PacketExpert™ 100G ExpertSAM™
(Up to 100 Gbps)

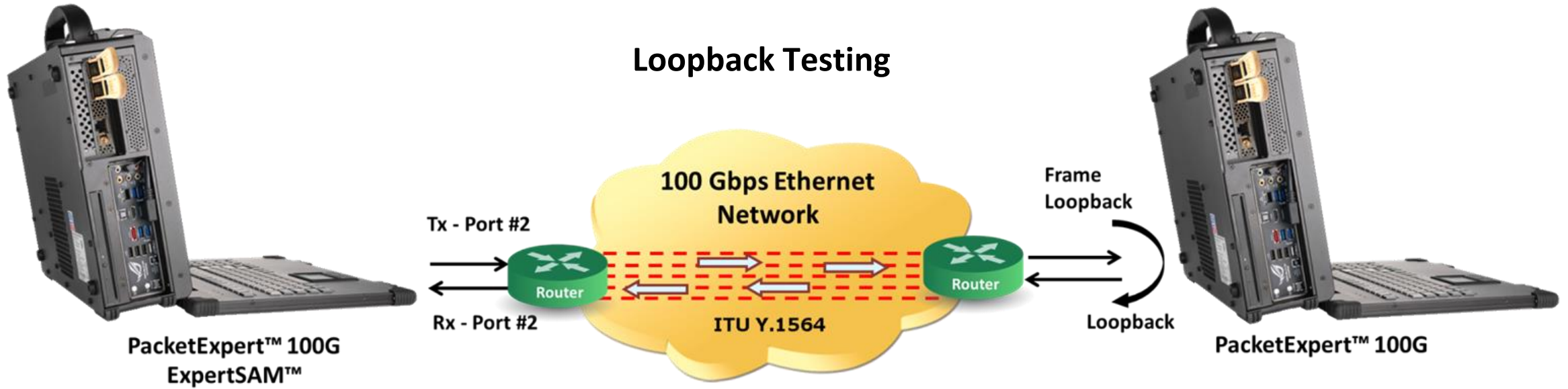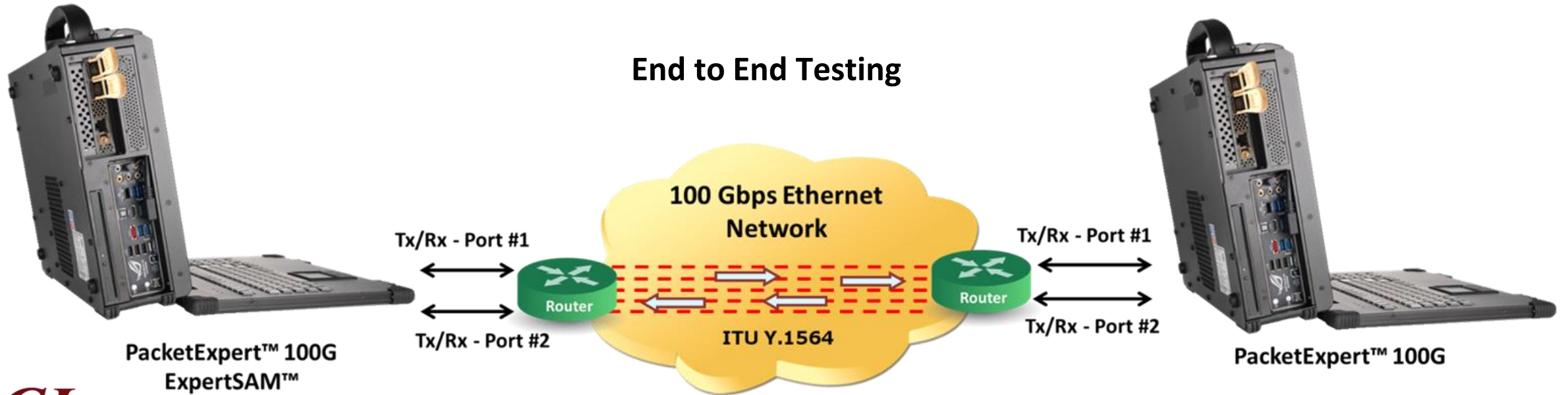**GL Communications Inc.**

