires the synchronized time in the measurement session. MEP and RMEP (remote MEP) should be created before performing this command.

Command Syntax

<On-Demand Delay-measurement test>

ethernet soam delay-msmt (one-way|two-way) rmepid <1-8191> mepid <1-8191> (megid MEGID|ma-name MA-NAME md-name MD-NAME) count <1-60> ({priority <0-7> | interval (100ms | 1sec | 10sec)| frame-size <64-1522> }|)

<Proactive Delay-measurement test>

delay-msmt (one-way|two-way) rmepid <1-8191> mepid <1-8191> duration (1min|5mins| 15mins|1hour|24hours |forever) ({priority <0-7> | interval (1sec | 10sec)

no delay-msmt (one-way|two-way) mepid <1-8191>

<Delay-measurement test result Retrieving>

show ethernet soam delay-msmt result ((megid MEGID|ma-name MA-NAME md-name MD-NAME))

show ethernet soam delay-msmt result

<Delay-measurement configuration Retrieving>

show ethernet soam delay-msmt config

<Delay-measurement result clear>

clear ethernet soam delay-msmt result

clear ethernet soam delay-msmt result ((megid MEGID|ma-name MA-NAME md-name MD-NAME))

Syntax	Description
(one-way two-way)	The type of the delay-measurement test
rmepid <1-8191>	MEPID of the target RMEP (remote MEP)
remote-mac MACADDRESS	MAC address of the target RMEP
mepid <1-8191>	MEPID of Initiator MEP sending the delay-measurement message
megid MEGID	If the Domain is based on Y.1731, use this parameter to designate the target Domain.

Syntax	Description
ma-name MA-NAME md-name MD-NAME	If the Domain is based on IEEE 802.1ag, use this parameter to designate the target Domain.
count <1-60>	The number of transmitting delay-measurement messages
priority <0-7>	The priority of the delay-measurement message; The default is 7.
interval (100ms 1sec 10sec)	Transmission interval between the delay-measurement messages.
duration (1min 5mins 15mins 1hour 24hours forever)	The Measurement duration of the Delay-measurement test

Command Mode

Privileged EXEC mode or
MA mode (SOAM_MA_MODE)

Default

None

Usage

Use the commands to issue the delay-measurement message. This commands are available in Privileged EXEC mode or SOAM MA mode.

Example

The following example shows how to perform the delay-measurement test.

```
BTI SA-805,21,22# ethernet soam delay-msmt two-way rmepid 4453 mepid 4443
megid evc1001 count 60 interval 1sec
```

```
BTI SA-805,21,22# show ethernet soam delay-msmt result megid evc1001
[Delay Measurement (ETH-DM) statistics]
```

```
-----
- domain      : evc1001 (meg)
- level       : 4
- vlanid      : 1001
- mepid       : 4443
- rmepid      : 4453
- type        : two-way
- interval    : 1s
- duration    : 1min(60s)
- dmm/ldm tx  : 11
- dmr rx      : 11
- ldm rx      : 0
- suspected   : 0
- dmr (cache) : 11
- ldm (cache) : 0
```

```
- start time   : 2014-08-06 13:27:34
- status       : active

- minimum-delay      :      8.768 us
- maximum-delay      :      9.096 us
- average-delay      :      8.917 us
- minimum-delay-variation :      0.056 us
- maximum-delay-variation :      0.224 us
- average-delay-variation :      0.127 us
```

```
BTI SA-805,21,22# configure terminal
```

```
Enter configuration commands, one per line.  End with CNTL/Z.
```

```
BTI SA-805,21,22(config)# ethernet soam meg megid evc1001
```

```
BTI SA-805,21,22(config-soam-ma)# do show eth soam delay result meg evc1001
*(suspected sample)
```

```
[Delay Measurement (ETH-DM) statistics]
```

```
- domain       : evc1001 (meg)
- level        : 4
- vlanid       : 1001
- mepid        : 4443
- rmepid       : 4453
- type         : two-way
- interval     : 1s
- duration     : 1min(60s)
- dmm/ldm tx   : 60
- dmr rx       : 60
- ldm rx       : 0
- suspected    : 0
- dmr (cache)  : 60
- ldm (cache)  : 0
- start time   : 2014-08-06 13:27:34
- status       : in-active

- minimum-delay      :      8.728 us
- maximum-delay      :      9.360 us
- average-delay      :      8.981 us
- minimum-delay-variation :      0.008 us
- maximum-delay-variation :      0.480 us
- average-delay-variation :      0.140 us
```

```
BTI SA-805,21,22(config-soam-ma)# delay-msmt two-way rmepid 4453 mepid 4443
duration forever
```

```
BTI SA-805,21,22(config-soam-ma)# do show eth soam delay result meg evc1001
*(suspected sample)
```

```
[Delay Measurement (ETH-DM) statistics]
```



```
- domain      : evc1001 (meg)
- level       : 4
- vlanid      : 1001
- mepid       : 4443
- rmepid      : 4453
- type        : two-way
- interval    : 1s
- duration    : infinite(0s)
- dmm/ldm tx  : 8
- dmr rx      : 8
- ldm rx      : 0
- suspected   : 0
- dmr (cache) : 8
- ldm (cache) : 0
- start time  : 2014-08-06 13:28:43
- status      : active

- minimum-delay      :      8.784 us
- maximum-delay      :      9.168 us
- average-delay       :      9.004 us
- minimum-delay-variation :      0.008 us
- maximum-delay-variation :      0.336 us
- average-delay-variation :      0.168 us
```

BTI SA-805,21,22(config-soam-ma)#

Related Commands

9.8 Loss-measurement

This section covers the following topics :

- 9.8.1, “loss-msmt ”
- 9.8.2, “show ethernet soam loss-msmt”
- 9.8.3, “loss-measurement test using single-ended LM”
- 9.8.4, “proactive loss-measurement test using dual-ended LM”

Loss-measurement is used to measure frame loss rate. Frame loss is measured by sending periodic loss-measurement frames to a peer MEP and receiving the frames from the peer MEP during proactive measurement session and, or, the diagnostic interval. The switch loss-measurement collects counter values applicable for ingress and egress service frames where the counters maintain a count of transmitted and received data frames between the pair of the MEPs.

Synthetic loss-measurement (ETH-SLM) is NOT supported in the switch.

Service loss-measurement (ETH-LM) is only supported at a point-to-point OAM domain.

The per-CoS Service loss-measurement is not supported.

The specific-CoS Service loss-measurement (Single CoS Service loss-measurement) may be supported in the future.

The switch supports two types of the on-demand and proactive loss-measurement test. One is single-ended loss-measurement that collects the frame loss using the round trip message (LMM/LMR). The other is dual-ended loss-measurement that collect the frame loss using the continuity-check message (CCM).

9.8.1 loss-msmt

Enabling transmission and reception counters

Loss-measurement

Loss-measurement is used to measure frame loss rate. Frame loss is measured by sending periodic loss-measurement frames to a peer MEP and receiving the frames from the peer MEP during proactive measurement session and/or the diagnostic interval. The switch loss-measurement collects counter values applicable for ingress and egress service frames where the counters maintain a count of transmitted and received data frames between the pair of the MEPs.

Note:

Synthetic loss-measurement (ETH-SLM) is NOT supported.

Service loss-measurement (ETH-LM) is only supported at a point-to-point OAM domain.

The switch supports two types of the on-demand and proactive loss-measurement test. One is single-ended loss-measurement that collects the frame loss using the round trip message (LMM/LMR). The other is dual-ended loss-measurement that collect the frame loss using the continuity-check message (CCM).

Loss-measurement test requires the H/W Transmission / Reception counters for precise loss-measurement. These commands are used to enable or disable the dual-ended or single-ended loss-measurement H/W counters on a pair of MEPs (a point-to-point OAM domain; ELine or EVPLine EVC).

Command Syntax

```
loss-msmt enable dual-ended mepid <1-8191> all-cos ({ stats-interval (1sec|10sec)})
```

```
loss-msmt enable single-ended mepid <1-8191> all-cos
```

```
no loss-msmt enable mepid <1-8191>
```

Syntax	Description
(single-ended dual-ended)	The type of the loss-measurement test
mepid <1-8191>	MEPID of the MEP counting the service frames
megid MEGID	If the Domain is based on Y.1731, use this parameter to designate the target Domain.
ma-name MA-NAME md-name MD-NAME	If the Domain is based on IEEE 802.1ag, use this parameter to designate the target Domain.
all-cos	all-cos: counting all service frames regardless CoS per-cos: counting service frames per CoS value cos <0-7>: counting a specific CoS service frames
Stats-interval	After this interval, the switch will gather the counter values and calculate frame loss.

Command Mode

MA mode (SOAM_MA_MODE)

Default

Loss-measurement is disabled by default.

Usage

None

Example

The following example shows how to enable or disable the loss-measurement test.

```
BTI SA-805,21,22# show ethernet soam loss-msmt config
[Loss-measurement session configuration]
-----
rmepid mepid vid  l lm-type      int  duration      st  domain
-----
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet soam meg megid evc2002
BTI SA-805,21,22(config-soam-ma)# loss-msmt enable dual-ended mepid 4443 all-
cos
BTI SA-805,21,22(config-soam-ma)# loss-msmt dual-ended mepid 4443 duration
forever
BTI SA-805,21,22(config-soam-ma)# end
BTI SA-805,21,22# show ethernet soam loss-msmt
config result
BTI SA-805,21,22# show ethernet soam loss-msmt config
int(interval), st(status)

[Loss-measurement session configuration]
-----
rmepid mepid vid  l lm-type      int  duration      st  domain
-----
4453  4443  2002 4 dual-ended  1sec  infinite(0s)  en  meg: evc2002
BTI SA-805,21,22# show ethernet soam loss-msmt result megid
BTI SA-805,21,22# show ethernet soam loss-msmt result megid evc2002

[Loss-measurement (ETH-DM) session info.]
-----
- domain      : evc2002 (meg)
- level       : 4
- vlanid      : 2002
- mepid       : 4443
- rmepid      : 4453
```

```

- type          : dual-ended
- stats-interval : 1s
- measured-cos   : all-cos
- duration       : infinite(0s)
- start time     : 2014-08-06 14:01:30
- status        : active

```

[Total loss-msmt statistics]

```

- total-loss-measurement      :          13
- elapsed-loss-measurement    :           0 (suspected)
- forward-transmitted-frames  :           0
- forward-received-frames     :           0
- forward-min-frame-loss-ratio :      0.000%
- forward-max-frame-loss-ratio :      0.000%
- forward-avg-frame-loss-ratio :      0.000%
- backward-transmitted-frames :           0
- backward-received-frames    :           0
- backward-min-frame-loss-ratio :      0.000%
- backward-max-frame-loss-ratio :      0.000%
- backward-avg-frame-loss-ratio :      0.000%

```

[Last-1min loss-msmt statistics]

```

- total-loss-measurement      :          13
- elapsed-loss-measurement    :           0 (suspected)
- forward-transmitted-frames  :           0
- forward-received-frames     :           0
- forward-min-frame-loss-ratio :      0.000%
- forward-max-frame-loss-ratio :      0.000%
- forward-avg-frame-loss-ratio :      0.000%
- backward-transmitted-frames :           0
- backward-received-frames    :           0
- backward-min-frame-loss-ratio :      0.000%
- backward-max-frame-loss-ratio :      0.000%
- backward-avg-frame-loss-ratio :      0.000%

```

BTI SA-805,21,22#

BTI SA-805,21,22# configure terminal

Enter configuration commands, one per line. End with CNTL/Z.

(config)#

BTI SA-805,21,22(config)# ethernet soam meg megid evc2002

BTI SA-805,21,22(config-soam-ma)# no loss-msmt mepid 4443

BTI SA-805,21,22(config-soam-ma)# do show ethernet soam loss-msmt config
int(interval), st(status)

[Loss-measurement session configuration]

rmepid	mepid	vid	l	lm-type	int	duration	st	domain
-	4443	2002	4	dual-ended	1sec	infinite(0s)	dis	meg: evc2002

BTI SA-805,21,22(config-soam-ma)#

Related Commands

None

9.8.2 show ethernet soam loss-msmt

Command Syntax

show ethernet soam loss-msmt config

show ethernet soam loss-msmt result (megid MEGID|ma-name MA-NAME md-name MD-NAME)

<Loss-measurement result clear>

clear ethernet soam loss-msmt result mepid <1-8192> (megid MEGID|ma-name MA-NAME md-name MD-NAME)

Command Mode

Privileged EXEC mode

Default

None

Usage

Use the command to retrieve the loss-measurement configuration. This command is available in Privileged EXEC mode.

Example

The following example shows how to perform this command.

```
BTI SA-805,21,22(config-soam-ma)# do show ethernet soam loss-msmt config
int(interval), st(status)
```

```
[Loss-measurement session configuration]
```

```
-----
rmepid mepid vid  l lm-type      int   duration      st   domain
-----
-      4443   2002 4 dual-ended   1sec  infinite(0s)   dis meg: evc2002
```

```
BTI SA-805,21,22# show ethernet soam loss-msmt result megid evc2002
```

```
[Loss-measurement (ETH-DM) session info.]
```

```
-----
- domain      : evc2002 (meg)
- level       : 4
- vlanid      : 2002
- mepid       : 4443
- rmepid      : 4453
- type        : dual-ended
- stats-interval : 1s
```

```
- measured-cos : all-cos
- duration      : infinite(0s)
- start time    : 2014-08-06 14:01:30
- status        : in-active
```

[Total loss-msmt statistics]

```
- total-loss-measurement      :          86
- elapsed-loss-measurement    :           0 (suspected)
- forward-transmitted-frames  :           0
- forward-received-frames     :           0
- forward-min-frame-loss-ratio :      0.000%
- forward-max-frame-loss-ratio :      0.000%
- forward-avg-frame-loss-ratio :      0.000%
- backward-transmitted-frames :           0
- backward-received-frames    :           0
- backward-min-frame-loss-ratio :      0.000%
- backward-max-frame-loss-ratio :      0.000%
- backward-avg-frame-loss-ratio :      0.000%
```

Related Commands

None

9.8.3 loss-measurement test using single-ended LM

Command Syntax

ethernet soam loss-msmt single-ended rmepid <1-8191> mepid <1-8192> (megid MEGID|ma-name MA-NAME md-name MD-NAME) ({count <2-60>|interval (100ms|1sec|10sec)}|)

<Proactive Loss-measurement test>

loss-msmt dual-ended mepid <1-8192> duration (1min|5mins|15mins|1hour|24hours|forever)

loss-msmt single-ended rmepid <1-8191> mepid <1-8192> duration (1min|5mins|15mins|1hour|24hours|forever) ({interval (1sec | 10sec)}|)

no loss-msmt mepid <1-8191>

Syntax	Description
single-ended	On-demand test for Loss-measurement is supported by single-ended loss-measurement.
rmepid <1-8191>	MEPID of the target RMEP (remote MEP)
remote-mac MACADDRESS	MAC address of the target RMEP (not yet supported)
mepid <1-8191>	MEPID of Initiator MEP sending the loss-measurement message
megid MEGID	If the Domain is based on Y.1731, use this parameter to designate the target Domain.
ma-name MA-NAME md-name MD-NAME	If the Domain is based on IEEE 802.1ag, use this parameter to designate the target Domain.
count <2-60>	The number of transmitting loss-measurement messages
duration (1min 5mins 15mins 1hour 24hours forever)	The Measurement duration of the Delay-measurement test
interval (100ms 1sec 10sec)	Transmission interval between the loss-measurement messages.

Command Mode

Privileged EXEC mode

MA mode (SOAM_MA_MODE)

Default

None

Usage

Use the commands to issue the loss-measurement message. This commands are available in Privileged EXEC mode or MA mode. After this command, the result of the loss-measurement test will be reported.

Example - 1

The following example shows how to perform the on-demand single-ended loss-measurement test.

```
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet soam meg megid evc2001
BTI SA-805,21,22(config-soam-ma)# loss-msmt enable single-ended mepid 4444 all-
cos
BTI SA-805,21,22(config-soam-ma)# end
BTI SA-805,21,22# show ethernet soam loss-msmt config
    int(interval), st(status)
```

[Loss-measurement session configuration]

```
-----
rmepid mepid vid  l lm-type      int  duration      st  domain
-----
-      4444  2001 4 single-ended -    infinite(0s)    dis meg: evc2001
-      4443  2002 4 dual-ended  1sec infinite(0s)    dis meg: evc2002
BTI SA-805,21,22# ethernet soam loss-msmt single-ended rmepid 4454 mepid 4444
megid evc2001
count      interval
BTI SA-805,21,22# ethernet soam loss-msmt single-ended rmepid 4454 mepid 4444
megid evc2001 count 60 interval 1sec
BTI SA-805,21,22# show ethernet soam loss-msmt result megid evc2001
```

[Loss-measurement (ETH-DM) session info.]

```
-----
- domain      : evc2001 (meg)
- level       : 4
- vlanid      : 2001
- mepid       : 4444
- rmepid      : 4454
- type        : single-ended
- interval    : 1s
- measured-cos : all-cos
- duration    : 1min(0s)
- start time  : 2014-08-06 14:11:19
- status      : active
-----
```

[Total loss-msmt statistics]

```
- total-loss-measurement      :      14
- elapsed-loss-measurement    :      0 (suspected)
- forward-transmitted-frames  :      14
- forward-received-frames     :      14
- forward-min-frame-loss-ratio :    0.000%
- forward-max-frame-loss-ratio :    0.000%
- forward-avg-frame-loss-ratio :    0.000%
- backward-transmitted-frames :      14
```

```

- backward-received-frames      :          14
- backward-min-frame-loss-ratio :      0.000%
- backward-max-frame-loss-ratio :      0.000%
- backward-avg-frame-loss-ratio :      0.000%
-----
[Last-1min loss-msmt statistics]
- total-loss-measurement        :          14
- elapsed-loss-measurement      :           0 (suspected)
- forward-transmitted-frames    :          14
- forward-received-frames       :          14
- forward-min-frame-loss-ratio  :      0.000%
- forward-max-frame-loss-ratio  :      0.000%
- forward-avg-frame-loss-ratio  :      0.000%
- backward-transmitted-frames   :          14
- backward-received-frames      :          14
- backward-min-frame-loss-ratio :      0.000%
- backward-max-frame-loss-ratio :      0.000%
- backward-avg-frame-loss-ratio :      0.000%

```

BTI SA-805,21,22#

Example - 2

The following example shows how to perform the proactive single-ended loss-measurement test.

BTI SA-805,21,22# show ethernet soam loss-msmt config

BTI SA-805,21,22# show ethernet soam loss-msmt config
int(interval), st(status)

[Loss-measurement session configuration]

```

-----
rmepid mepid vid  l lm-type      int  duration      st  domain
-----
-      4444  2001  4 single-ended 1sec  1min(60s)      dis meg: evc2001
-      4443  2002  4 dual-ended  1sec  infinite(0s)    dis meg: evc2002

```

BTI SA-805,21,22# configure terminal

Enter configuration commands, one per line. End with CNTL/Z.

BTI SA-805,21,22(config)# ethernet soam meg mepid evc2001

BTI SA-805,21,22(config-soam-ma)# loss-msmt single-ended rmepid 4454 mepid
4444 duration forever interval 10sec

BTI SA-805,21,22(config-soam-ma)# end

BTI SA-805,21,22# show ethernet soam loss-msmt config
int(interval), st(status)

[Loss-measurement session configuration]

```

-----
rmepid mepid vid  l lm-type      int  duration      st  domain
-----
4454    4444  2001  4 single-ended 10sec  infinite(0s)    en  meg: evc2001

```

```
-          4443  2002 4 dual-ended  1sec  infinite(0s)      dis meg: evc2002
BTI SA-805,21,22# show ethernet soam loss-msmt result megid evc2001
```

```
[Loss-measurement (ETH-DM) session info.]
```

```
-----
- domain      : evc2001 (meg)
- level       : 4
- vlanid      : 2001
- mepid       : 4444
- rmepid      : 4454
- type        : single-ended
- interval    : 10s
- measured-cos : all-cos
- duration    : infinite(0s)
- start time  : 2014-08-06 14:15:14
- status      : active
-----
```

```
[Total loss-msmt statistics]
```

```
- total-loss-measurement      :          1
- elapsed-loss-measurement    :          0 (suspected)
- forward-transmitted-frames  :         10
- forward-received-frames     :         10
- forward-min-frame-loss-ratio :        0.000%
- forward-max-frame-loss-ratio :        0.000%
- forward-avg-frame-loss-ratio :        0.000%
- backward-transmitted-frames :         10
- backward-received-frames    :         10
- backward-min-frame-loss-ratio :        0.000%
- backward-max-frame-loss-ratio :        0.000%
- backward-avg-frame-loss-ratio :        0.000%
-----
```

```
[Last-1min loss-msmt statistics]
```

```
- total-loss-measurement      :          1
- elapsed-loss-measurement    :          0 (suspected)
- forward-transmitted-frames  :         10
- forward-received-frames     :         10
- forward-min-frame-loss-ratio :        0.000%
- forward-max-frame-loss-ratio :        0.000%
- forward-avg-frame-loss-ratio :        0.000%
- backward-transmitted-frames :         10
- backward-received-frames    :         10
- backward-min-frame-loss-ratio :        0.000%
- backward-max-frame-loss-ratio :        0.000%
- backward-avg-frame-loss-ratio :        0.000%
```

```
BTI SA-805,21,22#
```

Related Commands

loss-msmt enable single-ended mepid <1-8191>(all-cos | per-cos | cos <0-7>)

9.8.4 proactive loss-measurement test using dual-ended LM

The switch supports the dual-ended loss-measurement using CCM. After enabling the dual-ended loss-measurement, the transmission and reception counters should be gathered by using the following command.

Command Syntax

loss-msmt dual-ended mepid <1-8192> duration (1min|5mins|15mins|1hour|24hours|forever)

Syntax	Description
dual-ended	Proactive test for Loss-measurement is supported by dual-ended loss-measurement.
mepid <1-8191>	MEPID of Initiator MEP sending the loss-measurement message
duration (1min 5mins 15mins 1hour 24hours forever)	The Measurement duration of the Delay-measurement test

Command Mode

MA mode (SOAM_MA_MODE)

Default

None

Usage

Use the command to gather the current dual-ended loss-measurement result. This command is available in MA mode. After this command, the result of the loss-measurement test will be reported.

Example

The following example shows how to check the result of the dual-ended loss-measurement test.

```
$BTI SA-805,21,22# show ethernet soam loss-msmt config
[Loss-measurement session configuration]
-----
rmepid mepid vid  l lm-type      int  duration      st  domain
-----
4454   4444   2001 4 single-ended 10sec infinite(0s)  en  meg: evc2001
-      4443   2002 4 dual-ended  1sec  infinite(0s)  dis meg: evc2002
BTI SA-805,21,22#
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet soam meg mepid evc2002
BTI SA-805,21,22(config-soam-ma)# loss-msmt
```

```
dual-ended      enable          single-ended
BTI SA-805,21,22(config-soam-ma)# loss-msmt dual-ended mepid 4443 duration
forever
BTI SA-805,21,22(config-soam-ma)# end
BTI SA-805,21,22# show ethernet soam loss-msmt config
int(interval), st(status)
```

```
[Loss-measurement session configuration]
```

```
-----
rmepid mepid vid  l lm-type      int  duration      st  domain
-----
4454   4444   2001  4 single-ended 10sec infinite(0s)  en  meg: evc2001
4453   4443   2002  4 dual-ended  1sec  infinite(0s)  en  meg: evc2002
BTI SA-805,21,22# show ethernet soam loss-msmt result megid evc2002
```

```
[Loss-measurement (ETH-DM) session info.]
```

```
-----
- domain      : evc2002 (meg)
- level       : 4
- vlanid      : 2002
- mepid       : 4443
- rmepid      : 4453
- type        : dual-ended
- stats-interval : 1s
- measured-cos : all-cos
- duration     : infinite(0s)
- start time   : 2014-08-06 14:35:44
- status      : active
-----
```

```
[Total loss-msmt statistics]
```

```
- total-loss-measurement      :          7
- elapsed-loss-measurement    :          0 (suspected)
- forward-transmitted-frames  :          0
- forward-received-frames     :          0
- forward-min-frame-loss-ratio :      0.000%
- forward-max-frame-loss-ratio :      0.000%
- forward-avg-frame-loss-ratio :      0.000%
- backward-transmitted-frames :          0
- backward-received-frames    :          0
- backward-min-frame-loss-ratio :      0.000%
- backward-max-frame-loss-ratio :      0.000%
- backward-avg-frame-loss-ratio :      0.000%
-----
```

```
[Last-1min loss-msmt statistics]
```

```
- total-loss-measurement      :          7
- elapsed-loss-measurement    :          0 (suspected)
- forward-transmitted-frames  :          0
- forward-received-frames     :          0
- forward-min-frame-loss-ratio :      0.000%
```

```
- forward-max-frame-loss-ratio :      0.000%
- forward-avg-frame-loss-ratio :      0.000%
- backward-transmitted-frames :        0
- backward-received-frames :          0
- backward-min-frame-loss-ratio :      0.000%
- backward-max-frame-loss-ratio :      0.000%
- backward-avg-frame-loss-ratio :      0.000%
BTI SA-805,21,22#
```

Related Commands

loss-msmt enable dual-ended mepid <1-8191>(all-cos | per-cos | cos <0-7>) ({stats-interval <1-10>| cache-size <1-512>})

9.9 Throughput-measurement

This section covers the following topics :

- [9.9, “Throughput-measurement”](#)
- [9.9.2, “RFC 2544 Frame Loss Ratio Test”](#)
- [9.9.3, “ clear ethernet soam thrpt-msmt status”](#)
- [9.9.4, “show ethernet soam thrpt-msmt status”](#)

9.9.1 ethernet soam thrpt-msmt tx-start

Throughput-measurement transmission start

Y.1731 defines a number of OAM PDUs that can be used for the throughput-measurement. e.g., unicast loopback frames (e.g., LBM and LBR frames with the data field) and test frames (e.g., TST frames with the data field). The switch supports the throughput-measurement test using the test frames (TST frame). All the required information for the test is manually configured by the user upon the initialization of the test.

This test generates the test frames to support RFC 2544 benchmarking tests. So, the throughput-measurement is not enabled with RFC 2544 at the same time.

The throughput-measurement test is should be enabled on a pair of MEPs. If the test frame transmission is enabled on a MEP, the test frame reception should be enabled on the other MEP.

Command Syntax

```
ethernet soam thrpt-msmt tx-start (rmepid <1-8191>|remote-mac MACADDR) mepid <1-8191>
(megid MEGID|ma-name MA-NAME md-name MD-NAME) ({tx-num (<1-65535> |
continuous) | pattern-type (repeat VALUE|random|increment-byte|decrement-byte) | frame-size
<64-9800>| tx-rate (mbps <1-1000>|kbps <1-1000000>) | priority <0-7>|tx-duration (second
<1-60>|15m|2h|24h) | drop (eligible|ineligible))|)
```

```
ethernet soam thrpt-msmt tx-stop mepid <1-8191> (megid MEGID|ma-name MA-NAME md-
name MD-NAME)
```

Syntax	Description
tx-start tx-stop	Used to enable or disable the throughput-measurement transmission.
rmepid <1-8191>	MEPID of the target RMEP (remote MEP)
remote-mac MACADDRESS	MAC address of the target RMEP
mepid <1-8191>	MEPID of Initiator MEP sending the throughput-measurement message
megid MEGID	If the Domain is based on Y.1731, use this parameter to designate the target Domain.
ma-name MA-NAME md-name MD-NAME	If the Domain is based on IEEE 802.1ag, use this parameter to designate the target Domain.
tx-num (<1-65535> continuous)	The number of transmitting throughput-measurement messages; If it is set to continuous, the transmission will be done with tx-duration.
pattern-type (repeat VALUE random increment-byte decrement-byte)	The data pattern of the payload of the test frame;
frame-size <64-9800>	The frame size of the throughput-measurement message
tx-rate (mbps <1-1000> kbps <1-1000000>)	The transmission rate of the throughput-measurement test; The transmission rate is able to be configured within mbps or kbps.

Syntax	Description
priority <0-7>	The priority of the throughput-measurement message; The default is 0.
tx-duration (second <1-60> 15m 2h 24h)	The time of the transmission for the throughput-measurement test; The transmission will be continued until this duration or All the test frames defined by the tx-num are transmitted.
drop (eligible ineligible)	Set/ Clear Drop Eligible Indication (DEI)

Command Mode

Privileged EXEC mode

Default

None

Usage

Use the command to enable the throughput-measurement transmission. Before this command, the user should enable the throughput-measurement reception at the peer MEP. This command is available in Privileged EXEC mode.

Example

The following example shows how to perform the throughput-measurement test.

```
BTI SA-805,21,22# show ethernet soam maintenance-point
fault: xcon(cross connection mismatch), eoc(error of continuity),
      loc(loss of continuity), mac(mac status defect),
      rdi(remote defect indication)

[MEP]
-----
mepid vid  1 ifname  mac-addr      dir  cci rdi fault domain
-----
73      100  4 eth-0-3  0019.6de1.e103 up    en  off none  md-ma: v100-v100

[MIP]
-----
vid  1 ifname  mac-addr      domain
-----
100  6 eth-0-3  0019.6de1.e103 md-ma: 1e6-v100

[Remote MEP]
-----
rmepid mepid vid  1 mac-addr      fault(loc/mac/rdi) domain
-----
83      73      100  4 0019.6de1.e203      (---/---/---) md-ma: v100-v100
```

```
BTI SA-805,21,22# ethernet soam thrpt-msmt tx-start rmepid 83 mepid 73 ma-name v100
```

```
md-name v100 tx-num continuous tx-duration second 20 pattern-type increment-byte
```

```
tx-rate mbps 15
```

```
BTI SA-805,21,22# show ethernet soam thrpt-msmt status
```

```
[Throughput-measurement status]
```

```
-----
```

```
domain          : md-ma: v100-v100
```

```
level           : 4
```

```
vid             : 100
```

```
mepid           : 73
```

```
transmission    : enabled
```

```
reception       : disabled
```

```
status          : running
```

```
start-time      : 01:45:07
```

```
predict-end-time : 01:45:27
```

```
end-time        : -
```

```
frame-type      : Test frame
```

```
tx-rate         : 15mbps
```

```
frame-size      : 512bytes
```

```
tx number       : 33488
```

```
tx bytes        : 17145856
```

```
rx number       : 0
```

```
rx bytes        : 0
```

```
BTI SA-805,21,22#
```

Related Commands

ethernet soam thrpt-msmt rx-start mepid <1-8191> (megid MEGID|ma-name MA-NAME md-name MD-NAME)

9.9.2 RFC 2544 Frame Loss Ratio Test

The frame loss ratio test determines the frame loss ratio. First select 100% of the maximum frame rate for the frame size on the input media. Then reduce the frame rate by the granularity, if it has loss. The granularity level is 1% to 10% of maximum frame rate.

9.9.3 clear ethernet soam thrpt-msmt status

Clearing Throughput-measurement test result

Command Syntax

clear ethernet soam thrpt-msmt status

Command Mode

Privileged EXEC mode

Default

None

Usage

Use the command to clear the result of the throughput-measurement test. Until issuing this command, transmission or reception statistics are not cleared.

Example

The following example shows how to perform this command.

```
BTI SA-805,21,22# show ethernet soam thrpt-msmt status
[Throughput-measurement status]
```

```
-----
domain           : meg: v100
level            : 4
vid              : 100
mepid            : 83
transmission     : disabled
reception        : enabled
status           : non-running
start-time       : -
end-time         : -
frame-type       : -
tx-rate          : -
frame-size       : -
tx number        : 0
tx bytes         : 0
rx number        : 70269
rx bytes         : 35977728
```

```
BTI SA-805,21,22# clear ethernet soam thrpt-msmt status
BTI SA-805,21,22# show ethernet soam thrpt-msmt status
[Throughput-measurement status]
```

```
-----
domain           : meg: v100
level            : 4
vid              : 100
```

```
mepid           : 83
transmission    : disabled
reception       : enabled
status          : non-running
start-time      : -
end-time        : -
frame-type      : -
tx-rate         : -
frame-size      : -
tx number       : 0
tx bytes        : 0
rx number       : 0
rx bytes        : 0
```

BTI SA-805,21,22#

Related Commands

ethernet soam thrpt-msmt tx-start (rmepid <1-8191>|remote-mac MACADDR) mepid <1-8191> (megid MEGID|ma-name MA-NAME md-name MD-NAME) ({tx-num (<1-65535> | continuous) | pattern-type (repeat VALUE|random|increment-byte|decrement-byte) | frame-size <64-9800>| tx-rate (mbps <1-1000>|kbps <1-1000000>) | priority <0-7>|tx-duration (second <1-60>|15m|2h|24h))|)

ethernet soam thrpt-msmt rx-start mepid <1-8191> (megid MEGID|ma-name MA-NAME md-name MD-NAME)

9.9.4 show ethernet soam thrpt-msmt status

Retrieving Throughput-measurement test results

Command Syntax

show ethernet soam thrpt-msmt status

Command Mode

Privileged EXEC mode

Default

None

Usage

Use the command to show the current status or the result of the throughput-measurement test. This command is available in Privileged EXEC mode.

Example

The following example shows how to retrieve the throughput-measurement test results.

```
BTI SA-805,21,22# show ethernet soam thrpt-msmt status
[Throughput-measurement status]
```

```
-----
domain           : md-ma: v100-v100
level            : 4
vid              : 100
mepid            : 73
transmission     : enabled
reception        : disabled
status           : running
start-time       : 01:45:07
predict-end-time : 01:45:27
end-time         : -
frame-type       : Test frame
tx-rate          : 15mbps
frame-size       : 512bytes
tx number        : 33488
tx bytes         : 17145856
rx number        : 0
rx bytes         : 0
```

```
BTI SA-805,21,22#
```

Related Commands

ethernet soam thrpt-msmt tx-start (rmepid <1-8191>|remote-mac MACADDR) mepid <1-8191> (megid MEGID|ma-name MA-NAME md-name MD-NAME) ({tx-num (<1-65535> |

continuous) | pattern-type (repeat VALUE|random|increment-byte|decrement-byte) | frame-size <64-9800>| tx-rate (mbps <1-1000>|kbps <1-1000000>) | priority <0-7>|tx-duration (second <1-60>|15m|2h|24h)|)

ethernet soam thrpt-msmt rx-start mepid <1-8191> (megid MEGID|ma-name MA-NAME md-name MD-NAME)

9.10 Fault history

This section covers the following topics :

- 9.10.1, “show ethernet soam fault-history”
- 9.10.2, “clear ethernet soam fault-history”

9.10.1 show ethernet soam fault-history

Retrieving Fault-history

The switch stores the history of the defects for each enabled Service OAM Domain. The following commands is used to check this history.

Command Syntax

show ethernet soam fault-history (megid MEGID|ma-name MA-NAME md-name MD-NAME)

Syntax	
Description	If the Domain is based on Y.1731, use this parameter to designate the target Domain.
megid MEGID	
ma-name MA-NAME md-name MD-NAME	If the Domain is based on IEEE 802.1ag, use this parameter to designate the target Domain.

Command Mode

Privileged EXEC mode

Default

None

Usage

Use the command to retrieve the history of the Service OAM Domain defects.

Example

The following example shows how to retrieve the fault-history.

```
BTI SA-805,21,22# show ethernet soam fault-history ma-name v100 md-name v100
```

```
[Fault History]
```

```
-----
```

```
-
```

```
1970/01/01T00:36:32 mepid: 73   vid: 100  level: 4 mac: 0019.6de1.e203
domain: (md-ma: v100-v100) fault-desc: (Receive first packet)
```

```
-----
```

```
-
```

```
1970/01/01T01:47:29 mepid: 73   vid: 100  level: 4 mac: 0019.6de1.e203
domain: (md-ma: v100-v100) fault-desc: (SomeRMEPCCMDefect: dloc defect)
```

Related Commands

MEP and RMEP (remote MEP) should be created before performing this command.

9.10.2 clear ethernet soam fault-history

Command Syntax

clear ethernet soam fault-history (megid MEGID|ma-name MA-NAME md-name MD-NAME)
(MEP and RMEP (remote MEP) should be created before performing this command.)

Syntax	Description
megid MEGID	If the Domain is based on Y.1731, use this parameter to designate the target Domain.
ma-name MA-NAME md-name MD-NAME	If the Domain is based on IEEE 802.1ag, use this parameter to designate the target Domain.

Command Mode

Privileged EXEC mode

Default

None

Usage

Use this command to clear the history of the Service OAM Domain defects.

Example

The following example shows how to clear the fault-history.

```
BTI SA-805,21,22# show ethernet soam fault-history ma-name v100 md-name v100
BTI SA-805,21,22# show ethernet soam fault-history ma-name v100 md-name v100
[Fault History]
```

```
-----
1970/01/01T00:36:32 mepid: 73   vid: 100  level: 4 mac: 0019.6de1.e203
domain: (md-ma: v100-v100) fault-desc: (Receive first packet)
-----
```

```
-----
1970/01/01T01:47:29 mepid: 73   vid: 100  level: 4 mac: 0019.6de1.e203
domain: (md-ma: v100-v100) fault-desc: (SomeRMEPCCMDefect: dloc defect)
-----
```

```
BTI SA-805,21,22# show ethernet soam fault-history ma-name v100 md-name v100
[Fault History]
```

```
-----
1970/01/01T00:36:32 mepid: 73   vid: 100  level: 4 mac: 0019.6de1.e203
domain: (md-ma: v100-v100) fault-desc: (Receive first packet)
-----
```

```
1970/01/01T01:47:29 mepid: 73   vid: 100   level: 4 mac: 0019.6de1.e203
domain: (md-ma: v100-v100) fault-desc: (SomeRMEPCCMDefect: dloc defect)
-----
-
1970/01/01T01:58:52 mepid: 73   vid: 100   level: 4 mac: 0019.6de1.e203
domain: (md-ma: v100-v100) fault-desc: (SomeRMEPCCMDefect: dloc defect
clear)

BTI SA-805,21,22# clear ethernet soam fault-history ma-name v100 md-name v100
BTI SA-805,21,22# show ethernet soam fault-history ma-name v100 md-name v100
[Fault History]
-----
-
no entry
```

Related Commands

9.11 mep mepid (mepid) interface (type) direction down different-maid

This command is used to create a MEP with a different MAID in order to support system compatibility with other devices (such as PVX) when multiple domains in the same VLAN and level may exist.

Command Syntax

mep mepid <1-8191> interface (IFPHYSICAL|IFAGG) direction down different-maid

Command Mode

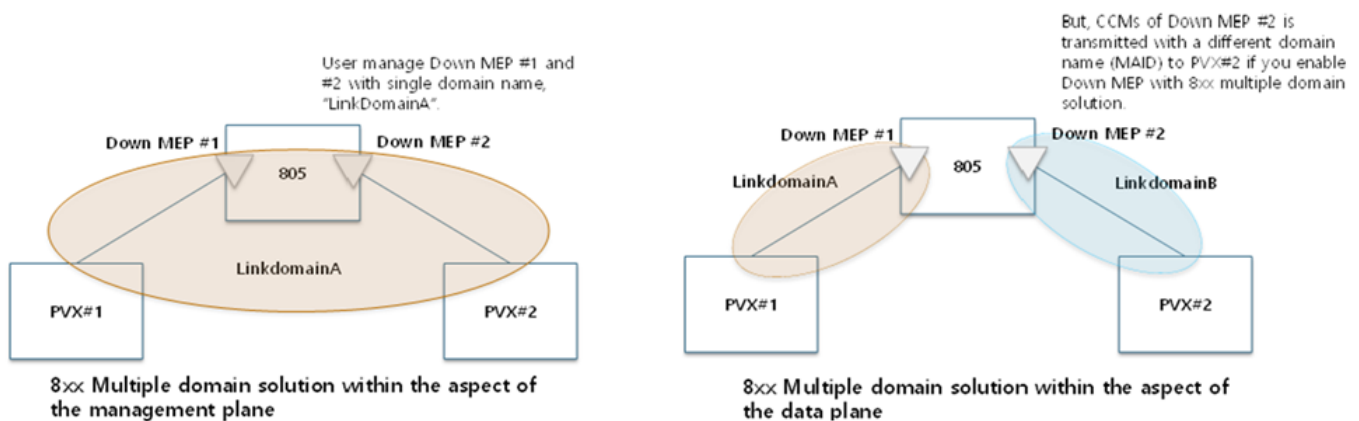
MA mode (SOAM MA mode)

Default

None

Usage

After performing this command, the MEP will be created with the new configured MAID regardless of the OAM domain name. This command is also available in Privileged EXEC mode.



Example

```
BTI SA-805,21,22(config)# ethernet soam meg mepid LinkdomainA level 2 vlan
100
BTI SA-805,21,22(config-soam-ma)# mep mepid 1 interface eth-0-1 direction
down
BTI SA-805,21,22(config-soam-ma)# mep mepid 2 interface eth-0-2 direction down
different-maid mepid LinkdomainB meg-type stringBTI SA-805,21,22(config-soam-
ma)# end
BTI SA-805,21,22# show ethernet soam domain mepid LinkdomainA
[Global configuration]
- enable: enabled
```

[Domain attributes]

```
-----
-
md-name          : LinkdomainA          md-type          : no-present
level           : 2
-----
-
ma-name          : LinkdomainA          ma-type          : string
vid             : 100                   ccm-interval     : 1sec
rmep-learning    : en                   rmep-aging       : 0
tlv-included     : none                 evc-status-update: disabled
mip-auto-creation: none

mepid maid in ccm
-----
1      md(no-present/0/-)/ma(string/11/LinkdomainA)
2      md(no-present/0/-)/ma(string/11/LinkdomainB)
```

```
BTI SA-805,21,22# show ethernet soam maintenance-point
*(dynamic maintenance-point)
xcon(cross connection mismatch), eoc(error of continuity),
loc(loss of continuity), mac(mac status defect), rdi(remote defect
indication)
```

[MEP]

```
-----
mepid vid 1 ifname  mac-addr      dir  cci rdi fault domain
-----
1      100  2 eth-0-1  0019.6d01.29e9 down en  off none meg: LinkdomainA
2      100  2 eth-0-2  0019.6d01.29ea down en  off none meg: LinkdomainA
      *LinkdomainA.2 different-maid: enabled
```

[MIP]

```
-----
vid 1 ifname  mac-addr      domain
-----
```

[Remote MEP]

```
-----
rmepid mepid vid 1 mac-addr      fault      domain
-----
3*      1      100  2 0019.6d3d.0001 ---/---/--- meg: LinkdomainA
4*      2      100  2 0019.6d3d.0002 ---/---/--- meg: LinkdomainA
```

Related Commands

show ethernet soam domain

show ethernet soam maintenance-point

9.12 mep mepid (mepid id) interface (interface id) direction up replication

This command creates a replicated MEP to MLAG port. The replicated MEP status is then managed by the MLAG process.

Command Syntax

```
mep mepid <1-8191> interface (interface id) direction up replication
```

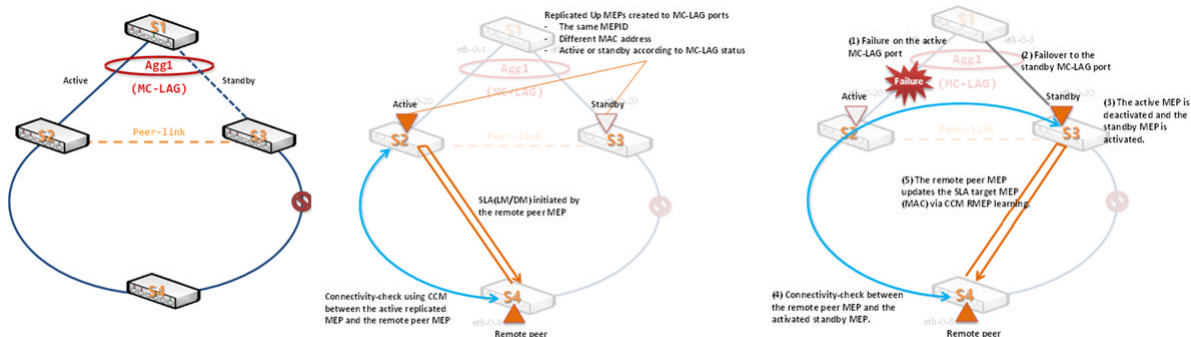
Command Mode

MA mode (SOAM MA mode)

Usage

Replicated MEPs are a pair of Up MEPs created with the same MEPID and different MAC addresses on the MLAG ports located in the different devices. These MEPs have Active or Standby status according to the MLAG port status. Before configuring the MEP replication, the user must configure the MLAG and service into S2 and S3 configurations.

Example



In this example of configuring the MEP Replication, the network engineer has configured the MLAG and OAM service Active on BTI SA-822 (Switch2 (S2)) and Standby on BTI SA-821 (Switch3 (S3)). BTI SA-805 (Switch 4 (S4)) has been configured as the remote peer.

The following shows S2, S3 and S4 replicated MEPs configuration on the MLAG ports. Note to enable the protection switching to function correctly, the remote MEPS are set to dynamic on S1, S2 and S3. The remote-mac address is also set to dynamic on S3.

S2 and S3 Configuration : Creating the replicated MEPs to the MLAG ports

```
(config)# ethernet soam meg mepid MLAG-UP mep-type icc-based level 5 vlan 1001
ccm lsec evc status-update enable
(config-soam-ma)# continuity-check rmep-learning enable
(config-soam-ma)# mip auto-creation default
(config-soam-ma)#mep mepid 3001 interface agg1 direction up replication
```

```
(config-soam-ma)# rmep rmepid 3002 mepid 3001 dynamic
(config-soam-ma)# loss-msmt enable single-ended mepid 3001 all-cos
```

S4 Configuration

```
(config)# ethernet soam meg megid MLAG-UP meg-type icc-based level 5 vlan 1001
ccm lsec
evc status-update enable
(config-soam-ma)#continuity-check rmep-learning enable
(config-soam-ma)#mep mepid 3002 interface eth-0-4 direction up
(config-soam-ma)#rmep rmepid 3001 mepid 3002 dynamic
(config-soam-ma)#delay-msmt two-way rmepid 3001 mepid 3002 duration forever
pri 7 int lsec
(config-soam-ma)#loss-msmt enable single-ended mepid 3002 all-cos
(config-soam-ma)#loss-msmt single-ended rmepid 3001 mepid 3002 duration
forever interval lsec
```

Verifying the status of S2.

```
S2 - Active replicated MEPBTI-SA-822# show ethernet soam maintenance-point
*(dynamic maintenance-point)
xcon(cross connection mismatch), eoc(error of continuity),
loc(loss of continuity), mac(mac status defect), rdi(remote defect
indication)
```

[MEP]

mepid	vid	l	ifname	mac-addr	dir	cci	rdi	fault	domain
1000	4000	4	eth-0-3	0019.6d01.2af7	down	en	off	none	meg: ERP
1002	4000	4	eth-0-4	0019.6d01.2af8	down	en	off	none	meg: ERP
2008	2000	2	eth-0-5	0019.6d01.2af9	down	en	off	none	meg: SUB-RING
3001	1001	5	agg1	0019.6d01.2b01	up	en	off	none	meg: MLAG-UP

*MLAG-UP.3001 mep-replication: enabled (active)

[MIP]

vid	l	ifname	mac-addr	domain
1001	5	eth-0-1	0019.6d01.2af5*	meg: MLAG-UP
1001	5	eth-0-3	0019.6d01.2af7*	meg: MLAG-UP
1001	5	eth-0-4	0019.6d01.2af8*	meg: MLAG-UP
1001	5	eth-0-5	0019.6d01.2af9*	meg: MLAG-UP

[Remote MEP]

rmepid	mepid	vid	l	mac-addr	fault	domain
1001	1000	4000	4	0014.d060.01c5	---/---/---	meg: ERP
1005*	1002	4000	4	0014.d060.01c6	---/---/---	meg: ERP


```
2002* 2008 2000 2 0019.6d01.29c2 ---/---/--- meg: SUB-RING
3002* 3001 1001 5 0019.6d01.29c4 ---/---/--- meg: MLAG-UP
```

BTI-SA-822# show mlag interface

```
ID: Mlag instance ID
A/S: Active/Standby mode, A/A: Active/Active mode
op-mode: operation mode
REV: revertive mode
N-REV: non-revertive mode
(r): Reload-delay timer is running
```

```
ID local-if      local-state  remote-state mode op-mode
  (admin_state) (oper_state)
```

```
-----
1  aggl(S)        up(A)         down          A/S  N-REV
```

Verifying the status of S3.

