APPENDIX **B**

Pseudo Command Line Interface Reference

This chapter describes Pseudo-IOS command line interface (PCLI) for GE_XP, 10GE_XP, GE_XPE, and 10GE_XPE cards.

Note Unless otherwise specified, "ONS 15454" refers to both ANSI and ETSI shelf assemblies.

B.1 Understanding PCLI

PCLI provides an IOS-like command line interface for GE_XP, 10GE_XP, GE_XPE, and 10GE_XPE cards in Layer 2 (L2) mode. PCLI employs the Cisco IOS Modular QoS CLI (MQC).

PCLI is a text interface from where you can operate, provision and retrieve GE_XP, 10GE_XP, GE_XPE, and 10GE_XPE card information. PCLI runs on the Timing, Communications, and Control (TCC) of the node controller, to access card level information. PCLI acts as a Corba client and provides the same provisioning mechanisms as CTC or TL1. PCLI can be accessed via CTC by selecting **Tools > Open Pseudo IOS Connection** menu option or right-click on the node in the Network View and select **Open Pseudo IOS Connection**. To access the PCLI text interface use Telnet, or SSH to open a shell session to connect to a GE_XP, 10GE_XP, GE_XPE, or 10GE_XPE card and input IOS-like commands.

To access PCLI from Windows XP, enter the following command at the Windows command prompt:

```
telnet <node name> <port number>
```

To access PCLI from Solaris 8, enter the following command:

```
ssh -p <Port Number> <Node Name>
telnet <Node Name> <Port Number>
```

The PCLI shell supports the 454 multi-shelf architecture. Multi-shelf supports 16 shelves with each shelf containing 17 slots. The GE_XP, 10GE_XP, GE_XPE, or 10GE_XPE cards can be inserted in any Input/Output (IO) slot or shelf. PCLI also provides a command to virtually connect to a specified shelf/slot. However, connection to a non-Xponder slot or to an Xponder slot that is not in L2 mode is not supported. PCLI supports a maximum of 16 concurrent login sessions per node controller. A session can be cancelled by logging out of the PCLI session or when the idle timer times out.

Note PCLI adheres to the idle user timeout period security policy set via CTC or TL1.

Note For information on viewing security policies, refer the task, "DLP-G189 Change Security Policy for Multiple Nodes" in the *Cisco ONS 15454 DWDM Procedure Guide.*

If a PCLI session on a node using a given port number is open, the port number used by the PCLI session cannot be changed. When connecting in a Non-Secure state to a node and a port, use the configured port number for non-secured mode only, and when connecting via a Secure state to a node and a port, use the configured port number for Secure mode.

B.1.1 PCLI Security

PCLI supports configurable secure or unsecure access with a configurable port number per access mechanism. Use CTC to view or modify these settings. The default access state is "Non-secure" and the default port number is "65000".

PCLI supports an unsecured connection via Telnet and a secure connection via Secure Shell (SSH) by using existing system authentication, authorization and accounting (AAA) mechanisms. Login with user/password that is configured at the Network Element (NE). Use CTC or TL1 to manage user accounts.

Note If you have logged in to a PCLI connection in an Non-Secure state and change the connection via CTC to a Secure one (or vice versa), the Non-Secure state in PCLI (or Secure, as the case may be) is closed once the CTC configuration is completed.

For information on setting the access states (Non-secure or Secure), refer *Cisco ONS 15454 DWDM Procedure Guide*.

B.2 PCLI Command Modes

The PCLI supports eight different command modes. Each command mode can be accessed by specifying a command. The prompt changes to reflect the new command mode that you are in. Consequently, the set of valid commands changes to reflect the sub-commands that are allowed within that mode.

The following section shows supported PCLI commands for each command mode.

B.2.1 Common Commands

The following commands are common across all command modes.

- ?—Enter a question mark (?) at the system prompt to display a list of commands available in each command mode.
- !— Enter an exclamation symbol (!) at the system prompt to add comments.
- exit—Enter exit at the system prompt to exit from the mode you are currently in.

B.2.2 User EXEC Mode

Prompt: (>)

After a successful login, the system goes to User Executive (EXEC) command mode. Most PCLI commands in the User EXEC mode do not change system operation. The User EXEC mode allows you to work on multiple GE_XP, 10GE_XP, GE_XPE, and 10GE_XPE cards during a single session while restricting the view at any given time to a single card in a specific shelf and slot. This mode displays system wide parameters that span all cards in the node.

The following commands are supported in the User EXEC mode:

- enable shelf/slot
- show modules
- show users

B.2.3 Privileged EXEC Mode

Prompt: (#)

In general, the Privileged EXEC commands allow you to connect to remote devices, perform basic tests, and lists system information. Most CLI commands in Privileged EXEC mode do not change or modify provisioning and system operation. The most common EXEC commands are show commands and are used to display configuration or operational data, and do not have capability to modify provisioning.

To enter privileged EXEC mode, use the enable shelf/slot command.

The following commands are part of Privileged EXEC mode:

- configure terminal
- reload
- show startup-config
- show users
- show ip igmp snooping groups vlan vlanid
- show interfaces
- show ethernet service instance name
- show vlan profiles
- show vlans
- show modules
- show controllers type port
- show history
- show policy-maps
- show policy-map name
- show policy-map type port
- show lacp [detail]
- ethernet oam remote-loopback
- show ethernet oam discovery
- show ethernet oam statistics
- show ethernet oam status
- show ethernet oam summary

- clear ethernet cfm
- clear ethernet cfm statistics
- show ethernet cfm domain
- show ethernet cfm maintenance-points local
- show ethernet cfm maintenance-points
- show ethernet cfm mpdb
- show ethernet cfm statistics
- show interfaces rep
- show rep topology

B.2.4 Global Configuration Mode

Prompt: Node Name# (Config)

Enter global configuration mode from privileged EXEC mode. Global configuration commands generally apply to the whole system rather than just one protocol or interface. You can enter other configuration sub modes listed in this section from global configuration mode.

To enter global configuration mode, use the configure terminal command.

Note The node name can be configured by using CTC. Select **Node view > General > General > Node Name**

The following commands are part of global configuration mode:

- interface channel-group
- ethernet cfm ieee
- ethernet cfm domain
- ethernet cfm service
- mac-address-table learning vlan vlanid
- [no] mac-address-table learning interface type port
- [no] vlan vlan-id
- interface gigabitethernet port
- interface tengigabitethernet port
- policy-map name
- [no] mvr
- mvr vlan
- mvr group ip address count
- rep admin svlan

B.2.5 VLAN Configuration Mode

Prompt: (config-vlan)

Enter VLAN configuration mode from global configuration mode. You can configure parameters for an individual VLAN.

To enter VLAN configuration mode, use the **vlan <vlanid>** command.

The following commands are part of VLAN configuration mode:

- name vlan name
- protected
- ip igmp snooping
- ip igmp snooping immediate-leave
- ip igmp snooping report-suppression

B.2.6 Interface Configuration Mode

Prompt: (config-if)

Enter interface configuration mode from global configuration mode. In this mode and other interface sub modes, a wide variety of capabilities are supported. You can configure provisioning on a specific module interface, i.e. port.

To enter interface configuration mode, use the interface gigabitethernet port or interface tengigabitethernet port command.

The following commands are part of interface configuration mode:

- channel-group channel-number mode chanlgrp-mode
- channel-group channel-number hash chanlgrp-hash
- channel-group channel-number expected speed chanlgrp-speed
- description description
- ethernet oam
- ethernet oam mode
- ethernet oam link-monitor frame
- ethernet oam link-monitor frame-period
- ethernet oam link-monitor frame-seconds
- ethernet oam link-monitor high-threshold
- ethernet oam remote-failure link-fault
- ethernet cfm mip
- ethernet cfm mep
- ethernet cfm interface
- rep segment
- rep stcn
- rep preempt delay
- rep preempt
- rep preempt segment
- rep block port

- shutdown
- mtu bytes
- speed autol1000, 10000
- flowcontrol onloff
- switchport mode trunk
- switchport mode dot1q-tunnel
- service-policy input name
- service-policy output name
- service instance ethernet name
- l2protocol-tunnel
- [no] switchport port-security mac-address mac-address
- ip igmp snooping mrouter

B.2.7 Service Instance Configuration Mode

Prompt: (config-if-srv)

Service instance configuration mode is a sub mode of the interface configuration mode and can be used to define service instances, i.e. Ethernet Flow Points (EFPs). EFPs are specific to a particular interface. Multiple EFPs can be strung together to make an Ethernet Virtual Circuit (EVC).

The encapsulation commands can be used in any combination to implement flexible EFPs. However, the **dot1q** and **untagged** commands must be used for selective mode translations, and the **default** command must be used for transparent mode translations. The following restrictions apply to encapsulation commands:

- Selective and transparent mode apply to a whole port and are mutually exclusive.
- Encapsulation default is for transparent translations. Only one transparent service instance is allowed per port.
- Encapsulation untagged is for selective translation with no *cvlan* tag. If the operation is DOUBLE_ADD (**rewrite ingress tag push dot1q** <*multipurpose vlan*> *second-dot1q* <*svlan*>), only one service instance is allowed per port.

To enter service instance configuration mode, use the service instance ethernet name command.

The following commands are part of service instance configuration mode:

- encapsulation default
- encapsulation dot1q first cvlan last cvlan
- encapsulation untagged
- service-policy input name
- bridge-domain svlan

Note The encapsulation and rewrite commands are work together. These commands take effect only if the following sequence is followed:

1. Enter the encapsulation command.

2. Enter the rewrite command.

Note A service instance cannot be edited once user exits the service instance configuration mode. To make changes to any of these parameters, delete the service instance and recreate it.

B.2.8 Policy Map Configuration Mode

Prompt: (config-pmap)

Enter policy map configuration mode from global configuration mode by using the **policy-map** command to create a policy map or modify an existing policy map. This mode is part of the quality-of-service (QoS) feature.

To attach a QoS policy to a specific interface, you must enter interface configuration mode from global configuration mode by identifying the interface and then using the service-policy command to attach an existing policy. QoS policy map provisioning can be accessed across multiple GE_XP, 10GE_XP, GE_XPE, and 10GE_XPE cards.

To enter policy map configuration mode, enter the policy-map name command from the global config mode.

The following commands are part of policy map configuration mode:

- police cir percent % bc bytes be bytes
- set cos number
- wrr-queue cos-map queue-id cos1 … cosn
- wrr-queue queue-id weight 1-16 bandwidth percent %

B.2.9 VLAN Profile Config Mode

Prompt: (config-profile)

VLAN profile configuration mode can be used to provision the parameters for a VLAN profile. A VLAN profile can later be applied to multiple VLANs. VLAN profile provisioning can be accessed across multiple GE cards.

To enter VLAN profile configuration mode, use the vlan profile *name* command from the global config mode.

The following commands are part of VLAN profile configuration mode:

- police cir percent % bc bytes be bytes

enable *shelf/slot*

To enter privileged EXEC mode, use the **enable** command in user EXEC mode.

enable *shelf/slot*

Syntax Description

shelf/slot	Shelf and slot number.