Ethernet Network Testing

Loopback Testing

Tx - Port #2

Rx - Port #2

100 Gbps Ethernet Network

ITU Y.1564

Frame Loopback

Loopback

PacketExpert™ 100G ExpertSAM™

Router

Router

PacketExpert™ 100G

End to End Testing

Tx/Rx - Port #1

Tx/Rx - Port #2

100 Gbps Ethernet Network

ITU Y.1564

Tx/Rx - Port #1

Tx/Rx - Port #2

PacketExpert™ 100G ExpertSAM™

Router

Router

PacketExpert™ 100G
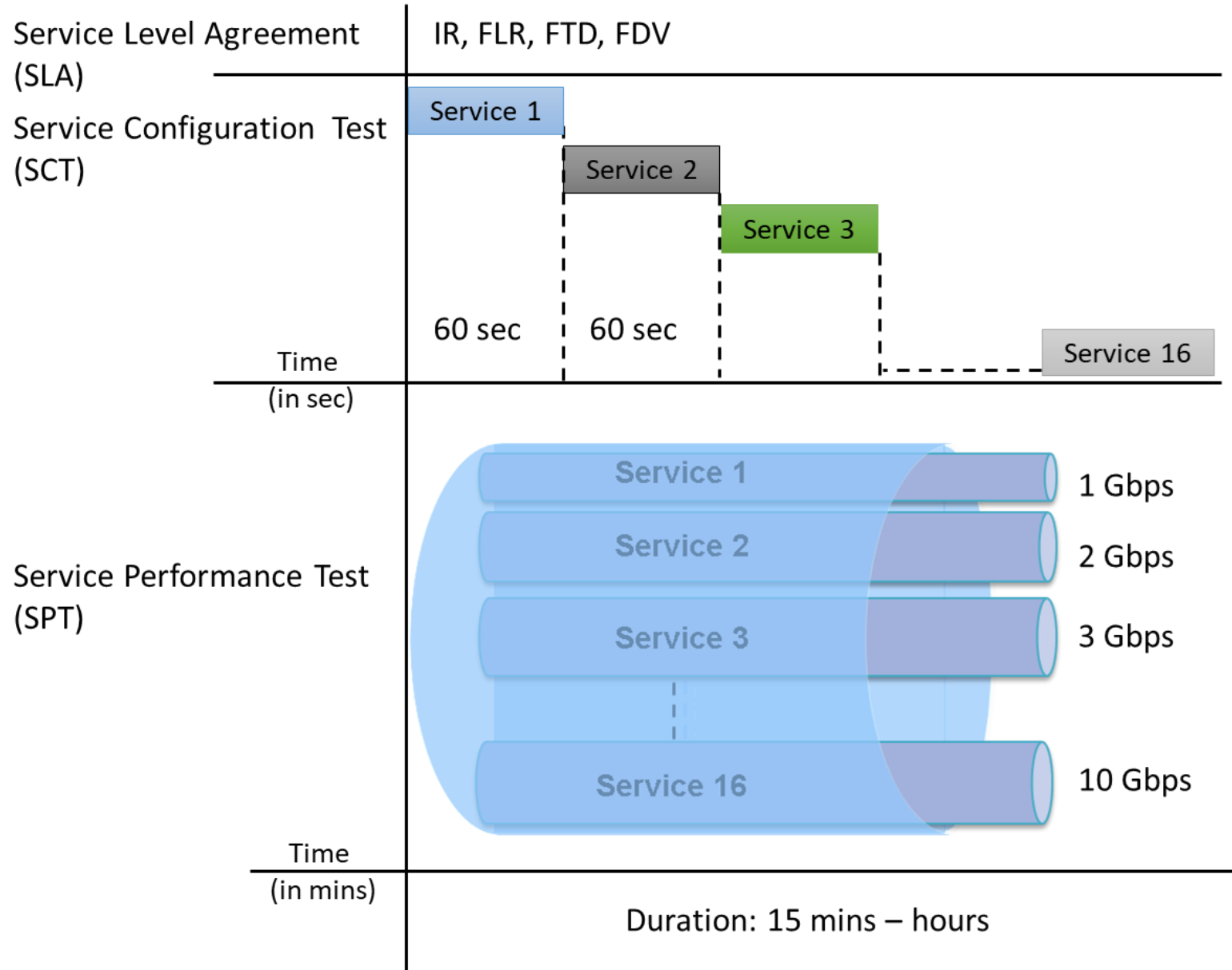
GL Communications

Ethernet Network Testing

- A single test to validate service-level agreements (SLAs) as per ITU-T Y.1564 standard

- ITU-T Y.1564 completes this testing in two phases based on the SLA parameters:

