

Multicast Fairness Tuning

- Multicast fairness, on page 1
- Guidelines and limitations for multicast fairness tuning, on page 1
- Configure multicast fairness tuning, on page 2
- Verify the Multicast Fairness Tuning Configuration, on page 3

Multicast fairness

Multicast traffic involves sending data from one source to multiple destinations simultaneously, which can sometimes lead to difference in latency. The multicast fairness tuning feature aims to minimize the latency difference for a multicast stream across different ports.

Beginning with NX-OS Release 10.5(2)F, the multicast fairness tuning feature for Cisco Nexus 3550-T switches allows you to tune the egressing multicast traffic by configuring equalization delay for specific ports. Thus, this feature ensures that the egressing traffic reaches its destinations at almost the same time.

You can tune the latency difference for a multicast stream among the ports by adding delays to the faster ports. However, you need to measure the delay or latency for each port beforehand and be aware of the default latency, only then can you equalize the delay on the faster ports. The deviation is reduced to a negligible difference of less than 250 pico-seconds.

For example, consider a multicast stream is being sent through the interfaces Ethernet 1/2, Ethernet 1/3, and Ethernet 1/4. The timestamp of the multicast stream reveals that it leaves N3550-T from Ethernet 1/2 at 6.85 nano-seconds, from Ethernet 1/3 at 5.70 nano-seconds, and from Ethernet 1/4 at 6.20 nano-seconds. The tuning feature allows you to add around 1000 pico-seconds delay at Ethernet 1/3 and around 600 pico-seconds delay at Ethernet 1/4 to allow each of these streams coming out from these ports within the 250 pico-seconds range.

Beginning with NX-OS Release 10.6(3)F, 25G is supported on 3550-T and multicast fairness tuning feature is supported on 25G 3550-T platform.

Guidelines and limitations for multicast fairness tuning

Follow these guidelines and limitations while configuring the multicast fairness tuning feature.

- If you send more traffic than the line rate, it leads to congestion and the interface can no longer maintain the fairness. However, as soon as the traffic rate reduces, the fairness is restored.

- If traffic from multiple sources compete to go out of the same interface, then this impacts the latency fairness for that interface.
- If you try to configure latency on a specific port with running traffic, then this results in a short disruption in the traffic in the form of either a drop or corruption.

Configure multicast fairness tuning

The multicast fairness tuning feature is an interface specific feature, so go to the required interface to configure the feature. Follow these steps to configure the multicast fairness tuning feature.

Procedure

	Command or Action	Purpose

Step 1	**configure terminal**
	Example:
	`switch# configure terminal`
	`switch(config)#`
		Enters global configuration mode.

Step 2	**interface** *type slot/port*
	Example:
	`switch(config)# interface ethernet 1/10`
	`switch(config-if)#`
		Specifies an interface to configure and enters the interface configuration mode.

Step 3	[**no**] **equalization-delay** *value*
	Example:
	`switch(config-if)# equalization-delay 10`
	`switch(config-if)#`
		Specify the equalization delay value that you want to configure on the specified interface. The default value is zero (0).
		The range for equalization delay values is 0 to 15 for both 10G and 25G ports, where 1=100 pico-seconds. Thus, the maximum delay that can be configured is 1500 pico-seconds.
		If you configure the delay as 4, it is equal to 400 pico-seconds.
		The **no** form of this command disables equalization delay.

Step 4	**shut**
	Example:
	`switch(config-if)# shut`
	`switch(config)#`
		Disables the specified interface.

Step 5	**no shut**
	Example:
	`switch(config-if)# no shut`
	`switch(config)#`
		Enables the specified interface.

	Command or Action	Purpose

Step 6	**exit**
	Example:
	`switch(config-if)# exit`
	`switch(config)#`
		Exits the interface configuration mode.

Example

This example shows how to configure multicast fairness tuning on a particular interface.

```
switch# configure terminal
switch(config)# interface ethernet 1/10
switch(config-if)# equalization-delay 10
switch(config-if)# shut
switch(config-if)# no shut
switch(config-if)# exit
```

Verify the Multicast Fairness Tuning Configuration

Perform the relevant show commands listed in the table to display the required information about the multicast fairness tuning configuration.

