

H3C S5560X-EI Product Test Procedures

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Revision Record

Date	Revision Version	Sec No.	Change Description	Author



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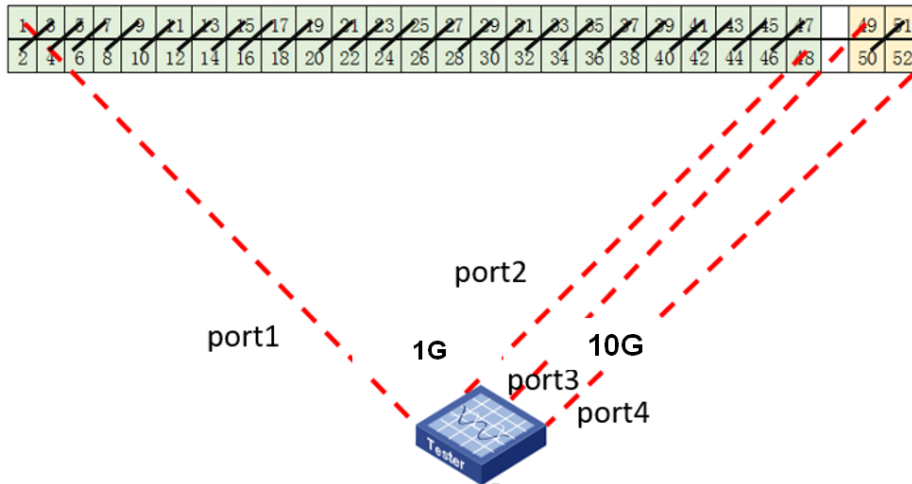
1 Performance test

1.1 Layer 2 forwarding performance

Test Item Name: Layer 2 forwarding performance

Work Hour: 120 min

Test Topology:



Test Process:

1. Use the Tester to send IPv4 Layer 2 unicast traffic at wire speed to the DUT.
2. The packet destination is the other port on the tester.
3. Use packets of 64 bytes, 128 bytes, 256 bytes, 512 bytes, 1024 bytes, 1280 bytes, and 1518 bytes for the tests.
4. Each test is no shorter than 120 seconds.
5. Record the packet loss, throughput, and latency statistics. Result 1 is expected.

Expect Results:

1. The switch achieves 100% throughput and no packet loss.

Actual Result:

1. Disable stp globally.

```
[DUT]undo stp global enable
```

2. Enter tcclsh view to configure vlan and all ports by using scripts.

```
<DUT>tcclsh
<DUT-tcl>
```



```
[DUT-tcl]vlan 1 to 26
[DUT-tcl]for {set i 2} {$i<=24} {incr i} {
    interface GigabitEthernet1/0/[expr $i*2-1]
    port access vlan [expr $i]
    interface GigabitEthernet1/0/[expr $i*2]
    port access vlan [expr $i]
}
[DUT-tcl]for {set i 25} {$i<=26} {incr i} {
    interface Ten-GigabitEthernet 1/0/[expr $i*2-1]
    port access vlan [expr $i]
    interface Ten-GigabitEthernet 1/0/[expr $i*2]
    port access vlan [expr $i]
}
```

3. Check vlan on each ports by inputting command *display interface brief*.

Brief information on interfaces in bridge mode:
Link: ADM - administratively down; Stby - standby
Speed: (a) - auto
Duplex: (a)/A - auto; H - half; F - full
Type: A - access; T - trunk; H - hybrid

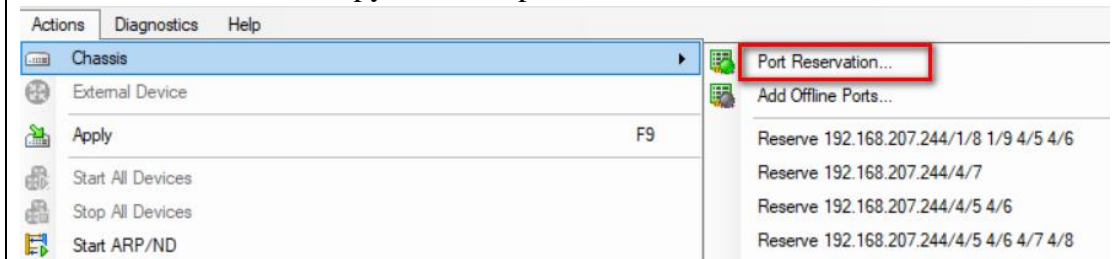
Interface	Link	Speed	Duplex	Type	PVID	Description
GE1/0/1	UP	1G(a)	F(a)	A	1	
GE1/0/2	UP	1G(a)	F(a)	A	1	
GE1/0/3	UP	1G(a)	F(a)	A	2	
GE1/0/4	UP	1G(a)	F(a)	A	2	
GE1/0/5	UP	1G(a)	F(a)	A	3	
GE1/0/6	UP	1G(a)	F(a)	A	3	
GE1/0/7	UP	1G(a)	F(a)	A	4	
GE1/0/8	UP	1G(a)	F(a)	A	4	
GE1/0/9	UP	1G(a)	F(a)	A	5	
GE1/0/10	UP	1G(a)	F(a)	A	5	
GE1/0/11	UP	1G(a)	F(a)	A	6	
GE1/0/12	UP	1G(a)	F(a)	A	6	
GE1/0/13	UP	1G(a)	F(a)	A	7	
GE1/0/14	UP	1G(a)	F(a)	A	7	
GE1/0/15	UP	1G(a)	F(a)	A	8	
GE1/0/16	UP	1G(a)	F(a)	A	8	
GE1/0/17	UP	1G(a)	F(a)	A	9	
GE1/0/18	UP	1G(a)	F(a)	A	9	
GE1/0/19	UP	1G(a)	F(a)	A	10	
GE1/0/20	UP	1G(a)	F(a)	A	10	
GE1/0/21	UP	1G(a)	F(a)	A	11	
GE1/0/22	UP	1G(a)	F(a)	A	11	
GE1/0/23	UP	1G(a)	F(a)	A	12	
GE1/0/24	UP	1G(a)	F(a)	A	12	

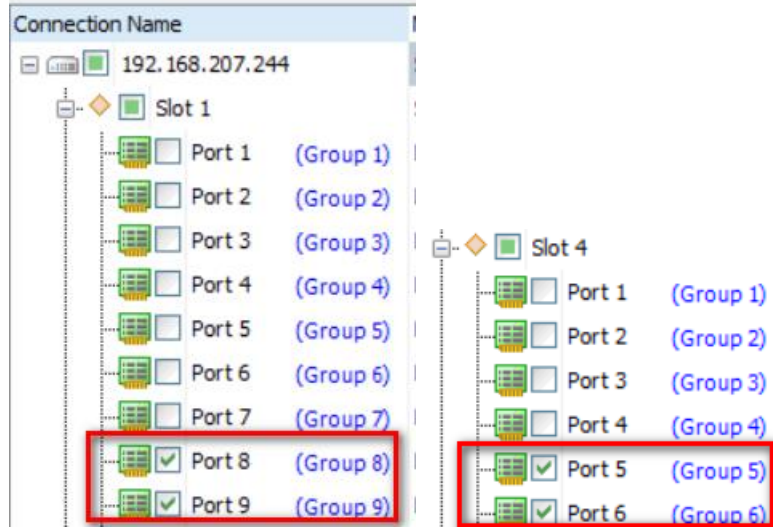


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GE1/0/25	UP	1G(a)	F(a)	A	13
GE1/0/26	UP	1G(a)	F(a)	A	13
GE1/0/27	UP	1G(a)	F(a)	A	14
GE1/0/28	UP	1G(a)	F(a)	A	14
GE1/0/29	UP	1G(a)	F(a)	A	15
GE1/0/30	UP	1G(a)	F(a)	A	15
GE1/0/31	UP	1G(a)	F(a)	A	16
GE1/0/32	UP	1G(a)	F(a)	A	16
GE1/0/33	UP	1G(a)	F(a)	A	17
GE1/0/34	UP	1G(a)	F(a)	A	17
GE1/0/35	UP	1G(a)	F(a)	A	18
GE1/0/36	UP	1G(a)	F(a)	A	18
GE1/0/37	UP	1G(a)	F(a)	A	19
GE1/0/38	UP	1G(a)	F(a)	A	19
GE1/0/39	UP	1G(a)	F(a)	A	20
GE1/0/40	UP	1G(a)	F(a)	A	20
GE1/0/41	UP	1G(a)	F(a)	A	21
GE1/0/42	UP	1G(a)	F(a)	A	21
GE1/0/43	UP	1G(a)	F(a)	A	22
GE1/0/44	UP	1G(a)	F(a)	A	22
GE1/0/45	UP	1G(a)	F(a)	A	23
GE1/0/46	UP	1G(a)	F(a)	A	23
GE1/0/47	UP	1G(a)	F(a)	A	24
GE1/0/48	UP	1G(a)	F(a)	A	24
XGE1/0/49	UP	10G(a)	F(a)	A	25
XGE1/0/50	UP	10G(a)	F(a)	A	25
XGE1/0/51	UP	10G(a)	F(a)	A	26

4. Connect TC and occupy the tester port.





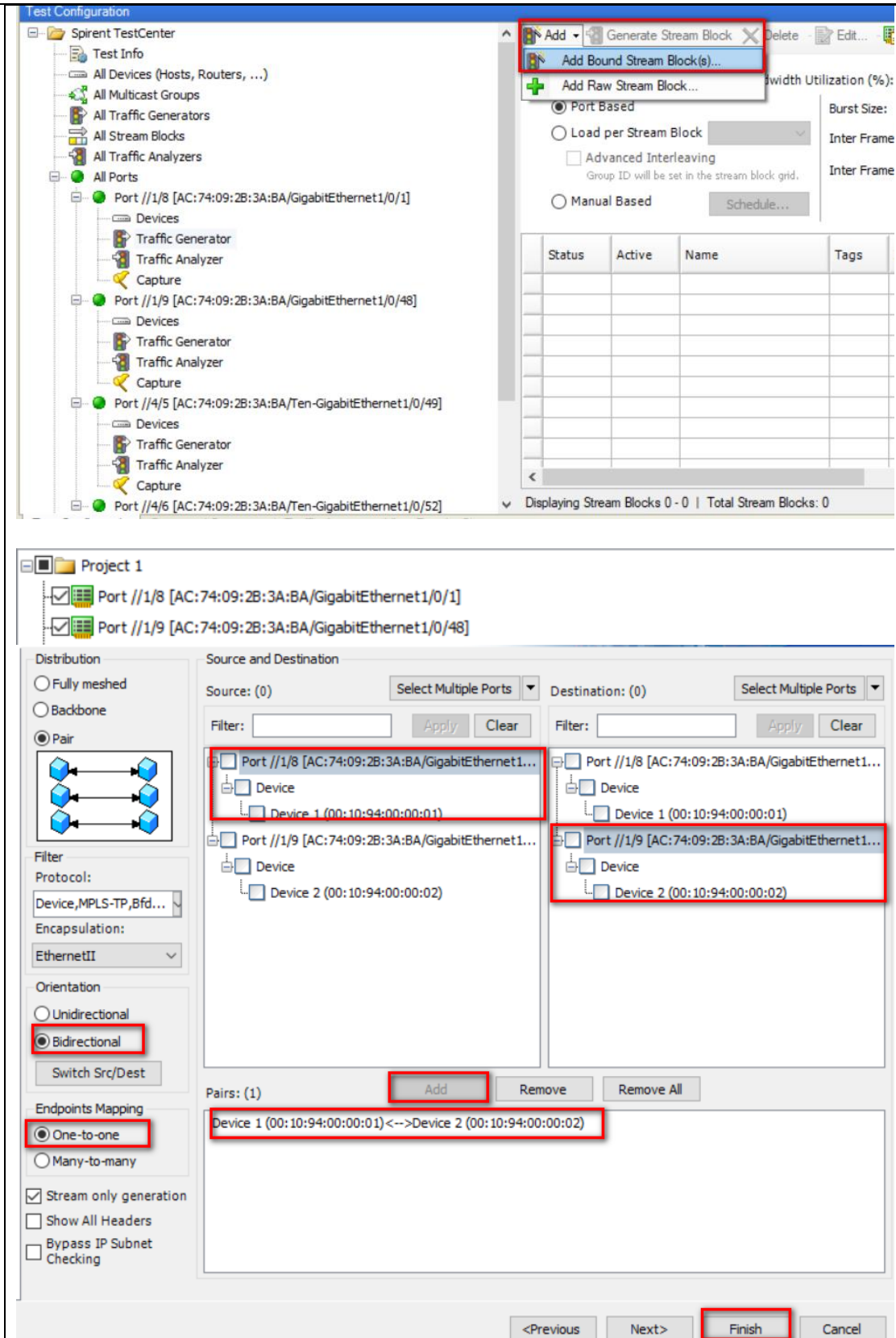
5. Add Devices under Port 1/8, Port 1/9, Port 4/5, Port 4/6, respectively

The screenshot shows the 'Add' menu with options: 'Device', 'Host', and 'Router'. The 'Device' option is selected. Below it, the 'Device' configuration window is open, showing a table of devices and their configurations.

Port Name	Device Name	Tags	Device Count	Incoming Links	Outgoing Links	Encapsulation	Rate
Port //1/8 [AC:74:09:2B:3A:BA/GigabitEthernet1/0/1]	Device 1	Click to a...	1			EthernetII	0.0
Port //1/9 [AC:74:09:2B:3A:BA/GigabitEthernet1/0/48]	Device 2	Click to a...	1			EthernetII	0.0
Port //4/5 [AC:74:09:2B:3A:BA/Ten-GigabitEthernet1/0/49]	Device 3	Click to a...	1			EthernetII	0.0
Port //4/6 [AC:74:09:2B:3A:BA/Ten-GigabitEthernet1/0/52]	Device 4	Click to a...	1			EthernetII	0.0

The 'Device' configuration window also shows the 'Lower Layer' and 'Upper Layer' settings. The 'Lower Layer' is set to 'Ethernet II' and the 'Upper Layer' is set to 'None'.

6. Add bound stream between Port 1/8 and Port 1/9, between Port 1/8, Port 1/9, respectively.



H3C S5560X-EI Product Test Procedures

The screenshot displays the Spirent TestCenter 'Test Configuration' window. On the left, a tree view shows the hierarchy: 'All Ports' is expanded, and 'Port //4/5 [AC:74:09:2B:3A:BA/Ten-GigabitEthernet1/0/49]' is selected. Within this port, the 'Traffic Generator' component is highlighted with a red box. On the right, the 'Generate Stream Block' dialog is open, with the 'Add Bound Stream Block(s)...' option selected and highlighted by a red box. Below this, the 'Port Based' radio button is selected. At the bottom, the 'Select ports:' section shows a list of ports under 'Project 1'. The ports 'Port //4/5 [AC:74:09:2B:3A:BA/Ten-GigabitEthernet1/0/49]' and 'Port //4/6 [AC:74:09:2B:3A:BA/Ten-GigabitEthernet1/0/52]' are checked and highlighted with a red box.



H3C S5560X-EI Product Test Procedures

The screenshot displays the configuration interface for a throughput test on an H3C S5560X-EI switch. The interface is divided into several sections:

- Distribution:** Includes options for "Fully meshed", "Backbone", and "Pair". The "Pair" option is selected, and a diagram shows two devices connected by a bidirectional link.
- Filter:** Includes a "Protocol" dropdown set to "Device, MPLS-TP, Bfd..." and an "Encapsulation" dropdown set to "EthernetII".
- Orientation:** Includes options for "Unidirectional" and "Bidirectional". The "Bidirectional" option is selected.
- Endpoints Mapping:** Includes options for "One-to-one" and "Many-to-many". The "One-to-one" option is selected.
- Source and Destination:** This section contains two lists of ports and devices. The "Source" list shows "Port //4/5 [AC:74:09:2B:3A:BA/Ten-GigabitEther...]" and "Device 3 (00:10:94:00:00:03)". The "Destination" list shows "Port //4/5 [AC:74:09:2B:3A:BA/Ten-GigabitEther...]" and "Device 3 (00:10:94:00:00:03)".
- Pairs:** A list showing the configured pair: "Device 3 (00:10:94:00:00:03) <--> Device 4 (00:10:94:00:00:04)".
- Buttons:** Includes "<Previous", "Next>", "Finish", and "Cancel". The "Finish" button is highlighted.

Below the configuration window, a toolbar contains various icons and a "Wizards..." button, which is also highlighted.

7. Add the configured data flow to the throughput RFC2544 test set.



H3C S5560X-EI Product Test Procedures

- Access
- Application Layer Protocols
- Benchmarking
 - Asymmetric Performance Test Wizard
 - Data Center Bridging
 - IEEE 802.11
 - RFC 2544**
 - RFC 2889
 - RFC 3918
- Carrier Ethernet
- Devices
- Routing and MPLS
- Sequence Generator
- Switching
- Traffic
- Triple Play
- TSN

Tests based on RFC 2544, Benchmarking Methodology for Network Interconnect Devices.

The RFC 2544 with VLAN Network Device Benchmark Test Package is an essential tool enabling network testers to measure the performance of Layer 2 and Layer 3 switches and the networks on which they will be deployed. A component of the Spirent TestCenter, the test package provides a framework to test modern routing features within the guidelines of well-established standards.

Reset

< Back

Next >

☐ Preview Topology

Cancel

Steps

- Select Wizard
- Select Test**
- Select Ports
- Configure Endpoints
- Configure Traffic
- Configure Test Options
- Throughput Parameters

Select Test

Select the test(s) to perform

☐ Back-to-back Test

Characterizes the ability of the DUT to process back-to-back frames. This test simulates popular network activity such as requests for large amounts of data over an Ethernet network, that may use a relatively small MTU size and that can result in many fragments being transmitted.

☐ Frame Loss Test

Determines the percentage of frames that should have been forwarded by a network device under steady state (constant) load that were not forwarded due to lack of resources.

☐ Latency Test

Determines the minimum, average, maximum transmit delay through the DUT.

☒ **Throughput Test**

Determines the maximum rate at which none of the offered frames are dropped by the DUT.

Test Options

☐ Enable RFC-5180 IPv6 Benchmarking Test Options

☐ Enable Traffic Group Test Options

Reset

< Back

Next >

☐ Preview Topology

Run

Finish

Cancel

H3C S5560X-EI Product Test Procedures

[illegible][illegible]

H3C S5560X-EI Product Test Procedures

[illegible]

Steps

- Select Wizard
- Select Test
- Select Ports
- Configure Endpoints
- Configure Traffic
- Configure Test Options**
- Throughput Parameters

Test Options
Configure test options.

Scheduling

Start traffic delay (second): 2

Stagger start (64 microseconds): 0

Delay after transmission (second): 15

Latency Type

☐ LILO

☒ LIFO (Store and forward)

☐ FIFO (Bit forwarding)

☒ **Enable Learning**

Mode: L2 Learning

Delay before learning (sec): 2

Rate (frames/sec): 1000

Repeat count: 5

Learning Frame Size

☒ Same As Test

☐ Fixed

Frequency

☒ Learn once

☐ Learn every trial

☐ Learn every frame size

☐ Learn every iteration

☐ **Enable Traffic Verification**

Verification Frequency: Verify every iteration

Tx Frame Rate: 1000

Tx Frame Count: 100

☒ Abort test if traffic verification fails

☒ Save detailed stream results with every iteration

Display load unit in results: Percent (%)

☐ Measure Jitter

< Back Next > Preview Topology Run Finish Cancel



H3C S5560X-EI Product Test Procedures

RFC 2544 - Throughput Parameters

Steps

- Select Wizard
- Select Test
- Select Ports
- Configure Endpoints
- Configure Traffic
- Configure Test Options
- Throughput Parameters**

Configure Throughput Test
Configure parameters of Throughput test.

Test Duration

Number of trials: 1

Trial Duration

☒ Time (sec): 60

☐ Bursts (frames): 1000

Improve Time To Test

☐ Skip to next load when iteration fails

☐ Enable Turbo Iteration

Turbo Duration (sec): 5

Frame Size (bytes)

☐ Random Min: 128 Max: 256

☐ Step Start: 128 End: 256 Step: 128

☒ Custom (Comma delimited, e.g. 64 128 256 512 1024 1280 1518)

64, 128, 256, 512, 1024, 1280, 1518

Custom Frame Size Editor - 7 items

Custom Frame Size

- 64
- 128
- 256
- 512
- 1024
- 1280
- 1518

OK Cancel

Traffic Load for Throughput Search

Mode

☒ Step

☐ Binary

☐ Combine

Rate lower limit (%): 1

Rate upper limit (%): 100

Initial rate (%): 100

Step rate (%): 100

Resolution (%): 1

Back-off (%): 50

Acceptable frame loss (%): 0

☐ Ignore lower/up

(Note: Non-RFC compliant when Acceptable frame loss is not 0)

Reset < Back Next > Preview Topology Run Finish Cancel

8. Then wait until this test report jump out.

Command Name P/F Start Time Elapsed Time

✓ RFC 2544: Throughput Test 1		2021/1/22 14:53:16	00:10:23.765
✓ BenchmarkTestStartCommand 1		2021/1/22 14:53:16	00:00:03.093
✓ BenchmarkTestLearnStartCommand 1		2021/1/22 14:53:20	00:00:14.357
✓ Trial Loop (2)		2021/1/22 14:53:34	00:10:05.852
✓ BenchmarkIterateTrialCommand 1		2021/1/22 15:03:40	00:00:00.111
Frame Size Loop (0)			00:00:00.000
Benchmark Iterate Frame Size 1			00:00:00.000
Load Loop (0)			00:00:00.000
Benchmarking: Benchmark Throughput 1			00:00:00.000
Set Traffic Duration 1			00:00:00.000
Clear All Results 1			00:00:00.000

9. Check the report, result1 is expected.

Trial Number	Id	Frame Size Type	Configured Frame Size	Avg Frame Size	iMIX Distribution	Intended Load (%)	Offered Load (%)	Result	Throughput (%)
1	0	Fixed	64	64	N/A	100	100	Passed	100
1	1	Fixed	128	128	N/A	100	100	Passed	100
1	2	Fixed	256	256	N/A	100	100	Passed	100
1	3	Fixed	512	512	N/A	100	100	Passed	100
1	4	Fixed	1,024	1,024	N/A	100	100	Passed	100
1	5	Fixed	1,280	1,280	N/A	100	100	Passed	100
1	6	Fixed	1,518	1,518	N/A	100	99.882	Passed	99.882

ad (%)	Offered Load (%)	Result	Throughput (%)	Max Latency Threshold Exceeded	Out of Seq Threshold Exceeded	Tx Frame Count	Rx Frame Count	Frame Loss	Percent Loss	Offered Load (fps)	Forwarding Rate (fps)
100	Passed	100	False	False	1,964,285,716	1,964,285,716	0	0	0	32,738,095.267	32,738,047.73
100	Passed	100	False	False	1,114,864,868	1,114,864,868	0	0	0	18,581,081.1	18,581,044.94
100	Passed	100	False	False	597,826,090	597,826,090	0	0	0	9,903,768.167	9,903,745.88
100	Passed	100	False	False	310,150,378	310,150,378	0	0	0	5,169,172.967	5,169,156.1
100	Passed	100	False	False	158,045,980	158,045,980	0	0	0	2,634,099.667	2,634,085.64
100	Passed	100	False	False	126,923,078	126,923,078	0	0	0	2,115,384.633	2,115,372.42
99.882	Passed	99.882	False	False	107,155,524	107,155,524	0	0	0	1,785,925.4	1,785,913.88

NOTE: scripts

```
for {set i 2} {$i<=24} {incr i} {  
    interface GigabitEthernet1/0/[expr $i*2-1]  
    port access vlan [expr $i]
```



```
interface GigabitEthernet1/0/[expr $i*2]
port access vlan [expr $i]
}

for {set i 25} {$i<=26} {incr i} {
interface Ten-GigabitEthernet 1/0/[expr $i*2-1]
port access vlan [expr $i]
interface Ten-GigabitEthernet 1/0/[expr $i*2]
port access vlan [expr $i]
}
```

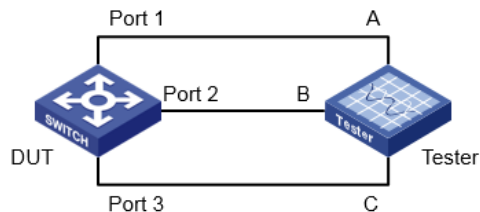
☐ Passed☐ Failed

1.2 MAC address table capacity

Test Item Name: MAC address table capacity

Work Hour: 30 min

Test Topology:



Test Process:

1. On the tester, send broadcast packets through Port A. The source MAC addresses of the packets are 16K consecutive MAC addresses.
2. On the tester, send unicast packets through Port B. The destination MAC addresses are the MAC addresses that the DUT has learned. Result 1 is expected.

Expect Results:

1. On the tester, Port B receives all the packets sent by Port B. If traffic loss occurs, the MAC address table capacity does not meet the 16K specification.

Actual Result:

1. Select the “Traffic Generator” under PORT A, and click “Add Raw Stream Block...” in the context menu of the interface



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Actions Diagnostics Help

Chassis External Device Apply F9 Start All Devices Stop All Devices Start ARP/ND

Port Reservation... Add Offline Ports...

Reserve 192.168.207.244/1/8 1/9 4/5 4/6
Reserve 192.168.207.244/4/7
Reserve 192.168.207.244/4/5 4/6
Reserve 192.168.207.244/4/5 4/6 4/7 4/8

Connect/Create Show Port Groups Show Ports: All Ports

Connection Name	Model	Licensed Speeds	Status
Port 6 (Group 6)	Link Down, Spee...		Available
Port 7 (Group 7)	Link Down, Spee...		Available
Port 8 (Group 8)	Link Down, Spee...		Available
Slot 4	HYPERMETRICS ...	10G	
Port 1 (Group 1)	Link Up, Speed 10G		Available - 84:D9:31:CA:51
Port 2 (Group 2)	Link Up, Speed 10G		Available - 84:D9:31:CA:51
Port 3 (Group 3)	Link Down, Spee...		Available
Port 4 (Group 4)	Link Down, Spee...		Available
Port 5 (Group 5)	Link Up, Speed 10G		Reserved by y23198@y23
Port 6 (Group 6)	Link Up, Speed 10G		Reserved by y23198@y23
Port 7 (Group 7)	Link Up, Speed 10G		To Be Reserved
Port 8 (Group 8)	Link Down, Spee...		Available
Slot 5	HYPERMETRICS ...	10G	
Port 1 (Group 1)	Link Down, Spee...		Available

Firmware Version: 4.95.6666

Summary

Available: 45 Unavailable: 3 Reserved by User: 4 Reserved by Other: 7

Ports: 59 Chassis: 1 Test Modules: 8

Add Offline Ports... Add Default Traffic: No OK Cancel

Add Generate Stream Block Delete Edit... Copy Wizard... Auto

Add Bound Stream Block(s)... Add Raw Stream Block...

Width Utilization (%): 10

Port Based Load per Stream Block Advanced Interleaving Group ID will be set in the stream block grid. Manual Based Schedule...

Burst Size: 1 Duration Mode: Continuous Inter Frame Gap: 12 Inter Frame Gap Unit: bytes Advanced... Port Load...

[Scheduling mode graphical example](#)

2. First configure the packet size in the General tab, set to 64Bytes



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General Frame Groups Rx Port Preview

☒ Active Name: StreamBlock 1

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

☒ Fixed Size: 64

☐ Increment Step: 1 (power of 2)

☐ Decrement Min: 128

☐ Random Max: 256

☐ Auto Avg: 192

☐ IMIX Default Edit...

Streamblock load option

Load mode: Fixed

☒ Percent (%) 10

☐ Frames/sec (fps) 84459

☐ Inter-Burst Gap (bytes) 1344

☐ Inter-Burst Gap (msec) 1344

☐ Inter-Burst Gap (nsec) 1344

☐ bps 100000000

☐ Kbps 100000

☐ Mbps 100

☐ L2 Rate (bps) 100000000

Refresh rates

3. Right-click on the “Source MAC” field in the Frame tab and select “Insert MAC Modifier...” from the menu

General Frame Groups Rx Port Preview

Preview: EthernetII

☐ 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 MAC Modifier...

Others

Expand All

Collapse All

Name	Value
Frame	
EthernetII	
Destination MAC	00:00:01:00:00:01
Source MAC	00:10:94:00:00:02
EtherType	

Add Header(s)...

Link Modifiers/VFDs...

Insert MAC Modifier...

4. Construct 16K packets with different MAC addresses on the PORT A of the tester to fill the DUT's MAC address table

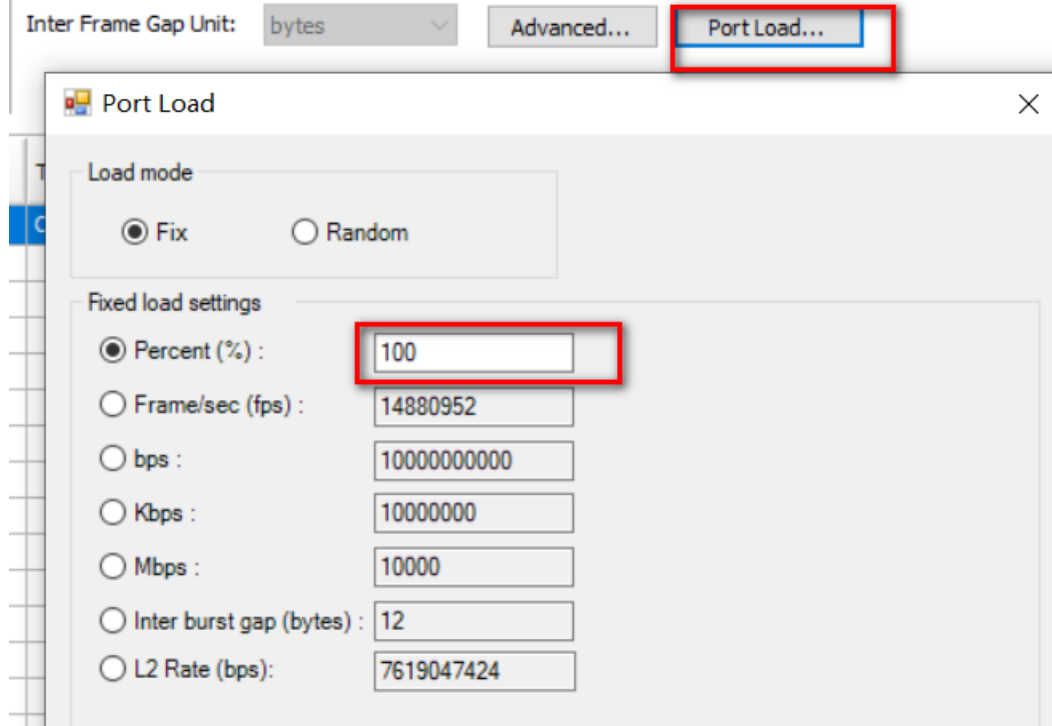


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The screenshot displays the H3C S5560X-EI software interface. The 'General' tab is active, showing the 'EthernetII' frame configuration. The 'MAC Modifier' is highlighted in the 'Value' column. A red box highlights the 'Count=16000;Step=00:00:00:00:00:01' value. Below this, the 'Configure MAC Modifier' dialog box is open, showing the 'Offset' section with 'Start modifier on first byte' selected. The 'Type' section has 'Increment' selected. The 'Details' section shows 'Count: 16000' (highlighted with a red box), 'Step: 00:00:00:00:00:01', 'Repeat: 0', 'Mask: 00:00:FF:FF:FF:FF', 'Seed: 0', and 'Value: 00:10:94:00:00:01'.

5. Click OK to return to the main interface of the software. At this time, you need to configure the traffic mode (Duration mode) to Bursts, send a total of 16,000 packets, and set the packet rate to line rate [100%]

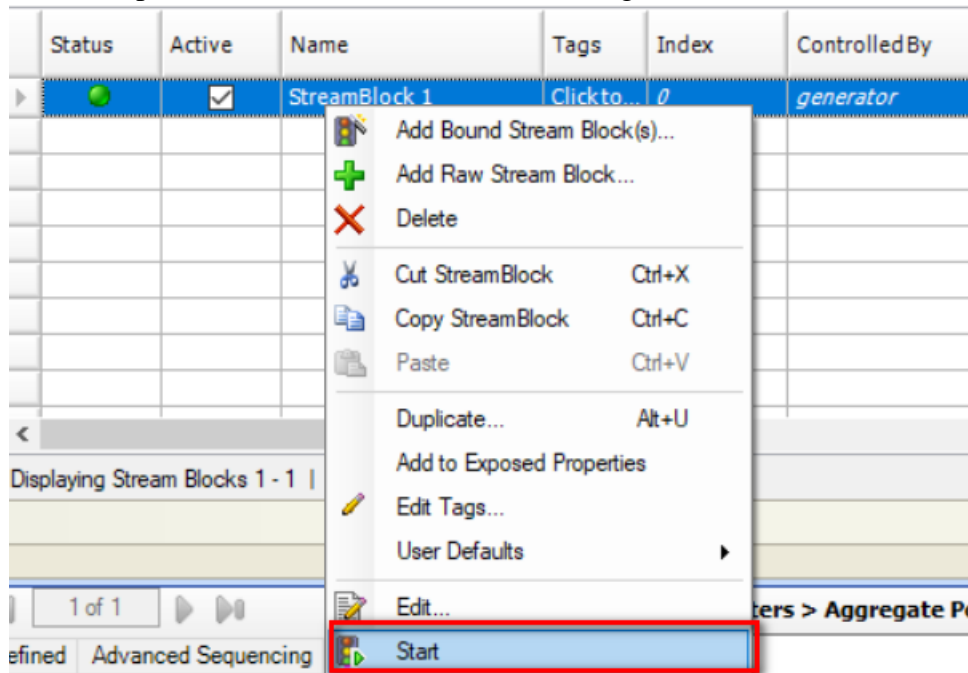
The screenshot displays the H3C S5560X-EI software interface. The 'Scheduling Mode' is set to 'Port Based'. The 'Bandwidth Utilization (%)' is 100. The 'Burst Size' is 1, 'Duration Mode' is 'Bursts', 'Inter Frame Gap' is 12, and 'Burst(s)' is 16000. A red box highlights the 'Burst(s)' field. Below the 'Burst(s)' field, there are buttons for 'Advanced...' and 'Port Load...'. A link 'Scheduling mode graphical example' is visible at the bottom.



- Before sending traffic, clear the MAC address on the DUT and verify that the number of MAC addresses on the DUT is 0

```
[DUT]undo mac-address
This will delete all non-MacAuth entries. Continue? [Y/N]:y
[DUT]display mac-address count
0 mac address(es) found.
```

- Send packet. You can see that in the resulting view, PORT A sent 40,000 packets.





H3C S5560X-EI Product Test Procedures

Port Name	Total Tx Count (Frames)	Total Rx Count (Frames)	Total Tx Count (bits)	Total Rx Count (bits)
Port //4/5...	16,000	0	8,192,000	0
Port //4/6...	0	16,000	0	8,192,000
Port //4/7	0	16,000	0	8,192,000

8. At this time, check the number of MAC addresses on the DUT.

```
[DUT]display mac-address
MAC Address      VLAN ID   State      Port/Nickname   Aging
0010-9400-0002   1         Learned    XGE1/0/49       Y
0010-9400-0003   1         Learned    XGE1/0/49       Y
0010-9400-0004   1         Learned    XGE1/0/49       Y
0010-9400-0005   1         Learned    XGE1/0/49       Y
0010-9400-0006   1         Learned    XGE1/0/49       Y
0010-9400-0007   1         Learned    XGE1/0/49       Y
0010-9400-0008   1         Learned    XGE1/0/49       Y
0010-9400-0009   1         Learned    XGE1/0/49       Y
0010-9400-000a   1         Learned    XGE1/0/49       Y
0010-9400-000b   1         Learned    XGE1/0/49       Y
0010-9400-000c   1         Learned    XGE1/0/49       Y
0010-9400-000d   1         Learned    XGE1/0/49       Y
0010-9400-000e   1         Learned    XGE1/0/49       Y
0010-9400-000f   1         Learned    XGE1/0/49       Y
0010-9400-0010   1         Learned    XGE1/0/49       Y
0010-9400-0011   1         Learned    XGE1/0/49       Y
0010-9400-0012   1         Learned    XGE1/0/49       Y
0010-9400-0013   1         Learned    XGE1/0/49       Y
0010-9400-0014   1         Learned    XGE1/0/49       Y
0010-9400-0015   1         Learned    XGE1/0/49       Y
0010-9400-0016   1         Learned    XGE1/0/49       Y
0010-9400-0017   1         Learned    XGE1/0/49       Y
[DUT]display mac-address count
16000 mac address(es) found.
```

9. The traffic is sent from PORT B. The destination MAC address is the source MAC address configured on PORT A in the above step, to verify that the learned MAC address can work normally, because all the destination mac address belong to Port A , Port C can't receive the traffic and result 1 is expected



H3C S5560X-EI Product Test Procedures

General Frame Groups Rx Port Preview

☒ Active Name: StreamBlock 2

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

☒ Fixed **Size: 64**

☐ Increment Step: 1 (power of 2)

☐ Decrement Min: 128

☐ Random Max: 256

☐ Auto Avg: 192

☐ IMIX Default Edit...

Streamblock load option

Load mode: Fixed

☒ Percent (%) 100

☐ Frames/sec (fps) 8445946

☐ Inter-Burst Gap (bytes) 12

☐ Inter-Burst Gap (msec) 9.6E-06

☐ Inter-Burst Gap (nsec) 9.6

☐ bps 10000000000

☐ Kbps 10000000

☐ Mbps 10000

☐ L2 Rate (bps) 8648648648

Refresh rates



H3C S5560X-EI Product Test Procedures

General

Frame

Groups

Rx Port

Preview

Preview:

EthernetII

☐ Show All Fields ☐ Allow Invalid Packets

Frames

Create new Frame >

Save Frame as Template...

Manage Frame Templates...

Actions

Add Header(s)...

Link Modifiers/VFDs

Delete MAC Modifier

Edit MAC Modifier

Others

Expand All

Collapse All

Name

Value

Frame

EthernetII

Destination MAC

MAC Modifier

Source MAC

EtherType (hex)

00:10:94:00:00:02

Count=16000;Step=00:00:00:00:00:01

00:00:01:00:00:01

<auto> 88B5

Configure MAC Modifier

Offset

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

Type

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

Details

Count: 16000

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

Hex Editor

0000 FB 55 55

Scheduling Mode

Bandwidth Utilization (%): 100

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

Burst Size: 1

Inter Frame Gap: 12

Inter Frame Gap Unit: bytes

Duration Mode: Bursts

Burst(s): 16000

Advanced...

Port Load...

Schedule...

[Scheduling mode graphical example](#)

Basic Counters

Errors

Triggers

Protocols

Undersize/Oversize/Jumbo

PFC Counters

User Def

Port Name

Total Tx Count (Frames)

Total Rx Count (Frames)

Total Tx Count (bits)

Total Rx Count (bits)

Port //4/5...

0

16,000

0

8,192,000

Port //4/6...

16,000

0

8,192,000

0

Port //4/7

0

0

0

0

☐ Passed

☐ Failed

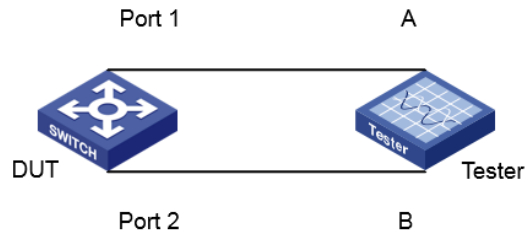


1.3 Multicast Group Capacity

Test Item Name: Multicast Group Capacity

Work Hour: 20 min

Test Topology:



Test Process:

1. Create VLAN 100, assign Port A/B of DUT to join VLAN 100.
2. Enable igmp-snooping globally, enable igmp-snooping enable within VLAN 100.
3. The DUT Port B is configured with igmp-snooping static-group 225.0.0.1 vlan 100, and the IP address is increased by 0.0.0.1 to a total of 1000 multicast groups.
4. DUT display igmp-snooping static-group, result 1 is expected.
5. Send the destination IP 225.0.0.1 into port A of tester, change the multicast traffic of 1000 groups in total, check the packet of Port B of tester, result 2 is expected.

Expect Results:

1. DUT display igmp-snooping static-group has 1000 correct static groups.
2. The Tester Port B can receive the traffic of 1000 multicast groups starting from 225.0.0.1.

Actual Result:

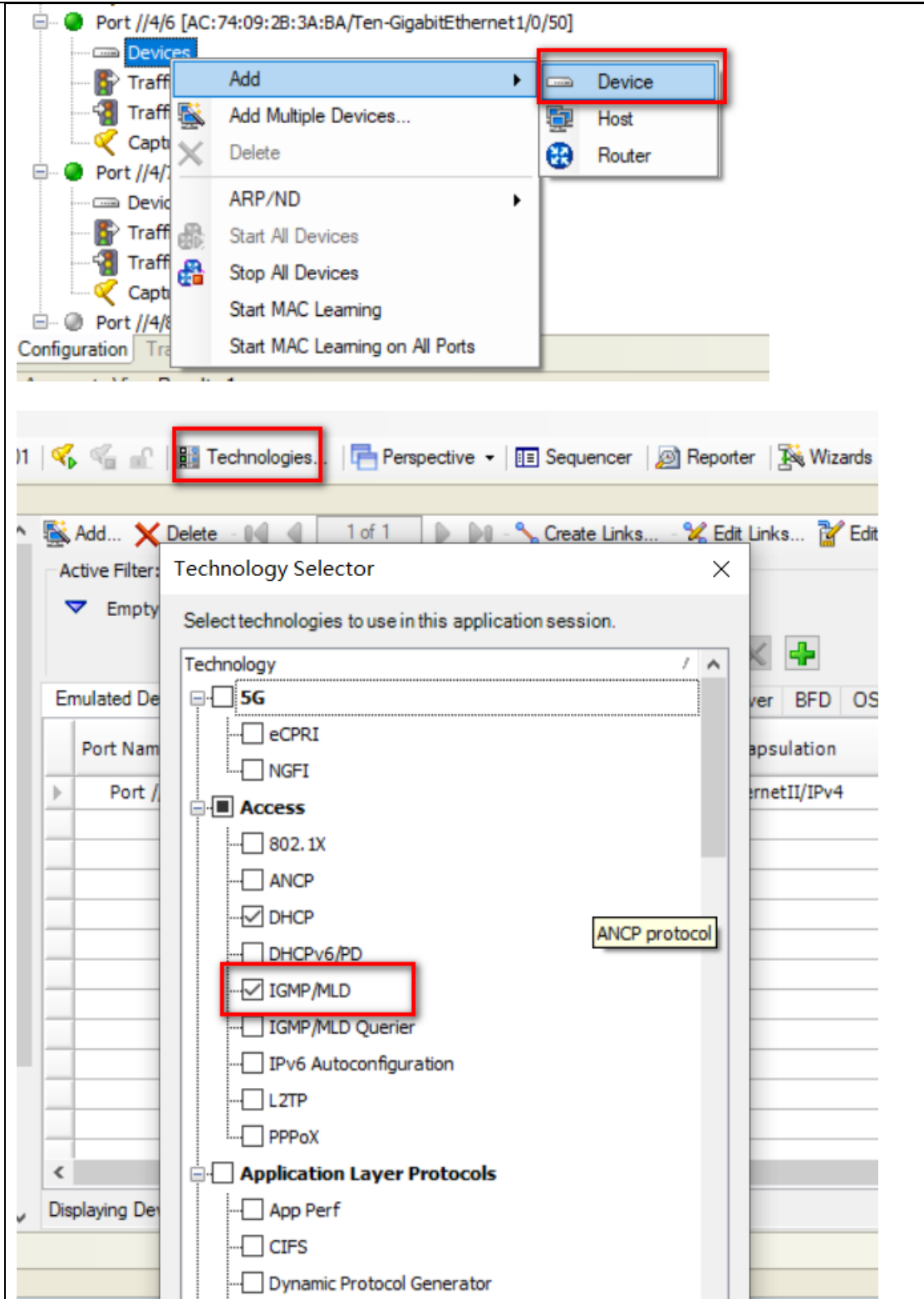
1. Create VLAN 100, assign Port A/B of DUT to join VLAN 100

```
[DUT-vlan100]port Ten-GigabitEthernet 1/0/49
[DUT-vlan100]port Ten-GigabitEthernet 1/0/50
```

2. Enable igmp-snooping globally, enable igmp-snooping enable within VLAN 100

```
[DUT]igmp-snooping
[DUT-igmp-snooping]quit
[DUT]vlan 100
[DUT-vlan100]igmp-snooping enable
```

3. The DUT Port B is configured with igmp-snooping static-group 225.0.0.1 vlan 100, and the IP address is increased by 0.0.0.1 to a total of 1000 multicast groups



The screenshot displays the H3C S5560X-EI configuration interface, specifically the IGMP configuration page. The interface includes a top toolbar with various actions like 'Add...', 'Delete', 'Create Links...', 'Edit Links...', 'Edit Interface...', and 'Edit Group Memberships...'. Below the toolbar, there's a filter section with 'Active Filter: (Unsaved)' and 'Empty Filter'. The main area shows a table of emulated device interfaces with columns for Port Name, Device Name, Tags, Device Count, Active, Host State, Multicast Version, Group Count, Source Count, Calculate Latency, Pack Reports, and Force Initial.

The table shows one entry: Port //4/6 [A...], Device 1, Click to a..., 1, ☒, Non-Member, IGMPv2, 500, 0, ☐, ☐, and Force Initial.

Below the table, there are three pop-up windows:

- Edit Group Memberships:** This window has a 'Select Devices' dropdown with a '+' icon, and buttons for '+ Add', 'X Delete', 'Manage Multicast Groups...', 'Apply', 'Staggered Host Membership', and 'Generate Join Groups in Batches'. It also has a 'Select property...' dropdown and an 'Equal to' filter.
- Add IGMP/MLD Group Membership:** This window has a 'Select a task...' section with 'Add new groups' (selected) and 'Use existing groups'. It also has a 'Select a device-group mapping...' section with 'Many-to-many' (selected), 'One-to-one', and 'Round-robin'. The 'Add New Groups' section has a description: 'Creates new multicast group(s) and maps these group(s) to the associated multicast host or router'. It includes input fields for 'Starting group address' (225.0.0.1), 'Group address increment' (0.0.0.1), 'Number of groups' (500), and 'Number of group blocks' (1).
- Context Menu:** A right-click context menu is open over the table, showing options like 'Add', 'Add Multiple Devices...', 'Delete', 'Cut', 'Copy', 'Paste', 'Duplicate...', 'Add to Exposed Properties', 'Edit Tags...', 'User Defaults', 'Links', 'Edit Links...', 'Edit Interface...', 'View Control Plane Bindings...', and 'Start Device' (highlighted).

At the bottom, there's a summary bar: 'Displaying Devices 1 - 1 | Filtered Devices: 1 | Total Devices: 1 | Selected 1'.

The bottom part of the screenshot shows the same table as above, but with the 'Host State' column now showing 'Member' instead of 'Non-Member'.

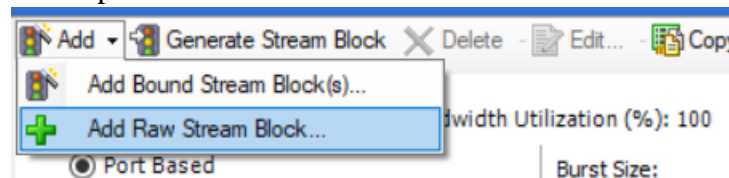
4. DUT display igmp-snooping static-group, result 1 is expected



```
[DUT-vlan100]display igmp-snooping group
Total 500 entries.

VLAN 100: Total 500 entries.
(0.0.0.0, 225.0.0.1)
  Host ports (1 in total):
    XGE1/0/50 (00:04:11)
(0.0.0.0, 225.0.0.2)
  Host ports (1 in total):
    XGE1/0/50 (00:04:16)
(0.0.0.0, 225.0.0.3)
  Host ports (1 in total):
    XGE1/0/50 (00:04:13)
(0.0.0.0, 225.0.0.4)
  Host ports (1 in total):
    XGE1/0/50 (00:04:16)
(0.0.0.0, 225.0.0.5)
  Host ports (1 in total):
    XGE1/0/50 (00:04:15)
(0.0.0.0, 225.0.0.6)
  Host ports (1 in total):
    XGE1/0/50 (00:04:16)
(0.0.0.0, 225.0.0.7)
  Host ports (1 in total):
    XGE1/0/50 (00:04:16)
---- More ----
```

5. Send the destination IP 225.0.0.1 into port A of tester, change the multicast traffic of 1000 groups in total, check the packet of Port B of tester, result 2 is expected





H3C S5560X-EI Product Test Procedures

General Frame Groups Rx Port Preview

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...
- Delete IPv4 Modifier
- Edit IPv4 Modifier

Others

- Expand All
- Collapse All

Hex Editor

0000	FB	55	55	55	55
0010	94	00	00	02	00
0020	18	94	C0	55	00

Navigate stream

Name	Value
Frame	
EthernetII	
Destination MAC	00:00:01:00:00:01
Source MAC	00:10:94:00:00:02
EtherType (hex)	<auto> Internet IP
IPv4 Header	
ToS/DiffServ	tos (0x00)
Total length (int)	<auto> calculated
Time to live (int)	255
Protocol (int)	<auto> Experimental
Source	192.85.1.2
Destination	225.0.0.1
IPv4 Modifier	Count=500;Step=0.0.0.1

Configure IPv4 Modifier

Offset

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

Type

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

Details

Count: 500 Step: 0.0.0.1

Repeat: 0 Mask: 255.255.255.255

Seed: 0

Value: 225.0.0.1



H3C S5560X-EI Product Test Procedures

Status	Active	Name	Tags	Index	ControlledBy
	<input checked="" type="checkbox"/>	StreamBlock 3	Click to edit	0	generator

Add Bound Stream Block(s)...

Add Raw Stream Block...

Delete

Cut StreamBlock Ctrl+X

Copy StreamBlock Ctrl+C

Paste Ctrl+V

Duplicate... Alt+U

Add to Exposed Properties

Edit Tags...

User Defaults

Edit...

Start

Displaying Stream Blocks 1 - 1 | Total 1

1 of 1

Advanced Sequencing

Port Name	Rate (fps)	Generator Rate (fps)	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)
Port //4/5...		844,595	108,108,135	864,865,080	844,595	0
Port //4/6...		0	0	0	0	844,595

Aggregate Port L1 Tx Rate | Channel

Aggregate

☐ Passed

☐ Failed



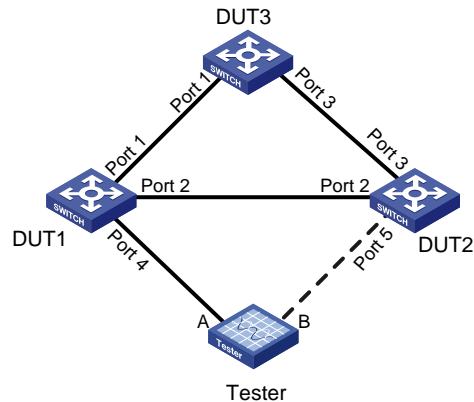
2 Layer 2 protocol

2.1 STP

Test Item Name: STP

Work Hour: 30 min

Test Topology:



Test Process:

1. On the DUTs, set the spanning tree mode to STP and execute the **STP** global mcheck command.
2. Configure DUT 1 as the root bridge.
3. View the STP status on the DUTs. On the tester, send broadcast traffic through Port A for 1 minute. Result 1 is expected.
4. On the tester, construct Layer 2 unicast packets and the reversed packets (source and destination MAC addresses are swapped). Send all the packets continuously through Port A and Port B. Result 2 is expected.
5. Remove the link between DUT 1 and DUT 2. Result 3 is expected.
6. Reconnect DUT 1 to DUT 2. Result 3 is expected.

Expect Results:

1. DUTs can calculate spanning trees correctly.
2. DUTs can recalculate spanning trees correctly in 30 seconds.

Actual Result:

1. Enable STP globally

[DUT] stp global enable

[DUT] stp mode stp



2. Configure DUT1 as the root bridge

[DUT1] stp root primary

3. Check the STP status on DUT

Display stp brief

```
[DUT1]dis stp br
```

MST ID	Port	Role	STP State	Protection
0	Ten-GigabitEthernet1/0/25	DES	FORWARDING	NONE
0	Ten-GigabitEthernet1/0/26	DES	FORWARDING	NONE
0	Ten-GigabitEthernet1/0/27	DES	FORWARDING	NONE

[DUT1]

```
[DUT2]dis stp br
```

MST ID	Port	Role	STP State	Protection
0	Ten-GigabitEthernet1/0/49	ROOT	FORWARDING	NONE
0	Ten-GigabitEthernet1/0/50	ALTE	DISCARDING	NONE
0	Ten-GigabitEthernet1/0/51	DES	FORWARDING	NONE

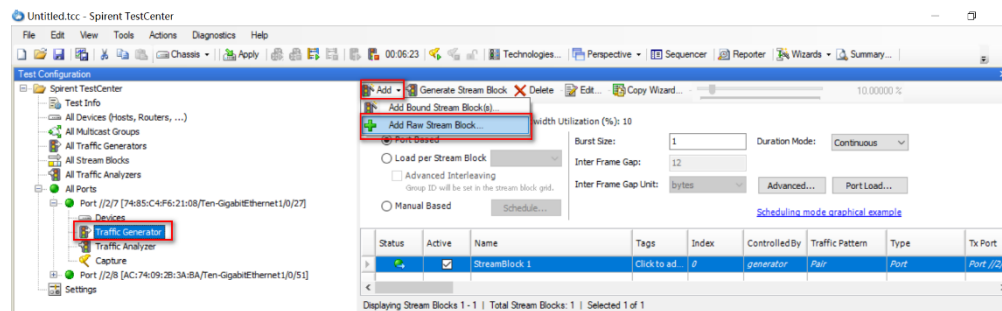
[DUT2]

```
[DUT3]dis stp br
```

MST ID	Port	Role	STP State	Protection
0	Ten-GigabitEthernet1/0/24	ROOT	FORWARDING	NONE
0	Ten-GigabitEthernet1/0/39	DES	FORWARDING	NONE

[DUT3]

4. Send broadcast traffic on Port A





H3C S5560X-EI Product Test Procedures

StreamBlock Editor - Port //2/7 [74:85:C4:F6:21:08/Ten-GigabitEthernet1/0/27] : StreamBlock 1

General Frame Groups Rx Port Preview

Preview: EthernetII ☒ Show All Fields ☐ Allow Invalid Packets

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	FF:FF:FF:FF:FF:FF
Source MAC	00:10:94:00:00:02
EtherType (hex)	<auto> 88B5

5. No broadcast storm occurs.

Untitled.tcc - Spirent TestCenter

File Edit View Tools Actions Diagnostics Help

00:05:16 Technologies... Perspective Sequencer Reporter Wizards Summary...

Test Configuration

Spirent TestCenter

Test Info

- All Devices (Hosts, Routers, ...)
- All Multicast Groups
- All Traffic Generators
- All Stream Blocks
- All Traffic Analyzers
- All Ports

Port //2/7 [74:85:C4:F6:21:08/Ten-GigabitEthernet1/0/27]

Devices

- Traffic Generator
- Traffic Analyzer
- Capture

Settings

Port //2/8 [AC:74:09:2b:3a:8a/Ten-GigabitEthernet1/0/51]

StreamBlock Editor

Add Generate Stream Block Delete Edit Copy Wizard... 10.00000 %

Scheduling Mode: Port Based Bandwidth Utilization (%): 10

Burst Size: 1 Duration Mode: Continuous

Inter Frame Gap: 12

Inter Frame Gap Unit: bytes

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

Manual Based: ☐ Schedule...

StreamBlock 1

Status	Active	Name	Tags	Index	Controlled By	Traffic Pattern	Type	Tx Port
		StreamBlock 1	Click to edit	0	generator	Pair	Port	Port //2/7

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

Basic Traffic Results

Port Traffic and Counters > Basic Traffic Results Change Result View 1 of 1

Port Name	pps	Generator Rate (bps)	Generator Rate (pps)	Rx Sig Rate (pps)	Rx Sig Rate (bps)
Port //2/7	108,108,098	864,864,794	864,595	0	864,594
Port //2/8	0	0	0	0	0

Streams > Detailed Stream Results

Select Tx Ports: All Ports Select Rx Ports: All Ports Change Counter Mode:

Basic Mode Resample

Name/ID	Tx Port Name	Rx Port Names	Aggregated Rx Port Count	Tx Count (Frames)	Rx Count (Frames)	Tx Rate (pps)
StreamBlock 1	Port //2/7	Port //2/8	1	266,476,862	267,600,109	864,864,648

```
[DUT1]d c r i i
Usage: Bandwidth utilization in percentage
Interface      Usage (%)    Total (pps)    Broadcast (pps)    Multicast (pps)
XGE1/0/25      0            0              ---               ---
XGE1/0/26      0            0              ---               ---
XGE1/0/27      10           844575         ---               ---

Overflow: More than 14 digits.
--: Not supported.

[DUT1]d c r o i
Usage: Bandwidth utilization in percentage
Interface      Usage (%)    Total (pps)    Broadcast (pps)    Multicast (pps)
XGE1/0/25      10           844575         ---               ---
XGE1/0/26      10           844575         ---               ---
XGE1/0/27      0            0              ---               ---

Overflow: More than 14 digits.
--: Not supported.
```



6. Send bi-direction unicast traffic

7. Traffic is forwarding normally, and no traffic loss occurs

The screenshot displays the Spirent TestCenter interface. The top section shows the Test Configuration window with a tree view on the left containing 'All Multicast Groups', 'All Traffic Generators', 'All Stream Blocks', 'All Traffic Analyzers', and 'All Ports'. The main area shows the configuration for 'Port //2/7 [74:85:C4:F6:21:08/Ten-GigabitEthernet1/0/27]' and 'Port //2/8 [AC:74:09:2B:3A:8A/Ten-GigabitEthernet1/0/51]'. The 'Scheduling Mode' is set to 'Port Based' with 'Bandwidth Utilization (%)' at 10. The 'Duration Mode' is 'Continuous'. The 'Status' table shows 'StreamBlock 2' is active. The bottom section shows the 'Basic Traffic Results' window with a table of traffic statistics.

Port Name	ps	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)
Port //2/7...	108,108,080	864,864,660	864,864,660	844,595	844,595
Port //2/8...	108,108,089	864,864,722	864,864,722	844,595	844,594

8. Remove the link between DUT 1 and DUT 2 and traffic can recover within 30s

```
[DUT1-Ten-GigabitEthernet1/0/25]shu
%Jan 28 10:26:57:762 2021 DUT1 STP/6/STP_NOTIFIED_TC: Instance 0's port Ten-GigabitEthernet1/0/2
6 was notified a topology change.
%Jan 28 10:26:57:777 2021 DUT1 IFNET/3/PHY_UPDOWN: Physical state on the interface Ten-GigabitEt
hernet1/0/25 changed to down.
%Jan 28 10:26:57:868 2021 DUT1 IFNET/5/LINK_UPDOWN: Line protocol state on the interface Ten-Gig
abitEthernet1/0/25 changed to down.
[DUT1-Ten-GigabitEthernet1/0/25]
```

The screenshot shows the 'Basic Traffic Results' window with a table of traffic statistics. The table has columns for Port Name, ps, Generator Rate (Bps), Generator Rate (bps), Generator Sig Rate (fps), and Rx Sig Rate (fps). The data shows that traffic has recovered after the link was removed.

Port Name	ps	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)
Port //2/7...	108,108,114	864,864,912	864,864,912	844,595	844,595
Port //2/8...	108,108,085	864,864,680	864,864,680	844,595	844,594

9. Reconnect DUT 1 to DUT 2 and traffic can recover within 30s

```
[DUT1-Ten-GigabitEthernet1/0/25]und shu
[DUT1-Ten-GigabitEthernet1/0/25]%Jan 28 10:47:39:157 2021 DUT1 IFNET/3/PHY_UPDOWN: Physical stat
e on the interface Ten-GigabitEthernet1/0/25 changed to up.
%Jan 28 10:47:39:161 2021 DUT1 IFNET/5/LINK_UPDOWN: Line protocol state on the interface Ten-Gig
abitEthernet1/0/25 changed to up.
```

Basic Traffic: Results 1

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

Basic Counters Errors Triggers Protocols Undersize/Oversize/Jumbo PFC Counters User Defined Advan < >

Port Name	ps	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)
Port //2/7...	108,108,114	864,864,912	844,595	844,595	
Port //2/8...	108,108,085	864,864,680	844,595	844,594	
Σ					

< >

☐ Passed

☐ Failed

2.2 RSTP

Test Item Name: RSTP
Work Hour: 40 min
Test Topology:
Test Process: <ol style="list-style-type: none"> 1. On the DUTs, set the spanning tree mode to RSTP 2. Configure DUT 1 as the root bridge. 3. View the RSTP status on the DUTs. On the tester, send broadcast traffic through Port A for 1 minute. Result 1 is expected. 4. On the tester, construct Layer 2 unicast packets and the reversed packets (source and destination MAC addresses are swapped). Send all the packets continuously through Port A and Port B. Result 2 is expected. 5. Configure Port 4 of DUT 1 and Port 5 of DUT 2 as edge ports.



6. Remove the link between DUT 1 and DUT 2. Result 3 is expected.
7. Reconnect DUT 1 to DUT 2. Result 3 is expected.
8. Modify the spanning tree parameters of the DUTs and verify whether the DUTs can recalculate spanning trees based on the modifications. Result 3 is expected.

Expect Results:

1. DUTs can calculate spanning trees correctly.
2. DUTs can recalculate spanning trees correctly within 2s.

Actual Results:

1. Set STP mode to RSTP on DUT

[DUT] stp global enable

[DUT] stp mode rstp

2. Configure DUT1 as root bridge

[DUT1] stp root primary

3. Check the STP status on DUT

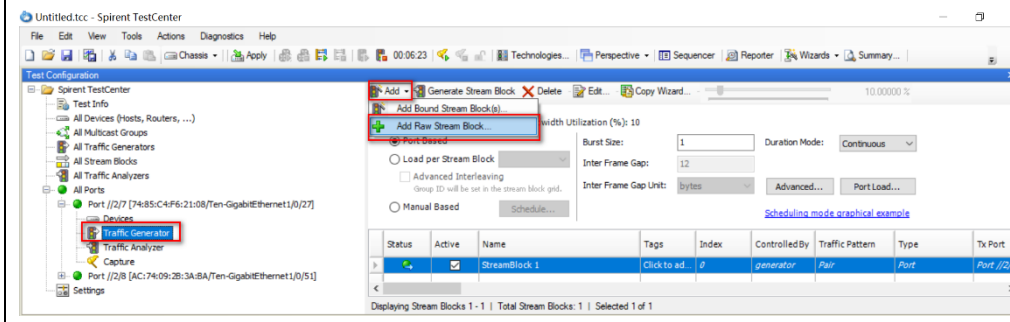
Display stp brief

[DUT1]dis stp br					
MST ID	Port	Role	STP State	Protection	
0	Ten-GigabitEthernet1/0/25	DESI	FORWARDING	NONE	
0	Ten-GigabitEthernet1/0/26	ROOT	FORWARDING	NONE	
0	Ten-GigabitEthernet1/0/27	DESI	FORWARDING	NONE	

[DUT2]dis stp br					
MST ID	Port	Role	STP State	Protection	
0	Ten-GigabitEthernet1/0/49	ALTE	DISCARDING	NONE	
0	Ten-GigabitEthernet1/0/50	ROOT	FORWARDING	NONE	
0	Ten-GigabitEthernet1/0/51	DESI	FORWARDING	NONE	

[DUT3]dis stp br					
MST ID	Port	Role	STP State	Protection	
0	Ten-GigabitEthernet1/0/24	DESI	FORWARDING	NONE	
0	Ten-GigabitEthernet1/0/39	DESI	FORWARDING	NONE	

4. Send broadcast traffic and no broadcast storm occurs.





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StreamBlock Editor - Port //2/7 [74:85:C4:F6:21:08/Ten-GigabitEthernet1/0/27] : StreamBlock 1

General Frame Groups Rx Port Preview

Preview:

EthernetII ☒ Show All Fields ☐ Allow Invalid Packets

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	FF:FF:FF:FF:FF:FF
Source MAC	00:10:94:00:00:02
EtherType (hex)	<auto> 88B5

Untitled.tcc - Spirent TestCenter

File Edit View Tools Actions Diagnostics Help

00:05:16 Technologies... Perspective Sequencer Reporter Wizards Summary...

Test Configuration

Spirent TestCenter

Test Info

- All Devices (Hosts, Routers, ...)
- All Multicast Groups
- All Traffic Generators
- All Stream Blocks
- All Traffic Analyzers
- All Ports
 - Port //2/7 [74:85:C4:F6:21:08/Ten-GigabitEthernet1/0/27]
 - Devices
 - Traffic Generator
 - Traffic Analyzer
 - Capture
 - Port //2/8 [AC:74:09:2B:1A:8A/Ten-GigabitEthernet1/0/51]
- Settings

StreamBlock Editor

Add Generate Stream Block Delete Edit Copy Wizard...

Scheduling Mode: Bandwidth Utilization (%): 10

☒ Port Based ☐ Load per Stream Block ☐ Manual Based

☐ Advanced Interleaving

Burst Size: 1 Duration Mode: Continuous

Inter Frame Gap: 12

Inter Frame Gap Unit: Bytes

Advanced... Port Load...

