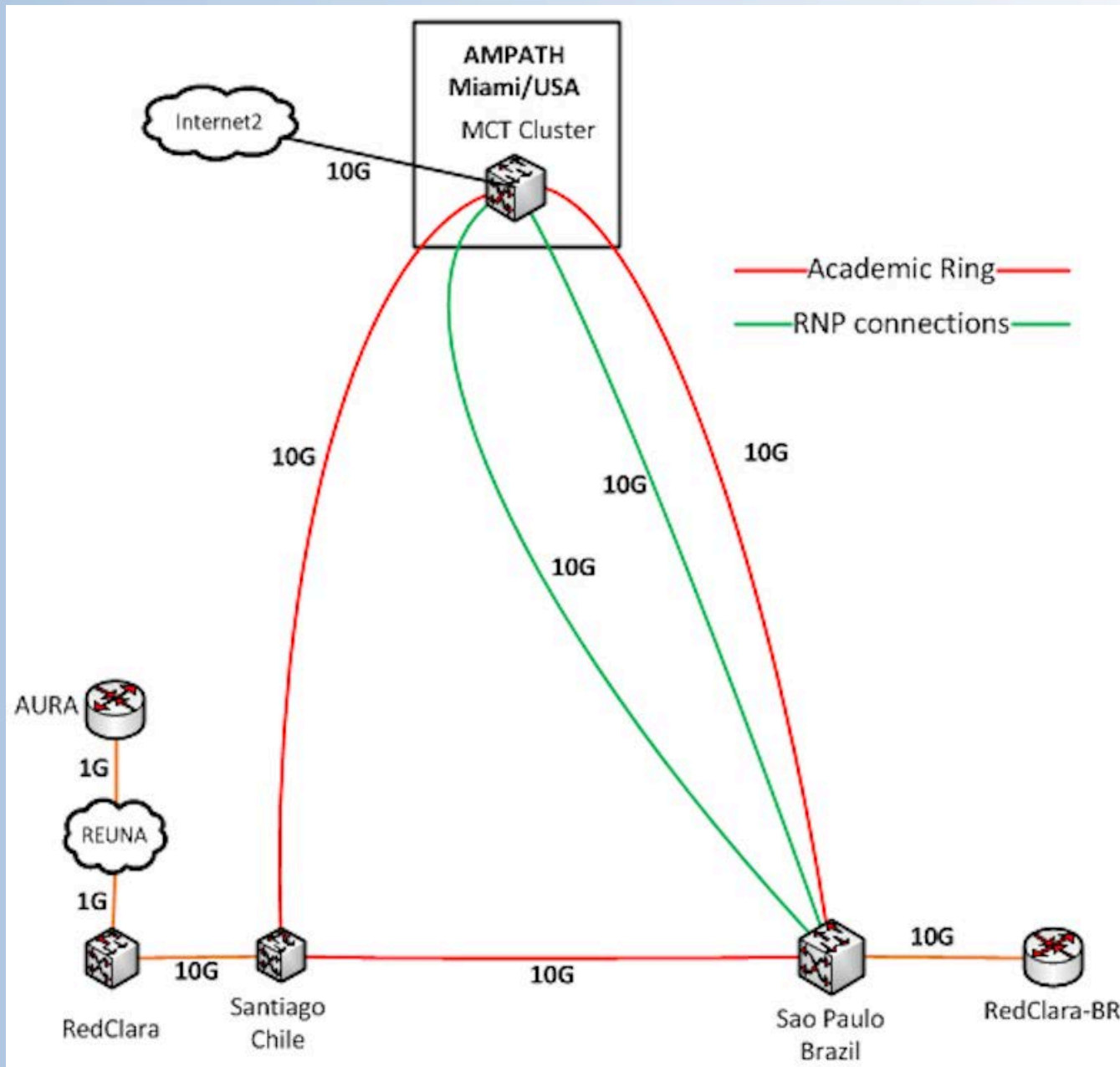# Virtual SAACC Meeting Apr 2014:
Updates from the last meeting:
AmLight connections

Jeronimo A. Bezerra

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Current AmLight Topology

What has changed to AURA?

