

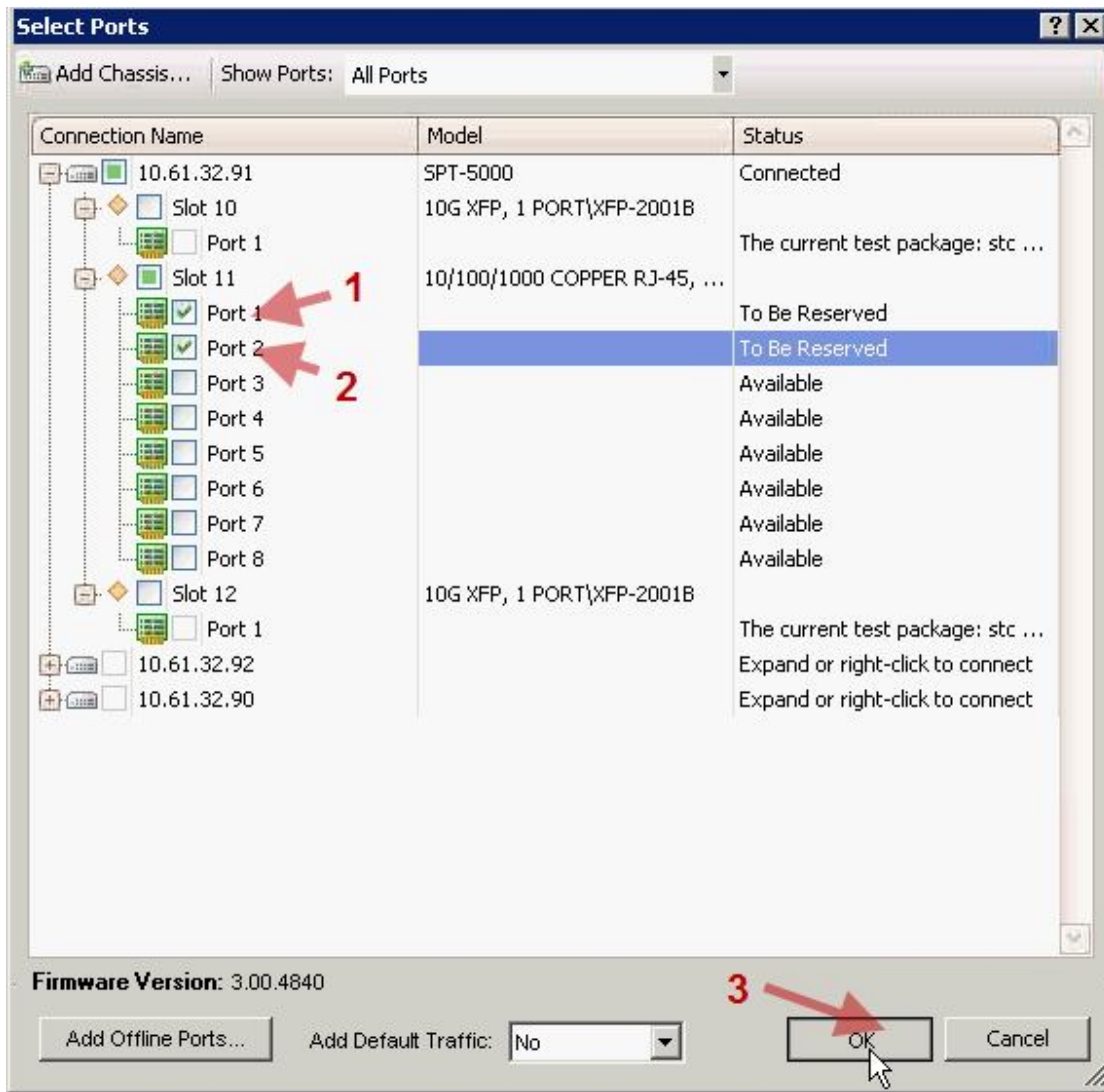
Spirent TestCenter

RFC2544 throughput test (manual)