S3 - Standby replicated MEP BTI-SA-821# show mlag interface

```
ID: Mlag instance ID
A/S: Active/Standby mode, A/A: Active/Active mode
op-mode: operation mode
REV: revertive mode
N-REV: non-revertive mode
(r): Reload-delay timer is running
```

```
ID local-if      local-state  remote-state mode op-mode
  (admin_state) (oper_state)
```

```
-----
1  aggl(A)        admin-dn(S) up          A/S  N-REV
```

BTI-SA-821# show ethernet soam maintenance-point

```
*(dynamic maintenance-point)
xcon(cross connection mismatch), eoc(error of continuity),
loc(loss of continuity), mac(mac status defect), rdi(remote defect
indication)
```

[MEP]

```
-----
mepid vid  l ifname      mac-addr      dir  cci rdi fault domain
-----
1001  4000  4 eth-0-3  0014.d060.01c5 down en  off none  meg: ERP
1005  4000  4 eth-0-4  0014.d060.01c6 down en  off none  meg: ERP
2007  2000  2 eth-0-5  0014.d060.01c7 down en  off none  meg: SUB-RING
      *SUB-RING.2007 different-maid: enabled
3001  1001  5 aggl      0014.d060.01df up   en  off none  meg: MLAG-UP
      *MLAG-UP.3001 mep-replication: enabled (standby)
```

[MIP]

```
-----
```

vid	l	ifname	mac-addr	domain
1001	5	eth-0-1	0014.d060.01c3*	meg: MLAG-UP
1001	5	eth-0-3	0014.d060.01c5*	meg: MLAG-UP
1001	5	eth-0-4	0014.d060.01c6*	meg: MLAG-UP
1001	5	eth-0-5	0014.d060.01c7*	meg: MLAG-UP

[Remote MEP]

rmepid	mepid	vid	l	mac-addr	fault	domain
1000*	1001	4000	4	0019.6d01.2af7	---/---/---	meg: ERP
1002*	1005	4000	4	0019.6d01.2af8	---/---/---	meg: ERP
2001*	2007	2000	2	0019.6d01.29c1	---/---/---	meg: SUB-RING
3002*	3001	1001	5	0019.6d01.29c4	---/---/---	meg: MLAG-UP

Verifying the status of S4.

S4 - Remote peer MEP\$

```
BTI-SA-805# show ethernet soam maintenance-point
*(dynamic maintenance-point)
xcon(cross connection mismatch), eoc(error of continuity),
loc(loss of continuity), mac(mac status defect), rdi(remote defect
indication)
```

[MEP]

mepid	vid	l	ifname	mac-addr	dir	cci	rdi	fault	domain
2001	2000	2	eth-0-1	0019.6d01.29c1	down	en	off	none	meg: SUB-RING
				*SUB-RING.2001 different-maid: enabled					
2002	2000	2	eth-0-2	0019.6d01.29c2	down	en	off	none	meg: SUB-RING
202	1002	5	eth-0-3	0019.6d01.29c3	up	en	off	none	meg: rfc2544
3002	1001	5	eth-0-4	0019.6d01.29c4	up	en	off	none	meg: MLAG-UP

[MIP]

vid	l	ifname	mac-addr	domain
-----	---	--------	----------	--------

[Remote MEP]

rmepid	mepid	vid	l	mac-addr	fault	domain
2007*	2001	2000	2	0014.d060.01c7	---/---/---	meg: SUB-RING
2008*	2002	2000	2	0019.6d01.2af9	---/---/---	meg: SUB-RING
201*	202	1002	5	0019.6d01.2a13	---/---/---	meg: rfc2544
3001*	3002	1001	5	0019.6d01.2b01	---/---/---	meg: MLAG-UP

To test the configuration, induce a fault by shutting down the Active MLAG interface. The result of this action is that the Standby MLAG becomes active and the Standby replicated MEP will be activated.

S3 - Standby MLAG interface and Standby replicated MEP become active

```
BTI-SA-821# show mlag interface
```

```
ID: Mlag instance ID
A/S: Active/Standby mode, A/A: Active/Active mode
op-mode: operation mode
REV: revertive mode
N-REV: non-revertive mode
(r): Reload-delay timer is running
```

```
ID local-if      local-state  remote-state mode op-mode
  (admin_state) (oper_state)
```

```
-----
1  aggl(A)        up(A)         down          A/S  N-REV
```

```
BTI-SA-821# show ethernet soam maintenance-point
```

```
*(dynamic maintenance-point)
xcon(cross connection mismatch), eoc(error of continuity),
loc(loss of continuity), mac(mac status defect), rdi(remote defect
indication)
```

```
[MEP]
```

```
-----
mepid vid  l ifname      mac-addr          dir  cci rdi fault domain
-----
1001  4000  4 eth-0-3    0014.d060.01c5  down en  off none  meg: ERP
1005  4000  4 eth-0-4    0014.d060.01c6  down en  off none  meg: ERP
2007  2000  2 eth-0-5    0014.d060.01c7  down en  off none  meg: SUB-RING
      *SUB-RING.2007 different-maid: enabled
3001  1001  5 aggl        0014.d060.01df  up   en  off none  meg: MLAG-UP
      *MLAG-UP.3001 mep-replication: enabled (active)
```

```
[MIP]
```

```
-----
vid  l ifname      mac-addr          domain
-----
1001  5 eth-0-1    0014.d060.01c3*  meg: MLAG-UP
1001  5 eth-0-3    0014.d060.01c5*  meg: MLAG-UP
1001  5 eth-0-4    0014.d060.01c6*  meg: MLAG-UP
1001  5 eth-0-5    0014.d060.01c7*  meg: MLAG-UP
```

```
[Remote MEP]
```

```
-----
rmepid mepid vid  l mac-addr          fault          domain
-----
1000*  1001  4000  4 0019.6d01.2af7 ---/---/--- meg: ERP
1002*  1005  4000  4 0019.6d01.2af8 ---/---/--- meg: ERP
2001*  2007  2000  2 0019.6d01.29c1 ---/---/--- meg: SUB-RING
```

```
3002* 3001 1001 5 0019.6d01.29c4 ---/---/--- meg: MLAG-UP
```

S4 - Remote peer MEP : The activated MEPs MAC is updated to the remote peer MEP.

```
S4 - Remote peer MEPBTI-SA-805# show ethernet soam maintenance-point
*(dynamic maintenance-point)
xcon(cross connection mismatch), eoc(error of continuity),
loc(loss of continuity), mac(mac status defect), rdi(remote defect
indication)
```

[MEP]

mepid	vid	l	ifname	mac-addr	dir	cci	rdi	fault	domain
2001	2000	2	eth-0-1	0019.6d01.29c1	down	en	off	none	meg: SUB-RING
*SUB-RING.2001 different-maid: enabled									
2002	2000	2	eth-0-2	0019.6d01.29c2	down	en	off	none	meg: SUB-RING
202	1002	5	eth-0-3	0019.6d01.29c3	up	en	off	none	meg: rfc2544
3002	1001	5	eth-0-4	0019.6d01.29c4	up	en	off	none	meg: MLAG-UP

[MIP]

vid	l	ifname	mac-addr	domain
-----	---	--------	----------	--------

[Remote MEP]

rmepid	mepid	vid	l	mac-addr	fault	domain
2007*	2001	2000	2	0014.d060.01c7	---/---/---	meg: SUB-RING
2008*	2002	2000	2	0019.6d01.2af9	---/---/---	meg: SUB-RING
201*	202	1002	5	0019.6d01.2a13	---/---/---	meg: rfc2544
3001*	3002	1001	5	0014.d060.01df	---/---/---	meg: MLAG-UP

After the remote MEPs MAC learning, the SLA target is changed. The remote peer MEP will continue to measure the service performance.

```
S4 - Remote peer MEPBTI-SA-805# show ethernet soam loss-msmt result megid MLAG-UP
single-ended* (lmm-lmr-counted)
```

[Loss-measurement (ETH-LM) session info.]

- domain	: MLAG-UP (meg)
- level	: 5
- vlanid	: 1001
- mepid	: 3002
- rmepid	: 3001
- type	: single-ended
- interval	: 1s
- measured-cos	: all-cos
- duration	: infinite(0s)

```

- lmm tx      : 45545
- lmm rx      : 0
- lmr tx      : 0
- lmr rx      : 44700
- start time  : 1970-01-02 13:35:38
- status      : active

```

[Total loss-msmt statistics]

```

- total-loss-measurement      :      44477
- thresholdFlr                : >  0.000% (-)
- thresholdAvail              : <  0.000% (-)

- forward-transmitted-frames  : 170319903
- forward-received-frames     : 114579772
- forward-min-frame-loss-ratio :      0.000%
- forward-max-frame-loss-ratio :     99.665%
- forward-avg-frame-loss-ratio :      0.002%
- forward-unavailability-count :      0
- forward-availability        : 100.000%

- backward-transmitted-frames : 170319908
- backward-received-frames    : 114580296
- backward-min-frame-loss-ratio :      0.000%
- backward-max-frame-loss-ratio :     99.664%
- backward-avg-frame-loss-ratio :      0.002%
- backward-unavailability-count :      0
- backward-availability       : 100.000%

```

[Last-1min loss-msmt statistics]

```

- total-loss-measurement      :      59
- forward-transmitted-frames  : 5923744
- forward-received-frames     : 5923744
- forward-min-frame-loss-ratio :      0.000%
- forward-max-frame-loss-ratio :      0.000%
- forward-avg-frame-loss-ratio :      0.000%
- backward-transmitted-frames : 5923742
- backward-received-frames    : 5923742
- backward-min-frame-loss-ratio :      0.000%
- backward-max-frame-loss-ratio :      0.000%
- backward-avg-frame-loss-ratio :      0.000%

```

BTI-SA-805# show ethernet soam delay-msmt result megid MLAG-UP

[Delay Measurement (ETH-DM) statistics]

```

- domain      : MLAG-UP (meg)
- level       : 5
- vlanid      : 1001
- mepid       : 3002
- rmepid      : 3001
- type        : two-way
- frame size   : 64 bytes

```

```
- interval          : 1s
- duration          : infinite(0s)
- dmm/ldm tx       : 44913
- dmr rx           : 44300
- ldm rx           : 0
- dmr (cache)      : 59
- ldm (cache)      : 0
- start time       : 1970-01-02 13:46:38
- status           : active
- threshold(delay) : 0.000 us (-)
- threshold(variation) : 0.000 us (-)
```

[Total delay-msmt statistics]

```
- minimum-delay      :          5.240 us
- maximum-delay      :         12.712 us
- average-delay      :          5.951 us
- minimum-delay-variation :          0.000 us
- maximum-delay-variation :          4.608 us
- average-delay-variation :          0.496 us
```

[Last-1min delay-msmt statistics]

```
- total              :             58
- suspected          :              0
- minimum-delay      :          5.280 us
- maximum-delay      :          6.952 us
- average-delay      :          5.708 us
- minimum-delay-variation :          0.000 us
- maximum-delay-variation :          1.568 us
- average-delay-variation :          0.419 us
```

Related Commands

show ethernet soam maintenance-point

show mlag interface

10.0 8. Link Layer Discovery Protocol (LLDP) (802.1AB) Commands

This section covers the following topics :

- 10.1, “lldp enable”
- 10.2, “ lldp enable (txonly|rxonly|txrx)”
- 10.3, “lldp msg-tx-hold”
- 10.4, “ lldp timer msg-tx-interval”
- 10.5, “ lldp timer tx-delay”
- 10.6, “ lldp timer reinitDelay”
- 10.7, “ lldp remoteChangeNotification interval”
- 10.8, “ lldp tlv”

10.1 lldp enable

Use this command to enable the LLDP.

Command Syntax

lldp enable

Command Mode

Global configuration

Usage

None

Example

This example shows how to enable the LLDP module:

```
BTI SA-805,21,22(config)# lldp enable
```

Related Commands

None

10.2 lldp enable (txonly|rxonly|txrx)

Use this command to configure the LLDP mode for an interface.

Command Syntax

lldp enable (txonly|rxonly|txrx)

lldp disable

Command Mode

Interface configuration

Default

disable

Usage

None

Example

This example shows how to configure the LLDP mode

```
BTI SA-805,21,22(config-if)# lldp enable txonly
```

```
BTI SA-805,21,22(config-if)# lldp disable
```

Related Commands

None

10.3 lldp msg-tx-hold

Use this command to configure the message transmit hold value for the interface.

Command Syntax

lldp msg-tx-hold <2-10>

Command Mode

Global configuration

Default

4

Usage

None

Example

This example shows how to configure the tx-hold value.

```
BTI SA-805,21,22(config)# lldp msg-tx-hold 5
```

Related Commands

None

10.4 lldp timer msg-tx-interval

Use this command to configure the message transmit interval for the interface.

Command Syntax

lldp timer msg-tx-interval <5-32768>

Command Mode

Global configuration

Default

30

Usage

This value has to be below :

(msg-tx-interval * 0.25) >= tx-delay

Example

This example shows how to configure the tx-interval.

```
BTI SA-805,21,22(config)# lldp timer msg-tx-interval 60
```

Related Commands

lldp timer tx-delay

10.5 lldp timer tx-delay

Use this command to configure the message transmit interval for the interface.

Command Syntax

lldp timer tx-delay <1-8192>

Command Mode

Global configuration

Default

2

Usage

This value has to be below :

$1 \leq \text{txdelay} \leq (0.25 * \text{msg-tx-interval})$

Example

This example shows how to configure tx-delay.

```
BTI SA-805,21,22(config)# lldp timer tx-delay 4
```

Related Commands

lldp timer msg-tx-interval

10.6 lldp timer reinitDelay

Use this command to configure the re-initialization delay.

Command Syntax

lldp timer reinitDelay <1-10>

Command Mode

Global configuration

Default

2

Usage

None

Example

This example shows how to configure reinit-delay.

```
BTI SA-805,21,22(config)# lldp timer reinitDelay 4
```

Related Commands

None

10.7 lldp remoteChangeNotification interval

Use this command to configure the Remote Change Notification Interval.

Command Syntax

lldp remoteChangeNotification interval <5-3600>

Command Mode

Global configuration

Default

30

Usage

None

Example

This example shows how to configure the LLDP Remote Change Notification Interval.

```
BTI SA-805,21,22(config)# lldp remoteChangeNotification interval 25
```

Related Commands

lldp remoteChangeNotification (Interface configuration)

10.8 lldp tlv

Use this command to enable or disable the LLDP TLVs for a interface.

Command Syntax

lldp tlv basic (management-address|port-description|system-capabilities|system-description|system-name|all)

lldp tlv 8023-org-specific (link-aggregation|mac-phy-cfg|max-frame-size|power|all)

Command Mode

Interface configuration

Default

None

Usage

None

Example

This example shows how to enable the LLDP TLVs.

```
BTI SA-805,21,22(config-if)# lldp tlv basic management-address system-  
capabilities
```

```
BTI SA-805,21,22(config-if)# no lldp tlv basic port-description
```

```
BTI SA-805,21,22(config-if)# lldp tlv 8023-org-specific all
```

Related Commands

None

11.0 Link Aggregation Group (LAG) and Link Aggregation Control Protocol (LACP) Commands

This section covers the following topics :

- 11.1, “lag group”
- 11.2, “lag load-balance”
- 11.3, “lag member”
- 11.4, “lag group (min-member|max-member)”
- 11.5, “lacp port-priority ”
- 11.6, “lacp timeout”
- 11.7, “lacp system-priority”
- 11.8, “show lag summary”
- 11.9, “show lacp internal”
- 11.10, “show lacp internal detail”
- 11.11, “show lacp neighbor”
- 11.12, “show lacp neighbor detail”
- 11.13, “show channel-group port”
- 11.14, “ show lag load-balance”
- 11.15, “show lacp counters”
- 11.16, “show lacp sys-id”

- 11.17, “clear lacp counters”

11.1 lag group

Use this command to create a Link Aggregation Group (LAG). Use the **del** form of this command to remove a Link Aggregation Group.

Command Syntax

```
lag group add (1-2 | 1-6 | 1-14) {lacp | static}
```

```
lag group del channel-group-number = BTI SA-805 (1-2) BTI SA-821 (1-14) BTI SA-822 (1-6)
```

Command Mode

Global configuration

LAG Usage

When deleting a LAG, LAG members must first be removed from the LAG group.

MLAG usage

To delete a LAG that is associated with a MLAG, you must first delete the MLAG and then delete the LAG. Shutdown the remote LAG before changing an MLAG configuration from Static to LACP or LACP to Static.

Static LAGs associated with an MLAG will have an admin-up | admin-down status. LACP LAGs associated with an MLAG will have a up | down status.

Example

This example shows how to create and remove a Link Aggregation Group (lacp / static)

```
BTI SA-805,21,22(config)# lag group add 1 lacp
BTI SA-805,21,22(config)# lag group add 2 static
BTI SA-805,21,22# show lag summary
Flags:  s - suspend           T - standby
        D - down/admin down   B - in Bundle
        w - wait              U - in use
        * - mlag
        (m/M) - min/Max Member
```

```
Aggregator (m/M) Protocol    Ports
Name
```

```
-----+-----+-----+-----
agg1(D)    (1/8) LACP
agg2(D)    (1/8) Static
```

```
BTI SA-805,21,22(config)# lag group del 1
BTI SA-805,21,22(config)# lag group del 2
BTI SA-805,21,22# show lag summary
Flags:  s - suspend           T - standby
        D - down/admin down   B - in Bundle
```

w - wait U - in use
(m/M) - min/Max Member

Aggregator (m/M)	Protocol	Ports
------------------	----------	-------

Name

-----+-----+-----+-----

Related Commands

None

11.2 lag load-balance

Use this command to set the Link Aggregation Group (LAG) load balance. The no form of this command returns the lag load-balance to the default setting.

Command Syntax

[no] lag load-balance (dst-mac|src-mac|src-dst-mac|dst-ip|src-ip|src-dst-ip)

dst-ip : Destination IP address based load balancing

dst-mac : Destination MAC address based load balancing

src-dst-ip : Source and Destination IP address based load balancing (Default Mode)

src-dst-mac : Source and Destination MAC address based load balancing

src-ip : Source IP address based load balancing

src-mac : Source MAC address based load balancing

Command Mode

Global configuration

Pre-requisites

Create the LACP group before setting the lag load-balance.

Example

This example shows how to set the Link Aggregation Group (LAG) load balance to Source and Destination IP address based load balancing.

```
BTI SA-805,21,22(config)# lag load-balance src-dst-ip
BTI SA-805,21,22(config)# exit
BTI SA-805,21,22# show lag load-balance
Load-balance: Source and Destination IP address
```

Related Commands

None

11.3 lag member

Use this command to assign a port to a Link Aggregation Group. Use the **no** form of this command to remove a port from a Link Aggregation Group.

Command Syntax

[no] **lag member add** (channel-group-number)

channel-group-number: BTI SA-805 (1-2) BTI SA-821 (1-14) BTI SA-822 (1-6).

Command Mode

Interface configuration

Usage

The `lag member` command is used to add interfaces to both LAG and MLAGs.

Example

This example shows how to assign and remove a LAG member from Link Aggregation Group (lacp / static)

```
BTI SA-805,21,22(config)# interface eth-0-4
BTI SA-805,21,22(config-if)# lag member add 1
BTI SA-805,21,22(config)# interface eth-0-5
BTI SA-805,21,22(config-if)# lag member add 2
BTI SA-805,21,22 # show lag summary
Flags:  s - suspend          T - standby
        D - down/admin down  B - in Bundle
        w - wait             U - in use
        * - mlag
        (m/M) - min/Max Member
```

Aggregator Name	Protocol	Ports
agg1(D)	LACP	eth-0-4(D)
agg2(D)	Static	eth-0-5(D)

```
BTI SA-805,21,22(config)# interface eth-0-4
BTI SA-805,21,22(config-if)# no lag member
BTI SA-805,21,22(config)# interface eth-0-5
BTI SA-805,21,22(config-if)# no lag member
BTI SA-805,21,22# show lag summary
Flags:  s - suspend          T - standby
        D - down/admin down  B - in Bundle
        w - wait             U - in use
        * - mlag
        (m/M) - min/Max Member
```

Aggregator Name	Protocol	Ports
-----------------	----------	-------

-----+-----+	
agg1(D)	LACP
agg2(D)	Static

Related Commands

None

11.4 lag group (min-member|max-member)

Use this command to configure a min/max member to a Link Aggregation Group.

Command Syntax

lag group (1-2 | 1-6 | 1-14) min-member (1-8)

lag group (1-2 | 1-6 | 1-14) max-member (1-8)

Command Mode

Interface configuration

Usage

The following channel-group number ranges apply for each switch : BTI SA-805 (1-2) BTI SA-821 (1-14) BTI SA-822 (1-6).

Example

This example shows how to configure a min/max member to Link Aggregation Group.

```
BTI SA-805,21,22 # show lag summary
```

```
Flags:  s - suspend          T - standby
        D - down/admin down  B - in Bundle
        w - wait             U - in use
        * - mlag
        (m/M) - min/Max Member
```

Aggregator (m/M) Protocol Ports

Name

```
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
agg1(D) (1/8) LACP eth-0-4(D)
agg2(D) (1/8) Static eth-0-5(D)
BTI SA-805,21,22(config)# lag group 1 min-member 3
BTI SA-805,21,22(config)# lag group 1 max-member 6
BTI SA-805,21,22(config)# lag group 2 min-member 2
BTI SA-805,21,22(config)# lag group 2 max-member 7
BTI SA-805,21,22 # show lag summary
```

```
Flags:  s - suspend          T - standby
        D - down/admin down  B - in Bundle
        w - wait             U - in use
        * - mlag
        (m/M) - min/Max Member
```

Aggregator (m/M) Protocol Ports

Name

```
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
agg1(D) (3/6) LACP eth-0-4(D)
agg2(D) (2/7) Static eth-0-5(D)
```


Related Commands

None

11.5 lacp port-priority

Use this command to configure the port priority for the Link Aggregation Control Protocol (LACP). Use the **no** form of this command to return to the default setting.

Command Syntax

lacp port-priority *priority*

no lacp port-priority

priority: <1-65535>

Command Mode

Interface configuration

Default

32768

Usage

None

Example

This example shows how to configure the port priority 100 for the Link Aggregation Control Protocol (LACP) member and return to the default setting.

```
BTI SA-805,21,22(config -if )# lacp port-priority 100
```

```
BTI SA-805,21,22(config -if )# no lacp port-priority
```

Related Commands

None

11.6 lacp timeout

Use this command to configure the port timeout for the Link Aggregation Control Protocol (LACP). Use the **no** form of this command to return to the default setting.

Command Syntax

lacp timeout {short | long}

no lacp timeout

Command Mode

Interface configuration

Default

Long

Usage

None

Example

This example shows how to configure the port timeout short for the Link Aggregation Control Protocol (LACP):

```
BTI SA-805,21,22(config -if )# lacp timeout short
```

```
BTI SA-805,21,22(config -if )# no lacp timeout
```

Related Commands

None

11.7 lacp system-priority

Use this command to configure the system priority for the Link Aggregation Control Protocol (LACP). Use the **no** form of this command to return to the default setting.

Command Syntax

lacp system-priority *priority*

no lacp system-priority

priority: <1-65535>

Command Mode

Global configuration

Defaults

32768

Usage

None

Example

This example shows how to configure the Link Aggregation Control Protocol (LACP) system priority to 100 and return to the default setting.

```
BTI SA-805,21,22(config)# lacp system-priority 100
```

```
BTI SA-805,21,22(config)# no lacp system-priority
```

Related Commands

None

11.8 show lag summary

Use this command to display a summary of all of the Link Aggregation Groups or a specified channel group.

Command Syntax

show lag [channel-group-number] **summary**

channel-group-number: (1-2 | 1-6 | 1-14)

Command Mode

EXEC

Usage

The following channel-group number ranges apply for each switch : BTI SA-805 (1-2) BTI SA-821 (1-14) BTI SA-822 (1-6).

Example

This example shows how to display a summary of all of the channel groups:

```
BTI SA-805,21,22# show lag summary
Flags:  s - suspend          T - standby
        D - down/admin down  B - in Bundle
        w - wait            U - in use
        * - mlag
        (m/M) - min/Max Member
```

Aggregator Name	(m/M)	Protocol	Ports
agg10(D)	(1/8)	LACP	eth-0-9(D) eth-0-10(D)
agg20(D)	(1/8)	LACP	eth-0-11(D) eth-0-12(D)

This example shows how to display a summary of a specified channel group:

```
BTI SA-805,21,22# show lag 10 summary
Flags:  s - suspend          T - standby
        D - down/admin down  B - in Bundle
        w - wait            U - in use
        * - mlag
        (m/M) - min/Max Member
```

Aggregator Name	(m/M)	Protocol	Ports
agg10(D)	(1/8)	LACP	eth-0-9(D) eth-0-10(D)

Related Commands

None

11.9 show lacp internal

Use this command to display internal information of all of the channel groups, or a specified channel group.

Command Syntax

show lacp [channel-group-number] **internal**

channel-group-number: (1-2 | 1-6 | 1-14)

Command Mode

EXEC

Usage

The following channel-group number ranges apply for each switch : BTI SA-805 (1-2) BTI SA-821 (1-14) BTI SA-822 (1-6).

Example

This example shows how to display internal information of all of the channel groups:

```
BTI SA-805,21,22# show lacp internal
```

```
Flags:  S - Device is requesting Slow LACPDUs
```

```
        F - Device is requesting Fast LACPDUs
```

```
        A - Device is in Active mode          P - Device is in Passive mode
```

```
Channel group: agg10
```

```
Min/Max Member: 1/8
```

Port	Flags	State	LACP port Priority	Admin key	Oper Key	Port Number	Port State
eth-0-9	SA	down	32768	10	10	0x9	0x45
eth-0-10	SA	down	32768	10	10	0xa	0x45

```
Channel group: agg20
```

```
Min/Max Member: 1/8
```

Port	Flags	State	LACP port Priority	Admin key	Oper Key	Port Number	Port State
eth-0-11	SA	down	32768	20	20	0xb	0x45
eth-0-12	SA	down	32768	20	20	0xc	0x45

Related Commands

None

11.10 show lacp internal detail

Use this command to display detailed internal information of all of the channel groups, or a specified channel group.

Command Syntax

show lacp [channel-group-number] internal detail

channel-group-number:(1-2 | 1-6 | 1-14)

Command Mode

EXEC

Usage

The following channel-group number ranges apply for each switch : BTI SA-805 (1-2) BTI SA-821 (1-14) BTI SA-822 (1-6).

Example

This example shows how to display detailed internal information of all of the channel groups:

```
BTI SA-805,21,22# show lacp internal detail
Flags:  S - Device is requesting Slow LACPDUs
        F - Device is requesting Fast LACPDUs
        A - Device is in Active mode           P - Device is in Passive mode
Channel group: aggl
Min/Max Member: 1/8
Actor's information:
```

Port	Actor System ID	Actor Port Number	Actor Flags
eth-0-11	32768,ca9c.e21d.a301	0x56	FA

LACP Actor Port Priority	Actor Oper Key	Actor Port State
32768	1	0x3f

Port State Flags Decode:

Activity:	Timeout:	Aggregation:	Synchronization:
Active	Short	Yes	Yes

Collecting:	Distributing:	Defaulted:	Expired:
Yes	Yes	No	No

Port	Actor System ID	Actor Port Number	Actor Flags
eth-0-12	32768,ca9c.e21d.a301	0x57	FA

LACP Actor	Actor	Actor
------------	-------	-------

Port Priority	Oper Key	Port State
32768	1	0x3f

Port State Flags Decode:

Activity:	Timeout:	Aggregation:	Synchronization:
Active	Short	Yes	Yes

Collecting:	Distributing:	Defaulted:	Expired:
Yes	Yes	No	No

Channel group: agg50

Min/Max Member: 1/8

Actor's information:

Port	Actor	Actor	Actor
	System ID	Port Number	Flags
eth-0-9	32768,ca9c.e21d.a301	0x54	FA

LACP Actor	Actor	Actor
Port Priority	Oper Key	Port State
32768	50	0x3f

Port State Flags Decode:

Activity:	Timeout:	Aggregation:	Synchronization:
Active	Short	Yes	Yes

Collecting:	Distributing:	Defaulted:	Expired:
Yes	Yes	No	No

Port	Actor	Actor	Actor
	System ID	Port Number	Flags
eth-0-10	32768,ca9c.e21d.a301	0x55	FA

LACP Actor	Actor	Actor
Port Priority	Oper Key	Port State
32768	50	0x3f

Port State Flags Decode:

Activity:	Timeout:	Aggregation:	Synchronization:
Active	Short	Yes	Yes

Collecting:	Distributing:	Defaulted:	Expired:
Yes	Yes	No	No

Related Commands

None

11.11 show lacp neighbor

Use this command to display neighbor information of all of the channel groups, or a specified channel group.

Command Syntax

show lacp [channel-group-number] neighbor

channel-group-number: (1-2 | 1-6 | 1-14)

Command Mode

EXEC

Usage

The following channel-group number ranges apply for each switch : BTI SA-805 (1-2) BTI SA-821 (1-14) BTI SA-822 (1-6).

Example

This example shows how to display neighbor information of all of the channel groups:

```
BTI SA-805,21,22# show lacp neighbor
lags:  S - Device is requesting Slow LACPDUs
       F - Device is requesting Fast LACPDUs
       A - Device is in Active mode
P - Device is in Passive mode
```

```
Channel group: agg1
Partner's information:
```

LACP port				Admin	Oper	Port
Port	Flags	Priority	Dev ID	key	Key	Number
eth-0-11	FA	32768	ca9c.e21d.a301	0	1	0x56
0x3f						
eth-0-12	FA	32768	ca9c.e21d.a301	0	1	0x57
0x3f						

```
Channel group: agg50
Partner's information:
```

LACP port				Admin	Oper	Port
Port	Flags	Priority	Dev ID	key	Key	Number
eth-0-9	FA	32768	ca9c.e21d.a301	0	50	0x54
0x3f						
eth-0-10	FA	32768	ca9c.e21d.a301	0	50	0x55

0x3f

BTI SA-805,21,22#

Related Commands

None

11.12 show lacp neighbor detail

Use this command to display detailed neighbor information of all of the channel groups, or a specified channel group.

Command Syntax

show lacp [channel-group-number] neighbor detail

channel-group-number:(1-2 | 1-6 | 1-14)

Command Mode

EXEC

Usage

The following channel-group number ranges apply for each switch : BTI SA-805 (1-2) BTI SA-821 (1-14) BTI SA-822 (1-6).

Example

This example shows how to display detailed neighbor information of all of the channel groups:

```
BTI SA-805,21,22# show lacp neighbor detail
Flags:  S - Device is requesting Slow LACPDUs
        F - Device is requesting Fast LACPDUs
        A - Device is in Active mode
P - Device is in Passive mode
Channel group: aggl
Min/Max Member: 1/8
Partner's information:
```

Port	Partner System ID	Partner Port Number	Partner Flags
eth-0-11	32768,ca9c.e21d.a301	0x56	FA

LACP Partner	Partner	Partner
Port Priority	Oper Key	Port State
32768	1	0x3f

Port State Flags Decode:

Activity:	Timeout:	Aggregation:	Synchronization:
Active	Short	Yes	Yes

Collecting:	Distributing:	Defaulted:	Expired:
Yes	Yes	No	No

Port	Partner System ID	Partner Port Number	Partner Flags
eth-0-12	32768,ca9c.e21d.a301	0x57	FA

LACP Partner	Partner	Partner
Port Priority	Oper Key	Port State
32768	1	0x3f

Port State Flags Decode:

Activity:	Timeout:	Aggregation:	Synchronization:
Active	Short	Yes	Yes

Collecting:	Distributing:	Defaulted:	Expired:
Yes	Yes	No	No

Channel group: agg50

Min/Max Member: 1/8

Partner's information:

Port	Partner	Partner	Partner
eth-0-9	System ID	Port Number	Flags
	32768,ca9c.e21d.a301	0x54	FA

LACP Partner	Partner	Partner
Port Priority	Oper Key	Port State
32768	199	0x3f

Port State Flags Decode:

Activity:	Timeout:	Aggregation:	Synchronization:
Active	Short	Yes	Yes

Collecting:	Distributing:	Defaulted:	Expired:
Yes	Yes	No	No

Port	Partner	Partner	Partner
eth-0-10	System ID	Port Number	Flags
	32768,ca9c.e21d.a301	0x55	FA

LACP Partner	Partner	Partner
Port Priority	Oper Key	Port State
32768	199	0x3f

Port State Flags Decode:

Activity:	Timeout:	Aggregation:	Synchronization:
Active	Short	Yes	Yes

Collecting:	Distributing:	Defaulted:	Expired:
Yes	Yes	No	No

Related Commands

None

11.13 show channel-group port

Use this command to display details of the LACP port of all of the channel groups, or a specified channel group, or a specified port.

Command Syntax

show channel-group port [*ifname*]

ifname: interface name

Command Mode

EXEC

Usage

None

Example

This example shows how to display details of the LACP port of all of the channel group:

```
BTI SA-805,21,22# show channel-group port eth-0-11
```

```
Port: eth-0-11
```

```
-----
```

```
Port state      = Up In-Bndl
```

```
Channel number = 1          Protocol = LACP          Channel-group = aggl
```

```
Port index      = 90          Mode = Active
```

```
Flags:  S - Device is sending Slow LACPDUs  F - Device is sending fast  
LACPDUs
```

```
        A - Device is in active mode        P - Device is in passive mode
```

Local information:

			LACP port		Admin	Oper	Port	Port
Port	Flags	State	Priority	Key	Key	Key	Number	State
eth-0-11	FA	bndl	32768	1	1		0x5a	0x3f

Partner's information:

			LACP port		Admin	Oper	Port	Port
Port	Flags	Priority	Dev ID	key	Key	Key	Number	State
eth-0-11	FA	32768	ca9c.e21d.a301	0	1		0x56	0x3f

```
BTI SA-805,21,22#
```

Related Commands

None

11.14 show lag load-balance

Use this command to display the lag load-balance.

Command Syntax

show lag load-balance

Command Mode

EXEC

Usage

Source and Destination IP address based load balancing (src-dst-ip) is the default mode.

Example

This example shows how to display detailed internal information of all of the channel groups:

```
BTI SA-805,21,22# show lag load-balance
Load-balance: Source and Destination IP address
```

Related Commands

None

11.15 show lacp counters

Use this command to display the packet traffic on all of the channel groups, or a specified channel group.

Command Syntax

show lacp [channel-group-number] **counters**

channel-group-number: (<1-2>,<1-6>,<1-14>)

Command Mode

EXEC

Usage

The following channel-group number ranges apply for each switch : BTI SA-805 (1-2) BTI SA-821 (1-14) BTI SA-822 (1-6).

Example

This example shows how to display the packet traffic on all of the channel groups:

```
BTI SA-805,21,22# show lacp counters
```

```
Channel-group agg1
```

```
Min/Max Member: 1/8
```

```
Port
```

	LACPDUs		Pckt err	
	Sent	Recv	Sent	Recv
eth-0-11	231	226	0	0
eth-0-12	224	219	0	0

```
Channel-group agg50
```

```
Min/Max Member: 1/8
```

```
Port
```

	LACPDUs		Pckt err	
	Sent	Recv	Sent	Recv
eth-0-9	29	25	0	0
eth-0-10	24	18	0	0

```
BTI SA-805,21,22#
```

Related Commands

None

11.16 show lacp sys-id

Use this command to display the LACP system ID.

Command Syntax

show lacp sys-id

Command Mode

EXEC

Usage

None

Example

This example shows how to display the LACP system ID:

```
BTI SA-805,21,22# show lacp sys-id
System ID: 32768(0x8050), 0019.6de1.e100
```

Related Commands

None

11.17 clear lacp counters

Use this command to clear all counters of all of the channel groups, or a specified channel group.

Command Syntax

clear lacp [channel-group-number] **counters**

channel-group-number: (1-2 | 1-6 | 1-14)

Command Mode

EXEC

Usage

The following channel-group number ranges apply for each switch : BTI SA-805 (1-2) BTI SA-821 (1-14) BTI SA-822 (1-6).

Example

This example shows how to clear all counters of all of the channel groups:

```
BTI SA-805,21,22# clear lacp counters
BTI SA-805,21,22# clear lacp 10 counters
```

Related Commands

12.0 Multi-chassis Link Aggregation (MLAG) Commands

This section covers the following topics :

- 12.1, “mlag (mlag id) interface agg (agg id)”
- 12.2, “mlag (mlag id) mode”
- 12.3, “mlag (mlag id) opmode”
- 12.4, “mlag ip address”
- 12.5, “ peer-link”
- 12.6, “ peer-address”
- 12.7, “reload-delay”
- 12.8, “timers mlag”
- 12.9, “mlag (mlag id) (shutdown|no shutdown)”
- 12.10, “clear mlag count”
- 12.11, “show mlag”
- 12.12, “show mlag interface”
- 12.13, “show mlag peer”

Note	The current MLAG configuration options support active-standby MLAG mode only. Active-active MLAG configuration mode will be supported in a future release.
-------------	--

12.1 mlag (mlag id) interface agg (agg id)

This command creates an MLAG and assigns an AGG to the MLAG ID. The no mlag (mlag id) interface agg command deletes the AGG from the MLAG ID. The MLAG domain should be provisioned between the NNIs before issuing this command. All MLAGs provisioned between NNIs will use the same MLAG domain.

Command Syntax

[no] mlag (1-2 | 1-14 | 1-6) interface agg (2-8) (active | standby)

agg id = MLAG group members, with a maximum of 8 LAG groups (4 active and 4 standby)

active = active member link is active on MLAG

standby = standby member link is standby on MLAG

default = none

Command Mode

MLAG Configuration

Usage

The following MLAG groups apply to each switch: BTI SA-805 (1-2), BTI SA-821 (1-14), BTI SA-822 (1-6) .

Pre-requisites

Before creating the MLAG you must first create the LAG and add the required members to the AGG. For example the following shows how to create a static and LACP LAG group and add a LAG member:

```
BTI SA-805,21,22-08(config)# lag group add 1 static
BTI SA-805,21,22-08(config)# interface eth-0-9
BTI SA-805,21,22-08(config-if)# lag member add 1
BTI SA-805,21,22-08(config-if)# exit
BTI SA-805,21,22-08(config)# interface agg 1
BTI SA-805,21,22-08(config-if)# no shutdown
```

```
BTI SA-805,21,22-08(config)# lag group add 2 lacp
BTI SA-805,21,22-08(config)# interface eth-0-10
BTI SA-805,21,22-08(config-if)# lag member add 2
BTI SA-805,21,22-08(config-if)# exit
BTI SA-805,21,22-08(config)# interface agg 2
BTI SA-805,21,22-08(config-if)# no shutdown
BTI SA-805,21,22-08(config-if)# exit
```

```
BTI SA-805,21,22-09(config)# lag group add 1 static
BTI SA-805,21,22-09(config)# interface eth-0-9
BTI SA-805,21,22-09(config-if)# lag member add 1
BTI SA-805,21,22-09(config-if)# exit
```

```
BTI SA-805,21,22-09(config)# interface agg 1
BTI SA-805,21,22-09(config-if)# no shutdown

BTI SA-805,21,22-09(config)# lag group add 2 lacp
BTI SA-805,21,22-09(config)# interface eth-0-10
BTI SA-805,21,22-09(config-if)# lag member add 2
BTI SA-805,21,22-09(config-if)# exit
BTI SA-805,21,22-09(config)# interface agg 2
BTI SA-805,21,22-09(config-if)# no shutdown
BTI SA-805,21,22-09(config-if)# exit
```

```
BTI SA-805,21,22-08 # show lag summary
```

```
Flags:  s - suspend          T - standby
        D - down/admin down  B - in Bundle
        w - wait             U - in use
        * - mlag
        (m/M) - min/Max Member
```

```
Aggregator (m/M) Protocol    Ports
Name
```

```
-----+-----+-----+-----
agg1(D)  (1/8) Static        eth-0-9(D)
agg2(D)  (1/8) LACP          eth-0-10(D)
```

```
BTI SA-805,21,22-09 # show lag summary
```

```
Flags:  s - suspend          T - standby
        D - down/admin down  B - in Bundle
        w - wait             U - in use
        * - mlag
        (m/M) - min/Max Member
```

```
Aggregator (m/M) Protocol    Ports
Name
```

```
-----+-----+-----+-----
agg1(D)  (1/8) Static        eth-0-9(D)
agg2(D)  (1/8) LACP          eth-0-10(D)
```

To create the MLAG

Only one UNI MLAG ID can be provisioned to an interface. An individual MLAG number cannot be provisioned to more than one interface. The following interface agg ranges apply for each switch : BTI SA-805 (1-2), BTI SA-821 (1-14), BTI SA-822 (1-6) .

New MLAG AGG members are added in the interface configuration mode using the `lag member` command. Static LAGs associated with an MLAG will have an `admin-up | admin-down` status. LACP LAGs associated with an MLAG will have a `up | down` status.

Shutdown the remote standard LAG before changing an MLAG configuration from Static to LACP or LACP to Static.

Examples

```
BTI SA-805,21,22-08(config)# mlag configuration
BTI SA-805,21,22-08(config-mlag)# mlag 1 interface agg 1 activeBTI
SA-805,21,22-08(config-mlag)# mlag 1 mode active-standby
BTI SA-805,21,22-08(config-mlag)# mlag 1 opmode non-revertive
BTI SA-805,21,22-08(config-mlag)# mlag 2 interface agg 2 activeBTI
SA-805,21,22-08(config-mlag)# mlag 2 mode active-standby
BTI SA-805,21,22-08(config-mlag)# mlag 2 opmode non-revertive
```

```
BTI SA-805,21,22-09(config)# mlag configuration
BTI SA-805,21,22-09(config-mlag)# mlag 1 interface agg 1 activeBTI
SA-805,21,22-09(config-mlag)# mlag 1 mode active-standby
BTI SA-805,21,22-09(config-mlag)# mlag 1 opmode non-revertive
BTI SA-805,21,22-09(config-mlag)# mlag 2 interface agg 2 activeBTI
SA-805,21,22-09(config-mlag)# mlag 2 mode active-standby
BTI SA-805,21,22-09(config-mlag)# mlag 2 opmode non-revertive
```

```
BTI SA-805,21,22-08# show mlag interface
ID: Mlag instance ID
A/S: Active/Standby mode, A/A: Active/Active mode
op-mode: operation mode
REV: revertive mode
N-REV: non-revertive mode
```

ID	local-if (admin_state)	local-state (oper_state)	remote-state	mode	op-mode
1	agg1(A)	up(A)	admin-down	A/S	N-REV
2	agg2(A)	up(A)	down	A/S	N-REV

```
BTI SA-805,21,22-09# show mlag interface
ID: Mlag instance ID
A/S: Active/Standby mode, A/A: Active/Active mode
op-mode: operation mode
REV: revertive mode
N-REV: non-revertive mode
```

ID	local-if (admin_state)	local-state (oper_state)	remote-state	mode	op-mode
1	agg1(A)	down (s)	admin-up	A/S	N-REV
2	agg2(A)	down (s)	up	A/S	N-REV

After provisioning the MLAG, the AGGs associated to the MLAGs will be displayed in the LAG summary as now belonging to the MLAG configuration.

```
BTI SA-805,21,22-08# show lag summary
```

```
Flags:  s - suspend           T - standby
        D - down/admin down  B - in Bundle
        w - wait             U - in use
        * - mlag
```

(m/M) - min/Max Member

Aggregator Name	(m/M)	Protocol	Ports
-----------------	-------	----------	-------

agg1(D)*	(1/8)	Static	eth-0-9(D)
agg2(D)*	(1/8)	LACP	eth-0-10(D)

BTI SA-805,21,22-09# show lag summary

Flags: s - suspend T - standby
 D - down/admin down B - in Bundle
 w - wait U - in use
 * - mlag
 (m/M) - min/Max Member

Aggregator Name	(m/M)	Protocol	Ports
-----------------	-------	----------	-------

agg1(D)*	(1/8)	Static	eth-0-9(D)
agg2(D)*	(1/8)	LACP	eth-0-10(D)

Related tasks

After creating the MLAG the MLAG should be assigned to the UNI. For example :

```
BTI SA-805,21,22-08(config)# ethernet uni add LAG-1
BTI SA-805,21,22-08(config-uni)# map interface agg 1
BTI SA-805,21,22-08(config-uni)# exit
BTI SA-805,21,22-08(config)# ethernet uni add LAG-2
BTI SA-805,21,22-08(config-uni)# map interface agg 2
BTI SA-805,21,22-08(config-uni)#
```

```
BTI SA-805,21,22-09(config)# ethernet uni add LAG-1
BTI SA-805,21,22-09(config-uni)# map interface agg 1
BTI SA-805,21,22-09(config-uni)# exit
BTI SA-805,21,22-09(config)# ethernet uni add LAG-2
BTI SA-805,21,22-09(config-uni)# map interface agg 2
BTI SA-805,21,22-09(config-uni)# exit
BTI SA-805,21,22-09(config)# exit
```

```
BTI SA-805,21,22-08#show ethernet uni
Local UNI
```

UNI LAG-1	
Description	: agg1
Mapped Interface	: agg1
TPID Value	: 0x8100
MTU Size	: 1522
Default CVLANID	: 0
Default SVLAN Priority	: 0
All to One Bundling	: Yes

Bundling	: No
Service Multiplexing	: No
Maximum Number of EVC	: 1
L2CP Profile	: 0
Number of EVC	: 0
Number of OVC	: 0
Efspd	: disabled(LBM with LIS disabled)

UNI LAG-2

Description	: agg2
Mapped Interface	: agg2
TPID Value	: 0x8100
MTU Size	: 1522
Default CVLANID	: 0
Default SVLAN Priority	: 0
All to One Bundling	: Yes
Bundling	: No
Service Multiplexing	: No
Maximum Number of EVC	: 1
L2CP Profile	: 0
Number of EVC	: 0
Number of OVC	: 0
Efspd	: disabled(LBM with LIS disabled)

BTI SA-805,21,22-09#show ethernet uni

Local UNI

UNI LAG-1

Description	: agg1
Mapped Interface	: agg1
TPID Value	: 0x8100
MTU Size	: 1522
Default CVLANID	: 0
Default SVLAN Priority	: 0
All to One Bundling	: Yes
Bundling	: No
Service Multiplexing	: No
Maximum Number of EVC	: 1
L2CP Profile	: 0
Number of EVC	: 0
Number of OVC	: 0
Efspd	: disabled(LBM with LIS disabled)

UNI LAG-2

Description	: agg2
Mapped Interface	: agg2
TPID Value	: 0x8100
MTU Size	: 1522
Default CVLANID	: 0
Default SVLAN Priority	: 0
All to One Bundling	: Yes

Bundling	: No
Service Multiplexing	: No
Maximum Number of EVC	: 1
L2CP Profile	: 0
Number of EVC	: 0
Number of OVC	: 0
Efpsd	: disabled(LBM with LIS disabled)

Related Commands

show mlag interface

mlag (mlag id) mode

mlag (mlag id) opmode

12.2 mlag (mlag id) mode

This command provisions the active-standby mode for each MLAG group.

Command Syntax

mlag (1-2 |1-14|1-6) mode (active-standby)

active-standby = only one of MLAG peers is active and the other is in backup

default = active-standby

Command Mode

MLAG Configuration

Usage

Only active-standby is supported in this release. Support for active-active will be implemented in a future release.

The following MLAG groups apply to each switch : BTI SA-805 (1-2), BTI SA-821 (1-14), BTI SA-822 (1-6) .

Example

```
BTI SA-805,21,22(config)# mlag configuration
BTI SA-805,21,22(config-mlag)# mlag 1 mode active-standbyBTI
SA-805,21,22(config-mlag)# end
BTI SA-805,21,22# show mlag interface
```

ID: Mlag instance ID
A/S: Active/Standby mode
A/A: Active/Active mode
op-mode: operation mode
REV: revertive mode
N-REV: non-revertive mode

ID	local-if	local-state	remote-state	mode	op-mode
1	agg1(A)	up(A)	down	A/S	N-REV
2	agg2(A)	admin-dn(S)	up	A/S	N-REV

Related Commands

show mlag interface

12.3 mlag (mlag id) opmode

This command provisions the non-revertive or revertive mode for each MLAG group.

Command Syntax

mlag (1-2 |1-14|1-6) mode (non-revertive)

default = non-revertive

Command Mode

MLAG Configuration

Usage

Only non-revertive is supported in this release. Support for revertive will be implemented in a future release.

The following MLAG groups apply to each switch : BTI SA-805 (1-2), BTI SA-821 (1-14), BTI SA-822 (1-6)

Example

```
BTI SA-805,21,22(config)# mlag configuration
BTI SA-805,21,22(config-mlag)# mlag 1 opmode non-revertiveBTI
SA-805,21,22(config-mlag)# end
BTI SA-805,21,22# show mlag interface
```

```
ID: Mlag instance ID
A/S: Active/Standby mode
A/A: Active/Active mode
op-mode: operation mode
REV: revertive mode
N-REV: non-revertive mode
```

ID	local-if	local-state	remote-state	mode	op-mode
1	agg1(A)	up(A)	down	A/S	N-REV
2	agg2(A)	admin-dn(S)	up	A/S	N-REV

Related Commands

show mlag peer

show mlag interface

12.4 mlag ip address

This command creates the local mlag ip address for the MLAG domain. The no mlag ip address command removes the local mlag ip address. The MLAG domain exists between two peer NNIs. The MLAG domain is created by assigning an MLAG IP address to the MLAG domain on each NNI and provisioning an IPv4 peer-link between the NNIs. All MLAGs provisioned between NNIs will use the same MLAG domain.

Command Syntax

[no] mlag ip address A.B.C.D/M

A.B.C.D/M IP destination prefix (e.g. 10.0.0.0/8)

Command Mode

Interface configuration

Usage

The local mlag ip address is used to communicate with the MLAG peer in Multi-chassis LAG configurations.