  - ➢ Service Level Agreement Parameters: Information Rate (IR), Frame Transfer Delay (FTD), Frame Delay Variation (FDV), Frame Loss Ratio (FLR)

  - ➢ Service Configuration Test

  - ➢ Service Performance Test

Y.1564 (ExpertSAM™)

- **Service Configuration Test** - confirms the end-to-end configuration with the SLA parameters for all configured traffic streams

- **Service Performance Test** - transmits all configured traffic streams simultaneously at the committed information rate (CIR), confirming all traffic is able to transverse the network under full load with the above-mentioned parameters

Service Level Agreement (SLA)   IR, FLR, FTD, FDV

Service Configuration Test (SCT)

Service 1

Service 2

Service 3

60 sec   60 sec   Service 16

Time (in sec)

Service Performance Test (SPT)

Service 1   1 Gbps
Service 2   2 Gbps
Service 3   3 Gbps
Service 16   10 Gbps

Time (in mins)

Duration: 15 mins – hours

4

RFC 2544 vs. Y.1564 (ExpertSAM™)

	RFC 2544	Y.1564
Measurements	Throughput, burstability, frame loss and latency	Throughput, burstability, frame loss, latency, packet jitter, QoS
Services	Link level	Multiple concurrent service levels
Performance	Measuring maximum performance	Key performance indicators (KPI) validation
Throughput	No separation of the committed and excess traffic	CIR, EIR and Traffic Policing constantly ensuring that KPI are met during the test
Frame Delay	Tests one frame in every test time and does not consider any latency variation that might occur over a longer test period.	Latency is measured during the test on all the generated frames measuring any deviation out of the defined range
Frame loss	Frame loss is measured during rate distribution throughput test where the frame loss distribution doesn't align with committed rate without complying to the KPI	Frame loss measurement during throughput test
Frame Delay Variation	Frame delay variation is not measured	Frame delay variation is measured for traffic generated up to the CIR ensuring proper traffic prioritization

Loading ExpertSAM™ Application

Test Setup

Service Configuration Summary

Service Configuration - Fixed Frame Size

Service Configuration - Emix Frame Size

Service Configuration - Bandwidth Profile

Service Configuration - Color Aware

Service Configuration - SLA Parameters

Service Selection

Test Configuration

Overall Results Summary

Service Configuration Results - Overview

Service Configuration Test Results - Detail

Service Performance Results - Overview

Service Performance Results - Detail

ITU-T Y.1564 (ExpertSAM™) Graph
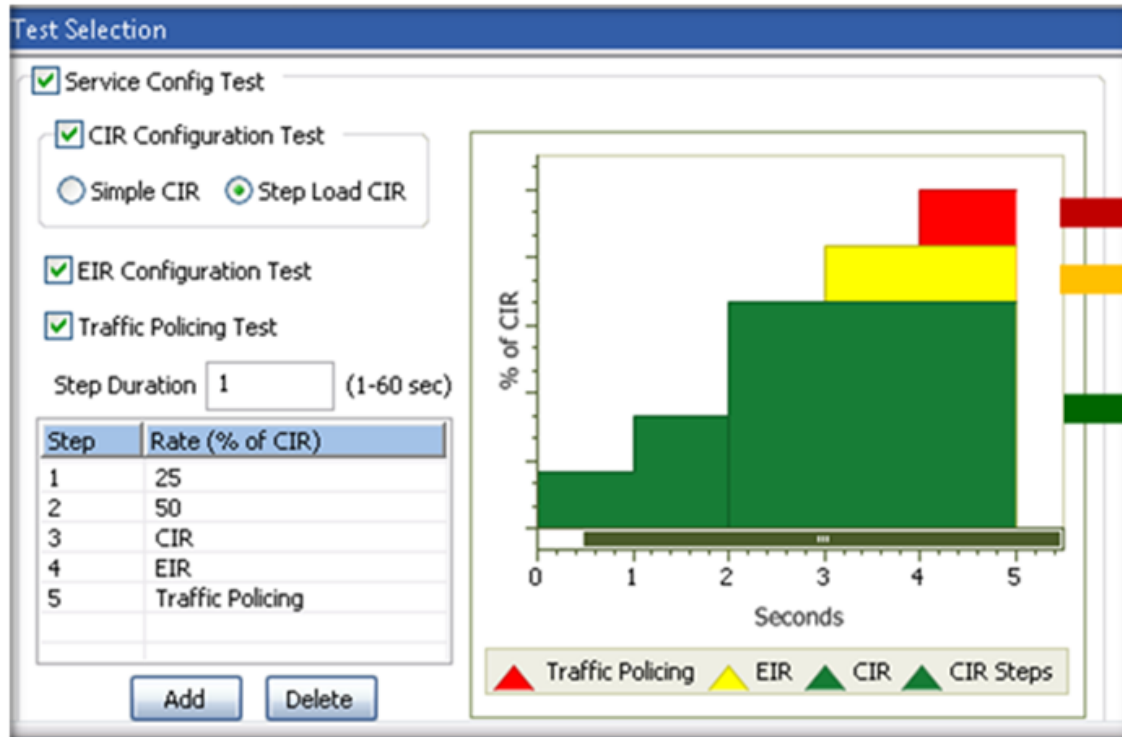
- Committed information rate or CIR is the average bandwidth guaranteed by a service provider. At any given time, the bandwidth should not fall below this committed figure

