



Virtual SAACC Meeting Apr 2015: AmLight Updates

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Outline



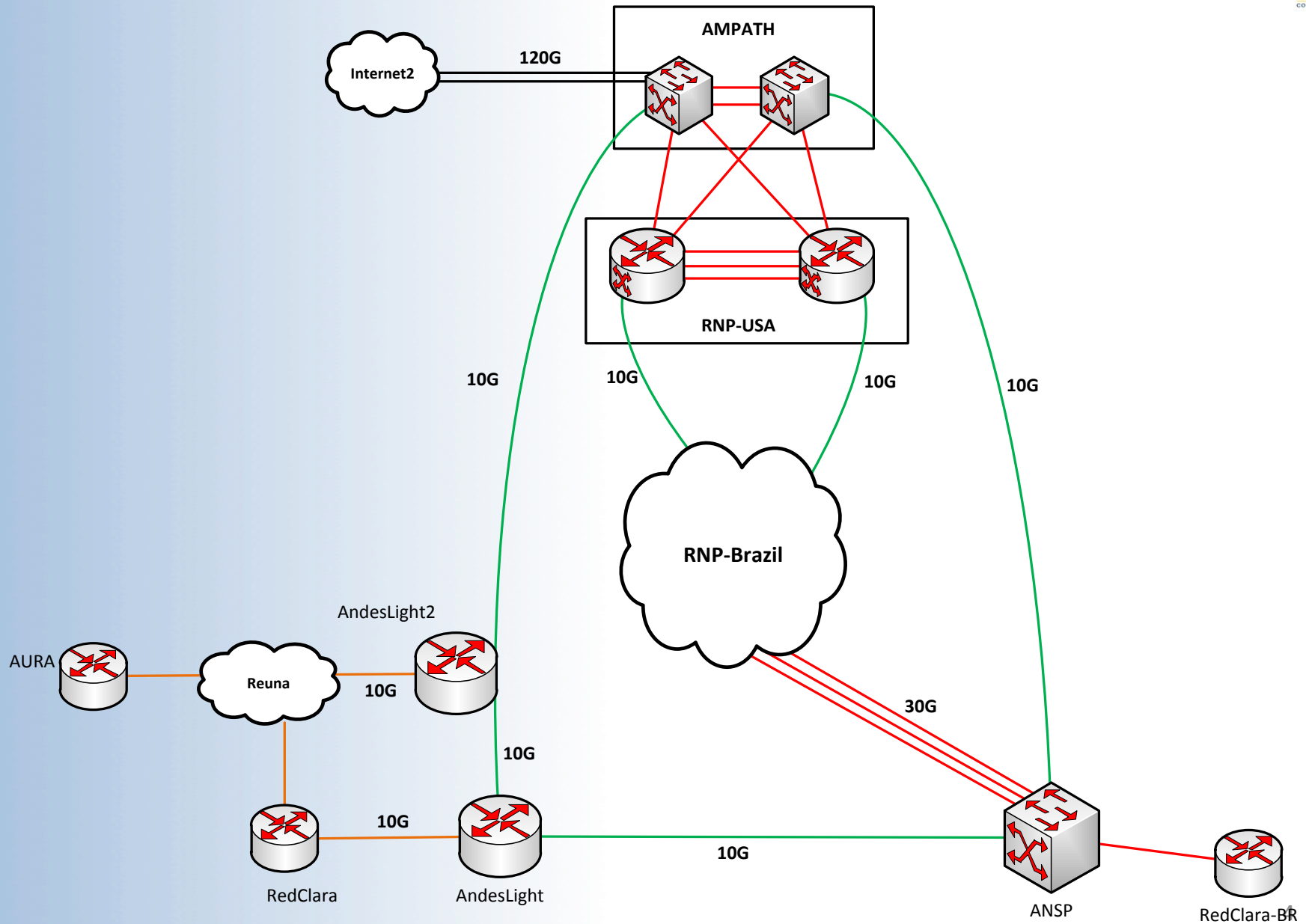
- What has changed to AmLight in the last year?
- What has changed to AURA connection to AmLight?
- Network Programmability: Benefits
- Plans for 2015

What has changed to AmLight in the last year?



- SDN deployed on Aug 31st:
 - Openflow 1.0 deployed
 - Layer 2 circuits created and monitored by a SDN Orchestrator
 - Better control and visibility
 - Network Programmability is now available for researchers
- A second Ethernet/SDN switch was installed in Santiago:
 - Redundant network access points to AmLight
- A 100G connection to Internet2 was activated last week:
 - Total of 120Gbps available for collaboration