Command Modes

User EXEC

Usage Guidelines

Use this command to enter privileged configuration mode. Entering privileged EXEC mode enables the use of privileged commands. Note the prompt for user EXEC mode is the greater than symbol (>), and the prompt for privileged EXEC mode is the hash symbol (#).

Examples

```
MSTP-176> enable 2/12
MSTP-176#
```

configure terminal

To enter global configuration mode, use the **configure terminal** command in privileged EXEC mode.

configure terminal

Syntax Description

This command has no arguments or keywords.

Command Modes

Privileged EXEC

Usage Guidelines

Use this command to enter global configuration mode.

After you enter the **configure terminal** command, the system prompt changes from `<node-name>#` to `<node-name>(config)#`, indicating that the card is now in global configuration mode. To leave global configuration mode and return to privileged EXEC mode, type `exit`.

Examples

```
MSTP-176# configure terminal
MSTP-176(config)#
```

show modules

To display summary information (shelf/slot/port, equipment type, service state) of the GE_XP, 10GE_XP, GE_XPE, or 10GE_XPE card, use the **show modules** command in User EXEC and privileged EXEC mode.

show modules

Syntax Description

This command has no arguments or keywords.

Command Default

No default behavior or values.

Command Modes

User EXEC and Privileged EXEC

Examples

The following is sample output of the **show modules** command:

```
MSTP-176# show modules
Shelf/Slot/Port        EquipType              ServiceState
    1/NA/NA              BIC_UNKNOWN              IS-NR
    1/1 /NA           XP_GE_LINE_CARD             IS-NR
    1/1 /1                 PPM_1_PORT     OOS-AU,AINS&UEQ
    1/1 /2                 PPM_1_PORT     OOS-AU,AINS&UEQ
    1/1 /8                 PPM_1_PORT     OOS-AU,AINS&UEQ
    1/1 /9                 PPM_1_PORT     OOS-AU,AINS&UEQ
    1/1 /11                PPM_1_PORT              IS-NR
    1/1 /15                PPM_1_PORT              IS-NR
    1/1 /16                PPM_1_PORT     OOS-AU,AINS&UEQ
MSTP-176#
```

show vlans

To display VLAN information, use the **show vlans** command in privileged EXEC mode.

show vlans

Syntax Description

This command has no arguments or keywords.

Command Default

No default behavior or values

Command Modes

Privileged EXEC

Examples

The following is sample output of the **show vlans** command which shows the status of 1+1 protection, MAC address learning, IGMP snooping, immediate leave, and report suppression on the GE_XP, 10GE_XP, GE_XPE, or 10GE_XPE card for a given VLAN.

```
MSTP-176# show vlans
                                    IGMP
VLAN Name Prot MAC Learn   Enable Immed Suppress
2          F    F            F     F     T
50         F    F            F     F     F
100        F    F            T     F     T
101        F    F            F     F     T
MSTP-176#
```

show interfaces

To display port level parameters and statistics of interfaces configured on the GE_XP, 10GE_XP, GE_XPE, or 10GE_XPE, use the **show interfaces** command in privileged EXEC mode.

show interfaces

Syntax Description

This command has no arguments or keywords.

Defaults

Privileged EXEC

Examples

The following is sample output of the **show interfaces** command. The output in the example depends on the type and number of interfaces in the card. For this reason only a part of the output is shown.

```
MSTP-176# show interfaces
Port 22 (Trunk),  Port name:
Admin State: ADMIN_IS, Service State: IS_NR
Reach: LR, Wavelength: WV_1310, AIS Action: NONE
Flow Control: DISABLED, Duplex Mode: FULL, Speed: SPEED_10G, MTU: 9700
NI Mode: NNI, MAC Learning: DISABLED, IGMP Static Router Port: DISABLED
Ingress CoS: 0, Ethertype Inner/Outer: 8100/8100, Egress QoS: DISABLED
Committed Info Rate: 100, Burst Size Committed/Excess: BCKT_4K/BCKT_4K
ifInOctets: 196928,  rxTotalPkts: 2896, ifInUcastPkts: 0
ifInMulticastPkts: 2896, ifInBroadcastPkts: 0
ifInDiscards: 0, ifOutOctets: 448072424, txTotalPkts: 132911365
ifOutMulticastPkts: 132911359, ifOutBroadcastPkts: 0
ifOutDiscards: 0, ifOutErrors: 0
dot3StatsAlignmentErrors: 0, dot3StatsFCSErrors: 0
dot3StatsFrameTooLong: 0, dot3StatsControlInUnknownOpCodes: 0
dot3StatsInPauseFrames: 0, dot3StatsOutPauseFrames: 0
etherStatsUndersizePkts: 0, etherStatsFragments: 0
etherStatsPkts: 132914261, etherStatsPkts64Octets: 0
65-127 Octets: 132914247, 128-255 Octets: 0
256-511 Octets: 0, 512-1023 Octets: 0
1024-1518 Octets: 0, 1519-1522: 0
etherStatsBroadcastPkts: 0, etherStatsMulticastPkts: 132914255
etherStatsOversizePkts: 0, etherStatsJabbers: 0
etherStatsOctets: 448269352, etherStatsCRCAlignErrors: 0
etherStatsOctets: 448269352, etherStatsCRCAlignErrors: 0
ifHCInOctets: 196928, ifHCInUcastPkts: 0
ifHCInMulticastPkts: 2896, ifHCInBroadcastPkts: 0
ifHCOutOctets: 448072424, ifHCOutMulticastPkts: 132911359
ifHCOutBroadcastPkts: 0, etherStatsHighCapacityPkts: 132914261
etherStatsHighCapacityOctets: 448269352
etherStatsHighCapacityPkts64Octets: 0
etherStatsHighCapacityPkts65to127Octets: 132914247
etherStatsHighCapacityPkts128to255Octets: 0
etherStatsHighCapacityPkts256to511Octets: 0
etherStatsHighCapacityPkts512to1023Octets: 0
etherStatsHighCapacityPkts1024to1518Octets: 0
cisRxReports: 2854, cisRxLeaves: 2
cisTxReports: 0, cisTxLeaves: 2
cisTxGeneralQueries: 2251, cisTxGroupSpecificQueries: 6
cisRxGeneralQueries: 35, RxGroupSpecificQueries 5
cisRxValidPackets: 2896, cisRxInvalidPackets: 0
MSTP-176#
```

show policy-maps

To display all policy maps in the node, use the **show policy-maps** command.

Syntax Description

This command has no arguments or keywords.

Defaults

Privileged EXEC

Examples

The following example displays all the policy maps on the GE_XP, 10GE_XP, GE_XPE, or 10GE_XPE cards:

```
MSTP-176# show policy-map
Policy Name: port1
Policy Type: SERVICE INSTANCE
CoS: 2

Policy Name: cos3
Policy Type: INGRESS
Ingress CoS: 3   Committed Info Rate: 80   Committed Burst Size: 1
Excess Burst Size: 2 Excess Info Rate: 100
MSTP-176#
```

show policy-map *name*

To display the information of an unnamed class, use the **show policy-map** command in privileged EXEC mode.

show policy-map *name*

Syntax Description

name	(Optional) The name of the service policy map whose complete configuration is to be displayed. The name can be a maximum of 31 characters.

Defaults

Existing policy map configurations are displayed.

Command Modes

Privileged EXEC

Examples

The **show policy-map** command displays the configuration of a service policy map that was created using the policy-map name command.

The following example displays the contents of policy map “pmapegress” on the GE_XP, 10GE_XP, GE_XPE, or 10GE_XPE card:

```
MSTP-176# show policy-maps pmapegress
Policy Name: pmapegress
Policy Type: EGRESS
CoS: 0     Queue: 0   Bandwidth: 15   Weight: 1
CoS: 1     Queue: 1   Bandwidth: 100   Weight: 1
CoS: 2     Queue: 2   Bandwidth: 100   Weight: 1
CoS: 3     Queue: 3   Bandwidth: 100   Weight: 1
CoS: 4     Queue: 4   Bandwidth: 100   Weight: 1
CoS: 5     Queue: 5   Bandwidth: 100   Weight: 1
CoS: 6     Queue: 6   Bandwidth: 100   Weight: 1
CoS: 7     Queue: 7   Bandwidth: 100   Weight: 1
MSTP-176#
```

show policy-map *type port*

To display all the policy maps configured on the port, use the **show policy-map type port** in privileged EXEC mode.

show policy-map *type port*

Syntax Description

type port	Interface type and port number.

Command Default

This command has no default behavior or values.

Command Modes

Privileged EXEC

Usage Guidelines

The **show policy-map type port** command displays the configuration of classes on the specified interface.

Examples

This section provides sample output of a typical **show policy-map type port** command. The output in the example depends on the type, number of interfaces and options enabled on the card. For this reason only a part of the output is shown and may vary.

```
MSTP-176# show policy-map int g 1
Policy Name: ingress
Policy Type: INGRESS
Ingress CoS: 3   Committed Info Rate: 50   Committed Burst Size: 4K
Excess Burst Size: 4K

Policy Name: new
Policy Type: EGRESS
CoS: 0     Queue: 0   Bandwidth: 100   Weight: 1
CoS: 1     Queue: 1   Bandwidth: 90   Weight: 2
CoS: 2     Queue: 0   Bandwidth: 100   Weight: 1
CoS: 3     Queue: 3   Bandwidth: 100   Weight: 1
CoS: 4     Queue: 4   Bandwidth: 100   Weight: 1
CoS: 5     Queue: 5   Bandwidth: 100   Weight: 1
CoS: 6     Queue: 6   Bandwidth: 100   Weight: 1
CoS: 7     Queue: 7   Bandwidth: 100   Weight: 1
MSTP-176#
```

show controllers *type port*

To display information about Small Form-factor Pluggable (SFP) installed, use the **show controllers *type port*** command in privileged EXEC mode.

show controllers *type port*

Syntax Description

type port	Interface type and port number.

Defaults

No defaults

Command Modes

Privileged EXEC

Examples

This section provides sample output of a typical **show controllers *type port*** command.

```
MSTP-176# show controllers g 2
Port 22 SFP is Present
Equipment Type                   : 1GE/1FC/2FC-1310nm
HW Part Number                   : 10-2273-01
HW Revision                      : A
Serial Number                    : FNS1032J435
CLEI Code                        : WMOTB17AAA
Product ID                       : ONS-SE-G2F-LX
Version ID                       : V01
```

MSTP-176#

show vlan profiles

To display the parameters of all configured VLANs or one VLAN (if the VLAN ID or name is specified), use the **show vlan profiles** command in privileged EXEC mode.

Note A vlan profile is a named set of vlan attributes. A profile can be associated to a VLAN ID on an interface. A profile can be attached to multiple vlan/interface pairs.

show vlan profiles

Command Modes

Privileged EXEC

Examples

The following example shows the output of the **show vlan profiles** command:

```
MSTP-176# show vlan profiles
Name           CIR BC    PIR BE    LinkIntegrity
a_profile      100 4     100 4           F
d_profile      200 4     100 4           T
e_profile      300 4     100 4           F
v_profile      400 4     100 4           T

MSTP-176#
```

show vlan profiles *name*

To display the parameters of all configured VLANs or one VLAN (if the VLAN ID or name is specified), use the **show vlan profiles *name*** command in privileged EXEC mode.