Scheduling mode graphical example

Status	Active	Name	Tags	Index	Controlled By	Traffic Pattern	Type	Tx Port
		StreamBlock 1	Click to add	0	generator	Pair	Port	Port //2/7

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

Basic Traffic Results 1

Port Traffic and Counters > Basic Traffic Results Change Result View

Port Name	pps	Generator Rate (Bps)	Generator Rate (pps)	Generator Sig Rate (pps)	Rx Sig Rate (pps)
Port //2/7	108,108,099	894,894,794	894,595	0	
Port //2/8	0	0	0	894,594	

Streams > Detailed Stream Results Change Result View

Select Tx Ports: All Ports Select Rx Ports: All Ports Change Counter Mode:

Basic Mode Resample

Name/ID	Tx Port Name	Rx Port Name	Aggregated Rx Port Count	Tx Count (frames)	Rx Count (frames)	Tx Rate (bps)
StreamBlock	Port //2/7 [74:85:C4:F6:21:08/Ten-GigabitEthernet1/0/27]	Port //2/8 [AC:74:09:2B:1A:8A/Ten-GigabitEthernet1/0/51]	1	266,478,992	267,000,109	894,894,848

Display counter rate inbound interface

```
[DUT1]d c r i i
Usage: Bandwidth utilization in percentage
Interface      Usage (%)  Total (pps)  Broadcast (pps)  Multicast (pps)
XGE1/0/25      0          0            ---             ---
XGE1/0/26      0          0            ---             ---
XGE1/0/27      10         844575       ---             ---

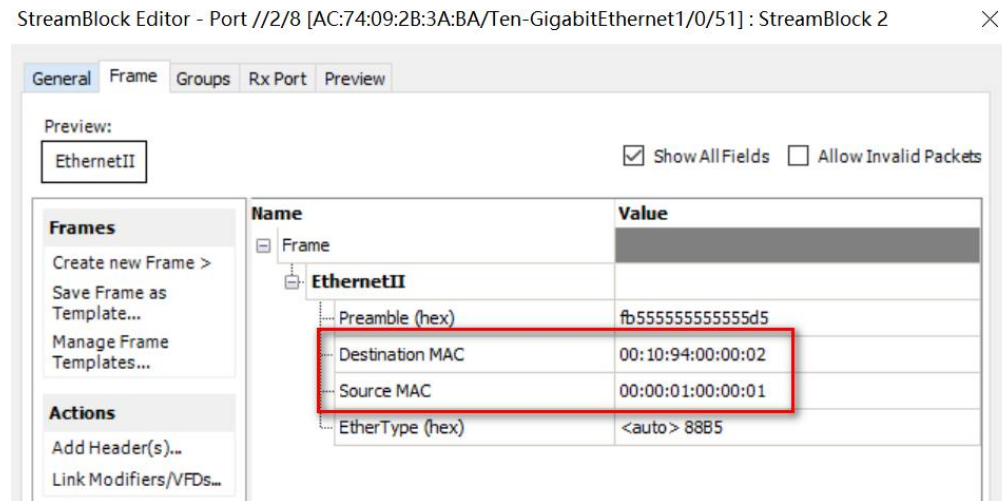
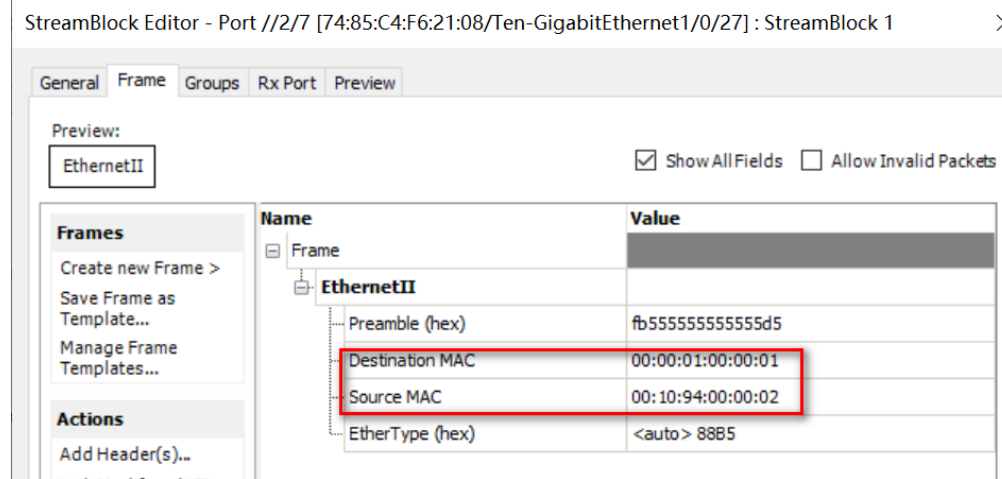
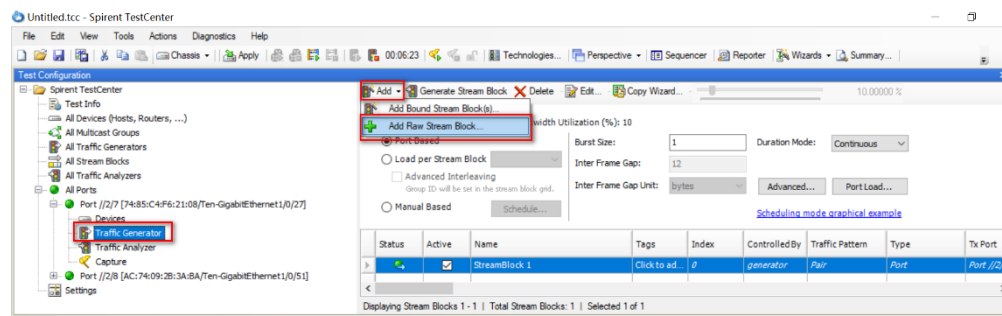
Overflow: More than 14 digits.
--: Not supported.

[DUT1]d c r o i
Usage: Bandwidth utilization in percentage
Interface      Usage (%)  Total (pps)  Broadcast (pps)  Multicast (pps)
XGE1/0/25      10         844575       ---             ---
XGE1/0/26      10         844575       ---             ---
XGE1/0/27      0          0            ---             ---

Overflow: More than 14 digits.
--: Not supported.
```

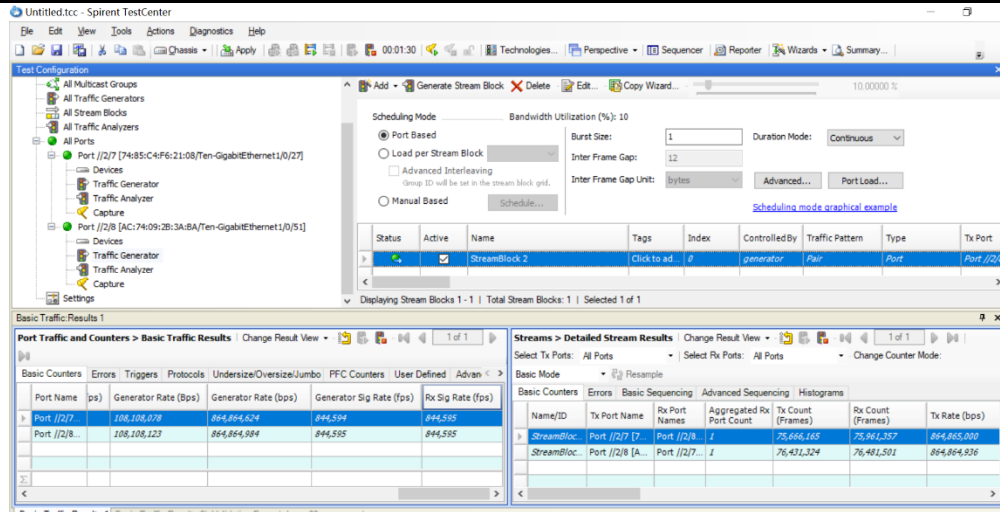


5. Send bi-direction unicast traffic and no traffic loss occurs.



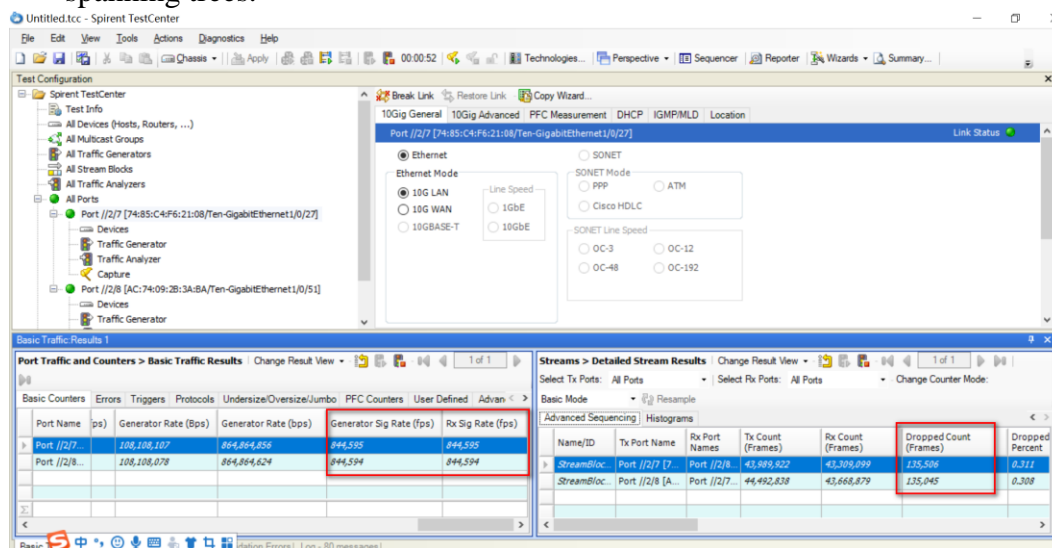


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6. Remove the link between DUT1 and DUT2

7. Traffic is interrupted within 2 seconds, and the DUTs can recalculate spanning trees.



$135506/844594=0.158\text{ s}$

☐ Passed

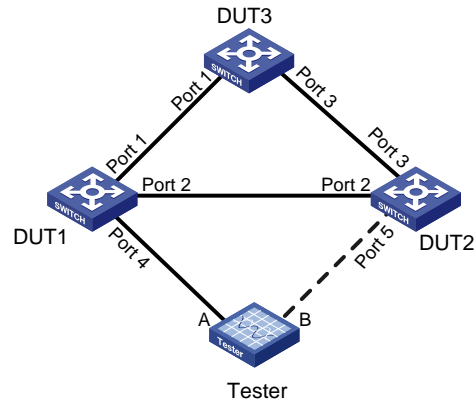
☐ Failed

2.3 MSTP

Test Item Name: MSTP

Work Hour: 50 min

Test Topology:



Test Process:

1. On the DUTs, create VLAN 2, configure the ports that interconnect the DUTs as trunk ports, and configure the ports to permit packets of all VLANs.
2. On the DUTs, configure an MSTP region, and map VLAN 1 and VLAN 2 to MSTI 1 and MSTI 2, respectively.
3. Configure Port 4 of DUT 1 and Port 5 of DUT 2 as edge ports.
4. Configure DUT 1 as the root bridge of MSTI 0 and MSTI 1, and configure DUT 3 as the root bridge of MSTI 2.
5. On the tester, send broadcast traffic of VLAN 1 continuously through Port A, and send broadcast traffic of VLAN 2 continuously through Port B. Result 1 is expected.
6. Remove the link between DUT 1 and DUT 2. Result 2 is expected.
7. Reconnect DUT 1 to DUT 2. Result 2 is expected.
8. Remove the link between DUT 1 and DUT 3. Result 3 is expected.
9. Reconnect DUT 1 to DUT 3. Result 3 is expected.

Expect Results:

1. Port A and Port B of the tester send and receive traffic correctly.
2. On Port B, incoming traffic is interrupted for fewer than 2 seconds. No traffic interruption occurs on Port A.
3. On Port A, incoming traffic is interrupted for fewer than 2 seconds. No traffic interruption occurs on Port B.

**Actual Result:**

1. On the DUTs, create VLAN 2, configure the ports that interconnect the DUTs as trunk ports, and configure the ports to permit packets of all VLANs.

#

vlan 2

#

interface Ten-GigabitEthernet1/0/xx**port link-mode bridge****port link-type trunk****port trunk permit vlan all**

#

2. On the DUTs, configure an MSTP region, and map VLAN 1 and VLAN 2 to MSTI 1 and MSTI 2, respectively.

[DUT] stp region-configuration**[DUT-mst-region] instance 1 vlan 1****[DUT-mst-region] instance 2 vlan 2****[DUT-mst-region] region-name H3C****[DUT-mst-region] active region-configuration**

3. Configure Port 4 of DUT 1 and Port 5 of DUT 2 as edge ports.

#

interface Ten-GigabitEthernet1/0/27**port link-mode bridge****port link-type trunk****port trunk permit vlan all****stp edged-port**

#

4. Configure DUT 1 as the root bridge of MSTI 0 and MSTI 1, and configure DUT 3 as the root bridge of MSTI 2.

[DUT1]stp instance 0 root primary**[DUT1]stp instance 1 root primary****[DUT3]stp instance 2 root primary**



5. Send broadcast traffic of VLAN 1 continuously through Port A, and send broadcast traffic of VLAN 2 continuously through Port B

StreamBlock Editor - Port //2/7 [74:85:C4:F6:21:08/Ten-GigabitEthernet1/0/27] : StreamBlock 1

GeneralFrameGroupsRx PortPreview

Preview:

EthernetII

☒ Show All Fields ☐ Allow Invalid Packets

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)	fb55555555555d5
Destination MAC	FF:FF:FF:FF:FF:FF
Source MAC	00:10:94:00:00:02
Vlans	
Vlan	
Type (hex)	8100
Priority (bits)	000
CFI (bit)	0
ID (int)	1
EtherType (hex)	<auto> 88B5

StreamBlock Editor - Port //2/8 [AC:74:09:2B:3A:BA/Ten-GigabitEthernet1/0/51] : StreamBlock 2

GeneralFrameGroupsRx PortPreview

Preview:

EthernetII

☒ Show All Fields ☐ Allow Invalid Packets

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)	fb55555555555d5
Destination MAC	FF:FF:FF:FF:FF:FF
Source MAC	00:00:01:00:00:01
Vlans	
Vlan	
Type (hex)	8100
Priority (bits)	000
CFI (bit)	0
ID (int)	2
EtherType (hex)	<auto> 88B5



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6. Port A and Port B of the tester send and receive traffic correctly.

The screenshot shows the Spirent TestCenter interface. The 'Test Configuration' pane on the left shows a tree view with 'All Multicast Groups', 'All Traffic Generators', 'All Stream Blocks', 'All Traffic Analyzers', and 'All Ports'. Under 'All Ports', there are two entries: 'Port //2/7 [74:85:C4:F6:21:08/Ten-GigabitEthernet1/0/27]' and 'Port //2/8 [AC:74:09:2B:3A:8A/Ten-GigabitEthernet1/0/51]'. The 'Scheduling Mode' is set to 'Port Based'. The 'Bandwidth Utilization (%)' is 10. The 'Burst Size' is 1, 'Duration Mode' is 'Continuous', 'Inter Frame Gap' is 12, and 'Inter Frame Gap Unit' is 'bytes'. The 'Status' table shows 'StreamBlock 2' is active. The 'Basic Traffic Results' table shows the following data:

Port Name	ps	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)
Port //2/7...	108,108,110	864,865,640	864,595	864,595	
Port //2/8...	108,108,111	864,864,888	864,595	864,594	

The 'Streams > Detailed Stream Results' table shows the following data:

Name/ID	Tx Port Name	Rx Port Names	Tx Count (Frames)	Rx Count (Frames)	Dropped Count (Frames)	Dropped Percent
StreamBlock...	Port //2/7 [74...	Port //2/8...	4,191,751	4,432,845	0	0.000
StreamBlock...	Port //2/8 [AC...	Port //2/7...	3,960,764	4,053,349	0	0.000

7. Remove and reconnect the link between DUT1 and DUT2

8. On Port B, incoming traffic is interrupted within 2 seconds. No traffic interruption occurs on Port A.

The screenshot shows the Spirent TestCenter interface. The 'Test Configuration' pane on the left shows a tree view with 'All Multicast Groups', 'All Traffic Generators', 'All Stream Blocks', 'All Traffic Analyzers', and 'All Ports'. Under 'All Ports', there are two entries: 'Port //2/7 [74:85:C4:F6:21:08/Ten-GigabitEthernet1/0/27]' and 'Port //2/8 [AC:74:09:2B:3A:8A/Ten-GigabitEthernet1/0/51]'. The 'Scheduling Mode' is set to 'Port Based'. The 'Bandwidth Utilization (%)' is 10. The 'Burst Size' is 1, 'Duration Mode' is 'Continuous', 'Inter Frame Gap' is 12, and 'Inter Frame Gap Unit' is 'bytes'. The 'Status' table shows 'StreamBlock 2' is active. The 'Basic Traffic Results' table shows the following data:

Port Name	ps	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)
Port //2/7...	108,108,084	864,864,672	864,595	864,595	
Port //2/8...	108,108,119	864,864,952	864,595	864,594	

The 'Streams > Detailed Stream Results' table shows the following data:

Name/ID	Tx Port Name	Rx Port Names	Tx Count (Frames)	Rx Count (Frames)	Dropped Count (Frames)	Dropped Percent
StreamBlock...	Port //2/7 [74...	Port //2/8...	174,826,212	174,226,892	6151	0.003
StreamBlock...	Port //2/8 [AC...	Port //2/7...	174,597,414	173,853,356	0	0.000

$$6151/844594=0.00728 \text{ s}$$

9. Remove and reconnect the link between DUT1 and DUT3

10. On Port A, incoming traffic is interrupted within 2 seconds. No traffic interruption occurs on Port B.



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The screenshot shows the Spirent TestCenter interface. The 'Test Configuration' pane on the left shows a tree view with 'All Ports' selected, showing 'Port //2/7 [74:85:C4:F6:21:08/Ten-GigabitEthernet1/0/27]' and 'Port //2/8 [AC:74:09:2B:3A:8A/Ten-GigabitEthernet1/0/51]'. The 'Scheduling Mode' pane shows 'Port Based' selected with 'Bandwidth Utilization (%)' set to 10. The 'Streams > Detailed Stream Results' pane shows a table with columns: Name/ID, Tx Port Name, Rx Port Name, Tx Count (Frames), Rx Count (Frames), Dropped Count (Frames), and Drop Percent. The table contains two rows of data for 'StreamBlock 2'.

Name/ID	Tx Port Name	Rx Port Name	Tx Count (Frames)	Rx Count (Frames)	Dropped Count (Frames)	Drop Percent
StreamBlock 2	Port //2/7 [74:85:C4:F6:21:08]	Port //2/8 [AC:74:09:2B:3A:8A]	299,720,381	299,720,381	0	0.000
StreamBlock 2	Port //2/8 [AC:74:09:2B:3A:8A]	Port //2/7 [74:85:C4:F6:21:08]	299,619,941	298,888,944	8,940	0.002

$$8940/844595=0.01058 \text{ s}$$

☐ Passed

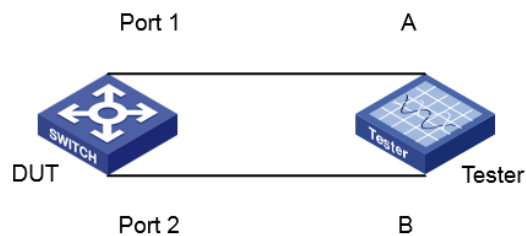
☐ Failed

2.4 VLAN specification

Test Item Name: VLAN Specification

Work Hour: 30 min

Test Topology:



Test Process:

1. Create 4094 VLANs on DUT
2. Configure Port 1 and Port 2 as trunk Ports and configure them to permit all VLANs
3. The Tester Port A sends 4094 L2 broadcast packets in burst mode. The VLAN tag of the sent message range from 1 to 4094. The packet is received and captured on Port B. The expected result is 1.

Expect Results:



1. Tester Port B can receive 4,094 L2 broadcast messages from Port A

Actual Result:

1. Create 4094 VLANs on DUT

```
[DUT]vlan all
Please wait.....Done.
[DUT]
```

2. Configure ports as trunk mode and permit all VLANs to pass

#

interface GigabitEthernet1/0/1

port link-mode bridge

port link-type trunk

port trunk permit vlan all

#

interface GigabitEthernet1/0/2

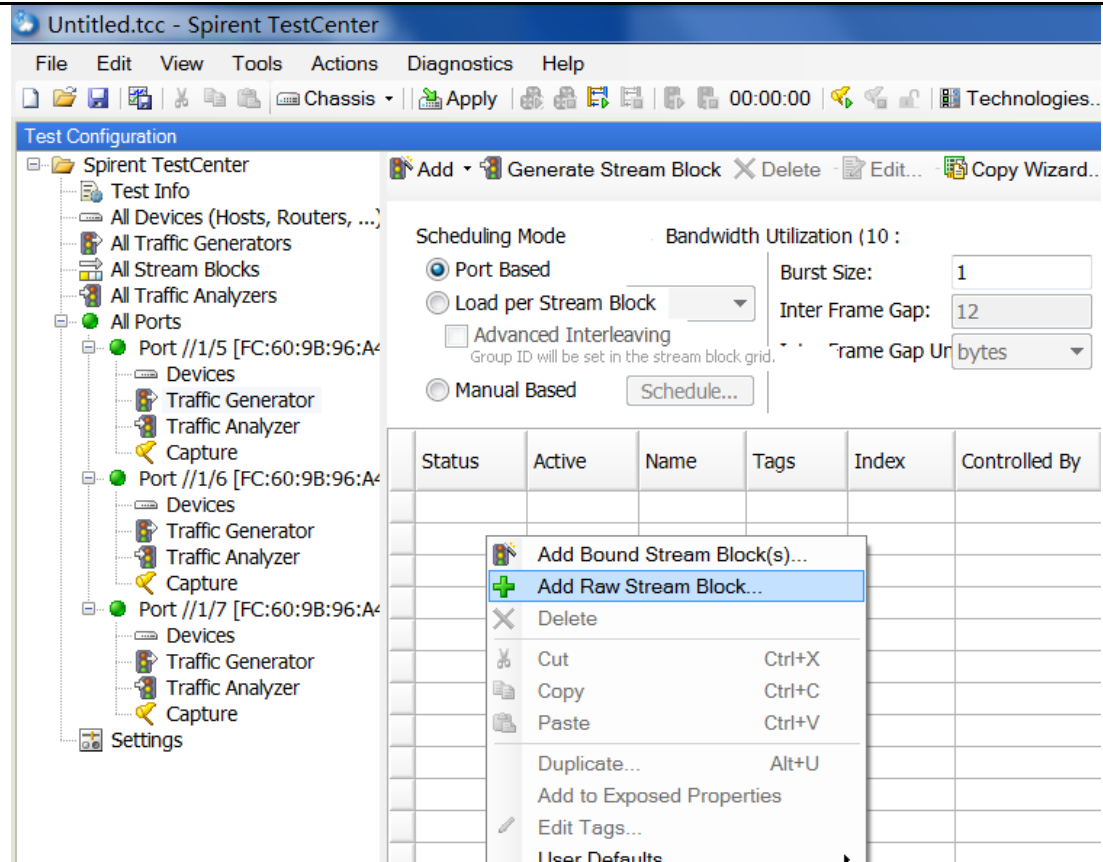
port link-mode bridge

port link-type trunk

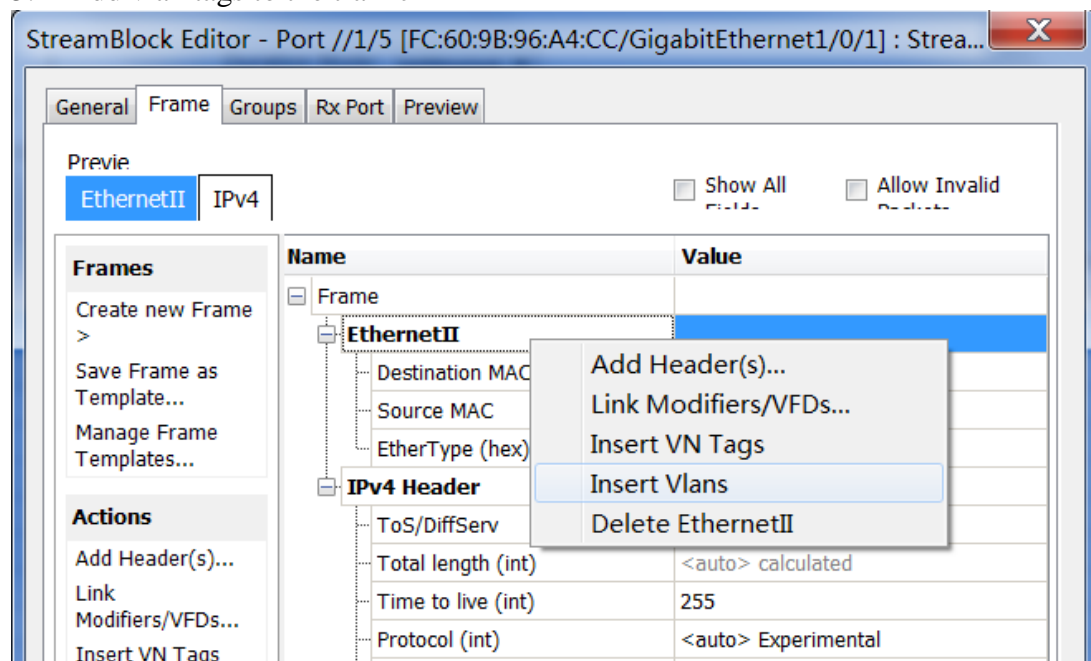
port trunk permit vlan all

#

4. Create raw stream on TC1:



- ## 5. Add vlan tags to the traffic



6. Change the vlan modifier:



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StreamBlock Editor - Port //1/5 [FC:60:9B:96:A4:CC/GigabitEthernet1/0/1] : Strea...

General Frame Groups Rx Port Preview

Preview

EthernetII IPv4 ☐ Show All ☐ Allow Invalid

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	
Destination MAC	00:00:01:00:00:01
Source MAC	00:10:94:00:00:02
Vlans	
Vlan	
Type (hex)	8100
Priority (bits)	000
CFI (bit)	0
ID (int)	4094
EtherType (hex)	
IPv4 Header	
ToS/DiffServ	
Total length (int)	<auto> calculated

Add Header(s)...

Link Modifiers/VFDs...

Insert Modifier...

Configure Modifier

Offset

☒ Start modifier on first byte ☐ Start modifier at offset

Type

☒ Increment ☐ Decrement ☐ List ☐ Random ☐ Shuffle ☐ Use Stream:

Details

Count: 4094 Step: 1

Repeat: 0 Mask: 4095

Seed: 0

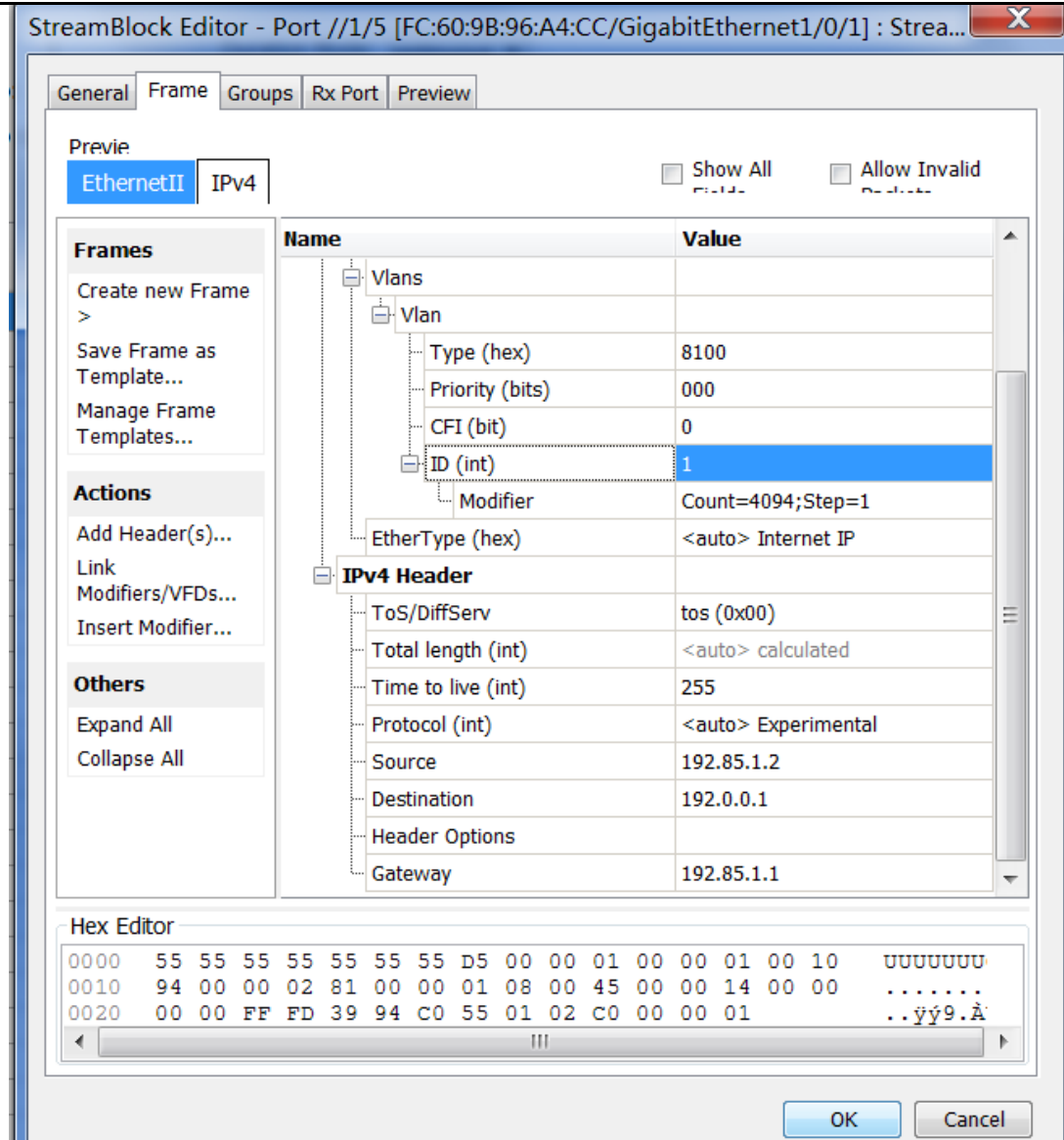
Value: 1

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

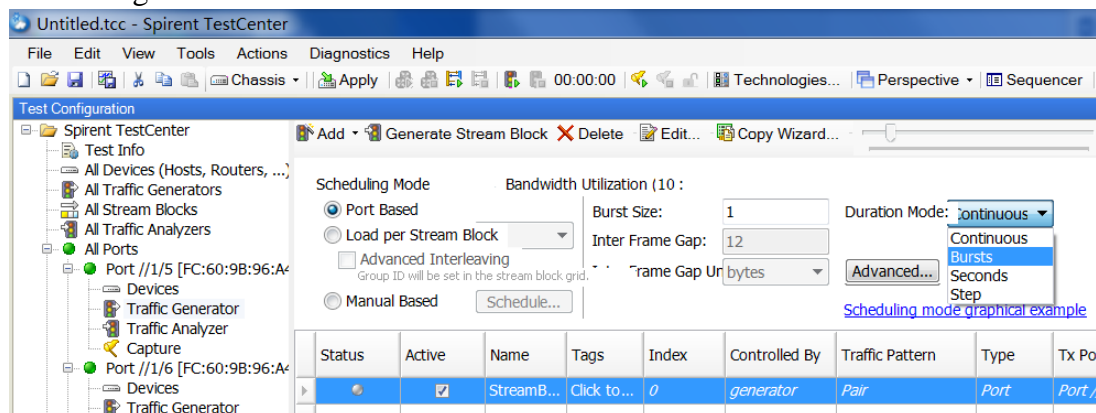
OK Cancel



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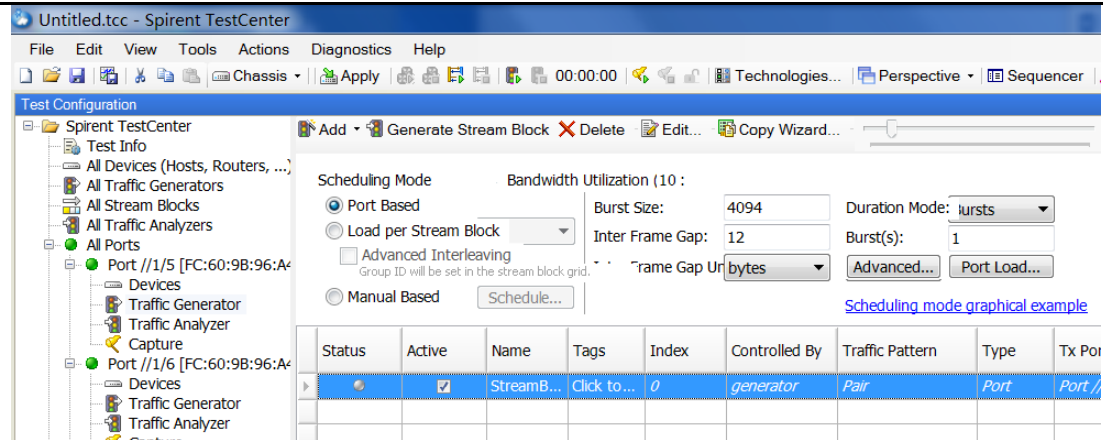
7. Change the duration mode to burst:



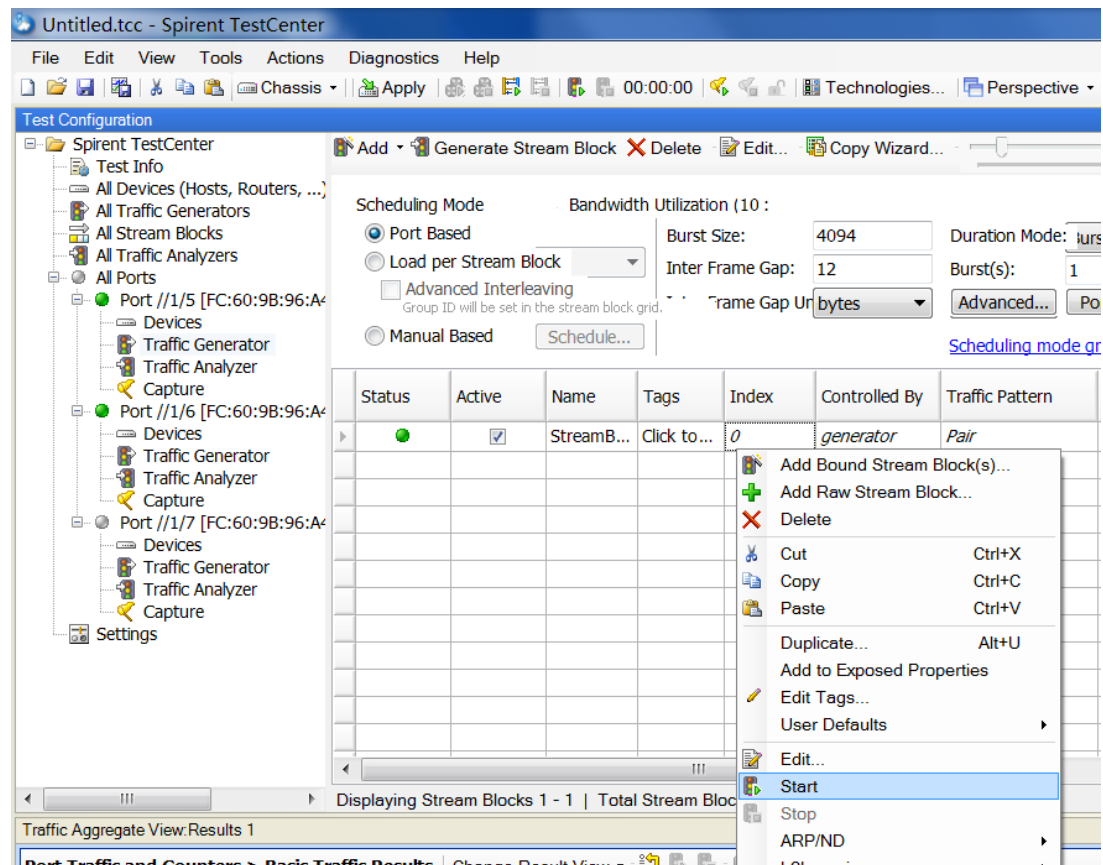
8. Change the burst size to 4094



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9. Start the traffic



10. Check the result, there are 4094 packets sent and received

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Traffic Aggregate View: Results 1

Displaying Stream Blocks: 1 | Total Stream Blocks: 1 | Selected Port: 1

Port Traffic and Counters > Basic Traffic Results									
Change Result View									
Basic Counters		Errors	Triggers	Protocols	Undersize/Oversize/Jumbo	FEC Counters	User Defined	Advanced Sequencing	FEC Counters
Port Name	Rate (ent)	Rx L1 Rate (Percent)	Generator Count (Frames)	Generator Sig Count (Frames)	Rx Sig Count (Frames)	Total Tx Rate (fps)	Total Rx Rate (fps)		
Port //1...		0	4,094	4,094	0	0	0		
Port //1...		0	0	0	4,094	0	0		
Port //1...		0	0	0	0	0	0		
Σ			4,094	4,094	4,094				

11. Capture the packets on TC2

12. Send the traffic again and stop the capture



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Untitled.tcc - Spirent TestCenter

File Edit View Tools Actions Diagnostics Help

Chassis Apply 00:00:00 Technologies...

Test Configuration

Spirent TestCenter

- Test Info
- All Devices (Hosts, Routers, ...)
- All Traffic Generators
- All Stream Blocks
- All Traffic Analyzers
- All Ports
 - Port //1/5 [FC:60:9B:96:A4]
 - Devices
 - Traffic Generator
 - Traffic Analyzer
 - Capture
 - Port //1/6 [FC:60:9B:96:A4]
 - Devices
 - Traffic Generator
 - Traffic Analyzer
 - Capture
 - Port //1/7 [FC:60:9B:96:A4]
 - Devices
 - Traffic Generator
 - Traffic Analyzer
 - Capture
- Settings

Scheduling Mode: ☒ Port Based ☐ Load per Stream Block ☐ Manual Based

Bandwidth Utilization (10 :
Burst Size: 4094
Inter Frame Gap: 12
Frame Gap Unit: bytes

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

Schedule...

Status	Active	Name	Tags	Index	Controlled By
		StreamB	Click to	0	generator
		Add Bound Stream Block(s)...			
		Add Raw Stream Block...			
		Delete			
		Cut Ctrl+X			
		Copy Ctrl+C			
		Paste Ctrl+V			
		Duplicate... Alt+U			
		Add to Exposed Properties			
		Edit Tags...			
		User Defaults			
		Edit...			
		Start			
		Stop			
		ARP/ND			

Displaying Stream B

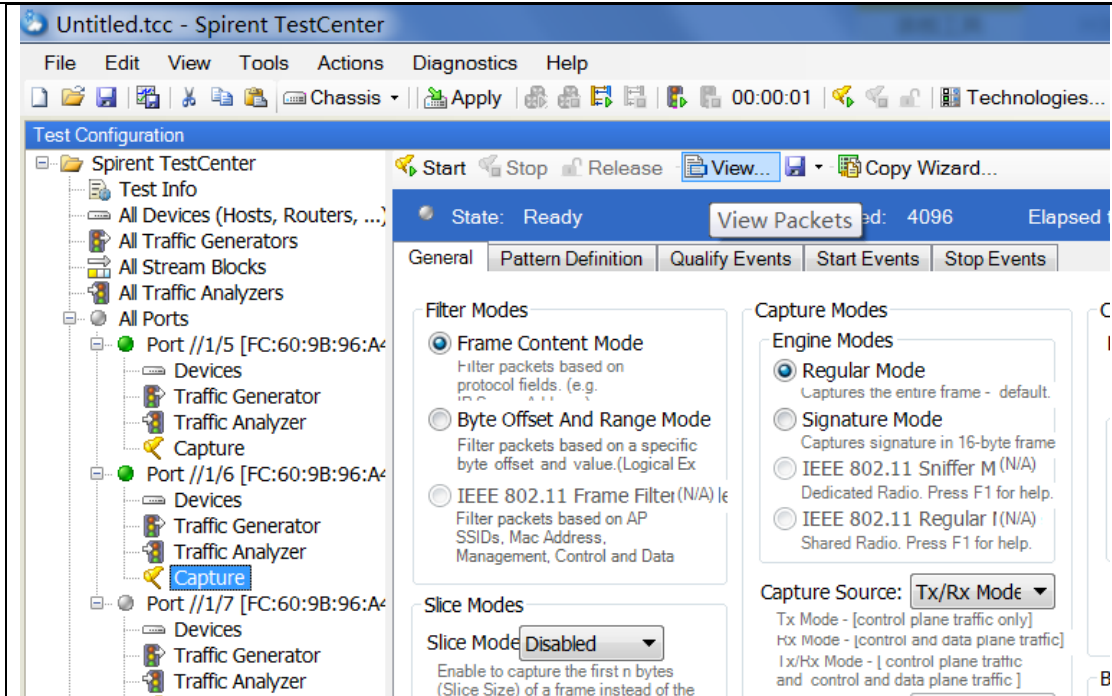
Traffic Aggregate View: Results 1

selected 1 of 1

13. Check the results



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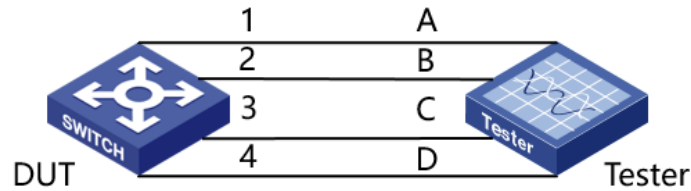


14. The packets have 4094 different vlan tags

*\\.\pipe\view_capture_192-168-207-244_1_6_01182021_150436						
文件(F) 编辑(E) 视图(V) 跳转(G) 捕获(C) 分析(A) 统计(S) 电话(Y) 无线(W) 工具(T) 帮助(H)						
应用显示过滤器 ... <Ctrl-/>						
No.	Time	Source	Destination	Protocol	802.1Q	Length
	1.750274	Performa_00:00:02	Broadcast	0x88b5	4083	128
	1.750275	Performa_00:00:02	Broadcast	0x88b5	4084	128
	1.750276	Performa_00:00:02	Broadcast	0x88b5	4085	128
	1.750277	Performa_00:00:02	Broadcast	0x88b5	4086	128
	1.750278	Performa_00:00:02	Broadcast	0x88b5	4087	128
	1.750279	Performa_00:00:02	Broadcast	0x88b5	4088	128
	1.750281	Performa_00:00:02	Broadcast	0x88b5	4089	128
	1.750282	Performa_00:00:02	Broadcast	0x88b5	4090	128
	1.750283	Performa_00:00:02	Broadcast	0x88b5	4091	128
	1.750284	Performa_00:00:02	Broadcast	0x88b5	4092	128
	1.750285	Performa_00:00:02	Broadcast	0x88b5	4093	128
	1.750287	Performa_00:00:02	Broadcast	0x88b5	4094	128
<input type="checkbox"/> Passed				<input type="checkbox"/> Failed		

2.5 Isolate group

Test Item Name: Isolate group
Work Hour: 20 min
Test Purpose:
Test Topology:



Test Process:

1. Assign Port1 through Port 4 to VLAN 2. Create isolation group 1, and assign Port 1 through Port3 to isolation group 1. Do not assign Port4 to the isolation group.
2. Send broadcast packets out of Port A of Tester. Result 1 is expected.
3. Send broadcast packets out of Port B of Tester. Result 1 is expected.
4. Send broadcast packets out of Port C of Tester. Result 1 is expected.
5. Send broadcast packets out of Port D of Tester. Result 2 is expected.

Expect Results:

1. Only Port D of Tester receives packets.
2. Ports A, B, and C of Tester receive packets.

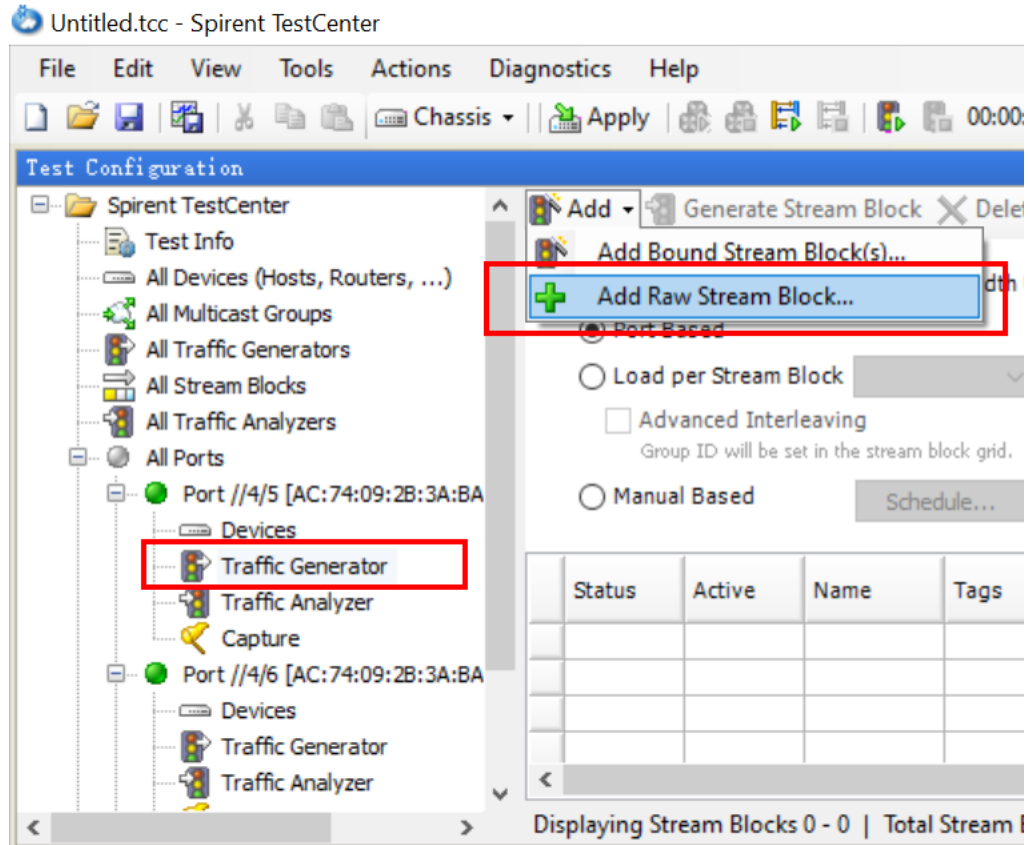
Actual Result:

1. Assign Port1 through Port 4 to VLAN 2. Create isolation group 1, and assign Port 1 through Port3 to isolation group 1. Do not assign Port4 to the isolation group.

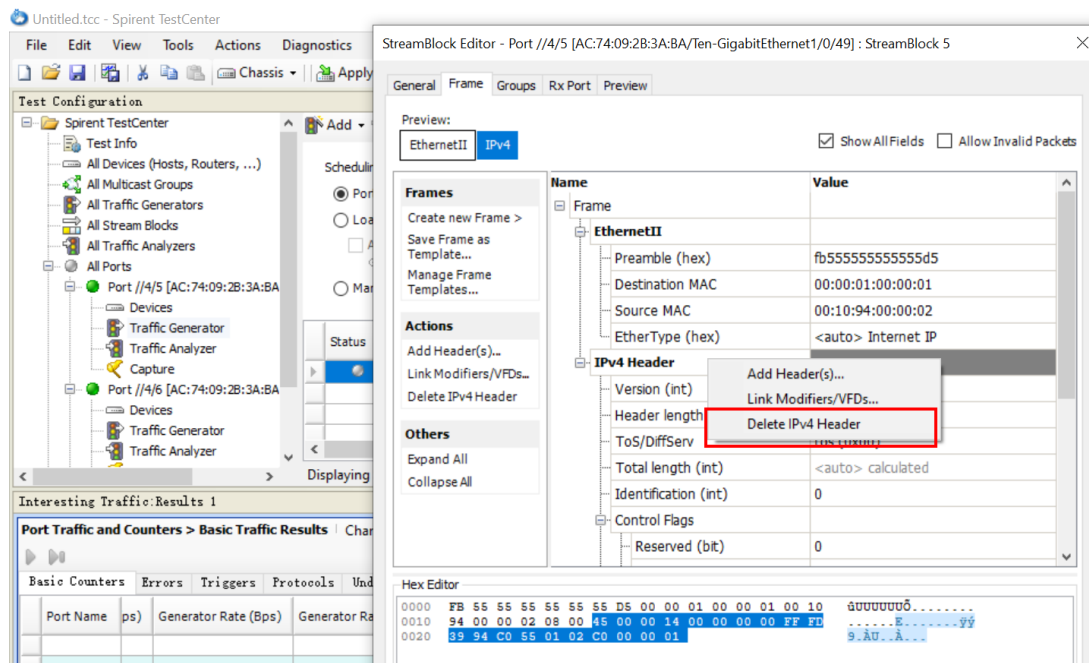
```
[DUT]port-isolate group 1
[DUT]vlan 2
[DUT-vlan2]port Ten-GigabitEthernet 1/0/49 to Ten-GigabitEthernet 1/0/52
[DUT-vlan2]quit
[DUT]interface Ten-GigabitEthernet1/0/49
[DUT-Ten-GigabitEthernet1/0/49]port-isolate enable group 1
[DUT-Ten-GigabitEthernet1/0/49]interface Ten-GigabitEthernet1/0/50
[DUT-Ten-GigabitEthernet1/0/50]port-isolate enable group 1
[DUT-Ten-GigabitEthernet1/0/50]interface Ten-GigabitEthernet1/0/51
[DUT-Ten-GigabitEthernet1/0/51]port-isolate enable group 1
```

2. Send broadcast packets out of Port A of Tester. Result 1 is expected.

Add raw stream.



Delete the IPv4 header.



Change the destination MAC to send the broadcast traffic.



H3C S5560X-EI Product Test Procedures

StreamBlock Editor - Port //4/5 [AC:74:09:2B:3A:BA/Ten-GigabitEthernet1/0/49] : StreamBlock 1

General Frame Groups Rx Port Preview

Preview: EthernetII ☒ Show All Fields ☐ Allow Invalid Packets

Name	Value
EthernetII	
Preamble (hex)	fb555555555555d5
Destination MAC	ff:ff:ff:ff:ff:ff
Source MAC	00:10:94:00:00:02
EtherType (hex)	<auto> 88b5

Actions

Add Header(s)...

Link Modifiers/VFDs...

Others

Expand All

Collapse All

Hex Editor

```
0000 fb 55 55 55 55 55 55 55 d5 ff ff ff ff ff ff 00 10  ....µ.....  
0010 94 00 00 02 88 b5  ....µ
```

Port Traffic and Counters > Basic Traffic Results

Port Name	Generator Rate (Bps)	Generator Rate
Port //4/5	108,108,129	864,865,032
Port //4/6...	0	0
Port //4/7...	0	0
Port //4/8...	0	0

Interesting Traffic: Results 1

Interesting Traffic: Results 2

Strat to send the traffic.



H3C S5560X-EI Product Test Procedures

Untitled.tcc - Spirent TestCenter

File Edit View Tools Actions Diagnostics Help

Chassis Apply 00:00:01 Technologies... Persp

Test Configuration

Spirent TestCenter

- Test Info
- All Devices (Hosts, Routers, ...)
- All Multicast Groups
- All Traffic Generators
- All Stream Blocks
- All Traffic Analyzers
- All Ports
 - Port //4/5 [AC:74:09:2B:3A:BA]
 - Devices
 - Traffic Generator
 - Traffic Analyzer
 - Capture
 - Port //4/6 [AC:74:09:2B:3A:BA]
 - Devices
 - Traffic Generator
 - Traffic Analyzer

Scheduling Mode: Port Based (selected)

Bandwidth Utilization (%): 10

Burst Size: 1

Inter Frame Gap: 12

Inter Frame Gap Unit: bytes

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

Manual Based: ☐

Stream Blocks

Status	Active	Name
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	StreamBlo...

Displaying Stream Blocks 1 - 1 | Total Str

Interesting Traffic: Results 1

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

Port Name	ps	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate

Interesting Traffic: Results 1

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

Port Name	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)
Port //4/5...	108,108,135	864,865,080	844,595	0
Port //4/6...	0	0	0	0
Port //4/7...	0	0	0	0
Port //4/8...	0	0	0	844,594

Streams > Interesting Stream Results | Change

Rx Port Name	Stream Index	Rx Count (Frames)

3. Send broadcast packets out of Port B of Tester. Result 1 is expected. The process of creating a data stream is similar to Port A



H3C S5560X-EI Product Test Procedures

Port Name	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)
Port //4/5...	0	0	0	0
Port //4/6...	108,108,111	864,864,888	844,595	0
Port //4/7...	0	0	0	0
Port //4/8...	0	0	0	844,594

4. Send broadcast packets out of Port C of Tester. Result 1 is expected.
The process of creating a data stream is similar to Port A.

Port Name	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)
Port //4/5...	0	0	0	0
Port //4/6...	0	0	0	0
Port //4/7...	108,108,111	864,864,888	844,595	0
Port //4/8...	0	0	0	844,595

5. Send broadcast packets out of Port D of Tester. Result 2 is expected.
The process of creating a data stream is similar to Port A.

Port Name	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)
Port //4/5...	0	0	0	844,595
Port //4/6...	0	0	0	844,595
Port //4/7...	0	0	0	844,594
Port //4/8...	108,108,124	864,864,992	844,595	0

☐ Passed

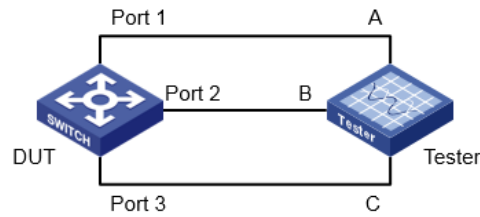
☐ Failed

2.6 SPAN

Test Item Name: SPAN

Work Hour: 30 min

Test Topology:



Test Process:

1. Configure the following static MAC address entries (0-0-1111) on DUT1.
2. Send packets with destination MAC address 0-0-1111 out of Port B of Tester.
Result 1 is expected.
3. Configure Port 3 to monitor bidirectional packets of Port 1 on DUT1.
4. Send packets with destination MAC address 0-0-1111 out of Port B of Tester.
Result 2 is expected.

Expect Results:

1. Packets sent out Port B of Tester can't be received on Port C of Tester.
2. Packets sent out Port B of Tester can be received on Port C of Tester.

Actual Result:

1. Configure static mac-address on Port 1 and configure Port 1/2 to vlan 100
#

interface GigabitEthernet1/0/1

port link-mode bridge

port access vlan 100

mac-address static 0000-0000-1111 vlan 100

#

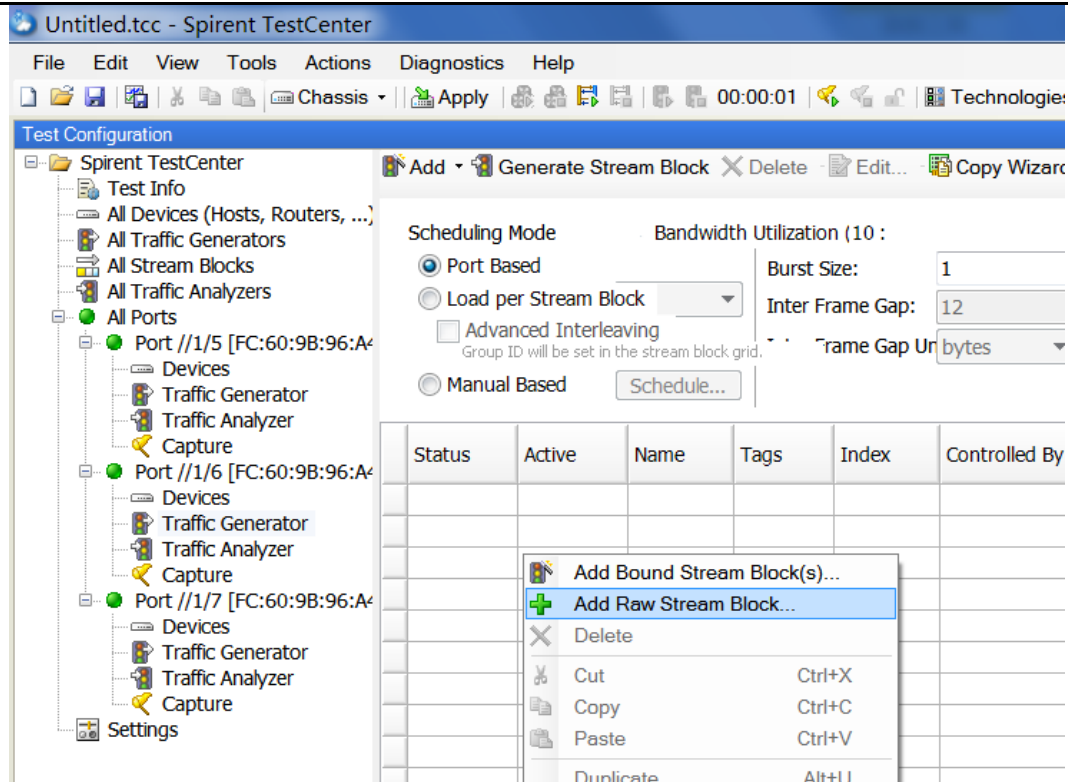
interface GigabitEthernet1/0/2

port link-mode bridge

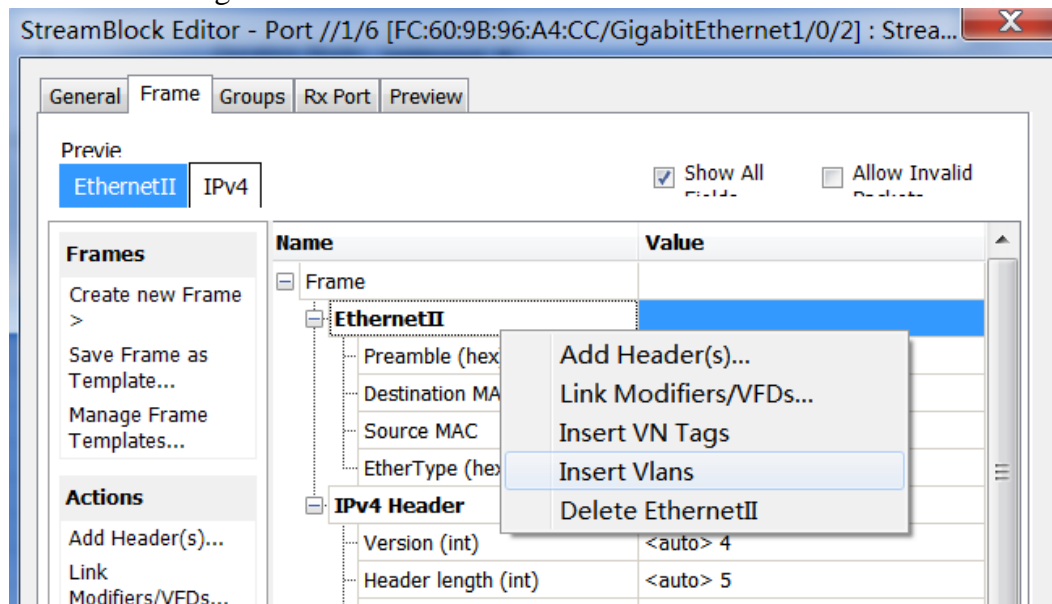
port access vlan 100

#

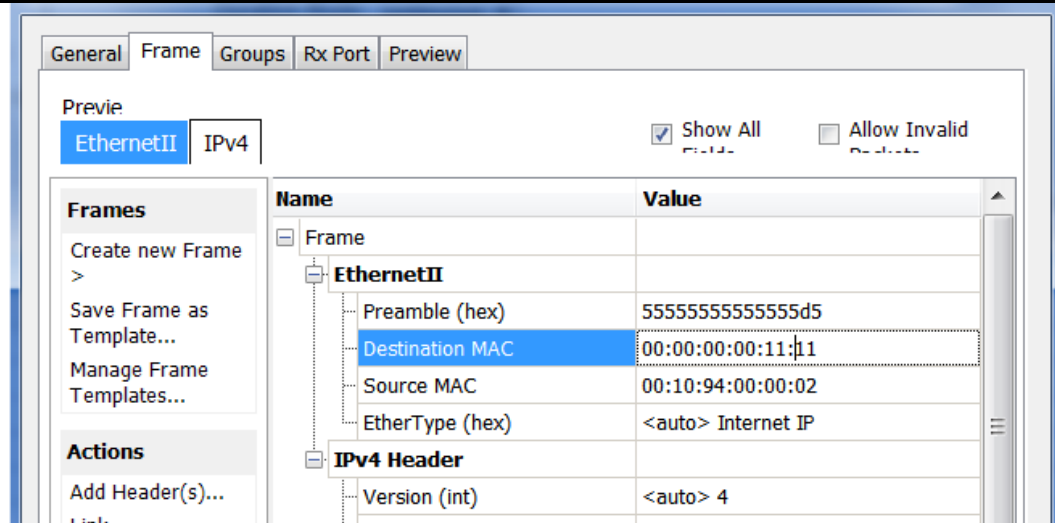
2. Create raw stream



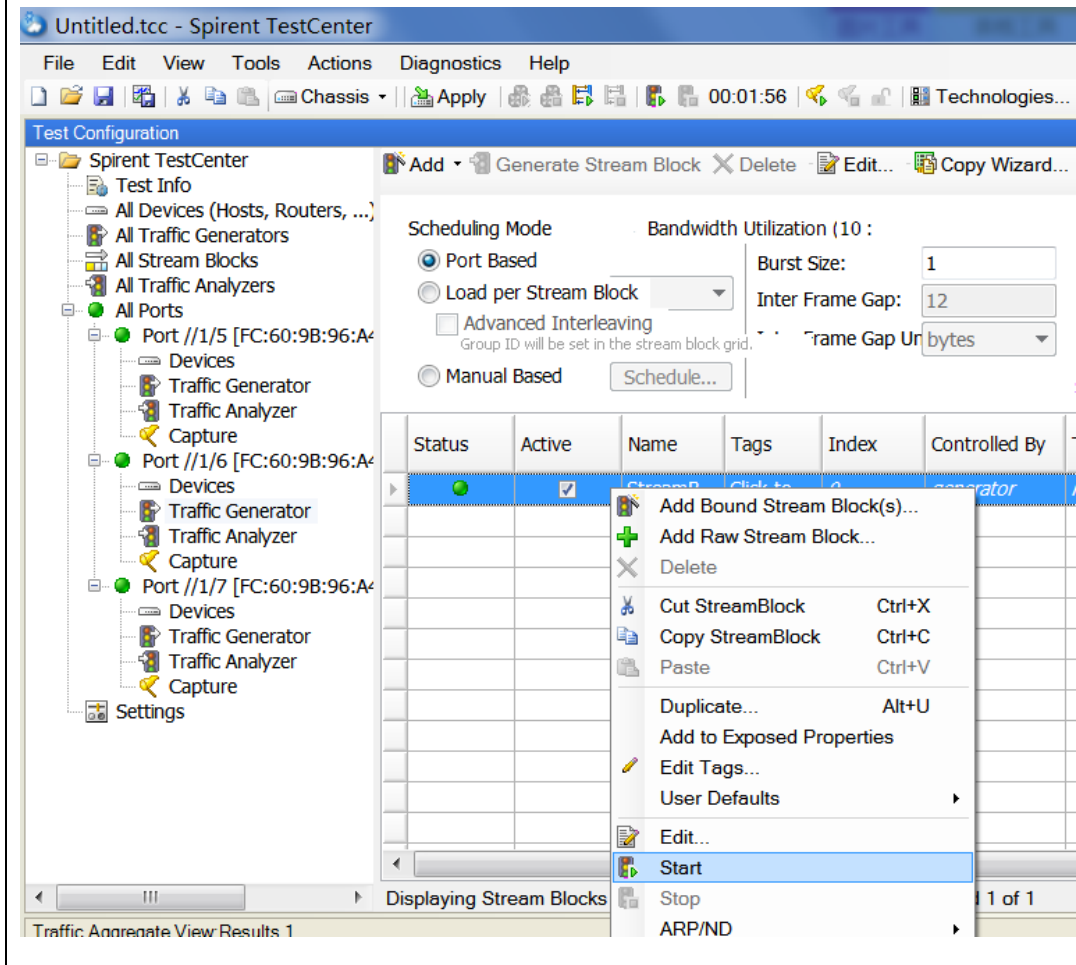
- ### 3. Add vlan tag for the stream



4. Change the destination mac and click on **OK**



5. Start the traffic and check the result





H3C S5560X-EI Product Test Procedures

Traffic Aggregate View: Results 1								
Port Traffic and Counters > Basic Traffic Results								
Change Result View								
Basic Counters	Errors	Triggers	Protocols	Undersize/Oversize/Jumbo	PFC Counters	User Defined	Advanced Sequencing	FEC Counters
Port Name	Total Tx Rate (fps)	Total Rx Rate (fps)	Generator Rate (fps)	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)	
Port //1...	0	84,460	0	0	0	0	84,460	
Port //1...	84,459	1	84,459	10,810,804	86,486,432	84,459	0	
Port //1...	0	1	0	0	0	0	0	

All the traffic is received on Port A and isn't received on Port C

6. Configure Port 3 to monitor bidirectional packets of Port 1 on DUT1.

#

interface GigabitEthernet1/0/1

port link-mode bridge

port access vlan 100

mac-address static 0000-0000-1111 vlan 100

mirroring-group 1 mirroring-port both

#

interface GigabitEthernet1/0/3

port link-mode bridge

mirroring-group 1 monitor-port

#

7. Start the traffic and check the result

Port Traffic and Counters > Basic Traffic Results								
Change Result View								
Basic Counters	Errors	Triggers	Protocols	Undersize/Oversize/Jumbo	PFC Counters	User Defined	Advanced Sequencing	FEC Counters
Port Name	Total Tx Rate (fps)	Total Rx Rate (fps)	Generator Rate (fps)	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)	
Port //1...	0	84,460	0	0	0	0	84,460	
Port //1...	84,460	0	84,460	10,810,815	86,486,520	84,460	0	
Port //1...	0	84,460	0	0	0	0	84,459	

The traffic is received on Port A and Port C

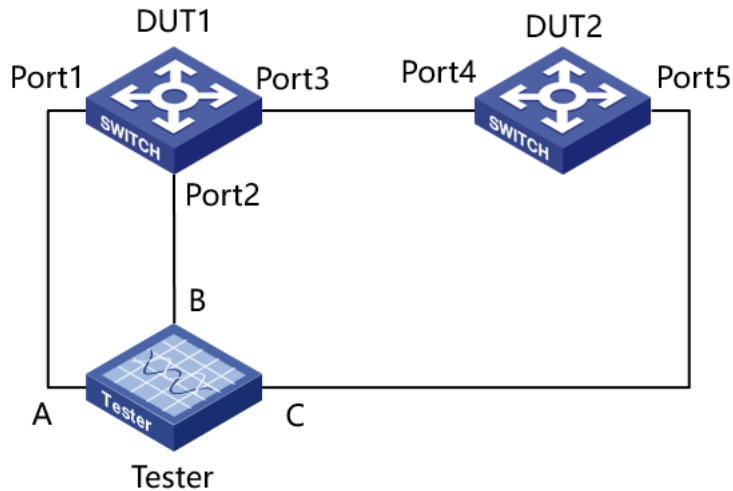
☐ Passed

☐ Failed

2.7 RSPAN

Test Item Name: RSPAN

Work Hour: 30 min

Test Topology:

Test Process:

1. Configure a remote source group to mirror the inbound packets of the specified source Port and configure a remote probe VLAN for the remote source group on DUT1.
2. Configure DUT2.
3. Configure the following static MAC address entries (0-0-1111/0-0-2222) on DUT1.
4. Send packets with destination MAC address 0-0-2222 out of Port A of Tester.
5. Send packets with destination MAC address 0-0-1111 out of Port B of Tester.
6. Result 1 is expected.
7. Configure mirroring group 1 to monitor bidirectional packets of Port 1. Send packets with destination MAC address 0-0-2222 out of Port A of Tester. Send packets with destination MAC address 0-0-1111 out of Port B of Tester. Result 2 is expected.
8. Configure mirroring group 1 to monitor outbound packets of Port 1. Send packets with destination MAC address 0-0-2222 out of Port A of Tester. Send packets with destination MAC address 0-0-1111 out of Port B of Tester. Result 3 is expected.

Expect Results:

1. Packets sent out Port A of Tester are received on Port C of Tester.
2. Packets sent out Port A and Port B of Tester are received on Port C of Tester.



3. Packets sent out Port B of Tester are received on Port C of Tester.

Actual Result:

1. Configure a remote source group to mirror the inbound packets of the specified source Port and configure a remote probe VLAN for the remote source group on DUT1.

```
[DUT1]vlan 100
```

```
[DUT1]mirroring-group 1 remote-source  
[DUT1]mirroring-group 1 remote-probe vlan 100  
[DUT1]mirroring-group 1 mirroring-port Ten-GigabitEthernet 1/0/49 inbound  
[DUT1]mirroring-group 1 monitor-egress Ten-GigabitEthernet 1/0/52
```

```
[DUT1]interface Ten-GigabitEthernet1/0/52  
[DUT1-Ten-GigabitEthernet1/0/52]port link-type trunk  
[DUT1-Ten-GigabitEthernet1/0/52]port trunk permit vlan 100
```

2. Configure DUT2.

```
[DUT2]vlan 100
```

```
[DUT2]interface Ten-GigabitEthernet1/0/25  
[DUT2-Ten-GigabitEthernet1/0/25]port link-type trunk  
[DUT2-Ten-GigabitEthernet1/0/25]port trunk permit vlan 100
```

```
[DUT2]interface Ten-GigabitEthernet1/0/28  
[DUT2-Ten-GigabitEthernet1/0/28]port link-type trunk  
[DUT2-Ten-GigabitEthernet1/0/28]port trunk permit vlan 100
```

```
[DUT2]mirroring-group 1 remote-destination  
[DUT2]mirroring-group 1 remote-probe vlan 100  
Make sure the VLAN has not been used for any other purpose. Mirrored packets will be broadcast within the VLAN after the configuration. Continue? [Y/N]: y  
[DUT2]mirroring-group 1 monitor-port Ten-GigabitEthernet 1/0/25
```

3. Configure the following static MAC address entries (0-0-1111/0-0-2222) on DUT1.

Send packets with destination MAC address 0-0-2222 out of Port A of Tester.

Send packets with destination MAC address 0-0-1111 out of Port B of Tester.

Result 1 is expected.

```
[DUT1]mac-address static 0-0-1111 interface Ten-GigabitEthernet 1/0/49 vlan 1
```

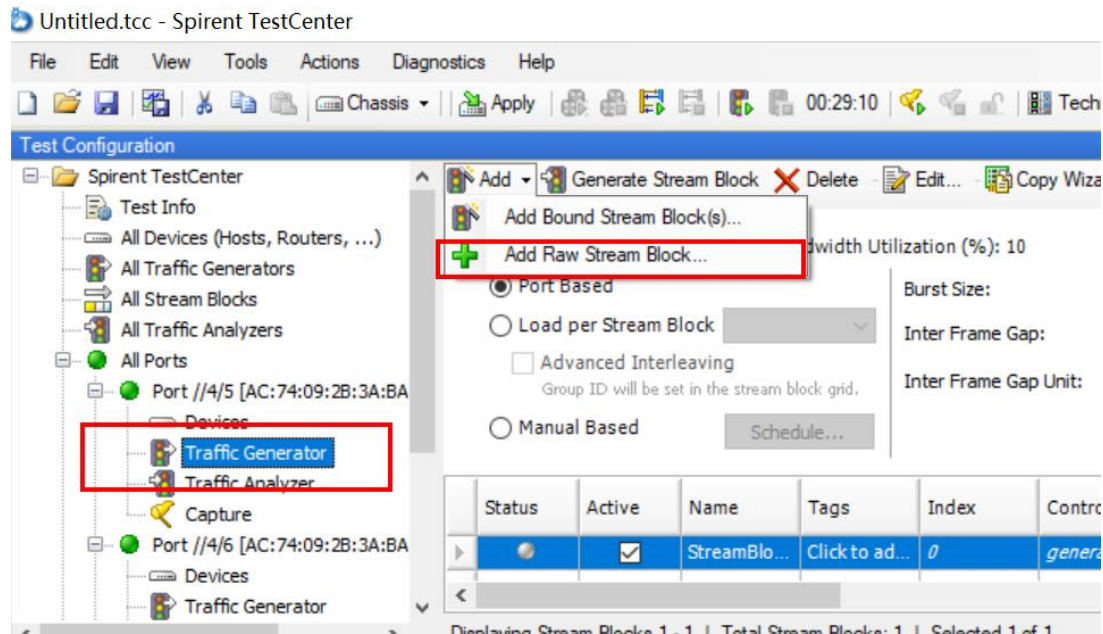
```
[DUT1]mac-address static 0-0-2222 interface Ten-GigabitEthernet 1/0/50 vlan 1
```

Create the traffic on Port A.