- Excess Information Rate or EIR is the CIR plus excess rate that service provider claims to provide on a 'best-effort' basis

Throughput Graph
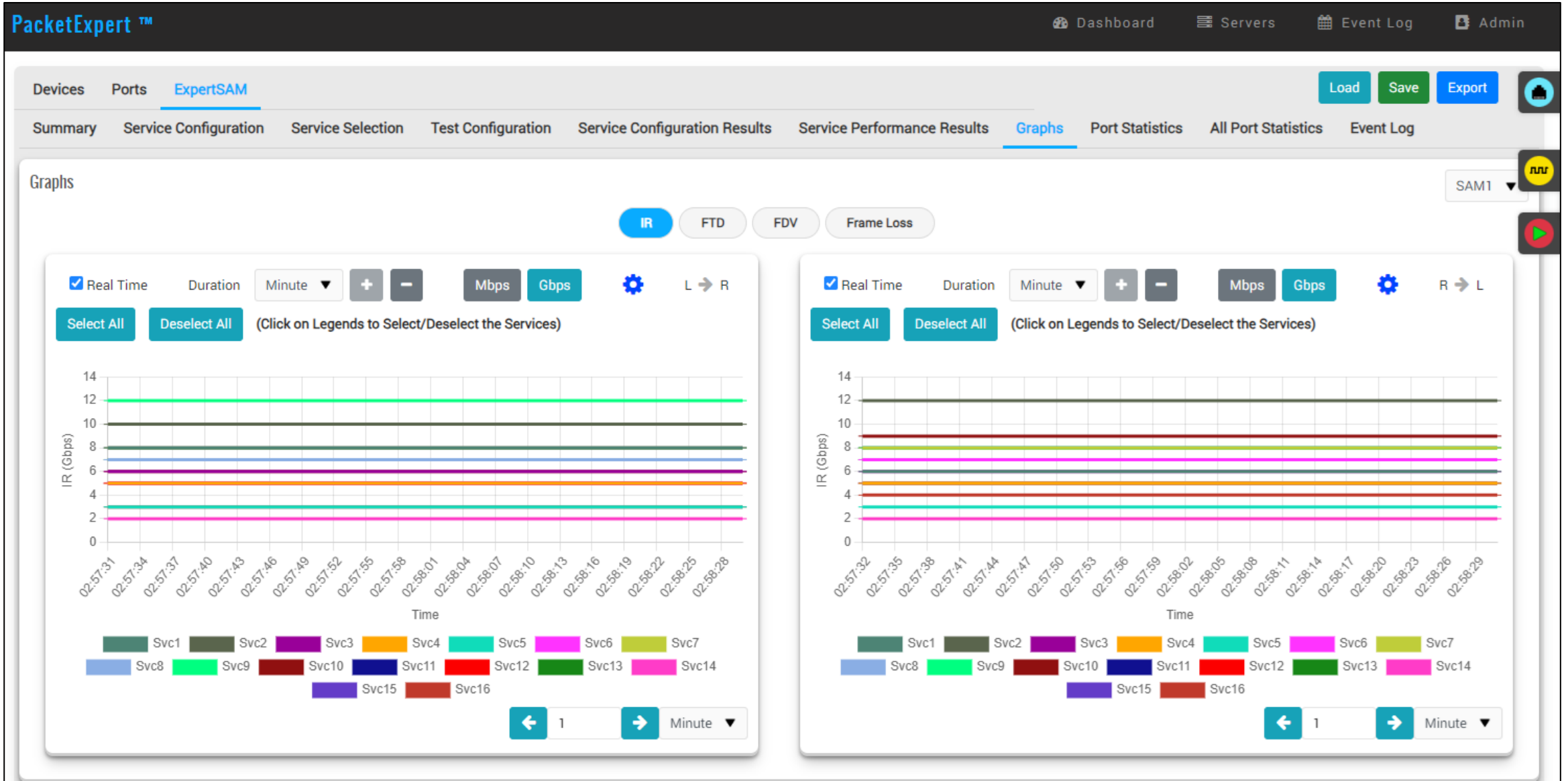
Frame Transfer Delay Graph
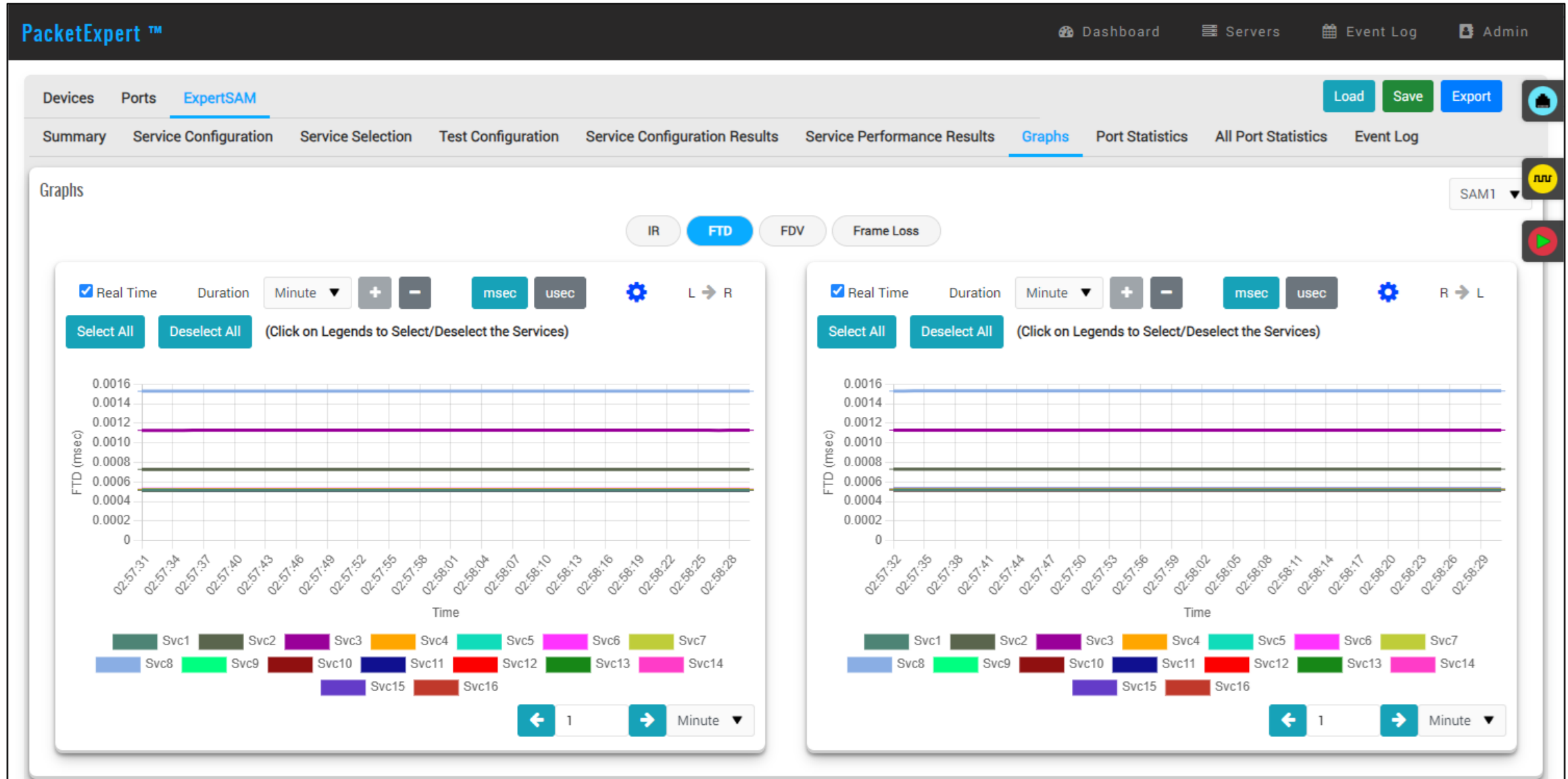
Frame Delay Variation Graph