Syntax Description

name	Displays information about a single VLAN identified by VLAN name.

Note A vlan profile is a named set of vlan attributes. A profile can be associated to a VLAN ID on an interface. A profile can be attached to multiple vlan/interface pairs.

Command Modes Privileged EXEC

Examples The following example shows the output of the **show vlan profiles *name*** command:

```
MSTP-176# show vlan profiles a_profile
Name           CIR BC    PIR BE    LinkIntegrity
a_profile      100 4     100 4           F
```

show ethernet service instance *name*

To display information about ethernet customer service instances, use the **show ethernet service instance *name*** command in privileged EXEC mode.

show ethernet service instance *name*

Syntax Description

name	Displays service instance information of the specified service instance.

Command Modes

Privileged EXEC

Usage Guidelines

This command is useful for system monitoring and troubleshooting.

Examples

The following is an example of output from the **show ethernet service instance** command:

```
MSTP-176# show ethernet service instance
Identifier Interface              CE-Vlans
222        FastEthernet0/1       untagged,1-4093
10         FastEthernet0/2
222        FastEthernet0/2       200
333        FastEthernet0/2       default
10         FastEthernet0/3       300
11         FastEthernet0/3
10         FastEthernet0/4       300
10         FastEthernet0/6       untagged,1-4093
10         FastEthernet0/7       untagged,1-4093
10         FastEthernet0/8       untagged,1-4093
10         FastEthernet0/9       untagged
20         FastEthernet0/9
222        FastEthernet0/11      300-350,900-999
333        FastEthernet0/11      100-200,1000,1999-4093
222        FastEthernet0/12      20
333        FastEthernet0/12      10
10         FastEthernet0/13      10
20         FastEthernet0/13      20
30         FastEthernet0/13      30
200        FastEthernet0/13      222
200        FastEthernet0/14      200,222
300        FastEthernet0/14      333
555        FastEthernet0/14      555
```

show users

To display information about the active users on the node, use the **show users** command in user EXEC or privileged EXEC mode.

show users

Syntax Description

This command has no arguments or keywords.

Command Modes

User EXEC or Privileged EXEC

Usage Guidelines

This command displays user name, security level, aaplications users are using and login time of all users on the node.

Examples

The following is a sample output of the **show users** command:

```
MSTP-176# show users
User1, SUPERUSER, PCLI, loginTime:05.13.2000  10:08:29
User2, SUPERUSER, EMS, loginTime:05.13.2000  10:05:27
User3, SUPERUSER, EMS, loginTime:05.13.2000  09:39:35
User4, SUPERUSER, EMS, loginTime:05.13.2000  07:35:18
MSTP-176#
```

reload

To reset a card, use the **reload** command in privileged EXEC mode.

reload

Syntax Description

This command has no arguments or keywords.

Command Modes

Privileged EXEC

Usage Guidelines

This command resets the card that is currently used.

Examples

The following is a sample output of the **reload** command:

```
MSTP-176> reload
Warning! Resetting this card may impact traffic.
Please confirm (yes/no): n
Command cancelled.

MSTP-176>
```

show history

To list the commands you have entered in the current session (in all modes), use the **show history** command.

show history

Syntax Description

This command has no arguments or keywords.

Command Modes

All modes

Usage Guidelines

The **show history** command provides a record of commands you have entered. The history buffer records 100 commands.

The **show history** command can be used with the help of certain keys as shown in Table B-1.

Table B-1 History Keys

Card	Port Description
Ctrl-P or Up Arrow1[1]	Recalls commands in the history buffer in a backward sequence, beginning with the most recent command. Repeat the key sequence to recall successively older commands.
Ctrl-N or Down Arrow[1]	Returns to more recent commands in the history buffer after recalling commands with Ctrl-P or the Up Arrow. Repeat the key sequence to recall successively more recent commands.

1. The arrow keys function only with ANSI-compatible terminals.

Examples

The following is a sample output from the **show history** command, which lists the commands the user has entered in privileged EXEC mode for this session:

```
MSTP-176# show history
help
show users
show history
MSTP-176#
```

show startup-config

To display the current configuration of the GE_XP, 10GE_XP, GE_XPE, or 10GE_XPE card, use the **show startup-config** command in privileged EXEC mode. The start-up config and the running-config are the same.

show startup-config

Syntax Description

This command has no arguments or keywords.

Command Modes

Privileged EXEC

Command Default

No defaults

Examples

The following partial sample output displays the configuration file named startup-config:

```
MSTP-176# show startup-config

interface tengigabitethernet 22
speed 10000
mtu 9700
flowcontrol off
switchport mode trunk
switchport dot1q ethertype 8100
switchport dot1q ethertype inner 8100
no ip igmp snooping mrouter
switchport port-security mac-address blocked
no l2protocol-tunnel
link integrity action none
service instance ethernet
no shutdown

vlan profile a
no link integrity
police cir percent 100 pir percent 100 bc 4 be 4

no mac-address-table learning interface gigabitethernet 11
no mac-address-table learning interface gigabitethernet 13
no mac-address-table learning interface tengigabitethernet 21
no mac-address-table learning interface tengigabitethernet 22
end
MSTP-176#
```

show ip igmp snooping groups vlan *vlanid*

To display the multicast groups that were learned through Internet Group Management Protocol (IGMP) on a given SVLAN/MVLAN, use the **show ip igmp groups vlan *vlanid*** in privileged EXEC mode.

show ip igmp groups vlan *vlanid*

Syntax Description

vlanid	VLAN ID range is 1 to 4093.

Command Modes

Privileged EXEC

Command Default

No defaults.

Examples

The following partial sample output displays the multicast groups for VLAN 10:

```
MSTP-176# show ip igmp sn gr vlan 128
MCAST IP ADDR                   VLAN    Ports
224.1.1.1                       128     ETHER(99)/SH-1/SL-13/PRT-2
224.1.1.2                       128     ETHER(99)/SH-1/SL-13/PRT-2
224.1.1.3                       128     ETHER(99)/SH-1/SL-13/PRT-2

MSTP-176#
```

show lacp [detail]

To display detailed LACP information from the GE_XP, 10GE_XP, GE_XPE, or 10GE_XPE cards, use the **show lacp** command in privileged EXEC mode.

show lacp [detail]

Syntax Description

detail	Shows the detailed LACP information.

Command Default

None

Command Modes

Privileged EXEC (#)

Usage Guidelines

If you omit the **detail** keyword, basic LACP information is shown.

Examples

The following is a sample output for the **show lacp** command:

```
MSTP-176# show lacp
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
Link state can be:
         bndl:     active in an aggregation
         hot-sby:  In hot standby mode (Not supported)
         susp:     LACP not up
         down:     link is not available
_____________________________________________________________________________
Channel Group 1
_____________________________________________________________________________
Actor    Port     Flags   State   LACP Port   Admin   Oper   Port
         Number                   Priority    Key     Key    State
         Phy21    SP      down    32768       1       0      0x44
-----------------------------------------------------------------------------
Partner  Oper     Flags   State   LACP Port   Admin   Oper   Port
         Port #                   Priority    Key     Key    State
Phy21    0        SP      down    0           0       0      0x0
_____________________________________________________________________________
MSTP-176#
```

ethernet oam remote-loopback

To turn on or off the remote loopback function on an EFM interface, use the **ethernet oam remote-loopback** command in privileged EXEC mode. This command does not have a **no** form.

ethernet oam remote-loopback {start|stop} {interface *number***}**

Syntax Description

start	Starts the remote loopback operation.
stop	Stops the remote loopback operation.
interface	Specifies an Ethernet interface.
number	Number of the Ethernet interface. If the operation is start, the range of number is 1 to 20; if the operation is stop, the range of number is 21 to 22.

Command Default

By default, the remote loopback function is turned off.

Command Modes

Privileged EXEC (#)

Usage Guidelines

When the remote loopback function is enabled on an EFM interface, traffic passed on this interface is discarded by the remote interface.

Examples

The following example shows how to start a remote loopback session on a specific interface:

```
MSTP-176# ethernet oam remote-loopback start interface 8
```

show ethernet oam discovery

To display discovery information for all EFM interfaces or for a specific EFM interface, use the **show ethernet oam discovery** command in privileged EXEC mode.

show ethernet oam discovery [interface *number***]**

Syntax Description

interface	Specifies an Ethernet interface.
number	Number of the Ethernet interface. The number ranges from 1 to 22.

Command Default

None

Command Modes

Privileged EXEC (#)

Usage Guidelines

This command displays the following information pertaining to Ethernet OAM discovery:

- Remote device which is directly connected to this device
- Local and remote OAM configuration and capability
- Local and remote OAM mode
- Remote platform identity
- State of the local discovery state machine

If an interface is specified, only data pertaining to the OAM peer on that interface is displayed; otherwise, data for all OAM peers on all interfaces is displayed.

Examples

The following example shows how to display discovery information for a specific EFM interface.

```
MSTP-176# show ethernet oam discovery
Interface-22:
Local client
------------
  Administrative configurations:
                Mode: active
         Link monitor: (on)
      Remote loopback: supported
             Mtu size: 1500
  Operational status:
          Port status: active send
      Loopback status: no loopback
         PDU revision: 0
Remote client
-------------
  Remote Ethernet OAM client has not been found!
MSTP-176#
```

show ethernet oam statistics

To display detailed information about the EFM packets, use the **show ethernet oam statistics** command in privileged EXEC mode.

show ethernet oam statistics [interface *number***]**

Syntax Description

interface	Specifies an Ethernet interface.
number	Number of the Ethernet interface. The number ranges from 1 to 22.

Command Default

None

Command Modes

Privileged EXEC (#)

Usage Guidelines

This command displays the following statistics:

- Rx/Tx OAM Protocol Data Unit (PDU) counters
- Link monitoring events, including event logs, if available
- Remote fault detection events
- Remote loopback events

Examples

The following example shows how to display information for a specific interface:

```
MSTP-176# show ethernet oam statistics interface 22
Interface-22:
Counters:
---------
                     Information OAMPDU Tx: 1
                     Information OAMPDU Rx: 0
       Unique Event Notification OAMPDU Tx: 0
       Unique Event Notification OAMPDU Rx: 0
    Duplicate Event Notification OAMPDU TX: 0
    Duplicate Event Notification OAMPDU RX: 0
                Loopback Control OAMPDU Tx: 0
                Loopback Control OAMPDU Rx: 0
                Variable Request OAMPDU Tx: 0
                Variable Request OAMPDU Rx: 0
               Variable Response OAMPDU Tx: 0
               Variable Response OAMPDU Rx: 0
                           Cisco OAMPDU Tx: 0
                           Cisco OAMPDU Rx: 0
                     Unsupported OAMPDU Tx: 0
                     Unsupported OAMPDU Rx: 0
                    Frames Lost due to OAM: 0
Local Faults:
-------------
1 Link Fault records
```

```
Total link faults: 1
Time stamp: 1271800854d
0 Dying Gasp records
0 Critical Event records
Remote Faults:
--------------
0 Link Fault records
0 Dying Gasp records
0 Critical Event records
Local event logs:
-----------------
0 Errored Symbol Period records
0 Errored Frame records
0 Errored Frame Period records
0 Errored Frame Second records
Remote event logs:
------------------
0 Errored Symbol Period records
0 Errored Frame records
0 Errored Frame Period records
0 Errored Frame Second records
MSTP-176#
```

show ethernet oam status

To display EFM configurations for all interfaces or for a specific interface, use the **show ethernet oam status** command in privileged EXEC mode.

show ethernet oam status [interface *number***]**

Syntax Description

interface	Specifies an Ethernet interface.
number	Number of the Ethernet interface. The number ranges from 1 to 22.

