



N9500-64OC Smoke Test Report

AI Datacenter 64*800G SONiC Switch

NADDOD Pte.Ltd.

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Contents

1. Overall Test Conclusion	1
2. Functional Test Conclusion	1
2.1. L2 Functional Tests	1
2.2. L3 Functional Tests	1
2.3. QoS Mechanism Tests	2
2.4. System Management Tests	2
2.5. High Availability Tests	3
3. Performance Metrics Conclusion	3
4. Testing Environment	3
5. L2	1
5.1. Link Aggregation Function Test	1
5.2. LLDP Function Test	5
5.3. VLAN Function Test	7
5.4. Mac Address Table Entry Specification Test	13
5.5. Static FDB Function Test	16
5.6. STP Function Test	18
5.7. RFC-2544 Function Test	20
6. L3	21
6.1. ARP Protocol Test	21
6.2. ARP Specification Test	23
6.3. ECMP	25
6.4. BGP	27
6.5. IPv4 Route table specifications	30
Test Items	30
6.6. IPv6	32
6.7. IPv6 Route table specifications	35
6.8. IPv6 Route table specifications-Global	36
7. QoS	38
7.1. Classification-COS	38
7.2. Classification-DSCP	39
7.3. Marking-COS	41
7.4. Marking-DSCP	42

7.5. DiffServ	45
7.6. PFC (Priority Flow Control)	48
7.7. Asym PFC	52
7.8. PFC Watchdog (WD)	56
7.9. PFC Watermark (WM)	59
7.10. Scheduling	63
7.11. Egress Shaping (Port, Queue)	64
7.12. WRED	72
7.13. ECN	78
8. System/ Management	78
8.1. SNMP	82
8.2. SNMP Trap	83
8.3. Rsyslog	84
8.4. Open SSH/SCP/SFTP	85
8.5. Mirroring	87
8.6. DPB (Dynamic Port Breakout)	89
8.7. COPP	92
8.8. ZTP	95

一、 Overall Test Conclusion

The N9500-64OC device demonstrated excellent performance across all functional tests within the SONiC system environment. All test items were successfully completed without any major defects identified that could affect normal operation. The device fully meets design specifications in critical domains such as L2/L3 network functionalities, QoS mechanisms, and system management, exhibiting robust stability, reliability, and performance metrics that align with industry standards and practical application requirements.

二、 Functional Test Conclusion

2.1 L2 Functional Tests

Link Aggregation (802.3ad): The device supports multi-link aggregation, enabling seamless traffic failover upon link disconnection. The load balancing mechanism of aggregated ports operates normally without packet loss, verifying the redundancy and bandwidth expansion capabilities.

VLAN Functionality : It accurately processes VLAN tagging as configured, forwards untagged/tagged packets correctly, and ensures error-free cross-port VLAN communication, compliant with IEEE 802.1q standards.

MAC Address Table Specifications: The MAC address table can learn up to 8,191 entries, meeting the specified requirements. The address learning and aging mechanisms function properly.

Spanning Tree Protocol (STP): The device achieves rapid convergence to eliminate network loops, with port state transitions complying with standards to ensure no loop risks.

2.2 L3 Functional Tests

ARP Protocol: It correctly handles ARP requests/responses, supports invalid MAC address filtering, and the ARP table can accommodate up to 16,383 entries, meeting large-scale network

requirements.

BGP Routing: It stably establishes connections with external neighbors, learns and forwards routes, and supports IPv4/IPv6 routing table specification tests (capable of learning 500,000 and 610,000 routes respectively). The routing convergence speed meets expectations.

ECMP Load Balancing : Multipath forwarding functions normally, distributing traffic proportionally across links without significant packet loss or skew.

IPv6 Support: It fully supports IPv6 address configuration, neighbor discovery, and routing forwarding, with good compatibility with the IPv4 protocol stack. Bidirectional communication remains error-free in tests.

2.3 QoS Mechanism Tests

Traffic Classification & Marking : Classification and marking based on COS/DSCP are accurate, mapping packets to specified queues. The egress marking modification function meets design requirements.

Priority Flow Control (PFC) : Supports symmetric/asymmetric PFC to pause traffic by priority. Watchdog and Watermark mechanisms prevent congestion effectively, ensuring lossless transmission.

Queue Scheduling & Shaping : The WRR scheduling algorithm allocates bandwidth by weight, and port/queue shaping precisely limits traffic rates, compliant with QoS service level agreements (SLAs).

Congestion Management (WRED/ECN): Dynamically drops packets based on queue depth. The ECN marking function correctly feedbacks to senders during congestion, optimizing network transmission efficiency.

2.4 System Management Tests

SNMP & Traps : Supports SNMPv2c for remote device status acquisition. Trap alarms are real-time, accurately reporting events like port state changes.

Logging & Remote Management: Rsyslog functions normally for real-time log transmission to remote servers. SSH/SCP/SFTP services are stable, enabling secure remote login and file transfer.

Mirroring: Copies traffic from specified ports to monitoring ports, supporting multi-source port mirroring with complete data capture for network monitoring scenarios.

Dynamic Port Breakout (DPB): Supports breaking 800G ports into 2x200G/4x200G modes. Post-breakout, port rates and forwarding functions remain normal, meeting flexible networking needs.

2.5 High Availability Tests

COPP Protection: Defends against CPU-directed malicious traffic, maintaining CPU utilization <20% under high load to ensure stable system operation.

Zero Touch Provisioning (ZTP): Supports automatic configuration acquisition via DHCP+TFTP, enabling rapid system initialization and configuration loading after reboot to reduce deployment complexity.

2.6 Performance Metrics Conclusion

RFC-2544 Testing: The device's metrics including throughput, latency, and packet loss rate comply with requirements. It achieves line-rate forwarding without packet loss, demonstrating excellent performance.

Large-Scale Specification Testing: Both IPv4/IPv6 routing tables and ARP/MAC address entries reach the design upper limits, with no significant decrease in query and forwarding efficiency.

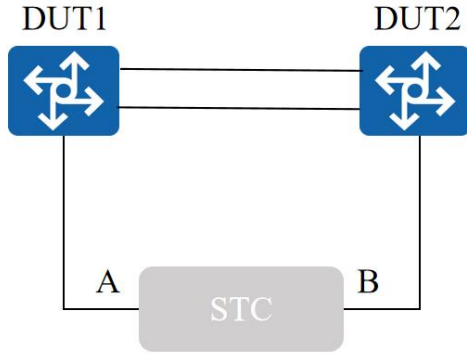
2.7 Testing Environment

The switch testing environment consists of the Device Under Test (DUT), testing instruments, servers, routers, and configuration terminals. Most test items are conducted between the DUT and instruments. Servers are used to verify the DUT's support for functions such as RADIUS and

SYSLOG. For specific test items and environments, refer to the detailed descriptions in each test section.

三、L2

3.1 Link Aggregation Function Test

Test Items	Link Aggregation Function Test
Test Content	Verify the Accuracy of DUT Link Aggregation Function
Test Topology	 <pre> graph LR DUT1[DUT1] --- L1[] DUT1 --- L2[] L1 --- DUT2[DUT2] L2 --- DUT2 DUT1 --- A[A] DUT2 --- B[B] A --- STC[STC] B --- STC </pre>
Test Steps	1、Connect devices as per the test environment. 2、Set the ports connected between DUT1 and DUT2 to be aggregated into one group. 3、The test instrument's Port A sends a broadcast (with MAC address all "F") to Port B. 4、Disconnect one of the links. 5、The test instrument's Port A sends N unicast flows to Port B (where N is greater than the number of aggregated links), and check whether Port B can receive the packets sent by Port A ,Check1. 6、Disconnect one of the links. 7、The test instrument's Port A sends two unicast data flows with the same priority to Port B. The traffic of Data Flow 1 exceeds the line rate of the aggregated port, and the traffic of Data Flow 2 is lower than the line rate of the aggregated port. Observe whether Port B can receive the two data flows sent by Port A, Check2.
Expected Results	Check1: The test instrument's Port B should be able to receive the packets sent from Port A. Check2: The test instrument's Port B should be able to receive the two data flows sent from Port A.
Actual Test Results	<pre> config portchannel add PortChannel12 config portchannel member add PortChannel12 Ethernet4 config portchannel member add PortChannel12 Ethernet8 config vlan add 100 config vlan member add 100 PortChannel12 -u config vlan member add 100 Ethernet16 -u </pre>


```
root@sonic:~# sonic-clear counters
Cleared counters

root@sonic:~# show interfaces counters -i Ethernet4,Ethernet8,Ethernet16
Last cached time was 2025-03-20 11:28:19.358063
```

IFACE	STATE	RX_OK	RX_BPS	RX_UTIL	RX_ERR	RX_DRP	RX_OVR	RX_DRP_RATE	TX_OK	TX_BPS	TX_UTIL	TX_ERR	TX_DRP	TX_OVR	TX_DRP_RATE	CNP_PKT	EOL_PKT
Ethernet4	U	0	0.00 B/s	0.00%	0	0	0	0.00%	0	0.00 B/s	0.00%	0	0	0	0.00%	0	0
Ethernet8	U	0	0.36 B/s	0.00%	0	0	0	0.00%	0	0.36 B/s	0.00%	0	0	0	0.00%	0	0
Ethernet16	U	0	0.00 B/s	0.00%	0	0	0	0.00%	0	0.00 B/s	0.00%	0	0	0	0.00%	0	0

```
root@sonic:~# show interfaces status Ethernet4,Ethernet8,Ethernet16
```

Interface	Lanes	Speed	MTU	Oper	FE	Alias	Vlan	Oper	Admin	ProtoDown	Eff Admin	Type	Asym PFC	Oper Speed
Ethernet4	10,14	2000	9100	rs	Eth1/1(Port1)	PortChannel12	down	up	up	False	up	OSFP 8X Pluggable Transceiver	N/A	2000
Ethernet8	25,26	2000	9100	rs	Eth2/1(Port2)	PortChannel12	up	up	up	False	up	OSFP 8X Pluggable Transceiver	N/A	2000
Ethernet16	17,18,19,20	4000	9100	rs	Eth3/1(Port3)	trunk	up	up	up	False	up	OSFP 8X Pluggable Transceiver	N/A	4000

```
root@sonic:~# show interfaces counters -i Ethernet4,Ethernet8,Ethernet16
Last cached time was 2025-03-20 11:28:19.358063
```

IFACE	STATE	RX_OK	RX_BPS	RX_UTIL	RX_ERR	RX_DRP	RX_OVR	RX_DRP_RATE	TX_OK	TX_BPS	TX_UTIL	TX_ERR	TX_DRP	TX_OVR	TX_DRP_RATE	CNP_PKT	EC
Ethernet4	U	7	15.53 B/s	0.00%	0	0	0	0.00%	7	15.53 B/s	0.00%	0	0	0	0.00%	0	0
Ethernet8	U	6	0.07 B/s	0.00%	0	0	0	0.00%	100,000,000	2393.96 KB/s	0.01%	0	0	0	0.00%	0	0
Ethernet16	U	100,000,000	2394.17 KB/s	0.00%	0	0	0	0.00%	0	0.00 B/s	0.00%	0	0	0	0.00%	0	0

```
root@sonic:~# show interfaces counters -i Ethernet4,Ethernet8,Ethernet16
Last cached time was 2025-03-20 11:28:19.358063
```

IFACE	STATE	RX_OK	RX_BPS	RX_UTIL	RX_ERR	RX_DRP	RX_OVR	RX_DRP_RATE	TX_OK	TX_BPS	TX_UTIL	TX_ERR	TX_DRP	TX_OVR	TX_DRP_RATE	CNP_PKT	EC
Ethernet4	U	7	7.02 B/s	0.00%	0	0	0	0.00%	7	7.02 B/s	0.00%	0	0	0	0.00%	0	0
Ethernet8	U	7	12.74 B/s	0.00%	0	0	0	0.00%	100,000,000	1002.38 KB/s	0.00%	0	0	0	0.00%	0	0
Ethernet16	U	100,000,000	1002.46 KB/s	0.00%	0	0	0	0.00%	0	0.00 B/s	0.00%	0	0	0	0.00%	0	0

Disconnect one link

Displaying Stream Blocks 1 - 1 | Total Stream Blocks: 1 | Selected 1 of 1

Stream Block Name	Port / In	Port / Out	Stream Count	Frame Length	MD
TGA	Port / In	Port / Out	1	1	1

```
root@sonic:~# show interfaces portchannel
```

Port Name	Port Type	Port Mode	Port Speed	Port Status	Port Admin	Port Oper	Port Error	Port Drop	Port Over	Port Rate	Port Util	Port Err	Port Drp	Port Ovr	Port Rte	Port Util	Port Err	Port Drp	Port Ovr	Port Rte
PortChannel12	LACP(A)(Dw)	Ethernet16(D)	101	auto	false	1	64	0	0.00 B/s	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
PortChannel10	LACP(A)(Dw)	Ethernet10(D)	102	auto	false	1	64	0	0.00 B/s	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
PortChannel18	LACP(A)(Dw)	Ethernet18(D)	103	auto	false	1	64	0	0.00 B/s	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
PortChannel12	LACP(A)(Up)	Ethernet8(S)	112	auto	false	1	64	0	0.00 B/s	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%

```
root@sonic:~# sonic-clear counters
Cleared counters

root@sonic:~# show interfaces counters -i Ethernet4,Ethernet8,Ethernet16
Last cached time was 2025-03-20 11:28:24.967748
```

IFACE	STATE	RX_OK	RX_BPS	RX_UTIL	RX_ERR	RX_DRP	RX_OVR	RX_DRP_RATE	TX_OK	TX_BPS	TX_UTIL	TX_ERR	TX_DRP	TX_OVR	TX_DRP_RATE	CNP_PKT	EOL_PKT
Ethernet4	D	0	0.00 B/s	0.00%	0	0	0	0.00%	0	0.00 B/s	0.00%	0	0	0	0.00%	0	0
Ethernet8	U	0	0.07 B/s	0.00%	0	0	0	0.00%	0	0.07 B/s	0.00%	0	0	0	0.00%	0	0
Ethernet16	U	0	0.00 B/s	0.00%	0	0	0	0.00%	0	0.00 B/s	0.00%	0	0	0	0.00%	0	0

```
root@sonic:~# show interfaces status Ethernet4,Ethernet8,Ethernet16
```

Interface	Lanes	Speed	MTU	Oper	FE	Alias	Vlan	Oper	Admin	ProtoDown	Eff Admin	Type	Asym PFC	Oper Speed
Ethernet4	10,14	2000	9100	rs	Eth1/1(Port1)	PortChannel12	down	up	up	False	up	OSFP 8X Pluggable Transceiver	N/A	2000
Ethernet8	25,26	2000	9100	rs	Eth2/1(Port2)	PortChannel12	up	up	up	False	up	OSFP 8X Pluggable Transceiver	N/A	2000
Ethernet16	17,18,19,20	4000	9100	rs	Eth3/1(Port3)	trunk	up	up	up	False	up	OSFP 8X Pluggable Transceiver	N/A	4000

```
root@sonic:~# show interfaces counters -i Ethernet4,Ethernet8,Ethernet16
Last cached time was 2025-03-20 11:28:24.967748
```

IFACE	STATE	RX_OK	RX_BPS	RX_UTIL	RX_ERR	RX_DRP	RX_OVR	RX_DRP_RATE	TX_OK	TX_BPS	TX_UTIL	TX_ERR	TX_DRP	TX_OVR	TX_DRP_RATE	CNP_PKT	EOL_PKT
Ethernet4	D	0	0.00 B/s	0.00%	0	0	0	0.00%	0	0.00 B/s	0.00%	0	0	0	0.00%	0	0
Ethernet8	U	100,000,000	634.59 KB/s	0.00%	0	0	0	0.00%	0	5.76 B/s	0.00%	0	0	0	0.00%	0	0
Ethernet16	U	0	0.00 B/s	0.00%	0	0	0	0.00%	100,000,000	633.56 KB/s	0.00%	0	0	0	0.00%	0	0

Port A sends unicast flows with incrementing source IPs to Port B.

Configure IPv4 Modifier

Offset

☒ Start modifier on first byte ☐ Start modifier at offset

Type

☒ Increment ☐ Decrement ☐ List ☐ Random ☐ Shuffle ☐ Use Streams

Details

Count: Step:

Repeat: Mask:

Seed:

Value: >

```

Ethernet0 17,18 2880 9180 rs Eth2/(Port2) Portchannel12 up up False up GSP EX Pluggable Transceiver N/A 2880
Ethernet16 17,18,19,20 4860 9180 rs Eth2/(Port2) Portchannel12 up up False up GSP EX Pluggable Transceiver N/A 4860
root@n9500:~# show interfaces portchannel12
Flags: A - active, I - inactive, D - down, B - down, N/A - not available,
S - selected, D - deselected, * - not synced,
W - wind speed
No. Team Dev. Protocol Ports Oper Key Admin Key Fast Rate System ID System Priority Dev Number Max Ports
12 Portchannel12 LACP(A)(up) (Ethernet0/0) (Ethernet16/0) 112 auto False 1 64
root@n9500:~# show interfaces counters
Clear counters
root@n9500:~# show interfaces counters -i Ethernet4,Ethernet8,Ethernet16
Last cached time was 2025-03-26 11:41:29.800397
TABLE STATE RX_OK RX_BPS RX_UTIL RX_ERR RX_DROP RX_OVR RX_DROP_RATE TX_OK TX_BPS TX_UTIL TX_ERR TX_DROP TX_OVR TX_DROP_RATE CNP_PKT EOL_PKT
Ethernet4 U 0 0.17 B/s 0.00% 0 0 0 0.00% 0 0.17 B/s 0.00% 0 0 0 0.00% 0 0
Ethernet8 U 1 10.44 B/s 0.00% 0 0 0 0.00% 1 10.44 B/s 0.00% 0 0 0 0.00% 0 0
Ethernet16 U 0 0.00 B/s 0.00% 0 0 0 0.00% 0 0.00 B/s 0.00% 0 0 0 0.00% 0 0
root@n9500:~# show interfaces status Ethernet4,Ethernet8,Ethernet16
Interface Lanes Speed MTU Oper FEC Alias Vlan Oper Admin Protodown EFP Admin Type Asym PFC Oper Speed
Ethernet4 13,14 2880 9180 rs Eth1/(Port1) Portchannel12 up up False up GSP EX Pluggable Transceiver N/A 2880
Ethernet8 15,16 2880 9180 rs Eth2/(Port2) Portchannel12 up up False up GSP EX Pluggable Transceiver N/A 2880
Ethernet16 17,18,19,20 4860 9180 rs Eth2/(Port2) Portchannel12 up up False up GSP EX Pluggable Transceiver N/A 4860
root@n9500:~# show interfaces counters -i Ethernet4,Ethernet8,Ethernet16
Last cached time was 2025-03-26 11:41:29.800397
TABLE STATE RX_OK RX_BPS RX_UTIL RX_ERR RX_DROP RX_OVR RX_DROP_RATE TX_OK TX_BPS TX_UTIL TX_ERR TX_DROP TX_OVR TX_DROP_RATE CNP_PKT EOL_PKT
Ethernet4 U 10 0.44 B/s 0.00% 0 0 0 0.00% 22,125,818 168.24 MB/s 0.67% 0 0 0 0.00% 0 0
Ethernet8 U 10 0.07 B/s 0.00% 0 0 0 0.00% 45,875,818 143.44 MB/s 0.55% 0 0 0 0.00% 0 0
Ethernet16 U 100,000,000 316.66 MB/s 0.63% 0 0 0 0.00% 0 0.00 B/s 0.00% 0 0 0 0.00% 0 0
root@n9500:~# show interfaces counters -i Ethernet4,Ethernet8,Ethernet16
Last cached time was 2025-03-26 11:41:29.800397
TABLE STATE RX_OK RX_BPS RX_UTIL RX_ERR RX_DROP RX_OVR RX_DROP_RATE TX_OK TX_BPS TX_UTIL TX_ERR TX_DROP TX_OVR TX_DROP_RATE CNP_PKT EOL_PKT
Ethernet4 U 10 0.13 B/s 0.00% 0 0 0 0.00% 53,125,818 11.14 MB/s 0.20% 0 0 0 0.00% 0 0
Ethernet8 U 10 0.35 B/s 0.00% 0 0 0 0.00% 46,875,818 0.18% 0.00% 0 0 0 0.00% 0 0
Ethernet16 U 100,000,000 316.27 MB/s 0.13% 0 0 0 0.00% 0 0.00 B/s 0.00% 0 0 0 0.00% 0 0

```

Disconnect one link

Spirent TestCenter

TestCenter IQ Settings

All Devices (Hosts, Routers, ...)

All Multicast Groups

All Traffic Generators

All Stream Blocks

All Traffic Analyzers

All Ports

Port //4/9

Devices

Traffic Generator

Traffic Analyzer

Capture

Port //4/1

Devices

Traffic Generator

Traffic Analyzer

Capture

Settings

Add Generate Stream Block Delete Edit Copy Wizard...

Scheduling Mode Bandwidth Utilization (%): 50

☒ Port Based ☐ Load per Stream Block

Burst Size: Duration Mode:

☐ Advanced Interleaving

Group ID will be set in the stream block grid.

☐ Manual Based

Scheduling mode graphic

Status	Active	Name	Tags	Index	Load	Load Unit	Traffic Pattern
☒	☒	TGA	Click...	0			Pair

Displaying Stream Blocks 1-1 | Total Stream Blocks: 1 | Selected 1 of 1

Initiated Results 1

Port Traffic and Counters > Basic Traffic Results

Change Result View 1 of 1

Basic Counters Errors Triggers Protocols Undersize/Oversize/Jumbo PFC Counters User Defined Advanced Sequencing FEC Counters

Port Name	Total Tx Count (Frames)	Total Rx Count (Frames)	Generator Sig Count (Frames)	Rx Sig Count (Frames)	Total Tx Count (bits)	Total Rx Count (bits)	Tx L1 Rate (Percent)	Rx L1 R
Port //4/9	0	100,000,000	0	100,000,000	0	102,400,000,000	0	0
Port //4/1	100,000,000	0	100,000,000	0	102,400,000,000	0	0	0

	<pre> root@sonic~# config interface shutdown Ethernet8 root@sonic~# show interfaces status Ethernet4,Ethernet8,Ethernet16 Interface Lines Speed MTU Oper PFC Alias ----- Ethernet4 12,14 2000 9100 rs Eth3/1(Port1) PortChannel12 up up False up QSFP SX Pluggable Transceiver N/A 2000 Ethernet8 22,26 2000 9100 rs Eth3/1(Port2) PortChannel12 down down False down QSFP SX Pluggable Transceiver N/A 2000 Ethernet16 17,18,19,20 4000 9100 rs Eth3/1(Port3) trunk up up False up QSFP SX Pluggable Transceiver N/A 4000 root@sonic~# show interfaces portchannel Flags: A - active, I - inactive, Up - up, Dw - Down, N/A - not available, S - selected, D - deselected, + - not synced, R - mixed speed No. Team Dev Protocol Ports Oper Key Admin Key Fast Rate System ID System Priority Dev Number Max Ports --- 12 PortChannel12 LACP(A)(Up) Ethernet8(D) Ethernet4(S) 112 auto false root@sonic~# sonic-clear counters Cleared counters root@sonic~# show interfaces counters -s Ethernet4,Ethernet8,Ethernet16 Last cached time was 2023-03-20 11:49:44.573056 IFACE STATE RX_OK RX_BPS RX_UTIL RX_ERR RX_DRP RX_OVR RX_DRP_RATE TX_OK TX_BPS TX_UTIL TX_ERR TX_OVR TX_DRP_RATE CNP_PKT EOL_PKT ----- Ethernet4 U 0 3.07 B/s 0.00% 0 0 0 0.00% 0 3.07 B/s 0.00% 0 0 0 0.00% 0 0 Ethernet8 X 0 0.00 B/s 0.00% 0 0 0 0.00% 0 0.00 B/s 0.00% 0 0 0 0.00% 0 0 Ethernet16 U 0 0.00 B/s 0.00% 0 0 0 0.00% 0 0.00 B/s 0.00% 0 0 0 0.00% 0 0 root@sonic~# show interfaces counters -s Ethernet4,Ethernet8,Ethernet16 Last cached time was 2023-03-20 11:49:44.573056 IFACE STATE RX_OK RX_BPS RX_UTIL RX_ERR RX_DRP RX_OVR RX_DRP_RATE TX_OK TX_BPS TX_UTIL TX_ERR TX_OVR TX_DRP_RATE CNP_PKT EOL_PKT ----- Ethernet4 U 2 0.16 B/s 0.00% 0 0 0 0.00% 100,000,000 4022.78 KB/s 0.02% 0 0 0 0.00% 0 0 Ethernet8 X 0 0.00 B/s 0.00% 0 0 0 0.00% 0 0.00 B/s 0.00% 0 0 0 0.00% 0 0 Ethernet16 U 100,000,000 4022.78 KB/s 0.01% 0 0 0 0.00% 0 0.00 B/s 0.00% 0 0 0 0.00% 0 0 root@sonic~# show interfaces counters -s Ethernet4,Ethernet8,Ethernet16 Last cached time was 2023-03-20 11:49:44.573056 IFACE STATE RX_OK RX_BPS RX_UTIL RX_ERR RX_DRP RX_OVR RX_DRP_RATE TX_OK TX_BPS TX_UTIL TX_ERR TX_OVR TX_DRP_RATE CNP_PKT EOL_PKT ----- Ethernet4 U 2 0.09 B/s 0.00% 0 0 0 0.00% 100,000,000 2219.03 KB/s 0.01% 0 0 0 0.00% 0 0 Ethernet8 X 0 0.00 B/s 0.00% 0 0 0 0.00% 0 0.00 B/s 0.00% 0 0 0 0.00% 0 0 Ethernet16 U 100,000,000 2219.03 KB/s 0.00% 0 0 0 0.00% 0 0.00 B/s 0.00% 0 0 0 0.00% 0 0 root@sonic~# </pre>
Test results	PASS
Remarks	

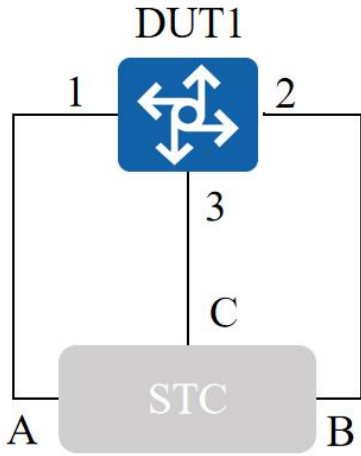
3.2 LLDP Function Test

Test Items	LLDP Test
Test Content	The test device can normally send and receive LLDP and parse it.
Test Topology	
Test Steps	- Set up the test environment as per the diagram. - Enable LLDP on the device and third-party devices. - View the LLDP neighbor information of the device, Check1. - View the LLDP neighbor information of the peer third-party device, Check2. - Delete the relevant configurations.
Expected Results	Check1: The device can correctly process the LLDP packets from the third-party device and display normal information. Check2: The LLDP packets sent by the device can be parsed by the third-party device, and the content is normal.
Actual Test Results	<pre> root@sonic:/home/admin# show lldp table Capability codes: (R) Router, (B) Bridge, (O) Other LocalPort RemoteDevice RemotePortID Capability RemotePortDescr ----- Ethernet40 sonic Eth6/1(Port6) BR Ethernet40 Ethernet44 sonic Eth6/2(Port6) BR Ethernet44 Ethernet232 sonic Eth30(Port30) BR Ethernet232 eth0 68:21:5f:34:14:a2 BR Ethernet Port on unit 1, port 15 ----- Total entries displayed: 4 </pre>

	<pre> root@sonic:/home/admin# show lldp table Capability codes: (R) Router, (B) Bridge, (O) Other LocalPort RemoteDevice RemotePortID Capability RemotePortDescr ----- Ethernet40 sonic Eth6/1(Port6) BR Ethernet40 Ethernet44 sonic Eth6/2(Port6) BR Ethernet44 Ethernet232 sonic Eth30(Port30) BR Ethernet232 eth0 68:21:5f:34:14:a2 BR Ethernet Port on unit 1, port 15 ----- Total entries displayed: 4 root@sonic:/home/admin# show lldp global ----- LLDP Global configuration: ----- HELLO TIMER 30 SYSTEM NAME sonic SYSTEM DESCRIPTION SONiC Software Version: SONiC.202111.30.6.2.251 - HwSku: Naddod-N9500-64OC - Distribution: Debian 11.11 - Kernel: 5.10.0-8-2-amd64 ----- root@sonic:/home/admin# show lldp neighbors ----- LLDP neighbors: ----- Interface: eth0, via: LLDP, RID: 2, Time: 0 day, 00:00:15 Chassis: ChassisID: mac 68:21:5f:34:14:93 SysDescr: ECS5520-18T Capability: Bridge, on Capability: Router, on Port: PortID: mac 68:21:5f:34:14:a2 PortDescr: Ethernet Port on unit 1, port 15 TTL: 120 MFS: 1522 PMD autoneg: supported: yes, enabled: yes Adv: 10Base-T, HD: yes, FD: yes Adv: 100Base-TX, HD: yes, FD: yes Adv: 1000Base-T, HD: no, FD: yes MAU oper type: 1000BaseTFD - Four-pair Category 5 UTP, full duplex mode VLAN: 120, pvid: yes PPVID: supported: yes, enabled: no PI: 00 27 42 42 03 00 00 02 PI: 88 09 01 PI: 88 09 03 PI: 88 8e LLDP-MED: Device Type: Network Connectivity Device Capability: Capabilities, yes Capability: Policy, yes Capability: Location, yes Capability: Inventory, yes LLDP-MED Location Identification: Type: Civic address Country: TW Inventory: Hardware Revision: R0A </pre>
--	---

	Firmware Revision: 10.27.14.15 Serial Number: EC1948000847 Manufacturer: edgecore Model: ECS5520-18T
Test results	PASS
Remarks	

3.3 VLAN Function Test

Test Items	VLAN Function Test
Test Content	The test device can forward according to the set VLAN.
Test Topology	
Test Steps	1、 Set up the test environment as per the diagram. 2、 Create VLAN 2 and VLAN 3. 3、 Configure DUTP1 to join VLAN 2 as untagged and VLAN 3 as tagged. 4、 Configure DUTP2 to join VLAN 2 as untagged. 5、 Configure DUTP3 to join VLAN 3 as tagged, and check whether the configuration is successful ,Check1. 6、 The TGA sends untagged packets, and view the packet reception status on the instrument ,Check2. 7、 The TGA sends VLAN 2 tagged packets, and view the packet reception status on the instrument ,Check3. 8、 The TGA sends VLAN 3 tagged packets, and view the packet reception status on the instrument ,Check4. 9、 The TGA sends VLAN 4 tagged packets, and view the packet reception status on the instrument ,Check5.
Expected Results	Check1: Configuration and binding are successful. Check2: Only TGB receives the packets, and the packets are untagged. Check3: Only TGB receives the packets, and the packets are untagged. Check4: Only TGC receives the packets, and the packets are VLAN 3 tagged.

