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Chapter 1 Commands for MRPP

1.1 control-vlan

Command: control-vlan <vid>

no control-vlan

Function: Configure control VLAN ID of MRPP ring; the “no control-vlan” command deletes control VLAN ID.

Parameter: <vid> expresses control VLAN ID, the valid range is from 1 to 4094.

Command Mode: MRPP ring mode

Default: None

Usage Guide: The command specifies Virtual VLAN ID of MRPP ring, currently it can be any value in 1-4094. To avoid confusion, it is recommended that the ID is non-configured VLAN ID, and the same to MRPP ring ID. In configuration of MRPP ring of the same MRPP loop switches, the control VLAN ID must be the same, otherwise the whole MRPP loop may not be able to work normally or form broadcast.

The mrpp enable command must be start before the control-vlan command be used. If primary port, secondary port, node-mode and enable commands all be configured after control-vlan, the mrpp-ring function is enabled.

Example: Configure control VLAN of mrpp ring 4000 is 4000.

```
Switch(config)#mrpp ring 4000
```

```
Switch(mrpp-ring-4000)#control-vlan 4000
```

1.2 clear mrpp statistics

Command: clear mrpp statistics [<ring-id>]

Function: Clear statistic information of MRPP data packet of MRPP ring receiving and transferring.

Parameter: <ring-id> is MRPP ring ID, the valid range is from 1 to 4096, if not specified ID, it clears all of MRPP ring statistic information.

Command Mode: Admin Mode.

Default: None.

Usage Guide: None.

Example: Clear statistic information of MRPP ring 4000 of switch.

```
Switch#clear mrpp statistics 4000
```

1.3 debug mrpp

Command: debug mrpp

no debug mrpp

Function: Open MRPP debug information; “no description” command disables MRPP debug information.

Command Mode: Admin Mode

Parameter: None.

Usage Guide: Enable MRPP debug information, and check message process of MRPP protocol and receive data packet process, it is helpful to monitor debug.

Example: Enable debug information of MRPP protocol.

```
Switch#debug mrpp
```

1.4 enable

Command: enable

no enable

Function: Enable configured MRPP ring, the “no enable” command disables this enabled MRPP ring.

Parameter:

Command Mode: MRPP ring mode

Default: Default disable MRPP ring.

Usage Guide: Executing this command, it must enable MRPP protocol, and if other commands have configured, the MRPP ring is enabled.

Example: Configure MRPP ring 4000 of switch to primary node, and enable the MRPP ring.

```
Switch(config)#mrpp enable
```

```
Switch(config)#mrpp ring 4000
```

```
Switch(mrpp-ring-4000)#control-vlan 4000
```

```
Switch(mrpp-ring-4000)# node-mode master
```

```
Switch(mrpp-ring-4000)#fail-timer 18
```

```
Switch(mrpp-ring-4000)#hello-timer 6
```

```
Switch(mrpp-ring-4000)#enable
```

```
Switch(mrpp-ring-4000)#exit
```

```
Switch(config)#in ethernet1/0/1
```

```
Switch(config-If-Ethernet1/0/1)#mrpp ring 4000 primary-port
```

```
Switch(config)#in ethernet 1/0/3
```

```
Switch(config-If-Ethernet1/0/3)#mrpp ring 4000 secondary-port
```

1.5 errp domain

Command: `errp domain <domain-id>`

`no errp domain <domain-id>`

Function: Create ERRP domain, the no command deletes the configured ERRP domain.

Parameter: `<domain-id>` domain ID of ERRP, the range between 1 and 15.

Command Mode: Global mode

Usage Guide: If domain ID of ERRP needs to be configured, the compatible mode of ERRP should be enabled firstly. When executing this command, it should create a new ERRP domain if there is no ERRP domain. However, the no command is used to delete the corresponding domain ID of ERRP.

Example: Configure domain ID for ERRP globally.

```
Switch(Config)#errp domain 1
```

1.6 fail-timer

Command: `fail-timer <timer>`

`no fail-timer`

Function: Configure if the primary node of MRPP ring receive Timer interval of Hello packet or not, the “no fail-timer” command restores default timer interval.

