SA3CC Meeting – May 01st, 2024

AmLight: Monitoring and Measurement Improvements

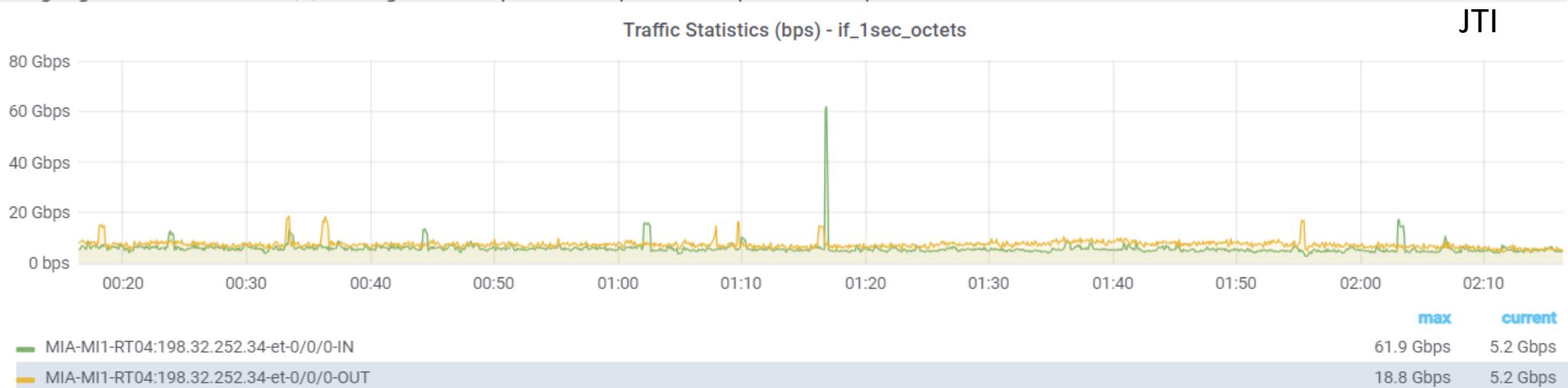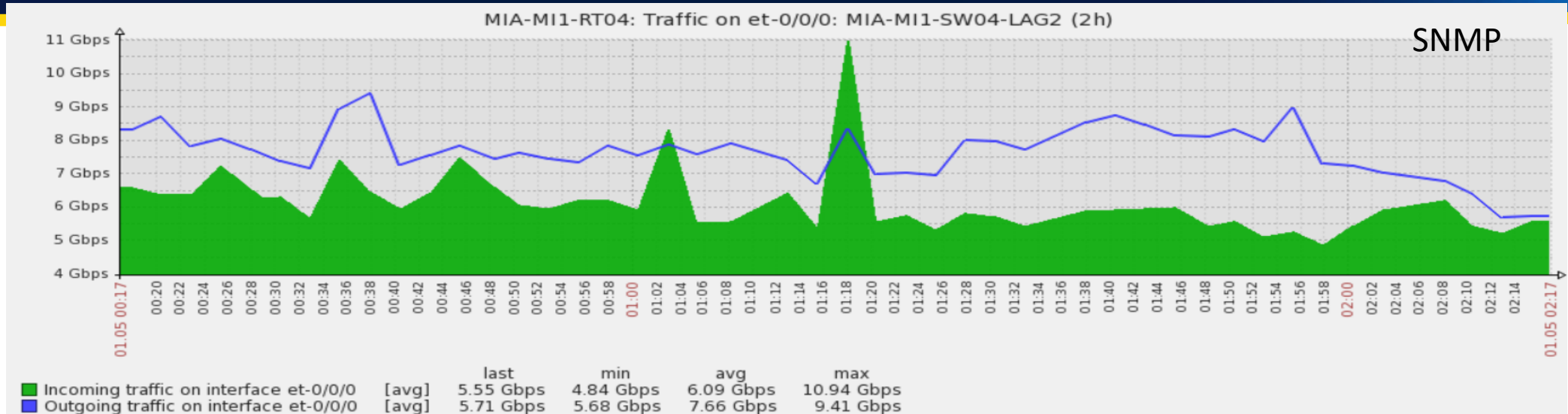**Renata Frez – Senior Network Engineer - RNP/AmLight**

Tools/Frameworks in use at AmLight [1]

➢ AmLight has a rich set of tools to monitor its infrastructure and measure its performance.