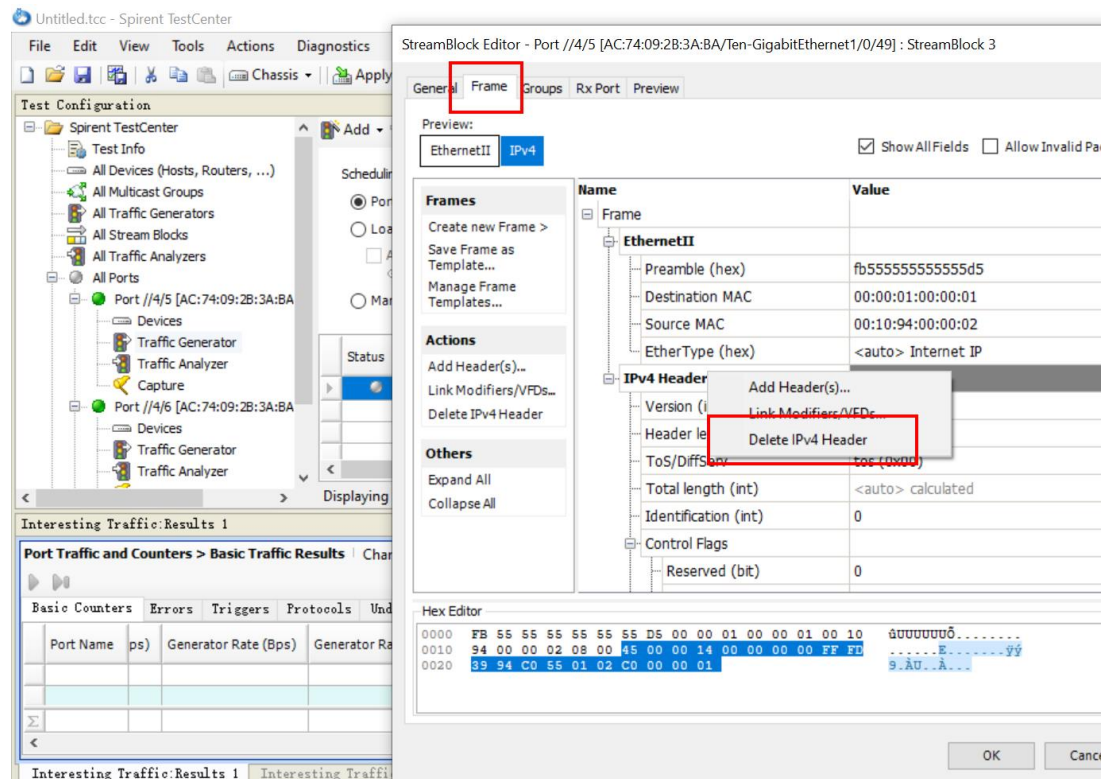
Add raw stream.



H3C S5560X-EI Product Test Procedures



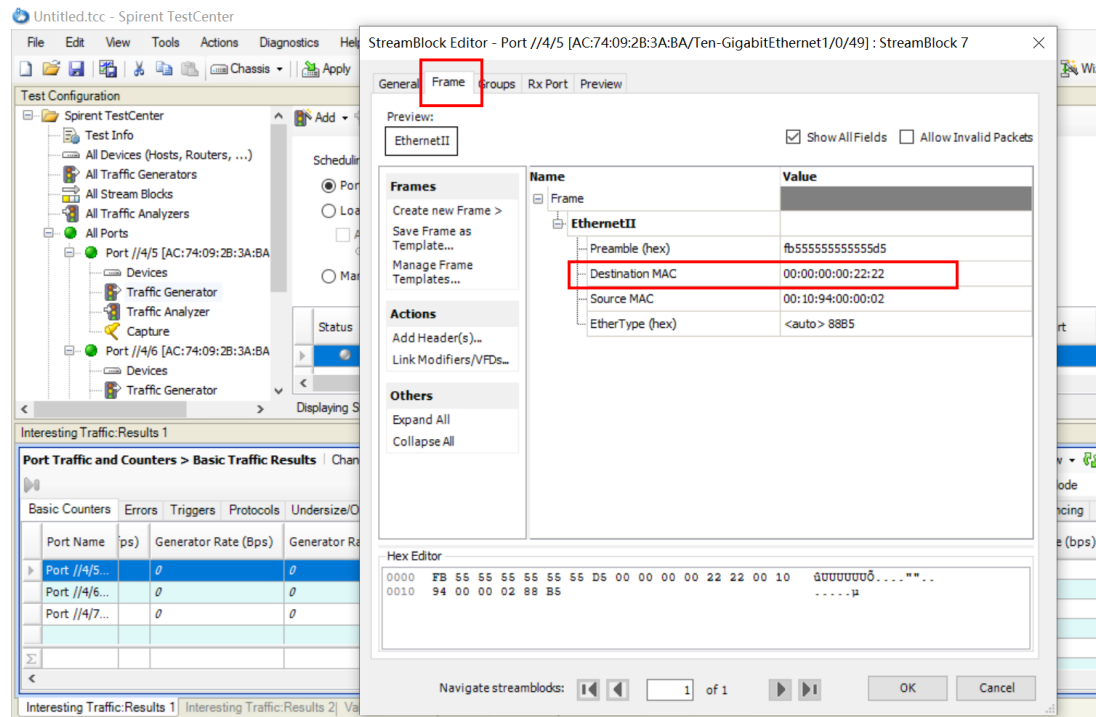
Delete the IPv4 header.



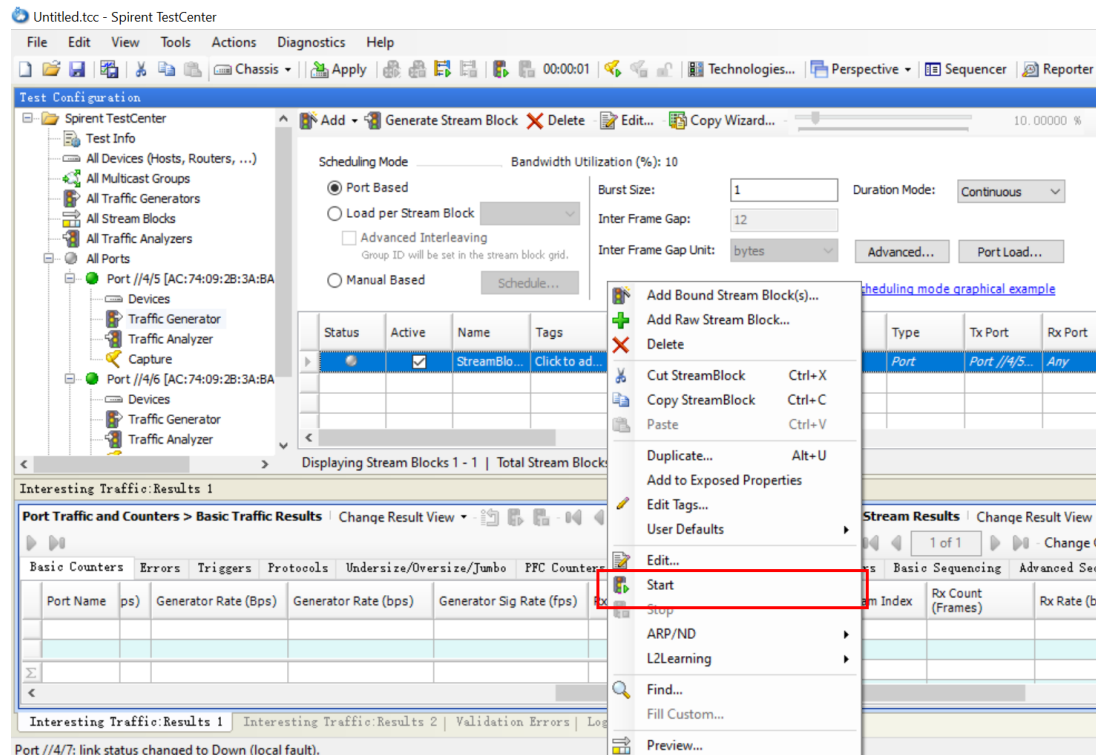
Change the destination MAC.



H3C S5560X-EI Product Test Procedures



Send packets with destination MAC address 0-0-2222 out of Port A of Tester.



Packets sent out Port A of Tester are received on Port C of Tester.



H3C S5560X-EI Product Test Procedures

Untitled.tcc - Spirent TestCenter

File Edit View Tools Actions Diagnostics Help

00:00:05 Technologies... Perspective Sequencer

Test Configuration

Spirent TestCenter

- Test Info
- All Devices (Hosts, Routers, ...)
- All Traffic Generators
- All Stream Blocks
- All Traffic Analyzers
- All Ports
 - Port //4/5 [AC:74:09:2B:3A:BA]
 - Devices
 - Traffic Generator**
 - Traffic Analyzer
 - Capture
 - Port //4/6 [AC:74:09:2B:3A:BA]
 - Devices
 - Traffic Generator

Scheduling Mode: Port Based (selected)

Bandwidth Utilization (%): 10

Burst Size: 1

Duration Mode: Continuous

Inter Frame Gap: 12

Inter Frame Gap Unit: bytes

Advanced Interleaving: ☐ (disabled)

Group ID will be set in the stream block grid.

Manual Based: ☐ (disabled)

Schedule...

Scheduling mode graphical ex...

Status	Active	Name	Tags	Index	Controlled By	Traffic Pattern	Type	Tx Port
	<input checked="" type="checkbox"/>	StreamBlo...	Click to ad...	0	generator	Pair	Port	Port //4/5

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

Interesting Traffic Results 1

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

Port Name	ps	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)
Port //4/5...	108,108,090	864,864,720	844,595	0	
Port //4/6...	0	0	0	844,595	
Port //4/7...	0	0	0	844,595	

Streams > Interesting Stream Results | Change R

Rx Port Name	Stream Index	Rx Count (Frames)

Create the traffic on Port B.

Add raw stream.

Untitled.tcc - Spirent TestCenter

File Edit View Tools Actions Diagnostics Help

00:29:10

Test Configuration

Spirent TestCenter

- Test Info
- All Devices (Hosts, Routers, ...)
- All Traffic Generators
- All Stream Blocks
- All Traffic Analyzers
- All Ports
 - Port //4/5 [AC:74:09:2B:3A:BA]
 - Devices
 - Traffic Generator
 - Traffic Analyzer
 - Capture
 - Port //4/6 [AC:74:09:2B:3A:BA]
 - Devices
 - Traffic Generator**

Add Bound Stream Block(s)...

+ Add Raw Stream Block...

Bandwidth Utilization (%): 10

Burst Size:

Inter Frame Gap:

Inter Frame Gap Unit:

Advanced Interleaving: ☐ (disabled)

Group ID will be set in the stream block grid.

Manual Based: ☐ (disabled)

Schedule...

Status	Active	Name	Tags	Index	Co
	<input checked="" type="checkbox"/>	StreamBlo...	Click to ad...	0	ge

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

Delete the IPv4 header.



H3C S5560X-EI Product Test Procedures

StreamBlock Editor - Port //4/6 [AC:74:09:2B:3A:BA/Ten-GigabitEthernet1/0/50] : StreamBlock 4

General Frame Groups Rx Port Preview

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

Name	Value
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)	
Header length (int)	
ToS/DiffServ	
Total length (int)	<auto> calculated
Identification (int)	0
Control Flags	
Reserved (bit)	0

Hex Editor

Hex	ASCII
fb 55 55 55 55 55 d5 00 00 01 00 00 01 00 10
94 00 00 02 08 00 16 00 00 14 00 00 00 ff ff
39 94 c0 55 01 02 c0 00 00 01

Change the destination MAC.

StreamBlock Editor - Port //4/6 [AC:74:09:2B:3A:BA/Ten-GigabitEthernet1/0/50] : StreamBlock 8

General Frame Groups Rx Port Preview

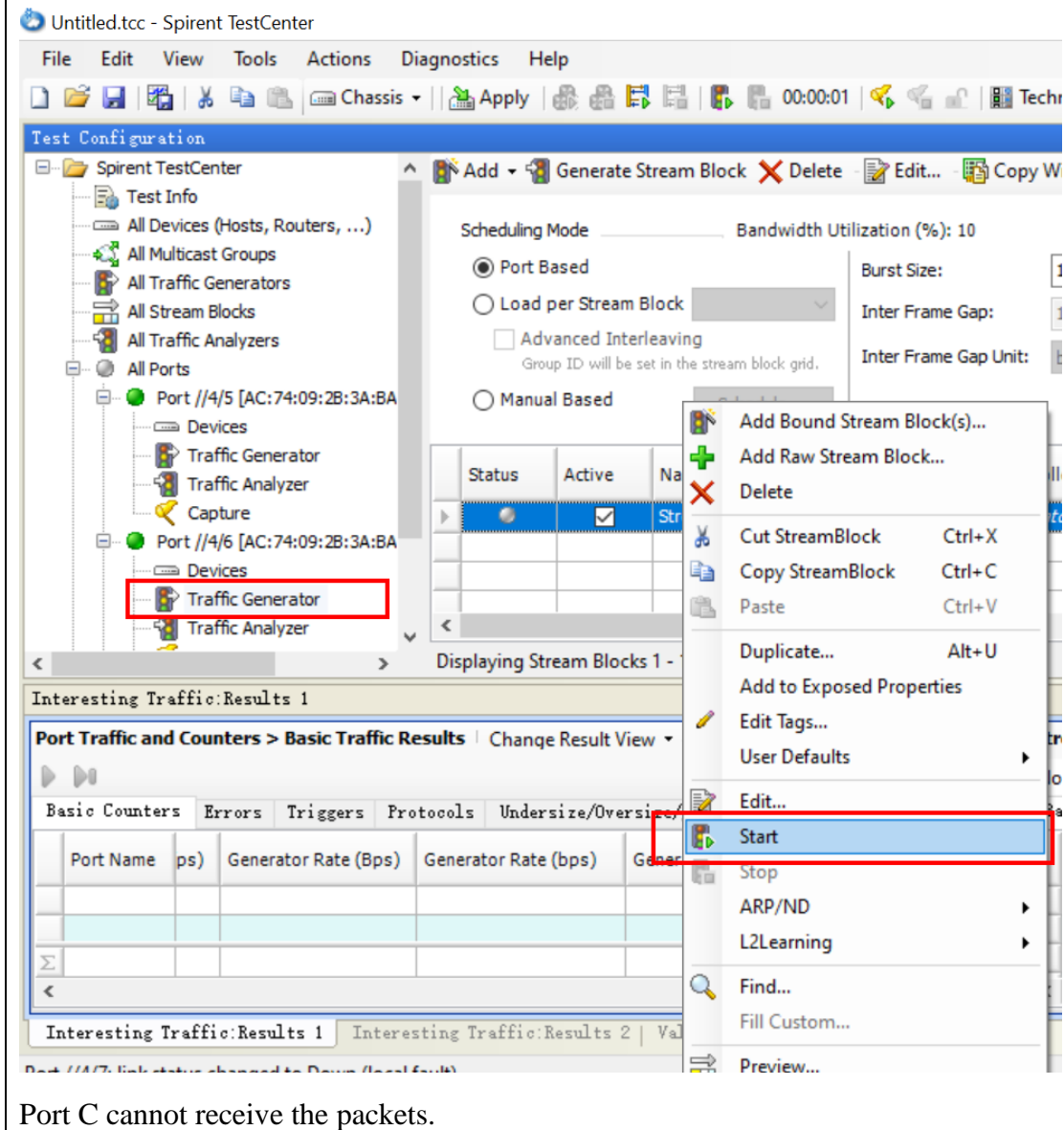
Preview: EthernetII ☒ Show All Fields ☐ Allow Invalid Packets

Name	Value
EthernetII	
Preamble (hex)	fb555555555555d5
Destination MAC	00:00:00:00:11:11
Source MAC	00:10:94:00:00:02
EtherType (hex)	<auto> 88B5

Hex Editor

Hex	ASCII
fb 55 55 55 55 55 d5 00 00 00 00 11 11 00 10
94 00 00 02 88 B5

Send packets with destination MAC address 0-0-1111 out of Port B of Tester.





H3C S5560X-EI Product Test Procedures

Untitled.tcc - Spirent TestCenter

File Edit View Tools Actions Diagnostics Help

00:00:05 Technologies... Perspective Sequ

Test Configuration

Spirent TestCenter

Test Info

All Devices (Hosts, Routers, ...)

All Traffic Generators

All Stream Blocks

All Traffic Analyzers

All Ports

Port //4/5 [AC:74:09:2B:3A:BA]

Devices

Traffic Generator

Traffic Analyzer

Capture

Port //4/6 [AC:74:09:2B:3A:BA]

Devices

Traffic Generator

Scheduling Mode

Bandwidth Utilization (%): 10

☒ Port Based

☐ Load per Stream Block

☐ Advanced Interleaving

☐ Manual Based

Burst Size: 1

Inter Frame Gap: 12

Inter Frame Gap Unit: bytes

Duration Mode:

Advanced...

Scheduling mode

Status	Active	Name	Tags	Index	Controlled By	Traffic Pattern	Type
		StreamBlo...	Click to ad...	0	generator	Pair	Port

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

Interesting Traffic: Results 1

Port Traffic and Counters > Basic Traffic Results

Change Result View

1 of 1

Basic Counters	Errors	Triggers	Protocols	Undersize/Oversize	Number	RFC Counters	User Defined	Advan
Port Name	ps	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)			
Port //4/5...	0	0	0	0	844,595			
Port //4/6...	108,108,129	864,865,032	844,595	0	0			
Port //4/7...	0	0	0	0	0			

Streams > Interesting Stream Result

1 of 1

Change C

Basic Counters	Errors	Basic Sequenci
Rx Port Name	Stream Index	Rx C (Fra

- Configure mirroring group 1 to monitor bidirectional packets of Port 1. Send packets with destination MAC address 0-0-2222 out of Port A of Tester. Send packets with destination MAC address 0-0-1111 out of Port B of Tester. Result 2 is expected.

```
[DUT1]undo mirroring-group 1 mirroring-port Ten-GigabitEthernet 1/0/49
[DUT1]mirroring-group 1 mirroring-port Ten-GigabitEthernet 1/0/49 both
```

Send packets with destination MAC address 0-0-2222 out of Port A of Tester.
Packets sent out Port A of Tester are received on Port C of Tester.



H3C S5560X-EI Product Test Procedures

Untitled.tcc - Spirent TestCenter

File Edit View Tools Actions Diagnostics Help

Chassis Apply 00:00:05 Technologies... Perspecti

Test Configuration

Spirent TestCenter

- Test Info
- All Devices (Hosts, Routers, ...)
- All Traffic Generators
- All Stream Blocks
- All Traffic Analyzers
- All Ports
- Port //4/5 [AC:74:09:2B:3A:BA]
 - Devices
 - Traffic Generator**
 - Traffic Analyzer
 - Capture
- Port //4/6 [AC:74:09:2B:3A:BA]
 - Devices
 - Traffic Generator

Scheduling Mode Bandwidth Utilization (%): 10

☒ Port Based ☐ Load per Stream Block ☐ Manual Based

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

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

Schedule...

Status	Active	Name	Tags	Index	Controlled By	Traffic Pattern
	<input checked="" type="checkbox"/>	StreamBlo...	Click to ad...	0	generator	Pair

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

Interesting Traffic: 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	Advan
Port Name	ps	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)	Rx Port Name	Strea
Port //4/5...	108,108,081	864,864,648	844,594	0			
Port //4/6...	0	0	0	844,594			
Port //4/7...	0	0	0	844,595			
Σ							

Streams > Interesting: 1 of 1

Basic Counters	Errors

Send packets with destination MAC address 0-0-1111 out of Port B of Tester.

Packets sent out Port B of Tester are received on Port C of Tester.



H3C S5560X-EI Product Test Procedures

The screenshot displays the Spirent TestCenter interface. The 'Test Configuration' pane on the left shows a tree view with 'Spirent TestCenter' expanded, containing 'Test Info', 'All Devices (Hosts, Routers, ...)', 'All Traffic Generators', 'All Stream Blocks', 'All Traffic Analyzers', 'All Ports', and 'All Traffic Analyzers'. Under 'All Ports', 'Port //4/5 [AC:74:09:2B:3A:BA]' is selected, and its 'Traffic Generator' is highlighted with a red box. The 'Scheduling Mode' is set to 'Port Based' with 'Bandwidth Utilization (%)' at 10. The 'Burst Size' is 1, 'Inter Frame Gap' is 12, and 'Inter Frame Gap Unit' is 'bytes'. The 'Status' table shows one active stream block named 'StreamBlo...'. The 'Interesting Traffic: Results 1' pane at the bottom shows 'Port Traffic and Counters > Basic Traffic Results'. The table below has columns for 'Port Name', 'ps', 'Generator Rate (Bps)', 'Generator Rate (bps)', 'Generator Sig Rate (fps)', and 'Rx Sig Rate (fps)'. A red box highlights the 'Generator Rate (bps)' and 'Generator Sig Rate (fps)' columns for the selected port.

Port Name	ps	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)
Port //4/5...	0	0	0	0	844,595
Port //4/6...	108,108,107	864,864,856	844,594	0	
Port //4/7...	0	0	0	844,595	

5. Configure mirroring group 1 to monitor outbound packets of Port 1. Send packets with destination MAC address 0-0-2222 out of Port A of Tester. Send packets with destination MAC address 0-0-1111 out of Port B of Tester. Result 3 is expected.

```
[DUT1]undo mirroring-group 1 mirroring-port Ten-GigabitEthernet 1/0/49  
[DUT1]mirroring-group 1 mirroring-port Ten-GigabitEthernet 1/0/49 outbound
```

Send packets with destination MAC address 0-0-2222 out of Port A of Tester. Port C cannot receive the packets.



H3C S5560X-EI Product Test Procedures

Untitled.tcc - Spirent TestCenter

File Edit View Tools Actions Diagnostics Help

Chassis | Apply | 00:00:05 | Technologies... | Perspective

Test Configuration

Spirent TestCenter

- Test Info
- All Devices (Hosts, Routers, ...)
- All Traffic Generators
- All Stream Blocks
- All Traffic Analyzers
- All Ports
- Port //4/5 [AC:74:09:2B:3A:BA]
- Port //4/6 [AC:74:09:2B:3A:BA]
- Port //4/7 [AC:74:09:2B:3A:BA]

Traffic Generator

Scheduling Mode: ☒ Port Based ☐ Load per Stream Block ☐ Manual Based

Bandwidth Utilization (%): 10

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

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

Schedule...

Status	Active	Name	Tags	Index	Controlled By	Traffic Pattern	Type
		StreamBlo...	Click to ad...	0	generator	Pair	Port

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

Interesting Traffic: 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	Advan
Port Name	ps	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)		
Port //4/5...		108,108,131	864,865,048	844,595	0		
Port //4/6...		0	0	0	844,595		
Port //4/7...		0	0	0	0		

Streams > Interesting Stream F

Basic Counters	Errors	Basic Se
Rx Port Name	Stream Index	

Send packets with destination MAC address 0-0-1111 out of Port B of Tester.

Packets sent out Port B of Tester are received on Port C of Tester.



H3C S5560X-EI Product Test Procedures

Untitled.tcc - Spirent TestCenter

File Edit View Tools Actions Diagnostics Help

Chassis Apply 00:00:06 Technologies... Perspective

Test Configuration

Spirent TestCenter

- Test Info
- All Devices (Hosts, Routers, ...)
- All Traffic Generators
- All Stream Blocks
- All Traffic Analyzers
- All Ports
 - Port //4/5 [AC:74:09:2B:3A:BA]
 - Devices
 - Traffic Generator
 - Traffic Analyzer
 - Capture
 - Port //4/6 [AC:74:09:2B:3A:BA]
 - Devices
 - Traffic Generator

Scheduling Mode Bandwidth Utilization (%): 10

☒ Port Based

☐ Load per Stream Block

☐ Advanced Interleaving

☐ Manual Based

Burst Size: 1

Inter Frame Gap: 12

Inter Frame Gap Unit: bytes

Status Active Name Tags Index Controlled By Traffic Pattern

Status	Active	Name	Tags	Index	Controlled By	Traffic Pattern
	<input checked="" type="checkbox"/>	StreamBlo...	Click to ad...	0	generator	Pair

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

Interesting Traffic Results 1

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

Basic Counters	Errors	Triggers	Protocols	Undersize/Oversize/Jumbo	PFC Counters	User Defined	Advan
Port Name	ps	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)	Rx Port Name	Stream
Port //4/5...	0	0	0	844,595			
Port //4/6...	108,108,102	864,864,816	844,594	0			
Port //4/7...	0	0	0	844,595			

Streams > Interesting St

Basic Counters Errors B

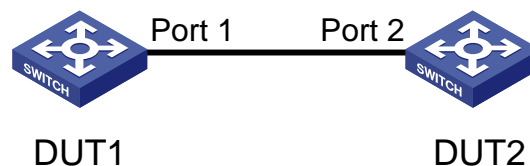
☐ Passed ☐ Failed

2.8 LLDP

Test Item Name: LLDP

Work Hour: 20 min

Test Topology:



Test Process:

1. Enable LLDP globally on DUT 1 and DUT 2.
2. Display the global local LLDP information on DUT 1. Result 1 is expected.
3. Display the local LLDP information about Port 1 on DUT 1. Result 2 is expected.



4. Display the LLDP information that Port 1 of DUT 1 has received from Port 2 of DUT 2. Result 3 is expected.

Expect Results:

1. The system displays the global local LLDP information on DUT 1, including the MAC address, device name, description, supported and enabled features of the system, hardware version, and firmware version.
2. The system displays the local LLDP information about Port 1 on DUT 1, including the port ID, management address, and port auto-negotiation configuration.
3. The system displays the LLDP information about Port 2 on DUT 2, including the port ID, management address, and port auto-negotiation configuration.

Actual Result:

1. Enable LLDP globally

lldp global enable

2. Display the LLDP neighbor information

```
[DUT]display lldp neighbor-information list
Chassis ID : * -- -- Nearest nontpmr bridge neighbor
             # -- -- Nearest customer bridge neighbor
             Default -- -- Nearest bridge neighbor
Local Interface Chassis ID      Port ID      System Name
MGE0/0/0        000f-e219-4047 GigabitEthernet1/0/37    lab-lan-sw1
```

3. Display the LLDP local information

```
[DUT]display lldp local-information
Global LLDP local-information:
Chassis ID      : fc60-9b96-a4cc
System name     : DUT
System description :
  H3C Comware Platform Software, Software Version 7.1.070, Release 6515P06
  H3C S5560X-30C-PWR-EI
  Copyright (c) 2004-2020 New H3C Technologies Co., Ltd. All rights reserved.
System capabilities supported : Bridge, Router, Customer Bridge, Service Bridge
System capabilities enabled   : Bridge, Router, Customer Bridge

MED information:
Device class                : Connectivity device
MED inventory information of master board:
HardwareRev                 : Ver.B
FirmwareRev                 : 117
SoftwareRev                  : 7.1.070 Release 6515P06
SerialNum                   : 210235A1XE9204Q00002
Manufacturer name           : H3C
Model name                   : H3C S5560X-30C-PWR-EI
Asset tracking identifier     : Unknown
```

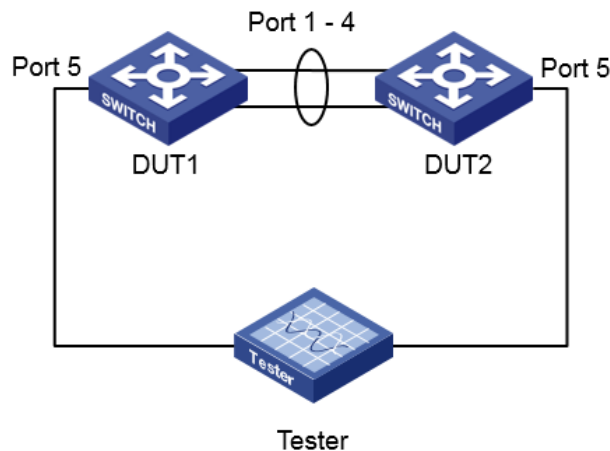


4. Display the LLDP neighbor information on interface

```
[DUT]display lldp neighbor-information interface M-GigabitEthernet 0/0/0
LLDP neighbor-information of port 631[M-GigabitEthernet0/0/0]:
LLDP agent nearest-bridge:
  LLDP neighbor index : 1
  ChassisID/subtype   : 000f-e219-4047/MAC address
  PortID/subtype      : GigabitEthernet1/0/37/Interface name
  Capabilities        : Bridge, Router
```

☐ Passed☐ Failed

2.9 LACP (Link backup)

Test Item Name: LACP (Link backup)**Work Hour: 30 min****Test Topology:****Test Process:**

1. On DUT 1 and DUT 2, create Layer 2 dynamic aggregate interface Bridge-Aggregation 1 and assign Layer 2 interfaces Port 1/2/3/4 to aggregation group 1.
2. On the tester, send a broadcast traffic flow out of Port A. Result 1 is expected.
3. Shut down a Selected port on a DUT.
4. On the tester, view traffic statistics about Port B. Result 2 is expected.
5. Bring up the down port.
6. On the tester, view traffic statistics about Port B. Result 2 is expected.

Expect Results:



1. Port B receives the broadcast traffic sent by Port A.
2. Transient traffic loss occurs, and then Port B receives the broadcast traffic sent by Port A.

Actual Result:

1. Create aggregation group 1 with dynamic mode and add 4 ports

#

interface Bridge-Aggregation1

link-aggregation mode dynamic

#

#

interface Ten-GigabitEthernet1/0/49

port link-mode bridge

port link-aggregation group 1

#

interface Ten-GigabitEthernet1/0/50

port link-mode bridge

port link-aggregation group 1

#

interface Ten-GigabitEthernet1/0/51

port link-mode bridge

port link-aggregation group 1

#

interface Ten-GigabitEthernet1/0/52

port link-mode bridge

port link-aggregation group 1

#

2. Send traffic on Port A



H3C S5560X-EI Product Test Procedures

General Frame Groups Rx Port Preview

Preview:

EthernetII ☒ Show All Fields ☐ Allow Invalid Packets

Name	Value
Frame	
EthernetII	
Preamble (hex)	55555555555555d5
Destination MAC	FF:FF:FF:FF:FF:FF
Source MAC	00:10:94:00:00:02
EtherType (hex)	<auto> 88B5

Frames

Create new Frame >

Save Frame as Template...

Manage Frame Templates...

Actions

Add Header(s)...

Link Modifiers/VFDs...

3. Shutdown 1 member port and check the traffic loss

Management VLANs: None

System ID: 0x8000, 7485-c4f6-2108

Local:

Port	Status	Priority	Index	Oper-Key	Flag
XGE1/0/25 (R)	S	32768	1	1	{ACDEF}
XGE1/0/26	S	32768	2	1	{ACDEF}
XGE1/0/27	S	32768	3	1	{ACDEF}
XGE1/0/28	S	32768	4	1	{ACDEF}

Remote:

Actor	Priority	Index	Oper-Key	SystemID	Flag
XGE1/0/25	32768	1	1	0x8000, ac74-092b-3aba	{ACDEF}
XGE1/0/26	32768	2	1	0x8000, ac74-092b-3aba	{ACDEF}
XGE1/0/27	32768	3	1	0x8000, ac74-092b-3aba	{ACDEF}
XGE1/0/28	32768	4	1	0x8000, ac74-092b-3aba	{ACDEF}

[5560x-ei-1]

```
[5560x-ei-1]int te 1/0/25
[5560x-ei-1-Ten-GigabitEthernet1/0/25]shu
%Jan 29 06:25:39:475 2021 5560x-ei-1 LAGG/6/LAGG_INACTIVE_PHYSTATE: Member port XGE1/0/25 of aggregation group BAGG1 changed to the inactive state, because the physical or line protocol state of the port was down.
%Jan 29 06:25:39:512 2021 5560x-ei-1 IFNET/3/PHY_UPDOWN: Physical state on the interface Ten-GigabitEthernet1/0/25 changed to down.
%Jan 29 06:25:39:519 2021 5560x-ei-1 IFNET/5/LINK_UPDOWN: Line protocol state on the interface Ten-GigabitEthernet1/0/25 changed to down.
[5560x-ei-1-Ten-GigabitEthernet1/0/25]
```



H3C S5560X-EI Product Test Procedures

Untitled.tcc - Spirent TestCenter

File Edit View Tools Actions Diagnostics Help

00:02:30 Technologies... Perspective Sequencer Reporter Wizards Summary...

Test Configuration

Schedule Add Generate Stream Block Delete Edit Copy Wizard... 10.00000 %

Scheduling Mode Bandwidth Utilization (%): 10

Port Based Load per Stream Block Advanced Interleaving Manual Based

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

Duration Mode: Continuous

Scheduling mode graphical example

StreamBlock 1

Port //1/8 [74:85:C4:F6:21:08/GigabitEthernet1/0/1]

Port //1/9 [AC:74:09:2B:3A:BA/GigabitEthernet1/0/9]

Basic Traffic Results 1

Port Traffic and Counters > Basic Traffic Results

Port Name	ps	Generator Rate (bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)
Port //1/8	10,810,429	86,486,624	84,460	0	
Port //1/9	0	0	0	84,459	

Streams > Detailed Stream Results

Name/ID	Tx Port Name	Rx Port Name	Tx Count (Frames)	Rx Count (Frames)	Dropped Count (Frames)	Dropped Percent
StreamBlock	Port //1/8 [74:85:C4:F6:21:08/GigabitEthernet1/0/1]	Port //1/9 [AC:74:09:2B:3A:BA/GigabitEthernet1/0/9]	12,786,073	12,658,569	1,127	0.008

4. Bring up the port and see the traffic can recover

Untitled.tcc - Spirent TestCenter

File Edit View Tools Actions Diagnostics Help

00:00:04 Technologies... Perspective Sequencer Reporter Wizards Summary...

Test Configuration

Schedule Add Generate Stream Block Delete Edit Copy Wizard... 10.00000 %

Scheduling Mode Bandwidth Utilization (%): 10

Port Based Load per Stream Block Advanced Interleaving Manual Based

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

Duration Mode: Continuous

Scheduling mode graphical example

StreamBlock 1

Port //1/8 [74:85:C4:F6:21:08/GigabitEthernet1/0/1]

Port //1/9 [AC:74:09:2B:3A:BA/GigabitEthernet1/0/9]

Basic Traffic Results 1

Port Traffic and Counters > Basic Traffic Results

Port Name	ps	Generator Rate (bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)
Port //1/8	10,810,797	86,486,376	84,459	0	
Port //1/9	0	0	0	84,459	

Streams > Detailed Stream Results

Name/ID	Tx Port Name	Rx Port Name	Aggregated Rx Port Count	Tx Count (Frames)	Rx Count (Frames)	Tx Rate (bps)
StreamBlock	Port //1/8 [74:85:C4:F6:21:08/GigabitEthernet1/0/1]	Port //1/9 [AC:74:09:2B:3A:BA/GigabitEthernet1/0/9]	1	389,370	349,506	80,914,536

☐ Passed

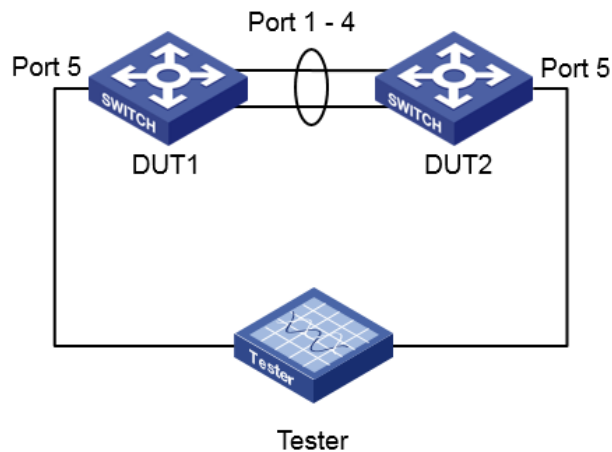
☐ Failed

2.10 LACP (Load sharing)

Test Item Name: LACP (Load sharing)

Work Hour: 30 min

Test Topology:



Test Process:

1. Clear interface packet statistics on DUT 1.
2. On the tester, send Layer 2 broadcast packets sourced from 200 consecutive MAC addresses out of Port A. Result 1 is expected.
3. On DUT 1 and DUT 2, create VLAN-interface 1 and assign the VLAN interfaces IP addresses that belong to the same subnet.
4. On DUT 1, create VLAN 2 and assign Port 5 to VLAN 2. Create VLAN-interface 2 and assign it an IP address.
5. On the tester, send Layer 3 packets out of Port A. The packets are destined for VLAN-interface 1 on DUT 2 and sourced from 200 consecutive IP addresses in the same subnet as the IP address of VLAN-interface 2 on DUT 1. Result 1 is expected.

Expect Results:

1. On DUT 1, the traffic is distributed to Port 1/2/3/4 almost evenly.

Actual Result:

1. Create aggregation group 1 with dynamic mode and add 4 ports

#

interface Bridge-Aggregation1

link-aggregation mode dynamic

#

#

interface Ten-GigabitEthernet1/0/49



```
port link-mode bridge
port link-aggregation group 1
#
interface Ten-GigabitEthernet1/0/50
port link-mode bridge
port link-aggregation group 1
#
interface Ten-GigabitEthernet1/0/51
port link-mode bridge
port link-aggregation group 1
#
interface Ten-GigabitEthernet1/0/52
port link-mode bridge
port link-aggregation group 1
#
```

2. Send traffic with changing source mac

StreamBlock Editor - Port //1/8 [74:85:C4:F6:21:08/GigabitEthernet1/0/1] : StreamBlock 1

General Frame Groups Rx Port Preview

Preview: EthernetII ☒ Show All Fields ☐ Allow Invalid Packets

Name	Value
Frame	
EthernetII	
Preamble (hex)	5555555555555d5
Destination MAC	FF:FF:FF:FF:FF:FF
Source MAC	00:10:94:00:00:02
MAC Modifier	Count=200;Step=00:00:00:00:00:01
EtherType (hex)	<auto> 88B5

3. On DUT 1, the traffic is distributed to Port 1/2/3/4 almost evenly.



```
[5560x-ei-1-GigabitEthernet1/0/1]d c r i i
Usage: Bandwidth utilization in percentage
Interface      Usage (%)    Total (pps)    Broadcast (pps)    Multicast (pps)
BAGG1          0            0              --               --
GE1/0/1        10           84458          --               --
XGE1/0/25      0            0              --               --
XGE1/0/26      0            0              --               --
XGE1/0/27      0            0              --               --
XGE1/0/28      0            0              --               --

Overflow: More than 14 digits.
--: Not supported.
[5560x-ei-1-GigabitEthernet1/0/1]d c r o i
Usage: Bandwidth utilization in percentage
Interface      Usage (%)    Total (pps)    Broadcast (pps)    Multicast (pps)
BAGG1          0            84456          --               --
GE1/0/1        0            0              --               --
XGE1/0/25      0            21114          --               --
XGE1/0/26      0            21114          --               --
XGE1/0/27      0            21114          --               --
XGE1/0/28      0            21114          --               --

Overflow: More than 14 digits.
--: Not supported.
```

4. Configure VLAN-int on DUT

DUT1

#

interface Vlan-interface1

ip address 10.1.1.1 255.255.255.0

#

DUT2

#

interface Vlan-interface1

ip address 10.1.1.2 255.255.255.0

#

5. Configure VLAN-int 2 on DUT1

#

interface Vlan-interface2

ip address 20.1.1.1 255.255.255.0

#

- On the tester, send Layer 3 packets out of Port A. The packets are destined for VLAN-interface 1 on DUT 2 and sourced from 200 consecutive IP addresses in



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the same subnet as the IP address of VLAN-interface 2 on DUT 1. Result 1 is expected.

The image displays two screenshots of the Spirent TestCenter software interface, specifically the 'Test Configuration' window. The top screenshot shows a configuration for 'Device 1' with IP address 20.1.1.2. The bottom screenshot shows a configuration for 'Device 2' with IP address 10.1.1.3. Both configurations are for a 'Port //1/9' interface.

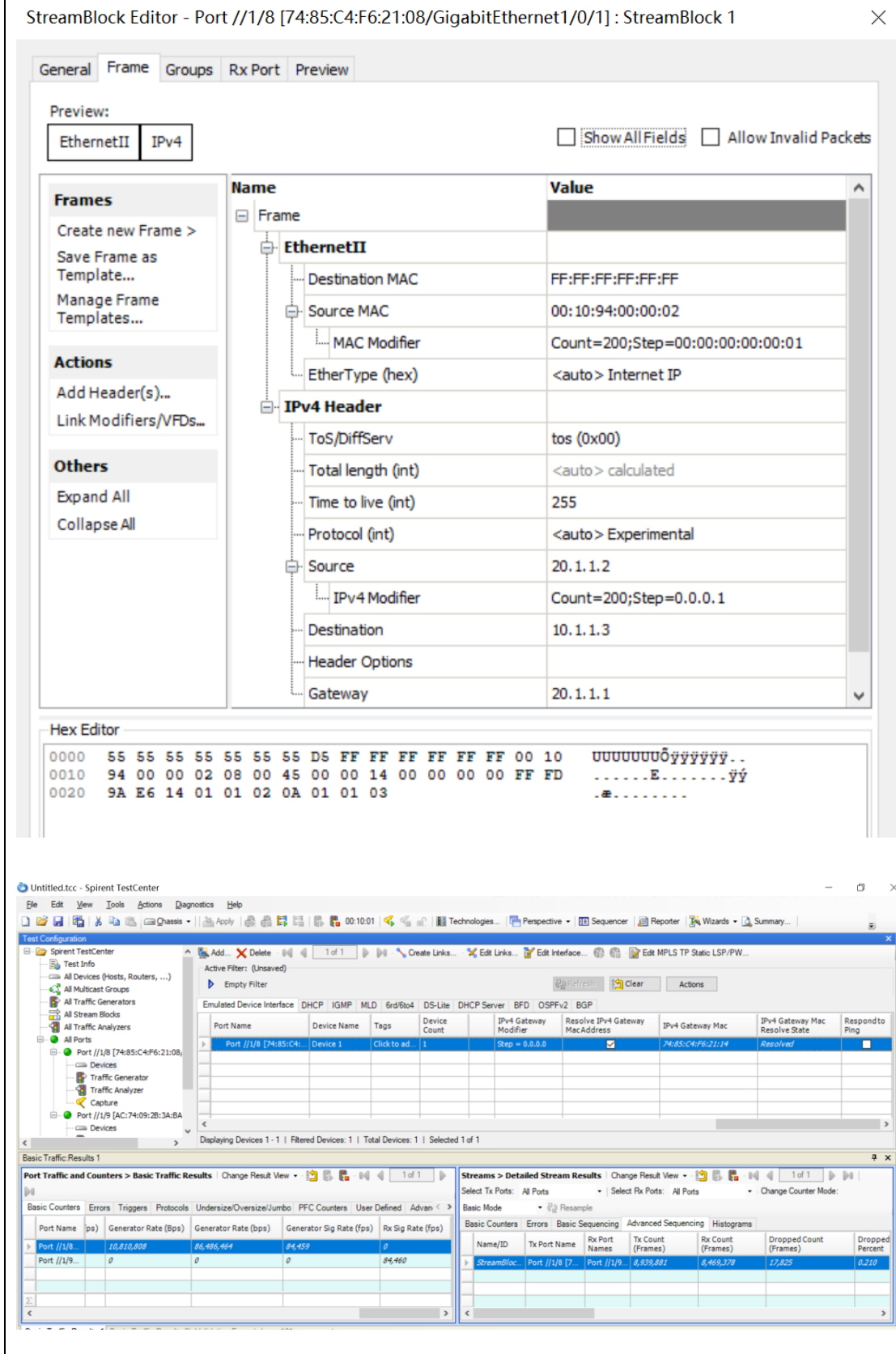
Top Screenshot: Device 1 Configuration

Port Name	Device Name	Tags	Device Count	ToS Type	IPv4 Address	IPv4 Modifier	IPv4 Prefix Length	IPv4 Default Gateway	IPv4 Gateway Modifier	Resolve MacAc
Port //1/9 [74:85:C4:...	Device 1	Click to ad...	1	S	20.1.1.2	Step = 0.0.0.1	24	20.1.1.1	Step = 0.0.0.0	

Bottom Screenshot: Device 2 Configuration

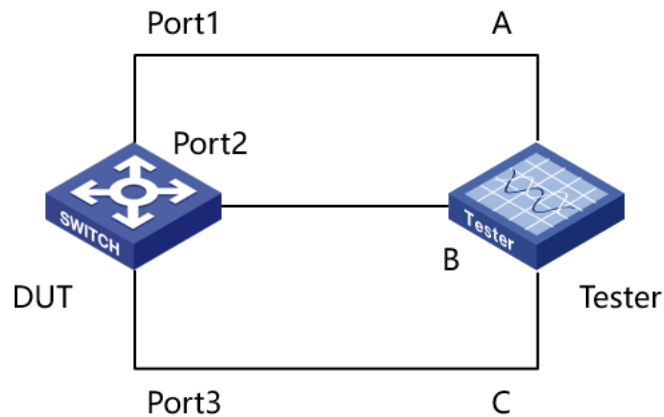
Port Name	Device Name	Tags	Device Count	ToS Type	IPv4 Address	IPv4 Modifier	IPv4 Prefix Length	IPv4 Default Gateway	IPv4 Gateway Modifier	Resolve MacAc
Port //1/9 [AC:74:09:2B:3A:8A]	Device 2	Click to ad...	1	ToS	10.1.1.3	Step = 0.0.0.1	24	10.1.1.2	Step = 0.0.0.0	

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☐ Passed☐ Failed

2.11 Dynamic MAC limit

Test Item Name: Dynamic MAC limit**Work Hour: 30 min****Test Topology:****Test Process:**

1. On the DUT, set the MAC learning limit to 100 on Port 1.
2. On the tester, send untagged broadcast packets through Port A. The source MAC addresses of the packets are 1000 consecutive MAC addresses starting at 0-0-1111. Result 1 is expected.
3. On the DUT, set the MAC learning limit to 150 on Port 3.
4. On the tester, send untagged broadcast packets through Port C. The source MAC addresses of the packets are 1000 consecutive MAC addresses starting at 0-0-1111. Result 2 is expected.

Expect Results:

1. The DUT has learned 100 MAC addresses on Port 1.
2. The DUT has learned 150 MAC addresses on Port 3.

Actual Result:

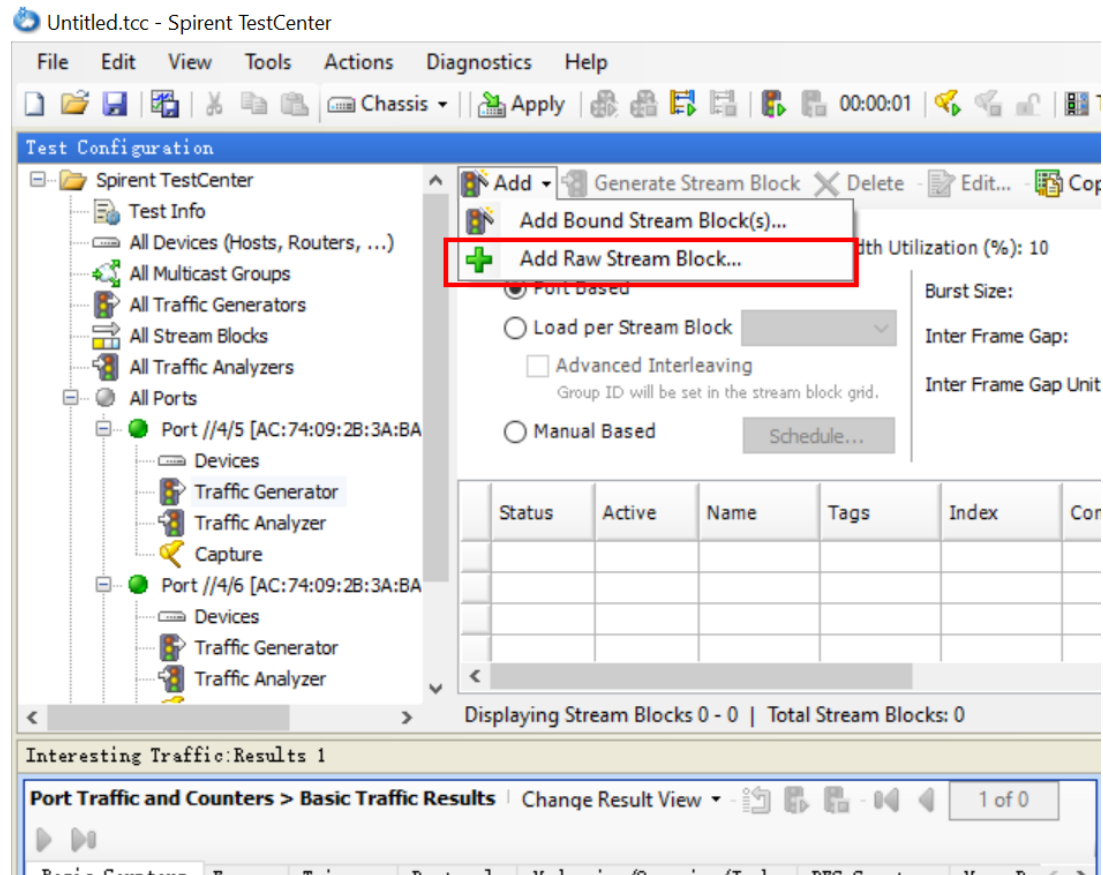
1. On the DUT, set the MAC learning limit to 100 on Port 1.

```
[DUT]interface Ten-GigabitEthernet1/0/49
[DUT-Ten-GigabitEthernet1/0/49]mac-address max-mac-count 100
```



2. On the tester, send untagged broadcast packets through Port A. The source MAC addresses of the packets are 1000 consecutive MAC addresses starting at 0-0-1111. Result 1 is expected.

Add raw traffic.



Delete the IPv4 header.



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StreamBlock Editor - Port //4/5 [AC:74:09:2B:3A:BA/Ten-GigabitEthernet1/0/49] : StreamBlock 7

General Frame Groups Rx Port Preview

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

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)	
Header length (int)	
ToS/DiffServ	
Total length (int)	<auto> calculated
Identification (int)	0
Control Flags	
Reserved (bit)	0

Hex Editor

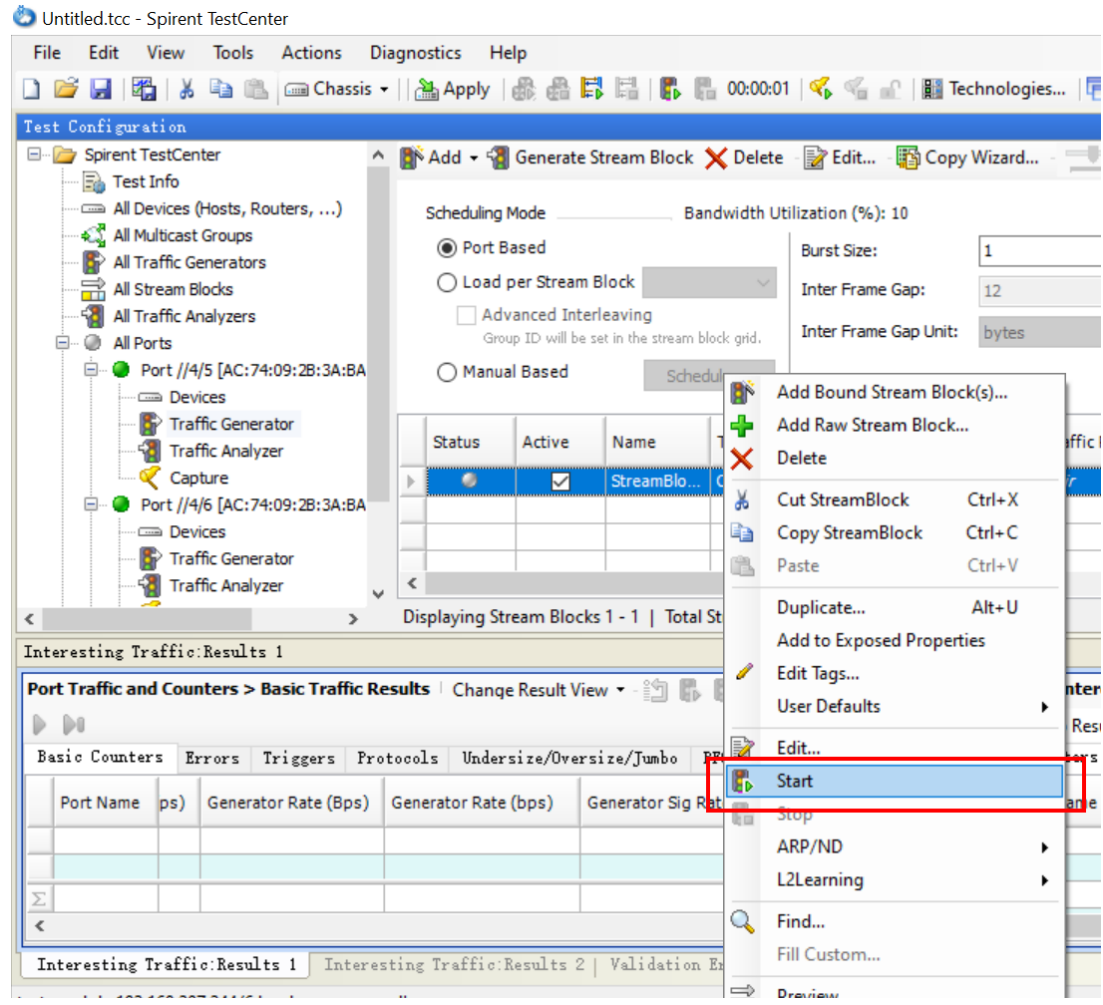
```
0000 FB 55 55 55 55 55 55 D5 00 00 01 00 00 01 00 10 6UUUUUUUU.....
0010 94 00 00 02 08 00 45 00 00 14 00 00 00 00 FF FD .....E.....yy
0020 39 94 C0 55 01 02 C0 00 00 01 00 00 00 00 00 00 9.AU...A...
```

Change the source MAC modifier.



All rights reserved

Send the traffic.





H3C S5560X-EI Product Test Procedures

Untitled.tcc - Spirent TestCenter

File Edit View Tools Actions Diagnostics Help

Chassis Apply 00:00:06 Technologies... Perspec

Test Configuration

All Ports

- Port //4/5 [AC:74:09:2B:3A:BA]
 - Devices
 - Traffic Generator
 - Traffic Analyzer
 - Capture
- Port //4/6 [AC:74:09:2B:3A:BA]
 - Devices
 - Traffic Generator
 - Traffic Analyzer
 - Capture
- Port //4/7 [AC:74:09:2B:3A:BA]
 - Devices
 - Traffic Generator
 - Traffic Analyzer
 - Capture

Scheduling Mode Bandwidth Utilization (%): 10

☒ Port Based ☐ Load per Stream Block ☐ Manual Based

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

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

Schedule...

Status	Active	Name	Tags	Index	Controlled By	Traffic Pattern
	<input checked="" type="checkbox"/>	StreamBlo...	Click to ad...	0	generator	Pair

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

Interesting Traffic: 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	Advan >
Port Name	ps	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)		
Port //4/5...		108,108,111	864,864,888	844,595	0		
Port //4/6...		0	0	0	844,595		
Port //4/7...		0	0	0	844,594		

Streams > Interesting

Basic Counters	Errors
Rx Port Name	Str

```
[DUT]display mac-address count
100 mac address(es) found.
```

- On the DUT, set the MAC learning limit to 150 on Port 3.

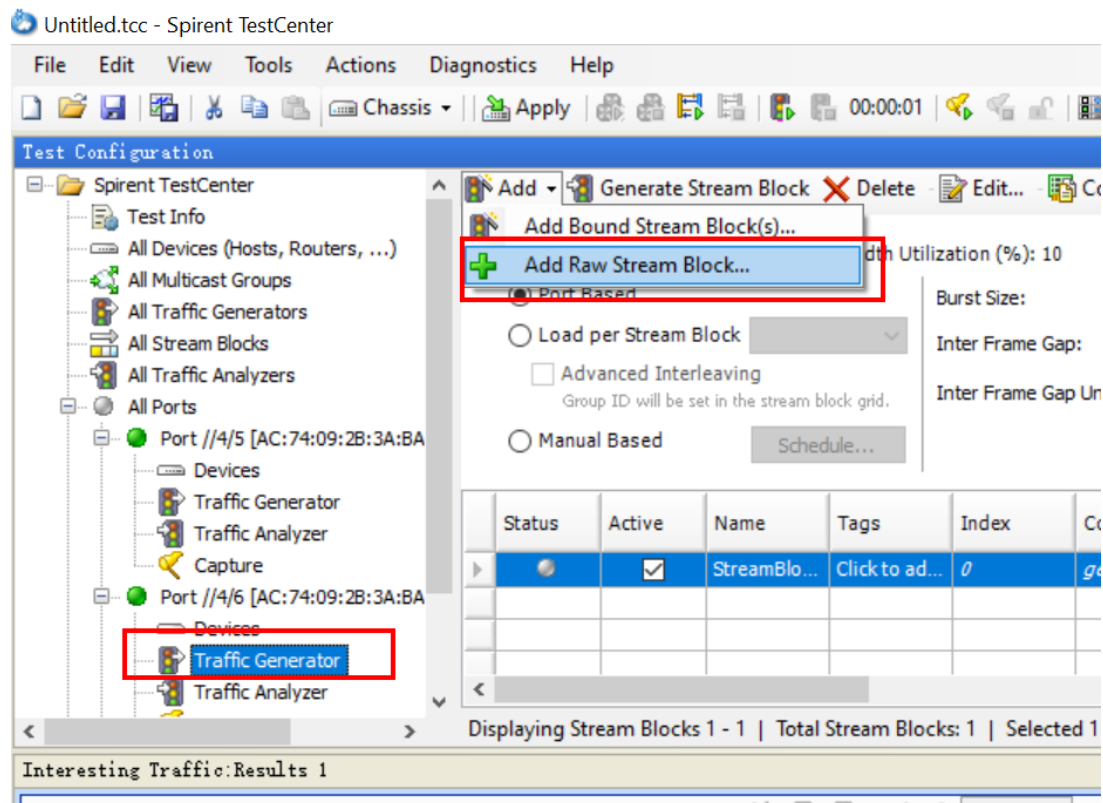
```
[DUT]interface Ten-GigabitEthernet1/0/51
[DUT-Ten-GigabitEthernet1/0/51]mac-address max-mac-count 150
```

- On the tester, send untagged broadcast packets through Port C. The source MAC addresses of the packets are 1000 consecutive MAC addresses starting at 0-0-1111. Result 2 is expected.

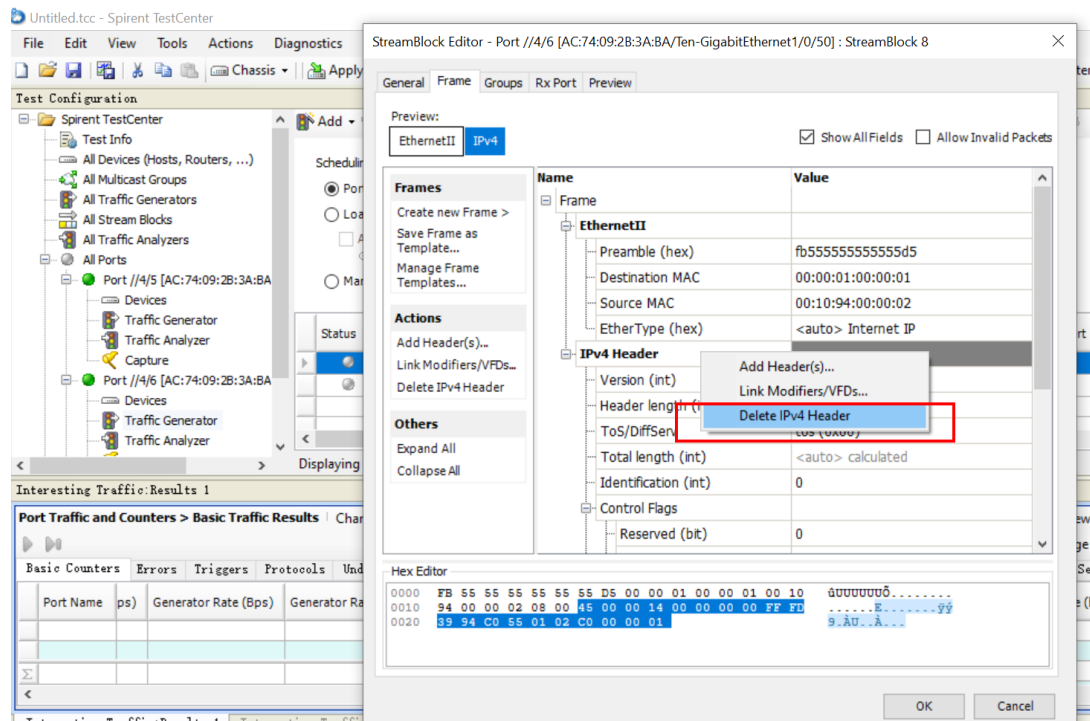
Add raw stream.



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Delete the IPv4 header.



Change the source MAC modifier.



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Send the traffic.

Untitled.tcc - Spirent TestCenter

File Edit View Tools Actions Diagnostics Help

Test Configuration

Spirent TestCenter

- Test Info
- All Devices (Hosts, Routers, ...)
- All Multicast Groups
- All Traffic Generators
- All Stream Blocks
- All Traffic Analyzers
- All Ports
 - Port //4/5 [AC:74:09:2B:3A:BA]
 - Devices
 - Traffic Generator
 - Traffic Analyzer
 - Capture
 - Port //4/6 [AC:74:09:2B:3A:BA]
 - Devices
 - Traffic Generator
 - Traffic Analyzer

Scheduling Mode: ☒ Port Based ☐ Load per Stream Block ☐ Manual Based

Bandwidth Utilization (%): 10

Burst Size: 1 Duration Mode: Cont

Inter Frame Gap: 12

Inter Frame Gap Unit: bytes

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

Stream Blocks

Status	Active	Name	Tags
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	StreamBlo...	Click to add...

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

Interesting Traffic: Results 1

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

Port Name	ps	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)
Port //4/5...	0	0	0	844,595
Port //4/6...	0	0	0	844,594
Port //4/7...	108,108,111	864,864,888	844,595	0

Interesting Traffic: Results 1 | Interesting Traffic: Results 2 | Validation Errors

Untitled.tcc - Spirent TestCenter

File Edit View Tools Actions Diagnostics Help

Test Configuration

Spirent TestCenter

- Devices
- Traffic Generator
- Traffic Analyzer
- Capture
- Port //4/5 [AC:74:09:2B:3A:BA]
 - Devices
 - Traffic Generator
 - Traffic Analyzer
 - Capture
- Port //4/6 [AC:74:09:2B:3A:BA]
 - Devices
 - Traffic Generator
 - Traffic Analyzer
 - Capture
- Port //4/7 [AC:74:09:2B:3A:BA]
 - Devices
 - Traffic Generator
 - Traffic Analyzer
 - Capture

Scheduling Mode: ☒ Port Based ☐ Load per Stream Block ☐ Manual Based

Bandwidth Utilization (%): 10

Burst Size: 1 Duration Mode: Cont

Inter Frame Gap: 12

Inter Frame Gap Unit: bytes

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

Stream Blocks

Status	Active	Name	Tags	Index	Controlled By	Traffic Pattern	Type	Tx
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	StreamBlo...	Click to add...	0	generator	Pair	Port	Port

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

Interesting Traffic: Results 1

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

Port Name	ps	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)
Port //4/5...	0	0	0	844,595	844,595
Port //4/6...	0	0	0	844,594	844,594
Port //4/7...	108,108,111	864,864,888	844,595	0	0

Streams > Interesting Stream Results | Change Counter

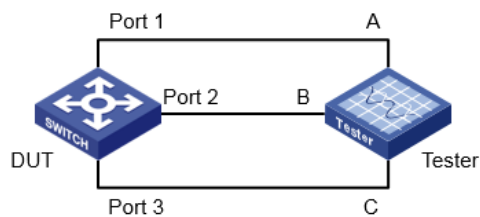
Rx Port Name	Stream Index	Rx Count (Frames)



```
[DUT]display mac-address count  
150 mac address(es) found.
```

☐ Passed☐ Failed

2.12 Jumbo frame

Test Item Name: Jumbo Frame**Work Hour: 10 min****Test Topology:****Test Process:**

1. Enable jumbo frame forwarding on Port A, Port B, and Port C of Tester.
2. Port A of Tester sends broadcast packets with the length as 9000(9216) bytes continuously. Result 1 is expected.
3. Disable jumbo frame forwarding on Port 1 of DUT1. Result 2 is expected.
4. Enable jumbo frame forwarding on Port 1 of DUT1. Result 1 is expected.

Expect Results:

1. Packets sent out Port A of Tester are received on Port B and Port C of Tester.
2. Packets sent out Port A of Tester are not received on Port B and Port C of Tester.

Actual Result:

1. Enable jumbo frame forwarding on Port A, Port B, and Port C of Tester

```
[DUT-Ten-GigabitEthernet1/0/49]jumboframe enable  
[DUT-Ten-GigabitEthernet1/0/49]interface Ten-GigabitEthernet1/0/50  
[DUT-Ten-GigabitEthernet1/0/50]jumboframe enable  
[DUT-Ten-GigabitEthernet1/0/50]interface Ten-GigabitEthernet1/0/51  
[DUT-Ten-GigabitEthernet1/0/51]jumboframe enable
```
2. Port A of Tester sends broadcast packets with the length as 9000(9216) bytes continuously. Result 1 is expected



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Actions Diagnostics Help

Chassis

External Device

Apply F9

Start All Devices

Stop All Devices

Start ARP/ND

Port Reservation...

Add Offline Ports...

Reserve 192.168.207.244/1/8 1/9 4/5 4/6

Reserve 192.168.207.244/4/7

Reserve 192.168.207.244/4/5 4/6

Reserve 192.168.207.244/4/5 4/6 4/7 4/8

Connect/Create ☒ Show Port Groups Show Ports: All Ports

Connection Name	Model	Licensed Speeds	Status
Port 6 (Group 6)	Link Down, Spee...		Available
Port 7 (Group 7)	Link Down, Spee...		Available
Port 8 (Group 8)	Link Down, Spee...		Available
Slot 4	HYPERMETRICS ...	10G	
Port 1 (Group 1)	Link Up, Speed 10G		Available - 84:D9:31:CA:5I
Port 2 (Group 2)	Link Up, Speed 10G		Available - 84:D9:31:CA:5I
Port 3 (Group 3)	Link Down, Spee...		Available
Port 4 (Group 4)	Link Down, Spee...		Available
Port 5 (Group 5)	Link Up, Speed 10G		Reserved by y23198@y23
Port 6 (Group 6)	Link Up, Speed 10G		Reserved by y23198@y23
Port 7 (Group 7)	Link Up, Speed 10G		To Be Reserved
Port 8 (Group 8)	Link Down, Spee...		Available
Slot 5	HYPERMETRICS ...	10G	
Port 1 (Group 1)	Link Down, Spee...		Available

Firmware Version: 4.95.6666

Summary

Available: 45 Unavailable: 3 Reserved by User: 4 Reserved by Other: 7

Ports: 59 Chassis: 1 Test Modules: 8

Add Offline Ports... Add Default Traffic: No



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The screenshot displays the Spirent TestCenter interface for configuring a Stream Block. The top left shows a tree view of the test setup, including Test Info, All Devices, All Multicast Groups, All Traffic Generators, All Stream Blocks, All Traffic Analyzers, and All Ports. The top right shows a context menu with options: Add, Generate Stream Block, Delete, Add Bound Stream Block(s)..., and Add Raw Stream Block... (highlighted with a red box). The main window shows the configuration for 'StreamBlock 3' under the 'General' tab. The 'Frame size (Bytes)(With CRC and signature field)' section has 'Fixed' selected, and the 'Size' is set to 9216 (highlighted with a red box). The 'Streamblock load option' section has 'Load mode' set to 'Fixed' and 'Percent (%)' selected. The 'Settings' section shows 'Scheduling priority' as 0, 'Burst size' as 1, 'Start delay (bytes)' as 0, 'Inter-frame gap unit' as 'Gap (bytes)', and 'Inter-frame gap' as 12. The 'Packet' section shows 'Payload fill constant (hex)' as 0000, 'Payload fill type' as 'Constant', and checkboxes for 'Include Signature Field', 'High Speed Result Analysis', and 'Enable AnalyzerPreload'.

General | **Frame** | **Groups** | **Rx Port** | **Preview**

☒ Active Name: StreamBlock 3

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

☒ Fixed Size: 9216

☐ Increment Step: 1 (power of 2)

☐ Decrement Min: 128

☐ Random Max: 256

☐ Auto Avg: 192

☐ iMIX Default Edit...