Parameter: `<timer>` valid range is from 1 to 300s.

Command Mode: MRPP ring mode

Default: Default configure timer interval 3s.

Usage Guide: If primary node of MRPP ring doesn't receives Hello packet from primary port of primary node on configured fail timer, the whole loop is fail. Transfer node of MRPP doesn't need this timer and configure. To avoid time delay by transfer node forwards Hello packet, the value of fail timer must be more than or equal to 3 times of Hello timer. On time delay loop, it needs to modify the default and increase the value to avoid primary node doesn't receive Hello packet on fail timer due to time delay.

Example: Configure fail timer of MRPP ring 4000 to 10s.

```
Switch(config)# mrpp ring 4000
```

```
Switch(mrpp-ring-4000)#fail-timer 10
```

1.7 hello-timer

Command: `hello-timer <timer>`

`no hello-timer`

Function: Configure timer interval of Hello packet from primary node of MRPP ring, the “no hello-timer” command restores timer interval of default.

Parameter: `<timer>` valid range is from 1 to 100s.

Command Mode: MRPP ring mode

Default: Default configuration timer interval is 1s.

Usage Guide: The primary node of MRPP ring continuously sends Hello packet on configured Hello timer interval, if secondary port of primary node can receive this packet in configured period; the whole loop is normal, otherwise fail. Transfer node of MRPP ring doesn't need this timer and configure.

Example: Configure hello-timer of MRPP ring 4000 to 3 seconds.

```
Switch(config)# mrpp ring 4000
```

```
Switch(mrpp-ring-4000)#hello-timer 3
```

1.8 mrpp eaps compatible

Command: `mrpp eaps compatible`

`no mrpp eaps compatible`

Function: Enable the compatible mode for EAPS, the no command disables the compatible mode.

Parameter: None.

Command Mode: Global mode

Default: Disable the compatible function of EAPS.

Usage Guide: If the compatible function of EAPS needs to be configured, MRPP protocol should be enabled firstly. When executing `no mrpp eaps compatible` command, it should ensure that the switch has enabled MRPP protocol.

Example: Enable the compatible function of EAPS globally.

```
Switch(Config)#mrpp enable
```

```
Switch(Config)#mrpp eaps compatible
```

1.9 mrpp enable

Command: `mrpp enable`

no mrpp enable

Function: Enable MRPP protocol module, the “no mrpp enable” command disables MRPP protocol.

Parameter: None.

Command Mode: Global Mode.

Default: The system doesn't enable MRPP protocol module.

Usage Guide: If it needs to configure MRPP ring, it enables MRPP protocol. Executing “no mrpp enable” command, it ensures to disable the switch enabled MRPP ring.

Example: Globally enable MRPP.

```
Switch(config)#mrpp enable
```

1.10 mrpp errp compatible

Command: mrpp errp compatible

no mrpp errp compatible

Function: Enable the compatible mode for ERRP, the no command disables the compatible mode.

Parameter: None.

Command Mode: Global mode

Default: Disable the compatible function of ERRP.

Usage Guide: If the compatible function of ERRP needs to be configured, MRPP protocol should be enabled firstly. Furthermore, the port with ERRP compatible mode should be configured as hybrid or trunk mode and allow the packets with Control Vlan information.

Example: Enable the compatible function of ERRP globally.

```
Switch(Config)#mrpp enable
```

```
Switch(Config)#mrpp errp compatible
```

```
Switch(Config)#mrpp ring 2
```

```
Switch(mrpp-ring-2)#control-vlan 4000
```

```
Switch(config-if-ethernet1/51)#switchport mode hybrid
```

```
Switch(config-if-ethernet1/51)#switchport hybrid allowed vlan 4000 tag
```

```
Switch(config-if-ethernet1/52)#switchport mode hybrid
```

```
Switch(config-if-ethernet1/52)#switchport hybrid allowed vlan 4000 tag
```

1.11 mrpp poll-time

Command: mrpp poll-time <20-2000>

Function: Configure the query interval of MRPP.