Command Default

None

Command Modes

Privileged EXEC (#)

Usage Guidelines

Use this command to display the runtime settings of link monitoring and general OAM operations for all the interfaces or for a specific interface.

OAM must be operational on the interfaces before you use this command.

Examples

The following example shows how to display EFM configurations for a specific interface:

```
MSTP-176# show ethernet oam status interface 22
Interface-22:
General
-------
            Admin state: enabled
                   Mode: active
               PDU rate: 1 packet per 1 second
           Link timeout: 5 seconds
  High threshold action: error block interface
      Link fault action: error block interface
Link Monitoring
---------------
  Status:
  Frame Error
                 Window: 10 x 100 milliseconds
          Low threshold: 10 error frame(s)
         High threshold: 10 error frame(s)
  Frame Period Error
                 Window: 1000 x 10000 frames
          Low threshold: 9 error frame(s)
         High threshold: 10 error frame(s)
  Frame Seconds Error
                 Window: 100 x 100 milliseconds
          Low threshold: 1 error second(s)
         High threshold: none
MSTP-176#
```

show ethernet oam summary

To display the active EFM sessions on a device, use the **show ethernet oam summary** command in privileged EXEC mode.

show ethernet oam summary

Syntax Description

This command has no arguments or keywords.

Command Default

None

Command Modes

Privileged EXEC (#)

Examples

The following example shows how to display the active EFM sessions on a device:

```
MSTP-176# show ethernet oam summary
Symbols:          * - Master Loopback State,  # - Slave Loopback State
                  & - Error Block State
Capability codes: L - Link Monitor,  R - Remote Loopback
                  U - Unidirection,  V - Variable Retrieval
  Local                        Remote
Interface       MAC Address    OUI    Mode    Capability
Interface-22
MSTP-176#
```

clear ethernet cfm

To clear the Maintenance Intermediate Point (MIP) and Maintenance End Point (MEP) database in CFM, use the **clear ethernet cfm maintenance-points remote** command in privileged EXEC mode.

clear ethernet cfm maintenance-points remote

Syntax Description

This command has no arguments or keywords.

Command Default

None

Command Modes

Privileged EXEC (#)

Examples

The following example shows how to clear MIP and MEP database:

```
MSTP-176# clear ethernet cfm maintenance-points remote
```

clear ethernet cfm statistics

To clear the CFM statistics, use the **clear ethernet cfm statistics** command in privileged EXEC mode.

clear ethernet cfm statistics

Syntax Description

This command has no arguments or keywords.

Command Default

None

Command Modes

Privileged EXEC (#)

Examples

The following example shows how to clear the CFM statistics:

```
MSTP-176# clear ethernet cfm statistics
```

show ethernet cfm domain

To display brief information or detailed information about CFM maintenance domains and services configured under the domains, use the **show ethernet cfm domain** in privileged EXEC mode.

show ethernet cfm domain [brief | *domain_name***]**

Syntax Description

brief	Displays brief information about CFM maintenance domains.
domain_name	Name of the maintenance domain.

Command Default

None

Command Modes

Privileged EXEC (#)

Examples

The following example shows how to display detailed information about a specific CFM maintenance domain:

```
MSTP-176# show ethernet cfm domain test_domain
Domain Name: test_domain           Level:2

Attached to MAProfile: maprofile1  VlanId:150   CCEnabled: True
MSTP-176#
```

show ethernet cfm maintenance-points local

To display the maintenance points configured on a device, use the **show ethernet cfm maintenance-points local** command in privileged EXEC mode.

show ethernet cfm maintenance-points local [mip [level *level*] **[service** *vlan*] **| mep [domain** *domain_name*] **[service** *vlan*]]

Syntax Description

level	Maintenance level. The level range is from 0 to 7.
vlan	VLAN range. The VLAN range is from 1 to 4093.
domain_name	Name of the maintenance domain.

Command Default

None

Command Modes

Privileged EXEC (#)

Examples

The following example shows how to display all the maintenance points configured on a device:

```
MSTP-176# show ethernet cfm maintenance-points local
Local MEP Configuration
Local MIP Configuration
Port: 1   SvlanId :150     level:2
MSTP-176#
```

show ethernet cfm maintenance-points

To display information about remote maintenance point domains, use the **show ethernet cfm maintenance-points remote** in privileged EXEC mode.

show ethernet cfm maintenance-points remote [domain *domain_name***] [service** *vlan***]]**

Syntax Description

domain_name	Name of the maintenance domain.
vlan	VLAN range. The VLAN range is from 1 to 4093.

Command Default

None

Command Modes

Privileged EXEC (#)

Examples

The following example shows how to display information about remote maintenance point domains:

```
MSTP-176# show ethernet cfm maintenance-points remote domain test_domain service 6
Maintenance Domain   Name: test_domain level:6
Domain Name: ma6         VlanId:6
MPId:34  Remote MAC: 22:22:22:22:31:34
Incoming Port:21  ccLifeTime: 3500   ageOfLastCC: 266
MSTP-176#
```

show ethernet cfm mpdb

To display the output of the Ethernet CFM MIP database, use the **show ethernet cfm mpdb** command in privileged EXEC mode.

show ethernet cfm mpdb [level *level***] [service** *vlan***]**

Syntax Description

level	Maintenance level. The level range is from 0 to 7.
vlan	VLAN range. The VLAN range is from 1 to 4093.

Command Default

None

Command Modes

Privileged EXEC (#)

Examples

The following example shows how to displays the output of the CFM MIP database:

```
MSTP-176# show ethernet cfm mpdb level 6 service 6
Level: 6         VlanId:6
MPId:34  Remote MAC: 22:22:22:22:31:34
Ingress Port:21  archiveTimer: 6003500
MSTP-176#
```

show ethernet cfm statistics

To display the CFM statistics, use the **show ethernet cfm statistics** command in privileged EXEC mode.

show ethernet cfm statistics [domain *domain_name*] **[service** *vlan*]

Syntax Description

domain_name	Name of the maintenance domain.
vlan	VLAN range. The VLAN range is from 1 to 4093.

Command Default

None

Command Modes

Privileged EXEC (#)

Examples

The following example shows how to display the CFM statistics:

```
MSTP-176# show ethernet cfm statistics domain test_domain service 6
Domain Name: test_domain VlanId:6     mpId:6
Ccm transmitted:70268  ccmRececived: 583  ccRecvSeqErr: 1 Lt Unexpected recv:0  lbr
transmitted: 0  lbr rcvd in order: 0 Lbr Recvd Seq Error:0  lbr rcvd bad msdu: 0
MSTP-176#
```

show interfaces rep

To display REP configuration and status for a specific interface or for all interfaces, use the **show interfaces rep** command in privileged EXEC mode.

show interfaces [*interface_name***] rep [detail]**

Syntax Description

interface_name	REP configuration and status for a specific physical interface or port channel ID.
detail	Displays detailed REP configuration and status information.

Command Default

None

Command Modes

Privileged EXEC (#)

Examples

The following is a sample output for the **show interfaces rep** command:

```
MSTP-176# show interfaces rep detail
Phy1   REP enabled
Segment-id: 2 (Preferred)
PortID: 00000019076cb77a
Preferred flag: Yes
Operational Link Status: NO_NEIGHBOR
Current Key: 00000019076cb77a5bdd
Port Role: Fail No Ext Neighbor
Blocked VLAN: 1-4094
Rcvd VLAN: <empty>
Admin-svlan: 0
Admin-cvlan: 0
Preempt Delay Timer: disabled
LSL Ageout Timer: 5000 ms
VLAN load balancing: disabled
STCN Propagate to: none
LSL PDU rx: 0, tx: 102
HFL PDU rx: 0, tx: 0
BPA TLV rx: 0, tx: 0
BPA (STCN, LSL) TLV rx: 0, tx: 0
BPA (STCN, HFL) TLV rx: 0, tx: 0
EPA-ELECTION TLV rx: 0, tx: 0
EPA-COMMAND TLV rx: 0, tx: 0
EPA-INFO TLV rx: 0, tx: 0
MSTP-176#
```

show rep topology

To display REP topology information for a segment or for all the segments (including the primary and secondary edge ports in the segment), use the **show rep topology** command in privileged EXEC mode.

show rep topology [segment *id***] [archive] [detail]**

Syntax Description

segment *id*	Displays the REP topology information for a specific segment. The ID range is from 1 to 1024.
archive	Displays the previous topology of the segment.
detail	Displays detailed REP topology information.

Command Default

None

Command Modes

Privileged EXEC (#)

Usage Guidelines

The **archive** keyword is useful for troubleshooting a link failure.

Examples

The following is a sample output for the **show rep topology**command:

```
MSTP-176# show rep topology
BridgeName          PortName   Edge Role
------------------- ---------- ---- ----
     10.64.106.37-s1       Phy1      FailNoNbr
MSTP-176#
```

interface channel-group

To create a channel group on the GE_XP, 10GE_XP, GE_XPE, and 10GE_XPE cards, use the **interface channel-group** command in global configuration mode.

interface channel-group *chanlgrp-num*

Syntax Description

chanlgrp-num	ID of the channel group. The channel group range is as follows: • 1 to 11 on the GE_XP and GE_XPE cards. • 1 to 2 on the 10GE_XP and 10GE_XPE cards.

Command Default

No channel groups are created.

Command Modes

Global Configuration (config)

Examples

The following example shows how to create a channel group with id 7:

```
MSTP-176(config)# interface channel-group 7
```

ethernet cfm ieee

To enable CFM on the GE_XP, 10GE_XP, GE_XPE, and 10GE_XPE cards, use the **ethernet cfm ieee** command in global configuration mode. To disable CFM on the card, use the **no** form of this command.

ethernet cfm ieee

[no] ethernet cfm ieee

Syntax Description

This command has no arguments or keywords.

Command Default

None

Command Modes

Global configuration (config)

Examples

The following example shows how to enable CFM on the GE_XP, 10GE_XP, GE_XPE, and 10GE_XPE cards:

```
MSTP-176# ethernet cfm ieee
```

ethernet cfm domain

To create a maintenance domain, use the **ethernet cfm domain** in global configuration mode.

ethernet cfm domain *domain_name* **level** *level*

[no] ethernet cfm domain *domain_name* **level** *level*

Syntax Description

domain_name	Name of the maintenance domain
level	Maintenance level. The level range is from 0 to 7

Command Default

No maintenance domain is created.