Example

The following example shows how to provision the mlag ip address in an MLAG domain provisioned with a virtual peer-link.

```
BTI SA-805,21,22-08(config)# interface vlan 1000
BTI SA-805,21,22-08(config-if)# mlag ip address 192.168.1.1/24BTI
SA-805,21,22-08(config-if)# exit
BTI SA-805,21,22-08(config)# ethernet evc add mc-peer
BTI SA-805,21,22-08(config-evc)# service type epline
BTI SA-805,21,22-08(config-evc)# svlan 1000
BTI SA-805,21,22-08(config-evc)# exit

BTI SA-805,21,22-08(config)# ethernet nni NNI-08
BTI SA-805,21,22-08(config-nni)# add evc mc-peer

BTI SA-805,21,22-08(config-nni)# map interface eth-0-8
BTI SA-805,21,22-08(config-nni)# exit
BTI SA-805,21,22-08(config)# interface eth-0-8
BTI SA-805,21,22-08(config-if)# no shutdown
BTI SA-805,21,22-08(config-if)# exit

BTI SA-805,21,22-08((config)# mlag configuration
BTI SA-805,21,22-08((config-mlag)# peer-address 192.168.1.2
BTI SA-805,21,22-08((config-mlag)# peer-link vlan 1000

BTI SA-805,21,22-08(config-mlag)# timers mlag 1 4
BTI SA-805,21,22-08(config-mlag)# reload-delay 40
```

```
BTI SA-805,21,22-09(config)# interface vlan 1000
BTI SA-805,21,22-09(config-if)# mlag ip address 192.168.1.2/24BTI
SA-805,21,22-09(config-if)#
BTI SA-805,21,22-09(config)# ethernet evc add mc-peer
BTI SA-805,21,22-09(config-evc)# service type epline
BTI SA-805,21,22-09(config-evc)# svlan 1000
BTI SA-805,21,22-09(config-evc)# exit
```

```
BTI SA-805,21,22-09(config)# ethernet nni NNI-08
BTI SA-805,21,22-09(config-nni)# add evc mc-peer
```

```
BTI SA-805,21,22-09(config-nni)# map interface eth-0-8
BTI SA-805,21,22-09(config-nni)# exit
BTI SA-805,21,22-09(config)# interface eth-0-8
BTI SA-805,21,22-09(config-if)# no shutdown
BTI SA-805,21,22-09(config-if)# exit
```

```
BTI SA-805,21,22-09(config)# mlag configuration
BTI SA-805,21,22-09(config-mlag)# peer-address 192.168.1.1
BTI SA-805,21,22-09(config-mlag)# peer-link vlan 1000
```

```
BTI SA-805,21,22-09(config-mlag)# timers mlag 1 4
BTI SA-805,21,22-09(config-mlag)# reload-delay 40
```

```
BTI SA-805,21,22-08# show mlag
MLAG configuration:
```

```
-----
role           : Master
local_sysid    : 0014.d060.00e5
remote_sysid   : 0019.6d01.2ae0
mlag_sysid     : 0019.6d01.2ae0
local_syspri   : 0
remote_syspri  : 0
mlag_syspri    : 0
local-address  : 192.168.1.1/24
peer-link      : vlan1000
peer conf      : Yes
reload-delay   : 30
```

```
BTI SA-805,21,22-09# show mlag
MLAG configuration:
```

```
-----
role           : Slave
local_sysid    : 0014.d060.00e5
remote_sysid   : 0019.6d01.2ae0
mlag_sysid     : 0019.6d01.2ae0
local_syspri   : 0
remote_syspri  : 0
```

```
m1ag_syspri   : 0
local-address: 192.168.1.2/24
peer-link     : vlan1000
peer conf     : Yes
reload-delay  : 30
```

Related Commands

show mlag

show mlag peer

show mlag interface

12.5 peer-link

This command creates the MLAG peer-link. The no peer-link command removes the MLAG peer-link. Creating the peer-link is a task required when creating the MLAG domain. The MLAG domain is created between NNIs. All MLAGs provisioned between NNIs will use the same peer-link and MLAG domain.

Command Syntax

[no] peer-link (IFNAME| IFVLAN)

IFNAME = Peer-link interface port identity

IFVLAN = Peer-link VLAN identity

Command Mode

MLAG Configuration

Usage

The peer-link can be provisioned on an interface or a VLAN for virtual peer-link (NNI, G.8032). See the examples below.

Examples

Provisioning the peer-link on an interface :

```
BTI SA-805,21,22# configure terminal
BTI SA-805,21,22(config)# interface eth-0-3
BTI SA-805,21,22(config-if)# mlag ip address 192.168.1.1/24
BTI SA-805,21,22(config)# mlag configuration
BTI SA-805,21,22(config-mlag)# peer-link eth-0-3BTI SA-805,21,22(config-mlag)# end
```

```
BTI SA-805,21,22# show mlag
```

MLAG configuration:

```
-----
role           : Master
local_sysid    : 0019.6d01.2ae0
remote_sysid   : 0014.d060.00e5
mlag_sysid     : 0019.6d01.2ae0
local_syspri   : 0
remote_syspri  : 0
mlag_syspri    : 0
local-address  : 192.168.7.168/24
peer-link      : eth-0-3
peer conf      : Yes
reload-delay   : 30
BTI SA-805,21,22#
```

Provisioning a virtual peer-link:

```
BTI SA-805,21,22(config)# interface vlan 1000
BTI SA-805,21,22(config-if)# mlag ip address 192.168.1.1/24
BTI SA-805,21,22(config-if)# exit
BTI SA-805,21,22 (config)# mlag configuration
BTI SA-805,21,22 (config-mlag)# peer-link vlan 1000BTI SA-805,21,22 (config-
mlag)# peer-address 192.168.2.1
```

```
BTI SA-805,21,22(config)# ethernet evc add mc-peer
BTI SA-805,21,22(config-evc)# service type epline
BTI SA-805,21,22(config-evc)# svlan 1000
BTI SA-805,21,22(config-evc)# exit
```

```
BTI SA-805,21,22(config)# ethernet nni NNI-08
BTI SA-805,21,22(config-nni)# add evc mc-peer
```

```
BTI SA-805,21,22(config-nni)# map interface eth-0-8
BTI SA-805,21,22(config-nni)# exit
BTI SA-805,21,22(config)# interface eth-0-8
BTI SA-805,21,22(config-if)# no shutdown
BTI SA-805,21,22(config-if)# exit
```

```
BTI SA-805,21,22(config-mlag)# timers mlag 1 4
BTI SA-805,21,22(config-mlag)# reload-delay 40
```

MLAG configuration:

```
-----
role           : Master
local_sysid    : 0014.d060.00e5
remote_sysid   : 0019.6d01.2ae0
mlag_sysid     : 0019.6d01.2ae0
local_syspri   : 0
remote_syspri  : 0
mlag_syspri    : 0
local-address  : 192.168.7.167/24
peer-link      : vlan1000
peer conf      : Yes
reload-delay   : 30
BTI-SA-821#
```

The following example shows peer-link provisioning in an MLAG domain with a virtual peer-link provisioned on VLAN 1000 and a physical connection provisioned between BTI SA-805,21,22-08 and BTI SA-805,21,22-09 on eth-0-08.

```
BTI SA-805,21,22-08(config)# interface vlan 1000
BTI SA-805,21,22-08(config-if)# mlag ip address 192.168.1.1/24
BTI SA-805,21,22-08(config-if)#
BTI SA-805,21,22-08(config)# ethernet evc add mc-peer
BTI SA-805,21,22-08(config-evc)# service type epline
BTI SA-805,21,22-08(config-evc)# svlan 1000
BTI SA-805,21,22-08(config-evc)# exit
```

```
BTI SA-805,21,22-08(config)# ethernet nni-08
```



```
BTI SA-805,21,22-08(config-nni)# add evc mc-peer

BTI SA-805,21,22-08(config-nni)# map interface eth-0-8
BTI SA-805,21,22-08(config-nni)# exit
BTI SA-805,21,22-08(config)# interface eth-0-8
BTI SA-805,21,22-08(config-if)# no shutdown
BTI SA-805,21,22-08(config-if)# exit

BTI SA-805,21,22-08((config)# mlag configuration
BTI SA-805,21,22-08((config-mlag)# peer-link vlan 1000BTI
SA-805,21,22-08((config-mlag)# peer-address 192.168.1.2

BTI SA-805,21,22-08(config-mlag)# timers mlag 1 4
BTI SA-805,21,22-08(config-mlag)# reload-delay 40

BTI SA-805,21,22-09(config)# interface vlan 1000
BTI SA-805,21,22-09(config-if)# mlag ip address 192.168.1.2/24
BTI SA-805,21,22-09(config-if)#

BTI SA-805,21,22-09(config)# ethernet evc add mc-peer
BTI SA-805,21,22-09(config-evc)# service type epline
BTI SA-805,21,22-09(config-evc)# svlan 1000
BTI SA-805,21,22-09(config-evc)# exit

BTI SA-805,21,22-09(config)# ethernet nni-08
BTI SA-805,21,22-09(config-nni)# add evc mc-peer

BTI SA-805,21,22-09(config-nni)# map interface eth-0-8
BTI SA-805,21,22-09(config-nni)# exit
BTI SA-805,21,22-09(config)# interface eth-0-8
BTI SA-805,21,22-09(config-if)# no shutdown
BTI SA-805,21,22-09(config-if)# exit

BTI SA-805,21,22-09(config)# mlag configuration
BTI SA-805,21,22-09(config-mlag)# peer-link vlan 1000BTI
SA-805,21,22-09(config-mlag)# peer-address 192.168.1.1

BTI SA-805,21,22-09(config-mlag)# timers mlag 1 4
BTI SA-805,21,22-09(config-mlag)# reload-delay 40

BTI SA-805,21,22-08# show mlag
MLAG configuration:
-----
role           : Master
local_sysid    : 0014.d060.00e5
remote_sysid   : 0019.6d01.2ae0
mlag_sysid     : 0019.6d01.2ae0
local_syspri   : 0
remote_syspri  : 0
mlag_syspri    : 0
```

```
local-address: 192.168.1.1/24
peer-link      : vlan1000
peer conf      : Yes
reload-delay   : 30
```

```
BTI SA-805,21,22-09# show mlag
MLAG configuration:
```

```
-----
role           : Slave
local_sysid    : 0014.d060.00e5
remote_sysid   : 0019.6d01.2ae0
mlag_sysid     : 0019.6d01.2ae0
local_syspri   : 0
remote_syspri  : 0
mlag_syspri    : 0
local-address: 192.168.1.2/24
peer-link      : vlan1000
peer conf      : Yes
reload-delay   : 30
```

Related Commands

[no] peer-address ipv4_addr

show mlag

show mlag peer

show mlag interface

12.6 peer-address

This command creates the peer IPv4 address for the MLAG domain. The no peer-address command removes the MLAG peer IPv4 address from the MLAG domain. Creating the peer-link is a task required when creating the MLAG domain. The MLAG domain is created between NNIs. All MLAGs provisioned between NNIs will use the same peer-link and MLAG domain.

Command Syntax

[no] peer-address ipv4_addr (A.B.C.D)

A.B.C.D = IP address (e.g. 10.0.0.0)

Command Mode

MLAG Configuration

Usage

N/A

Example

The following example shows peer-link address provisioning in an MLAG domain with a virtual peer-link provisioned on VLAN 1000 and a physical connection provisioned between NNI-08 and NNI-09 on eth-0-8.

```
BTI SA-805,21,22-08(config)# interface vlan 1000
BTI SA-805,21,22-08(config-if)# mlag ip address 192.168.1.1/24
BTI SA-805,21,22-08(config-if)#
BTI SA-805,21,22-08(config)# ethernet evc add mc-peer
BTI SA-805,21,22-08(config-evc)# service type epline
BTI SA-805,21,22-08(config-evc)# svlan 1000
BTI SA-805,21,22-08(config-evc)# exit
```

```
BTI SA-805,21,22-08(config)# ethernet nni-08
BTI SA-805,21,22-08(config-nni)# add evc mc-peer
```

```
BTI SA-805,21,22-08(config-nni)# map interface eth-0-8
BTI SA-805,21,22-08(config-nni)# exit
BTI SA-805,21,22-08(config)# interface eth-0-8
BTI SA-805,21,22-08(config-if)# no shutdown
BTI SA-805,21,22-08(config-if)# exit
```

```
BTI SA-805,21,22-08((config)# mlag configuration
BTI SA-805,21,22-08((config-mlag)# peer-link vlan 1000
BTI SA-805,21,22-08((config-mlag)# peer-address 192.168.1.1BTI
SA-805,21,22-08(config-mlag)# timers mlag 1 4
BTI SA-805,21,22-08(config-mlag)# reload-delay 40
```

```
BTI SA-805,21,22-09(config)# interface vlan 1000
```

```
BTI SA-805,21,22-09(config-if)# mlag ip address 192.168.1.2/24
BTI SA-805,21,22-09(config-if)#
BTI SA-805,21,22-09(config)# ethernet evc add mc-peer
BTI SA-805,21,22-09(config-evc)# service type epline
BTI SA-805,21,22-09(config-evc)# svlan 1000
BTI SA-805,21,22-09(config-evc)# exit

BTI SA-805,21,22-09(config)# ethernet nni-08
BTI SA-805,21,22-09(config-nni)# add evc mc-peer

BTI SA-805,21,22-09(config-nni)# map interface eth-0-8
BTI SA-805,21,22-09(config-nni)# exit
BTI SA-805,21,22-09(config)# interface eth-0-8
BTI SA-805,21,22-09(config-if)# no shutdown
BTI SA-805,21,22-09(config-if)# exit

BTI SA-805,21,22-09(config)# mlag configuration
BTI SA-805,21,22-09(config-mlag)# peer-link vlan 1000
BTI SA-805,21,22-09(config-mlag)# peer-address 192.168.1.1BTI
SA-805,21,22-09(config-mlag)# timers mlag 1 4
BTI SA-805,21,22-09(config-mlag)# reload-delay 40

BTI SA-805,21,22-08 # show running-config
    mlag configuration
    reload-delay 40
    peer-link vlan1000
    peer-address 192.168.1.2
    timers mlag 1 4
    mlag 1 interface agg1 active
    mlag 2 interface agg2 active

BTI SA-805,21,22-09 # show running-config
    mlag configuration
    reload-delay 40
    peer-link vlan1000
    peer-address 192.168.1.1
    timers mlag 1 4
    mlag 1 interface agg1 standby
    mlag 2 interface agg2 standby
```

Related Commands

[no] peer-link
show mlag peer
show mlag
show running-config

12.7 reload-delay

This command provisions the time period that non-peer links are disabled after an MLAG peer reboots. The no reload-delay command restores the default value.

Command Syntax

reload-delay (30 - 86400)

default = 30 s

Command Mode

MLAG Configuration

Usage

N/A

Example

```
BTI SA-805,21,22(config)# mlag configuration
BTI SA-805,21,22(config-mlag)# reload-delay 30BTI SA-805,21,22(config-mlag)#
end
BTI SA-805,21,22# show mlag
MLAG configuration:
-----
role           : Master
local_sysid    : 0019.6d01.2ae0
remote_sysid   : 0014.d060.00e5
mlag_sysid     : 0019.6d01.2ae0
local_syspri   : 0
remote_syspri  : 0
mlag_syspri    : 0
local-address  : 192.168.7.168/24
peer-link      : eth-0-18
peer conf      : Yes
reload-delay  : 30
```

Related Commands

Show mlag

12.8 timers mlag

This command provisions the keep alive interval and hold time timers. The no timers mlag command returns the keep alive interval and hold time to the default value.

Command Syntax

timers mlag (keepalive | holdtime)

keepalive range = 1 - 65535 s

holdtime range = 4 - 65535 s

default keepalive interval = 60 s

default holdtime = 240 s

Command Mode

MLAG Configuration

Usage

To initiate the new keep alive and hold time values commit the changes and reboot the system. The hold time should be no less than 4 times of the keep alive time.

Example

```
BTI SA-805,21,22(config)# mlag configuration
BTI SA-805,21,22(config-mlag)# timers mlag 1 4BTI SA-805,21,22# show mlag
peer
```

```
MLAG neighbor is 192.168.7.168, MLAG version 1
MLAG state = Established, up for 03:24:57
Last read 00:00:01, hold time is 4, keepalive interval is 1 seconds
Configured hold time is 4, keepalive interval is 1 seconds
Received 15836 messages,Sent 12545 messages
```

```
Open      : received 2, sent 2
KALive    : received 12520, sent 12522
Fdb sync  : received 0, sent 0
Failover  : received 68, sent 7
Conf      : received 18, sent 8
Syspri    : received 2, sent 2
Peer fdb  : received 17, sent 5
STP Total: received 3226, sent 4
Global    : received 6, sent 4
Packet    : received 0, sent 0
Instance  : received 0, sent 0
State     : received 3220, sent 0
```

```
Connections established 2; dropped 1
Local host: 192.168.7.167, Local port: 35091
```

```
Foreign host: 192.168.7.168, Foreign port: 61000  
remote_sysid: 0019.6d01.2ae0  
BTI SA-805,21,22#
```

Related Commands

show mlag peer

12.9 mlag (mlag id) (shutdown|no shutdown)

Use the mlag (mlag id) shutdown command to admin down a mlag group. Use the mlag (mlag id) no shutdown command to admin up a mlag group.

Command Syntax

mlag (1-2 |1-14|1-6) (shutdown|no shutdown)

shutdown = the MLAG is not operational

no shutdown = the MLAG is operational

default = none

Command Mode

MLAG Configuration

Usage

The following MLAG IDs apply to each switch : BTI SA-805 (1-2), BTI SA-821 (1-14), BTI SA-822 (1-6).

Examples

```
BTI SA-805,21,22(config)# mlag configuration
BTI SA-805,21,22(config-mlag)# mlag 1 shutdown
BTI SA-805,21,22(config-mlag)# end
BTI SA-805,21,22# show mlag interface
```

ID: Mlag instance ID
A/S: Active/Standby mode
A/A: Active/Active mode
op-mode: operation mode
REV: revertive mode
N-REV: non-revertive mode

ID	local-if	local-state	remote-state	mode	op-mode
1	agg1(A)	admin-dn(S)	down	A/S	N-REV
2	agg2(A)	admin-dn(S)	up	A/S	N-REV

```
BTI SA-805,21,22# show mlag peer
```

```
MLAG neighbor is 192.168.7.168, MLAG version 1
MLAG state = not established
Last read 00:00:01, hold time is 4, keepalive interval is 1 seconds
Configured hold time is 4, keepalive interval is 1 seconds
Received 15836 messages,Sent 12545 messages
Open      : received 2, sent 2
```



```

KAlive    : received 12520, sent 12522
Fdb sync  : received 0, sent 0
Failover  : received 68, sent 7
Conf      : received 18, sent 8
Syspri    : received 2, sent 2
Peer fdb  : received 17, sent 5
STP Total: received 3226, sent 4
  Global  : received 6, sent 4
  Packet  : received 0, sent 0
  Instance: received 0, sent 0
  State   : received 3220, sent 0

```

```

Connections established 2; dropped 1
Local host: 192.168.7.167, Local port: 35091
Foreign host: 192.168.7.168, Foreign port: 61000
remote_sysid: 0019.6d01.2ae0
BTI SA-805,21,22#
BTI SA-805,21,22(config)# mlag configuration
BTI SA-805,21,22(config-mlag)# mlag 1 no shutdown
BTI SA-805,21,22(config-mlag)# end
BTI SA-805,21,22# show mlag interface

```

```

ID: Mlag instance ID
A/S: Active/Standby mode
A/A: Active/Active mode
op-mode: operation mode
REV: revertive mode
N-REV: non-revertive mode

```

ID	local-if	local-state	remote-state	mode	op-mode
1	agg1(A)	up(A)	down	A/S	N-REV
2	agg2(A)	admin-dn(S)	up	A/S	N-REV

```

BTI SA-805,21,22# show mlag peer
MLAG neighbor is 192.168.7.168, MLAG version 1
MLAG state = Established, up for 03:24:57
Last read 00:00:01, hold time is 4, keepalive interval is 1 seconds
Configured hold time is 4, keepalive interval is 1 seconds
Received 15836 messages,Sent 12545 messages
Open      : received 2, sent 2
KAlive    : received 12520, sent 12522
Fdb sync  : received 0, sent 0
Failover  : received 68, sent 7
Conf      : received 18, sent 8
Syspri    : received 2, sent 2
Peer fdb  : received 17, sent 5
STP Total: received 3226, sent 4
  Global  : received 6, sent 4
  Packet  : received 0, sent 0

```

```
Instance: received 0, sent 0  
State    : received 3220, sent 0
```

```
Connections established 2; dropped 1  
Local host: 192.168.7.167, Local port: 35091  
Foreign host: 192.168.7.168, Foreign port: 61000  
remote_sysid: 0019.6d01.2ae0  
BTI SA-805,21,22#
```

Related Commands

show mlag interface

show mlag peer

12.10 clear mlag count

This command clears the mlag count data. The mlag count data is the information displayed by the show mlag peer command.

Command Syntax

clear mlag count

Command Mode

Privileged Exec

Usage

N/A

Example

```
BTI SA-805,21,22# clear mlag countBTI SA-805,21,22# show mlag peer
MLAG neighbor is 192.168.7.168, MLAG version 1
MLAG state = Established, up for 03:41:52
Last read 00:00:01, hold time is 4, keepalive interval is 1 seconds
Configured hold time is 4, keepalive interval is 1 seconds
Received 3 messages,Sent 4 messages
Open      : received 0, sent 0
KAlive    : received 3, sent 4
Fdb sync  : received 0, sent 0
Failover  : received 0, sent 0
Conf      : received 0, sent 0
Syspri    : received 0, sent 0
Peer fdb  : received 0, sent 0
STP Total: received 0, sent 0
  Global  : received 0, sent 0
  Packet  : received 0, sent 0
  Instance: received 0, sent 0
  State   : received 0, sent 0

Connections established 2; dropped 1
Local host: 192.168.7.167, Local port: 35091
Foreign host: 192.168.7.168, Foreign port: 61000
remote_sysid: 001
```

Related Commands

show mlag peer

12.11 show mlag

This command displays the mlag global configuration.

Command Syntax

show mlag

Command Mode

Privileged Exec

Usage

N/A

Example

```
BTI SA-805,21,22# show mlag
MLAG configuration:
-----
role           : Master
local_sysid    : 0019.6d01.2ae0
remote_sysid   : 0014.d060.00e5
mlag_sysid     : 0019.6d01.2ae0
local_syspri   : 0
remote_syspri  : 0
mlag_syspri    : 0
local-address  : 192.168.7.168/24
peer-link      : eth-0-18
peer conf      : Yes
reload-delay   : 30
BTI SA-805,21,22#
```

Related Commands

mlag ip address

peer-link

peer-address

timers mlag

12.12 show mlag interface

This command displays the mlag interface configuration.

Command Syntax

```
show mlag interface
```

Command Mode

Privileged Exec

Usage

Static LAGs associated with a MLAG will have an admin-up | admin-down status. LACP LAGs associated with an MLAG will have a up | down status.

Example

```
BTI SA-805,21,22# show mlag interface
```

```
ID: Mlag instance ID
```

```
A/S: Active/Standby mode, A/A: Active/Active mode
```

```
op-mode: operation mode
```

```
REV: revertive mode
```

```
N-REV: non-revertive mode
```

```
ID local-if      local-state  remote-state mode op-mode
   (admin_state) (oper_state)
```

```
-----
1  agg1(A)        up(A)         down          A/S  N-REV
2  agg2(A)        admin-dn(S)  up            A/S  N-REV
```

```
BTI SA-805,21,22# show lag summary
```

```
Flags:  s - suspend          T - standby
         D - down/admin down  B - in Bundle
         w - wait             U - in use
         * - mlag
         (m/M) - min/Max Member
```

```
Aggregator (m/M) Protocol  Ports
Name
```

```
-----+-----+-----+-----
agg1(D)*  (1/8) LACP        eth-0-5(D)
agg2(D)*  (1/8) Static      eth-0-6(D)
```

Related Commands

```
show lag [channel-group-number] summary
```

```
mlag (mlag id) interface agg
```

mlag (mlag id) mode

mlag (mlag id) opmode

mlag shutdown

12.13 show mlag peer

This command displays the mlag peer configuration.

Command Syntax

show mlag peer

Command Mode

Privileged Exec

Usage

N/A

Example

```
BTI SA-805,21,22# show mlag peer
MLAG neighbor is 192.168.7.168, MLAG version 1
MLAG state = Established, up for 03:24:57
Last read 00:00:01, hold time is 4, keepalive interval is 1 seconds
Configured hold time is 4, keepalive interval is 1 seconds
Received 15836 messages,Sent 12545 messages
Open      : received 2, sent 2
KAlive    : received 12520, sent 12522
Fdb sync  : received 0, sent 0
Failover  : received 68, sent 7
Conf      : received 18, sent 8
Syspri    : received 2, sent 2
Peer fdb  : received 17, sent 5
STP Total: received 3226, sent 4
  Global  : received 6, sent 4
  Packet  : received 0, sent 0
  Instance: received 0, sent 0
  State   : received 3220, sent 0

Connections established 2; dropped 1
Local host: 192.168.7.167, Local port: 35091
Foreign host: 192.168.7.168, Foreign port: 61000
remote_sysid: 0019.6d01.2ae0
BTI SA-805,21,22#
```

Related Commands

mlag ip address

peer-link

peer-address

timers mlag

13.0 Ethernet Protection (G.8031/.8032v1/G.8032v2) Commands

- 13.1, “g8031 eps-id”
- 13.2, “instance”
- 13.3, “ working-path mpeid”
- 13.4, “protection-path mpeid”
- 13.5, “mode (revertive|non-revertive)”
- 13.6, “timer (wait-to-restore|hold-off)”
- 13.7, “eps enable”
- 13.8, “eps disable”
- 13.9, “g8031 force eps-id”
- 13.10, “g8031 manual eps-id ”
- 13.11, “ g8031 lockout eps-id ”
- 13.12, “g8031 exercise eps-id ”
- 13.13, “g8031 clear eps-id”
- 13.14, “show g8031”
- 13.15, “g8032 ring-id”
- 13.16, “traffic-channel”
- 13.17, “westmp mepid”
- 13.18, “eastmp mepid”

- 13.19, “raps vlan”
- 13.20, “raps ring-id”
- 13.21, “raps-vc”
- 13.22, “raps-vc vlan”
- 13.23, “rpl”
- 13.24, “timer”
- 13.25, “ring enable”
- 13.26, “ring disable”
- 13.27, “g8032 force ring-id”
- 13.28, “g8032 manual ring-id”
- 13.29, “g8032 flush ring-id”
- 13.30, “g8032 clear ring-id”
- 13.31, “g8032 statistics clear ring-id”
- 13.32, “show g8032”

13.1 g8031 eps-id

Use this command to enter the eps configuration mode. If the g8031 eps group with the specified eps-id does not exist, the system will create a new one. Use the **no** form of this command to delete the g8031 eps group.

Command Syntax

[no] g8031 eps-id <1-8> (working-port (working-port id) protection-port (protection-port id))

EPS protection link identity range = <1-8>

working-port id = working-port identity

protection-port id = protection-port port identity

Command Mode

Global configuration

Usage

Use this command to enter the eps configuration mode.

If the g8031 eps group with the specified eps-id does not exist, system will create a new one. The user should specify the working port and protection port when creating a group. The working port and protection port is not permitted to change after the eps group has been created.

If the g8031 eps group with the specified eps-id exists, the user can enter the eps configuration mode without specify the working port and protection port.

Example

The following example shows how to create a g8031 eps group and enter the eps configuration mode:

```
BTI SA-805,21,22(config)# g8031 eps-id 8 working-port eth-0-9 protection-port  
eth-0-10
```

Related Commands

g8031 ethernet protect instance

g8031 ethernet md-name

show g8031

13.2 instance

Use this command to bind an instance in a g8031 eps group and use the **no** form of this command to unbind the protected instance.

Command Syntax

[no] traffic-channel <1-8>

Command Mode

eps configuration

Usage

Use this command to bind an instance in g8031 eps group. The instance should exist in the mstp config mode before binding.

User can bind more than one instance in g8031 eps group.

Example

The following example shows how to bind an instance in g8031 eps group:

```
BTI SA-805,21,22(g8031-config-switching)# traffic-channel 1
```

Related Commands

g8031 eps-id

show g8031

13.3 working-path mpeid

Use this command to bind a cfm maintains domain in the g8031 eps group and use the **no** form of this command to unbind the cfm maintains domain .

Command Syntax

[no] working-path mpeid *MEPID* ma-name *MA_NAME* md-name *MD_NAME*

[no] working-path mpeid *MEPID* megid *MEGID*

MEPID Maintenance End Point ID

MD_NAME Maintenance-domain name

MA_NAME Maintenance-association name

MEGID Maintenance Entity Group name

Command Mode

eps configuration

Usage

Use this command to bind a cfm maintains domain and maintains association in the g8031 eps group.

The cfm maintains domain and maintains association should exist in the cfm configuration.

Example

The following example shows how to bind a cfm maintains domain:

```
BTI SA-805,21,22(g8031-config-switching)# working-path mepid 231 ma-name ma1  
md-name md1
```

Related Commands

g8031 eps-id

show g8031

13.4 protection-path mpeid

Use this command to bind a cfm maintains domain in the g8031 eps group and use the **no** form of this command to unbind the cfm maintains domain .

Command Syntax

[no] protection-path mpeid *MEPID* ma-name *MA_NAME* md-name *MD_NAME*

[no] protection-path mpeid *MEPID* megid *MEGID*

MEPID Maintenance End Point ID

MD_NAME Maintenance-domain name

MA_NAME Maintenance-association name

MEGID Maintenance Entity Group name

Command Mode

eps configuration

Usage

Use this command to bind a cfm maintains domain and maintains association in the g8031 eps group.

The cfm maintains domain and maintains association should exist in the cfm configuration.

Example

The following example shows how to bind a cfm maintains domain:

```
BTI SA-805,21,22(g8031-config-switching)# protection-path mepid 232 ma-name  
ma2 md-name md2
```

Related Commands

g8031 eps-id

show g8031

13.5 mode (revertive|non-revertive)

Use this command to set the mode of g8031 ethernet protection. Use the no form of this command to return to the default setting.

Command Syntax

g8031 mode (revertive | non-revertive)

revertive Revertive mode

non-revertive Non-revertive mode

Command Mode

eps configuration

Usage

Use this command to set the mode of g8031 ethernet protection.

The default setting should be revertive mode.

After set the mode of g8031 ethernet protection, the state machine of APS should restart.

Example

The following example shows how to change the mode of a g8031 eps group:

```
BTI SA-805,21,22(g8031-config-switching)# mode non-revertive
```

Related Commands

g8031 eps-id

show g8031

13.6 timer (wait-to-restore|hold-off)

Use this command to set the hold-off timer or wait-to-restore timer of a g8031 ethernet protection group. Use the **no** form of this command to return to the default setting.

Command Syntax

[no] timer (wait-to-restore (time) | hold-off (time))

wait-to-restore time range = 5-12 min (provisionable in 1 minute intervals)

hold-off time range = 0-10 sec (provisionable in 1 second intervals)

default wait-to-restore time = 5 min

Command Mode

eps configuration

Usage

N/a

Example

The following example shows how to change the timer of a g8031 eps group:

```
BTI SA-805,21,22(g8031-config-switching)# timer wait-to-restore 8
BTI SA-805,21,22(g8031-config-switching)# timer timer hold-off 10
```

Related Commands

g8031 eps-id

show g8031

13.7 eps enable

Use this command to start the g8031 Eps group state machine.

Command Syntax

eps enable

Command Mode

eps configuration

Usage

Use this command to start the g8031 eps group state machine. The eps group should have bind md/ma and instance before enable the EPS group.

Example

The following example shows how to enable the eps group:

```
BTI SA-805,21,22(g8031-config-switching)# eps enable
```

Related Commands

eps disable

show g8031

13.8 eps disable

Use this command to start the g8031 Eps group state machine.

Command Syntax

eps disable

Command Mode

eps configuration

Usage

Use this command to stop the g8031 eps group state machine.

Example

The following example shows how to disable the g8031 eps group:

```
BTI SA-805,21,22(g8031-config-switching)# eps disable
```

Related Commands

eps enable

show g8031

13.9 g8031 force eps-id

Use this command to trigger the local force-switch event of a g8031 ethernet protection group.

Command Syntax

g8031 force eps-id <1-8>

Command Mode

Privileged EXEC

Usage

When the current state has a higher priority than the force-switch, the system will reject the force-switch command.

Example

The following example shows how to trigger the local force-switch event of a g8031 eps group:

```
BTI SA-805,21,22# g8031 force eps-id 8
```

Related Commands

g8031 eps-id

show g8031

13.10 g8031 manual eps-id

Use this command to trigger the local manual-switch event of a g8031 ethernet protection group.

Command Syntax

g8031 manual eps-id <1-8>

Command Mode

Privileged EXEC

Usage

When the current state has a higher priority than the manual-switch, the system will reject the manual-switch command.

Example

The following example shows how to trigger the local manual-switch event of a g8031 eps group:

```
BTI SA-805,21,22# g8031 manual eps-id 8
```

Related Commands

g8031 eps-id

show g8031

13.11 g8031 lockdown eps-id

Use this command to trigger the local lockdown event of a g8031 ethernet protection group.

Command Syntax

g8031 lockdown eps-id <1-8>

Command Mode

Privileged EXEC

Usage

Use this command to trigger the local lockdown event of a g8031 ethernet protection group.

Example

The following example shows how to trigger the local lockdown event of a g8031 eps group:

```
BTI SA-805,21,22# g8031 lockdown eps-id 8
```

Related Commands

g8031 eps-id

show g8031

13.12 g8031 exercise eps-id

Use this command to trigger the local exercise event of a g8031 ethernet protection group.

Command Syntax

g8031 exercise eps-id <1-8>

Command Mode

Privileged EXEC

Usage

N/A

Example

The following example shows how to trigger the local exercise event of a g8031 eps group:

```
BTI SA-805,21,22# g8031 exercise eps-id 8
```

Related Commands

g8031 eps-id

show g8031

13.13 g8031 clear eps-id

Use this command to trigger the local clear event of a g8031 ethernet protection group.

Command Syntax

g8031 clear eps-id <1-8>

Command Mode

Privileged EXEC

Usage

N/A

Example

The following example shows how to trigger the clear exercise event of a g8031 eps group:

```
BTI SA-805,21,22# g8031 clear eps-id 8
```

Related Commands

g8031 eps-id

show g8031

13.14 show g8031

Use this command to show the configuration and statues of g8031 ethernet protection groups.

Command Syntax

show g8031 eps-id <1-8>

Command Mode

Privileged EXEC

Usage

If the eps-id is not specified all protection group configurations will be displayed.

Example

The following example shows the result of using this command:

```
BTI SA-805,21,22# show g8031
Codes: ID - Group id of G.803
IF-W - Interface of working entity, IF-P - Interface of protection entity
MD - Maintenance domain
MA-W - Maintenance association of working entity
MA-P - Maintenance association of protection entity
CS - Current state, LS - Last state, LE - Last event, FS - Far end state
R/B - Request signal & bridged signal
MODE - Revertive or Non-revertive
WTR - Wait to restore
DFOP - Failure of protocol defects
=====
  ID IF-W IF-P CS LS LE FS R/B MODE
-----
  1 eth-0-1 eth-0-2 -- -- -- -- -- REV
OpState - Disable
MepId-W - 231 (megid:EPS / Vid:4090)
MepId-P - 232 (megid:EPS / Vid:4090)
WTR-Timer - 5 (min)
HOLDOFF-Timer - 0 (ms)
Active-Path - Working
DFOP State - Not in defect mode
Traffic-channel - Tc1
=====
```

Related Commands

g8031 eps-id

13.15 g8032 ring-id

Use this command to enter the g8032 configuration mode. If the g8032 ring with the specified ring-id does not exist, system will create a new one. Use the no form of this command to delete the g8032 ring.

Command Syntax

g8032 ring-id <1-8> east-interface *IFNAME-E* west-interface *IFNAME-W*

g8032 ring-id <1-8> interface *IFNAME-E*major-ring-id <1-8>

no g8032 ring-id <1-8>

<1-8>unique id to identify an g8032 ring

*IFNAME-E*Interface name for east interface

*IFNAME-W*Interface name for west interface

Command Mode

Global configuration

Usage

Use this command to enter the g8032 configuration mode.

If the g8032 ring with the specified ring-id does not exist, system will create a new one. User should specify the east interface and west interface when creating a group. The east interface and west interface is not allowed to change after the g8032 ring created.

If the g8032 ring with the specified ring-id exists, user can enter the g8032 configuration mode without specify the east interface and west interface.

Example

The following example shows how to create a g8032 ring and enter the g8032 configuration mode:

```
BTI SA-805,21,22(config)# g8032 ring-id 1 east-interface eth-0-1 west-  
interface eth-0-2  
BTI SA-805,21,22(g8032-config-switch)# exit  
BTI SA-805,21,22(config)# g8032 ring-id 1  
BTI SA-805,21,22(g8032-config-switch)# exit
```

Related Commands

westmp

eastmp

traffic-channel

timer

show g8032

13.16 traffic-channel

Use this command to bind a Traffic-channel in g8032 ring. Use the no form of this command to unbind the Traffic-channel.

Command Syntax

traffic-channel <1-8>

no traffic-channel <1-8>

<1-8> Set restrictions for the port of particular traffic-channel

Command Mode

G8032 configuration

Usage

Use this command to bind a traffic-channel in g8032 ring. The traffic-channel should exist in the traffic-channel before binding.

User can bind more than one traffic-channel in a g8032 ring.

Example

The following example shows how to bind a traffic-channel in g8032 erp group:

```
BTI SA-805,21,22(g8032-config-switch)# traffic-channel 1
BTI SA-805,21,22(g8032-config-switch)#
```

Related Commands

westmp

eastmp

timer

show g8032

13.17 westmp mepid

Use this command to bind a cfm maintenance domain in the g8032 ring. Use the no form of this command to unbind the cfm maintenance domain.

Command Syntax

westmp mepid MEPID ma-name MA_NAME md-name MD_NAME

westmp mepid MEPID megid MEGID

no westmp

MEPID Maintenance End Point ID

MD_NAME Maintenance-domain name

MA_NAME Maintenance-association name

MEGID Maintenance Entity Group name

Command Mode

G8032 configuration

Usage

Use this command to bind a cfm maintenance domain and maintenance association in the g8032 ring.

The cfm maintenance domain and maintenance association should exist in the cfm configuration.

Example

The following example shows how to bind a cfm maintenance domain:

```
BTI SA-805,21,22(g8032-config-switch)# westmp mepid 1001 ma-name ma1 md-name md1
```

```
BTI SA-805,21,22(g8032-config-switch)#
```

Related Commands

traffic-channel

timer

show g8032

13.18 eastmp mepid

Use this command to bind a cfm maintenance domain in the g8032 ring. Use the no form of this command to unbind the cfm maintenance domain.

Command Syntax

eastmp mepid MEPID ma-name MA_NAME md-name MD_NAME

eastmp mepid MEPID megid MEGID

no eastmp

MEPID Maintenance End Point ID

MD_NAME Maintenance-domain name

MA_NAME Maintenance-association name

MEGID Maintenance Entity Group name

Command Mode

G8032 configuration

Usage

Use this command to bind a cfm maintenance domain and maintenance association in the g8032 ring.

The cfm maintenance domain and maintenance association should exist in the cfm configuration.

Example

The following example shows how to bind a cfm maintenance domain:

```
BTI SA-805,21,22(g8032-config-switch)# eastmp mepid 1001 ma-name ma1 md-name md1
```

```
BTI SA-805,21,22(g8032-config-switch)#
```

Related Commands

traffic-channel

timer

show g8032

13.19 raps vlan

Use this command to set the R-APS vlan of a g8032 ring. Use the no form of this command to delete the R-APS vlan.

Command Syntax

raps vlan VID

no raps-vlan

VID R-APS channel vlan id

Command Mode

G8032 configuration

Usage

Use this command to set the R-APS channel vlan of a g8032 ring. R-APS messages should use a dedicated vlan .

Example

The following example shows how to set R-APS channel vlan:

```
BTI SA-805,21,22(g8032-config-switch)# raps vlan 22
```

```
BTI SA-805,21,22(g8032-config-switch)#
```

Related Commands

westmp

eastmp

traffic-channel

timer

show g8032

13.20 raps ring-id

Use this command to set the R-APS Ring-ID of a g8032 ring.

Command Syntax

raps ring-id <1-255>

Command Mode

G8032 configuration

Usage

Use this command to set the R-APS Ring-ID of a g8032 ring.

Example

The following example shows how to set R-APS Ring-ID:

```
BTI SA-805,21,22(g8032-config-switch)# raps ring-id 10
BTI SA-805,21,22(g8032-config-switch)#
```

Related Commands

show g8032 ring-id <1-16> config

13.21 raps-vc

Use this command to set the Virtual channel option of a g8032 sub ring.

Command Syntax

raps-vc (subring-none|subring-without-vc|subring-with-vc)

subring-none Not used Subring R-APS with/without Virtual channel option

subring-without-vc Set Subring R-APS without Virtual channel option

subring-with-vc Set Subring R-APS with Virtual channel option

Command Mode

G8032 configuration

Usage

Use this command to set the Virtual Channel option of a g8032 sub ring.

Example

The following example shows how to set Subring R-APS Virtual channel option:

```
BTI SA-805,21,22(g8032-config-switch)# raps-vc subring-without-vc
BTI SA-805,21,22(g8032-config-switch)#
```

Related Commands

show g8032 ring-id <1-16> config

13.22 raps-vc vlan

Use this command to set the Virtual channel vlan of a g8032 sub ring.

Command Syntax

raps-vc vlan VID

VID R-APS virtual channel vlan id

Command Mode

G8032 configuration

Usage

Use this command to set the Virtual Channel vlan of a g8032 sub ring.

Example

The following example shows how to set Subring R-APS Virtual channel vlan:

```
BTI SA-805,21,22(g8032-config-switch)# raps-vc vlan 4080
```

```
BTI SA-805,21,22(g8032-config-switch)#
```

Related Commands

show g8032 ring-id <1-16> config

13.23 rpl

Use this command to set the rpl role of a g8032 ring.

Command Syntax

rpl-node (general|neighbor|owner)

rpl (east-interface|west-interface|none)

no rpl owner

east-interface Ring's east interface

west-interface Ring's west interface

Command Mode

G8032 configuration

Usage

Use this command to set the rpl role of a g8032 ring. In a (major) ring, user can specify east interface or west interface as rpl.

Example

The following example shows how to set rpl role of a g8032 ring

```
BTI SA-805,21,22(g8032-config-switch)# rpl-node owner
```

```
BTI SA-805,21,22(g8032-config-switch)# rpl east-interface
```

```
BTI SA-805,21,22(g8032-config-switch)#
```

Related Commands

westmp

eastmp

traffic-channel

timer

show g8032

13.24 timer

Use this command to set the wait-to-restore timer or hold-off timer or guard-timer of a g8032 ring.

Command Syntax

timer (wait-to-restore *TIMEVAL*| hold-off *TIMEVAL*| guard-timer *TIMEVAL*)

*TIMEVAL*g8032 wait-to-restore timer(1-12min)

*TIMEVAL*g8032 hold-off timer(0-10s)

*TIMEVAL*g8032 guard timer(100ms-2s)

Command Mode

G8032 configuration

Usage

Use this command to set the wait-to-restore timer or hold-off timer or guard-timer of g8032 ring.

The wait-to-restore (WTR) period, may be configured by the operator in 1 minute steps between 1 and 12 minutes; the default value is 5 minutes.

The range of the hold-off timer is 0 to 10 seconds in steps of 100 ms.

The guard timer may be configured by the operator in 100ms steps between 100ms and 2 seconds, with a default value of 500ms.

Example

The following example shows how to change the timer of a g8032 ring:

```
BTI SA-805,21,22(g8032-config-switch)# timer wait-to-restore 6
BTI SA-805,21,22(g8032-config-switch)# timer hold-off 100
BTI SA-805,21,22(g8032-config-switch)# timer guard-timer 200
```

Related Commands

westmp

eastmp

traffic-channel

show g8032

13.25 ring enable

Use this command to start the g8032 ring state machine.

Command Syntax

ring enable

Command Mode

G8032 configuration

Usage

Use this command to start the g8032 ring state machine. The ring should have bind md/ma and instance before enable the ring.

Example

The following example shows how to enable the ring:

```
BTI SA-805,21,22(g8032-config-switch)# ring enable
BTI SA-805,21,22(g8032-config-switch)#
```

Related Commands

ring disable

show g8032

13.26 ring disable

Use this command to disable the g8032 ring.

Command Syntax

ring disable

Command Mode

G8032 configuration

Usage

Use this command to disable the g8032 ring.

Example

The following example shows how to disable a g8032 ring:

```
BTI SA-805,21,22(g8032-config-switch)# ring disable
BTI SA-805,21,22(g8032-config-switch)#
```

Related Commands

ring enable

show g8032

13.27 g8032 force ring-id

Use this command to trigger the local force-switch event of a g8032 Ethernet Ring Protection group.

Command Syntax

g8032 force ring-id <1-16> (east|west)

<1-16>unique id to identify an g8032 ring

Command Mode

Privileged EXEC

Usage

Use this command to trigger the local force-switch event of a g8032 Ethernet Ring Protection group.

When the current state has the higher priority than force-switch, the system should reject the operation.

Example

The following example shows how to trigger the local force-switch event of a g8032 erp group:

```
BTI SA-805,21,22# g8032 force ring -id 1 east
```

Related Commands

g8032 ring-id

show g8032

13.28 g8032 manual ring-id

Use this command to trigger the local manual-switch event of a g8032 Ethernet Ring Protection group.

Command Syntax

g8032 manual ring-id <1-16> (east|west)
<1-16>unique id to identify an g8032 ring

Command Mode

Privileged EXEC

Usage

Use this command to trigger the local manual-switch event of a g8032 Ethernet Ring Protection group.

When the current state has the higher priority than manual-switch, the system should reject the operation.

Example

The following example shows how to trigger the local manual-switch event of a g8032 ERP group:

```
BTI SA-805,21,22# g8032 manual ring -id 1 east
```

Related Commands

g8032 ring-id
show g8032

13.29 g8032 flush ring-id

Use this command to trigger the flush event of a g8032 Ethernet Ring Protection group.

Command Syntax

g8032 flush ring-id <1-16>

<1-16>unique id to identify an g8032 ring

Command Mode

Privileged EXEC

Usage

Use this command to trigger the flush event of a g8032 Ethernet Ring Protection group.

Example

The following example shows how to trigger the flush event of a g8032 ERP group:

```
BTI SA-805,21,22# g8032 flush ring -id 1
```

Related Commands

g8032 ring-id

show g8032

13.30 g8032 clear ring-id

Use this command to trigger the local clear event of a g8032 Ethernet Ring Protection group.

Command Syntax

g8032 clear ring-id <1-16>

<1-16>unique id to identify an g8032 ring

Command Mode

Privileged EXEC

Usage

Use this command to trigger the local exercise clear of a g8032 Ethernet Ring Protection group.

Example

The following example shows how to trigger the clear exercise event of a g8032 ERP group:

```
BTI SA-805,21,22# g8032 clear ring -id 1
```

Related Commands

g8032 ring-id

show g8032

13.31 g8032 statistics clear ring-id

Use this command to clear the statistics counts of a g8032 Ethernet Ring Protection group.

Command Syntax

g8032 statistics clear ring-id<1-16>

<1-16>unique id to identify an g8032 ring

Command Mode

Privileged EXEC

Usage

Use this command to clear the statistics counts of a g8032 Ethernet Ring Protection group.

Example

The following example shows how to clear the statistics of a g8032 ERP group:

```
BTI SA-805,21,22# g8032 statistics clear ring-id 1
```

Related Commands

g8032 ring-id

show g8032

13.32 show g8032

Use this command to show the configuration and statues and statistics of a g8032 ring.

Command Syntax

```
show g8032 status
show g8032 ring-id <1-16> config
show g8032 ring-id <1-16> status
show g8032 ring-id <1-16> statistics
<1-16>unique id to identify an g8032 ring
```

Command Mode

Privileged EXEC

Usage

Use this command to show the configuration and statistics of g8032 ring.

User can enter the ring-id to show the specified ring. If the ring-id is not specified, all rings should be shown.

