IEEE1588 Transparent Clock Configuration Commands

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IEEE1588 Transparent Clock Configuration Commands

IEEE1588 transparent clock configuration commands include:

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ptp enable (global)

Syntax

ptp enable

no ptp enable

Parameter

N/A

Default value

N/A

Explanation

This command is used to enable or disable the IEEE1588 transparent clock. The transparent clock is shortened as TC and it can be classified into E2E TC and P2P TC according to the link delay measurement mode. TC can adjust the time introduced by synchronous packets via intermediate device to realize the exquisite synchronization between active and standby clocks.

Command mode

Global configuration mode

Example

The following example shows how to enable the IEEE1588 TC.

Switch_config# ptp enable
Switch_config#

ptp enable (port)

Syntax

ptp enable

no ptp enable

Parameter

N/A

Default value

N/A

Explanation

This command is used to enable or disable PTP on a L3 port.

Command mode

Port configuration mode

Example

The following example shows how to enable the IEEE1588 TC on interface vlan1.

Switch_config# interface vlan 1

Switch_config_v1#ptp enable

Switch_config_v1#

ptp start

Syntax

ptp start {**l2**|**l3**}

no ptp start

Parameter

Parameter	Description
L2	Creates a L2 PTP port to run in an Ethernet.
L3	Creates a L3 PTP port to run in IP or UDP.

Default value

N/A

Explanation

Before PTP communication, several PTP ports should be created on TC and connected to the active and standby TCs respectively. You can run **ptp start** to create or delete the PTP ports in port configuration mode. All the ports of a switch support PTP.

After **no ptp enable** is globally configured, all created PTP ports will be deleted automatically.

After you create L2 PTP ports via the **ptp start l2** command, these ports receive and transmit Ethernet-based PTP packets. After you create L3 PTP ports via the **ptp start l3** command, these ports receive and transmit IP/UDP-based PTP packets. You can switch over to **ptp start l2** from **ptp start l3** directly without extra deletion actions.

If you run the **no ptp start** command to delete PTP ports, no extra parameters need to be added to this command.

Command mode

Port configuration mode

Example

The following example shows how to create a L2 PTP port on port G0/24.

Switch_config_g0/24# ptp start l2

Switch_config_g0/24#

The following example shows how to modify a L2 PTP port to be a L3 PTP port on port G0/24.

Switch_config_g0/24# ptp start l3

Switch_config_g0/24#

The following example shows how to delete the PTP port on port G0/24.

Switch_config_g0/24# no ptp start

Switch_config_g0/24#

ptp delay-mechanism

Syntax

ptp delay-mechanism {**e2e**|**p2p**}

Parameter

Parameter	Description
e2e	Sets to the E2E TC mode.
p2p	Sets to the P2P TC mode.

Default value

p2p

Explanation

The IEEE1588 TC can be switched over between two working modes: the E2E mode and the P2P mode. The P2P mode is the default one. In E2E mode, TC can process the **Delay_Req** packets and the **Delay_Resp** packets; In P2P mode, the path-delay mechanism is running on each PTP port, the Pdelay_Req packets are transmitted periodically, and the **Pdelay_Resp** packets and the **Pdelay_Resp_Folllow_Up** packets are responded to. The two modes are incompatible with each other. For example, if it is in P2P mode, the **Delay_Req** packets received from the clock will be dropped.

Command mode

Global configuration mode

Example

The following example shows how to set TC to the P2P mode.

Switch_config# ptp delay-mechanism p2p

Switch_config#

The following example shows how to set TC to the E2E mode.

Switch_config# ptp delay-mechanism e2e

Switch_config#

ptp sync-mechanism

Syntax

ptp sync-mechanism { straight-forward | store-forward}

Parameter

| Parameter	Description
straight-forward	Sets the proceeding method of **Sync/Follow_Up** packets to **direct forwarding**.
store-forward	Sets the proceeding method of **Sync/Follow_Up** packets to **store-forward**.

Default value

straight-forward

Explanation

This command is mainly used to set the forwarding mode of Sync/Follow_Up packets to **straight forward** or **store-forward**. The default forwarding mode is straight forwarding, that is, the PTP port immediately forwards after receiving Sync packets, re-encapsulates the Follow_UP packets after receiving them and then forwards them out.