➢ A Zabbix server that monitors the entire network and IT infrastructure.

➢ The perfSONAR results can be accessible at https://dashboard.ampath.net/maddash-webui/index.cgi.

  ➢ In the last months, we installed new nodes in Boca Raton, San Juan, and Atlanta and updated the São Paulo node.

  ➢ More tests will be deployed soon to Esnet.

➢ A Status page is available for the community to inform any ongoing events quickly and directly: https://status.amlight.net.

➢ Links' utilization can be found on https://my.amlight.net.

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Tools/Frameworks in use at AmLight [2]

Tool/Framework	Used for:
SNMP	➢ General monitoring.
sFlow	➢ Troubleshooting unusual events. ➢ TOP N reports.
Juniper Telemetry Interface (JTI)	➢ Environments that require more granular information. Juniper devices only.
In-band Network Telemetry (INT)	➢ Troubleshooting short-time events.

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SNMP x Juniper Telemetry Interface (JTI)

In-band Network Telemetry (INT)

Interface 11 Utilization - Monitored using In-band Network Telemetry

Interface 11 Utilization - Monitored by SNMP every 15 seconds
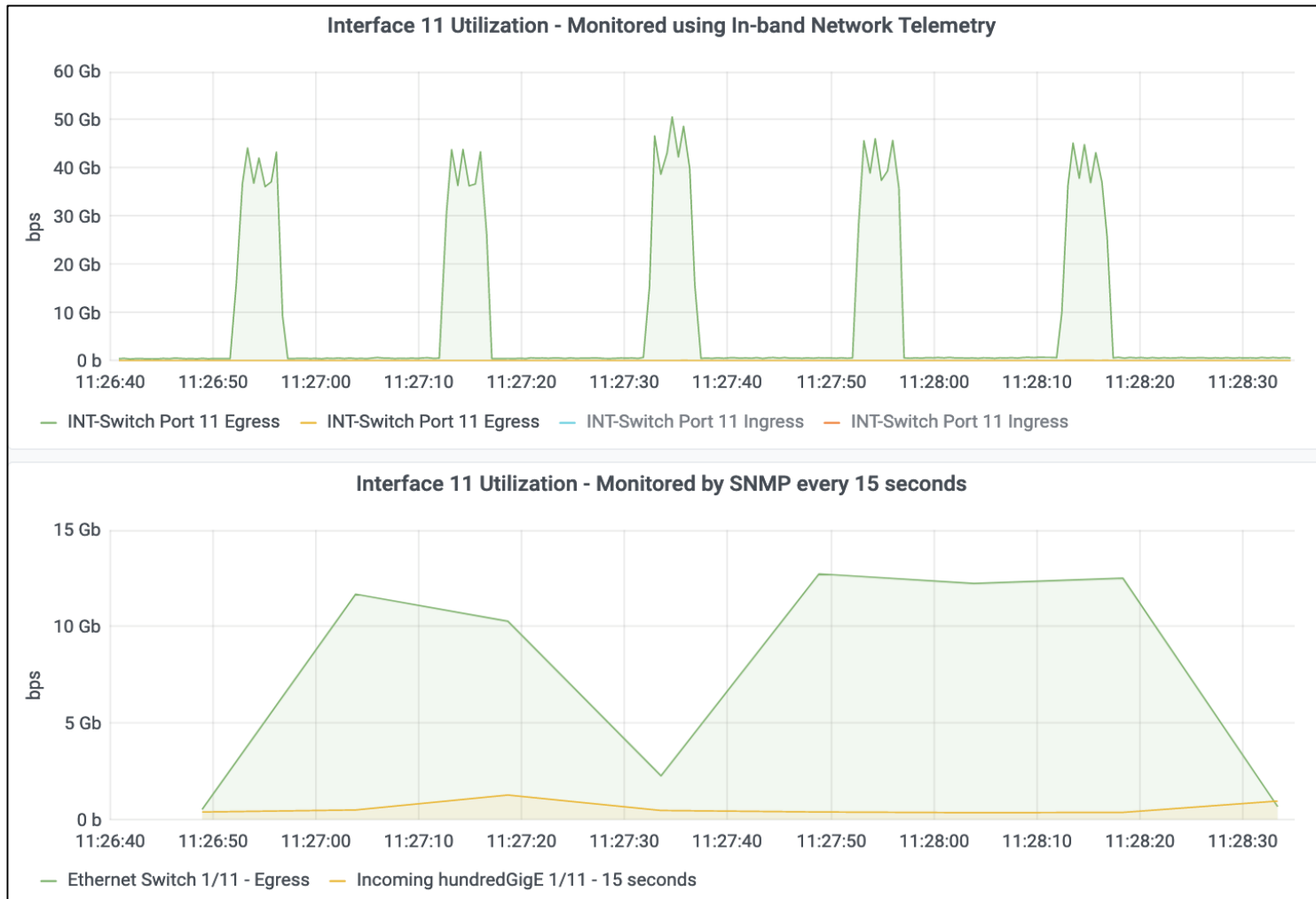
Comparing SNMP x JTI x INT