Example

The following example shows the result of using this command:

```
BTI SA-805,21,22# show g8032 status
```

```
-----
ERP(G.8032)AllStatus
-----
```

```
ERP module(global):      Enabled
-----
```

```
OpState:Enabled
InstanceId:1
NodeTypeNeighbor: (RPL: East)
NodeID: 0019.6d3c.0000
NodeStatus: Idle
Block: East
RapsChannelBlock   : -
Sf(SignalFailure)  : -
TopPriorityReq: R-aps(nr,rb)
WtrRunning: No
WtbRunning :No
StatusEastBPRWest  :(0019.6d3b.0000)
StatusWestBPR West  :(0019.6d3b.0000)
-----
```

```
BTI SA-805,21,22# show g8032 ring-id 1 status
```

```
-----
ERP(G.8032)Status
-----
```

```
ERP module          :          Enabled
```

```
OpState              :Enabled
InstanceId:1
NodeType :Neighbor
StatusNode :Idle
Block :East
RapsChannelBlock:   -
Sf(SignalFailure):  -
TopPriority:Req:R-aps(nr,rb)
WtrRunning:No
WtbRunning:No
WtrRemained(sec):-
WtbRemained(sec):   -
StatusEastBPR: West
StatusEastRemoteId: 0019.6d3b.0000
StatusWestBPR: West
StatusWestRemoteId : 0019.6d3b.0000
```

```
BTI SA-805,21,22# show g8032 ring-id 1 config
```

```
ERP(G.8032)Config
```

```
OpState: Enabled
InstanceId: 1
Version: V2
WestPort: eth-0-2
WestCcm: On
WestMepId: 8007 (md-ma:EVC_RING-EVC_RING)
EastPort: eth-0-1
EastCcm: On
EastMepId: 8004 (md-ma:EVC_RING-EVC_RING)
NodeType: Neighbor
RplPort: East
NodeId: 0019.6d3c.0000
Revertive: On
PropagateTc: On
TopologyChange: 0 0 0
TrafficChannel: Tc2
RapsRingMel: 3
RapsRingId: 1
RapsVlanId: Raps-4094
RapsVc: -
RapsVcVlanId: -
WtrTimer(min): 1
GuardTimer(msec): 500
HoldoffTimer(msec): 0
WtbTimer(msec): 5500
Fs: -
```

Ms: -

BTI SA-805,21,22# show g8032 ring-id 1 statistics

ERP(G.8032)Statistics

OpState: Enabled

InstanceId: 1

	: West		East
StatisticsLocalSf: 2			1
StatisticsLocalMs: 0			0
StatisticsLocalFs: 0			0
StatisticsRapsRxTotal: 402			401
StatisticsRapsRxNr: 17			18
StatisticsRapsRxNrRb: 359			359
StatisticsRapsRxSf: 26			24
StatisticsRapsRxMs: 0			0
StatisticsRapsRxFs: 0			0
StatisticsRapsTxTotal: 27			27
StatisticsRapsTxNr: 6			6
StatisticsRapsTxNrRb: 0			0
StatisticsRaps:TxSf21			21
StatisticsRaps:TxMs0			0
StatisticsRaps:TxFs0			0
StatisticsFdbFlushing: 12			12

Related Commands

g8032 ring-id

14.0 Ethernet in the First Mile (EFM) (802.3AH) Commands

This section covers the following topics:

- 14.1, “ethernet oam enable”
- 14.2, “ethetnet oam mode”
- 14.3, “ ethernet oam min-rate”
- 14.4, “ethernet oam max-rate”
- 14.5, “ethernet oam link-monitor on”
- 14.6, “ethernet oam link-monitor frame”
- 14.7, “ethernet oam link-monitor frame-seconds threshold”
- 14.8, “ethernet oam link-monitor high threshold action”
- 14.9, “ethernet oam remote loopback support”
- 14.10, “ethernet oam remote loopback timeout”
- 14.11, “ethernet oam remote loopback start”
- 14.12, “ethernet oam remote-loopback stop”
- 14.13, “ethernet oam remote-failure”
- 14.15, “show ethernet oam discovery”
- 14.16, “show ethernet oam status”
- 14.17, “show ethernet oam state-machine”
- 14.18, “show ethernet oam statistics”
- 14.14, “ethernet oam (critical|dying-gasp) event”

- 14.19, “show ethernet oam (critical|dying-gasp) event ”

14.1 ethernet oam enable

Use this command to enable Ethernet operations, maintenance, and administration (OAM) on an interface.

Command Syntax

ethernet oam enable

no ethernet oam enable

Command Mode

Interface mode

Default

The default status of Ethernet OAM is disabled.

Usage

This command is used to enable the Ethernet OAM module on a port.

Example

The following example shows how to enable ethernet oam for a interface

```
BTI SA-805,21,22# configure terminal
BTI SA-805,21,22(config)# interface eth-0-1
BTI SA-805,21,22(config-if)# ethernet oam enable
```

Related Commands

no ethernet oam enable

14.2 ethetnet oam mode

Use the command to configure Ethernet OAM mode on an interface

Command Syntax

ethernet oam mode active

ethernet oam mode passive

no ethernet oam mode

Command Mode

Interface mode

Default

The default Ethernet OAM mode for the DTE is passive.

Usage

This command is used to set the DTE to active mode or passive mode.

Example

```
BTI SA-805,21,22# configure terminal
BTI SA-805,21,22(config)# interface eth-0-1
BTI SA-805,21,22(config-if)# ethernet oam mode active
BTI SA-805,21,22(config-if)# ethernet oam mode passive
```

RelatedCommands

None

14.3 ethernet oam min-rate

Use this command to set the OAMPDU timer. Use the no form of the command to reset to default value.

Command Syntax

ethernet oam min-rate *SECONDS*

no ethernet oam min-rate

SECONDS: the number of seconds chosen for this timer in the range <1-10>

Command Mode

Global configuration

Default

The default value of the OAMPDU timer is 1 second.

Usage

Set the timer to transmit at least one OAMPDU per second and ensure that the sublayer adheres to the maximum number of OAMPDUs per second. The minimum is 1 OAMPDU per second and the maximum is 10 OAMPDU per second

Example

```
BTI SA-805,21,22# configure terminal
```

```
BTI SA-805,21,22(config)# ethernet oam min-rate 1
```

Related Commands

show ethernet oam status

14.4 ethernet oam max-rate

Use this command to set the OAMPDU maximum number of PDUS per second. Use the no form of the command to reset max-rate to the default value.

Command Syntax

ethernet oam max-rate *PDUS*

no ethernet oam max-rate

PDUS: The maximum number of PDUs per second in the range <1-10>

Command Mode

Global configuration

Default

The default value of the max-rate is 10 PDUs per second.

Usage

This command is to ensure that the sublayer adheres to the maximum number of OAMPDUs per second. The minimum is 1 OAMPDU per second and the maximum is 10 OAMPDUs per second.

Example

```
BTI SA-805,21,22# configure terminal
```

```
BTI SA-805,21,22(config)# ethernet oam max-rate 10
```

Related Commands

show ethernet oam status

14.5 ethernet oam link-monitor on

Use this command to turn on link monitoring on an interface. Use the no form of this command to turn link monitoring off.

Command Syntax

ethernet oam link-monitor on (frame|frame-seconds|all)

no ethernet oam link-monitor on (frame|frame-seconds|all)

Command Mode

Interface mode

Default

When link monitor is supported, link monitoring is automatically turned on.

Example

```
BTI SA-805,21,22# configure terminal
BTI SA-805,21,22(config)# interface eth-0-1
BTI SA-805,21,22(config-if)# ethernet oam link-monitor on frame
BTI SA-805,21,22(config-if)# ethernet oam link-monitor on frame-seconds
```

Related Commands

show ethernet oam status

14.6 ethernet oam link-monitor frame

Use this command to configure the low and high threshold and the window for the frame event. If the low threshold is exceeded, an errored frame link event is generated. If the high threshold is exceeded, the action defined using the command ethernet oam link-monitor high threshold action is taken.

Command Syntax

ethernet oam link-monitor frame threshold high (*HIGH_THRES* | none) low *LOW_THRES*
window *WINDOW*

no ethernet oam link-monitor frame threshold

HIGH_THRES: Value of the high threshold for errored frames in the range <1-65535>

none: No high threshold value is set

LOW_THRES: Value of the low threshold for errored frames in the range <0-65535>

WINDOW: Size of frame event window, expressed in milliseconds, in multiples of 100, in the range <10-600>

Command Mode

Interface mode

Default

The default value for high threshold is none, meaning that no high threshold is configured. The default value of low threshold is 1.

The default value for the frame event window is 100.

Example

```
BTI SA-805,21,22# configure terminal
BTI SA-805,21,22(config)# interface eth-0-1
BTI SA-805,21,22(config-if)# ethernet oam link-monitor frame threshold high 5
low 2 window 200
```

Related Commands

show ethernet oam status

14.7 ethernet oam link-monitor frame-seconds threshold

Use this command to configure the low and high threshold and the window for the frame-seconds event. If the low threshold is exceeded, an errored-frame-seconds link event is generated. If the high threshold is exceeded then action defined through the command ethernet oam link-monitor high threshold action will be taken.

Command Syntax

ethernet oam link-monitor frame-seconds threshold high (*HIGH_THRES* | none) low *LOW_THRES* window *WINDOW*

no ethernet oam link-monitor frame-seconds threshold high

HIGH_THRES: High threshold for the number of errored frame-seconds in the range of <1-900>

none: No high threshold value is set

LOW_THRES: Low threshold for the number of errored frame-seconds <1-900>

WINDOW: Window for frame-seconds events, in milliseconds, in multiples of 100, in the range <100-9000>.

Command Mode

Interface mode

Default

The default value for high threshold is none, meaning that no high threshold is configure. The default value for the low threshold is 1. The default value of frame event window is 1000.

Usage

High threshold generates errdisable to the link. To generate errdisable, high-threshold action should be enabled by CLI. Default setting is disabled. Low threshold generates Event Notification.

Example

```
BTI SA-805,21,22# configure terminal
BTI SA-805,21,22(config)# interface eth-0-1
BTI SA-805,21,22(config-if)# ethernet oam link-monitor frame-seconds threshold
high5 low2 window 200
```

Related Commands

show ethernet oam status

14.8 ethernet oam link-monitor high threshold action

Use this command to define action when high threshold is detected. Use no form of the command to reset the action.

Command Syntax

ethernet oam link-monitor high threshold action error-disable-interface

no ethernet oam link-monitor high threshold action error-disable-interface

error-disable-interface: Disable the interface when high threshold is exceeded.

Command Mode

Interface mode

Default

When high threshold is exceeded it will generate only the corresponding link event and will not trigger any interface events by default.

Usage

High threshold generates errdisable to the link. The default is disabled. To generate errdisable, high-threshold action should be enabled by CLI. Default setting is disabled. Low threshold generates Event Notification.

Example

```
BTI SA-805,21,22# configure terminal
```

```
BTI SA-805,21,22(config)# interface eth-0-1
```

```
BTI SA-805,21,22(config-if)# ethernet oam link-monitor high-threshold action  
error-disable-interface
```

Related Commands

show ethernet oam status

14.9 ethernet oam remote loopback support

Use this command to configure remote loopback on a interface. This command can be used to enable or disable remote loopback. Use the no form of this command to remove remote-loopback support from the interface.

Command syntax

ethernet oam remote-loopback supported

no ethernet oam remote-loopback supported

supported Remote loopback can be initiated in the DTE

Command Mode

Interface mode

Default

The default state for the remote loopback is not supported.

Example

```
BTI SA-805,21,22# configure terminal
```

```
BTI SA-805,21,22(config)# interface eth-0-1
```

```
BTI SA-805,21,22(config-if)# ethernet oam remote-loopback supported
```

Related Commands

show ethernet oam status

14.10 ethernet oam remote loopback timeout

Use this command to configure remote loopback timeout. This command can be used to configure the remote loopback timeout, which is the number of seconds the DTE will wait for the remote DTE to respond to the ethernet oam remote-loopback enable command.

Command syntax

ethernet oam remote-loopback timeout SECS

no ethernet oam remote-loopback timeout

timeout Configure the timeout for remote loopback in seconds

SECS The remote loopback timeout value in the range of <1-10>

Command Mode

Global configuration

Default

Default value is 3 Seconds

Example

```
BTI SA-805,21,22(config)# ethernet oam remote-loopback timeout 4
```

Related Commands

show ethernet oam status

14.11 ethernet oam remote loopback start

Use this command to start an Ethernet OAM remote-loopback mechanism.

Command Syntax

ethernet oam remote-loopback start interface *IFNAME*

IFNAME: Name of the interface

Command Mode

Privileged Exec mode

Default

The default state of the remote loopback function is disabled.

Usage

This command is used to start a remote loopback mechanism. In EFM-loopback, all traffic wouldn't be transmitting to remote side, except OAMPDU, because they(excepted OAMPDU) were loopbacked from remote.

Example

```
BTI SA-805,21,22# ethernet oam remote-loopback start interface eth-0-1
```

Related Commands

show ethernet oam state-machine

14.12 ethernet oam remote-loopback stop

Use this command to stop an Ethernet OAM remote-loopback process.

Command Syntax

ethernet oam remote-loopback stop interface *IFNAME*

IFNAME: Name of the interface

Command Mode

Privileged Exec mode

Default

Use this command to stop an Ethernet OAM remote loopback mechanism.

Usage

Use this command to stop an Ethernet OAM remote loopback mechanism.

Example

```
BTI SA-805,21,22# ethernet oam remote-loopback stop interface eth-0-1
```

Related Commands

show ethernet oam state-machine

14.13 ethernet oam remote-failure

Use this command to error-disable port when get remote failure item form peer. Use the no form of the command to unset the action.

Command Syntax

ethernet oam remote-failure (link-fault | critical-event | dying-gasp) action error-disable-interface

no ethernet oam remote-failure (link-fault | critical-event | dying-gasp) action error-disable-interface

link-fault Critical Link Event

critical-event Dying Gasp Event

dying-gasp Link Fault Event

Command Mode

Interface Configuration

Default

None

Usage

This command is used to error-disable port when get remote failure item form peer.

Example

The following example shows how to error-disable port when get remote failure item form peer on interface eth-0-1

```
BTI SA-805,21,22(config)# interface eth-0-1
```

```
BTI SA-805,21,22(config-if)# ethernet oam remote-failure link-fault action  
error-disable-interface
```

Related Commands

None

14.14 ethernet oam (critical|dying-gasp) event

Use this command to enable or disable event notification.

Command Syntax

ethernet oam (critical|dying-gasp) event enable

IFNAME: Name of the interface

Command Mode

Interface Configuration

Usage

None

Example

```
BTI SA-805,21,22(config)# interface eth-0-1
BTI SA-805,21,22(config-if)# ethernet oam critical event enable
BTI SA-805,21,22(config-if)# ethernet oam dying-gasp event enable
```

Related Commands

None

14.15 show ethernet oam discovery

Use this command to display the ethernet oam administrative and operation configuration for local and remote DTE.

Command Syntax

show ethernet oam discovery (interface *IFNAME*)

IFNAME: Name of the interface

Command Mode

Privileged Exec mode

Usage

The following sample output from this command displays ethernet oam administrative and operation configurations for local and remote DTE.

Example

```
BTI SA-805,21,22# show ethernet oam discovery interface eth-0-1
```

Related Commands

None

14.16 show ethernet oam status

Use this command to display the runtime settings of link-monitoring and general OAM operations for all interfaces or for a specific interface.

Command Syntax

show ethernet oam status (interface *IFNAME*|)

IFNAME: Name of the interface

Command Mode

Privileged Exec mode

Usage

None

Example

```
BTI SA-805,21,22# show ethernet oam status interface eth-0-1
```

Related Commands

None

14.17 show ethernet oam state-machine

Use this command to display the state machine information.

Command Syntax

show ethernet oam state-machine (interface *IFNAME*|)

IFNAME: Name of the interface

Command Mode

Privileged Exec mode

Usage

The command displays the state of the interface.

Example

```
BTI SA-805,21,22# show ethernet oam state-machine interface eth-0-1
```

Related Commands

None

14.18 show ethernet oam statistics

Use this command to display the statistics information.

Command Syntax

show ethernet oam statistics (interface *IFNAME*)

IFNAME: Name of the interface

Command Mode

Privileged Exec mode

Usage

The command displays the statistics of the interface.

Example

```
BTI SA-805,21,22# show ethernet oam statistic interface eth-0-1
```

Related Commands

None

14.19 show ethernet oam (critical|dying-gasp) event

Use this command to show the event log history.

Command Syntax

ethernet oam (critical|dying-gasp) event enable for a interface

IFNAME: Name of the interface

Command Mode

Privileged Exec mode

Usage

None

Example

```
BTI SA-805,21,22# show ethernet oam event-log interface eth-0-1
```


15.0 Performance and Statistics Commands

This section covers the following topics :

- 15.1, “group enable”
- 15.2, “last5minutes enable”
- 15.3, “ethernet interface statistics clear”
- 15.4, “ clear pm soam mepid”
- 15.5, “clear pm eservice”
- 15.6, “ clear pm last5min”
- 15.7, “ interface threshold”
- 15.8, “system threshold”
- 15.9, “file-transfer enable”
- 15.10, “file-transfer mode”
- 15.11, “file-transfer target server”
- 15.12, “file-transfer upload-group”
- 15.13, “file-transfer upload-bin”
- 15.14, “file-transfer upload-mode”
- 15.15, “file-transfer upload-mode random”
- 15.16, “show pm admin, show pm info”
- 15.17, “ show pm interface”
- 15.18, “show pm soam mepid”
- 15.19, “show eservice statistics”

- 15.20, “ show pm interface last5min”
- 15.21, “show eservice last5minutes statistics”
- 15.22, “ show pm file-transfer status”

15.1 group enable

Use this command to enable pm group statistics collection operation.

Command Syntax

(interface|soam|eservice|system) enable

no (interface|soam|eservice|system) enable

Syntax	Description
interface	Ethernet interface statistics
soam	Service OAM statistics
eservice	E-Service statistics
system	System Performance

Command Mode

PM mode configuration

Default

The default status of all group Disabled

Usage

This command is used for collection for interface/oam/eservice.

Example

The following example shows how to enable and disable pm group enable.

```
BTI SA-805,21,22# configure terminal
BTI SA-805,21,22(config)# pm
BTI SA-805,21,22(config-pm)# interface enable
BTI SA-805,21,22(config-pm)# no interface enable
```

Related Commands

None

15.2 last5minutes enable

Use this command to enable last5minutes operation.

Command Syntax

(interface|eservice) last5min enable

no (interface|eservice) last5min enable

Syntax	Description
interface	Ethernet interface statistics
eservice	E-Service statistics

Command Mode

PM mode configuration

Default

The default status is Disabled

Usage

This command is used to interface/eservice last5min

Example

The following example shows how to enable and disable last5minutes.

```
BTI SA-805,21,22(config)# pm
```

```
BTI SA-805,21,22(config-pm)# interface last5min enable
```

```
BTI SA-805,21,22(config-pm)# no interface last5min enable
```

Related Commands

None

15.3 ethernet interface statistics clear

Use this command to delete the Ethernet interface statistics bin data operation.

Command Syntax

clear pm interface IFPHYSICAL (all|current|untimed)

clear pm interface (all|current|untimed)

Syntax	Description
Interface	Ethernet interface statistics
IFPHYSICAL	Physical Interface port (if omitted, the entire interface)
all	Current & untimed statistics bin data
current	Current statistics bin data
untimed	Untimed statistics bin data

Command Mode

Global configuration

Default

None

Usage

This command is used to delete the Ethernet interface statistics bin data.

Example

The following example shows how to delete the Ethernet interface statistics bin data.

```
BTI SA-805,21,22# clear pm interface eth-0-1 all
```

```
BTI SA-805,21,22# clear pm interface untimed
```

Related Commands

None

15.4 clear pm soam mepid

Use this command to delete the OAM statistics bin data.

Command Syntax

clear pm soam mepid <1-8191> megid MEGID (all|current|untimed)

clear pm soam mepid <1-8191> ma-name MANAME md-name MDNAME (all|current|untimed)

clear pm soam (all|current|untimed)

Syntax	Description
soam	Service OAM statistics
mepid	MEPID of Initiator MEP sending the message
<1-8191>	Enter the MEPID of the initiator MEP
megid	Maintenance Entity Group name (megid)
MEGID	Enter the Maintenance Entity Group name (megid)
ma-name	Maintenance Association name (ma-name of MAID)
MANAME	Enter the Maintenance Association name (ma-name)
md-name	Maintenance Domain name (ma-name of MAID)
MDNAME	Enter the Maintenance Domain name (md-name)
all	Current & untimed statistics bin data
current	Current statistics bin data
untimed	Untimed statistics bin data

Command Mode

Global configuration

Default

None

Usage

This command is used to delete the OAM statistics bin data.

Example

The following example shows how to delete the OAM statistics bin data.

```
BTI SA-805,21,22# clear pm soam mepid 4453 megid evc2002 current
```

```
BTI SA-805,21,22# clear pm soam untimed
```

Related Commands

None

15.5 clear pm eservice

Use this command to delete the eservice statistics bin data.

Command Syntax

clear pm eservice EPU-ID (all|current|untimed)

clear pm eservice (all|current|untimed)

Syntax	Description
eservice	E-Service statistics
EPU-ID	Specific epu (if omitted, the entire epu)
All	Current & untimed statistics bin data
Current	Current statistics bin data
untimed	Untimed statistics bin data

Command Mode

Global configuration

Default

None

Usage

This command is used to delete the eservice statistics bin data.

Example

The following example shows how to delete the eservice statistics bin data.

```
BTI SA-805,21,22# clear pm eservice epu-e1 current
```

```
BTI SA-805,21,22# clear pm eservice untimed
```

Related Commands

None

15.6 clear pm last5min

Use this command to delete the last5minutes statistics bin data.

Command Syntax

clear pm (interface|eservice) last5min

Syntax	Description
Interface	Ethernet interface statistics
Eservice	E-Service statistics
last5min	All interface & epu last5minutes statistics bin data

Command Mode

Global configuration

Default

None

Usage

This command is used to delete the last5minutes statistics bin data.

Example

The following example shows how to delete the last5minutes statistics bin data.

```
BTI SA-805,21,22# clear pm interface last5min
```

```
BTI SA-805,21,22# clear pm eservice last5min
```

Related Commands

None

15.7 interface threshold

Use this command to set the Ethernet interface threshold count operation.

Command Syntax

interface threshold (opr|opt|lbc|vol|temp) <1-10>

interface threshold (cv|es|ses) <1-1000>

Syntax	Description
interface	Ethernet interface statistics
opr	Optical Power Received
opt	Optical Power Transmitted
lbc	Laser Bias Current
vol	Supply Voltage
temp	Temperature of the transceiver
cv	Code Violation
es	Errored seconds on LOS or LOSYNC
ses	Severely Errored Seconds

Command Mode

PM mode configuration

Default

None

Usage

This command is used to set the Ethernet interface threshold over count.

Example

The following example shows how to set the Ethernet interface threshold count.

```
BTI SA-805,21,22(config-pm)# interface threshold temp 10
```

```
BTI SA-805,21,22(config-pm)# interface threshold ses 200
```

Related Commands

None

15.8 system threshold

Use this command to set the system threshold operation.

Command Syntax

system threshold (cpu|mem) <20-100>

Syntax	Description
system	System Performance
cpu	CPU Utilization
mem	Memory utilization

Command Mode

PM mode configuration

Default

None

Usage

This command is used to set the system threshold utilization

Example

The following example shows how to set the system threshold utilization

```
BTI SA-805,21,22(config-pm)# system threshold cpu 70
```

```
BTI SA-805,21,22(config-pm)# system threshold mem 80
```

Related Commands

None

15.9 file-transfer enable

Use this command to set the statistics CSV file transfer operation.

Command Syntax

[no] file-transfer enable

default = disabled

Command Mode

PM mode configuration

Usage

The following characters must not be included in the CSV file name when uploading the CSV file to a system using a Microsoft Windows Operating System (OS).

- \ / : * ? " < > |

Example

The following example shows how to enable and disable file-transfer.

```
BTI SA-805,21,22(config-pm)# file-transfer enable
```

```
BTI SA-805,21,22(config-pm)# no file-transfer enable
```

Related Commands

None

15.10 file-transfer mode

Use this command to set the transfer mode.

Command Syntax

file-transfer mode (ftp|sftp)

Syntax	Description
mode	Transfer mode
ftp	FTP transfer (default port, 21)
sftp	SFTP transfer (default port, 22)

Command Mode

PM mode configuration

Default

FTP mode

Usage

This command is used to set the transfer mode.

Example

The following example shows how to ftp and sftp transfer mode.

```
BTI SA-805,21,22(config-pm)# file-transfer mode sftp
```

Related Commands

None

15.11 file-transfer target server

Use this command to set the transfer target server information.

Command Syntax

file-transfer target A.B.C.D USER PASSWORD PATH (<1-65535>|)

file-transfer target mgmt-if A.B.C.D USER PASSWORD PATH (<1-65535>|)

Syntax	Description
target	Target server information
mgmt-if	Management interface (if omitted, in-band)
A.B.C.D	Target server IP address
USER	User ID
PASSWORD	User Password
PATH	Target server store destination path
<1-65535>	Port number (if omitted, default port number, FTP:21, SFTP:22)

Command Mode

PM mode configuration

Default

IP Address : 0.0.0.0

User ID : 0

User Password : 0

Path : 0

Port Number : 21 (Default transfer mode, FTP)

Usage

This command is used to set the transfer target server information.

Example

The following example shows how to set the target server information

```
BTI SA-805,21,22(config-pm)# file-transfer target 192.168.0.231 test test csv/  
FTP
```

```
BTI SA-805,21,22(config-pm)# file-transfer target 192.168.0.231 test test csv/  
FTP 100
```

```
BTI SA-805,21,22(config-pm)# file-transfer target mgmt-if 192.168.33.100 test  
test csv/FTP 60
```

Related Commands

None

15.12 file-transfer upload-group

Use this command to set the transfer upload-group.

Command Syntax

file-transfer upload-group add (interface|soam|esvc|all)

file-transfer upload-group del (interface|soam|esvc|all)

Syntax	Description
upload-group	Upload-group the statistics CSV file
interface	Ethernet interface statistics CSV file
soam	Service OAM statistics CSV file
esvc	E-Service statistics CSV file

Command Mode

PM mode configuration

Default

All group is Off.

Usage

This command is used to set the transfer upload-group.

Example

The following example shows how to set the transfer upload-group.

```
BTI SA-805,21,22(config-pm)# file-transfer upload-group add all
BTI SA-805,21,22(config-pm)# file-transfer upload-group del soam
```

Related Commands

None

15.13 file-transfer upload-bin

Use this command to set the transfer upload-bin.

Command Syntax

file-transfer upload-bin add (1m|5m|15m|24h|all)

file-transfer upload-bin del (1m|5m|15m|24h|all)

Syntax	Description
upload-bin	Upload-bin the statistics CSV file
1m	1minutes statistics CSV file
5m	5minutes statistics CSV file
15m	15minutes statistics CSV file
24h	24hours statistics CSV file
all	1m/5m/15m/24h statistics CSV file

Command Mode

PM mode configuration

Default

All bin is On.

Usage

This command is used to set the transfer upload-bin.

Example

The following example shows how to set the transfer upload-bin.

```
BTI SA-805,21,22(config-pm)# file-transfer upload-bin del 15m
```

```
BTI SA-805,21,22(config-pm)# file-transfer upload-group add 5m
```

Related Commands

None

15.14 file-transfer upload-mode

Use this command to set the transfer upload-mode.

Command Syntax

file-transfer upload-mode manual

file-transfer upload-mode base-time (2h|8h|24h)

file-transfer upload-mode date <0-23> <0-59>

file-transfer upload-mode frequency <0-23> <0-59> <5-60>

Syntax	Description
upload-mode	Upload-mode the statistics CSV file
manual	Generated immediately upload
base-time	Generated base time
2h	Upload the 2 hour to statistics CSV file
8h	Upload the 8 hour to statistics CSV file
24h	Upload the 24 hour to statistics CSV file
date	Upload the date time, HH:MM
<0-23>	HH, Date time hour
<0-59>	MM, Date time minutes
frequency	Frequency related command
<0-23>	HH, Base time offset hour
<0-59>	MM, Base time offset minute
<5-60>	MM, Frequency time minutes

Command Mode

PM mode configuration

Default

Default upload-mode is manual mode.

Usage

This command is used to set the transfer upload-mode.

Example

The following example shows how to set the transfer upload-mode.

```
BTI SA-805,21,22(config-pm)# file-transfer upload-mode manual
```

```
BTI SA-805,21,22(config-pm)# file-transfer upload-mode base-time 8h
```

```
BTI SA-805,21,22(config-pm)# file-transfer upload-mode date 9 30
```

```
BTI SA-805,21,22(config-pm)# file-transfer upload-mode frequency 00 30 30
```

Related Commands

None

15.15 file-transfer upload-mode random

Use this command to set the transfer upload-mode random operation.

Command Syntax

file-transfer upload-mode random enable

no file-transfer upload-mode random enable

file-transfer upload-mode random interval <1-30>

Syntax	Description
upload-mode	Upload-mode the statistics CSV file
random	Upload the random interval time to statistics file
interval	Upload to be interval
<1-30>	Interval range 1 ~ 30. Bin file is uploaded during the interval

Command Mode

PM mode configuration

Default

Default file-transfer upload-mode random setting is disable.

Random interval is 1.

Usage

This command is used to set the transfer upload-mode random.

Example

The following examples show how to set the transfer upload-mode random operation.

```
BTI SA-805,21,22(config-pm)# file-transfer upload-mode random enable
```

```
BTI SA-805,21,22(config-pm)# no file-transfer upload-mode random enable
```

```
BTI SA-805,21,22(config-pm)# file-transfer upload-mode random interval 10
```

Related Commands

None

15.16 show pm admin, show pm info

Use this command to display information the pm group admin.

Command Syntax

show pm (interface|soam|eservice) admin

show pm info

Syntax	Description
interface	Ethernet interface statistics
soam	Service OAM statistics
eservice	E-Service statistics

Command Mode

Global configuration

Default

None

Usage

None

Example

The following examples show how to display the group admin status

```
BTI SA-805,21,22# show pm interface admin
```

```
-----
                PM Information
-----
Interface Mode      Enable
-----
```

```
BTI SA-805,21,22# show pm info
```

```
-----
                PM Status Information
-----
| Interface |   SOAM   |   E-SVC   | System
-----
PM          | Disable  | Disable    | Enable
-----
Last5min    | Disable  | X          | Disable  | X
-----
```


File-transfer Status

Disable

Related Commands

(interface|soam|eservice) enable

no (interface|soam|eservice) enable

15.17 show pm interface

Use this command to display the Ethernet interface statistics bin data

Command Syntax

IFPHYSICAL current

show pm interface IFPHYSICAL 1m <1-120>

show pm interface IFPHYSICAL 5m <1-96>

show pm interface IFPHYSICAL 15m <1-32>

show pm interface IFPHYSICAL 24h

Syntax	Description
interface	Ethernet interface statistics
IFPHYSICAL	Physical Interface port
current	Current untimed/1m/5m/15m/24h bin data
1m	1minutes real bin data. Bin index 1 ~ 120
5m	5minutes real bin data. Bin index 1 ~ 96
15m	15minutes real bin data. Bin index 1 ~ 32
24h	24 hour real bin. Bin number 2.

Command Mode

Global configuration

Default

None

Usage

None

Example

The following examples show how to display the Ethernet interface statistics.

```
BTI SA-805,21,22# show pm interface eth-0-1 current
```

```
-----  
-  
Interface Name : eth-0-1                      PM Status : Enable  
  
-----  
Item      |      Untimed| 1Minutes#07| 5Minutes#02|15Minutes#01|  
24Hours#01
```

Start Time	Jan01 00:00	Jan01 00:06	Jan01 00:05	Jan01 00:00	Jan01 00:00
Status	Valid	Invalid	Invalid	Invalid	Invalid
OPR_(dBm)	-5.68	-5.68	-5.68	-5.68	-5.68
OPT_(dBm)	-5.51	-5.51	-5.51	-5.51	-5.51
LBC_(dBm)	11.65	11.65	11.65	11.65	11.65
VOL_(V)	3.33	3.33	3.33	3.33	3.33
TEMP_(C)	53.03	53.03	53.03	53.03	53.03
CV	0	0	0	0	0
ES	23	0	0	0	0
SES	23	0	0	0	0
Discard	0	0	0	0	0
FCS	0	0	0	0	0
Undersized	0	0	0	0	0
Oversized	0	0	0	0	0
Fragment	0	0	0	0	0
Jabber	0	0	0	0	0
RX Octet	0	0	0	0	0
RX Frame	0	0	0	0	0
RX UCAST	0	0	0	0	0
RX MCAST	0	0	0	0	0
RX BCAST	0	0	0	0	0

TX Octet	9024	320	1024	1024
1024				
TX Frame	141	5	16	16
16				
TX UCAST	0	0	0	0
0				
TX MCAST	140	5	16	16
16				
TX BCAST	1	0	0	0
0				

BTI SA-805,21,22# show pm interface eth-0-1 5m 2

Interface Name : eth-0-1		
Item	5Minutes#01	5Minutes#02
Start Time	Jan 01 00:00	Jan 01 00:05
Status	Invalid	Invalid
OPR_(dBm)	0.00	-5.68
OPT_(dBm)	0.00	-5.55
LBC_(dBm)	0.00	11.56
VOL_(V)	0.00	3.33
TEMP_(C)	0.00	52.97
CV	0	0
ES	0	0
SES	0	0
Discard	0	0
FCS	0	0
Undersized	0	0
Oversized	0	0
Fragment	0	0
Jabber	0	0
RX Octet	0	0
RX Frame	0	0
RX UCAST	0	0
RX MCAST	0	0
RX BCAST	0	0
TX Octet	0	3136
TX Frame	0	49
TX UCAST	0	0
TX MCAST	0	49

TX BCAST		0		0
----------	--	---	--	---

Related Commands

interface enable

no interface enable

15.18 show pm soam mepid

Use this command to display the OAM statistics bin data

Command Syntax

show pm soam mepid <1-8191> megid MEGID current

show pm soam mepid <1-8191> ma-name MANAME md-name MDNAME current

show pm soam mepid <1-8191> megid MEGID 1m <1-120>

show pm soam mepid <1-8191> ma-name MANAME md-name MDNAME 1m <1-120>

show pm soam mepid <1-8191> megid MEGID 5m <1-96>

show pm soam mepid <1-8191> ma-name MANAME md-name MDNAME 5m <1-96>

show pm soam mepid <1-8191> megid MEGID 15m <1-32>

show pm soam mepid <1-8191> ma-name MANAME md-name MDNAME 15m <1-32>

show pm soam mepid <1-8191> megid MEGID 24h

show pm soam mepid <1-8191> ma-name MANAME md-name MDNAME 24h

Syntax	Description
soam	Service OAM statistics
mepid	MEPID of Initiator MEP sending the message
<1-8191>	Enter the MEPID of the initiator MEP
megid	Maintenance Entity Group name (megid)
MEGID	Enter the Maintenance Entity Group name (megid)
ma-name	Maintenance Association name (ma-name of MAID)
MANAME	Enter the Maintenance Association name (ma-name)
md-name	Maintenance Domain name (ma-name of MAID)
MDNAME	Enter the Maintenance Domain name (md-name)
current	Current untimed/1m/5m/15m/24h bin data
1m	1minutes real bin data. Bin index 1 ~ 120
5m	5minutes real bin data. Bin index 1 ~ 96
15m	15minutes real bin data. Bin index 1 ~ 32
24h	24 hour real bin. Bin number 2.

Command Mode

Global configuration

Default

None

Usage

None

Example

The following examples show how to display the OAM statistics.

BTI SA-805,21,22# show pm soam mepid 4453 megid evc1001 current

```
-----
OAM Domain   : [meg: evc1001]
-----
OAM DM Type  : 1-way      | MepID : [4453]          | PM Status : Enable
-----
Item         |      Untimed| 1Minutes#63| 5Minutes#85|15Minutes#29|
24Hours#01
-----
Start Time   |Jul 19 22:58|Jul 19 23:00|Jul 19 22:58|Jul 19 22:58|Jul 19
22:58
Status       |      Valid|      Invalid|      Invalid|      Invalid|
Invalid
-----
NE FLR (%)   |      0.00|      0.00|      0.00|      0.00|
0.00
FE FLR (%)   |      0.00|      0.00|      0.00|      0.00|
0.00
-----
FD Min (us)  |      4.90|      4.91|      4.90|      4.90|
4.90
FD Max (us)  |      5.33|      5.33|      5.33|      5.33|
5.33
FD Avg (us)  |      5.12|      5.13|      5.12|      5.12|
5.12
FDV Min(us)  |      0.00|      0.00|      0.00|      0.00|
0.00
FDV Max(us)  |      0.33|      0.33|      0.33|      0.33|
0.33
FDV Avg(us)  |      0.70|      0.11|      0.70|      0.70|
0.70
-----
```

BTI SA-805,21,22# show pm soam mepid 4454 megid evc2001 lm 47

```
-----
OAM Domain   : [meg: evc2001]
-----
```

OAM DM Type : 2-way MepID : [4454]

Item	1Minutes#46	1Minutes#47
Start Time	Jul 19 22:44	Jul 19 22:45
Status	Valid	Valid
NE FLR (%)	0.00	0.00
FE FLR (%)	0.00	0.00
FD Min (us)	110498.90	110487.60
FD Max (us)	110499.92	110498.79
FD Avg (us)	110499.36	110492.53
FDV Min(us)	0.06	0.00
FDV Max(us)	0.34	0.54
FDV Avg(us)	0.20	0.20

Related Commands

soam enable

no soam enable

15.19 show eservice statistics

Use this command to display the eservice statistics bin data.

Command Syntax

```
show pm eservice EPU-ID current
show pm eservice EPU-ID 5m <1-96>
show pm eservice EPU-ID 15m <1-32>
show pm eservice EPU-ID 24h
```

eservice	E-Service statistics
EPU-ID	epu name
current	Current untimed/1m/5m/15m/24h bin data
5m	5minutes real bin data. Bin index 1 ~ 96
15m	15minutes real bin data. Bin index 1 ~ 32
24h	24 hour real bin. Bin number 2.

Command Mode

Global configuration

Default

None

Usage

None

Example

The following example shows how to display the eservice statistics.

```
BTI SA-805,21,22# show pm eservice 6F618-EPLINE1 current
```

```
-----
E-Service ID : 6F618-EPLINE1 PM Status : Enable
-----
```

```
Item | Untimed| 5Minutes#32| 15Minutes#11| 24Hours#01
-----
```

```
Start Time| Jan01 00:19| Jan01 02:35| Jan01 02:30| Jan01 00:00
```

```
Status | Valid| Invalid| Invalid| Invalid
-----
```

RX Statistics

Packets(G)| 0| 0| 0| 0

Octets (G)| 0| 0| 0| 0

Packets(Y)| 0| 0| 0| 0

Octets (Y)| 0| 0| 0| 0

Packets(R)| 0| 0| 0| 0

Octets (R)| 0| 0| 0| 0

Pkts (G+Y)| 0| 0| 0| 0

Octet(G+Y)| 0| 0| 0| 0

TX Statistics

Packets(G)| 0| 0| 0| 0

Octets (G)| 0| 0| 0| 0

Packets(Y)| 0| 0| 0| 0

Octets (Y)| 0| 0| 0| 0

Pkts (G+Y)| 0| 0| 0| 0

Octet(G+Y)| 0| 0| 0| 0

(G) : Green / (Y) : Yellow / (R) : Red

BTI SA-805,21,22# show pm eservice 6F618-EPLINE1 5m 30

E-Service ID : 6F618-EPLINE1

Item | 5Minutes#29 | 5Minutes#30

Start Time | Jan01 02:20 | Jan01 02:25

Status | Valid | Valid

RX Statistics

Packets (G)| 0 | 0

Octets (G)| 0 | 0
Packets (Y)| 0 | 0
Octets (Y)| 0 | 0
Packets (R)| 0 | 0
Octets (R)| 0 | 0
Pkts (G+Y)| 0 | 0
Octets(G+Y)| 0 | 0

TX Statistics

Packets (G)| 0 | 0
Octets (G)| 0 | 0
Packets (Y)| 0 | 0
Octets (Y)| 0 | 0
Pkts (G+Y)| 0 | 0
Octets(G+Y)| 0 | 0

RX bps | 0 | 0
pps | 0 | 0
BW Util ||
CIR(%) | - | -
CIR(bps)| - | -
EIR(%) | - | -
EIR(bps)| - | -
PIR(%) | - | -

TX bps | 0 | 0
pps | 0 | 0
BW Util ||
CIR(%) | - | -
CIR(bps)| - | -
EIR(%) | - | -
EIR(bps)| - | -

PIR(%) | - | -

Bandwidth Profile

CIR EIR

TX 0 Mbps 0 Mbps

RX 0 Mbps 0 Mbps

Related Commands

eservice enable

no eservice enable

15.20 show pm interface last5min

Use this command to display the Ethernet interface last5minutes statistics bin data.

Command Syntax

show pm interface last5min (IFPHYSICAL)

show pm interface last10sec (IFPHYSICAL)

Syntax	Description
interface	Ethernet interface statistics
last5min	Last5minutes statistics bin average data
IFPHYSICAL	Physical Interface port (if omitted, the entire interface)

Command Mode

Global configuration

Default

None

Usage

None

Example

The following examples show how to display the Ethernet interface statistics.

```
BTI SA-805,21,22# show pm interface last5min eth-0-1
```

```
-----
Interface Average-Rate Last-5minutes Statistics
-----
```

```
Status : Enable
-----
```

```
Name bps pps Utilization(%)
```

```
eth-0-1 Rx 0 0 0.00
```

```
Tx 8 0 0.00
-----
```

```
BTI SA-805,21,22#
```

```
BTI SA-805,21,22# show pm interface last10sec eth-0-1
```

```
-----
Interface Average-Rate Last-10seconds Statistics
-----
```

```
Status : Enable
-----
```

```
Name bps pps Utilization(%)
-----
```

```
eth-0-1 Rx 0 0 0.00  
Tx 256 0 0.00
```

Related Commands

None

15.21 show eservice last5minutes statistics

Use this command to display the eservice last5minutes statistics bin data.

Command Syntax

show pm eservice last5min (EPU-ID|)

Syntax	Description
Eservice	E-Service statistics
last5min	Last5minutes statistics bin data
EPU-ID	epu name

Command Mode

Global configuration

Default

None

Usage

None

Example

The following example shows how to display the eservice statistics.

```
BTI SA-805,21,22# show pm eservice last5min 6F618-EPLINE1
```

E-Service PM Last-5minutes Statistics								
Status : Enable								
	bps	pps	Rate(bps)		Utilization			
			CIR	EIR	CIR	EIR	PIR	
EPU-ID : 6F618-EPLINE1								
RX	0	0	-	-	-	-	-	-
TX	0	0	-	-	-	-	-	-

Related Commands

None

15.22 show pm file-transfer status

Use this command to display the file-transfer status

Command Syntax

show pm file-transfer status

Syntax	Description
file-transfer	File-transfer configuration

Command Mode

Global configuration

Default

None

Usage

None

Example

The following example shows how to display the file-transfer status.

```
BTI SA-805,21,22# show pm file-transfer status
```

```
-----
                        PM File-transfer Status
-----
```

File-transfer Status	Enable
----------------------	--------

```
-----
```

File-transfer Mode	FTP
--------------------	-----

```
-----
```

PM Interface	In-band
User Name	config
User Password	*****
IP Address	192.168.33.38
Port	26
Destination Path	./

```
-----
```

File Upload-Group

```
-----
```

	Interface	SOAM	E-SVC
PM	On	Off	Off
UPLOAD	On	Off	Off

```
-----
```


24h Bin	On	On	On
15m Bin	On	On	On
5m Bin	On	On	On
1m Bin	On	On	X

Upload Mode	Date
Upload Time	Daily 09:30

Random-Interval Status	Enable
Random-Interval	5

PM Based Time : Thu Jan 01 01:46:47 GMT 1970

Related Commands

None

15.23 show ethernet interface threshold

Use this command to display the Ethernet interface threshold and current threshold count.

Command Syntax

show pm interface threshold

show pm interface (IFPHYSICAL|) th-count

threshold	Threshold
IFPHYSICAL	Physical interface. ex 'eth-0-1', 'eth-0-4'
th-count	Current threshold count

Command Mode

Global configuration

Default

None

Usage

None

Example

The following example shows how to display the Ethernet interface threshold.

```
BTI SA-805,21,22# show pm interface threshold
```

```
-----  
PM Interface_Threshold_Value
```

```
-----  
OPR 2  
OPT 2  
LBC 2  
VOL 2  
TEMP 10
```

```
-----  
CV 100ES 100  
SES 100
```

```
-----  
BTI SA-805,21,22# show pm interface th-count
```

```
-----  
PM Interface Current Threshold Count
```

```
-----  
Port | OPR | OPT | LBC | VOL | TEMP
```

```
-----  
eth-0-1 | 0 | 0 | 0 | 0 | 0  
eth-0-2 | 0 | 0 | 0 | 0 | 0
```

```
eth-0-3 | 0 | 0 | 0 | 2 | 0
eth-0-4 | 0 | 0 | 0 | 0 | 0
-----
BTI SA-805,21,22# show pm interface eth-0-1 th-count
-----
PM Interface Current Threshold Count
-----
Port | OPR | OPT | LBC | VOL | TEMP
-----
eth-0-3 | 0 | 0 | 0 | 0 | 0
-----
```

Related Commands

None

15.24 show pm system threshold

Use this command to display the system pm threshold.

Command Syntax

show pm system threshold

Command Mode

Global configuration

Default

None

Usage

None

Example

The following example shows how to display the Ethernet interface threshold.

```
BTI SA-805,21,22# show pm system threshold
```

PM System_Threshold_Value			

		Utilization	threshold

CPU		5%	70%
MEM		25%	70%

Related Commands

None

15.25 show pm eservice threshold

Use this command to display the eservice pm threshold.

Command Syntax

show pm eservice threshold (EPU-ID|all)

EPU-ID	EPU ID
all	All EPU

Command Mode

Global configuration

Default

None

Usage

None

Example

The following example shows how to display the Ethernet interface threshold.

```
BTI SA-805,21,22# show pm eservice threshold all
-----
E-Service PM Threshold Information
-----
E-Service ID : 6F618-EPLINE1
-----
Ingress CIR 100(%)
EIR 90(%)
-----
Egress CIR 100(%)
EIR 90(%)
-----
E-Service ID : 6F619-EPLINE2
-----
Ingress CIR 100(%)
EIR 90(%)
-----
Egress CIR 100(%)
EIR 90(%)
-----
BTI SA-805,21,22# show pm eservice threshold 6F619-EPLINE2
-----
E-Service PM Threshold Information
```

E-Service ID : 6F619-EPLINE2

Related Commands

None

16.0 Synchronous Ethernet and ESMC Commands

This section covers the following topics :

- 16.1, “show clock synce”
- 16.2, “clock synce global-enable”
- 16.3, “clock synce ssm enable”
- 16.4, “clock synce slave-only”
- 16.5, “clock synce master-only”
- 16.6, “clock synce local-priority”
- 16.7, “clock synce local-quality option1”
- 16.8, “clock synce local-quality option2”
- 16.9, “clock synce enable”
- 16.10, “clock synce ssm enable”
- 16.11, “clock synce priority”
- 16.12, “clock synce switch-force”

16.1 show clock synce

Use this command to show the global and port configuration of SyncE.

Command Syntax

show clock synce (interface_id)

interface_id : Ethernet port number of the interface

Command Mode

Privileged Exec

Usage

N/A

Example

The following example shows how to display the global configuration of SyncE.

```
BTI SA-805,21,22# show clock synce
----- Global SyncE Clock Configure -----
Device ClockID : 00:14:D0:FF:FE:60:00:E5
Enable global synce : enable
Enable global ssm : enable
SSM option mode : 1
Device quality : SSU-B
Current quality : SSU-A
Current selected interface : eth-0-1
Switch force interface : N/A
Clock running state : Lock
Device type : Default
Enable Operation revertive : enable
Wait to restore timer : 5 min.
BTI SA-805,21,22# show clock synce eth-0-9
-----
Interface : eth-0-1
----- Port Configure -----
Synce enable : enable
ESMC RX/TX : ESMC TX & RX
Port up : enable
Receive quality : SSU-A
Send quality : DNU
Port priority : 100
Send timer running : enable
Timeout timer running : enable
```

Related Commands

None

16.2 clock synce global-enable

Use this command to set the clock synce enable globally. Use the no command to return the default value.

Command Syntax

[no] clock synce global-enable

Default : disabled

Command Mode

Global configuration

Usage

N/A

Example

The following example sets the clock synce to enable.

```
BTI SA-805,21,22(config)# clock synce global-enable
```

Related Commands

clock synce enable

16.3 clock synce ssm enable

Use this command to set the switch in synchronization mode globally. Use no command to return the default value.

Command Syntax

[no] clock synce ssm enable

Default = disable

Command Mode

Global configuration

Usage

N/A

Example

The following example sets the device to synchronization mode.

```
BTI SA-805,21,22(config)# clock synce ssm enable
```

Related Commands

None

16.4 clock synce slave-only

Use this command to set the clock synce to slave-only mode. Use no command to return the default value.

Command Syntax

[no] clock synce slave-only

Command Mode

Global configuration

Usage

By default, synce is disabled on device. If the switch is configured in slave-only mode, it will select best clock signal from all ssm ports.

By default, the clock is not in slave-only mode. The system will select the best clock from all ssm ports and the switch itself. The switch cannot be set to slave-only mode and master-only mode at the same time. If the device is configured as “slave-only” or it is in the default mode (neither slave-only mode nor master-only mode), the ”local-quality” value should not be set to “prc” or “prs”.

Example

The following example sets the clock to slave-only.

```
BTI SA-805,21,22(config)# clock synce slave-only
```

Related Commands

clock synce master-only

16.5 clock syncE master-only

Use this command to set the clock syncE on master-only mode. Use the no command to return the default value.