Current AmLight Topology



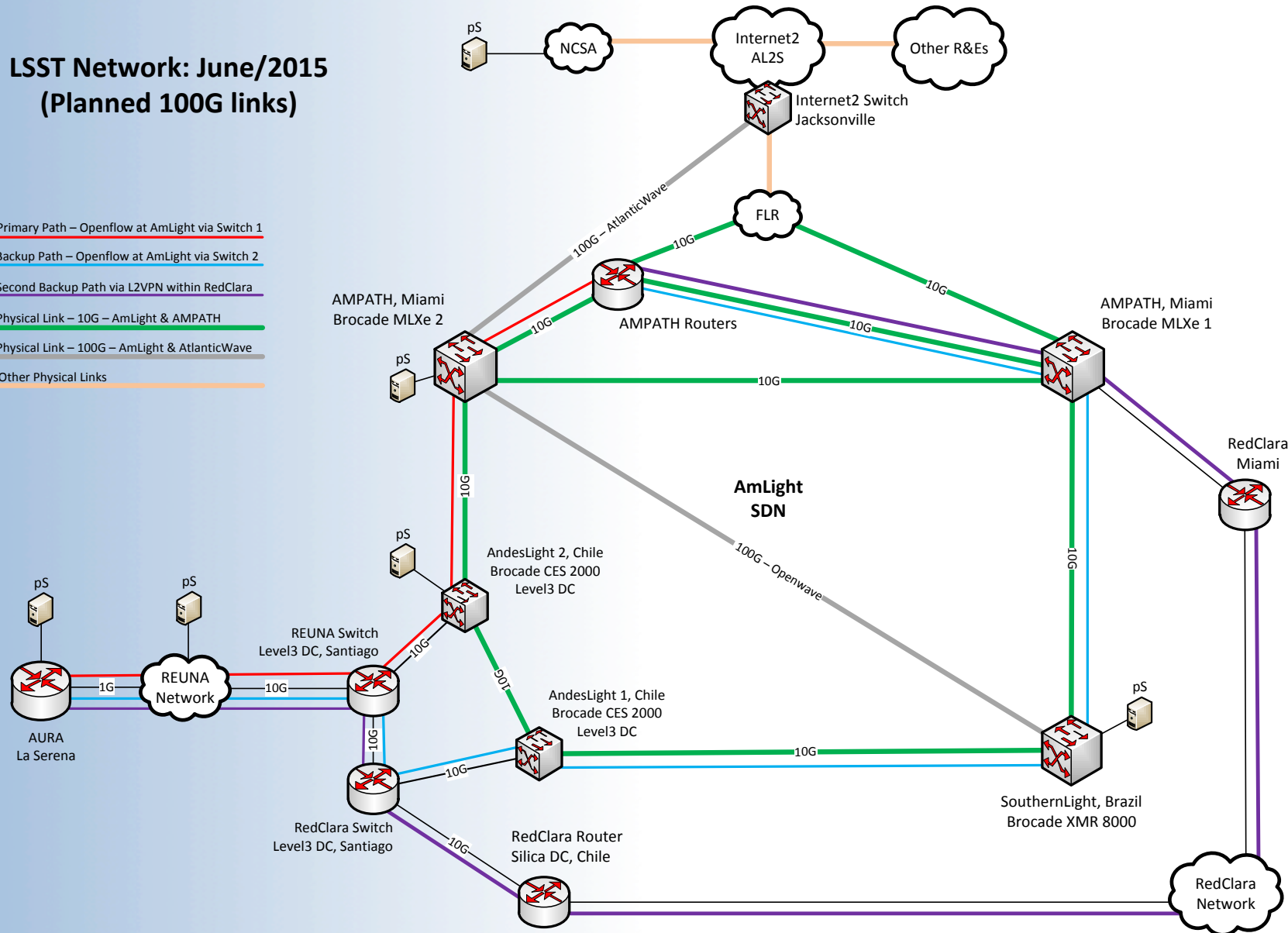
What has changed to AURA connection to AmLight?

- Resilience was improved:
 - With a second Ethernet/Openflow switch installed, AURA has multiple exit points in Chile
 - Bidirectional Forwarding Detection (BFD) protocol was enabled between AURA and AMPATH:
 - Faster convergence between possible paths
 - RedClara's network is the third path:
 - In case of double cut, AURA remains UP
 - A joint effort involving AmLight, REUNA, RedClara and AURA

What has changed to AURA? (2)

LSST Network: June/2015 (Planned 100G links)

- Primary Path – Openflow at AmLight via Switch 1
- Backup Path – Openflow at AmLight via Switch 2
- Second Backup Path via L2VPN within RedClara
- Physical Link – 10G – AmLight & AMPATH
- Physical Link – 100G – AmLight & AtlanticWave
- Other Physical Links