- **Dell (Switch OpenFlow)** = SNMP polling every **14s** (lowest possible value).

- **Juniper (Router)** = JTI enabled sending telemetry every **2s** (lowest possible value).

- **Noviflow** (P4 Programmable Switch) = INT enabled for all packets, i.e., **real-time**. Database stores information every **100ms**.

Bandwidth Utilization - bps
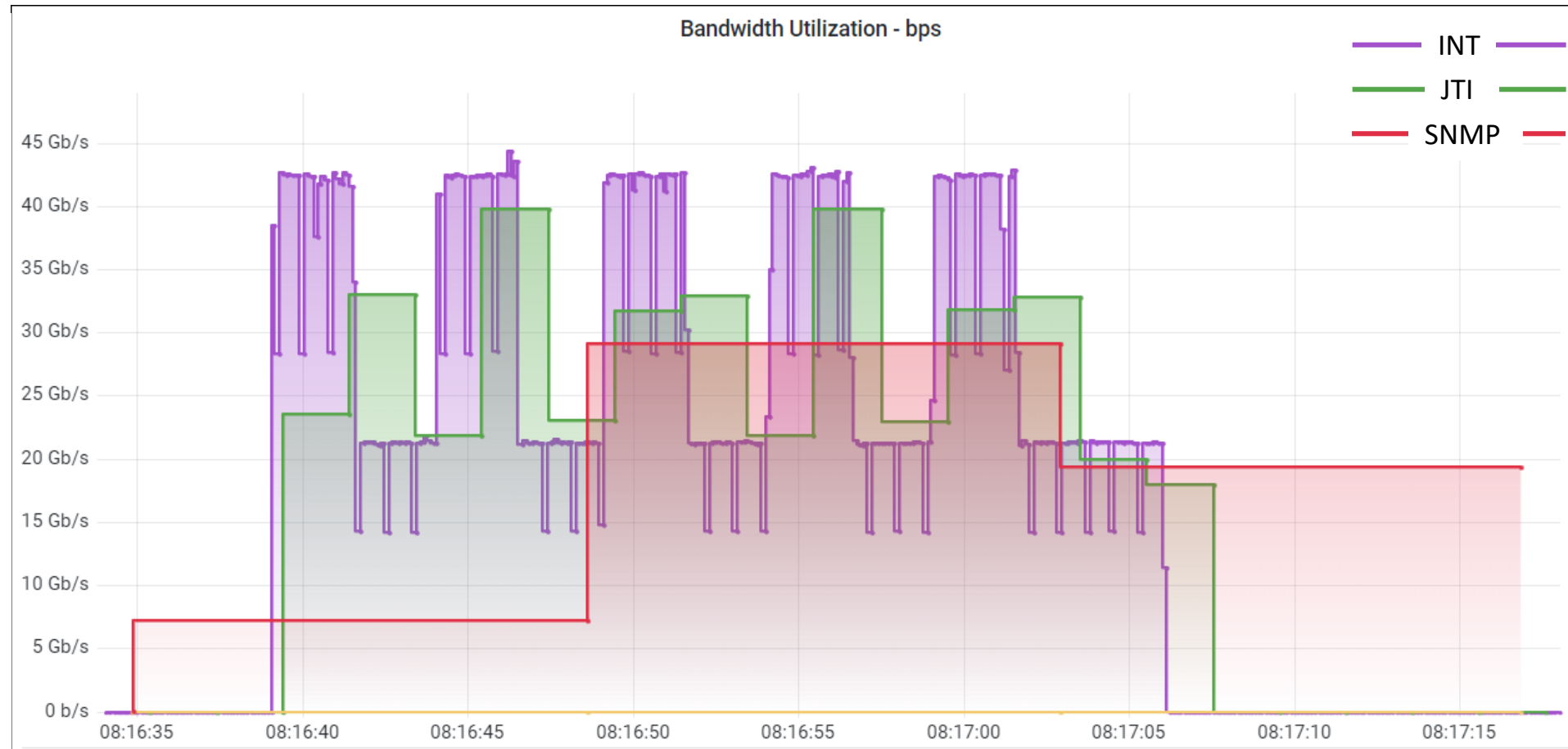
sFlow - Report