Command Syntax

[no] clock syncE master-only

Command Mode

Global configuration

Usage

If the switch is configured in master-only mode, it will send the quality and not select best clock signal. By default, the clock master-only mode is not selected, and the best clock from all ssm ports and the switch itself is selected. The switch cannot be set to slave-only mode and master-only mode at the same time. It is suggest that the "local-quality" value should be set to "prc" or "prs", if the device is configured as "master-only" mode.

Example

The following example set the clock master-only.

```
BTI SA-805,21,22(config)# clock syncE master-only
```

Related Commands

clock syncE slave-only

16.6 clock synce local-priority

Use this command to set the clock synce local-priority. Use the no command to return the default priority value.

Command Syntax

[no] clock synce local-priority (1-255)

Default: 255

Command Mode

Global configuration

Usage

N/A

Example

The following example shows how to set the synce local-priority to 1.

```
BTI SA-805,21,22(config)# clock synce local-priority 1
```

Related Commands

clock synce priority

16.7 clock syncE local-quality option1

Use this command to set the clock syncE local quality option-1. Use the no command to return the default quality value.

Command Syntax

[no] clock syncE local-quality option1 (dnu | eec1 | prc | ssu-a | ssu-b)

dnu = Do Not Use (DNU)

eec1 = synchronous Ethernet Equipment Clock (type 1)

prc = Primary Reference Clock

ssu-a = Type I or V slave clock, defined in ITU-T G.812

ssu-b = Type VI slave clock defined in ITU-T G.812

Default: dnu

Command Mode

Global configuration

Usage

N/A

Example

The following example sets the quality to eec1 in the option1 mode.

```
BTI SA-805,21,22(config)# clock syncE local-quality option1 eec1
```

Related Commands

clock syncE local-quality option2

16.8 clock synce local-quality option2

Use this command to set the synce local-quality option 2. Use the no command to return the default quality value.

Command Syntax

[no] clock synce local-quality option2 (dus | eec2 | prs | prov | smc | st2 | st3e | stu | tnc)

dus = Do Not Use

eec2 = synchronous Ethernet Equipment Clock□type 2□

prs = Primary Reference Source

prov = Provisionable by the network operator

smc = Traceable to SONET clock self timed

st2 = Traceable to stratum 2 (ITU-T G.812, type II)

st3e = Traceable to stratum 3E (ITU-T G.812, type III)

stu = Synchronized Traceability unknown

tnc = Traceable to transit node clock (ITU-T G.812, type V)

Default = dnu

Command Mode

Global configuration

Usage

N/A

Example

The following example set the quality to eec2 under option2.

```
BTI SA-805,21,22(config)# clock synce local-quality option2 eec2
```

Related Commands

clock synce local-quality option1

16.9 clock synce enable

Use this command to configure clock synce on an interface.

Command Syntax

[no] clock synce enable

default : clock synce is not enabled

Command Mode

Interface configuration

Usage

N/A

Example

The following example enables clock synce on an interface.

```
BTI SA-805,21,22(config-if)# clock synce enable
```

Related Commands

clock synce global-enable

16.10 clock synce ssm enable

Use this command to enable synchronization status message (ssm). The interface can be configured to receive and send ESMC Protocol Data Unit (PDU). Use the no command to set the interface to neither send or receive PDU.

Command Syntax

clock synce ssm enable (rx | tx | all)
no clock synce ssm enable (rx | tx | all)
rx: the interface can receive PDU only
tx: the interface can send PDU only
all: the interface can both receive and send PDU

Command Mode

Interface configuration

Usage

By default, the interface can receive and send PDU. The behavior that configures both “rx” and “tx” is equivalent to configuring “all”.

Example

The following example shows how to set the interface to receive and send PDU.

```
BTI SA-805,21,22(config)# clock synce ssm enable all
```

Related Commands

None

16.11 clock synce priority

Use this command to set the clock synce priority on the interface. Use no command to return the default priority value.

Command Syntax

[no] clock synce priority (1-255)

Default : 255

Command Mode

Interface configuration

Usage

N/A

Example

The following example set the priority to 1.

```
BTI SA-805,21,22(config-if)# clock synce priority 1
```

Related Commands

clock synce local-priority

16.12 clock synce switch-force

Use this command to configure a clock synce switch-force on an interface. Use the no command to return the default configuration.

Command Syntax

[no] clock synce switch-force (interface_id)

interface id : Ethernet interface name

Command Mode

Global configuration

Usage

By the default, synce is not configured on a port. If the user configures clock synce switch-force on an interface, the interface will take precedence of time synchronization. It will select the synchronous operation mode and non-sync mode.

Example

The following example configures synce switch-force on Ethernet port 3.

```
BTI SA-805,21,22(config-if)# clock synce switch-force eth-0-3
```

Related Commands

clock source (primary | secondary | release)

17.0 IEEE1588v2 Commands

This section covers the following topics :

- 17.1, “show ptp”
- 17.2, “show ptp interface”
- 17.3, “show ptp foreign-master”
- 17.4, “clear ptp statistics”
- 17.5, “ptp device-type”
- 17.6, “ptp global-enable”
- 17.7, “ptp domain”
- 17.8, “ptp slave-only”
- 17.9, “ptp priority1”
- 17.10, “ptp priority2”
- 17.11, “ptp clock-accuracy”
- 17.12, “ptp clock-class”
- 17.13, “ptp leap59”
- 17.14, “ptp leap61”
- 17.15, “ptp time-source”
- 17.16, “ptp announce-interval”
- 17.17, “ptp sync-interval”
- 17.18, “ptp min-delayreq-interval”
- 17.19, “ptp min-pdelayreq-interval”

- 17.20, “ptp announce-receipt-timeout”
- 17.21, “ptp delay-mechanism”
- 17.22, “ptp enable”
- 17.23, “ptp protocol”
- 17.25, “ptp tagging vlan”
- 17.26, “ptp tagging cvlan”
- 17.27, “ptp g8032 enable”
- 17.28, “ptp g8032 announce-interval”
- 17.29, “ptp g8032 sync-interval”
- 17.30, “ptp g8032 min-delayreq-interval”
- 17.31, “ptp g8032 min-pdelayreq-interval”
- 17.32, “ptp g8032 announce-receipt-timeout”
- 17.32, “ptp g8032 announce-receipt-timeout”
- 17.32, “ptp g8032 announce-receipt-timeout”
- 17.33, “ptp g8032 delay-mechanism”
- 17.34, “ptp g8032 protocol”
- 17.35, “ptp g8032 tagging vlan”
- 17.36, “ptp g8032 tagging cvlan”
- 17.37, “show ptp g8032”

17.1 show ptp

Use this command to show the PTP configuration and Best Master Clock (BMC) properties.

Command Syntax

show ptp (brief)

brief: Shows summary of the PTP configuration

Command Mode

Privileged Exec

Usage

N/A

Example

The following example displays the PTP global configuration and Best Master Clock (BMC) properties.

```
BTI SA-805,21,22# show ptp
----- Global Configure -----
PTP State : enable
Port Number : 1
Domain : 0
Slave Only : false
Clock Type : ordinary clock
Priority1 : 128
Priority2 : 128
Clock Accuracy : 0xfe
Clock Class : 248
Time Source : internal-oscillator(160)
UTC Offset : 34
Leap59 : false
Leap61 : false
Local Clock Identity : 14:6D:8F:FF:FE:0A:6F:00
Set systime via PTP: : false
PTP G8032 : disable
----- BMC Properties -----
Receive Member : (null)
Parent Clock Identity : 14:6D:8F:FF:FE:0A:6F:00
Parent Port Number : 0
Mean Path Delay : 0
Offset From Master : 0
Step Removed : 0
GM Clock Identity : 14:6D:8F:FF:FE:0A:6F:00
```

Related Commands

None

17.2 show ptp interface

Use this command to show the PTP configuration on an interface.

Command Syntax

show ptp interface (IFPHYSICAL | IFAGG | brief)

IFPHYSICAL: Ethernet interface name

IFAGG: Link aggregation interface name

brief: Brief information

Command Mode

Privileged Exec

Usage

N/A

Example

The following example displays the PTP configuration on an interface.

```
BTI SA-805,21,22# show ptp interface eth-0-9
```

```
Name      State Delay-mechanism Enable Step
```

```
-----  
eth-0-9  master normal   enable      two
```

Related Commands

None

17.3 show ptp foreign-master

Use this command to show the PTP foreign-master information.

Command Syntax

show ptp foreign-master

Command Mode

Privileged Exec

Usage

N/A

Example

The following example displays the PTP foreign-master information.

```
BTI SA-805,21,22# show ptp foreign-master
Foreign_master_port_identity Qualification Interface
```

```
-----
*EE:D3:E0:FF:FE:4A:06:00@9 true eth-0-9
```

Related Commands

None

17.4 clear ptp statistics

Use this command to clear the PTP statistics.

Command Syntax

clear ptp statistics [IFPHYSICAL | IFAGG]

IFPHYSICAL: Ethernet interface name

IFAGG: Link aggregation interface name

Command Mode

Privileged Exec

Usage

N/A

Example

The following example clears the statistics on all interfaces.

```
BTI SA-805,21,22# clear ptp statistics
```

Related Commands

None

17.5 ptp device-type

Use this command to set the clock type.

Command Syntax

[no] ptp device-type (oc)

oc: ordinary clock

default : oc

Command Mode

Global configuration

Usage

N/A

Example

```
BTI SA-805,21,22# ptp device-type oc
```

Related Commands

None

17.6 ptp global-enable

Use this command to enable PTP in the global configuration mode.

Command Syntax

[no] ptp global-enable

default : disabled

Command Mode

Privileged Exec

Usage

N/A

Example

The following example set the clock enable PTP.

```
BTI SA-805,21,22# ptp global-enable
```

Related Commands

None

17.7 ptp domain

Use this command to set the domain of the ordinary clock.

Command Syntax

(no) ptp domain (0-255)

default = 0

Command Mode

Global configuration

Usage

N/A

Example

The following example sets the domain to 1.

```
BTI SA-805,21,22(config)# ptp domain 1
```

Related Commands

ptp device-type

17.8 ptp slave-only

Use this command to set the ordinary clock to slave-only mode.

Command Syntax

[no] ptp slave-only

default : the ordinary clock is not slave-only

Command Mode

Global configuration

Usage

N/A

Example

The following example set the clock slave-only.

```
BTI SA-805,21,22(config)# ptp slave-only
```

Related Commands

ptp device-type

17.9 ptp priority1

Use this command to set the priority1 of the ordinary clock.

Command Syntax

[no] ptp priority1 (0-255)

default : 128

Command Mode

Global configuration

Usage

Priority1 is the highest priority. The 1588v2 algorithm sets Priority1 ahead of all other clock attributes.

Example

```
BTI SA-805,21,22(config)# ptp priority1 2
```

Related Commands

ptp device-type

17.10 ptp priority2

Use this command to set the priority2 of the ordinary clock.

Command Syntax

[no] ptp priority2 (0-255)

default : 128

Command Mode

Global configuration

Usage

N/A

Example

The following example sets the priority2 to 1.

```
BTI SA-805,21,22(config)# ptp priority2 1
```

Related Commands

ptp device-type

17.11 ptp clock-accuracy

Use this command to set the clock-accuracy of the ordinary clock.

Command Syntax

[no] ptp clock-accuracy (0x20 | 0x21 | 0x22 | 0x23 | 0x24 | 0x25 | 0x26 | 0x27 | 0x28 | 0x29 | 0x2a | 0x2b | 0x2c | 0x2d | 0x2e | 0x2f | 0x30 | 0x31 | 0xfe)

default : 0xfe (unknown)

Value	Time is accurate to within	Value	Time is accurate to within
0x20	25 ns	0x2a	2.5 ms
0x21	100 ns	0x2b	10 ms
0x22	250 ns	0x2c	25 ms
0x23	1 us	0x2d	100 ms
0x24	2.5 us	0x2e	250 ms
0x25	10 us	0x2f	1 s
0x26	25 us	0x30	10 s
0x27	100 us	0x31	> 10 s
0x28	250 us	0xfe	unknown
0x29	1 ms		

Command Mode

Global configuration

Usage

N/A

Example

The following example sets the clock-accuracy to 0x21.

```
BTI SA-805,21,22(config)# ptp clock-accuracy 0x21
```

Related Commands

ptp device-type

17.12 ptp clock-class

Use this command to set the clock-class of the ordinary clock.

Command Syntax

[no] ptp clock-class (6 | 7 | 13 | 14 | 52 | 58 | 187 | 193 | 248)

default : 248

6 = designates a clock that is synchronized to a primary reference time source. The timescale distributed shall be PTP. A clock Class 6 clock shall not be a slave to another clock in the domain.

7 = designates a clock that has previously been designated as clock Class 6 but that has lost the ability to synchronize to a primary. A clockClass 7 clock shall not be a slave to another clock in the domain.

13 = designates a clock that is synchronized to an application-specific source of time. The timescale distributed shall be ARB.

14 = designates a clock that has previously been designated as clock Class 13 but that has lost the ability to synchronize to an application-specific source of time and is in holdover mode and within holdover specifications.

The timescale distributed shall be ARB.

52 = Degradation alternative A for a clock of clock Class 7 that is not within holdover specification.

58 = Degradation alternative A for a clock of clock Class 14 that is not within holdover specification.

187 = Degradation alternative B for a clock of clock Class 7 that is not within holdover specification.

193 = A degradation alternative B for a clock of clock class 14 that is not within holdover specification.

248 = Default. This clock Class is used if no other clock class is specified.

Command Mode

Global configuration

Usage

N/A

Example

The following example set the clock class to 6.

```
BTI SA-805,21,22(config)# ptp clock-class 6
```

Related Commands

ptp device-type

17.13 ptp leap59

Use this command to sets the leap59 of the ordinary clock.

Command Syntax

[no] ptp leap59

default : leap59 is not configured.

Command Mode

Global configuration

Usage

N/A

Example

The following example sets the leap59.

```
BTI SA-805,21,22(config)# ptp leap59
```

Related Commands

ptp device-type

17.14 ptp leap61

Use this command to set the leap61 of the ordinary clock.

Command Syntax

[no] ptp leap61

default : leap61 is not configured

Command Mode

Global configuration

Usage

N/A

Example

The following example sets the leap61.

```
BTI SA-805,21,22 (config)# ptp leap61
```

Related Commands

ptp device-type

17.15 ptp time-source

Use this command to set the time-source of the ordinary clock.

Command Syntax

[no] ptp time-source (atomic-clock | gps | hand-set | internal-oscillator | ntp | other | ptp | terrestrial-radio)

default : internal-oscillator

atomic-clock : Any device, or device directly connected to such a device, that is based on atomic resonance for frequency and that has been calibrated against international standards for frequency.

gps : Any device synchronized to a satellite system that distributes time and frequency tied to international standards.

hand-set : Any device whose time has been set by means of a human interface based on observation of an international standards source of time to within the claimed clock accuracy.

internal-oscillator : Any device whose frequency is not based on atomic resonance nor calibrated against international standards for frequency, and whose time is based on a free-running oscillator with epoch determined in an arbitrary or unknown manner.

ntp : Any device synchronized via NTP or Simple Network Time Protocol (SNTP) to servers that distribute time and frequency tied to international standards other Other source of time and/or frequency not covered by other values.

ptp : Any device synchronized to a PTP-based source of time external to the domain.

terrestrial-radio : Any device synchronized via any of the radio distribution systems that distribute time and frequency and is tied to international standards.

Command Mode

Global configuration

Usage

N/A

Example

The following example sets the time-source to gps.

```
BTI SA-805,21,22(config)# ptp time-source gps
```

Related Commands

ptp device-type

17.16 ptp announce-interval

Use this command to set the ordinary clock announce interval.

Command Syntax

[no] ptp announce-interval (0-10)

default : 1 (2 seconds)

Command Mode

Interface configuration

Usage

The logarithm is to the base 2 of this time interval and is measured in seconds.

Example

The following example set the announce interval of the interface to 1024 second.

```
BTI SA-805,21,22(config-if)# ptp announce-interval 10
```

Related Commands

None

17.17 ptp sync-interval

Use this command to set the ordinary clock sync interval.

Command Syntax

[no] ptp sync-interval (-1 to 10)

default : 0 (1 second)

Command Mode

Interface configuration

Usage

The logarithm is to the base 2 of this time interval and is measured in seconds.

Example

The following example set the sync interval of the interface to 1024 second.

```
BTI SA-805,21,22(config-if)# ptp sync-interval 10
```

Related Commands

None

17.18 ptp min-delayreq-interval

Use this command to set the ordinary clock min-delayreq interval.

Command Syntax

[no] ptp min-delayreq-interval (-1 to 10)

default = 0 (1 second)

Command Mode

Interface configuration

Usage

The logarithm is to the base 2 of this time interval and is measured in seconds.

Example

```
BTI SA-805,21,22(config-if)# ptp min-delayreq-interval 10
```

Related Commands

None

17.19 ptp min-pdelayreq-interval

Use this command to set the ordinary clock min-pdelayreq interval.

Command Syntax

[no] ptp min-pdelayreq-interval (-1 to 10)

default : 0 (1 second)

Command Mode

Interface configuration

Usage

The logarithm is to the base 2 of this time interval and is measured in seconds.

Example

The following example sets the min-pdelayreq interval of the interface to 1024 second.

```
BTI SA-805,21,22(config-if)# ptp min-pdelayreq-interval 10
```

Related Commands

None

17.20 ptp announce-receipt-timeout

Use this command to set the ordinary clock announce-receipt-timeout duration.

Command Syntax

[no] ptp announce-receipt-timeout (3-255)

default : 4

Command Mode

Interface configuration

Usage

N/A

Example

The following example sets the announce-receipt-timeout times of the interface to 3.

```
BTI SA-805,21,22(config-if)# ptp announce-receipt-timeout 3
```

Related Commands

None

17.21 ptp delay-mechanism

Use this command to set the ordinary clock delay mechanism.

Command Syntax

[no] ptp delay-mechanism (disable | normal | peer)

default : normal

disable: Disables the delay mechanism

normal: Sets the delay request-response mechanism

peer: Sets the peer delay mechanism

Command Mode

Interface configuration

Usage

N/A

Example

The following example sets the delay mechanism of the interface on clock to peer.

```
BTI SA-805,21,22(config-if)# ptp delay-mechanism peer
```

Related Commands

None

17.22 ptp enable

Use this command to enable PTP on the interface designated for the ordinary clock.

Command Syntax

ptp enable
no ptp enable

Command Mode

Interface configuration

Usage

By default, PTP is disabled on interface.

Example

The following example enables ptp.

```
BTI SA-805,21,22(config-if)# ptp enable
```

Related Commands

None

17.23 ptp protocol

Use this command to set the protocol type of interface on clock.

Note This command is not supported for MAC mode with the multicast MAC address.

Command Syntax

ptp protocol { mac | udp source-ip A.B.C.D unicast dest-ip A.B.C.D }

source-ip : system inband management IP address

dest-ip : master IP address

A.B.C.D: the source/destination IP address of UDP encapsulation

Command Mode

Interface configuration

Usage

By default, each interface is over UDP/Ipv4 protocol with the unicast MAC address.

Example

The following example sets the interface to use UDP protocol with source-ip 192.168.2.132

```
BTI SA-805,21,22(config-if)# ptp protocol udp source-ip 192.168.2.132 unicast  
dest-ip 192.168.2.115
```

Related Commands

None

17.24 ptp vlan

Use this command to enable ptp on a vlan.

Command Syntax

[no] ptp vlan (1-4094)

default = 0

Command Mode

Global configuration

Usage

N/A

Example

The following example enables ptp on vlan 2.

```
BTI SA-805,21,22(config)# ptp vlan 2
```

Related Commands

ptp tagging vlan

17.25 ptp tagging vlan

Use this command to enable vlan tagging on an interface configured with 1588v2 PTP.

Command Syntax

[no] ptp tagging vlan (1-4094) cos (0-7)
default cos : 0

Command Mode

Interface configuration

Usage

If the vlan tag is configured without cos, the default cos value will be 0.

Example

The following example tags the ptp vlan with a COS priority of 3.

```
BTI SA-805,21,22(config-if)# ptp tagging vlan 2 cos 3
```

Related Commands

ptp vlan

17.26 ptp tagging cvlan

Use this command to enable cvlan tagging on an interface configured with 1588v2 PTP.

Command Syntax

[no] ptp tagging cvlan (1-4094) cos (0-7)
default cos : 0

Command Mode

Interface configuration

Usage

By default, there is no cvlan tag in the PTP message. If the cvlan tag is configured without Class of Service (cos), the cvlan cos value will be 0.

Example

The following example set the interface use cvlan 2 and priority 3.

```
BTI SA-805,21,22(config-if)# ptp tagging cvlan 2 cos 3
```

Related Commands

None

17.27 ptp g8032 enable

Use this command to set the 1588v2 clock enable globally in a G8032 ring topology.

Command Syntax

[no] ptp g8032 enable

default : no ptp g8032 enable

Command Mode

Global configuration

Usage

N/A

Example

The following example enables PTP on the G8032 ring.

```
BTI SA-805,21,22(config)# ptp g8032 enable
```

Related Commands

None

17.28 ptp g8032 announce-interval

Use this command to set the ordinary clock announce interval in a g8032 ring topology.

Command Syntax

[no] ptp g8032 announce-interval interval (0 - 10)

default : 1 (2 seconds)

Command Mode

Global configuration

Usage

The logarithm is to the base 2 of this time interval and is measured in seconds.

Example

The following example sets the announce interval to 1024 seconds.

```
BTI SA-805,21,22(config)# ptp g8032 announce-interval 10
```

Related Commands

None

17.29 ptp g8032 sync-interval

Use this command to set the sync interval on ordinary clock on g8032 ring topology.

Command Syntax

[no] ptp g8032 sync-interval (-1 to 10)

default : 0 (1 second)

Command Mode

Global configuration

Usage

The logarithm is to the base 2 of this time interval and is measured in seconds.

Example

The following example sets the sync-interval to 1024 seconds.

```
BTI SA-805,21,22(config)# ptp g8032 sync-interval 10
```

Related Commands

None

17.30 ptp g8032 min-delayreq-interval

Use this command to set the ordinary clock min-delayreq interval in a G8032 ring topology.

Command Syntax

[no] ptp g8032 min-delayreq-interval (-1 to 10)

default : 0 (1 second)

Command Mode

Global configuration

Usage

The logarithm is to the base 2 of this time interval and is measured in seconds.

Example

The following example set the min-delayreq-interval to 1024 seconds.

```
BTI SA-805,21,22 (config)# ptp g8032 min-delayreq-interval 10
```

Related Commands

None

17.31 ptp g8032 min-pdelayreq-interval

Use this command to set the min-pdelayreq interval on the ordinary clock in a g8032 ring topology.

Command Syntax

[no] ptp g8032 min-pdelayreq-interval interval
default : 0 (1 second)

Command Mode

Global configuration

Usage

N/A

Example

The following example set the min-pdelayreq-interval to 1024 seconds.

```
BTI SA-805,21,22(config)# ptp g8032 min-pdelayreq-interval 10
```

Related Commands

None

17.32 ptp g8032 announce-receipt-timeout

Use this command to set the announce-receipt-timeout times on the ordinary clock in a g8032 ring topology.

Command Syntax

ptp g8032 announce-receipt-timeout times

no g8032 announce-receipt-timeout

Note times: <3-255> the time out times of the announce receipt

Command Mode

Global configuration

Usage

By default, the value of announce-receipt-timeout is 4.

Example

The following example set the announce interval of the interface to 1024 second.

```
BTI SA-805,21,22(config)# ptp g8032 announce-receipt-timeout 3
```

Related Commands

None

17.33 ptp g8032 delay-mechanism

Use this command to set the delay mechanism of 1588v2 PTP on g8032 ring topology.

Command Syntax

ptp g8032 delay-mechanism {disable | normal | peer}

no ptp g8032 delay-mechanism {disable | normal | peer}

- | | |
|-------------|---|
| Note | <ul style="list-style-type: none">• disable: Do not implement the delay mechanism• normal: Use the delay request-response mechanism• peer: Use the peer delay mechanism |
|-------------|---|

Command Mode

Global configuration

Usage

By default, the value of delay mechanism is normal.

Example

The following example set the delay mechanism of the interface on clock to peer.

```
BTI SA-805,21,22(config)# ptp g8032 delay-mechanism peer
```

Related Commands

None

17.34 ptp g8032 protocol

Use this command to set the protocol type of 1588v2 PTP on g8032 ring topology.

Note This command is not supported for MAC mode with the multicast MAC address.

Command Syntax

ptp protocol udp source-ip A.B.C.D unicast dest-ip A.B.C.D}

source-ip: system inband management IP address

dest-ip: master IP address

A.B.C.D: the source/destination IP address of UDP encapsulation

Command Mode

Global configuration

Usage

By default, each interface is over UDP/Ipv4 protocol with the unicast MAC address.

Example

The following example sets the interface to use UDP protocol with source-ip 192.168.2.132

```
BTI SA-805,21,22(config)# ptp g8032 protocol udp source-ip 192.168.2.132
unicast dest-ip 192.168.2.115
```

Related Commands

None

17.35 ptp g8032 tagging vlan

Use this command to enable vlan tagging in a G8032 ring topology configured with 1588v2 PTP.

Command Syntax

[no] ptp g8032 tagging vlan (1-4094) cos (0-7)
default cos : 0

Command Mode

Global configuration

Usage

By default, there is no vlan tag in PTP message. If the cvlan tag is configured without Class of Service (cos), the cvlan cos value will be 0.

Example

The following example set the interface use vlan 2 and priority 3.

```
BTI SA-805,21,22(config)# ptp g8032 tagging vlan 2 cos 3
```

Related Commands

None

17.36 ptp g8032 tagging cvlan

Use this command to enable cvlan tagging in a G8032 ring topology configured with 1588v2 PTP.

Command Syntax

[no] ptp g8032 tagging cvlan (1-4094) cos (0-7)
default cos : 0

Command Mode

Global configuration

Usage

By default, there is no vlan tag in PTP message. If the cvlan tag is configured without Class of Service (cos), the cvlan cos value will be 0.

Example

The following example set the interface use cvlan 2 and priority 3.

```
BTI SA-805,21,22(config)# ptp g8032 tagging cvlan 2 cos 3
```

Related Commands

None

17.37 show ptp g8032

Use this command to show the information of PTP g8032.

Command Syntax

```
show ptp g8032
```

Command Mode

Privileged Exec

Usage

This command displays the information of PTP g8032.

Example

The following example shows the information of PTP g8032.

```
BTI SA-805,21,22# show ptp interface eth-0-9
```

```
-----
Interface                : eth-0-9
----- Port Configure -----
PTP state                 : enable
Port ID                   : 00:14:D0:FF:FE:60:1D:56@9
Delay Mechanism           : normal
Step Mode                 : two
Port State                : uncalibrated
Addressing                : UDP /IP version 4 unicast
Port Address              : 172.27.93.109
S-tagging Mode            : tagged
VLAN/COS                  : 4093/0
C-tagging Mode            : tagged
VLAN/COS                  : 93/0
Announce Interval         : 1
Sync Interval             : -6
Announce Receipt Timeout  : 4
Delay_Req Interval        : -6
----- Port Statistic -----
Recv Packet Statistics
-----
Announce      : 1380374      Sync      : 176168587
Delay_Req     : 0           Pdelay_Req : 0
Delay_Resp    : 88048732    Pdelay_Resp : 0
Follow_Up     : 172889223    Pdelay_Resp_Follow_Up : 0
Unknown       : 27537
Send Packet Statistics
-----
Announce      : 0           Sync      : 0
```

Delay_Req	: 172889223	Pdelay_Req	: 0
Delay_Resp	: 0	Pdelay_Resp	: 0
Follow_Up	: 0	Pdelay_Resp_Follow_Up	: 0
Unknown	: 27567		

Discard Packet Statistics

Announce	: 0	Sync	: 2503
Delay_Req	: 0	Pdelay_Req	: 0
Delay_Resp	: 0	Pdelay_Resp	: 0
Follow_Up	: 62220	Pdelay_Resp_Follow_Up	: 0
Unknown	: 0		

Related Commands

None

18.0 Secure Shell (SSH) Commands

This section covers the following topics :

- [18.1, “ip ssh server”](#)
- [18.2, “ip ssh server version”](#)
- [18.3, “show ip ssh server session”](#)
- [18.4, “show ip ssh server status”](#)

18.1 ip ssh server

Use the command to enable or disable Secure Shell (SSH) service.

Command Syntax

`ip ssh server {enable | disable}`

enable : SSH service is ON

disable : SSH service is OFF

Default

SSH service is enabled.

Command Mode

Global configuration

Usage

None

Example

The following example enables the SSH service :

```
BTI SA-805,21,22(config)# ip ssh server enable
```

Related Commands

`show ip ssh server status`

18.2 ip ssh server version

Use this command to set the ip Secure Shell (SSH) server version. To restore the default value, use the **no** form of this command.

Command Syntax

`ip ssh server version { 1 | 2 | all }`

`no ip ssh server version`

1 - runs only SSH Version 1.

2 - runs only SSH Version 2.

all - SSH Version 1 and Version 2 are supported.

Default

The default SSH version is 2.

Command Mode

Global configuration

Usage

None

Example

The following shows examples of SSH configurations:

```
BTI SA-805,21,22(config)# ip ssh server version 1
```

```
BTI SA-805,21,22(config)# ip ssh server version 2
```

```
BTI SA-805,21,22(config)# no ip ssh server version
```

Related Commands

`show ip ssh server status`

18.3 show ip ssh server session

Use this command to display the session information for Secure Shell (SSH).

Command Syntax

show ip ssh server session

Command Mode

Privileged EXEC

Usage

Use the **show ip ssh server session** command to view the session information.

Example

The following example shows the current SSH sessions:

```
BTI SA-805,21,22# show ip ssh server session
Version Encryption   Hmac      User      IP          State
=====
2.0      aes128-cbc   hmac-md5   abc       10.10.29.22 Session started
```

Related Commands

show ip ssh server status

18.4 show ip ssh server status

Use this command to display the version and configuration data for Secure Shell (SSH), server status.

Command Syntax

show ip ssh server status

Command Mode

Privileged EXEC

Usage

None

Example

The following example shows the ip SSH server status:

```
BTI SA-805,21,22# show ip ssh server status
SSH server enabled
Version: 1.99
Authentication timeout: 33 second(s)
Authentication retries: 6 time(s)
Server key lifetime: 60 minute(s)
Authentication type: password, public-key
```

Related Commands

show ip ssh server session

19.0 Network Time Protocol (NTP) Commands

This section covers the following topics :

- 19.1, “ntp server A.B.C.D (prefer|)(1st|2nd|3rd|)”
- 19.2, “ntp mode (in-band|out-band)”
- 19.3, “show ntp”
- 19.4, “show ntp status”

19.1 ntp server A.B.C.D (prefer|)(1st|2nd|3rd|)

Use this command to configure one or more NTP server IP addresses. If selecting more than one NTP server, you can configure a preferred NTP server and set the preference of the NTP server [1st|2nd|3rd]. If you do not specify the NTP order, the system will set the order.

Note In Release 1.1.1 the switch can be provisioned as a client of an external SNTP server. It cannot be provisioned as a clock source.

Command Syntax

ntp server A.B.C.D (prefer|1st|2nd|3rd|)

Command Mode

Global configuration

Usage

None

Example

```
BTI SA-805,21,22 (config) # ntp server 192.165.3.1
```

Related Commands

no ntp server A.B.C.D

show ntp

show ntp status

(config)# ptp time-source ntp - enables the NTP client function on the switch

(config)# clock set timezone <time_zone>

19.2 ntp mode (in-band|out-band)

Use this command to configure the NTP synchronous path.

Command Syntax

ntp mode (in-band|out-band)

Command Mode

Global configuration

Usage

None

Example

The following shows how to configure the NTP server address

```
BTI SA-805,21,22 (config) # ntp server 192.168.0.1
```

Related Commands

no ntp server A.B.C.D

show ntp

show ntp status

19.3 show ntp

Use this command to display the NTP configurations.

Command Syntax

show ntp

Command Mode

Privilege mode.

Usage

None

Example

```
BTI SA-805,21,22# show ntp
```

```
Current NTP configuration:
```

```
=====
```

```
Unicast server:
```

```
172.35.6.122
```

Related Commands

show ntp status

19.4 show ntp status

Use this command to display the NTP status.

Command Syntax

show ntp

Command Mode

Privilege mode.

Usage

None

Example

```
BTI SA-805,21,22# show ntp status :
```

```
Current NTP status:
```

```
=====
Current mode:      out-band
Next mode:         out-band
clock is synchronized
stratum:           6
reference clock:    172.27.6.131
frequency:         11.332 ppm
precision:         2**15
reference time:     d88f3efa.faa51748  (16:40:26.979 UTC Wed Feb 18 2015)
root delay:        80.995 ms
root dispersion:    32768.000 ms
peer dispersion:    32768.000 ms
clock offset:      -1.333 ms
stability:         32768.000 ppm
BTI SA-805,21,22# Current mode:      out-band
```

Related Commands

show ntp

20.0 System Log Commands

This section covers the following topics :

- [20.1, “clear syslog”](#)
- [20.2, “syslog enable”](#)
- [20.3, “syslog output enable”](#)
- [20.4, “syslog remote server address”](#)
- [20.5, “syslog severity”](#)
- [20.6, “show syslog info”](#)
- [20.7, “show syslog \(reverse | backup\)”](#)

20.1 clear syslog

Use this command to clear messages from syslog file.

Command Syntax

clear syslog

Command Mode

Global configuration

Usage

None

Example

The following shows how to clear syslog message

```
BTI SA-805,21,22# clear syslog
```

Related Commands

clear syslog backup

show syslog

20.2 syslog enable

Use this command to store the log message in syslog file.

Command Syntax

syslog enable

no syslog enable

Command Mode

Global configuration

Default

Enable mode

Usage

None

Example

The following shows how to clear syslog message.

```
BTI SA-805,21,22(config)# syslog enable
```

Related Commands

show syslog info

20.3 syslog output enable

Use this command to send the log message to the console and syslog remote server.

Command Syntax

syslog output (console|remote) enable

no syslog output (console|remote) enable

Syntax	Description
console	Send to console
remote	Send to remote syslog server

Command Mode

Global configuration

Default

no disable mode

Usage

None

Example

The following shows how to enable the syslog output

```
BTI SA-805,21,22(config)# syslog output remote enable
```

```
BTI SA-805,21,22(config)# syslog output console enable
```

Related Commands

syslog remote address

show syslog info

20.4 syslog remote server address

Use this command to send the log system messages to a remote server.

Command Syntax

syslog remote address (mgmt-if) ip-address

no syslog remote address (mgmt-if) ip-address

Syntax	Description
ip-address	IP address of the server that will receive the system logging messages

Command Mode

Global configuration

Default

System logging messages are not sent to any remote server.

Usage

The logging server address command identifies a remote server (usually a device serving as a syslog server) to receive logging messages. By issuing this command more than once, you can build a list of servers that receive logging messages.

Example

In the following example, messages are logged to a server at 192.168.5.31 :

```
BTI SA-805,21,22(config)# syslog remote address mgmt-if 192.168.5.31
```

```
BTI SA-805,21,22(config)# syslog output console enable
```

Related Commands

syslog output remote enable

20.5 syslog severity

Use this command to define which log messages are stored in the system log.

Command Syntax

syslog severity {critical | major | minor | notice | info | all} enable

no syslog severity {critical | major | minor | notice | info | all} enable

Syntax	Description
Critical	Critical Events or Alarms
Major	Major Events or Alarms
Minor	Minor Events or Alarms
Notice	Notice : Normal but Significant Conditions
Info	Information
all	All severity

Command Mode

Global configuration

Default

Logging server level is {4 | warning}

Usage

None

Example

In the following examples, only critical and major messages are stored in the system log:

```
BTI SA-805,21,22(config)# syslog severity critical enable
```

```
BTI SA-805,21,22(config)# syslog severity major enable
```

Related Commands

show syslog info

20.6 show syslog info

Use this command to display the state of system log.

Command Syntax

show syslog info

Command Mode

Privileged EXEC

Usage

None

Example

The following shows how to display the system log information.

```
BTI SA-805,21,22(config)# show syslog info
```

Syslog	Information

Syslog Status	Enable
Critical Severity	Enable
Major Severity	Enable
Minor Severity	Enable
Notice Severity	Enable
Information Severity	Enable
Console Output	Disable
Remote Output	Disable
Remote ip address no setting	

Related Commands

show syslog

20.7 show syslog (reverse | backup)

Use this command to display the contents of the system log.

Command Syntax

show syslog

show syslog reverse

show syslog backup <1-3>

show syslog backup <1-3> reverse

Command Mode

Privileged EXEC

Usage

This command is used to display the contents in logging buffer.

Example

```
BTI SA-805,21,22# show syslog
1970-01-01 04:01:49 HA8XX:eth-0:1 MJ INF Loss of signal Active
1970-01-01 04:02:16 HA8XX:eth-0:1 MJ SYS Module Missing Active
1970-01-01 04:02:16 HA8XX:eth-0:1 MJ INF Loss of signal Clear
```

```
BTI SA-805,21,22# show syslog reverse
1970-01-01 04:02:16 HA8XX:eth-0:1 MJ INF Loss of signal Clear
1970-01-01 04:02:16 HA8XX:eth-0:1 MJ SYS Module Missing Active
1970-01-01 04:01:49 HA8XX:eth-0:1 MJ INF Loss of signal Active
```

Related Commands

show syslog info

21.0 Simple Network Management Protocol (SNMP) Commands

This section covers the following topics :

- 21.1, “snmp-server enable”
- 21.2, “snmp-server community”
- 21.3, “snmp-server trap enable”
- 21.4, “snmp-server trap target-address”
- 21.5, “snmp-server pen”
- 21.6, “show snmp”
- 21.7, “show snmp-server”
- 21.9, “show snmp-server trap-receiver”
- 21.9, “show snmp-server trap-receiver”
- 21.10, “show snmp-serverpen”

21.1 snmp-server enable

Use this command to enable the SNMP function. To disable the SNMP function, use the no form of this command.

Command Syntax

snmp-server enable

no snmp-server enable

Command Mode

Global configuration

Default

snmp-server enable

Usage

None

Example

The following is sample output from the **snmp-server enable** command:

```
BTI SA-805,21,22(config)# snmp-server enable
```

```
BTI SA-805,21,22(config)# no snmp-server enable
```

Related Commands

show snmp

21.2 snmp-server community

Use this command to set up the community access string to permit access to the Simple Network Management Protocol (SNMP). To remove the specified community string, use the **no** form of this command.

Command Syntax

`snmp-server community string {read-only | read-write} [view view-name]`
`no snmp-server community string`
string Specify a SNMP community name
`read-only` Read-only access with the community string
`read-write` Read-write access with the community string
`view view-name` Restrict this community to a named MIB view (default view is `_all_`)

Default

`snmp-server community public read-only`
`snmp-server community private read-write`

Command Mode

Global configuration

Usage

The `no snmp-server` command disables all versions of SNMP (SNMPv1, SNMPv2C).

Example

The following example shows how to set the `snmp-server community`:

```
BTI SA-805,21,22(config)# snmp-server community newstring read-write
```

Related Commands

Show `snmp-server community`

21.3 snmp-server trap enable

Use this command to enable all Simple Network Management Protocol (SNMP) notification types on the system. To disable all available SNMP notifications, use the no form of this command.

Command Syntax

snmp-server trap enable *notification-type*

no snmp-server trap enable *notification-type*

*notification-type*Type of notification to enable or disable. If the all argument is specified, all notifications available on your device are enabled or disabled (if the no form is used).

Default

snmp-server trap enable event

snmp-server trap enable alarm

snmp-server trap enable v2 all

snmp-server trap enable v2 coldstart

snmp-server trap enable v2 linkup

snmp-server trap enable v2 linkdown

snmp-server trap enable v2 authentication

Command Mode

Global configuration

Usage

The **snmp-server trap enable** command is used in conjunction with the **snmp-server trap target-address** command. Use the **snmp-server trap target-address** command to specify which host or hosts receive the SNMP notifications. To send notifications, you must configure at least one **snmp-server trap target-address** command.

The Alarm Trap has the all items that are related to the alarm. Use the **show alarm** command, to view alarms.

Example

```
BTI SA-805,21,22(config)# snmp-server trap enable event
```

Related Commands

snmp-server trap target-address

show snmp-server

21.4 snmp-server trap target-address

Use this command to configure a remote trap manager's IP address. To remove the configuration, use the **no** form of this command.

Command Syntax

snmp-server trap target-address [mgmt-if] *ip-address* community *string* [udpport *number*]

no snmp-server trap target-address [mgmt-if] *ip-address* community *string* [udpport *port*]

mgmt-if Management port

ip-address IP address.

community string Password-like community string sent with the notification operation.

udpport (Optional) Specifies the SNMP notifications or information is sent to an SNMP manager. The default port is 162.

Default

The router does not send any trap messages.

Command Mode

Global configuration

Usage

This command is used to specify the server target address to which the trap is sended.

Example

```
BTI SA-805,21,22(config)# snmp-server trap target-address mgmt-if  
192.168.1.100 community test udpport 6000
```

Related Commands

snmp-server trap enable

21.5 snmp-server pen

Use this command to set the system PEN (Private Enterprise Number) string.

Note You MUST reboot the switch after changing PEN code.

Command Syntax

snmp-server pen PEN_STR

PEN_STR String that describes the private enterprise number, product number and model number.

(Example Default PEN code : 30005.1.7).

Default

« 30005.1.7 »

Command Mode

Global configuration

Usage

None

Example

The following is an example of a system location string:

```
BTI SA-805,21,22(config)# snmp-server pen 30005.1.7
```

Related Commands

show snmp-server pen

21.6 show snmp

Use this command to display the SNMP state of operation.

Command Syntax

show snmp

Command Mode

Privileged EXEC

Usage

None

Example

The following is sample output from the **show snmp** command:

```
BTI SA-805,21,22# show snmp
SNMP services: enable
```

Related Commands

snmp-server enable

21.7 show snmp-server

Use this command to display the SNMP server information.

Command Syntax

show snmp-server

Command Mode

Privileged EXEC

Usage

None

Example

The following example shows the **show snmp-server** command:

```
BTI SA-805,21,22# show snmp-server
                        SNMP Trap Enable
=====
Global All Trap
=====
SNMP Event Trap      : enable
SNMP Alarm Trap      : enable
=====
V2 System Trap
=====
SNMP V2 Traps        : enable
SNMP LinkUp Trap     : enable
SNMP LinkDown Trap   : enable
SNMP ColdStart Trap  : enable
SNMP Authentication Trap : enable

                        SNMP Trap Receiver
=====
Target-ipaddress  mgmt-if  udpport  version  pdu-type  community
=====
192.168.35.10     yes      162     v2c      trap      public
192.168.35.11     no       162     v2c      trap      public
192.168.35.12     yes      162     v2c      trap      public

                        SNMP Community
=====
Community-Access  Community-String  Security-name
=====
read-only         public            comm1
read-write        private          comm2
```

Related Commands

snmp-server trap enable

show snmp-server trap-receiver

show snmp-server community

21.8 show snmp-server community

Use this command to display the SNMP community information.

Command Syntax

show snmp-server community

Command Mode

Privileged EXEC

Usage

None

Example

The following example shows **show snmp-server community** command:

```
BTI SA-805,21,22# show snmp-server community
```

```
Community-Access Community-String Security-name
=====
read-only public comm1
read-write private comm2
```

Related Commands

snmp-server community

21.9 show snmp-server trap-receiver

Use this command to display the SNMP traps receiver information.

Command Syntax

show snmp-server trap-receiver

Command Mode

Privileged EXEC

Usage

None

Example

The following example shows the **show snmp-server trap-receiver** command:

```
BTI SA-805,21,22# show snmp-server trap-receiver
Target-ipaddress mgmt-if udpport version pdu-type community
=====
192.169.37.10 yes 162 v2c trap public
192.169.37.11 no 162 v2c trap public
192.169.37.12 yes 162 v2c trap public
```

Related Commands

snmp-server trap target-addres

21.10 show snmp-serverpen

Use this command to display the SNMP PEN number information.

Command Syntax

show snmp-server pen

Command Mode

Privileged EXEC

Usage

None

Example

The following example shows the **show snmp-server pen** command:

```
BTI SA-805,21,22# show snmp-server pen
```

```
-----  
snmp pen (Private Enterprise Number & Product & Model oid)
```

```
-----  
current snmp_pen :      30005.1.7
```

```
next      snmp_pen :      30005.1.7  
-----
```

Related Commands

snmp-server trap target-address

22.0 RADIUS Commands

RADIUS is a networking protocol that provides centralized Authentication, Authorization, and Accounting (AAA) management for users that connect and use a network service. The switch supports Authentication only.

This section covers the following topics :

- 22.1, “ radius-server enable”
- 22.2, “ radius-auth-order”
- 22.3, “radius-server host”
- 22.4, “radius-server timeout”
- 22.5, “radius-server retransmit”
- 22.6, “show radius-server”

22.1 radius-server enable

Use this command to enable the RADIUS authentication type.

Command Syntax

[no] radius-server enable

Command Mode

Global Configuration & Line mode

Usage

Reply-Message and Idle-Timeout are the two attributes used in the authentication processing. The two attributes must be included to the response packet from RADIUS server sent in order for the RADIUS to function.

The Reply-Message attribute be used :

Attribute value	Privilege	Authorization
admin	3	All configuration & user management
superuser	3	
provisioning	2	All configuration
maintenance	2	
operator	2	
surveillance	1	Retrieve configurations
viewer	1	

The Idle-Timeout attribute be used for processing the automatically session close at the idle is as follows:

- 0 : disable the autologout
- 35791 : Maximum value (Seconds)

Example

The following example shows how to enable the RADIUS authentication type.

```
BTI SA-805,21,22# configure terminal
```

```
BTI SA-805,21,22(config)# radius-server enable
```

Related Commands.

N/A

22.2 radius-auth-order

Use this command to set the RADIUS authentication order.

Command Syntax

radius-auth-order (local | radius)

local = sets the system to use local authentication

radius = sets the system to use RADIUS authentication

default = local

Command Mode

Global Configuration

Usage

None

Example

The following example shows how to set login authentication to use RADIUS.

```
BTI SA-805,21,22# configure terminal
```

```
BTI SA-805,21,22(config)# radius-auth-order radius
```

Related Commands.

N/A

22.3 radius-server host

Use this command to provision the RADIUS server address.

Command Syntax

radius-server host A.B.C.D

radius-server host A.B.C.D key <KEYSTRING>

radius-server host A.B.C.D auth-port <PORTNO>

radius-server host A.B.C.D mgmt

no radius-server host A.B.C.D

key : set the shared key string

auth-port : set the authentication-port (UDP). default 1812.

mgmt : set the communication path to management (out-of-band).

Command Mode

Global Configuration

Usage

None

Example

The following example shows how to provision the RADIUS server address.

```
BTI SA-805,21,22(config)# radius-server host 192.168.5.250 key testing123
```

```
BTI SA-805,21,22(config)# radius-server host 192.168.0.253 key testing123 mgmt
```

Related Commands

None

22.4 radius-server timeout

Use this command to configure the maximum timeout value for receiving the response packets.

Command Syntax

radius-server timeout (Seconds)

no radius-server timeout

Default

5 seconds

Command Mode

Global Configuration

Usage

None

Example

The following example shows how to configure the maximum timeout value for receiving the response packets to 10 seconds.

```
BTI SA-805,21,22(config)# radius-server timeout 10
```

Related Commands

None

22.5 radius-server retransmit

Use this command to configure the retransmit count. The 'retransmit' means the maximum send count of authentication request packet.

Command Syntax

radius-server retransmit RETRIES

no radius-server retransmit

Default

3

Command Mode

Global Configuration

Usage

None

Example

The following example shows how to configure the retransmit count.

```
BTI SA-805,21,22(config)# radius-server retransmit 10
```

Related Commands

None

22.6 show radius-server

Use this command to display the RADIUS-server.

Command Syntax

show radius-server

Default

Enable

Command Mode

Exec mode.

Usage

None

Example

The following example shows how to display the RADIUS configuration.

```
BTI SA-805,21,22# show radius-server
```

```
=====
RADIUS : Enable
=====
First      RADIUS Auth Server IP : 192.168.31.128
           RADIUS Auth port   : 1812
           RADIUS Auth Path    : mgmt
           RADIUS Auth Secret  : testing123
Second     RADIUS Auth Server IP : 192.168.5.250
           RADIUS Auth port    : 1812
           RADIUS Auth Path    : inband
           RADIUS Auth Secret  : testing123
RADIUS Auth Order      : RADIUS
RADIUS retrial number  : 3
RADIUS timeout(sec)    : 5
RADIUS fallback        : enable
=====
```

Related Commands

None

23.0 Station Loopback Commands

This section covers the following topics :

- 23.1, “station-loopback session service-type evc uni cvlan”
- 23.2, “station-loopback session service-type acl-rule nni”
- 23.3, “station-loopback session (start|stop)”
- 23.4, “no station-loopback session”
- 23.5, “show station-loopback brief”
- 23.6, “show station-loopback session”
- 23.7, “clear station-loopback session count”
- 23.8, “ethernet sat loopback session evc nni”
- 23.9, “ethernet sat loopback session (start|stop)”
- 23.10, “no ethernet sat loopback session”
- 23.11, “show ethernet sat loopback brief”
- 23.12, “show ethernet sat loopback session”
- 23.13, “clear ethernet sat loopback session count”

23.1 station-loopback session service-type evc uni cvlan

Use this command to create the session for EVC (UNI) loopback.