Streamblock load option

Load mode: Fixed

☒ Percent (%) 10

☐ Frames/sec (fps) 84459

☐ Inter-Burst Gap (bytes) 1344

☐ Inter-Burst Gap (msec) 1344

☐ Inter-Burst Gap (nsec) 1344

☐ bps 100000000

☐ Kbps 100000

☐ Mbps 100

☐ L2 Rate (bps) 100000000

Refresh rates

Settings

Scheduling priority: 0 (0 is the highest)

Burst size: 1

Start delay (bytes): 0

Inter-frame gap unit: Gap (bytes)

Inter-frame gap: 12

Packet

Payload fill constant (hex) : 0000

Payload fill type: Constant

☐ Insert FCS error

☒ Include Signature Field

☒ High Speed Result Analysis

☐ Enable AnalyzerPreload

The screenshot shows the Packet Builder application interface. The top tabs are General, Frame, Groups, Rx Port, and Preview. The Preview tab is selected, and the packet type is set to EthernetII. On the left sidebar, there are sections for Frames (Create new Frame >, Save Frame as Template..., Manage Frame Templates...), Actions (Add Header(s)..., Link Modifiers/VFDs...), and Others (Expand All, Collapse All). The main area displays a tree view of the packet structure:

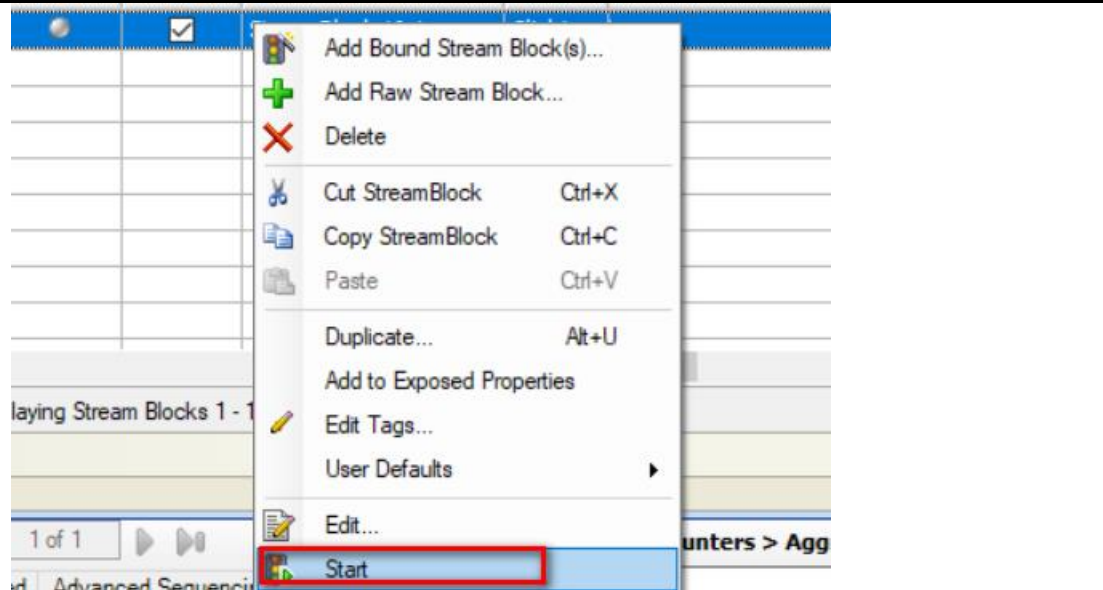
Name	Value
Frame	
EthernetII	
Preamble (hex)	fb55555555555d5
Destination MAC	FF:FF:FF:FF:FF:FF
Source MAC	00:10:94:00:00:02
EtherType (hex)	<auto> 88B5

At the bottom, there is a Hex Editor window showing the raw bytes of the packet:

```

0000 FB 55 55 55 55 55 D5 FF FF FF FF FF FF 00 10  ....UUUUUU.....
0010 94 00 00 02 88 B5                .....µ
  
```

The bottom navigation bar includes "Navigate streamblocks:" with icons for previous/next block, a dropdown showing "1 of 1", and buttons for OK and Cancel. The OK button is highlighted with a red rectangle.



Port Name	e (fps)	Generator Rate (fps)	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)
Port //4/5...		13,534	124,729,941	997,839,528	13,534	0
Port //4/6...	0	0	0	0	0	0
Port //4/7...	0	0	0	0	0	0

4. Enable jumbo frame forwarding on Port 1 of DUT1. Result 1 is expected

[DUT-Ten-GigabitEthernet1/0/49]jumboframe enable

Port Name	e (fps)	Generator Rate (fps)	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)
Port //4/5...		13,534	124,729,568	997,836,544	13,534	0
Port //4/6...	0	0	0	0	0	13,534
Port //4/7...	0	0	0	0	0	13,534

☐ Passed

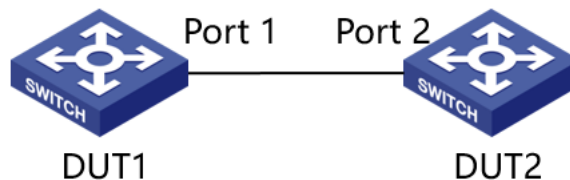
☐ Failed

2.13 Ethernet auto negotiation

Test Item Name: Ethernet Auto negotiation

Work Hour: 15 min

Test Topology:



Test Process:



1. Connect DUT1 with DUT2 on 10GE port, using SFP transceivers. Create VLAN-int on both devices and configure IP addresses. Perform ping between two VLAN-int. Result 1 is expected.
2. Check the status of interface on DUT. Result 2 is expected.

Expect Results:

1. DUT 1/2 can successfully ping each other.
2. The status of interface is 10GE speed

Actual Result:

Configuration on DUT1:

1. Add Port1 to VLAN 10 and assign IP address to VLAN interface 10.

```
[DUT1]vlan 10
[DUT1-vlan10]port Ten-GigabitEthernet 1/0/25
```

```
[DUT1]interface Vlan-interface 10
[DUT1-Vlan-interface10]ip address 30.0.0.1 24
```

Configuration on DUT2:

2. Add Port2 to VLAN 10 and assign IP address to VLAN interface 10.

```
[DUT2]vlan 10
[DUT2-vlan10]port Ten-GigabitEthernet 1/0/52
```

```
[DUT2]interface Vlan-interface 10
[DUT2-Vlan-interface10]ip address 30.0.0.2 24
```

3. Perform ping between two VLAN-int. Result 1 is expected.

```
[DUT1]ping 30.0.0.2
Ping 30.0.0.2 (30.0.0.2): 56 data bytes, press CTRL+C to break
56 bytes from 30.0.0.2: icmp_seq=0 ttl=255 time=1.922 ms
56 bytes from 30.0.0.2: icmp_seq=1 ttl=255 time=1.744 ms
56 bytes from 30.0.0.2: icmp_seq=2 ttl=255 time=1.771 ms
56 bytes from 30.0.0.2: icmp_seq=3 ttl=255 time=43.703 ms
56 bytes from 30.0.0.2: icmp_seq=4 ttl=255 time=1.787 ms

--- Ping statistics for 30.0.0.2 ---
5 packet(s) transmitted, 5 packet(s) received, 0.0% packet loss
round-trip min/avg/max/std-dev = 1.744/10.185/43.703/16.759 ms
```



```
[DUT2-Vlan-interface10]ping 30.0.0.1
Ping 30.0.0.1 (30.0.0.1): 56 data bytes, press CTRL+C to break
56 bytes from 30.0.0.1: icmp_seq=0 ttl=255 time=4.806 ms
56 bytes from 30.0.0.1: icmp_seq=1 ttl=255 time=9.865 ms
56 bytes from 30.0.0.1: icmp_seq=2 ttl=255 time=1.655 ms
56 bytes from 30.0.0.1: icmp_seq=3 ttl=255 time=1.680 ms
56 bytes from 30.0.0.1: icmp_seq=4 ttl=255 time=1.519 ms

--- Ping statistics for 30.0.0.1 ---
5 packet(s) transmitted, 5 packet(s) received, 0.0% packet loss
round-trip min/avg/max/std-dev = 1.519/3.905/9.865/3.226 ms
```

4. Check the status of interface on DUT. Result 2 is expected.

```
[DUT1]display interface Ten-GigabitEthernet 1/0/25
Ten-GigabitEthernet1/0/25
Current state: UP
Line protocol state: UP
IP packet frame type: Ethernet II, hardware address: 7485-c4f6-214a
Description: Ten-GigabitEthernet1/0/25 Interface
Bandwidth: 100000000 kbps

[DUT2]display interface Ten-GigabitEthernet 1/0/52
Ten-GigabitEthernet1/0/52
Current state: UP
Line protocol state: UP
IP packet frame type: Ethernet II, hardware address: ac74-092b-3b16
Description: Ten-GigabitEthernet1/0/52 Interface
Bandwidth: 100000000 kbps
```

☐ Passed

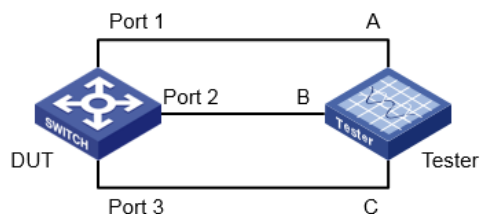
☐ Failed

2.14 QinQ

Test Item Name: QinQ

Work Hour: 30 min

Test Topology:



Test Process:



1. On the DUT, create VLAN 2, and assign Port 1 to VLAN 2 as an access port. Configure Port 2 as a hybrid port, and assign Port 2 to VLAN 2 as a tagged member.
2. Enable QinQ on Port 1 of the DUT.
3. Send a broadcast packet tagged with VLAN 100 from Port A of the tester to the DUT. Result 1 is expected.
4. Configure Port 1 of the DUT as a trunk port, and assign it to VLAN 2 and other VLANs. The PVID of Port 1 is 2. Configure Port 2 of the DUT as a hybrid port, and assign it to VLAN 2 as a tagged member.
5. Enable QinQ on Port 1 of the DUT.
6. Send a broadcast packet tagged with VLAN 100 from Port A of the tester to the DUT. Result 1 is expected.

Expect Results:

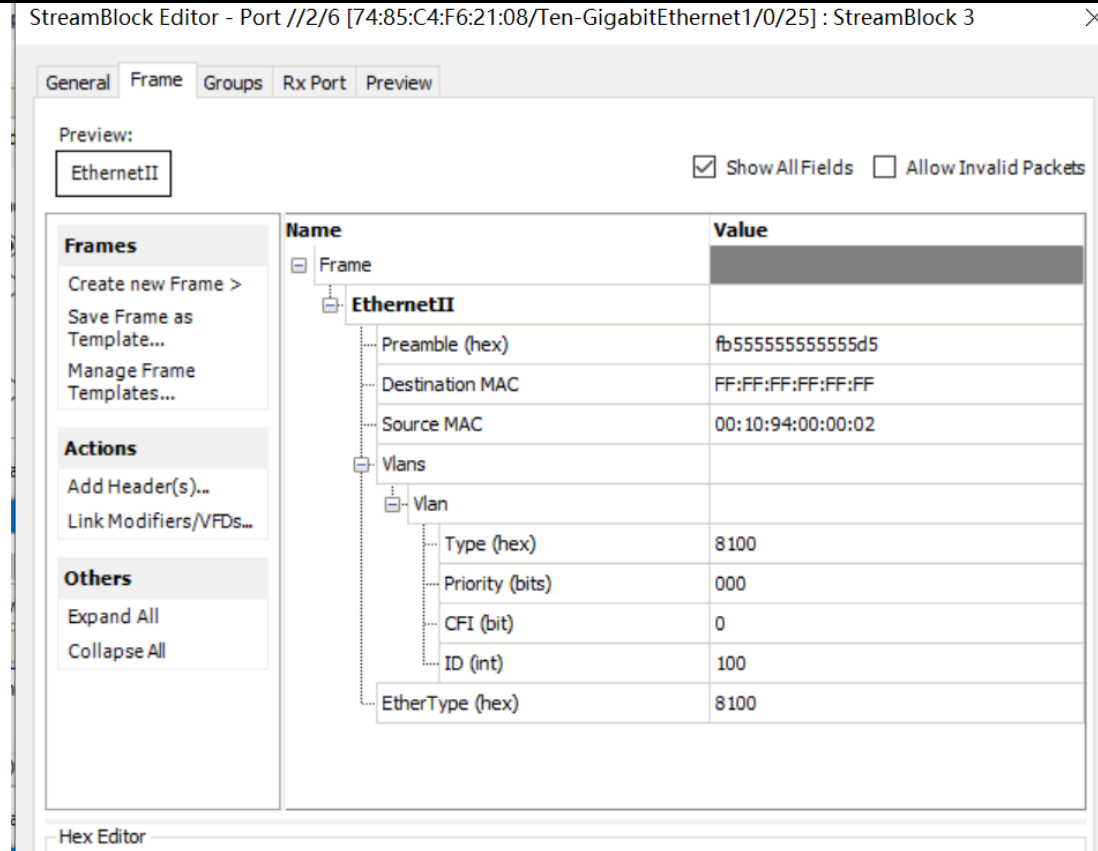
1. Port B of the tester receives a double-tagged packet from Port 2 of the DUT. The SVLAN and CVLAN of packet is 2 and 100, respectively. The TPID value is 8100 in both the SVLAN tag and the CVLAN tag.

Actual Result:

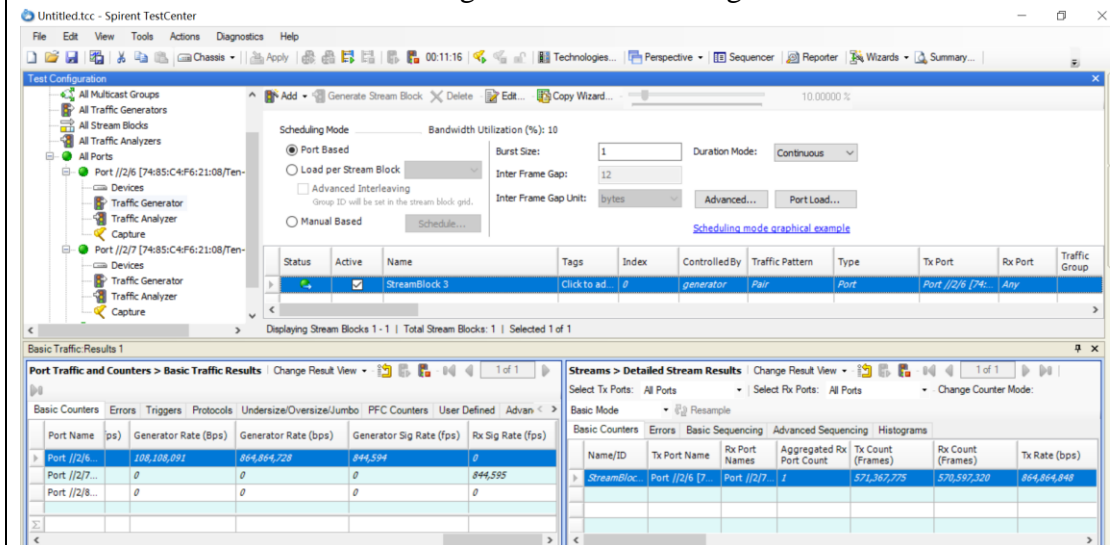
1. On the DUT, create VLAN 2, and assign Port 1 to VLAN 2 as an access port. Configure Port 2 as a hybrid port, and assign Port 2 to VLAN 2 as a tagged member.
[5560x-ei-1-Ten-GigabitEthernet1/0/25]port access vlan 2
[5560x-ei-1-Ten-GigabitEthernet1/0/26]port link-type hybrid
[5560x-ei-1-Ten-GigabitEthernet1/0/26]port hybrid vlan 2 tagged
2. Enable QinQ on Port 1 of the DUT.
[5560x-ei-1-Ten-GigabitEthernet1/0/25]qinq enable
3. Send a broadcast packet tagged with VLAN 100 from Port A of the tester to the DUT. Result 1 is expected.



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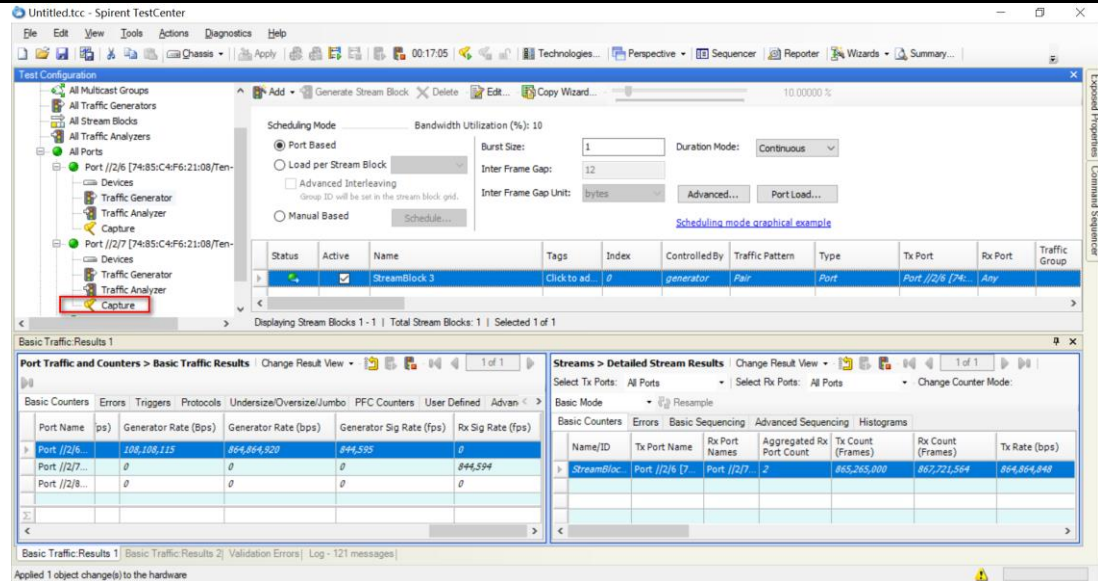


4. Port B of the tester receives a double-tagged packet from Port 2 of the DUT. The SVLAN and CVLAN of packet is 2 and 100, respectively. The TPID value is 8100 in both the SVLAN tag and the CVLAN tag.

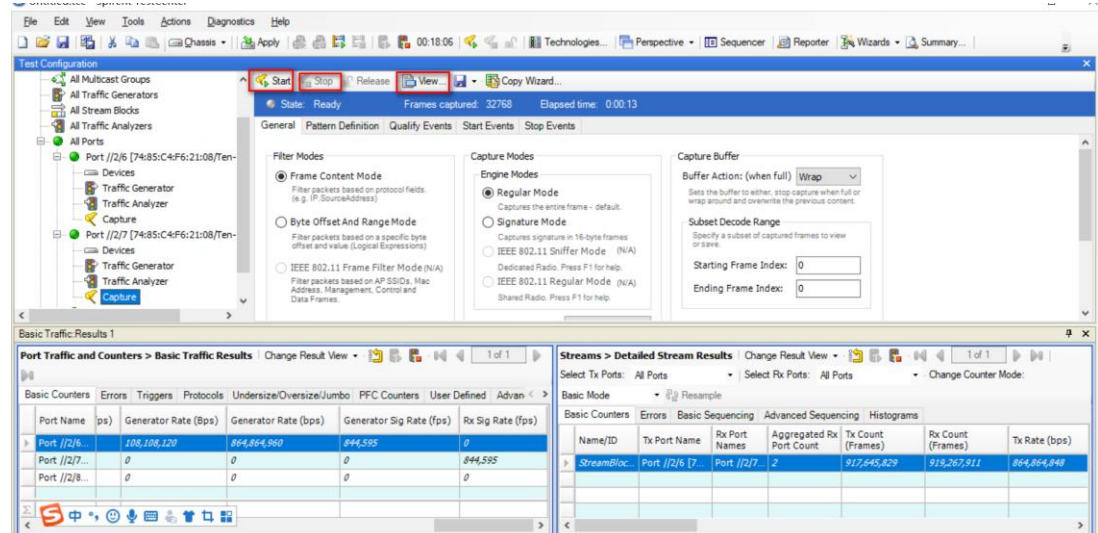




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Click Start, Stop, View successively to capture packets on Port B of Tester.



```
▼ 802.1Q Virtual LAN, PRI: 0, DEI: 0, ID: 2
  000. .... = Priority: Best Effort (default) (0)
  ...0 .... = DEI: Ineligible
  .... 0000 0000 0010 = ID: 2
  Type: 802.1Q Virtual LAN (0x8100)
▼ 802.1Q Virtual LAN, PRI: 0, DEI: 0, ID: 100
  000. .... = Priority: Best Effort (default) (0)
  ...0 .... = DEI: Ineligible
  .... 0000 0110 0100 = ID: 100
  Type: 802.1Q Virtual LAN (0x8100)
```

5. Configure Port 1 of the DUT as a trunk port, and assign it to VLAN 2 and other VLANs. The PVID of Port 1 is 2. Configure Port 2 of the DUT as a hybrid port, and assign it to VLAN 2 as a tagged member.

#



```
interface Ten-GigabitEthernet1/0/26
```

```
port link-mode bridge
```

```
port link-type hybrid
```

```
port hybrid vlan 2 tagged
```

```
port hybrid vlan 1 untagged
```

```
#
```

```
interface Ten-GigabitEthernet1/0/25
```

```
port link-mode bridge
```

```
port link-type trunk
```

```
port trunk permit vlan all
```

```
port trunk pvid vlan 2
```

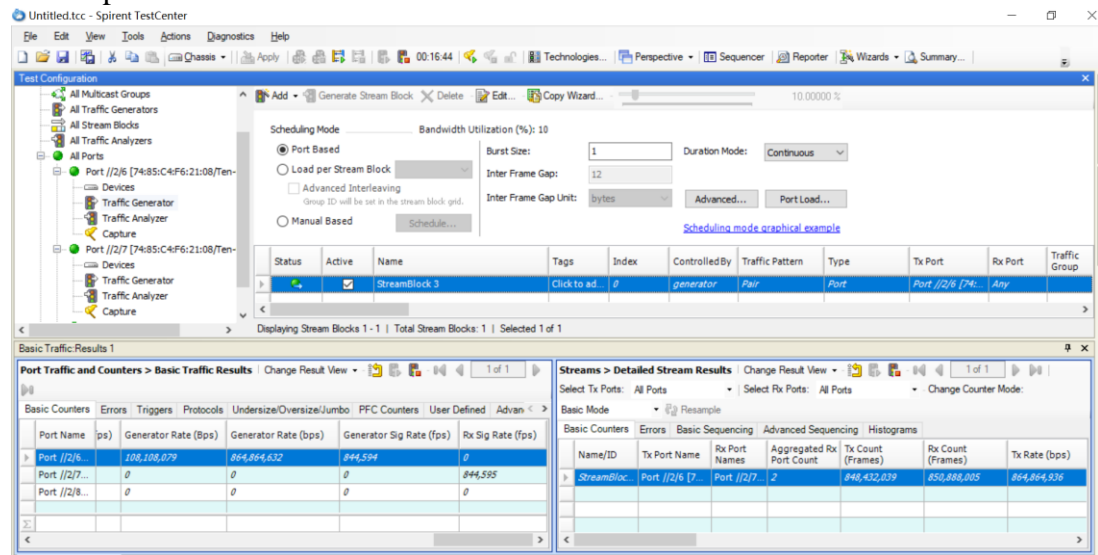
```
qinq enable
```

```
#
```

6. Enable QinQ on Port 1 of the DUT.

```
qinq enable
```

7. Capture on Port B of tester

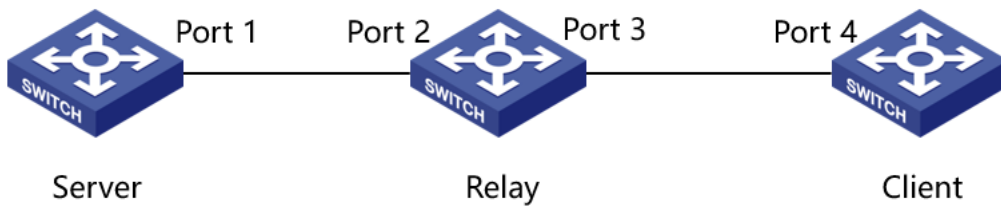


```
> Frame 1: 132 bytes on wire (1056 bits), 132 bytes captured (1056 bits) on interface \\.\pipe\view_capture_192-168-207-244_2_7_01292021_150813, id
> Ethernet II, Src: Performa_00:00:00:02 (00:10:94:00:00:02), Dst: Broadcast (ff:ff:ff:ff:ff:ff)
> 802.1Q Virtual LAN, PRI: 0, DEI: 0, ID: 2
> 000. .... = Priority: Best Effort (default) (0)
> ...0 .... = DEI: Ineligible
> .... 0000 0010 = ID: 2
> Type: 802.1Q Virtual LAN (0x8100)
> 802.1Q Virtual LAN, PRI: 0, DEI: 0, ID: 100
> 000. .... = Priority: Best Effort (default) (0)
> ...0 .... = DEI: Ineligible
> .... 0000 0110 0100 = ID: 100
> Type: 802.1Q Virtual LAN (0x8100)
```

☐ Passed☐ Failed

3 Layer 3 protocol

3.1 DHCP

Test Item Name: DHCP**Work Hour: 30 min****Test Topology:****Test Process:**

1. Configure the DHCP server and relay on DUT
2. Configure the DHCP relay agent to support Option 82.
3. Configure the strategy for handling DHCP requests containing Option 82.
4. Configure the padding mode for the Circuit ID sub-option and the Remote ID sub-option of Option 82.
5. Configure Port 4 to request an IP address from the DHCP server. Result 1 is expected.
6. Use the Wireshark to capture packets on the server. Configure DUT 2 to request an IP address from the DHCP server again. Result 2 is expected.

Expect Results:

1. Port 4 can get IP address from DHCP server.
2. The captured DHCP discover packet contains the Circuit ID sub-option and the Remote ID sub-option of Option 82

Actual Result:

Configuration on DHCP Server:

1. Add Port4 to VLAN and assign IP address to VLAN interface.



```
[DHCP Server]vlan 20
[DHCP Server-vlan20]port GigabitEthernet 1/0/1
[DHCP Server-vlan20]interface Vlan-interface 20
[DHCP Server-Vlan-interface20]ip address 20.0.0.1 255.255.255.0
```

2. Enable DHCP

```
[DHCP Server]dhcp enable
```

3. Exclude the IP addresses of the gateway from dynamic assignment.

```
[DHCP Server]dhcp server forbidden-ip 10.0.0.1
```

4. Configure parameters in DHCP address pool 0, including the subnet for address assignment and gateway address.

```
[DHCP Server]dhcp server ip-pool 1
[DHCP Server-dhcp-pool-1]network 10.0.0.0 mask 255.255.255.0
[DHCP Server-dhcp-pool-1]gateway-list 10.0.0.1
```

5. Apply DHCP address pool 1 to VLAN-interface 20 on the DUT.

```
[DHCP Server]int vlan 20
[DHCP Server-Vlan-interface20]dhcp server apply ip-pool 1
```

Configuration on DHCP Relay:

6. Enable DHCP on DUT.

```
[DHCP Relay]dhcp enable
```

7. Create a VLAN interface that is connected to the DHCP server.

```
[DHCP Relay]vlan 20
[DHCP Relay-vlan20]port GigabitEthernet 1/0/1
[DHCP Relay-vlan20]interface Vlan-interface 20
[DHCP Relay-Vlan-interface20]ip address 20.0.0.2 24
```

8. Create VLAN 100 and enable the DHCP relay agent on VLAN-interface 100

```
[DHCP Relay]vlan 100
[DHCP Relay-vlan100]port GigabitEthernet 1/0/2
[DHCP Relay-vlan100]interface Vlan-interface 100
[DHCP Relay-Vlan-interface100]ip address 10.0.0.1 24
[DHCP Relay-Vlan-interface100]dhcp select relay
```

9. Specify the DHCP server address on VLAN-interface 100.

```
[DHCP Relay]interface Vlan-interface 100
[DHCP Relay-Vlan-interface100]dhcp relay server-address 20.0.0.1
```

10. Configure the DHCP relay agent to support Option 82.

```
[DHCP Relay-Vlan-interface100]dhcp relay information enable
```

11. Configure the strategy for handling DHCP requests containing Option 82.

```
[DHCP Relay-Vlan-interface100]dhcp relay information strategy replace
```

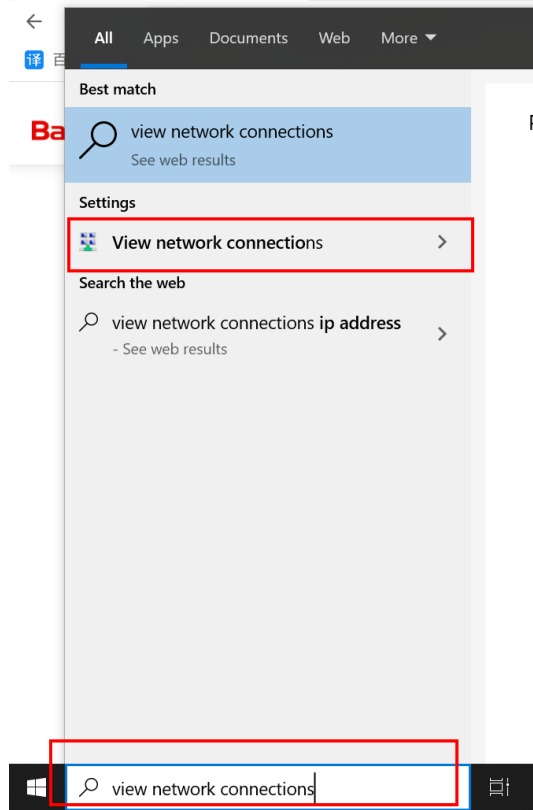
12. Configure the padding mode and padding format of Option 82.

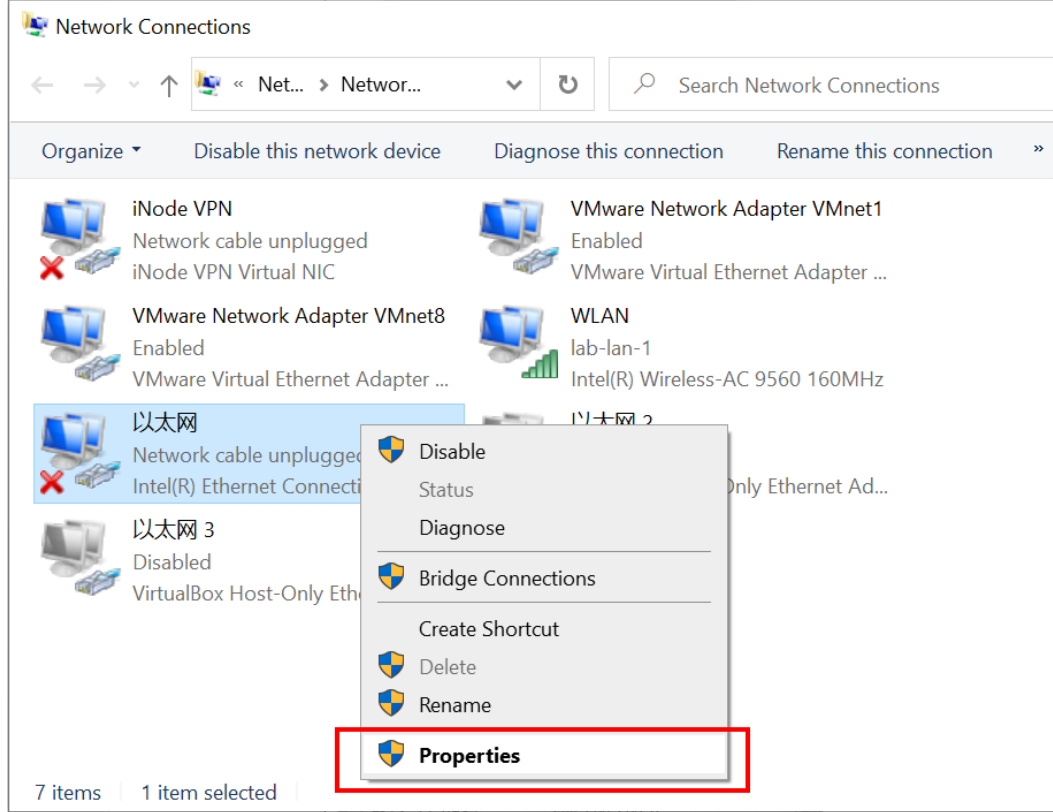
```
[DHCP Relay-Vlan-interface100]dhcp relay information remote-id string normal  
[DHCP Relay-Vlan-interface100]dhcp relay information circuit-id normal
```

13. Configure the DHCP client to request an IP address from the DHCP server.

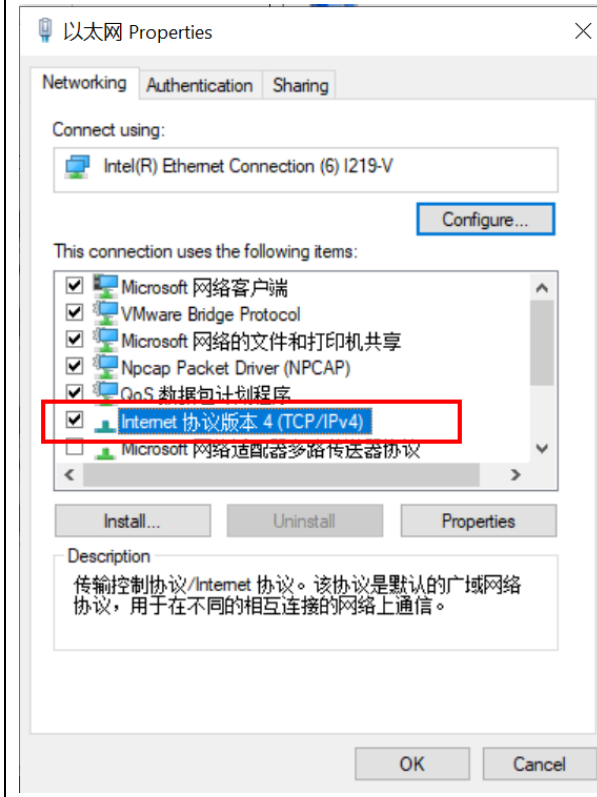
Result 1 is expected.

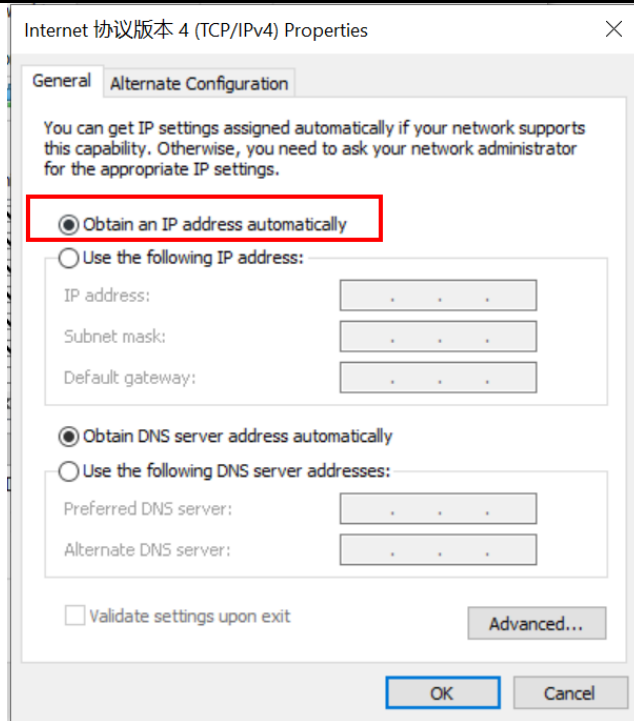
Select computer network card



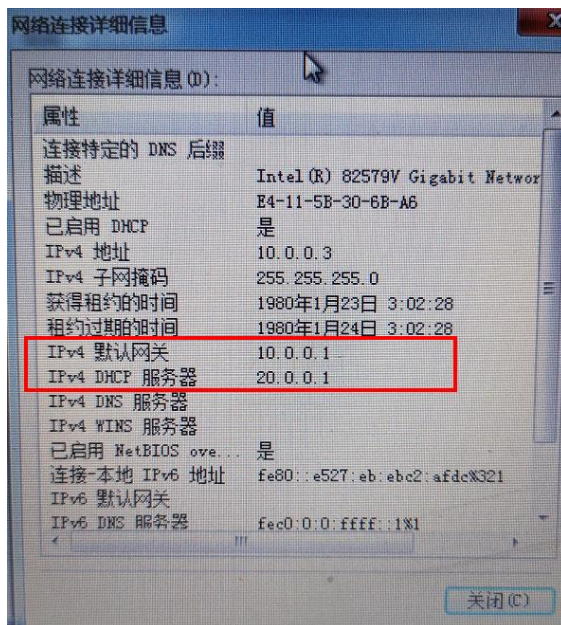


Set the network card to obtain IP address automatically





The client can get IP address from DHCP server.

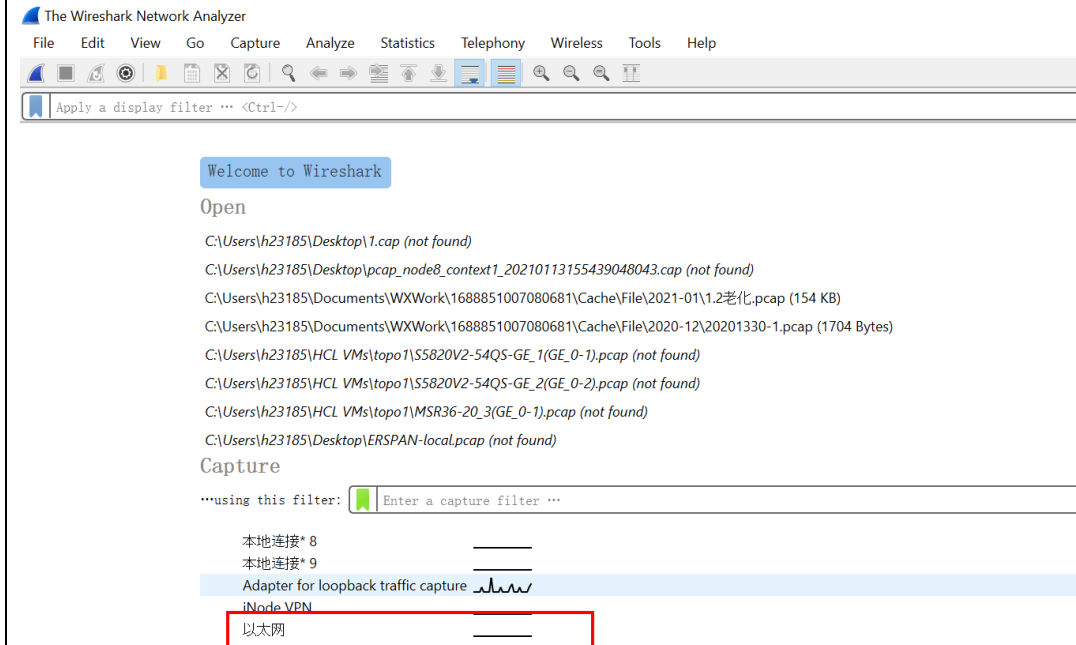


- Use the Wireshark to capture packets on the server. Configure client to request an IP address from the DHCP server again. Result 2 is expected.

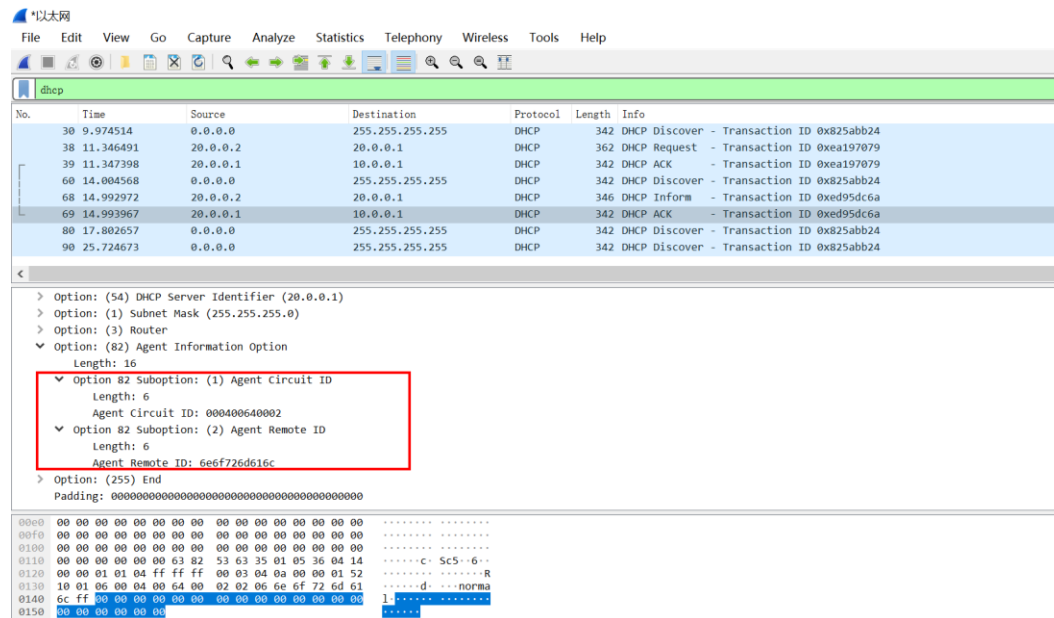
Select the corresponding network card on Wireshark.



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The captured DHCP discover packet contains the Circuit ID sub-option and the Remote ID sub-option of Option 82.



☐ Passed

☐ Failed

3.2 OSPF

Test Item Name: OSPF



Work Hour: 20 min

Test Topology:



Test Process:

1. Configure IP addresses for Port1 and Port2
2. Configure IP addresses for Loopback interfaces on DUT1 and DUT2
3. Configure OSPF on DUT1 and DUT2 with expect Result 1
4. Check the routing-table on DUT1 and DUT2 with expect Result 2
5. Perform ping between the two loopback interfaces.

Expect Results:

1. DUT1 and DUT2 can build OSPF neighbors
2. The loopback routing can be seen in the routing-table, and its type is OSPF
3. DUT1 and DUT2 can successfully ping each other.

Actual Result:

1. Configure IP addresses for Port1 and Port2

DUT1:

int Ten-GigabitEthernet 1/0/25-----port 1

ip address 10.2.1.1 24

DUT2:

int Ten-GigabitEthernet 1/0/2-----port 2

ip address 10.2.1.2 24

2. Configure IP addresses for Loopback interfaces on DUT1 and DUT2

DUT1:

int loopback 0

ip address 1.1.1.1 32

DUT2:

int loopback 0

ip address 2.2.2.2 32



3. Configure OSPF on DUT1 and DUT2

```
[5560x-ei-1-ospf-1]d%Jan 4 02:33:53:399 2013 5560x-ei-1 OSPF/5/OSPF_NBR_CHG: 0
SPF 1 Neighbor 10.2.1.2(Ten-GigabitEthernet1/0/25) changed from LOADING to FULL

dis ospf peer

      OSPF Process 1 with Router ID 10.2.1.1
        Neighbor Brief Information

Area: 0.0.0.0
Router ID      Address          Pri Dead-Time  State      Interface
10.2.1.2      10.2.1.2        1   38         Full/DR    XGE1/0/25
[5560x-ei-1-ospf-1]
```

4. Check the routing-table on DUT1 and DUT2.

```
[5560x-ei-1-ospf-1-area-0.0.0.0]dis ip routing-table

Destinations : 21          Routes : 21

Destination/Mask    Proto    Pre Cost           NextHop           Interface
0.0.0.0/32          Direct   0   0               127.0.0.1         InLoop0
1.1.1.0/24          Direct   0   0               1.1.1.1           Loop0
1.1.1.0/32          Direct   0   0               1.1.1.1           Loop0
1.1.1.1/32          Direct   0   0               127.0.0.1         InLoop0
1.1.1.255/32        Direct   0   0               1.1.1.1           Loop0
2.2.2.2/32          0_INTRA 10  1               10.2.1.2          XGE1/0/25
10.2.1.0/24         Direct   0   0               10.2.1.1          XGE1/0/25
10.2.1.0/32         Direct   0   0               10.2.1.1          XGE1/0/25
10.2.1.1/32         Direct   0   0               127.0.0.1         InLoop0
10.2.1.255/32       Direct   0   0               10.2.1.1          XGE1/0/25
127.0.0.0/8         Direct   0   0               127.0.0.1         InLoop0
127.0.0.0/32        Direct   0   0               127.0.0.1         InLoop0
127.0.0.1/32        Direct   0   0               127.0.0.1         InLoop0
127.255.255.255/32  Direct   0   0               127.0.0.1         InLoop0
192.168.206.0/23     Direct   0   0               192.168.207.140   MGE0/0/0
192.168.206.0/32     Direct   0   0               192.168.207.140   MGE0/0/0
192.168.207.140/32  Direct   0   0               127.0.0.1         InLoop0
```

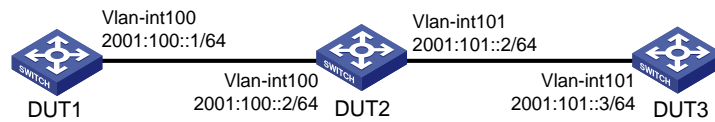
ping each other

```
<5560x-ei-1>ping -a 1.1.1.1 2.2.2.2
Ping 2.2.2.2 (2.2.2.2) from 1.1.1.1: 56 data bytes, press CTRL+C to break
56 bytes from 2.2.2.2: icmp_seq=0 ttl=255 time=2.575 ms
56 bytes from 2.2.2.2: icmp_seq=1 ttl=255 time=1.778 ms
56 bytes from 2.2.2.2: icmp_seq=2 ttl=255 time=1.717 ms
56 bytes from 2.2.2.2: icmp_seq=3 ttl=255 time=1.746 ms
```

☐ Passed☐ Failed

3.3 OSPFv3 authentication

Test Item Name: OSPFv3 authentication

**Work Hour: 20 min****Test Topology:****Test Process:**

1. Enable OSPFv3 routing protocols on devices DUT1, DUT2, and DUT3 respectively; OSPFv3 configuration on device DUT1 is as follows, and OSPFv3 configuration on devices DUT2 and DUT3 is similar:
2. Configure the encryption rule set, configure the authentication algorithm as HMAC-SHA-256, and configure the verification password and effective time
3. Enable keychain authentication on the Layer 3 interface
4. Check the status of ospfv3 neighbors on display DUT1 / DUT2 / DUT3 via display ospfv3 peer, the result 1 is expected.
5. The device DUT1 pings the IPv6 address of the VLAN101 virtual interface of device DUT3, or the device DUT3 pings the IPv6 address of the VLAN100 virtual interface of device DUT1, the result 2 is expected.

Expect Results:

1. OSPFv3 neighbor established correctly
2. Able to ping.

Actual Result:

1. Configurations on DUTs,
DUT1/2/3:

ospfv3 1
router-id 1.1.1.1/2.2.2.2/3.3.3.3
#

Enable OSPFv3 on each VLAN-interface respectively

```
#  
interface Vlan-interface100  
ospfv3 1 area 0.0.0.0  
#
```



```
#
keychain test mode absolute
key 1
  key-string plain 123456
  authentication-algorithm hmac-sha-256
  send-lifetime utc 11:11:11 2021/01/01 to 11:11:11 2022/01/01
  accept-lifetime utc 11:11:11 2021/01/01 to 11:11:11 2022/01/01
#
```

Note: The system time should be among 11:11:11 2021/01/01 to 11:11:11 2022/01/01, then the keychain will take effect.

2. Enable keychain authentication on the Layer 3 interface

Enter the Layer 3 interface

OspfV3 authentication-mode keychain test

3. Check the status of ospfv3 neighbors on display Dos1 / DUT2 / DUT3 via display ospfv3 peer, the result 1 is expected.
Put command **dis ospf peer** on all devices to check the result.

4. OSPFv3 neighbor established correctly

```
dis ospfv3 peer

          OSPFv3 Process 1 with Router ID 2.2.2.2

Area: 0.0.0.0
-----
Router ID    Pri State          Dead-Time InstID Interface
3.3.3.3      1 Full/DR0ther      00:00:38  0      XGE1/0/19
1.1.1.1      1 Full/DR           00:00:37  0      XGE1/0/21
```

5. Able to ping.

```
ping ipv6 2001:101::3
Ping6(56 data bytes) 2001:100::1 --> 2001:101::3, press CTRL+C to break
56 bytes from 2001:101::3, icmp_seq=0 hlim=63 time=4.658 ms
56 bytes from 2001:101::3, icmp_seq=1 hlim=63 time=2.131 ms
56 bytes from 2001:101::3, icmp_seq=2 hlim=63 time=2.063 ms
56 bytes from 2001:101::3, icmp_seq=3 hlim=63 time=1.916 ms
56 bytes from 2001:101::3, icmp_seq=4 hlim=63 time=2.117 ms

--- Ping6 statistics for 2001:101::3 ---
5 packet(s) transmitted, 5 packet(s) received, 0.0% packet loss
```

☐ Passed

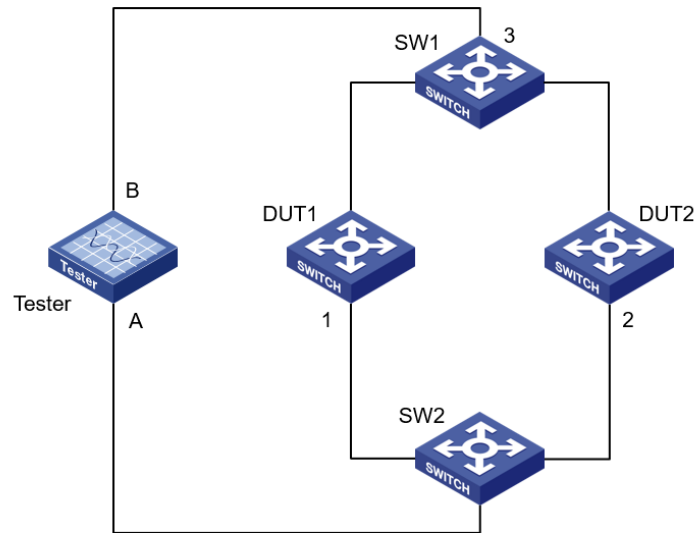
☐ Failed

3.4 BFD for VRRP

Test Item Name: BFD for VRRP

Work Hour: 45 min

Test Topology:



Test Process:

1. Use DUT 2 as the backup in the VRRP group and use DUT 1 as the master by configuring different priorities for them.
2. Specify the source IP address of BFD echo packets. As a best practice, specify the IP address of the loopback interface as the source IP address.
3. Create a track entry associated with the echo-mode BFD session. The remote IP address is the IP address of interface Port2 on DUT 2, and the local IP address is the IP address of interface Port1 on DUT 1.
4. Display BFD session information on DUT 1. Result 1 is expected.
5. Associate VRRP group 1 with a track entry.
6. Display VRRP group state information on DUT 1. Result 2 is expected.
7. Power down DUT 1. Result 3 is expected on DUT 1.

Expect Results:

1. An echo-mode BFD session is established and is in up state.
2. The output shows DUT 2 as the backup in the VRRP group, the track entry associated with the VRRP group, and the Switchover mode.
3. The log message about BFD session down is printed. DUT 2 changes from the backup to the master immediately, without waiting for three VRRP advertisement intervals.



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The screenshot displays the Spirent TestCenter software interface. The top section shows the 'Test Configuration' window with a tree view on the left and configuration options on the right. The 'Scheduling Mode' is set to 'Port Based'. The 'StreamBlock 1' table is visible. Below this, the 'Basic Traffic Results' window shows a table of traffic statistics. The 'Streams > Detailed Stream Results' window is also open, showing a table of stream details. The 'Dropped Count (Frames)' column in the detailed stream results table is highlighted with a red box, showing a value of 194,113.

Port Name	ps	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)
Port //2/6	#	108,108,085	864,864,680	844,594	0

Name/ID	Tx Port Name	Rx Port Name	Tx Count (Frames)	Rx Count (Frames)	Dropped Count (Frames)	Dropped Percent
StreamBlock: Port //2/7 [7]	Port //2/6	Port //2/6	100,755,860	100,516,142	194,113	0.192

$19413/844594=0.02298$ s=22.99 us

Actual Result:

1. Configuration on DUTs

DUT1

#

vlan 10

#

interface Vlan-interface10

ip address 10.1.1.1 255.255.255.0

vrrp vrid 1 virtual-ip 10.1.1.10

vrrp vrid 1 priority 120

vrrp vrid 1 track 1 priority reduced 50

bfd min-echo-receive-interval 100

bfd detect-multiplier 3

bfd echo enable

#

bfd echo-source-ip 10.10.10.10

#

track 2 bfd echo interface Vlan-interface10 remote ip 10.1.1.2 local ip 10.1.1.1

#

DUT2

#

bfd echo-source-ip 20.20.20.20

#

track 1 bfd echo interface Vlan-interface10 remote ip 10.1.1.1 local ip 10.1.1.2

#

2. Display BFD session information on DUT 1.



```
[5560-2]dis bfd session
Total Session Num: 1      Up Session Num: 1      Init Mode: Active

IPv4 session working in echo mode:

LD      SourceAddr      DestAddr      State      Holdtime      Interface
129      10.1.1.2          10.1.1.1      Up          230ms          Vlan10
```

3. Associate VRRP group 1 with a track entry.

track 1 bfd echo int vlan 10 remote ip 10.1.1.1 local ip 10.1.1.2

4. Display VRRP group state information on DUT 1. Result 2 is expected.

```
[5560x-ei-1]dis vrrp verbose
IPv4 Virtual Router Information:
Running mode : Standard
Total number of virtual routers : 1
Interface Vlan-interface10
VRID          : 1                      Adver Timer   : 100
Admin Status  : Up                    State          : Master
Config Pri    : 120                   Running Pri    : 120
Preempt Mode  : Yes                   Delay Time     : 0
Auth Type     : Not supported
Version       : 3
Virtual IP    : 10.1.1.10
Virtual MAC   : 0000-5e00-0101
Master IP     : 10.1.1.1
VRRP Track Information:
Track Object   : 1                      State : Positive  Pri Reduced : 50

[5560x-ei-1]
```

```
<5560x-ei-1>reboot
Start to check configuration with next startup configuration file, please wait.....DONE!
This command will reboot the device. Continue? [Y/N]:y
```

4. An echo-mode BFD session is established and is in up state.

```
[5560-2]dis bfd session
Total Session Num: 1      Up Session Num: 1      Init Mode: Active

IPv4 session working in echo mode:

LD      SourceAddr      DestAddr      State      Holdtime      Interface
129      10.1.1.2          10.1.1.1      Up          230ms          Vlan10
```

5. The output shows DUT 2 as the backup in the VRRP group, the track entry associated with the VRRP group, and the Switchover mode.



```
[5560-2]dis vrrp verbose
IPv4 Virtual Router Information:
Running mode : Standard
Total number of virtual routers : 1
Interface Vlan-interface10
VRID          : 1                      Adver Timer   : 100
Admin Status  : Up                    State         : Backup
Config Pri    : 100                   Running Pri   : 100
Preempt Mode   : Yes                  Delay Time    : 0
Become Master  : 2630ms left
Auth Type      : None
Virtual IP     : 10.1.1.10
Virtual MAC    : 0000-5e00-0101
Master IP      : 10.1.1.1
VRRP Track Information:
Track Object   : 1                      State : Positive  Switchover
```

6. The log message about BFD session down is printed. DUT 2 changes from the backup to the master immediately, without waiting for three VRRP advertisement intervals.

```
[5560x-ei-1]int vl 10
[5560x-ei-1-Vlan-interface10]shu
[5560x-ei-1-Vlan-interface10]%Jan 25 10:44:58:169 2021 5560x-ei-1 VRRP4/6/VRRP_STATUS_CHANGE: The
e status of IPv4 virtual router 1 (configured on Vlan-interface10) changed from Master to Initia
lize: Interface event received.
%Jan 25 10:44:58:192 2021 5560x-ei-1 BFD/5/BFD_CHANGE_FSM: Sess[10.1.1.1/10.1.1.2, LD/RD:130/130
. Interface:Vlan10, SessType:Echo, LinkType:INET], Ver:1, Sta: UP->DOWN, Diag: 2 (Echo Function
Failed)
%Jan 25 10:44:58:198 2021 5560x-ei-1 TRACK/6/TRACK_STATE_CHANGE: The state of track entry 2 chan
ged from Positive to Negative.
%Jan 25 10:44:58:201 2021 5560x-ei-1 IFNET/3/PHY_UPDOWN: Physical state on the interface Vlan-in
terface10 changed to down.
%Jan 25 10:44:58:202 2021 5560x-ei-1 IFNET/5/LINK_UPDOWN: Line protocol state on the interface V
lan-interface10 changed to down.
```

```
dis bfd se
Total Session Num: 1      Up Session Num: 0      Init Mode: Active

IPv4 session working in echo mode:

LD      SourceAddr      DestAddr      State      Holdtime      Interface
130     10.1.1.1         10.1.1.2     Down      /             Vlan10
[5560x-ei-1-Vlan-interface10]
```

```
IPv4 Virtual Router Information:
Running mode : Standard
Total number of virtual routers : 1
Interface Vlan-interface10
VRID          : 1                      Adver Timer   : 100
Admin Status  : Up                    State         : Initialize
Config Pri    : 120                   Running Pri   : 120
Preempt Mode   : Yes                  Delay Time    : 0
Auth Type      : Not supported
Version       : 3
Virtual IP     : 10.1.1.10
Master IP      : 0.0.0.0
VRRP Track Information:
Track Object   : 1                      State : NotReady  Pri Reduced : 50
[5560x-ei-1-Vlan-interface10]
```

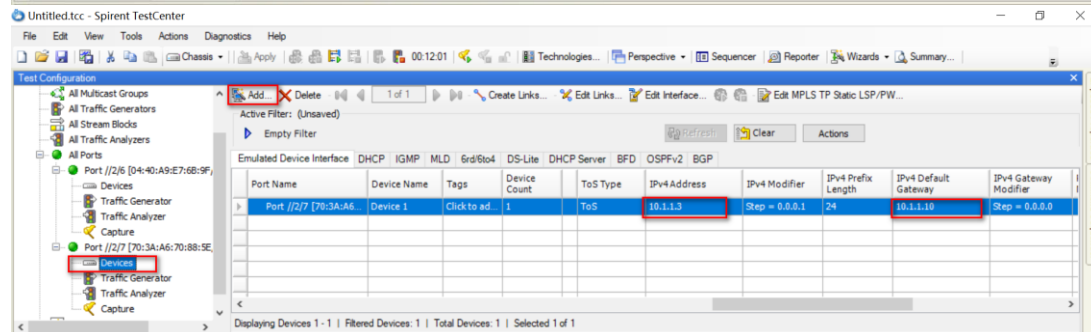
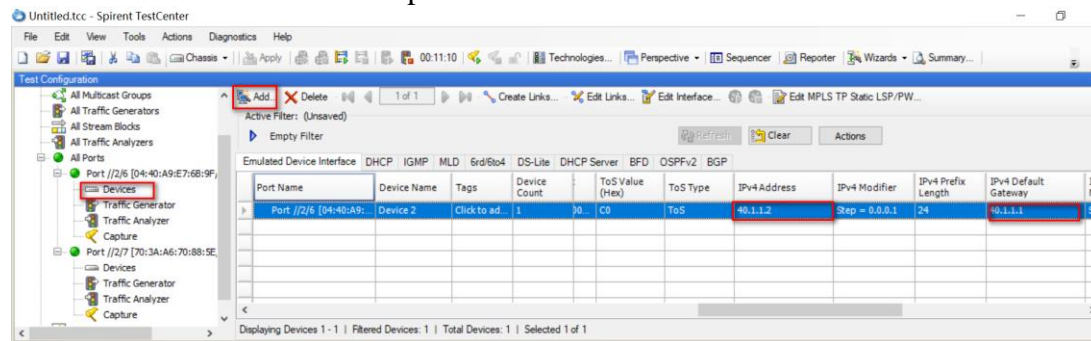


H3C S5560X-EI Product Test Procedures

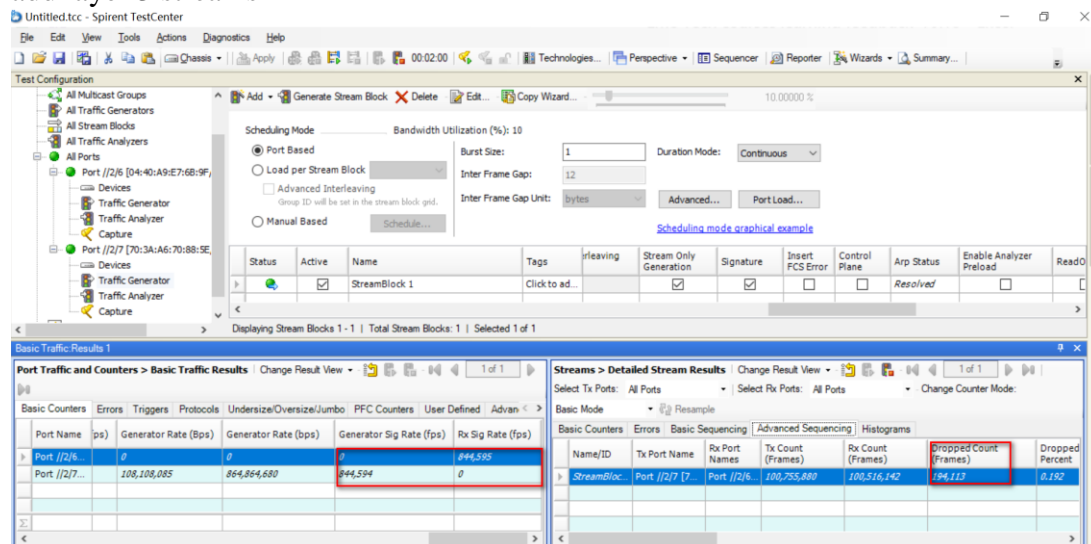
```
IPv4 Virtual Router Information:
Running mode : Standard
Total number of virtual routers : 1
Interface Vlan-interface10
VRID : 1
Admin Status : Up
Config Pri : 100
Preempt Mode : Yes
Auth Type : None
Virtual IP : 10.1.1.10
Virtual MAC : 0000-5e00-0101
Master IP : 10.1.1.2
VRRP Track Information:
Track Object : 1
State : Negative Switchover
Adver Timer : 100
State : Master
Running Pri : 100
Delay Time : 0
```

<5560-2>
<5560-2>

add devices on both two tester ports



add layer 3 streams





19413/844594=0.02298 s=22.99 us

7. Details for DUTs configurations

DUT1



DUT2



☐ Passed

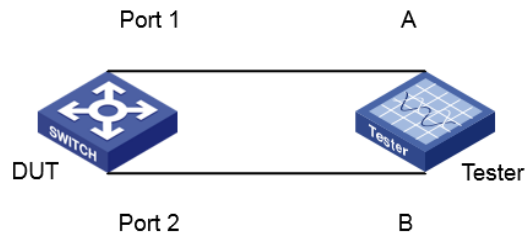
☐ Failed

3.5 Broadcast Suppression

Test Item Name: Broadcast Suppression

Work Hour: 10 min

Test Topology:



Test Process:

1. Create Stream1: broadcast, 1G
2. Send the Stream1 from the Port A, with expected Result 1
3. Configure the broadcast suppression 1024pps on the Port 1
4. Send the Stream1 from the Port A, with expected Result 2

Expect Results:

1. Tester Port B receive the 1G traffic



H3C S5560X-EI Product Test Procedures

Basic Traffic: 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
Port Name	ps	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)		
Port //1/8...	10,810,796	86,486,368	84,459	0			
Port //1/9...	0	0	0	84,459			
Σ							

2. Tester Port B receive the 1024pps traffic, average error is less than 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
Port Name	ps	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)		
Port //1/8...	10,810,837	86,486,696	84,460	0			
Port //1/9...	0	0	0	1,104			
Σ							

Actual Result:

1. Create Stream1: broadcast, 1G

Untitled.tcc - Spirent TestCenter

File View Tools Actions Diagnostics Help

Test Configuration

Spirent TestCenter

- Test Info
- All Devices (Hosts, Routers, ...)
- All Multicast Groups
- All Traffic Generators
- All Stream Blocks
- All Traffic Analyzers
- All Ports
 - Port //2/6 [74:85:C4:F6:21:08/Ter]
 - Devices
 - Traffic Generator**
 - Traffic Analyzer
 - Capture
 - Settings
 - Port //2/7 [74:85:C4:F6:21:08/Ter]

Generate Stream Block | Delete | Edit... | Copy Wizard... | Auto

Add | Add Bound Stream Block(s)... | Add Raw Stream Block...

Port Based (selected)
Load per Stream Block
Advanced Interleaving
Manual Based

Burst Size: 1 | Duration Mode: Continuous
Inter Frame Gap: 12
Inter Frame Gap Unit: bytes | Advanced... | Port Load...

Scheduling mode graphical example

Status	Active	Name	Tags	Index	Controlled By	Traffic Pattern	Type



H3C S5560X-EI Product Test Procedures

StreamBlock Editor - Port //1/8 [74:85:C4:F6:21:08/GigabitEthernet1/0/1] : StreamBlock 2

General Frame Groups Rx Port Preview

Preview: EthernetII ☒ Show All Fields ☐ Allow Invalid Packets

Frames

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

Actions

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

Others

Name	Value
Frame	
EthernetII	
Preamble (hex)	55555555555555d5
Destination MAC	FF:FF:FF:FF:FF:FF
Source MAC	00:10:94:00:00:02
EtherType (hex)	Internet IP

2. Send the Stream1 from the Port A, with expected Result 1

Basic Traffic: Results 1

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

Basic Counters	Errors	Triggers	Protocols	Undersize/Oversize/Jumbo	PFC Counters	User Defined	Advan <
Port Name	ps	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)		
Port //1/8...	10,810,796	86,486,368	84,459	0			
Port //1/9...	0	0	0	84,459			
Σ							

3. Configure the broadcast suppression 1024pps on the Port 1

```
[5560x-ei-1-GigabitEthernet1/0/2] int g1/0/1  
[5560x-ei-1-GigabitEthernet1/0/1] br  
[5560x-ei-1-GigabitEthernet1/0/1] broadcast-suppression p  
[5560x-ei-1-GigabitEthernet1/0/1] broadcast-suppression pps 1024
```

4. Send the Stream1 from the Port A.

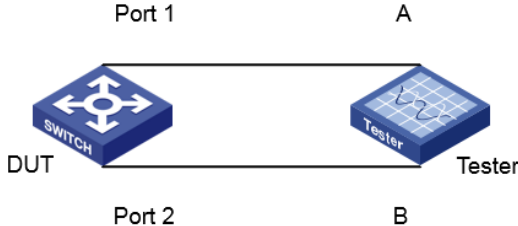
Port Traffic and Counters > Basic Traffic Results | Change Result View

Basic Counters	Errors	Triggers	Protocols	Undersize/Oversize/Jumbo	PFC Counters	User Defined	Advan <
Port Name	ps	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)		
Port //1/8...	10,810,837	86,486,696	84,460	0			
Port //1/9...	0	0	0	1,104			
Σ							

☐ Passed

☐ Failed

3.6 Multicast Suppression

Test Item Name: Multicast Suppression
Work Hour: 20 min
Test Topology: 
Test Process: <ol style="list-style-type: none"> 1. Create Stream1: multicast, 1G. 2. Send the Stream1 from the Port A, with expected Result 1. 3. Configure the multicast suppression 1024pps on the Port 1. 4. Send the Stream1 from the Port A, with expected Result 2.
Expect Results: <ol style="list-style-type: none"> 1. Tester Port B receive the 1G traffic. 2. Tester Port B receive the 1024pps traffic, average error is less than 1%.
Actual Result: <ol style="list-style-type: none"> 1. Enable igmp-snooping globally and on vlan 100 <pre>[DUT]igmp-snooping [DUT-igmp-snooping]quit [DUT]vlan 100 [DUT-vlan100]igmp-snooping enable</pre> 2. Create VLAN 100, assign Port A/B of DUT to join VLAN 100 <pre>[DUT-vlan100]port Ten-GigabitEthernet 1/0/49 [DUT-vlan100]port Ten-GigabitEthernet 1/0/50</pre> 3. The DUT Port B is configured with igmp-snooping static-group 225.0.0.1 vlan 100



H3C S5560X-EI Product Test Procedures

Actions Diagnostics Help

Chassis

External Device

Apply F9

Start All Devices

Stop All Devices

Start ARP/ND

Port Reservation...

Add Offline Ports...