Command Modes

Global configuration (config)

Examples

The following example shows how to create a maintenance domain with level 4:

```
MSTP-176# ethernet cfm domain test_domain level 4
```

ethernet cfm service

To attach the maintenance association to a maintenance domain, use the **ethernet cfm service** command in global configuration mode.

ethernet cfm service *service_name* **vlan** *vlan*

[no] ethernet cfm service *service_name* **vlan** *vlan*

Syntax Description

service_name	Name of the service identified by the maintenance association.
vlan	VLAN range. The VLAN range is from 1 to 4093.

Command Modes

Global configuration (config)

Examples

The following example shows how to attach a maintenance association to a maintenance domain:

```
MSTP-176# ethernet cfm service service name vlan 100
```

rep admin svlan

To configure the REP administrative VLAN to transmit hardware flood layer (HFL) messages, use the **rep admin svlan** command in global configuration mode. To return to the default configuration with VLAN 1 as the administrative VLAN, use the **no** form of this command.

rep admin svlan *svlanid*

no rep admin svlan

Syntax Description

svlanid	SVLAN identifier. The SVLAN range is from 1 to 4093.

Command Default

The default administrative VLAN is VLAN 1.

Command Modes

Global configuration (config)

Usage Guidelines

If the REP administrative VLAN is not configured, the default is VLAN 1. There can be only one administrative VLAN on a switch and on a segment.

Examples

The following example shows how to configure the REP administrative VLAN:

```
MSTP-176(config)# rep admin svlan 4000
```

mac-address-table learning vlan *vlanid*

Use the **mac-address-table learning vlan** global configuration command to enable MAC address learning on a VLAN. Use the no form of this command to disable MAC address learning on a VLAN to control which VLANs can learn MAC addresses.

mac-address-table learning vlan *vlanid*

no mac-address-table learning vlan <vlanid>

Syntax Description

vlanid	VLAN ID range is 1 to 4093.

Command Modes

Global configuration

Command Default

By default, MAC address learning is disabled on all VLANs.

Usage Guidelines

Customers in a service provider network can tunnel a large number of MAC addresses through the network and fill the available MAC address table space. When you control MAC address learning on a VLAN, you can manage the available MAC address table space by controlling which VLANs, and therefore which ports, can learn MAC addresses.

Examples

An example to enable MAC address learning on VLAN 10 is shown:

```
MSTP-176# mac-address-table learning vlan 10
MSTP-176#
```

[no] mac-address-table learning interface *type port*

Use the **mac-address-table learning interface *type port*** global configuration command to specify interface based learning of MAC addresses.

Syntax Description

type/port	Interface type, and the port number.

Command Modes

Global configuration

Command Default

None

Usage Guidelines

None

Examples

This example shows how to enable MAC-address learning on an interface:

```
MSTP-176# mac-address-table learning interface gig 1
MSTP-176#
```

[no] vlan *vlan-id*

To add a VLAN and enter config-VLAN submode, use the vlan command. Use the no form of this command to delete the VLAN.

vlan *vlan-id*

Syntax Description

vlan-id	VLAN ID.

Command Modes

Global configuration

Command Default

None

Usage Guidelines

None

Examples

This example shows how to add a new VLAN and to enter config-VLAN submode:

```
MSTP-176# (config)# vlan 2
MSTP-176# (config-vlan)#
```

interface gigabitethernet *port*

To enter gigabit ethernet (GigE) interface configuration, use the **interface gigabitethernet** command in the appropriate configuration mode.

interface gigabitethernet *port*

Syntax Description

port	Enter port number 1-20.

Command Modes

Global configuration

Command Default

Usage Guidelines

Examples

This example shows how to enter Gigabit Ethernet interface on port 2:

```
MSTP-176(config)# interface gigabitethernet 2
MSTP-176(config-if)#
```

interface tengigabitethernet *port*

To enter ten gigabit ethernet (10 GigE) interface configuration, use the **interface tengigabitethernet** command in the appropriate configuration mode.

interface tengigabitethernet *port*

Syntax Description

port	Enter port number 21-22.

Command Modes

Global configuration

Command Default

Usage Guidelines

Examples

This example shows how to enter 10GigE interface on port 21:

```
MSTP-176(config)# interface tengigabitethernet 21
MSTP-176(config-if)#
```

policy-map *name*

To configure the Quality of Service (QoS) policy map, use the **policy-map** command. Use the no form of this command to delete a policy map.

policy-map name

[no] policy-map name

Syntax Description

name	Policy map name.

Command Modes

Global configuration

Command Default

None

Usage Guidelines

None

Examples

This example shows how to create a QoS policy for ingress traffic on an interface command:

```
MSTP-176(config)# policy map pmap
MSTP-176(config-pmap)# police cir percent 60 pir percent 80 bc 4 be 16
MSTP-176(config-pmap)# set cos 8
MSTP-176(config-pmap)# service-policy input servpol1
MSTP-176# end
```

[no] mvr

Use the **mvr** global configuration command to enable the multicast VLAN registration (MVR) feature on the GE_XP, 10GE_XP, GE_XPE, and 10GE_XPE. Use the **[no] mvr** form of this command to disable MVR and its options.

mvr group ip-address vlan *vlan-id*

[no] mvr group ip-address vlan *vlan-id*

Command Modes

Global Configuration

Command Default

MVR is disabled by default.

Usage Guidelines

A maximum of 256 MVR multicast groups can be configured on the GE_XP, 10GE_XP, GE_XPE, and 10GE_XPE. MVR can be enabled only after the multi-group address and VLAN are configured.

Examples

This example shows how to configure 228.1.23.4 as an IP multicast address:

```
MSTP-176(config)# mvr group 228.1.23.4
```

This example shows how to set VLAN 2 as the multicast VLAN:

```
MSTP-176(config)# mvr vlan 2
```

This example shows how to enable MVR:

```
MSTP-176(config)# mvr
```

This example shows how to disable MVR:

```
MSTP-176(config)# no mvr
```

mvr vlan

To specify the VLAN (SVLAN) to act as a multicast VLAN, use the **mvr vlan** command. All ports must belong to this VLAN.

mvr vlan *svlan*

Syntax Description

svlan	SVLAN ID.

Command Modes

Global Configuration

Command Default

By default MVR is disabled on a SVLAN.

Usage Guidelines

None

Examples

This example shows how to set a VLAN to act as the multicast VLAN:

```
MSTP-176(config)# mvr vlan 22
```

mvr group *ip address count*

To configure an IP multicast address on the GE_XP, 10GE_XP, GE_XPE, or 10GE_XPE card, use the *count* parameter to configure a contiguous series of MVR group addresses. Any multicast data sent to this address is sent to all source ports on the switch and all receiver ports that have elected to receive data on that multicast address. Each multicast address would correspond to one television channel.

mvr group *ip address count*

Syntax Description

count	The range for *count* is 1 to 256.

Command Modes

Global Configuration (config)

Command Default

By default MVR is disabled on a SVLAN.

Examples

The following example shows how to configure two contiguous MVR address groups:

```
MSTP-176(config)# mvr group 228.1.23.4 2
```

ethernet cfm cc_interval *interval*

To configure the value of the Continuity Check timer (CC timer), use the **ethernet cfm cc_interval** command in CFM maintenance association configuration mode.

ethernet cfm cc_interval *interval*

[no] ethernet cfm cc_interval *interval*

Syntax Description

interval	Continuity Check timer interval. The interval values are 1 second, 10 seconds, and 1 minute.

Command Default

The default configuration is 1 second.

Command Modes

CFM Maintenance Association configuration (config-ecfm-srv)

Examples

The following example shows how to set the value of the CC timer to 10 seconds:

```
MSTP-176(config-ecfm-srv)# ethernet cfm cc_interval 10s
```

service *service_name*

To configure the service name for the maintenance association, use the **service** ***service_name*** command in CFM maintenance association configuration mode.

service *service_name*

Syntax Description

service_name	Service name of the maintenance association.

Command Modes

CFM Maintenance Association configuration (config-ecfm-srv)

Examples

The following example shows how to configure a CFM service:

```
MSTP-176(config-ecfm-srv)# service service name
```

continuity-check

To enable the CC timer for the maintenance association profile, use the **continuity-check** command in CFM maintenance association configuration mode. To disable the CC timer for the maintenance association profile, use the **no** form of this command.

continuity-check

[no] continuity-check

Syntax Description

This command has no arguments or keywords.

Command Default

Continuity check is disabled by default.

Command Modes

CFM Maintenance Association configuration (config-ecfm-srv)

Examples

The following example shows how to enable the CC timer for the maintenance association profile:

```
MSTP-176(config-ecfm-srv)# continuity-check
```

name vlan *name*

To configure the VLAN, use the **name vlan** *name* command in VLAN interface configuration mode.

name vlan *name*

Syntax Description

name	Specify the name of the VLAN.

Command Modes

VLAN interface configuration

Command Default

By default, no name is assigned to a VLAN.

Usage Guidelines

Names with blank spaces can be provided by enclosing the name within double quotes.

Examples

The following example shows how to set the VLAN name:

```
MSTP-176(config-vlan)# name MYVLAN
```

protected

To enables or disable Fast Automatic Protection Switching (FAPS) on the specified SVLAN, use the protected command.

protected

[no] protected

Syntax Description

This command has no arguments or keywords.

Command Modes

VLAN interface configuration

Command Default

By default, FAPS is disabled on all SVLANs.

Examples

The following example shows how to configure the card for protection:

```
MSTP-176(config-vlan)# protected
```

ip igmp snooping

To enable IGMP snooping, use the **ip igmp snooping** command. Use the no form of this command to disable IGMP snooping.

ip igmp snooping

no ip igmp snooping

Syntax Description

This command has no arguments or keywords.

Command Default

By default, IGMP snooping is disabled on all SVLANs.

Command Modes

VLAN interface configuration

Usage Guidelines

Before you can enable IGMP snooping configure the VLAN interface for multicast routing.

Examples

This example shows how to enable IGMP snooping:

```
MSTP-176(config-vlan)# ip igmp snooping
MSTP-176(config-vlan)#
```

ip igmp snooping immediate-leave

To enable IGMPv2 snooping immediate-leave processing on all existing VLAN interfaces, use the **ip igmp snooping immediate-leave** command. Use the no form of this command to disable immediate-leave processing.

ip igmp snooping immediate-leave

no ip igmp snooping immediate-leave

Syntax Description

This command has no arguments or keywords.

Defaults

By default, IGMP snooping immediate leave is disabled on all SVLANs.

Command Modes

VLAN interface configuration

Usage Guidelines

The immediate-leave feature is supported only with IGMP version 2.

Examples

This example shows how to enable IGMP immediate-leave processing:

```
MSTP-176(config-vlan)# ip igmp snooping immediate-leave
MSTP-176(config-vlan)#
```

ip igmp snooping report-suppression

To enable report suppression, use the **ip igmp snooping report-suppression** command. Use the no form of this command to disable report suppression and forward the reports to the multicast devices.

ip igmp snooping report-suppression

no igmp snooping report-suppression

Syntax Description

This command has no arguments or keywords.

Defaults

By default, IGMP snooping report-suppression is disabled on all SVLANs.