TOP Last Month – ACADEMIC – ASN x ASN
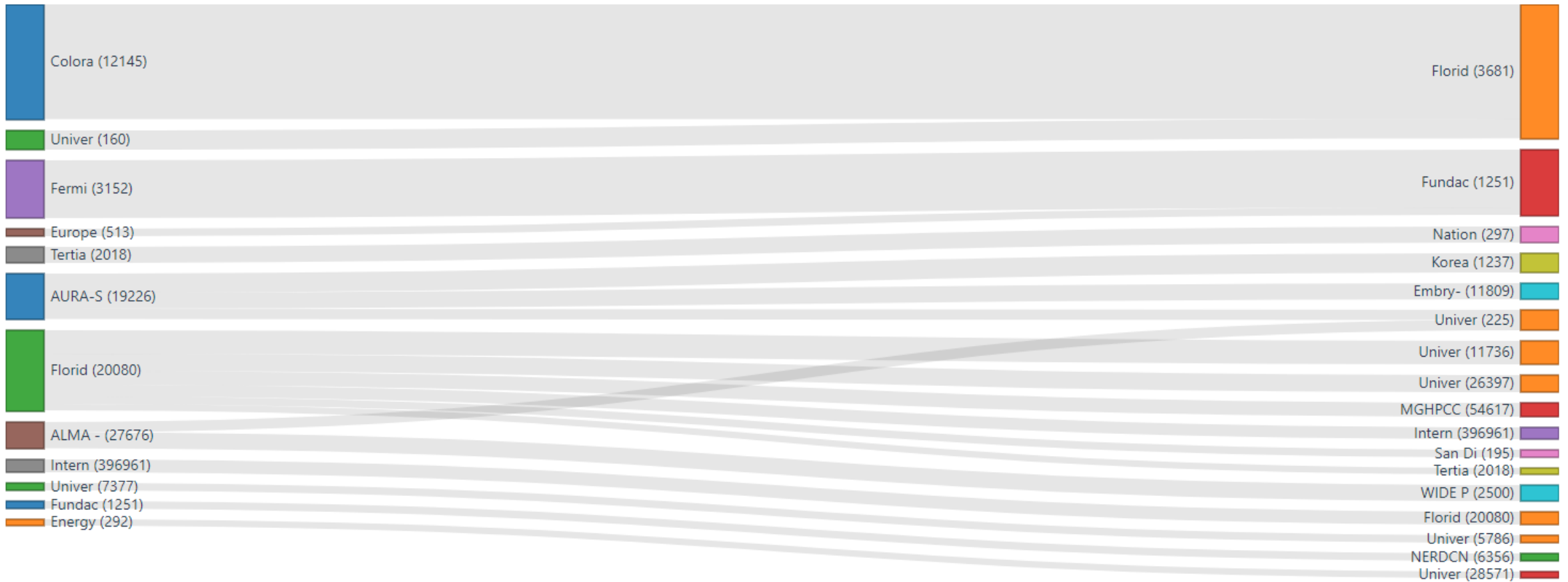
perfSONAR – Throughput – Miami x La Serena
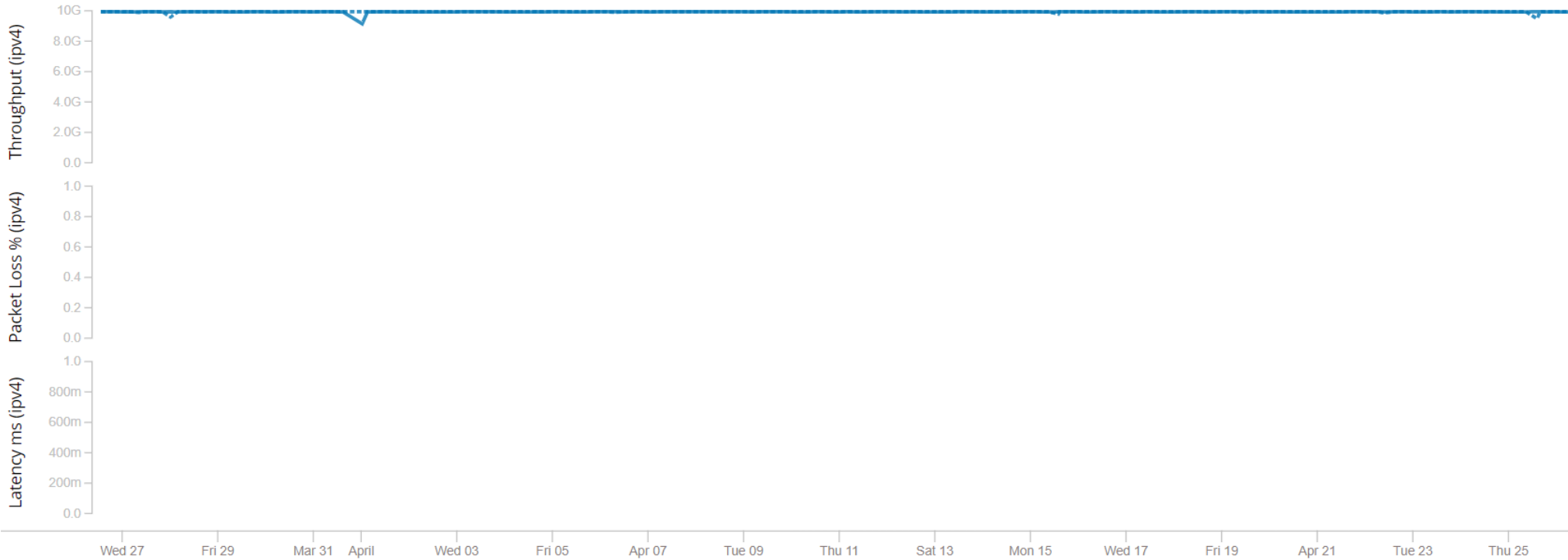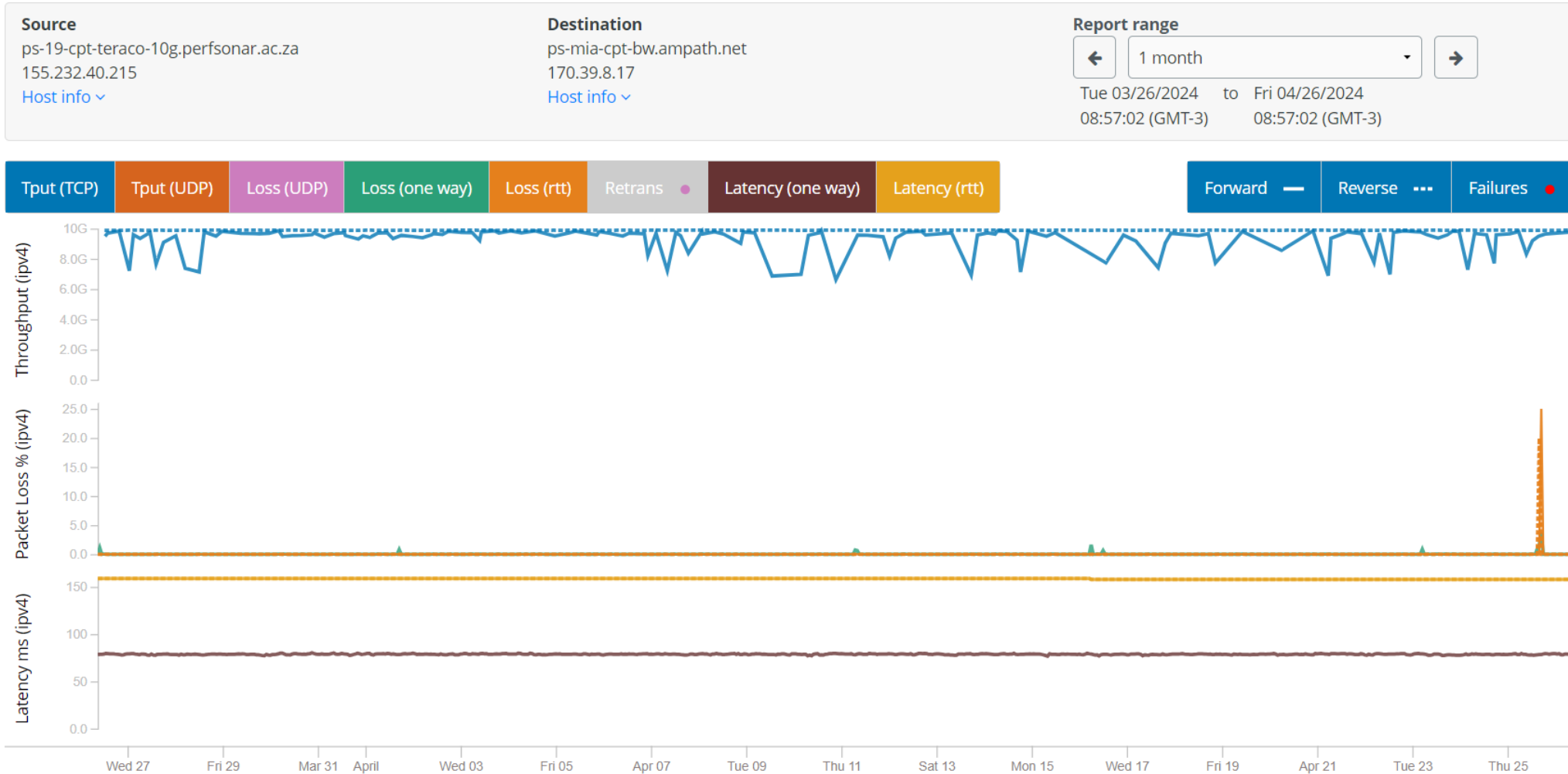