Frame Loss Graph

Port Statistics

CLI Python Client

- Test automation and regression testing via Python and REST APIs
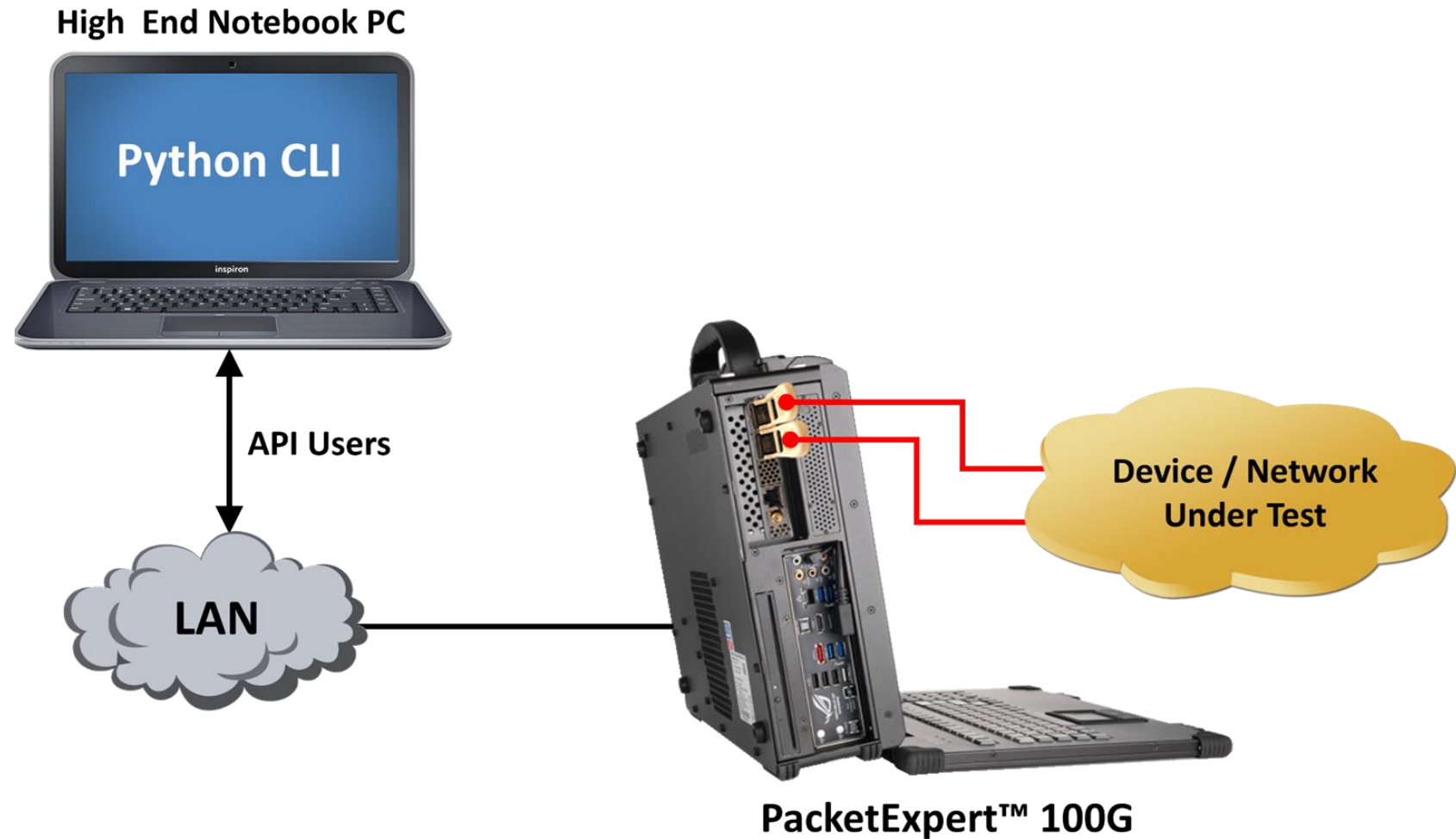
Python Script


```python
AllPortBert_Sample_app.py  ×

1    from Core.Utils import *                                           ⚠1 ⚠8 ^
2    from PacketExpertTests import *
3    import time
4
5
6    def main():
7        # Specify server details and test configuration
8        server_ip = "192.168.1.152"
9        server_port = 3333
10       device_list = [1]
11       port_list = [1, 2]
12
