perfSONAR Measurements

SIG-NGN October 26. 2023
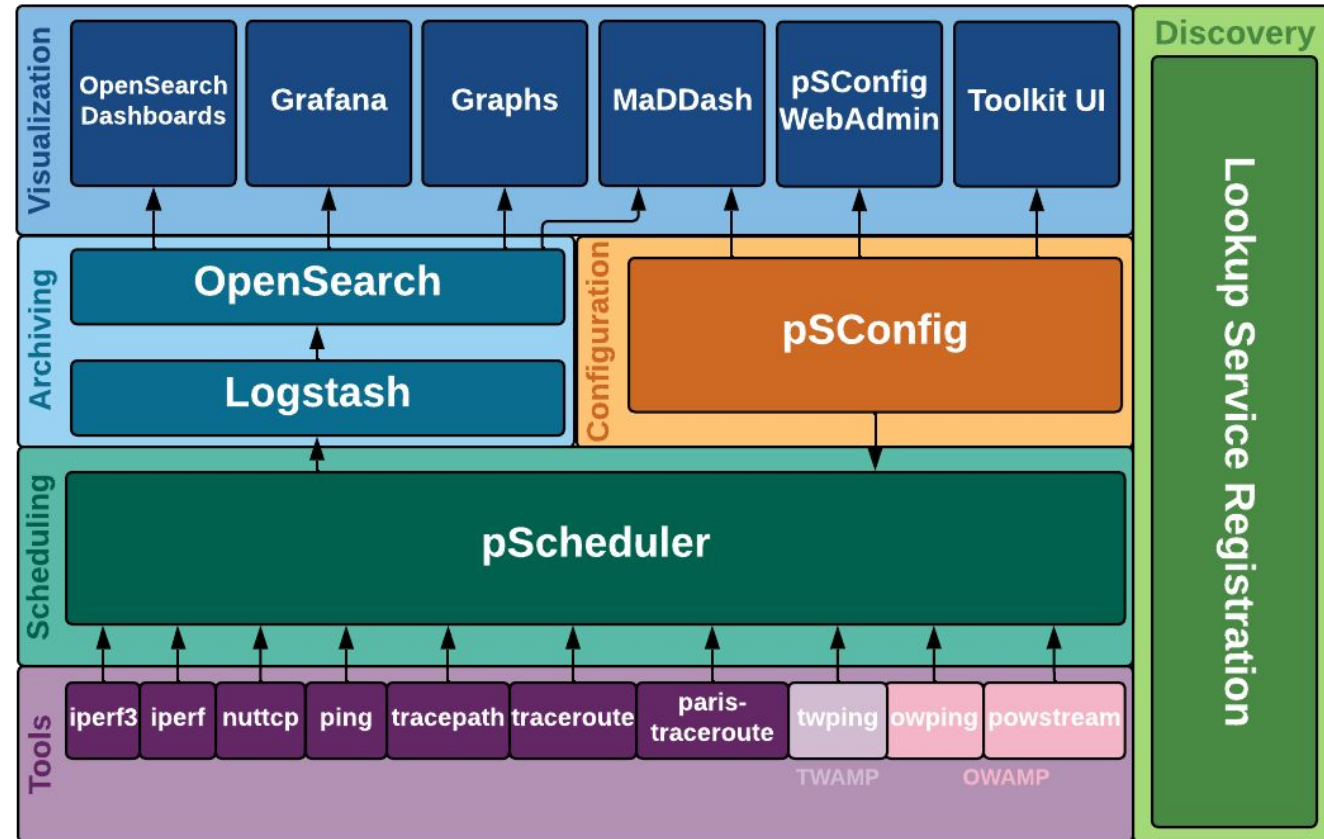
Andy Lake, ESnet

perfSONAR is developed by a partnership of

What is perfSONAR?

- An **open source collaboration** led by ESnet, GEANT, Indiana University, Internet2, RNP and the University of Michigan.

- **Goal is to provide network measurements between organizations** to help identify and troubleshoot network issues.

What does perfSONAR measure?