	Check5: The packets are discarded, and no port receives the packets. Configure DUTP1 to join VLAN 2 as untagged and VLAN 3 as tagged. <pre>config vlan member add 2 Ethernet0 -u config vlan member add 3 Ethernet0</pre> <pre>root@sonic:~# config vlan member add 2 Ethernet0 -u root@sonic:~# config vlan member add 3 Ethernet0 root@sonic:~# show vlan brief</pre> <table><thead><tr><th>VLAN ID</th><th>IP Address</th><th>Ports</th><th>Port Tagging</th><th>Proxy ARP</th><th>DHCP Helper Address</th><th>DHCP Relay Configuration</th></tr></thead><tbody><tr><td>2</td><td></td><td>Ethernet0</td><td>untagged</td><td>disabled</td><td></td><td>Source Interface: Link Selection: Server Vrf: Server ID Override:</td></tr><tr><td>3</td><td></td><td>Ethernet0</td><td>tagged</td><td>disabled</td><td></td><td>Source Interface: Link Selection: Server Vrf: Server ID Override:</td></tr></tbody></table> <pre>root@sonic:~# show vlan config</pre> <table><thead><tr><th>Name</th><th>VID</th><th>Member</th><th>Mode</th></tr></thead><tbody><tr><td>Vlan2</td><td>2</td><td>Ethernet0</td><td>untagged</td></tr><tr><td>Vlan3</td><td>3</td><td>Ethernet0</td><td>tagged</td></tr></tbody></table> <pre>root@sonic:~#</pre> config vlan member add 2 Ethernet8 -u <pre>root@sonic:~# config vlan member add 2 Ethernet2 -u root@sonic:~# show vlan brief</pre> <table><thead><tr><th>VLAN ID</th><th>IP Address</th><th>Ports</th><th>Port Tagging</th><th>Proxy ARP</th><th>DHCP Helper Address</th><th>DHCP Relay Configuration</th></tr></thead><tbody><tr><td>2</td><td></td><td>Ethernet0 Ethernet2</td><td>untagged untagged</td><td>disabled</td><td></td><td>Source Interface: Link Selection: Server Vrf: Server ID Override:</td></tr><tr><td>3</td><td></td><td>Ethernet0</td><td>tagged</td><td>disabled</td><td></td><td>Source Interface: Link Selection: Server Vrf: Server ID Override:</td></tr></tbody></table> <pre>root@sonic:~# show vlan config</pre> <table><thead><tr><th>Name</th><th>VID</th><th>Member</th><th>Mode</th></tr></thead><tbody><tr><td>Vlan2</td><td>2</td><td>Ethernet0</td><td>untagged</td></tr><tr><td>Vlan2</td><td>2</td><td>Ethernet2</td><td>untagged</td></tr><tr><td>Vlan3</td><td>3</td><td>Ethernet0</td><td>tagged</td></tr></tbody></table> <pre>root@sonic:~#</pre> config vlan member add 3 Ethernet16 <pre>root@sonic:~# config vlan member add 3 Ethernet4 root@sonic:~# show vlan brief</pre> <table><thead><tr><th>VLAN ID</th><th>IP Address</th><th>Ports</th><th>Port Tagging</th><th>Proxy ARP</th><th>DHCP Helper Address</th><th>DHCP Relay Configuration</th></tr></thead><tbody><tr><td>2</td><td></td><td>Ethernet0 Ethernet2</td><td>untagged untagged</td><td>disabled</td><td></td><td>Source Interface: Link Selection: Server Vrf: Server ID Override:</td></tr><tr><td>3</td><td></td><td>Ethernet0 Ethernet4</td><td>tagged tagged</td><td>disabled</td><td></td><td>Source Interface: Link Selection: Server Vrf: Server ID Override:</td></tr></tbody></table> <pre>root@sonic:~# show vlan config</pre> <table><thead><tr><th>Name</th><th>VID</th><th>Member</th><th>Mode</th></tr></thead><tbody><tr><td>Vlan2</td><td>2</td><td>Ethernet0</td><td>untagged</td></tr><tr><td>Vlan2</td><td>2</td><td>Ethernet2</td><td>untagged</td></tr><tr><td>Vlan3</td><td>3</td><td>Ethernet0</td><td>tagged</td></tr><tr><td>Vlan3</td><td>3</td><td>Ethernet4</td><td>tagged</td></tr></tbody></table> <pre>root@sonic:~#</pre> TGA sends untagged packets.	VLAN ID	IP Address	Ports	Port Tagging	Proxy ARP	DHCP Helper Address	DHCP Relay Configuration	2		Ethernet0	untagged	disabled		Source Interface: Link Selection: Server Vrf: Server ID Override:	3		Ethernet0	tagged	disabled		Source Interface: Link Selection: Server Vrf: Server ID Override:	Name	VID	Member	Mode	Vlan2	2	Ethernet0	untagged	Vlan3	3	Ethernet0	tagged	VLAN ID	IP Address	Ports	Port Tagging	Proxy ARP	DHCP Helper Address	DHCP Relay Configuration	2		Ethernet0 Ethernet2	untagged untagged	disabled		Source Interface: Link Selection: Server Vrf: Server ID Override:	3		Ethernet0	tagged	disabled		Source Interface: Link Selection: Server Vrf: Server ID Override:	Name	VID	Member	Mode	Vlan2	2	Ethernet0	untagged	Vlan2	2	Ethernet2	untagged	Vlan3	3	Ethernet0	tagged	VLAN ID	IP Address	Ports	Port Tagging	Proxy ARP	DHCP Helper Address	DHCP Relay Configuration	2		Ethernet0 Ethernet2	untagged untagged	disabled		Source Interface: Link Selection: Server Vrf: Server ID Override:	3		Ethernet0 Ethernet4	tagged tagged	disabled		Source Interface: Link Selection: Server Vrf: Server ID Override:	Name	VID	Member	Mode	Vlan2	2	Ethernet0	untagged	Vlan2	2	Ethernet2	untagged	Vlan3	3	Ethernet0	tagged	Vlan3	3	Ethernet4	tagged
VLAN ID	IP Address	Ports	Port Tagging	Proxy ARP	DHCP Helper Address	DHCP Relay Configuration																																																																																																										
2		Ethernet0	untagged	disabled		Source Interface: Link Selection: Server Vrf: Server ID Override:																																																																																																										
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Vlan2	2	Ethernet0	untagged																																																																																																													
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2		Ethernet0 Ethernet2	untagged untagged	disabled		Source Interface: Link Selection: Server Vrf: Server ID Override:																																																																																																										
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Vlan2	2	Ethernet0	untagged																																																																																																													
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Vlan3	3	Ethernet0	tagged																																																																																																													
Vlan3	3	Ethernet4	tagged																																																																																																													
Actual Test Results																																																																																																																

[illegible]

TGA sends VLAN 2 tagged packets

[illegible]

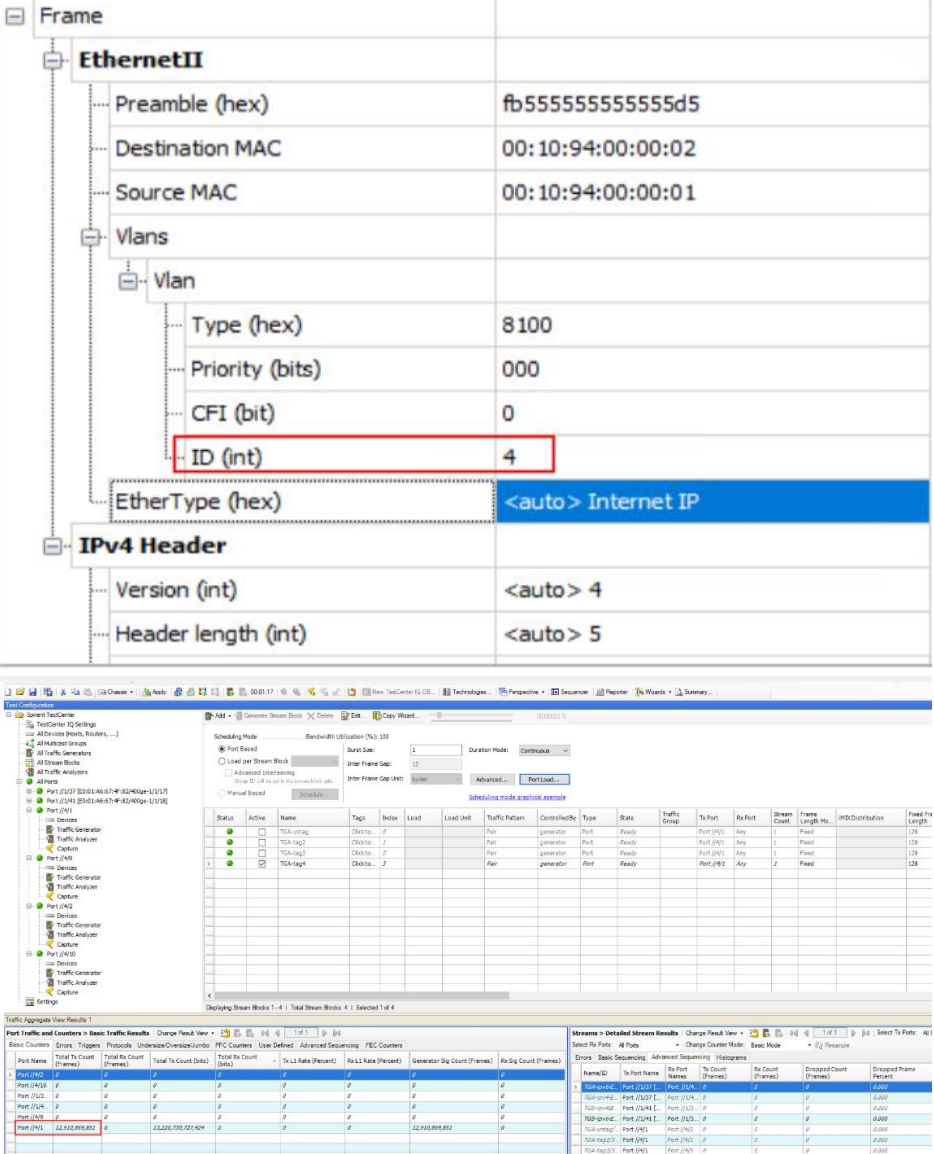
TGA sends VLAN 3 tagged packets

Name	Value
Frame	
EthernetII	
Preamble (hex)	fb555555555555d5
Destination MAC	00:10:94:00:00:02
Source MAC	00:10:94:00:00:01
Vlans	
Vlan	
Type (hex)	8100
Priority (bits)	000
CFI (bit)	0
ID (int)	3
EtherType (hex)	<auto> Internet IP
IPv4 Header	
Version (int)	<auto> 4
Header length (int)	<auto> 5

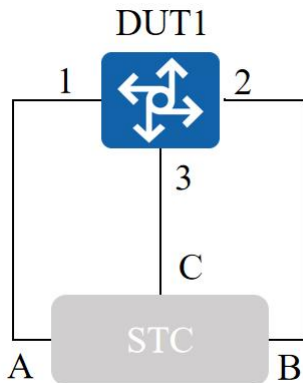
The screenshot displays the Wireshark 2.10.0 interface. The top pane shows the packet list with a selected packet (No. 32276). The middle pane shows the packet details, including Ethernet II, Internet Protocol Version 4, and Hypertext Transfer Protocol. The bottom pane shows the packet bytes. The right pane shows the packet capture statistics, including Packets Captured, Bytes Received, and Bytes Transmitted.

[illegible]

TGA sends VLAN 2 tagged packets

	 The screenshot displays the NADDOD configuration interface. The 'Ethernet II' section is expanded, showing fields for Preamble (hex), Destination MAC, Source MAC, Vlan (set to 4), and EtherType (hex). The 'IPv4 Header' section is also expanded, showing Version (int) and Header length (int). Below the configuration, a table of stream blocks is visible, and at the bottom, a detailed stream results table shows various metrics for different ports and protocols.
Test results	PASS
Remarks	

3.4 Mac Address Table Entry Specification Test

Test Items	Mac Address Table Entry Specification Test																																																			
Test Content	Verification of Device MAC Address Table Entry Specifications																																																			
Test Topology																																																				
Test Steps	1、 set up the test environment as shown in the diagram. 2、 Create VLAN 100. 3、 Configure ports DUTP1-DUTP3 to join VLAN 100 as untagged members. 4、 The test instrument TGA sends 100,000 packets with varying source MAC addresses (total 100,000 unique SMACs) at a rate of 1,000 pps. 5、 Clear the packet reception statistics on the instrument. 6、 TGB injects 100,000 packets with DMAC set to the SMAC of TGA, then perform Check 1.																																																			
Expected Results	Check1: The number of packets received by TGA minus the number of packets received by TGC equals the number of MAC addresses learned by the DUT.																																																			
Actual Test Results	config vlan add 100 config vlan member add 100 Ethernet16 -u config vlan member add 100 Ethernet18 -u config vlan member add 100 Ethernet20 -u <pre>root@sonic:~# config vlan member add 100 Ethernet16 -u root@sonic:~# config vlan member add 100 Ethernet18 -u root@sonic:~# config vlan member add 100 Ethernet20 -u root@sonic:~# show vlan brief</pre><table><thead><tr><th>VLAN ID</th><th>IP Address</th><th>Ports</th><th>Port Tagging</th><th>Proxy ARP</th><th>DHCP Helper Address</th><th>DHCP Relay Configuration</th></tr></thead><tbody><tr><td>100</td><td></td><td>Ethernet16</td><td>untagged</td><td>disabled</td><td></td><td>Source Interface:</td></tr><tr><td></td><td></td><td>Ethernet18</td><td>untagged</td><td></td><td></td><td>Link Selection:</td></tr><tr><td></td><td></td><td>Ethernet20</td><td>untagged</td><td></td><td></td><td>Server Vrf:</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td>Server ID Override:</td></tr></tbody></table><pre>root@sonic:~# show vlan config</pre><table><thead><tr><th>Name</th><th>VID</th><th>Member</th><th>Mode</th></tr></thead><tbody><tr><td>Vlan100</td><td>100</td><td>Ethernet16</td><td>untagged</td></tr><tr><td>Vlan100</td><td>100</td><td>Ethernet18</td><td>untagged</td></tr><tr><td>Vlan100</td><td>100</td><td>Ethernet20</td><td>untagged</td></tr></tbody></table> TGA: DST MAC: 00:00:02:00:00:01 SRC MAC: 00:10:94:00:00:02 – Increment (100000 个 MAC) Loading: 1000pps	VLAN ID	IP Address	Ports	Port Tagging	Proxy ARP	DHCP Helper Address	DHCP Relay Configuration	100		Ethernet16	untagged	disabled		Source Interface:			Ethernet18	untagged			Link Selection:			Ethernet20	untagged			Server Vrf:							Server ID Override:	Name	VID	Member	Mode	Vlan100	100	Ethernet16	untagged	Vlan100	100	Ethernet18	untagged	Vlan100	100	Ethernet20	untagged
VLAN ID	IP Address	Ports	Port Tagging	Proxy ARP	DHCP Helper Address	DHCP Relay Configuration																																														
100		Ethernet16	untagged	disabled		Source Interface:																																														
		Ethernet18	untagged			Link Selection:																																														
		Ethernet20	untagged			Server Vrf:																																														
						Server ID Override:																																														
Name	VID	Member	Mode																																																	
Vlan100	100	Ethernet16	untagged																																																	
Vlan100	100	Ethernet18	untagged																																																	
Vlan100	100	Ethernet20	untagged																																																	

Configure MAC Modifier

Offset

☒ Start modifier on first byte ☐ Start modifier at offset 0

Type

☒ Increment ☐ Decrement ☐ List ☐ Random ☐ Shuffle ☐ Use Streams

Details

Count: 100000 Step: 00:00:00:00:00:01

Repeat: 0 Mask: 00:00:FF:FF:FF:FF

Seed: 0

Value: 00:10:94:00:00:02

Tip: Enter a start-value from which to begin the sequence.

OK Cancel

☒ Fix ☐ Random

Fixed load settings

☐ Percent (%) : 0.00118397632

☒ Frame/sec (fps) : 1000

☐ bps : 1183976

☐ Kbps : 1183.97632

☐ Mbps : 1.18397632

☐ Inter burst gap (bytes) : 12499864

☐ L2 Rate (bps): 1024000

Load mode

☒ Fix ☐ Random

Fixed load settings

☐ Percent (%) : 0.00059198816

☒ Frame/sec (fps) : 1000

☐ bps : 1183976

☐ Kbps : 1183.97632

☐ Mbps : 1.18397632

☐ Inter burst gap (bytes) : 24999864

☐ L2 Rate (bps): 1024000

Total Tx Count (Frames)	Total Rx Count (Frames)	Total Tx Count (bits)	Tx L1 Rate (Percent)	Rx L1 Rate (Percent)	Total Rx Count (bits)	Generator Sig Count (Frames)	Rx Sig Count (Frames)
0	100,000	0	0	0	102,400,000	0	100,000
0	0	0	0	0	0	0	0
100,000	0	102,400,000	0	0	0	100,000	0
0	100,000	0	0	0	102,400,000	0	100,000

```

8185 100 00:10:94:00:10:A3 Ethernet20 Dynamic
8186 100 00:10:94:00:14:C8 Ethernet20 Dynamic
8187 100 00:10:94:00:0E:5C Ethernet20 Dynamic
8188 100 00:10:94:00:11:5F Ethernet20 Dynamic
8189 100 00:10:94:00:02:9E Ethernet20 Dynamic
8190 100 00:10:94:00:1D:EE Ethernet20 Dynamic
8191 100 00:10:94:00:1D:13 Ethernet20 Dynamic
Total number of entries 8191
root@sonic:~#
root@sonic:~# show mac -c
Total number of entries 8191
root@sonic:~#

```

TGB:

Dst MAC: 00:10:94:00:00:02 – Increment (100000 ↑ MAC)

SRC MAC: 00:00:02:00:00:01

Loading: 100%

Configure MAC Modifier

Offset

☒ Start modifier on first byte ☐ Start modifier at offset 2

Type

☒ Increment ☐ Decrement ☐ List ☐ Random ☐ Shuffle ☐ Use Streams

Details

Count: 100000 Step: 00:00:00:00:00:01

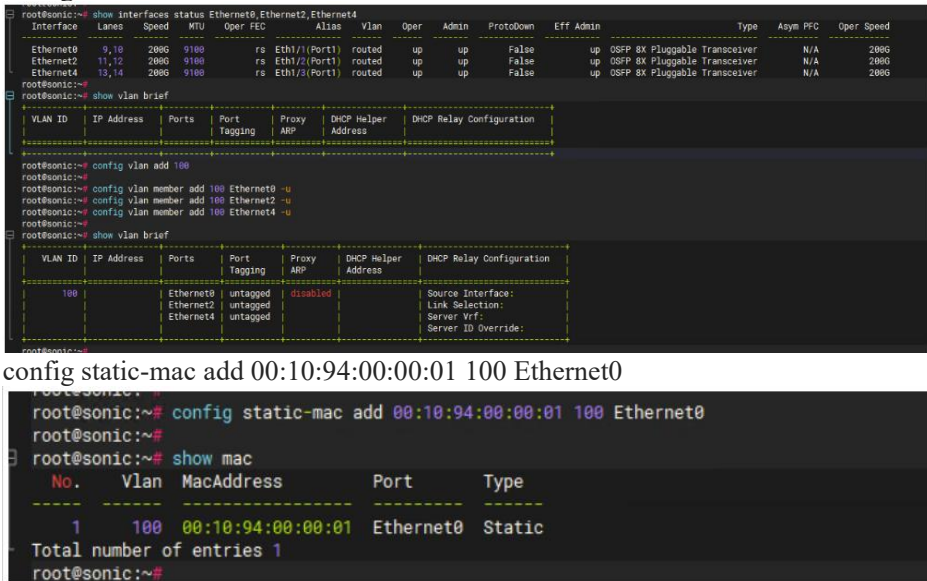
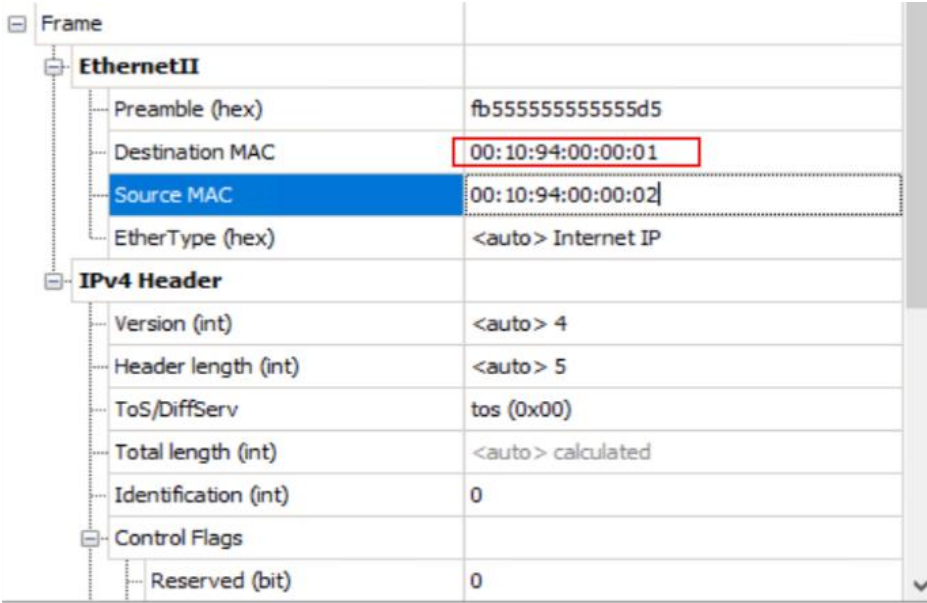
Repeat: 0 Mask: 00:00:FF:FF:FF:FF

Seed: 0

Value: 00:10:94:00:00:02 >

Tip: Enter a start-value from which to begin the sequence.

OK Cancel

	3、Configure ports DUTP1-DUTP3 to join VLAN 100 as untagged members. 4、Configure a static MAC address for VLAN 100 on DUTP1. 5、TGB injects 100,000 packets with DMAC set to the static MAC address. 6、configured for VLAN 100 on DUTP1, then observe the traffic transmission and reception status, Check 1.
Expected Results	Check1: TGA receives all 100,000 packets sent by TGB, while TGC receives no packets.
Actual Test Results	<pre> config vlan add 100 config vlan member add 100 Ethernet0 -u config vlan member add 100 Ethernet2 -u config vlan member add 100 Ethernet4 -u </pre>  Port B 

☒ Fix
 ☐ Random

Fixed load settings

☒ Percent (%) : 100

☐ Frame/sec (fps) : 84457770

☐ bps : 9999800000

☐ Kbps : 99998000

☐ Mbps : 99998

☐ Inter burst gap (bytes) : 12

☐ L2 Rate (bps) : 86484756480

Scheduling Mode: Port Based

Bandwidth Utilization (%): 100

☒ Port Based
 ☐ Load per Stream Block
 ☐ Advanced Interleaving
 ☐ Manual Based

Burst Size: 1
 Duration Mode: Bursts
 Burst(s): 100000
 Inter Frame Gap: 12
 Inter Frame Gap Unit: bytes

Packets received at Port A and Port C

Port Name	Test To Count (Frames)	Test Rx Count (Frames)	Test Tx Count (Bytes)	Test Rx Count (Bytes)	% L1 Rate (Percent)	% L2 Rate (Percent)	Generator Rx Count (Frames)	Rx Rx Count (Frames)
Port 1/2/3	1	1	1	1	1	1	1	1
Port 1/2/4	1	1	1	1	1	1	1	1
Port 1/2/5	1	1	1	1	1	1	1	1

NameID	%Port Name	Rx Port Name	Rx Count (Frames)	Rx Count (Bytes)	Dropped Count (Frames)	Dropped Count (Bytes)	Drop Rate (Frames)
100-1000	Port 1/2/3	Port 1/2/3	1	1	0	0	0.000
100-1000	Port 1/2/4	Port 1/2/4	1	1	0	0	0.000


```

root@ns0000:~# show clear counters
Cleared counters
root@ns0000:~# show mac
No.  Vlan  MacAddress  Port  Type
-----
1    100    00:10:10:00:00:01  Ethernet0  Static
Total number of entries 1
root@ns0000:~# show interfaces status Ethernet0,Ethernet2,Ethernet4
Interface  Lanes  Speed  MTU  Oper  FEC  Alias  Vlan  Oper  Admin  ProtDown  Eff Admin  Type  Asyn PFC  Oper Speed
-----
Ethernet0  5,10   2000   9100  rs  Eth1/1(Port1)  trunk  up  up  False  up  up  up  OSFP 8X Pluggable Transceiver  N/A  2000
Ethernet2  11,12  2000   9100  rs  Eth1/2(Port1)  trunk  up  up  False  up  up  up  OSFP 8X Pluggable Transceiver  N/A  2000
Ethernet4  13,14  2000   9100  rs  Eth1/3(Port1)  trunk  up  up  False  up  up  up  OSFP 8X Pluggable Transceiver  N/A  2000
root@ns0000:~# show interfaces counters -i Ethernet0,Ethernet2,Ethernet4
Last cached time was 2025-03-03 16:29:00.807519
IFACE  STATE  RX_OK  RX_BPS  RX_UTIL  RX_ERR  RX_DROP  RX_OVR  RX_DROP_RATE  TX_OK  TX_BPS  TX_UTIL  TX_ERR  TX_DROP  TX_OVR  TX_DROP_RATE  CNP_PKT  EOL_PKT
-----
Ethernet0  U  0  0.00 B/s  0.00%  0  0  0  0.00%  0  0.00 B/s  0.00%  0  0  0  0.00%  0  0
Ethernet2  U  0  0.00 B/s  0.00%  0  0  0  0.00%  0  0.00 B/s  0.00%  0  0  0  0.00%  0  0
Ethernet4  U  0  0.00 B/s  0.00%  0  0  0  0.00%  0  0.00 B/s  0.00%  0  0  0  0.00%  0  0
root@ns0000:~# show interfaces counters -i Ethernet0,Ethernet2,Ethernet4
Last cached time was 2025-03-03 16:29:00.807519
IFACE  STATE  RX_OK  RX_BPS  RX_UTIL  RX_ERR  RX_DROP  RX_OVR  RX_DROP_RATE  TX_OK  TX_BPS  TX_UTIL  TX_ERR  TX_DROP  TX_OVR  TX_DROP_RATE  CNP_PKT  EOL_PKT
-----
Ethernet0  U  0  0.00 B/s  0.00%  0  0  0  0.00%  100,000  700.43 KB/s  0.00%  0  0  0  0.00%  0  0
Ethernet2  U  100,000  143.10 KB/s  0.00%  0  0  0  0.00%  0  0.00 B/s  0.00%  0  0  0  0.00%  0  0
Ethernet4  U  0  0.00 B/s  0.00%  0  0  0  0.00%  0  0.00 B/s  0.00%  0  0  0  0.00%  0  0
root@ns0000:~# show vlan brief
VLAN ID  IP Address  Ports  Port Tagging  Proxy ARP  DHCP Helper Address  DHCP Relay Configuration
-----
100      untagged  Ethernet0  untagged  disabled  disabled  Source Interface:
Link Selection:
Server Vrrf:
Server ID Override:
    
```

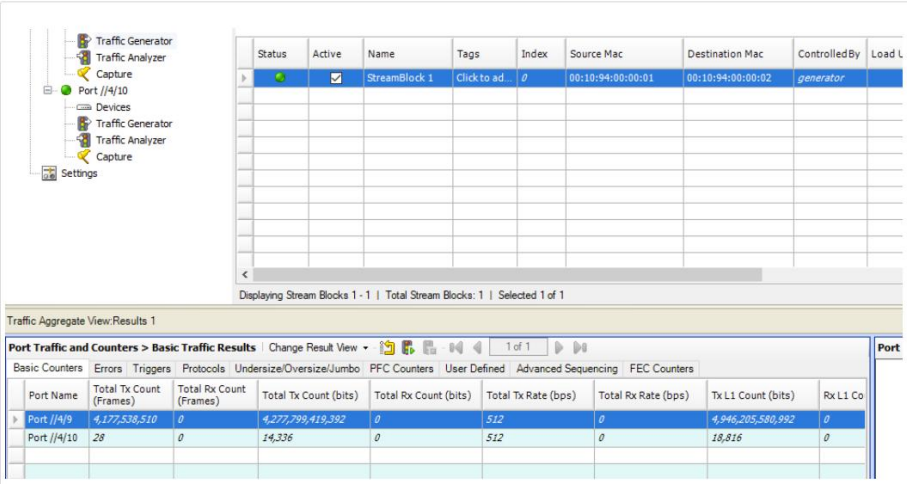
Test results PASS

Remarks

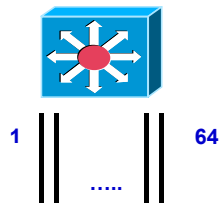
3.6 STP Function Test

Test Items	STP Function Test
Test Content	Test that the device's STP is working properly.

Test Topology	DUT1 1 2 A B STC																																																																																																									
Test Steps	1、 Set up the test environment as shown in the diagram. 2、 Configure VLANs. 3、 Configure STP. 4、 TGA and TGB simulate two ports of the same device with STP enabled (root priority 8192). 5、 Display the STP port status ,check 1. 6、 TGA sends data traffic to confirm whether a loop exists, and observe the traffic transmission and reception status,check2.																																																																																																									
Expected Results	Check1: No network loop exists. Check2: TGB does not receive any packets from TGA.																																																																																																									
Actual Test Results	config spanning-tree enable stp config vlan add 100 config vlan member add 100 Ethernet122 -u config vlan member add 100 Ethernet120 -u root@sonic:/home/admin# show spanning-tree brief Spanning Tree Mode : STP Spanning Tree Enabled/Disabled : Enabled Designated Root : 8192.000010001000 Current Root Port (Ethernet) : 120 Current Root Cost : 50 <table><tr><th>Interface</th><th>Pri</th><th>Designated Bridge ID</th><th>Designated Port ID</th><th>Oper Cost</th><th>STP Status</th><th>Role</th><th>State</th><th>Oper Edge</th></tr><tr><td>Ethernet120</td><td>128</td><td>8192.000010001000</td><td>128.1</td><td>50</td><td>EN</td><td>ROOT</td><td>FWD</td><td>No</td></tr><tr><td>Ethernet122</td><td>128</td><td>8192.000010001000</td><td>128.2</td><td>50</td><td>EN</td><td>ALTN</td><td>BLK</td><td>No</td></tr></table> root@sonic:/home/admin# TGA and TGB simulate two ports of the same device with STP enabled (root priority 8192). <table><tr><th>Emulated Device Interface</th><th>MACsec</th><th>DHCP</th><th>IGMP</th><th>MLD</th><th>EndHost</th><th>OS-Lite</th><th>DHCP Server</th><th>BFD</th><th>STP</th><th>BGP</th></tr><tr><td>Port /A/9</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Port /A/10</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table> View STP port status root@sonic:/home/admin# show spanning-tree brief Spanning Tree Mode : STP Spanning Tree Enabled/Disabled : Enabled Designated Root : 8192.000010001000 Current Root Port (Ethernet) : 120 Current Root Cost : 50 <table><tr><th>Interface</th><th>Pri</th><th>Designated Bridge ID</th><th>Designated Port ID</th><th>Oper Cost</th><th>STP Status</th><th>Role</th><th>State</th><th>Oper Edge</th></tr><tr><td>Ethernet104</td><td>128</td><td>32768.AC81B501D460</td><td>128.105</td><td>25</td><td>EN</td><td>DESG</td><td>FWD</td><td>No</td></tr><tr><td>Ethernet108</td><td>128</td><td>32768.AC81B501D460</td><td>128.105</td><td>25</td><td>EN</td><td>BKUP</td><td>BLK</td><td>No</td></tr><tr><td>Ethernet120</td><td>128</td><td>8192.000010001000</td><td>128.1</td><td>50</td><td>EN</td><td>ROOT</td><td>FWD</td><td>No</td></tr><tr><td>Ethernet122</td><td>128</td><td>8192.000010001000</td><td>128.2</td><td>50</td><td>EN</td><td>ALTN</td><td>BLK</td><td>No</td></tr></table> root@sonic:/home/admin# No network loop exists.	Interface	Pri	Designated Bridge ID	Designated Port ID	Oper Cost	STP Status	Role	State	Oper Edge	Ethernet120	128	8192.000010001000	128.1	50	EN	ROOT	FWD	No	Ethernet122	128	8192.000010001000	128.2	50	EN	ALTN	BLK	No	Emulated Device Interface	MACsec	DHCP	IGMP	MLD	EndHost	OS-Lite	DHCP Server	BFD	STP	BGP	Port /A/9											Port /A/10											Interface	Pri	Designated Bridge ID	Designated Port ID	Oper Cost	STP Status	Role	State	Oper Edge	Ethernet104	128	32768.AC81B501D460	128.105	25	EN	DESG	FWD	No	Ethernet108	128	32768.AC81B501D460	128.105	25	EN	BKUP	BLK	No	Ethernet120	128	8192.000010001000	128.1	50	EN	ROOT	FWD	No	Ethernet122	128	8192.000010001000	128.2	50	EN	ALTN	BLK	No
Interface	Pri	Designated Bridge ID	Designated Port ID	Oper Cost	STP Status	Role	State	Oper Edge																																																																																																		
Ethernet120	128	8192.000010001000	128.1	50	EN	ROOT	FWD	No																																																																																																		
Ethernet122	128	8192.000010001000	128.2	50	EN	ALTN	BLK	No																																																																																																		
Emulated Device Interface	MACsec	DHCP	IGMP	MLD	EndHost	OS-Lite	DHCP Server	BFD	STP	BGP																																																																																																
Port /A/9																																																																																																										
Port /A/10																																																																																																										
Interface	Pri	Designated Bridge ID	Designated Port ID	Oper Cost	STP Status	Role	State	Oper Edge																																																																																																		
Ethernet104	128	32768.AC81B501D460	128.105	25	EN	DESG	FWD	No																																																																																																		
Ethernet108	128	32768.AC81B501D460	128.105	25	EN	BKUP	BLK	No																																																																																																		
Ethernet120	128	8192.000010001000	128.1	50	EN	ROOT	FWD	No																																																																																																		
Ethernet122	128	8192.000010001000	128.2	50	EN	ALTN	BLK	No																																																																																																		

	
Test results	PASS
Remarks	

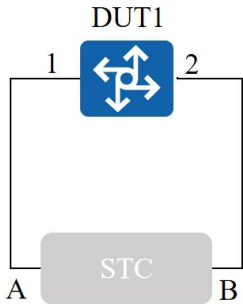
3.7 RFC-2544 Function Test

Test Items	RFC2544 Test
Test Content	The device is connected to a tester for RFC2544 testing.
Test Topology	 Test Center
Test Steps	1. Set up the test environment as shown in the diagram. 2. Configure VLAN. 3. Use the tester to perform RFC2544 testing. 4. Delete the relevant configurations.
Expected Results	The RFC2544 test results meet expectations.
Actual Test Results	<pre> config vlan add 100 config vlan member add 100 Ethernet440 -u config vlan member add 100 Ethernet8 -u </pre>

	Close lldp systemctl stop lldp.service Throughput report:  rfc2544_topolog y_two_400G_port
Test results	PASS
Remarks	

四、L3

4.1 ARP Protocol Test

Test Items	ARP Protocol Test
Test Content	Test that the device can correctly process ARP packets.
Test Topology	
Test Steps	1、Set up the test environment as shown in the diagram. 2、Configure DUT1 IP as 100.100.100.100/24. 3、TGA sends an incorrect ARP request to 100.100.100.100 with 100.100.100.1 as the source MAC for Check 1. 4、TGA sends a correct ARP request to 100.100.100.100 with 100.100.100.1 as the source MAC for Check 2. 5、Delete the relevant configurations.
Expected Results	Check1: The DUT does not learn 100.100.100.1. Check2: The DUT learns 100.100.100.1.
Actual Test Results	Configure the IP address of device port 1 as 100.100.100.100/24. config interface ip add Ethernet0 100.100.100.100/24 Port A

EthernetII	
Preamble (hex)	fb555555555555d5
Destination MAC	90:2D:77:0F:C8:00
Source MAC	00:10:94:00:00:01
EtherType (hex)	<auto> ARP
ARP	
Hardware Type (hex)	<auto> Ethernet
Protocol Type (hex)	<auto> Internet IP
Hardware Address Length (int)	6
Protocol Address Length (int)	5
Operation (int)	ARP Request
Sender Hardware Address	00:10:94:00:00:01
Sender Protocol Address	100.100.100.1
Target Hardware Address	00:00:00:00:00:00