- Moved from a STM-4 (622Mbps) circuit to the 10Gbps academic ring:
  - More bandwidth: both sides of the ring can be used at the same time (20Gbps);
  - Direct access to the researchers in Brazil (~60ms of "distance");
  - Protection using a network ring approach;
  - Delay using protection (via SP) reduced, from 191ms to 160ms;
- Better control and visibility of the topology and about what happens in the network:
  - No need to call LAN to ask about switch protection;
  - All links working using WAN-Phy technology
- An Ethernet switch was installed in Santiago, which will provide support for new applications and layer 2 circuits
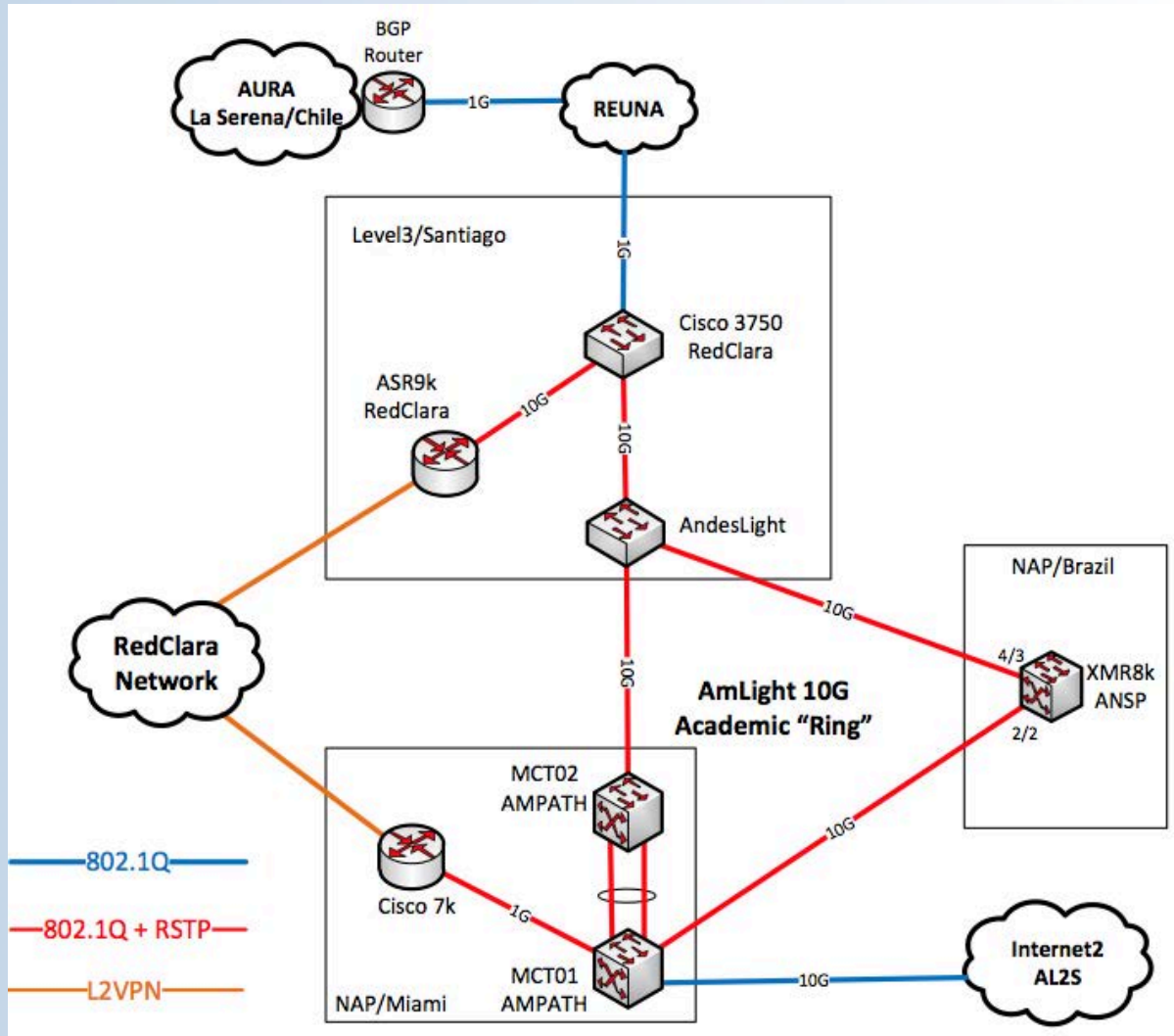 - AndesLight