Command mode: Global mode.

Usage Guide: Configure the query time to adjust the query interval of MRPP, the default interval is 100ms.

Example: Set the query time as 200ms.

```
Switch(Config)# mrpp poll-time 200
```

1.12 mrpp ring

Command: `mrpp ring <ring-id>`

`no mrpp ring <ring-id>`

Function: Create MRPP ring, and access MRPP ring mode, the “`no mrpp ring<ring-id>`” command deletes configured MRPP ring.

Parameter: `<ring-id>` is MRPP ring ID, the valid range is from 1 to 4096.

Command Mode: Global Mode

Usage Guide: If this MRPP ring doesn't exist it create new MRPP ring when executing the command, and then it enter MRPP ring mode. It needs to ensure disable this MRPP ring when executing the “`no mrpp ring`” command.

Example:

```
Switch(config)#mrpp ring 100
```

1.13 mrpp ring primary-port

Command: `mrpp ring <ring-id> primary-port {cos <cos>}`

`no mrpp ring <ring-id> primary-port`

Function: Specify MRPP ring primary-port and the cos which is brought in the packet head tag of port sending packet.

Parameter: `<ring-id>` is the ID of MRPP ring; range is <1-4096>.

`<cos>` is the cos value in the packet head; range is <0-7>.

Command Mode: Port mode

Default: There is no configuration and the cos value is 0 as default.

Usage Guide: The command specifies MRPP ring primary port. Primary node uses primary port to send Hello packet, secondary port is used to receive Hello packet from primary node. There are no difference on function between primary port and secondary of secondary node.

The `mrpp enable` command must be enabled before the `control-vlan` command be used. If primary port, secondary port, node-mode and enable commands all be configured

after control-vlan, then the mrpp-ring function is enabled.

Example: Configure the primary of MRPP ring 4000 to Ethernet 1/0/1.

```
Switch(Config)#interface ethernet 1/0/1
```

```
Switch(config-If-Ethernet1/0/1)#mrpp ring 4000 primary-port
```

1.14 mrpp ring secondary-port

Command: `mrpp ring < ring-id > secondary-port {cos <cos>}`

no mrpp ring < ring-id > secondary-port

Function: Specify secondary of MRPP ring and the cos which is brought in the packet head tag of port sending packet.

Parameter: `<ring-id>` is the ID of MRPP ring; range is `<1-4096>`.

`<cos>` is the cos value in the packet head; range is `<0-7>`.

Command Mode: Port mode

Default: There is no configuration and the cos value is 0 as default.

Usage Guide: The command specifies secondary port of MRPP ring. The primary node uses secondary port to receive Hello packet from primary node. There are no difference on function between primary port and secondary of secondary node.

The mrpp enable command must be enabled before the control-vlan command be used. If primary port, secondary port, node-mode and enable commands all be configured after control-vlan, then the mrpp-ring function is enabled.

Example: Configure secondary port of MRPP ring to 1/0/3.

```
Switch(config)#interface ethernet1/0/3
```

```
Switch(Config-If-Ethernet1/0/3)#mrpp ring 4000 secondary-port
```

1.15 node-mode

Command: `node-mode {maser | transit}`

Function: Configure the type of the node to primary node or secondary node.

Parameter: None.

Command Mode: MRPP ring mode.

Default: Default the node mode is secondary node.

Usage Guide: None.

Example: Configure the switch to primary node. MRPP ring 4000.

```
Switch(config)# mrpp ring 4000
```

```
Switch(mrpp-ring-4000)#node-mode master
```

1.16 show mrpp

Command: show mrpp [*<ring-id>*]

Function: Display MRPP ring configuration.

Parameter: *<ring-id>* is MRPP ring ID, the valid range is from 1 to 4096, if not specified ID, it display all of MRPP ring configuration.

Command Mode: Admin and Configuration Mode.

Default: None

Usage Guide: None

Example: Display configuration of MRPP ring 4000 of switch

```
Switch# show mrpp 4000
```

1.17 show mrpp statistics

Command: show mrpp statistics [*<ring-id>*]

Function: Display statistic information of data packet of MRPP ring receiving and transferring.