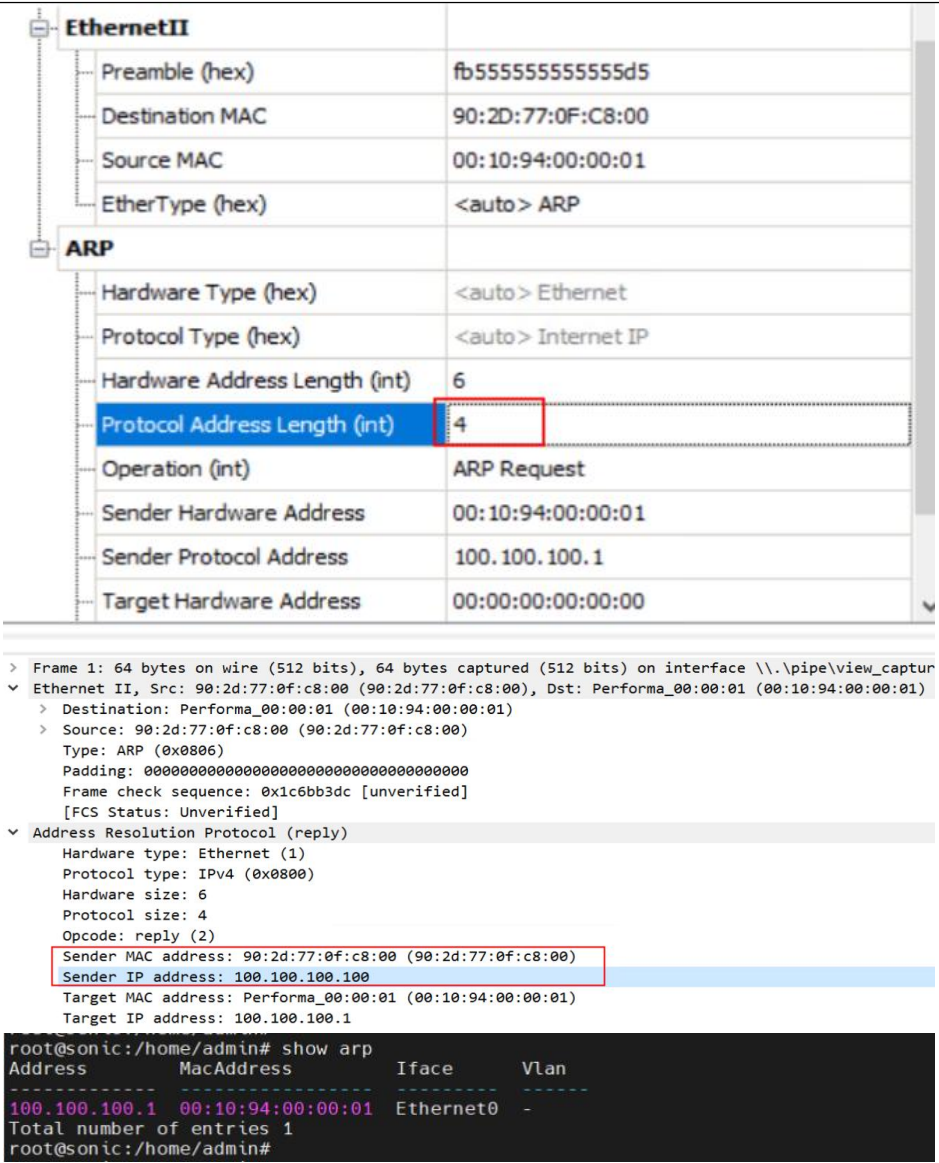
```

root@sonic:/home/admin# show arp
Address      MacAddress   Iface      Vlan
-----
Total number of entries 0
root@sonic:/home/admin#

```

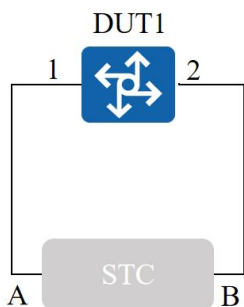
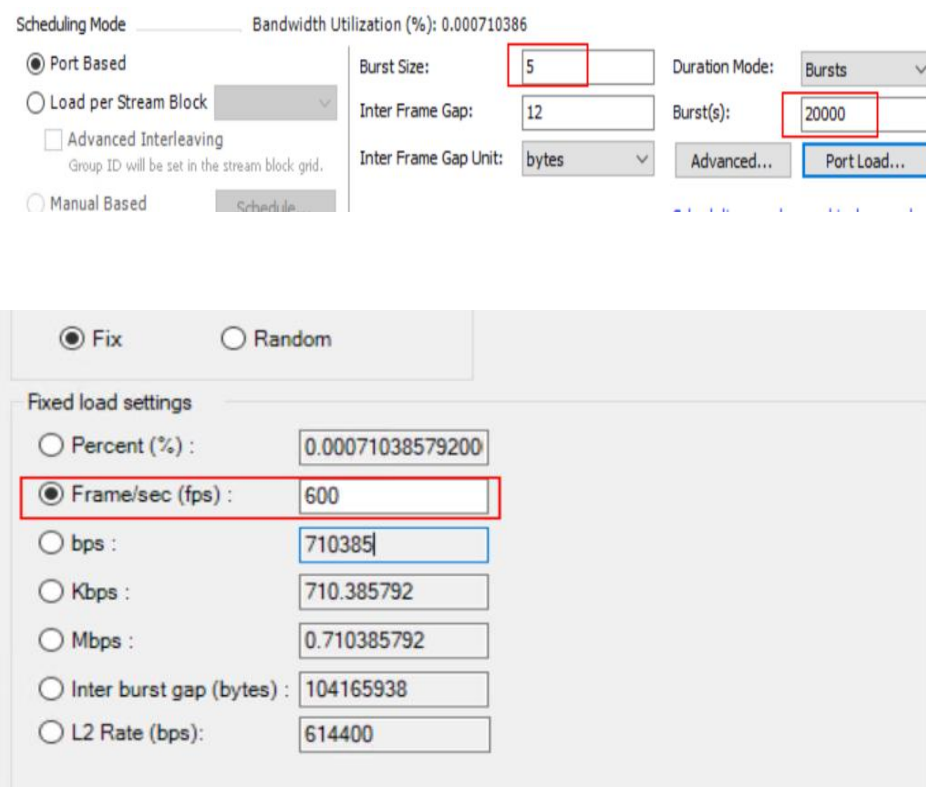
Port A

EthernetII	
Preamble (hex)	fb555555555555d5
Destination MAC	90:2D:77:0F:C8:00
Source MAC	00:10:94:00:00:01
EtherType (hex)	<auto> ARP
ARP	
Hardware Type (hex)	<auto> Ethernet
Protocol Type (hex)	<auto> Internet IP
Hardware Address Length (int)	6
Protocol Address Length (int)	4
Operation (int)	ARP Request
Sender Hardware Address	00:10:94:00:00:01
Sender Protocol Address	100.100.100.1
Target Hardware Address	00:00:00:00:00:00

	
Test results	PASS
Remarks	

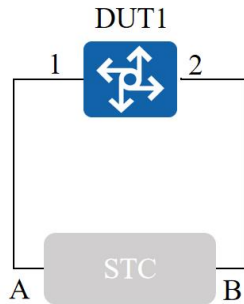
4.2 ARP Specification Test

Test Items	ARP Specification Test
Test Content	Test the ARP specifications of the device

Test Topology	
Test Steps	1、 Set up the test environment as shown in the diagram. 2、 Configure the IP address of DUT port P1 as 100.0.0.1/8. 3、 TGA starts sending incremental ARP requests from 100.0.0.2 to 100.0.0.1, Check 1. 4、 Delete the relevant configurations.
Expected Results	Check1: The ARP entries learned by the DUT comply with the specifications.
Actual Test Results	Configure the IP address of device port 1 as 100.0.0.1/8. config interface ip add Ethernet0 100.0.0.1/8 Port A 

	ACTUAL RESULT <pre> 192.168.64.246 00:10:94:00:3f:f5 - 154 192.168.64.247 00:10:94:00:3f:f6 - 154 192.168.64.248 00:10:94:00:3f:f7 - 154 192.168.64.249 00:10:94:00:3f:f8 - 154 192.168.64.250 00:10:94:00:3f:f9 - 154 192.168.64.251 00:10:94:00:3f:fa - 154 192.168.64.252 00:10:94:00:3f:fb - 154 192.168.64.253 00:10:94:00:3f:fc - 154 Total number of entries 16383 root@sonic:/home/admin# </pre>
Test results	PASS
Remarks	

4.3 ECMP

Test Items	ECMP Function Test
Test Content	Test that the device can learn routes via BGP and forward packets accordingly
Test Topology	
Test Steps	1、 Set up the test environment as shown in the diagram. 2、 Configure the interface IP address, Check 1. 3、 The tester TGA creates an IP interface and performs ARP interaction with device Port 1. 4、 The tester TGB creates multiple IP interfaces and performs ARP interaction with device P2. 5、 Configure equal-cost static routes, Check 2. 6、 TGA sends L3 packets to the destination IP specified by the equal-cost routes, Check 3. 7、 Delete the relevant configurations.
Expected Results	Check1: The IP address is configured successfully. Check2: The configuration is successful. Check3: The packet forwarding is normal without packet loss, and load balancing is achieved via ECMP.

Actual Test Results

Configure the interface IP address.
 config interface ip add Ethernet0 100.100.100.100/24
 config interface ip add Ethernet8 200.200.200.200/24
 The tester TGA creates an interface with IP 100.100.100.1 and performs ARP interaction with the device IP 100.100.100.100.
 The tester TGB creates interfaces with IPs 200.200.200.1 to 200.200.200.4 and performs ARP interaction with the device IP 200.200.200.200.
 Configure equal-cost static routes.

vttysh
 configure terminal
 ip route 100.50.25.12/32 200.200.200.1
 ip route 100.50.25.12/32 200.200.200.2
 ip route 100.50.25.12/32 200.200.200.3
 ip route 100.50.25.12/32 200.200.200.4

```
sonic# show ip route static
Codes: K - kernel route, C - connected, S - static, R - RIP,
O - OSPF, I - IS-IS, B - BGP, E - EIGRP, N - NHRP,
T - Table, v - VNC, V - VNC-Direct, A - Babel, F - PBR,
f - OpenFabric,
> - selected route, * - FIB route, q - queued, r - rejected, b - backup
t - trapped, o - offload Failure

S>* 100.50.25.12/32 [1/0] via 200.200.200.1, Ethernet416, weight 1, 00:00:44
* via 200.200.200.2, Ethernet416, weight 1, 00:00:44
* via 200.200.200.3, Ethernet416, weight 1, 00:00:44
* via 200.200.200.4, Ethernet416, weight 1, 00:00:44
sonic#
```

The tester TGA continuously sends packets with incremental source IPs from 100.100.100.1 to 100.100.100.64, and the destination IP is 100.50.25.12.

Port A

Preview: EthernetII IPv4 ☒ Show All Fields ☐ Allow Invalid Packets

Name	Value
EthernetII	
Preamble (hex)	ff55555555555555
Destination MAC	8C:5D:82:B6:00:00
Source MAC	00:10:94:00:00:02
EtherType (hex)	<auto> Internet IP
IPv4 Header	
Version (int)	<auto> 4
Header length (int)	<auto> 5
ToS/DiffServ	tos (0x00)
Total length (int)	<auto> calculated
Identification (int)	0
Control Flags	
Fragment Offset (int)	0
Time to live (int)	255
Protocol (int)	<auto> Experimental
Checksum (int)	<auto> 30025
Source	100.100.100.1
IPv4 Modifier	Count=64;Step=0.0.0.1
Destination	100.50.25.12
Header Options	
Gateway	100.100.100.100

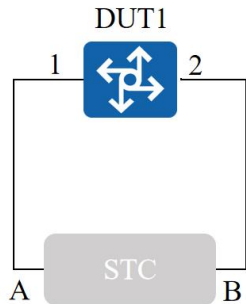
Port B

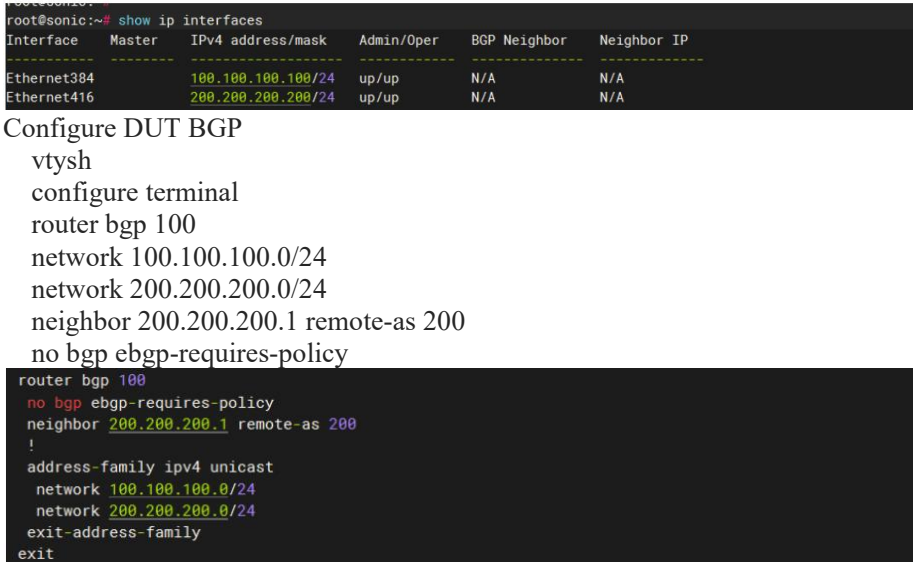
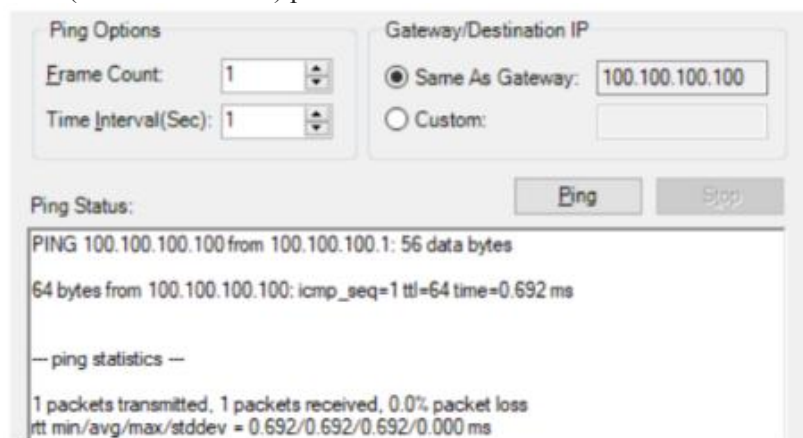
Basic Counters							
Errors							
Basic Sequencing							
Advanced Sequencing							
Histograms							
Tx Port Name	Rx Port Names	Stream Block	Tx Count (Frames)	Rx Count (Frames)	Dropped Count (Frames)	Dropped Frame Percent	In-order Count (Frames)
Port //1/13	Port //1/21	StreamBlo...	3,751,898,230	3,751,898,230	0	0.000	3,751,898,230

The tester TGB captures packets and checks the packet content.

	<pre> > Ethernet II, Src: Naddod_06:00:00 (8c:5d:b2:b6:00:00), Dst: Performa_00:00:04 (00:10:94:00:00:04) > Destination: Performa_00:00:04 (00:10:94:00:00:04) > Address: Performa_00:00:04 (00:10:94:00:00:04) > ..0. = LG bit: Globally unique address (factory default) > ..0. = IG bit: Individual address (unicast) > Source: Naddod_06:00:00 (8c:5d:b2:b6:00:00) > Address: Naddod_06:00:00 (8c:5d:b2:b6:00:00) > ..0. = LG bit: Globally unique address (factory default) > ..0. = IG bit: Individual address (unicast) > Type: IPv4 (0x0800) > Internet Protocol Version 4, Src: 100.100.100.39, Dst: 100.50.25.12 > Data (90 bytes) > Frame 3: 128 bytes on wire (1024 bits), 124 bytes captured (992 bits) on interface \\.\pipe\view_capture_172-21-120-222_1_21_02262025_201338, id 0 > Ethernet II, Src: Naddod_06:00:00 (8c:5d:b2:b6:00:00), Dst: Performa_00:00:02 (00:10:94:00:00:02) > Destination: Performa_00:00:02 (00:10:94:00:00:02) > Address: Performa_00:00:02 (00:10:94:00:00:02) > ..0. = LG bit: Globally unique address (factory default) > ..0. = IG bit: Individual address (unicast) > Source: Naddod_06:00:00 (8c:5d:b2:b6:00:00) > Address: Naddod_06:00:00 (8c:5d:b2:b6:00:00) > ..0. = LG bit: Globally unique address (factory default) > ..0. = IG bit: Individual address (unicast) > Type: IPv4 (0x0800) > Internet Protocol Version 4, Src: 100.100.100.37, Dst: 100.50.25.12 > Data (90 bytes) > Frame 4: 128 bytes on wire (1024 bits), 124 bytes captured (992 bits) on interface \\.\pipe\view_capture_172-21-120-222_1_21_02262025_201338, id 0 > Ethernet II, Src: Naddod_06:00:00 (8c:5d:b2:b6:00:00), Dst: Performa_00:00:05 (00:10:94:00:00:05) > Destination: Performa_00:00:05 (00:10:94:00:00:05) > Address: Performa_00:00:05 (00:10:94:00:00:05) > ..0. = LG bit: Globally unique address (factory default) > ..0. = IG bit: Individual address (unicast) > Source: Naddod_06:00:00 (8c:5d:b2:b6:00:00) > Address: Naddod_06:00:00 (8c:5d:b2:b6:00:00) > ..0. = LG bit: Globally unique address (factory default) > ..0. = IG bit: Individual address (unicast) > Type: IPv4 (0x0800) > Internet Protocol Version 4, Src: 100.100.100.38, Dst: 100.50.25.12 > Data (90 bytes) > Frame 7: 128 bytes on wire (1024 bits), 124 bytes captured (992 bits) on interface \\.\pipe\view_capture_172-21-120-222_1_21_02262025_201338, id 0 > Ethernet II, Src: Naddod_06:00:00 (8c:5d:b2:b6:00:00), Dst: Performa_00:00:03 (00:10:94:00:00:03) > Destination: Performa_00:00:03 (00:10:94:00:00:03) > Address: Performa_00:00:03 (00:10:94:00:00:03) > ..0. = LG bit: Globally unique address (factory default) > ..0. = IG bit: Individual address (unicast) > Source: Naddod_06:00:00 (8c:5d:b2:b6:00:00) > Address: Naddod_06:00:00 (8c:5d:b2:b6:00:00) > ..0. = LG bit: Globally unique address (factory default) > ..0. = IG bit: Individual address (unicast) > Type: IPv4 (0x0800) > Internet Protocol Version 4, Src: 100.100.100.41, Dst: 100.50.25.12 </pre>
Test results	PASS
Remarks	

4.4 BGP

Test Items	BGP Function Test
Test Content	Test that the device can learn routes via BGP and forward packets accordingly
Test Topology	
Test Steps	1、 Set up the test environment as shown in the diagram. 2、 Configure DUT port P1 with IP 100.100.100.100/24 and port P2 with IP 200.200.200.200/24, Check 1. 3、 Configure DUT BGP AS100; advertise networks 100.100.100.100/24 and 200.200.200.200/24; set neighbor 200.200.200.1 (AS200), Check 2. 4、 TGA (100.100.100.1/24) performs ARP interaction with the device. 5、 TGB (200.200.200.1/24) establishes an eBGP neighbor with the device and advertises route 2.2.2.0/24, Check 3.

	6、TGA sends packets with DA=DUT MAC, SIP=100.100.100.1, DIP=2.2.2.100, Check 4. 7、Delete the relevant configurations.
Expected Results	Check1: The IP address configuration is successful. Check2: The configuration is successful. Check3: The neighbor establishment is successful, and the DUT learns the route 2.2.2.0/24. Check4: The packet forwarding is normal without packet loss.
Actual Test Results	Configure the IP address of device port 1 as 100.100.100.100/24 and port 2 as 200.200.200.200/24. <pre>config interface ip add Ethernet0 100.100.100.100/24 config interface ip add Ethernet8 200.200.200.200/24</pre>  Configure DUT BGP <pre> vtysh configure terminal router bgp 100 network 100.100.100.0/24 network 200.200.200.0/24 neighbor 200.200.200.1 remote-as 200 no bgp ebgp-requires-policy router bgp 100 no bgp ebgp-requires-policy neighbor 200.200.200.1 remote-as 200 ! address-family ipv4 unicast network 100.100.100.0/24 network 200.200.200.0/24 exit-address-family exit </pre> TGA (100.100.100.1/24) performs ARP interaction with the device.  Neighbor status and routes

```

BGP neighbor is 200.200.200.1, remote AS 200, local AS 100, external link
BGP version 4, remote router ID 192.0.0.5, local router ID 200.200.200.200
BGP state = Established, up for 00:45:14
Last read 00:00:26, Last write 00:00:14
Hold time is 90, keepalive interval is 30 seconds
Neighbor capabilities:
 4 Byte AS: advertised
Extended Message: advertised
AddPath:
  IPv4 Unicast: RX advertised
Route refresh: advertised
Enhanced Route Refresh: advertised
Address Family IPv4 Unicast: advertised and received
Hostname Capability: advertised (name: sonic, domain name: n/a) not received
Graceful Restart Capability: advertised
Graceful restart information:
Local GR Mode: Helper+
Remote GR Mode: Disable
R bit: False
Timers:
  Configured Restart Time(sec): 120
  Received Restart Time(sec): 0
Message statistics:
Inq depth is 0
Outq depth is 0

      Sent      Rcvd
Opens:          1          1
Notifications:  0          0
Updates:         2          1
Keepalives:     91         91
Route Refresh:   0          0
Capability:       0          0
Total:          94         93
Minimum time between advertisement runs is 0 seconds

For address family: IPv4 Unicast
Update group 1, subgroup 1
Packet Queue length 0
Community attribute sent to this neighbor(all)
2 accepted prefixes

Connections established 1; dropped 0
Last reset 00:46:51, No AFI/SAFI activated for peer
Local host: 200.200.200.200, Local port: 179
Foreign host: 200.200.200.1, Foreign port: 53096
Nexthop: 200.200.200.200
Nexthop global: fe80::8e5d:b2ff:feb6:0
Nexthop local: fe80::8e5d:b2ff:feb6:0
BGP connection: shared network
BGP Connect Retry Timer in Seconds: 120
Read thread: on Write thread: on FD used: 27
  
```

Emulated Device Interface		MACsec	DHCP	IGMP	MLD	6rd/6to4	DS-Lite	DHCP Server	BFD	STP	BGP
	Port Name	Device Name	Tags	Device Count	Active	Router State	V4 Router State				
▶	Port //1/21	Router 1	Router	1	☒	Established	Established				

```

sonic# show ip route bgp
Codes: K - kernel route, C - connected, S - static, R - RIP,
       O - OSPF, I - IS-IS, B - BGP, E - EIGRP, N - NHRP,
       T - Table, v - VNC, V - VNC-Direct, A - Babel, F - PBR,
       f - OpenFabric,
       > - selected route, * - FIB route, q - queued, r - rejected, b - backup
       t - trapped, o - offload failure

B>* 2.2.2.0/24 [20/0] via 200.200.200.1, Ethernet416, weight 1, 00:16:19
B>* 2.2.3.0/24 [20/0] via 200.200.200.1, Ethernet416, weight 1, 00:16:19
sonic#
  
```

Packet forwarding result

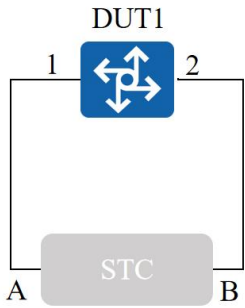
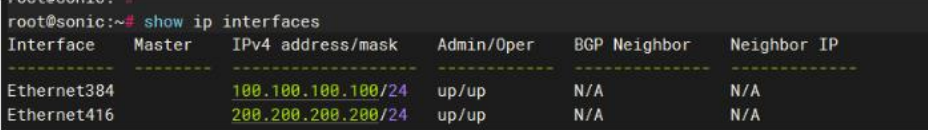
Traffic Aggregate View: Results 1							
Port Traffic and Counters > Basic Traffic Results							
Basic Counters	Errors	Triggers	Protocols	Undersize/Oversize/Jumbo	PFC Counters	User Defined	Advanced Sequencing
Port Name	Total Tx Count (Frames)	Total Rx Count (Frames)	Total Tx Count (bits)	Total Rx Count (bits)	Total Tx Rate (bps)	Total Rx Rate (bps)	Tx L1
Port //1/13	1,000	0	4,096,000	0	0	0	4.256
Port //1/21	0	1,000	0	4,096,000	0	0	0
	1,000	1,000	4,096,000	4,096,000			4.256

Test results

PASS

Remarks

4.5 IPv4 Route table specifications

Test Items	IPv4 Route table specifications
Test Content	IPv4 Route table specifications Test
Test Topology	
Test Steps	1、 Set up the test environment as shown in the diagram. 2 、 Configure DUT port P1 with IP 100.100.100.100/24 and port P2 with IP 200.200.200.200/24. 3 、 Configure DUT BGP AS100; advertise networks 100.100.100.100/24 and 200.200.200.200/24; set neighbor 200.200.200.1 (AS200). 4 、 TGB (200.200.200.1/24) establishes an eBGP neighbor with the device and advertises 1,100,000 routes, Check 1.
Expected Results	Check 1: View the maximum number of directly connected routes that BGP can learn.
Actual Results	Test Configure device Port 1 with IP address 100.100.100.100/24 and Port 2 with IP address 200.200.200.200/24. <pre>config interface ip add Ethernet0 100.100.100.100/24 config interface ip add Ethernet8 200.200.200.200/24</pre>  <pre>root@sonic:~# show ip interfaces Interface Master IPv4 address/mask Admin/Oper BGP Neighbor Neighbor IP ----- Ethernet384 up/up 100.100.100.100/24 up/up N/A N/A Ethernet416 up/up 200.200.200.200/24 up/up N/A N/A</pre> Configure DUT BGP <pre>vtysh configure terminal router bgp 100 network 100.100.100.0/24 network 200.200.200.0/24 neighbor 200.200.200.1 remote-as 200 no bgp ebgp-requires-policy</pre>

```
router bgp 100
no bgp ebgp-requires-policy
neighbor 200.200.200.1 remote-as 200
!
address-family ipv4 unicast
network 100.100.100.0/24
network 200.200.200.0/24
exit-address-family
exit
```

BGP route learning count

Test by bursting 1,100,000 packets

BGP Routes/VPLS/Link-State

Select Routers [+](#) Add [X](#) Delete [Advertise Route Block](#) [Withdraw Route Block](#) [Route Generator...](#)

Port Name	Device Name	Device Count	Route Block Name	Active	Route Count	Number Of Routes per Router	Network Count per Router	SubAFI
Port //1/21	Router 1	1	BgpIpv4Route...	☒	500000	500000	500000	Unicast

```
root@sonic:~# show ip route bgp | wc -l
500006
root@sonic:~#
root@sonic:~#
root@sonic:~#
root@sonic:~# show ip bgp summary
```

```
IPv4 Unicast Summary:
BGP router identifier 200.200.200.200, local AS number 100 vrf-id 0
BGP table version 7301002
RIB entries 1000003, using 104000552 bytes of memory
Peers 1, using 740296 KIB of memory
Peer groups 0, using 0 bytes of memory
```

Neighbor	V	AS	MsgRcvd	MsgSent	TblVer	InQ	OutQ	Up/Down	State/PfxRcd	NeighborName
200.200.200.1	4	200	4475	4354	0	0	0	00:04:47	500000	

Total number of neighbors 1

Checksum (int)	<auto> 61050
Source	100.100.100.1
Destination	2.2.2.1
IPv4 Modifier	Count=500000;Step=0.0.1.0
Header Options	
Gateway	100.100.100.100

Scheduling Mode Bandwidth Utilization (%): 59.2

☒ Port Based
 ☐ Load per Stream Block
 ☐ Advanced Interleaving
 ☐ Manual Based

Burst Size: 1
 Duration Mode: Bursts
 Inter Frame Gap: 12
 Burst(s): 500000
 Inter Frame Gap Unit: bytes
 [Advanced...](#)
[Port Load...](#)

[Schedule...](#) [Scheduling mode graphical example](#)

Status	Active	Name	Tags	Index	Source Mac	Destination Mac	ControlledBy	Load Unit	Load	Traffic Pattern	Type
	☒	BGP	Click to add	0	00:10:94:00:00:02	00:50:02:00:00:00	generator			Pair	Port

playing Stream Blocks 1-1 | Total Stream Blocks: 1 | Selected 1 of 1

reams > Detailed Stream Results Change Result View 1 of 1 Select Tx Ports: All Ports Select Rx Ports: All Ports Change Counter Mode:

Name/ID	Tx Port Name	Rx Port Names	Aggregated Rx Port Count	Tx Count (Frames)	Rx Count (Frames)	Tx Rate (bps)	Rx Rate (bps)	Tx Count (bits)	Rx Count (bits)	Tx L1 Count (bits)	Rx L1 Count (bits)
BGP491529	Port //1/21	Port //1/21	1	500,000	500,000	0	0	512,000,000	512,000,000	592,000,000	592,000,000

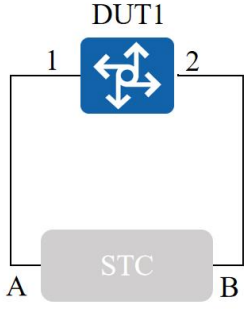
Test results

PASS

Remarks

The actual number of test-passed packets is 500,000.

4.6 IPv6

Test Items	IPv6 Test
Test Content	Test that the device can support IPv6.
Test Topology	
Test Steps	1、Set up the test environment as shown in the diagram. 2、Configure IPv6 addresses on the interfaces, check1; 3、Tester TGA creates an IPv6 interface and interacts with device port P1. 4、Tester TGB creates an IPv6 interface and interacts with device port P2. 5、TGA sends L3 IPv6 packets to TGB, check5; 6、Delete the relevant configurations.
Expected Results	1、Query IPv6 information. 2、Data is forwarded correctly.
Actual Results	Test Configure IPv6 addresses <pre>config interface ip add Ethernet0 2001::100/64 config interface ip add Ethernet8 2002::100/64 show ipv6 interface ip -6 neigh</pre>  Port A

StreamBlock Editor - Port //4/1 [AC:81:B5:01:D4:60/Eth3/1(Port3)] : TGA

General
Frame
Groups
Rx Port
Preview

Preview:

EthernetII
IPv6

☒ Show All Fields
☐ Allow Invalid Packet

Frames

Create new Frame >
Save Frame as Template...
Manage Frame Templates...

Actions

Add Header(s)...
Link Modifiers/VFDs...

Others

Expand All
Collapse All

Name	Value
Frame	
EthernetII	
Preamble (hex)	fb555555555555d5
Destination MAC	00:10:94:00:00:02
Source MAC	00:00:01:00:00:02
EtherType (hex)	<auto> IPv6
IPv6 Header	
Version (int)	6
Traffic Class (hex)	00
Flow label (hex)	0000
Payload length (int)	<auto> calculated
Next header (int)	<auto> IPv6-NoNxt
Hop limit (int)	255
Source Address	2001::4
Destination Address	2002::4
Gateway	2001::100

Hex Editor

```

0000  FB 55 55 55 55 55 55 D5 00 10 94 00 00 02 00 00  65555555d5.....
0010  01 00 00 02 86 DD 60 00 00 00 00 00 00 3B FF 20 01  00000286DD600000003BFF2001
0020  00 00 00 00 00 00 00 00 00 00 00 00 00 04 20 02  00000000000000000000042002
0030  00 00 00 00 00 00 00 00 00 00 00 00 00 00 04 04  00000000000000000000000404

```

Port B

33

StreamBlock Editor - Port //4/2 [AC:81:B5:01:D4:60/Eth3/2(Port3)] : TGB

General Frame Groups Rx Port Preview

Preview:

EthernetII IPv6

☒ Show All Fields ☐ Allow Invalid Pad

Frames

Create new Frame >
Save Frame as Template...
Manage Frame Templates...

Actions

Add Header(s)...
Link Modifiers/VFDs...

Others

Expand All
Collapse All

Name	Value
Frame	
EthernetII	
Preamble (hex)	fb555555555555d5
Destination MAC	00:00:01:00:00:02
Source MAC	00:10:94:00:00:02
EtherType (hex)	<auto> IPv6
IPv6 Header	
Version (int)	6
Traffic Class (hex)	00
Flow label (hex)	0000
Payload length (int)	<auto> calculated
Next header (int)	<auto> IPv6-NoNxt
Hop limit (int)	255
Source Address	2002::4
Destination Address	2001::4
Gateway	2002::100

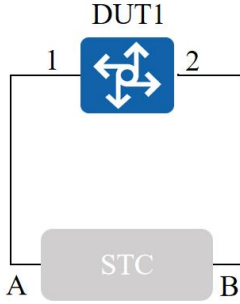
```
root@sonic:~# ip -6 neigh
2002::4 dev Ethernet18 lladdr 00:10:94:00:00:02 REACHABLE
2001::4 dev Ethernet16 lladdr 00:00:01:00:00:02 REACHABLE
root@sonic:~#
```

The screenshot shows the StreamBlock Editor interface. The top section displays the configuration for a StreamBlock named 'TGB' on Port //4/2. The configuration includes an EthernetII header and an IPv6 header. The IPv6 header fields are: Version (6), Traffic Class (00), Flow label (0000), Payload length (calculated), Next header (IPv6-NoNxt), Hop limit (255), Source Address (2002::4), Destination Address (2001::4), and Gateway (2002::100). The bottom section shows the 'Traffic Aggregate View Results' table, which lists the stream blocks and their associated traffic counters.

Stream Block	Port	Direction	Count	Rate	Drop Count	Drop Rate
TGB	Port //4/2	Out	1	0.00 B/s	0	0.00 B/s

Test results

PASS

Remarks	
4.7 IPv6 Route table specifications	
Test Items	IPv6 Route table specifications
Test Content	IPv6 Route table specifications Test
Test Topology	
Test Steps	1、Set up the test environment as shown in the diagram. 2、Configure DUT port 1 with IPv6 address 2001::100/64 and port 2 with 2002::100/64. 3、Configure DUT BGP AS100; set neighbor as 2002::1/64 (AS200). 4、TGB (2002::1/64) establishes an eBGP neighbor with the device and advertises 610,000 routes, check1; 5、Delete the relevant configurations.
Expected Results	Check1: View the maximum number of routes that BGP can learn.
Actual Results	Test Configure IP address <pre>config interface ip add Ethernet0 2001::100/64 config interface ip add Ethernet8 2002::200/64</pre> Configure to accept IPv6 link-local addresses as neighbors. <pre>config interface ipv6 enable use-link-local-only Ethernet8 config interface ipv6 enable use-link-local-only Ethernet16</pre> Configure DUT BGP <pre>vysh configure terminal router bgp 100 neighbor 2002::1 remote-as 200 no bgp ebgp-requires-policy address-family ipv6 unicast neighbor 2002::1 activate network 2002::200/64</pre>

```

root@sonic:~#
root@sonic:~# ip -6 route show | wc -l
610029
root@sonic:~# show ipv6 bgp summary

IPv6 Unicast Summary:
BGP router identifier 172.21.120.7, local AS number 100 vrf-id 0
BGP table version 610001
RIB entries 1220001, using 224480184 bytes of memory
Peers 1, using 740296 KiB of memory
Peer groups 0, using 0 bytes of memory

Neighbor      V   AS   MsgRcvd   MsgSent   TblVer   InQ   OutQ   Up/Down   State/PfxRcd   NeighborName
-----
2002::1      4    200     2657     2600         0     0     00:00:46     610000
Total number of neighbors 1
root@sonic:~#

```

Send data flow to the learned route table entries.