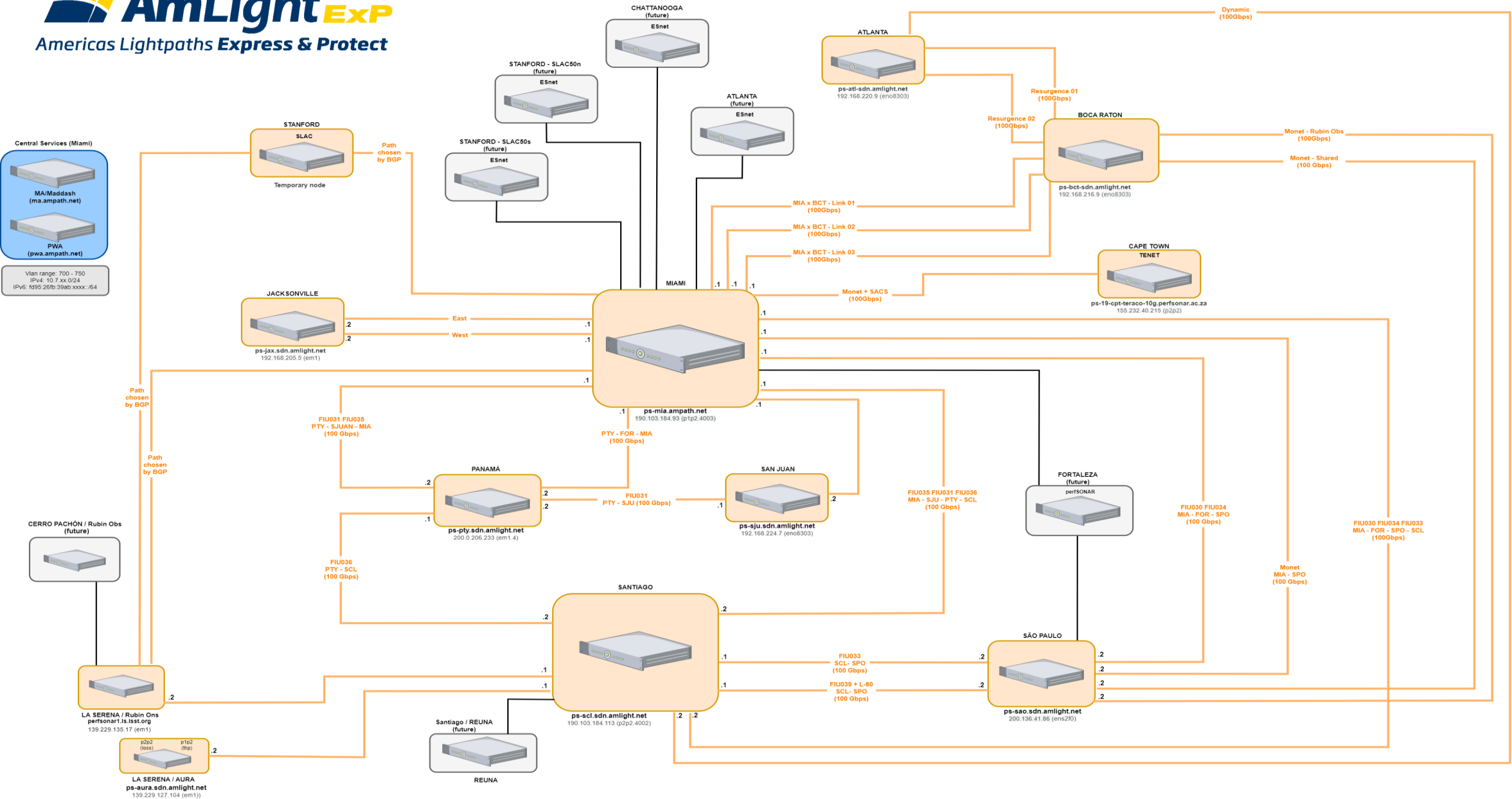
perfSONAR – Latency and Loss - Miami x La Serena