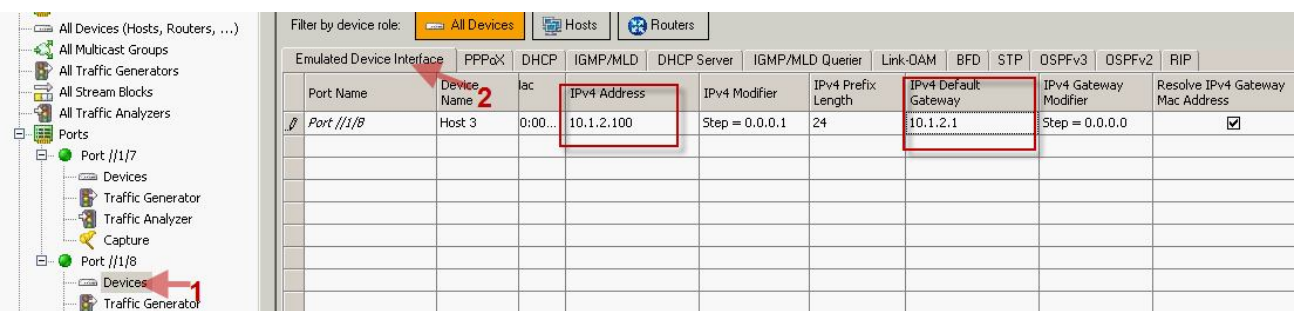
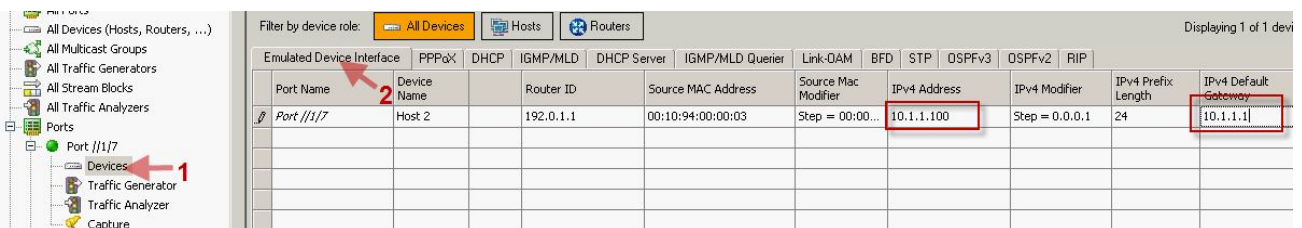


编号 版本	修改时间	说明
	01/08/2010	李辉

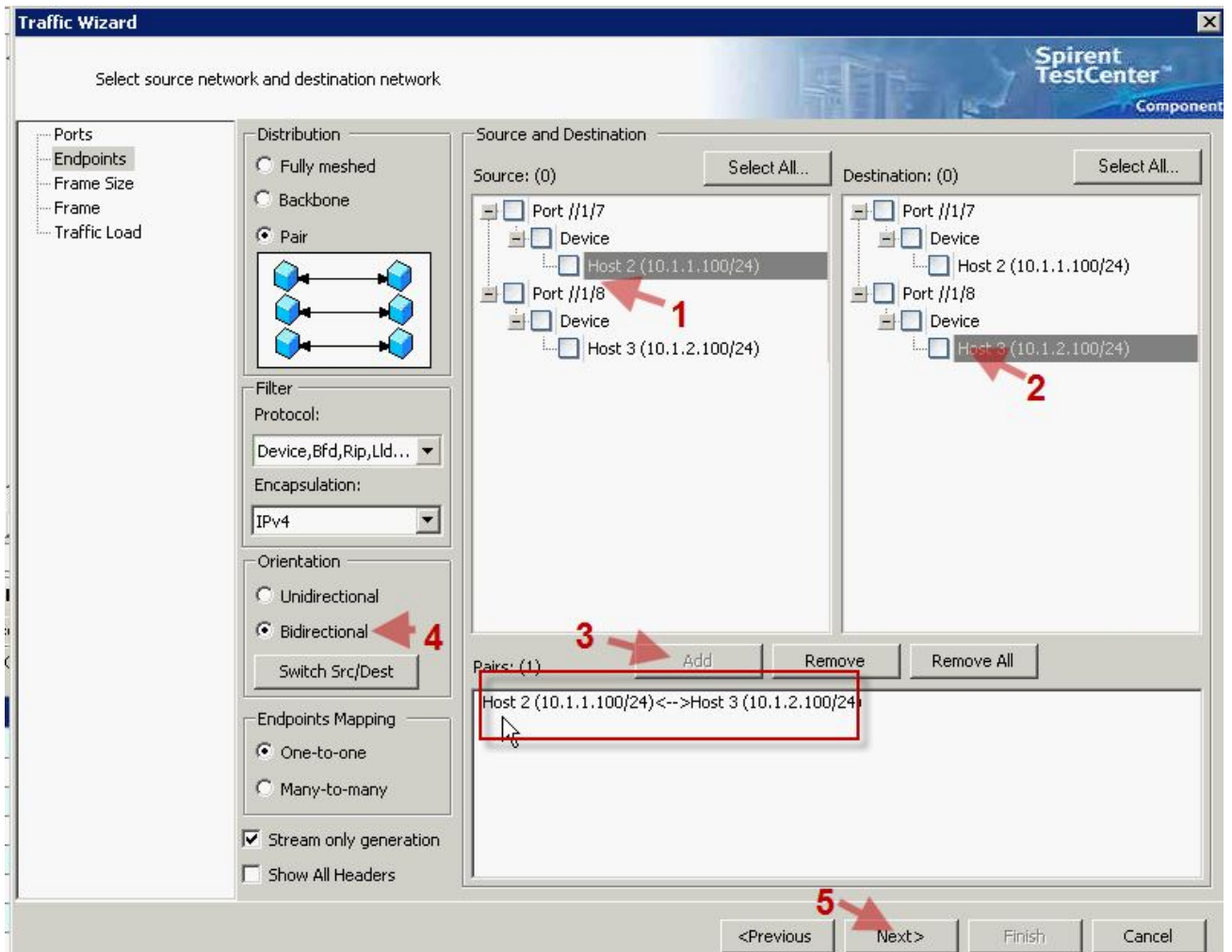
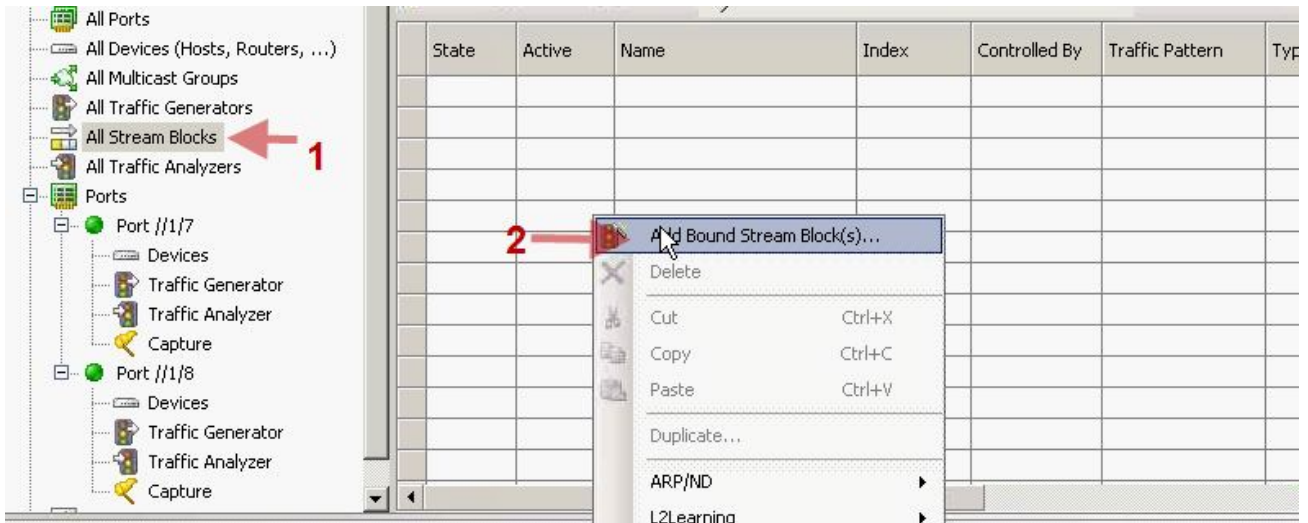
1 连接 Spirent TestCenter 机箱并占用测试端口