Preamble (hex)	fb555555555555d5
Destination MAC	8C:5D:B2:B6:00:00
Source MAC	00:10:94:00:00:02
EtherType (hex)	<auto> IPv6
IPv6 Header	
Version (int)	6
Traffic Class (hex)	00
Flow label (hex)	0000
Payload length (int)	<auto> calculated
Next header (int)	<auto> IPv6-NoNxt
Hop limit (int)	255
Source Address	2001::2
Destination Address	3000::1
IPv6 Modifier	Count=610000;Step=: 1
Gateway	::0

Traffic Aggregate View Results 1						
Streams > Stream Block Results						
Change Counter Mode: Basic Mode						
Basic Count: Errors Basic Sequences: Advanced Sequencing Histograms						
Tx Port Name	Rx Port Names	Stream Block	Tx Count (Frames)	Rx Count (Frames)	Dropped Count (Frames)	Dropped Frame Percent
Port //N/5	Port //N/10	IPv6-BGP	610,000	609,999	0	0.000

Port Traffic and Counters > Basic Traffic Results				
Port Name	Total Tx Count (Frames)	Total Rx Count (Frames)	Total Tx Count (bits)	Total Rx Count (bits)
Port //N/5	610,000	0	624,640,000	0
Port //N/10	0	609,999	0	624,638,078

Test results

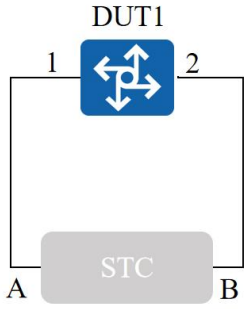
Pass

Remarks

Send 610,000 packets and receive 609,999 packets.

4.8 IPv6 Route table specifications-Global

Test Items	IPv6 Route table specifications
Test Content	IPv6 IPv6 Route table specifications Test

Test Topology	
Test Steps	1、 Set up the test environment as shown in the diagram. 2 、 Configure DUT port P1 with IPv6 address 2001::100/64 and port P2 with 2002::100/64. 3、 Configure the route map. 4、 Configure DUT BGP AS100; advertise network 2002::1/64 (AS200) and bind the route map. 5 、 TGB (2002::1/64) establishes an eBGP neighbor with the device and advertises 610,000 routes. Check 1.
Expected Results	Check 1: View the maximum number of routes that BGP can learn.
Actual Results	Test <pre> Configure IP address config interface ip add Ethernet0 2001::100/64 config interface ip add Ethernet8 2002::200/64 Configure Route map vtysh configure terminal route-map FROM_BGP_PEER_V6 permit 1 on-match next set ipv6 next-hop prefer-global Configure BGP vtysh configure terminal router bgp 100 neighbor 2002::1 remote-as 200 no bgp ebgp-requires-policy no bgp default ipv4-unicast address-family ipv6 unicast neighbor 2002::1 activate neighbor 2002::1 soft-reconfiguration inbound neighbor 2002::1 route-map FROM_BGP_PEER_V6 in network 2002::200/64 </pre>

```

root@sonic:~# show ipv6 bgp summary

IPv6 Unicast Summary:
BGP router identifier 172.21.128.7, local AS number 100 vrf-id 0
BGP table version 610001
RIB entries 1220001, using 224480184 bytes of memory
Peers 1, using 740296 KiB of memory
Peer groups 0, using 0 bytes of memory

Neighbor      V   AS  MsgRcvd  MsgSent  TblVer  InQ  OutQ  Up/Down  State/PfxRcd  NeighborName
-----
2002::1      4   200    2658    2599      0     0     0  00:01:06      610000

```

Total number of neighbors 1

```

root@sonic:~# ip -6 route show | wc -l
610029
root@sonic:~#

```

TGA sends 610,000 Layer 3 IPv6 packets to the eBGP routes advertised by TGB, with destination IPv6 addresses ranging from 3000::1 to 3000:0::9:4ecf.

Frames

Create new Frame >

Save Frame as Template...

Manage Frame Templates...

Actions

Add Header(s)...

Link Modifiers/VFDs...

Others

Expand All

Collapse All

Name	Value
EthernetII	
Preamble (hex)	fb555555555555d5
Destination MAC	8C:5D:B2:B6:00:00
Source MAC	00:10:94:00:00:02
EtherType (hex)	<auto> IPv6
IPv6 Header	
Version (int)	6
Traffic Class (hex)	00
Flow label (hex)	0000
Payload length (int)	<auto> calculated
Next header (int)	<auto> IPv6-NoNxt
Hop limit (int)	255
Source Address	2001::2
Destination Address	3000::1
IPv6 Modifier	Count=610000;Step=: 1
Gateway	::0

Packet reception

Traffic Aggregate View Results 1									
Streams > Stream Block Results									
Change Counter Mode: Basic Mode									
Tx Port Name	Rx Port Names	Stream Block	Tx Count (Frames)	Rx Count (Frames)	Dropped Count (Frames)	Dropped Frame Percent	In-order Count (Frames)		
Port //4/0	Port //4/10	IPv6-BGP	610,000	609,999	0	0.00%	609,999		

Port Traffic and Counters > Basic Traffic Results									
Basic Counters Errors: Trigger: Protocol: Undersize/oversize/... PFC Counters: User									
Port Name	Total Tx Count (Frames)	Total Rx Count (Frames)	Total Tx Count (bits)	Total Rx Count (bits)					
Port //4/0	610,000	0	624,640,000	0					
Port //4/10	0	609,999	0	624,638,078					

Test results

PASS

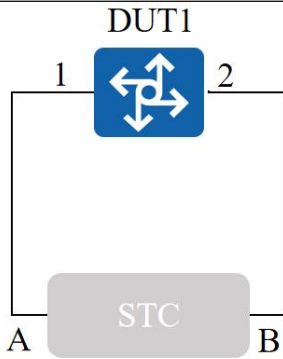
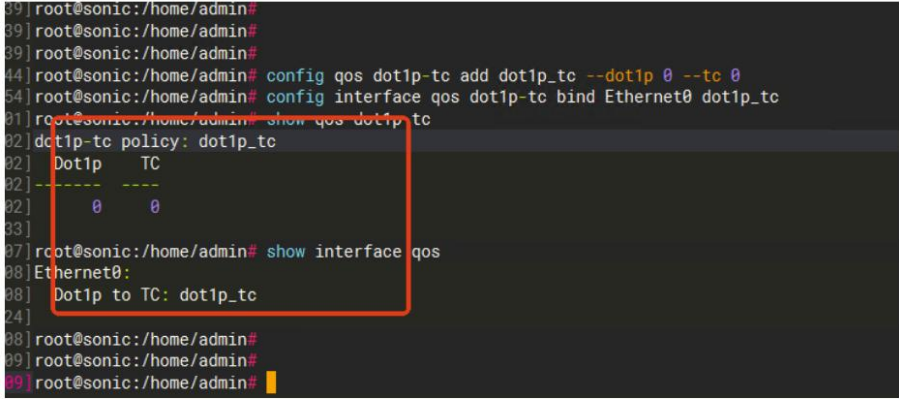
Remarks

ip -6 route show displays that 610,0014 routes are learned, and the traffic flow can be established.

五、QoS

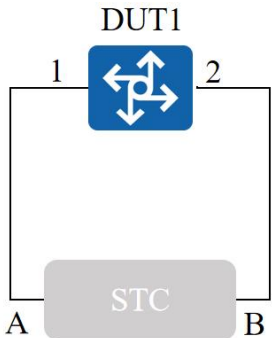
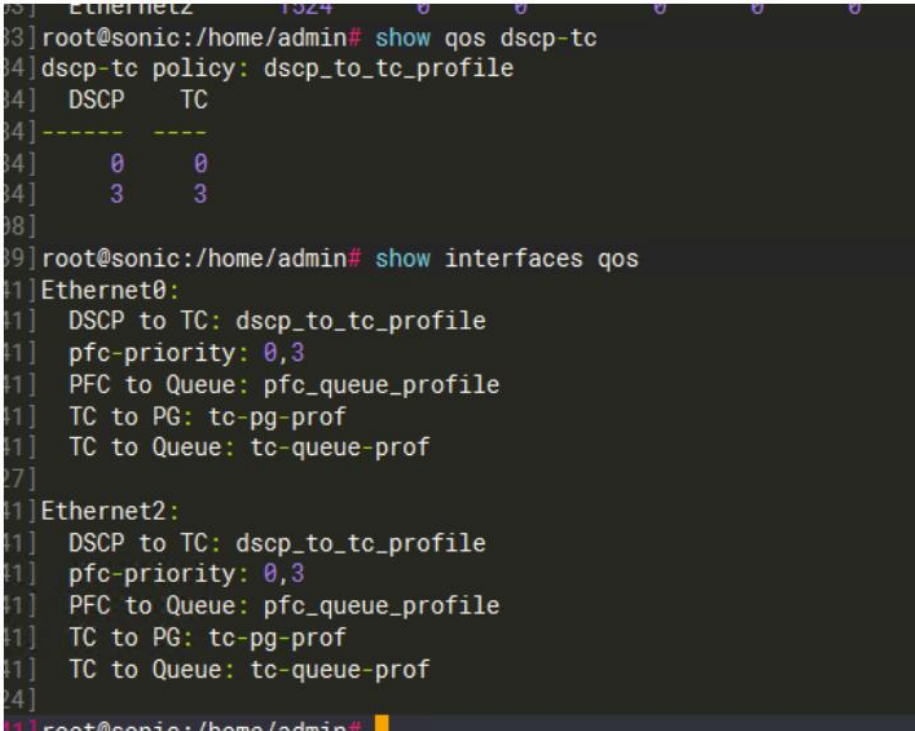
5.1 Classification-COS

Test Items	Classification COS Test
------------	-------------------------

Test Content	The testing device can classify according to the set Classification COS and bind it to the ingress port.
Test Topology	
Test Steps	1、Set up the test environment as shown in the diagram. 2、Create a dot1p-tc and map dot1p to TC. 3、Bind the created dot1p-tc to the port, check1; 4、View the created dot1p-tc and its binding, check2.
Expected Results	Check1: Configuration is successful. Check2: The displayed content is consistent with the creation.
Actual Test Results	Configure dot1p-tc mapping and bind it to the interface. <pre> config qos dot1p-tc add dot1p_tc --dot1p 0 --tc 0 config interface qos dot1p-tc bind Ethernet0 dot1p_tc show qos dot1p-tc show interface qos </pre>  <pre> root@sonic:/home/admin# root@sonic:/home/admin# root@sonic:/home/admin# root@sonic:/home/admin# config qos dot1p-tc add dot1p_tc --dot1p 0 --tc 0 root@sonic:/home/admin# config interface qos dot1p-tc bind Ethernet0 dot1p_tc root@sonic:/home/admin# show qos dot1p-tc dot1p-tc policy: dot1p_tc Dot1p TC ----- 0 0 root@sonic:/home/admin# show interface qos Ethernet0: Dot1p to TC: dot1p_tc root@sonic:/home/admin# root@sonic:/home/admin# root@sonic:/home/admin# </pre>
Test results	PASS
Remarks	

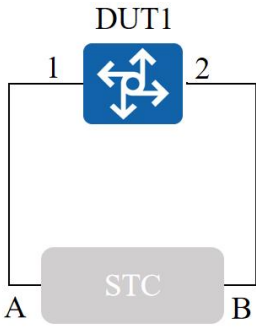
5.2 Classification-DSCP

Test Items	Classification DSCP Test
Test Content	The testing device can classify according to the set Classification DSCP and bind it to

	the ingress port.
Test Topology	
Test Steps	1、 Set up the test environment as shown in the diagram. 2、 Create a dscp-tc mapping and map DSCP values to Traffic Classes (TC). 3、 Bind the created dscp-tc mapping to the port, check1; 4、 View the created dscp-tc mapping and its binding, check2.
Expected Results	Check1: Configuration successful. Check2: Displayed content matches the configuration.
Actual Test Results	<pre> config qos dscp-tc add dscp_to_tc_profile --dscp 0 --tc 1 config interface qos dscp-tc bind Ethernet0 dscp_to_tc_profile show qos dscp-tc show interface qos </pre> 
Test results	PASS

Remarks	
---------	--

5.3 Marking-COS

Test Items	Marking COS Test
Test Content	The testing equipment can classify traffic according to the preset ingress Classification COS and directly translate it to the egress Marking COS.
Test Topology	
Test Steps	1、 Set up the test environment according to the diagram. 2、 Create a dot1p-tc mapping that maps dot1p 3 to TC 1. 3、 Bind the created dot1p-tc mapping to port DUTP1. 4、 Create a remark rule to remark TC 1 packets with dot1p 1. 5、 Bind the created remark rule to port DUTP2 , check1. 6、 View the created QoS rules and their bindings ,check2. 7、 Create VLAN 100 and add ports DUTP1 and DUTP2 as tagged members. 8、 Send packets with VLAN Priority 3 from TGA.Capture packets at TGB to check the VLAN Priority value ,check3.
Expected Results	Check1: Configuration and binding are successful. Check2: The displayed QoS configuration matches the settings. Check3: The VLAN priority value in the packets received by TGB is changed to 1.
Actual Results	<pre> config qos dot1p-tc add dot1p_tc --dot1p 3 --tc 1 config interface qos dot1p-tc bind Ethernet0 dot1p_tc config qos remark dot1p add remark_pcp --tc 1 --dot1p 1 config interface qos remark dot1p bind Ethernet8 remark_pcp show qos dot1p-tc show qos remark dot1p show interface qos </pre>

```

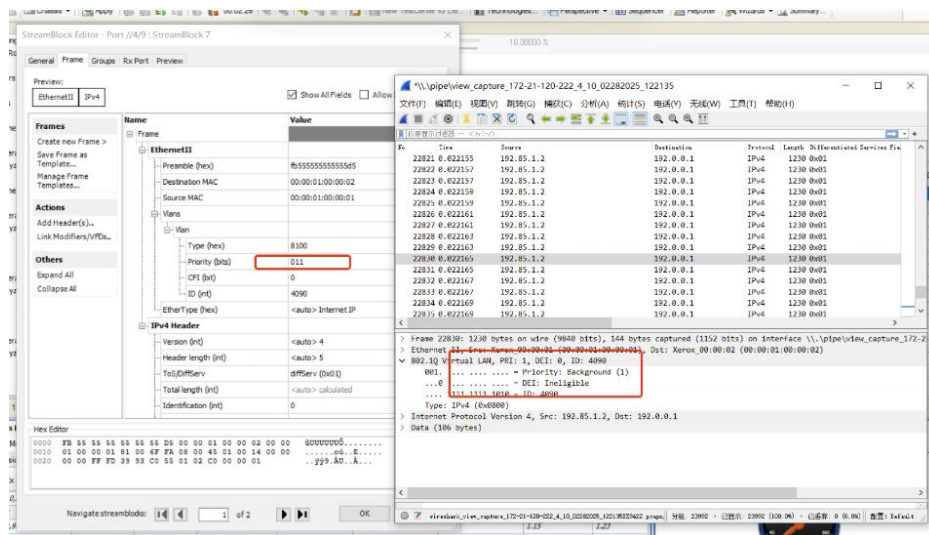
root@sonic:/home/admin#
root@sonic:/home/admin#
root@sonic:/home/admin# show qos dot1p-tc
dot1p-tc policy: dot1p_tc
  Dot1p    TC
  -----
  3         1

root@sonic:/home/admin# show qos remark dot1p
dot1p policy: remark_pcp
  TC      Dot1p
  -----
  1        1

root@sonic:/home/admin# show interfaces qos
Ethernet0:
  Dot1p to TC: dot1p_tc
Ethernet2:
  Dot1p remark: remark_pcp
root@sonic:/home/admin#

```

config vlan add 4090
 config vlan member add 4090 Ethernet0
 config vlan member add 4090 Ethernet2

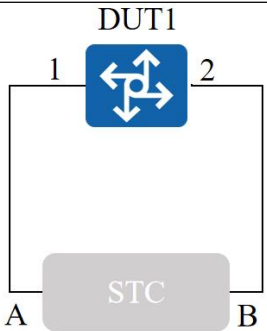


Test results

PASS

Remarks

5.4 Marking-DSCP

Test Items	Marking DSCP Test
Test Content	The testing equipment can classify traffic according to the preset ingress Classification DSCP and directly translate it to the egress Marking DSCP.
Test Topology	
Test Steps	1、 Set up the test environment according to the diagram. 2、 Create a dscp-tc mapping that maps DSCP 0 to TC 3. 3、 Bind the created dscp-tc mapping to port DUTP1. 4、 Create a remark rule to remark TC 3 packets with DSCP 1. 5、 Bind the created remark rule to port DUTP2 , check1. 6、 View the created QoS rules and their bindings , check2. 7、 Create VLAN 100 and add ports DUTP1 and DUTP2 as untagged members. 8、 Send IPv4 packets with DSCP 0 from TGA. Capture packets at TGB to check the DSCP value. 9、 Send IPv6 packets with Traffic Class 0 from TGA. Capture packets at TGB to check the Traffic Class value ,check3.
Expected Results	Check1: Configuration and binding are successful. Check2: The displayed QoS configuration matches the settings. Check3: The DSCP value of IPv4 packets and the Traffic Class value of IPv6 packets received by TGB are both changed to 0x04.
Actual Results	<pre> config qos dscp-tc add dscp_to_tc_profile --dscp 0 --tc 3 config interface qos dscp-tc bind Ethernet0 dscp_to_tc_profile config qos remark dscp add remark_dscp --tc 3 --dscp 1 config interface qos remark dscp bind Ethernet2 remark_dscp show qos dscp-tc show qos remark dscp show interface qos </pre>

```

6] root@sonic:/home/admin#
9] root@sonic:/home/admin# show qos dscp-tc
0] dscp-tc policy: dscp_to_tc_profile
0] DSCP TC
0] -----
0] 0 3
9]
0] root@sonic:/home/admin# show qos remark dscp
1] dscp policy: remark_dscp
1] TC DSCP
1] -----
1] 3 1
4]
2] root@sonic:/home/admin# show interface qos
2] Ethernet2:
2] IP DSCP remark: remark_dscp
8]
2] root@sonic:/home/admin#

```

config vlan add 100
config vlan member add 100 Ethernet0 -u
config vlan member add 100 Ethernet2 -u

Time	Source	Destination	Protocol	Length	Differentiated Services Field	Info
1 0.000000	192.85.1.2	192.8.0.1	IPv4	128	0x04	Unknown (253)
2 0.002000	192.85.1.2	192.8.0.1	IPv4	128	0x04	Unknown (253)
3 0.002000	192.85.1.2	192.8.0.1	IPv4	128	0x04	Unknown (253)
4 0.003000	192.85.1.2	192.8.0.1	IPv4	128	0x04	Unknown (253)
5 0.004000	192.85.1.2	192.8.0.1	IPv4	128	0x04	Unknown (253)
6 0.005000	192.85.1.2	192.8.0.1	IPv4	128	0x04	Unknown (253)
7 0.006000	192.85.1.2	192.8.0.1	IPv4	128	0x04	Unknown (253)
8 0.007000	192.85.1.2	192.8.0.1	IPv4	128	0x04	Unknown (253)
9 0.008000	192.85.1.2	192.8.0.1	IPv4	128	0x04	Unknown (253)
10 0.009000	192.85.1.2	192.8.0.1	IPv4	128	0x04	Unknown (253)
11 0.010000	192.85.1.2	192.8.0.1	IPv4	128	0x04	Unknown (253)
12 0.011000	192.85.1.2	192.8.0.1	IPv4	128	0x04	Unknown (253)
13 0.012000	192.85.1.2	192.8.0.1	IPv4	128	0x04	Unknown (253)
14 0.013000	192.85.1.2	192.8.0.1	IPv4	128	0x04	Unknown (253)
15 0.014000	192.85.1.2	192.8.0.1	IPv4	128	0x04	Unknown (253)
16 0.015000	192.85.1.2	192.8.0.1	IPv4	128	0x04	Unknown (253)
17 0.016000	192.85.1.2	192.8.0.1	IPv4	128	0x04	Unknown (253)
18 0.017000	192.85.1.2	192.8.0.1	IPv4	128	0x04	Unknown (253)
19 0.018000	192.85.1.2	192.8.0.1	IPv4	128	0x04	Unknown (253)
20 0.019000	192.85.1.2	192.8.0.1	IPv4	128	0x04	Unknown (253)
21 0.020000	192.85.1.2	192.8.0.1	IPv4	128	0x04	Unknown (253)
22 0.021000	192.85.1.2	192.8.0.1	IPv4	128	0x04	Unknown (253)
23 0.022000	192.85.1.2	192.8.0.1	IPv4	128	0x04	Unknown (253)
24 0.023000	192.85.1.2	192.8.0.1	IPv4	128	0x04	Unknown (253)

Frame 13: 128 bytes on wire (1024 bits), 124 bytes captured (992 bits) on interface \\.\pipe\view_capture_172-21-120-222_2_03202025_131129, id 0
 Ethernet II, Src: Performa_00:00:02:00:10:94:00:00:02, Dst: Xerox_00:00:01:00:00:01:00:00:01:00:00:01
 Internet Protocol Version 6, Src: 192.85.1.2, Dst: 192.8.0.1
 0100 = Version: 4
 0000 = Header Length: 20 bytes (5)
 > Differentiated Services Field: 0x04 (DSCP: LE, ECN: Not-ECT)
 Total length: 118
 Identification: 0x0000 (0x0000)
 Flags: 0x00
 Fragment Offset: 0
 Time to live: 255
 Protocol: Unknown (253)
 Header checksum: 0x0000 [validation disabled]
 Header checksum status: Unverified
 Source Address: 192.85.1.2
 Destination Address: 192.8.0.1
 Data (90 bytes)

Time	Source	Destination	Protocol	Length	Differentiated Services Field	Info
1 0.000000	2000::2	2000::1	IPv6	128		IPv6 no next header
2 0.001000	2000::2	2000::1	IPv6	128		IPv6 no next header
3 0.002000	2000::2	2000::1	IPv6	128		IPv6 no next header
4 0.003000	2000::2	2000::1	IPv6	128		IPv6 no next header
5 0.004000	2000::2	2000::1	IPv6	128		IPv6 no next header
6 0.005000	2000::2	2000::1	IPv6	128		IPv6 no next header
7 0.006000	2000::2	2000::1	IPv6	128		IPv6 no next header
8 0.007000	2000::2	2000::1	IPv6	128		IPv6 no next header
9 0.008000	2000::2	2000::1	IPv6	128		IPv6 no next header
10 0.009000	2000::2	2000::1	IPv6	128		IPv6 no next header
11 0.010000	2000::2	2000::1	IPv6	128		IPv6 no next header
12 0.011000	2000::2	2000::1	IPv6	128		IPv6 no next header
13 0.012000	2000::2	2000::1	IPv6	128		IPv6 no next header
14 0.013000	2000::2	2000::1	IPv6	128		IPv6 no next header
15 0.014000	2000::2	2000::1	IPv6	128		IPv6 no next header
16 0.015000	2000::2	2000::1	IPv6	128		IPv6 no next header
17 0.016000	2000::2	2000::1	IPv6	128		IPv6 no next header
18 0.017000	2000::2	2000::1	IPv6	128		IPv6 no next header
19 0.018000	2000::2	2000::1	IPv6	128		IPv6 no next header
20 0.019000	2000::2	2000::1	IPv6	128		IPv6 no next header
21 0.020000	2000::2	2000::1	IPv6	128		IPv6 no next header
22 0.021000	2000::2	2000::1	IPv6	128		IPv6 no next header
23 0.022000	2000::2	2000::1	IPv6	128		IPv6 no next header
24 0.023000	2000::2	2000::1	IPv6	128		IPv6 no next header

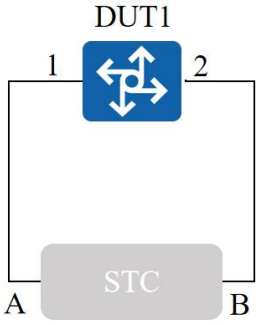
Frame 7: 128 bytes on wire (1024 bits), 124 bytes captured (992 bits) on interface \\.\pipe\view_capture_172-21-120-222_2_03202025_132604, id 0
 Ethernet II, Src: Performa_00:00:02:00:10:94:00:00:02, Dst: Xerox_00:00:01:00:00:01:00:00:01:00:00:01
 Internet Protocol Version 6, Src: 2000::2, Dst: 2000::1
 0100 = Version: 6
 0000 0000 0000 0000 0000 0000 = Traffic Class: 0x04 (DSCP: LE, ECN: Not-ECT)
 0000 0000 0000 0000 0000 0000 = Flow Label: 0x000000
 Payload Length: 70
 Next Header: No Next Header for IPv6 (59)
 Hop Limit: 255
 Source Address: 2000::2
 Destination Address: 2000::1
 Data (70 bytes)

Test results

PASS

Remarks	
---------	--

5.5 DiffServ

Test Items	Diffserv Functional Test
Test Content	The testing equipment can forward packets according to the DiffServ configuration.
Test Topology	
Test Steps	1、 Set up the test environment according to the diagram. 2、 Create VLAN 100 and add ports DUT P1 and DUTP2 as untagged members. 3、 Create a diffserv-type ACL to match DSCP values and enable policer actions. 4、 Bind the previously created diffserv-type ACL to the ingress direction of the TGA port. 5、 Create a policer rule to modify DSCP values for packets of different colors (e.g., green, yellow, red). 6、 Add the policer rule to the ACL ,Check1. 7、 Send DSCP-matching traffic from TGA at a rate exceeding the PIR (Peak Information Rate). Verify behavior ,Check2. 8、 Capture packets at TGB and check the DSCP values.
Expected Results	Check1: Configuration is successful. Check2: Packets are forwarded successfully, and DSCP values are modified according to the DiffServ settings.
Actual Test Results	<pre> config vlan add 100 config vlan member add 100 Ethernet0 -u config vlan member add 100 Ethernet8 -u Create an ACL of type diffserv-type that matches DSCP values and supports policer actions. config acl add table-type diffserv-type --match-dscp --action-set-policer show acl table-type root@sonic:/home/admin# config acl add table-type diffserv-type --match-dscp --action-set-policer root@sonic:/home/admin# show acl table-type Name Bind Point Match Policer ----- diffserv-type PORT DSCP Yes </pre>

```

IP type
root@sonic:/home/admin# config acl add table diffserv-table diffserv-type -s ingress -p
Ethernet68
root@sonic:/home/admin# show acl table
Name Type Binding Description Stage Policer
-----
diffserv-table diffserv-type Ethernet68 diffserv-table ingress Yes

root@sonic:/home/admin# config policer add pol tr_tcm packets blind --cir 100 --cbs
200 --pir 300 --pbs 400 --green_set_dscp 0 --yellow_set_dscp 20 --red_set_dscp 30
root@sonic:/home/admin# show policer
Name Type Mode Color Source CIR CBS PIR PBS Green Packet Action Yellow
Packet Action Red Packet Action
-----
pol packets tr_tcm blind 100 200 300 400 DSCP: 0 DSCP: 20 DSCP: 30

root@sonic:/home/admin# config acl add rule diffserv-table permit --priority 10000
--dscp 0 --policer pol
root@sonic:/home/admin# show policer
Name Type Mode Color Source CIR CBS PIR PBS Green Packet Action Yellow
Packet Action Red Packet Action
-----
pol packets tr_tcm blind 100 200 300 400 DSCP: 0 DSCP: 20 DSCP: 30

root@sonic:/home/admin# show acl rule
Table Rule Priority Action Match Status
-----
diffserv-table 10000 10000 FORWARD DSCP: 0 Active
POLICER: pol IP_TYPE: IP
root@sonic:/home/admin# show vlan brief
+-----+-----+-----+-----+-----+-----+-----+-----+
+-----+
| VLAN ID | IP Address | Ports | Port | Proxy | DHCP Helper | DHCP Relay
Configuration |
||| Tagging | ARP | Address ||
+=====+=====+=====+=====+=====+=====+=====+=====+
+-----+
| 100 || Ethernet68 | untagged | disabled || Source Interface: |
|| Ethernet70 | untagged ||| Link Selection: |
||||| Server Vrf: |
||||| Server ID Override: |
+-----+-----+-----+-----+-----+-----+-----+-----+
+-----+

root@sonic:/home/admin# show acl table
Name Type Binding Description Stage Policer
-----
diffserv-table diffserv-type Ethernet68 diffserv-table ingress Yes
config policer add pol tr_tcm packets blind --cir 100 --cbs 200 --pir 300 --pbs 400
--green_set_dscp 0 --yellow_set_dscp 20 --red_set_dscp 30
config acl add rule diffserv-table permit --priority 10000 --dscp 0 --policer pol
show policer

TGA sends packets with DSCP 0 at a rate of 400 packets per second.