Reserve 192.168.207.244/1/8 1/9 4/5 4/6

Reserve 192.168.207.244/4/7

Reserve 192.168.207.244/4/5 4/6

Reserve 192.168.207.244/4/5 4/6 4/7 4/8

Connect/Create ☒ Show Port Groups Show Ports: All Ports

Connection Name	Model	Licensed Speeds	Status
Port 6 (Group 6)	Link Down, Spee...		Available
Port 7 (Group 7)	Link Down, Spee...		Available
Port 8 (Group 8)	Link Down, Spee...		Available
Slot 4	HYPERMETRICS ...	10G	
Port 1 (Group 1)	Link Up, Speed 10G		Available - 84:D9:31:CA:5I
Port 2 (Group 2)	Link Up, Speed 10G		Available - 84:D9:31:CA:5I
Port 3 (Group 3)	Link Down, Spee...		Available
Port 4 (Group 4)	Link Down, Spee...		Available
Port 5 (Group 5)	Link Up, Speed 10G		Reserved by y23198@y23
Port 6 (Group 6)	Link Up, Speed 10G		Reserved by y23198@y23
Port 7 (Group 7)	Link Up, Speed 10G		Available - AC:74:09:2B:3I
Port 8 (Group 8)	Link Down, Spee...		Available
Slot 5	HYPERMETRICS ...	10G	
Port 1 (Group 1)	Link Down, Spee...		Available

Firmware Version: 4.95.6666

Summary

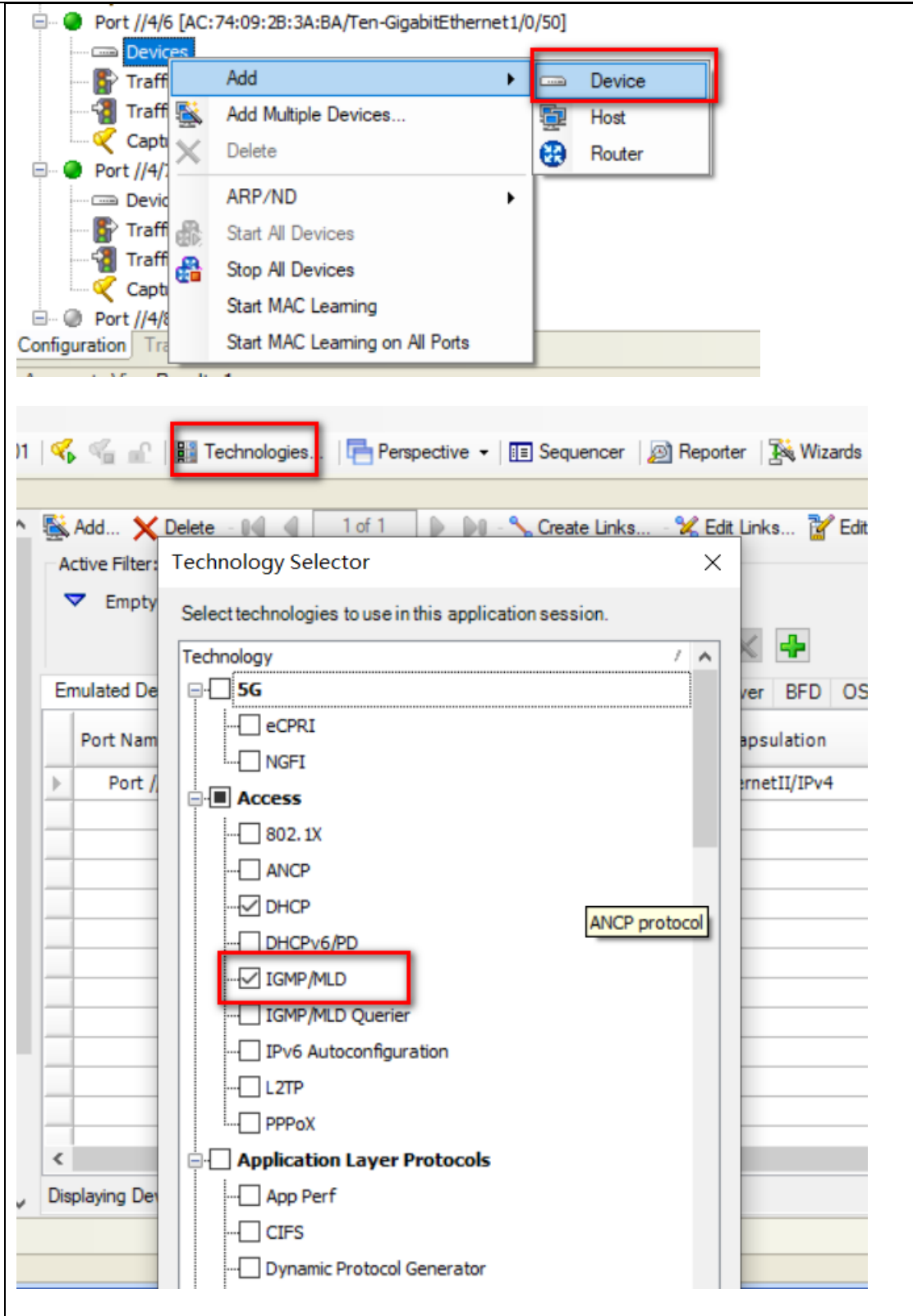
Available: 45 Unavailable: 3 Reserved by User: 4 Reserved by Other: 7

Ports: 59 Chassis: 1 Test Modules: 8

Add Offline Ports...

Add Default Traffic: No

OK Cancel





H3C S5560X-EI Product Test Procedures

The screenshot displays the H3C S5560X-EI configuration interface. The main window shows the 'Edit Group Memberships' dialog box. The 'Add' button is highlighted. The 'Add IGMP/MLD Group Membership' dialog box is open, showing the 'Add New Groups' section. The 'Starting group address' is set to 225.0.0.1, and the 'Group address increment' is set to 0.0.0.1. The 'Number of groups' is set to 1, and the 'Number of group blocks' is set to 1. The 'One-to-one' mapping option is selected under 'Select a device-group mapping...'. The 'Start Device' button is highlighted in the bottom right corner.

Port Name	Device Name	Tags	Device Count	Active	Host State	Multicast Version	Group Count	Source Count	Calculate Latency	Pack Reports	Force Initial J
Port //4/6 [A...	Device 1	Click to a...	1	<input checked="" type="checkbox"/>	Non-Member	IGMPv2	1	0	<input type="checkbox"/>	<input type="checkbox"/>	

Port Name	Device Name	Active	Multicast Group	Number of Groups	Starting Group IP	Device-Group Mapping
Port //4/6 [A...	Device 1	<input checked="" type="checkbox"/>	Ipv4Group 1	1	225.0.0.1	One-to-one

Select a task...

- ☒ Add new groups
- ☐ Use existing groups

Select a device-group mapping...

- ☐ Many-to-many
- ☒ One-to-one
- ☐ Round-robin

Add New Groups

Creates new multicast group(s) and maps these group(s) to the associated multicast host or router

Starting group address: 225.0.0.1

Group address increment: 0.0.0.1

Number of groups: 1

Number of group blocks: 1

Start Device

4. DUT display igmp-snooping static-group

```
[DUT]dis igmp-snooping group
Total 1 entries.

VLAN 100: Total 1 entries.
(0.0.0.0, 225.0.0.1)
Host ports (1 in total):
XGE1/0/50
(00:04:18)
```

5. Send the destination IP 225.0.0.1 into port A of tester, load is 1G



H3C S5560X-EI Product Test Procedures

StreamBlock Editor - Port //4/5 [AC:74:09:2B:3A:BA/Ten-GigabitEthernet1/0/49] : StreamBlock 3

General Frame Groups Rx Port Preview

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

Frames

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

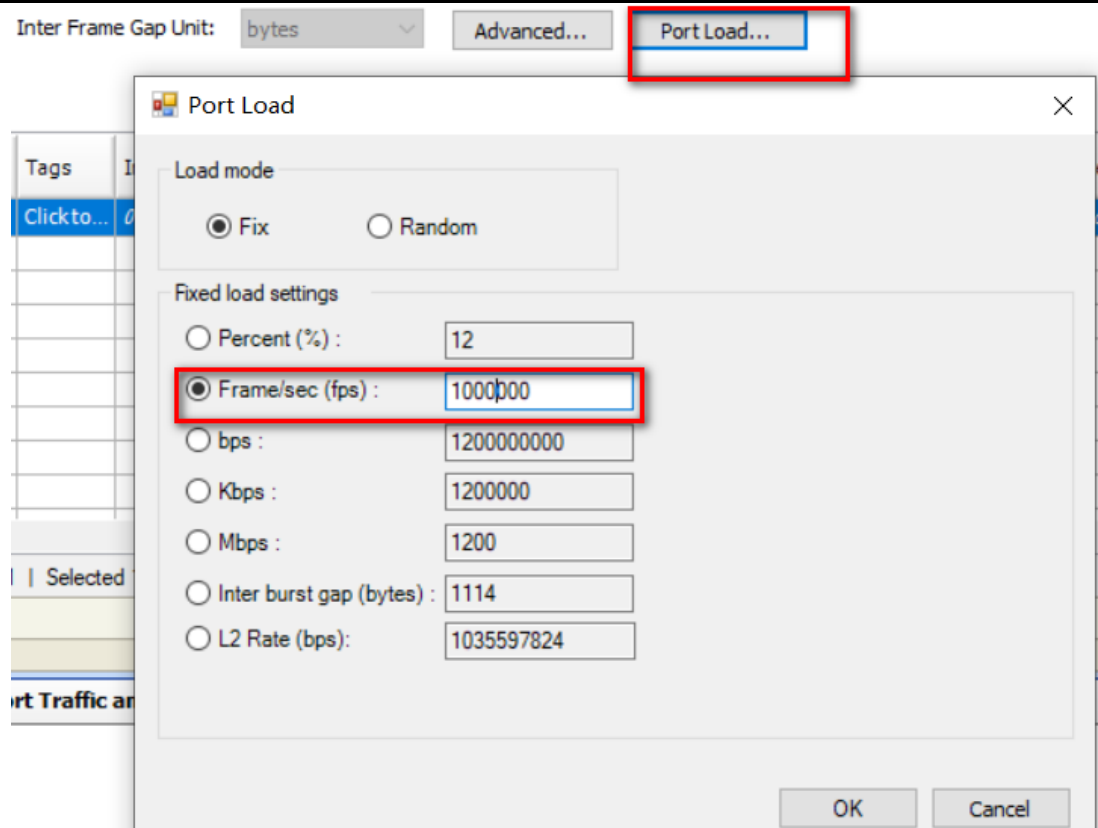
Actions

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

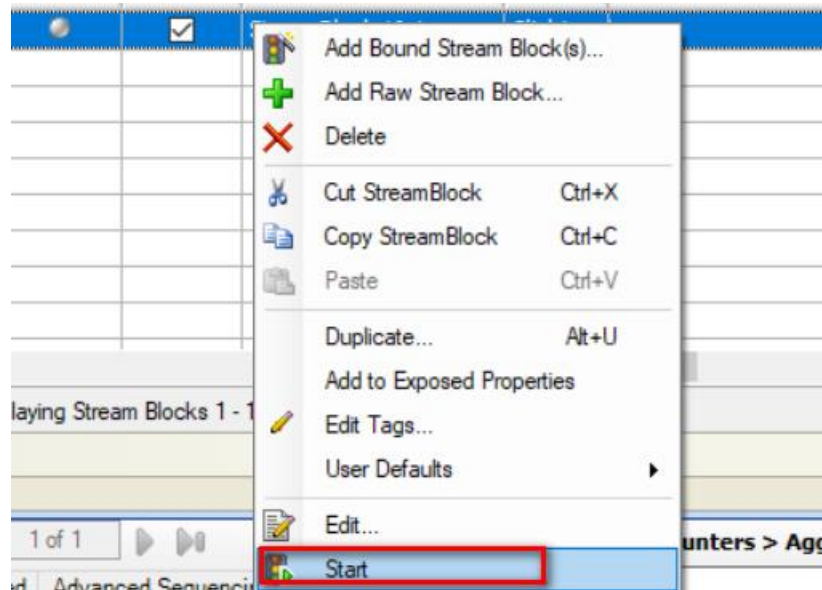
Others

- Expand All
- Collapse All

Name	Value
Frame	
EthernetII	
IPv4 Header	
ToS/DiffServ	tos (0x00)
Total length (int)	<auto> calculated
Time to live (int)	255
Protocol (int)	<auto> Experimental
Source	192.85.1.2
Destination	225.0.0.1
Header Options	
Gateway	192.85.1.1



6. Start traffic, result 1 is expected



Basic Counters	Errors	Triggers	Protocols	Undersize/Oversize/Jumbo	PFC Counters	User Defined	Advanced Sequencing	FEC Counters
Port Name	e (fps)	Generator Rate (fps)	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)		
Port //4/5...		1,011,324	129,449,407	1,035,595,256	1,011,324	0		
Port //4/6...		0	0	0	0	1,011,323		

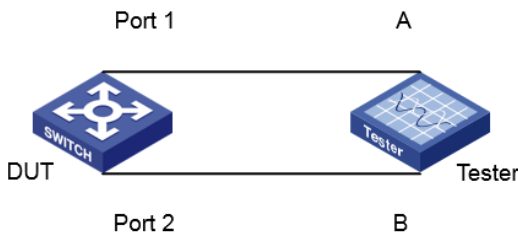
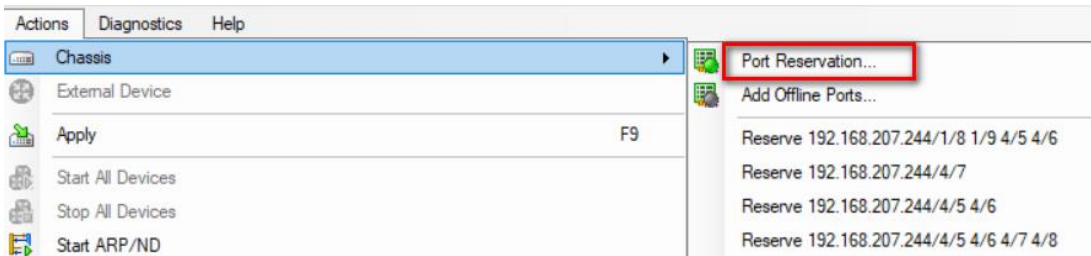
7. Configure the multicast suppression 1000pps on the Port 1, result 2 is expected.



H3C S5560X-EI Product Test Procedures

[DUT-Ten-GigabitEthernet1/0/49]multicast-suppression pps 1000						
Port Name	e (fps)	Generator Rate (fps)	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)
Port //4/5...		1,011,324	129,449,425	1,035,595,400	1,011,324	0
Port //4/6...		0	0	0	0	1,000
<input type="checkbox"/> Passed				<input type="checkbox"/> Failed		

3.7 Unicast Suppression

Test Item Name: unicast Suppression
Work Hour: 20 min
Test Topology: 
Test Process: <ol style="list-style-type: none">Create Stream1: unicast, 1G.Send the Stream1 from the Port A, with expected Result 1.Configure the unicast suppression 1024pps on the Port 1.Send the Stream1 from the Port A, with expected Result 2.
Expect Results: <ol style="list-style-type: none">Tester Port B receive the 1G traffic.Tester Port B receive the 1024pps traffic, average error is less than 1%.
Actual Result: <ol style="list-style-type: none">Create unicast stream, the load is 1G 



H3C S5560X-EI Product Test Procedures

Connect/Create ☒ Show Port Groups Show Ports: All Ports

Connection Name	Model	Licensed Speeds	Status
Port 6 (Group 6)	Link Down, Spee...		Available
Port 7 (Group 7)	Link Down, Spee...		Available
Port 8 (Group 8)	Link Down, Spee...		Available
Slot 4	HYPERMETRICS ...	10G	
Port 1 (Group 1)	Link Up, Speed 10G		Available - 84:D9:31:CA:51
Port 2 (Group 2)	Link Up, Speed 10G		Available - 84:D9:31:CA:51
Port 3 (Group 3)	Link Down, Spee...		Available
Port 4 (Group 4)	Link Down, Spee...		Available
Port 5 (Group 5)	Link Up, Speed 10G		Reserved by y23198@y23
Port 6 (Group 6)	Link Up, Speed 10G		Reserved by y23198@y23
Port 7 (Group 7)	Link Up, Speed 10G		Available - AC:74:09:2B:31
Port 8 (Group 8)	Link Down, Spee...		Available
Slot 5	HYPERMETRICS ...	10G	
Port 1 (Group 1)	Link Down, Spee...		Available

Firmware Version: 4.95.6666

Summary

Available:	45	Unavailable:	3	Reserved by User:	4	Reserved by Other:	7
Ports:	59	Chassis:	1	Test Modules:	8		

Add Offline Ports... Add Default Traffic: No **OK** Cancel

Spirent TestCenter

- Test Info
- All Devices (Hosts, Routers, ...)
- All Multicast Groups
- All Traffic Generators
- All Stream Blocks
- All Traffic Analyzers
- All Ports
 - Port //4/5 [AC:74:09:2B:3A:BA/Ten-GigabitEthernet1/0/49]
 - Devices
 - Traffic Generator
 - Traffic Analyzer
 - Capture
 - Port //4/6 [AC:74:09:2B:3A:BA/Ten-GigabitEthernet1/0/50]
 - Devices
 - Traffic Generator
 - Traffic Analyzer
 - Capture
 - Port //4/7
 - Devices
 - Traffic Generator
 - Traffic Analyzer
 - Capture

Add ☒ Generate Stream Block ☒ Delete

Add Raw Stream Block...

☒ Port Based

☐ Load per Stream Block

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

☐ Manual Based **Schedule...**

Status	Active	Name



H3C S5560X-EI Product Test Procedures

General Frame Groups Rx Port Preview

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...

Others

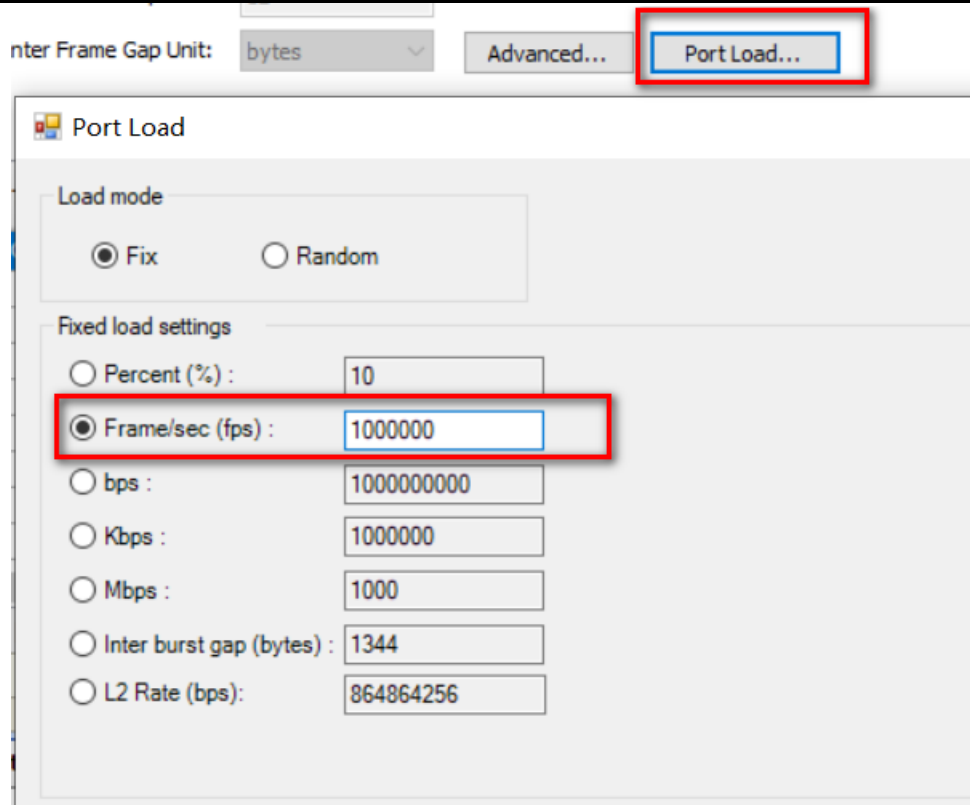
- Expand All
- Collapse All

Name	Value
Frame	
+ EthernetII	
+ IPv4 Header	
ToS/DiffServ	tos (0x00)
Total length (int)	<auto> calculated
Time to live (int)	255
Protocol (int)	<auto> Experimental
Source	192.85.1.2
Destination	192.85.1.1
Header Options	
Gateway	192.85.1.1

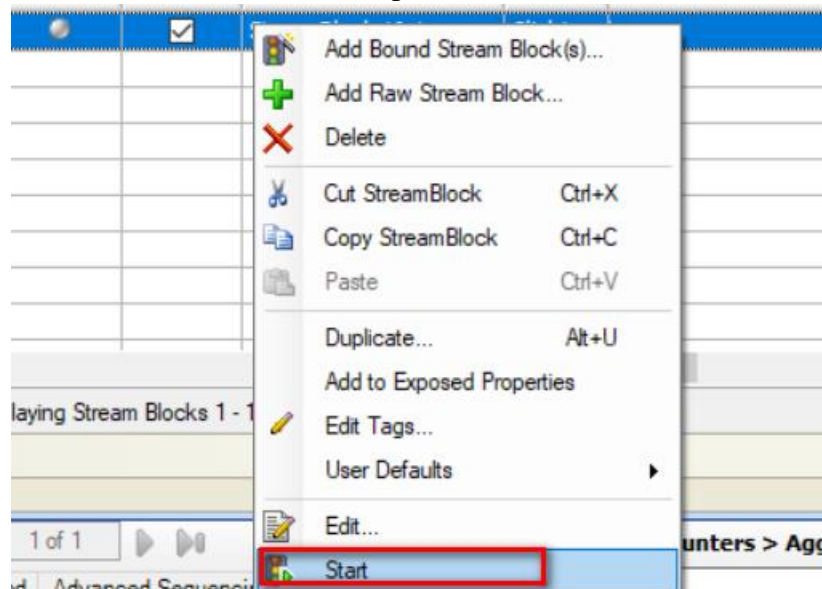
Hex Editor

0000	FB 55 55 55 55 55 55 D5 00 00 01 00 00 01 00 10	áUUUUUUô.....
0010	94 00 00 02 08 00 45 00 00 14 00 00 00 00 FF FDE.....ÿÿ
0020	38 3F C0 55 01 02 C0 55 01 01	8?ÀU..ÀU..

OK Cancel



2. Start traffic, result 1 is expected



Port Name	e (fps)	Generator Rate (fps)	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)
Port //4/5...		1,011,323	129,449,392	1,035,595,136	1,011,323	0
Port //4/6...		0	0	0	0	1,011,323

3. Configure the unicast suppression 1000pps on the Port 1, result 2 is expected

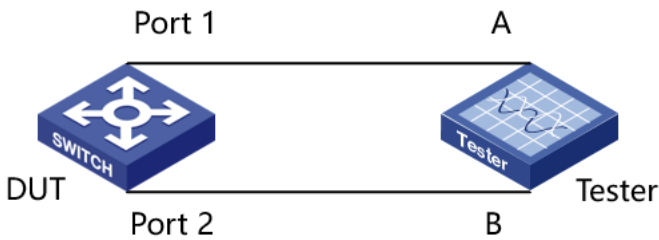
```
[DUT-Ten-GigabitEthernet1/0/49]unicast-suppression pps 1000
```




H3C S5560X-EI Product Test Procedures

Port Name	e (fps)	Generator Rate (fps)	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)
Port //4/5...		1,011,323	129,449,401	1,035,595,208	1,011,323	0
Port //4/6...		0	0	0	0	1,000
<input type="checkbox"/> Passed			<input type="checkbox"/> Failed			

3.8 IGMP V1/V2/V3

Test Item Name: IGMP V1/V2/V3
Work Hour:30 min
Test Topology: 
Test Process: <ol style="list-style-type: none">1. Create VLAN 2, assign Port 1 to the VLAN. Create VLAN 3, assign Port 2 to the VLAN.2. Configure IP address for layer 3 virtual interface of VLAN 2 and VLAN 3, Port A of Tester and layer 3 virtual interface in the same segment.3. Enable IGMP in Vlan-interface3 interface view, set up IGMP version 1, enable PIM DM in all ports:4. Send multicast data of 225.0.0.1 from Port A of Tester to DUT, source address is the port A address of Tester. Result 1 is expected.5. Send an IGMP message from Port B of Tester to simulate joining multicast group 225.0.0.1. Result 2 is expected.6. Enable IGMP in Vlan-interface3 interface view, set up IGMP version 2, enable pim dm in all ports:7. Send multicast data of 225.0.0.1 from Port A of Tester to DUT. Result 1 is expected.8. Send an IGMP message from Port B of Tester to simulate joining multicast group 225.0.0.1. Result 2 is expected.



9. Send an IGMP message from Port B of Tester to simulate leaving multicast group 225.0.0.1. Result 1 is expected.
10. Enable IGMP in Vlan-interface3 interface view, set up IGMP version 3, enable PIM DM in all layer 3 ports::
11. Send multicast data of 225.0.0.1 from Port A of Tester to DUT, source address is the port A address of Tester. Result 1 is expected.
12. Send an IGMPv3 message from Port B of Tester to simulate joining multicast group IS_IN (A) of 225.0.0.1, A indicates the port A address of Tester. Result 3 is expected.
13. Tester port B leaves multicast group IS_IN (A) of 225.0.0.1. Result A is expected.
14. Send an IGMPv3 message from Port B of Tester to simulate joining multicast group IS_IN (not A) of 225.0.0.1. Result 4 is expected.

Expect Results:

1. Tester Port B doesn't receive multicast traffic;
2. Multicast group 225.0.0.1 joined, Tester Port B receives multicast data.
3. Multicast group 225.0.0.1 joined, Tester Port B receives multicast data.
4. Multicast group 225.0.0.1 joined, Tester Port B doesn't receive multicast data.

Actual Result:

1. Create VLAN 2, assign Port 1 to the VLAN. Create VLAN 3, assign Port 2 to the VLAN.

```
[DUT2]vlan 2
[DUT2-vlan2]port Ten-GigabitEthernet 1/0/49
```

```
[DUT2]vlan 3
[DUT2-vlan3]port Ten-GigabitEthernet 1/0/50
```

2. Configure IP address for layer 3 virtual interface of VLAN 2 and VLAN 3, Port A of Tester and layer 3 virtual interface in the same segment.

```
[DUT2]interface Vlan-interface 2
[DUT2-Vlan-interface2]ip address 20.1.1.1 24
```

```
[DUT2]interface Vlan-interface 3
[DUT2-Vlan-interface3]ip address 30.1.1.1 24
```

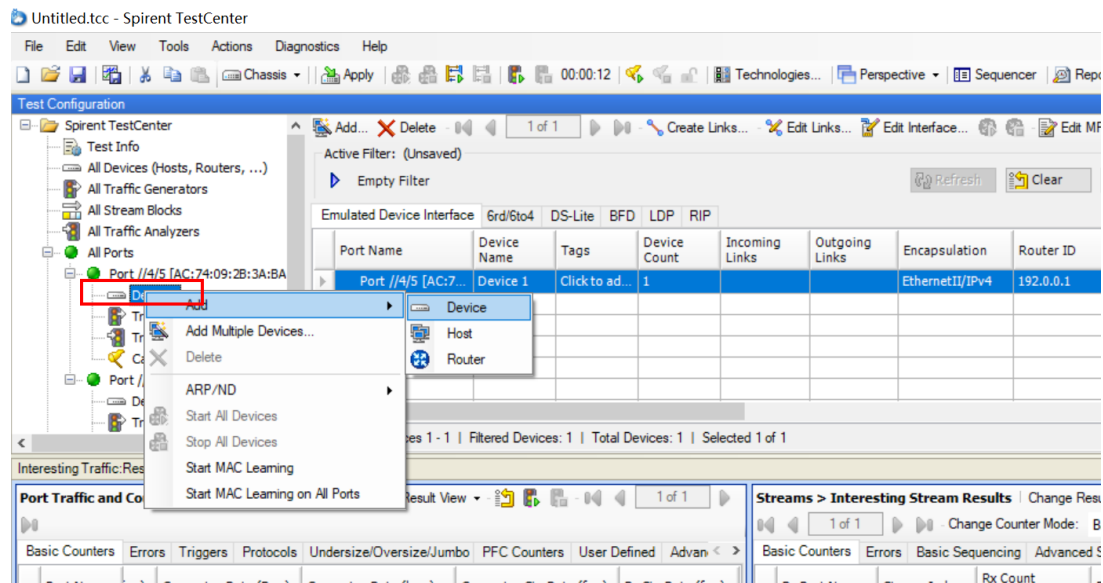
Create a device on each ports on the tester.



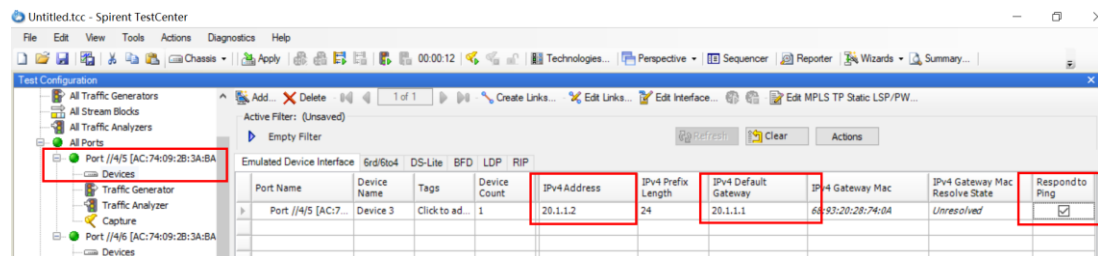
H3C S5560X-EI Product Test Procedures

On Port 4/5:

Add a new device.

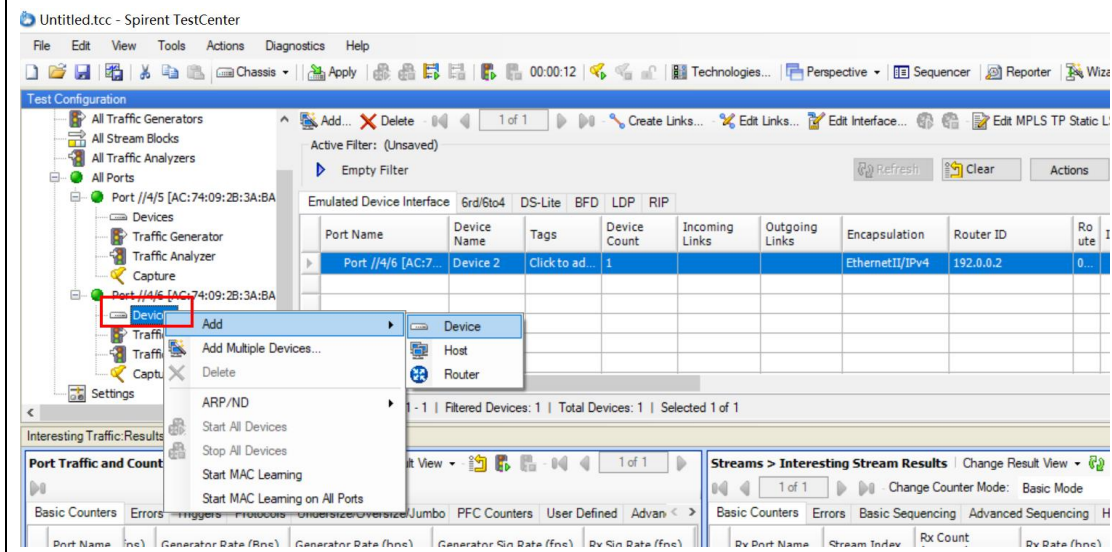


Set the ipv4 address and the gateway.



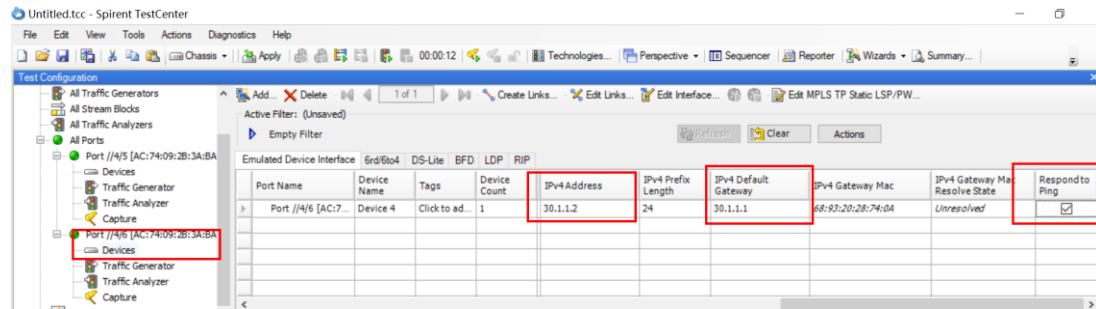
On Port 4/6:

Add a new device:

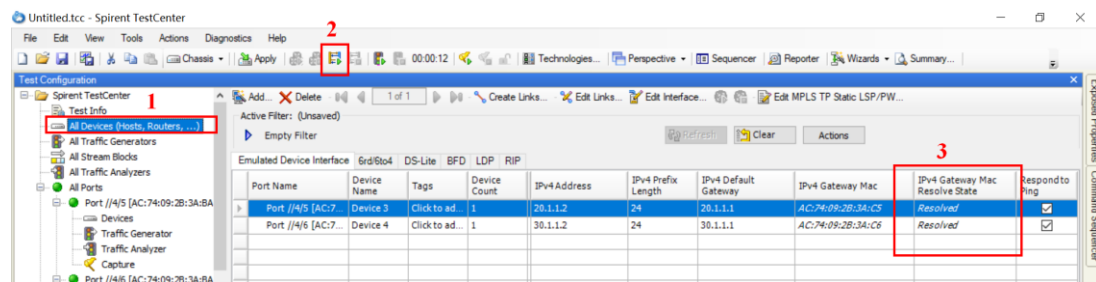




Set the IPv4 address and the gateway.



Select devices configured on the port and use ARP to resolve the gateway Mac address;



3. Enable IGMP in Vlan-interface3 interface view, set up IGMP version 1, enable PIM DM in all ports:

```
[DUT2]multicast routing
[DUT2-mrib]quit
```

```
[DUT2]interface Vlan-interface 3
[DUT2-Vlan-interface3]igmp enable
[DUT2-Vlan-interface3]igmp version 1
[DUT2-Vlan-interface3]pim dm
```

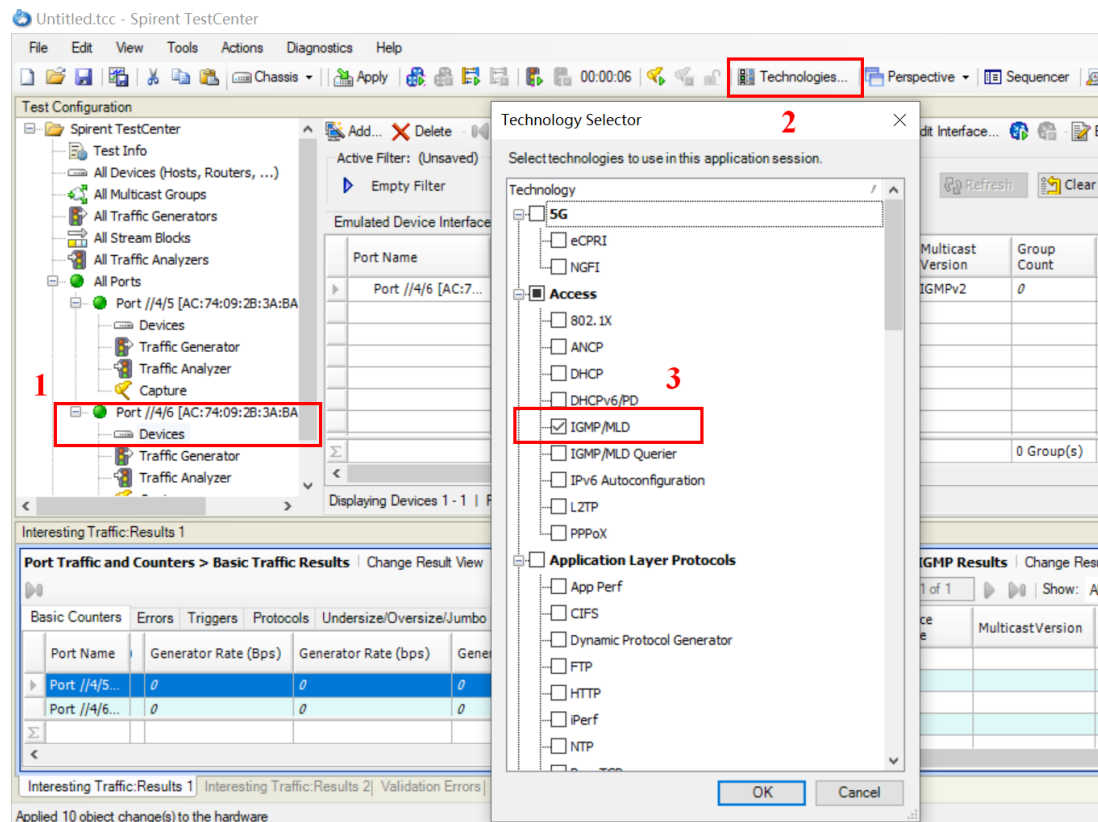
```
[DUT2]interface Vlan-interface 2
[DUT2-Vlan-interface2]pim dm
```

4. Send multicast data of 225.0.0.1 from Port A of Tester to DUT, source address is the port A address of Tester. Result 1 is expected.

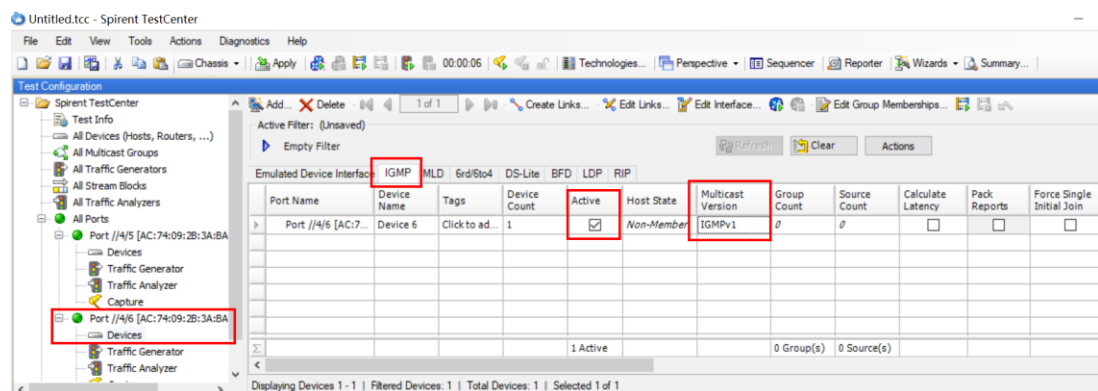
Select to use the IGMP protocol



H3C S5560X-EI Product Test Procedures



Select the multicast receiver Port 4/6, select it in the "Active" box, and the default version of IGMP is v1



Add multicast group members.

[illegible]



H3C S5560X-EI Product Test Procedures

Add IGMP/MLD Group Membership

Select a task...

☒ Add new groups
☐ Use existing groups

Select a device-group mapping...

☒ Many-to-many
☐ One-to-one
☐ Round-robin

Add New Groups

Creates new multicast group(s) and maps these group(s) to the associated multicast host or router

Starting group address: 225.0.0.1
Group address increment: 0.0.0.1
Number of groups: 1
Number of group blocks: 1

OK Cancel

Configure multicast traffic on the multicast sending port;

Add bound stream block

Untitled.tcc - Spirent TestCenter

File Edit View Tools Actions Diagnostics Help

Chassis Apply 00:00:06

Test Configuration

Spirent TestCenter

- Test Info
- All Devices (Hosts, Routers, ...)
- All Multicast Groups
- All Traffic Generators
- All Stream Blocks
- All Traffic Analyzers
- All Ports
 - Port //4/5 [AC:74:09:2B:3A:BA]
 - Devices
 - Traffic Generator**
 - Traffic Analyzer
 - Capture
 - Port //4/6 [AC:74:09:2B:3A:BA]
 - Devices
 - Traffic Generator
 - Traffic Analyzer
 - Capture

Add Generate Stream Block Delete Edit... Copy

Add Bound Stream Block(s)...

Add Raw Stream Block...

Port Based

Load per Stream Block

Advanced Interleaving

Manual Based

Schedule...

Bandwidth Utilization (%): 10

Burst Size:

Inter Frame Gap:

Inter Frame Gap I

Status	Active	Name	Tags	Index
	<input checked="" type="checkbox"/>	StreamBlo...	Click to ad...	0

Select active port



H3C S5560X-EI Product Test Procedures

Traffic Wizard

Select active ports

Ports
Endpoints
Frame Size
Frame
Traffic Load
Rx Port

Select ports:

Filter: Clear

☒ Project 1

- ☒ Port //4/5 [AC:74:09:2B:3A:BA/Ten-GigabitEthernet1/0/49]
- ☒ Port //4/6 [AC:74:09:2B:3A:BA/Ten-GigabitEthernet1/0/50]

Traffic Wizard

Select source network and destination network

Ports
Endpoints
Frame Size
Frame
Traffic Load
Rx Port

Distribution

☐ Fully meshed
☐ Backbone
☒ Pair

Filter

Protocol:

Encapsulation:

Orientation

☒ Unidirectional
☐ Bidirectional

Switch Src/Dest

Endpoints Mapping

☒ One-to-one
☐ Many-to-many

☒ Stream only generation
☐ Show All Headers
☐ Bypass IP Subnet Checking

Source and Destination

Source: (1) Select Multiple Ports

Filter: Apply Clear

- ☒ Port //4/5 [AC:74:09:2B:3A:BA/Ten-GigabitEther...]
- ☒ Device
- ☒ Device 3 (20.1.1.2/24)

Destination: (1) Select Multiple Ports

Filter: Apply Clear

- ☐ Device 3 (20.1.1.2/24)
- ☐ Port //4/6 [AC:74:09:2B:3A:BA/Ten-GigabitE...]
- ☐ Device
- ☐ Device 6 (192.85.1.8/24)
- ☒ Project
- ☒ IPv4
- ☐ Ipv4Group 1 (225.1.1.1/32)
- ☐ Ipv4Group 2 (225.1.1.1/32)
- ☐ Ipv4Group 3 (225.1.1.2/32)
- ☐ Ipv4Group 4 (225.1.1.1/32)
- ☒ Ipv4Group 5 (225.1.1.1/32)
- ☒ Ipv4Group 6 (225.1.1.1/32)

Pairs: (0) Add Remove Remove All

<Previous Next> Finish Cancel



H3C S5560X-EI Product Test Procedures

Traffic Wizard

Select source network and destination network

Ports
Endpoints
Frame Size
Frame
Traffic Load
Rx Port

Distribution
☐ Fully meshed
☐ Backbone
☒ Pair

Filter
Protocol:
Device,MPLS-TP,Bfd...
Encapsulation:
IPv4

Orientation
☒ Unidirectional
☐ Bidirectional
Switch Src/Dest

Endpoints Mapping
☒ One-to-one
☐ Many-to-many
☒ Stream only generation
☐ Show All Headers
☐ Bypass IP Subnet Checking

Source and Destination

Source: (0) Select Multiple Ports Filter: Apply Clear

Destination: (0) Select Multiple Ports Filter: Apply Clear

Port //4/5 [AC:74:09:2B:3A:BA/Ten-GigabitEther...]
Device
Device 3 (20.1.1.2/24)
Port //4/6 [AC:74:09:2B:3A:BA/Ten-GigabitEther...]
Device
Device 6 (192.85.1.8/24)

Device 3 (20.1.1.2/24)
Port //4/6 [AC:74:09:2B:3A:BA/Ten-GigabitEther...]
Device
Device 6 (192.85.1.8/24)
Project
IPv4
Ipv4Group 1 (225.1.1.1/32)
Ipv4Group 2 (225.1.1.1/32)
Ipv4Group 3 (225.1.1.2/32)
Ipv4Group 4 (225.1.1.1/32)
Ipv4Group 5 (225.1.1.1/32)
Ipv4Group 6 (225.1.1.1/32)

Pairs: (1)
Device 3 (20.1.1.2/24)-->Ipv4Group 6 (225.1.1.1/32)

<Previous Next> Finish Cancel

Send the packets on Port A.



H3C S5560X-EI Product Test Procedures

Untitled.tcc - Spirent TestCenter

File Edit View Tools Actions Diagnostics Help

00:00:06 Technologies... Perspective

Test Configuration

- Spirent TestCenter
 - Test Info
 - All Devices (Hosts, Routers, ...)
 - All Multicast Groups
 - All Traffic Generators
 - All Stream Blocks
 - All Traffic Analyzers
 - All Ports
 - Port //4/5 [AC:74:09:28:3A:BA]
 - Devices
 - Traffic Generator**
 - Traffic Analyzer
 - Capture
 - Port //4/6 [AC:74:09:28:3A:BA]
 - Devices
 - Traffic Generator
 - Traffic Analyzer

Scheduling Mode: Port Based (selected)

Bandwidth Utilization (%): 10

Burst Size: 1

Inter Frame Gap: 12

Inter Frame Gap Unit: bytes

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

Manual Based: ☐

Stream Blocks Table:

Status	Active	Name
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	StreamB...

Displaying Stream Blocks 1 - 1 | Total

Interesting Traffic: Results 1

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

Basic Counters	Errors	Triggers	Protocols	Undersize/Oversize/Jumbo	PFC Co
Port Name	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig		
Port //4/5...	0	0	0		
Port //4/6...	0	0	0		

Applied 17 object change(s) to the hardware

Context Menu:

- Add Bound Stream Block(s)...
- Add Raw Stream Block...
- Delete
- Cut StreamBlock Ctrl+X
- Copy StreamBlock Ctrl+C
- Paste Ctrl+V
- Duplicate... Alt+U
- Add to Exposed Properties
- Edit Tags...
- User Defaults
- Edit...
- Start**
- Stop
- ARP/ND
- L2Learning
- Find...
- Fill Custom...
- Preview...



H3C S5560X-EI Product Test Procedures

Untitled.tcc - Spirent TestCenter

File Edit View Tools Actions Diagnostics Help

00:00:04 Technologies... Perspective Sequencer Report

Test Configuration

Test Info

- All Devices (Hosts, Routers, ...)
- All Multicast Groups
- All Traffic Generators
- All Stream Blocks
- All Traffic Analyzers
- All Ports
 - Port //4/5 [AC:74:09:2B:3A:BA]
 - Devices
 - Traffic Generator
 - Traffic Analyzer
 - Capture
 - Port //4/6 [AC:74:09:2B:3A:BA]
 - Devices
 - Traffic Generator
 - Traffic Analyzer

Scheduling Mode: Port Based (selected) Bandwidth Utilization (%): 10

Burst Size: 1 Duration Mode: Continuous

Inter Frame Gap: 12

Inter Frame Gap Unit: bytes

Advanced Interleaving (unchecked)

Manual Based (unchecked)

Group ID will be set in the stream block grid.

Schedule...

Scheduling mode graphical example

Status	Active	Name	Tags	Index	ControlledBy	Source	Destination	Traffic Pattern
	<input checked="" type="checkbox"/>	StreamBlo...	Click to ad...	0	generator	Device 3 (...)	Ipv4Group 1	Pair

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

Interesting Traffic: Results 1

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

Port Name	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)
Port //4/5...	108,108,120	864,864,960	844,595	0
Port //4/6...	0	0	0	0

Interesting Traffic: Results 1 | Interesting Traffic: Results 2 | Validation Errors | Log - 562 messages

Multicast > IGMP > IGMP Results | Change Result View

Port Name	Device Name	MulticastVersion	Host S
Port //4/6...	Device 6	IGMPv1	Non-M

Port B doesn't receive multicast traffic.

5. Send an IGMP message from Port B of Tester to simulate joining multicast group 225.0.0.1. Result 2 is expected.

Start the device created on Port B to send the IGMP message to simulate joining multicast group 225.0.0.1



H3C S5560X-EI Product Test Procedures

Untitled.tcc - Spirent TestCenter

File Edit View Tools Actions Diagnostics Help

Test Configuration

Spirent TestCenter

Test Info

All Devices (Hosts, Routers, ...)

All Multicast Groups

All Traffic Generators

All Stream Blocks

All Traffic Analyzers

All Ports

Port //4/5 [AC:74:09:2B:3A:BA]

Devices

Traffic Generator

Traffic Analyzer

Capture

Port //4/6 [AC:74:09:2B:3A:BA]

Devices

Traffic Generator

Traffic Analyzer

Emulated Device Interface

IGMP MLD

Port Name Device Name

Port //4/6 [AC:74:09:2B:3A:BA] Device 6

Displaying Devices 1 - 1 | Filtered Devices

Interesting Traffic: Results 1

Port Traffic and Counters > Basic Traffic Results

Basic Counters Errors Triggers Protocols Undersize/Oversize/Jumbo PFC Counter

Port Name	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate
Port //4/5...	108,108,124	864,864,992	844,595
Port //4/6...	0	0	0

Interesting Traffic: Results 1 Interesting Traffic: Results 2 Validation Errors Log - 569 mes

IGMP/MLD Leave Group 5: Port //4/6 [AC:74:09:2B:3A:BA] / Ten-Gigabit Ethernet 1 / 0/5/01: Start

Untitled.tcc - Spirent TestCenter

File Edit View Tools Actions Diagnostics Help

Test Configuration

Spirent TestCenter

Test Info

All Devices (Hosts, Routers, ...)

All Multicast Groups

All Traffic Generators

All Stream Blocks

All Traffic Analyzers

All Ports

Port //4/5 [AC:74:09:2B:3A:BA]

Devices

Traffic Generator

Traffic Analyzer

Capture

Port //4/6 [AC:74:09:2B:3A:BA]

Devices

Traffic Generator

Traffic Analyzer

Emulated Device Interface

IGMP MLD 6rd/6to4 DS-Lite BFD LDP RIP

Port Name	Device Name	Tags	Device Count	Active	Host State	Multicast Version
Port //4/6 [AC:74:09:2B:3A:BA]	Device 6	Click to ad...	1	<input checked="" type="checkbox"/>	Member	IGMPv1

Displaying Devices 1 - 1 | Filtered Devices: 1 | Total Devices: 1 | Selected 1 of 1

Interesting Traffic: Results 1

Port Traffic and Counters > Basic Traffic Results

Basic Counters Errors Triggers Protocols Undersize/Oversize/Jumbo PFC Counters User Defined Advan

Port Name	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)
Port //4/5...	108,108,114	864,864,912	844,595	0
Port //4/6...	0	0	0	844,594

Multicast > IGMP > IGMP Results

Port Name	Device Name	Multicast Version
Port //4/6...	Device 6	IGMPv1



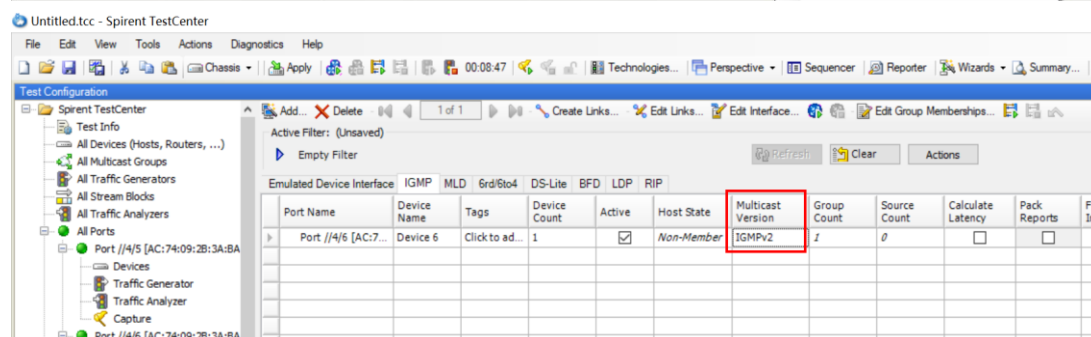
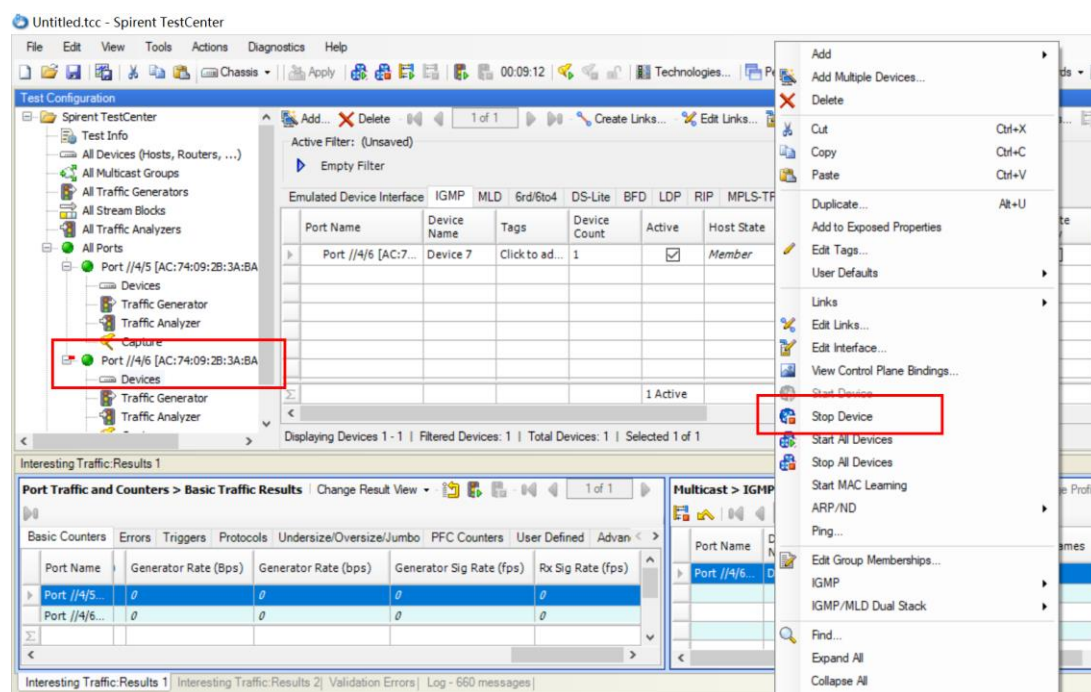
Multicast group 225.0.0.1 joined, Tester Port B receives multicast data.

6. Enable IGMP in Vlan-interface3 interface view, set up IGMP version 2, enable pim dm in all ports:

Change the IGMP version. The default version is IGMP version 2.

```
[DUT2]interface Vlan-interface 3
[DUT2-Vlan-interface3]igmp version 2
```

Stop the device on Port 4/6. Change the IGMP protocol, change the multicast version to IGMPv2.



7. Send multicast data of 225.0.0.1 from Port A of Tester to DUT. Result 1 is expected.

Configure multicast traffic on the multicast sending port;



H3C S5560X-EI Product Test Procedures

Send the packets on Port A.

Untitled.tcc - Spirent TestCenter

File Edit View Tools Actions Diagnostics Help

Test Configuration

Spirent TestCenter

- Test Info
- All Devices (Hosts, Routers, ...)
- All Multicast Groups
- All Traffic Generators
- All Stream Blocks
- All Traffic Analyzers
- All Ports
 - Port //4/5 [AC:74:09:2B:3A:BA]
 - Devices
 - Traffic Generator**
 - Traffic Analyzer
 - Capture
 - Port //4/6 [AC:74:09:2B:3A:BA]
 - Devices
 - Traffic Generator
 - Traffic Analyzer

Scheduling Mode: Port Based (selected)

Bandwidth Utilization (%): 10

Burst Size: 1

Inter Frame Gap: 12

Inter Frame Gap Unit: bytes

Duration Mode: Continuous

Advanced Interleaving: ☐ (disabled)

Manual Based: ☐ (disabled)

Group ID will be set in the stream block grid.

Stream Block Grid:

Status	Active	Name
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	StreamBlock

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

Interesting Traffic: Results 1

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

Port Name	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)
Port //4/5...	0	0	0
Port //4/6...	0	0	0

Applied 17 object change(s) to the hardware

Context Menu:

- Add Bound Stream Block(s)...
- Add Raw Stream Block...
- Delete
- Cut StreamBlock Ctrl+X
- Copy StreamBlock Ctrl+C
- Paste Ctrl+V
- Duplicate... Alt+U
- Add to Exposed Properties
- Edit Tags...
- User Defaults
- Edit...
- Start**
- Stop
- ARP/ND
- L2Learning
- Find...
- Fill Custom...
- Preview...

Port B doesn't receive multicast traffic.

Untitled.tcc - Spirent TestCenter

File Edit View Tools Actions Diagnostics Help

Test Configuration

Spirent TestCenter

- Test Info
- All Devices (Hosts, Routers, ...)
- All Multicast Groups
- All Traffic Generators
- All Stream Blocks
- All Traffic Analyzers
- All Ports
 - Port //4/5 [AC:74:09:2B:3A:BA]
 - Devices
 - Traffic Generator**
 - Traffic Analyzer
 - Capture
 - Port //4/6 [AC:74:09:2B:3A:BA]
 - Devices
 - Traffic Generator
 - Traffic Analyzer

Scheduling Mode: Port Based (selected)

Bandwidth Utilization (%): 10

Burst Size: 1

Inter Frame Gap: 12

Inter Frame Gap Unit: bytes

Duration Mode: Continuous

Advanced Interleaving: ☐ (disabled)

Manual Based: ☐ (disabled)

Group ID will be set in the stream block grid.

Stream Block Grid:

Status	Active	Name	Tags	Index	Controlled By	Source	Destination	Traffic Pattern	Type	Tx Port
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	StreamBlock	Click to add...	0	generator	Device 3 (...)	Ipv4Group 6...	Pair	Port	Port //4/5...

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

Interesting Traffic: Results 1

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

Port Name	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)
Port //4/5...	108,108,107	864,864,856	844,595	0
Port //4/6...	0	0	0	0

Multicast > IGMP > IGMP Results | Change Result View

Port Name	Device Name	Multicast Version	Host State	Tx Frames	Rx Frames
Port //4/6...	Device 7	IGMPv2	Non-Member	10	12

8. Send an IGMP message from Port B of Tester to simulate joining multicast group 225.0.0.1. Result 2 is expected.

Start the device created on Port B to send the IGMP message to simulate joining multicast group 225.0.0.1

The screenshot shows the Spirent TestCenter interface. In the 'Test Configuration' pane, a device is connected to 'Port //4/6 [AC:74:09:2B:3A:BA]'. A red box highlights this port in the tree view. Another red box highlights the 'Start Device' option in the context menu. Below, the 'Port Traffic and Counters > Basic Traffic Results' table shows traffic data for Port //4/6...

Port Name	Generator Rate (Bps)	Generator Rate (bps)	Gener...
Port //4/5...	108,108,107	864,864,856	844,5...
Port //4/6...	0	0	0

Below the table, the 'Interesting Traffic: Results 1' section shows 'Port Traffic and Counters > Basic Traffic Results'. The 'Device Name' is 'Device 7' and the 'Multicast Version' is 'IGMPv2'.

Multicast group 225.0.0.1 joined, Tester Port B receives multicast data.

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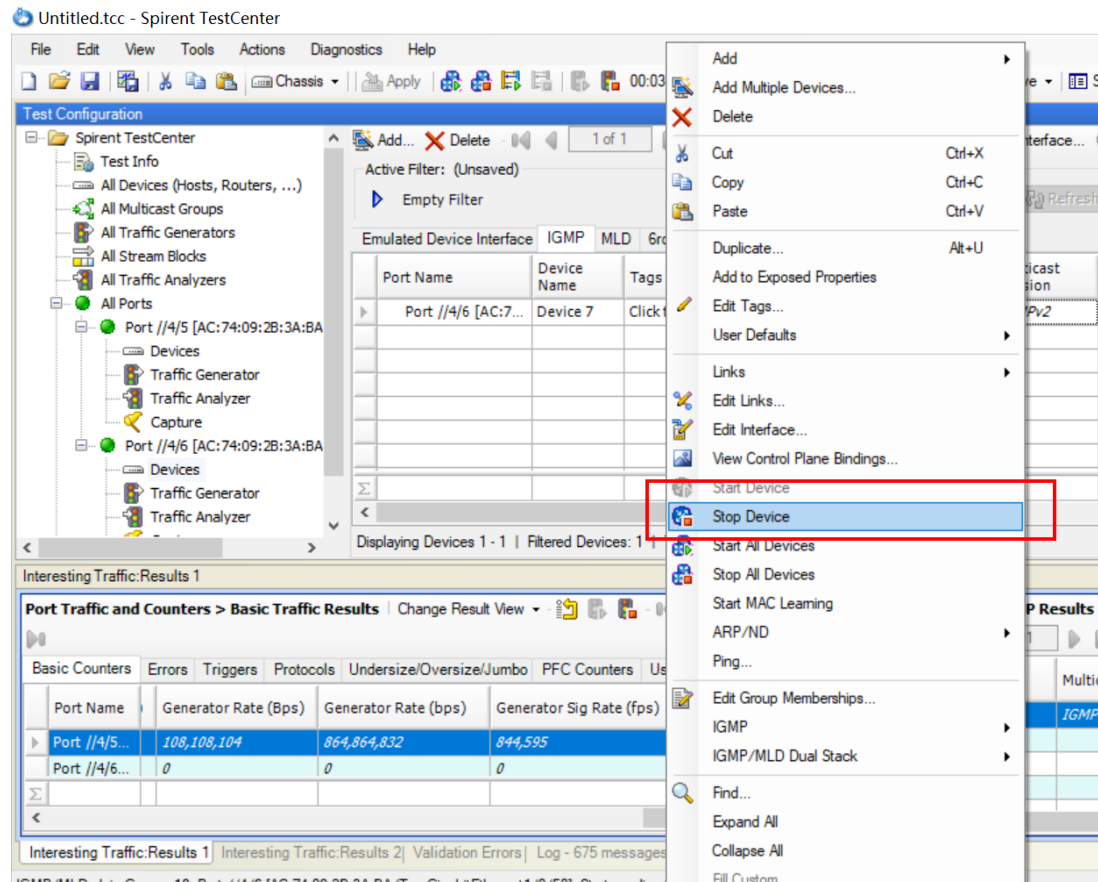
The screenshot displays the Spirent TestCenter software interface. The top menu bar includes File, Edit, View, Tools, Actions, Diagnostics, and Help. Below the menu is a toolbar with various icons for file operations and device management. The main window is divided into several panes:

- Test Configuration Pane (Left):** Shows a tree view of the test setup. Under "Test Info", there are sections for "All Devices (Hosts, Routers, ...)", "All Multicast Groups", "All Traffic Generators", "All Stream Blocks", "All Traffic Analyzers", and "All Ports". Two specific ports are listed: "Port //4/5 [AC:74:09:2B:3A:BA]" and "Port //4/6 [AC:74:09:2B:3A:BA]". Each port has sub-items for "Devices", "Traffic Generator", "Traffic Analyzer", and "Capture".
- Active Filter: (Unsaved) Empty Filter**
- Emulated Device Interface Table:** A table with columns: Port Name, Device Name, Tags, Device Count, Active, Host State, and Multicast Version. The first row shows "Port //4/6 [AC:74:09:2B:3A:BA]" connected to "Device 7" with a "Click to ad..." tag, a device count of 1, and is marked as "Active". The "Host State" is "Member" and the "Multicast Version" is "IGMPv2".
- Displaying Devices 1 - 1 | Filtered Devices: 1 | Total Devices: 1 | Selected 1 of 1**
- Interesting Traffic: Results 1**
- Port Traffic and Counters > Basic Traffic Results:** A table with columns: Port Name, Generator Rate (Bps), Generator Rate (pps), Generator Sig Rate (fps), and Rx Sig Rate (fps). The first row shows "Port //4/5..." with a generator rate of 108,108,131 Bps and 864,865,048 pps, a generator signature rate of 844,595 fps, and a receiver signature rate of 0 fps. The second row shows "Port //4/6..." with a generator rate of 0 Bps and 0 pps, a generator signature rate of 0 fps, and a receiver signature rate of 844,594 fps.
- Multicast > IGMP > IGMP Results:** A table with columns: Port Name, Device Name, and Multicast Version. The first row shows "Port //4/6..." connected to "Device 7" with a "Click to ad..." tag, a device count of 1, and is marked as "Active". The "Host State" is "Member" and the "Multicast Version" is "IGMPv2".
- Displaying Devices 1 - 1 | Filtered Devices: 1 | Total Devices: 1 | Selected 1 of 1**
- Interesting Traffic: Results 1**
- Interesting Traffic: Results 2 | Validation Errors | Log - 675 messages**

9. Send an IGMP message from Port B of Tester to simulate leaving multicast group 225.0.0.1. Result 1 is expected.

Stop the device on Port 4/6 to simulate leaving multicast group 225.0.0.1.

H3C S5560X-EI Product Test Procedures



Multicast group 225.0.0.1 leaved, Tester Port B doesn't receive multicast data.



H3C S5560X-EI Product Test Procedures

Untitled.tcc - Spirent TestCenter

File Edit View Tools Actions Diagnostics Help

00:03:32 Technologies... Perspective Sequen

Test Configuration

Active Filter: (Unsaved)
Empty Filter

Emulated Device Interface IGMP MLD 6rd/6to4 DS-Lite BFD LDP RIP MPLS-TP

Port Name	Device Name	Tags	Device Count	Active	Host State	Multicast Version	Group Count
Port //4/6 [AC:7...	Device 7	Click to ad...	1	<input checked="" type="checkbox"/>	Non-Member	IGMPv2	1
				1 Active			1 Gro

Displaying Devices 1 - 1 | Filtered Devices: 1 | Total Devices: 1 | Selected 1 of 1

Interesting Traffic: Results 1

Port Traffic and Counters > Basic Traffic Results | Change Result View | 1 of 1

Port Name	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)
Port //4/5...	108,108,113	864,864,904	844,595	0
Port //4/6...	0	0	0	0

Multicast > IGMP > IGMP Results | Char | 1 of 1

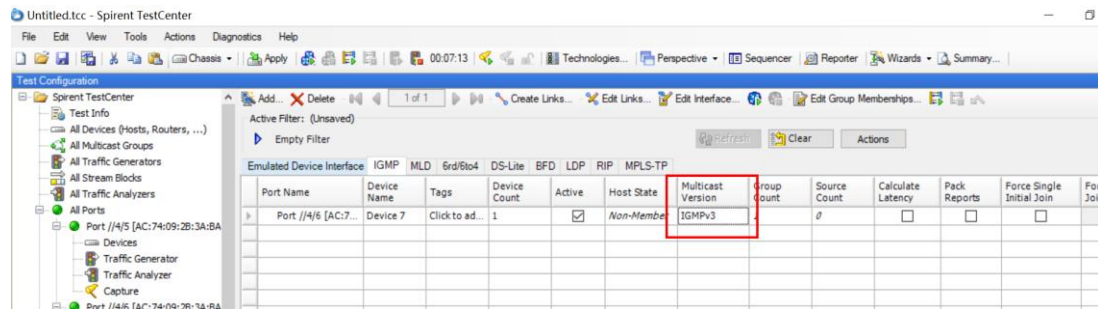
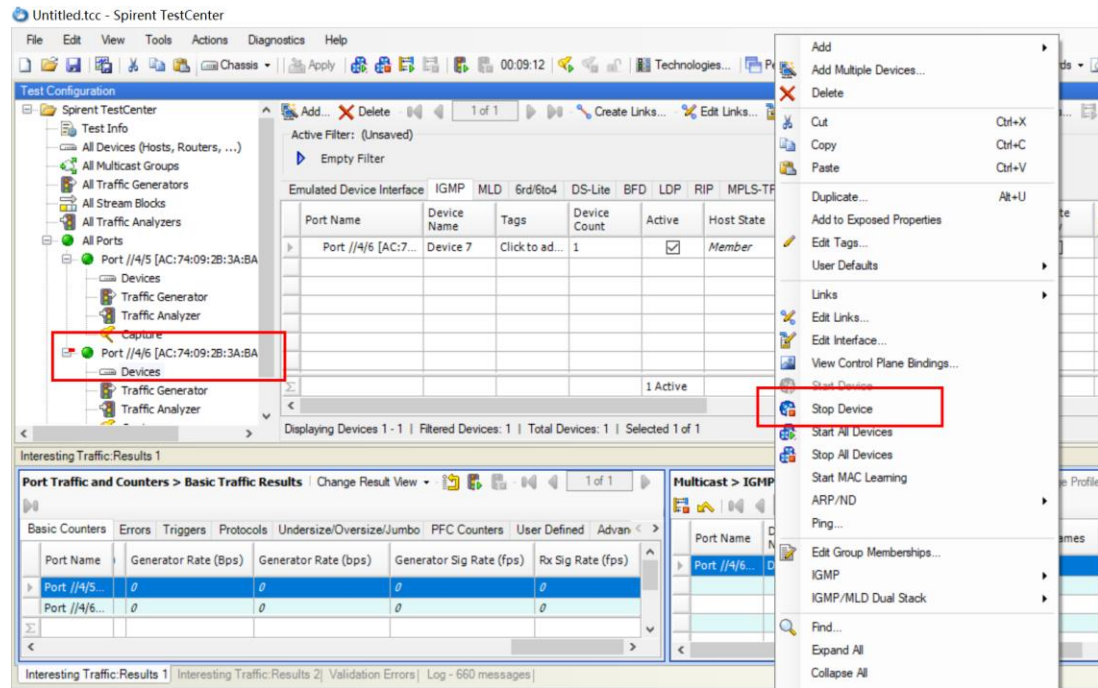
Port Name	Device Name	Multicast Version
Port //4/6...	Device 7	IGMPv2

10. Enable IGMP in Vlan-interface3 interface view, set up IGMP version 3, enable PIM DM in all layer 3 ports:

Change the IGMP version. The default version is IGMP version 3.

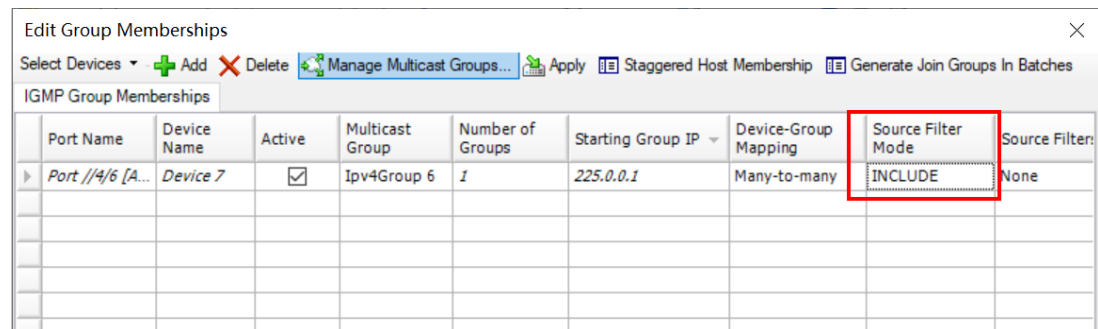
```
[DUT2]interface Vlan-interface 3
[DUT2-Vlan-interface3]igmp version 3
```

Stop the device on Port 4/6. Change the IGMP protocol, change the multicast version to IGMPv3.