Parameter: *<ring-id>* is MRPP ring ID, the valid range is from 1 to 4096, if not specified ID, it displays all of MRPP ring statistic information.

Command Mode: Admin and Configuration Mode.

Default: None

Usage Guide: None

Example: Display statistic information of MRPP ring 4000 of switch.

```
Switch# show mrpp statistic 4000
```

Chapter 2 Commands for ULPP

2.1 clear ulpp flush counter interface

Command: clear ulpp flush counter interface *<name>*

Function: Clear the statistic information of the flush packets.

Parameter: *<name>* is the name of the port.

Default: None.

Command mode: Admin mode.

Usage Guide: None.

Example: Clear the statistic information of the flush packets for the port1/0/1.

```
Switch#clear ulpp flush counter interface e1/0/1
```

ULPP flush counter has been reset.

2.2 control vlan

Command: control vlan *<integer>*

no control vlan

Function: Configure the control VLAN of ULPP group; the no command restores the default value.

Parameter: *<integer>* is the control VLAN ID that sends the flush packets, range from 1 to 4094.

Default: The default is VLAN 1.

Command mode: ULPP group configuration mode.

Usage Guide: Configure the control VLAN of ULPP group. This VLAN must correspond the existent VLAN, after it is configured, this VLAN can't be deleted. It must belong to the VLAN protected by ULPP group to avoid flush packets loopback.

Example: Configure the sending control VLAN of ULPP group as 10.

```
Switch(config)# ulpp group 20
```

```
Switch(ulpp-group-20)# control vlan 10
```

2.3 debug ulpp error

Command: debug ulpp error

no debug ulpp error

Function: Show the error information of ULPP. The no operation disables showing the error information of ULPP.

Parameter: None.

Default: Do not display.

Command mode: Admin mode.

Usage Guide: None.

Example: Show the error information of ULPP.

```
Switch# debug ulpp error
```

```
Unrecognized Flush packet received.
```

2.4 debug ulpp event

Command: debug ulpp event

no debug ulpp event

Function: Show the event information of ULPP. The no operation disables showing the event information of ULPP.

Parameter: None.

Default: Do not display.

Command mode: Admin mode.

Usage Guide: None.

Example: Show the event information of ULPP.

```
Switch# debug ulpp event
```

```
ULPP group 1 state changes:
```

```
Master port ethernet 1/0/1 in ULPP group 1 changed state to Forwarding.
```

```
Slave port ethernet 1/0/2 in ULPP group 1 changed state to Standby.
```

2.5 debug ulpp flush content interface

Command: debug ulpp flush content interface *<name>*

no debug ulpp flush content interface *<name>*

Function: Show the contents of the receiving flush packets. The no operation disables the shown contents.

Parameter: *<name>* is the name of the port.

Default: Do not display.

Command mode: Admin mode.

Usage Guide: None.

Example: Show the contents of the receiving flush packets for the port1/0/1.

```
Switch# debug ulpp flush content interface e1/0/1
```

Flush packet content:

Destination MAC: 01-03-0f-cc-cc-cc

Source MAC: 00-a0-cc-d7-5c-ea

Type: 8100

Vlan ID: 1

Length: 518

Control Type: 2

Control Vlan: 10

MAC number:0

Vlan Bitmap:

2.6 debug ulpp flush {send | receive} interface

Command: debug ulpp flush {send | receive} interface *<name>*

no debug ulpp flush {send | receive} interface *<name>*

Function: Show the information of the receiving/sending flush packets, it only shows the receiving packets, but do not show the detailed contents of the packets. The no operation disables the shown information.

Parameter: *<name>* is the name of the port.

Default: Do not display.

Command mode: Admin mode.

Usage Guide: None.

Example: Show the information that send the flush packets for the port1/0/1.

```
Switch# debug ulpp flush send interface e1/0/1
```

Flush packet send on port Ethernet 1/0/1.

2.7 description

Command: description *<string>*

no description

Function: Configure the description character string of ULPP group. The no command deletes the description.