What most people think of:

- Packet Loss
- Throughput
- One-way latency
- Traceroute

Generally Speaking:

**End-to-end active measurements**

Other Metrics:

- Round Trip Time
- MTU
- Clock difference
- DHCP Response/Time
- DNS Response/Time
- Disk-to-Disk Throughput (e.g. GridFTP)
- 802.1x authentication Result/Time
- HTTP Result/Time
- Reachability
- Open ports
- S3 Throughput
- WiFi BSSID Properties

Plugin framework to add more

What do most people configure?

- **Packet Loss/One-way Latency:** OWAMP tests that send 10 pps and report summaries every minute

- **Throughput:** 30 second single stream iperf3 tests every few hours

- **Traceroute:** Traceroute tests every 10 minutes between the same endpoints as test above

Example: Pan-STARRS Hawaii to Queen's University Belfast
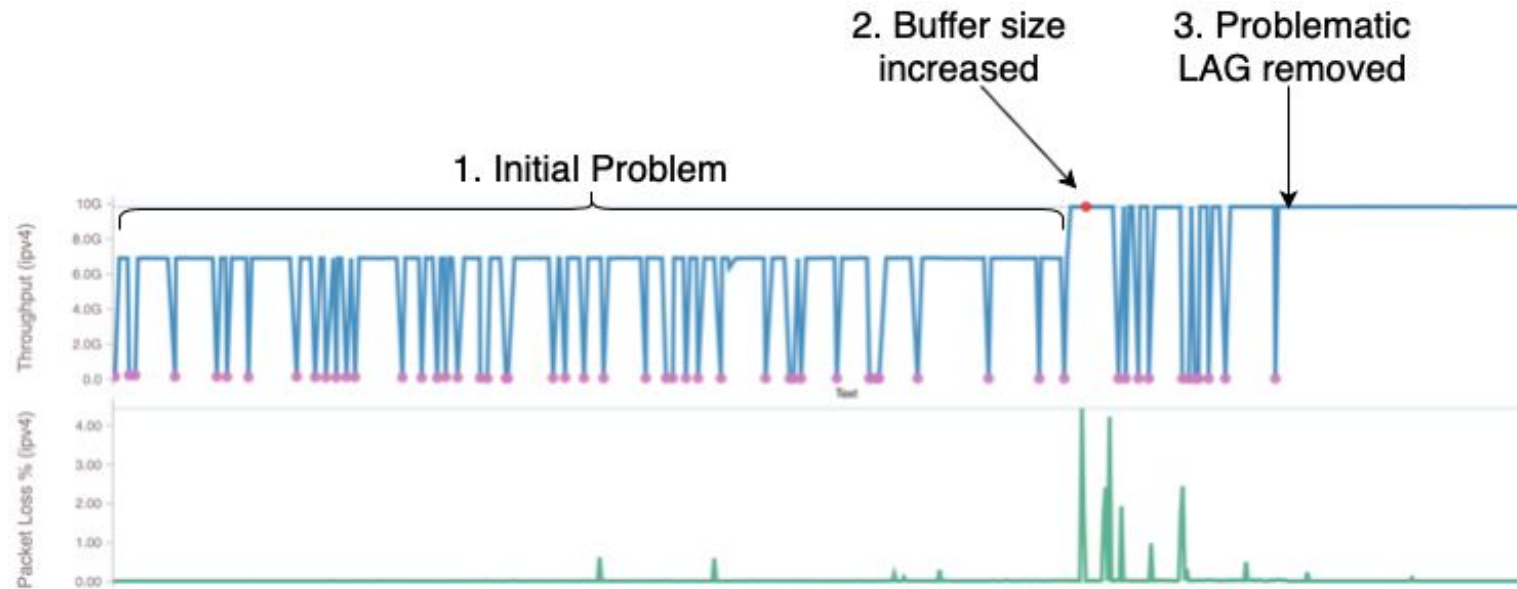
- Initially found undersized buffer that increased throughput ceiling but packet loss and dips remained (2)
- Operations found a single LAG giving errors, removed it from aggregation and results stabilized (3)