```

EthernetII	
Preamble (hex)	fb555555555555d5
Destination MAC	00:10:94:00:00:02
Source MAC	00:10:94:00:00:01
EtherType (hex)	<auto> Internet IP
IPv4 Header	
Version (int)	<auto> 4
Header length (int)	<auto> 5
ToS/DiffServ	tos (0x00)
Total length (int)	<auto> calculated
Identification (int)	0

Fixed load settings

☐ Percent (%) : 0.000473590528

☒ Frame/sec (fps) : 400

☐ bps : 473590

☐ Kbps : 473.590528

☐ Mbps : 0.473590528

☐ Inter burst gap (bytes) : 31249864

☐ L2 Rate (bps): 409600

TGB captures the received packets and checks the DSCP settings:

Green packets: DSCP 0

Yellow packets: DSCP 20

Red packets: DSCP 30

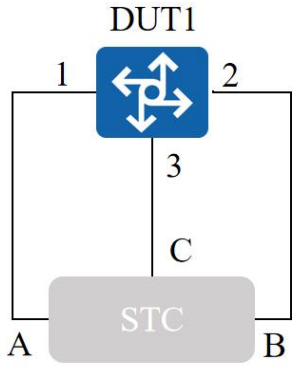
```

Frame 299: 128 bytes on wire (1024 bits), 124 bytes captured (992 bits) on interface \\.\pipe\view_c
Ethernet II, Src: Performa_00:00:01 (00:10:94:00:00:01), Dst: Performa_00:00:02 (00:10:94:00:00:02)
Internet Protocol Version 4, Src: 192.85.1.2, Dst: 192.0.0.1
  0100 .... = Version: 4
  .... 0101 = Header Length: 20 bytes (5)
  v Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)
    0000 00.. = Differentiated Services Codepoint: Default (0)
    .... ..00 = Explicit Congestion Notification: Not ECN-Capable Transport (0)
Total Length: 110
  
```

	<pre> 1582 3.952500 192.168.1.68 192.168.1.70 IPv4 128 Unknown (253) 1583 3.955000 192.168.1.68 192.168.1.70 IPv4 128 Unknown (253) 1584 3.957500 192.168.1.68 192.168.1.70 IPv4 128 Unknown (253) 1586 3.962500 192.168.1.68 192.168.1.70 IPv4 128 Unknown (253) 1587 3.965000 192.168.1.68 192.168.1.70 IPv4 128 Unknown (253) 1588 3.967500 192.168.1.68 192.168.1.70 IPv4 128 Unknown (253) 1590 3.972500 192.168.1.68 192.168.1.70 IPv4 128 Unknown (253) 1591 3.975000 192.168.1.68 192.168.1.70 IPv4 128 Unknown (253) 1592 3.977500 192.168.1.68 192.168.1.70 IPv4 128 Unknown (253) 1594 3.982500 192.168.1.68 192.168.1.70 IPv4 128 Unknown (253) 1595 3.985000 192.168.1.68 192.168.1.70 IPv4 128 Unknown (253) 1596 3.987500 192.168.1.68 192.168.1.70 IPv4 128 Unknown (253) 1598 3.992500 192.168.1.68 192.168.1.70 IPv4 128 Unknown (253) 1599 3.995000 192.168.1.68 192.168.1.70 IPv4 128 Unknown (253) 1600 3.997500 192.168.1.68 192.168.1.70 IPv4 128 Unknown (253) 1602 4.002500 192.168.1.68 192.168.1.70 IPv4 128 Unknown (253) Frame 1602: 128 bytes on wire (1024 bits), 124 bytes captured (992 bits) on interface \\.\pipe\view_capture_172-21 Ethernet II, Src: 00:00:00_00:00:68 (00:00:00:00:00:68), Dst: 00:00:00_00:00:70 (00:00:00:00:00:70) Internet Protocol Version 4, Src: 192.168.1.68, Dst: 192.168.1.70 0100 = Version: 4 0101 = Header Length: 20 bytes (5) < Differentiated Services Field: 0x50 (DSCP: AF22, ECN: Not-ECT) 0101 00.. = Differentiated Services Codepoint: Assured Forwarding 22 (20) 00 = Explicit Congestion Notification: Not ECN-Capable Transport (0) Total Length: 110 Identification: 0x0641 (1601) > Flags: 0x00 Fragment Offset: 0 Time to Live: 255 Protocol: Unknown (253) Header Checksum: 0x3027 [validation disabled] [Header checksum status: Unverified] Source Address: 192.168.1.68 1631 4.075000 192.168.1.68 192.168.1.70 IPv4 128 Unknown (253) 1635 4.085000 192.168.1.68 192.168.1.70 IPv4 128 Unknown (253) 1639 4.095000 192.168.1.68 192.168.1.70 IPv4 128 Unknown (253) 1643 4.105000 192.168.1.68 192.168.1.70 IPv4 128 Unknown (253) 1647 4.115000 192.168.1.68 192.168.1.70 IPv4 128 Unknown (253) 1651 4.125000 192.168.1.68 192.168.1.70 IPv4 128 Unknown (253) 1655 4.135000 192.168.1.68 192.168.1.70 IPv4 128 Unknown (253) 1659 4.145000 192.168.1.68 192.168.1.70 IPv4 128 Unknown (253) 1663 4.155000 192.168.1.68 192.168.1.70 IPv4 128 Unknown (253) > Frame 1603: 128 bytes on wire (1024 bits), 124 bytes captured (992 bits) on interface \\.\pipe\view_capture_172-21-120-222_1_33_6 Ethernet II, Src: 00:00:00_00:00:68 (00:00:00:00:00:68), Dst: 00:00:00_00:00:70 (00:00:00:00:00:70) Internet Protocol Version 4, Src: 192.168.1.68, Dst: 192.168.1.70 0100 = Version: 4 0101 = Header Length: 20 bytes (5) < Differentiated Services Field: 0x78 (DSCP: AF33, ECN: Not-ECT) 0111 10.. = Differentiated Services Codepoint: Assured Forwarding 33 (30) 00 = Explicit Congestion Notification: Not ECN-Capable Transport (0) Total Length: 110 Identification: 0x0642 (1602) > Flags: 0x00 Fragment Offset: 0 Time to Live: 255 Protocol: Unknown (253) Header Checksum: 0x2ffe [validation disabled] [Header checksum status: Unverified] </pre>
Test results	PASS
Remarks	

5.6 PFC (Priority Flow Control)

Test Items	PFC Functional Test
Test Content	The testing equipment's PFC (Priority Flow Control) can trigger PFC packets and stop traffic based on PFC priorities.
Test Topology	

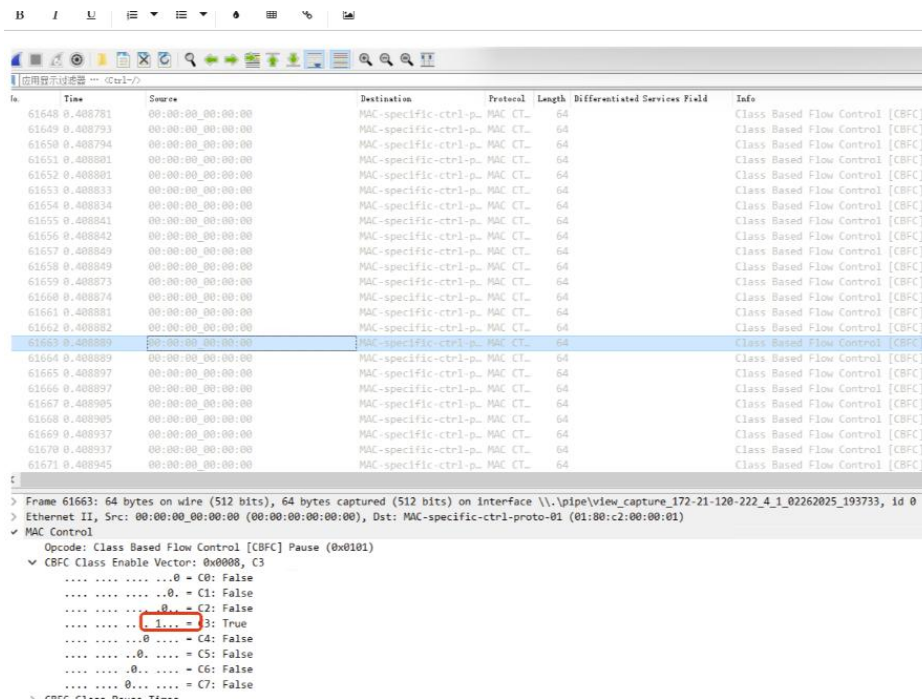
	
Test Steps	1、 Set up the test environment according to the diagram. 2、 Map dot1p priority 3 to tc3 and pg3. 3、 Bind the QoS mapping to the port. 4、 Enable PFC priority 3 on DUTP1 and DUTP2. 5、 Create VLAN100 and add DUT P1-P3 as tagged members. 6、 TGB and TGC send bidirectional VLAN tagged traffic, with TGC sending at 100% rate to TGB. 7、 TGA sends line-rate VLAN100 packets with priority 3 to TGB (check1). 8、 TGA captures packets and confirms PFC priority 3 packets sent by the device (check2). 9、 Stop traffic transmission on all ports. 10、 Create pfc-priority-queue to map PFC priority 3 to queue3. 11、 Bind the created pfc-priority-queue to TGB. 12、 TGA sends line-rate VLAN100 packets with priority 3 to TGB. 13、 TGB sends PFC priority 3 packets (check3).
Expected Results	Check1: Configuration is successful. Check2: The device sends PFC priority 3 packets. Check3: TGB stops receiving VLAN100 packets with priority 3 sent from TGA.
Actual Results	Test <pre> Configure QOS config qos dot1p-tc add dot1p_to_tc_profile --dot1p 3 --tc 3 config interface qos dot1p-tc bind Ethernet0 dot1p_to_tc_profile config interface qos dot1p-tc bind Ethernet8 dot1p_to_tc_profile config interface qos dot1p-tc bind Ethernet16 dot1p_to_tc_profile config qos tc-pg add tc-pg-prof --tc 3 --pg 3 config interface qos tc-pg bind Ethernet0 tc-pg-prof config interface qos tc-pg bind Ethernet8 tc-pg-prof config interface qos tc-pg bind Ethernet16 tc-pg-prof config qos tc-queue add tc-queue-prof --tc 3 --queue 3 config interface qos tc-queue bind Ethernet0 tc-queue-prof config interface qos tc-queue bind Ethernet8 tc-queue-prof config interface qos tc-queue bind Ethernet16 tc-queue-prof config interface pfc priority Ethernet0 3 on config interface pfc priority Ethernet8 3 on Configure vlan </pre>

```
config vlan add 100
config vlan member add 100 Ethernet0
config vlan member add 100 Ethernet8
config vlan member add 100 Ethernet16
```

```
oot@sonic:/home/admin# config qos reload

Running command: /usr/local/bin/sonic-cfggen -d --write-to-db -t /usr/share/sonic/device/x86_64-naddod_n9500_640c
naddod-N9500-640C/qos.json.j2,config-db -y /etc/sonic/sonic_version.yml
config interface buffer bind priority-group Ethernet20 0 ingress_lossless_profile
oot@sonic:/home/admin# config interface buffer bind priority-group Ethernet22 0 ingress_lossless_profile
oot@sonic:/home/admin# config interface buffer bind queue Ethernet20 0 egress_lossless_profile
oot@sonic:/home/admin# config interface buffer bind queue Ethernet22 0 egress_lossless_profile
oot@sonic:/home/admin#
oot@sonic:/home/admin# config interface buffer bind priority-group Ethernet20 3 ingress_lossless_profile
oot@sonic:/home/admin# config interface buffer bind priority-group Ethernet22 3 ingress_lossless_profile
oot@sonic:/home/admin#
oot@sonic:/home/admin# config interface buffer bind queue Ethernet20 3 egress_lossless_profile
oot@sonic:/home/admin# config interface buffer bind queue Ethernet22 3 egress_lossless_profile
oot@sonic:/home/admin#
oot@sonic:/home/admin# config qos dot1p-tc add dot1p_to_tc_profile --dot1p 3 --tc 3
oot@sonic:/home/admin# config qos tc-pg add tc-pg-prof --tc 3 --pg 3
oot@sonic:/home/admin# config qos tc-queue add tc-queue-prof --tc 3 --queue 3
oot@sonic:/home/admin#
oot@sonic:/home/admin# config interface qos dot1p-tc bind Ethernet20 dot1p_to_tc_profile
oot@sonic:/home/admin# config interface qos dot1p-tc bind Ethernet22 dot1p_to_tc_profile
oot@sonic:/home/admin#
oot@sonic:/home/admin# config interface qos tc-pg bind Ethernet20 tc-pg-prof
oot@sonic:/home/admin# config interface qos tc-pg bind Ethernet22 tc-pg-prof
oot@sonic:/home/admin#
oot@sonic:/home/admin# config interface qos tc-queue bind Ethernet20 tc-queue-prof
oot@sonic:/home/admin# config interface qos tc-queue bind Ethernet22 tc-queue-prof
oot@sonic:/home/admin#
```

TGB and TGC send bidirectional VLAN tagged data flows, with TGC sending traffic to TGB at a rate of 100%. TGA sends line-rate data packets of VLAN 100 with priority 3 to TGB. TGA captures packets and can see the PFC priority 3 packets sent by the device.



No.	Time	Source	Destination	Protocol	Length	Differentiated Services Field	Info
61648	0.408781	00:00:00:00:00:00	MAC-specific-ctrl-p	MAC CT	64		Class Based Flow Control [CBFC]
61649	0.408793	00:00:00:00:00:00	MAC-specific-ctrl-p	MAC CT	64		Class Based Flow Control [CBFC]
61650	0.408794	00:00:00:00:00:00	MAC-specific-ctrl-p	MAC CT	64		Class Based Flow Control [CBFC]
61651	0.408801	00:00:00:00:00:00	MAC-specific-ctrl-p	MAC CT	64		Class Based Flow Control [CBFC]
61652	0.408801	00:00:00:00:00:00	MAC-specific-ctrl-p	MAC CT	64		Class Based Flow Control [CBFC]
61653	0.408833	00:00:00:00:00:00	MAC-specific-ctrl-p	MAC CT	64		Class Based Flow Control [CBFC]
61654	0.408834	00:00:00:00:00:00	MAC-specific-ctrl-p	MAC CT	64		Class Based Flow Control [CBFC]
61655	0.408841	00:00:00:00:00:00	MAC-specific-ctrl-p	MAC CT	64		Class Based Flow Control [CBFC]
61656	0.408842	00:00:00:00:00:00	MAC-specific-ctrl-p	MAC CT	64		Class Based Flow Control [CBFC]
61657	0.408849	00:00:00:00:00:00	MAC-specific-ctrl-p	MAC CT	64		Class Based Flow Control [CBFC]
61658	0.408849	00:00:00:00:00:00	MAC-specific-ctrl-p	MAC CT	64		Class Based Flow Control [CBFC]
61659	0.408873	00:00:00:00:00:00	MAC-specific-ctrl-p	MAC CT	64		Class Based Flow Control [CBFC]
61660	0.408874	00:00:00:00:00:00	MAC-specific-ctrl-p	MAC CT	64		Class Based Flow Control [CBFC]
61661	0.408881	00:00:00:00:00:00	MAC-specific-ctrl-p	MAC CT	64		Class Based Flow Control [CBFC]
61662	0.408882	00:00:00:00:00:00	MAC-specific-ctrl-p	MAC CT	64		Class Based Flow Control [CBFC]
61663	0.408889	00:00:00:00:00:00	MAC-specific-ctrl-p	MAC CT	64		Class Based Flow Control [CBFC]
61664	0.408889	00:00:00:00:00:00	MAC-specific-ctrl-p	MAC CT	64		Class Based Flow Control [CBFC]
61665	0.408897	00:00:00:00:00:00	MAC-specific-ctrl-p	MAC CT	64		Class Based Flow Control [CBFC]
61666	0.408897	00:00:00:00:00:00	MAC-specific-ctrl-p	MAC CT	64		Class Based Flow Control [CBFC]
61667	0.408905	00:00:00:00:00:00	MAC-specific-ctrl-p	MAC CT	64		Class Based Flow Control [CBFC]
61668	0.408905	00:00:00:00:00:00	MAC-specific-ctrl-p	MAC CT	64		Class Based Flow Control [CBFC]
61669	0.408937	00:00:00:00:00:00	MAC-specific-ctrl-p	MAC CT	64		Class Based Flow Control [CBFC]
61670	0.408937	00:00:00:00:00:00	MAC-specific-ctrl-p	MAC CT	64		Class Based Flow Control [CBFC]
61671	0.408945	00:00:00:00:00:00	MAC-specific-ctrl-p	MAC CT	64		Class Based Flow Control [CBFC]

Frame 61663: 64 bytes on wire (512 bits), 64 bytes captured (512 bits) on interface \\pipe\view_capture_172-21-120-222_4_1_02262025_193733, id 0
 Ethernet II, Src: 00:00:00:00:00:00 (00:00:00:00:00:00), Dst: MAC-specific-ctrl-01 (01:80:c2:00:00:01)
 MAC Control
 Opcode: Class Based Flow Control [CBFC] Pause (0x0101)
 CBFC Class Enable Vector: 0x0008, C3
0 = C0: False
0 = C1: False
0 = C2: False
1 = C3: True
0 = C4: False
0 = C5: False
0 = C6: False
0 = C7: False
 CBFC Place Pause Time

```
pfc-priority-queue
config qos pfc-priority-queue add pfc_queue_profile --pfc-priority 3 --queue 3
config interface qos pfc-priority-queue bind Ethernet8 pfc_queue_profile
```

Stop packet transmission on all ports. TGA sends line-rate VLAN 100 packets with priority 3 to TGB. TGB sends destination learning packets and PFC priority 3 packets.

The screenshot shows the TestCenter IQ Settings interface. On the left, a tree view shows the configuration hierarchy: TestCenter IQ Settings > All Devices (Hosts, Routers, ...) > All Multicast Groups > All Traffic Generators > All Stream Blocks > All Traffic Analyzers > All Ports > Port //4/1 > Devices > Traffic Generator > Capture. The main panel shows the 'Scheduling Mode' set to 'Port Based' with 'Bandwidth Utilization (%)' at 10. The 'Burst Size' is 1, 'Inter Frame Gap' is 12, and 'Duration Mode' is 'Continuous'. Below this is a table of stream blocks:

Status	Active	Name	Tags	Index	Controlled By	Load Unit	Load	Source Mac
☒	☒	StreamBlock 2	Click to ad...	0	generator			00:00:01:00:00
☒	☒	StreamBlock 4	Click to ad...	1	generator			00:10:94:00:00

Below the table, it says 'Displaying Stream Blocks 1 - 2 | Total Stream Blocks: 2 | Selected 1 of 2'. The bottom section shows 'Traffic Aggregate View: Results 1' with a table of traffic results:

Name/ID	ts	Rx L1 Count (bits)	Tx L1 Rate (bps)	Rx L1 Rate (bps)	Tx Rate (fps)	Rx Rate (fps)	Rx Sig Count (Frames)	Rx Sig
1/98304	1	1,497,058,319.2	99,999,999,806	0	84,459,459	0	1,299,529,791	0
StreamBlock 2	0	9,999,999,953	0	8,445,946	0	0	0	0
StreamBlock 4	1	9,42,695,295.4	10,000,000,046	9,729,729,767	8,445,946	8,445,946	1,686,367,444	8,445
2/98305	2	27,767,277,835...	100,000,000,114	97,297,297,361	84,459,460	84,459,459	24,103,539,788	84,45

Stop PFC on port B, and the traffic recovers.

The screenshot shows the TestCenter IQ Settings interface after stopping PFC on port B. The configuration is the same as the previous screenshot. The bottom section shows 'Traffic Aggregate View: Results 1' with a table of traffic results:

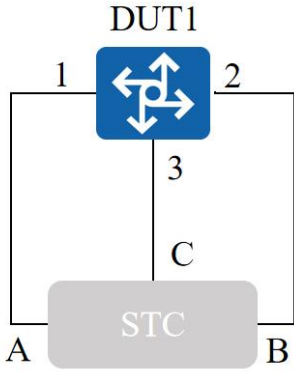
Name/ID	ts	Rx L1 Count (bits)	Tx L1 Rate (bps)	Rx L1 Rate (bps)	Tx Rate (fps)	Rx Rate (fps)	Rx Sig Count (Frames)	Rx Sig
1/98304	2	2,620,329,798.5	99,999,999,856	58,066,607,463	84,459,460	50,405,041	2,274,591,839	50,40
StreamBlock 2	0	0	0	0	0	0	0	0
StreamBlock 4	0	2,808,163,717.6	20,000,000,113	19,459,459,566	16,891,892	16,891,892	2,437,642,116	16,89
2/98305	6	34,112,878,992...	99,999,999,835	58,066,608,266	84,459,459	50,405,042	29,611,874,125	50,40

Test results

PASS

Remarks

5.7 Asym PFC

Test Items	Asym PFC Functional Test
Test Content	The testing equipment's Asym PFC (Asymmetric Priority Flow Control) can correctly trigger PFC packets and stop traffic based on PFC priorities.
Test Topology	
Test Steps	1、 Set up the test environment according to the diagram. 2、 Map dot1p priority 3 to tc3 and pg3. 3、 Bind the QoS mapping to the port. 4、 Enable PFC priority 3 and Asym PFC on DUTP1 and DUTP2. 5、 Create VLAN100 and add DUT P1-P3 as tagged members. 6、 TGB and TGC send bidirectional VLAN tagged traffic, with TGC sending at 100% rate to TGB , check1. 7、 TGA sends line-rate VLAN100 packets with priority 3 to TGB. 8、 TGA captures packets and confirms PFC priority 3 packets sent by the device , check2. 9、 Stop traffic transmission on all ports. 10、 Create pfc-priority-queue to map PFC priority 3 to queue3. 11、 Bind the created pfc-priority-queue to TGB. 12、 TGA sends line-rate VLAN100 packets with priority 3 to TGB. 13、 TGB sends PFC priority 3 packets ,check3.
Expected Results	Check1: Configuration is successful. Check2: The device sends PFC priority 3 packets. Check3: TGB stops receiving VLAN100 priority 3 packets sent from TGA.
Actual Test Results	Configure QOS <pre> config qos dot1p-tc add dot1p_to_tc_profile --dot1p 3 --tc 3 config interface qos dot1p-tc bind Ethernet0 dot1p_to_tc_profile config interface qos dot1p-tc bind Ethernet8 dot1p_to_tc_profile config interface qos dot1p-tc bind Ethernet16 dot1p_to_tc_profile config qos tc-pg add tc-pg-prof --tc 3 --pg 3 </pre>

```
config interface qos tc-pg bind Ethernet0 tc-pg-prof
config interface qos tc-pg bind Ethernet8 tc-pg-prof
config interface qos tc-pg bind Ethernet16 tc-pg-prof
config qos tc-queue add tc-queue-prof --tc 3 --queue 3
config interface qos tc-queue bind Ethernet0 tc-queue-prof
config interface qos tc-queue bind Ethernet8 tc-queue-prof
config interface qos tc-queue bind Ethernet16 tc-queue-prof
```

```
config interface pfc priority Ethernet20 3 on
config interface pfc priority Ethernet22 3 on
config interface pfc asymmetric Ethernet20 on
config interface pfc asymmetric Ethernet22 on
```

```
root@sonic:/home/admin#
root@sonic:/home/admin# config interface pfc asymmetric Ethernet20 on
root@sonic:/home/admin# config interface pfc asymmetric Ethernet22 on
root@sonic:/home/admin#
root@sonic:/home/admin# show interfaces pfc config
[ Ethernet20
PFC Mode: Asymmetric
PFC Lossless-Preserves: 3
PFC to Queue: pfc_queue_profile
PFC Priority: Queue
3
3
[ Ethernet22
PFC Mode: Asymmetric
PFC Lossless-Preserves: 3
PFC to Queue: pfc_queue_profile
PFC Priority: Queue
3
3
root@sonic:/home/admin# show interfaces status | grep 'Ethernet20: Ethernet22'
[ Ethernet20 23.22 2000 9100 rs Eth0/1 (Port1) trunk up up False up QSFP SX Pluggable Transceiver on 2000
[ Ethernet22 23.24 2000 9100 rs Eth0/4 (Port3) trunk up up False up QSFP SX Pluggable Transceiver on 2000
[ Ethernet200 192,194,195,196,197,198,199,200 8000 9100 rs Eth0/6 (Port5) routed down up False up N/A N/A 8000
[ Ethernet208 212,214,215,216,217,218,219,220 8000 9100 rs Eth0/7 (Port27) routed down up False up N/A N/A 8000
[ Ethernet224 222,224,227,228,229,230,231,232 8000 9100 rs Eth0/9 (Port29) routed down up False up N/A N/A 8000
root@sonic:/home/admin#
```

```
config vlan add 100
config vlan member add 100 Ethernet20
config vlan member add 100 Ethernet22
```

Rate limit port 22.

TGB and TGC send bidirectional VLAN tagged traffic, with TGC sending traffic to TGB at 100% rate.

TGA sends line-rate VLAN 100 packets with priority 3 to TGB.

TGA captures packets and can see the PFC priority 3 packets sent by the device.

Port A

EthernetII	
Preamble (hex)	fb555555555555d5
Destination MAC	00:10:94:00:00:02
Source MAC	00:10:94:00:00:01
Vlans	
Vlan	
Type (hex)	8100
Priority (bits)	011
CFI (bit)	0
ID (int)	100
EtherType (hex)	<auto> Int ID = 100
IPv4 Header	

Port B

EthernetII	
Preamble (hex)	fb55555555555d5
Destination MAC	00:10:94:00:00:03
Source MAC	00:10:94:00:00:02
Vlans	
Vlan	
Type (hex)	8100
Priority (bits)	000
CFI (bit)	0
ID (int)	100
EtherType (hex)	<auto> Internet IP
IPv4 Header	

Port C

Frame	
EthernetII	
Preamble (hex)	fb55555555555d5
Destination MAC	00:10:94:00:00:02
Source MAC	00:10:94:00:00:03
Vlans	
Vlan	
Type (hex)	8100
Priority (bits)	000
CFI (bit)	0
ID (int)	100
EtherType (hex)	<auto> Internet IP
IPv4 Header	
Version (int)	<auto> 4
Header length (int)	<auto> 5

9618	1.210129	00:00:00:00:00:00	MAC-specific-ctrl-p. MAC CT.	64	Class Based Flow Control [CBFC] Pause
9619	1.210265	00:00:00:00:00:00	MAC-specific-ctrl-p. MAC CT.	64	Class Based Flow Control [CBFC] Pause
9620	1.210391	00:00:00:00:00:00	MAC-specific-ctrl-p. MAC CT.	64	Class Based Flow Control [CBFC] Pause
9621	1.210517	00:00:00:00:00:00	MAC-specific-ctrl-p. MAC CT.	64	Class Based Flow Control [CBFC] Pause
9622	1.210643	00:00:00:00:00:00	MAC-specific-ctrl-p. MAC CT.	64	Class Based Flow Control [CBFC] Pause
9623	1.210769	00:00:00:00:00:00	MAC-specific-ctrl-p. MAC CT.	64	Class Based Flow Control [CBFC] Pause
9624	1.210894	00:00:00:00:00:00	MAC-specific-ctrl-p. MAC CT.	64	Class Based Flow Control [CBFC] Pause
9625	1.211020	00:00:00:00:00:00	MAC-specific-ctrl-p. MAC CT.	64	Class Based Flow Control [CBFC] Pause
9626	1.211146	00:00:00:00:00:00	MAC-specific-ctrl-p. MAC CT.	64	Class Based Flow Control [CBFC] Pause
9627	1.211272	00:00:00:00:00:00	MAC-specific-ctrl-p. MAC CT.	64	Class Based Flow Control [CBFC] Pause
9628	1.211398	00:00:00:00:00:00	MAC-specific-ctrl-p. MAC CT.	64	Class Based Flow Control [CBFC] Pause
9629	1.211524	00:00:00:00:00:00	MAC-specific-ctrl-p. MAC CT.	64	Class Based Flow Control [CBFC] Pause
9630	1.211649	00:00:00:00:00:00	MAC-specific-ctrl-p. MAC CT.	64	Class Based Flow Control [CBFC] Pause
9631	1.211775	00:00:00:00:00:00	MAC-specific-ctrl-p. MAC CT.	64	Class Based Flow Control [CBFC] Pause
9632	1.211901	00:00:00:00:00:00	MAC-specific-ctrl-p. MAC CT.	64	Class Based Flow Control [CBFC] Pause
9633	1.212027	00:00:00:00:00:00	MAC-specific-ctrl-p. MAC CT.	64	Class Based Flow Control [CBFC] Pause
9634	1.212153	00:00:00:00:00:00	MAC-specific-ctrl-p. MAC CT.	64	Class Based Flow Control [CBFC] Pause
9635	1.212279	00:00:00:00:00:00	MAC-specific-ctrl-p. MAC CT.	64	Class Based Flow Control [CBFC] Pause
9636	1.212404	00:00:00:00:00:00	MAC-specific-ctrl-p. MAC CT.	64	Class Based Flow Control [CBFC] Pause
9637	1.212530	00:00:00:00:00:00	MAC-specific-ctrl-p. MAC CT.	64	Class Based Flow Control [CBFC] Pause
9638	1.212656	00:00:00:00:00:00	MAC-specific-ctrl-p. MAC CT.	64	Class Based Flow Control [CBFC] Pause

Frame 9629: 64 bytes on wire (512 bits), 64 bytes captured (512 bits) on interface \\.\pipe\view_capture_172-21-120-222_4_1_02262025_203936, id 0
Ethernet II, Src: 00:00:00:00:00:00 (00:00:00:00:00:00), Dst: MAC-specific-ctrl-p. MAC CT. (01:00:c2:00:00:01)

MAC Control
OpCode: Class Based Flow Control [CBFC] Pause (0x0101)
▼ CBFC Class Enable Vector: 0x0000, C3
.....0 = C0: False
.....0 = C1: False
.....0 = C2: False
.....1 = C3: True
.....0 = C4: False
.....0 = C5: False
.....0 = C6: False
.....0 = C7: False
> CBFC Class Pause Times

pfc-priority-queue

config qos pfc-priority-queue add pfc_queue_profile --pfc-priority 3 --queue 3

config interface qos pfc-priority-queue bind Ethernet8 pfc_queue_profile

Stop packet transmission on all ports.

TGA sends line-rate VLAN 100 packets with priority 3 to TGB.

TGB sends destination learning packets and PFC priority 3 packets.

Port A

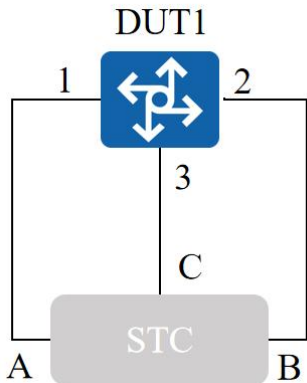
EthernetII	
Preamble (hex)	fb555555555555d5
Destination MAC	00:10:94:00:00:02
Source MAC	00:10:94:00:00:01
Vlans	
Vlan	
Type (hex)	8100
Priority (bits)	011
CFI (bit)	0
ID (int)	100
EtherType (hex)	<auto> Internet IP
IPv4 Header	
Version (int)	<auto> 4

Port B

	Stop PFC on port B, and the traffic recovers.
Test results	PASS
Remarks	

5.8 PFC Watchdog (WD)

Test Items	PFC watchdog Functional Test
------------	------------------------------

Test Content	The PFC watchdog of the testing equipment can work.
Test Topology	
Test Steps	1、Set up the test environment according to the diagram. 2、Map dot1p priority 3 to tc3 and pg3. 3、Bind the QoS mapping to the port. 4、Enable PFC priority 3 on DUTP1 and DUTP2. 5、Create VLAN100 and add DUT P1-P3 as tagged members. 6、Create pfc-priority-queue to map PFC priority 3 to queue3. 7、Bind the created pfc-priority-queue to TGB (check1). 8、TGA sends line-rate VLAN100 packets with priority 3 to TGB (check2). 9、TGB sends PFC priority 3 packets. 10、Enable PFC Watchdog (PFCWD) on the port.
Expected Results	Check1: TGB stops receiving data packets from TGA. Check2: TGB starts receiving partial data packets from TGA.
Actual Results	Test <pre> QOS config qos dot1p-tc add dot1p_to_tc_profile --dot1p 3 --tc 3 config interface qos dot1p-tc bind Ethernet0 dot1p_to_tc_profile config interface qos dot1p-tc bind Ethernet8 dot1p_to_tc_profile config interface qos dot1p-tc bind Ethernet16 dot1p_to_tc_profile config qos tc-pg add tc-pg-prof --tc 3 --pg 3 config interface qos tc-pg bind Ethernet0 tc-pg-prof config interface qos tc-pg bind Ethernet8 tc-pg-prof config interface qos tc-pg bind Ethernet16 tc-pg-prof config qos tc-queue add tc-queue-prof --tc 3 --queue 3 config interface qos tc-queue bind Ethernet0 tc-queue-prof config interface qos tc-queue bind Ethernet8 tc-queue-prof config interface qos tc-queue bind Ethernet16 tc-queue-prof config interface pfc priority Ethernet0 3 on config interface pfc priority Ethernet8 3 on </pre>

```

root@sonic:/home/admin# config interface pfc priority Ethernet0 3 on
Interface      Lossless priorities
-----
Ethernet0      3
root@sonic:/home/admin# config interface pfc priority Ethernet8 3 on
Interface      Lossless priorities
-----
Ethernet8      3
root@sonic:/home/admin#

```

vlan

config vlan add 100

config vlan member add 100 Ethernet0

config vlan member add 100 Ethernet8

config vlan member add 100 Ethernet16

pfc-priority-queue

config qos pfc-priority-queue add pfc_queue_profile --pfc-priority 3 --queue 3

config interface qos pfc-priority-queue bind Ethernet8 pfc_queue_profile

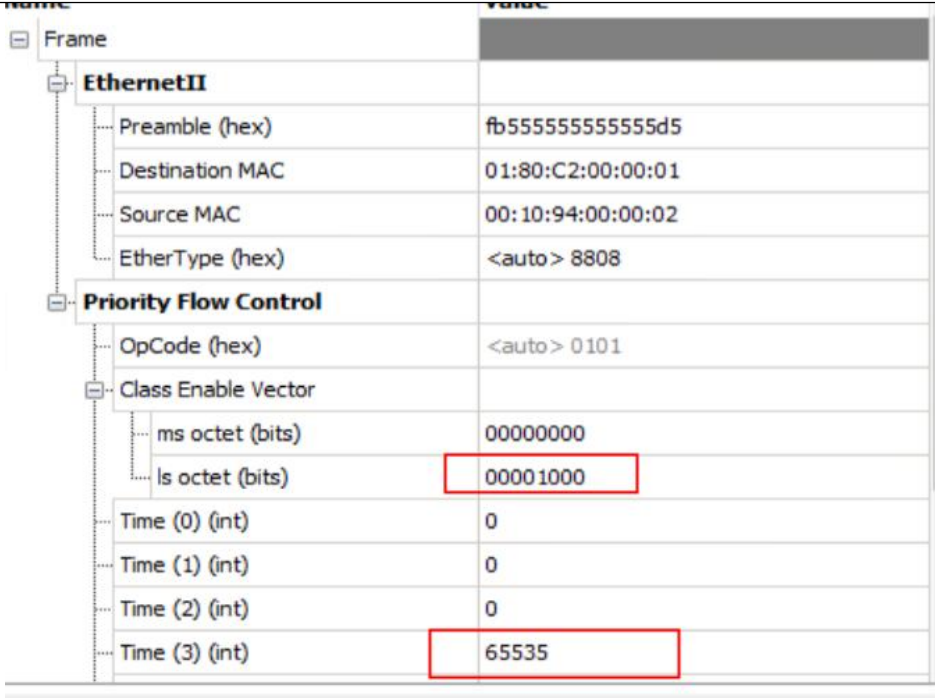
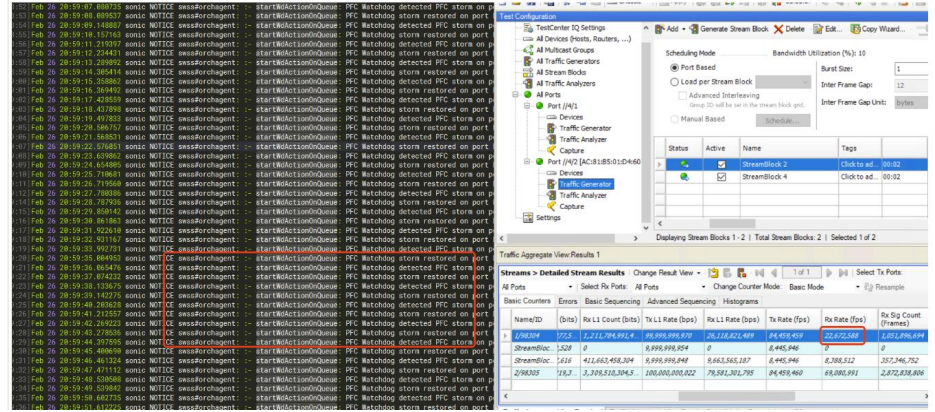
TGA sends VLAN 100 data packets with priority 3 to TGB at line rate.

TGB sends destination learning packets and PFC priority 3 packets.

Port A

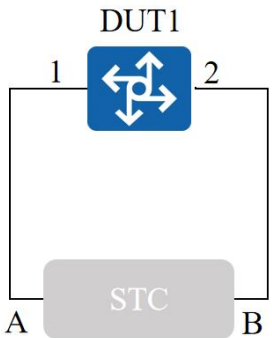
Frame	
EthernetII	
Preamble (hex)	fb555555555555d5
Destination MAC	00:10:94:00:00:02
Source MAC	00:10:94:00:00:01
Vlans	
Vlan	
Type (hex)	8100
Priority (bits)	011
CFI (bit)	0
ID (int)	100
EtherType (hex)	<auto> Internet IP
IPv4 Header	
Version (int)	<auto> 4
Header length (int)	<auto> 5

Port B

	 <pre> config pfcwd start --action forward --restoration-time 4000 ports Ethernet0 detection-time 4000 config pfcwd start --action forward --restoration-time 4000 ports Ethernet8 detection-time 4000 </pre> 	
Test results	PASS	
Remarks		

5.9 PFC Watermark (WM)

Test Items	PFC Watetmark Functional Test
Test Content	The PFC watermark of the testing equipment can be displayed according to statistics.