Parameter: *<string>* is the name of ULPP group, the max number of the characters is 128.

Default: Do not configure ULPP name by default.

Command mode: ULPP group configuration mode.

Usage Guide: None.

Example: Configure the description of ULPP group as switch.

```
Switch(config)# ulpp group 20
```

```
Switch(ulpp-group-20)# description switch
```

2.8 flush disable arp

Command: flush disable arp

Function: Disable sending the flush packets of deleting ARP.

Parameter: None.

Default: By default, enable the sending function of the flush packets which are deleted by ARP.

Command mode: ULPP group configuration mode.

Usage Guide: If configure this command, when the link is switched, it will not actively send the flush packets to notify the upstream device to delete the entries of ARP.

Example: Disable sending the flush packets of deleting ARP.

```
Switch(config)# ulpp group 20
```

```
Switch(ulpp-group-20)# flush disable arp
```

2.9 flush disable mac

Command: flush disable mac

Function: Disable sending the flush packets of updating MAC address.

Parameter: None.

Default: By default, enable sending the flush packets of updating MAC address.

Command mode: ULPP group configuration mode.

Usage Guide: If configure this command, when the link is switched, it will not actively send the flush packets to notify the upstream device to update the MAC address table.

Example: Disable sending the flush packets of updating MAC address.

```
Switch(config)# ulpp group 20
```

```
Switch(ulpp-group-20)# flush disable mac
```

2.10 flush disable mac-vlan

Command: flush disable mac-vlan

Function: Disable sending the flush packets of deleting the dynamic unicast mac

according to vlan.

Parameter: None.

Default: Disable.

Command mode: ULPP group configuration mode.

Usage Guide: If configure this command, when the link is switched, it will not actively send the flush packets to notify the upstream device to delete the dynamic unicast mac according to vlan.

Example: Disable sending the flush packets deleted by mac-vlan.

```
Switch(config)#ulpp group 1
```

```
Switch(ulpp-group-1)#flush disable mac-vlan
```

2.11 flush enable arp

Command: flush enable arp

Function: Enable sending the flush packets of deleting ARP.

Parameter: None.

Default: By default, enable sending the flush packets of deleting ARP.

Command mode: ULPP group configuration mode.

Usage Guide: If enable this function, when the link is switched, it will actively send the flush packets to notify the upstream device, so as to delete the list entries of ARP.

Example: Enable sending the flush packets of deleting ARP.

```
Switch(config)# ulpp group 20
```

```
Switch(ulpp-group-20)# flush enable arp
```

2.12 flush enable mac

Command: flush enable mac

Function: Enable sending the flush packets of updating MAC address.

Parameter: None.

Default: By default, enable sending the flush packets of updating MAC address.

Command mode: ULPP group configuration mode.

Usage Guide: If enable this function, when the link is switched, it will actively send the flush packets to notify the upstream device, so as to update the MAC address table.

Example: Enable sending the flush packets of updating MAC address.

```
Switch(config)# ulpp group 20
```

```
Switch(ulpp-group-20)# flush enable mac
```

2.13 flush enable mac-vlan

Command: flush enable mac-vlan

Function: Enable sending the flush packets of deleting the dynamic unicast mac according to vlan.

Parameter: None.

Default: Disable.

Command mode: ULPP group configuration mode.

Usage Guide: If configure this command, when the link is switched, it will actively send the flush packets to notify the upstream device to delete the dynamic unicast mac according to vlan.

Example: Enable sending the flush packets deleted by mac-vlan.

```
Switch(config)#ulpp group 1
```

```
Switch(ulpp-group-1)#flush enable mac-vlan
```

2.14 preemption delay

Command: preemption delay *<integer>*

no preemption delay

Function: Configure the preemption delay, the no command configures the preemption delay as the default value.

Parameter: *<integer>*: the preemption delay, range from 1 to 600, in second.

Default: The default preemption delay is 30.

Command mode: ULPP group configuration mode.

Usage Guide: The preemption delay is the delay time before the master port is preempted as the forwarding state, for avoiding the link oscillation in a short time. After the preemption mode is enabled, the preemption delay takes effect.