Command	Purpose
show interface *type slot/port*	Displays the interface status and information for the specified interface along with the configured equalization delay in pico-seconds.
show interface *type slot/port* **equalization-delay**	Displays only the values for equalization delay in pico-seconds for the specified interface.
show interface *type range of slots/ports* **equalization-delay**	Displays all the values for equalization delay in pico-seconds for the specified range of interfaces.
show running-config [**all**]	Displays information about the current configuration. The **all** option displays the default and current configurations. This command also displays the equalization delay configured for each interface.

Sample Outputs for Show Commands

This is a sample output of the **show run interface** *type slot/port* command that displays the equalization delay for the specified interface.

```
show run interface ethernet 1/10
  interface Ethernet1/10
  equalization-delay 10
```

This is a sample output of the **show interface** *type slot/port* command that displays the interface status and information for the specified interface including the information regarding equalization delay for the interface.

Sample output for 25G

```
N3550T-TOR2# show interface eth1/17

Ethernet1/17 is up

admin state is up, Dedicated Interface

 Hardware: 25000 Ethernet, address: 643f.5f84.489e (bia 643f.5f84.48af)

 MTU 1500 bytes, BW 25000000 Kbit , DLY 10 usec

 reliability 255/255, txload 1/255, rxload 1/255

 Encapsulation ARPA, medium is broadcast

 full-duplex, 25 Gb/s, media type is 25G

 Beacon is turned off

 Auto-Negotiation is turned off FEC mode is Auto

 Input flow-control is off, output flow-control is off

 Auto-mdix is turned off

 Rate mode is dedicated

 Switchport monitor is off

 EtherType is 0x8100

 EEE (efficient-ethernet) : n/a

 admin fec state is auto, oper fec state is auto

Equalization delay 1000 picosec

 Last link flapped 00:03:13

 Last clearing of "show interface" counters never

 2 interface resets

 Load-Interval #1: 30 seconds

 30 seconds input rate 0 bits/sec, 0 packets/sec

 30 seconds output rate 0 bits/sec, 0 packets/sec

 input rate 0 bps, 0 pps; output rate 0 bps, 0 pps

 Load-Interval #2: 5 minute (300 seconds)

 300 seconds input rate 0 bits/sec, 0 packets/sec

 300 seconds output rate 0 bits/sec, 0 packets/sec

 input rate 0 bps, 0 pps; output rate 0 bps, 0 pps
```

```
 RX
 0 unicast packets 0 multicast packets 0 broadcast packets
 0 input packets 0 bytes
 0 jumbo packets 0 storm suppression packets
 0 runts 0 giants 0 CRC 0 no buffer
 0 input error 0 short frame 0 overrun 0 underrun 0 ignored
 0 watchdog 0 bad etype drop 0 bad proto drop 0 if down drop
 0 input with dribble 0 input discard
 0 Rx pause
 0 Stomped CRC
 TX
 0 unicast packets 54 multicast packets 10 broadcast packets
 64 output packets 0 bytes
 0 jumbo packets
 0 output error 0 collision 0 deferred 0 late collision
 0 lost carrier 0 no carrier 0 babble 0 output discard
 0 Tx pause
N3550T-TOR2#
```