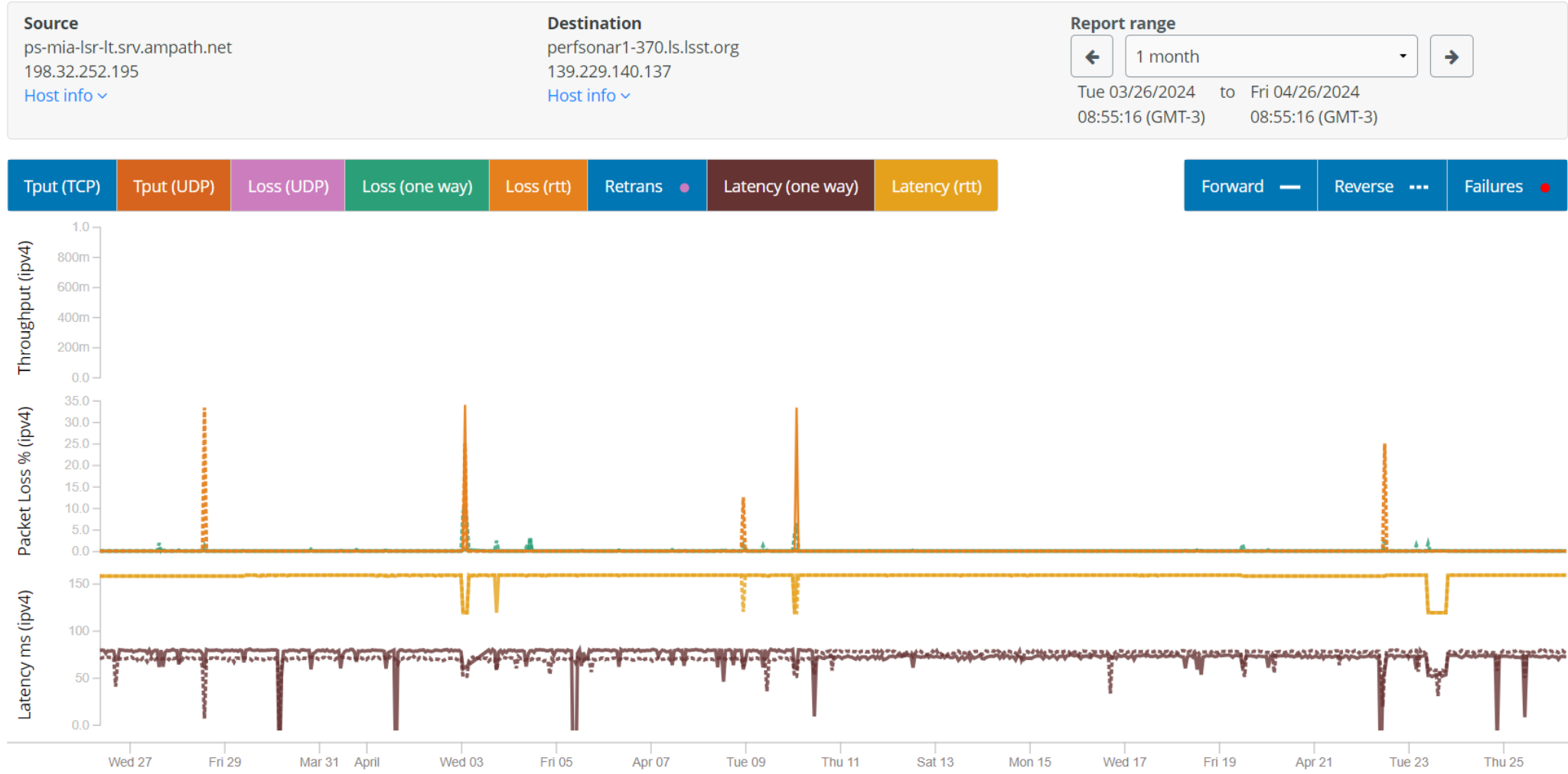
perfSONAR – Throughput + Latency/Loss – Miami x Cape Town