Example: Configure the preemption delay as 50s for ULPP group.

```
Switch(config)# ulpp group 20
```

```
Switch(ulpp-group-20)# preemption delay 50
```

2.15 preemption mode

Command: preemption mode

no preemption mode

Function: Enable/disable the preemption mode of ULPP group.

Parameter: None.

Default: Do not preempt.

Command mode: ULPP group configuration mode.

Usage Guide: If the preemption mode configured by ULPP group, and the slave port is in forwarding state, and the master port is in the standby state, the master port will turn into the forwarding state and the slave port turn into the standby state after the preemption delay.

Example: Configure the preemption mode of ULPP group.

```
Switch(config)# ulpp group 20
```

```
Switch(ulpp-group-20)# preemption mode
```

2.16 protect vlan-reference-instance

Command: protect vlan-reference-instance *<instance-list>*

no protect vlan-reference-instance *<instance-list>*

Function: Configure the protective VLANs of ULPP group, the no command cancels the protective VLANs.

Parameter: *<instance-list>* is MSTP instance list, such as: i; j-k. The number of the instances is not limited in the list.

Default: Do not protect any VLANs by default that means any instances are not quoted.

Command mode: ULPP group configuration mode.

Usage Guide: Quote the instances of MSTP to protect the VLANs. The VLAN corresponds to this instance is at the forwarding state on one port of this group, and at the blocked state on another port of this group. Each ULPP group can quotes all instances of MSTP. And it can quotes the inexistent MSTP instances that means any VLANs are not protected, the different ULPP groups can't quote the same instance.

Example: Configure the protective VLAN quoted from instance 1 for ULPP group.

```
Switch(config)# ulpp group 20
```

```
Switch(ulpp-group-20)# protect vlan-reference-instance 1
```

2.17 show ulpp flush counter interface

Command: show ulpp flush counter interface {ethernet <IFNAME> | <IFNAME>}

Function: Show the statistic information of the flush packets.

Parameter: <IFNAME> is the name of the ports.

Default: None.

Command mode: Admin mode.

Usage Guide: Show the statistic information of the flush packets, such as: the information

of the flush packets number which has been received, the time information that receive the flush packets finally.

Example: Show the statistic information of the flush packets for ULPP group1.

```
Switch# show ulpp flush counter interface e1/0/1
```

```
Received flush packets: 10
```

2.18 show ulpp flush-receive-port

Command: show ulpp flush-receive-port

Function: Show the port which receive flush packet, flush type and control VLAN.

Parameter: None.

Default: None.

Command mode: Admin mode.

Usage Guide: None.

Example: Show the information that the port receives flush packets.

```
Switch# show ulpp flush-receive-port
```

```
ULPP flush-receive portlist:
```

```
Portname          Type  Control Vlan
```

```
-----
```

```
Ethernet1/0/1     ARP   1
```

```
Ethernet1/0/3     MAC   1;3;5-10
```

2.19 show ulpp group

Command: show ulpp group [group-id]

Function: Show the configuration information of the ULPP groups which have been configured.

Parameter: [group-id]: Show the information of the specific ULPP group.

Default: By default, show the information of all ULPP groups which have been configured.

Command mode: Admin mode.

Usage Guide: Show the configuration information of ULPP groups which have been configured, such as: the state of the master port and the slave port, the preemption mode, the preemption delay, etc.

Example: Show the configuration information of ULPP group1.

```
Switch# show ulpp group 1
```

```
ULPP group 1 information:
```

Description: abc

Preemption mode: on

Preemption delay: 30s

Control VLAN:1

Protected VLAN: Reference Instance 1

Member	Role	State

Ethernet1/0/1	MASTER	FORWARDING
Ethernet1/0/2	SLAVE	STANDBY

2.20 ulpp control vlan

Command: `ulpp control vlan <vlan-list>`

`no ulpp control vlan <vlan-list>`

Function: Configure the receiving control VLANs of the port, the no command restores the default value.

