OpenWave: 100G alien wave AmLight Project

IRNC ProNet 100Gbps Supplement Awards
Kickoff meeting
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OpenWave 100G project

- OpenWave is under NSF IRNC ProNet AmLight award for U.S.-Latin America connectivity
- OpenWave will deploy an experimental 100G alien wave between US and Brazil
- OpenWave is an experiment consisting of 2 major goals:
  - Experiments to deploy a 100G trans-oceanic alien wave on a highly constrained operational undersea cable system
  - Experiments to operate a 100G wave at 9,800km that spans North and South America

OpenWave Project Partners

- NSF and the IRNC program
- FIU via the AmLight Project
- FAPESP, via the ANSP project
- RNP, Brazil's NREN
- PadTec, optical equipment manufacturer
- Latin American Nautilus, undersea cable operator
- Florida LambdaRail (FLR)
- Internet2

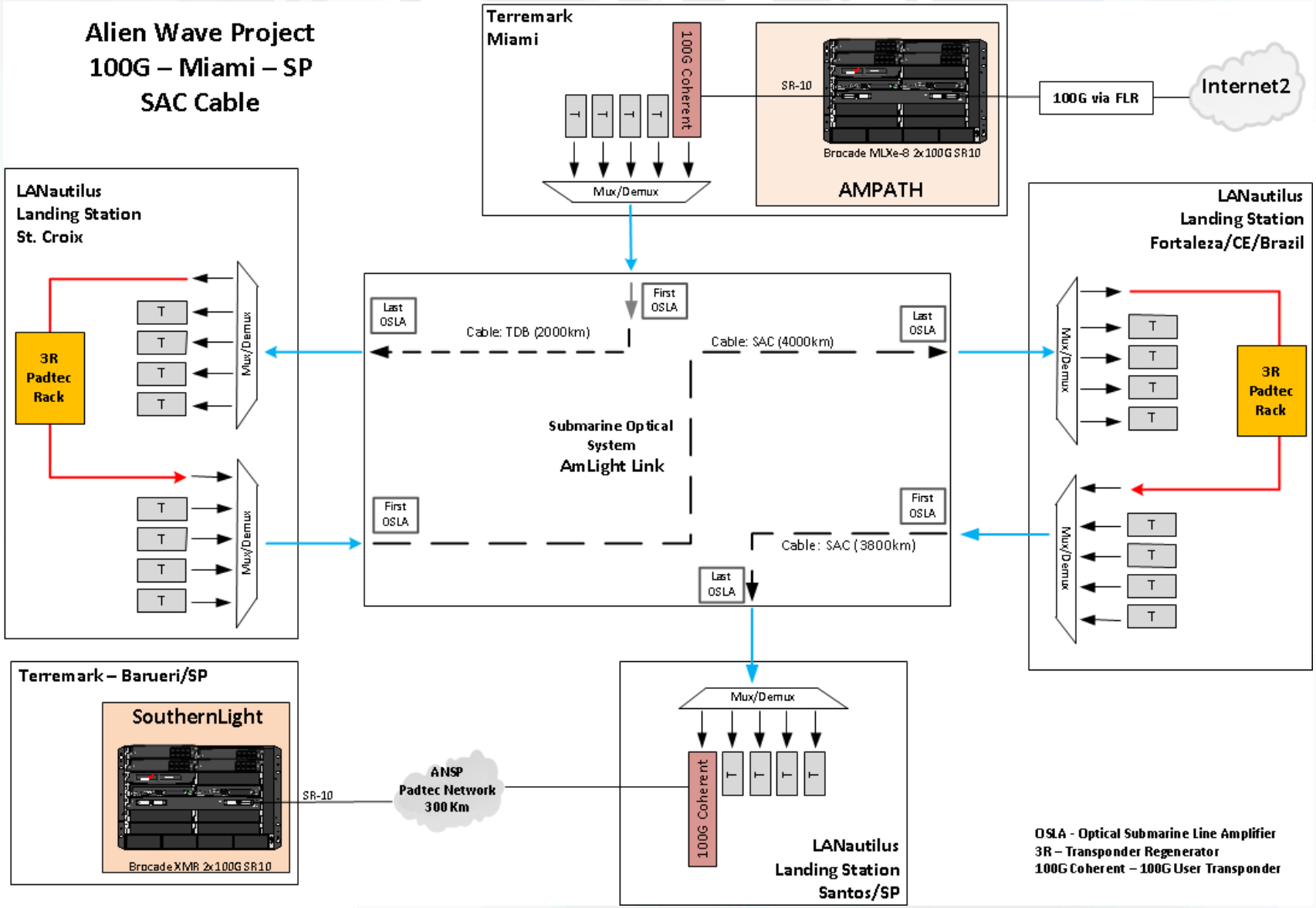
OpenWave Challenges & Benefits

- Introducing a Coherent 100G system in an intensity modulation long distance undersea optical system
- Building a testbed to discover how to overcome the nonlinear phase noise problem impairments on this undersea cable system
- Impact is the potential of introducing a novel approach for upgrading production undersea optical fiber systems, and
- Facilitating academic access to submarine optronics