This mode may lead to disorder in multileveled TC cascading, as shown in the following figure:

GM₁

TC

Sync1
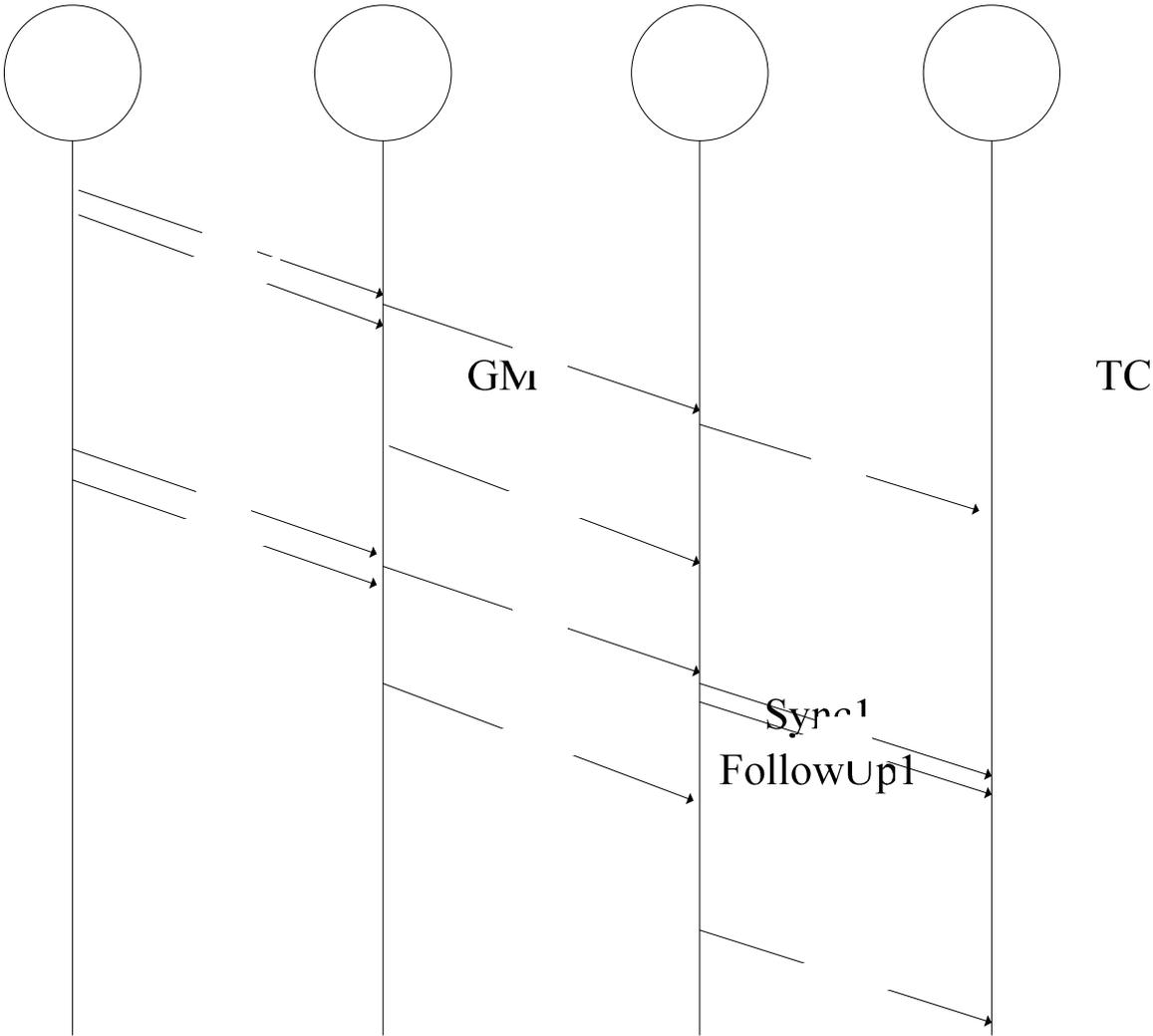
FollowUp1

In straight-forward mode, the time to process the Sync packets is obviously less than that to process the Follow_Up packets. If this process goes through multileveled TC cascading, the clock may have already received Sync2 before Follow_up1. This may lead to the malfunction of the clock.

Hence, we specially design the store-forward mode for our customers in which the PTP port does not forward a received Sync packet until the corresponding Follow_Up packet is received so that the problem of disorder will not arise.

Sync2

FollowUp2

Command mode

Global configuration mode

Example

The following example shows how to set TC to the straight-forward mode.

Switch_config#ptp sync-mechanism straight-forward
Switch_config#

The following example shows how to set TC to the store-forward mode.

Switch_config#ptp sync-mechanism store-forward
Switch_config#

ptp domain

Syntax

ptp domain *number*

no ptp domain

Parameter

Parameter	Description
number	Stands for the PTP domain ID, which ranges from 0 to 3.