What has changed to AURA? (2)
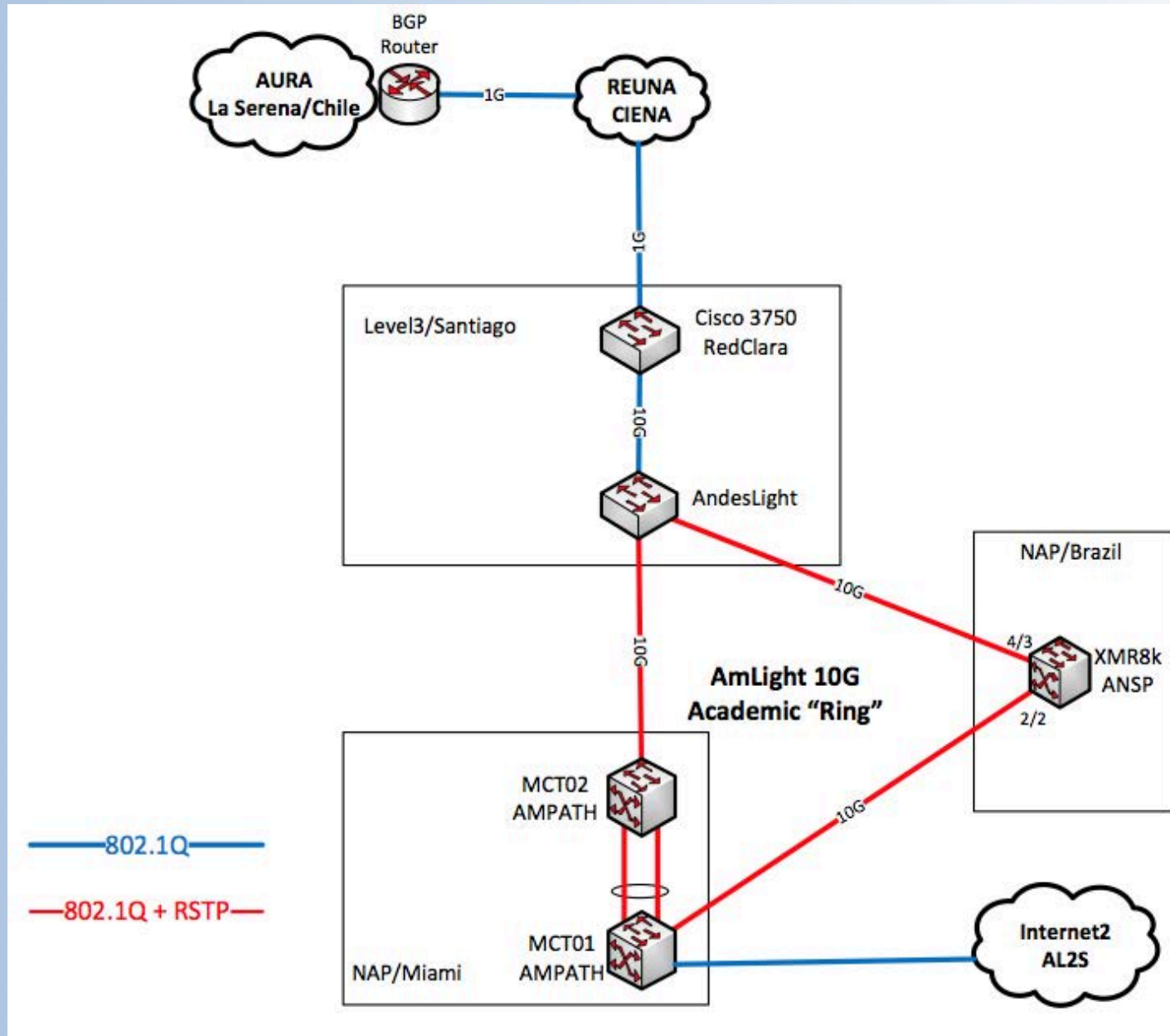
Next Steps

Next weeks:

- Establishment of a new redundancy approach for users in Chile using RedClara's backbone

  – This will add an extra path in case of double failure

Next Steps (2)

- Later this year:
  - Migrate AmLight links to SDN
    - Automate all provisioning activities
      - New layer 2 circuits will be provisioned through a Web interface
    - Reduce OPEX
      - No VLAN negotiation with all participants
      - No *Rapid Spanning-Tree* configuration
  - Bandwidth upgrade:
    - Activate an 100G link between Miami and Internet2
    - Activate an 100G link between Sao Paulo and Miami