2 在端口下创建 Devices (Hosts)



3 创建 boundstream



4 Start ARP

A. Start Hosts ARP

The screenshot shows the 'Test Configuration' window in Spirent TestCenter. On the left, a tree view shows 'All Stream Blocks' selected, with a red arrow pointing to it. The main area displays a table of emulated device interfaces. A context menu is open over the 'Port //1/7' entry. The menu options are:

- Add Multiple Devices...
- Delete
- Cut EmulatedDevice Ctrl+X
- Copy EmulatedDevice Ctrl+C
- Paste Ctrl+V
- Duplicate...
- Add Links...
- Edit Links...
- Edit Interface...
- View Control Plane Bindings...
- Start Device
- Stop Device
- Start All Devices
- Stop All Devices
- ARP/ND
- Ping...
- View Bindings
- Edit MPLS Label Bindings...
- Start ARP/ND
- Start ARP/ND On All Devices
- Stop ARP/ND
- View Resolved MAC Addresses

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

Name/ID	Tx Port Name	Rx Port Names	Aggregated Rx Port Count	Tx Count (Frames)	Rx Count (Frames)	Tx Rate (bps)
Start ARP/ND		N/A	0	0	0	0
Start ARP/ND On All Devices		N/A	0	0	0	0
Stop ARP/ND						

Filter by device role: All Devices Hosts Routers Displaying 2 of 2 devices

Emulated Device Interface	PPPoX	DHCP	IGMP/MLD	DHCP Server	IGMP/MLD Querier	Link-OAM	BFD	STP	OSPFv3	OSPFv2	RIP
Port //1/7											
Port //1/8											

