



Americas Lightpaths: Building an enhanced measurement and reporting capability using Coral Reef

**ISMA 2013 Workshop on Active Internet
Measurements
February 6 – 8, 2013
UCSD, La Jolla, CA**

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AmLight: Americas LightPaths

- AmLight is an NSF IRNC Production Network (ProNet) award for USA-Latin America science & engineering research and education, OCI-0963053
- AmLight aims to enhance science research and education in the Americas
 - Interconnecting key points of aggregation
 - Providing operation of production infrastructure
 - Engaging U.S. and western hemisphere science and engineering research and education communities
 - Creating an open instrument for collaboration
 - Maximizing benefits of all investors



AmLight: International Collaboration of NRENs, GOLEs and RONS

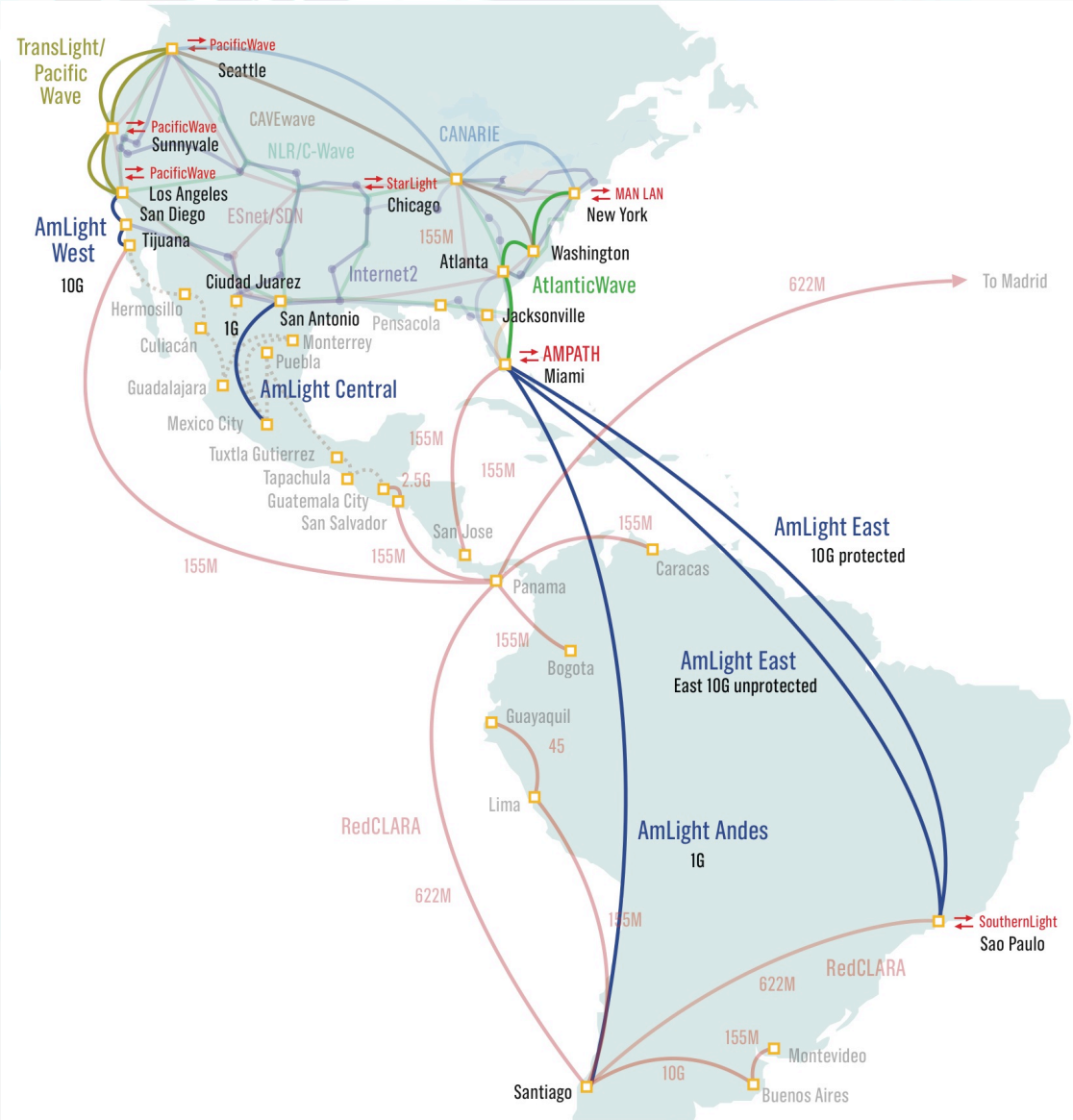


- Florida International University (AMPATH @ FIU)
- Corporation for Education Network Initiatives in California (CENIC)
- Lonestar Education and Research Network (LEARN)
- Academic Network of Sao Paulo (ANSP-FAPESP)
- Association of Universities for Research in Astronomy (AURA)
- Cooperación Latino Americana de Redes Avanzadas (CLARA)
- Corporación Universitaria para el Desarrollo de Internet (CUDI)
- Red Universitaria Nacional (REUNA)
- Rede Nacional de Ensino e Pesquisa (RNP)
- Florida LambdaRail
- Internet2
- Southeastern Universities Research Association (SURA)
- AtlanticWave Exchange Points
- National LambdaRail