Parameter: `<vlan-list>` specify the control VLAN list that receives the flush packets, such as: i; j-k. The number of VLANs in Each character string cannot exceed 100. The receiving control VLAN of the port can be added.

Default: The default is VLAN 1.

Command mode: Port mode.

Usage Guide: Configure the receiving control VLAN for the port. This VLAN must correspond the existent VLAN, after it is configured, this VLAN can't be deleted.

Example: Configure the receiving control VLAN as 10.

```
Switch(config)# interface ethernet 1/0/1
```

```
Switch(config-If-Ethernet1/0/1)# ulpp control vlan 10
```

2.21 ulpp flush disable arp

Command: `ulpp flush disable arp`

Function: Disable receiving the flush packets of deleting ARP.

Parameter: None.

Default: By default, disable receiving the flush packets of deleting ARP.

Command mode: Port mode.

Usage Guide: If this command is configured, then it will not receive the flush packets of deleting ARP.

Example: Disable receiving the flush packets of deleting ARP.

```
Switch(config)# interface ethernet 1/0/1
Switch(config-if-Ethernet1/0/1)# ulpp flush disable arp
```

2.22 ulpp flush disable mac

Command: `ulpp flush disable mac`

Function: Disable receiving the flush packets of updating MAC address.

Parameter: None.

Default: By default, disable receiving the flush packets of updating MAC address.

Command mode: Port mode.

Usage Guide: If this command is configured, then it will not receive the flush packets of updating MAC address.

Example: Disable receiving the flush packets of updating MAC address.

```
Switch(config)# interface ethernet 1/0/1
Switch(config-if-Ethernet1/0/1)# ulpp flush disable mac
```

2.23 ulpp flush disable mac-vlan

Command: `ulpp flush disable mac-vlan`

Function: Disable receiving the flush packets of mac-vlan type.

Parameter: None.

Default: Disable.

Command mode: Port mode.

Usage Guide: If enabling this function, forward the hardware of the flush packets with mac-vlan type received in port. It will not be analyzed.

Example: Disable receiving the flush packets deleted by mac-vlan of port.

```
Switch(config)#interface e1/0/2
Switch(config-if-ethernet1/0/2)#ulpp flush disable mac-vlan
```

2.24 ulpp flush enable arp

Command: `ulpp flush enable arp`

Function: Enable receiving the flush packets of deleting ARP.

Parameter: None.

Default: By default, disable receiving the flush packets of deleting ARP.

Command mode: Port mode.

Usage Guide: Enable this function to receive the flush packets which delete ARP.

Example: Enable receiving of the flush packets of deleting ARP.

```
Switch(config)# interface ethernet 1/0/1
```

```
Switch(config-If-Ethernet1/0/1)# ulpp flush enable arp
```

2.25 ulpp flush enable mac

Command: `ulpp flush enable mac`

Function: Enable receiving the flush packets of updating MAC address.

Parameter: None.

Default: By default, disable receiving the flush packets of updating MAC address.

Command mode: Port mode.

Usage Guide: Enable receiving the flush packets of updating MAC address table.

Example: Enable receiving the flush packets of updating the MAC address.

```
Switch(config)# interface ethernet 1/0/1
```

```
Switch(config-If-Ethernet1/0/1)# ulpp flush enable mac
```

2.26 ulpp flush enable mac-vlan

Command: `ulpp flush enable mac-vlan`

Function: Enable receiving the flush packets of mac-vlan type.

Parameter: None.

Default: Disable.

Command mode: Port mode.

Usage Guide: If enabling this function, configure the interface to receive the flush packets handled mac-vlan type and delete the dynamic unicast mac according to vlan information in the packets.

Example: Enable receiving the flush packets deleted by mac-vlan of port.

```
Switch(config)#interface e1/0/2
```

```
Switch(config-if-ethernet1/0/2)#ulpp flush enable mac-vlan
```

2.27 ulpp group

Command: `ulpp group <integer>`

`no ulpp group <integer>`

Function: Create a ULPP group. If this group exists, then enter the configuration mode of ULPP group. The no command deletes a ULPP group.