Default value

0

Explanation

This command is used to set the domain to which the PTP port belongs and the default domain of this port is domain0. In IEEE1588 are there four domains defined: domain0, domain1, domain2 and domain3.

Command mode

Port configuration mode

Example

The following example shows how to set the PTP port on interface g0/24 to run in domain1.

Switch_config_g0/24# ptp domain 1
Switch_config_g0/24#

ptp domain-filter

Syntax

ptp domain-filter

no ptp domain-filter

Parameter

N/A

Default value

The PTP domain filter is enabled by default.

Explanation

This command is used to set the domain filtration function, which is enabled by default. You can conduct area management toward PTP equipment through domain segment. PTP equipment in different sub-domains cannot perform time synchronization. After the domain filtration function is enabled, the PTP packets in other domains are dropped; if domain filtration is disabled, TC will not conduct the domain checkup.

Command mode

Global configuration mode

Example

The following example shows how to enable domain filtration:

Switch_config#ptp domain-filter
Switch_config#

The following example shows how to disable domain filtration:

Switch_config#no ptp domain-filter
Switch_config#

ptp pdelay-interval

Syntax

ptp pdelay-interval *time*

no ptp pdelay-interval

Parameter

Parameter	Description
time	Stands for the transmission interval of Pdelay_Req packets.

Default value

0 (that is, 1 second)

Explanation

This command is used to set the transmission interval of Pdelay_Req packets. The transmission interval ranges from -4 to 4, and its actual interval is the *n* powers of 2 seconds. For example, it is set to 0, the actual transmission interval is the *0* power of 2 seconds, that is, 1 second.

Command mode

Global configuration mode

Example

The following example shows how to configure the transmission interval of Pdelay_Req packets to 2 seconds.

Switch_config#ptp delay-interval 1
Switch_config#

ptp e2e-record-timeout

Syntax

ptp e2e-record-timeout *time*

no ptp e2e-record-timeout

Parameter

Parameter	Description
time	Stands for the timeout time of recording Delay_Req packets, which ranges from 0 to 10.

Default value

5 (32s)

Explanation

This command is used to set the timeout time recorded by Delay_Req packets, which ensures that the Delay_Req record can be released even if Delay_Resp message is missing.

Command mode

Global configuration mode

Example

The following example shows how to set the timeout time recorded by Delay_Req packets to 1024 seconds.

Switch_config#   ptp e2e-record-timeout *10*

Switch_config#

debug p2p

Syntax

debug ptp {errors|rx-packet|tx-packet |sync|e2e|p2p}

Parameter

Parameter	Description
errors	Browses the PTP error logs.
rx-packet	Browses the received PTP packets.
tx-packet	Browses the transmitted PTP packets.
sync	Browses how TC processes Sync packets.
e2e	Browses how TC processes Delay_Req packets.
p2p	Browses Path_Delay calculation on a PTP port.

Default value

N/A

Explanation

This command is used to export the debugging information generated during the running of TC for you to have an idea of how PTP is going on and incorrect positioning.

show ptp

Syntax

show ptp [interface *intf-id*]

To display the 802.1x configuration information, run the previous command.

Parameter

Parameter	Description
intf-id	Stands for a specific physical interface.

Default value

N/A

Explanation

This command is used to display the configuration information on the IEEE1588 TC.

Command mode

EXEC

Example

Switch#show ptp

   IEEE1588 Transparent Clock Default Data Set

clock identity 00-E0-0F-FF-FE-DB-0B-54
number of ports 300
delay mechianism...... E2E
primary domain 0
Pdelay_Req interval... 0

   Domain Control

domain filter	ON	
domain number	sync mode	master port
0	straight_forward	G0/20
1	straight_forward	(null)
2	straight_forward	(null)
3	straight_forward	(null)

delay-req record timeout 32(s)

IEEE 1588 on port G0/18 enabled

    Port Data Set
clock identity 00-E0-0F-FF-FE-DB-0B-66
port number 1
log pdelay interval ... 0
current path delay 000000000.000000000
domain number 0

Request_Respond Mechanism (E2E) on port G0/18 is ON
current sequece id 59983

IEEE 1588 on port G0/20 enabled

    Port Data Set
clock identity 00-E0-0F-FF-FE-DB-0B-68
port number 2
log pdelay interval ... 0
current path delay 000000000.000000000
domain number 0

Request_Respond Mechanism (E2E) on port G0/20 is ON
current sequece id 0

Switch#