OpenWave 100G Network Testbed

- OpenWave consists of three submarine segments:
  - Miami/USA to St. Croix (2000 km)
  - St. Croix to Fortaleza/BR (4000 km)
  - Fortaleza/BR to Sao Paulo/BR (3800 km)
- 3R Regeneration at St. Croix and Fortaleza
- Spectrum of 50 GHz will be used with guard bands at 25 GHz each
- AmLight will continue to operate 4 x 10G production circuits

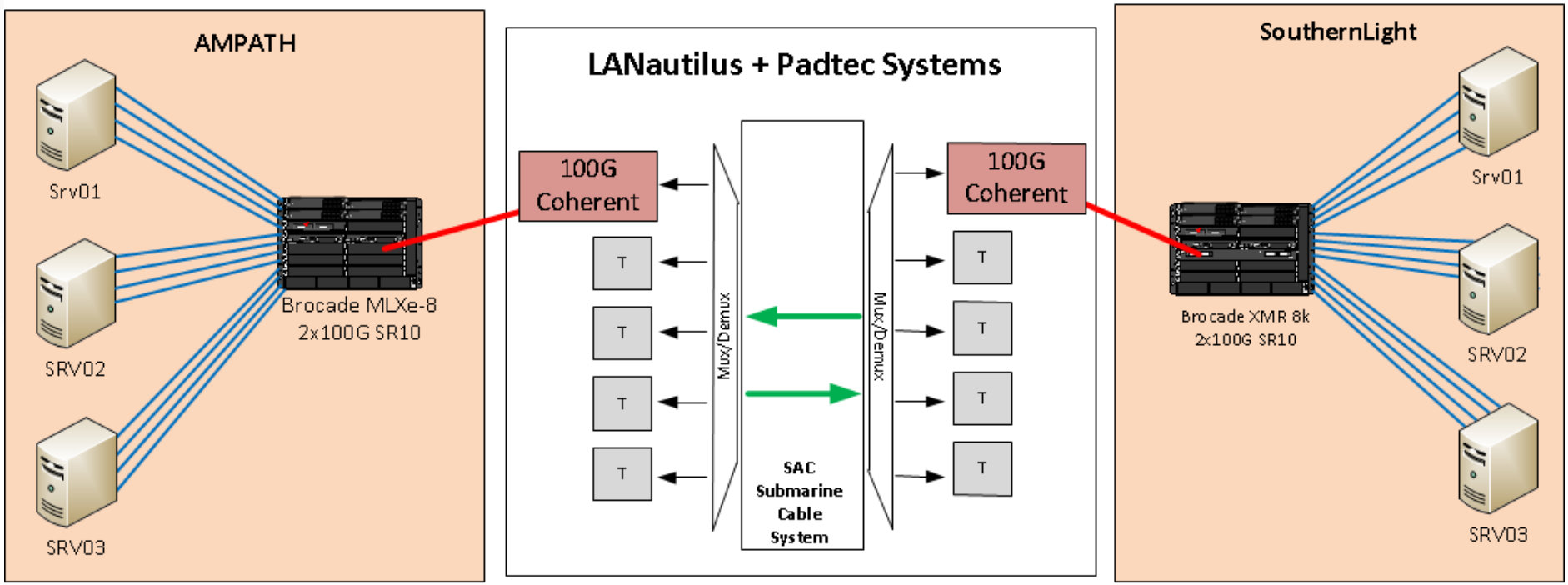
OpenWave Network Design

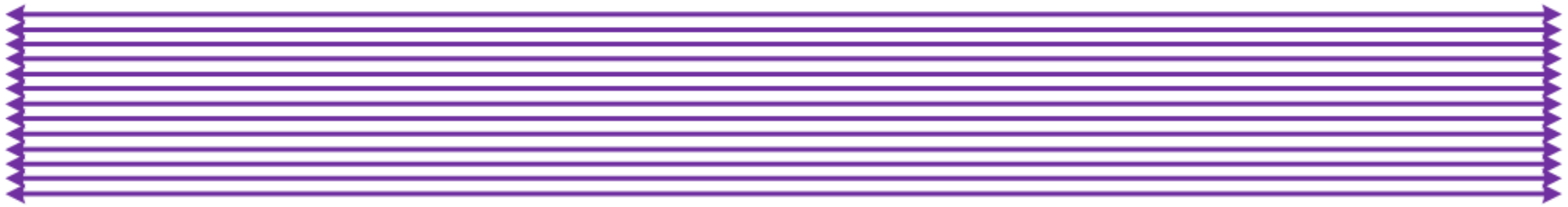


Network Performance Tests

- Two phases
  - First: Optical testbed deployed by Padtec
  - Second: Application testbed deployed by AmLight
- Second (Application) testbed:
  - 3 servers each side with 4 x 10G NICs
  - 12 x UDP and TCP 10G flows in both directions
- Data Transport Layer Tests
  - Verify that hybrid network services can be properly supported

100G Testbed
AMPATH/Mia to SouthernLight/SP





12 TCP or UDP Flows with 10Gbps each

Thank You!
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