Command Syntax

station-loopback session SERVICE-ID service-type evc EVC-NAME uni UNI-NAME cvlan CVLAN

Command Mode

Global configuration

Usage

The UNI should be in EVC.

If all-to-one-bundling is enabled at UNI, cvlan can be set 1 to 4095.

If EVC (UNI) sessions are configured on same interface, cvlan should be different per each session.

SERVICE-ID should be unique in station loopback sessions.

Example

This example shows how to create the session for EVC (UNI) Loopback.

```
BTI SA-805,21,22(config)# station-loopback session STLB-1 service-type evc
evc1 uni uni1 cvlan 2
BTI SA-805,21,22(config)# station-loopback session STLB-2 service-type evc
evc2 uni uni1 cvlan 3:10
BTI SA-805,21,22(config)# station-loopback session STLB-3 service-type evc
evc3 uni uni1 cvlan 10,20
```

Related Commands

ethernet evc add EVC

ethernet uni add UNI

23.2 station-loopback session service-type acl-rule nni

Use this command to create the session for NNI loopback.

Command Syntax

station-loopback session SERVICE-ID service-type acl-rule CMAP nni NNI-NAME

Command Mode

Global configuration

Usage

SERVICE-ID should be unique in station loopback sessions.

Cannot used class-map already used on other session.

Example

This example shows how to create the session for NNI loopback.

```
BTI SA-805,21,22(config)#mac access-list mac
BTI SA-805,21,22(config-mac-acl)# permit src-mac any dest-mac host
0000.1111.2222
BTI SA-805,21,22(config-mac-acl)# exit
BTI SA-805,21,22(config)# class-map cmap
BTI SA-805,21,22(config-cmap)# match access-group mac
```

Related Commands

mac access-list NAME

ip access-list NAME

class-map NAME

23.3 station-loopback session (start|stop)

Use this command to start or stop the Station Loopback session.

Command Syntax

station-loopback session SERVICE-ID (start|stop)

Command Mode

Exec Mode

Usage

None

Example

This example shows how to start or stop the session.

```
BTI SA-805,21,22# show station-loopback brief
```

```
-----  
IDX | Session Name | Status | Interface | Rule Name  
-----
```

```
1 | STLB-ACL | Idle | nn1l | cmap  
-----
```

```
2 | STLB-1 | Idle | un1l | Loopback cvlan (2)  
-----
```

```
BTI SA-805,21,22# station-loopback session STLB-ACL start
```

```
BTI SA-805,21,22# show station-loopback session STLB-ACL
```

```
[NNI] : nn1l
```

```
CLASS-MAP-NAME [cmap]  
-----
```

```
Session Name : STLB-ACL | Status : Active
```

```
Interface : nn1l | Count : 0  
-----
```

```
Access-Group [mac]
```

```
10 permit src-mac any dest-mac host 0000.1111.2222
```

```
BTI SA-805,21,22# station-loopback session STLB-ACL stop
```

```
BTI SA-805,21,22# show station-loopback session STLB-ACL
```

```
[NNI] : nn1l
```

```
CLASS-MAP-NAME [cmap]  
-----
```

```
Session Name : STLB-ACL | Status : Idle
```

```
Interface : nn1l | Count : 0  
-----
```

```
Access-Group [mac]
```

```
10 permit src-mac any dest-mac host 0000.1111.2222
```

Related Commands

None

23.4 no station-loopback session

Use this command to delete the station loopback session.

Command Syntax

no station-loopback session SERVICE-ID

Command Mode

Global configuration

Usage

None

Example

This example shows how to delete the station loopback session.

```
BTI SA-805,21,22# show station-loopback brief
```

```
-----  
IDX |Session Name | Status | Interface | Rule Name  
-----
```

```
1 | STLB-ACL | Idle | nn1l | cmap  
-----
```

```
2 | STLB-1 | Idle | un1l | Loopback cvlan (2)  
-----
```

```
BTI SA-805,21,22# configure terminal
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
BTI SA-805,21,22(config)# no station-loopback session STLB-ACL
```

```
BTI SA-805,21,22(config)# exit
```

```
BTI SA-805,21,22 # show station-loopback brief
```

```
-----  
IDX |Session Name | Status | Interface | Rule Name  
-----
```

```
2 | STLB-1 | Idle | un1l | Loopback cvlan (2)  
-----
```

Related Commands

None

23.5 show station-loopback brief

Use this command to show station loopback summary.

Command Syntax

show station-loopback brief

Command Mode

Exec mode

Usage

None

Example

This example shows how to show station loopback summary.

```
BTI SA-805,21,22# show station-loopback brief
```

```
-----  
IDX | Session Name | Status | Interface | Rule Name  
-----  
1 | STLB-ACL | Idle | nn1 | cmap  
-----  
2 | STLB-1 | Idle | uni1 | Loopback cvlan (2)  
-----
```

Related Commands

None

23.6 show station-loopback session

Use this command to show station loopback session information.

Command Syntax

show station-loopback session SERVICE-ID

Command Mode

Exec mode

Usage

None

Example

This example shows how to show station loopback session Information.

```
BTI SA-805,21,22# show station-loopback session STLB-ACL
[NNI] : nn11
CLASS-MAP-NAME [cmap]
```

```
-----
Session Name : STLB-ACL | Status : Active
Interface : nn11 | Count : 0
-----
```

```
Access-Group [mac]
10 permit src-mac any dest-mac host 0000.1111.2222
```

Related Commands

None

23.7 clear station-loopback session count

Use this command to clear station loopback counter.

Command Syntax

clear station-loopback session SERVICE-ID count

Command Mode

Exec mode

Usage

None

Example

This example shows how to clear station loopback counter.

```
BTI SA-805,21,22# show station-loopback brief
```

```
-----  
IDX |Session Name | Status | Interface | Rule Name  
-----
```

```
1 | STLB-ACL | Idle | nn1l | cmap  
-----
```

```
2 | STLB-1 | Idle | un1l | Loopback cvlan (2)  
-----
```

```
BTI SA-805,21,22# configure terminal
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
BTI SA-805,21,22# clear station-loopback session count
```

```
BTI SA-805,21,22# show station-loopback brief
```

```
-----  
IDX |Session Name | Status | Interface | Rule Name  
-----
```

```
2 | STLB-1 | Idle | un1l | Loopback cvlan (2)  
-----
```

Related Commands

None

23.8 ethernet sat loopback session evc nni

Use this command to create the SAT Loopback session.

Command Syntax

ethernet sat loopback session SERVICE-ID evc EVC-NAME nni NNI-NAME

ethernet sat loopback session SERVICE-ID evc EVC-NAME nni NNI-NAME dest-mac
ADDRESS

Command Mode

Global configuration

Usage

Example

- Destination MAC Address is optional.
- The session without destination MAC Address can loop back the packet by svlan-id from EVC.
- Destination MAC Address format is '00xx.xxxx.xxxx' and should be unicast MAC Address.
- The session with destination MAC Address can loop back the packet by svlan-id and destination MAC Address.
- Service ID should be unique in SAT Loopback sessions.

```
BTI SA-805,21,22(config)# ethernet sat loopback session SAT-1 evc evc1 nni  
nni1
```

```
BTI SA-805,21,22(config)# ethernet sat loopback session SAT-DST evc evc1 nni  
nni1 dest-mac  
0000.1111.2222
```

Related Commands

None

23.9 ethernet sat loopback session (start|stop)

Use this command to start or stop the SAT Loopback session.

Command Syntax

ethernet sat loopback session SERVICE-ID (start|stop)

Command Mode

Exec mode

Usage

None

Example

This example shows how to start or stop the SAT Loopback session.

```
BTI SA-805,21,22# show ethernet sat loopback brief
```

```
-----  
IDX | Session Name | Status | Interface | Rule Name  
-----
```

```
1 | SAT-1 | Idle | nn11 | EVC(evcl)  
-----
```

```
2 | SAT-DST | Idle | nn11 | EVC(evcl) + dest-mac :  
| | | 0000.1111.2222  
-----
```

```
BTI SA-805,21,22# ethernet sat loopback session SAT-1 start
```

```
BTI SA-805,21,22# show ethernet sat loopback session SAT-1
```

```
[NNI] : nn11 in EVC(evcl)  
-----
```

```
Session Name : SAT-1 | Status : Active
```

```
Interface : nn11 | Count : 6  
-----
```

```
Access-Group [SAT-1]
```

```
10 permit src-mac any dest-mac any vlan 100
```

Related Commands

None

23.10 no ethernet sat loopback session

Use this command to delete the SAT loopback session.

Command Syntax

no ethernet sat loopback session SERVICE-ID

Command Mode

Global configuration

Usage

None

Example

This example shows how to delete the SAT Loopback session.

```
BTI SA-805,21,22 no ethernet sat loopback session SAT-1
BTI SA-805,21,22# show ethernet sat loopback brief
```

```
-----
IDX | Session Name | Status | Interface | Rule Name
-----
1  | SAT-1 | Idle | nn11 | EVC(evcl)
-----
2  | SAT-DST | Idle | nn11 | EVC(evcl) + dest-mac :
  | | | 0000.1111.2222
-----
```

Related Commands

None

23.11 show ethernet sat loopback brief

Use this command to show the SAT loopback summary.

Command Syntax

show ethernet sat loopback brief

Command Mode

Exec mode

Usage

None

Example

This example shows SAT Loopback brief.

```
BTI SA-805,21,22# show ethernet sat loopback brief
```

```
-----  
IDX | Session Name | Status | Interface | Rule Name  
-----
```

```
1 | SAT-1 | Idle | nn11 | EVC(evcl)  
-----
```

```
2 | SAT-DST | Idle | nn11 | EVC(evcl) + dest-mac :  
| | | 0000.1111.2222  
-----
```

```
BTI SA-805,21,22# configure terminal
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
BTI SA-805,21,22(config)# no ethernet sat loopback session SAT-1
```

```
BTI SA-805,21,22(config)# exit
```

```
BTI SA-805,21,22# show ethernet sat loopback brief
```

```
-----  
IDX | Session Name | Status | Interface | Rule Name  
-----
```

```
2 | SAT-DST | Idle | nn11 | EVC(evcl) + dest-mac :  
| | | 0000.1111.2222  
-----
```

Related Commands

None

23.12 show ethernet sat loopback session

Use this command to show the SAT loopback session information.

Command Syntax

show ethernet sat loopback session SERVICE-ID

Command Mode

Exec mode

Usage

None

Example

This example shows SAT Loopback session information.

```
BTI SA-805,21,22# show ethernet sat loopback session SAT-1
```

Related Commands

None

23.13 clear ethernet sat loopback session count

Use this command to clear SAT Loopback count.

Command Syntax

clear ethernet sat loopback session SERVICE-ID count

Command Mode

Exec mode

Usage

None

Example

This example shows SAT how to clear the SAT Loopback session count.

```
BTI SA-805,21,22# show ethernet sat loopback session SAT-1
[NNI] : nn11 in EVC(evcl)
```

```
-----
Session Name : 2 | Status : Active
Interface : nn11 | Count : 13585069
-----
```

```
Access-Group [2]
10 permit src-mac any dest-mac host 0000.1111.2222 vlan 100
BTI SA-805,21,22# clear ethernet sat loopback session SAT-1 count
BTI SA-805,21,22# show ethernet sat loopback session SAT-1
[NNI] : nn11 in EVC(evcl)
```

```
-----
Session Name : 2 | Status : Active
Interface : nn11 | Count : 0
-----
```

```
Access-Group [2]
```

Related Commands

None

24.0 RFC2544 Commands

This section covers the following topics :

- 24.1, “show ethernet rfc2544 brief”
- 24.2, “show ethernet rfc2544 evc status”
- 24.3, “show ethernet rfc2544 result”
- 24.4, “rfc2544 cos type rfc2544 cos”
- 24.5, “rfc2544 framesize”
- 24.6, “rfc2544 throughput enable”
- 24.7, “rfc2544 throughput frame-rate mbps”
- 24.8, “rfc2544 throughput oper-way”
- 24.9, “rfc2544 throughput successive-time”
- 24.10, “rfc2544 throughput duration second”
- 24.11, “rfc2544 throughput acceptable-loss”
- 24.12, “rfc2544 throughput trial times”
- 24.13, “rfc2544 frame-loss-ratio enable”
- 24.14, “rfc2544 frame-loss-ratio oper-way”
- 24.15, “rfc2544 frame-loss-ratio granularity”
- 24.16, “rfc2544 frame-loss-ratio successive-time”
- 24.17, “rfc2544 frame-loss-ratio duration seconds”
- 24.18, “rfc2544 latency enable”
- 24.19, “rfc2544 latency oper-way”

- 24.20, “rfc2544 latency duration second”
- 24.21, “ethernet rfc2544 evc start”
- 24.22, “clear ethernet rfc2544 result”

RFC2544 General

RFC2544 defines a specific set of test that vendors can use to measure and report the performance characteristics of the network device. The following applies:

- The switch supports RFC2544 for E(V)PLINE.
- RFC2544 is managed by the session. A session resource is supported and shared with Y1564. If the session is reserved by Y1564, RFC2544 cannot be performed until Y1564 is terminated.
- RFC2544 does not function when Station Loopback is operating. If RFC2544 is performed as loopback oper-way, station loopback session been performed at the remote side. Since all test traffic is loopbacked by the station loopback session, remote test session will not function. In this case, if the remote test session starts the test, local test session can receive the control packet in the Test Start Message. The ACK message from local test session, will not be sent to the remote test session as the loopback from station loopback session is at the remote side. The test sequence will be broken.
- Throughput test cannot be configured single-ended oper-way. Single-ended oper-way for throughput test requires a round-trip of the TST packet. To support single-ended, RFC2544 session can control station loopback session at the remote side. The station loopback session should classify the TST packet and the Control packet. The TST packet and Control Packet is in the same packet format as CFM but with a different opcode.

Station loopback does not support the above items.

- Latency test cannot be configured one-way oper-way.
- The RFC2544 function of the switch is implemented with the port policing function that is used for rate limit per Bridge Port. Therefore the switch does not support the non-interfering service test for other services occupied on the same port.
- The station loopback session does not support EVC(UNI) egress loopback for RFC2544 or Y1564. All packets for RFC2544 or Y1564 test are processed at OAM module before reach station loopback session.
- The available RFC2544 sessions are shown by the CLI command `show ethernet rfc2544 brief`. However, when the SAT (y.1564) session is created on the same MEP, the session is invisible on the brief lists. To shown on the lists, the SAT(Y1564) session should be removed.

24.1 show ethernet rfc2544 brief

Use this command to show RFC 2544 summary.

Command Syntax

show ethernet rfc2544 brief

Command Mode

Exec mode

Usage

This command can check RFC 2544 summary information.

Example

This example shows RFC 2544 summary.

```
BTI SA-805,21,22# show ethernet evc evc1 status
* BWP. : Bandwidth profile
```

```
-----
RFC2544 with EVC Brief Information
-----
```

No.	EVC	MEP	BWP.(Mbps)	Status
		CIR	EIR	

1	evc1	101	0	0	Idle
---	------	-----	---	---	------

```
-----
```

Related Commands

None

24.2 show ethernet rfc2544 evc status

Use this command to show RFC 2544 status.

Command Syntax

show ethernet rfc2544 evc EVC-NAME status

Command Mode

Exec mode

Usage

None

Example

This example shows how to display RFC 2544 status.

```
BTI SA-805,21,22# show ethernet evc evc1 status
[Service Configuration]
```

```
EVC[evc1]
```

```
-----
SVLAN ID:100|Service Type : EPLINE
SVLAN Pri.: 4|
NNI: nnil
UNI : unil
```

```
-----
BWP-CIR : 0 Mbps | BWP-EIR : 0 Mbps
-----
```

```
SVLAN Pri.: SVLAN Priority
```

```
[RFC2544 for EVC Configuration]
```

```
-----
MODE [-] Point to Point
-----
```

```
Test State :IDLE|VID:100
COS Mode :Manual|COS:3
L-MEP :101|R-MEP:102
LEVEL : 3|
-----
```

Related Commands

None

24.3 show ethernet rfc2544 result

Use this command to show RFC 2544 result.

Command Syntax

show ethernet rfc2544 result (current|previous)

Command Mode

Exec mode

Usage

RFC 2544 result can save 2 results (latest, previous). If current is chosen, the latest result is shown on the screen. If previous chosen, the previous result is shown on the screen.

Example

This example shows RFC 2544 result.

```
BTI SA-805,21,22# show ethernet rfc2544 result current
-----
Target EVC : evcl
Start Time : 00:22:10 Jan 01 1970 | Stop Time : 00:25:35 Jan 01 1970
-----
SVID : 100 | Service Type : EPLINE
BWP-CIR : 0 Mbps | BWP-EIR : 0 Mbps
Local-MEP : 101 | Remote-MEP : 102
LEVEL : 3 | COS : 3
-----
[Throughput Result]
-----
[FSize]:Frame Size [FR]:Frame Rate [LR]:Loss Rate [IR]:Information Rate
-----
Oper-Way : Dual-End | Duration : 5 seconds
Max. Rate : 1000.00 Mbps | S. Trial : 1
Max Trial Times : 10 Times | Acceptable Loss : 0 %
-----
FSize | 64 | 128 | 256 | 512 | 1024 | 1518
-----
Direction [NE -> FE]
-----
L1(Mbps)| 1000.00 | 1000.00 | 1000.00 | 1000.00 | 1000.00 | 1000.00
L2(Mbps)| 761.90 | 864.86 | 927.54 | 962.41 | 980.84 | 986.00
-----
FS |Trial| Traffic Load | Tx Count | Loss Count | Loss(%)
| | L1 | L2 | (Total) | (Total) |
-----
64| 1 |1000.000 Mbps| 761.904 Mbps| 7387223 | 0 | 0.000 %
128| 1 |1000.000 Mbps| 864.864 Mbps| 4205693 | 0 | 0.000 %
```

256		1		1000.000 Mbps		927.536 Mbps		2254433		0		0.000 %
512		1		1000.000 Mbps		962.406 Mbps		1169382		0		0.000 %
1024		1		1000.000 Mbps		980.842 Mbps		597744		0		0.000 %
1518		1		1000.000 Mbps		986.996 Mbps		405822		0		0.000 %

Direction [NE <- FE]

L1(Mbps)		1000.00		1000.00		1000.00		1000.00		1000.00		1000.00
L2(Mbps)		761.90		864.86		927.54		962.41		980.84		986.00

FS | Trial | Traffic Load | Tx Count | Loss Count | Loss(%)
| | L1 | L2 | (Total) | (Total) |

64		1		1000.000 Mbps		761.904 Mbps		7386846		0		0.000 %
128		1		1000.000 Mbps		864.864 Mbps		4207166		0		0.000 %
256		1		1000.000 Mbps		927.536 Mbps		2255158		0		0.000 %
512		1		1000.000 Mbps		962.406 Mbps		1169733		0		0.000 %
1024		1		1000.000 Mbps		980.842 Mbps		597881		0		0.000 %
1518		1		1000.000 Mbps		986.996 Mbps		405903		0		0.000 %

[Frame Loss Ratio Result]

Oper-Way : Dual-End | S. Trial : 1
Granularity : 10 % | Duration : 5 seconds

Direction [NE -> FE]

FS(byte) | Trial | Traffic Load | Frame Loss Ratio (%)
| | Line Rate(Info. Rate) |

64		1		1000.000(761.904)Mbps		0.000 %
128		1		1000.000(864.864)Mbps		0.000 %
256		1		1000.000(927.536)Mbps		0.000 %
512		1		1000.000(962.406)Mbps		0.000 %
1024		1		1000.000(980.842)Mbps		0.000 %
1518		1		1000.000(986.996)Mbps		0.000 %

Direction [NE <- FE]

FS(byte) | Trial | Traffic Load | Frame Loss Ratio (%)
| | Line Rate(Info. Rate) |

64		1		1000.000(761.904)Mbps		0.000 %
128		1		1000.000(864.864)Mbps		0.000 %
256		1		1000.000(927.536)Mbps		0.000 %
512		1		1000.000(962.406)Mbps		0.000 %
1024		1		1000.000(980.842)Mbps		0.000 %
1518		1		1000.000(986.996)Mbps		0.000 %

[Latency Result]

Oper-Way : Two-way | Duration : 5 seconds

Direction [NE <-> FE]

FSize | 64 | 128 | 256 | 512 | 1024 | 1518

Max (us) | 6.960 | 8.480 | 11.568 | 18.944 | 36.160 | 47.568

Min (us) | 6.656 | 7.448 | 10.256 | 15.248 | 24.928 | 31.736

Avg (us) | 6.772 | 8.000 | 10.761 | 17.584 | 29.832 | 39.040

Variations

FSize | 64 | 128 | 256 | 512 | 1024 | 1518

Max (us) | 0.304 | 1.032 | 1.312 | 3.696 | 11.232 | 15.832

Min (us) | 0.216 | 0.344 | 0.088 | 3.696 | 2.856 | 15.832

Avg (us) | 0.260 | 0.814 | 0.890 | 3.696 | 6.962 | 15.832

BTI SA-805,21,22# show ethernet rfc2544 result previous

Target EVC : evc1

Start Time : 00:05:11 Jan 01 1970 | Stop Time : 00:07:15 Jan 01 1970

SVID : 100 | Service Type : EPLINE

BWP-CIR : 0 Mbps | BWP-EIR : 0 Mbps

Local-MEP : 101 | Remote-MEP : 102

LEVEL : 3 | COS : 4

[Throughput Result]

[FSize]:Frame Size [FR]:Frame Rate [LR]:Loss Rate [IR]:Information Rate

Oper-Way : Dual-End | Duration : 5 seconds

Max. Rate : 1000.00 Mbps | S. Trial : 1

Max Trial Times : 10 Times | Acceptable Loss : 0 %

FSize | 64 | 128 | 256 | 512 | 1024 | 1518

Direction [NE -> FE]

L1(Mbps) | 1000.00 | 1000.00 | 1000.00 | 1000.00 | 1000.00 | 1000.00

L2(Mbps) | 761.90 | 864.86 | 927.54 | 962.41 | 980.84 | 986.00

FS | Trial | Traffic Load | Tx Count | Loss Count | Loss(%)

| | L1 | L2 | (Total) | (Total) |

```

64| 1 |1000.000 Mbps| 761.904 Mbps| 7385717 | 0 | 0.000 %
128| 1 |1000.000 Mbps| 864.864 Mbps| 4205299 | 0 | 0.000 %
256| 1 |1000.000 Mbps| 927.536 Mbps| 2254441 | 0 | 0.000 %
512| 1 |1000.000 Mbps| 962.406 Mbps| 1169195 | 0 | 0.000 %
1024| 1 |1000.000 Mbps| 980.842 Mbps| 597732 | 0 | 0.000 %
1518| 1 |1000.000 Mbps| 986.996 Mbps| 405820 | 0 | 0.000 %

```

Direction [NE <- FE]

```

L1(Mbps)| 1000.00 | 1000.00 | 1000.00 | 1000.00 | 1000.00 | 1000.00
L2(Mbps)| 761.90 | 864.86 | 927.54 | 962.41 | 980.84 | 986.00

```

```

FS |Trial| Traffic Load | Tx Count | Loss Count | Loss(%)
| | L1 | L2 | (Total) | (Total) |

```

```

64| 1 |1000.000 Mbps| 761.904 Mbps| 7385298 | 0 | 0.000 %
128| 1 |1000.000 Mbps| 864.864 Mbps| 4206268 | 0 | 0.000 %
256| 1 |1000.000 Mbps| 927.536 Mbps| 2253783 | 0 | 0.000 %
512| 1 |1000.000 Mbps| 962.406 Mbps| 1169056 | 0 | 0.000 %
1024| 1 |1000.000 Mbps| 980.842 Mbps| 597770 | 0 | 0.000 %
1518| 1 |1000.000 Mbps| 986.996 Mbps| 405827 | 0 | 0.000 %

```

[Frame Loss Ratio Result]

```

Oper-Way : Dual-End | S. Trial : 1
Granularity : 10 % | Duration : 5 seconds

```

Direction [NE -> FE]

```

FS(byte)|Trial| Traffic Load | Frame Loss Ratio (%)
| | Line Rate(Info. Rate) |

```

```

64 | 1| 1000.000( 761.904)Mbps | 0.000 %
128 | 1| 1000.000( 864.864)Mbps | 0.000 %
256 | 1| 1000.000( 927.536)Mbps | 0.000 %
512 | 1| 1000.000( 962.406)Mbps | 0.000 %

```

Direction [NE <- FE]

```

FS(byte)|Trial| Traffic Load | Frame Loss Ratio (%)
| | Line Rate(Info. Rate) |

```

```

64 | 1| 1000.000( 761.904)Mbps | 0.000 %
128 | 1| 1000.000( 864.864)Mbps | 0.000 %
256 | 1| 1000.000( 927.536)Mbps | 0.000 %
512 | 1| 1000.000( 962.406)Mbps | 0.000 %

```

[Latency Result]

```

Oper-Way : Two-way | Duration : 5 seconds

```

Direction [NE <-> FE]

FSize		64		128		256		512		1024		1518
-------	--	----	--	-----	--	-----	--	-----	--	------	--	------

Max (us)		0.000		0.000		0.000		0.000		0.000		0.000
----------	--	-------	--	-------	--	-------	--	-------	--	-------	--	-------

Min (us)		0.000		0.000		0.000		0.000		0.000		0.000
----------	--	-------	--	-------	--	-------	--	-------	--	-------	--	-------

Avg (us)		0.000		0.000		0.000		0.000		0.000		0.000
----------	--	-------	--	-------	--	-------	--	-------	--	-------	--	-------

Variations

FSize		64		128		256		512		1024		1518
-------	--	----	--	-----	--	-----	--	-----	--	------	--	------

Max (us)		0.000		0.000		0.000		0.000		0.000		0.000
----------	--	-------	--	-------	--	-------	--	-------	--	-------	--	-------

Min (us)		0.000		0.000		0.000		0.000		0.000		0.000
----------	--	-------	--	-------	--	-------	--	-------	--	-------	--	-------

Avg (us)		0.000		0.000		0.000		0.000		0.000		0.000
----------	--	-------	--	-------	--	-------	--	-------	--	-------	--	-------

Related Commands

None

24.4 rfc2544 cos type rfc2544 cos

Use this command to configure cos in RFC 2544.

Command Syntax

```
rfc2544 cos type (evc|manual) rfc2544 cos <0-7>
```

Command Mode

Ethernet EVC mode

Usage

RFC 2544 cos level can be configured based on svlan priority at EVC or user specified value.

As default, this value is copied from svlan priority on EVC.

Example

This example shows how to configure cos type and level.

```
BTI SA-805,21,22# show ethernet evc evc1
```

```
-----  
EVC evc1  
Service Type           : epline  
VC Type                : Point-to-Point  
SVLAN ID               : 100  
SVLAN Priority Mode     : manual  
SVLAN Priority Value    : 4  
CE-VLAN ID Preservation : Yes  
CE-VLAN CoS ID Preservation : Yes  
Maximum Number of UNI  : 2  
Number of UNI          : 1  
Number of RUNI         : 1  
Number of ENNI         : 0  
EVC MEG state          : enable  
OAM Domain Name        : jyj-test  
MEG Level              : 3  
CCM Interval           : 1sec  
Service Status         : Active  
Local UNI List -----  
    unil,  
Remote UNI List -----  
    runil02,  
INNI List -----  
    nnil,  
-----
```

```
BTI SA-805,21,22# show ethernet rfc2544 evc evc1 status  
[Service Configuration]
```

```
    EVC[evc1]
```

```

-----
SVLAN ID      :          100 | Service Type : EPLINE
SVLAN Pri.    :           4 |
NNI           : nnil
UNI           : unil
-----
BWP-CIR       :          0 Mbps | BWP-EIR      :          0 Mbps
-----
SVLAN Pri.    : SVLAN Priority

```

[RFC2544 for EVC Configuration]

```

-----
MODE [-] Point to Point
-----

```

```

Test State    :          IDLE | VID          :          100
COS Mode      : Copy From EVC | COS          :           0
L-MEP         :          101 | R-MEP        :          102
LEVEL         :           3 |
-----

```

```

BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet evc evc1
BTI SA-805,21,22(config-evc)# rfc2544 cos type manual
BTI SA-805,21,22(config-evc)# rfc2544 cos 3
BTI SA-805,21,22(config-evc)# end
BTI SA-805,21,22# show ethernet rfc2544 evc evc1 status
[Service Configuration]

```

EVC[evc1]

```

-----
SVLAN ID      :          100 | Service Type : EPLINE
SVLAN Pri.    :           4 |
NNI           : nnil
UNI           : unil
-----
BWP-CIR       :          0 Mbps | BWP-EIR      :          0 Mbps
-----
SVLAN Pri.    : SVLAN Priority

```

[RFC2544 for EVC Configuration]

```

-----
MODE [-] Point to Point
-----

```

```

Test State    :          IDLE | VID          :          100
COS Mode      :          Manual | COS          :           3
L-MEP         :          101 | R-MEP        :          102
LEVEL         :           3 |
-----

```

Related Commands

ethernet evc add EVC

24.5 rfc2544 framesize

Use this command to configure test frame size for RFC 2544.

Command Syntax

rfc2544 framesize {size1 SIZE|size2 SIZE|size3 SIZE|size4 SIZE|size5 SIZE|size6 SIZE}

Command Mode

Ethernet EVC mode

Usage

The RFC 2544 has 6 test frame size. They can be configured to 0 or 64 up to 9600 byte. If it set to 0, it means doesn't performed test.

Example

This example shows how to configure test frame size.

```
BTI SA-805,21,22(config-evc)# rfc2544 framesize size1 0 size2 64 size3 1518  
size4 5000 size5 8000  
size6 9600
```

Related Commands

None

24.6 rfc2544 throughput enable

Use this command to configure throughput test status.

Command Syntax

rfc2544 throughput enable

no rfc2544 throughput enable

Command Mode

Ethernet EVC mode

Usage

In RFC 2544, the throughput test can be enabled or disabled. In RFC 2544, all tests are based on throughput test. Therefore, the throughput test should be always enabled.

Example

This example shows how to configure the throughput test enable.

```
BTI SA-805,21,22# show ethernet evc evc1 config
[TEST Frame Size]
```

```
-----
Index | 1 | 2 | 3 | 4 | 5 | 6
-----
```

```
Byte | 64 | 128 | 256 | 512 | 1024 | 1518
-----
```

```
[Throughput Config]
```

```
-----
[FSize]:Frame Size [FR]:Frame Rate [LR]:Loss Rate [IR]:Information Rate
-----
```

```
Oper-Way : Dual-End | Duration : 5 seconds
Max. Rate : 1000.00 Mbps | S. Trial : 1
Max Trial Times : 10 Times | Acceptable Loss : 0 %
-----
```

```
[Frame Loss Ratio Config]
```

```
-----
Oper-Way : Dual-End | S. Trial : 1
Granularity : 10 % | Duration : 5 seconds
-----
```

```
[Latency Config]
```

```
-----
Oper-Way : Two-way | Duration : 5 seconds
-----
```

```
BTI SA-805,21,22# configure terminal
BTI SA-805,21,22(config)# ethernet evc evc1
BTI SA-805,21,22(config-evc)# no rfc2544 throughput enable
BTI SA-805,21,22(config-evc)# end
BTI SA-805,21,22# show ethernet rfc2544 evc evc1 config
```

[TEST Frame Size]

Index | 1 | 2 | 3 | 4 | 5 | 6

Byte | 64 | 128 | 256 | 512 | 1024 | 1518

[Frame Loss Ratio Config]

Oper-Way : Dual-End | S. Trial : 1
Granularity : 10 % | Duration : 5 seconds

[Latency Config]

Oper-Way : Two-way | Duration : 5 seconds

Related Commands

None

24.7 rfc2544 throughput frame-rate mbps

Use this command to configure throughput frame rate.

Command Syntax

```
rfc2544 throughput frame-rate mbps <1-1000>
no rfc2544 throughput frame-rate
```

Command Mode

Ethernet EVC mode

Usage

Throughput test can configure the throughput test rate to 1 Mbps up to 1000Mbps. As default, throughput rate is copied from Bandwidth profile CIR and EIR. If EVC has no Bandwidth profile or CIR and EIR are zero, throughput rate is set as 1000 Mbps.

If enter the CLI 'no rfc2544 throughput frame-rate', throughput rate is copied from Bandwidth profile. If EVC doesn't have bandwidth profile or CIR and EIR are 0, throughput rate is set to 1000 Mbps.

Example

This example shows how to configure throughput test frame rate.

```
BTI SA-805,21,22# show ethernet evc evc1 status
[Service Configuration]
EVC[evc1]
-----
SVLAN ID : 100 | Service Type : EPLINE
SVLAN Pri. : 4 |
NNI : nn1l
UNI : un1l
-----
BWP-CIR : 400 Mbps | BWP-EIR : 100 Mbps
-----
SVLAN Pri. : SVLAN Priority
[RFC2544 for EVC Configuration]
-----
MODE [-] Point to Point
-----
Test State : IDLE | VID : 100
COS Mode : Manual | COS : 3
L-MEP : 101 | R-MEP : 102
LEVEL : 3 |
-----
BTI SA-805,21,22# show ethernet rfc2544 evc evc1 config
[TEST Frame Size]
-----
```

Index | 1 | 2 | 3 | 4 | 5 | 6

Byte | 64 | 128 | 256 | 512 | 1024 | 1518

[Throughput Config]

[FSize]:Frame Size [FR]:Frame Rate [LR]:Loss Rate [IR]:Information Rate

Oper-Way : Dual-End | Duration : 5 seconds

Max. Rate : 500.00 Mbps | S. Trial : 1

Max Trial Times : 10 Times | Acceptable Loss : 0 %

[Frame Loss Ratio Config]

Oper-Way : Dual-End | S. Trial : 1

Granularity : 10 % | Duration : 5 seconds

[Latency Config]

Oper-Way : Two-way | Duration : 5 seconds

BTI SA-805,21,22# configure terminal

Enter configuration commands, one per line. End with CNTL/Z.

BTI SA-805,21,22(config)# ethernet evc evc1

BTI SA-805,21,22(config-evc)# rfc2544 throughput frame-rate mbps 600

BTI SA-805,21,22(config-evc)# end

BTI SA-805,21,22# show ethernt evc evc1 config

[TEST Frame Size]

Index | 1 | 2 | 3 | 4 | 5 | 6

Byte | 64 | 128 | 256 | 512 | 1024 | 1518

[Throughput Config]

[FSize]:Frame Size [FR]:Frame Rate [LR]:Loss Rate [IR]:Information Rate

Oper-Way : Dual-End | Duration : 5 seconds

Max. Rate : 600.00 Mbps | S. Trial : 1

Max Trial Times : 10 Times | Acceptable Loss : 0 %

[Frame Loss Ratio Config]

Oper-Way : Dual-End | S. Trial : 1

Granularity : 10 % | Duration : 5 seconds

[Latency Config]

Oper-Way : Two-way | Duration : 5 seconds

BTI SA-805,21,22# configure terminal

Enter configuration commands, one per line. End with CNTL/Z.

BTI SA-805,21,22(config)# ethernet evc evc1

BTI SA-805,21,22(config-evc)# no rfc2544 throughput frame-rate

BTI SA-805,21,22(config-evc)# end

BTI SA-805,21,22# show ethernet evc evc1 config

[TEST Frame Size]

Index | 1 | 2 | 3 | 4 | 5 | 6

Byte | 64 | 128 | 256 | 512 | 1024 | 1518

[Throughput Config]

[FSize]:Frame Size [FR]:Frame Rate [LR]:Loss Rate [IR]:Information Rate

Oper-Way : Dual-End | Duration : 5 seconds

Max. Rate : 500.00 Mbps | S. Trial : 1

Max Trial Times : 10 Times | Acceptable Loss : 0 %

[Frame Loss Ratio Config]

Oper-Way : Dual-End | S. Trial : 1

Granularity : 10 % | Duration : 5 seconds

[Latency Config]

Oper-Way : Two-way | Duration : 5 seconds

Related Commands

ethernet bwp add bwp

cir CIR cbs CBS eir EIR ebs EBS

ethernet epu EPU-NAME bandwidth-profile ingress BWP

24.8 rfc2544 throughput oper-way

Use this command to configure throughput test oper-way.

Command Syntax

rfc2544 throughput oper-way (dual-ended|loopback)

Command Mode

Throughput test oper-way can be configured dual-ended or loopback oper-way. Default set is dual-ended. Throughput test oper-way can be configured dual-ended or loopback oper-way. Default set is dual-ended.

Usage

This example shows how to configure throughput test oper-way.

Example

```
BTI SA-805,21,22# show ethernet evc evc1 config
[TEST Frame Size]
-----
Index | 1 | 2 | 3 | 4 | 5 | 6
-----
Byte | 64 | 128 | 256 | 512 | 1024 | 1518
-----
[Throughput Config]
-----
[FSize]:Frame Size [FR]:Frame Rate [LR]:Loss Rate [IR]:Information Rate
-----
Oper-Way : Dual-End | Duration : 5 seconds
Max. Rate : 500.00 Mbps | S. Trial : 1
Max Trial Times : 10 Times | Acceptable Loss : 0 %
-----
[Frame Loss Ratio Config]
-----
Oper-Way : Dual-End | S. Trial : 1
Granularity : 10 % | Duration : 5 seconds
-----
[Latency Config]
-----
Oper-Way : Two-way | Duration : 5 seconds
-----
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet evc evc1
BTI SA-805,21,22(config-evc)# rfc2544 throughput oper-way loopback
BTI SA-805,21,22(config-evc)# end
BTI SA-805,21,22# show ethernet rfc2544 evc evc1 config
[TEST Frame Size]
```

Index | 1 | 2 | 3 | 4 | 5 | 6

Byte | 64 | 128 | 256 | 512 | 1024 | 1518

[Throughput Config]

[FSize]:Frame Size [FR]:Frame Rate [LR]:Loss Rate [IR]:Information Rate

Oper-Way : Loopback | Duration : 5 seconds
Max. Rate : 500.00 Mbps | S. Trial : 1
Max Trial Times : 10 Times | Acceptable Loss : 0 %

[Frame Loss Ratio Config]

Oper-Way : Dual-End | S. Trial : 1
Granularity : 10 % | Duration : 5 seconds

[Latency Config]

Oper-Way : Two-way | Duration : 5 seconds

Related Commands

None

24.9 rfc2544 throughput successive-time

Use this command to configure throughput test successive times.

Command Syntax

rfc2544 throughput successive-times <1-2>

Command Mode

Ethernet EVC mode

Usage

none

Example

This example shows how to configure throughput test successive times.

```
BTI SA-805,21,22# show ethernet rfc2544 evc evc1 config
[TEST Frame Size]
```

Index	1	2	3	4	5	6
Byte	64	128	256	512	1024	1518

```
[Throughput Config]
```

```
[FSize]:Frame Size  [FR]:Frame Rate  [LR]:Loss Rate [IR]:Information Rate
```

```
Oper-Way      :      Loopback | Duration      :      5 seconds
Max. Rate     :      500.00 Mbps | S. Trial      :      1
Max Trial Times :      10 Times | Acceptable Loss :      0 %
```

```
[Frame Loss Ratio Config]
```

```
Oper-Way      :      Dual-End | S. Trial      :      1
Granularity   :      10 %   | Duration     :      5 seconds
```

```
[Latency Config]
```

```
Oper-Way      :      Two-way | Duration      :      5 seconds
```

```
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
```

```
BTI SA-805,21,22(config)# ethernet evc evc1
BTI SA-805,21,22(config-evc)# rfc2544 throughput successive-times 2
BTI SA-805,21,22(config-evc)# end
BTI SA-805,21,22# show ethernet rfc2544 evc evc1 config
[TEST Frame Size]
```

Index		1		2		3		4		5		6
Byte		64		128		256		512		1024		1518

[Throughput Config]

[FSize]:Frame Size	[FR]:Frame Rate	[LR]:Loss Rate	[IR]:Information Rate
--------------------	-----------------	----------------	-----------------------

Oper-Way	:	Loopback		Duration	:	5 seconds
Max. Rate	:	500.00 Mbps		S. Trial	:	2
Max Trial Times	:	10 Times		Acceptable Loss	:	0 %

[Frame Loss Ratio Config]

Oper-Way	:	Dual-End		S. Trial	:	1
Granularity	:	10 %		Duration	:	5 seconds

[Latency Config]

Oper-Way	:	Two-way		Duration	:	5 seconds
----------	---	---------	--	----------	---	-----------

Related Commands

None

24.10 rfc2544 throughput duration second

Use this command to configure throughput test duration.

Command Syntax

rfc2544 throughput duration seconds <5-60>

Command Mode

Ethernet EVC mode

Usage

none

Example

This example shows how to configure throughput test duration.

```
BTI SA-805,21,22# show ethernet rfc2544 evc evc1 config
[TEST Frame Size]
```

Index	1	2	3	4	5	6
Byte	64	128	256	512	1024	1518

```
[Throughput Config]
```

```
[FSize]:Frame Size  [FR]:Frame Rate  [LR]:Loss Rate [IR]:Information Rate
```

```
Oper-Way      :      Loopback | Duration      :      5 seconds
Max. Rate     :      500.00 Mbps | S. Trial       :      2
Max Trial Times :      10 Times | Acceptable Loss :      0 %
```

```
[Frame Loss Ratio Config]
```

```
Oper-Way      :      Dual-End | S. Trial       :      1
Granularity   :      10 %   | Duration      :      5 seconds
```

```
[Latency Config]
```

```
Oper-Way      :      Two-way | Duration      :      5 seconds
```

```
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
```

```
BTI SA-805,21,22(config)# ethernet evc evc1
BTI SA-805,21,22(config-evc)# rfc2544 throughput duration seconds 60
BTI SA-805,21,22(config-evc)# end
BTI SA-805,21,22# show ethernet rfc2544 evc evc1 config
[TEST Frame Size]
```

Index		1		2		3		4		5		6
Byte		64		128		256		512		1024		1518

[Throughput Config]

[FSize]:Frame Size	[FR]:Frame Rate	[LR]:Loss Rate	[IR]:Information Rate
--------------------	-----------------	----------------	-----------------------

Oper-Way	:	Loopback		Duration	:	60 Secs.
Max. Rate	:	500.00 Mbps		S. Trial	:	2
Max Trial Times	:	10 Times		Acceptable Loss	:	0 %

[Frame Loss Ratio Config]

Oper-Way	:	Dual-End		S. Trial	:	1
Granularity	:	10 %		Duration	:	5 seconds

[Latency Config]

Oper-Way	:	Two-way		Duration	:	5 seconds
----------	---	---------	--	----------	---	-----------

Related Commands

None

24.11 rfc2544 throughput acceptable-loss

Use this command to configure throughput test acceptable loss.

Command Syntax

rfc2544 throughput acceptable-loss <0-10>

Command Mode

Ethernet EVC mode

Usage

None

Example

```
BTI SA-805,21,22# show ethernet rfc2544 evc evc1 config
[TEST Frame Size]
```

Index		1		2		3		4		5		6
Byte		64		128		256		512		1024		1518

```
[Throughput Config]
```

```
[FSize]:Frame Size  [FR]:Frame Rate  [LR]:Loss Rate [IR]:Information Rate
```

```
Oper-Way           :           Loopback | Duration           :           60 Secs.
Max. Rate          :           500.00 Mbps | S. Trial           :           2
Max Trial Times     :           10 Times | Acceptable Loss   :           0 %
```

```
[Frame Loss Ratio Config]
```

```
Oper-Way           :           Dual-End | S. Trial           :           1
Granularity        :           10 % | Duration          :           5 seconds
```

```
[Latency Config]
```

```
Oper-Way           :           Two-way | Duration           :           5 seconds
```

```
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
```

```
BTI SA-805,21,22(config)# ethernet evc evc1
BTI SA-805,21,22(config-evc)# rfc2544 throughput acceptable-loss 4BTI
SA-805,21,22(config-evc)# end
BTI SA-805,21,22# show ethernet rfc2544 evc evc1 config
[TEST Frame Size]
```

Index		1		2		3		4		5		6
Byte		64		128		256		512		1024		1518

[Throughput Config]

[FSize]:Frame Size	[FR]:Frame Rate	[LR]:Loss Rate	[IR]:Information Rate
Oper-Way	:	Loopback	Duration : 60 Secs.
Max. Rate	:	500.00 Mbps	S. Trial : 2
Max Trial Times	:	10 Times	Acceptable Loss : 4 %

[Frame Loss Ratio Config]

Oper-Way	:	Dual-End	S. Trial : 1
Granularity	:	10 %	Duration : 5 seconds

[Latency Config]

Oper-Way	:	Two-way	Duration : 5 seconds
----------	---	---------	----------------------

Related Commands

rfc2544 latency enable

24.12 rfc2544 throughput trial times

Use this command to configure throughput test maximum trial times.

Command Syntax

rfc2544 throughput trial times <5-20>

Command Mode

Ethernet EVC mode

Usage

None

Example

This example shows how to configure throughput test maximum trial times.

```
BTI SA-805,21,22# show ethernet rfc2544 evc evc1 config
[TEST Frame Size]
```

Index	1	2	3	4	5	6
Byte	64	128	256	512	1024	1518

```
[Throughput Config]
```

```
[FSize]:Frame Size  [FR]:Frame Rate  [LR]:Loss Rate [IR]:Information Rate
```

```
Oper-Way      :      Loopback | Duration      :      60 Secs.
Max. Rate     :      500.00 Mbps | S. Trial      :      2
Max Trial Times :      10 Times | Acceptable Loss :      4 %
```

```
[Frame Loss Ratio Config]
```

```
Oper-Way      :      Dual-End | S. Trial      :      1
Granularity   :      10 % | Duration     :      5 seconds
```

```
[Latency Config]
```

```
Oper-Way      :      Two-way | Duration     :      5 seconds
```

```
BTI SA-805,21,22# configure terminal
```

Enter configuration commands, one per line. End with CNTL/Z.

BTI SA-805,21,22(config)# ethernet evc evc1

BTI SA-805,21,22(config-evc)# rfc2544 throughput acceptable-loss 4

BTI SA-805,21,22(config-evc)# end

BTI SA-805,21,22# show ethernet rfc2544 evc evc1 config

[TEST Frame Size]

Index		1		2		3		4		5		6
Byte		64		128		256		512		1024		1518

[Throughput Config]

[FSize]:Frame Size [FR]:Frame Rate [LR]:Loss Rate [IR]:Information Rate

Oper-Way	:	Loopback		Duration	:	60 Secs.
Max. Rate	:	500.00 Mbps		S. Trial	:	2
Max Trial Times	:	20 Times		Acceptable Loss	:	4 %

[Frame Loss Ratio Config]

Oper-Way	:	Dual-End		S. Trial	:	1
Granularity	:	10 %		Duration	:	5 seconds

[Latency Config]

Oper-Way	:	Two-way		Duration	:	5 seconds
----------	---	---------	--	----------	---	-----------

Related Commands

None

24.13 rfc2544 frame-loss-ratio enable

Use this command to configure frame loss ratio test.

Command Syntax

rfc2544 frame-loss-ratio enable

no rfc2544 frame-loss-ratio enable

Command Mode

Ethernet EVC mode

Usage

None

Example

```
BTI SA-805,21,22# show ethernet rfc2544 evc evc1 config
[TEST Frame Size]
```

Index	1	2	3	4	5	6
Byte	64	128	256	512	1024	1518

```
[Throughput Config]
```

```
[FSize]:Frame Size  [FR]:Frame Rate  [LR]:Loss Rate [IR]:Information Rate
```

```
Oper-Way      :      Loopback | Duration      :      60 Secs.
Max. Rate     :      500.00 Mbps | S. Trial       :      2
Max Trial Times :      10 Times  | Acceptable Loss :      4 %
```

```
[Frame Loss Ratio Config]
```

```
Oper-Way      :      Dual-End  | S. Trial       :      1
Granularity    :      10 %    | Duration      :      5 seconds
```

```
[Latency Config]
```

```
Oper-Way      :      Two-way   | Duration      :      5 seconds
```

```
BTI SA-805,21,22# configure terminal
```

Enter configuration commands, one per line. End with CNTL/Z.

BTI SA-805,21,22(config)# ethernet evc evc1

BTI SA-805,21,22(config-evc)# **no rfc2544 frame-loss-ratio enable**BTI

SA-805,21,22(config-evc)# end

BTI SA-805,21,22# show ethernet rfc2544 evc evc1 config

[TEST Frame Size]

Index		1		2		3		4		5		6
Byte		64		128		256		512		1024		1518

[Throughput Config]

[FSize]:Frame Size [FR]:Frame Rate [LR]:Loss Rate [IR]:Information Rate

Oper-Way	:	Loopback		Duration	:	60 Secs.
Max. Rate	:	500.00 Mbps		S. Trial	:	2
Max Trial Times	:	20 Times		Acceptable Loss	:	4 %

[Latency Config]

Oper-Way	:	Two-way		Duration	:	5 seconds
----------	---	---------	--	----------	---	-----------

Related Commands

None

24.14 rfc2544 frame-loss-ratio oper-way

Use this command to configure frame loss ratio test oper-way.