11. Send multicast data of 225.0.0.1 from Port A of Tester to DUT, source address is the port A address of Tester. Result 1 is expected.

Edit multicast group members. Change the source filter mode to INCLUDE.



Use Port 4/5 to send multicast packets.

The top screenshot displays the Spirent TestCenter 'Test Configuration' window. A context menu is open over the 'StreamBlock' table, with the 'Start' option highlighted. The 'StreamBlock' table has columns: Status, Active, Name. The 'Start' option is highlighted in red.

The bottom screenshot displays the 'Interesting Traffic Results' window. A red box highlights the 'Basic Traffic Results' table. The table has columns: Port Name, Generator Rate (Bps), Generator Rate (bps), Generator Sig Rate (fps), Rx Sig Rate (fps). The data for Port //4/5... is highlighted in blue.

12. Send an IGMPv3 message from Port B of Tester to simulate joining multicast group IS_IN (A) of 225.0.0.1, A indicates the port A address of Tester. Result 3 is expected.

Start the device created on Port B to send the IGMP message to simulate joining multicast group IS_IN (A) of 225.0.0.1

Untitled.tcc - Spirent TestCenter

The screenshot shows the Spirent TestCenter interface. In the 'Test Configuration' pane, the 'All Ports' section is expanded, and 'Port //4/6 [AC:74:09:2B:3A:BA]' is selected. A red box highlights this port. In the 'Emulated Device Interface' pane, the 'Start Device' button is highlighted with a red box. The 'Interesting Traffic: Results 1' pane shows the 'Port Traffic and Counters > Basic Traffic Results' table.

Port Name	Generator Rate (Bps)	Generator Rate (bps)
Port //4/5...	108,108,088	864,864,704
Port //4/6...	0	0

Below the table, the status 'IGMP/MLD: Leave Groups 12: Port //4/6 [AC:74:09:2B:3A:BA]/Ten-GigabitEth' is visible.

Multicast group 225.0.0.1 joined, Tester Port B receives multicast data.



H3C S5560X-EI Product Test Procedures

Untitled.tcc - Spirent TestCenter

File Edit View Tools Actions Diagnostics Help

Chassis Apply 00:00:20 Technologies... Perspective

Test Configuration

Spirent TestCenter

- Test Info
- All Devices (Hosts, Routers, ...)
- All Multicast Groups
- All Traffic Generators
- All Stream Blocks
- All Traffic Analyzers
- All Ports
 - Port //4/5 [AC:74:09:2B:3A:BA]
 - Devices
 - Traffic Generator
 - Traffic Analyzer
 - Capture
 - Port //4/6 [AC:74:09:2B:3A:BA]
 - Devices
 - Traffic Generator
 - Traffic Analyzer

Scheduling Mode: Port Based (selected)

Bandwidth Utilization (%): 10

Burst Size: 1

Inter Frame Gap: 12

Inter Frame Gap Unit: bytes

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

Manual Based: ☐ Schedule...

Status	Active	Name	Tags	Index	Controlled By	Source
	<input checked="" type="checkbox"/>	StreamBlo...	Click to ad...	0	generator	Device 3 (...)

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

Interesting Traffic: Results 1

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

Port Name	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)
Port //4/5...	108,108,106	864,864,848	844,594	0
Port //4/6...	0	0	0	844,595

Multicast > IGMP > IGMP

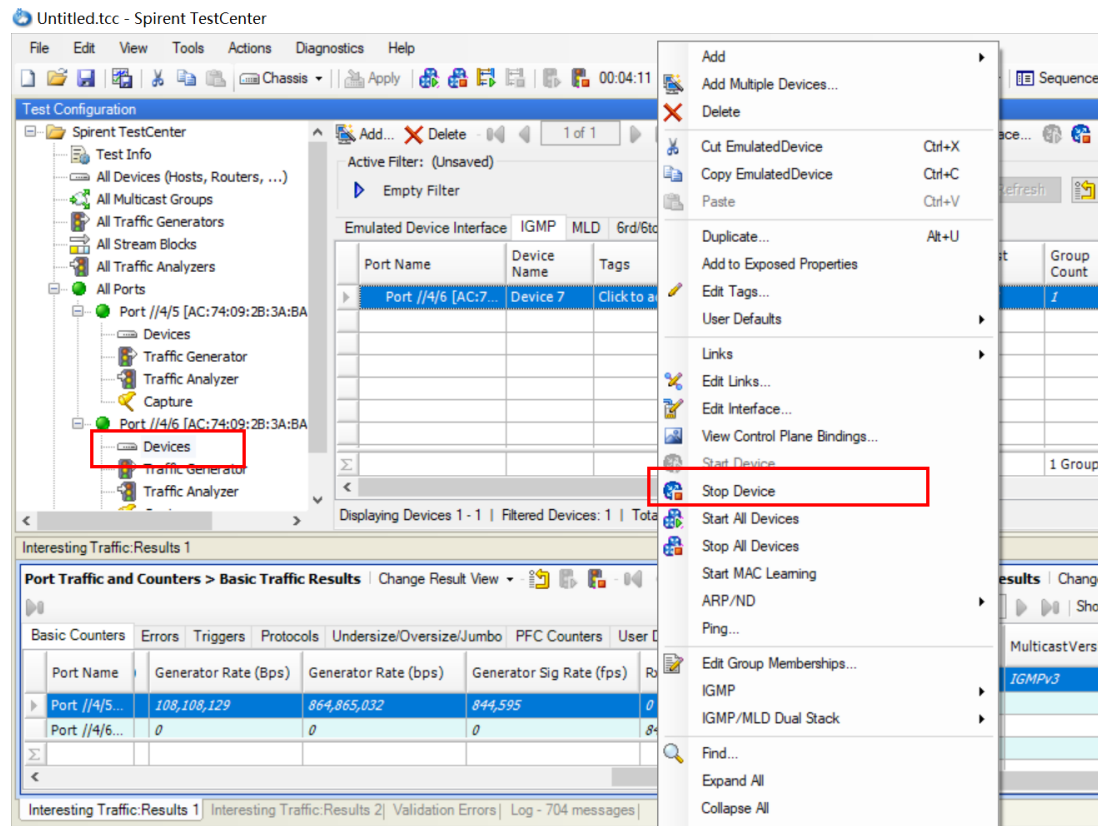
Port Name	Device Name
Port //4/6...	Device 2

13. Tester port B leaves multicast group IS_IN (A) of 225.0.0.1. Result A is expected.

Stop the device on Port 4/6 to simulate leaving multicast group IS_IN (A) of 225.0.0.1.

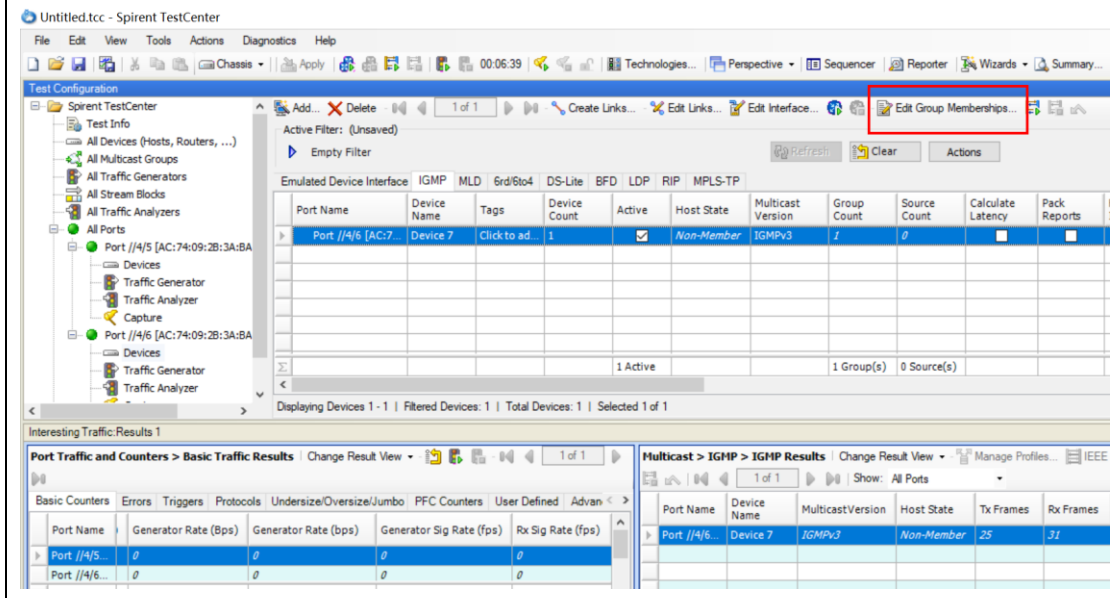


H3C S5560X-EI Product Test Procedures



14. Send an IGMPv3 message from Port B of Tester to simulate joining multicast group IS_IN (not A) of 225.0.0.1. Result 4 is expected.

Edit the multicast group memberships.



Delete the existing member, add a new member with the address which it not 225.0.0.1.

Edit Group Memberships

Select Devices ▾ + Add - Delete Manage Multicast Groups... Apply Staggered Host Membership Generate Join Groups In Batches

IGMP Group Memberships

Port Name	Device Name	Active	Multicast Group	Number of Groups	Starting Group IP	Device-Group Mapping	Source Filter Mode	Source Filter
Port //4/6 [A...	Device 7	<input checked="" type="checkbox"/>	Ipv4Group 6	1	225.0.0.1	Many-to-many	EXCLUDE	None

Add IGMP/MLD Group Membership

Select a task...

☒ Add new groups
☐ Use existing groups

Select a device-group mapping...

☒ Many-to-many
☐ One-to-one
☐ Round-robin

Add New Groups

Creates new multicast group(s) and maps these group(s) to the associated multicast host or router

Starting group address: 225.0.1|1

Group address increment: 0.0.0.1

Number of groups: 1

Number of group blocks: 1

OK Cancel

Use Port A send the multicast packets and start the device created on Port B to send the IGMP message to simulate joining multicast group IS_IN (not A).



H3C S5560X-EI Product Test Procedures

Untitled.tcc - Spirent TestCenter

File Edit View Tools Actions Diagnostics Help

Test Configuration

Active Filter: (Unsaved)

Empty Filter

Emulated Device Interface

Port Name	Device Name	Tags	Device Count	Active	Host State	Multicast Version
Port //4/6 [AC:7...	Device 7	Click to ad...	1	<input checked="" type="checkbox"/>	Non-Member	IGMPv3

1 Active

Displaying Devices 1 - 1 | Filtered Devices: 1 | Total Devices: 1 | Selected 1 of 1

Interesting Traffic: Results 1

Port Traffic and Counters > Basic Traffic Results

Port Name	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)
Port //4/5...	108,108,109	864,864,872	844,595	0
Port //4/6...	0	0	0	0

Multicast > IGMP > IGMP Results

Port Name	Device Name
Port //4/6...	Device 7

Start Device

Multicast group 225.0.0.1 joined, Tester Port B doesn't receive multicast data.

Untitled.tcc - Spirent TestCenter

File Edit View Tools Actions Diagnostics Help

Test Configuration

Active Filter: (Unsaved)

Empty Filter

Emulated Device Interface

Port Name	Device Name	Tags	Device Count	Active	Host State	Multicast Version
Port //4/6 [AC:7...	Device 7	Click to ad...	1	<input checked="" type="checkbox"/>	Member	IGMPv3

1 Active

Displaying Devices 1 - 1 | Filtered Devices: 1 | Total Devices: 1 | Selected 1 of 1

Interesting Traffic: Results 1

Port Traffic and Counters > Basic Traffic Results

Port Name	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)
Port //4/5...	108,108,117	864,864,936	844,594	0
Port //4/6...	0	0	0	0

Multicast > IGMP > IGMP Results

Port Name	Device Name	Mu
Port //4/6...	Device 7	IG

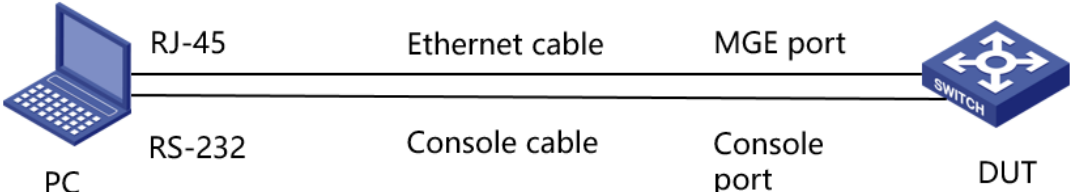
☐ Passed

☐ Failed



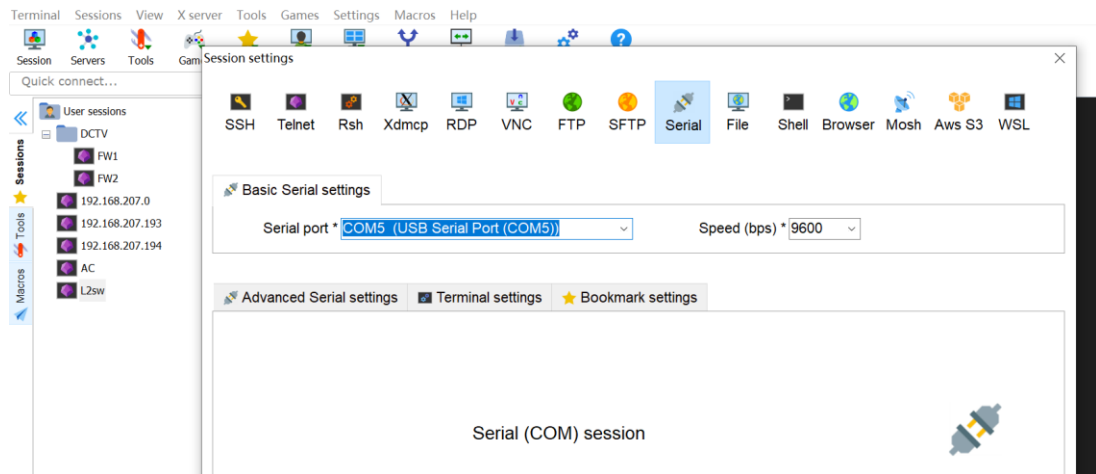
4 Network management

4.1 Authentication to CLI

Test Item Name: Authentication to CLI	
Work Hour: 25 min	
Test Topology: 	
Test Process: <ol style="list-style-type: none">1. Log in to the device through the console Port.2. Configure to enable Telnet and SSH server authentication3. Use Telnet/SSH to connect the device with Result 14. Configure to enable the aux authentication5. Use console Port to access the device with Result 16. Configure ACL to deny IP 192.168.207.3 and permit others7. Configure to enable restricting access by telnet based on ACL8. Configure the IP address 192.168.207.3 for PC9. Use PC to access the device by telnet with Result 210. Configure the IP address 192.168.207.28 for PC11. Use PC to access the device by telnet with Result 1	
Expect Results: <ol style="list-style-type: none">1. You can login the device by console/Telnet/SSH with the configured account successfully and DUT allows 8 concurrent sessions by Telnet/SSH2. Fail to connect to the device	
Actual Result: <ol style="list-style-type: none">1. Log in to the device through the console Port.	



H3C S5560X-EI Product Test Procedures



2. Configure to enable Telnet and SSH server authentication

```
[DUT]telnet server enable
```

```
[DUT]ssh server enable
```

```
[DUT]line vty 0 63
```

```
[DUT-line-vty0-63]authentication-mode scheme
```

```
[DUT-line-vty0-63]user-role network-admin
```

```
[DUT]local-user admin class manage
```

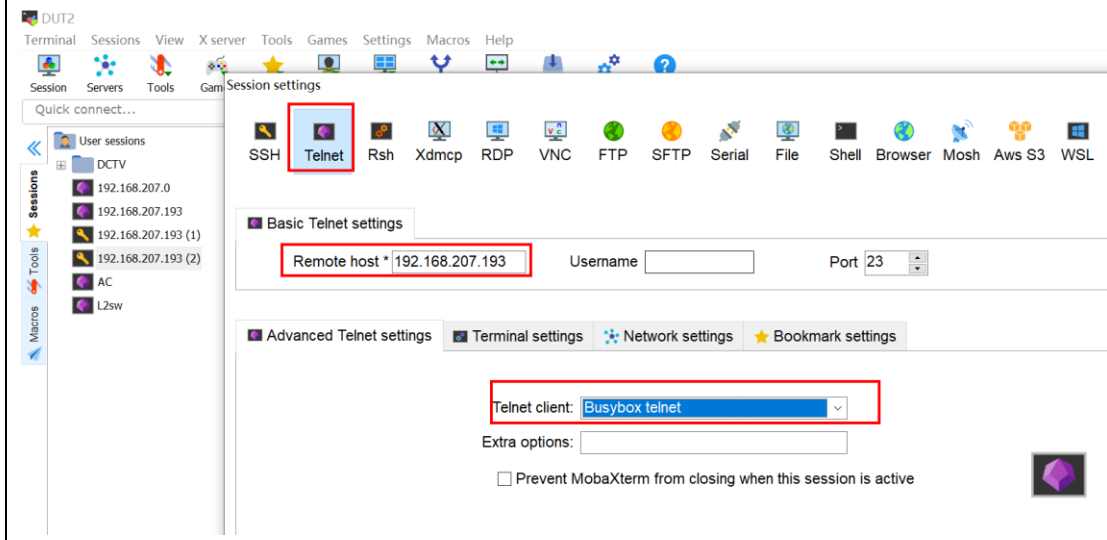
```
[DUT-luser-manage-admin]password simple 123456abcd
```

```
[DUT-luser-manage-admin]service-type telnet ssh
```

```
[DUT-luser-manage-admin]authorization-attribute user-role network-admin
```

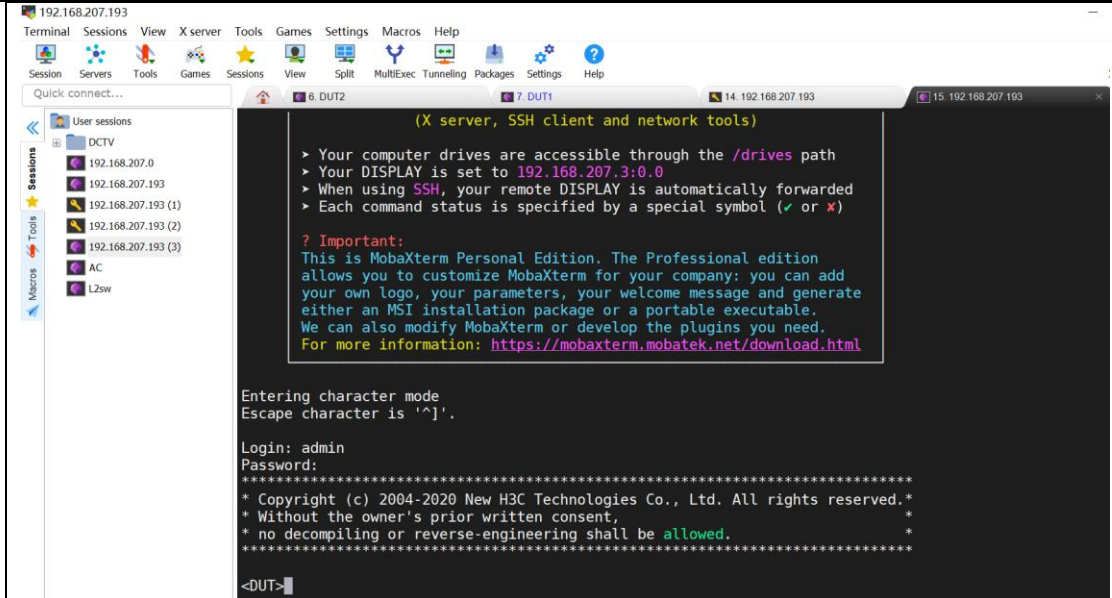
3. Use Telnet/SSH to connect the device with Result 1

Use Telnet

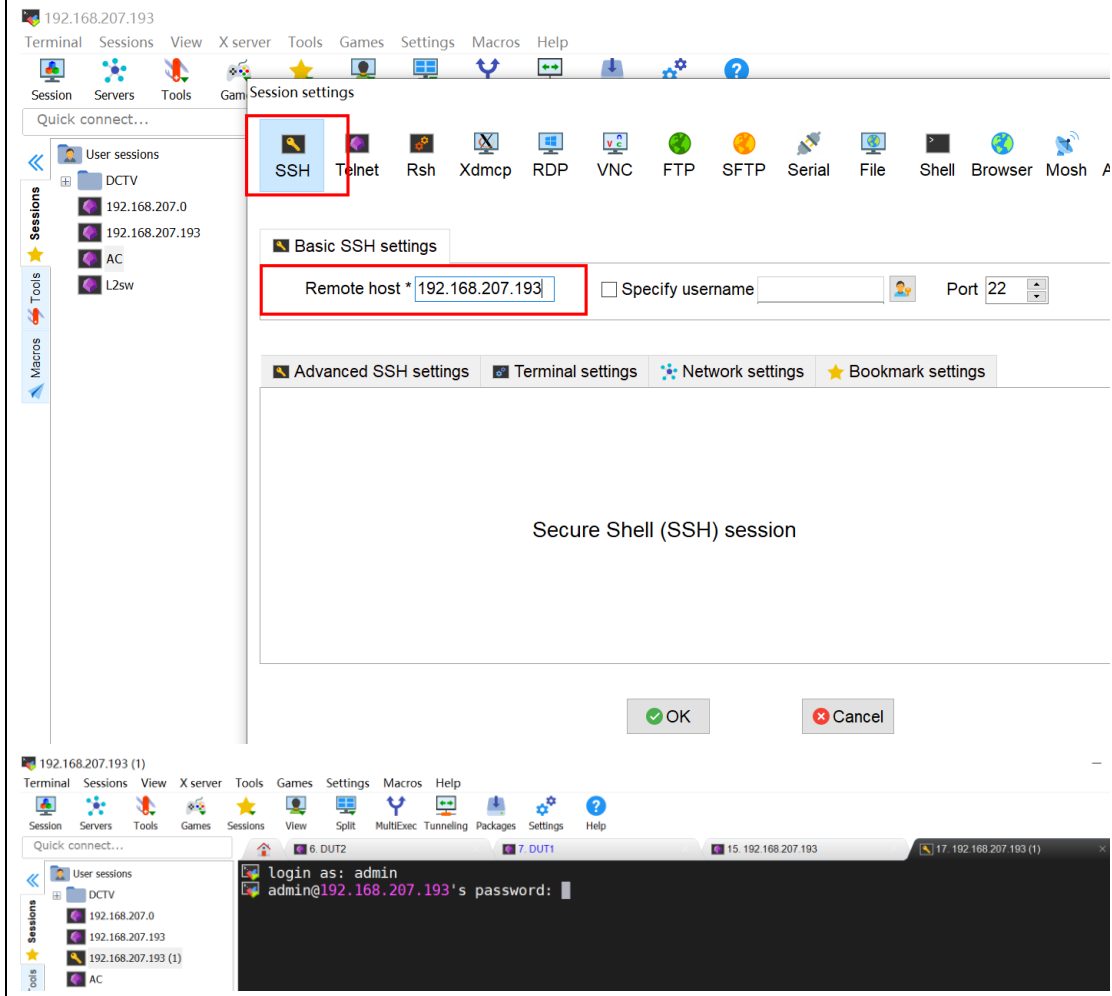




H3C S5560X-EI Product Test Procedures

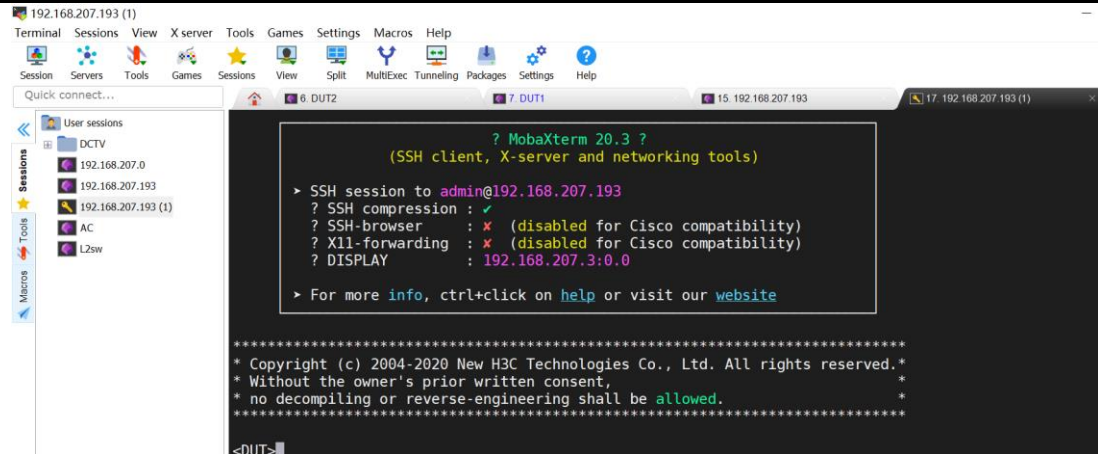


Use SSH:





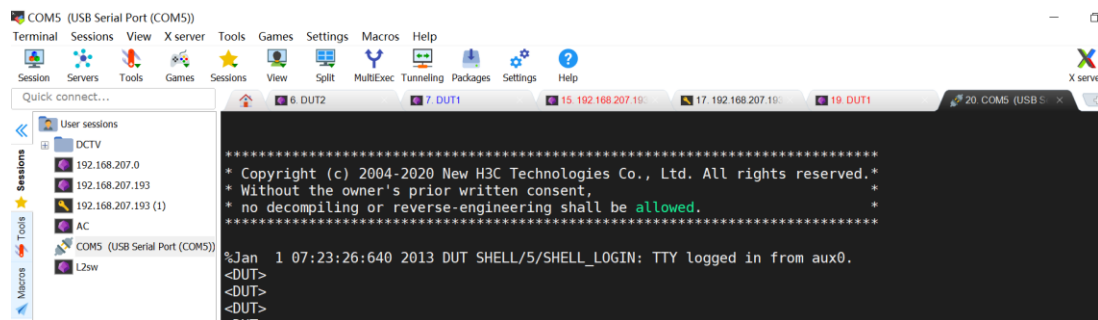
H3C S5560X-EI Product Test Procedures



4. Configure to enable the aux authentication

```
[DUT]user-interface aux 0
[DUT-line-aux0]user-role network-admin
```

5. Use console Port to access the device with Result 1



6. Configure ACL to deny IP 192.168.207.3 and permit others

```
[DUT1]acl number 2000
[DUT1-acl-ipv4-basic-2000]rule 0 deny source 192.168.207.3 0
[DUT1-acl-ipv4-basic-2000]rule 5 permit
```

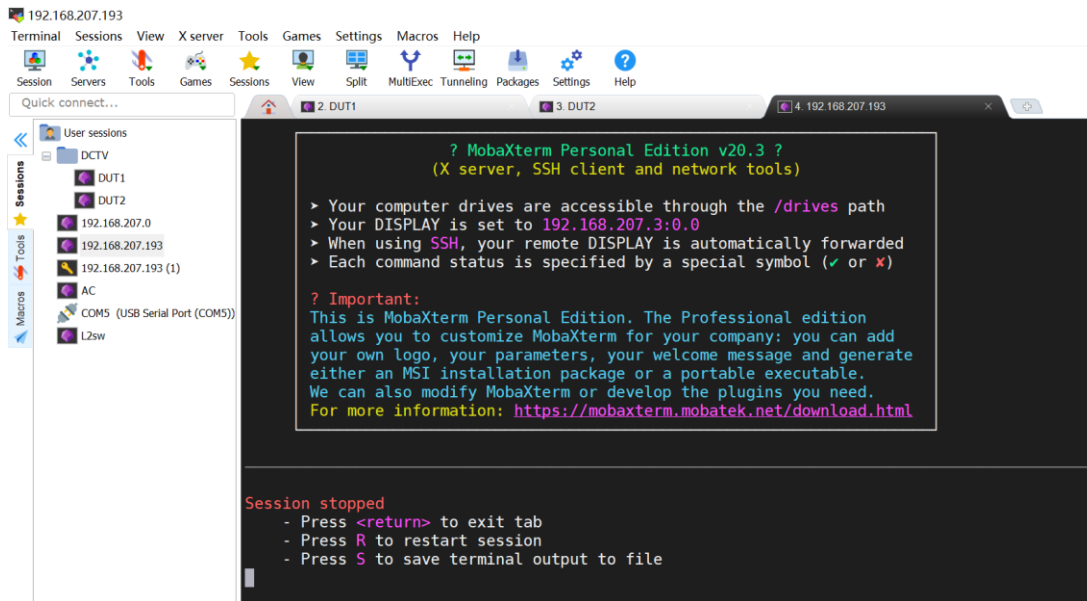
7. Configure to enable restricting access by telnet based on ACL

```
[DUT1]interface GigabitEthernet 1/0/5
[DUT1-GigabitEthernet1/0/5]packet-filter 2000 inbound
```

8. Configure the IP address 192.168.207.3 for PC



9. Use PC to access the device by telnet with Result 2



10. Configure the IP address 192.168.207.28 for PC

Internet 协议版本 4 (TCP/IPv4) 属性

常规

如果网络支持此功能，则可以获取自动指派的 IP 设置。否则，你需要从网络系统管理员处获得适当的 IP 设置。

☐ 自动获得 IP 地址(O)

☒ 使用下面的 IP 地址(S):

IP 地址(I): 192 . 168 . 207 . 28

子网掩码(U): 255 . 255 . 254 . 0

默认网关(D): 192 . 168 . 207 . 0

☐ 自动获得 DNS 服务器地址(B)

☒ 使用下面的 DNS 服务器地址(E):

首选 DNS 服务器(P): . . .

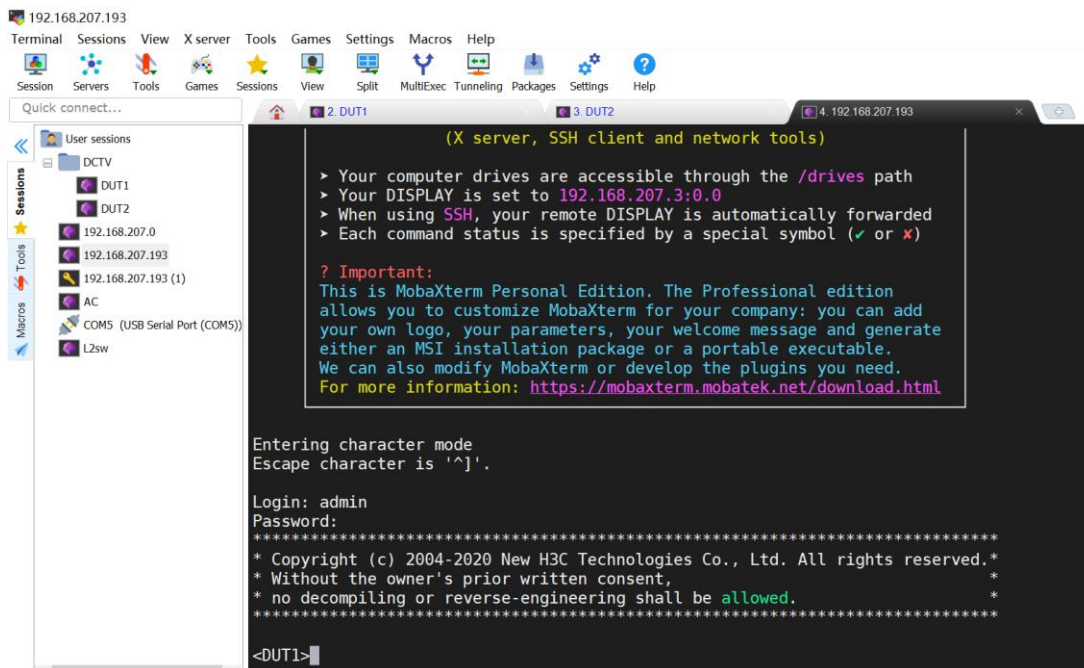
备用 DNS 服务器(A): . . .

☐ 退出时验证设置(L)

高级(V)...

确定 取消

11. Use PC to access the device by telnet with Result 1



☐ Passed

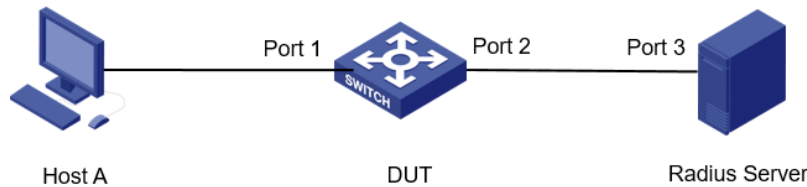
☐ Failed

4.2 RADIUS authentication

Test Item Name: RADIUS authentication

Work Hour: 30 min

Test Topology:



Test Process:

Configure the RADIUS server correctly, add two accounts for the telnet users and specify the passwords for the accounts.

1. Telnet to the switch from Host A Enable the telnet server.
2. Enable scheme authentication for VTY line 0 to 63.
3. Enable the default user role feature.
4. Create a RADIUS scheme named *test*.
5. Specify the primary authentication and accounting servers.
6. Set the shared keys to expert in plaintext form for secure RADIUS communication.
7. Exclude domain names from the usernames sent to the RADIUS server.
8. Create an ISP domain named *test*.
9. Specify the ISP domain as the default ISP domain.
10. Configure the ISP domain to use RADIUS scheme *test* as the default authentication, authorization, and accounting methods.
11. Configure the RADIUS server correctly, add two accounts for the telnet users, and specify the passwords for the accounts.
12. Telnet to the switch from Host A and Host B, and enter the correct usernames and passwords. Result 1 is expected.
13. Telnet to the switch from Host A and Host B, and enter incorrect usernames and passwords. Result 2 is expected.



Expect Results:

1. The users can telnet to the switch from Host A and Host B.
2. The users cannot telnet to the switch from Host A or Host B.

Actual Result:

1. Configuration on DUT:

#

telnet server enable

#

line vty 0 63

authentication-mode scheme

user-role network-admin

user-role network-operator

#

role default-role enable

#

radius scheme test

primary authentication 192.168.207.57

primary accounting 192.168.207.57

key authentication simple expert

key accounting simple expert

user-name-format without-domain

nas-ip 192.168.206.108

#

primary authentication 192.168.207.57

primary accounting 192.168.207.57

key authentication simple expert

key accounting simple expert

#

user-name-format without-domain

#

domain test

authentication login radius-scheme test

authorization login radius-scheme test

accounting login radius-scheme test

#

2. Configuring the RADIUS server:

(1) Add the router to the IMC platform as an access device:

Log in to IMC, click the **User** tab, and select **User Access Policy > Access Device Management > Access Device** from the navigation tree. Then, click **Add** to configure an access device as follows:

The screenshot shows the H3C Intelligent Management Center (IMC) login page. The login form includes fields for Operator (admin), Password (masked), and Mode (Classic/Desktop). A message indicates the license is a trial version expiring on August 4, 2020. Below the login form, a list of recommended browsers is provided: IE10/IE11, Firefox 50 and later versions, and Chrome 44 and later versions. The recommended resolution width is 1280.

Below the login form, the navigation tree is visible. The **User** tab is selected, and the **Access Device Management > Access Device** path is highlighted. The **Add** button is visible in the top right corner of the navigation tree.

The main content area shows the **Access Device Management** page. It includes a search bar for template names and a table with columns: Name, Timeout (seconds), Retries, Modify, and Delete. The table currently shows one entry with a timeout of 3 seconds and 3 retries.

Below the table, there are tabs for **Default Configuration**, **AAA Deploy Result**, and **Command Deploy Result**. The **Default Configuration** tab is active, showing a table with columns: Device Name, Device IP, Device Model, Configuration Type, Access Location, Comments, Port Synchronization Result, Details, and Operation. The table currently shows no matches found.

a. Set the shared key for secure RADIUS communication to **expert**.

b. Set the ports for authentication and accounting to **1812** and **1813**, respectively.

c. Select **STANDARD (Standard)** from the **Access Device Type** list.



H3C S5560X-EI Product Test Procedures

User > User Access Policy > Access Device Management > Access Device > Add Access Device

Access Configuration

Authentication Port * 1812 Accounting Port * 1813

Service Type Unlimited Forcible Logout Type Disconnect user

Access Device Type STANDARD (Standard) Service Group Ungrouped

Shared Key * ***** Confirm Shared Key * *****

Access Location Group --

Device List

Select Add Manually Clear All

Device Name	Device IP	Device Model	Comments	Delete
No match found.				
Total items: 0.				

OK Cancel

e. Select an access device from the device list or **manually add** an access device. In this example, the device IP address is 192.168.207.108. (equals to nas-ip address 192.168.206.108)

Add Access Device Manually - 用户配置 1 - Microsoft Edge

不安全 | 192.168.207.57:8080/imc/acm/accessdevice/manu...

Add Access Device Manually

Device IP * 192.168.206.108

Device Name A

Device Model

Comments

OK Cancel

H3C Intelligent Management Center

User > User Access Policy > Access Device Management > Access Device > Modify Access Device

Access Configuration

Authentication Port * 1812 Accounting Port * 1813

Service Type Unlimited Forcible Logout Type Disconnect user

Access Device Type STANDARD (Standard) Access Location Group --

Shared Key * ***** exper Confirm Shared Key * *****

Device List

Device Name	Device IP	Device Model	Comments
A	192.168.206.108		
Total items: 1.			

OK Cancel

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f. Use the default values for other parameters and click OK.

The IP address of the access device specified here must be the same as the source IP address of the RADIUS packets sent from the router. The source IP address is chosen in the following order on the router:

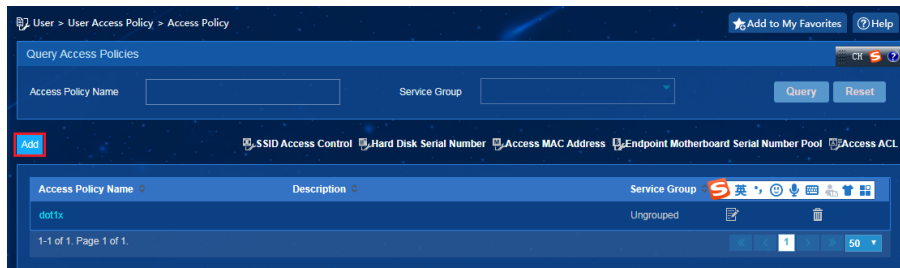
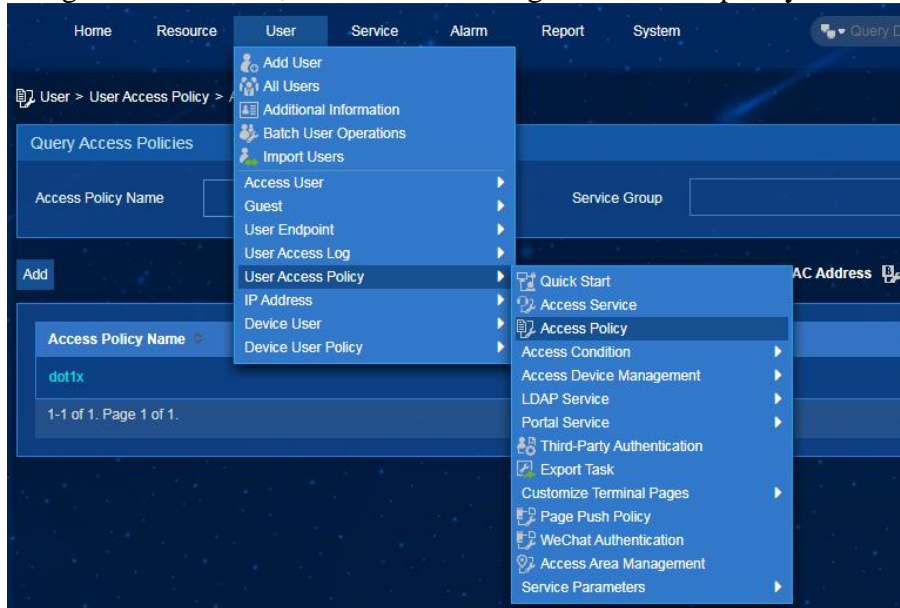
IP address specified by using the nas-ip command.

IP address specified by using the radius nas-ip command.

IP address of the outbound interface (the default).

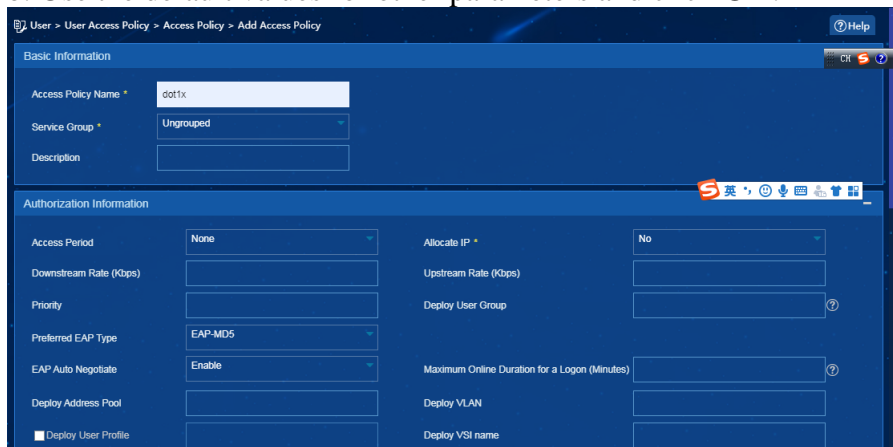
(2) Add an access policy:

Click the User tab, and select **User Access Policy > Access Policy** from the navigation tree. Then, click Add to configure an access policy as follows:



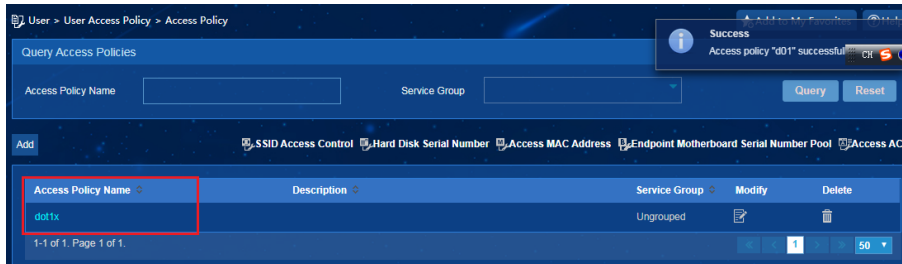
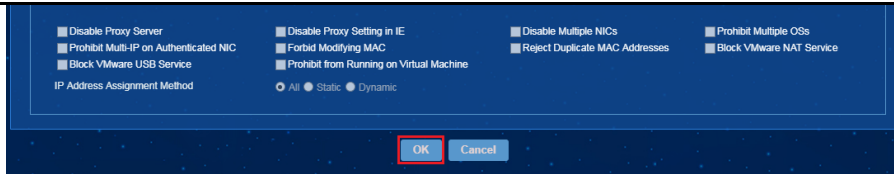
a. Enter Access Policy Name **dot1x**.

b. Use the default values for other parameters and click **OK**.



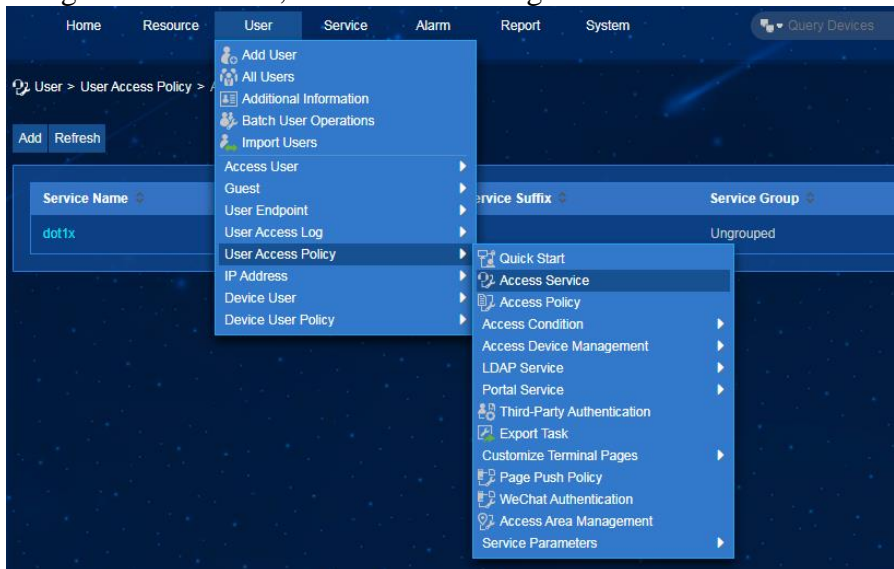


H3C S5560X-EI Product Test Procedures



(3) Add an access service:

Click the User tab, and select **User Access Policy > Access Service** from the navigation tree. Then, click Add to configure an access service as follows:



- Enter Service Name dot1x.
- Use the default values for other parameters and click **OK**.



H3C S5560X-EI Product Test Procedures

Basic Information

Service Name * Service Suffix

Service Group * Default Access Policy *

Default Proprietary Attribute Assignment Policy * ?

Default Max. Devices for Single Account * ?

Default Max. Number of Online Endpoints *

Daily Max. Online Duration * ?

Description

☒ Available ? ☒ Transparent Authentication ?

Access Scenario List

Access Scenario	Access Policy	Proprietary Attribute Assignment Policy	Priority	Modify	Del
No match found.					

User > User Access Policy > Access Service

Service Name	Description	Service Suffix	Service Group	Modify	Delete
dot1x			Ungrouped	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>

(4) Add an access user for device management:

Select Access User View > All Access Users from the navigation tree. Then, click Add to configure a device management account as follows:

H3C Intelligent Management Center

Home Resource User Service Alarm Report System

User Management

Access User

Dashboard

Online Users

Deliver Message

All Access Users

Blacklisted User

LDAP User

User > All Access Users

Query Access Users

Account Name User Name

User Group Service Name

Account Name	User Name	User Group	Creation Date	Start Time	End Time
Ungrouped					

H3C Intelligent Management Center

Home Resource User Service Alarm Report System

User Management

Access User

Dashboard

Online Users

Deliver Message

All Access Users

Blacklisted User

LDAP User

Mute Terminal User Config Profile

Pre-registered User

User > All Access Users

Query Access Users

Account Name User Name

User Group Service Name

Account Name	User Name	User Group	Creation Date	Start Time	End Time	Account Status	Modify
user	111	Ungrouped	2020-06-05			Normal	<input type="button" value="Edit"/>

1-1 of 1, Page 1 of 1

- Enter account name **user** and specify the password as **1111** form the Access Information.
- Specify 10 from the **Max Concurrent Logins** list.
- Select the **dot1x** in Access Service.
- Click OK.



H3C S5560X-EI Product Test Procedures

User > All Access Users > Add Access User Help

Basic Information

User Name * Identity Number *
Contact Address Telephone ?
Email ? User Group * ?

Access Information

Account Name * ?
☐ Trial Account ☐ Default BYOD User ☐ MAC Authentication User ☐ Computer User ☐ Fast Access User
Password * Confirm Password *
☒ Allow User to Change Password ☐ Enable Password Strategy ☐ Modify Password at Next Login
Start Time ? End Time ?
Max. Idle Time (Minutes) Max. Concurrent Logins
Login Message

Access Service

Service Name	Service Suffix	Status	Allocate IP
<input checked="" type="checkbox"/> dot1x		Available	

Binding Information

Device SN Port ?
Outer VLAN ID VLAN ID/Inner VLAN ID
User SSID Device IP
Windows Domain Terminal IP Address
Terminal MAC Address IMEI
Hard Disk Serial Number

Tips
Note: When you input multiple items in the text box, you can input only one item each line.

- Telnet to the switch from PC 4, and enter the correct usernames and passwords.
Result 1 is expected.

```
<6800-2>telnet 10.1.1.1
Trying 10.1.1.1 ...
Press CTRL+K to abort
Connected to 10.1.1.1 ...
Login: usera
Password: 1111
*****
* Copyright (c) 2004-2020 New H3C Technologies Co., Ltd. All rights reserved.*
* Without the owner's prior written consent,
* no decompiling or reverse-engineering shall be allowed.
*****
<6800-1>
```

- Telnet to the switch from PC 4, and enter incorrect usernames and passwords.
Result 2 is expected.



```
Login: admin
Password:
E63018: The user does not exist or has not subscribed to this service.
AAA authentication failed.
Login: user
Password:
E63032: Incorrect password. You can retry 9 times.
AAA authentication failed.
Login: █
```

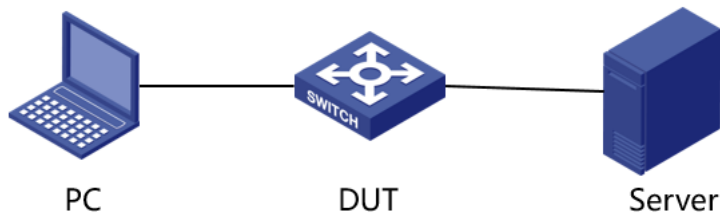
☐ Passed☐ Failed

4.3 TACACS +

Test Item Name: TACACS +

Work Hour: 30 min

Test Topology:



Test Process:

1. Add the DUT to the server as an AAA client. (Details not shown)
2. Add a Telnet user on the server. (Details not shown.)
3. Create and configure HWTACACS scheme hwtac on the DUT.
4. Create ISP domain hwtacacs and apply HWTACACS scheme hwtac to the ISP domain for authentication, authorization, and accounting of users.
5. Specify ISP domain hwtacacs as the default ISP domain.
6. Enable the Telnet server on the DUT and enable scheme authentication for Telnet users on VTY user lines 0 to 63.
7. Enable the default user role feature.
8. On the PC, use the correct username and password to log in to the DUT. Result 1 is expected.
9. On the PC, use the incorrect username or password to log in to the DUT. Result 2 is expected.



10. On the PC, use a username and password that do not exist on the server to log in to the DUT. Result 2 is expected.

Expect Results:

1. The PC successfully logs in to the DUT.
2. The PC cannot log in to the DUT.

Actual Result:

1. Enable Telnet server.

```
[DUT]telnet server enable
```

2. Enable scheme authentication for Telnet users on VTY user interfaces 1 through 15.

```
[DUT]line vty 0 63
[DUT-line-vty0-63]authentication-mode scheme
```

3. Enable the default user role feature.

```
[DUT]role default-role enable
```

4. Configure the HWTACACS scheme.

```
[DUT]hwtacacs scheme 1
[DUT-hwtacacs-1]primary authentication 192.168.207.53
[DUT-hwtacacs-1]primary authorization 192.168.207.53
[DUT-hwtacacs-1]primary accounting 192.168.207.53
[DUT-hwtacacs-1]key authentication simple 12345
[DUT-hwtacacs-1]key authorization simple 12345
[DUT-hwtacacs-1]key accounting simple 12345
[DUT-hwtacacs-1]user-name-format without-domain
[DUT-hwtacacs-1]nas-ip 192.168.207.193
```

5. Specify AAA schemes for the ISP domain.

```
[DUT]domain 1
[DUT-isp-1]authentication login hwtacacs-scheme 1
[DUT-isp-1]authorization login hwtacacs-scheme 1
[DUT-isp-1]accounting login hwtacacs-scheme 1
```

6. Specify the ISP domain example as the default domain.

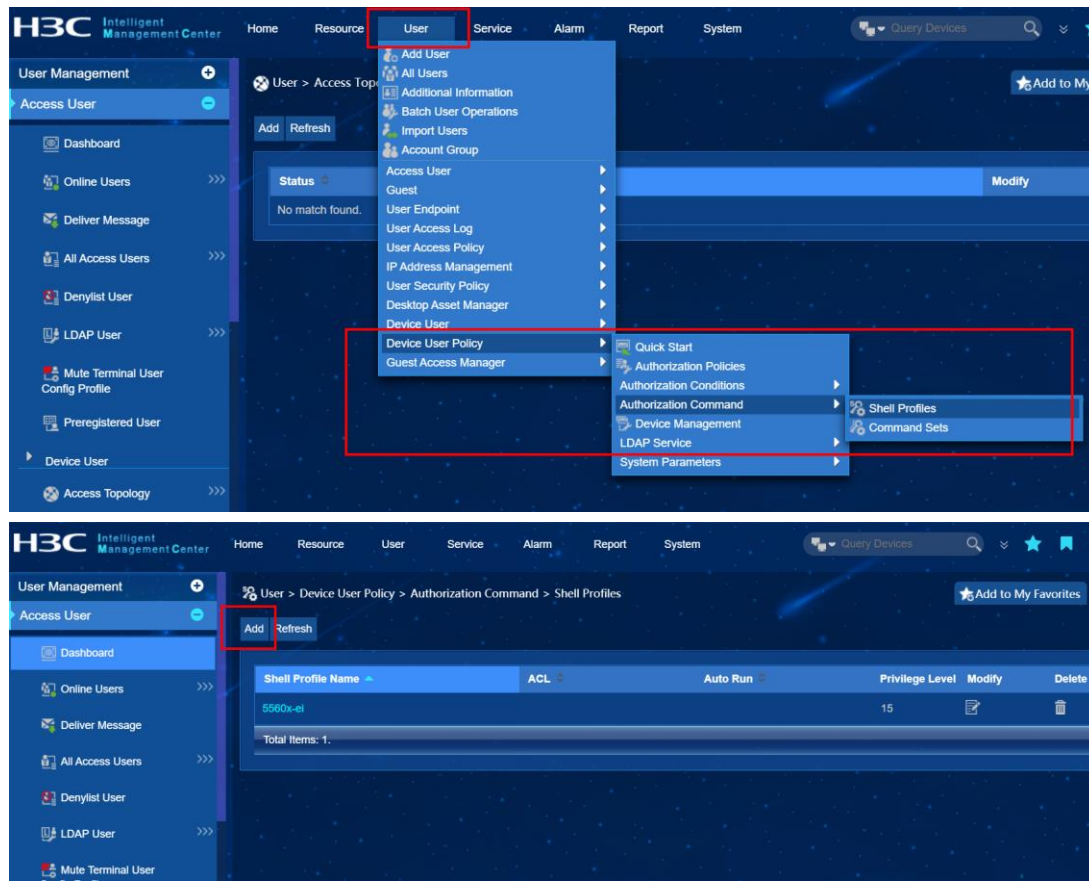
```
[DUT]domain default enable 1
```

7. Configure the HWTACACS server:

The HWTACACS server runs IMC PLAT.

Add a shell profile.

- Log into IMC.
- Click the User tab.
- From the navigation tree, select Device User Policy > Authorization Command > Shell Profiles.
- Click Add.
- On the Add Shell Profile page, configure the shell profile name and the privilege level, and click OK.





H3C S5560X-EI Product Test Procedures

User > Device User Policy > Authorization Command > Shell Profiles > Add Shell Profile

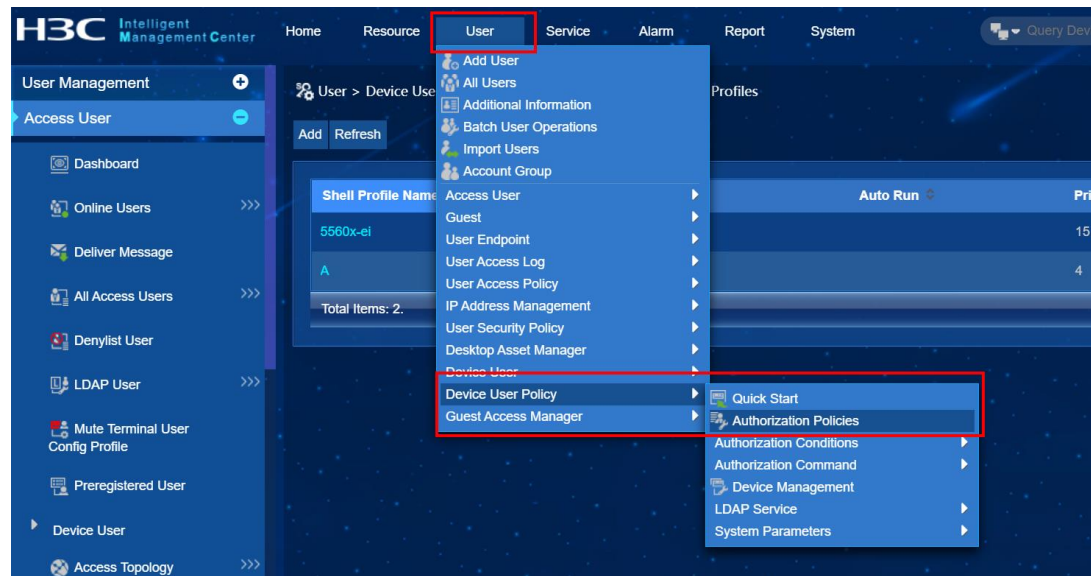
Add Shell Profile

Shell Profile Name *	A	
ACL		
Privilege Level	4	
Idle Time		Minutes
Session Lifetime		Minutes
Auto Run		
Custom Attribute	<button>Add Attribute</button> ?	
Description		

OK Cancel

Add an authorization policy.

- From the navigation tree, select Device User Policy > Authorization Policies.
- Click Add.
- On the Add Authorization Policy page, configure the policy name and add the configured shell profile to the Access Authorization Info area.
- Click OK.





H3C S5560X-EI Product Test Procedures

The first screenshot shows the 'User > Device User Policy > Authorization Policies' page. The 'Add' button is highlighted with a red box. The table below shows no results.

Policy Name	Description
No match found.	
Total Items: 0.	

The second screenshot shows the 'Modify Authorization Policy' page. The 'Authorization Policy Name' field is highlighted with a red box and contains the value 'B'. The 'Access Authorization Info' section shows a table with one entry.

Device Area	Device Type	Authorized Time Range	Shell Profile	Authorization Com	Priority	Modify	Delete
Unlimited	Unlimited	Unlimited	A	Unlimited			

The third screenshot shows the 'Access Authorization' configuration page. The 'Shell Profile' dropdown menu is highlighted with a red box and shows the value 'A'.

Device Area	Unlimited
Device Type	Unlimited
Authorized Time Range	Unlimited
Shell Profile	A
Authorization Command Set	Unlimited

Add the DUT as an access device.

- From the navigation tree, select Device User Policy > Device Management.
- Click Add.
- On the Add Device page, configure the shared key as expert and set the authentication port to 49. In the Device Management area, click Select or Add Manually to add the DUT to IMC as an access device.
- Click OK.



H3C S5560X-EI Product Test Procedures

The first screenshot shows the H3C Intelligent Management Center (IMC) interface. The 'User' menu is highlighted, and the 'Device User Policy' option is selected. The 'Device User Policy' page is displayed, showing a table of devices. The 'Add' button is highlighted.

The second screenshot shows the 'Device User Policy' page. The 'Add' button is highlighted. The 'Device Management' page is displayed, showing a table of devices. The 'Add' button is highlighted.

The third screenshot shows the 'Device Management' page. The 'Add Device' button is highlighted. The 'Device Configuration' page is displayed, showing the 'Shared Key' and 'Confirm Shared Key' fields. The 'Authentication Port' field is set to 49. The 'Device Area' and 'Device Type' fields are empty. The 'Single Connection' and 'Watchdog' fields are set to 'Not Supported'. The 'Description' field is empty. The 'Add Manually' button is highlighted.

Device Configuration

Field	Value
Shared Key *
Confirm Shared Key *
Authentication Port *	49
Device Area	
Device Type	
Single Connection *	Not Supported
Watchdog *	Not Supported
Description	

Device Management

Select Add Manually Clear All

Tips:TAM does not support IPv6 addresses.



The screenshot displays the H3C Device Management interface. At the top, there is a 'Device Management' header. Below it, a navigation bar includes buttons for 'Select', 'Add Manually', and 'Clear All'. A dropdown menu is open under 'Add Manually', showing options: 'Add', 'Batch Add', and 'No match found'. Below the navigation bar, there is a table with columns 'Device Name' and 'Device IP'. A 'Tips: TAM does' icon is also visible. Below the table, there is a 'Manually Add Device' section. This section contains a 'Device Name Type' selector with radio buttons for 'FQDN' (selected) and 'Sysname'. Below this, there are two input fields: 'Device Name' with the value 'DUT1' and 'Device IP *' with the value '192.168.207.193'. A 'Get IP Address' button is located to the right of the 'Device Name' field. At the bottom of the 'Manually Add Device' section, there are 'OK' and 'Cancel' buttons.

Add an access user.

- From the navigation tree, select Device User > All Device Users.
- Click Add.
- On the Add Device User page, add the user test and configure a password for the user.
- Select the configured authorization policy from the User Authorization Policy list.
- Click OK.



H3C S5560X-EI Product Test Procedures

The first screenshot shows the H3C IMC interface with the 'User' menu highlighted. The 'Add User' option is selected, and the 'Device User' option is highlighted in the dropdown menu. The 'Device User' option is also highlighted in the left sidebar.

The second screenshot shows the 'User > Device User > All Device Users' page. The 'Add' button is highlighted. The table below shows the current state of the device users.

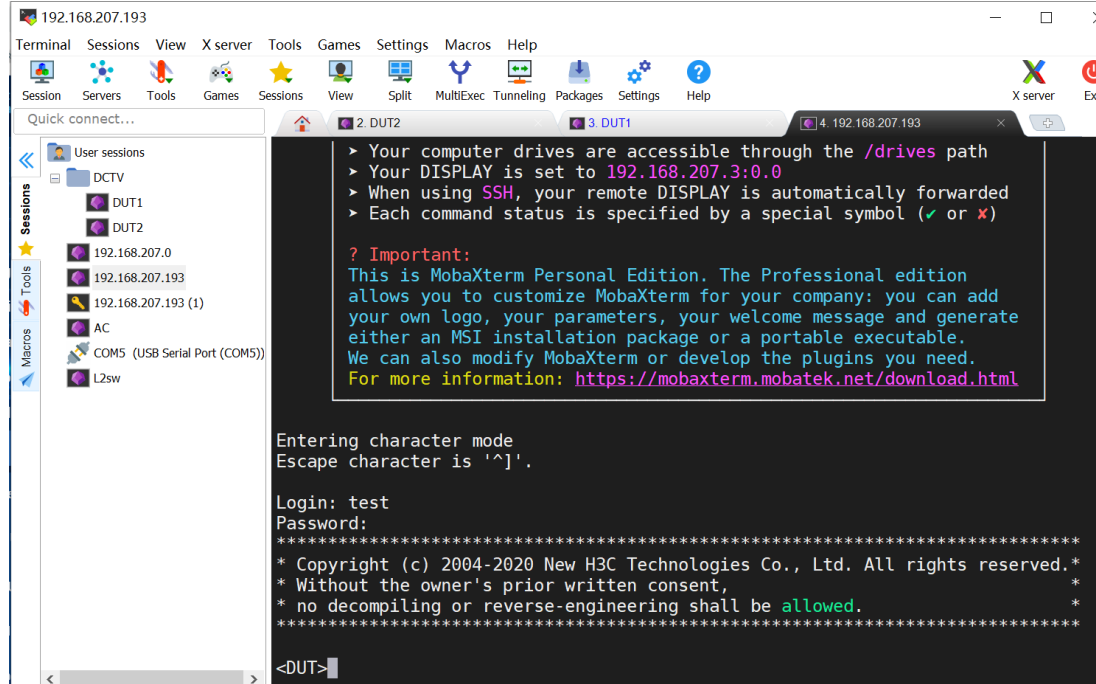
Account Name	User Name	Device User Gr	Authorization Policy	Created at	Expired at	Status
No match found.						

The third screenshot shows the 'Add Device User' form. The 'Account Name' field is set to 'test', the 'Login Password' field is set to '---', the 'Device User Group' is set to 'Ungrouped', the 'Group Authorization Policy' is set to 'CLI Access Not Supported', the 'User Authorization Policy' is set to 'B', and the 'Max. Online Users' is set to '1'. The 'Expiration Date' field is empty.

- Host A uses the correct username and password to log into the DUT. Result 1 is expected.



H3C S5560X-EI Product Test Procedures



9. Host A uses incorrect usernames and passwords to log into the DUT. Result 2 is expected.

☐ Passed

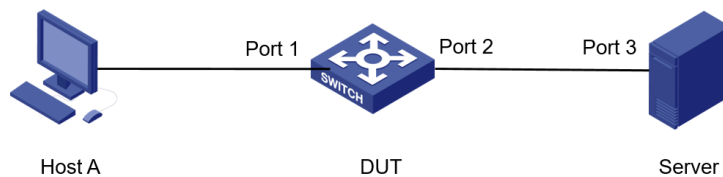
☐ Failed

4.4 802.1X authentication

Test Item Name:802.1X authentication

Work Hour: 60 min

Test Topology:





Test Process:

1. Enable 802.1X globally on the DUT.
2. Enable 802.1X on the Port 1 (interface connected to the Client).
3. Create and configure RADIUS scheme test.
4. Create ISP domain test.com and apply RADIUS scheme test to the ISP domain for authentication, authorization, and accounting of LAN users.
5. On the DUT, assign Port 2 (interface connected to the RADIUS server) to VLAN 2 and assign IP address 192.168.207.53 to VLAN-interface 2.
6. On the RADIUS server at 192.168.207.53, add user user with password 1111, configure the authentication key as expert, and add IP address 13.1.1.3 of the DUT to the NAS IP list.
7. Use username user@h3c.com and password 1111 to initiate authentication from PC A.
8. Display user connection information. Result 1 is expected.
9. Ping the gateway address of PC A to verify the network accessibility of PC A. For example, the gateway of PC A is the VLAN interface of the VLAN to which Port 1 belongs. Ping the IP address of that VLAN interface. Result 2 is expected.
10. On the 802.1X client of PC A, disconnect the network.
11. Verify the network accessibility of PC A. Result 3 is expected

Expect Results:

1. The output shows that the user has passed 802.1X authentication, and it also shows the MAC address of PC A.
2. PC A can access the network.
3. PC A cannot access the network.

