

SAACC Meeting

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Evolving AmLight-Exp to 100G: *Current Status*

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Outline



- Introducing the AmLight-ExP project
- 100G Ring Installation Plan
- Current Status
- Next Steps

Introducing the AmLight-ExP Project



- *AmLight Express and Protect* (AmLight-ExP) is the evolution of the AmLight project
- Started on April 2015/Planned for 5 years
- Two main phases:
 - Phase 2015-2017:
 - Original plan: Add a 100G link between Sao Paulo and Miami. Total capacity planned: 140Gbps
 - Updated plan: Upgrade one of the two 10G rings to 100G. Total capacity: 220Gbps
 - Phase 2017-2019:
 - Leased capacity: Keep the 100G ring, remove the second 10G ring
 - + Spectrum:
 - Santiago -> Sao Paulo -> Miami via Atlantic
 - 300GHz on a new submarine cable Sao Paulo -> Miami
 - » Initial capacity planned: 600Gbps
 - » Users will be responsible for lighting their spectrum
 - » AmLight Engineering Team will operate the optical infrastructure
 - Initial Capacity: 800Gbps

100G Ring Installation Plan

The 100G ring installation was planned to use the following sequence:

- *Miami <-> Sao Paulo*: March 1st 2016
- *Miami <-> Santiago*: April 1st 2016
- *Sao Paulo <-> Santiago*: April 30th 2016
- Opening the *Miami <-> Sao Paulo* in Fortaleza:
May 15th 2016
- Opening the *Miami <-> Santiago* in Panama City:
only in 2018

Current Status

- Carrier has delayed its upgrade to 100G:
 - The submarine system had to be upgraded
- The *Miami <-> Sao Paulo* link is being installed:
 - It was ready for tests last week, but a fiber cut on the carrier's network postponed our tests
 - The link will be connected to two Brocade MLXe switches
- AMPATH borrowed a 100G IXIA tester test the link:
 - Testing a 100G link is more complex than testing 10Gbps or 40Gbps links

Next Steps (1/3)

- To activate the 100G *Miami-Sao Paulo* link, minimum investment was needed at AMPATH:
 - US\$ 9,900.00 for a single 100G transceiver (80% discount)
- To activate any other 100G link, the AmLight network has to be upgraded:
 - Cost estimated: US\$144,000.00 to US\$ 198,000.00
 - For Chile and Miami only
 - Instead of just upgrading the current network devices, new devices are being evaluated:
 - Special focus on features related to QoS, currently not supported on the current devices
 - Final solution was not defined yet

Next Steps (2/3)

- The next link planned was *Miami <-> Santiago*
- 100G activation in Santiago was postponed to November 2016:
 - On the JTM meeting (Mar 2016), AmLight made this request to evaluate other vendors
 - On the same JTM meeting, it was agreed that, as the AURA 100G link to Santiago will be available only after October, opening in Santiago right now is not necessary
- Links *Miami <-> Santiago* and *Santiago <-> Sao Paulo* will be activated as a single link:
 - Planned for April/May 2016
 - Once AURA reaches Santiago with 100G, this link will be opened in Santiago

Next Steps (3/3)

- Then, the *Miami <-> Sao Paulo* link will be opened in Fortaleza:
 - RNP will provide the network device and 100G port
 - AmLight, RNP and the carrier are working on the colocation space at this moment
 - Estimated for May/June 2016

Conclusion



- By December 2016, AURA/LSST will have 100G from La Serena to NCSA
 - Two paths inside AmLight: via Pacific and via Atlantic
- At AMPATH, a 100G host is available for performance and application tests:
 - At SC2015, server reached 95Gbps of throughput
- Bandwidth Reservation will be supported at AmLight



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Questions?

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