Next Steps (3) – SDN and 100G links
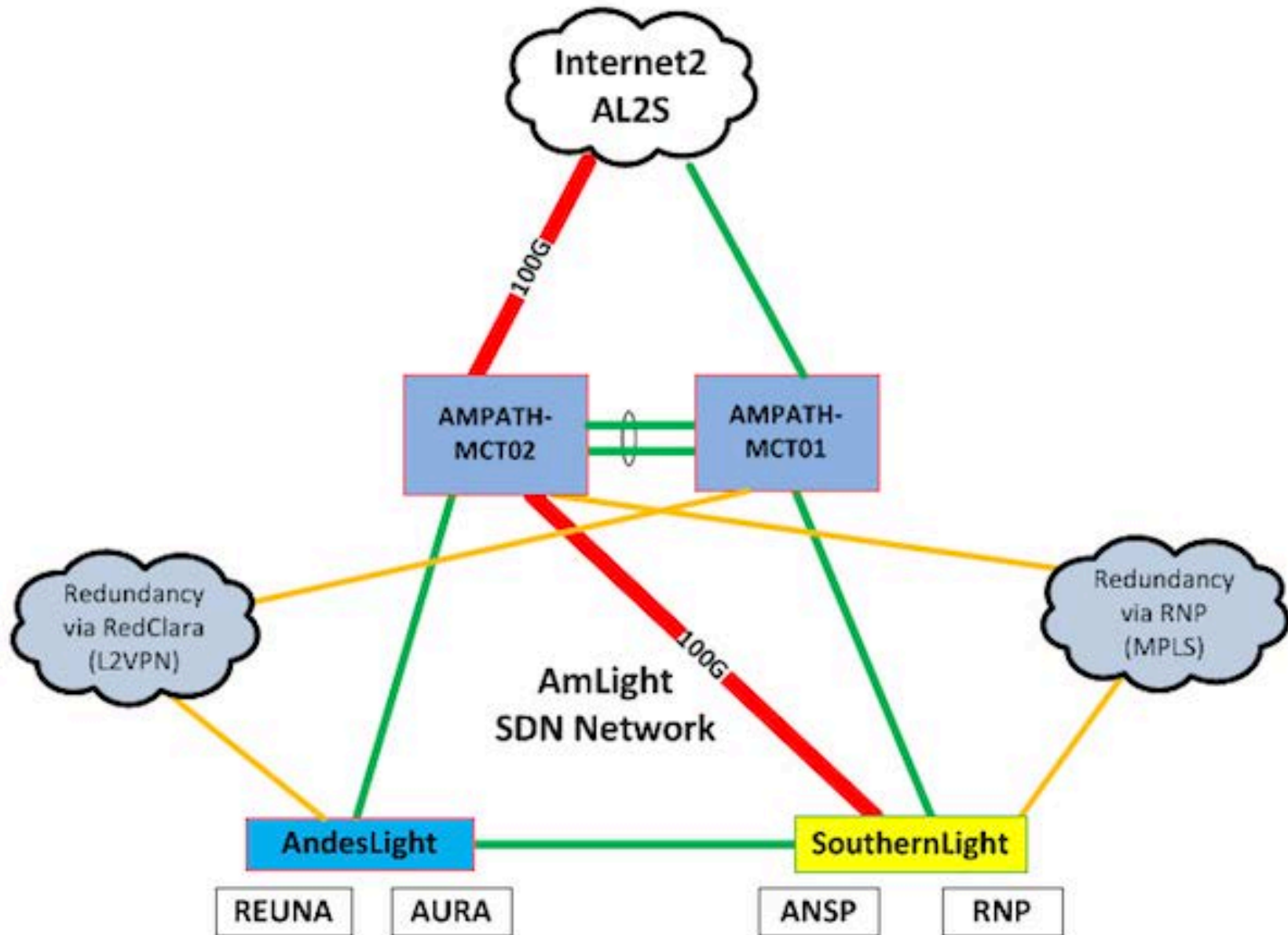
# Virtual SAACC Meeting Apr 2014: Monitoring Activities