Port Name	Device Name	Iac	IPv4 Address	IPv4 Modifier	IPv4 Prefix Length	IPv4 Default Gateway	IPv4 Gateway Modifier	Resolve IPv4 Gateway Mac Address	IPv4 Gateway Mac
Port //1/7	Host 2	0:00...	10.1.1.100	Step = 0.0.0.1	24	10.1.1.1	Step = 0.0.0.0	<input checked="" type="checkbox"/>	00:19:55:E1:5E:C1
Port //1/8	Host 3	0:00...	10.1.2.100	Step = 0.0.0.1	24	10.1.2.1	Step = 0.0.0.0	<input checked="" type="checkbox"/>	00:19:55:E1:5E:C2

B. Start Boundstream ARP

The screenshot shows the 'Test Configuration' window in Spirent TestCenter. On the left, a tree view shows 'All Stream Blocks' selected, with a red arrow pointing to it. The main area displays a table of stream blocks. A context menu is open over the 'Stream' entry. The menu options are:

- Add Bound Stream Block(s)...
- Delete
- Cut StreamBlock Ctrl+X
- Copy StreamBlock Ctrl+C
- Paste Ctrl+V
- Duplicate...
- ARP/ND
- L2Learning
- Copy Down Traffic Group...
- Copy Down IMDX...
- Edit...
- Start
- Start ARP/ND
- Start ARP/ND On All Stream Blocks
- Stop ARP/ND
- View Resolved MAC Addresses

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

State	Active	Name	Index	Controlled By	Source	Destination	Traffic Pattern	Type	Tx Port	Rx Port
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Stream			Host 2 (10...	Host 3 (10.1...	Pair	Port	Port //1/7	Port //1/8
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Stream			Host 3 (10...	Host 2 (10.1...	Pair	Port	Port //1/8	Port //1/7

5. 发流验证

The screenshot displays the Spirent TestCenter interface. The top section shows the 'Test Configuration' window with a tree view on the left and a table of configurations on the right. A red box highlights the 'State' column for two entries, 'StreamBlock 1-1' and 'StreamBlock 1-2', both of which are active. A red arrow points to the 'Edit...' button above the table.

State	Active	Name	Index	Controlled By	Source	Destination	Traffic Pattern	Type
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	StreamBlock 1-1	0	generator	Host 2 (10.1...	Host 3 (10.1...	Pair	Port
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	StreamBlock 1-2	0	generator	Host 3 (10.1...	Host 2 (10.1...	Pair	Port

The bottom section shows 'Results 1' with two tables. The left table, 'Port Traffic and Counters > Basic Traffic Results', shows traffic data for ports //1/7 and //1/8. The right table, 'Streams > Detailed Stream Results', shows stream data for the same ports.

Port Name	ps	Generator Rate (Bps)	Generator Rate (bps)	Generator Sig Rate (fps)	Rx Sig Rate (fps)
Port //1/7	10,810,891	86,487,128	84,460	84,459	
Port //1/8	10,810,734	86,485,872	84,458	84,459	

Name/ID	Tx Port Name	Rx Port Names	Aggregated Rx Port Count	Tx Count (Frames)
StreamBloc...	Port //1/7	Port //1/8	1	8,993,96
StreamBloc...	Port //1/8	Port //1/7	1	9,037,01

6 配置 RFC2544 wizard

A. 选择 RFC2544 test package

The screenshot shows the 'Wizards' menu in the Spirent TestCenter interface. A red arrow points to the 'Wizards...' option, which is labeled with a red '1'. Another red arrow points to the 'Rfc2544 Test Package...' option, which is labeled with a red '2'.

Controlled By	Source
generator	Device 1 (10.1...
generator	Device 2 (10.1...

- Wizards... 1
- Triple Play/Video Quality Analyzer...
- Triple Play/IPTV...
- Rfc2544 Test Package... 2
- Routing/MPLS/MPLS IP VPN...
- Routing/MPLS/6PE/6VPE...

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

Reset


< Back

Next >

Finish

<input checked="" type="checkbox"/>	Active	Port Name	Location	Media Type	Online
<input checked="" type="checkbox"/>		<i>PortConfig1 //1/1 (offline)</i>	<i> //(Offline)//1/1</i>	Ethernet Copper	<input type="checkbox"/>
<input checked="" type="checkbox"/>		<i>PortConfig2 //1/1 (offline)</i>	<i> //(Offline)//1/1</i>	Ethernet Copper	<input type="checkbox"/>