Command Modes

VLAN interface configuration

Examples

This example shows how to enable report suppression:

```
MSTP-176(config-vlan)# ip igmp snooping report-suppression
MSTP-176(config-vlan)#
```

This example shows how to disable report suppression:

```
MSTP-176(config-vlan)# )# no ip igmp snooping report-suppression
MSTP-176(config-vlan)#
```

channel-group *channel-number* mode *chanlgrp-mode*

To configure the mode for the channel group on the GE_XP, 10GE_XP, GE_XPE, and 10GE_XPE cards, use the **channel-group** *channel-number* **mode** *chanlgrp-mode* command in interface configuration mode. To set the channel group mode to active, use the **no** form of this command.

channel-group *channel-number* **mode** *chanlgrp-mode*

[no] channel-group *channel-number* **mode** *chanlgrp-mode*

Syntax Description

channel-number	Number of the channel group.
chanlgrp-mode	Mode of the channel group. The channel group mode values are active, passive, and manual.

Command Default

The channel group mode is set to active.

Command Modes

Interface Configuration (config-if)

Examples

The following example shows how to change the channel group mode to passive:

```
MSTP-176(config-if)# channel-group 6 mode passive
```

channel-group *channel-number* hash *chanlgrp-hash*

To configure the hashing algorithm for the channel group on the GE_XP, 10GE_XP, GE_XPE, and 10GE_XPE cards, use the **channel-group** *channel-number* **hash** *chanlgrp-hash* command in interface configuration mode.

channel-group *channel-number* **hash** *chanlgrp-hash*

[no] channel-group *channel-number* **hash** *chanlgrp-hash*

Syntax Description

channel-number	Number of the channel group.
chanlgrp-hash	Hashing algorithm for the channel group. The channel group hash values are sa-incoming, da-incoming, sa-da-incoming, src-ip-tcp-udp, dst-ip-tcp-udp, and src-dst-ip-tcp-udp.

Command Default

The hashing algorithm is set to to sa-da-incoming.

Command Modes

Interface Configuration (config-if)

Examples

The following example shows how to change the hashing algorithm for the channel group mode to src-ip-tcp-udp:

```
MSTP-176(config-if)# channel-group 2 hash src-ip-tcp-udp
```

channel-group *channel-number* expected speed *chanlgrp-speed*

To change the expected speed of the channel group on the GE_XP, 10GE_XP, GE_XPE, and 10GE_XPE cards, use the **channel-group** *channel-number* **expected speed** *chanlgrp-speed* command in interface configuration mode.

channel-group *channel-number* **expected speed** *chanlgrp-speed*

[no] channel-group *channel-number* **expected speed** *chanlgrp-speed*

Syntax Description

channel-number	Number of the channel group.
chanlgrp-speed	Expected speed of the channel group. The channel group speed values are 10, 100, and 1000.

Command Default

The default expected speed is 1000.

Command Modes

Interface Configuration (config-if)

Examples

The following example shows how to change the expected speed for the channel group to 100:

```
MSTP-176(config-if)# channel-group 2 expected speed 100
```

description *description*

To specify the port name, use the **description** command in interface configuration mode.

description

Syntax Description

description	Port name can be a maximum of 32 characters

Command Modes

Interface configuration

Usage Guidelines

To view the ports on an interface, use the show interfaces command in privileged EXEC mode.

Examples

This example shows how to specify a port name:

```
MSTP-176(config-if)# description 5p
```

The following partial sample output displays the port name that was set:

```
MSTP-176# show interface

Port 2 (Client),  Port name: 5p
Admin State: ADMIN_OOS_DSBLD, Service State: OOS_MA_DSBLD
Reach: REACH_UNKNOWN, Wavelength: WV_UNKNOWN, AIS Action: NONE
Flow Control: DISABLED, Duplex Mode: FULL, Speed: SPEED_AUTO, MTU: 9700
NI Mode: UNI, MAC Learning: DISABLED, IGMP Static Router Port: DISABLED
Ingress CoS: 0, Ethertype Inner/Outer: 8100/8100, Egress QoS: DISABLED
Committed Info Rate: 100, Burst Size Committed/Excess: BCKT_4K/BCKT_4K
Failed to get PM counters for this port

MSTP-176#
```

ethernet oam

To enable EFM on an interface, use the **ethernet oam** command in interface configuration mode. To disable EFM on an interface, use the **no** form of this command.

ethernet oam

[no] ethernet oam

Syntax Description

This command has no arguments or keywords.

Command Default

EFM is disabled by default.

Command Modes

Interface Configuration (config-if)

Usage Guidelines

When EFM is configured on an interface, the default mode of the EFM client is active. When the EFM mode is enabled on two interfaces passing traffic, both interfaces cannot be in passive mode. Both interfaces can be in active mode, and one can be in active mode and the other in passive mode.

Examples

The following example shows how to enable EFM on an interface:

```
MSTP-176(config-if)# ethernet oam
```

ethernet oam mode

To configure the EFM mode (active or passive) and the timeout parameter, use the **ethernet oam command** in interface configuration mode. To return to the default configuration, use the **no** form of this command.

ethernet oam [mode {active | passive} | timeout *seconds*]

[no] ethernet oam [mode {active | passive} | timeout *seconds*]

Syntax Description

mode	Sets the EFM client mode.
active	Sets the EFM client mode to active after the interface was previously placed in passive mode. The default mode is active.
passive	Sets the EFM client mode to passive. In passive mode, a device cannot initiate discovery, inquire about variables, or set loopback mode.
timeout	Specifies the amount of time, in seconds, after which a device declares its EFM peer to be nonoperational and resets its state machine.
seconds	Number of seconds of the timeout period. The range is from 2 to 30 seconds. The default is 5.

Command Default

EFM mode is active by default.

Command Modes

Interface Configuration (config-if)

Usage Guidelines

When EFM is configured on an interface, the default mode of the EFM client is active. When the EFM mode is enabled on two interfaces passing traffic, both interfaces cannot be in passive mode. Both interfaces can be in active mode, and one can be in active mode and the other in passive mode.

Examples

The following example shows how to set the EFM mode as passive with 25 seconds as timeout period:

```
MSTP-176(config-if)# ethernet oam mode passive timeout 25
```

ethernet oam link-monitor frame

To configure an error frame threshold or window on an EFM interface, use the **ethernet oam link-monitor frame** command in interface configuration mode. To remove the error frame threshold or window, use the **no** form of this command.

ethernet oam link-monitor frame {threshold {high {none| *high frames***} | low {***low frames***}} | window** *milliseconds***}**

[no] ethernet oam link-monitor frame {threshold {high {none| *high frames***} | low {***low frames***}} | window** *milliseconds***}**

Syntax Description

threshold	Sets the number of error frames at, above, or below which an action is triggered.
high	Sets a high error frame threshold in number of frames. High threshold must be greater than the low threshold.
none	Disables a high threshold.
high-frames	Integer in the range of 1 to 65535 that sets the high threshold in number of frames. There is no default. The high threshold must be configured.
low	Sets a low error frame threshold in number of frames.
low-frames	Integer in the range of 0 to 65535 that sets the low threshold in number of frames. The default is 1.
window	Sets a window and period of time during which error frames are counted.
milliseconds	Integer in the range of 10 to 600 that represents milliseconds in multiples of 100. The default is 10.

Command Default

The **ethernet oam link-monitor frame** command is not configured.

Command Modes

Interface Configuration (config-if)

Usage Guidelines

The **ethernet oam link-monitor frame** command configures a number of error frames that triggers an action or a period of time in which error frames are counted.

Examples

The following example shows how to configure an EFM link-monitor frame window of 300 milliseconds:

```
MSTP-176(config-if)# ethernet oam link-monitor frame window 300
```

ethernet oam link-monitor frame-period

To configure an error frame period on an EFM interface, use the **ethernet oam link-monitor frame-period** command in interface configuration mode. To remove the error frame period, use the **no** form of this command.

ethernet oam link-monitor frame-period {threshold {high {none| *high-frames*} | low {*low-frames*}} | window *frames*}

[no] ethernet oam link-monitor frame-period {threshold {high {none| *high-frames*} | low {*low-frames*}} | window *frames*}

Syntax Description

threshold	Sets the number of error frames for the period at, above, or below which an action is triggered.
high	Sets a high threshold for the error frame period in number of frames.
none	Disables a high threshold.
high-frames	Integer in the range of 1 to 65535 that sets the high threshold in number of frames. There is no default. The high threshold must be configured.
low	Sets a low error frame threshold for the error frame period in number of frames.
low-frames	Integer in the range of 0 to 65535 that sets the low threshold in number of frames. The default is 1.
window	Sets a window and period of time during which error frames are counted.
frames	Integer in the range of 1 to 65535 that sets the window size in number of frames. Each value is a multiple of 10000. The default is 1000.

Command Default

The **ethernet oam link-monitor frame-period** command is not configured.

Command Modes

Interface Configuration (config-if)

Usage Guidelines

The **ethernet oam link-monitor frame-period** command configures an error frame period in number of frames. When a high threshold is configured, it must be at least as same as the low threshold for frame errors.

Examples

The following example shows how to configure an EFM link-monitor frame-period window of 20000 frames:

```
MSTP-176(config-if)# ethernet oam link-monitor frame-period window 2
```

The following example shows how to configure an EFM link-monitor frame-period low threshold of 500 frames:

```
MSTP-176(config-if)# ethernet oam link-monitor frame-period threshold low 500
```

ethernet oam link-monitor frame-seconds

To configure the frame-seconds period on an EFM interface, use the **ethernet oam link-monitor frame-seconds** command in interface configuration mode. To remove the frame-seconds period, use the **no** form of this command.

ethernet oam link-monitor frame-seconds {threshold {high {none| *high-frames*} | low {*low-frames*}} | window *milliseconds***}**

[no] ethernet oam link-monitor frame-seconds {threshold {high {none| *high-frames*} | low {*low-frames*}} | window *milliseconds***}**

Syntax Description

threshold	Sets a number at, above, or below which an action is triggered.
high	Sets a high error frame-seconds threshold in number of seconds.
none	Disables a high threshold.
high-frames	Integer in the range of 1 to 900 that sets the high threshold in number of frames. There is no default. The high threshold must be configured.
low	Sets a low error frame-seconds threshold in number of seconds.
low-frames	Integer in the range of 0 to 900 that sets the low threshold in number of frames. The default is 1.
window	Sets a window and period of time during which error frames are counted.
milliseconds	Integer in the range of 100 to 9000 that represents a number of milliseconds in multiples of 100. The default is 100.

Command Default

The **ethernet oam link-monitor frame-seconds** command is not configured.

Command Modes

Interface Configuration (config-if)

Usage Guidelines

The **ethernet oam link-monitor frame-seconds** command configures a number of error frames that triggers an action or a period of time in which error frames are counted.

Examples

The following example shows how to configure an EFM link-monitor frame-seconds window of 30000 milliseconds (30 seconds):

```
MSTP-176(config-if)# ethernet oam link-monitor frame-seconds window 300
```

ethernet oam link-monitor high-threshold

To configure a specific action to occur when a high threshold for an error is exceeded on an EFM interface, use the **ethernet oam link-monitor high-threshold** command in interface configuration mode. To remove the high-threshold action, use the **no** form of this command.

ethernet oam link-monitor high-threshold action {none|disable-port}

[no] ethernet oam link-monitor high-threshold action {none|disable-port}

Syntax Description

action	Specifies the action taken when the high threshold for an error is exceeded.
none	Specifies that no action is taken.
disable-port	Performs an error-disable function on the interface.