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Monitoring

- perfSonar is the official framework used by Internet2, ESNET, GEANT and AMPATH to measure network performance and identify bottlenecks
  - Measures: Round Trip Time, bandwidth, one-way delay, traceroute, packet loss
  - Very useful to help network engineers to find issues in the network
- PerfSonar servers currently installed:
  - REUNA
  - AMPATH
  - AURA (disconnected after the NTP attacks)
  - To be installed:
    - ANSP
    - RedClara (Chile, PA, BR, AR and US)
  - Unknown status:
    - NCSA
- It's being used to evaluate the span Miami-Chile for the LSST Phase 1
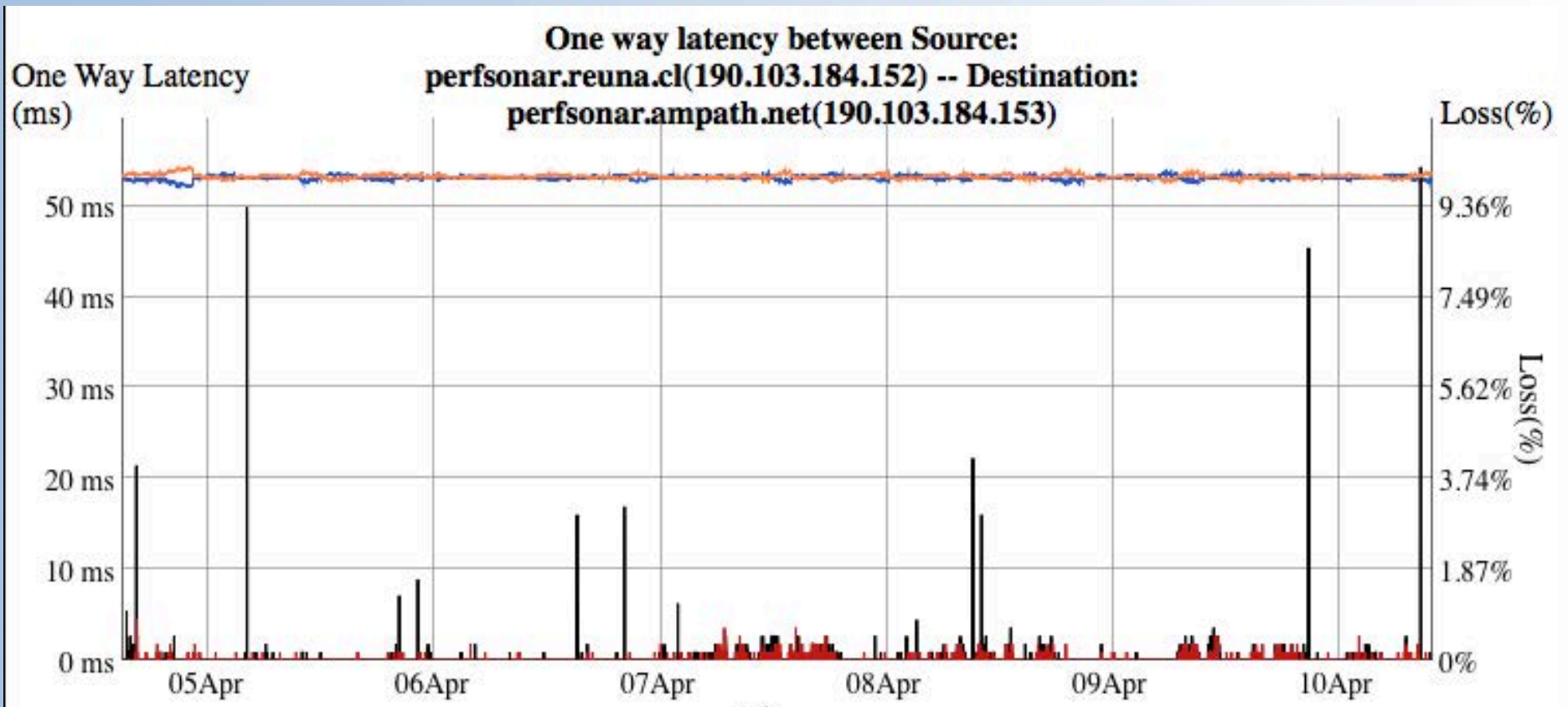
LSST Measurement Topology
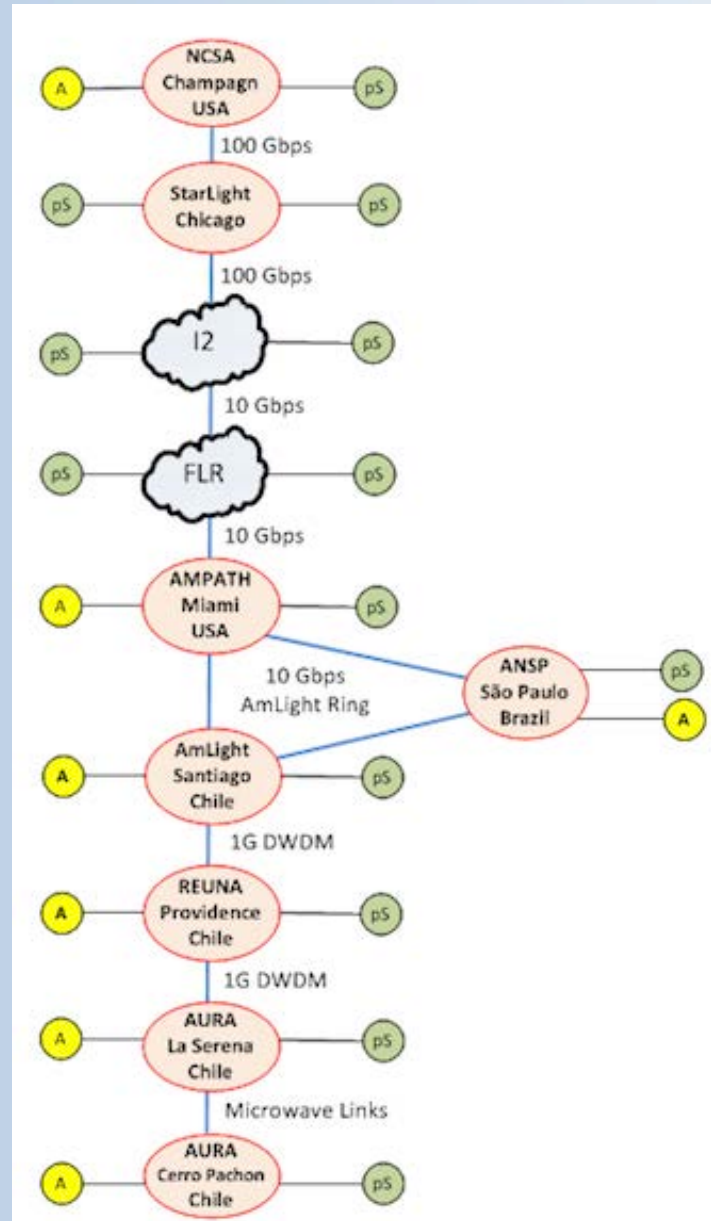
Some Measurements