AmLight Current Status

- AmLight East:
 - Sao Paulo-Miami:
 - 20G: 10G protected, 10G unprotected
- AmLight West:
 - Tijuana-Los Angeles
 - 10G connection to CENIC and Pacific Wave
 - 10G extended to CICESE in Ensenada
- AmLight Andes:
 - Santiago-Miami:
 - 1G protected
- AmLight Central:
 - Mex. City-San Antonio:
 - 1G connection to LEARN network



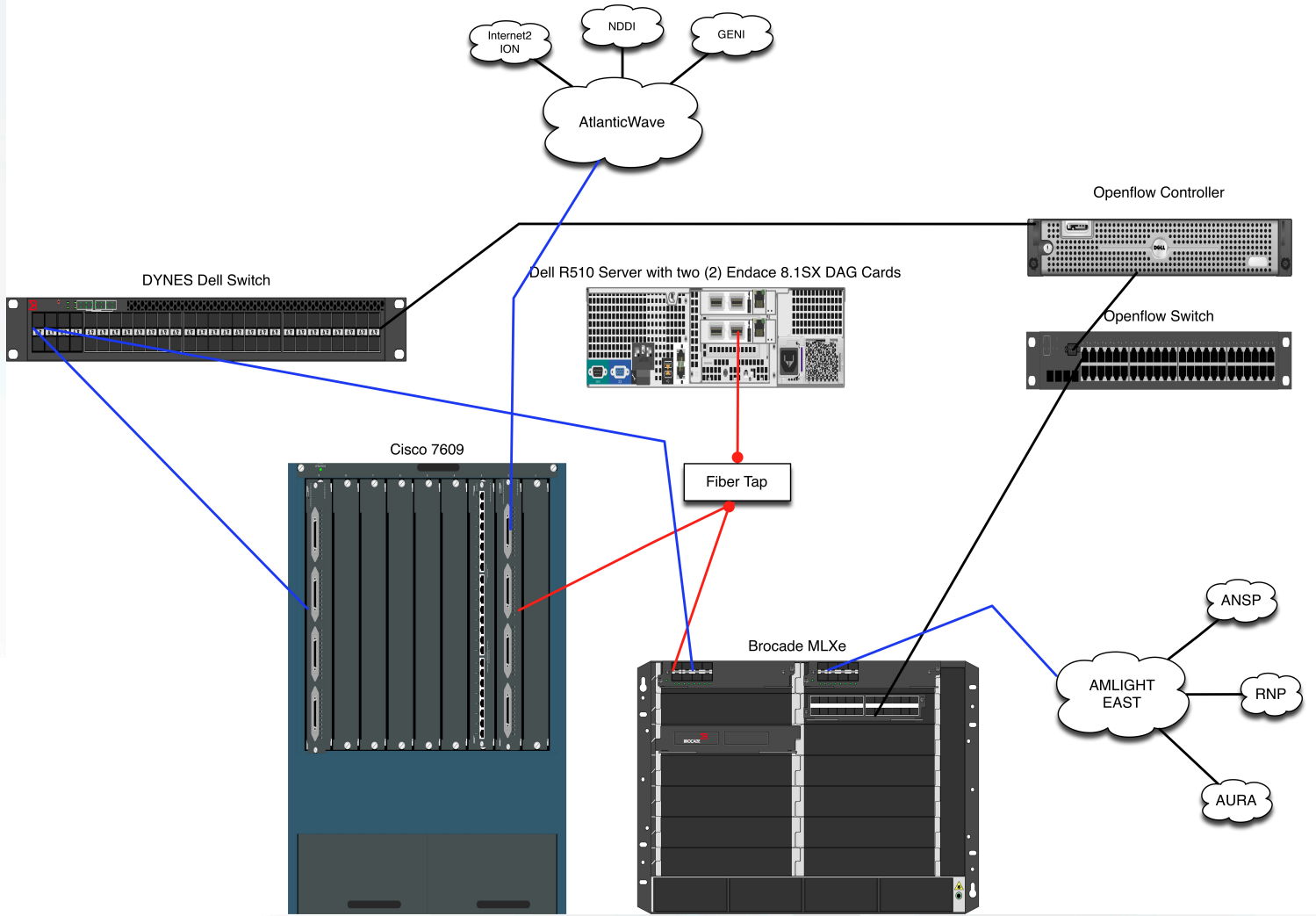
AmLight Measurement and Reporting Goals

- The IRNC program solicitation classified Hybrid Network Services as production
 - *“Dynamic circuit networking in combination with shared IP services must be support, NSF 09-564”*
- Measurement and reporting tools must support hybrid network services
- Goals: Operate a production-level measurement and reporting system for hybrid network services
 - Methodology: Collaborate with CAIDA to deploy the Coral Reef passive monitor in a production environment to support dynamic circuits and Openflow