Ports Selected: 2

1 

< Back Next > Finish

Rfc2544 Test Package - Configure Endpoints


Steps

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

Configure End Points
Configure end points for test traffic

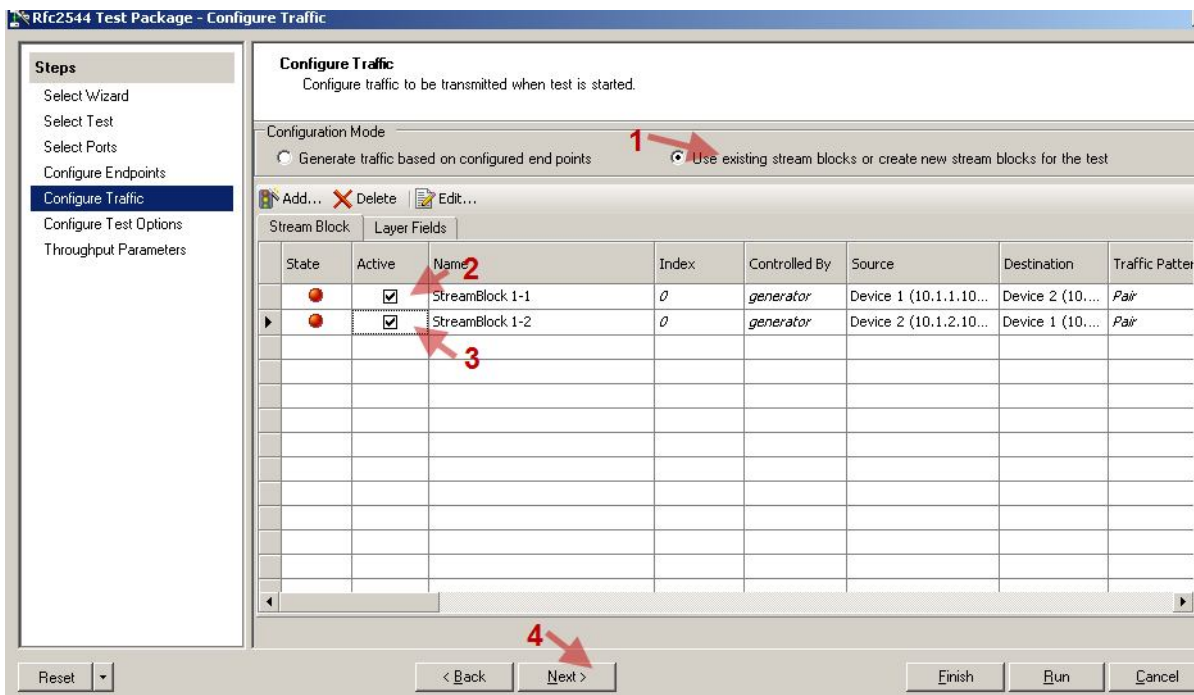
Add Delete Edit Interface...

Emulated Device Interface	PPPoX	DHCP	DHCP Server	STP	Port Name	Device Name	Device Count	Role	Incoming Links	Outgoing Links	Encapsulation
					<i>PortConfig1 //1/1 (offline)</i>	Device 1	1				EthernetII/IPv4
					<i>PortConfig2 //1/1 (offline)</i>	Device 2	1				EthernetII/IPv4