Using Zabbix for round trip time:
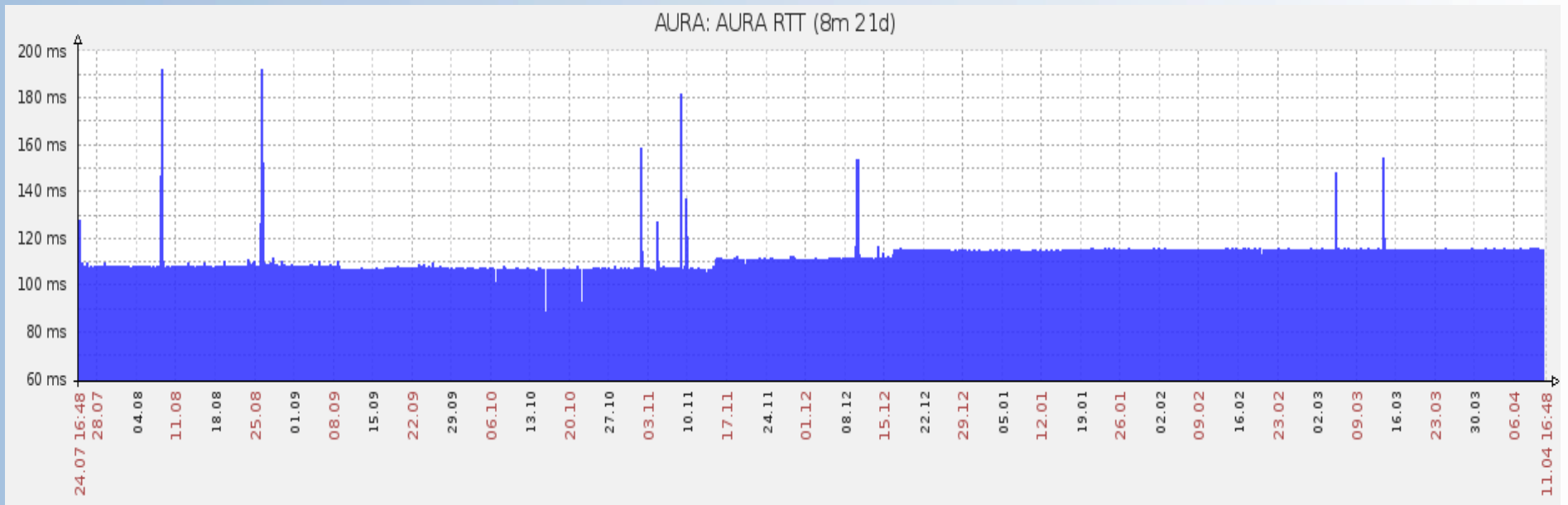
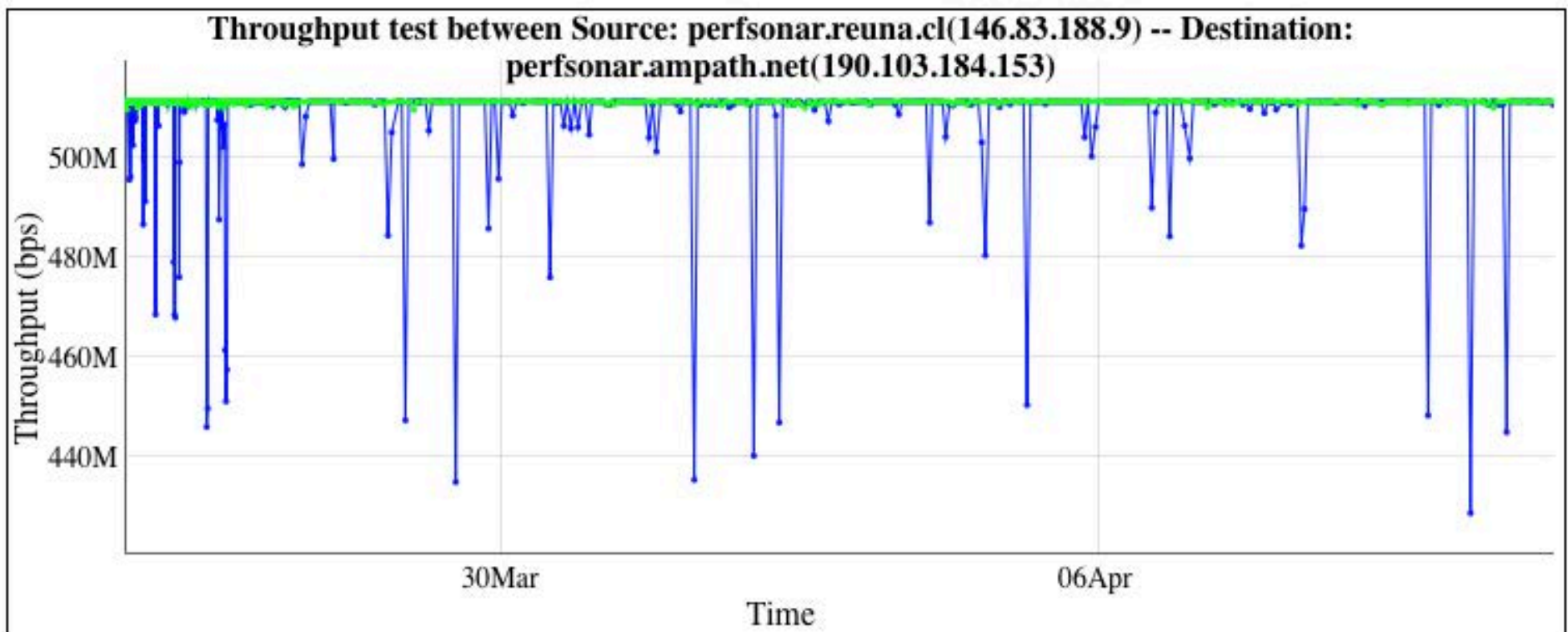AURA was moved to the academic ring on Dec 18th