Hybrid Networking on AmLight

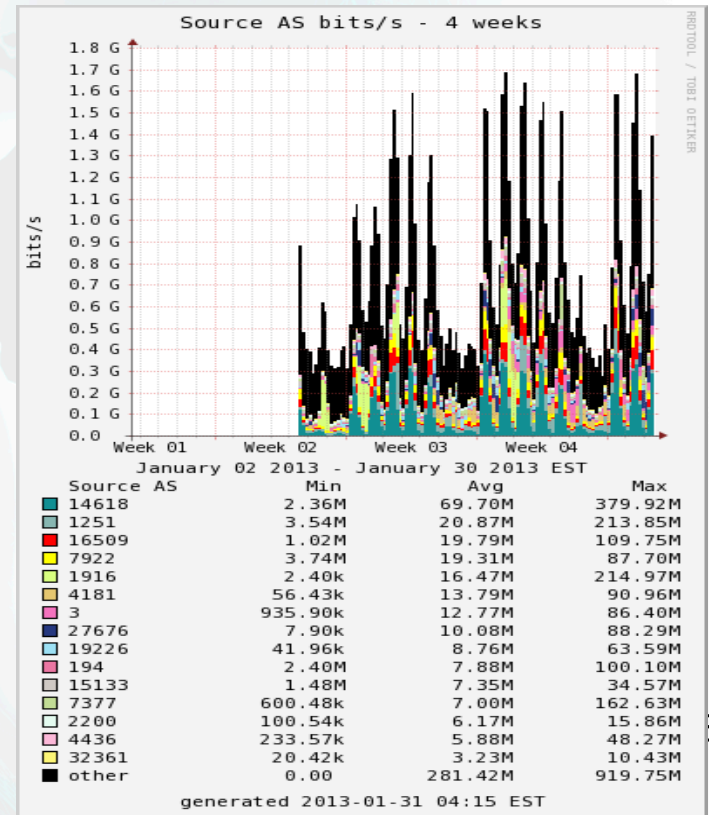
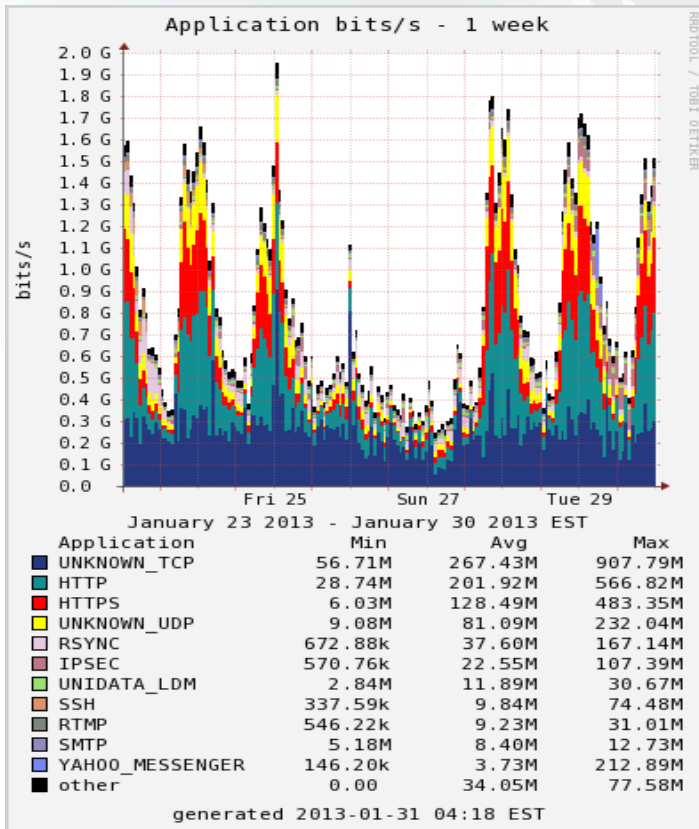
- Deployed the DYNES Inter-Domain Controller (IDC) supporting the On-Demand Secure Circuits and Advance Reservation System (OSCARS)
- Deployed OpenFlow switches to interconnect SDN deployments in Latin America with U.S. deployments (GENI, Internet2, Esnet, etc.)

Coral Reef Implementation



Reports

- Currently reporting Bits/s, Packets/s, Tuples/s for Applications, Protocol, and AS-Source.



Next Steps

- Reports on a per vlan level, instead of only the port
- Measuring dynamically provisioned VLANs
- Measuring and Reporting on OpenFlow circuits



**The End
Thank You**