13       err, device_test_configuration = set_device_traffic_config(device_list)
14
15       # Configure TC1 Bert Test Parameters
16
17       device_test_configuration[1].port_mode = PortMode.Gbps100
18       device_test_configuration[1].start_frame_size = 64
19       device_test_configuration[1].start_rate = 1
20       device_test_configuration[1].start_error_rate = 4  # Bit error insertion rate 10^-4
21
22       test_duration = 10
23
24       default_json_path = 'C:\\Users\\Desktop\\PXXPythonClient-Release\\JSON\\'
25       result_file_path = 'C:\\Users\\Desktop\\PXXPythonClient-Release\\Log\\'
26       result_file_name = "Bert_Results"
27
28       generate_report_info = GenerateReport()
29       generate_report_info.test_conducted_by = "GLIndia"
30       generate_report_info.filename = "Bert_Report"
31       generate_report_info.title = "All Port Bert"
32
33       generate_report_info.init_selected_ports(device_list, port_list, AppName.AllPortBERT)
34
35       enable_generate_report = True
```
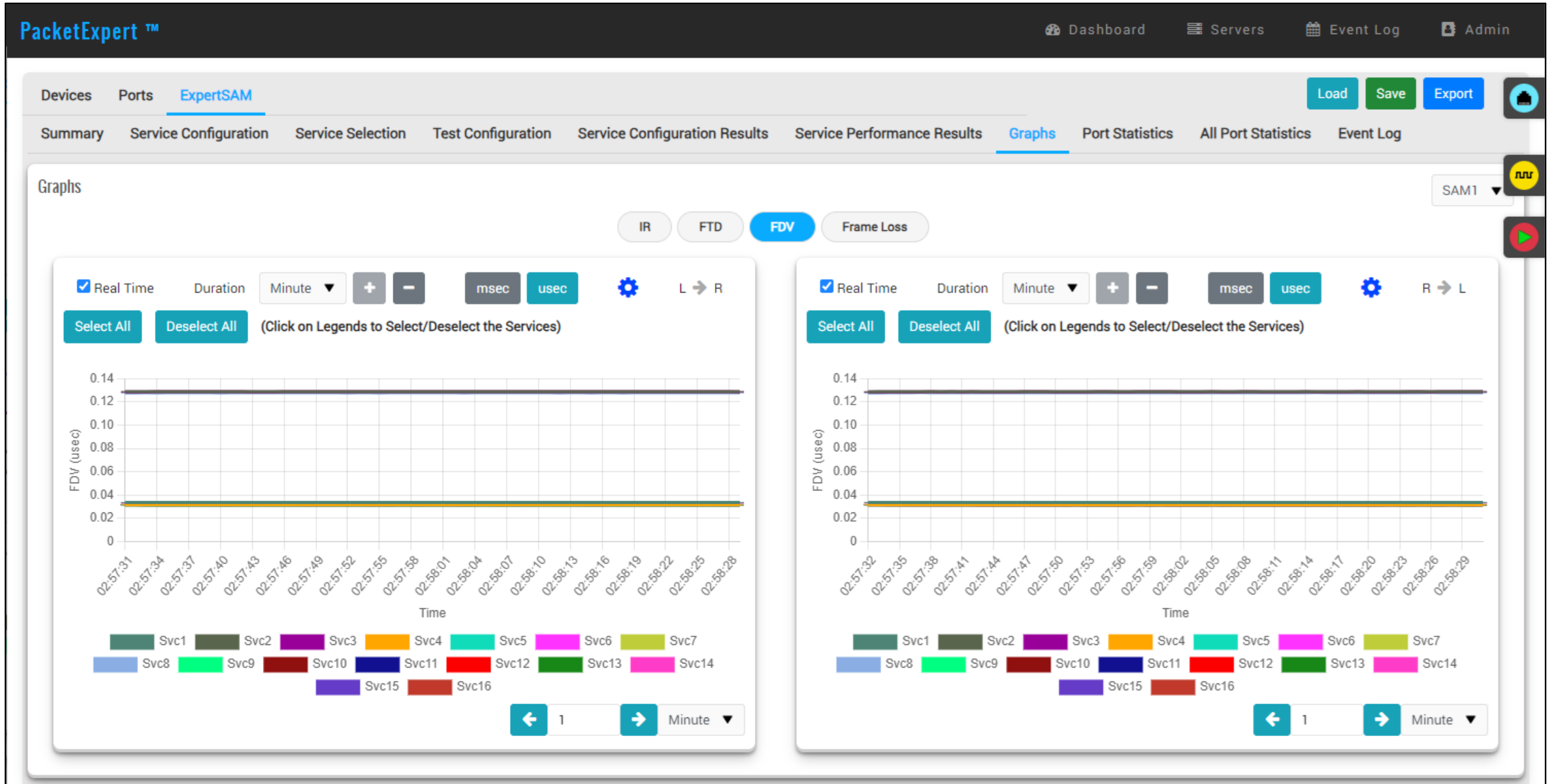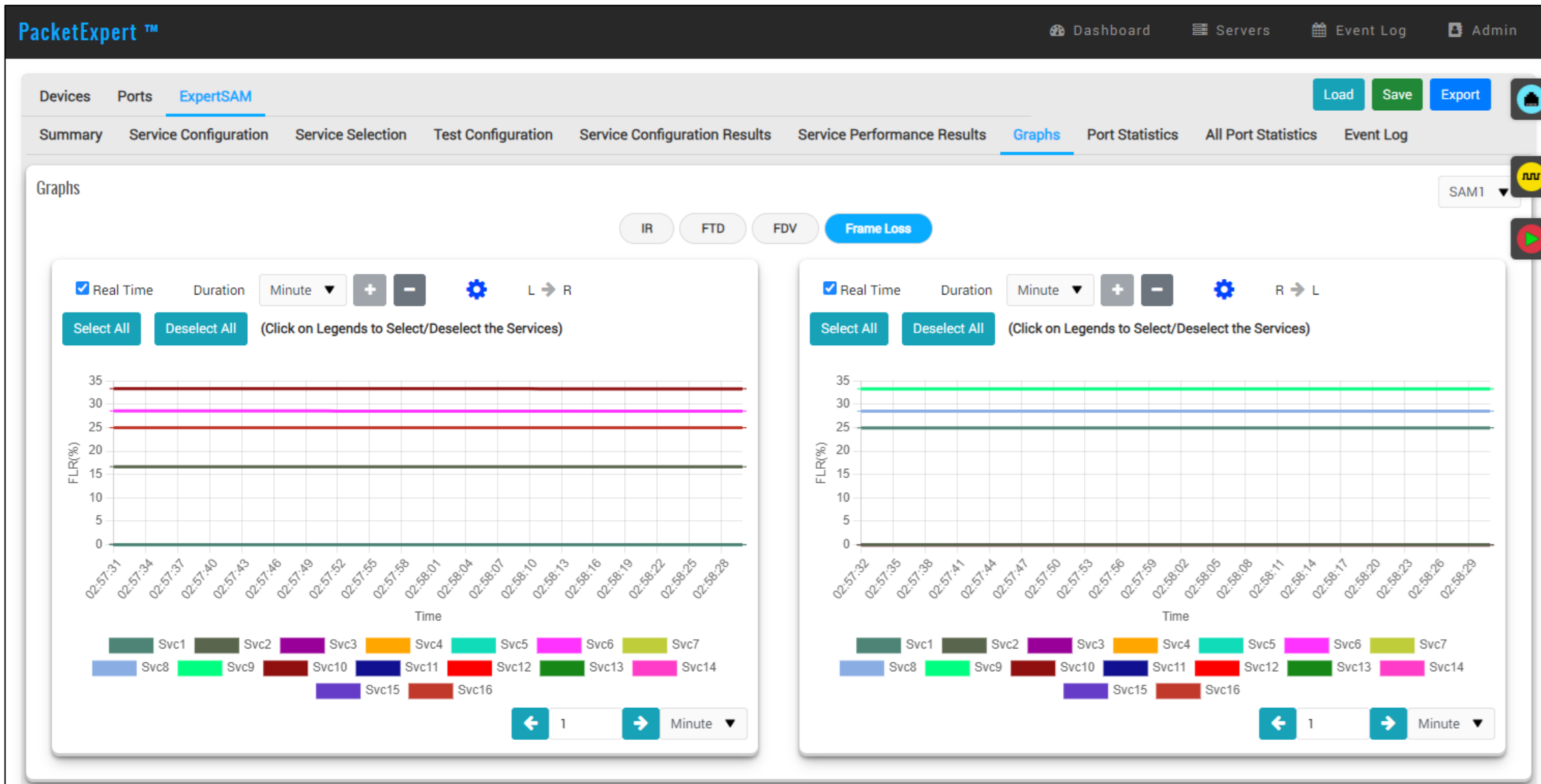
Thank you