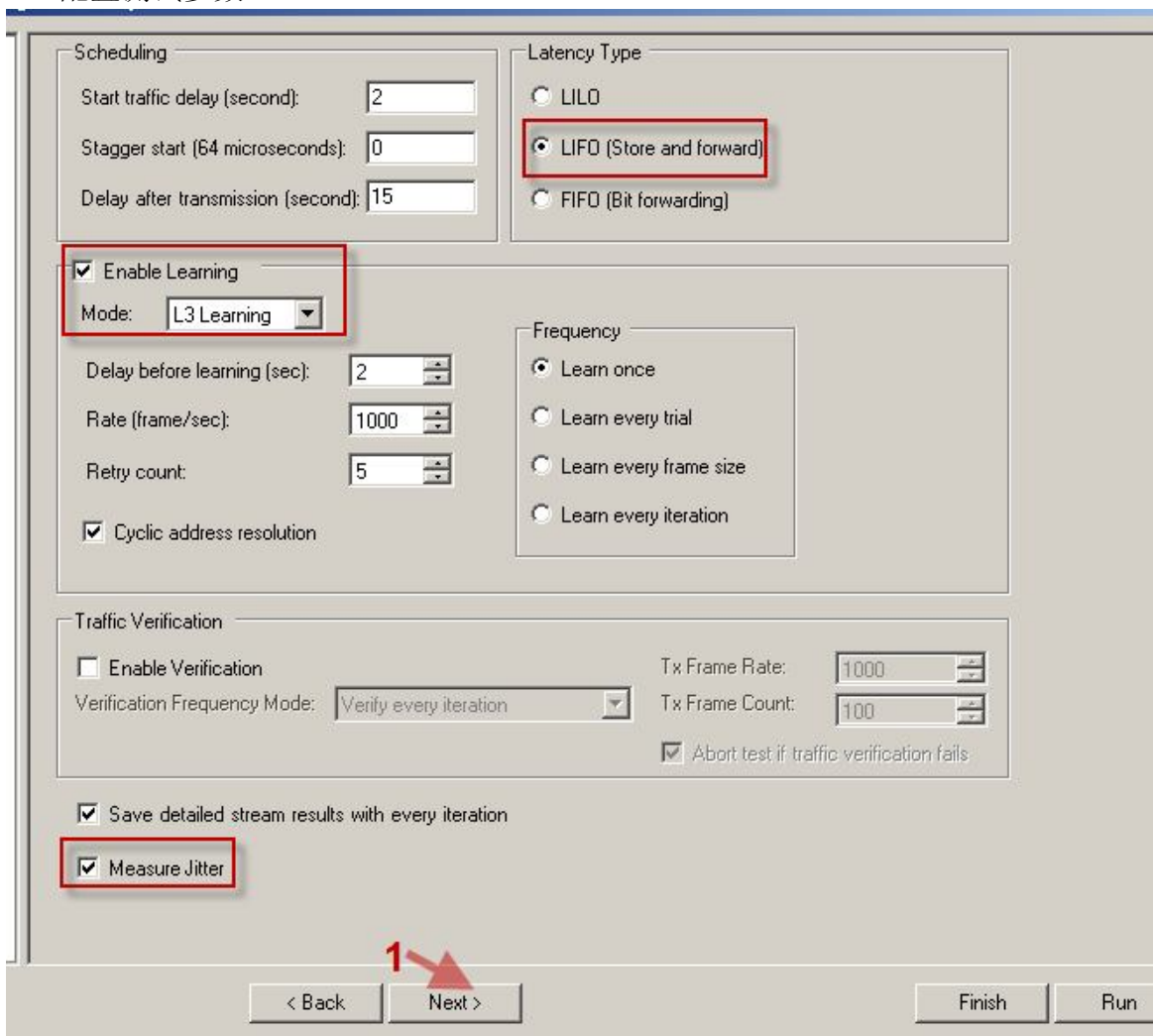
1 

Reset < Back Next > Finish Run Cancel

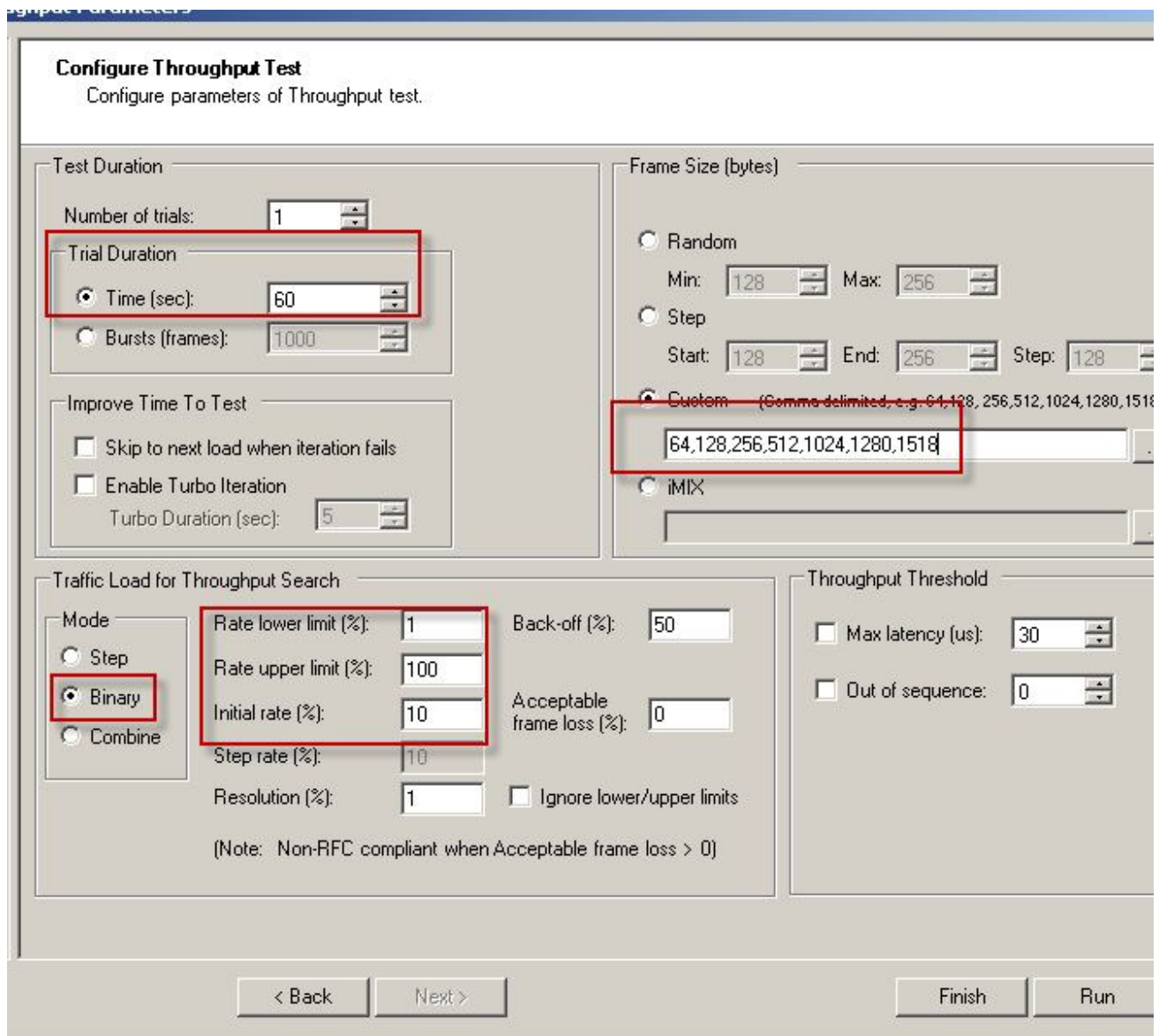
C. 调用之前配置的 boundstream 进行 throughput 测试



D. 配置测试参数