AmLight perfSONAR Infrastructure
April 2024

Traffic Generator for Network Testing
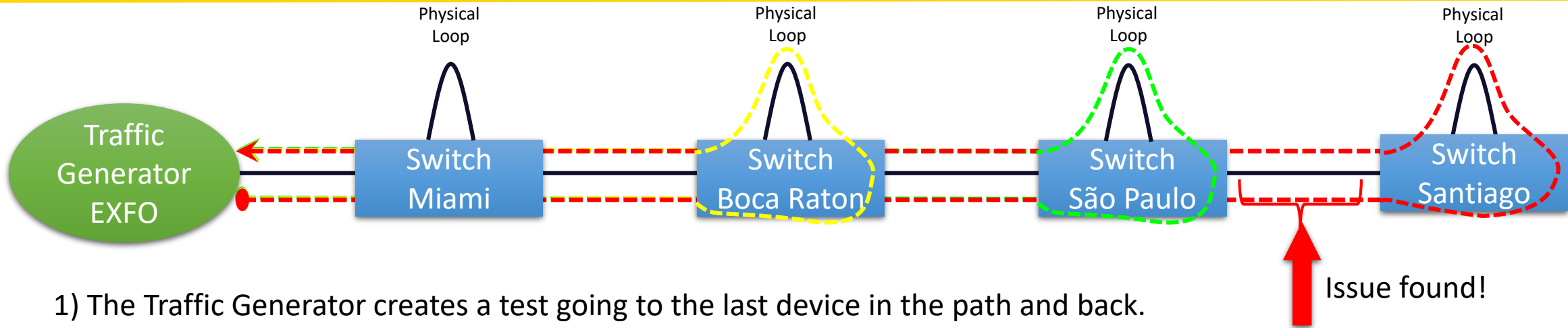
1) The Traffic Generator creates a test going to the last device in the path and back.

2) A problem is detected, so the Traffic Generator will start "shrinking" the path.

3) The Traffic Generator will start a new test using just the first half of the path.

4) The new test doesn't detect any issues, meaning there's no problem in the first section of the path.

5) The Traffic Generator will then shrink the second half of the path.

6) No issues are found again, meaning the problem is confined between São Paulo and Santiago, generating an alarm.

All tests will run periodically and automatically. No intervention from the Engineers!

Final Comments

➤ INT and JTI are used in our daily operations, increasing the network visibility beyond our expectations.

➤ Each tool has its pros and cons.

  ➤ Combining all monitoring tools enables AmLight to track performance issues and user complaints.

➤ The perfSONAR tests help us to check the user experience between two points. Future work:

  ➤ perfSONAR 5 deployment under study.

  ➤ perfSONAR matrix being evaluated.

  ➤ perfSONAR node in Buenos Aires to be deployed.

➤ New Zabbix 6 under deployment.

➤ We continue studying new ways of monitoring our environment.

➤ If you want to request monitoring of something specific, feel free to reach us!

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Thank You! / Questions? / Comments?

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