Command Default

A high-threshold action is not configured.

Command Modes

Interface Configuration (config-if)

Examples

The following example shows how to configure the disable-port action to occur when the high threshold for an error is exceeded:

```
MSTP-176(config-if)# ethernet oam link-monitor high-threshold action disable-port
```

ethernet oam remote-failure link-fault

To configure the EFM Remote Failure Indication (RFI), use the **ethernet oam remote-failure link-fault** command in interface configuration mode. To remove the configuration, use the **no** form of this command.

ethernet oam remote-failure link-fault action error-block-interface

[no] ethernet oam remote-failure link-fault action error-block-interface

Syntax Description

action	Specifies the action that is taken for RFI.
error-block-interface	Specifies the interface that is placed in the error-block state.

Command Default

The remote failure action is not configured.

Command Modes

Interface Configuration (config-if)

Examples

The following example shows how to configure the error-block-interface action to occur for a remote failure:

```
MSTP-176(config-if)# ethernet oam remote-failure link-fault action error-block-interface
```

ethernet cfm mip

To create a MIP and configure the MIP parameters, use the **ethernet cfm mip** command in interface configuration mode.

ethernet cfm mip level *level* **vlan** *vlan*

[no] ethernet cfm mip level *level* **vlan** *vlan*

Syntax Description

level	Maintenance level. The level range is from is 0 to 7.
vlan	VLAN level. The VLAN range is from 1 to 4093.

Command Default

No MIP is created.

Command Modes

Interface configuration (config-if)

Examples

The following example shows how to create a MIP with the maintenance level 4 and VLAN 100:

```
MSTP-176(config-if)# ethernet cfm mip level 4 vlan 100
```

ethernet cfm mep

To create a MEP and configure the MEP parameters, use the **ethernet cfm mep** command in interface configuration mode.

ethernet cfm mep domain *domain_name* **mepid** *mepid* **vlan** *vlan*

[no] ethernet cfm mep domain *domain_name* **mepid** *mepid* **vlan** *vlan*

Syntax Description

domain_name	Name of the maintenance domain that contains this MEP.
mepid	ID of MEP. The MEPID range is from 1 to 8191.
vlan	VLAN level. The VLAN range is from 1 to 4093.

Command Default

No MEP is created by default.

Command Modes

Interface configuration (config-if)

Examples

The following example shows how to create a MEP:

```
MSTP-176(config-if)# ethernet cfm mep domain test_mep mepid 100 vlan 200
```

ethernet cfm interface

To enable CFM on the interface, use the **ethernet cfm interface** in interface configuration mode. To disable CFM on the interface, use the **no** form of this command.

ethernet cfm interface

[no] ethernet cfm interface

Syntax Description

This command has no arguments or keywords.

Command Default

CFM is disabled on the interface by default.

Command Modes

Interface configuration (config-if)

Examples

The following example shows how to enable CFM on the interface:

```
MSTP-176(config-if)# ethernet cfm interface
```

rep segment

To enable REP on an interface and to assign a segment ID to it, use the **rep segment** command in interface configuration mode. REP is disabled on all interfaces by default. To disable REP on an interface, use the **no** form of this command.

rep segment {*id*} **[edge [no-neighbor] [primary]] [preferred]**

[no] rep segment {*id*} **[edge [no-neighbor] [primary]] [preferred]**

Syntax Description

id	Segment ID assigned to the interface; The range of ID is from 1 to 1024.
edge	Configures the port as an edge port. If you enter the **edge** keyword without the **primary** keyword, the port is configured as a secondary edge port. Each segment has only two edge ports.
no-neighbor	Specifies that the edge port must not have a neighbor port.
primary	Specifies that the port is the primary edge port. A segment has only one primary edge port. If you configure two ports in a segment as the primary edge port, for example ports on different switches, the REP selects one of them to serve as the segment primary edge port.
preferred	Configures the edge port as the preferred alternate port or the preferred port for VLAN load balancing. Configuring a port as **preferred** does not guarantee the port to become an alternate port; it gives the port preference over other similar ports. The alternate port is usually a previously failed port.

Command Default

REP is disabled on the interface.

Command Modes

Interface configuration (config-if)

Usage Guidelines

When REP is enabled on an interface, the default is for the port to be a regular segment port

You must configure two edge ports on each REP segment. If you configure two ports in a segment as the primary edge port, for example, ports on different switches, the configuration is allowed. However, REP selects one of the ports to serve as the segment primary edge port. If you enable REP on two ports on a switch, the ports must be either regular segment ports or edge ports.

Examples

The following example shows how to enable REP on a regular segment port:

```
MSTP-176(config-if)# rep segment 100
```

The following example shows how to enable REP on a port and identify the port as the REP primary edge port:

```
MSTP-176(config-if)# rep segment 100 edge primary
```

The following example shows how to enable REP on a port and identify the port as the REP secondary edge port:

```
MSTP-176(config-if)# rep segment 100 edge
```

Other Examples:

```
MSTP-176(config-if)# rep segment 100 edge no-neighbor
MSTP-176(config-if)# rep segment 100 edge no-neighbor primary
MSTP-176(config-if)# rep segment 100 preferred
MSTP-176(config-if)# rep segment 100 edge preferred
MSTP-176(config-if)# rep segment 100 edge primary preferred
MSTP-176(config-if)# rep segment 100 edge no-neighbor preferred
MSTP-176(config-if)# rep segment 100 edge no-neighbor primary preferred
```

rep stcn

To configure the edge port to send REP segment topology change notifications (STCNs) to another interface or to other segments, use the **rep stcn** command in interface configuration mode. To disable the sending of STCNs to the interface or segment, use the **no** form of this command.

rep stcn {interface {*interface-id***} | segment {***id_list***}}**

[no] rep stcn {interface {*interface-id***} | segment {***id_list***}}**

Syntax Description

interface *interface-id*	Identifies a physical interface or port channel to receive STCNs.
segment	Identifies one REP segment or list of segments to receive STCNs.
id_list	Segment ID list. The valid range is from 1 to 1024.

Command Default

Transmission of STCNs to other interfaces and segments is disabled by default.

Command Modes

Interface configuration (config-if)

Usage Guidelines

STCNs are disabled by default. This command does not apply to regular segment ports.

Examples

The following example shows how to configure a REP edge port to send STCNs:

```
MSTP-176(config-if)# rep stcn segment 50
MSTP-176(config-if)# rep stcn interface <1-22>
```

rep preempt delay

To configure a waiting period after a segment port failure and recovery before VLAN load balancing is triggered, use the **rep preempt delay** command in interface configuration mode. To remove the configured delay, use the **no** form of this command.

rep preempt delay {*seconds*}

[no] rep preempt delay

Syntax Description

seconds	Number of seconds to delay REP preemption. The time delay range is from 15 to 300.

Command Default

No preemption delay is set if you do not enter the **rep preempt delay** command. The default setting is manual preemption with no delay.

Command Modes

Interface configuration (config-if)

Usage Guidelines

Enter this command only on the REP primary edge port. Enter this command and configure a preempt delay if you want VLAN load balancing to automatically trigger after a link failure and recovery.

Examples

The following example shows how to configure REP preemption time delay of 100 seconds on the primary edge port:

```
MSTP-176(config-if)# rep preempt delay 100
```

rep preempt

To manually start the REP preemption, use the **rep preempt** command in interface configuration mode. The **no** form of this command is used to de-activate the REP VLAN load balancing.

rep preempt

Syntax Description

This command has no arguments or keywords.

Command Default

Manual preemption is the default behavior.

Command Modes

Interface configuration (config-if)

Usage Guidelines

Enter this command on the primary edge port where VLAN load balancing is configured.

Examples

The following example shows how to manually trigger REP preemption:

```
MSTP-176(config-if)# rep preempt
```

rep preempt segment

To manually start the REP preemption on a segment, use the **rep preempt segment** command in interface configuration mode. This command does not have a **no** form.

rep preempt segment *segment_id*

Syntax Description

segment_id	ID of the REP segment. The value ranges from 1 to 1024.

Command Default

Manual preemption is the default behavior.

Command Modes

Interface configuration (config-if)

Usage Guidelines

Enter this command on the switch that has the primary edge port.

Examples

The following example shows how to manually trigger REP preemption on segment 100:

```
MSTP-176(config-if)# rep preempt segment 100
```

rep block port

To configure REP VLAN load balancing on the REP primary edge port, use the **rep block port** in interface configuration mode. To return to the default configuration, use the **no** form of this command.

rep block port {id *port_id* **| preferred} vlan {***vlan_list* **| all}**

[no] rep block port {id *port_id* **| preferred} vlan {***vlan_list* **| all}**

Syntax Description

id *port_id*	Identifies the VLAN blocking alternate port by entering the unique port ID that is automatically generated when REP is enabled. The REP port ID is a 16 character hexadecimal value. For example, 0X0080001647FB1780
preferred	Identifies the VLAN blocking alternate port as the segment port. Entering the **preferred** keyword does not ensure that the preferred port is the alternate port; it gives it preference over other similar ports.
vlan	Identifies the VLANs to be blocked.
vlan_list	VLAN ID from 1 to 4094 or a range or sequence of VLANs (such as 1-3, 22, 41-44) of VLANs to be blocked.
all	Blocks all VLANs.

Command Default

All VLANs are blocked at the primary edge port by default.

Command Modes

Interface configuration (config-if)

Usage Guidelines

The default behavior after you enter the **rep preempt segment** privileged EXEC command (for manual preemption) is to block all VLANs at the primary edge port. This behavior remains until you configure the **rep block port** command.

If the primary edge port cannot determine which port is to be the alternate port, the default action is no preemption and no VLAN load balancing.

Examples

The following example shows how to configure the alternate port to block VLANs 1 to 100:

```
MSTP-176(config-if)# rep block port id 0X0080001647FB1780 vlan 1-100
```

shutdown

To disable a port, use the **shutdown** command. Use the **no shutdown** command to enable the port. This command can be executed only by administrators.

shutdown

no shutdown

Syntax Description

This command has no arguments or keywords.

Command Modes

Interface configuration

Examples

This example shows how to shutdown traffic on vlan 2:

```
MSTP-176(config-if)# shutdown vlan 2
```

mtu *bytes*

To set the maximum frame size that will be accepted by the port, use the **mtu** command.

To enable jumbo frames on an interface by adjusting the maximum transmission unit (MTU), use the **mtu** command.

mtu <bytes>

Syntax Description

bytes	Byte size; Valid values are 64-9700.

Defaults

By default, jumbo frames are disabled. The default mtu value is 9700

Command Modes

Interface configuration

Usage Guidelines

Login as an administrator and make sure that the port is down administratively to make this setting.

Examples

This example shows how to specify an MTU of 1800 bytes:

```
MSTP (config)# interface GigabitEthernet 2
MSTP (config-if)# mtu 1800
```

speed *auto|1000, 10000*

To enable auto negotiation or to set the speed manually, use the **speed** command in interface configuration mode.