Command Syntax

rfc2544 frame-loss-ratio oper-way (single-ended|dual-ended|loopback)

Command Mode

Ethernet EVC mode

Usage

None

Example

This example shows how to configure frame loss ratio test oper-way.

```
BTI SA-805,21,22# show ethernet rfc2544 evc evc1 config
[TEST Frame Size]
```

Index	1	2	3	4	5	6
Byte	64	128	256	512	1024	1518

```
[Throughput Config]
```

```
[FSize]:Frame Size  [FR]:Frame Rate  [LR]:Loss Rate [IR]:Information Rate
```

```
Oper-Way      :      Loopback | Duration      :      60 Secs.
Max. Rate     :      500.00 Mbps | S. Trial       :      2
Max Trial Times :      10 Times | Acceptable Loss :      4 %
```

```
[Frame Loss Ratio Config]
```

```
Oper-Way      :      Dual-End | S. Trial       :      1
Granularity    :      10 %   | Duration      :      5 seconds
```

```
[Latency Config]
```

```
Oper-Way      :      Two-way | Duration      :      5 seconds
```

```
BTI SA-805,21,22# configure terminal
```

Enter configuration commands, one per line. End with CNTL/Z.

BTI SA-805,21,22(config)# ethernet evc evc1

BTI SA-805,21,22(config-evc)# **rfc2544 frame-loss-ratio oper-way loopback**BTI

SA-805,21,22(config-evc)# end

BTI SA-805,21,22# show ethernet rfc2544 evc evc1 config

[TEST Frame Size]

Index		1		2		3		4		5		6
Byte		64		128		256		512		1024		1518

[Throughput Config]

[FSize]:Frame Size [FR]:Frame Rate [LR]:Loss Rate [IR]:Information Rate

Oper-Way	:	Loopback		Duration	:	60 Secs.
Max. Rate	:	500.00 Mbps		S. Trial	:	2
Max Trial Times	:	20 Times		Acceptable Loss	:	4 %

[Frame Loss Ratio Config]

Oper-Way	:	Loopback		S. Trial	:	1
Granularity	:	10 %		Duration	:	5 seconds

[Latency Config]

Oper-Way	:	Two-way		Duration	:	5 seconds
----------	---	---------	--	----------	---	-----------

Related Commands

None

24.15 rfc2544 frame-loss-ratio granularity

Use this command to configure frame loss ratio test granularity.

Command Syntax

rfc2544 frame-loss-ratio granularity <1-10>

Command Mode

Ethernet EVC mode

Usage

None

Example

```
BTI SA-805,21,22# show ethernet rfc2544 evc evc1 config
[TEST Frame Size]
```

Index		1		2		3		4		5		6
Byte		64		128		256		512		1024		1518

```
[Throughput Config]
```

```
[FSize]:Frame Size  [FR]:Frame Rate  [LR]:Loss Rate [IR]:Information Rate
```

```
Oper-Way          :          Loopback | Duration          :          60 Secs.
Max. Rate          :          500.00 Mbps | S. Trial           :          2
Max Trial Times     :          10 Times | Acceptable Loss   :          4 %
```

```
[Frame Loss Ratio Config]
```

```
Oper-Way          :          Loopback | S. Trial           :          1
Granularity        :          10 % | Duration          :          5 seconds
```

```
[Latency Config]
```

```
Oper-Way          :          Two-way | Duration          :          5 seconds
```

```
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet evc evc1
```

```
BTI SA-805,21,22(config-evc)# rfc2544 frame-loss-ratio granularity 6
```

```
BTI SA-805,21,22(config-evc)# end
```

```
BTI SA-805,21,22# show ethernet rfc2544 evc evc1 config
```

```
[TEST Frame Size]
```

Index		1		2		3		4		5		6
Byte		64		128		256		512		1024		1518

```
[Throughput Config]
```

```
[FSize]:Frame Size [FR]:Frame Rate [LR]:Loss Rate [IR]:Information Rate
```

```
Oper-Way          :          Loopback | Duration          :          60 Secs.
Max. Rate          :          500.00 Mbps | S. Trial           :          2
Max Trial Times     :          20 Times | Acceptable Loss   :          4 %
```

```
[Frame Loss Ratio Config]
```

```
Oper-Way          :          Loopback | S. Trial           :          1
Granularity        :          6 % | Duration          :          5 seconds
```

```
[Latency Config]
```

```
Oper-Way          :          Two-way | Duration          :          5 seconds
```

Related Commands

None

24.16 rfc2544 frame-loss-ratio successive-time

Use this command to configure frame loss ratio test successive times.

Command Syntax

rfc2544 frame-loss-ratio successive-times <1-2>

Command Mode

Ethernet EVC mode

Usage

None

Example

This example shows how to configure frame loss ratio test for successive times.

```
BTI SA-805,21,22# show ethernet rfc2544 evc evc1 config
[TEST Frame Size]
```

Index	1	2	3	4	5	6
Byte	64	128	256	512	1024	1518

```
[Throughput Config]
```

```
[FSize]:Frame Size  [FR]:Frame Rate  [LR]:Loss Rate  [IR]:Information Rate
```

```
Oper-Way      :      Loopback | Duration      :      60 Secs.
Max. Rate     :      500.00 Mbps | S. Trial      :      2
Max Trial Times :      20 Times | Acceptable Loss :      4 %
```

```
[Frame Loss Ratio Config]
```

```
Oper-Way      :      Loopback | S. Trial      :      1
Granularity   :      6 %    | Duration     :      5 seconds
```

```
[Latency Config]
```

```
Oper-Way      :      Two-way | Duration      :      5 seconds
```

```
BTI SA-805,21,22# configure terminal
```

Enter configuration commands, one per line. End with CNTL/Z.

BTI SA-805,21,22(config)# ethernet evc evc1

BTI SA-805,21,22(config-evc)# rfc2544 frame-loss-ratio successive-times 2

BTI SA-805,21,22(config-evc)# end

BTI SA-805,21,22# show ethernet rfc2544 evc evc1 config

[TEST Frame Size]

Index		1		2		3		4		5		6
Byte		64		128		256		512		1024		1518

[Throughput Config]

[FSize]:Frame Size [FR]:Frame Rate [LR]:Loss Rate [IR]:Information Rate

Oper-Way	:	Loopback		Duration	:	60 Secs.
Max. Rate	:	500.00 Mbps		S. Trial	:	2
Max Trial Times	:	20 Times		Acceptable Loss	:	4 %

[Frame Loss Ratio Config]

Oper-Way	:	Loopback		S. Trial	:	2
Granularity	:	6 %		Duration	:	5 seconds

[Latency Config]

Oper-Way	:	Two-way		Duration	:	5 seconds
----------	---	---------	--	----------	---	-----------

Related Commands

None

24.17 rfc2544 frame-loss-ratio duration seconds

Use this command to configure frame loss ratio test duration.

Command Syntax

rfc2544 frame-loss-ratio duration seconds <5-60>

Command Mode

Ethernet EVC mode

Usage

None

Example

This example shows how to configure frame loss ratio test duration.

```
BTI SA-805,21,22# show ethernet rfc2544 evc evc1 config
[TEST Frame Size]
```

Index	1	2	3	4	5	6
Byte	64	128	256	512	1024	1518

```
[Throughput Config]
```

```
[FSize]:Frame Size  [FR]:Frame Rate  [LR]:Loss Rate  [IR]:Information Rate
```

```
Oper-Way      :      Loopback | Duration      :      60 Secs.
Max. Rate     :      500.00 Mbps | S. Trial       :      2
Max Trial Times :      20 Times  | Acceptable Loss :      4 %
```

```
[Frame Loss Ratio Config]
```

```
Oper-Way      :      Loopback | S. Trial       :      2
Granularity   :      6 %     | Duration      :      5 seconds
```

```
[Latency Config]
```

```
Oper-Way      :      Two-way  | Duration      :      5 seconds
```

```
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
```

```
BTI SA-805,21,22(config)# ethernet evc evc1
BTI SA-805,21,22(config-evc)# rfc2544 frame-loss-ratio duration seconds 60
BTI SA-805,21,22(config-evc)# end
BTI SA-805,21,22# show ethernet rfc2544 evc evc1 config
[TEST Frame Size]
```

Index		1		2		3		4		5		6
Byte		64		128		256		512		1024		1518

[Throughput Config]

[FSize]:Frame Size	[FR]:Frame Rate	[LR]:Loss Rate	[IR]:Information Rate
Oper-Way	:	Loopback	Duration : 60 Secs.
Max. Rate	:	500.00 Mbps	S. Trial : 2
Max Trial Times	:	20 Times	Acceptable Loss : 4 %

[Frame Loss Ratio Config]

Oper-Way	:	Loopback	S. Trial : 2
Granularity	:	6 %	Duration : 60 Secs.

[Latency Config]

Oper-Way	:	Two-way	Duration : 5 seconds
----------	---	---------	----------------------

Related Commands

None

24.18 rfc2544 latency enable

Use this command to configure the latency test status.

Command Syntax

[no] rfc2544 latency enable

Command Mode

Ethernet EVC mode

Usage

The Latency test is performed with the throughput test result. If the throughput test result shows a loss, the latency test does not function. To permit the latency test to function, configure the acceptable loss for throughput test using the CLI command `rfc2544 throughput acceptable-loss`.

Example

```
BTI SA-805,21,22# show ethernet rfc2544 evc evc1 config
[TEST Frame Size]
```

Index	1	2	3	4	5	6
Byte	64	128	256	512	1024	1518

```
[Throughput Config]
```

```
[FSize]:Frame Size  [FR]:Frame Rate  [LR]:Loss Rate [IR]:Information Rate
```

```
Oper-Way      :      Loopback | Duration      :      60 Secs.
Max. Rate     :      500.00 Mbps | S. Trial      :      2
Max Trial Times :      20 Times | Acceptable Loss :      4 %
```

```
[Frame Loss Ratio Config]
```

```
Oper-Way      :      Loopback | S. Trial      :      2
Granularity   :      6 %    | Duration     :      60 Secs.
```

```
[Latency Config]
```

```
Oper-Way      :      Two-way | Duration     :      5 seconds
```

```
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
BTI SA-805,21,22(config)# ethernet evc evc1
BTI SA-805,21,22(config-evc)# no rfc2544 latency enableBTI
SA-805,21,22(config-evc)# end
BTI SA-805,21,22# show ethernet rfc2544 evc evc1 config
[TEST Frame Size]
```

Index		1		2		3		4		5		6
Byte		64		128		256		512		1024		1518

[Throughput Config]

[FSize]:Frame Size	[FR]:Frame Rate	[LR]:Loss Rate	[IR]:Information Rate
Oper-Way	:	Loopback	Duration : 60 Secs.
Max. Rate	:	500.00 Mbps	S. Trial : 2
Max Trial Times	:	20 Times	Acceptable Loss : 4 %

[Frame Loss Ratio Config]

Oper-Way	:	Loopback	S. Trial : 2
Granularity	:	6 %	Duration : 60 Secs.

Related Commands

rfc2544 throughput acceptable-loss

24.19 rfc2544 latency oper-way

Use this command to configure latency test oper-way.

Command Syntax

rfc2544 latency oper-way (two-way|loopback)

Command Mode

Ethernet EVC mode

Usage

None

Example

This example shows how to configure latency oper-way.

```
BTI SA-805,21,22# show ethernet rfc2544 evc evc1 config
[TEST Frame Size]
```

Index	1	2	3	4	5	6
Byte	64	128	256	512	1024	1518

```
[Throughput Config]
```

```
[FSize]:Frame Size  [FR]:Frame Rate  [LR]:Loss Rate [IR]:Information Rate
```

```
Oper-Way           :      Loopback | Duration           :      60 Secs.
Max. Rate           :      500.00 Mbps | S. Trial            :      2
Max Trial Times      :      20 Times | Acceptable Loss    :      4 %
```

```
[Frame Loss Ratio Config]
```

```
Oper-Way           :      Loopback | S. Trial            :      2
Granularity         :      6 % | Duration           :      60 Secs.
```

```
[Latency Config]
```

```
Oper-Way           :      Two-way | Duration           :      5 seconds
```

```
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
```

```
BTI SA-805,21,22(config)# ethernet evc evc1
BTI SA-805,21,22(config-evc)# rfc2544 latency oper-way loopback
BTI SA-805,21,22(config-evc)# end
BTI SA-805,21,22# show ethernet rfc2544 evc evc1 config
[TEST Frame Size]
```

Index		1		2		3		4		5		6
Byte		64		128		256		512		1024		1518

[Throughput Config]

[FSize]:Frame Size	[FR]:Frame Rate	[LR]:Loss Rate	[IR]:Information Rate
--------------------	-----------------	----------------	-----------------------

Oper-Way	:	Loopback		Duration	:	60 Secs.
Max. Rate	:	500.00 Mbps		S. Trial	:	2
Max Trial Times	:	20 Times		Acceptable Loss	:	4 %

[Frame Loss Ratio Config]

Oper-Way	:	Loopback		S. Trial	:	2
Granularity	:	6 %		Duration	:	60 Secs.

[Latency Config]

Oper-Way	:	Loopback		Duration	:	5 seconds
----------	---	----------	--	----------	---	-----------

Related Commands

None

24.20 rfc2544 latency duration second

Use this command to configure latency test duration.

Command Syntax

rfc2544 latency duration seconds <5-60>

Command Mode

Ethernet EVC mode

Usage

None

Example

This example shows how to configure latency duration.

```
BTI SA-805,21,22# show ethernet rfc2544 evc evc1 config
[TEST Frame Size]
```

Index	1	2	3	4	5	6
Byte	64	128	256	512	1024	1518

```
[Throughput Config]
```

```
[FSize]:Frame Size  [FR]:Frame Rate  [LR]:Loss Rate [IR]:Information Rate
```

```
Oper-Way      :      Loopback | Duration      :      60 Secs.
Max. Rate     :      500.00 Mbps | S. Trial       :      2
Max Trial Times :      20 Times  | Acceptable Loss :      4 %
```

```
[Frame Loss Ratio Config]
```

```
Oper-Way      :      Loopback | S. Trial       :      2
Granularity    :      6 %     | Duration      :      60 Secs.
```

```
[Latency Config]
```

```
Oper-Way      :      Loopback | Duration      :      5 seconds
```

```
BTI SA-805,21,22# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
```

```
BTI SA-805,21,22(config)# ethernet evc evc1
BTI SA-805,21,22(config-evc)# rfc2544 latency duration seconds 60
BTI SA-805,21,22(config-evc)# end
BTI SA-805,21,22# show ethernet rfc2544 evc evc1 config
[TEST Frame Size]
```

Index		1		2		3		4		5		6
Byte		64		128		256		512		1024		1518

[Throughput Config]

[FSize]:Frame Size	[FR]:Frame Rate	[LR]:Loss Rate	[IR]:Information Rate
Oper-Way	:	Loopback	Duration : 60 Secs.
Max. Rate	:	500.00 Mbps	S. Trial : 2
Max Trial Times	:	20 Times	Acceptable Loss : 4 %

[Frame Loss Ratio Config]

Oper-Way	:	Loopback	S. Trial : 2
Granularity	:	6 %	Duration : 60 Secs.

[Latency Config]

Oper-Way	:	Loopback	Duration : 60 Secs.
----------	---	----------	---------------------

Related Commands

None

24.21 ethernet rfc2544 evc start

Use this command to start or stop RFC2544 Test.

Command Syntax

```
ethernet rfc2544 evc EVC-NAME start
```

```
ethernet rfc2544 evc EVC-NAME target MAC-ADDR start
```

Command Mode

Exec mode

Usage

The RFC 2544 test can be started as a non-loopback oper-way, or a loopback oper-way test.

Loopback oper-way test:

- If all enabled tests are configured as loopback oper-way, it can be performed as loopback oper-way.
- In this case, target MAC address is used.
- As default, target MAC address is the system resolved MAC address.
- If you want to use a different MAC address, you can input the target MAC address, as shown below :

```
ethernet rfc2544 evc evc1 target 0000.1111.2222 start
```

- Target MAC Address format is '00xx.xxxx.xxxx'
- The target MAC address should be a Unicast MAC address
- If you want to set the target MAC address back to the system resolved MAC address, input the following command:

```
clear rfc2544 evc EVC-NAME target-mac
```

- A loopback oper-way test requires SAT loopback at the remote side.
- For more details about SAT loopback, please refer to [Chapter 23, “Station Loopback Commands”](#).
- If all enabled tests are configure as non-loopback oper-way, it uses remote mepid.

Example

```
// Loopback oper-way TestBTI SA-805,21,22# show ethernet rfc2544 evc evc1
config
[TEST Frame Size]
```

Index		1		2		3		4		5		6
Byte		64		128		256		512		1024		1518

[Throughput Config]

[FSize]:Frame Size [FR]:Frame Rate [LR]:Loss Rate [IR]:Information Rate

Oper-Way	:	Loopback		Duration	:	60 Secs.
Max. Rate	:	500.00 Mbps		S. Trial	:	2
Max Trial Times	:	20 Times		Acceptable Loss	:	4 %

[Frame Loss Ratio Config]

Oper-Way	:	Loopback		S. Trial	:	2
Granularity	:	6 %		Duration	:	60 Secs.

[Latency Config]

Oper-Way	:	Loopback		Duration	:	60 Secs.
----------	---	----------	--	----------	---	----------

BTI SA-805,21,22# show ethernet rfc2544 evc evc1 status

[Service Configuration]

EVC[evc1]

SVLAN ID	:	100		Service Type	:	EPLINE
SVLAN Pri.	:	4				
NNI	:	nnil				
UNI	:	unil				

BWP-CIR	:	400 Mbps		BWP-EIR	:	100 Mbps
---------	---	----------	--	---------	---	----------

SVLAN Pri. : SVLAN Priority

[RFC2544 for EVC Configuration]

MODE [-] Loopback TargetMac [0019.6d01.2b57]

Test State	:	IDLE		VID	:	100
COS Mode	:	Manual		COS	:	3
L-MEP	:	101		Target MAC:	:	0019.6d01.2b57
LEVEL	:	3				

BTI SA-805,21,22# **ethernet rfc2544 evc evc1 target 0000.1111.2222 start**BTI

SA-805,21,22# show ethernet rfc2544 evc evc1 status

[Service Configuration]

```
EVC[evc1]
```

```
-----
SVLAN ID      :          100 | Service Type : EPLINE
SVLAN Pri.    :           4 |
NNI           : nnil
UNI           : unil
-----
```

```
BWP-CIR      :      400 Mbps | BWP-EIR      :      100 Mbps
-----
```

```
SVLAN Pri. : SVLAN Priority
```

```
[RFC2544 for EVC Configuration]
```

```
-----
MODE [ACTIVE] Loopback TargetMac [0000.1111.2222]
```

```
-----
Test State    :      ACTIVE | VID      :          100
COS Mode      :      Manual | COS      :           3
L-MEP        :      101    | Target MAC: 0000.1111.2222
LEVEL        :           3 |
-----
```

```
BTI SA-805,21,22# ethernet rfc2544 evc evc1 stop
```

```
BTI SA-805,21,22# show ethernet rfc2544 evc evc1 status
```

```
[Service Configuration]
```

```
EVC[evc1]
```

```
-----
SVLAN ID      :          100 | Service Type : EPLINE
SVLAN Pri.    :           4 |
NNI           : nnil
UNI           : unil
-----
```

```
BWP-CIR      :      400 Mbps | BWP-EIR      :      100 Mbps
-----
```

```
SVLAN Pri. : SVLAN Priority
```

```
[RFC2544 for EVC Configuration]
```

```
-----
MODE [-] Loopback TargetMac [0000.1111.2222]
```

```
-----
Test State    :      IDLE  | VID      :          100
COS Mode      :      Manual | COS      :           3
L-MEP        :      101    | Target MAC: 0000.1111.2222
LEVEL        :           3 |
-----
```

```
// Non Loopback oper-way Test
```

```
BTI SA-805,21,22# show ethernet rfc2544 evc evc1 config
```

```
[TEST Frame Size]
```

Index		1		2		3		4		5		6
Byte		64		128		256		512		1024		1518

[Throughput Config]

[FSize]:Frame Size	[FR]:Frame Rate	[LR]:Loss Rate	[IR]:Information Rate
<hr/>			
Oper-Way	:	Dual-End	Duration : 60 Secs.
Max. Rate	:	500.00 Mbps	S. Trial : 2
Max Trial Times	:	20 Times	Acceptable Loss : 4 %

[Frame Loss Ratio Config]

Oper-Way	:	Dual-End	S. Trial	:	2
Granularity	:	6 %	Duration	:	60 Secs.

[Latency Config]

Oper-Way	:	Two-way	Duration	:	60 Secs.
----------	---	---------	----------	---	----------

BTI SA-805,21,22# show ethernet rfc2544 evc evc1 status

[Service Configuration]

EVC[evc1]

SVLAN ID	:	100		Service Type	:	EPLINE
SVLAN Pri.	:	4				
NNI	:	nnil				
UNI	:	unil				
BWP-CIR	:	400 Mbps		BWP-EIR	:	100 Mbps
SVLAN Pri.	:	SVLAN Priority				

[RFC2544 for EVC Configuration]

MODE [-] Point to Point

Test State	:	IDLE		VID	:	100
COS Mode	:	Manual		COS	:	3
L-MEP	:	101		R-MEP	:	102

```
LEVEL          :          3 |
```

```
-----
BTI SA-805,21,22# ethernet rfc2544 evc evc1 start
BTI SA-805,21,22# show ethernet rfc2544 evc evc1 status
[Service Configuration]
```

```
EVC[evc1]
```

```
-----
SVLAN ID      :          100 | Service Type : EPLINE
SVLAN Pri.    :           4 |
NNI           : nn11
UNI           : un11
-----
```

```
BWP-CIR      :      400 Mbps | BWP-EIR      :      100 Mbps
-----
```

```
SVLAN Pri.   : SVLAN Priority
```

```
[RFC2544 for EVC Configuration]
```

```
-----
MODE [ACTIVE] Point to Point
-----
```

```
-----
Test State    :      ACTIVE | VID          :          100
COS Mode      :      Manual | COS          :           3
L-MEP         :          101 | R-MEP        :          102
LEVEL         :           3 |
-----
```

Related Commands

ethernet sat loopback session SERVICE-ID nni NNI-NAME dest-mac MACADDR

24.22 clear ethernet rfc2544 result

Use this command to clear the RFC2544 result.

Command Syntax

clear ethernet rfc2544 result (all|current|previous)

Command Mode

Exec mode

Usage

To clear the result, especially, for current result, RFC 2544 test should be done or stopped.

Example

This example shows how to clear the RFC 2544 result.

```
BTI SA-805,21,22# show ethernet rfc2544 result current
sho ethernet rfc2544 result current
```

```
-----
Target EVC : evcl
```

```
Start Time : 00:22:10 Jan 01 1970 | Stop Time : 00:25:35 Jan 01 1970
-----
```

```
SVID : 100 | Service Type : EPLINE
```

```
BWP-CIR : 0 Mbps | BWP-EIR : 0 Mbps
```

```
Local-MEP : 101 | Remote-MEP : 102
```

```
LEVEL : 3 | COS : 3
-----
```

```
[Throughput Result]
```

```
-----
[FSize]:Frame Size [FR]:Frame Rate [LR]:Loss Rate [IR]:Information Rate
-----
```

```
Oper-Way : Dual-End | Duration : 5 seconds
```

```
Max. Rate : 1000.00 Mbps | S. Trial : 1
```

```
Max Trial Times : 10 Times | Acceptable Loss : 0 %
-----
```

```
FSize | 64 | 128 | 256 | 512 | 1024 | 1518
-----
```

```
Direction [NE -> FE]
-----
```

```
L1(Mbps)| 1000.00 | 1000.00 | 1000.00 | 1000.00 | 1000.00 | 1000.00
```

```
L2(Mbps)| 761.90 | 864.86 | 927.54 | 962.41 | 980.84 | 986.00
-----
```

```
FS |Trial| Traffic Load | Tx Count | Loss Count | Loss(%)
```

```
| | L1 | L2 | (Total) | (Total) |
```

```
-----
64| 1 |1000.000 Mbps| 761.904 Mbps| 7387223 | 0 | 0.000 %
```

```
128| 1 |1000.000 Mbps| 864.864 Mbps| 4205693 | 0 | 0.000 %
```

```
256| 1 |1000.000 Mbps| 927.536 Mbps| 2254433 | 0 | 0.000 %
-----
```

```

512| 1 |1000.000 Mbps| 962.406 Mbps| 1169382 | 0 | 0.000 %
1024| 1 |1000.000 Mbps| 980.842 Mbps| 597744 | 0 | 0.000 %
1518| 1 |1000.000 Mbps| 986.996 Mbps| 405822 | 0 | 0.000 %

```

```
-----
Direction [NE <- FE]

```

```

-----
L1(Mbps)| 1000.00 | 1000.00 | 1000.00 | 1000.00 | 1000.00 | 1000.00
L2(Mbps)| 761.90 | 864.86 | 927.54 | 962.41 | 980.84 | 986.00

```

```

-----
FS |Trial| Traffic Load | Tx Count | Loss Count | Loss(%)
| | L1 | L2 | (Total) | (Total) |

```

```

-----
64| 1 |1000.000 Mbps| 761.904 Mbps| 7386846 | 0 | 0.000 %
128| 1 |1000.000 Mbps| 864.864 Mbps| 4207166 | 0 | 0.000 %
256| 1 |1000.000 Mbps| 927.536 Mbps| 2255158 | 0 | 0.000 %
512| 1 |1000.000 Mbps| 962.406 Mbps| 1169733 | 0 | 0.000 %
1024| 1 |1000.000 Mbps| 980.842 Mbps| 597881 | 0 | 0.000 %
1518| 1 |1000.000 Mbps| 986.996 Mbps| 405903 | 0 | 0.000 %

```

```
-----
[Frame Loss Ratio Result]

```

```

-----
Oper-Way : Dual-End | S. Trial : 1
Granularity : 10 % | Duration : 5 seconds

```

```
-----
Direction [NE -> FE]

```

```

-----
FS(byte)|Trial| Traffic Load | Frame Loss Ratio (%)
| | Line Rate(Info. Rate) |

```

```

-----
64 | 1| 1000.000( 761.904)Mbps | 0.000 %
128 | 1| 1000.000( 864.864)Mbps | 0.000 %
256 | 1| 1000.000( 927.536)Mbps | 0.000 %
512 | 1| 1000.000( 962.406)Mbps | 0.000 %
1024 | 1| 1000.000( 980.842)Mbps | 0.000 %
1518 | 1| 1000.000( 986.996)Mbps | 0.000 %

```

```
-----
Direction [NE <- FE]

```

```

-----
FS(byte)|Trial| Traffic Load | Frame Loss Ratio (%)
| | Line Rate(Info. Rate) |

```

```

-----
64 | 1| 1000.000( 761.904)Mbps | 0.000 %
128 | 1| 1000.000( 864.864)Mbps | 0.000 %
256 | 1| 1000.000( 927.536)Mbps | 0.000 %
512 | 1| 1000.000( 962.406)Mbps | 0.000 %
1024 | 1| 1000.000( 980.842)Mbps | 0.000 %
1518 | 1| 1000.000( 986.996)Mbps | 0.000 %

```

```
-----
[Latency Result]

```

```

-----
Oper-Way : Two-way | Duration : 5 seconds

```

Direction [NE <-> FE]

FSize | 64 | 128 | 256 | 512 | 1024 | 1518

Max (us)| 6.960 | 8.480 | 11.568 | 18.944 | 36.160 | 47.568

Min (us)| 6.656 | 7.448 | 10.256 | 15.248 | 24.928 | 31.736

Avg (us)| 6.772 | 8.000 | 10.761 | 17.584 | 29.832 | 39.040

Variations

FSize | 64 | 128 | 256 | 512 | 1024 | 1518

Max (us)| 0.304 | 1.032 | 1.312 | 3.696 | 11.232 | 15.832

Min (us)| 0.216 | 0.344 | 0.088 | 3.696 | 2.856 | 15.832

Avg (us)| 0.260 | 0.814 | 0.890 | 3.696 | 6.962 | 15.832

BTI SA-805,21,22# show ethernet rfc2544 result previous

Target EVC : evc1

Start Time : 00:05:11 Jan 01 1970 | Stop Time : 00:07:15 Jan 01 1970

SVID : 100 | Service Type : EPLINE

BWP-CIR : 0 Mbps | BWP-EIR : 0 Mbps

Local-MEP : 101 | Remote-MEP : 102

LEVEL : 3 | COS : 4

[Throughput Result]

[FSize]:Frame Size [FR]:Frame Rate [LR]:Loss Rate [IR]:Information Rate

Oper-Way : Dual-End | Duration : 5 seconds

Max. Rate : 1000.00 Mbps | S. Trial : 1

Max Trial Times : 10 Times | Acceptable Loss : 0 %

FSize | 64 | 128 | 256 | 512 | 1024 | 1518

Direction [NE -> FE]

L1(Mbps)| 1000.00 | 1000.00 | 1000.00 | 1000.00 | 1000.00 | 1000.00

L2(Mbps)| 761.90 | 864.86 | 927.54 | 962.41 | 980.84 | 986.00

FS |Trial| Traffic Load | Tx Count | Loss Count | Loss(%)

| | L1 | L2 | (Total) | (Total) |

64| 1 |1000.000 Mbps| 761.904 Mbps| 7385717 | 0 | 0.000 %

128| 1 |1000.000 Mbps| 864.864 Mbps| 4205299 | 0 | 0.000 %

```

256| 1 |1000.000 Mbps| 927.536 Mbps| 2254441 | 0 | 0.000 %
512| 1 |1000.000 Mbps| 962.406 Mbps| 1169195 | 0 | 0.000 %
1024| 1 |1000.000 Mbps| 980.842 Mbps| 597732 | 0 | 0.000 %
1518| 1 |1000.000 Mbps| 986.996 Mbps| 405820 | 0 | 0.000 %

```

```
-----
Direction [NE <- FE]

```

```

-----
L1(Mbps)| 1000.00 | 1000.00 | 1000.00 | 1000.00 | 1000.00 | 1000.00
L2(Mbps)| 761.90 | 864.86 | 927.54 | 962.41 | 980.84 | 986.00

```

```

-----
FS |Trial| Traffic Load | Tx Count | Loss Count | Loss(%)
| | L1 | L2 | (Total) | (Total) |

```

```

-----
64| 1 |1000.000 Mbps| 761.904 Mbps| 7385298 | 0 | 0.000 %
128| 1 |1000.000 Mbps| 864.864 Mbps| 4206268 | 0 | 0.000 %
256| 1 |1000.000 Mbps| 927.536 Mbps| 2253783 | 0 | 0.000 %
512| 1 |1000.000 Mbps| 962.406 Mbps| 1169056 | 0 | 0.000 %
1024| 1 |1000.000 Mbps| 980.842 Mbps| 597770 | 0 | 0.000 %
1518| 1 |1000.000 Mbps| 986.996 Mbps| 405827 | 0 | 0.000 %

```

```
-----
[Frame Loss Ratio Result]

```

```

-----
Oper-Way : Dual-End | S. Trial : 1
Granularity : 10 % | Duration : 5 seconds

```

```
-----
Direction [NE -> FE]

```

```

-----
FS(byte)|Trial| Traffic Load | Frame Loss Ratio (%)
| | Line Rate(Info. Rate) |

```

```

-----
64 | 1| 1000.000( 761.904)Mbps | 0.000 %
128 | 1| 1000.000( 864.864)Mbps | 0.000 %
256 | 1| 1000.000( 927.536)Mbps | 0.000 %
512 | 1| 1000.000( 962.406)Mbps | 0.000 %

```

```
-----
Direction [NE <- FE]

```

```

-----
FS(byte)|Trial| Traffic Load | Frame Loss Ratio (%)
| | Line Rate(Info. Rate) |

```

```

-----
64 | 1| 1000.000( 761.904)Mbps | 0.000 %
128 | 1| 1000.000( 864.864)Mbps | 0.000 %
256 | 1| 1000.000( 927.536)Mbps | 0.000 %
512 | 1| 1000.000( 962.406)Mbps | 0.000 %

```

```
-----
[Latency Result]

```

```

-----
Oper-Way : Two-way | Duration : 5 seconds

```

```
-----
Direction [NE <-> FE]

```

FSize | 64 | 128 | 256 | 512 | 1024 | 1518

Max (us) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000

Min (us) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000

Avg (us) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000

Variations

FSize | 64 | 128 | 256 | 512 | 1024 | 1518

Max (us) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000

Min (us) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000

Avg (us) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000

BTI SA-805,21,22# clear ethernet rfc2544 result previous

BTI SA-805,21,22# show ethernet rfc2544 result previous

Target EVC :

Start Time : | Stop Time :

SVID : 0 | Service Type : -

BWP-CIR : 0 Mbps | BWP-EIR : 0 Mbps

Local-MEP : 0 | Remote-MEP : 0

LEVEL : 0 | COS : 0

BTI SA-805,21,22# clear ethernet rfc2544 result current

BTI SA-805,21,22# show ethernet rfc2544 result current

Target EVC :

Start Time : | Stop Time :

SVID : 0 | Service Type : -

BWP-CIR : 0 Mbps | BWP-EIR : 0 Mbps

Local-MEP : 0 | Remote-MEP : 0

LEVEL : 0 | COS : 0

Related Commands

None

25.0 Synchronous Clock Source Commands

This section covers the following topics :

- 25.1, “show clock source”
- 25.2, “clock source primary|secondary”
- 25.3, “clock source”
- 25.4, “clock source revertive enable”

Caution Before provisioning the primary and secondary clock source on the BTI SA-821 and BTI SA-822, ensure that cables to the SMA [BITS] and RJ48c [BITS] interfaces are not connected at the same time.

A Right to Use (RTU) licence is required to set the clock source. The `rtu set` command will enable the RTU licence.

System	RTU Licence		BTI 800 Hardware		BTI 800 Software	
	Description	PEC	Description	PEC	Description	PEC
BTI SA-805	SA-805 RTU 1588	BT7D05 LS	SA-805 Base System	BT7D05AA-I02	Release 1.2 or above	BT7D05SW0012
BTI SA-821	SA-821 RTU 1588	BT7D21 LS	SA-821 Base System	BT7D21AA-I02	Release 1.2 or above	BT7D05SW0012
BTI SA-822	SA-822 RTU 1588	BT7D22 LS	SA-822 Base System	BT7D22AA-I02	Release 1.2 or above	BT7D05SW0012

25.1 show clock source

Use this command to show the current clock source and clock status of the system.

Command Syntax

show clock source

Command Mode

Privileged Exec

Usage

N/A

Example

The following example displays the current clock source of system.

```
BTI SA-805,21,22# show clock source
----- Clock Source -----
Operation Revertive : enable
Operation Status : Lock
Selected Clock Valid Status : Valid
Forced Clock Source : -
Primary Clock Source : BITS
Secondary Clock Source : SyncE
Current Clock Source : SyncE
```

Related Commands

None

25.2 clock source primary|secondary

Use this command to set the primary and secondary clock source.

Command Syntax

[no] clock source primary (bits | synce | 1588v2) secondary (bits | synce | 1588v2 | none)

1588v2 = Sets 1588v2 for either the primary or secondary clock source

bits = Sets BITS for either the primary or secondary clock source

synce = Sets synce for either the primary or secondary clock source

none = Set no clock source for either the primary or secondary clock source

default = Free running state. Both primary and secondary clock sources are set to none

Command Mode

Global configuration

Usage

Only the BTI SA-821 and BTI SA-822 can be configured as a master clock source.

If the switch is not provisioned with a clock source, the switch will function in the "free running" state with timing provided by the internal oscillator. By default the clock source is not configured on the switch.

If the clock sources fail the system will function in a holdover state. If after 24 hours the clock failure is not corrected clock timing will revert to free running.

Example

```
BTI SA-805,21,22(config)# clock source primary synce secondary none
```

Related Commands

rtu set

clock source force

Task	Commands
Command to force the clock to use the primary or secondary clock source. Command to release the force command.	clock source force (primary secondary release)
Set the revertive clock source	clock source revertive enable
Set "freerun" state	no clock source

25.3 clock source

Use this command to switch the clock source to secondary or primary or release a forced switch.

Command Syntax

clock source (primary | secondary | release)

primary Primary Clock source

secondary Secondary Clock source

release Release Forced Switch

Command Mode

Global configuration

Usage

N/A

Example

The following example sets the clock source to the primary clock configuration.

```
BTI SA-805,21,22(config)# clock source primary
```

Related Commands

[no] clock sync switch-force (interface id)

25.4 clock source revertive enable

Use this command to set the revertive mode for clock source.

Command Syntax

[no] clock source revertive enable

Command Mode

Global configuration

Usage

When the clock source is set to revertive enable, the system will return back to the original clock source after a switch has occurred.

Example

The following example sets the revertive mode for clock source.

```
BTI SA-805,21,22(config)# clock source revertive enable
```

Related Commands

None

26.0 External Clock Commands

This section covers the following topics:

- [26.1, “ext clk-in”](#)
- [26.2, “external clk-out”](#)
- [26.3, “show extclk info”](#)

Caution Before provisioning the external clock-in and clock-out feature on the BTI SA-821 and BTI SA-822, ensure that cables to the SMA [BITS] and RJ48c [BITS] interfaces are not connected at the same time.

To enable the external clock interfaces on the primary or secondary clock source a RTU licence may be required.

System	RTU Licence		BTI 800 Hardware		BTI 800 Software	
	Description	PEC	Description	PEC	Description	PEC
BTI SA-805	SA-805 RTU 1588	BT7D05 LS	SA-805 Base System	BT7D05AA-I02	Release 1.2 or above	BT7D05SW0012
BTI SA-821	SA-821 RTU 1588	BT7D21 LS	SA-821 Base System	BT7D21AA-I02	Release 1.2 or above	BT7D05SW0012
BTI SA-822	SA-822 RTU 1588	BT7D22 LS	SA-822 Base System	BT7D22AA-I02	Release 1.2 or above	BT7D05SW0012

26.1 ext clk-in

Use this command to set the external clock in.

Command Syntax

ext clk-in (e1 | t1 | 1pps)

1pps 1PPS command

e1 E1(2.048Mbps)

t1 T1(1.544Mbps)

Default : external clock in is t1 and 1pps is disabled

Command Mode

Global configuration

Usage

The following ext-clk-in options are available :

BTI SA-805	BTI SA-821 BTI SA-822	
Clock-In Options	External Clock-In Options	Interface
N/A	1pps	1PPS (SMA)
N/A	N/A	BITS (SMA)
	N/A	
	E1 (2.048Mbps)	
	T1 (1.544Mbps)	
N/A	E1 (2.048Mbps)	BITS (RJ48c)
	T1 (1.544Mbps)	

When BITS is selected as the external clock mode, either the ext clk-in or ext clk-out is provisioned.

Example

The following example sets the external clock in.

```
BTI SA-805,21,22(config)# ext clk-in e1
```

Related Commands

Ext clk-out

26.2 external clk-out

Use this command to set the external clock out.

Command Syntax

```
ext clk-out ( 1544kHz | 2048kHz | e1 | t1 )
```

1544kHz 1544kHz

2048kHz 2048kHz

e1 E1(2.048Mbps)

t1 T1(1.544Mbps)

Default : the external clock is disabled

Command Mode

Global configuration

Usage

The following external clk-out options are available :

BTI SA-805		BTI SA-821 BTI SA-822	
Clock-Out Options	Interface	External Clock-Out Options	Interface
The external 1PPS is not provisionable and is set to enable.	1PPS (SMA)	The external 1PPS is not provisionable and is set to enable.	1PPS (SMA)
2048kHz - clock source only	SYNC (SMA/BITS)	1544kHz - clock source only	BITS (SMA)
1544kHz - clock source only		2048kHz - clock source only	
E1 (2.048Mbps)		E1 (2.048Mbps)	
T1 (1.544Mbps)		T1 (1.544Mbps)	
		E1 (2.048Mbps)	BITS (RJ48c)
	T1 (1.544Mbps)		
ToD	RJ45		
The serial connection to the console port will no longer be available.			

When BITS is selected as the external clock mode, either the ext clk-in or ext clk-out is provisioned.

Example

The following example sets the external clock out.

```
BTI SA-805,21,22(config)# ext clk-out t1
```

Related Commands

ext clk-in

26.3 show extclk info

Use this command to show the current external clock in and out information.

Command Syntax

show extclk info

Command Mode

Privileged Exec

Usage

This command displays the current external clock in and out information.

Example

The following example shows the current external clock in and out information

```
BTI SA-805,21,22# show extclk info
```

CAUTION : Do NOT connect the cables to SMA and RJ48 interface at the same time.

```
-----  
External Clock Information  
-----
```

```
Clock-In T1(1.544Mbps)  
1PPS In Disable  
-----
```

```
Clock-Out Disable  
1PPS Out Enable  
-----
```

Related Commands

None

27.0 Ethernet Fault Propagation Shutdown (EFPD) Commands

This section covers the following topics :

- 27.1, “efpsd enable mepid”
- 27.2, “efpsd enable”
- 27.3, “show ethernet uni efpsd”
- 27.4, “show ethernet soam maintenance-point”
- 27.5, “show ethernet uni”

27.1 efpsd enable mepid

Use this command to enable EFPSD (lbm with lis) SOAM mode .

Command Syntax

efpsd enable mepid <1-8191> lbm-with-lis

no efpsd enable mepid <1-8191> lbm-with-lis

The EFPSD acquires the MEP information from the EVC. The CLI commands above bind the MEP

information to the EVC. The following CLI commands update the MEP information on the EVC:

CLI	Description
evc status-update enable	This CLI update the mep information to EVC. This CLI is used on SOAM mode.

Command Mode

Service SOAM mode

Usage

This command sets the SOAM mode EFPSD enable.

Example

The following example EFPSD enable(LBM with LIS) of SOAM mode

```
BTI SA-805,21,22# config terminal
BTI SA-805,21,22(config)# ethernet soam meg megid evc100
BTI SA-805,21,22(config-soam-ma)# evc status-update enable
BTI SA-805,21,22(config-soam-ma)# efpsd enable mepid 11 lbm-with-lis
BTI SA-805,21,22(config-soam-ma)#
```

Related Commands

None

27.2 efpsd enable

Use this command to set the UNI mode EFPSD enable..

Command Syntax

efpsd enable
no efpsd enable

Command Mode

UNI mode

Usage

This command sets the UNI mode EFPSD enable.

Example

The following example sets the UNI mode EFPSD enable.

```
BTI SA-805,21,22# config terminal
BTI SA-805,21,22(config)# ethernet uni uni3
BTI SA-805,21,22(config-uni)# efpsd enable
```

Related Commands

None

27.3 show ethernet uni efpsd

Use this command to show the current UNI EFPSD state.

Command Syntax

show ethernet uni efpsd

Command Mode

Privileged Exec

Usage

This command displays the current UNI EFPSD state.

Example

The following example shows the current UNI EFPSD state

```
BTI SA-805,21,22# show ethernet uni efpsd
-----
EFPSD Reason
ifname vid state engaging admin SVR|LIS mepid domain
-----
eth-0-3 100 normal off enable off|off 11 meg: evc100
```

Related Commands

None

27.4 show ethernet soam maintenance-point

Use this command to show the current SOAM mode EFPSD enable/disable state.

Command Syntax

show ethernet soam maintenance-point mep mepid <1-8191> megid MEGID

Command Mode

Privileged Exec

Usage

This command displays the current SOAM mode EFPSD enable/disable state.

Example

The following example shows the current SOAM mode EFPSD enable/disable state.

```
BTI SA-805,21,22# show ethernet soam maintenance-point mep mepid 11 megid
evc100
*(dynamic maintenance-point)
xcon(cross connection mismatch), eoc(error of continuity),
loc(loss of continuity), mac(mac status defect), rdi(remote defect
indication)
[MEP attributes]
-----
domain : meg: evc100 level : 4
vid : 100 ccm-interval : 1sec
-----
mepid : 11 direction : up
ifname : eth-0-3 mac : 0014.d060.002c
cci(tx) : en ccm-ltm-priority: 7
fng-state : reset low-pri-defect : all-defects(1)
fng-alarm-time : 2.50sec fng-reset-time : 10.00sec
rdi(tx) : off highest-defect : none(0)
efpsd(loopback) : enable
-----
defects : ----/---/---/---/---
```

Related Commands

None

27.5 show ethernet uni

Use this command to show the current UNI mode EFPSD enable/disable state.

Command Syntax

show ethernet uni NAME

Command Mode

Privileged Exec

Usage

This command displays the current UNI mode EFPSD enable/disable state.

Example

The following example shows the current UNI EFPSD enable/disable state.

```
BTI SA-805,21,22# show ethernet uni uni3
```

```
-----  
UNI uni3  
Description : eth-0-3  
Mapped Interface : eth-0-3  
TPID Value : 0x8100  
MTU Size : 1522  
Default CVLANID : 0  
Default SVLAN Priority : 0  
All to One Bundling : Yes  
Bundling : No  
Service Multiplexing : No  
Maximum Number of EVC : 1  
Number of EVC : 1  
Number of OVC : 0  
Efpsd : enabled(LBM with LIS enabled)  
EVC List  
evc100,  
-----
```

Related Commands

None

28.0 Service Activation Test (SAT) Y.1564 Commands

This section covers the following topics :

- 28.1, “show ethernet sat config”
- 28.2, “show ethernet sat result”
- 28.3, “ethernet sat enable mepid”
- 28.4, “ethernet sat bandwidth-profile”
- 28.5, “ethernet sat configuration/performance-test enable”
- 28.6, “ethernet sat cos”
- 28.7, “ethernet sat oper-way”
- 28.8, “ethernet sat step-duration”
- 28.9, “ethernet sat test-duration”
- 28.10, “ethernet sat test-pattern”
- 28.11, “ethernet sat break-on-fail enable”
- 28.12, “ethernet sat threshold”
- 28.13, “ethernet sat start/stop”

28.1 show ethernet sat config

Use this command to show Y1564 Configuration.

Command Syntax

show ethernet sat config

Command Mode

Exec mode

Usage

This command can check y1564 test configuration.

Example

```
BTI SA-805,21,22# show ethernet sat config
```

```
[Y.1564 SAT Configuration]
```

```
-----  
Domain : jyj-test (meg)  
Source MEP : 101 (eth-0-3)  
Target MEP : 102  
Step load rate : 25 %  
Start load rate : 25 %  
Test duration : 900 sec (min15)  
Step duration : 5 sec  
Priority : 0  
Break-On-Fail : Disabled  
Test pattern : fixed 512 Bytes  
Config-Test : Enable  
Perform-Test : Enable  
Oper Status : operFailed  
[Bandwidth-profile]  
- CIR : 500.000 Mbps  
- CBS : 12176 Bytes  
- EIR : 0.000 Mbps  
- EBS : 0 Bytes  
[SAC (Service Acceptance Criteria)]  
- IR (Information Rate) : 98.000 %  
- FLR (Frame Loss Ratio) : 0.100 %  
- FTD (Frame Transfer Delay) : 100000 usec  
- FDV (Frame Delay Variation) : 10000 usec  
- Avail (Availability) : 99.000 %  
[Operational way]  
- Throughput-msmt : one-way  
- Delay-msmt : two-way (round-trip)  
- Loss-msmt : single-ended  
-----
```

Related Commands

None

28.2 show ethernet sat result

Use this command to show Y1564 result.