Test Topology	
Test Steps	1、 Set up the test environment according to the diagram. 2、 Load the QoS configuration file. 3、 Configure buffer parameters and bind them to the port. 4、 Map DSCP 3 to tc3 and pg3; map DSCP 0 to tc0 and pg0. 5、 Bind the QoS mapping to the port. 6、 Create a pfc-priority-queue to map PFC priority 3 to queue3 and PFC priority 0 to queue0. 7、 Bind the created pfc-priority-queue to the port. 8、 Enable PFC priorities 3 and 0 on the port. 9、 Create VLAN 100 and add ports to VLAN 100 , check1. 10、 TGA sends line-rate DSCP 3 and DSCP 0 data packets of 1230 bytes to TGB. 11、 Check the watermark statistics. 12、 Rate limit the egress of TGB to 10G. 13、 Check the watermark statistics again , check2. 14、 Delete the relevant configurations.
Expected Results	Check1: Configuration is successful. Check2: View the statistics.
Actual Results	Test <pre> QOS sudo config qos reload config interface buffer bind priority-group Ethernet0 0 ingress_lossless_profile config interface buffer bind priority-group Ethernet2 0 ingress_lossless_profile config interface buffer bind queue Ethernet0 0 egress_lossless_profile config interface buffer bind queue Ethernet2 0 egress_lossless_profile config interface buffer bind priority-group Ethernet0 3 ingress_lossless_profile config interface buffer bind priority-group Ethernet2 3 ingress_lossless_profile config interface buffer bind queue Ethernet0 3 egress_lossless_profile config interface buffer bind queue Ethernet2 3 egress_lossless_profile config qos dscp-tc add dscp_to_tc_profile --dscp 3 --tc 3 config qos dscp-tc update dscp_to_tc_profile --dscp 0 --tc 0 config interface qos dscp-tc bind Ethernet0 dscp_to_tc_profile config interface qos dscp-tc bind Ethernet2 dscp_to_tc_profile config qos tc-pg add tc-pg-prof --tc 3 --pg 3 config qos tc-pg update tc-pg-prof --tc 0 --pg 0 config interface qos tc-pg bind Ethernet0 tc-pg-prof config interface qos tc-pg bind Ethernet2 tc-pg-prof config qos tc-queue add tc-queue-prof --tc 3 --queue 3 config qos tc-queue update tc-queue-prof --tc 0 --queue 0 config interface qos tc-queue bind Ethernet0 tc-queue-prof </pre>

```
config interface qos tc-queue bind Ethernet2 tc-queue-prof
```

```
pfc-priority-queue
```

```
config qos pfc-priority-queue add pfc_queue_profile --pfc-priority 3 --queue 3
```

```
config qos pfc-priority-queue update pfc_queue_profile --pfc-priority 0 --queue 0
```

```
config interface qos pfc-priority-queue bind Ethernet0 pfc_queue_profile
```

```
config interface qos pfc-priority-queue bind Ethernet2 pfc_queue_profile
```

```
config interface pfc priority Ethernet0 3 on
```

```
config interface pfc priority Ethernet0 0 on
```

```
config interface pfc priority Ethernet2 3 on
```

```
config interface pfc priority Ethernet2 0 on
```

```
vlan
```

```
config vlan add 100
```

```
config vlan member add 100 Ethernet0 -u
```

```
config vlan member add 100 Ethernet2 -u
```

TGB sends MAC learning packets, and TGA sends line-rate packets with DSCP 3 and DSCP 0.

Port A

The image shows a Wireshark packet capture of a network frame. The packet structure is as follows:

- Ethernet II**
 - Preamble (hex): fb555555555555d5
 - Destination MAC: 00:10:94:00:00:02
 - Source MAC: 00:10:94:00:00:01
 - EtherType (hex): <auto> Internet IP
- IPv4 Header**
 - Version (int): <auto> 4
 - Header length (int): <auto> 5
 - ToS/DiffServ: tos (0x0C)

A 'Custom Editor' dialog is open, showing the 'Quality of Service' section. The 'ToS' radio button is selected. The 'Value' field is set to '0C' (Hex), '12' (Dec), and '00001100' (Binary).

Frame	
EthernetII	
Preamble (hex)	fb5555555555d5
Destination MAC	00:10:94:00:00:02
Source MAC	00:10:94:00:00:01
EtherType (hex)	<auto> Internet IP
IPv4 Header	
Version (int)	<auto> 4
Header length (int)	<auto> 5
ToS/DiffServ	tos (0x00)
Total length (int)	<auto> calculated
Identification (int)	0
Control Flags	
Reserved (bit)	0
DF Bit (bit)	0

Port B

Frame	
EthernetII	
Preamble (hex)	fb5555555555d5
Destination MAC	00:10:94:00:00:01
Source MAC	00:10:94:00:00:02
EtherType (hex)	<auto> Internet IP
IPv4 Header	
Version (int)	<auto> 4
Header length (int)	<auto> 5
ToS/DiffServ	tos (0x00)
Total length (int)	<auto> calculated
Identification (int)	0
Control Flags	
Reserved (bit)	0
DF Bit (bit)	0

sonic-clear priority-group watermark headroom

config scheduler add profile-1 --shaper_type=bytes --bandwidth=10g

config interface scheduler bind port Ethernet2 profile-1

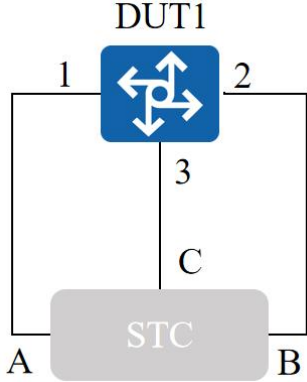
```

48:49] root@sonic:/home/admin# show priority-group watermark headroom | grep -iw "Ethernet0|Ethernet2"
48:49] Ethernet0 18348960 0 0 18614136 0 0 0 0
48:49] Ethernet2 0 0 0 0 0 0 0 0
48:49] root@sonic:/home/admin#
48:51] root@sonic:/home/admin# show priority-group watermark shared | grep -iw "Ethernet0|Ethernet2"
48:52] Ethernet0 2923832 0 0 2921508 0 0 0 0
48:52] Ethernet2 1524 0 0 0 0 0 0 0
49:16] root@sonic:/home/admin# show buffer profile
49:17] Profile Pool Size Shared Mode Shared Size Xoff Xon

```

Test results	PASS
Remarks	

5.10 Scheduling

Test Items	Scheduling Functional Test
Test Content	The testing equipment forwards packets according to QoS Scheduling.
Test Topology	
Test Steps	1、Set up the test environment according to the diagram. 2、Map DSCP3 to tc3 and pg3, and map DSCP0 to tc0 and pg0. 3、Bind the QoS mapping to the port. 4、Configure schedulers wrr60 and wrr40, and bind them to queue0 and queue3 of DUTP3. 5、Create VLAN100, add DUT P1-P3 to VLAN100 as tagged members (check1). TGC sends learning packets. 6、TGA is set to send DSCP0 packets with a length of 1230 at line rate to TGC; 7、TGB is set to send DSCP3 packets with a length of 1230 at line rate to TGC. 8、TGA and TGB send packets simultaneously, check the ratio of packets received by TGC from TGA and TGB (check2). 9、Stop packet transmission on all ports.
Expected Results	Check1: Configuration is successful. Check2: The DSCP packets received by TGC from TGA and TGB conform to the WRR ratio.
Actual Results	<pre> qos config qos dscp-tc add dscp_to_tc_profile --dscp 3 --tc 3 config qos dscp-tc update dscp_to_tc_profile --dscp 0 --tc 0 config interface qos dscp-tc bind Ethernet0 dscp_to_tc_profile config interface qos dscp-tc bind Ethernet8 dscp_to_tc_profile config interface qos dscp-tc bind Ethernet16 dscp_to_tc_profile config qos tc-pg add tc-pg-prof --tc 3 --pg 3 config qos tc-pg update tc-pg-prof --tc 0 --pg 0 config interface qos tc-pg bind Ethernet0 tc-pg-prof config interface qos tc-pg bind Ethernet8 tc-pg-prof config interface qos tc-pg bind Ethernet16 tc-pg-prof config qos tc-queue add tc-queue-prof --tc 3 --queue 3 </pre>

	<pre>config qos tc-queue update tc-queue-prof --tc 0 --queue 0 config interface qos tc-queue bind Ethernet0 tc-queue-prof config interface qos tc-queue bind Ethernet8 tc-queue-prof config interface qos tc-queue bind Ethernet16 tc-queue-prof scheduler config scheduler add sched-prof-wrr60 --sched_type WRR --weight 60 config scheduler add sched-prof-wrr40 --sched_type WRR --weight 40 config interface scheduler bind queue Ethernet16 0 sched-prof-wrr60 config interface scheduler bind queue Ethernet16 3 sched-prof-wrr40 vlan config vlan add 100 config vlan member add 100 Ethernet0 -u config vlan member add 100 Ethernet8 -u config vlan member add 100 Ethernet16 -u</pre> TGC sends learning packets. The packet reception rates at TGC for DSCP 0 (from TGA) and DSCP 3 (from TGB) are measured when TGA and TGB send simultaneously. The port receives DSCP 0 and DSCP 3 packets at a rate ratio of 3:2. <table><tr><th>Name/ID</th><th>t</th><th>Late Count (Frames)</th><th>Dropped Rate (fps)</th><th>Dropped Frame Perce...</th><th>In-order Rate (fps)</th><th>R</th></tr><tr><td>StreamBlock...</td><td></td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>StreamBlock...</td><td></td><td>0</td><td>0</td><td>0</td><td>31,581,791</td><td>0</td></tr><tr><td>StreamBlock...</td><td></td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>StreamBlock...</td><td></td><td>0</td><td>0</td><td>0</td><td>20,091,821</td><td>0</td></tr><tr><td>StreamBlock...</td><td></td><td>0</td><td>28,441,934</td><td>67.35</td><td>13,787,794</td><td>0</td></tr><tr><td>StreamBlock...</td><td></td><td>0</td><td>23,231,268</td><td>55.011</td><td>18,998,461</td><td>0</td></tr></table>	Name/ID	t	Late Count (Frames)	Dropped Rate (fps)	Dropped Frame Perce...	In-order Rate (fps)	R	StreamBlock...		0	0	0	0	0	StreamBlock...		0	0	0	31,581,791	0	StreamBlock...		0	0	0	0	0	StreamBlock...		0	0	0	20,091,821	0	StreamBlock...		0	28,441,934	67.35	13,787,794	0	StreamBlock...		0	23,231,268	55.011	18,998,461	0
Name/ID	t	Late Count (Frames)	Dropped Rate (fps)	Dropped Frame Perce...	In-order Rate (fps)	R																																												
StreamBlock...		0	0	0	0	0																																												
StreamBlock...		0	0	0	31,581,791	0																																												
StreamBlock...		0	0	0	0	0																																												
StreamBlock...		0	0	0	20,091,821	0																																												
StreamBlock...		0	28,441,934	67.35	13,787,794	0																																												
StreamBlock...		0	23,231,268	55.011	18,998,461	0																																												
Test results	PASS																																																	
Remarks																																																		

5.11 Egress Shaping (Port, Queue)

Test Items	Egress Shaping Functional Test
Test Content	The testing equipment forwards packets according to the set Egress shaping value.
Test Topology	
Test Steps	1. Set up the test environment according to the diagram. 2. Map DSCP3 to tc3 and pg3, and map DSCP0 to tc0 and pg0. 3. Bind the QoS mapping to the port. 4. Set the port bandwidth of DUTP2 to 10G and the bandwidth of queue0 to 1G. 5. Create VLAN2, add DUT P1-P2 to VLAN2 as tagged members (check1).

		6. TGB sends learning packets. 7. TGA is set to send DSCP0 packets with a length of 1230 at line rate to TGB, and check the packet reception rate (check2). 8. TGA is set to send DSCP3 packets with a length of 1230 at line rate to TGB, and check the packet reception rate (check3). 9. Stop packet transmission on all ports.
Expected Results		Check1: Configuration is successful. Check2: The rate of DSCP0 packets received by TGB is 1G. Check3: The rate of DSCP3 packets received by TGB is 10G.
Actual Results	Test	<pre> qos config qos dscp-tc add dscp_to_tc_profile --dscp 3 --tc 3 config qos dscp-tc update dscp_to_tc_profile --dscp 0 --tc 0 config interface qos dscp-tc bind Ethernet0 dscp_to_tc_profile config interface qos dscp-tc bind Ethernet8 dscp_to_tc_profile config qos tc-pg add tc-pg-prof --tc 3 --pg 3 config qos tc-pg update tc-pg-prof --tc 0 --pg 0 config interface qos tc-pg bind Ethernet0 tc-pg-prof config interface qos tc-pg bind Ethernet8 tc-pg-prof config qos tc-queue add tc-queue-prof --tc 3 --queue 3 config qos tc-queue update tc-queue-prof --tc 0 --queue 0 config interface qos tc-queue bind Ethernet0 tc-queue-prof config interface qos tc-queue bind Ethernet8 tc-queue-prof config scheduler add profile-1 --shaper_type=bytes --bandwidth=10g config scheduler add profile-2 --shaper_type=bytes --bandwidth=1g config interface scheduler bind port Ethernet8 profile-1 config interface scheduler bind queue Ethernet8 0 profile-2 vlan config vlan add 100 config vlan member add 100 Ethernet0 -u config vlan member add 100 Ethernet8 -u TGB sends learning packets. TGA is set to send DSCP0 packets with a length of 1230 at line rate to TGB, and check the packet reception rate. </pre>

```
oot@sonic:~# show qos dscp-tc
oot@sonic:~# show qos tc-pg
oot@sonic:~# show qos tc-queue
oot@sonic:~# config qos dscp-tc add dscp_to_tc_profile --dscp 3 --tc 3
oot@sonic:~# config qos dscp-tc update dscp_to_tc_profile --dscp 0 --tc 0
oot@sonic:~# config interface qos dscp-tc bind Ethernet16 dscp_to_tc_profile
oot@sonic:~# config interface qos dscp-tc bind Ethernet18 dscp_to_tc_profile
oot@sonic:~# show qos dscp-tc
dscp-tc policy: dscp_to_tc_profile
DSCP    TC
-----
0        0
3        3

oot@sonic:~# config qos tc-pg add tc-pg-prof --tc 3 --pg 3
oot@sonic:~# config qos tc-pg update tc-pg-prof --tc 0 --pg 0
oot@sonic:~# config interface qos tc-pg bind Ethernet0 tc-pg-prof
oot@sonic:~# config interface qos tc-pg unbind Ethernet0 tc-pg-prof
oot@sonic:~# config interface qos tc-pg unbind Ethernet16 tc-pg-prof
Usage: config interface qos tc-pg [OPTIONS] {bind|unbind}
      {<interface_name>|all} <profile>
Try "config interface qos tc-pg -h" for help.

Error: 'tc-pg-prof' profile is not configured on interface Ethernet16.
oot@sonic:~# config interface qos tc-pg bind Ethernet16 tc-pg-prof
oot@sonic:~# config interface qos tc-pg bind Ethernet18 tc-pg-prof
oot@sonic:~# show qos tc-pg
tc-pg policy: tc-pg-prof
TC       PG
-----
0        0
3        3

oot@sonic:~# config qos tc-queue add tc-queue-prof --tc 3 --queue 3
oot@sonic:~# config qos tc-queue update tc-queue-prof --tc 0 --queue 0
oot@sonic:~# config interface qos tc-queue bind Ethernet16 tc-queue-prof
oot@sonic:~# config interface qos tc-queue bind Ethernet18 tc-queue-prof
oot@sonic:~# show qos tc-queue
tc-queue policy: tc-queue-prof
TC       Queue
-----
0        0
3        3
```

Set the port bandwidth of DUTP2 to 10G and the bandwidth of queue0 to 1G.

```
root@sonic:~# config scheduler add profile-1 --shaper_type=bytes --bandwidth=10g
root@sonic:~# config scheduler add profile-2 --shaper_type=bytes --bandwidth=1g
root@sonic:~# config interface scheduler bind port Ethernet18 profile-1
root@sonic:~# config interface scheduler bind queue Ethernet18 0 profile-2
root@sonic:~# show interfaces scheduler
Ethernet18
Type Queue Profile Scheduling Mode Weight Shaper Type Bandwidth
-----
Port N/A profile-1 N/A N/A bytes 10 Gbps
Queue 0 profile-2 N/A N/A bytes 1 Gbps

root@sonic:~#
```

Create VLAN2 and add DUT Port1-Port2 to VLAN2 as tagged members.

```
root@sonic:~# config vlan add 2
root@sonic:~# config vlan member add 2 Ethernet16
root@sonic:~# config vlan member add 2 Ethernet18
root@sonic:~# show vlan brief
VLAN ID IP Address Ports Port Tagging Proxy ARP DHCP Helper Address DHCP Relay Configuration
-----
2 Ethernet16 tagged disabled
2 Ethernet18 tagged disabled
Source Interface:
Link Selection:
Server Vrf:
Server ID Override:
100 Ethernet416 untagged disabled
Source Interface:
Link Selection:
Server Vrf:
Server ID Override:

root@sonic:~# show vlan config
Name VID Member Mode
Vlan2 2 Ethernet16 tagged
Vlan2 2 Ethernet18 tagged
Vlan100 100 Ethernet416 untagged
root@sonic:~#
```

TGB sends learning packets.

GeneralFrameGroupsRx PortPreview

Preview:

EthernetIIIPv4

Show All FieldsAllow Invalid Pack

Frames

Create new Frame >Save Frame as Template...Manage Frame Templates...

Actions

Add Header(s)...Link Modifiers/VFDs...Insert MACModifier...

Others

Expand AllCollapse All

NameValue

Frame

EthernetII

Preamble (hex)fb555555555555d5

Destination MAC00:10:94:00:00:02

Source MAC00:00:01:00:00:01

EtherType (hex)<auto> Internet IP

IPv4 Header

Version (int)<auto> 4

Header length (int)<auto> 5

ToS/DiffServtos (0x00)

Total length (int)<auto> calculated

Identification (int)0

Control Flags

Reserved (bit)0

DF Bit (bit)0

MF Bit (bit)0

Fragment Offset (int)0

Time to live (int)255

Hex Editor

0000FB 55 55 55 55 55 55 55 D5 00 10 94 00 00 02 00 10

001094 00 00 02 08 00 45 00 00 14 00 00 00 00 FF FD

002039 94 C0 55 01 02 C0 00 00 01

67

Data Path Mode
☒ Normal
☐ Diagnostic Loopback

Clock Source
☐ Internal
☒ Internal w/PPM Adjustment
PPM Adjustment

Traffic Analyzer
Capture
Port //4/2 [AC:81:85:01D4:60/Eth3/2]

Devices
Traffic Generator
Traffic Analyzer
Capture
Port //1/37 [E0:01:A6:67:4F:82/400ge-1]
Port //1/41 [E0:01:A6:67:4F:82/400ge-1]
Settings

Stream	Direction	Rate	Click to...	Pair	generator
1	TGB	0			

Displaying Stream Blocks 1 - 1 | Total Stream Blocks: 1 | Selected 1 of 1

Traffic Aggregate View: Results 1

Port Traffic and Counters > Basic Traffic Results | Change Result View

Port Name	Total Tx Count (Frames)	Total Rx Count (Frames)	Total Tx Count (bits)	Tx L1 Rate (Percent)	Rx L1 Rate (Percent)	Total Rx Count (bits)	Total Tx Rate (bps)	Total Rx Rate (bps)
Port //4/1...	0	3	0	0	0	10,344	0	0
Port //4/2...	1,850,274,520	3	18,205,717,276,600	99.999	0	10,344	196,796,065,160	0
Port //1/3...	0	3	0	0	0	5,712	0	0
Port //1/4...	0	3	0	0	0	5,712	0	0

```

root@sonic:~# show mac
No.    Vlan  MacAddress      Port      Type
-----
1      100   E0:01:A6:67:4F:83 Ethernet416 Dynamic
Total number of entries 1
root@sonic:~# show mac
No.    Vlan  MacAddress      Port      Type
-----
1      100   00:00:01:00:00:01 Ethernet18 Dynamic
2      100   E0:01:A6:67:4F:83 Ethernet416 Dynamic
Total number of entries 2
root@sonic:~#

```

The screenshot shows the StreamBlock Editor interface. At the top, the title bar reads "StreamBlock Editor - Port //4/1 [AC:81:B5:01:D4:60/Eth3/1(Port3)] : TGA-DSCP0". Below the title bar are tabs for "General", "Frame", "Groups", "Rx Port", and "Preview", with "Frame" currently selected.

In the "Preview:" section, there are two buttons: "EthernetII" (selected) and "IPv4". To the right of these buttons are two checkboxes: "Show All Fields" (checked) and "Allow Invalid Packets" (unchecked).

The main area displays a tree view of packet fields under the heading "Name" and "Value". The tree is expanded to show the "Ethernet II" header and the "IPv4 Header".

Name	Value
EthernetII	
Preamble (hex)	fb5555555555d5
Destination MAC	00:00:01:00:00:01
Source MAC	00:10:94:00:00:02
EtherType (hex)	<auto> Internet IP
IPv4 Header	
Version (int)	<auto> 4
Header length (int)	<auto> 5
ToS/DiffServ	tos (0x00)
Total length (int)	<auto> calculated
Identification (int)	0
Control Flags	
Reserved (bit)	0
DF Bit (bit)	0
MF Bit (bit)	0
Fragment Offset (int)	0
Time to live (int)	255

At the bottom, there is a "Hex Editor" section displaying hexadecimal data in columns. The first column shows addresses from 0000 to 0020. The second column shows hex values. The third column shows ASCII representations. The fourth column shows additional hex values.

```

0000 FB 55 55 55 55 55 D5 00 00 01 00 00 01 00 10  áùùùùùùù.....
0010 94 00 00 02 08 00 45 00 00 00 00 FF FD  .....E.....ÿý
0020 39 94 C0 55 01 02 C0 00 00 01                9.À.À...
  
```

B口(端口为200G端口, 故速率为0.5G):

```

root@ns101:~# show interfaces counters -i Ethernet16, Ethernet18
Last cached time was 2023-02-27 16:22:06.763919

```

IFACE	STATE	Rx_OK	Rx_BPS	Rx_UTIL	Rx_ERR	Rx_DRP	Rx_OVR	Rx_DRP_RATE	Tx_OK	Tx_BPS	Tx_UTIL	Tx_ERR	Tx_DRP	Tx_OVR	Tx_DRP_RATE	CMP_PNT	COL_PNT
Ethernet16	U	2,211,547,952	27769.62 MB/s	100.00%	0	0	0	0.00%	5	8.55 B/s	0.00%	0	0	0	0.00%	0	0
Ethernet18	U	0	0.00 B/s	0.00%	0	0	0	0.00%	112,511,575	1487.54 MB/s	5.63%	0	2,499,969,150	0	94.01%	0	0

```

root@ns101:~# show interfaces counters -i group U

```

IFACE	STATE	Rx_OK	Rx_BPS	Rx_UTIL	Rx_ERR	Rx_DRP	Rx_OVR	Rx_DRP_RATE	Tx_OK	Tx_BPS	Tx_UTIL	Tx_ERR	Tx_DRP	Tx_OVR	Tx_DRP_RATE	CMP_PNT	COL_PNT
Ethernet1	U	0	35.41 B/s	0.00%	0	0	0	0.00%	0	61.56 B/s	0.00%	0	0	0	0.00%	0	0
Ethernet5	U	0	25.41 B/s	0.00%	0	0	0	0.00%	0	61.56 B/s	0.00%	0	0	0	0.00%	0	0
Ethernet10	U	4,531,862,201	20398.25 MB/s	100.00%	0	0	0	0.00%	9	8.42 B/s	0.00%	0	0	0	0.00%	0	0
Ethernet16	U	0	8.68 B/s	0.00%	0	0	0	0.00%	235,521,911	1249.33 MB/s	5.08%	0	4,396,275,850	0	94.32%	0	0
Ethernet20	U	0	8.70 B/s	0.00%	0	0	0	0.00%	0	9.46 B/s	0.00%	0	0	0	0.00%	0	0
Ethernet22	U	0	8.14 B/s	0.00%	0	0	0	0.00%	0	9.46 B/s	0.00%	0	0	0	0.00%	0	0
Ethernet24	U	0	76.08 B/s	0.00%	0	0	0	0.00%	0	75.25 B/s	0.00%	0	0	0	0.00%	0	0
Ethernet26	U	0	77.05 B/s	0.00%	0	0	0	0.00%	0	75.25 B/s	0.00%	0	0	0	0.00%	0	0
Ethernet28	U	0	77.05 B/s	0.00%	0	0	0	0.00%	0	75.25 B/s	0.00%	0	0	0	0.00%	0	0
Ethernet30	U	0	77.05 B/s	0.00%	0	0	0	0.00%	0	75.25 B/s	0.00%	0	0	0	0.00%	0	0
Ethernet1200	U	0	61.55 B/s	0.00%	0	0	0	0.00%	0	61.86 B/s	0.00%	0	0	0	0.00%	0	0
Ethernet184	U	0	42.31 B/s	0.00%	0	0	0	0.00%	0	46.40 B/s	0.00%	0	0	0	0.00%	0	0
Ethernet186	U	0	42.31 B/s	0.00%	0	0	0	0.00%	0	50.07 B/s	0.00%	0	0	0	0.00%	0	0
Ethernet188	U	0	42.31 B/s	0.00%	0	0	0	0.00%	0	50.07 B/s	0.00%	0	0	0	0.00%	0	0
Ethernet190	U	0	42.31 B/s	0.00%	0	0	0	0.00%	0	50.07 B/s	0.00%	0	0	0	0.00%	0	0
Ethernet192	U	0	42.31 B/s	0.00%	0	0	0	0.00%	0	50.07 B/s	0.00%	0	0	0	0.00%	0	0
Ethernet194	U	0	42.31 B/s	0.00%	0	0	0	0.00%	0	50.07 B/s	0.00%	0	0	0	0.00%	0	0
Ethernet196	U	0	42.31 B/s	0.00%	0	0	0	0.00%	0	50.07 B/s	0.00%	0	0	0	0.00%	0	0
Ethernet198	U	0	42.31 B/s	0.00%	0	0	0	0.00%	0	50.07 B/s	0.00%	0	0	0	0.00%	0	0
Ethernet199	U	0	42.31 B/s	0.00%	0	0	0	0.00%	0	50.07 B/s	0.00%	0	0	0	0.00%	0	0

```

root@ns101:~# show mac

```

Mac	Vlan	MacAddress	Port	Type
1	00:00:00:00:00:01	Ethernet18	Dynamic	
2	00:10:10:00:00:02	Ethernet16	Dynamic	

```

Total number of entries: 2
root@ns101:~# show interfaces counters -i Ethernet16, Ethernet18
Last cached time was 2023-02-27 16:22:06.763919

```

IFACE	STATE	Rx_OK	Rx_BPS	Rx_UTIL	Rx_ERR	Rx_DRP	Rx_OVR	Rx_DRP_RATE	Tx_OK	Tx_BPS	Tx_UTIL	Tx_ERR	Tx_DRP	Tx_OVR	Tx_DRP_RATE	CMP_PNT	COL_PNT
Ethernet16	U	4,772,312,742	24660.55 MB/s	96.40%	0	0	0	0.00%	708,369,235	24284.64 MB/s	99.28%	0	0	0	0.00%	0	0
Ethernet18	U	786,394,801	24954.43 MB/s	96.28%	0	0	0	0.00%	416,827,598	125.13 MB/s	0.36%	0	8,362,142,422	0	95.33%	0	0

```

root@ns101:~# show interfaces counters -i Ethernet16, Ethernet18
Last cached time was 2023-02-27 16:22:06.763919

```

IFACE	STATE	Rx_OK	Rx_BPS	Rx_UTIL	Rx_ERR	Rx_DRP	Rx_OVR	Rx_DRP_RATE	Tx_OK	Tx_BPS	Tx_UTIL	Tx_ERR	Tx_DRP	Tx_OVR	Tx_DRP_RATE	CMP_PNT	COL_PNT
Ethernet16	U	4,892,230,482	24997.99 MB/s	96.29%	0	0	0	0.00%	688,282,498	24284.69 MB/s	99.28%	0	0	0	0.00%	0	0
Ethernet18	U	886,251,482	24954.41 MB/s	96.28%	0	0	0	0.00%	416,834,973	125.13 MB/s	0.36%	0	8,361,542,807	0	95.33%	0	0

```

root@ns101:~# show interfaces counters -i Ethernet16, Ethernet18
Last cached time was 2023-02-27 16:22:06.763919

```

IFACE	STATE	Rx_OK	Rx_BPS	Rx_UTIL	Rx_ERR	Rx_DRP	Rx_OVR	Rx_DRP_RATE	Tx_OK	Tx_BPS	Tx_UTIL	Tx_ERR	Tx_DRP	Tx_OVR	Tx_DRP_RATE	CMP_PNT	COL_PNT
Ethernet16	U	4,972,291,420	24660.54 MB/s	96.40%	0	0	0	0.00%	688,290,672	24289.77 MB/s	98.40%	0	0	0	0.00%	0	0
Ethernet18	U	786,394,842	24959.19 MB/s	96.40%	0	0	0	0.00%	417,142,058	125.13 MB/s	0.36%	0	8,361,142,917	0	95.42%	0	0

```

root@ns101:~#

```

TGA is configured to send DSCP3 packets with a length of 1230 at line rate to TGB, and the packet reception rate is checked.

Preview:

EthernetII

IPV4

Show All Fields

Allow Invalid Packets

Frames

Create new Frame >

Save Frame as Template...

Manage Frame Templates...

Actions

Add Header(s)...

Link Modifiers/VFDs...

Insert Modifier...

Others

Expand All

Collapse All

Name

Value

Frame

EthernetII

Preamble (hex)

fb555555555555d5

Destination MAC

00:00:01:00:00:01

Source MAC

00:10:94:00:00:02

EtherType (hex)

<auto> Internet IP

IPv4 Header

Version (int)

<auto> 4

Header length (int)

<auto> 5

ToS/DiffServ

Total length

Identification

Control Flags

Reserve

DF Bit (0)

MF Bit (0)

Fragment Offset

Time to live

Custom Editor

Quality of Service

DiffServ

ToS

Value

(Hex)

(Dec)

(Binary)

0C

12

00001100

Precedence

0 - Routine

Delay

Normal

Throughput

High

Reliability

High

Monetary Cost

Normal

Hex Editor

0000

fb 55 55 55 55 55 55 55 d5 00 00

0010

94 00 00 02 08 00 45 00 00 14

0020

39 94 c0 55 01 02 c0 00 00 01

The image displays a Wireshark packet capture analysis. The top pane shows a list of captured packets, with packet 1 selected. The middle pane shows the packet details, including Ethernet II, Internet Protocol Version 4, and Hypertext Transfer Protocol. The bottom pane shows the packet bytes. The right pane displays various statistics, including packet counts, interface statistics, and protocol details.

Packet 1 Details:

- Ethernet II, Src: N9500-640C (08:00:00:00:00:00), Dst: N9500-640C (08:00:00:00:00:00)
- Internet Protocol Version 4, Src: 192.168.1.1, Dst: 192.168.1.2
- Hypertext Transfer Protocol

Interface Statistics:

Interface	State	Speed	Duplex	Mode	Port	Type
Ethernet16	up	10000	Full	Auto	16	Ethernet II
Ethernet18	up	10000	Full	Auto	18	Ethernet II

Statistics:

Protocol	Count	Size	Time
Ethernet II	1	144	0.000000
Internet Protocol Version 4	1	60	0.000000
Hypertext Transfer Protocol	1	100	0.000000

Stop packet transmission on all ports.

The image displays a Wireshark packet capture analysis. The top pane shows a list of captured packets, with packet 1 selected. The middle pane shows the packet details, including Ethernet II, Internet Protocol Version 4, and Hypertext Transfer Protocol. The bottom pane shows the packet bytes. The right pane displays various statistics, including packet counts, interface statistics, and protocol details.