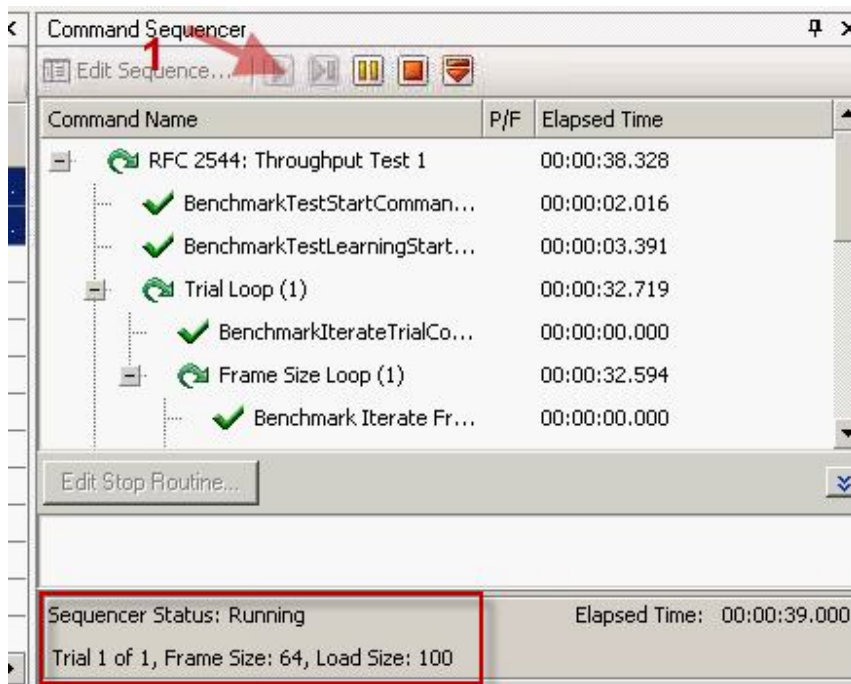


Enable Learning – 若测试三层性能则选择 L3 Learning；若测试二层性能侧选择 L2 Learning。
Latency Type – 选择 LIFO（存储转发）。测试吞吐量的同时可以测试 Latency。
Measure Jitter – 使能该功能后，测试结果有 Jitter（抖动）。