Parameter: `<integer>` is the ID of ULPP group, range from 1 to 48.

Command mode: Global Mode.

Default: Any ULPP groups are not configured.

Usage Guide: None.

Example: Configure ulpp group 20 or enter the mode of ulpp group 20.

```
Switch(config)# ulpp group 20
```

```
Switch(ulpp-group-20)#
```

2.28 ulpp group master

Command: `ulpp group <integer> master`

`no ulpp group <integer> master`

Function: Configure the master port of ULPP group, the no command deletes the master port.

Parameter: `<integer>` is the ID of ULPP group, range from 1 to 48.

Default: There is no master port configured by default.

Command mode: Port mode.

Usage Guide: There is no sequence requirement for the master and slave port configuration in a group, but the protective VLANs must be configured before the member ports. Each group has only one master port, if the master port exists, then the configuration fail.

Example: Configure the master port of ULPP group.

```
Switch(config)# interface ethernet 1/0/1
```

```
Switch(config-If-Ethernet1/0/1)# ulpp group 20 master
```

2.29 ulpp group slave

Command: `ulpp group <integer> slave`

`no ulpp group <integer> slave`

Function: Configure the slave port of ULPP group, the no command deletes the slave port.

Parameter: `<integer>` is the ID of ULPP group, the range from 1 to 48.

Default: There is no slave port configured by default.

Command mode: Port mode.

Usage Guide: There is no sequence requirement for the master and slave port configuration in a group, but the protective VLANs must be configured before the member ports. Each group has only one slave port, if the slave port exists, then the configuration is fail.

Example: Configure the slave port of ULPP group.

```
Switch(config)# interface ethernet 1/0/2
```

```
Switch(config-If-Ethernet1/0/2)# ulpp group 20 slave
```

Chapter 3 Commands for ULSM

3.1 debug ulsm event

Command: debug ulsm event

no debug ulsm event

Function: Show the event information of ULSM. The no operation disables showing ULSM events.

Parameter: None.

Default: None.

Command mode: Admin Mode.

Usage Guide: None.

Example: Show the event information of ULSM.

```
Switch# debug ulsm event
```

```
Downlink synchronized with ULSM group, change state to Down.
```

3.2 show ulsm group

Command: show ulsm group [group-id]

Function: Show the configuration information of ULSM group.

Parameter: [group-id]: the ID of ULSM group.

Default: By default, show the information of all ULSM groups which have been configured.

Command mode: Admin Mode.

Usage Guide: None.

Example: Show the configuration information of ULSM group1.

```
Switch# show ulsm group 1
```

```
ULSM group 1 information:
```

```
ULSM group state: Down
```

Member	Role	State	Down by ULSM
ethernet1/0/1	UpLINK	Down	
ethernet1/0/2	DownLINK	Down	Yes

3.3 ulsm group

Command: `ulsm group <group-id>`

`no ulsm group <group-id>`

Function: Create a ULSM group. The no command deletes the ULSM group.

Parameter: `<group-id>` is the ID of ULSM group, range from 1 to 32.

Default: There is no ULSM group configured by default.

Command mode: Global Mode.

Usage Guide: None.

Example: Create ULSM group 10.

```
Switch(config)# ulsm group 10
```

3.4 ulsm group {uplink | downlink}

Command: `ulsm group <group-id> {uplink | downlink}`

`no ulsm group <group-id>`

Function: Configure the uplink/downlink ports of ULSM group. The no command deletes the uplink/downlink ports.

Parameter: `<group-id>`: The ID of ULSM group, the range from 1 to 32.

uplink: Configure the port as the uplink port.

downlink: Configure the port as the downlink port.

Default: The port does not belong to any ULSM group.

Command mode: Port Mode.

Usage Guide: Configure the uplink/downlink ports of ULSM group. Each ULSM group can configure 8 uplink ports and 16 downlink ports at most.

Example: Configure port1/0/3 as the uplink port of ULSM group10.

```
Switch(config)# interface ethernet 1/0/3
```

```
Switch(config-If-Ethernet1/0/3)# ulsm group 10 uplink
```