Command Syntax

show ethernet sat result

Command Mode

Exec mode

Usage

None

Example

```
BTI SA-805,21,22# show ethernet sat result
* Unavl: Unavail count
* IR-tx, IR-rx: Transmission or Reception Information Rate
* IR-t, FLR-t FTD-t, FDV-t: Threshold (no % value) of each performance
parameter
[Pass/Fail Criteria]
- IR (InfoRate) : Pass if IR-rx <= IR-tx * IR-t
Pass if IR-rx <= CIR * IR-t on EIR & Traffic Policing Test
- FLR (LossRatio): Pass if FLR <= FLR-t
Pass if FLR <= 1 - ((CIR * (1 - FLR-t)) / IR-tx)
- FTD (Delay) : Pass if FTD <= FTD-t
- FDV (DelayVar) : Pass if FDV <= FDV-t
- Additional criteria for Traffic Policing test:
Pass if CIR * (1 - FLR-t) <= IR-rx <= CIR + EIR + M factor
where M factor is '(CIR + EIR) * 0.02(2%)' for CBS/EBS effect
[Y.1564 SAT Configuration]
-----
Domain : evc100 (meg)
Source MEP : 21 (eth-0-3)
Target MEP : 22
Step load rate : 25 %
Start load rate : 25 %
Test duration : 900 sec (min15)
Step duration : 5 sec
Priority : 0
Break-On-Fail : Disabled
Oper Status : completed
[Bandwidth-profile]
- CIR : 100.000 Mbps
- CBS : 12176 Bytes
- EIR : 200.000 Mbps
- EBS : 12176 Bytes
* Test Frame Line Rate for CIR
```


- 103.876 Mbps for 512 Bytes
 [SAC (Service Acceptance Criteria)]
 - IR (Information Rate) : 98.000 %
 - FLR (Frame Loss Ratio) : 0.100 %
 - FTD (Frame Transfer Delay) : 100000 usec
 - FDV (Frame Delay Variation) : 10000 usec
 - Avail (Availability) : 99.000 %

[Operational way]

- Throughput-msmt : one-way
 - Delay-msmt : two-way (round-trip)
 - Loss-msmt : single-ended

[CIR Test - Simple CIR Test]

F/S	DIR	P/F	IR(Mbps)	FL	FTD(us)	FDV(us)						
			Input	Rx	Count	FLR(%)	Min	Mean	Max	Min	Mean	Max
512	FW	Pass	98.738	98.738	0	0.000	11	12	15	0	0	3
	BW	Pass	98.740	98.740	0	0.000	11	12	15	0	0	3

[EIR Test]

F/S	DIR	P/F	IR(Mbps)	FL	FTD(us)	FDV(us)						
			Input	Rx	Count	FLR(%)	Min	Mean	Max	Min	Mean	Max
512	FW	Pass	298.529	298.529	0	0.000	11	13	15	0	2	3
	BW	Pass	298.532	298.532	0	0.000	11	13	15	0	2	3

[Traffic Policing Test]

F/S	DIR	P/F	IR(Mbps)	FL	FTD(us)	FDV(us)						
			Input	Rx	Count	FLR(%)	Min	Mean	Max	Min	Mean	Max
512	FW	Pass	348.514	300.023	47021	13.919	11	13	15	0	1	2
	BW	Fail	348.517	348.517	0	0.000	11	13	15	0	1	2

* IR has fail condition on Backward over CIR + EIR + M factor

[Performance Test]

F/S	DIR	P/F	IR	FL	FTD(us)	FDV(us)	Avail	Unavl					
			(Mbps)	Count	FLR(%)	Min	Mean	Max	Min	Mean	Max	%	Count
512	FW	Pass	98.737	0	0.000	11	12	17	0	0	5	100.000	0
	BW	Pass	98.737	0	0.000	11	12	17	0	0	5	100.000	0

[Description]

* FTD/FDV in Forward & Backward : Round-trip latency (us)

Related Commands

None

28.3 ethernet sat enable mepid

Use this command to enable the Y1564 Session.

Command Syntax

ethernet sat enable mepid MEPID rmepid RMEPID (megid MEGID|ma-name MA-NAME md-name MD-NAME)

ethernet sat enable mepid MEPID target-mac MACADDR (megid MEGID|ma-name MA-NAME md-name MD-NAME)

Command Mode

Global Configuration

Usage

Y.1564 SAT test on test owner (source) and test peer (destination) devices, is able to be configured by « ethernet sat

enable mepid MEPID rmepid RMEPID (megid MEGID|ma-name MA-NAME md-name MD-NAME) » CLI.

Y.1564 SAT test on single test owner device with the remote loopback of a commercial Test Gear, is able to be

configured by «ethernet sat enable mepid MEPID target-mac MACADDR (megid MEGID|ma-name MA-NAME mdname

MD-NAME)» CLI

TARGET-MAC: the target MAC address of the other vender's device. The format of the MAC address inputted is

HHHH.HHHH.HHHH. It should be inserted by the user. The default value is 0011.2233.4455.

Example

```
// Y1564 SAT test on test owner and test peer devices
BTI SA-805,21,22# configure terminal
BTI SA-805,21,22(config)# ethernet sat enable mepid 101 rmepid 102 megid y1564-
test
BTI SA-805,21,22# configure terminal
BTI SA-805,21,22(config)# ethernet sat enable mepid 102 rmep 101 megid y1564-
test
// Y1564 SAT test on single test ownder device with the remote loopback of a
commercial
Test Gear
BTI SA-805,21,22# configure terminal
BTI SA-805,21,22(config)# ethernet sat enable mepid 101 target-mac
0000.1111.2222 megid y1564-test
```

Related Commands

no ethernet sat enable mepid MEPID (megid MEGID|ma-name MA-NAME md-name MD-NAME)

28.4 ethernet sat bandwidth-profile

Use this command to configure the CIR, CBS, EIR and EBS values used on Y1564 Test..

Command Syntax

ethernet sat bandwidth-profile cir CIR cbs CBS eir EIR ebs EBS

Command Mode

Global Configuration

Usage

CIR : It should be set by the management system. The configurable value is from 0 to 1000000 in Kbps. (CIR-Test, Performance-Test, Policing-Test)

CBS : It should be set by the management system. The configurable value is from 0 to 1250000 in byte. (Policing-Test)

EIR : It should be set by the management system. The configurable value is from 0 to 1000000 in Kbps. (EIR-Test, Policing-Test)

EBS : It should be set by the management system. The configurable value is from 0 to 1250000 in byte. (Policing-Test)

To configure, Y1564 Session should be enabled.

Example

This example shows how to configure test frame size

```
BTI SA-805,21,22(config)# ethernet sat bandwidth-profile cir 100000 cbs 12176  
eir 100000 ebs 12176
```

Related Commands

ethernet sat configuration-test enable

ethernet sat performance-test enable

28.5 ethernet sat configuration/performance-test enable

Use this command to configure Y1564 Tests.

Command Syntax

ethernet sat configuration-test enable

ethernet sat performance-test enable

Command Mode

Global Configuration

Usage

Configuration-test : Configure test status (CIR-Test, EIR-Test, Policing-Test)

Performance-test : Configure test status for Performance Test.

To configure, Y1564 Session should be enabled.

Example

```
BTI SA-805,21,22# configure terminal
BTI SA-805,21,22(config)# ethernet sat configuration-test enable
BTI SA-805,21,22(config)# ethernet sat performance-test enable
```

Related Commands

ethernet sat bandwidth-profile cir CIR cbs CBS eir EIR ebs EBS

28.6 ethernet sat cos

Use this command to configure CoS for Y1564 Test.

Command Syntax

ethernet sat cos <0-7>

Command Mode

Global Configuration

Usage

Set the CoS of the tested service. Default is 0.

To configure, Y1564 session should be enabled.

Example

```
BTI SA-805,21,22# configure terminal
BTI SA-805,21,22(config)# ethernet sat cos 4
```

Related Commands

None

28.7 ethernet sat oper-way

Use this command to configure operational way for Y1564 Test.

Command Syntax

ethernet sat oper-way thrpt (one-way-loopback|one-way)

ethernet sat oper-way delay-msmt (one-way-loopback|two-way)

ethernet sat oper-way loss-msmt (single-ended|single-ended-loopback)

Command Mode

Global Configuration

Usage

The oper-ways that means as loopback should be configured when the Y1564 session is created as loopback session.

Example

```
BTI SA-805,21,22# configure terminal
BTI SA-805,21,22(config)# ethernet sat oper-way thrpt one-way
BTI SA-805,21,22(config)# ethernet sat oper-way loss-mgmt single-ended
BTI SA-805,21,22(config)# ethernet sat oper-way delay-msmt two-way
// one-line command
BTI SA-805,21,22(config)# ethernet sat oper-way thrpt one-way loss-mgmt single-
ended delay-msmt twoway
// Configuration for Loopback Session
BTI SA-805,21,22# configure terminal
BTI SA-805,21,22(config)# ethernet sat enable mepid 101 rmepid 102 megid y1564-
test
BTI SA-805,21,22(config)# ethernet sat oper-way thrpt one-way-loopback loss-
mgmt single-endedloopback
delay-msmt one-way-loopback
```

Related Commands

ethernet sat enable mepid MEPID rmepid MEPID megid MEGID

ethernet sat enable mepid MEPID target-mac MACADDR megid MEGID

28.8 ethernet sat step-duration

Use this command to configure Step-duration.

Command Syntax

ethernet sat step-duration <5-60>

Command Mode

Global Configuration

Usage

This duration is used for the test time of the CIR configuratino test, EIR configuration test and traffic policing test.

This value should be in the range from 5 to 60 sec.

To configure, Y1564 Session should be enabled.

Example

```
BTI SA-805,21,22# configure terminal
BTI SA-805,21,22(config)# ethernet sat step-duration 10
```

Related Commands

None

28.9 ethernet sat test-duration

Use this command to configure test-duration..

Command Syntax

ethernet sat test-duration <hour2/hour24/min1/min15>

Command Mode

Global Configuration

Usage

This duration is used for the test time of the Service Performance test. This value should be selected in the following

time list: min1/min15/ hour2/hour24

Example

```
BTI SA-805,21,22# configure terminal
BTI SA-805,21,22(config)# ethernet sat test-duration min15
```

Related Commands

None

28.10 ethernet sat test-pattern

Use this command to configure the traffic pattern (test frame-size) tested by Y1564.

Command Syntax

ethernet sat test-pattern frame-size {FrameSizeA| FrameSizeB| FrameSizeC| FrameSizeD|
FrameSizeE| FrameSizeF|

FrameSizeG| FrameSizeH| FrameSizeU}

ethernet sat test-pattern type (e-mix|fixed)

Command Mode

Global Configuration

Usage

Test-Pattern Type :

- Test-Pattern is used to configure the frame size tested in SA-800 series SAT function.
 - Fixed : Single frame size is able to be configured on this type
 - E-MiX : A number of frame sizes are configurable on this Test-pattern. E-MIX is variable frame size pattern using a set of frame sizes.
- Test-Pattern Frame sizes (multiple choice up to 4)
 - Frame size can be configured up to 4 upon E-MIX Test-Pattern
 - FrameSizeA (default value :64)
 - FrameSizeB (default value :128)
 - FrameSizeC (default value :256)
 - FrameSizeD (default value : 512)
 - FrameSizeE (default value : 1024)
 - FrameSizeF (default value : 1280)
 - FrameSizeG (default value : 1518)
 - FrameSizeH (default value : MTU)
 - FrameSizeU (User defined : 0)

To configure, Y1564 Session should be enabled.

Example

```
BTI SA-805,21,22# configure terminal
BTI SA-805,21,22(config)# ethernet sat test-pattern type e-mix
BTI SA-805,21,22(config)# ethernet sat test-pattern frame-size 64 128 256 512
```

1024 1280 1518 mtu
user-define 9600

Related Commands

None

28.11 ethernet sat break-on-fail enable

Use this command to configure break-on-fail for Y1564 test.

Command Syntax

ethernet sat break-on-fail enable

Command Mode

Global Configuration

Usage

If the attribute is configured, the test session will be stopped at the failed sub test against to the SAC (Service Acceptance Criteria).

To configure, Y1564 session should be enabled.

Example

```
BTI SA-805,21,22# configure terminal
BTI SA-805,21,22(config)# ethernet sat break-on-fail enable
```

Related Commands

None

28.12 ethernet sat threshold

Use this command to configure the items for SAT.

Command Syntax

ethernet sat threshold ir IR

ethernet sat threshold flr FLR

ethernet sat threshold ftd FTD

ethernet sat threshold fdv FDV

ethernet sat threshold avail AVAIL

Command Mode

Global Configuration

Usage

IR(Information Rate) in milli-percent: This configured to 98% (98000) by default.

FLR(Frame Loss Ratio) in milli-percent: It should be configured by the user in the SAT configuration. The configurable value is from 1(0.001%) to 100000 (100.000%)

FTD(Frame Transfer Delay) in micro-second: It should be configured by the user in the SAT provisioning step. The configurable value is from 0 to maximum 32 bit integer value.

FDV(Frame Delay Variatio) in micro-second: It should be configured by the user in the SAT provisioning step. The configurable value is from 0 to maximum 32bit integer value.

Avail(Availability) in milli-percent: It should be configured by the user in the SAT provisioning step. The configurable value is from 1(0.001%) to 100000 (100.000%).

To configure, Y1564 Session should be enabled.

Example

```
BTI SA-805,21,22# configure terminal
BTI SA-805,21,22(config)# ethernet sat threshold ir 98000
BTI SA-805,21,22(config)# ethernet sat threshold flr 100000
BTI SA-805,21,22(config)# ethernet sat threshold ftd 1000
BTI SA-805,21,22(config)# ethernet sat threshold fdv 1000
BTI SA-805,21,22(config)# ethernet sat threshold avail 100000
```

Related Commands

None

28.13 ethernet sat start/stop

Use this command to start or stop Y1564 test.

Command Syntax

ethernet sat (start|stop)

Command Mode

Exec mode

Usage

none

Example

```
BTI SA-805,21,22# configure terminal
BTI SA-805,21,22(config)# ethernet sat enable mepid 101 rmepid 102 megid y1564-
test
BTI SA-805,21,22(config)# ethernet sat oper-way thrpt one-way loss-mgmt single-
ended delay-mgmt twoway
BTI SA-805,21,22(config)# ethernet sat cos 6
BTI SA-805,21,22(config)# ethernet sat bandwidth-profile cir 100000 cbs 12176
eir 100000 ebs 12176
BTI SA-805,21,22(config)# ethernet sat step-duration 30
BTI SA-805,21,22(config)# ethernet sat test-duration min1
BTI SA-805,21,22(config)# ethernet sat throughput ir 98000
BTI SA-805,21,22(config)# ethernet sat throughput flr 100000
BTI SA-805,21,22(config)# ethernet sat throughput ftd 1000
BTI SA-805,21,22(config)# ethernet sat throughput fdv 1000
BTI SA-805,21,22(config)# ethernet sat throughput avail 100000
BTI SA-805,21,22(config)# ethernet sat break-on-fail enable
BTI SA-805,21,22(config)# exit
BTI SA-805,21,22# ethernet sat start
```

Related Commands

None

Appendix A: Time zones

The following table lists the time zone values that are available.

Time Zones

Time Zone	Time Zone
AFGHANISTAN	ALBANIA
ALGERIA	AMERICASAMOA
ANDORRA	ARGENTINA
ARGENTINAWESTERNPROV	ANGUILLA
ANTARCTICA	ANTIGUA
ARMENIA	ARUBA
ASCENSION	AUSTRALIAAUSTRALIANCAPITALTERRITORY
AUSTRALIALORDHOWEISLAND	AUSTRALIANEWSOUTHWALES
AUSTRALIANORTHERNTERRITORY	AUSTRALIAQUEENSLAND
AUSTRALIASOUTH	AUSTRALIATASMANIA
AUSTRALIAVICTORIA	AUSTRALIAWESTERN
AUSTRIA	AZERBAJIAN
AZORES	BAHAMAS
BAHRAIN	BALEARICISLANDS
BANGLADESH	BARBADOS
BELARUS	BELGIUM
BELIZE	BENIN
BERMUDA	BHUTAN
BOLIVIA	BONAIRE
BOSNIAHERCEGOVINA	BOTSWANA

Time Zones (Continued)

Time Zone	Time Zone
BRAZILACRE	BRAZILATLANTICISLANDS
BRAZILEAST	BRAZILWEST
BRITISHVIRGINISLANDS	BRUNEI
BULGARIA	BURKINAFASO
BURUNDI	CAMBODIA
CAMEROON	CANADAATLANTIC
CANADACENTRAL	CANADAEASTERN
CANADAMOUNTAIN	CANADANEWFOUNDLAND
CANADAPACIFICYUKON	CANADASASKATCHEWAN
CANARYISLANDS	CANTONENDERBURYISLANDS
CAPEVERPE	CAROLINEISLANDS
CAYMANISLAND	CENTRALAMERICANREPUBLIC
CHAD	CHANNELISLANDS
CHATHAMISLAND	CHILE
CHINAPEOPLESREPUBLIC	CHRISTMASISLANDS
COLOMBIA	CONGO
COOKISLANDS	COSTARICA
COTEDIVOIRE	CROATIA
CUBA	CURACO
CYPRUS	CZECHREPUBLIC
DENMARK	DJIBOUTI
DOMINICA	DOMINICANREPUBLIC
EASTERISLAND	EQUADOR
EGYPT	ELSALVADOR
ENGLAND	EQUATORIALGUINEA
ERITREA	ESTONIA
ETHIOPIA	FALKLANDISLAND
FAROEISLAND	FIJI
FINLAND	FRANCE
FRENCHGUIANA	FRENCHPOLYNESIA
GABON	GAMBIERAILAND
GEORGIA	GERMANY
GHANA	GIBRALTAR
GREECE	GREENLAND
GREENLANDSCORESBYSUN	GREENLANDANDTHULE
GREENWICHMEANTIMEUTC	GRENADA
GRENADINES	GUADELOUPE
GUAM	GUATEMALA

Time Zones (Continued)

Time Zone	Time Zone
GUINEA	GUYANA
HAITI	HONDURAS
HONGKONG	HUNGARY
ICELAND	INDIA
INDONESIA CENTRAL	INDONESIA EAST
INDONESIA WEST	IRAQ
IRAN	IRELAND REPUBLIC OF
ISRAEL	ITALY
JAMAICA	JAPAN
JOHNSTON ISLAND	JORDAN
KAZAKHSTAN	KENYA
KIRIBATI	KOREA DEM REPUBLIC OF
KOREA REPUBLIC OF	KUWAIT
KUWAIT	KWAJALEIN
KYRGYZSTAN	LAOS
LATVIA	LEBANON
LEEWARD ISLANDS	LESOTHO
LIBERIA	LIBYA
LITHUANIA	LUXEMBOURG
MACEDONIA	MADAGASCAR
MADEIRA	MALAWI
MALAYSIA	MALDIVES
MALI	MALLORCA ISLAND
MALTA	MARIANA ISLAND
MARQUESAS ISLANDS	MARSHALL ISLAND
MARTINIQUE	MAUROTUS
MAYOTTE	MELILLA
MEXICO	MEXICO BAJA CALIFORNIA
MEXICO NAYARIT	MEXICO SINALOA
MEXICO SONORA	MIDWAY ISLAND
MOLDOVA	MOLDOVIAN REPUBLIC OF
MONACO	MONGOLIA
MOROCCO	MOZAMBIQUE
MYANMAR	NAMIBIA
NAURU REPUBLIC OF	NEPAL
NETHERLANDS	NETHERLANDS ANTILLES
NEVIS MONT SERRAT	NEW CALEDONIA
NEW HEBRIDES	NEW ZEALAND

Time Zones (Continued)

Time Zone	Time Zone
NICARAGUA	NIGER
NIGERIA	NIUEISLAND
NORFOLKISLAND	NORTHERNIRELAND
NORTHERNMARIANAISLANDS	NORWAY
OMAN	PAKISTAN
PALAU	PANAMA
PAPUANEWGUINEA	PARAGUAY
PERU	PHILIPPINES
PINGELAP	POLAND
PONAPEISLAND	PORTUGAL
PRINCIPEISLAND	PUERTORICO
QATAR	REUNION
ROMANIA	RUSSIANFEDERATIONCHITAYAKUTSK
RUSSIANFEDERATIONIRKUTSKULANUDE	RUSSIANFEDERATIONKALINGRAD
RUSSIANFEDERATIONKAMCHATKAANADY	RUSSIANFEDERATIONKRASNOYARSKTOMSK
RUSSIANFEDERATIONMAGADANKOLYMA	RUSSIANFEDERATIONMOSCOWSTPETERSBURG
RUSSIANFEDERATIONNOVOSIBIRSKOMSK	RUSSIANFEDERATIONSAMARAIZMEVSK
RUSSIANFEDERATIONVLADIVOSTOKKHABAROVSK	RUSSIANFEDERATIONYEKATERINBURGPERM
RAWANADA	SABA
SAMOA	SANMARINO
SAOTOMEPRINCIPE	SAUDIAARABIA
SCOTLAND	SENEGAL
SEYCHELLES	SIERRALEONE
SINGAPORE	SLOVAKIA
SLOVENIA	SOCIETYISLAND
SOLOMONISLANDS	SOMALIA
SOUTHAFRICA	SPAIN
SRILANKA	STCHRISTOPHER
STCROIX	STHELENA
STJOHN	STKITTSNEVIS
STLUCIA	STMAARTEN
STPIERREMIQUELON	STTHOMAS
STVINCENT	SUDAN
SURINAME	SWAZILAND
SWEDEN	SWITZERLAND
SYRIA	TAHITI
TAIWAN	TAJIKISTAN

Time Zones (Continued)

Time Zone	Time Zone
TANZANIA	THAILAND
TOGO	TONGA
TRINIDADANDTOBAGO	TUAMOTUISLAND
TUBUAIISLAND	TUNISIA
TURKEY	TURKMENISTAN
TURKS ANDCACOSISLANDS	TUVALU
UGANDA	UKRAINE
UNITEDARABEMERATES	UNITEDKINGDOM
URUGUAY	USAALASKA
USAALUTIAN	USAARIZONA
USACENTRAL	USAEASTERN
USAHAWAII	USAINDIANAEAST
USAMOUNTAIN	USAPACIFIC
UZBEKISTAN	VANUATU
VATICANCITY	VENEZUELA
VIETNAM	VIRGINISLANDS
WAKEISLAND	WALES
WALLISANDFUTUNAIISLANDS	WINDWARDISLANDS
YEMEN	YUGOSLAVIA
ZAIREHAUTZAIRE	ZAIREKASAI
ZAIREKINSHASAMBANDAKA	ZAIREKIVU
ZAIRESHABA	ZAMBIA
ZIMBABWE	

Appendix B: ITU Wavelength Plan for C Band Tunable DWDM Transceiver

This wavelength plan is supported on the following:

- BP3AM6TL 10G Multi-Rate / Multi-Protocol Tunable DWDM single mode SFP+ transceiver on BTI SA-805, BTI SA-821, BTI SA-822 systems with the following rates, protocols and link length:
 - 9.95/10.3 Gbps 10GE LAN PHY
 - Link Length for 9/125um single mode fiber: 80 km

Additional information is located at the following:

- `transceiver itu` command in Chapter 3, Command Line Reference Guide.

Table B- 1 ITU Wavelength Plan for C Band Tunable DWDM Transceiver

Wavelength nm	Frequency THz	Channel No.	Wavelength nm	Frequency THz	Channel No.
1528.77	196.10	96	1547.72	193.70	48
1529.16	196.05	95	1548.11	193.65	47
1529.55	196.00	94	1548.51	193.60	46
1529.94	195.95	93	1548.91	193.55	45
1530.33	195.90	92	1549.32	193.50	44
1530.72	195.85	91	1549.72	193.45	43
1531.12	195.80	90	1550.12	193.40	42
1531.51	195.75	89	1550.52	193.35	41
1531.90	195.70	88	1550.92	193.30	40
1532.29	195.65	87	1551.32	193.25	39
1532.68	195.60	86	1551.72	193.20	38
1533.07	195.55	85	1552.12	193.15	37
1533.47	195.50	84	1552.52	193.10	36
1533.86	195.45	83	1552.93	193.05	35
1534.25	195.40	82	1553.33	193.00	34
1534.64	195.35	81	1553.73	192.95	33
1535.04	195.30	80	1554.13	192.90	32
1535.43	195.25	79	1554.54	192.85	31
1535.82	195.20	78	1554.94	192.80	30
1536.22	195.15	77	1555.34	192.75	29
1536.61	195.10	76	1555.75	192.70	28
1537.00	195.05	75	1556.15	192.65	27
1537.40	195.00	74	1556.55	192.60	26
1537.79	194.95	73	1556.96	192.55	25
1538.19	194.90	72	1557.36	192.50	24
1538.58	194.85	71	1557.77	192.45	23
1538.98	194.80	70	1558.17	192.40	22
1539.37	194.75	69	1558.58	192.35	21
1539.77	194.70	68	1558.98	192.30	20
1540.16	194.65	67	1559.39	192.25	19
1540.56	194.60	66	1559.79	192.20	18
1540.95	194.55	65	1560.20	192.15	17
1541.35	194.50	64	1560.61	192.10	16
1541.75	194.45	63	1561.01	192.05	15
1542.14	194.40	62	1561.42	192.00	14
1542.54	194.35	61	1561.83	191.95	13
1542.94	194.30	60	1562.23	191.90	12

Table B- 1 ITU Wavelength Plan for C Band Tunable DWDM Transceiver

Wavelength nm	Frequency THz	Channel No.	Wavelength nm	Frequency THz	Channel No.
1543.33	194.25	59	1562.64	191.85	11
1543.73	194.20	58	1563.05	191.80	10
1544.13	194.15	57	1563.45	191.75	9
1544.53	194.10	56	1563.86	191.70	8
1544.92	194.05	55	1564.27	191.65	7
1545.32	194.00	54	1564.68	191.60	6
1545.72	1193.9	53	1565.09	191.55	5
1546.12	193.90	52	1565.50	191.50	4
1546.52	193.85	51	1565.90	191.45	3
1546.92	193.80	50	1566.31	191.40	2
1547.32	193.75	49	1566.72	191.35	1

Appendix C: Wavelength Compatibility Table

Table C- 1 Wavelength Compatibility Table

BTI 7000 - 32+8 Channel	BTI 7000 Legacy 44 Channel	BTI 7000 ROADM 96 Channel	MUX/ DEMUX 96 Channel	BP3AM6TL Transceiver 96 Channel	Wavelength nm	Freq. THz
N/A	N/A	610	C96	96	1528.77	196.10
N/A	N/A	605	C95	95	1529.16	196.05
E8	600	600	C94	94	1529.55	196.00
N/A	N/A	595	C93	93	1529.94	195.95
32	590	590	C92	92	1530.33	195.90
N/A	N/A	585	C91	91	1530.72	195.85
31	580	580	C90	90	1531.12	195.80
N/A	N/A	575	C89	89	1531.51	195.75
30	570	570	C88	88	1531.90	195.70
N/A	N/A	565	C87	87	1532.29	195.65
29	560	560	C86	86	1532.68	195.60
N/A	N/A	555	C85	85	1533.07	195.55
28	550	550	C84	84	1533.47	195.50
N/A	N/A	545	C83	83	1533.86	195.45
27	540	540	C82	82	1534.25	195.40
N/A	N/A	535	C81	81	1534.64	195.35
26	530	530	C80	80	1535.04	195.30
N/A	N/A	525	C79	79	1535.43	195.25
25	520	520	C78	78	1535.82	195.20
N/A	N/A	515	C77	77	1536.22	195.15

Table C- 1 Wavelength Compatibility Table

BTI 7000 - 32+8 Channel	BTI 7000 Legacy 44 Channel	BTI 7000 ROADM 96 Channel	MUX/ DEMUX 96 Channel	BP3AM6TL Transceiver 96 Channel	Wavelength nm	Freq. THz
E7	510	510	C76	76	1536.61	195.10
N/A	N/A	505	C75	75	1537.00	195.05
E6	500	500	C74	74	1537.40	195.00
N/A	N/A	495	C73	73	1537.79	194.95
24	490	490	C72	72	1538.19	194.90
N/A	N/A	485	C71	71	1538.58	194.85
23	480	480	C70	70	1538.98	194.80
N/A	N/A	475	C69	69	1539.37	194.75
22	470	470	C68	68	1539.77	194.70
N/A	N/A	465	C67	67	1540.16	194.65
21	460	460	C66	66	1540.56	194.60
N/A	N/A	455	C65	65	1540.95	194.55
20	450	450	C64	64	1541.35	194.50
N/A	N/A	445	C63	63	1541.75	194.45
19	440	440	C62	62	1542.14	194.40
N/A	N/A	435	C61	61	1542.54	194.35
18	430	430	C60	60	1542.94	194.30
N/A	N/A	425	C59	59	1543.33	194.25
17	420	420	C58	58	1543.73	194.20
17	N/A	415	C57	57	1544.13	194.15
E5	410	410	C56	56	1544.53	194.10
N/A	N/A	405	C55	55	1544.92	194.05
E4	400	400	C54	54	1545.32	194.00
N/A	N/A	395	C53	53	1545.72	193.95
16	390	390	C52	52	1546.12	193.90
N/A	N/A	385	C51	51	1546.52	193.85
15	380	380	C50	50	1546.92	193.80
N/A	N/A	375	C49	49	1547.32	193.75
14	370	370	C48	48	1547.72	193.70
N/A	N/A	365	C47	47	1548.11	193.65
13	360	360	C46	46	1548.51	193.60
N/A	N/A	355	C45	45	1548.91	193.55
12	350	350	C44	44	1549.32	193.50
N/A	N/A	345	C43	43	1549.72	193.45
11	340	340	C42	42	1550.12	193.40
N/A	N/A	335	C41	41	1550.52	193.35

Table C- 1 Wavelength Compatibility Table

BTI 7000 - 32+8 Channel	BTI 7000 Legacy 44 Channel	BTI 7000 ROADM 96 Channel	MUX/ DEMUX 96 Channel	BP3AM6TL Transceiver 96 Channel	Wavelength nm	Freq. THz
10	330	330	C40	40	1550.92	193.30
N/A	N/A	325	C39	39	1551.32	193.25
9	320	320	C38	38	1551.72	193.20
N/A	N/A	315	C37	37	1552.12	193.15
E3	310	310	C36	36	1552.52	193.10
N/A	N/A	305	C35	35	1552.93	193.05
E2	300	300	C34	34	1553.33	193.00
N/A	N/A	295	C33	33	1553.73	192.95
8	290	290	C32	32	1554.13	192.90
N/A	N/A	285	C31	31	1554.54	192.85
7	280	280	C30	30	1554.94	192.80
N/A	N/A	275	C29	29	1555.34	192.75
6	270	270	C28	28	1555.75	192.70
N/A	N/A	265	C27	27	1556.15	192.65
5	260	260	C26	26	1556.55	192.60
N/A	N/A	255	C25	25	1556.96	192.55
4	250	250	C24	24	1557.36	192.50
N/A	N/A	245	C23	23	1557.77	192.45
3	240	240	C22	22	1558.17	192.40
N/A	N/A	235	C21	21	1558.58	192.35
2	230	230	C20	20	1558.98	192.30
N/A	N/A	225	C19	19	1559.39	192.25
1	220	220	C18	18	1559.79	192.20
N/A	N/A	215	C17	17	1560.20	192.15
E1	210	210	C16	16	1560.61	192.10
N/A	N/A	205	C15	15	1561.01	192.05
N/A	N/A	200	C14	14	1561.42	192.00
N/A	N/A	195	C13	13	1561.83	191.95
N/A	N/A	190	C12	12	1562.23	191.90
N/A	N/A	185	C11	11	1562.64	191.85
N/A	N/A	180	C10	10	1563.05	191.80
N/A	N/A	175	C9	9	1563.45	191.75
ROADM	N/A	170 (ext)	C8	8	1563.86	191.70
ROADM	N/A	165 (ext)	C7	7	1564.27	191.65
ROADM	N/A	160 (ext)	C6	6	1564.68	191.60
ROADM	N/A	155 (ext)	C5	5	1565.09	191.55

Table C- 1 Wavelength Compatibility Table

BTI 7000 - 32+8 Channel	BTI 7000 Legacy 44 Channel	BTI 7000 ROADM 96 Channel	MUX/ DEMUX 96 Channel	BP3AM6TL Transceiver 96 Channel	Wavelength nm	Freq. THz
ROADM	N/A	150 (ext)	C4	4	1565.50	191.50
ROADM	N/A	145 (ext)	C3	3	1565.90	191.45
ROADM	N/A	140 (ext)	C2	2	1566.31	191.40
ROADM	N/A	135 (ext)	C1	1	1566.72	191.35

Appendix D: Glossary

This appendix provides a listing of glossary terms and acronyms that are common to the packetVX™ and the BTI 700 Series of Ethernet Access Devices.

10 GE LAN PHY

The 10 GE LAN PHY protocol encodes the 10.0 Gb/s data stream from the media access control (MAC) layer to a 10.3125 Gb/s signal using the 64B/66B Physical Coding Sublayer (PCS).

10 Gigabit Small Form Factor Pluggable (XFP)

The 10 Gigabit Small Form Factor Pluggable (XFP) module is a hot pluggable, small footprint, serial-to-serial data-agnostic multirate optical transceiver, intended to support Telecom (SONET OC-192 and G.709 “OTU2”) and Datacom applications (10 Gb/s Ethernet and 10 Gb/s Fibre Channel). Nominal data rates range from 9.95 Gb/s, 10.31 Gb/s, 10.52 Gb/s, 10.70 Gb/s, and the emerging 11.09 Gb/s. The modules support all data encodings for these technologies. The modules may be used to implement single mode or multi-mode serial optical interfaces at 850 nm, 1310 nm, or 1550 nm. The XFP module design can use one of several different optical connectors. An adaptable heat sink option allows a single module design to be compatible with a variety of hosts.

AINS

See Automatic In Service (AINS).

Automatic In Service (AINS)

When provisioned hardware has a secondary state of Automatic In Service (AINS), the hardware is in a delay transition (to the IS) state. Alarms and threshold crossing alerts (TCA) are not generated for the hardware if AINS is present. Once the fault conditions clear, the timer starts counting down and the hardware transitions to In Service when the timer expires.

The system-wide default timer setting for AINS is 08-00 hours. The timer can be configured up to 96-00 (96 hours). If the system-wide default timer for AINS is reset, it will not affect the active timer currently set on a piece of equipment. However, the timer on a specific piece of equipment is reset if the timer for that equipment is changed.

Bandwidth profile

Bandwidth profiles allow an Ethernet service provider to bill for bandwidth usage and engineer their network resources to provide performance assurances for in-profile Service Frames. Bandwidth profiles enable a service provider to offer bandwidth to subscribers in increments less than the UNI (physical port) speed. Such granularity allows subscribers to purchase the bandwidth they need and allow service providers to price services more incrementally than TDM-based services. See CIR, CBR, EIR, and EBR.

Bridge

Bridge connects multiple network segments at the data link layer (layer 2) of the OSI model, and the term layer 2 switch is often used interchangeably with bridge. Bridges are similar to repeaters or network hubs, devices that connect network segments at the physical layer. However, a bridge works by using bridging where traffic from one network is managed rather than simply rebroadcast to adjacent network segments.

CBS

See Committed Burst Size (CBS).

CIR

See Committed Information Rate (CIR).

Class of Service (CoS)

Class of Service (CoS) is a three-bit field within a layer two Ethernet frame header when using IEEE 802.1Q. It specifies a priority value of between 0 (signifying best-effort) and 7 (signifying priority real-time data) that can be used by Quality of Service disciplines to differentiate traffic.

Class of Service (CoS) is a way of managing traffic in a network by grouping similar types of traffic (for example, e-mail, streaming video, voice, large document file transfer) together and treating each type as a class with its own level of service priority. Unlike Quality of Service (QoS) traffic management, Class of Service technologies do not guarantee a level of service in terms of bandwidth and delivery time. They offer a "best-effort" because CoS technology is simpler to manage and more scalable as a network grows in structure and traffic volume. One can think of CoS as "coarsely-grained" traffic control and QoS as "finely-grained" traffic control.

Client

Client is used to distinguish interfaces that connect to subscribers from interfaces that connect to a provider (often called line or network interfaces).

Committed Burst Size (CBS)

The Committed Burst Size (CBS) is the maximum number of bytes allowed for incoming Ethernet Service Frames to still be CIR-conforming. CIR-conforming Service Frames are colored green.

Committed Information Rate (CIR)

The Committed Information Rate (CIR) is the average rate up to which Ethernet Service Frames are delivered per the service performance objectives. Such frames are referred to as being ‘CIR-compliant’. The CIR is an average rate because all Service Frames are always sent at the UNI speed, for example, 10Mbps, and not at the CIR, for example, 2Mbps. Service Frames whose average rate is greater than the CIR are not CIR-compliant and are either colored yellow (if EIR is non-zero) or are discarded (if EIR=0). A non-zero CIR may be specified to be less than or equal to the UNI speed. If multiple bandwidth profiles are applied at the UNI, the sum of all CIRs in each bandwidth profile must be less than or equal to the UNI speed.

Control Plane

Control plane is a set of protocols, techniques, and algorithms which enable the appropriate and correct switching of the data.

CoS

See Class of Service (CoS).

Customer Bridge

Customer bridge assumes all ports are in the customer domain so there is no distinction between User Network Interface (UNI) ports and Network-to-Network Interface (NNI) ports. This mode is not supported.

Customer VLAN (C-VLAN) tag

Customer VLAN (C-VLAN) tag is the original VLAN tag defined in IEEE 802.1Q. The VLAN field is a 4 byte addition to the Ethernet frame. The 12-bit VLAN tag provides 4096 values of which 0 and 4095 are reserved resulting in 4094 usable VLAN or broadcast domains.

C-VLAN

See Customer VLAN (C-VLAN) tag.

Data Plane

Data plane is the path through the system for the data that is being switched through the networks.

Digital Subscriber Line (DSL)

Digital subscriber lines carry data at high speeds over standard telephone wires. With DSL, data can be delivered at a rate of up to 1.5 Mbps. Also, DSL users can receive voice and data simultaneously so there is no need for a separate phone line.

DSL

See Digital Subscriber Line (DSL).

Dynamic Entry

Dynamic entry to the filtering database is created automatically by the system, for example learned addresses from packets or Virtual LAN (VLAN) registrations from GVRP.

EBS

See Excessive Burst Size (EBS).

EIR

See Excessive Information Rate (EIR).

E-LAN

See Ethernet LAN (E-LAN).

EPL

See Ethernet Private Line (EPL).

Ethernet Bridge

An Ethernet Bridge is an internetworking device that operates at layer 2 (also referred to as the data link or MAC layer) in the OSI network model.

Ethernet LAN (E-LAN)

Any Ethernet service that is based upon a multipoint-to-multipoint Ethernet Virtual Connection is designated as an Ethernet LAN (E-LAN) Service type.

Ethernet Private Line (EPL)

An Ethernet Private Line (EPL) service is specified using an E-Line Service type. EPL uses a point-to-point EVC between two UNIs and provides a high degree of transparency for service frames between the UNIs it interconnects such that the service frame's header and payload are identical at both the source and destination UNI.

The service also has an expectation of low frame delay, frame delay variation and frame loss ratio. It does not allow for service multiplexing, that is, a dedicated UNI (physical interface) is used for the service.

Ethernet Virtual Connection (EVC)

Ethernet Virtual Connection (EVC) is an association of two or more UNIs that limits the exchange of service frames through UNIs in the Ethernet Virtual Connection.

An important thing to note from this definition is that an EVC can be point-to-point (two UNIs) or multipoint (more than two UNIs). EVCs are used to carry services. Point-to-point EVCs carry

a class of services called Ethernet Line or E-Line services. Multipoint EVCs carry a class of services called Ethernet LAN or E-LAN services.

EVC

See Ethernet Virtual Connection (EVC).

Excessive Burst Size (EBS)

EBS is the maximum number of bytes allowed for incoming Ethernet Service Frames to be EIR-compliant. EIR-compliant Service Frames are colored yellow.

Excess Information Rate (EIR)

The Excess Information Rate (EIR) specifies the average rate, greater than or equal to the CIR, up to which Service Frames are admitted into the provider's network. Note that these Service Frames are not CIR-compliant and are hence delivered without any performance objectives. The EIR is an average rate because all Service Frames are sent at the UNI speed, for example, 10Mbps, and not at the EIR, for example, 8Mbps.

FEC

See Forward Error Correction (FEC).

Forward Error Correction (FEC)

Forward Error Correction (FEC) is a system of error control for data transmission, whereby the sender adds redundant data to its messages, also known as an error correction code. This allows the receiver to detect and correct errors (within some bound) without the need to ask the sender for additional data. The advantage of forward error correction is that a back-channel is not required, or that retransmission of data can often be avoided, at the cost of higher bandwidth requirements on average. FEC is therefore applied in situations where retransmissions are relatively costly or impossible.

Filtering Database

The IEEE 802 standards are written from the point-of-view that all received packets should be forwarded everywhere (that is, flooded) unless forwarding is restricted by entries in the filtering database. This is often called the *forwarding database* or *address database*. In 802.1Q the filtering database can contain both address entries and VLAN entries, either or both of which can be used to limit the forwarding of a packet to fewer than "all ports" — usually none or one for a unicast packet.

Frame

Frame is a data packet of fixed or variable length which has been encoded by a data link layer communications protocol for digital transmission over a node-to-node link. Each frame consists of a header frame synchronization and perhaps bit synchronization, payload (useful information, or a packet at higher protocol layer) and trailer. Examples are Ethernet frames and Point-to-point protocol (PPP) frames.

GARP VLAN Registration Protocol (GVRP)

GARP VLAN Registration Protocol (GVRP) is a standards-based Layer 2 network protocol, for automatic configuration of VLAN information on switches.

Within a layer 2 network, GVRP provides a method to dynamically share VLAN information and configure the needed VLANs. For example, to add a switch port to a VLAN, only the end port need be reconfigured, and all necessary VLAN trunks are dynamically created on the other GVRP-enabled switches. Without GVRP, manual configuration of VLAN trunks is necessary.

It is through GVRP that Dynamic VLAN entries are updated in the Filtering Database. In short, GVRP helps to maintain VLAN configuration dynamically based on current network configurations.

GE

See Gigabit Ethernet (GE).

Gigabit Ethernet (GE)

Gigabit Ethernet (GE) is a version of Ethernet that supports data transfer rates of 1 Gigabit per second.

GVRP

See GARP VLAN Registration Protocol (GVRP).

Ingress Filtering

If a packet is received with a tag for VLAN “x”, ingress filtering discards the packet if the port is not in the member set of VLAN “x”. Disabling ingress filtering does not apply this check and a packet is subject to other forwarding and filtering functions.

Interface

Interface refers to the physical input/output channels and various aggregates and abstractions that fill the same architectural slot (such as, a Link Aggregation Group (LAG)).

Internet Protocol (IP)

The Internet Protocol (IP) is a data-oriented protocol used for communicating data across a packet-switched internetwork. IP is a network layer protocol in the Internet protocol suite and is encapsulated in a data link layer protocol (for example, Ethernet). As a lower layer protocol, IP provides the service of communicable unique global addressing amongst computers.

Internet Protocol Television (IPTV)

Internet Protocol Television (IPTV) is a system where a digital television service is delivered by using Internet Protocol over a network infrastructure, which may include delivery by a broadband connection. A general definition of IPTV is television content that, instead of being delivered through traditional broadcast and cable formats, is received by the viewer through the technologies used for computer networks.

IP

See Internet Protocol (IP).

IPTV

See Internet Protocol Television (IPTV).

LAG

See Link Aggregation Group (LAG).

LAN

See Local Area Network (LAN).

Line

Line is used to distinguish between interfaces that connect to a service provider line.

Link Aggregation Group (LAG)

A Link Aggregation Group (LAG) is a group of two or more network links bundled together to appear as a single link. For instance, bundling two 100 Mbps network interfaces into a single link creates one 200 Mbps link. A LAG can include two or more network ports and two or more fibers, but the software sees the link as one logical link.

Local Area Network (LAN)

A Local Area Network (LAN) is a computer network that spans a relatively small area. Most LANs are confined to a single building or group of buildings. However, one LAN can be connected to other LANs over any distance. A system of LANs connected in this way is called a wide-area network (WAN).

Logical Interfaces

Logical interfaces provide the ability to do one-to-many multiplexing on the physical interfaces (for example, Link Aggregation) and many-to-one multiplexing in some systems (for example, virtual concatenation groups on top of a SONET interface).

MAC

See Media Access Control (MAC).

Media Access Control (MAC)

The Media Access Control (MAC) data communication protocol sub-layer is a sub layer of the Data Link Layer specified in the seven-layer OSI model (layer 2). It provides addressing and channel access control mechanisms that make it possible for several terminals or network nodes to communicate within a multipoint network.

MAC address

The Media Access Control (MAC) address is a hardware address that uniquely identifies each node of a network. In IEEE 802 networks, the Data Link Control (DLC) layer of the OSI Reference Model is divided into two sub layers: the Logical Link Control (LLC) layer and the Media Access Control (MAC) layer. The MAC layer interfaces directly with the network medium. Consequently, each different type of network medium requires a different MAC layer.

On networks that do not conform to the IEEE 802 standards but do conform to the OSI Reference Model, the node address is called the Data Link Control (DLC) address.

Management Plane

Management plane is a set of protocols, techniques, and algorithms for monitoring, configuring, and controlling the system and the operation of the control and data planes.

MSAN

See Multiservice Access Node (MSAN).

Multiservice Access Node (MSAN)

A multiservice access node (MSAN) is a device typically installed in a telephone exchange (although sometimes in a roadside serving area interface cabinet) which connects customers' telephone lines to the core network, to provide telephony, ISDN, and broadband such as DSL all from a single platform.

Network

Network is used to distinguish between interfaces that connect to a service provider line.

Network-to-Network Interface (NNI)

Network-to-Network Interface (NNI) is an interface that specifies signaling and management functions between two networks.

OSI Model

Open Systems Interconnection Basic Reference Model (OSI Reference Model or OSI Model) is an abstract description for layered communications and computer network protocol design. It was developed as part of the Open Systems Interconnection (OSI) initiative. In its most basic form, it divides network architecture into seven layers which, from top to bottom, are the Application, Presentation, Session, Transport, Network, Data-Link, and Physical Layers. It is therefore often referred to as the OSI Seven Layer Model.

Optical Transport Network (OTN)

Optical Transport Network (OTN) is composed of a set of Optical Network Elements (3R) that are connected by optical fiber links, able to provide functionality of transport, multiplexing, switching, management, supervision and survivability of optical channels carrying client signals.

OTN

See Optical Transport Network (OTN).

OTU2

The OTU2 protocol operating over the Optical Transport Network (OTN) has a line rate of approximately 10.7 Gbit/s and is designed to transport an OC-192, STM-64 or 10Gbit/s WAN. OTU2 can be over clocked (non standard) to carry signals faster than STM-64/OC-192 (9.953Gbit/s) like 10 gigabit Ethernet LAN PHY coming from IP/Ethernet switches and routers at full line rate (10.3 Gbit/s).

packetVX™

packetVX™ refers to the family of Internet protocol (IP) packet and layer 2 Ethernet services on a microWDM platform.

Packet

Packet is a formatted block of data carried by a packet mode computer network.

PB

See Provider Bridge (PB).

PCS

See Physical Coding Sublayer (PCS).

Permanent Database

Permanent database is a non-volatile group of static entries that is used as the boot image for the filtering database.

Physical Coding Sublayer (PCS)

The Physical Coding Sublayer (PCS) helps to define physical layer specifications for Fast Ethernet, Gigabit Ethernet and 10 Gigabit Ethernet. The Ethernet PCS sublayer is part of the Ethernet PHY layer.

Physical Interfaces

Physical interfaces are the lowest layer of the system that consists of wires and fibers.

Port

Port is the logical bridging channel that sits on top of an interface and provides support for the layer 2 services required by the bridge and the MAC service user.

Provider Bridge (PB)

Provider Bridge (PB) contains either one S-VLAN component or an S-VLAN component and one or more C-VLAN components.

PVX

See packetVX.

Q-in-Q

Q-in-Q, as defined in the IEEE 802.ad amendment to 802.1Q, is a provider bridge extension in the 802.1Q VLAN tag, also known as stackable VLANs. It enables service providers to use a single VLAN to support customers who have multiple VLANs.

QoS

See Quality of Service (QoS).

Quality of Service (QoS)

Quality of Service (QoS) is a networking term that specifies a guaranteed throughput level. One of the biggest advantages of ATM over competing technologies, such as Frame Relay and Fast Ethernet, is that it supports QoS levels. This allows ATM providers to guarantee to their customers that end-to-end latency will not exceed a specified level.

Services

Services are provided on each port, such as Ethernet Private Line (EPL) or Ethernet Private LAN services.

Service provider VLAN (S-VLAN) tag

The service provider VLAN tag is a new outer VLAN tag. The S-VLAN tag has roughly the same 32 bit structure as the original VLAN tag (C-VLAN) except that the TPID is different, 0x88A811 and the CFI bit is a discard eligibility indicator (DEI).

SONET

Synchronous optical networking (SONET).

Spanning-Tree Protocol (STP)

Spanning-Tree Protocol (STP) is a link management protocol that provides path redundancy while preventing undesirable loops in the network. For an Ethernet network to function properly, only one active path can exist between two stations.

Static Entry

Static entry to the filtering database is created through a network management (that is, human) action.

STP

See Spanning-Tree Protocol.

S-VLAN

See Service provider VLAN (S-VLAN) tag.

TDM

See Time Division Multiplexing (TDM).

Time Division Multiplexing (TDM)

Time Division Multiplexing transmits multiple signals simultaneously over a single transmission path. Each lower-speed signal is time sliced into one high-speed transmission. In the simplest example, three incoming 1,000 bps signals (A, B and C) can be interleaved into one outgoing 3,000 bps signal as ABCABCABCABC. The receiving end divides the single stream back into its original signals.

UNI

See User Network Interface (UNI).

User Network Interface (UNI)

The User Network Interface (UNI) is the physical interface or port that is the demarcation between the customer and the service provider (such as, a cable operator, carrier, or multiple system operators).

Virtual LAN (VLAN)

VLAN is a virtual LAN that is a broadcast domain created by switches. Normally, it is a router creating that broadcast domain. With VLANs, a switch can create the broadcast domain. This works by putting some switch ports in a VLAN other than one (1), the default VLAN. All ports in a single VLAN are in a single broadcast domain.

Virtual Switch

A Virtual Switch is a set of two or more packetVX modules that are connected together into a stack. One packetVX module controls the operation of the stack and is called the stack master. The stack master and the other packetVX modules in the stack are stack members.

VLAN

See Virtual LAN (VLAN).

XFP

See 10 Gigabit Small Form Factor Pluggable (XFP).



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