Packet 1 Details:

- Ethernet II, Src: N9500-640C (08:00:00:00:00:00), Dst: N9500-640C (08:00:00:00:00:00)
- Internet Protocol Version 4, Src: 192.168.1.1, Dst: 192.168.1.2
- Hypertext Transfer Protocol

Interface Statistics:

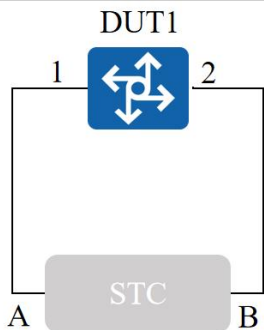
Interface	State	Speed	Duplex	Mode	Port	Type
Ethernet16	up	10000	Full	Auto	16	Ethernet II
Ethernet18	up	10000	Full	Auto	18	Ethernet II

Statistics:

Protocol	Count	Size	Time
Ethernet II	1	144	0.000000
Internet Protocol Version 4	1	60	0.000000
Hypertext Transfer Protocol	1	100	0.000000

	<pre>root@sonic:~# root@sonic:~# config interface scheduler unbind port Ethernet18 root@sonic:~# config interface scheduler unbind queue Ethernet18 0 root@sonic:~# root@sonic:~# config scheduler del profile-1 root@sonic:~# config scheduler del profile-2 root@sonic:~# root@sonic:~# show interfaces scheduler root@sonic:~# root@sonic:~# config interface qos tc-queue unbind Ethernet16 root@sonic:~# config interface qos tc-queue unbind Ethernet18 root@sonic:~# root@sonic:~# config interface qos tc-pg unbind Ethernet16 root@sonic:~# config interface qos tc-pg unbind Ethernet18 root@sonic:~# root@sonic:~# config interface qos dscp-tc unbind Ethernet16 root@sonic:~# config interface qos dscp-tc unbind Ethernet18 root@sonic:~# root@sonic:~# config qos tc-queue del tc-queue-prof root@sonic:~# root@sonic:~# config qos tc-pg del tc-pg-prof root@sonic:~# root@sonic:~# config qos dscp-tc del dscp-to_tc_profile root@sonic:~# root@sonic:~# show qos dscp-tc root@sonic:~# root@sonic:~# show qos tc-pg root@sonic:~# root@sonic:~# show qos tc-queue root@sonic:~# root@sonic:~# config vlan member del 2 Ethernet16 root@sonic:~# config vlan member del 2 Ethernet18 root@sonic:~# root@sonic:~# config vlan del 2 root@sonic:~# root@sonic:~# show vlan brief</pre> <table><tr><th>VLAN ID</th><th>IP Address</th><th>Ports</th><th>Port Tagging</th><th>Proxy ARP</th><th>DHCP Helper Address</th><th>DHCP Relay Configuration</th></tr><tr><td>100</td><td></td><td>Ethernet416</td><td>untagged</td><td>disabled</td><td></td><td>Source Interface: Link Selection: Server Vrf: Server ID Override:</td></tr></table>	VLAN ID	IP Address	Ports	Port Tagging	Proxy ARP	DHCP Helper Address	DHCP Relay Configuration	100		Ethernet416	untagged	disabled		Source Interface: Link Selection: Server Vrf: Server ID Override:
VLAN ID	IP Address	Ports	Port Tagging	Proxy ARP	DHCP Helper Address	DHCP Relay Configuration									
100		Ethernet416	untagged	disabled		Source Interface: Link Selection: Server Vrf: Server ID Override:									
Test results	PASS														
Remarks															

5.12 WRED

Test Items	WRED Functional Test
Test Content	The testing equipment can forward packets according to the WRED (Weighted Random Early Detection) settings.
Test Topology	

Test Steps	1、Set up the test environment according to the diagram. 2、Configure two WRED profiles. 3、Bind the WRED profiles to egress port Queue 0 and Queue 3 respectively. 4、Configure a QOS profile, bind it to the port, and map DSCP 0 to Queue 0 and DSCP 3 to Queue 3. 5、Configure egress rate limiting to 10G. 6、Create VLAN 100 and add DUT P1 and DUT P2 to VLAN 100 as untagged members. 7、TGB continuously sends MAC learning packets. 8、TGA sends line-rate packets to TGB for 10 seconds, and check the packet loss ratio received by TGB (check1). 9、delete the WRED configuration, repeat step 8, and check the packets received by TGB (check2).
Expected Results	Check1: WRED works as configured. Check2: No WRED behavior.
Actual Results	Test <pre> QOS sudo config qos reload config interface buffer bind priority-group Ethernet0 0 ingress_lossless_profile config interface buffer bind priority-group Ethernet8 0 ingress_lossless_profile config interface buffer bind queue Ethernet0 0 egress_lossless_profile config interface buffer bind queue Ethernet8 0 egress_lossless_profile config interface buffer bind priority-group Ethernet0 3 ingress_lossless_profile config interface buffer bind priority-group Ethernet8 3 ingress_lossless_profile config interface buffer bind queue Ethernet0 3 egress_lossless_profile config interface buffer bind queue Ethernet8 3 egress_lossless_profile config qos dscp-tc add dscp_to_tc_profile --dscp 0 --tc 0 config qos dscp-tc update dscp_to_tc_profile --dscp 3 --tc 3 config interface qos dscp-tc bind Ethernet0 dscp_to_tc_profile config interface qos dscp-tc bind Ethernet8 dscp_to_tc_profile config qos tc-pg add tc_to_pg_profile --tc 0 --pg 0 config qos tc-pg update tc_to_pg_profile --tc 3 --pg 3 config interface qos tc-pg bind Ethernet0 tc_to_pg_profile config interface qos tc-pg bind Ethernet8 tc_to_pg_profile config qos tc-queue add tc_to_queue_profile --tc 0 --queue 0 config qos tc-queue update tc_to_queue_profile --tc 3 --queue 3 config interface qos tc-queue bind Ethernet0 tc_to_queue_profile config interface qos tc-queue bind Ethernet8 tc_to_queue_profile config wred add wred-prof-high --mode wred --gmin 0 --gmax 133168898 --gdrop 100 config wred add wred-prof --mode wred --gmin 0 --gmax 133168898 --gdrop 10 config interface wred bind queue Ethernet8 0 wred-prof-high config interface wred bind queue Ethernet8 3 wred-prof show wred show interfaces wred </pre>

```

root@sonic:/home/admin# show wred
Profile: wred-prof
Color    Mode      Min Threshold  Max Threshold  Drop Probability
-----
Green    WRED        0              133168898      100
Yellow
Red

Profile: wred-prof-high
Color    Mode      Min Threshold  Max Threshold  Drop Probability
-----
Green    WRED        0              133168898      10
Yellow
Red

root@sonic:/home/admin#
root@sonic:/home/admin# show interfaces wred
Ethernet8
Queue: 0
ECN/WRED: wred-prof
Color    Mode      Min Threshold  Max Threshold  Drop Probability
-----
Green    WRED        0              133168898      100
Yellow
Red

Ethernet8
Queue: 3
ECN/WRED: wred-prof-high
Color    Mode      Min Threshold  Max Threshold  Drop Probability
-----
Green    WRED        0              133168898      10
Yellow
Red

root@sonic:/home/admin#

```

Configure egress rate limiting to 10G.

config scheduler add profile-1 --shaper_type=bytes --bandwidth=10g

config interface scheduler bind port Ethernet8 profile-1

Configure vlan

config vlan add 100

config vlan member add 100 Ethernet0 -u

config vlan member add 100 Ethernet8 -u

TGB continuously sends MAC learning packets, and TGA sends packets to TGB at a rate of 10.002 Gb.

port A

Frame

EthernetII

Preamble (hex)	fb555555555555d5
Destination MAC	00:10:94:00:00:02
Source MAC	00:10:94:00:00:01
EtherType (hex)	<auto> Internet IP

IPv4 Header

Version (int)	<auto> 4
Header length (int)	<auto> 5
ToS/DiffServ	tos (0x00)
Total length (int)	<auto> calculated
Identification (int)	0
Control Flags	
Reserved (bit)	0
DF Bit (bit)	0

General Frame Groups Rx Port Preview

☒ Active
 Name: StreamBlock 41

Frame size (Bytes)(With CRC and signature field)

☒ Fixed
 Size: 1230

☐ Increment
 Step: 1 (power of 2)

☐ Decrement
 Min: 128
 Max: 256

☐ Random
 Avg: 192

☐ Auto

☐ iMIX

Default

Edit...

StreamBlock

Loa

☒ Pe
 ☐ Fr
 ☐ In
 ☐ In
 ☐ In

The screenshot displays a network configuration interface with the following components:

- EthernetII Header:**
 - Preamble (hex): fb555555555555d5
 - Destination MAC: 00:10:94:00:00:02
 - Source MAC: 00:10:94:00:00:01
 - EtherType (hex): <auto> Internet IP
- IPv4 Header:**
 - Version (int): <auto> 4
 - Header length (int): <auto> 5
 - ToS/DiffServ: tos (0x0C) [Red box]
- Custom Editor Dialog:**
 - Title: Custom Editor
 - Quality of Service:
 - DiffServ: ☐
 - ToS: ☒
 - Value:
 - (Hex): 0C [Red box]
 - (Dec): 12 [Red box]
 - (Binary): 00001100 [Red box]
 - Precedence: [Empty field]
 - Delay: [Empty field]
- StreamBlock Configuration:**
 - Active: ☒
 - Name: StreamBlock 42
 - Frame size (Bytes)(With CRC and signature field):
 - Fixed: ☒ Size: 1230 [Red box]
 - Increment: ☐ Step: 1 (power of 2)
 - Decrement: ☐ Min: 128
 - Random: ☐ Max: 256

☒ Fix
 ☐ Random

Fixed load settings

☐ Percent (%) : 10.00179996
☐ Frame/sec (fps) : 1000179
☐ bps : 10001799960
☐ Kbps : 10001799.96
☒ Mbps : 10002
☐ Inter burst gap (bytes) : 11259
☐ L2 Rate (bps): 9841761360

Scheduling Mode: Port Based Bandwidth Utilization (%): 10.00179996

☒ Port Based
 ☐ Load per Stream Block

☐ Advanced Interleaving
Group ID will be set in the stream block grid.

Burst Size: 1
 Inter Frame Gap: 12
 Inter Frame Gap Unit: bytes

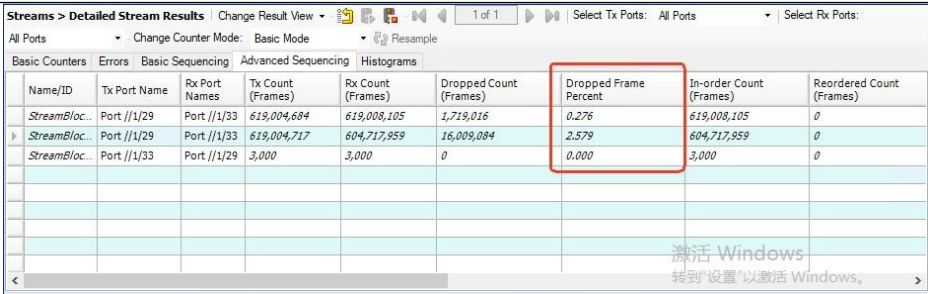
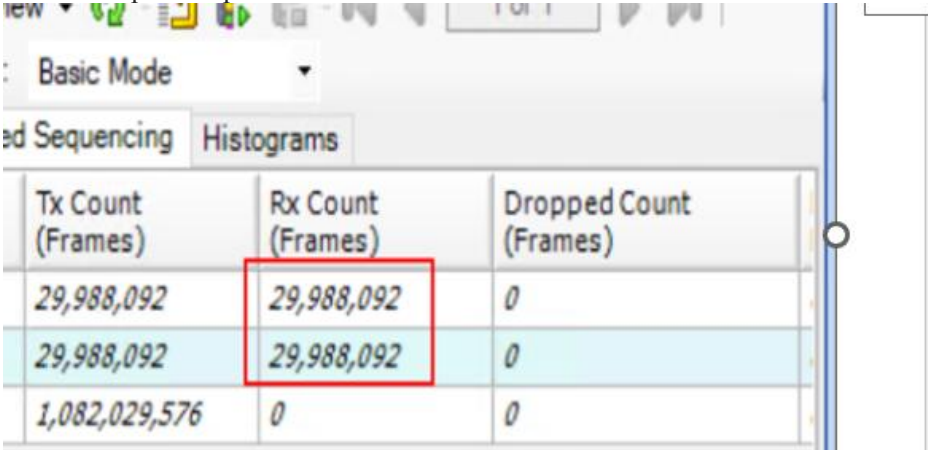
Duration Mode: Seconds
 Second(s): 10

Advanced... Port Load...

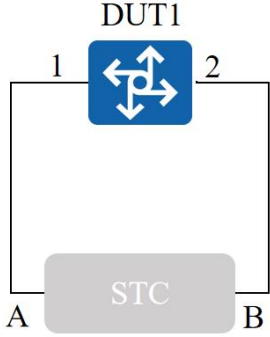
Port B

Frame	
EthernetII	
Preamble (hex)	fb5555555555d5
Destination MAC	00:10:94:00:00:01
Source MAC	00:10:94:00:00:02
EtherType (hex)	<auto> Internet IP
IPv4 Header	
Version (int)	<auto> 4
Header length (int)	<auto> 5
ToS/DiffServ	tos (0x00)
Total length (int)	<auto> calculated
Identification (int)	0
Control Flags	
Reserved (bit)	0
DF Bit (bit)	0

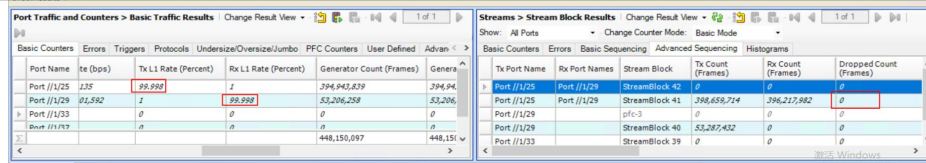
The packet reception at port B (the packet loss ratio is close to 1:10).

	 Remove WRED binding. The instrument configuration remains unchanged. Packet reception at port B. 
Test results	PASS
Remarks	

5.13 ECN

Test Items	ECN Functional Test
Test Content	The testing equipment can forward packets according to the ECN (Explicit Congestion Notification) settings.
Test Topology	
Test Steps	1、Set up the test environment according to the diagram. 2、Create VLAN 100 and add DUT P1 and DUT P2 to VLAN 100 as untagged members. 3、Configure a WRED profile and bind it to the port , check1.

	4、 Check the ECN configuration. 5、 Configure a QoS profile, bind it to the port, and map DSCP 0 to Queue 0 , check2. 6、 Set the egress rate limit to 10G ,check3. 7、 TGB continuously sends MAC learning packets. 8、 TGA sends IPv4 packets with ECN 0x01 at line rate. 9、 Capture packets at TGB for inspection ,check4. 10、 TGA sends IPv4 packets with ECN 0x02 at line rate. 11、 Capture packets at TGB for inspection ,check5. 12、 TGA sends IPv6 packets with ECN 0x01 at line rate. 13、 Capture packets at TGB for inspection. 14、 TGA sends IPv6 packets with ECN 0x02 at line rate. 15、 Capture packets at TGB for inspection.
Expected Results	Check1: Configuration is successful. Check2: No packet loss in packet forwarding. Check3: Packet loss occurs according to WRED settings. Check4: ECN captured by TGB is 3. Check5: ECN captured by TGB is 3.
Actual Results	Test Configure VLAN <pre>config vlan add 100 config vlan member add 100 Ethernet0 -u config vlan member add 100 Ethernet8 -u</pre> config wred add wred-prof --mode ecn --gmin 100000 --gmax 800000 --gdrop 100 config interface wred bind queue Ethernet0 0 wred-prof config interface wred bind queue Ethernet8 0 wred-prof show ecn Configure a QoS profile, bind it to the port, and map DSCP 0 to Queue 0. <pre>config qos dscp-tc add dscp_to_tc_profile --dscp 0 --tc 0 config interface qos dscp-tc bind Ethernet0 dscp_to_tc_profile config interface qos dscp-tc bind Ethernet8 dscp_to_tc_profile config qos tc-pg add tc_to_pg_profile --tc 0 --pg 0 config interface qos tc-pg bind Ethernet0 tc_to_pg_profile config interface qos tc-pg bind Ethernet8 tc_to_pg_profile config qos tc-queue add tc_to_queue_profile --tc 0 --queue 0 config interface qos tc-queue bind Ethernet0 tc_to_queue_profile config interface qos tc-queue bind Ethernet8 tc_to_queue_profile</pre>



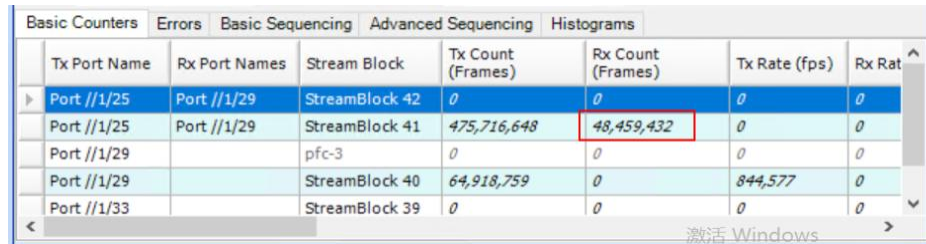
Port Traffic and Counters - Basic Traffic Results

Port Name	tx (bps)	Tx L1 Rate (Percent)	Rx L1 Rate (Percent)	Generator Count (Frames)	Genera
Port //1/25	125	98.898	1	394,943,839	394,94
Port //1/29	92,592	1	98.898	53,206,258	53,206
Port //1/33	0	0	0	0	0
Port //1/129	0	0	0	0	0
Total				448,150,097	448,151

Streams - Stream Block Results

Tx Port Name	Rx Port Names	Stream Block	Tx Count (Frames)	Rx Count (Frames)	Dropped Count (Frames)
Port //1/25	Port //1/29	StreamBlock 42	0	0	0
Port //1/25	Port //1/29	StreamBlock 41	475,716,648	48,459,432	0
Port //1/29		pfc-3	0	0	0
Port //1/29		StreamBlock 40	64,918,759	0	0
Port //1/33		StreamBlock 39	0	0	0

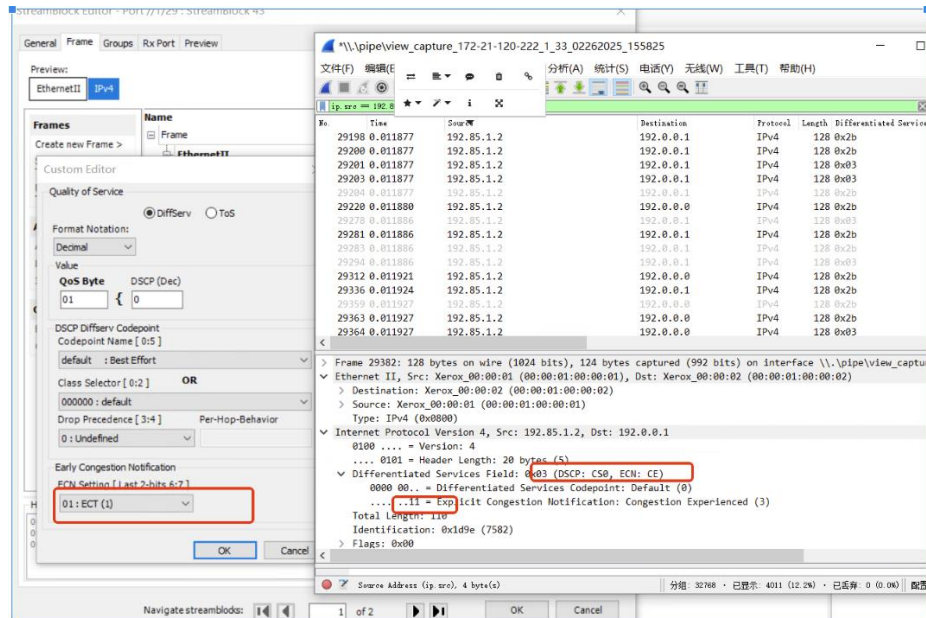
config scheduler add profile-1 --shaper_type=bytes --bandwidth=10g
config interface scheduler bind port Ethernet8 profile-1



Basic Sequencing

Tx Port Name	Rx Port Names	Stream Block	Tx Count (Frames)	Rx Count (Frames)	Tx Rate (fps)	Rx Rat
Port //1/25	Port //1/29	StreamBlock 42	0	0	0	0
Port //1/25	Port //1/29	StreamBlock 41	475,716,648	48,459,432	0	0
Port //1/29		pfc-3	0	0	0	0
Port //1/29		StreamBlock 40	64,918,759	0	844,577	0
Port //1/33		StreamBlock 39	0	0	0	0

TGA sends DSCP0 packets with ECN 1 at line rate, and TGB captures packets with ECN



StreamBlock Editor - Port //1/29 - StreamBlock 43

General Frame Groups Rx Port Preview

Preview: Ethernet II, IPv4

Frames

Create new Frame >

Custom Editor

Quality of Service

Format Notation: Decimal

Value

QoS Byte DSCP (Dec)

01 { 0

DSCP DiffServ Codepoint

Codepoint Name [0:5]

default : Best Effort

Class Selector [0:2] OR

000000 : default

Drop Precedence [3:4] Per-Hop-Behavior

0 : Undefined

Early Congestion Notification

ECN Setting (Last 2-bits 6:7)

01: ECT (1)

OK Cancel

Navigation: 1 of 2

Source Address (ip.sr), 4 bytes(s)

分组: 32768 · 已显示: 4011 (12.2%) · 已丢弃: 0 (0.0%) 配置

Packet Analysis:

No.	Time	Source	Destination	Protocol	Length	Differentiated Services
29198	0.011877	192.85.1.2	192.0.0.1	IPv4	128	0x2b
29200	0.011877	192.85.1.2	192.0.0.1	IPv4	128	0x2b
29201	0.011877	192.85.1.2	192.0.0.1	IPv4	128	0x03
29203	0.011877	192.85.1.2	192.0.0.1	IPv4	128	0x03
29204	0.011877	192.85.1.2	192.0.0.1	IPv4	128	0x2b
29220	0.011880	192.85.1.2	192.0.0.0	IPv4	128	0x2b
29278	0.011886	192.85.1.2	192.0.0.1	IPv4	128	0x03
29281	0.011886	192.85.1.2	192.0.0.1	IPv4	128	0x2b
29283	0.011886	192.85.1.2	192.0.0.1	IPv4	128	0x2b
29294	0.011886	192.85.1.2	192.0.0.1	IPv4	128	0x03
29312	0.011921	192.85.1.2	192.0.0.0	IPv4	128	0x2b
29336	0.011924	192.85.1.2	192.0.0.1	IPv4	128	0x2b
29399	0.011927	192.85.1.2	192.0.0.0	IPv4	128	0x2b
29363	0.011927	192.85.1.2	192.0.0.0	IPv4	128	0x2b
29364	0.011927	192.85.1.2	192.0.0.0	IPv4	128	0x03

Frame 29382: 128 bytes on wire (1024 bits), 124 bytes captured (992 bits) on interface \\.\pipe\view_capture

Ethernet II, Src: Xerox_00:00:01 (00:00:01:00:00:01), Dst: Xerox_00:00:02 (00:00:01:00:00:02)

Destination: Xerox_00:00:02 (00:00:01:00:00:02)

Source: Xerox_00:00:01 (00:00:01:00:00:01)

Internet Protocol Version 4, Src: 192.85.1.2, Dst: 192.0.0.1

Type: IPv4 (0x0000)

0100 = Version: 4

.... 0101 = Header Length: 20 bytes (5)

0000 00.. = Differentiated Services Field: 0x03 (DSCP: CS0, ECN: CE)

0000 00.. = Differentiated Services Codepoint: Default (0)

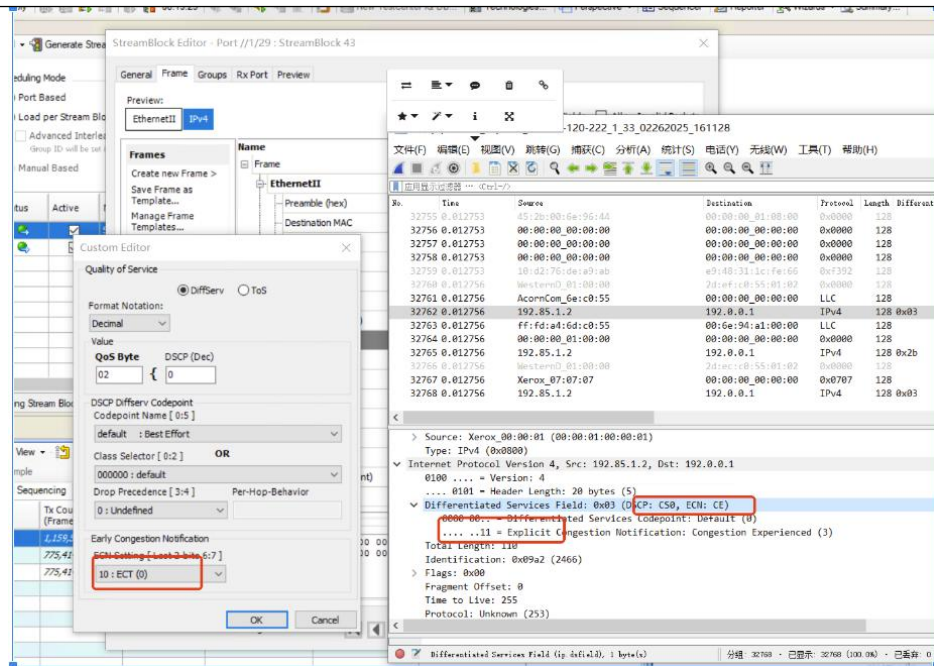
.... 1111 = Explicit Congestion Notification: Congestion Experienced (3)

Total Length: 116

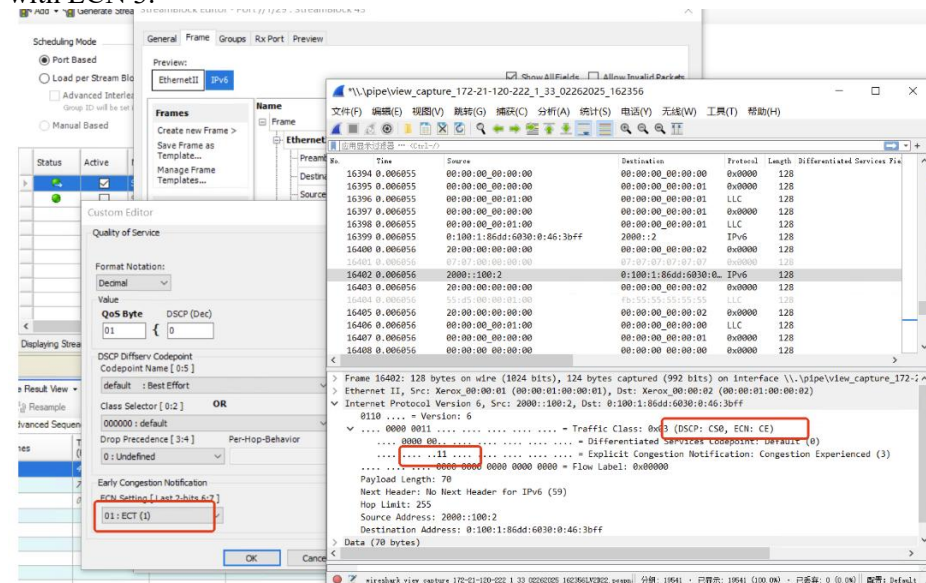
Identification: 0x1d9e (7582)

Flags: 0x00

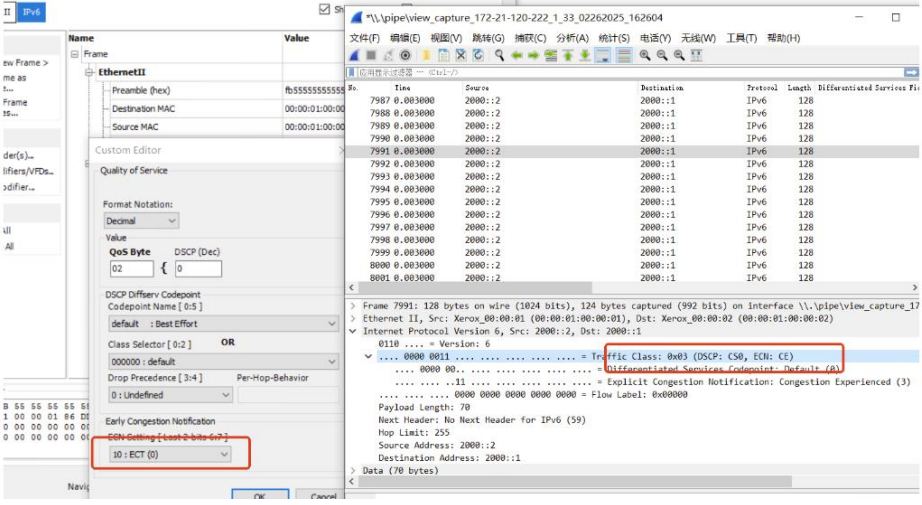
TGA sends DSCP0 packets with ECN 2 at line rate, and TGB captures packets with ECN 3.



TGA sends DSCP0 IPv6 packets with ECN 1 at line rate, and TGB captures packets with ECN 3.

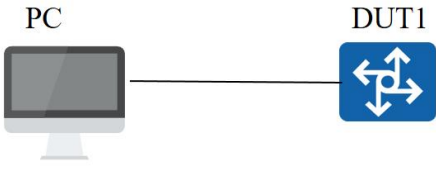


TGA sends DSCP0 IPv6 packets with ECN 2 at line rate, and TGB captures packets with ECN 3.

	
Test results	PASS
Remarks	

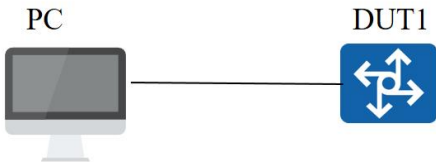
六、System/ Management

6.1 SNMP

Test Items	SNMP Support Test
Test Content	Verify that the switch supports the SNMP.
Test Topology	
Test Steps	1、Connect the host with MIB software installed to the switch. 2、Configure the SNMP community string and agent settings on the switch. 3、Use the snmpwalk tool to query MIB information, check1.
Expected Results	Check1: MIB information can be successfully retrieved.,
Actual Test Results	Step 2: <pre>config snmp community add testcomm rw config snmpagentaddress add x.x.x.x</pre> Step 3: <pre>snmpwalk -c testcomm -v 2c x.x.x.x F:\xijun>snmpget.exe -v 2c -c comtest 172.21.120.7 1.3.6.1.2.1.1.5.0 SNMPv2-MIB::sysName.0 = STRING: sonic</pre>

	F:\xijun>snmpwalk.exe -v 2c -c comtest 172.21.120.7 1.3.6.1.2.1.1.5.0 SNMPv2-MIB::sysName.0 = STRING: sonic
Test results	PASS
Remarks	

6.2 SNMP Trap

Test Items	SNMP trap
Test Content	Verify that the device sends SNMP traps as per the configured trap settings.
Test Topology	
Test Steps	1、 Set up the test environment as illustrated. 2、 Configure the device to send SNMP traps to the PC and start the SNMP trap server on the PC. 3、 View relevant logs on the PC.
Expected Results	1、 The configuration is successful. 2、 The SNMP Trap server receives relevant trap messages from the device.
Actual Results	Test <pre> Configure snmp trap server config snmptrap modify 2 -c public x.x.x.x root@sonic:/home/admin# config interface shutdown Ethernet232 root@sonic:/home/admin# config interface startup Ethernet232 Show snmp trap Configure show snmptrap root@sonic:/home/admin# config snmptrap modify 2 -c public 172.21.110.145 root@sonic:/home/admin# show snmptrap Version TrapReceiverIP Port VRF Community ----- 2 172.21.110.145 162 None public root@sonic:/home/admin# </pre>

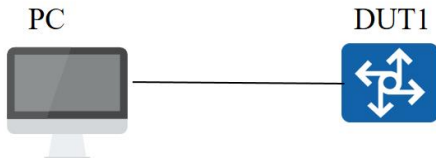
Test results	PASS
Remarks	

6.3 Rsyslog

Test Items	Rsyslog
Test Content	Verify that the device sends system log messages as per the rsyslog configuration.
Test Topology	
Test Steps	1、 Set up the test environment as shown in the diagram. 2、 Configure the device to send syslog to PC1 and start the log server on PC1. 3、 View relevant logs on PC1.
Expected Results	2、 The configuration is successful. 3、 The log server receives relevant logs from the device.
Actual Test Results	Configure a remote syslog server. <pre>config syslog add x.x.x.x root@sonic:/home/admin# config syslog add 172.21.110.145 Show syslog 172.21.120.7 03/03 14:31:52.101 <86>Mar 3 14:34:11.071570 sonic INFO sudo[225503]: pam_unix(sudo:session): session opened for user root(uid=0) by admin(uid=0) 172.21.120.7 03/03 14:31:52.101 <35>Mar 3 14:34:11.131290 sonic ERR PAM-tacplus[225503]: ACC: TACACS+ service type not configured</pre>

	<pre> 172.21.120.7 03/03 14:31:52.160 <86>Mar 3 14:34:11.131402 sonic INFO sudo[225503]: pam_unix(sudo:session): session closed for user root 172.21.120.7 03/03 14:31:52.161 <14>Mar 3 14:34:54.990603 sonic INFO syncd#syncd: [none] _brcm_sai_link_event_cb:870 Send port 165 up notification done. 172.21.120.7 03/03 14:32:36.020 <13>Mar 3 14:34:54.991438 sonic NOTICE swss#orchagent: :- doTask: Get port state change notification id:1000000000020 status:1 172.21.120.7 03/03 14:32:36.021 <13>Mar 3 14:34:54.991438 sonic NOTICE swss#orchagent: :- updatePortOperStatus: Port Ethernet232 oper state set from down to up 172.21.120.7 03/03 14:32:36.022 <13>Mar 3 14:34:54.993034 sonic NOTICE iccpd#iccpd: [iccp_event_handler_obj_input_newlink.NOTICE] Update local port Ethernet232 state up 172.21.120.7 03/03 14:32:36.022 <13>Mar 3 14:34:54.993127 sonic NOTICE iccpd#iccpd: [iccp_event_handler_obj_input_newaddr.NOTICE] ifname Ethernet232 index 60 address fe80::8e5d:b2ff:feb6:0 l3_proto 0, prefix_len 64 172.21.120.7 03/03 14:32:36.023 <13>Mar 3 14:34:54.993225 sonic NOTICE swss#portsyncd: :- onMsg: nlmsg type:16 key:Ethernet232 admin:1 oper:1 addr:8c:5d:b2:b6:00:00 ifindex:60 master:0 172.21.120.7 03/03 14:32:36.024 <13>Mar 3 14:34:54.993424 sonic NOTICE swss#orchagent: :- setHostIntfsOperStatus: Set operation status UP to host interface Ethernet232 172.21.120.7 03/03 14:32:36.024 <13>Mar 3 14:34:54.993424 sonic NOTICE swss#orchagent: :- updateMonitorLinkGrpDownlinkOperStatus: update port Ethernet232, oper status 1 172.21.120.7 03/03 14:32:36.025 <6>Mar 3 14:34:54.994522 sonic INFO kernel: [3699.737388] IPv6: ADDRCONF(NETDEV_CHANGE): Ethernet232: link becomes ready 172.21.120.7 03/03 14:32:36.026 <13>Mar 3 14:34:54.994632 sonic NOTICE swss#portsyncd: :- onMsg: Publish Ethernet232(ok:up) to state db </pre>
Test results	PASS
Remarks	

6.4 Open SSH/SCP/SFTP

Test Items	Open SSH/SCP/SFTP
Test Content	Test that the switch supports Open SSH/SCP/SFTP.
Test Topology	 <pre> graph LR PC[PC] --- DUT1[DUT1] </pre>
Test Steps	1、 Use the command line on PC1 to remotely log in via SSH: ssh admin@DUT_IP (follow prompts).