Syntax Description

auto	Enables Fast Ethernet auto negotiation. The interface automatically operates at 1000 Mbps or 10000 Mbps depending on environmental factors, such as the type of media and transmission speeds for the peer cards, hubs, and switches used in the network configuration. Auto negotiation is the default.

Command Modes

Interface configuration

Usage Guidelines

The speed of client and trunk ports of GE_XP, 10GE_XP, GE_XPE, and 10GE_XPE can be set accordingly:

Table B-2 Setting speed values

Card	Ports	Speed
GE_XP and GE_XPE	Client ports 1 to 20	auto 1000 Mbps
GE_XP and GE_XPE	Trunk ports 21 and 22	10000
10 GE-XP and 10 GE_XPE	Trunk ports 1 to 4	10000

Examples

The following example specifies 1000 Mbps operation:

```
MSTP-176(config-if)# speed 1000
```

flowcontrol on|off

To set a gigabit ethernet interface to send or receive pause frames, use the **flowcontrol** ON or OFF command.

flowcontrol *on|off*

Syntax Description

on	Enables a port to receive and process pause frames from remote ports or send pause frames to remote ports.
off	Prevents a port from receiving and processing pause frames from remote ports or from sending pause frames to remote ports.

Defaults

By default, Gigabit Ethernet and 10 Gigabit Ethernet interface ports are set to off.

Command Modes

Interface configuration

Usage Guidelines

Pause frames are special packets that signal a source to stop sending frames for a specific period of time because the buffers are full.

Examples

This example shows how to enable a port to pause frames:

```
MSTP-176(config-if)# flowcontrol receive on
MSTP-176(config-if)#
```

switchport mode trunk

To set a port as UNI/NNI, use the **switchport mode trunk** command.

switchport mode trunk

Defaults

By default, all client ports are dot1q-tunnel and all trunk ports are trunk.

Command Modes

Interface configuration

Usage Guidelines

The port has to be administratively down to make these settings

Examples

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

```
MSTP(config-if)# switchport mode trunk
```

To verify your settings enter the show interfaces privileged EXEC command.

switchport mode dot1q-tunnel

These commands set a port as UNI/NNI, use the **switchport mode trunk** command.

switchport mode dot1q-tunnel

Syntax Description

This command has no arguments or keywords.

Defaults

By default, all client ports are dot1q-tunnel and all trunk ports are trunk

Command Modes

Interface configuration

Usage Guidelines

Use the switchport mode trunk command to cause the interface to become a trunk.

Examples

This example shows how to configure a port as an IEEE 802.1Q tunnel port:

```
MSTP-176(config-if)# switchport mode dot1q-tunnel
```

To verify your settings enter the show interfaces privileged EXEC command.

service-policy input *name*

To set the ingress and egress QoS parameters on the port by mapping relevant policies to the port, use the **service-policy input** command.

service-policy input *name*

[no] service-policy input *name*

Syntax Description

name	Name of a service policy map to be attached.

Defaults

No policy maps are attached.

Command Modes

Interface configuration

Usage Guidelines

The port must be administratively down for configuring.

Examples

This example shows how to attach a policy map to an interface:

```
MSTP-176(config-if)# service-policy input pmap1
MSTP-176(config-if)#
```

service-policy output *name*

To set the ingress and egress QoS parameters on the port by mapping relevant policies to the port, use the **service-policy output *name*** command in interface configuration command.

service-policy output *name*

[no] service-policy output *name*

Syntax Description

name	Name of a service policy map to be attached.

Defaults

No policy map is attached.

Command Modes

Interface configuration

Examples

This example shows how to attach a policy map to an output interface:

```
MSTP-176(config-if)# service-policy output policy9
MSTP-176(config-if)#
```

service instance ethernet *name*

To create a service instance on an interface, use the **service instance ethernet *name*** command.

service instance ethernet *name*

Syntax Description

name	Name of a service instance. Maximum characters are 32

Command Modes

Interface configuration

Examples

This example shows how to create a service instance:

```
MSTP-176(config-if)# service instance Ethernet servether1
MSTP-176(config-if)#
```

l2protocol-tunnel

To enable protocol tunneling on an interface, use the **l2protocol-tunnel** command.

l2protocol-tunnel

Syntax Description

This command has no arguments or keywords.

Defaults

No Layer 2 protocol packets are tunneled.

Command Modes

Interface configuration

Examples

This example shows how to enable protocol tunneling:

```
MSTP-176(config-if)# l2protocol-tunnel
MSTP-176(config-if)#
```

[no] switchport port-security mac-address *mac-address*

To configure a secure MAC address for an interface, use the **switchport port-security mac-address** command.

switchport port-security mac-address *mac-address*

[no] switchport port-security mac-address *mac-address*

Syntax Description

mac-address	MAC address of the port. The format is 00:00:00:00:00:00

Defaults

MAC address is not secured on the port.

Command Modes

Interface configuration

Examples

This example shows how to configure a MAC address as secure on the interface:

```
MSTP-176(config-if)# switchport port-security mac-address ff:ee:00:12:30:04
```

ip igmp snooping mrouter

To configure a Layer 2 port as a multicast router port, use the ip igmp snooping mrouter command. Use the no form of this command to remove the configuration.

ip igmp snooping mroute

Command Modes

Interface configuration

Usage Guidelines

Takes effect on SVLANS associated with the port where IGMP is enabled.

Examples

This example shows how to specify the next-hop interface to the multicast router:

```
MSTP-176(config-if)# ip igmp snooping mrouter interface gigabitethernet 5
MSTP-176(config-if)#
```

encapsulation default

To set the encapsulation method used by the interface, use the **encapsulation default** command in service interface configuration mode.

encapsulation default

Syntax Description

This command has no arguments or keywords.

Command Modes

Service instance configuration

Usage Guidelines

Execute the rew ing tag push dot1 <svlan> command to set the port in transparent mode.

Examples

```
MSTP-176(config-if-srv)# encapsulation default
```

encapsulation dot1q *first cvlan last cvlan*

To enable IEEE 802.1Q encapsulation of traffic on a specified subinterface in a virtual LAN (VLAN), use the **encapsulation dot1q *first cvlan last cvlan>*** command in service interface configuration mode or subinterface configuration mode

encapsulation dot1q *first cvlan last cvlan>*

Syntax Description

<*first cvlan*> <*last cvlan*>	Comma must be entered to separate each customer VLAN (CVLAN) ID range from the next range.

This command has no arguments or keywords.

Defaults

By default, IEEE 802.1Q encapsulation is disabled.

Command Modes

Service instance configuration

Usage Guidelines

IEEE 802.1Q encapsulation is configurable on interface GiGe and 10Gige interfaces. IEEE 802.1Q is a standard protocol for interconnecting cards and for defining VLAN topologies.

Examples

```
MSTP-176(config-if-srv)# encapsulation dot1q 1000 1002
```

encapsulation untagged

Defines the matching criteria to be used in order to map untagged Ethernet frames ingress on an interface to the appropriate service instance.

encapsulation untagged

Syntax Description

This command has no arguments or keywords.

Command Modes

Service instance configuration

Examples

```
MSTP-176(config-if-srv)# encapsulation untagged
```

bridge-domain *svlan*

To enable RFC 1490 Frame Relay bridging to map a bridged VLAN to the GE_XP, 10GE_XP, GE_XPE, and 10GE_XPE card, use the **bridge-domain** command in service interface configuration mode.

bridge-domain *svlan*

Syntax Description

svlan	SVLAN ID to be used in the bridging configuration. The valid range is from 1 to 4093.

Defaults

Bridging is disabled.

Command Modes

Service instance configuration

Examples

The following example shows the GE_XP, 10GE_XP, GE_XPE, and 10GE_XPE being configured for IEEE 802.1Q VLAN bridging using a VLAN ID of 99:

```
MSTP-176(config-if-srv)# bridge-domain 99
```

police cir percent % bc *bytes* be *bytes*

To configure traffic policing based on a percentage of bandwidth available on an interface, use the police command in policy-map configuration mode.

police cir percent *%* **bc** *bytes* **be** *bytes*

Syntax Description

cir	Committed information rate. Indicates that the cir will be used for policing traffic.
percent	Specifies that percent of bandwidth will be used for calculating the cir.
%	Specifies the bandwidth percentage. Valid range is a number from 1 to 100.
bc	Conform burst (bc) size used by the first token bucket for policing traffic.
be	Peak burst (be) size used by the second token bucket for policing traffic.

Defaults

By default, traffic policing is disabled.

Command Modes

Policy-map configuration and VLAN profile configuration.

Examples

The following example configures traffic policing using a cir and a pir based on a percentage of bandwidth. In this example, a cir of 20 percent and a pir of 40 percent have been specified. Additionally, an optional bc value and be value (300 ms and 400 ms, respectively) have been specified.

```
MSTP(config-pmap)# police cir percent 20 bc 300 ms be 400 ms
```

set cos *number*

To set the Layer 2 class of service (CoS) value of an outgoing packet, use the set cos command in policy-map class configuration mode.

set cos *number*

Syntax Description

number	Specify the CoS value to be applied to the 802.1Q SVLAN tag. Values 0 through 7 specify constant values for the CoS. Values 8 and 9 mean: 8 = TRUST. This value indicates that the CVLAN CoS value must be trusted, i.e. copied into the SVLAN CoS field. 9 = CVLAN. This value indicates that the SVLAN CoS field is set based on the value of the CVLAN ID. This mapping is provided by an EVC service instance. A service instance on an interface can be defined to match frames with one or more CVLANs. That service instance can also have a policy applied that specifies a CoS. The result is a mapping from CVLAN to CoS on an interface.

Defaults

By default, no CoS value is set for the outgoing packet.

Command Modes

Policy-map configuration.

Usage Guidelines

Enter upto 9 CoS values.

Examples

In the following example, the policy map called "cos-set" is created to assign different CoS values for different types of traffic.

```
MSTP(config)# policy-map cos-set
MSTP(config-pmap-c)# set cos 1
```

wrr-queue cos-map *queue-id cos1 … cosn*

To map CoS values to drop thresholds for a queue, use the wrr-queue cos-map command.

wrr-queue cos-map *queue-id cos1 … cosn*

Syntax Description

queue-id	Queue number; the valid value is 1.
cos1 ... cosn	CoS value; valid values are from 0 to 9.

Command Modes

Policy-map configuration.

Examples

This example shows how to map the CoS values 0 and 1 to standard transmit queue 1

```
MSTP(config-pmap)# wrr-queue cos-map 1 1 0
MSTP(config-pmap)#
```

wrr-queue queue-id w*eight 1-16* bandwidth percent *%*

To allocate bandwidth between standard transmit queue 1 (low priority) and standard transmit queue 2 (high priority), use the **wrr-queue bandwidth** command.

wrr-queue <queue-id> weight <1-16> bandwidth percent <%>

Syntax Description

weight <1-16)	WRR weights; valid values are 1 to 15

Command Modes

Policy-map configuration.

Examples

This example shows how to allocate a three-to-one bandwidth ratio:

```
MSTP(config-pmap)# wrr-queue weight 2 bandwidth 3
```