Actual Result:

1. Configuration on DUT

[DUT]dot1x

[DUT-GigabitEthernet1/0/1]dot1x

[DUT]radius scheme test

[DUT-radius-test]primary authentication 192.168.207.53 //the ip for 802.1X authentication server

[DUT-radius-test]primary accounting 192.168.207.53

[DUT-radius-test]key authentication simple expert

[DUT-radius-test]key accounting simple expert

[DUT-radius-test]user-name-format without-domain

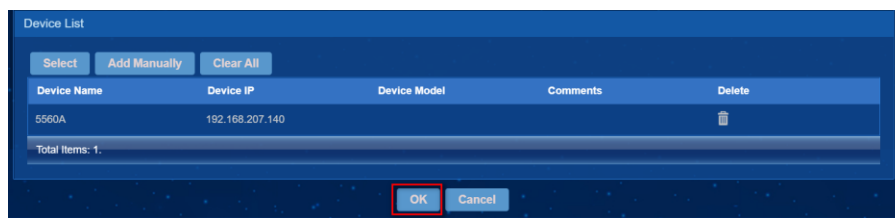
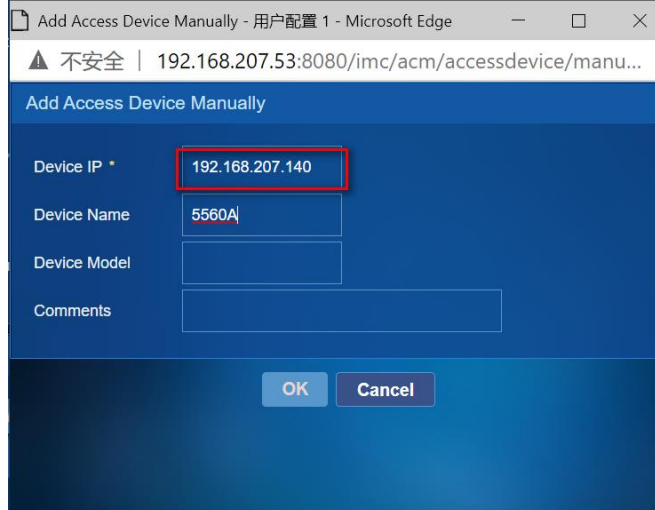
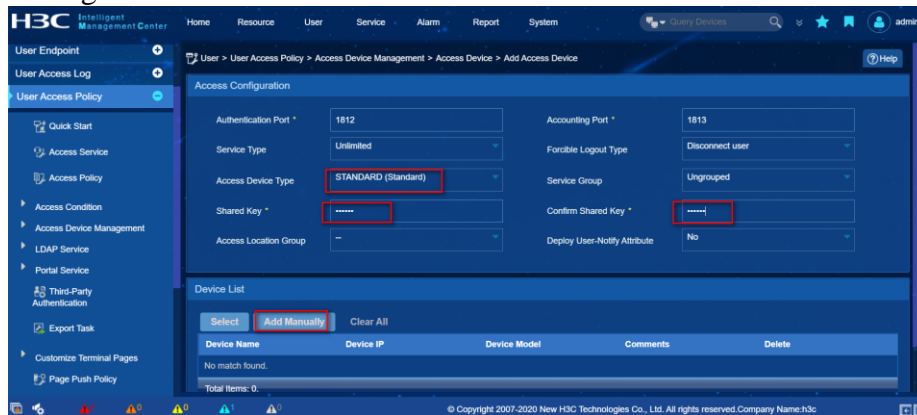
[DUT] domain test.com

[DUT-isp-test.com] authentication lan-access radius-scheme test

[DUT-isp-test.com] accounting lan-access radius-scheme test

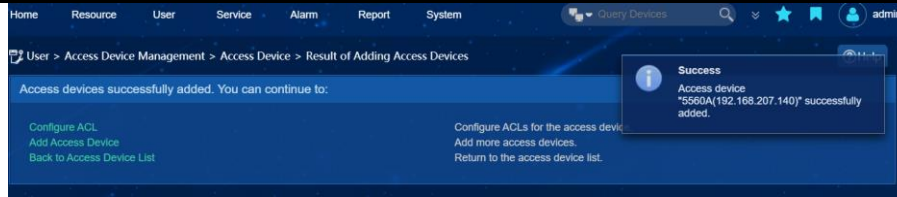
[DUT-isp-test.com] authorization lan-access radius-scheme test

2. Configuration on iMC

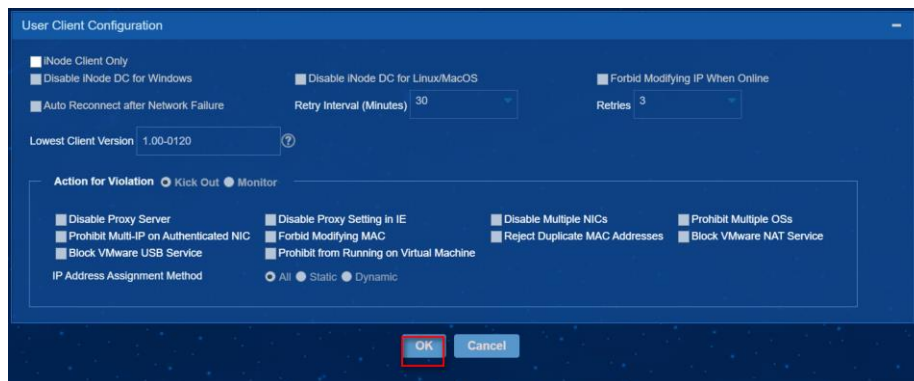
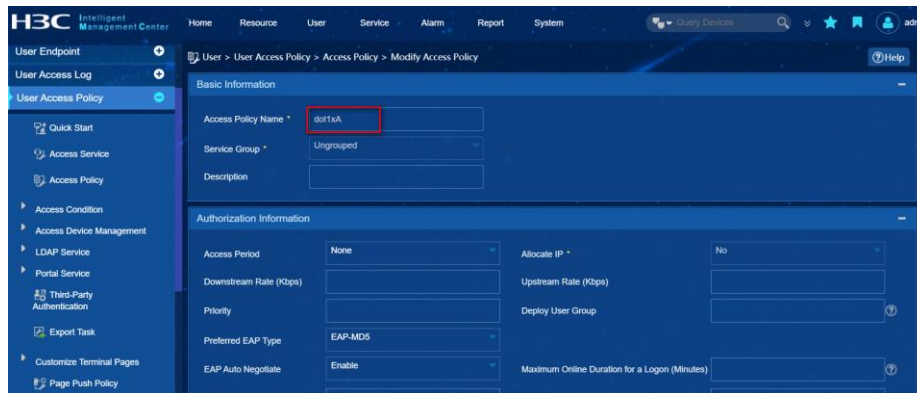
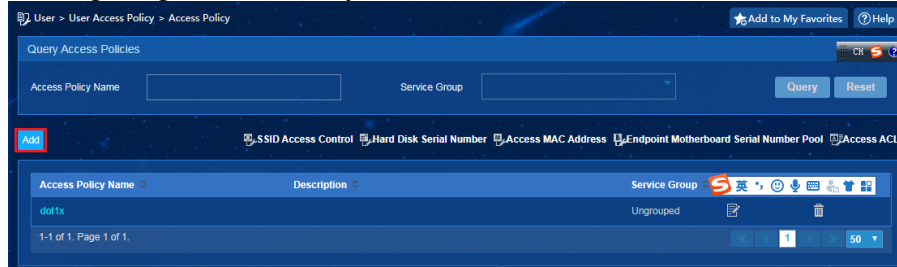


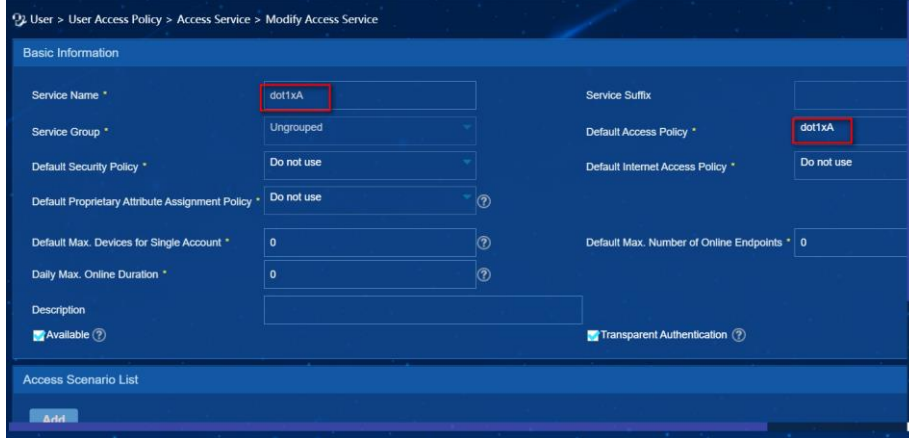


H3C S5560X-EI Product Test Procedures



Configuring Access Policy





- Use username user@h3c.com and password 1111 to initiate authentication from PC A.



- Display user connection information.

```
[5560x-ei-1-GigabitEthernet1/0/5]dis dot1x sessions
GigabitEthernet1/0/5 is link-up
Online 802.1X users: 1
MAC address      Auth state
002b-6756-647f   Authenticated
Ten-GigabitEthernet1/0/25 is link-up
Online 802.1X users: 0
[5560x-ei-1-GigabitEthernet1/0/5]
```

- Ping the gateway address of PC A to verify the network accessibility of PC A. For example, the gateway of PC A is the VLAN interface of the VLAN to

which Port 1 belongs. Ping the IP address of that VLAN interface.

```
C:\Users\j23223>ping 192.168.207.53

正在 Ping 192.168.207.53 具有 32 字节的数据:
来自 192.168.207.53 的回复: 字节=32 时间<1ms TTL=127
来自 192.168.207.53 的回复: 字节=32 时间<1ms TTL=127
来自 192.168.207.53 的回复: 字节=32 时间<1ms TTL=127
来自 192.168.207.53 的回复: 字节=32 时间=1ms TTL=127

192.168.207.53 的 Ping 统计信息:
    数据包: 已发送 = 4, 已接收 = 4, 丢失 = 0 (0% 丢失),
    往返行程的估计时间(以毫秒为单位):
        最短 = 0ms, 最长 = 1ms, 平均 = 0ms
```

6. On the 802.1X client of PC A, disconnect the network.



7. Verify the network accessibility of PC A. Result 3 is expected.

```
C:\Users\j23223>ping 192.168.207.53

正在 Ping 192.168.207.53 具有 32 字节的数据:
来自 192.168.207.46 的回复: 无法访问目标主机。
来自 192.168.207.46 的回复: 无法访问目标主机。
来自 192.168.207.46 的回复: 无法访问目标主机。
来自 192.168.207.46 的回复: 无法访问目标主机。

192.168.207.53 的 Ping 统计信息:
    数据包: 已发送 = 4, 已接收 = 4, 丢失 = 0 (0% 丢失),
```

☐ Passed

☐ Failed

4.5 Syslog Server

Test Item Name: syslog server

Work Hour: 20 min

Test Topology:



Test Process:

1. Configure the NMS VRF interface on DUT, and specify the source interface of syslog as VRF interface
2. Configure syslog server on DUT
3. Shutdown other Port on DUT and check whether the server can receive the log

Expect Results:

1. Interface up/down log is shown on the server

Actual Result:

1. Open the 3CD on computer and choose syslog Server

The screenshot shows the 3CDaemon application window. On the left, there is a sidebar with options: TFTP Server, Syslog Server (selected), and a section for Syslog Server configuration including 'Configure Syslog Server', 'Syslog Server is started', 'Clear list', and 'View Log files'. The main area displays a table of log messages.

Time	IP Address	Msg Type	Message
Jan 22 10:23:33	192.168.207.140	local7.warn	Jan 4 01:02:26 2013 5560x-ei-1 %10SHELL/4/SHELL_CMD_MATCHFAIL: -User=""-IPAddr=""; Command und info-center sou
Jan 22 10:23:30	192.168.207.140	local7.info	Jan 4 01:02:23 2013 5560x-ei-1 %10SHELL/6/SHELL_CMD: -Line=aux0-IPAddr=""-User=""; Command is qu
Jan 22 10:23:26	192.168.207.140	local7.info	Jan 4 01:02:19 2013 5560x-ei-1 %10SHELL/6/SHELL_CMD: -Line=aux0-IPAddr=""-User=""; Command is int g 1/0/5
Jan 22 10:23:20	192.168.207.140	local7.info	Jan 4 01:02:13 2013 5560x-ei-1 %10SHELL/6/SHELL_CMD: -Line=aux0-IPAddr=""-User=""; Command is sy
Jan 22 10:23:16	192.168.207.140	local7.notice	Jan 4 01:02:09 2013 5560x-ei-1 %10CFGMAN/5/CFGMAN_EXIT_FROM_CONFIGURE: -Line=aux0-IPAddr=""-User=""; Exit fr
Jan 22 10:23:16	192.168.207.140	local7.info	Jan 4 01:02:09 2013 5560x-ei-1 %10SHELL/6/SHELL_CMD: -Line=aux0-IPAddr=""-User=""; Command is qu
Jan 22 10:23:05	192.168.207.140	local7.info	Jan 4 01:01:57 2013 5560x-ei-1 %10SHELL/6/SHELL_CMD: -Line=aux0-IPAddr=""-User=""; Command is und info-center sou
Jan 22 10:20:46	192.168.207.140	local7.info	Jan 4 00:59:39 2013 5560x-ei-1 %10SHELL/6/SHELL_CMD: -Line=aux0-IPAddr=""-User=""; Command is qu
Jan 22 10:14:57	192.168.207.140	local7.info	Jan 4 00:53:50 2013 5560x-ei-1 %10SHELL/6/SHELL_CMD: -Line=aux0-IPAddr=""-User=""; Command is und dot1x
Jan 22 10:14:45	192.168.207.140	local7.info	Jan 4 00:53:38 2013 5560x-ei-1 %10SHELL/6/SHELL_CMD: -Line=aux0-IPAddr=""-User=""; Command is shu
Jan 22 10:14:41	192.168.207.140	local7.info	Jan 4 00:53:34 2013 5560x-ei-1 %10SHELL/6/SHELL_CMD: -Line=aux0-IPAddr=""-User=""; Command is di th
Jan 22 10:14:39	192.168.207.140	local7.info	Jan 4 00:53:32 2013 5560x-ei-1 %10SHELL/6/SHELL_CMD: -Line=aux0-IPAddr=""-User=""; Command is int g 1/0/5
Jan 22 10:14:28	192.168.207.140	local7.warn	Jan 4 00:53:21 2013 5560x-ei-1 %10SHELL/4/SHELL_CMD_MATCHFAIL: -User=""-IPAddr=""; Command int in view system f
Jan 22 10:14:12	192.168.207.140	local7.info	Jan 4 00:53:05 2013 5560x-ei-1 %10SHELL/6/SHELL_CMD: -Line=aux0-IPAddr=""-User=""; Command is info-center loghost
Jan 22 10:14:12	192.168.207.140	local7.info	Dec 31 23:59:44 2012 5560x-ei-1 %10SYSLOG/6/SYSLOG_RESTART: System restarted -- H3C Comware Software.
Jan 22 10:10:24	local	user.info	Listening for Syslog messages on IP address: 192.168.207.46
Jan 22 10:10:24	local	user.info	Listening for Syslog messages on IP address: 10.10.10.2

2. Configure syslog server on DUT

<Device>system-view

[Device]info-center enable

[Device]info-center loghost 192.168.207.46-----this is the computer's ip (this computer serves as syslog server)

3. Shutdown other Port on DUT and check whether the server can receive the log

The screenshot shows the H3C Daemon Syslog Server interface. On the left, there's a sidebar with options: 'Syslog Server', 'Configure Syslog Server', 'Syslog Server is started. Click here to stop it.', 'Clear list.', and 'View Log Files.'. The main area displays a table of received log messages.

Time	IP Address	Msg Type	Message
Jan 22 10:23:33	192.168.207.140	local7.warn	Jan 4 01:02:26 2013 5560x-ei-1 %10SHELL/4/SHELL_CMD_MATCHFAIL: -User=""-IPAddr="", Command und info-center sou
Jan 22 10:23:30	192.168.207.140	local7.info	Jan 4 01:02:23 2013 5560x-ei-1 %10SHELL/6/SHELL_CMD: -Line=aux0-IPAddr=""-User="", Command is qu
Jan 22 10:23:26	192.168.207.140	local7.info	Jan 4 01:02:19 2013 5560x-ei-1 %10SHELL/6/SHELL_CMD: -Line=aux0-IPAddr=""-User="", Command is int g 1/0/5
Jan 22 10:23:20	192.168.207.140	local7.info	Jan 4 01:02:13 2013 5560x-ei-1 %10SHELL/6/SHELL_CMD: -Line=aux0-IPAddr=""-User="", Command is sy
Jan 22 10:23:16	192.168.207.140	local7.notice	Jan 4 01:02:09 2013 5560x-ei-1 %10CFGMAN/5/CFGMAN_EXIT_FROM_CONFIGURE: -Line=aux0-IPAddr=""-User="", Exit fr
Jan 22 10:23:16	192.168.207.140	local7.info	Jan 4 01:02:09 2013 5560x-ei-1 %10SHELL/6/SHELL_CMD: -Line=aux0-IPAddr=""-User="", Command is qu
Jan 22 10:23:05	192.168.207.140	local7.info	Jan 4 01:01:57 2013 5560x-ei-1 %10SHELL/6/SHELL_CMD: -Line=aux0-IPAddr=""-User="", Command is und info-center sou
Jan 22 10:20:46	192.168.207.140	local7.info	Jan 4 00:59:39 2013 5560x-ei-1 %10SHELL/6/SHELL_CMD: -Line=aux0-IPAddr=""-User="", Command is qu
Jan 22 10:14:57	192.168.207.140	local7.info	Jan 4 00:53:50 2013 5560x-ei-1 %10SHELL/6/SHELL_CMD: -Line=aux0-IPAddr=""-User="", Command is und dot1x
Jan 22 10:14:45	192.168.207.140	local7.info	Jan 4 00:53:38 2013 5560x-ei-1 %10SHELL/6/SHELL_CMD: -Line=aux0-IPAddr=""-User="", Command is shu
Jan 22 10:14:41	192.168.207.140	local7.info	Jan 4 00:53:34 2013 5560x-ei-1 %10SHELL/6/SHELL_CMD: -Line=aux0-IPAddr=""-User="", Command is di th
Jan 22 10:14:39	192.168.207.140	local7.info	Jan 4 00:53:32 2013 5560x-ei-1 %10SHELL/6/SHELL_CMD: -Line=aux0-IPAddr=""-User="", Command is int g 1/0/5
Jan 22 10:14:28	192.168.207.140	local7.warn	Jan 4 00:53:21 2013 5560x-ei-1 %10SHELL/4/SHELL_CMD_MATCHFAIL: -User=""-IPAddr="", Command int in view system f
Jan 22 10:14:12	192.168.207.140	local7.info	Jan 4 00:53:05 2013 5560x-ei-1 %10SHELL/6/SHELL_CMD: -Line=aux0-IPAddr=""-User="", Command is info-center loghost
Jan 22 10:14:12	192.168.207.140	local7.info	Dec 31 23:59:44 2012 5560x-ei-1 %10SYSLOG/6/SYSLOG_RESTART: System restarted -- H3C Comware Software.
Jan 22 10:10:24	local	user.info	Listening for Syslog messages on IP address: 192.168.207.46
Jan 22 10:10:24	local	user.info	Listening for Syslog messages on IP address: 10.10.10.2

☐ Passed

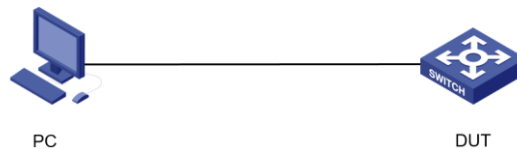
☐ Failed

4.6 FTP backup

Test Item Name: FTP backup of software and configuration file

Work Hour: 20 min

Test Topology:



Test Process:

1. Save the current configuration file named test.cfg.
2. Start the FTP service software on the PC, create a user, set the user name to "user" and the password to "test", and make sure that there are switch application files



- in the directory where the service is set
3. Enter the command in the user view for FTP connection, and enter the correct user name and password to log in, you can get the result 1.
 4. Ensure that there is a configuration file in Flash, execute the put command to upload the configuration file to the PC, and the expected result is 2.
 5. Use the "display boot-loader" command to view the currently used software.
 6. According to the startup software queried in the previous step (there may be multiple bin files), use the put command multiple times to upload the software file, and the expected result is 2. (Note to use binary transmission method to download)
 7. Enter the quit command or the bye command to log out, Expected result 3.

Expect Results:

1. Login successful.
2. File upload completed.
3. Log out and disconnect.

Actual Result:

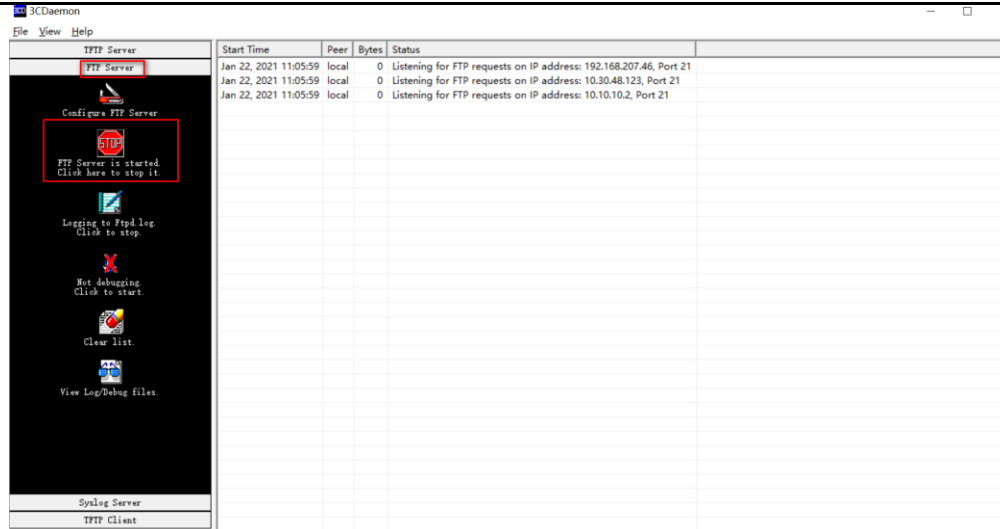
1. Save the test.cfg.

```
[5560x-ei-1]save
The current configuration will be written to the device. Are you sure? [Y/N]:y
Please input the file name(*.cfg) [flash:/j1x+m.cfg]
(To leave the existing filename unchanged, press the enter key):test.cfg
Validating file. Please wait...
Saved the current configuration to mainboard device successfully.
[5560x-ei-1]
```

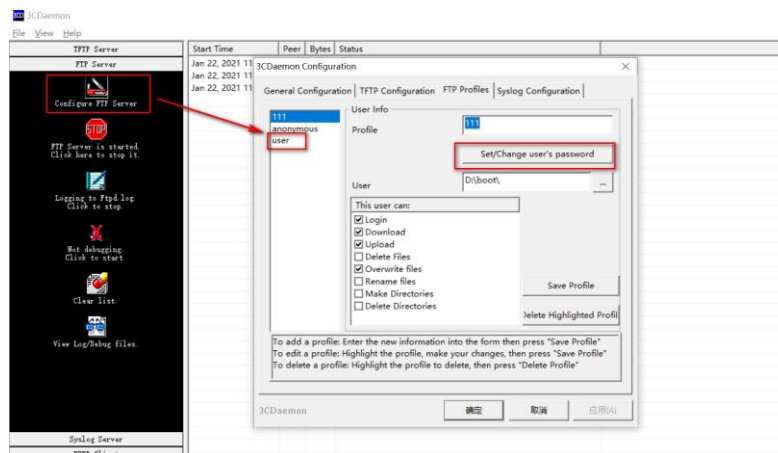
2. Start the FTP service software on the PC.



H3C S5560X-EI Product Test Procedures



Open the FTP server software on computer, create a user, set the user name to "user" and the password to "test"



3. Enter the command in the user view for FTP connection, and enter the correct user name and password to log in.

```
<5560x-ei-1>ftp 192.168.207.46
Press CTRL+C to abort.
Connected to 192.168.207.46 (192.168.207.46).
220 3Com 3C Daemon FTP Server Version 2.0
User (192.168.207.46:(none)): user
331 User name ok, need password
Password:
230 User logged in
Remote system type is UNIX.
Using binary mode to transfer files.
ftp>
```

4. Execute the put command to upload the configuration file to the PC.



```
ftp> ?
Commands may be abbreviated.  Commands are:

append      delete      ls          quit        rmdir
ascii       debug      mkdir       reget       status
binary      dir        newer       rstatus     system
bye         disconnect open        rhelp       user
cd          get        passive     rename      verbose
cdup        help       put         reset
close      lcd        pwd         restart
```

```
ftp> put test.cfg
227 Entering passive mode (192,168,207,46,218,195)
125 Using existing data connection
.
226 Closing data connection; File transfer successful
4696 bytes sent in 0.002 seconds (2.26 Mbytes/s)
ftp>
```

5. Use the "display boot-loader" command to view the currently used software.

```
<S5560x-ei-1>dis boot-loader
Software images on slot 1:
Current software images:
 flash:/s5560x_ei-cmw710-boot-f6517.bin
 flash:/s5560x_ei-cmw710-system-f6517.bin
 flash:/s5560x_ei-cmw710-freeradius-f6517.bin
 flash:/s5560x-ei-cmw710-escan-f6517.bin
Main startup software images:
 flash:/s5560x_ei-cmw710-boot-f6517.bin
 flash:/s5560x_ei-cmw710-system-f6517.bin
 flash:/s5560x_ei-cmw710-freeradius-f6517.bin
 flash:/s5560x-ei-cmw710-escan-f6517.bin
Backup startup software images:
None
```

6. Use the put command multiple times to upload the software file.

```
<S5560x-ei-1>ftp 192.168.207.46
Press CTRL+C to abort.
Connected to 192.168.207.46 (192.168.207.46).
220 3Com 3C Daemon FTP Server Version 2.0
User (192.168.207.46:(none)): user
331 User name ok, need password
Password:
230 User logged in
Remote system type is UNIX.
Using binary mode to transfer files.
ftp> put s5560x_ei-cmw710-devkit-f6517.bin
227 Entering passive mode (192,168,207,46,219,184)
125 Using existing data connection
.....
226 Closing data connection; File transfer successful.
8455168 bytes sent in 10.227 seconds (807.34 Kbytes/s)
ftp>
```

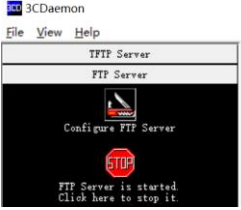
7. Enter the quit command or the bye command to log out.

```
ftp> bye
221 Service closing control connection
<S5560x-ei-1>
```

syslog appears in the FTP server.



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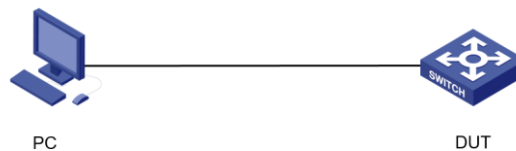
		<table><thead><tr><th>Start Time</th><th>Peer</th><th>Bytes</th><th>Status</th></tr></thead><tbody><tr><td>Jan 22, 2021 11:26:24</td><td>192.168.207.140</td><td>8455168</td><td>221 Service closing control connection</td></tr><tr><td>Jan 22, 2021 11:17:00</td><td>192.168.207.140</td><td>4696</td><td>221 Service closing control connection</td></tr><tr><td>Jan 22, 2021 11:05:59</td><td>local</td><td>0</td><td>Listening for FTP requests on IP address: 192.168.207.46, Port 21</td></tr><tr><td>Jan 22, 2021 11:05:59</td><td>local</td><td>0</td><td>Listening for FTP requests on IP address: 10.30.48.123, Port 21</td></tr><tr><td>Jan 22, 2021 11:05:59</td><td>local</td><td>0</td><td>Listening for FTP requests on IP address: 10.10.10.2, Port 21</td></tr></tbody></table>		Start Time	Peer	Bytes	Status	Jan 22, 2021 11:26:24	192.168.207.140	8455168	221 Service closing control connection	Jan 22, 2021 11:17:00	192.168.207.140	4696	221 Service closing control connection	Jan 22, 2021 11:05:59	local	0	Listening for FTP requests on IP address: 192.168.207.46, Port 21	Jan 22, 2021 11:05:59	local	0	Listening for FTP requests on IP address: 10.30.48.123, Port 21	Jan 22, 2021 11:05:59	local	0	Listening for FTP requests on IP address: 10.10.10.2, Port 21
Start Time	Peer	Bytes	Status																								
Jan 22, 2021 11:26:24	192.168.207.140	8455168	221 Service closing control connection																								
Jan 22, 2021 11:17:00	192.168.207.140	4696	221 Service closing control connection																								
Jan 22, 2021 11:05:59	local	0	Listening for FTP requests on IP address: 192.168.207.46, Port 21																								
Jan 22, 2021 11:05:59	local	0	Listening for FTP requests on IP address: 10.30.48.123, Port 21																								
Jan 22, 2021 11:05:59	local	0	Listening for FTP requests on IP address: 10.10.10.2, Port 21																								
<input type="checkbox"/> Passed		<input type="checkbox"/> Failed																									

4.7 TFTP backup

Test Item Name: TFTP backup of software and configuration file

Work Hour: 20 min

Test Topology:



Test Process:

1. Save the current configuration file, named test.cfg.
2. Open the TFTP server program on the PC and set the file transfer path.
3. Ensure that there is a configuration file in Flash, execute the put command to upload the configuration file to the PC, and the expected result is 1.
4. Use the "display boot-loader" command to view the currently used software.
5. According to the startup software queried in the previous step (there may be multiple bin files), use the put command multiple times to upload the software file, and the expected result is 1. (Note to use binary transmission method to download)

Expect Results:

1. File upload completed.
2. File upload completed.

Actual Result:

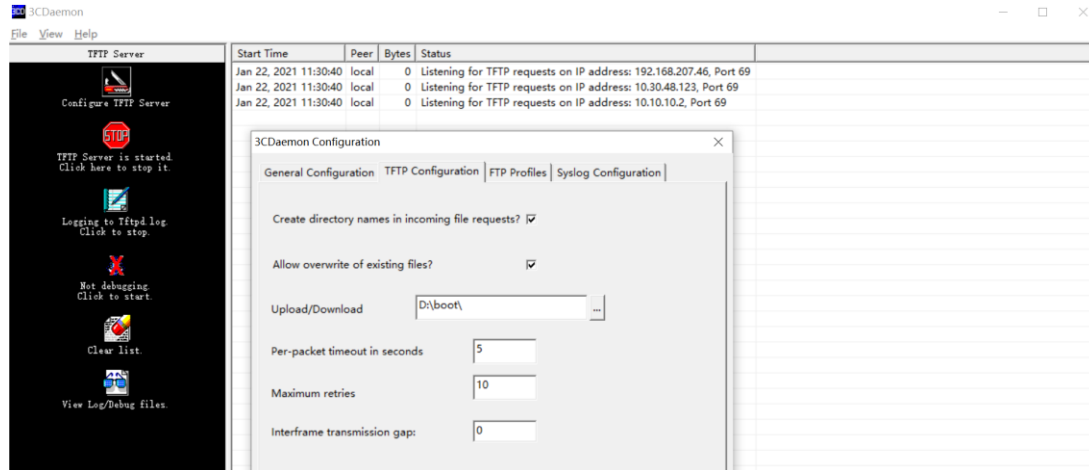
1. Save the test.cfg.



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```
[5560x-ei-1]save
The current configuration will be written to the device. Are you sure? [Y/N]:y
Please input the file name(*.cfg) [flash:/j1x+m.cfg]
(To leave the existing filename unchanged, press the enter key):test.cfg
Validating file. Please wait...
Saved the current configuration to mainboard device successfully.
[5560x-ei-1]
```

2. Open the TFTP server program on the PC and set the file transfer path.



3. Enexecute the put command to upload the configuration file to the PC.

```
<5560x-ei-1>tftp 192.168.207.46 put flash:/test.cfg
Press CTRL+C to abort.
% Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
           Dload  Upload   Total     Spent    Left     Speed
100 4696    0    0 100 4696      0 51750  --:--:--  --:--:--  --:--:-- 78266
<5560x-ei-1>
```

4. Use the "display boot-loader" command to view the currently used software.

```
<5560x-ei-1>dis boot-loader
Software images on slot 1:
Current software images:
 flash:/s5560x_ei-cmw710-boot-f6517.bin
 flash:/s5560x_ei-cmw710-system-f6517.bin
 flash:/s5560x_ei-cmw710-freeradius-f6517.bin
 flash:/s5560x-ei-cmw710-escan-f6517.bin
Main startup software images:
 flash:/s5560x_ei-cmw710-boot-f6517.bin
 flash:/s5560x_ei-cmw710-system-f6517.bin
 flash:/s5560x_ei-cmw710-freeradius-f6517.bin
 flash:/s5560x-ei-cmw710-escan-f6517.bin
Backup startup software images:
None
<5560x-ei-1>
```

5. Use the *put* command multiple times to upload the software file.

```
<5560x-ei-1>tftp 192.168.207.46 put s5560x_ei-cmw710-devkit-f6517.bin
Press CTRL+C to abort.
% Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
           Dload  Upload   Total     Spent    Left     Speed
0 8257k    0    0  0 12800      0  2458  0:57:19  0:00:05  0:57:14  2490
```

☐ Passed

☐ Failed

4.8 SNMPv2c

Test Item Name: SNMPv2c
Work Hour: 10 min
Test Topology: <pre> graph LR PC[PC 6.1.1.2] --- Port1[Port 1 6.1.1.1] --- DUT[DUT SWITCH] </pre>
Test Process: <ol style="list-style-type: none"> 1. Enable the SNMP agent. 2. Enable all SNMP versions. 3. Create an SNMP read-only community named public and read-write community named private. 4. On the MIB browser of the PC, use SNMPv2c to access the DUT and request the value of MIB object sysObjectID. Result 1 is expected.
Expect Results: <ol style="list-style-type: none"> 1. The MIB browser can obtain the value of sysObjectID through SNMPv2c successfully.
Actual Result: <ol style="list-style-type: none"> 1. Enable the SNMP agent <pre>[DUT] snmp-agent</pre> 2. Enable all SNMP versions <pre>[DUT] snmp-agent sys-info version all</pre> 3. Create an SNMP read-only community named public and read-write community named private <pre>[DUT] snmp-agent community read public</pre> <pre>[DUT] snmp-agent community write private</pre> 4. On the MIB browser of the PC, use SNMPv2c to access the DUT and request the value of MIB object sysObjectID. Result 1 is expected <div> MIB Browser 2020/11/13 9:24 快捷方式 3 KB </div>

Remote SNMP agent
192.168.207.194

Split
☐ Vertical

SNMP Protocol Preferences

SNMP protocol version
☐ SNMPv1
☒ **SNMPv2c**
☐ SNMPv3

General

Read community
public

Set community
private

Timeout [s]
5

Retransmits
4

Port number
161

Get-Bulk settings
☒ Use Get-Bulk
0 Non repeaters
10 Max repetitions

SNMPv3 security
User security name
Security level

Load user profile... Edit user...

☐ Add to agent profiles

OK

Cancel

Remote address: 192.168.207.194 port: 161 transport: IP/UDP
Local address: 192.168.207.17 port: 64113 transport: IP/UDP
Protocol version: **SNMPv2c**
1: sysUpTimeInstance (timeticks) 53 days 00h:28m:04s.34th (458088434)

MIB Tree

Contact
Walk
Prompt For OID...
Multiple Variable Bindings...
Expand
Collapse
Get
Get Next
Get Bulk
Set...
Table View
Info
Find
Copy OID

Query result

Find Object In Mib Tree...	
查找内容(N):	sysObjectID
<input type="checkbox"/> 全字匹配(W)	查找下一个(F)
<input type="checkbox"/> 区分大小写(C)	取消
方向 <input type="radio"/> 向上(U) <input checked="" type="radio"/> 向下(D)	
<input type="checkbox"/> Passed	<input type="checkbox"/> Failed

4.9 SNMP Traps

Test Item Name: SNMP Traps
Work Hour: 10 min
Test Topology:
Test Process: <ol style="list-style-type: none"> 1. Enable SNMP Trap. 2. Configure DUT to support SNMPv1 access.



3. Create an SNMP read-only community named public and read-write community named private.
4. Configure the SNMP 2 Trap receiver.
5. Simulate to generate Trap event, result 1 is expected.

Expect Results:

1. The trap information could be seen on MIB Browser.

Actual Result:

1. Enable SNMP Trap.

```
[DUT]snmp-agent
```

```
[DUT]snmp-agent trap enable
```

2. Configure DUT to support SNMPv1 access.

```
[DUT]snmp-agent sys-info version v1
```

3. Create an SNMP read-only community named public and read-write community named private.

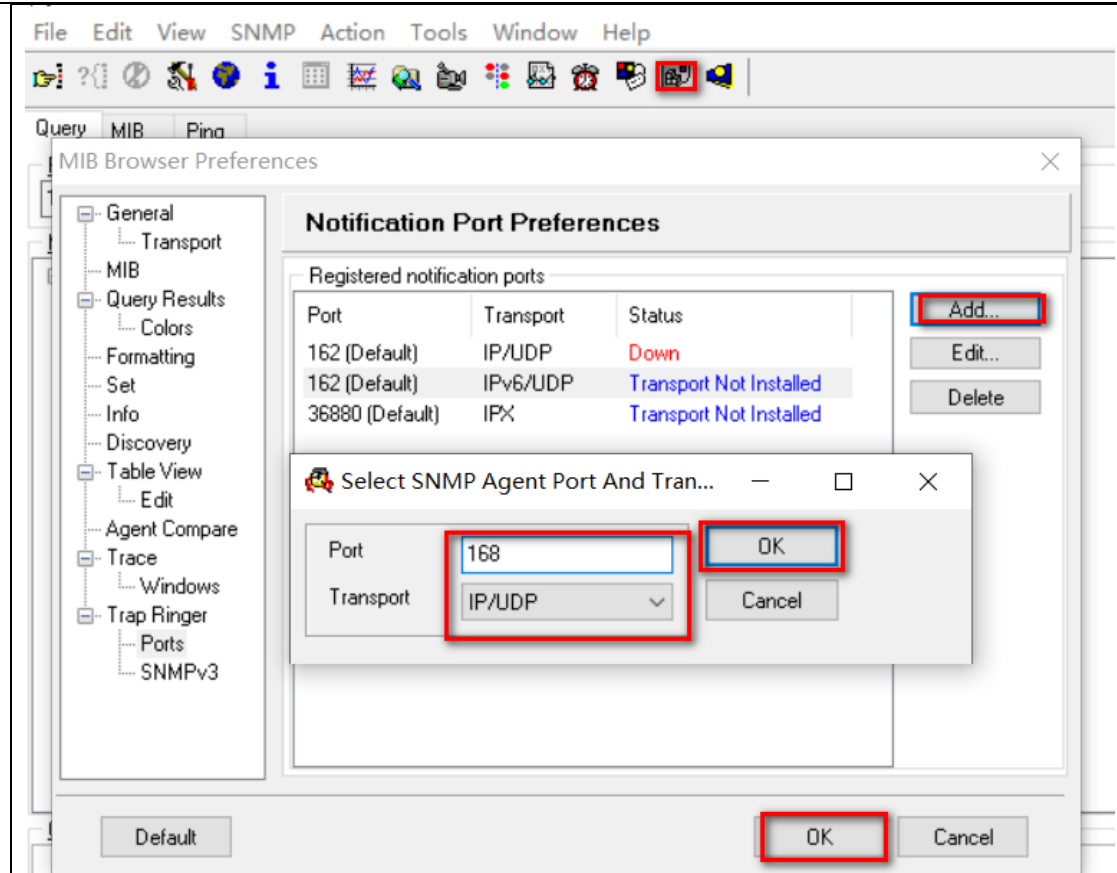
```
[DUT]snmp-agent community read public
```

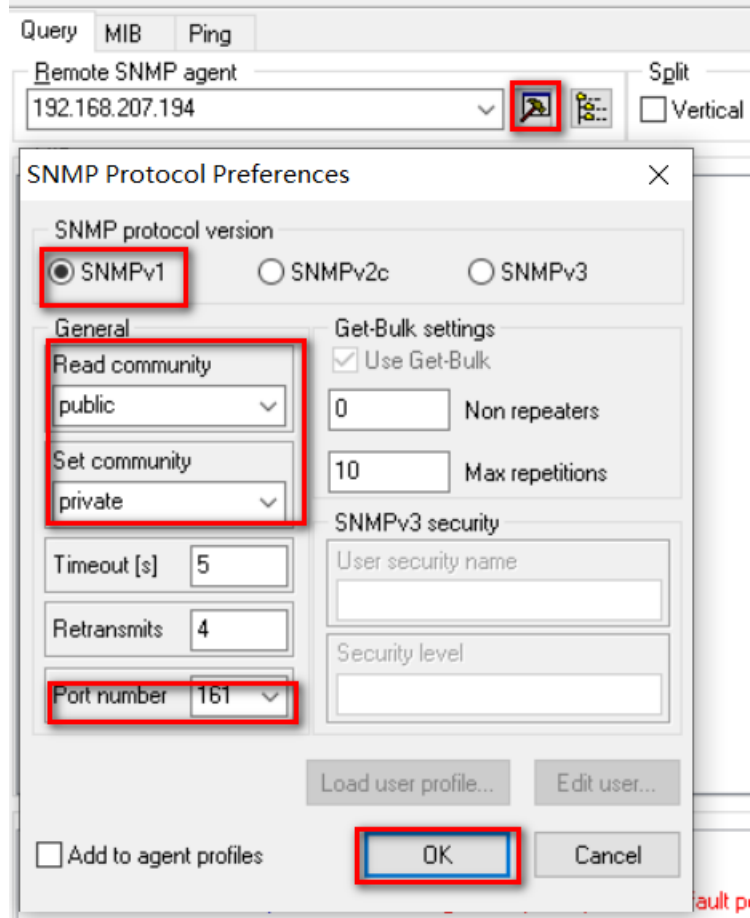
```
[DUT]snmp-agent community write private
```

4. Configure the SNMP Trap receiver.

```
[DUT]snmp-agent target-host trap address udp-domain 192.168.207.17 udp-port 168  
8 params securityname public1 v1
```

5. Simulate to generate Trap event, result 1 is expected.





Remote address: 192.168.207.194 port: 161 transport: IP/UDP
Local address: 192.168.207.17 port: 62261 transport: IP/UDP
Protocol version: **SNMPv1**
1: sysUpTimeInstance (timeticks) 53 days 01h:01m:14s.41th (458287441)

6. Shutdown a port , result 1 is expected.

[DUT-Ten-GigabitEthernet1/0/49]shutdown



No	Time	Notifi...	Version	Mess...	Desti...	Desti...	Trans...
1	17:45...	Speci...	SNM...	Trap...	10.30...	168	IP/UDP
2	17:45...	Speci...	SNM...	Trap...	10.30...	168	IP/UDP
3	17:45...	Gener...	SNM...	Trap...	10.30...	168	IP/UDP
4	17:45...	Gener...	SNM...	Trap...	10.30...	168	IP/UDP
5	17:45...	Speci...	SNM...	Trap...	10.30...	168	IP/UDP
6	17:45...	Speci...	SNM...	Test...	10.30...	168	IP/UDP
7	17:45...	Speci...	SNM...	Trap...	10.30...	168	IP/UDP
8	17:45...	Speci...	SNM...	Trap...	10.30...	168	IP/UDP
9	17:45...	Speci...	SNM...	Trap...	10.30...	168	IP/UDP
10	17:45...	Speci...	SNM...	Trap...	10.30...	168	IP/UDP
11	17:45...	Speci...	SNM...	Trap...	10.30...	168	IP/UDP
12	17:45...	Gener...	SNM...	Trap...	10.30...	168	IP/UDP
13	17:45...	Speci...	SNM...	Trap...	10.30...	168	IP/UDP
14	17:45...	Gener...	SNM...	Trap...	10.30...	168	IP/UDP
15	17:45...	Speci...	SNM...	Trap...	10.30...	168	IP/UDP
16	17:45...	Speci...	SNM...	Trap...	10.30...	168	IP/UDP
17	17:45...	Speci...	SNM...	Trap...	10.30...	168	IP/UDP

Specific: 1

Message reception date: 2021/1/22

Message reception time: 17:45:53.732

Time stamp: 53 days 07h:45m:08s.25h

Message type: Trap (v1)

Protocol version: SNMPv1

Transport: IP/UDP

Agent

Address: 192.168.207.194

Port: 22344

Manager

Address: 10.30.48.94

Port: 168

Community: public1

SNMPv1 agent address: 192.168.207.194

Enterprise: syslogMsgMib

Specific Trap MIB Lookup Results

Name: x25Restart, Module: RFC1382-MIB, Enterprise: x25

Name: ifDLICStatusChange, Module: RFC1315-MIB, Enterprise: frame-relay

Name: bgpEstablished, Module: RFC1269-MIB, Enterprise: bgp

Name: newRoot, Module: BRIDGE-MIB, Enterprise: dot1dBridge

Bindings (11)

Binding #1: syslogMsgFacility.966 *** (int32) user(1)

Binding #2: syslogMsgSeverity.966 *** (int32) err(3)

Binding #3: syslogMsgVersion.966 *** (gauge32) 1

Binding #4: syslogMsgTimeStamp.966 *** (octets) 2013-2-23 7:44:57.0-0-0 [07.DD.02.17.07.2C.39.00.00.00.2D.00.00 (hex)]

Binding #5: syslogMsgHostName.966 *** (octets) DUT [44.55.54 (hex)]

Binding #6: syslogMsgAppName.966 *** (octets) IFNET [49.46.4E.45.54 (hex)]

Binding #7: syslogMsgProcID.966 *** (octets) - [2D (hex)]

Binding #8: syslogMsgMsgID.966 *** (octets) PHY_UPDOWN [50.48.59.5F.55.50.44.4F.57.4E (hex)]

Binding #9: syslogMsgSDParams.966 *** (gauge32) 1

Binding #10: syslogMsgMsg.966 *** (octets) Physical state on the interface Ten-GigabitEthernet1/0/49 changed to down.

Binding #11: syslogMsgSDParamValue.966 T.12.83.121.115.76.111.99.64.50.53.48.54.4.83.108.111.116 *** (octets) 1 [31 (hex)]

☐ Passed
 ☐ Failed

5 QACL

5.1 L2 ACL

Test Item Name: Layer 2 ACL

Work Hour: 20 min

Test Topology:

Test Process:

1. Configure MAC ACL.



2. Send packets with source mac-address 0001-0001-0001 to Port 1 of DUT 1.
Result 1 is expected.
3. Apply inbound packet-filter to Port 1. Result 2 is expected.
4. Clear the configuration on the Port 1.
5. Apply outbreak packet-filter to Port 2. Result 2 is expected.

Expect Results:

1. Port 2 can receive the traffic
2. Port 2 can't receive the traffic

Actual Result:

Configuration on DUT:

1. Configure MAC ACL. Deny the packets with the source MAC address 0001-0001-0001

```
[DUT]acl number 4000
[DUT-acl-mac-4000]rule 0 deny source-mac 0001-0001-0001 ffff-ffff-ffff
```

2. Send packets with source mac-address 0001-0001-0001 to Port 1 of DUT. Result 1 is expected.

Add raw stream

The screenshot shows the Spirent TestCenter interface. In the left sidebar, under 'Test Configuration', the 'Traffic Generator' is selected. In the main panel, the 'Add' menu is open, and 'Add Raw Stream Block(s)...' is highlighted. Below this, the 'Port Based' option is selected. The 'Burst Size' is set to 1, 'Duration Mode' is Continuous, 'Inter Frame Gap' is 12, and 'Inter Frame Gap Unit' is bytes. The 'Status' table is empty. The 'Interesting Traffic: Results' section shows two tables: 'Streams > Stream Threshold Results' and 'Streams > Interesting Stream Results'. Both tables show results for Port //1/8 [74:85:C4:F6:21:08/Gig] and Port //1/9 [74:85:C4:F6:21:08/Gig].

Status	Active	Name	Tags	Index	ControlledBy	Traffic Pattern	Type	Tx Port	Rx Port

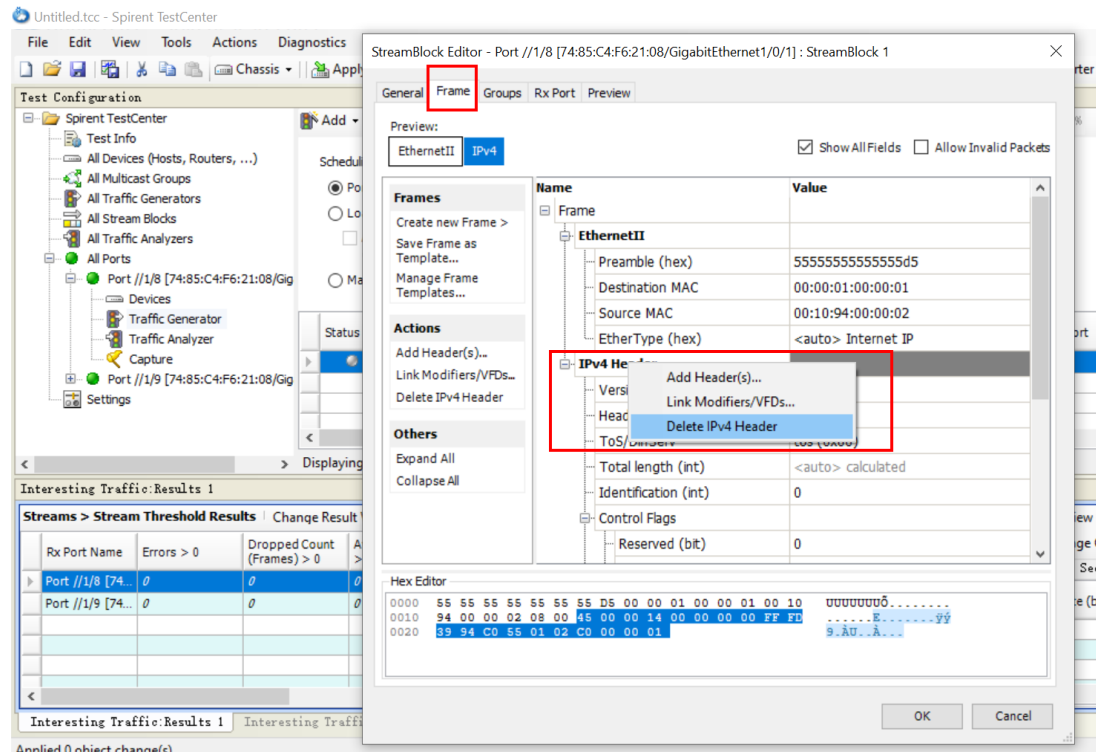
Rx Port Name	Errors > 0	Dropped Count (Frames) > 0	Avg Latency (us) > 250	Avg Jitter (us) > 5	Avg Interarrival Time (us) > 250	FCS Er
Port //1/8 [74:85:C4:F6:21:08/Gig]	0	0	0	0	0	0
Port //1/9 [74:85:C4:F6:21:08/Gig]	0	0	0	0	0	0

No Filter (No Resu	1 of 1	Change C	
Basic Counters	Errors	Basic Sequencing	Advanced Seq
Rx Port Name	Stream Index	Rx Count (Frames)	Rx Rate (b

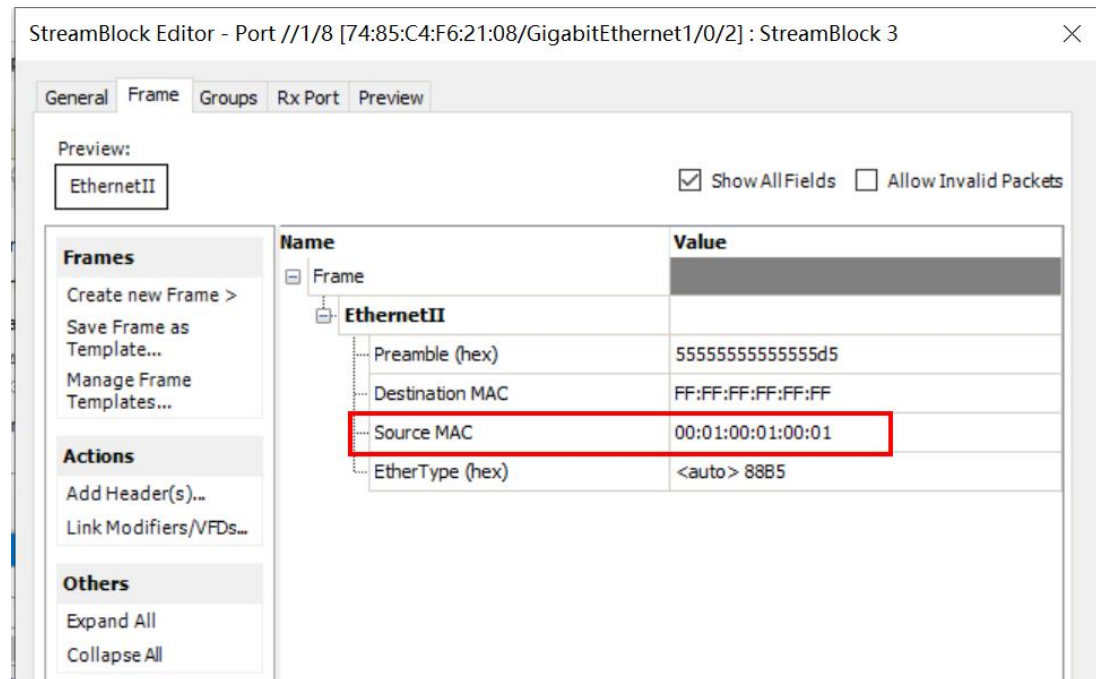
Delete the IPv4 header.



H3C S5560X-EI Product Test Procedures



Change the source MAC to 0001-0001-0001



Start the traffic



H3C S5560X-EI Product Test Procedures

Untitled.tcc - Spirent TestCenter

File Edit View Tools Actions Diagnostics Help

Test Configuration

Spirent TestCenter

- Test Info
- All Devices (Hosts, Routers, ...)
- All Multicast Groups
- All Traffic Generators
- All Stream Blocks
- All Traffic Analyzers
- All Ports
 - Port //1/8 [74:85:C4:F6:21:08/Gig
 - Devices
 - Traffic Generator
 - Traffic Analyzer
 - Capture
 - Port //1/9 [74:85:C4:F6:21:08/Gig
 - Settings

Scheduling Mode: Port Based (selected)

Bandwidth Utilization (%): 10

Burst Size: 1

Inter Frame Gap: 12

Inter Frame Gap Unit: bytes

Advanced Interleaving: ☐

Manual Based: ☐

Stream Block Grid:

Status	Active	Name	Tags
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	StreamBlo...	Click...

Displaying Stream Blocks 1 - 1 | Total Stream

Interesting Traffic: Results 1

Streams > Stream Threshold Results | Change Result View | Select

Rx Port Name	Errors > 0	Dropped Count (Frames) > 0	Avg Latency (us) > 250	Avg Jitter (us) > 5
Port //1/8 [74...	0	0	0	0
Port //1/9 [74...	0	0	0	0

Applied 0 object change(s)

Context Menu:

- Add Bound Stream Block(s)...
- Add Raw Stream Block...
- Delete
- Cut StreamBlock Ctrl+X
- Copy StreamBlock Ctrl+C
- Paste Ctrl+V
- Duplicate... Alt+U
- Add to Exposed Properties
- Edit Tags...
- User Defaults
- Edit
- Start
- Stop
- ARP/ND
- L2Learning
- Find...
- Fill Custom...
- Preview...

Port 2 can receive the traffic



H3C S5560X-EI Product Test Procedures

Untitled.tcc - Spirent TestCenter

File Edit View Tools Actions Diagnostics Help

00:00:05 Technologies... Perspective Sequencer Reporter

Test Configuration

Spirent TestCenter

- Test Info
- All Devices (Hosts, Routers, ...)
- All Traffic Generators
- All Stream Blocks
- All Traffic Analyzers
- All Ports
 - Port //1/8 [74:85:C4:F6:21:08]
 - Devices
 - Traffic Generator
 - Traffic Analyzer
 - Capture
 - Port //1/9 [74:85:C4:F6:21:08]
 - Devices
 - Traffic Generator
 - Traffic Analyzer
 - Capture

Scheduling Mode: Port Based Bandwidth Utilization (%): 10

Burst Size: 1 Duration Mode: Continuous

Inter Frame Gap: 12

Inter Frame Gap Unit: bytes

Advanced Interleaving

Group ID will be set in the stream block grid.

Advanced... Port Load...

Scheduling mode graphical example

Status	Active	Name	Tags	Index	Controlled By	Traffic Pattern	Type	Tx Port	Rx P
	<input checked="" type="checkbox"/>	StreamBlo	Click to ad...	0	generator	Pair	Port	Port //1/8...	Any

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

Interesting Traffic: Results 1

Port Traffic and Counters > Basic Traffic Results | Change Result View | 1 of 1

Port Name	ps	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)
Port //1/8...	10,810,787	86,486,296	84,459	0	
Port //1/9...	0	0	0	84,459	

Streams > Interesting Stream Results | Change Result View | 1 of 1

Rx Port Name	Stream Index	Rx Count (Frames)	Rx Ra
--------------	--------------	-------------------	-------

3. Apply inbound packet-filter to Port 1. Result 2 is expected.

```
[DUT]interface GigabitEthernet 1/0/1
[DUT-GigabitEthernet1/0/1]packet-filter mac 4000 inbound
```

Port 2 can't receive the traffic

Untitled.tcc - Spirent TestCenter

File Edit View Tools Actions Diagnostics Help

00:01:20 Technologies... Perspective Sequencer

Test Configuration

Spirent TestCenter

- Test Info
- All Devices (Hosts, Routers, ...)
- All Traffic Generators
- All Stream Blocks
- All Traffic Analyzers
- All Ports
 - Port //1/8 [74:85:C4:F6:21:08]
 - Devices
 - Traffic Generator
 - Traffic Analyzer
 - Capture
 - Port //1/9 [74:85:C4:F6:21:08]
 - Devices
 - Traffic Generator
 - Traffic Analyzer
 - Capture

Scheduling Mode: Port Based Bandwidth Utilization (%): 10

Burst Size: 1 Duration Mode: Continuous

Inter Frame Gap: 12

Inter Frame Gap Unit: bytes

Advanced Interleaving

Group ID will be set in the stream block grid.

Advanced... Port Load...

Scheduling mode graphical example

Status	Active	Name	Tags	Index	Controlled By	Traffic Pattern	Type	Tx Port
	<input checked="" type="checkbox"/>	StreamBlo	Click to ad...	0	generator	Pair	Port	Port //1/8...

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

Interesting Traffic: Results 1

Port Traffic and Counters > Basic Traffic Results | Change Result View | 1 of 1

Port Name	ps	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)
Port //1/8...	10,810,814	86,486,512	84,459	0	
Port //1/9...	0	0	0	0	

Streams > Interesting Stream Results | Change Result View | 1 of 1

Rx Port Name	Stream Index	Rx Count (Frames)
--------------	--------------	-------------------



4. Clear the configuration on the Port 1 .Apply outbreak packet-filter to Port 2.
Result 2 is expected.

```
[DUT-GigabitEthernet1/0/1]undo packet-filter mac 4000 inbound  
[DUT-GigabitEthernet1/0/1]interface GigabitEthernet 1/0/2  
[DUT-GigabitEthernet1/0/2]packet-filter mac 4000 outbound
```

Port 2 can't receive the traffic

Untitled.tcc - Spirent TestCenter

The screenshot shows the Spirent TestCenter interface. The left pane displays a tree view of the test configuration, including 'Test Info', 'All Devices (Hosts, Routers, ...)', 'All Traffic Generators', 'All Stream Blocks', 'All Traffic Analyzers', and 'All Ports'. The right pane shows the 'Test Configuration' tab, which includes a 'Scheduling Mode' section with options for 'Port Based', 'Load per Stream Block', and 'Manual Based'. The 'Port Based' mode is selected. Below this, there is a table for 'Stream Blocks' with columns: Status, Active, Name, Tags, Index, Controlled By, Traffic Pattern, and Type. The table shows one stream block named 'StreamBlo...' with a status of 'Active' and a type of 'Port'. The bottom pane shows 'Interesting Traffic: Results 1' with a table for 'Port Traffic and Counters > Basic Traffic Results'. The table has columns: Port Name, ps, Generator Rate (Bps), Generator Rate (bps), Generator Sig Rate (fps), and Rx Sig Rate (fps). The data shows that Port //1/8... has a Generator Rate of 10,810,823 Bps and a Generator Sig Rate of 84,459 fps, while Port //1/9... has a Generator Rate of 0 Bps and a Generator Sig Rate of 0 fps.

Port Name	ps	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)
Port //1/8...		10,810,823	86,486,584	84,459	0
Port //1/9...		0	0	0	0

☐ Passed

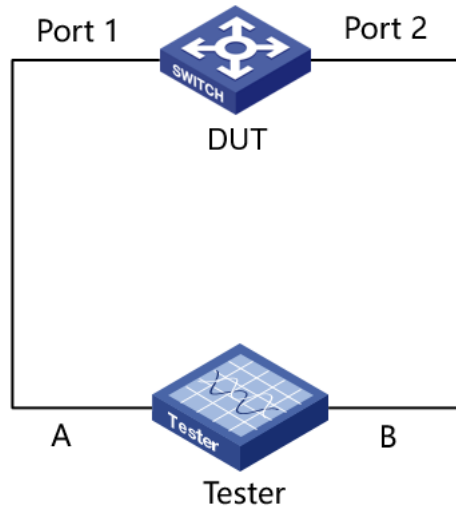
☐ Failed

5.2 L3 ACL

Test Item Name: Layer 3 ACL

Work Hour: 20 min

Test Topology:



Test Process:

1. Configure IPv4 ACL.
2. Send packets with source IP address 10.10.10.20 to Port 1 of DUT 1. Result 1 is expected.
3. Apply inbound packet-filter to Port 1. Result 2 is expected.
4. Clear the configuration on the Port 1.
5. Apply outbreak packet-filter to Port 2. Result 2 is expected.

Expect Results:

1. Port 2 can receive the traffic
2. Port 2 can't receive the traffic

Actual Result:

Configuration on DUT:

1. Configure IPv4 ACL.

```
[DUT]acl number 2000
[DUT-acl-ipv4-basic-2000]rule 0 deny source 10.10.10.20 0
```

2. Send packets with source IP address 10.10.10.20 to Port 1 of DUT 1. Result 1 is expected.

Add raw stream.



H3C S5560X-EI Product Test Procedures

Untitled.tcc - Spirent TestCenter

File Edit View Tools Actions Diagnostics Help

Test Configuration

Spirent TestCenter

- Test Info
- All Devices (Hosts, Routers, ...)
- All Multicast Groups
- All Traffic Generators
- All Stream Blocks
- All Traffic Analyzers
- All Ports
- Port //1/8 [74:85:C4:F6:21:08/Gig
- Port //1/9 [74:85:C4:F6:21:08/Gig
- Settings

Port Based

Load per Stream Block

Advanced Interleaving

Group ID will be set in the stream block grid.

Manual Based

Schedule...

Bandwidth Utilization (%): 10

Burst Size: 1

Inter Frame Gap: 12

Inter Frame Gap Unit: bytes

Status	Active	Name	Tags	Index	Controlled By	Traffic Pattern

Displaying Stream Blocks 0 - 0 | Total Stream Blocks: 0

Interesting Traffic: Results 1

Port Traffic and Counters > Basic Traffic Results

Change Result View

1 of 1

Port Name	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)
Port //1/8...	0	0	0	0

Streams > Interesting S

No Filter (No Resu

Rx Port Name	Stream
--------------	--------

Change the source IP address to 10.10.10.20



H3C S5560X-EI Product Test Procedures

StreamBlock Editor - Port //1/8 [74:85:C4:F6:21:08/GigabitEthernet1/0/2] : StreamBlock 4

General Frame Groups Rx Port Preview

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

Name	Value
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
Protocol (int)	<auto> Experimental
Checksum (int)	<auto> 59085
Source	10.10.10.20
Destination	192.0.0.1
Header Options	
Gateway	192.85.1.1

Hex Editor

```
0000  55 55 55 55 55 55 55 D5 00 00 01 00 00 01 00 10  UUUUUUUUÖ.....
0010  94 00 00 02 08 00 45 00 00 14 00 00 00 00 FF FD  .....E.....ÿÿ
0020  E6 CD 0A 0A 0A 14 C0 00 00 01  .....Ä....
```

Navigate streamblocks: 1 of 1 OK Cancel

Start the traffic



H3C S5560X-EI Product Test Procedures

Untitled.tcc - Spirent TestCenter

File Edit View Tools Actions Diagnostics Help

Chassis Apply 00:00:01 Technologies... Perspec

Test Configuration

Spirent TestCenter

- Test Info
- All Devices (Hosts, Routers, ...)
- All Multicast Groups
- All Traffic Generators
- All Stream Blocks
- All Traffic Analyzers
- All Ports
 - Port //1/8 [74:85:C4:F6:21:08/Gig
 - Devices
 - Traffic Generator
 - Traffic Analyzer
 - Capture
 - Port //1/9 [74:85:C4:F6:21:08/Gig
 - Settings

Scheduling Mode Bandwidth Utilization (%): 10

☒ Port Based

☐ Load per Stream Block

☐ Advanced Interleaving

Group ID will be set in the stream block grid.

☐ Manual Based

Burst Size: 1

Inter Frame Gap: 12

Inter Frame Gap Unit: bytes

StreamBlock

Displaying Stream Blocks 1 - 1 | Total Stream Bl

Interesting Traffic:Results 1

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

Basic Counters	Errors	Triggers	Protocols	Undersize/Oversize/Jumbo	PFC Count
Port Name	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)		
Port //1/8...	0	0	0		
Port //1/9...	0	0	0		

Applied 0 object change(s)

Start

Port 2 can receive the traffic



H3C S5560X-EI Product Test Procedures

Untitled.tcc - Spirent TestCenter

File Edit View Tools Actions Diagnostics Help

Test Configuration

Scheduling Mode: Port Based Bandwidth Utilization (%): 10

Burst Size: 1 Duration Mode: Continuous

Inter Frame Gap: 12

Inter Frame Gap Unit: bytes

Advanced Interleaving

Group ID will be set in the stream block grid.

Manual Based

Schedule...

Scheduling mode graphical example

Status	Active	Name	Tags	Index	Controlled By	Traffic Pattern	Type	Tx Port	Rx Port
		StreamBlo...	Click to ad...	0	generator	Pair	Port	Port //1/8...	Any

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

Interesting Traffic: Results 1

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

Port Name	ps	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)
Port //1/8...		10,810,813	86,486,504	84,459	0
Port //1/9...		0	0	0	84,459

Streams > Interesting Stream Results | Change Result View

Rx Port Name	Stream Index	Rx Count (Frames)	Rx Rate (bps)
--------------	--------------	-------------------	---------------

3. Apply inbound packet-filter to Port 1. Result 2 is expected.

```
[DUT]int GigabitEthernet 1/0/1
[DUT-GigabitEthernet1/0/1]packet-filter 2000 inbound
```

Port 2 can't receive the traffic

Untitled.tcc - Spirent TestCenter

File Edit View Tools Actions Diagnostics Help

Test Configuration

Scheduling Mode: Port Based Bandwidth Utilization (%): 10

Burst Size: 1 Duration Mode: Continuous

Inter Frame Gap: 12

Inter Frame Gap Unit: bytes

Advanced Interleaving

Group ID will be set in the stream block grid.

Manual Based

Schedule...

Scheduling mode graphical example

Status	Active	Name	Tags	Index	Controlled By	Traffic Pattern	Type	Tx Port	Rx Port
		StreamBlo...	Click to ad...	0	generator	Pair	Port	Port //1/8...	Any

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

Interesting Traffic: Results 1

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

Port Name	ps	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)
Port //1/8...		10,810,826	86,486,608	84,460	0
Port //1/9...		0	0	0	0

Streams > Interesting Stream Results | Change Result View

Rx Port Name	Stream Index	Rx Count (Frames)	Rx Rate (bps)
--------------	--------------	-------------------	---------------

4. Clear the configuration on the Port 1. Apply outbreak packet-filter to Port 2.

Result 2 is expected.


```
[DUT]interface GigabitEthernet 1/0/1
[DUT-GigabitEthernet1/0/1]undo packet-filter 2000 inbound
[DUT-GigabitEthernet1/0/1]interface GigabitEthernet 1/0/2
[DUT-GigabitEthernet1/0/2]packet-filter 2000 outbound
```

Port 2 can't receive the traffic

Untitled.tcc - Spirent TestCenter

The screenshot shows the Spirent TestCenter interface. The left pane displays the test configuration tree with 'Port //1/8' and 'Port //1/9' selected. The main pane shows the 'Test Configuration' tab with 'Scheduling Mode' set to 'Port Based' and 'Bandwidth Utilization (%)' set to 10. The 'Stream Blocks' table shows one block with 'Status' 'Active' and 'Name' 'StreamBlo...'. The 'Interesting Traffic: Results 1' section shows 'Port Traffic and Counters > Basic Traffic Results' with a table of counters for 'Port //1/8' and 'Port //1/9'. The 'Generator Sig Rate (fps)' for 'Port //1/8' is 84,460, and for 'Port //1/9' it is 0. The 'Rx Sig Rate (fps)' for both ports is 0. The 'Streams > Interesting Stream Results' section shows a table with 'Rx Port Name', 'Stream Index', and 'Rx Count (Frames)'.

Port Name	ps	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)
Port //1/8...		10,810,826	86,486,608	84,460	0
Port //1/9...		0	0	0	0

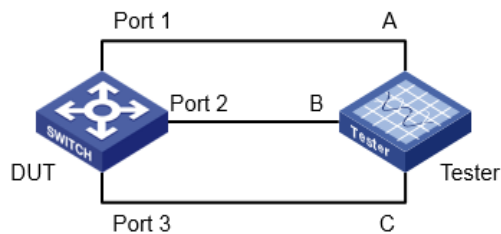
☐ Passed
 ☐ Failed

5.3 Traffic Classification

Test Item Name: Traffic Classification

Work Hour: 50 min

Test Topology:



Test Process:



1. Configure traffic classifier to match the traffic with VLAN ID 100, configure traffic behavior to remark it to 200, and configure the corresponding QoS policy.
2. Configure Port 1/2 as trunk mode and permit VLAN 100 and 200 to pass.
3. Send packets with VLAN 100. Result 1 is expected.
4. Apply QoS policy to Port 1. Result 2 is expected.
5. Configure traffic classifier to match the traffic with COS 3, configure traffic behavior to remark it to 6, and configure the corresponding QoS policy.
6. Send packets with COS 3. Result 3 is expected.
7. Apply QoS policy to Port 1. Result 4 is expected.
8. Configure traffic classifier to match the traffic with DSCP 3, configure traffic behavior to remark it to 6, and configure the corresponding QoS policy.
9. Send packets with DSCP 3. Result 3 is expected.
10. Apply QoS policy to Port 1. Result 4 is expected.

Expect Results:

1. Port 2 can receive the traffic with VLAN tag 100.
2. Port 2 can receive the traffic with VLAN tag 200.
3. Port 2 can receive the traffic with COS 3.
4. Port 2 can receive the traffic with COS 6.
5. Port 2 can receive the traffic with DSCP 3.
6. Port 2 can receive the traffic with DSCP 6.

Actual Result:

1. Configure traffic classifier to match the traffic with VLAN ID 100, configure traffic behavior to remark it to 200, and configure the corresponding QoS policy.

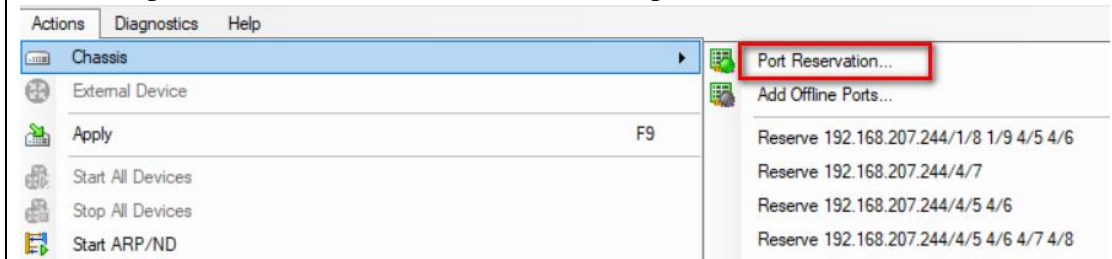
```
[DUT]traffic classifier 1
[DUT-classifier-1]display this
#
traffic classifier 1 operator and
if-match service-vlan-id 100
#
[DUT]traffic behavior 1
[DUT-behavior-1]display this
#
traffic behavior 1
remark service-vlan-id 200
#
```

2. Configure Port 1/2 as trunk mode and permit VLAN 100 and 200 to pass.