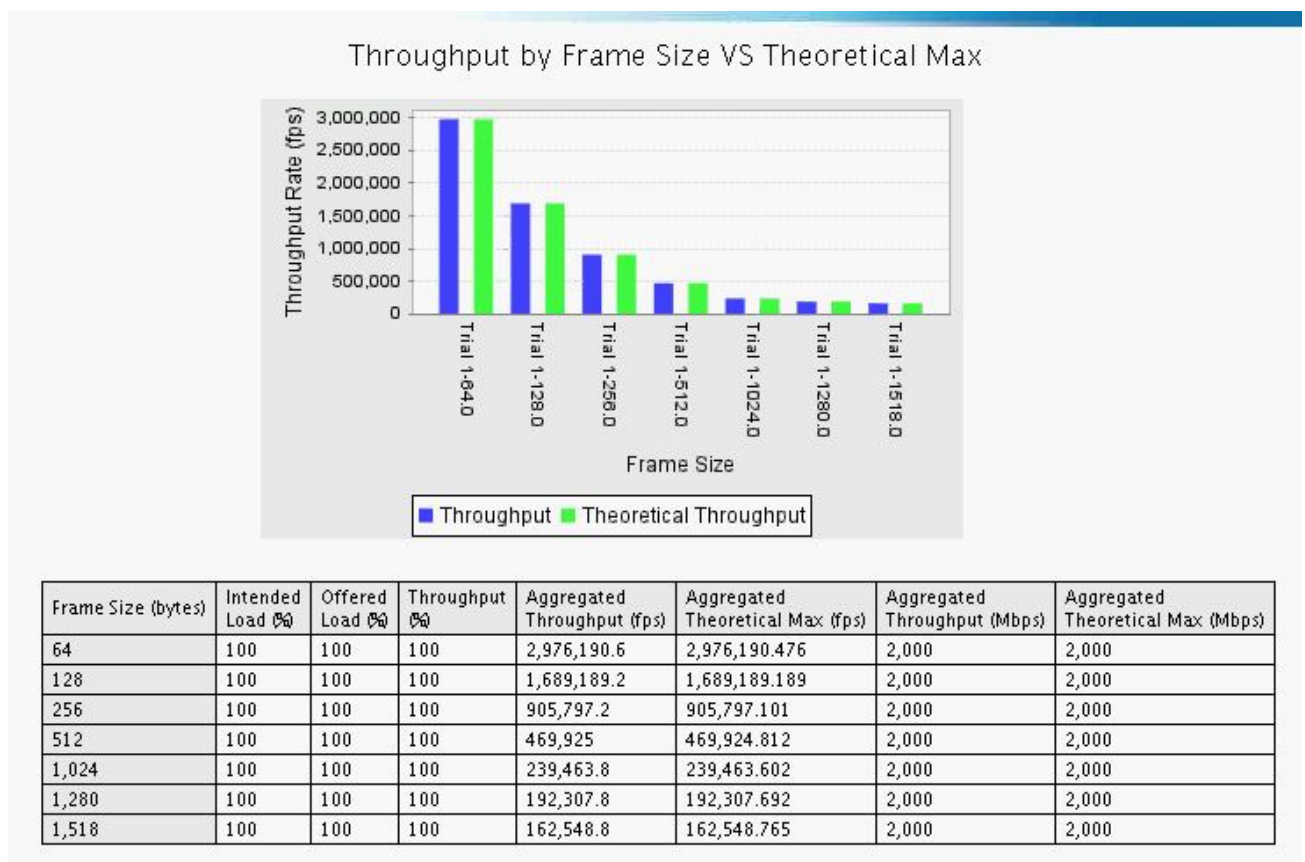


Trail Duration: 每轮测试的时间。
Binary: 采用二分法查找 throughput。
Rate Lower Limit: 二分法查找区间的最小值。
Rate Upper Limit: 二分法查找区间的最大值。
Initial Rate: 二分法查找的初始值。
Frame size: 分别测试以上七个字节长度的 throughput。

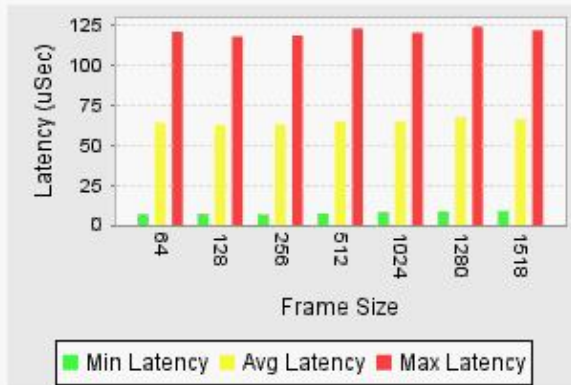
7 运行 Throughput 测试



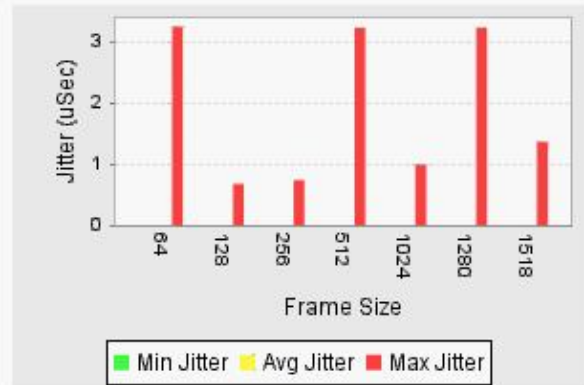
8 通过 result reporter 查看测试结果



Latency by Frame size at Throughput



Jitter by Frame size at Throughput



Frame Size (bytes)	Intended Load (%)	Offered Load (%)	Min Loss (%)	Min Latency (uSec)	Avg Latency (uSec)	Max Latency (uSec)	Min Jitter (uSec)	Avg Jitter (uSec)	Max Jitter (uSec)
64	100	100	0	7.08	64.27	121.43	0	0	3.25
128	100	100	0	7.23	62.82	118.44	0	0	0.68
256	100	100	0	7.01	63.38	118.9	0	0	0.74
512	100	100	0	7.4	65.37	123.45	0	0	3.23
1,024	100	100	0	8.46	65.39	120.8	0	0	1
1,280	100	100	0	8.8	67.69	124.72	0	0	3.23
1,518	100	100	0	9.05	66.59	122.25	0	0	1.37