PerfSonar vs One-Way Delay and Errors

The Left Column shows the one-way latency with the orange the the blue lines (representing directions)
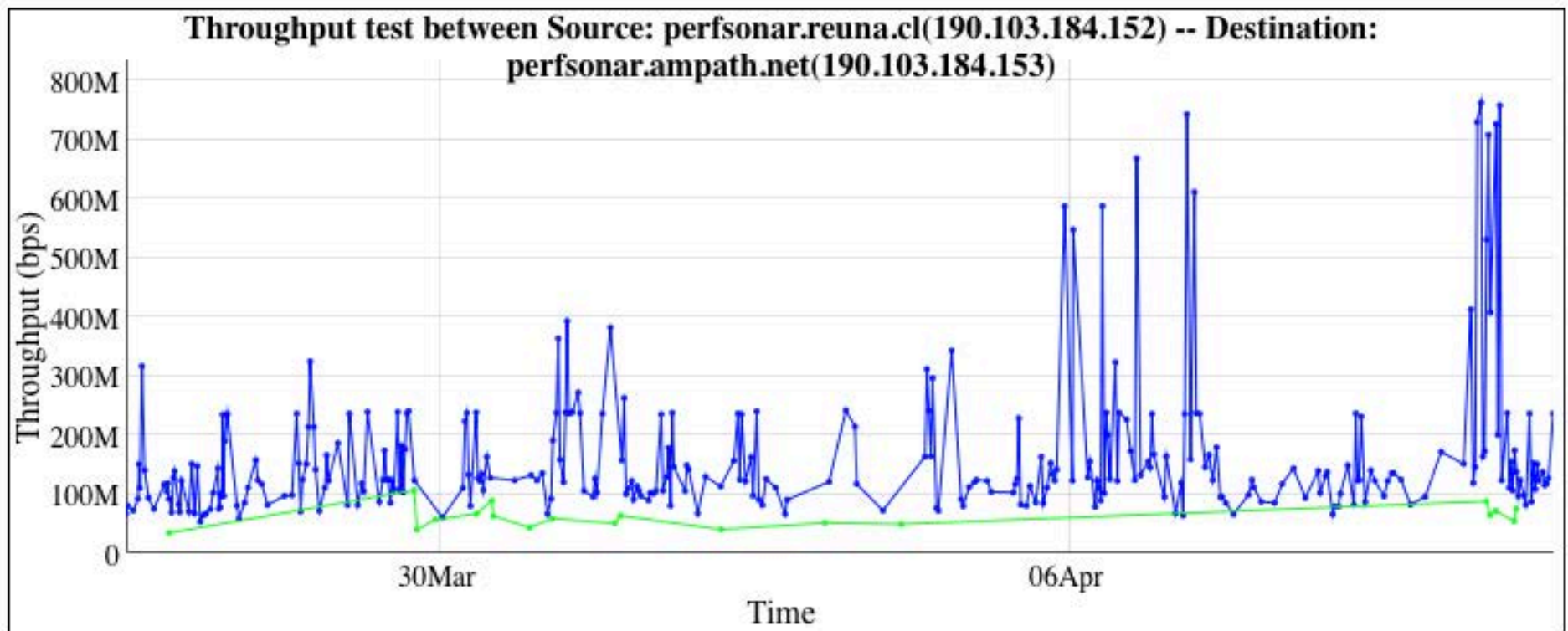The Right column shows the % of packet loss, with the red and black vertical lines
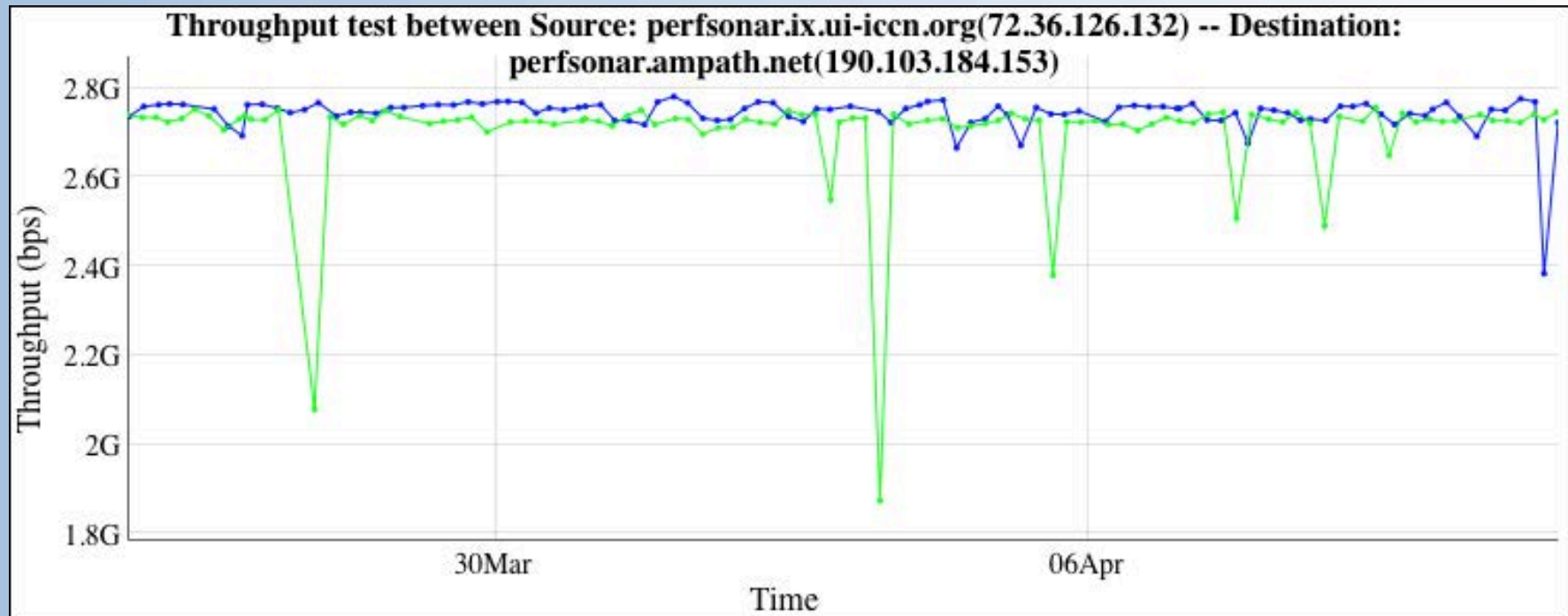
PerfSonar x UDP Bandwidth tests

Throughput test between Source: perfsonar.reuna.cl(146.83.188.9) -- Destination: perfsonar.ampath.net(190.103.184.153)

Green: AMPATH to REUNA
Blue: REUNA to AMPATH

PerfSonar vs TCP Bandwitdh tests

Green: AMPATH downloading from REUNA
Blue: REUNA downloading from AMPATH

PerfSonar vs TCP Bandwidth tests (2)

Green: AMPATH downloading from University of Illinois
Blue: University of Illinois downloading from AMPATH

Help needed!

- As you can see, perfSonar could provide very important measurements for all networks/researchers
  - Baselines are fundamental to understand what to expect from the network
  - But it's required that each network has its own!

- Sometimes it points out some very important issues that could affect overall performance
  - TCP is really affected with packet error rate over 0.001%

- AMPATH/AmLight is available to help you to install your perfSonar
  - noc@ampath.net

Do you want/need to have access to these graphs?
perfsonar.ampath.net

Thanks