```
[DUT-Ten-GigabitEthernet1/0/49]display this
#
interface Ten-GigabitEthernet1/0/49
 port link-mode bridge
 port link-type trunk
 port trunk permit vlan 1 100 200
#
[DUT-Ten-GigabitEthernet1/0/50]display this
#
interface Ten-GigabitEthernet1/0/50
 port link-mode bridge
 port link-type trunk
 port trunk permit vlan 1 100 200
#
```

3. Send packets with VLAN 100. Result 1 is expected.





H3C S5560X-EI Product Test Procedures

Connect/Create ☒ Show Port Groups Show Ports: All Ports

Connection Name	Model	Licensed Speeds	Status
Port 6 (Group 6)	Link Down, Spee...		Available
Port 7 (Group 7)	Link Down, Spee...		Available
Port 8 (Group 8)	Link Down, Spee...		Available
Slot 4	HYPERMETRICS ...	10G	
Port 1 (Group 1)	Link Up, Speed 10G		Available - 84:D9:31:CA:51
Port 2 (Group 2)	Link Up, Speed 10G		Available - 84:D9:31:CA:51
Port 3 (Group 3)	Link Down, Spee...		Available
Port 4 (Group 4)	Link Down, Spee...		Available
Port 5 (Group 5)	Link Up, Speed 10G		Reserved by y23198@y23
Port 6 (Group 6)	Link Up, Speed 10G		Reserved by y23198@y23
Port 7 (Group 7)	Link Up, Speed 10G		Available - AC:74:09:2B:31
Port 8 (Group 8)	Link Down, Spee...		Available
Slot 5	HYPERMETRICS ...	10G	
Port 1 (Group 1)	Link Down, Spee...		Available

Firmware Version: 4.95.6666

Summary

Available:	45	Unavailable:	3	Reserved by User:	4	Reserved by Other:	7
Ports:	59	Chassis:	1	Test Modules:	8		

Add Offline Ports... Add Default Traffic: No **OK** Cancel

Spirent TestCenter

- Test Info
- All Devices (Hosts, Routers, ...)
- All Multicast Groups
- All Traffic Generators
- All Stream Blocks
- All Traffic Analyzers
- All Ports
 - Port //4/5 [AC:74:09:2B:3A:BA/Ten-GigabitEthernet1/0/49]
 - Devices
 - Traffic Generator
 - Traffic Analyzer
 - Capture
 - Port //4/6 [AC:74:09:2B:3A:BA/Ten-GigabitEthernet1/0/50]
 - Devices
 - Traffic Generator
 - Traffic Analyzer
 - Capture

Generate Stream Block

Add Bound Stream Block(s)...

Add Raw Stream Block...

Port Based

Load per Stream Block

Advanced Interleaving

Manual Based

Schedule...

Status	Active	Name



H3C S5560X-EI Product Test Procedures

The screenshot displays the Spirent TestCenter interface. The top-left pane shows a tree view of the test setup, including 'Test Info', 'All Devices (Hosts, Routers, ...)', 'All Multicast Groups', 'All Traffic Generators', 'All Stream Blocks', 'All Traffic Analyzers', and 'All Ports'. Two ports are listed: 'Port //4/5 [AC:74:09:2B:3A:BA/Ten-GigabitEthernet1/0/49]' and 'Port //4/6 [AC:74:09:2B:3A:BA/Ten-GigabitEthernet1/0/50]'. The top-right pane shows the 'Generate Stream Block' dialog with options for 'Add Bound Stream Block(s)...' and 'Add Raw Stream Block...' (highlighted with a red box). The bottom pane shows the 'General' tab of the 'Frame' configuration. The 'Preview' section shows 'EthernetII'. The 'Frames' section on the left lists actions: 'Create new Frame >', 'Save Frame as Template...', and 'Manage Frame Templates...'. The 'Actions' section lists: 'Add Header(s)...', 'Link Modifiers/VFDs...', 'Insert VN Tags', 'Insert Vlan', and 'Delete EthernetII'. The 'Others' section lists: 'Expand All' and 'Collapse All'. The main frame configuration area shows a table with columns 'Name' and 'Value'. The 'Name' column contains 'Frame', 'EthernetII', 'Destination', 'Source', and 'EthernetII'. The 'Value' column contains '...', '...', '0:01', '0:02', and '...'. A context menu is open over the 'EthernetII' entry, with options: 'Add Header(s)...', 'Link Modifiers/VFDs...', 'Insert VN Tags', 'Insert Vlan' (highlighted with a red box), and 'Delete EthernetII'.

Spirent TestCenter

Test Info

- All Devices (Hosts, Routers, ...)
- All Multicast Groups
- All Traffic Generators
- All Stream Blocks
- All Traffic Analyzers
- All Ports
 - Port //4/5 [AC:74:09:2B:3A:BA/Ten-GigabitEthernet1/0/49]
 - Devices
 - Traffic Generator
 - Traffic Analyzer
 - Capture
 - Port //4/6 [AC:74:09:2B:3A:BA/Ten-GigabitEthernet1/0/50]
 - Devices
 - Traffic Generator
 - Traffic Analyzer
 - Capture

Generate Stream Block

Add Bound Stream Block(s)...

Add Raw Stream Block...

Port Based

Load per Stream Block

Advanced Interleaving

Manual Based

Group ID will be set in the stream block grid.

Schedule...

Status Active Name

General Frame Groups Rx Port Preview

Preview:

EthernetII

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 VN Tags
- Insert Vlan
- Delete EthernetII

Others

- Expand All
- Collapse All

Name Value

Frame	...
EthernetII	...
Destination	0:01
Source	0:02
EthernetII	...

Add Header(s)...

Link Modifiers/VFDs...

Insert VN Tags

Insert Vlan

Delete EthernetII



H3C S5560X-EI Product Test Procedures

General **Frame** Groups Rx Port Preview

Preview:
EthernetII ☐ Show All Fields ☐ Allow Invalid Packets

Name	Value
Frame	
EthernetII	
Destination MAC	00:00:01:00:00:01
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> 88B5

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

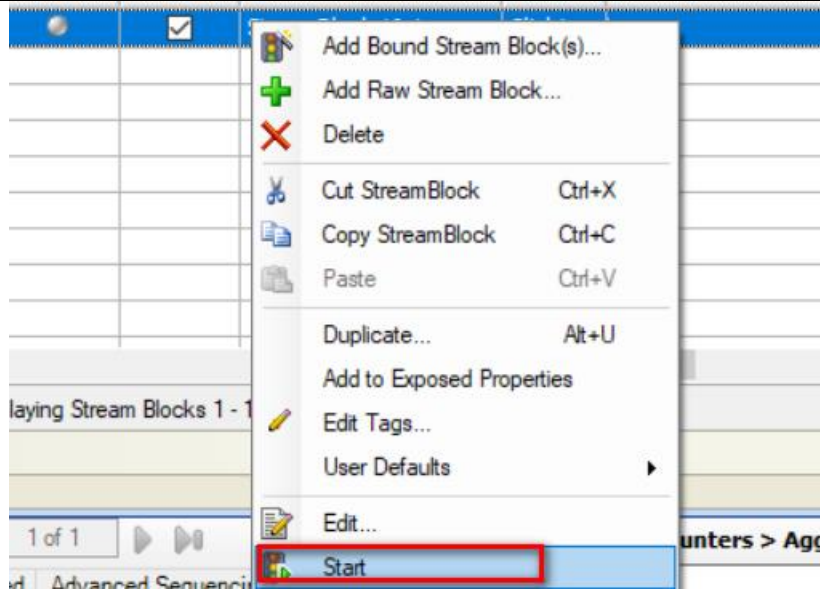
Actions
Add Header(s)...
Link Modifiers/VFDs...

Others
Expand All
Collapse All

Hex Editor

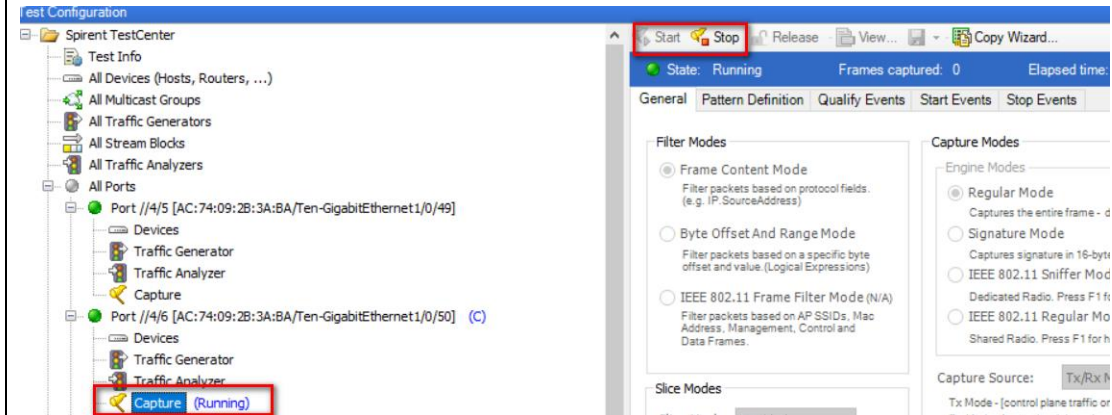
0000	FB 55 55 55 55 55 55 D5 00 00 01 00 00 01 00 10
0010	94 00 00 02 81 00 00 64 88 B5d.p

OK Cancel



Port Name	e (fps)	Generator Rate (fps)	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)
Port //4/5...		844,594	108,108,088	864,864,704	844,594	0
Port //4/6...		0	0	0	0	844,595

Note: when capturing, click start and after several seconds click stop, then choose view.





H3C S5560X-EI Product Test Procedures

The screenshot shows the Spirent TestCenter interface. On the left, a tree view displays the test configuration: Test Info, All Devices (Hosts, Routers, ...), All Multicast Groups, All Traffic Generators, All Stream Blocks, All Traffic Analyzers, All Ports, and Port //4/5 [AC:74:09:2B:3A:BA/Ten-GigabitEthernet1/0/49]. The right pane shows the 'View' tab with 'Filter Modes' and 'Slice Modes' sections. The 'Filter Modes' section has three radio buttons: 'Frame Content Mode' (selected), 'Byte Offset And Range Mode', and 'IEEE 802.11 Frame Filter Mode (N/A)'. The 'Slice Modes' section has a 'Slice Mode' dropdown set to 'Disabled'. Below the configuration, a table of captured packets is shown, with the first row highlighted. The packet details pane shows the following information:

```
> Frame 27766: 128 bytes on wire (1024 bits), 128 bytes captured (1024 bits) on interface \\.\pipe\view_capture_192-168-207-244_4_6_01212021_190410, 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)
> 802.1Q Virtual LAN, Prio: 0, DEI: 0, ID: 100
...0000 0110 0100 = ID: 100
Type: Local Experimental Ethertype 1 (0x88b5)
> Data (110 bytes)
```

4. Apply QoS policy to Port 1. Result 2 is expected.

The screenshot shows the Spirent TestCenter interface. On the left, a tree view displays the test configuration: Test Info, All Devices (Hosts, Routers, ...), All Multicast Groups, All Traffic Generators, All Stream Blocks, All Traffic Analyzers, All Ports, and Port //4/5 [AC:74:09:2B:3A:BA/Ten-GigabitEthernet1/0/49]. The right pane shows the 'View' tab with 'Filter Modes' and 'Capture Modes' sections. The 'Filter Modes' section has three radio buttons: 'Frame Content Mode' (selected), 'Byte Offset And Range Mode', and 'IEEE 802.11 Frame Filter Mode (N/A)'. The 'Capture Modes' section has three radio buttons: 'Regular Mode' (selected), 'Signature Mode', and 'IEEE 802.11 Sniffer Mode'. The 'Capture Source' is set to 'Tx/Rx'. Below the configuration, a table of captured packets is shown, with the first row highlighted. The packet details pane shows the following information:

```
[DUT-Ten-GigabitEthernet1/0/49] qos apply policy 1 inbound
```




H3C S5560X-EI Product Test Procedures

The screenshot shows the Spirent TestCenter interface. On the left, a tree view shows the test setup with two ports: Port //4/5 and Port //4/6, both configured with MAC address AC:74:09:2B:3A:BA and connected to Ten-GigabitEthernet1/0/49 and 1/0/50 respectively. The right pane shows the 'Filter Modes' section with 'Frame Content Mode' selected. Below this, a table displays traffic statistics for the two ports.

Port Name	e (fps)	Generator Rate (fps)	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)
Port //4/5...		844,594	108,108,088	864,864,704	844,594	0
Port //4/6...		0	0	0	0	844,595

Below the table, a packet capture detail for frame 8613 is shown, indicating it is 128 bytes on wire and captured. The packet is identified as a Local Experimental Ethertype 1 frame.

5. Configure traffic classifier to match the traffic with COS 3, configure traffic behavior to remark it to 6, and configure the corresponding QoS policy.

```
[DUT]vlan 100
[DUT-vlan100]interface Ten-GigabitEthernet 1/0/49
[DUT-Ten-GigabitEthernet1/0/49]display this
#
interface Ten-GigabitEthernet1/0/49
 port link-mode bridge
 port link-type trunk
 port trunk permit vlan 1 100
 qos trust dot1p
#
return
[DUT-Ten-GigabitEthernet1/0/49]interface Ten-GigabitEthernet 1/0/50
[DUT-Ten-GigabitEthernet1/0/50]display this
#
interface Ten-GigabitEthernet1/0/50
 port link-mode bridge
 port link-type trunk
 port trunk permit vlan 1 100
 qos trust dot1p
#
```



```
[DUT]traffic classifier 2
[DUT-classifier-2]display this
#
traffic classifier 2 operator and
  if-match service-dot1p 3
#
return
[DUT-classifier-2]traffic behavior 2
[DUT-behavior-2]display this
#
traffic behavior 2
  remark dot1p 6
#
return
[DUT-behavior-2]qos policy 2
[DUT-qospolicy-2]display this
#
qos policy 2
  classifier 2 behavior 2
#
return
```

6. Send packets with COS 3. Result 3 is expected.

The screenshot shows the Spirent TestCenter interface. On the left, a tree view displays the test setup, including 'All Ports' and two ports (//4/5 and //4/6) each with a 'Traffic Generator' and 'Capture' icon. On the right, a 'Generate Stream Block' dialog is open. The 'Add Raw Stream Block...' option is highlighted with a red box. Below the dialog, a table with columns 'Status', 'Active', and 'Name' is visible.

Status	Active	Name



H3C S5560X-EI Product Test Procedures

General Frame Groups Rx Port Preview

Preview: EthernetII ☐ Show All Fields ☐ Allow Invalid Packets

Name	Value
Frame	
EthernetII	
Destination	00:00:00:00:00:01
Source	00:00:00:00:00:02
EthernetII	

Frames

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

Actions

- Add Header(s)...
- Link Modifiers/VFDs...
- Insert VN Tags
- Insert Vlan
- Delete EthernetII

Others

- Expand All
- Collapse All

Context menu for EthernetII:

- Add Header(s)...
- Link Modifiers/VFDs...
- Insert VN Tags
- Insert Vlan
- Delete EthernetII

The screenshot displays the H3C S5560X-EI Product Test Procedures. It includes a context menu for stream blocks, a table of test results, and two screenshots of the Spirent TestCenter interface.

Context Menu:

- Add Bound Stream Block(s)...
- Add Raw Stream Block...
- Delete
- Cut StreamBlock Ctrl+X
- Copy StreamBlock Ctrl+C
- Paste Ctrl+V
- Duplicate... Alt+U
- Add to Exposed Properties
- Edit Tags...
- User Defaults
- Edit...
- Start

Table of Test Results:

Port Name	e (fps)	Generator Rate (fps)	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)
Port //4/5...	844,594	108,108,078	864,864,624	844,594	0	0
Port //4/6...	0	0	0	0	844,594	0

Spirent TestCenter Interface (Top):

- Test Configuration
- Test Info
- All Devices (Hosts, Routers, ...)
- All Multicast Groups
- All Traffic Generators
- All Stream Blocks
- All Traffic Analyzers
- All Ports
- Port //4/5 [AC:74:09:2B:3A:BA/Ten-GigabitEthernet1/0/49]
- Port //4/6 [AC:74:09:2B:3A:BA/Ten-GigabitEthernet1/0/50] (C)
- Capture (Running)

Spirent TestCenter Interface (Bottom):

- Test Configuration
- Test Info
- All Devices (Hosts, Routers, ...)
- All Multicast Groups
- All Traffic Generators
- All Stream Blocks
- All Traffic Analyzers
- All Ports
- Port //4/5 [AC:74:09:2B:3A:BA/Ten-GigabitEthernet1/0/49]
- Port //4/6 [AC:74:09:2B:3A:BA/Ten-GigabitEthernet1/0/50]
- Port //4/7



H3C S5560X-EI Product Test Procedures

No.	Time	Source	Destination	Protocol	Length	Info
29991	0.035508	192.85.1.2	192.0.0.1	IPv4		128 Unknown (253)
29992	0.035509	192.85.1.2	192.0.0.1	IPv4		128 Unknown (253)
29993	0.035511	192.85.1.2	192.0.0.1	IPv4		128 Unknown (253)
29994	0.035512	192.85.1.2	192.0.0.1	IPv4		128 Unknown (253)
29995	0.035513	192.85.1.2	192.0.0.1	IPv4		128 Unknown (253)
29996	0.035514	192.85.1.2	192.0.0.1	IPv4		128 Unknown (253)
29997	0.035515	192.85.1.2	192.0.0.1	IPv4		128 Unknown (253)
29998	0.035517	192.85.1.2	192.0.0.1	IPv4		128 Unknown (253)
29999	0.035518	192.85.1.2	192.0.0.1	IPv4		128 Unknown (253)
30000	0.035519	192.85.1.2	192.0.0.1	IPv4		128 Unknown (253)
30001	0.035520	192.85.1.2	192.0.0.1	IPv4		128 Unknown (253)

> Frame 1: 128 bytes on wire (1024 bits), 128 bytes captured (1024 bits) on interface \\.\pipe\view_capture_192-168-207-244_4_6_01222021_124631, 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)

> 802.1Q Virtual LAN, Prio: 3, DEI: 0, ID: 100

011. = Priority: Critical Applications (3)

...0 = DEI: Ineligible

.... 0000 0110 0100 = ID: 100

Type: IPv4 (0x0800)

Trailer: 686c5680

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

> Data (86 bytes)

7. Apply QoS policy to Port 1. Result 4 is expected.

[DUT-Ten-GigabitEthernet1/0/49] qos apply policy 2 inbound

The screenshot shows the Spirent TestCenter interface. On the left, a tree view displays the test configuration for Port //4/5 [AC:74:09:2B:3A:BA/Ten-GigabitEthernet1/0/49] and Port //4/6 [AC:74:09:2B:3A:BA/Ten-GigabitEthernet1/0/50]. The 'Capture' button for Port //4/5 is highlighted with a red box. On the right, the 'Capture' configuration window is open, showing the 'Filter Modes' and 'Capture Modes' tabs. The 'Filter Modes' tab is selected, and the 'Frame Content Mode' is chosen. The 'Capture Modes' tab is also visible, showing the 'Regular Mode' selected. The 'View' button for the capture configuration is highlighted with a red box.



H3C S5560X-EI Product Test Procedures

No.	Time	Source	Destination	Protocol	Length	Info
27369	0.032404	192.85.1.2	192.0.0.1	IPv4		128 Unknown (253)
27370	0.032405	192.85.1.2	192.0.0.1	IPv4		128 Unknown (253)
27371	0.032406	192.85.1.2	192.0.0.1	IPv4		128 Unknown (253)
27372	0.032407	192.85.1.2	192.0.0.1	IPv4		128 Unknown (253)
27373	0.032408	192.85.1.2	192.0.0.1	IPv4		128 Unknown (253)
27374	0.032410	192.85.1.2	192.0.0.1	IPv4		128 Unknown (253)
27375	0.032411	192.85.1.2	192.0.0.1	IPv4		128 Unknown (253)
27376	0.032412	192.85.1.2	192.0.0.1	IPv4		128 Unknown (253)
27377	0.032413	192.85.1.2	192.0.0.1	IPv4		128 Unknown (253)
27378	0.032414	192.85.1.2	192.0.0.1	IPv4		128 Unknown (253)
27379	0.032415	192.85.1.2	192.0.0.1	IPv4		128 Unknown (253)

<

> Frame 1: 128 bytes on wire (1024 bits), 128 bytes captured (1024 bits) on interface \\.\pipe\view_capture_192-168-207-244_4_6_01222021_124808, 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)

▼ 802.1Q Virtual LAN, PRI: 6, DEI: 0, ID: 100

110. = Priority: Internetwork Control (6)

...0 = DEI: Ineligible

.... 0000 0110 0100 = ID: 100

Type: IPv4 (0x0800)

Trailer: d3ad4647

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

> Data (86 bytes)

8. Clear the configuration and configure traffic classifier to match the traffic with DSCP 3, configure traffic behavior to remark it to 6, and configure the corresponding QoS policy.

```
[DUT]acl advanced 3000
[DUT-acl-ipv4-adv-3000]display this
#
acl advanced 3000
 rule 0 permit ip dscp 3
#
return
[DUT-acl-ipv4-adv-3000]traffic classifier 3
[DUT-classifier-3]display this
#
traffic classifier 3 operator and
 if-match acl 3000
#
return
[DUT-classifier-3]traffic behavior 3
[DUT-behavior-3]display this
#
traffic behavior 3
 remark dscp 6
#
return
[DUT-behavior-3]qos policy 3
[DUT-qospolicy-3]display this
#
qos policy 3
 classifier 3 behavior 3
#
```

9. Send packets with DSCP 3. Result 3 is expected



H3C S5560X-EI Product Test Procedures

Spirent TestCenter

Test Info

- All Devices (Hosts, Routers, ...)
- All Multicast Groups
- All Traffic Generators
- All Stream Blocks
- All Traffic Analyzers
- All Ports
- Port //4/5 [AC:74:09:2B:3A:BA/Ten-GigabitEthernet1/0/49]
 - Devices
 - Traffic Generator
 - Traffic Analyzer
 - Capture
- Port //4/6 [AC:74:09:2B:3A:BA/Ten-GigabitEthernet1/0/50]
 - Devices
 - Traffic Generator
 - Traffic Analyzer
 - Capture

General Frame Groups Rx Port Preview

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

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 diffServ (0x18)

Custom Editor

Quality of Service

☒ DiffServ ☐ ToS

Format Notation: Decimal

Value

QoS Byte 0C { DSCP (Dec) 3

DSCP Diffserv Codepoint

Codepoint Name [0:5]

default : Best Effort

Class Selector [0:2] OR

000000 : default

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

1 : Low default : Best Effort

OK Cancel

The screenshot displays the H3C S5560X-EI Product Test Procedures. It includes a context menu for stream blocks, a table of test results, and two screenshots of the Spirent TestCenter interface.

Context Menu:

- Add Bound Stream Block(s)...
- Add Raw Stream Block...
- Delete
- Cut StreamBlock Ctrl+X
- Copy StreamBlock Ctrl+C
- Paste Ctrl+V
- Duplicate... Alt+U
- Add to Exposed Properties
- Edit Tags...
- User Defaults
- Edit...
- Start

Table of Test Results:

Port Name	e (fps)	Generator Rate (fps)	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)
Port //4/5...	844,594	108,108,078	864,864,624	844,594	0	
Port //4/6...	0	0	0	0	844,594	

Spirent TestCenter Screenshot 1:

The screenshot shows the Spirent TestCenter interface with the 'Capture' button highlighted. The 'Filter Modes' section is visible, showing 'Frame Content Mode' selected. The 'Capture Modes' section shows 'Regular Mode' selected. The 'State' is 'Running'.

Spirent TestCenter Screenshot 2:

The screenshot shows the Spirent TestCenter interface with the 'View' button highlighted. The 'Filter Modes' section is visible, showing 'Frame Content Mode' selected. The 'Capture Modes' section shows 'Regular Mode' selected. The 'State' is 'Ready'.



H3C S5560X-EI Product Test Procedures

No.	Time	Source	Destination	Protocol	Length	Info
23176	0.027439	192.85.1.2	192.0.0.1	IPv4		128 Unknown (253)
23177	0.027440	192.85.1.2	192.0.0.1	IPv4		128 Unknown (253)
23178	0.027441	192.85.1.2	192.0.0.1	IPv4		128 Unknown (253)
23179	0.027443	192.85.1.2	192.0.0.1	IPv4		128 Unknown (253)
23180	0.027444	192.85.1.2	192.0.0.1	IPv4		128 Unknown (253)
23181	0.027445	192.85.1.2	192.0.0.1	IPv4		128 Unknown (253)
23182	0.027446	192.85.1.2	192.0.0.1	IPv4		128 Unknown (253)
23183	0.027447	192.85.1.2	192.0.0.1	IPv4		128 Unknown (253)
23184	0.027448	192.85.1.2	192.0.0.1	IPv4		128 Unknown (253)
23185	0.027450	192.85.1.2	192.0.0.1	IPv4		128 Unknown (253)
23186	0.027451	192.85.1.2	192.0.0.1	IPv4		128 Unknown (253)

> Frame 1: 128 bytes on wire (1024 bits), 128 bytes captured (1024 bits) on interface \\.\pipe\view_capture_192-168-207-244_4_6_01222021_101526, id 0
> Ethernet II, Src: Performa_00:00:00:02 (00:10:94:00:00:02), Dst: Xerox_00:00:01 (00:00:01:00:00:01)
v 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: Unknown, ECN: Not-ECT)
0000 11.. = Differentiated Services Codepoint: Unknown (3)
.... ..00 = Explicit Congestion Notification: Not ECN-Capable Transport (0)

10. Apply QoS policy to Port 1. Result 4 is expected

[DUT-Ten-GigabitEthernet1/0/49]qos apply policy 3 inbound

Port Name	e (fps)	Generator Rate (fps)	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)
Port //4/5...		844,594	108,108,078	864,864,624	844,594	0
Port //4/6...		0	0	0	0	844,594

Test Configuration

Spirent TestCenter

- Test Info
 - All Devices (Hosts, Routers, ...)
 - All Multicast Groups
 - All Traffic Generators
 - All Stream Blocks
 - All Traffic Analyzers
- All Ports
 - Port //4/5 [AC:74:09:2B:3A:BA/Ten-GigabitEthernet1/0/49]
 - Devices
 - Traffic Generator
 - Traffic Analyzer
 - Capture
 - Port //4/6 [AC:74:09:2B:3A:BA/Ten-GigabitEthernet1/0/50] (C)
 - Devices
 - Traffic Generator
 - Traffic Analyzer
 - Capture (Running)

Start Stop Release View... Copy Wizard...

State: Running Frames captured: 0 Elapsed time:

General Pattern Definition Qualify Events Start Events Stop Events

Filter Modes

- ☒ Frame Content Mode
Filter packets based on protocol fields.
(e.g. IP.SourceAddress)
- ☐ Byte Offset And Range Mode
Filter packets based on a specific byte
offset and value. (Logical Expressions)
- ☐ IEEE 802.11 Frame Filter Mode (N/A)
Filter packets based on AP SSIDs, Mac
Address, Management, Control and
Data Frames.

Slice Modes

Capture Modes

Engine Modes

- ☒ Regular Mode
Captures the entire frame - d
- ☐ Signature Mode
Captures signature in 16-byti
- ☐ IEEE 802.11 Sniffer Mod
- ☐ IEEE 802.11 Regular Mo

Capture Source: Tx/Rx

Tx Mode - (control plane traffic or

Test Configuration

Spirent TestCenter

- Test Info
 - All Devices (Hosts, Routers, ...)
 - All Multicast Groups
 - All Traffic Generators
 - All Stream Blocks
 - All Traffic Analyzers
- All Ports
 - Port //4/5 [AC:74:09:2B:3A:BA/Ten-GigabitEthernet1/0/49]
 - Devices
 - Traffic Generator
 - Traffic Analyzer
 - Capture
 - Port //4/6 [AC:74:09:2B:3A:BA/Ten-GigabitEthernet1/0/50]
 - Devices
 - Traffic Generator
 - Traffic Analyzer
 - Capture

Start Stop Release View... View Pa

State: Ready Frames captu

General Pattern Definition Qualify Events

Filter Modes

- ☒ Frame Content Mode
Filter packets based on protocol fields.
(e.g. IP.SourceAddress)
- ☐ Byte Offset And Range Mode
Filter packets based on a specific byte
offset and value. (Logical Expressions)
- ☐ IEEE 802.11 Frame Filter Mode (N/A)
Filter packets based on AP SSIDs, Mac
Address, Management, Control and
Data Frames.

Slice Modes

Slice Mode: Disabled



H3C S5560X-EI Product Test Procedures

No.	Time	Source	Destination	Protocol	Length	Info
31783	0.037630	192.85.1.2	192.0.0.1	IPv4		128 Unknown (253)
31784	0.037631	192.85.1.2	192.0.0.1	IPv4		128 Unknown (253)
31785	0.037632	192.85.1.2	192.0.0.1	IPv4		128 Unknown (253)
31786	0.037633	192.85.1.2	192.0.0.1	IPv4		128 Unknown (253)
31787	0.037635	192.85.1.2	192.0.0.1	IPv4		128 Unknown (253)
31788	0.037636	192.85.1.2	192.0.0.1	IPv4		128 Unknown (253)

> Frame 1: 128 bytes on wire (1024 bits), 128 bytes captured (1024 bits) on interface \\.\pipe\view_capture_192-168-207-244_4_6_01222021_101648, 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)

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

0100 = Version: 4

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

> Differentiated Services Field: 0x18 (DSCP: Unknown, ECN: Not-ECT)

☐ Passed

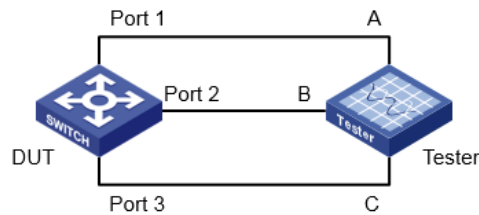
☐ Failed

5.4 QoS

Test Item Name: QoS

Work Hour: 40 min

Test Topology:



Test Process:

1. Configure IPv4 ACLs, traffic classes, traffic behaviors, and QoS policies.
2. Send packets with source IPv4 addresses 10.10.10.20 and 10.10.10.21 to Port 1 of DUT 1 at a rate of 500 Mbps. Result 1 is expected.
3. Apply QoS policy p1 to Port 1. Result 2 is expected.
4. Send packets with source IPv4 address other than 10.10.10.20 and 10.10.10.21 to Port 1 of DUT 1. Result 3 is expected.
5. Configure IPv6 ACLs, traffic classes, traffic behaviors, and QoS policies.
6. Send packets with source IPv6 addresses 2001:1::1 and 2001:1::2 to Port 1 of DUT 1 at a rate of 500 Mbps. Result 4 is expected.
7. Apply QoS policy p1 to Port 1. Result 5 is expected.
8. Send packets with source IPv4 address other than 2001:1::1 and 2001:1::2 to Port 1 of DUT 1. Result 3 is expected.

Expect Results:



1. Port 2 receives all packets with source IPv4 addresses 10.10.10.20 and 10.10.10.21.
2. Port 2 receives packets with source IPv4 addresses 10.10.20 and 10.10.10.21 at a total rate of 3072 kbps.
3. Port 2 receives packets at wire speed.
4. Port 2 receives all packets with source IPv6 addresses 2001:1::1 and 2001:1::2.
5. Port 2 receives packets with source IPv6 addresses 2001:1::1 and 2001:1::2 at a total rate of 3072 kbps.

Actual Result:

1. Configure acl
#

acl advanced 3001

rule 0 permit ip source 10.10.10.20 0

#

acl advanced 3002

rule 0 permit ip source 10.10.10.21 0

#

2. Configure traffic classifier and traffic behavior

#

traffic classifier 1 operator and

if-match acl 3001

#

traffic classifier 2 operator and

if-match acl 3002

#

traffic behavior 1

car cir 1024 cbs 64000 ebs 0 green pass red discard yellow pass

#

traffic behavior 2



car cir 2048 cbs 128000 ebs 0 green pass red discard yellow pass

#

3. Configure QOS policy to bound them

#

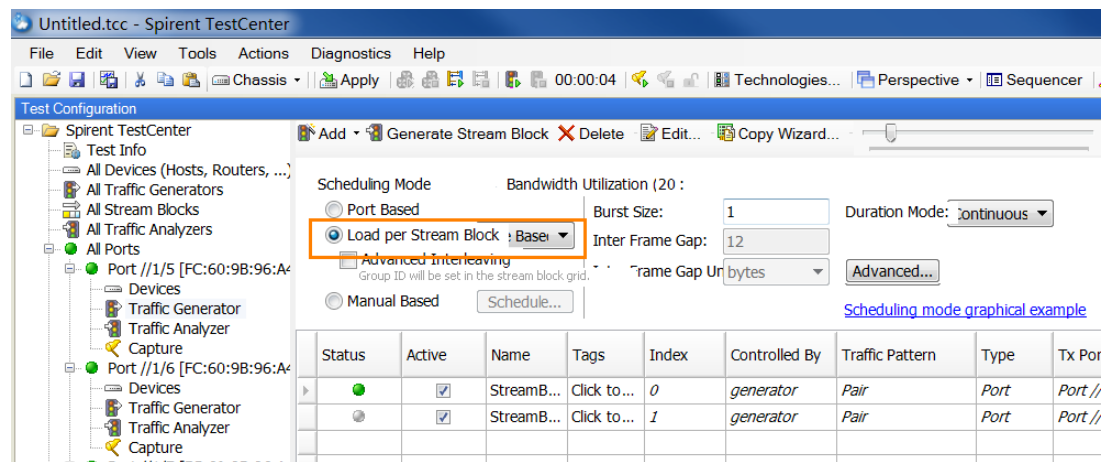
qos policy 1

classifier 1 behavior 1

classifier 2 behavior 2

#

4. Change the scheduling mode to **load per stream block**



5. Create traffic with source IP 10.10.10.20 and 10.10.10.21



H3C S5560X-EI Product Test Procedures

StreamBlock Editor - Port //1/5 [FC:60:9B:96:A4:CC/GigabitEthernet1/0/1] : StreamBlock 6

General Frame Groups Rx Port Preview

☒ Active Name: StreamBlock 6

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

☒ Fixed Size: 9216

☐ Increment Step: 1 (power of 2)

☐ Decrement Min: 130

☐ Random Max: 256

☐ Auto Avg: 193

☐ IMIX JMIx Downstr Edit...

Streamblock load option

Load mode: Fixed

☐ Percent (%) 50

☐ Frames/sec (fps) 6767

☐ Inter-Burst Gap (bytes) 9248

☐ Inter-Burst Gap (msec) 0.073984

☐ Inter-Burst Gap (nsec) 73984

☐ bps 500000000

☐ Kbps 500000

☒ Mbps 500

☐ L2 Rate (bps) 498917280

Refresh rates

StreamBlock Editor - Port //1/5 [FC:60:9B:96:A4:CC/GigabitEthernet1/0/1] : StreamBlock 6

General Frame Groups Rx Port Preview

Preview

EthernetII IPv4

☐ Show All ☐ Allow Invalid

Frames

Create new Frame

>

Save Frame as Template...

Manage Frame Templates...

Actions

Add Header(s)...

Link

Modifiers/VFDs...

Insert IPv4

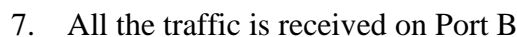
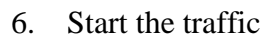
Modifier...

Others

Expand All

Collapse All

Name	Value
Frame	
EthernetII	
Destination MAC	00:00:01:00:00:01
Source MAC	00:10:94:00:00:02
EtherType (hex)	<auto> Internet IP
IPv4 Header	
ToS/DiffServ	tos (0x00)
Total length (int)	<auto> calculated
Time to live (int)	255
Protocol (int)	<auto> Experimental
Source	10.10.10.20
Destination	192.0.0.1
Header Options	
Gateway	192.85.1.1



8. Apply the qos policy on Port 1

```
interface GigabitEthernet1/0/1
```



```
port link-mode bridge
qos apply policy 1 inbound
```

#

9. The traffic speed is limited to around 3072kbps

Traffic Aggregate View Results 1

Port Traffic and Counters > Basic Traffic Results

Change Result View

1 of 1

Basic CountersErrorsTriggersProtocolsUndersize/Oversize/JumboPFC CountersUser DefinedAdvanced S

Port Name	Port ID	Total Rx Rate (bps)	Tx L1 Count (bits)	Rx L1 Count (bits)	Tx L1 Rate (bps)	Rx L1 Rate (bps)
Port //1...	4	984	508,175,561,376	618,056	999,993,289	1,144
Port //1...		3,072,200	0	161,497,112,520	0	3,078,921
Port //1...		3,072,768	0	161,496,521,416	0	3,079,542

10. Change the source IP for the traffic

[illegible]



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StreamBlock Editor - Port //1/5 [FC:60:9B:96:A4:CC/GigabitEthernet1/0/1] : StreamBlock 6

General Frame Groups Rx Port Preview

Preview

EthernetII IPv4 ☐ Show All Fields ☐ Allow Invalid Fields

Name	Value
Frame	
EthernetII	
Destination MAC	00:00:01:00:00:01
Source MAC	00:10:94:00:00:02
EtherType (hex)	<auto> Internet IP
IPv4 Header	
ToS/DiffServ	tos (0x00)
Total length (int)	<auto> calculated
Time to live (int)	255
Protocol (int)	<auto> Experimental
Source	10.10.10.30
Destination	192.0.0.1
Header Options	
Gateway	192.85.1.1

Frames

Create new Frame >

Save Frame as Template...

Manage Frame Templates...

Actions

Add Header(s)...

Link

Modifiers/VFDs...

Insert IPv4 Modifier...

Others

Expand All

Collapse All

11. The traffic is no longer limited

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 S
Port Name		Total Rx Rate (bps)	Tx L1 Count (bits)	Rx L1 Count (bits)	Tx L1 Rate (bps)	Rx L1 Rate (bps)	
Port //1... 8		0	583,256,852,576	719,440	499,982,212	0	
Port //1...		498,914,080	0	165,395,841,480	0	499,996,896	
Port //1...		498,912,568	0	165,300,082,632	0	499,995,328	

12. Then check IPv6 qos function

Configuration for IPv6:

#

acl ipv6 advanced 3003

rule 0 permit ipv6 source 2001:1::1/128

#

acl ipv6 advanced 3004

rule 0 permit ipv6 source 2001:1::2/128

#

traffic classifier 3 operator and

if-match acl ipv6 3003

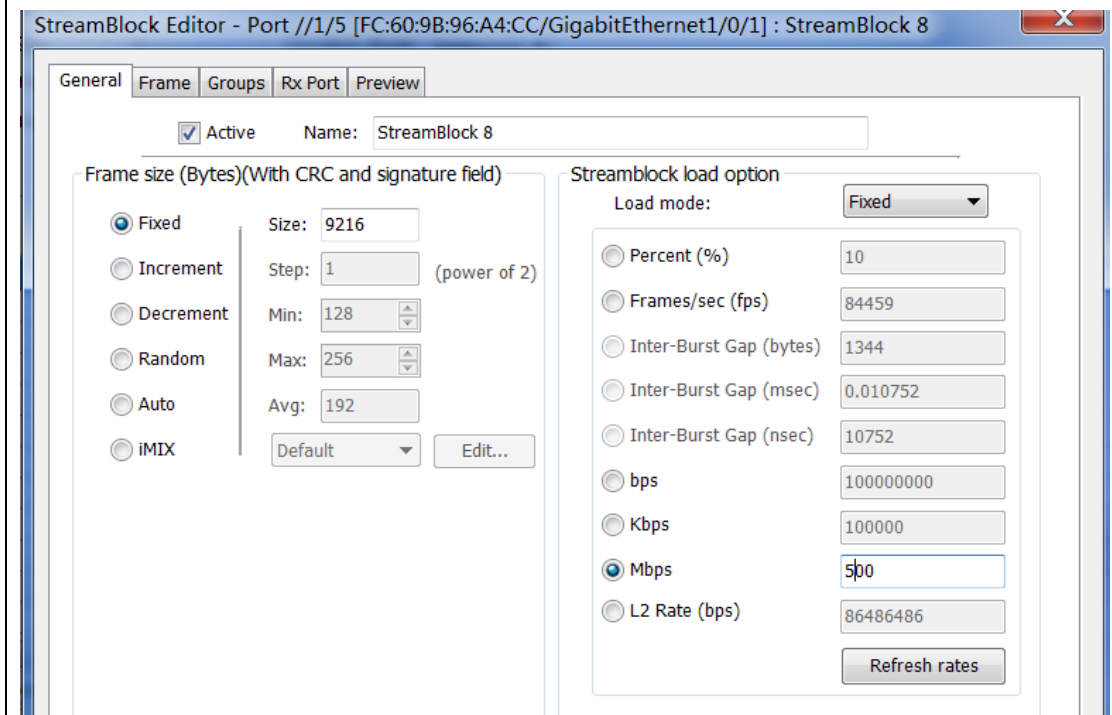
#

traffic classifier 4 operator and



```
if-match acl ipv6 3004
#
traffic behavior 3
  car cir 2048 cbs 128000 ebs 0 green pass red discard yellow pass
#
traffic behavior 4
  car cir 1024 cbs 64000 ebs 0 green pass red discard yellow pass
#
qos policy 2
  classifier 3 behavior 3
  classifier 4 behavior 4
#
```

13. Create traffic with IPv6 source 2001:1::1 and 2001:1::2





H3C S5560X-EI Product Test Procedures

StreamBlock Editor - Port //1/5 [FC:60:9B:96:A4:CC/GigabitEthernet1/0/1] : StreamBlock 8

General Frame Groups Rx Port Preview

Preview
EthernetII IPv4

☐ Show All Fields ☐ Allow Invalid Products

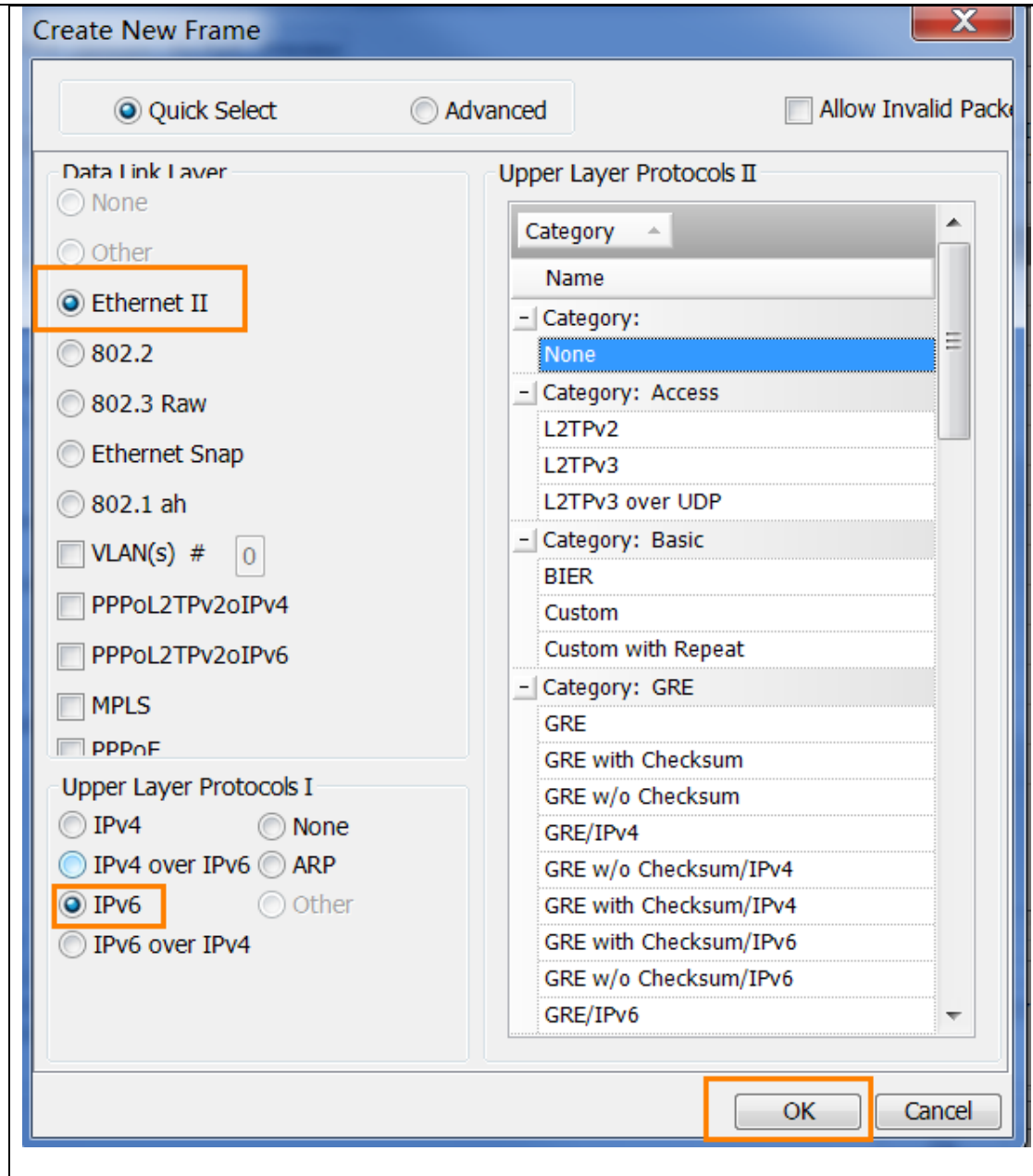
Name	Value
Frames	
Create new Frame	Create new Frame...
>	
EthernetII	
Destination MAC	00:00:01:00:00:01
Source MAC	00:10:94:00:00:02
EtherType (hex)	<auto> Internet IP
IPv4 Header	
ToS/DiffServ	tos (0x00)
Total length (int)	<auto> calculated
Time to live (int)	255
Protocol (int)	<auto> Experimental
Source	192.85.1.2
Destination	192.0.0.1
Header Options	
Gateway	192.85.1.1

Actions

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

Others

- Expand All
- Collapse All





H3C S5560X-EI Product Test Procedures

StreamBlock Editor - Port //1/5 [FC:60:9B:96:A4:CC/GigabitEthernet1/0/1] : StreamBlock 8

General Frame Groups Rx Port Preview

Preview

EthernetII IPv6 ☐ Show All ☐ Allow Invalid

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	
Destination MAC	00:00:01:00:00:01
Source MAC	00:10:94:00:00:02
EtherType (hex)	<auto> IPv6
IPv6 Header	
Traffic Class (hex)	00
Payload length (int)	<auto> calculated
Next header (int)	<auto> IPv6-NoNxt
Hop limit (int)	255
Source Address	2001:1::1
Destination Address	2000::1
Gateway	::0

StreamBlock Editor - Port //1/5 [FC:60:9B:96:A4:CC/GigabitEthernet1/0/1] : StreamBlock 9

General Frame Groups Rx Port Preview

Preview

EthernetII IPv6 ☐ Show All ☐ Allow Invalid

Frames

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

Actions

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

Others

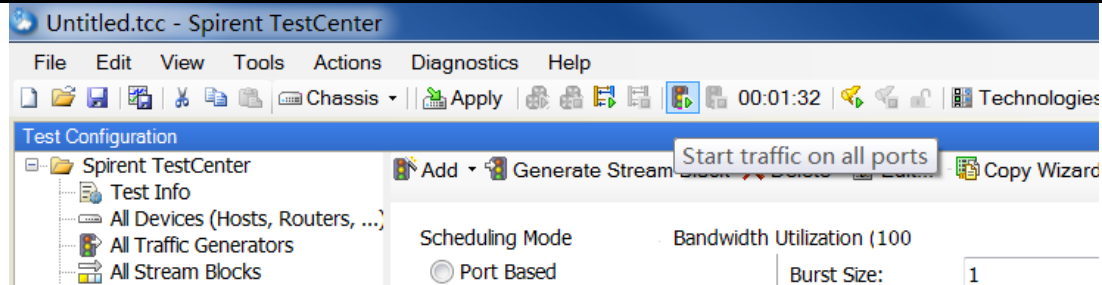
- Expand All
- Collapse All

Name	Value
Frame	
EthernetII	
Destination MAC	00:00:01:00:00:01
Source MAC	00:10:94:00:00:02
EtherType (hex)	<auto> IPv6
IPv6 Header	
Traffic Class (hex)	00
Payload length (int)	<auto> calculated
Next header (int)	<auto> IPv6-NoNxt
Hop limit (int)	255
Source Address	2001:1::2
Destination Address	2000::1
Gateway	::0

14. Start all the traffic



H3C S5560X-EI Product Test Procedures



15. All the traffic is received

Traffic Aggregate View: 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	Port ID	Total Rx Rate (bps)	Tx L1 Count (bits)	Rx L1 Count (bits)	Tx L1 Rate (bps)	Rx L1 Rate (bps)	Tx L1 Rate (Percent)	Rx L1 Rate (Percent)	
Port //1...	2	0	692,521,084,032	1,350,680	999,999,995	0	100	0	
Port //1...		931,345,536	0	274,486,979,376	0	1,000,000,518	0	100	
Port //1...		931,346,200	0	274,295,914,664	0	1,000,001,397	0	100	

16. Apply the qos policy on Port 1

#

interface GigabitEthernet1/0/1

port link-mode bridge

qos apply policy 2 inbound

#

17. Traffic is limited

Traffic Aggregate View: 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 S		
Port Name	Port ID	Total Rx Rate (bps)	Tx L1 Count (bits)	Rx L1 Count (bits)	Tx L1 Rate (bps)	Rx L1 Rate (bps)			
Port //1...	4	1,568	803,486,828,640	1,426,296	999,994,450	1,725			
Port //1...		3,072,440	0	302,493,437,456	0	3,079,162			
Port //1...		3,072,760	0	302,492,848,640	0	3,079,536			

18. Change the source IP



H3C S5560X-EI Product Test Procedures

StreamBlock Editor - Port //1/5 [FC:60:9B:96:A4:CC/GigabitEthernet1/0/1] : StreamBlock 8

General Frame Groups Rx Port Preview

Preview
EthernetII IPv6 ☐ 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 IPv6 Modifier...

Others

- Expand All
- Collapse All

Name	Value
Frame	
EthernetII	
Destination MAC	00:00:01:00:00:01
Source MAC	00:10:94:00:00:02
EtherType (hex)	<auto> IPv6
IPv6 Header	
Traffic Class (hex)	00
Payload length (int)	<auto> calculated
Next header (int)	<auto> IPv6-NoNxt
Hop limit (int)	255
Source Address	2002:1::1
Destination Address	2000::1
Gateway	::0

StreamBlock Editor - Port //1/5 [FC:60:9B:96:A4:CC/GigabitEthernet1/0/1] : StreamBlock 9

General Frame Groups Rx Port Preview

Preview
EthernetII IPv6 ☐ 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 IPv6 Modifier...

Others

- Expand All
- Collapse All

Name	Value
Frame	
EthernetII	
Destination MAC	00:00:01:00:00:01
Source MAC	00:10:94:00:00:02
EtherType (hex)	<auto> IPv6
IPv6 Header	
Traffic Class (hex)	00
Payload length (int)	<auto> calculated
Next header (int)	<auto> IPv6-NoNxt
Hop limit (int)	255
Source Address	2002:1::2
Destination Address	2000::1
Gateway	::0

19. Traffic is no more limited



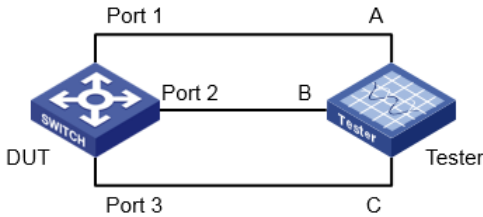
H3C S5560X-EI Product Test Procedures

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 Rx Rate (bps)	Tx L1 Count (bits)	Rx L1 Count (bits)	Tx L1 Rate (bps)	Rx L1 Rate (bps)	Tx L1 Rate (Percent)	Rx L1 Rate (Percent)
Port //1...	8	0	863,016,986,368	1,496,736	1,000,005,897	0	100.001	0
Port //1...		997,844,192	0	326,714,588,288	0	1,000,009,762	0	100.001
Port //1...		997,840,720	0	326,532,820,920	0	1,000,006,228	0	100.001

☐ Passed

☐ Failed

5.5 SP+WRR queuing

Test Item Name: SP+WRR queuing
Work Hour: 45 min
Test Topology: <div></div>
Test Process: <ol style="list-style-type: none">1. Configure Port 1, Port 2, and Port 3 as trunk ports, and assign them to vlan 32. Configure the priority trust mode as dot1p on Port 1 and Port 2, and configure SP+WRR on Port 3. Queue 6 and queue 7 are SP queues. Queues 0 to 5 are WRR queues, with scheduling weights as 1, 2, 3, 4, 5, and 9, respectively.3. Make Port 3 learn the MAC address 1-1-1.4. Send traffic from Port A and Port B, with dot1p increasing from 0 to 7, with expected result 1.
Expect Results: <ol style="list-style-type: none">1. Port 3 receives all packets of queue 6 and queue 7. Other packets share the remaining 40% of bandwidth according to their scheduling weights. No traffic loss on SP queue

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The screenshot shows the Wireshark interface with the Filter field set to '22-25 Filter on Stream ID'. Below the Filter field, the Filter Summary section displays the following information:

Filter Summary
 IPv4 Header.TotDiffServ = diffServ (0x0F) Min Value = diffServ (0x00) Max Value = diffServ (0xFF)

Same weight traffic for WRR queue

The image shows the Wireshark network protocol analyzer interface. The left sidebar contains the 'Packet List' pane, showing a list of captured packets. The middle pane displays the 'Packet Details' pane, showing the hierarchical structure of the selected packet (IPv4 Header). The right pane shows the 'Packet Bytes' pane, displaying the raw data of the selected packet. The bottom pane shows the 'Packet List' pane, displaying a list of captured packets. The interface is configured to show only the selected packet (32-bit filter over stream ID).

Actual Result:

1. Configuration on DUT

#

vlan 3

#

qos map-table dot1p-lp

```
import 0 export 0
```

```
import 1 export 1
```

import 2 export 2

#

```
interface Ten-GigabitEthernet1/0/25-----port 1
```

port link-type trunk

```
port trunk permit vlan 1 3
```

qos trust dscp

#

```
interface Ten-GigabitEthernet1/0/26-----port 2
```

port link-type trunk

```
port trunk permit vlan 1 3
qos trust dscp
#
interface Ten-GigabitEthernet1/0/27-----port 3
port link-type trunk
port trunk permit vlan 1 3
qos trust dscp
qos wrr af1 group 1 weight 1
qos wrr af2 group 1 weight 1
qos wrr af3 group 1 weight 1
qos wrr af4 group 1 weight 1
qos wrr ef group sp
qos wrr cs6 group sp
qos wrr cs7 group sp
#
```

2. Make Port 3 learn the MAC address 1-1-1.
3. Send traffic from Port A and Port B, with dot1p increasing from 0 to 7, with expected result 1

```
interface Ten-GigabitEthernet1/0/27
port link-mode bridge
port link-type trunk
port trunk permit vlan 1 3
mac-address static 0001-0001-0001 vlan 3
qos trust dscp
qos wrr af1 group 1 weight 1
qos wrr af2 group 1 weight 1
qos wrr af3 group 1 weight 1
qos wrr af4 group 1 weight 1
qos wrr ef group sp
qos wrr cs6 group sp
qos wrr cs7 group sp
```

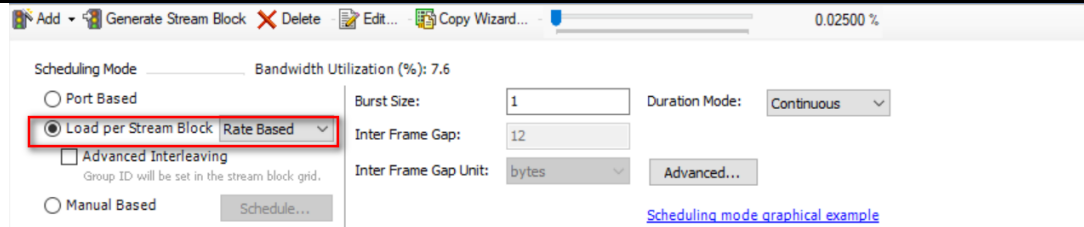
Add 9 streams and edit

Status	Active	Name	Tags	Rx Port	Traffic Group	State	Stream Count	Load	Load Unit	Frame Length Mode	IMIX
	<input checked="" type="checkbox"/>	1-DSCP-CS7	Click to add...	Port //2/8...		Ready	1	2.5	Mbps	Fixed	
	<input checked="" type="checkbox"/>	CS6	Click to add...	Port //2/8...		Ready	1	2.5	Mbps	Fixed	
	<input checked="" type="checkbox"/>	40	Click to add...	Port //2/8...		Ready	1	2.5	Mbps	Fixed	
	<input checked="" type="checkbox"/>	46	Click to add...	Port //2/8...		Ready	1	2.5	Mbps	Fixed	
	<input checked="" type="checkbox"/>	AF41	Click to add...	Port //2/8...		Ready	1	150	Mbps	Fixed	
	<input checked="" type="checkbox"/>	AF31	Click to add...	Port //2/8...		Ready	1	150	Mbps	Fixed	
	<input checked="" type="checkbox"/>	AF21	Click to add...	Port //2/8...		Ready	1	150	Mbps	Fixed	
	<input checked="" type="checkbox"/>	AF11	Click to add...	Port //2/8...		Ready	1	150	Mbps	Fixed	
	<input checked="" type="checkbox"/>	0	Click to add...	Port //2/8...		Ready	1	150	Mbps	Fixed	

before configuring streams, choose Load per Stream Block



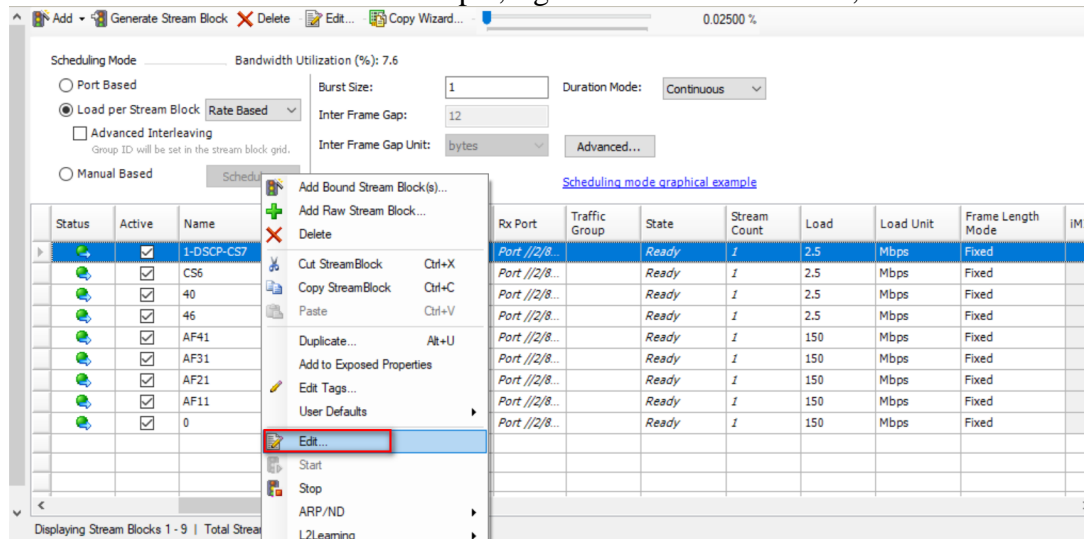
H3C S5560X-EI Product Test Procedures



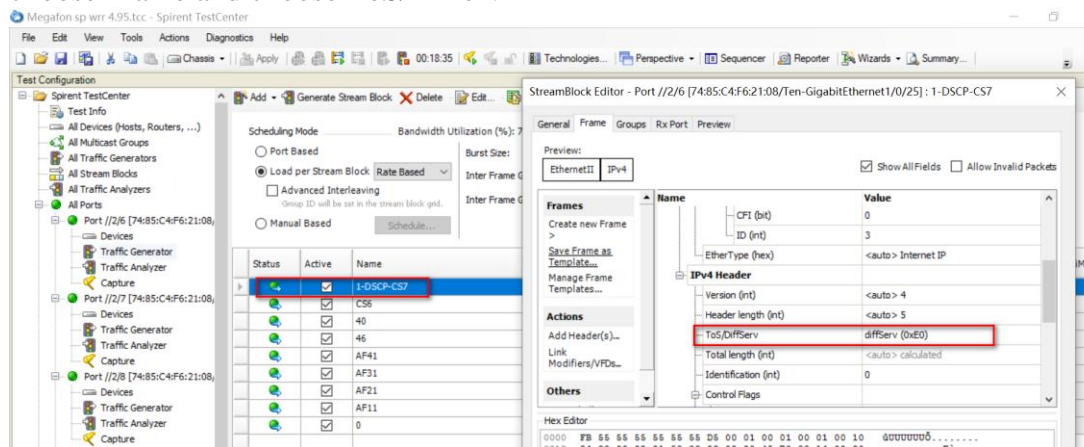
edit 9 streams

Status	Active	Name	Tags	Rx Port	Traffic Group	State	Stream Count	Load	Load Unit	Frame Length Mode	IMIX
	<input checked="" type="checkbox"/>	1-DSCP-CS7	Click to add...	Port //2/8...		Ready	1	2.5	Mbps	Fixed	
	<input checked="" type="checkbox"/>	CS6	Click to add...	Port //2/8...		Ready	1	2.5	Mbps	Fixed	
	<input checked="" type="checkbox"/>	40	Click to add...	Port //2/8...		Ready	1	2.5	Mbps	Fixed	
	<input checked="" type="checkbox"/>	46	Click to add...	Port //2/8...		Ready	1	2.5	Mbps	Fixed	
	<input checked="" type="checkbox"/>	AF41	Click to add...	Port //2/8...		Ready	1	150	Mbps	Fixed	
	<input checked="" type="checkbox"/>	AF31	Click to add...	Port //2/8...		Ready	1	150	Mbps	Fixed	
	<input checked="" type="checkbox"/>	AF21	Click to add...	Port //2/8...		Ready	1	150	Mbps	Fixed	
	<input checked="" type="checkbox"/>	AF11	Click to add...	Port //2/8...		Ready	1	150	Mbps	Fixed	
	<input checked="" type="checkbox"/>	0	Click to add...	Port //2/8...		Ready	1	150	Mbps	Fixed	

take stream 1-DSCP-CS7 for example, right click and choose edit,



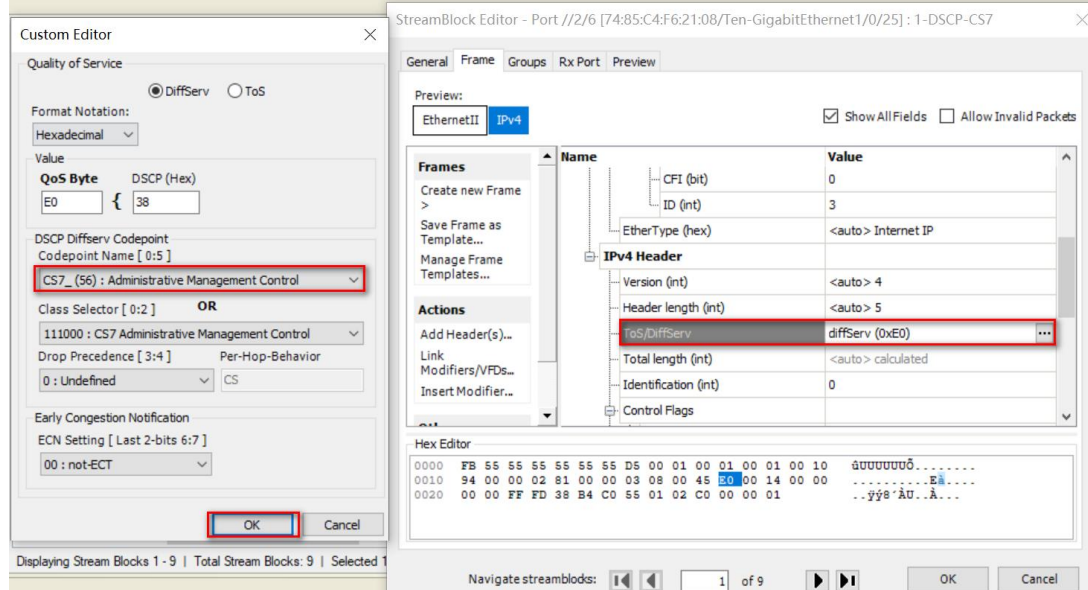
choose Frame and choose ToS/Differv



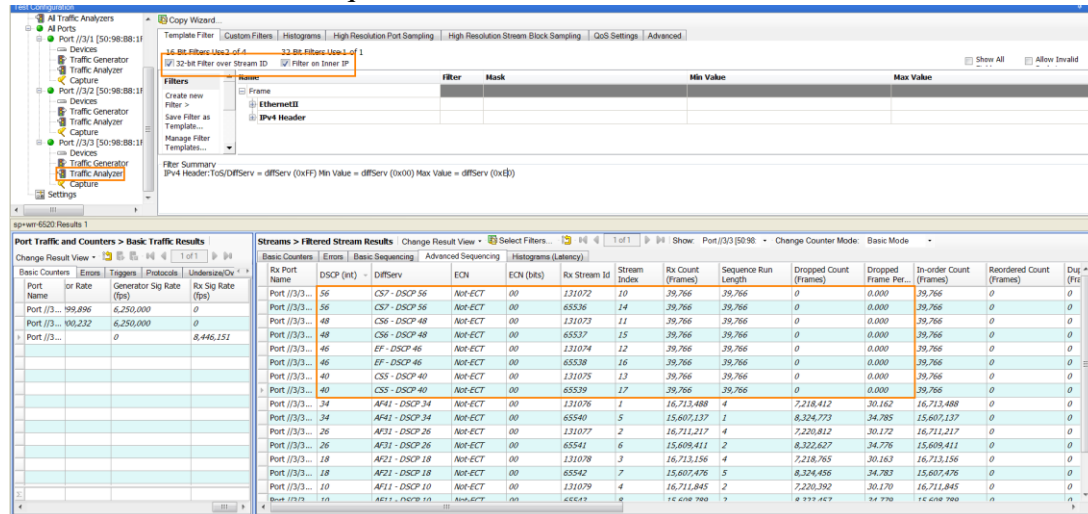
choose CS7 like the following picture,



H3C S5560X-EI Product Test Procedures



No traffic loss on SP queue



Same weight traffic for WRR queue



H3C S5560X-EI Product Test Procedures

Port /3/1 [50:9B:B8:1F]
Devices
Traffic Generator
Traffic Analyzer
Capture
Port /3/2 [50:9B:B8:1F]
Devices
Traffic Generator
Traffic Analyzer
Capture
Port /3/3 [50:9B:B8:1F]
Devices
Traffic Generator
Traffic Analyzer
Capture
Settings

Template Filter Custom Filters Histograms High Resolution Port Sampling High Resolution Stream Block Sampling QoS Settings Advanced
16-Bit Filter Use of 1 32-Bit Filter Use of 1
12-bit Filter over Stream ID Filter on lower IP

Filters Name Filter Mask Min Value Max Value
Frame
EthernetII
IPv4 Header
Filter Summary
IPv4 Header:ToS/DiffServ = diffServ (0xFF) Min Value = diffServ (0x00) Max Value = diffServ (0xE0)

Port Traffic and Counters > Basic Traffic Results
Change Result View Select Filters... 1 of 1 Show Port /3/3 [50:9B: Change Counter Mode Basic Mode

Streams > Filtered Stream Results
Basic Counters Errors Basic Sequencing Advanced Sequencing Histograms (Latency)
Rx Port Name DSCP (int) DiffServ ECN ECN (bits) Stream Index Rx Count (Frames) Sequence Run Length Dropped Count (Frames) Dropped Frame Per... In-order Count (Frames) Reordered Count (Frames) Duplicate Count (Frames)

Port /3/3...	56	CS2 - DSCP 56	Not-ECT	00	5	39,298	19,649	0	0.000	19,649	44	19,605
Port /3/3...	48	CS6 - DSCP 48	Not-ECT	00	6	39,298	19,649	0	0.000	19,649	44	19,605
Port /3/3...	46	EF - DSCP 46	Not-ECT	00	7	39,298	19,649	0	0.000	19,649	44	19,605
Port /3/3...	40	CS5 - DSCP 40	Not-ECT	00	8	39,298	19,649	0	0.000	19,649	44	19,605
Port /3/3...	24	AF31 - DSCP 24	Not-ECT	00	4	15,970,287	4	0	0.000	8,258,576	7,711,711	0
Port /3/3...	26	AF31 - DSCP 26	Not-ECT	00	0	15,970,274	2	0	0.000	8,257,293	7,712,981	0
Port /3/3...	18	AF21 - DSCP 18	Not-ECT	00	1	15,970,277	3	0	0.000	8,258,417	7,711,860	0
Port /3/3...	10	AF11 - DSCP 10	Not-ECT	00	2	15,970,281	3	0	0.000	8,257,514	7,712,767	0
Port /3/3...	0	Default - DSCP 0	Not-ECT	00	3	15,970,284	2	1	0.000	8,258,519	7,711,765	0

☐ Passed

☐ Failed