86

Remarks																																										
6.5 Mirroring																																										
Test Items	Mirroring																																									
Test Content	MirroringVerify whether the DUT (Device Under Test) supports Mirroring.																																									
Test Topology																																										
Test Steps	1、 Connect the devices as per the test environment. 2、 Configure port mirroring on the DUT, with Interface 1 as the source port and Interface 3 as the destination port. 3、 Send data packets from Port A to Port B of the test instrument. 4、 Reconfigure port mirroring on the DUT, setting Interface 1 and Interface 2 as source ports and Interface 3 as the destination port, then send data packets between Port A and Port B of the test instrument.																																									
Expected Results	3、 The test traffic sent from Port A can also be observed on DUT's Interface 3. 4、 The test traffic sent from both Port A and Port B can be observed on DUT's Interface 3.																																									
Actual Test Results	Vlan config vlan add 100 config vlan member add 100 Ethernet16 -u config vlan member add 100 Ethernet18 -u root@sonic:~# show vlan brief <table><tr><th>VLAN ID</th><th>IP Address</th><th>Ports</th><th>Port Tagging</th><th>Proxy ARP</th><th>DHCP Helper Address</th><th>DHCP Relay Configuration</th></tr><tr><td>100</td><td></td><td>Ethernet16 Ethernet18</td><td>untagged untagged</td><td>disabled</td><td></td><td>Source Interface: Link Selection: Server Vrf: Server ID Override:</td></tr><tr><td>4090</td><td></td><td>Ethernet4 Ethernet6</td><td>untagged untagged</td><td>disabled</td><td></td><td>Source Interface: Link Selection: Server Vrf: Server ID Override:</td></tr></table> root@sonic:~# show vlan config <table><tr><th>Name</th><th>VID</th><th>Member</th><th>Mode</th></tr><tr><td>Vlan100</td><td>100</td><td>Ethernet16</td><td>untagged</td></tr><tr><td>Vlan100</td><td>100</td><td>Ethernet18</td><td>untagged</td></tr><tr><td>Vlan4090</td><td>4090</td><td>Ethernet4</td><td>untagged</td></tr><tr><td>Vlan4090</td><td>4090</td><td>Ethernet6</td><td>untagged</td></tr></table> Step 3:	VLAN ID	IP Address	Ports	Port Tagging	Proxy ARP	DHCP Helper Address	DHCP Relay Configuration	100		Ethernet16 Ethernet18	untagged untagged	disabled		Source Interface: Link Selection: Server Vrf: Server ID Override:	4090		Ethernet4 Ethernet6	untagged untagged	disabled		Source Interface: Link Selection: Server Vrf: Server ID Override:	Name	VID	Member	Mode	Vlan100	100	Ethernet16	untagged	Vlan100	100	Ethernet18	untagged	Vlan4090	4090	Ethernet4	untagged	Vlan4090	4090	Ethernet6	untagged
VLAN ID	IP Address	Ports	Port Tagging	Proxy ARP	DHCP Helper Address	DHCP Relay Configuration																																				
100		Ethernet16 Ethernet18	untagged untagged	disabled		Source Interface: Link Selection: Server Vrf: Server ID Override:																																				
4090		Ethernet4 Ethernet6	untagged untagged	disabled		Source Interface: Link Selection: Server Vrf: Server ID Override:																																				
Name	VID	Member	Mode																																							
Vlan100	100	Ethernet16	untagged																																							
Vlan100	100	Ethernet18	untagged																																							
Vlan4090	4090	Ethernet4	untagged																																							
Vlan4090	4090	Ethernet6	untagged																																							

```
config mirror_session span add port0 Ethernet16 Ethernet0
```

```

root@sonic:~# show mirror_session
Name      Status      SRC IP      DST IP      GRE      DSCP      TTL      Queue      Policer      Monitor Port      SRC Port      Direction
-----
SPAN Sessions
Name      Status      DST Port      SRC Port      Direction      Queue      Policer
-----
root@sonic:~#
root@sonic:~# config mirror_session span add port0 Ethernet20 Ethernet16
root@sonic:~#
root@sonic:~# show mirror_session
ERSPAN Sessions
Name      Status      SRC IP      DST IP      GRE      DSCP      TTL      Queue      Policer      Monitor Port      SRC Port      Direction
-----
SPAN Sessions
Name      Status      DST Port      SRC Port      Direction      Queue      Policer
-----
port0     active      Ethernet20   Ethernet16   both          MC0

```

TGA sends packets to TGB.

Port A

Frame	
EthernetII	
Preamble (hex)	fb555555555555d5
Destination MAC	00:10:94:00:00:02
Source MAC	00:10:94:00:00:01
EtherType (hex)	<auto> Internet IP
IPv4 Header	
Version (int)	<auto> 4
Header length (int)	<auto> 5
ToS/DiffServ	tos (0x00)
Total length (int)	<auto> calculated
Identification (int)	0
Control Flags	
Reserved (bit)	0

Port C

File View Tools Actions Diagnostics Help
09:59:07
File View Center 12:18
Technologies
Perspective
Separator
Reporter
Visuals
Summary

Spantree
 SpanTree
 SpanTree 22 Settings
 All Device Ports, Address...
 All Multicast Groups
 All Traffic Generators
 All Stream Meters
 All Traffic Meters
 All Traffic
 All Ports
 Port 1/2/7
 Port 1/2/4
 Port 1/2/5
 Port 1/2/6
 Port 1/2/7
 Port 1/2/8
 Port 1/2/9
 Port 1/2/10
 Port 1/2/11
 Port 1/2/12
 Port 1/2/13
 Port 1/2/14
 Port 1/2/15
 Port 1/2/16
 Port 1/2/17
 Port 1/2/18
 Port 1/2/19
 Port 1/2/20
 Port 1/2/21
 Port 1/2/22
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 Port 1/2/299
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 Port 1/2/302
 Port 1/2/303
 Port 1/2/304
 Port 1/2/30

Port Traffic and Counters > Basic Traffic Results					
Basic Counters		Errors	Triggers	Protocols	Undersize/Oversize/Jumbo
Port Name	Total Tx Count (Frames)	Total Rx Count (Frames)	Total Tx Count (bits)	Total Rx Count (bits)	
Port //1/37	2,544,570,353	4	2,605,640,041,472	7,616	
Port //1/41	0	2,544,570,357	0	2,605,640,049,088	
Port //4/1	0	2,544,570,357	0	2,605,640,049,184	
Port //4/2	0	0	0	0	

Step 4:

config mirror_session remove port0

config mirror_session span add port0 Ethernet16 Ethernet20,Ethernet18

Port C

```

root@sonic:~# show mirror_session
ERSPAN Sessions
Name Status SRC IP DST IP GRE DSCP TTL Queue Policer Monitor Port SRC Port Direction
-----
SPAN Sessions
Name Status DST Port SRC Port Direction Queue Policer
-----
port0 active Ethernet20 Ethernet16 both MC0

root@sonic:~# config mirror_session remove port0
root@sonic:~# show mirror_session
ERSPAN Sessions
Name Status SRC IP DST IP GRE DSCP TTL Queue Policer Monitor Port SRC Port Direction
-----
SPAN Sessions
Name Status DST Port SRC Port Direction Queue Policer
-----

root@sonic:~# config mirror_session span add port0 Ethernet20 Ethernet16,Ethernet18
root@sonic:~# show mirror_session
ERSPAN Sessions
Name Status SRC IP DST IP GRE DSCP TTL Queue Policer Monitor Port SRC Port Direction
-----
SPAN Sessions
Name Status DST Port SRC Port Direction Queue Policer
-----
port0 active Ethernet20 Ethernet16,Ethernet18 both MC0

```

Test results

PASS

Remarks

6.6 DPB (Dynamic Port Breakout)

Test Items

Dynamic Port Breakout

Test Content

Test that the switch supports Dynamic Port Breakout.

Test Topology	
Test Steps	Modify DUT ports 472, 480, and 488 to 2x200G mode.
Expected Results	The ports can be split correctly, and the docking of the remaining ports can be up.
Actual Results	The optical module is in place to modify the 2x200G mode. <pre> config interface breakout Ethernet472 2x200G config interface breakout Ethernet480 2x200G config interface breakout Ethernet488 2x200G config interface startup Ethernet472 config interface startup Ethernet476 config interface startup Ethernet480 config interface startup Ethernet488 </pre> The ports are 800G ports by default. Split the ports into 200G ports using the CLI commands: <pre> sudo config interface breakout Ethernet16 4x200G sudo config interface breakout Ethernet24 4x200G </pre> <pre> root@sonic:~# show interfaces breakout current-mode Ethernet16 +-----+-----+ Interface Current Breakout Mode +-----+-----+ Ethernet16 4x200G +-----+-----+ root@sonic:~# show interfaces breakout current-mode Ethernet24 +-----+-----+ Interface Current Breakout Mode +-----+-----+ Ethernet24 4x200G +-----+-----+ root@sonic:~# show interfaces status grep OSFP Ethernet8 9,10 200G 9180 rs Eth1/1 (Port1) routed up up false up OSFP 8x Pluggable Transceiver N/A 200G Ethernet20 11,12 200G 9180 rs Eth1/2 (Port1) routed up up false up OSFP 8x Pluggable Transceiver N/A 200G Ethernet44 13,14 200G 9180 rs Eth1/3 (Port1) routed down up false up OSFP 8x Pluggable Transceiver N/A 200G Ethernet46 15,16 200G 9180 rs Eth1/4 (Port1) routed down up false up OSFP 8x Pluggable Transceiver N/A 200G Ethernet16 17,18 200G 9180 rs Eth3/1 (Port3) routed up up false up OSFP 8x Pluggable Transceiver N/A 200G Ethernet18 19,20 200G 9180 rs Eth3/2 (Port3) routed up up false up OSFP 8x Pluggable Transceiver N/A 200G Ethernet28 21,22 200G 9180 rs Eth3/3 (Port3) routed up up false up OSFP 8x Pluggable Transceiver N/A 200G Ethernet22 23,24 200G 9180 rs Eth3/4 (Port3) routed up up false up OSFP 8x Pluggable Transceiver N/A 200G Ethernet24 1,2 200G 9180 rs Eth4/1 (Port4) routed up up false up OSFP 8x Pluggable Transceiver N/A 200G Ethernet26 3,4 200G 9180 rs Eth4/2 (Port4) routed up up false up OSFP 8x Pluggable Transceiver N/A 200G Ethernet28 5,6 200G 9180 rs Eth4/3 (Port4) routed up up false up OSFP 8x Pluggable Transceiver N/A 200G Ethernet30 7,8 200G 9180 rs Eth4/4 (Port4) routed up up false up OSFP 8x Pluggable Transceiver N/A 200G Ethernet200 257,258,259,260,261,262,263,264 800G 9180 rs Eth26 (Port26) routed up up false up OSFP 8x Pluggable Transceiver N/A 800G Ethernet384 385,386 200G 9180 rs Eth49/1 (Port49) routed up up false up OSFP 8x Pluggable Transceiver N/A 200G Ethernet388 397,398 200G 9180 rs Eth49/3 (Port49) routed down up false up OSFP 8x Pluggable Transceiver N/A 200G Ethernet392 399,400 200G 9180 rs Eth49/4 (Port49) routed down up false up OSFP 8x Pluggable Transceiver N/A 200G Ethernet488 497,498,499,500,501,502,503,504 800G 9180 rs Eth62 (Port62) routed down up false up OSFP 8x Pluggable Transceiver N/A 800G </pre> Connect DUT's Ethernet20/22 to the instrument ports for data forwarding according to the topology diagram. The results are as follows:

Data Path Mode

☒ Normal
☐ Diagnostic Loopback

Clock Source

☒ Internal
☐ Internal w/PPM Adjustment

PPM Adjustment 0

```

root@sonic:~# config vlan add 202
root@sonic:~# config vlan member add 202 Ethernet20 -u
root@sonic:~# config vlan member add 202 Ethernet22 -u
root@sonic:~# show vlan brief

```

VLAN ID	IP Address	Ports	Port Tagging	Proxy ARP	DHCP Helper Address	DHCP Relay Configuration
202		Ethernet20 Ethernet22	untagged untagged	disabled		Source Interface: Link Selection: Server Vrf: Server ID Override:
4090		Ethernet0 Ethernet2	untagged untagged	disabled		Source Interface: Link Selection: Server Vrf: Server ID Override:

```

root@sonic:~# show vlan config

```

Name	VID	Member	Mode
Vlan202	202	Ethernet20	untagged
Vlan202	202	Ethernet22	untagged
Vlan4090	4090	Ethernet0	untagged
Vlan4090	4090	Ethernet2	untagged

```

root@sonic:~# show interfaces counters -i Ethernet20,Ethernet22
Last cached time was 2025-02-28 10:16:27.296294

```

IFACE	STATE	Rx_OK	Rx_BPS	Rx_UTIL	Rx_ERR	Rx_DROP	Rx_OVR	Rx_DROP_RATE	Tx_OK	Tx_BPS	Tx_UTIL	Tx_ERR	Tx_DROP	Tx_OVR	Tx_DROP_RATE	CMF_PNT	EOL_PNT
Ethernet20	U	0	0.00 B/s	0.00%	0	0	0	0.00%	11	22.77 B/s	0.00%	0	0	0	0.00%	0	0
Ethernet22	U	0	0.00 B/s	0.00%	0	0	0	0.00%	11	35.00 B/s	0.00%	0	0	0	0.00%	0	0

```

root@sonic:~# show interfaces status Ethernet20,Ethernet22

```

Interface	Lines	Speed	MTU	Oper	FEC	Alias	Vlan	Oper	Admin	Protobwn	Eff Admin	Type	Asyn PFC	Oper Speed
Ethernet20	21,22	2000	9100	rs	eth(1/1/Port1)	trunk	up	up	False	False	up	QSFP Sx Pluggable Transceiver	N/A	2000
Ethernet22	23,24	2000	9100	rs	eth(1/1/Port3)	trunk	up	up	False	False	up	QSFP Sx Pluggable Transceiver	N/A	2000

```

root@sonic:~# show mac

```

No.	Vlan	MacAddress	Port	Type
1	202	00:00:00:00:00:00	Ethernet22	Dynamic
2	202	00:00:00:00:00:00	Ethernet20	Dynamic
3	4090	00:00:00:00:00:00	Ethernet2	Dynamic
4	4090	00:00:00:00:00:00	Ethernet0	Dynamic

Total number of entries 4

```

root@sonic:~# show interfaces counters -i Ethernet20,Ethernet22
Last cached time was 2025-02-28 10:16:27.296294

```

IFACE	STATE	Rx_OK	Rx_BPS	Rx_UTIL	Rx_ERR	Rx_DROP	Rx_OVR	Rx_DROP_RATE	Tx_OK	Tx_BPS	Tx_UTIL	Tx_ERR	Tx_DROP	Tx_OVR	Tx_DROP_RATE	CMF_PNT	EOL_PNT
Ethernet20	U	2,086,885,454	18715.87 MB/s	42.87%	0	0	0	0.00%	2,618,635,777	18717.39 MB/s	42.87%	0	0	0	0.00%	0	0
Ethernet22	U	2,410,333,473	18717.23 MB/s	42.87%	0	0	0	0.00%	2,680,803,494	18716.87 MB/s	42.87%	0	0	0	0.00%	0	0

```

root@sonic:~# show interfaces counters -i Ethernet20,Ethernet22
Last cached time was 2025-02-28 10:16:27.296294

```

IFACE	STATE	Rx_OK	Rx_BPS	Rx_UTIL	Rx_ERR	Rx_DROP	Rx_OVR	Rx_DROP_RATE	Tx_OK	Tx_BPS	Tx_UTIL	Tx_ERR	Tx_DROP	Tx_OVR	Tx_DROP_RATE	CMF_PNT	EOL_PNT
Ethernet20	U	2,330,384,987	18812.54 MB/s	43.23%	0	0	0	0.00%	2,332,155,151	18812.54 MB/s	43.23%	0	0	0	0.00%	0	0
Ethernet22	U	2,330,352,761	18812.53 MB/s	43.23%	0	0	0	0.00%	2,330,352,811	18812.53 MB/s	43.23%	0	0	0	0.00%	0	0

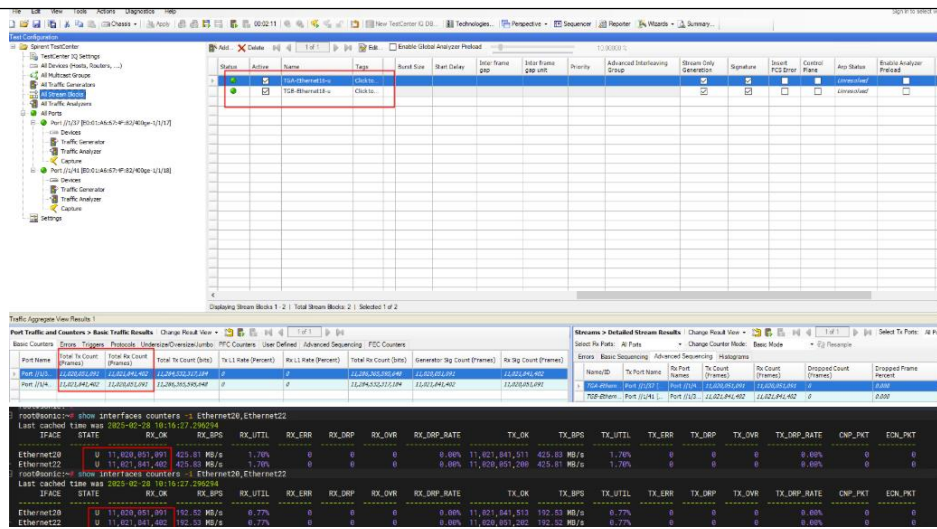
```

root@sonic:~# show interfaces counters -i Ethernet20,Ethernet22
Last cached time was 2025-02-28 10:16:27.296294

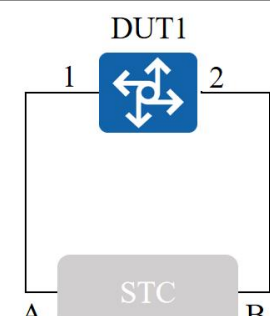
```

IFACE	STATE	Rx_OK	Rx_BPS	Rx_UTIL	Rx_ERR	Rx_DROP	Rx_OVR	Rx_DROP_RATE	Tx_OK	Tx_BPS	Tx_UTIL	Tx_ERR	Tx_DROP	Tx_OVR	Tx_DROP_RATE	CMF_PNT	EOL_PNT
Ethernet20	U	7,583,533,837	18899.38 MB/s	43.24%	0	0	0	0.00%	7,583,452,181	18899.38 MB/s	43.24%	0	0	0	0.00%	0	0
Ethernet22	U	7,583,422,415	18899.35 MB/s	43.24%	0	0	0	0.00%	7,583,652,465	18899.35 MB/s	43.24%	0	0	0	0.00%	0	0

Stop traffic generation.

	 The screenshot shows the NADDOD traffic analysis interface. The top section displays a list of test items with columns for Status, Action, Name, Type, Start Delay, Start Name, Start Rate, and Priority. The bottom section shows a detailed view of the test results, including a table of counters and a summary of the test status.
Test results	Pass
Remarks	

6.8 COPP

Test Items	COPP
Test Content	Test that the device can resist attacks after enabling COPP.
Test Topology	 The diagram shows a test topology with a central device labeled DUT1. It has two ports, 1 and 2. Port 1 is connected to a source labeled A, and Port 2 is connected to a source labeled B. A switch labeled STC is connected to both ports 1 and 2.
Test Steps	1、 Set up the test environment as shown in the diagram. 2、 Configure DUT P1 IP as 100.100.100.100/24 and P2 IP as 200.200.200.200/24. 3、 Check the device CPU load. 4、 Send packets to the device CPU at line rate via TGA, and check the device CPU load. 5、 Test ARP miss, wait for 5 minutes, and check the device CPU load.
Expected Results	4.5. The CPU utilization of the device is within the normal range.

Actual Results	Test Port 1 IP:100.100.100.100/24, Port 2 IP:200.200.200.200/24 config interface ip add Ethernet0 100.100.100.100/24 config interface ip add Ethernet8 200.200.200.200/24 TGA sends packets at line rate with the destination MAC as the device CPU MAC and the destination IP as 100.100.100.100. Observe for 5 minutes and capture the average value. root@sonic:/home/admin# top top - 10:00:52 up 7:33, 1 user, load average: 0.65, 0.83, 0.88 Tasks: 406 total, 1 running, 402 sleeping, 0 stopped, 3 zombie %Cpu(s): 2.5 us, 2.2 sy, 0.0 ni, 95.1 id, 0.0 wa, 0.0 hi, 0.2 si, 0.0 st MiB Mem : 15160.7 total, 9805.4 free, 3332.4 used, 2022.9 buff/cache MiB Swap: 0.0 total, 0.0 free, 0.0 used. 11386.4 avail Mem PID USER PR NI VIRT RES SHR S %CPU %MEM TIME+ COMMAND 11627 root 20 0 3829364 850656 228728 S 15.9 5.5 40:55.94 syncd 8740 root 20 0 263944 32932 12744 S 8.0 0.2 28:23.35 python3 5615 root 20 0 111012 58524 7400 S 5.0 0.4 16:27.16 redis-server 5746 root 20 0 42136 26396 13224 S 4.7 0.2 9:06.98 procdockerstats 5739 root 20 0 104884 21296 10720 S 2.7 0.1 9:42.95 main.py 5616 root 20 0 85412 38916 7360 S 1.3 0.3 6:44.89 redis-server 25898 root 20 0 199104 38888 13664 S 1.3 0.3 6:20.35 python3 8108 root 20 0 17404 10944 6236 S 1.0 0.1 3:17.75 python 13 root 20 0 0 0 0 I 0.3 0.0 0:11.02 rcu_sched 38 root 20 0 0 0 0 S 0.3 0.0 0:02.53 ksoftirqd/5 849 root 20 0 2985472 67904 35268 S 0.3 0.4 3:08.59 containerd 8112 root 20 0 17804 11164 6312 S 0.3 0.1 0:39.65 python 8741 root 20 0 37148 25340 12252 S 0.3 0.2 2:19.75 python3 13469 admin 20 0 11004 4564 3980 S 0.3 0.0 0:11.56 vty_log.sh 25894 root 20 0 2426288 186632 20156 S 0.3 1.2 1:19.96 telemetry 26060 root 20 0 2496040 186292 18228 S 0.3 1.2 1:21.52 dialout_client_ 1679555 root 20 0 11108 4304 3284 R 0.3 0.0 0:00.03 top 1 root 20 0 100464 11812 8044 S 0.0 0.1 0:08.93 systemd 2 root 20 0 0 0 0 S 0.0 0.0 0:00.00 kthreadd 3 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 rcu_gp 4 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 rcu_par_gp 6 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/0:0H-kblockd 7 root 20 0 0 0 0 I 0.0 0.0 0:00.11 kworker/0:1-cgroup_destroy 9 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 mm_percpu_wq 10 root 20 0 0 0 0 S 0.0 0.0 0:00.00 rcu_tasks_rude_ 11 root 20 0 0 0 0 S 0.0 0.0 0:00.00 rcu_tasks_trace 12 root 20 0 0 0 0 S 0.0 0.0 0:02.88 ksoftirqd/0 14 root rt 0 0 0 0 S 0.0 0.0 0:00.05 migration/0 15 root 20 0 0 0 0 S 0.0 0.0 0:00.00 cpuhp/0 16 root 20 0 0 0 0 S 0.0 0.0 0:00.00 cpuhp/1 17 root rt 0 0 0 0 S 0.0 0.0 0:00.22 migration/1 18 root 20 0 0 0 0 S 0.0 0.0 0:02.76 ksoftirqd/1 20 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/1:0H-events_highpri 21 root 20 0 0 0 0 S 0.0 0.0 0:00.00 cpuhp/2 22 root rt 0 0 0 0 S 0.0 0.0 0:00.23 migration/2 23 root 20 0 0 0 0 S 0.0 0.0 0:02.67 ksoftirqd/2 25 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/2:0H-events_highpri
----------------	---

```

26 root 20 0 0 0 0 S 0.0 0.0 0:00.00 cpuhp/3
27 root rt 0 0 0 0 0 S 0.0 0.0 0:00.23 migration/3
28 root 20 0 0 0 0 S 0.0 0.0 0:02.47 ksoftirqd/3
30 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/3:0H-events_highpri
31 root 20 0 0 0 0 S 0.0 0.0 0:00.00 cpuhp/4
32 root rt 0 0 0 0 0 S 0.0 0.0 0:00.23 migration/4
33 root 20 0 0 0 0 S 0.0 0.0 0:02.53 ksoftirqd/4
35 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/4:0H-events_highpri
36 root 20 0 0 0 0 S 0.0 0.0 0:00.00 cpuhp/5
37 root rt 0 0 0 0 0 S 0.0 0.0 0:00.24 migration/5
40 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/5:0H-kblockd
41 root 20 0 0 0 0 S 0.0 0.0 0:00.00 cpuhp/6
root@sonic:/home/admin#

```

TGA sends packets at line rate with the destination MAC as the device CPU MAC and the destination IP as 200.200.200.200. After waiting for 5 minutes.
check the device CPU load.

top

root@sonic:/home/admin# top

```

top - 10:01:42 up 7:33, 1 user, load average: 0.43, 0.74, 0.85
Tasks: 410 total, 2 running, 405 sleeping, 0 stopped, 3 zombie
%Cpu(s): 2.3 us, 2.1 sy, 0.0 ni, 95.6 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st
MiB Mem : 15160.7 total, 9775.3 free, 3362.3 used, 2023.0 buff/cache
MiB Swap: 0.0 total, 0.0 free, 0.0 used. 11357.2 avail Mem

```

```

PID USER PR NI VIRT RES SHR S %CPU %MEM TIME+ COMMAND

```

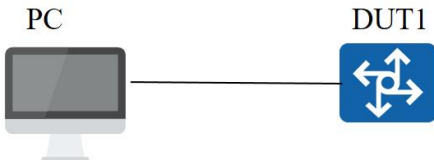
```

11627 root 20 0 3829364 850656 228728 S 19.9 5.5 41:00.65 syncd
8740 root 20 0 263944 32932 12744 S 7.3 0.2 28:26.36 python3
5615 root 20 0 111012 58352 7400 S 4.0 0.4 16:28.98 redis-server
5616 root 20 0 85412 39116 7360 S 3.3 0.3 6:45.67 redis-server
5739 root 20 0 104884 21296 10720 S 3.0 0.1 9:44.04 main.py
25898 root 20 0 199104 38888 13664 S 1.7 0.3 6:21.08 python3
1683142 root 20 0 1790756 64456 29572 S 1.7 0.4 0:00.05 docker
8108 root 20 0 17404 10944 6236 S 1.0 0.1 3:18.11 python
1302 root 20 0 3384108 130064 50576 S 0.7 0.8 4:08.10 dockerd
8741 root 20 0 37148 25340 12252 S 0.7 0.2 2:20.02 python3
11717 root 20 0 406040 24904 13564 S 0.7 0.2 0:25.88 orchagent
145 root 20 0 0 0 0 I 0.3 0.0 0:00.69 kworker/9:1-events
8107 root 20 0 19080 12524 6280 S 0.3 0.1 0:53.01 python
9756 root 20 0 29808 24896 8928 S 0.3 0.2 0:04.21 supervisord
14376 300 20 0 1568560 133248 11712 S 0.3 0.9 0:01.88 zebra
25894 root 20 0 2426288 186632 20156 S 0.3 1.2 1:20.05 telemetry
26060 root 20 0 2496040 186292 18228 S 0.3 1.2 1:21.60 dialout_client_
1682959 root 20 0 11104 4228 3212 R 0.3 0.0 0:00.02 top
1683213 root 20 0 6212 1984 1732 R 0.3 0.0 0:00.01 du
1 root 20 0 100464 11812 8044 S 0.0 0.1 0:08.93 systemd
2 root 20 0 0 0 0 S 0.0 0.0 0:00.00 kthreadd
3 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 rcu_gp
4 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 rcu_par_gp
6 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/0:0H-kblockd
7 root 20 0 0 0 0 I 0.0 0.0 0:00.11 kworker/0:1-cgroup_destroy
9 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 mm_percpu_wq
10 root 20 0 0 0 0 S 0.0 0.0 0:00.00 rcu_tasks_rude_
11 root 20 0 0 0 0 S 0.0 0.0 0:00.00 rcu_tasks_trace
12 root 20 0 0 0 0 S 0.0 0.0 0:02.88 ksoftirqd/0
13 root 20 0 0 0 0 I 0.0 0.0 0:11.04 rcu_sched

```

	14 root rt 0 0 0 0 S 0.0 0.0 0:00.05 migration/0 15 root 20 0 0 0 0 S 0.0 0.0 0:00.00 cpuhp/0 16 root 20 0 0 0 0 S 0.0 0.0 0:00.00 cpuhp/1 17 root rt 0 0 0 0 S 0.0 0.0 0:00.22 migration/1 18 root 20 0 0 0 0 S 0.0 0.0 0:02.76 ksoftirqd/1 20 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/1:0H-events_highpri 21 root 20 0 0 0 0 S 0.0 0.0 0:00.00 cpuhp/2 22 root rt 0 0 0 0 S 0.0 0.0 0:00.23 migration/2 23 root 20 0 0 0 0 S 0.0 0.0 0:02.67 ksoftirqd/2 25 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/2:0H-events_highpri 26 root 20 0 0 0 0 S 0.0 0.0 0:00.00 cpuhp/3 27 root rt 0 0 0 0 S 0.0 0.0 0:00.23 migration/3 28 root 20 0 0 0 0 S 0.0 0.0 0:02.47 ksoftirqd/3 30 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/3:0H-events_highpri 31 root 20 0 0 0 0 S 0.0 0.0 0:00.00 cpuhp/4 32 root rt 0 0 0 0 S 0.0 0.0 0:00.23 migration/4 33 root 20 0 0 0 0 S 0.0 0.0 0:02.53 ksoftirqd/4 35 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/4:0H-events_highpri 36 root 20 0 0 0 0 S 0.0 0.0 0:00.00 cpuhp/5
Test results	PASS
Remarks	

6.9 ZTP

Test Items	ZTP
Test Content	Test that the switch supports ZTP (Zero Touch Provisioning).
Test Topology	 <pre> graph LR PC[PC] --- DUT1[DUT1] </pre>
Test Steps	1、 Export the current configdb file (skip if already exported), and delete the current configdb file. 2、 On PC1, enable the DHCP server to configure option 67, enable the TFTP server containing the ZTP configuration file, and enable the HTTP server containing the configdb. 3、 Reboot the DUT and check whether it obtains the ZTP configuration and configdb.
Expected Results	2.The ZTP configuration and configdb file can be obtained.
Actual Test Results	Default configuration: Enabled state. root@sonic:/home/admin# cat /host/ztp/ztp_cfg.json {

	<pre> "admin-mode": true, "ztp-json-local": "/mnt/usb/ztp.json" } Delete configdbfile rm /etc/sonic/config_db.json Reboot Check the downloaded configdb file. Mar 4 14:58:07.994214 sonic INFO sonic-ztp[1167229]: Downloading provisioning data from tftp://192.168.1.150/ztp.json to /var/run/ztp/ztp_data_opt67.json Mar 4 14:58:08.353372 sonic INFO sonic-ztp[1167229]: Starting ZTP using JSON file /var/run/ztp/ztp_data_opt67.json at 2025-03-04 06:58:08 UTC. Mar 4 14:58:08.354179 sonic INFO sonic-ztp[1167229]: Processing configuration section 01-configdb-json at 2025-03-04 06:58:08 UTC. Mar 4 14:58:09.569112 sonic INFO sonic-ztp[1178666]: configdb-json: Downloading config_db.json file from 'tftp://192.168.1.150/N9500_config_db.json'. Mar 4 14:58:09.650892 sonic INFO sonic-ztp[1178666]: configdb-json: Configuration change detected. Removing ZTP configuration from Config DB. Mar 4 14:58:09.651051 sonic INFO sonic-ztp[1178666]: configdb-json: Stopping ZTP discovery on interfaces. Mar 4 14:58:28.316779 sonic INFO sonic-ztp[1178666]: configdb-json: Reloading config_db.json to Config DB. Mar 4 14:58:28.624094 sonic INFO sonic-ztp[1182422]: Running command: rm -rf /tmp/dropstat-* Mar 4 14:58:28.647855 sonic INFO sonic-ztp[1182422]: Disabling container monitoring ... Mar 4 14:58:28.666403 sonic INFO sonic-ztp[1182422]: Stopping SONiC target ... Mar 4 14:58:48.979418 sonic INFO sonic-ztp[1182422]: Running command: /usr/local/bin/sonic-cfggen -j /etc/sonic/init_cfg.json -j /tmp/config_dl.json --write-to-db Mar 4 14:58:49.246952 sonic INFO sonic-ztp[1182422]: Running command: /usr/local/bin/db_migrator.py -o migrate Mar 4 14:58:49.431069 sonic INFO sonic-ztp[1182422]: Running command: /usr/local/bin/sonic-cfggen -d -y /etc/sonic/sonic_version.yml -t /usr/share/sonic/templates/sonic-environment.j2,/etc/sonic/sonic-environment Mar 4 14:58:50.558117 sonic INFO sonic-ztp[1182422]: Restarting SONiC target ... Mar 4 14:58:50.642379 sonic INFO sonic-ztp[1182422]: Enabling container monitoring ... Mar 4 14:58:50.667017 sonic INFO sonic-ztp[1182422]: Updating hostname ... Mar 4 14:58:51.749871 sonic INFO sonic-ztp[1182422]: Reloading Monit configuration ... Mar 4 14:58:51.770692 sonic INFO sonic-ztp[1182422]: Reinitializing monit daemon Mar 4 14:58:52.036079 sonic INFO sonic-ztp[1185892]: user info loaded. Mar 4 14:58:52.157316 sonic INFO sonic-ztp[1167229]: Processed Configuration section 01-configdb-json with result SUCCESS, exit code (0) at 2025-03-04 06:58:08 UTC. Mar 4 14:58:52.158124 sonic INFO sonic-ztp[1167229]: Checking configuration section 01-configdb-json result: SUCCESS, ignore-result: False. Mar 4 14:58:52.169687 sonic INFO sonic-ztp[1167229]: ZTP successfully completed at 2025-03-04 06:58:52 UTC. root@sonic:/etc/sonic# show ztp ZTP Admin Mode : True ZTP Service : Inactive ZTP Status : SUCCESS ZTP Source : dhcp-opt67 (eth0) Runtime : 01m 42s </pre>
--	--

	Timestamp : 2025-03-04 06:58:52 UTC ZTP Service is not running 01-configdb-json: SUCCESS
Test results	PASS
Remarks	