Network Programmability: Benefits

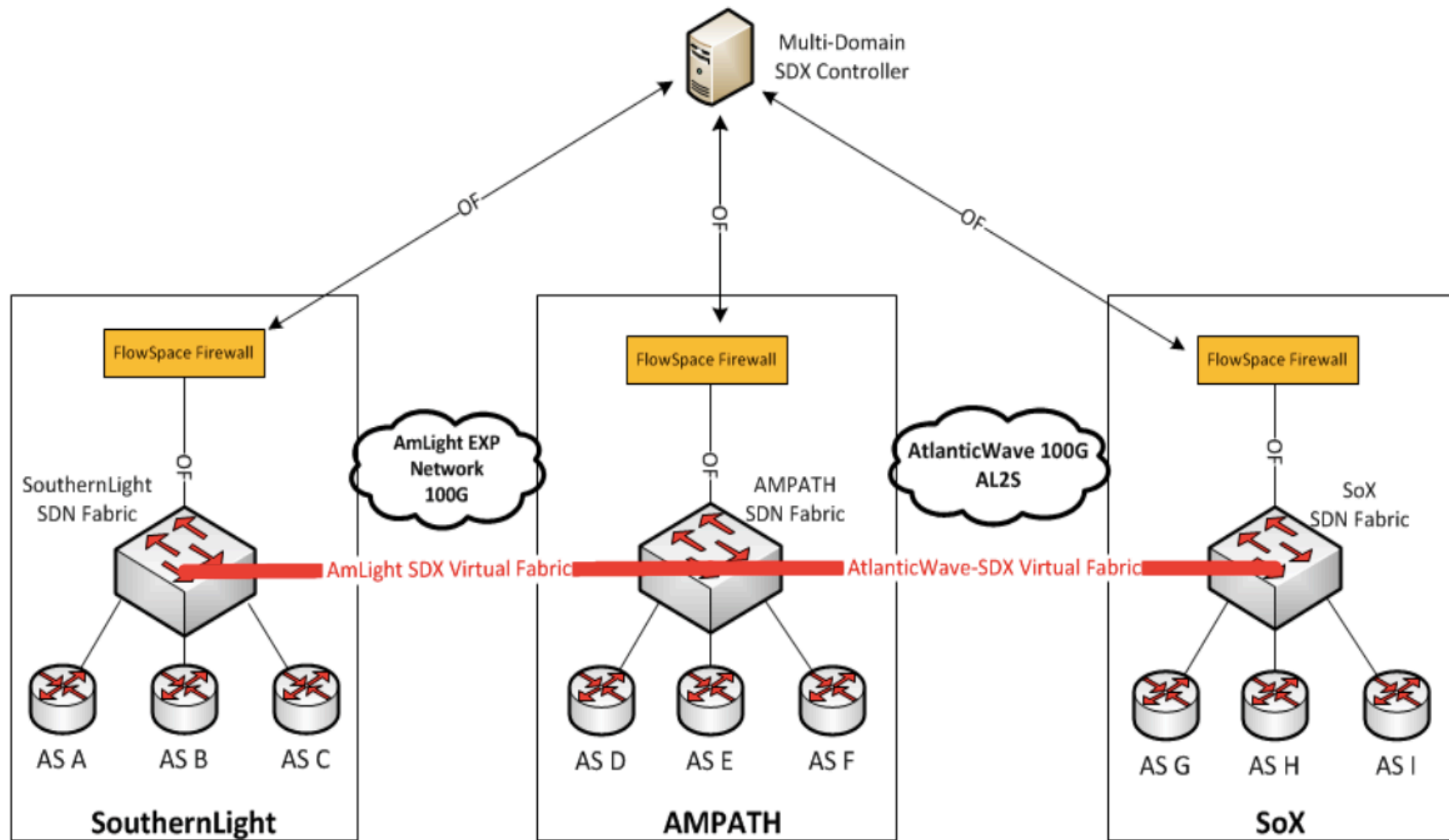


- SDN and its benefits for the SAACC Community:
 - SAACC Applications would be able to provision the network accordingly to their needs
 - Full network visibility
 - Applications could react to network conditions:
 - Delay change, packet drops/loss, bandwidth bottlenecks, ...
 - Applications could allocate bandwidth on demand:
 - Multiple paths could be used
 - No need to contact any NOC
 - All of it, 24x7x365

Plans for 2015

- Activation of the 100G link between Sao Paulo and Miami (Openwave project):
 - Estimated for June-July
- Migration to Openflow 1.3:
 - Features as Bandwidth Guarantee and Priorization will be available
- Deployment of new perfSonar servers:
 - Performance and Monitoring, end-to-end and network-by-network will be available soon, from La Serena to NSCA
- Deployment of a SDX (2015-2018)
 - From MANLAN/NYC to SouthernLight/Brazil, a single SDN fabric will be built
 - 100+ Gbps available
 - Great environment for SDN prototyping

AtlanticWave-SDX – SouthernLight, AMPATH and SoX Controller with Access to a Multi-Domain Slice via OpenFlow





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Network Programmability: Benefits

Two possible interfaces:

OpenFlow (currently 1.0, 1.3 in the future)

- Dedicated slices are created by the users
- Users will have their own VLAN ranges
- Different virtual topologies available
- Layer 2 and / or Layer 3 matches
- Low level configuration

NSI v2 – Network Service Interface

- High level abstraction for layer 2 multi-domain provisioning
- No need to know the topology and physical devices/configurations
- Layer 2 circuit provided as a service: easier to isolate from production traffic