Sample output for 10G

```
N3550T-TOR1# show interface eth1/19
Ethernet1/19 is up
admin state is up, Dedicated Interface
 Hardware: 1000/10000 Ethernet, address: 643f.5f84.3c5a (bia 643f.5f84.3c6d)
 MTU 1500 bytes, BW 10000000 Kbit , DLY 10 usec
 reliability 255/255, txload 1/255, rxload 1/255
 Encapsulation ARPA, medium is broadcast
 full-duplex, 10 Gb/s, media type is 10G
 Beacon is turned off
 Auto-Negotiation is turned on FEC mode is Auto
 Input flow-control is off, output flow-control is off
 Auto-mdix is turned off
 Rate mode is dedicated
```

```
 Switchport monitor is off
 EtherType is 0x8100
 EEE (efficient-ethernet) : n/a
 admin fec state is auto, oper fec state is auto
Equalization delay 1000 picosec
 Last link flapped 17:02:49
 Last clearing of "show interface" counters 02:57:48
 0 interface resets
 Load-Interval #1: 30 seconds
 30 seconds input rate 0 bits/sec, 0 packets/sec
 30 seconds output rate 0 bits/sec, 0 packets/sec
 input rate 0 bps, 0 pps; output rate 0 bps, 0 pps
 Load-Interval #2: 5 minute (300 seconds)
 300 seconds input rate 0 bits/sec, 0 packets/sec
 300 seconds output rate 0 bits/sec, 0 packets/sec
 input rate 0 bps, 0 pps; output rate 0 bps, 0 pps
 RX
 0 unicast packets 0 multicast packets 0 broadcast packets
 0 input packets 0 bytes
 0 jumbo packets 0 storm suppression packets
 0 runts 0 giants 0 CRC 0 no buffer
 0 input error 0 short frame 0 overrun 0 underrun 0 ignored
 0 watchdog 0 bad etype drop 0 bad proto drop 0 if down drop
 0 input with dribble 0 input discard
 0 Rx pause
 0 Stomped CRC
 TX
 0 unicast packets 2133 multicast packets 0 broadcast packets
 2133 output packets 0 bytes
 0 jumbo packets
 0 output error 0 collision 0 deferred 0 late collision
 0 lost carrier 0 no carrier 0 babble 0 output discard
```

```
 0 Tx pause


N3550T-TOR1#
```

Sample output for 1G

```
N3550T-TOR1# show interface eth1/1

Ethernet1/1 is up

admin state is up, Dedicated Interface

 Hardware: 1000/10000 Ethernet, address: 643f.5f84.3c5b (bia 643f.5f84.3c5b)

 MTU 1500 bytes, BW 1000000 Kbit , DLY 10 usec

 reliability 255/255, txload 1/255, rxload 1/255

 Encapsulation ARPA, medium is broadcast

 Port mode is access

 full-duplex, 1000 Mb/s, media type is 1G

 Beacon is turned off

 Auto-Negotiation is turned on FEC mode is Auto

 Input flow-control is off, output flow-control is off

 Auto-mdix is turned off

 Rate mode is dedicated

 Switchport monitor is off

 EtherType is 0x8100

 EEE (efficient-ethernet) : n/a

 admin fec state is auto, oper fec state is auto

Equalization delay 1000 picosec

 Last link flapped 03:37:28

 Last clearing of "show interface" counters 02:58:31

 0 interface resets

 Load-Interval #1: 30 seconds

 30 seconds input rate 0 bits/sec, 0 packets/sec

 30 seconds output rate 0 bits/sec, 0 packets/sec

 input rate 0 bps, 0 pps; output rate 0 bps, 0 pps

 Load-Interval #2: 5 minute (300 seconds)

 300 seconds input rate 0 bits/sec, 0 packets/sec
```

```
 300 seconds output rate 0 bits/sec, 0 packets/sec

 input rate 0 bps, 0 pps; output rate 0 bps, 0 pps

 RX

 9 unicast packets 2141 multicast packets 0 broadcast packets

 2150 input packets 0 bytes

 0 jumbo packets 0 storm suppression packets

 0 runts 0 giants 0 CRC 0 no buffer

 0 input error 0 short frame 0 overrun 0 underrun 0 ignored

 0 watchdog 0 bad etype drop 0 bad proto drop 0 if down drop

 0 input with dribble 0 input discard

 0 Rx pause

 0 Stomped CRC

 TX

 9 unicast packets 2141 multicast packets 0 broadcast packets

 2150 output packets 0 bytes

 0 jumbo packets

 0 output error 0 collision 0 deferred 0 late collision

 0 lost carrier 0 no carrier 0 babble 0 output discard

 0 Tx pause


N3550T-TOR1#
```