

**Measurement Activities at AMPATH and
Latin America**

**Workshop on Active Internet
Measurements
CAIDA
February 8-9, 2010**

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Outline

- About CIARA
- AMPATH Internet Exchange Point
- IRNC for Latin America
- AtlanticWave
- Measurement activities at AMPATH and Latin America

About CIARA

- CIARA is the Center for Internet Augmented Research & Assessment at FIU
- CIARA tailors CI technologies to domain-specific communities to augment faculty research and graduate education
- Projects managed out of CIARA:
 - AMPATH Internet Exchange Point for R&E networks, <http://www.ampath.net>

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 - Western-Hemisphere Research and Education Networks – Links Interconnecting Latin America (WHREN-LILA), <http://www.whren-lila.net>

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 - WHREN-LILA, <http://www.whren-lila.net>
 - PrimoGENI
 - Creates an environment in which real-time network simulation experiments can be conducted in the GENI ecosystem between FIU, computer and network researchers in the U.S. and Brazil
 - Leverages the network infrastructure between the U.S and Latin America
 - <http://groups.geni.net/geni/wiki/PrimoGENI>

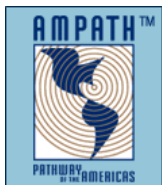
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- <http://www.ciara.fiu.edu>

AMPATH Internet Exchange Point

- AMPATH is an Internet Exchange Point, located in Miami, Florida, interconnecting R&E networks
- AMPATH serves network-enabled U.S.-Latin American and Caribbean science research and education communities
- Connection options at AMPATH are:
 - Ethernet, up to 10G, including Ethernet VLANs mapped using Next-Gen SONET/SDH protocols
 - Packet Over SONET (POS)/Synchronous Data Hierarchy (SDH)
 - Asynchronous Transfer Mode (ATM)
 - Standard interface configuration includes support for jumbo frames
- AMPATH is recognized as a GLIF-GOLE,

<http://www.ampath.net>

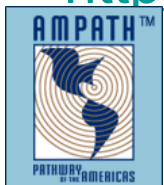
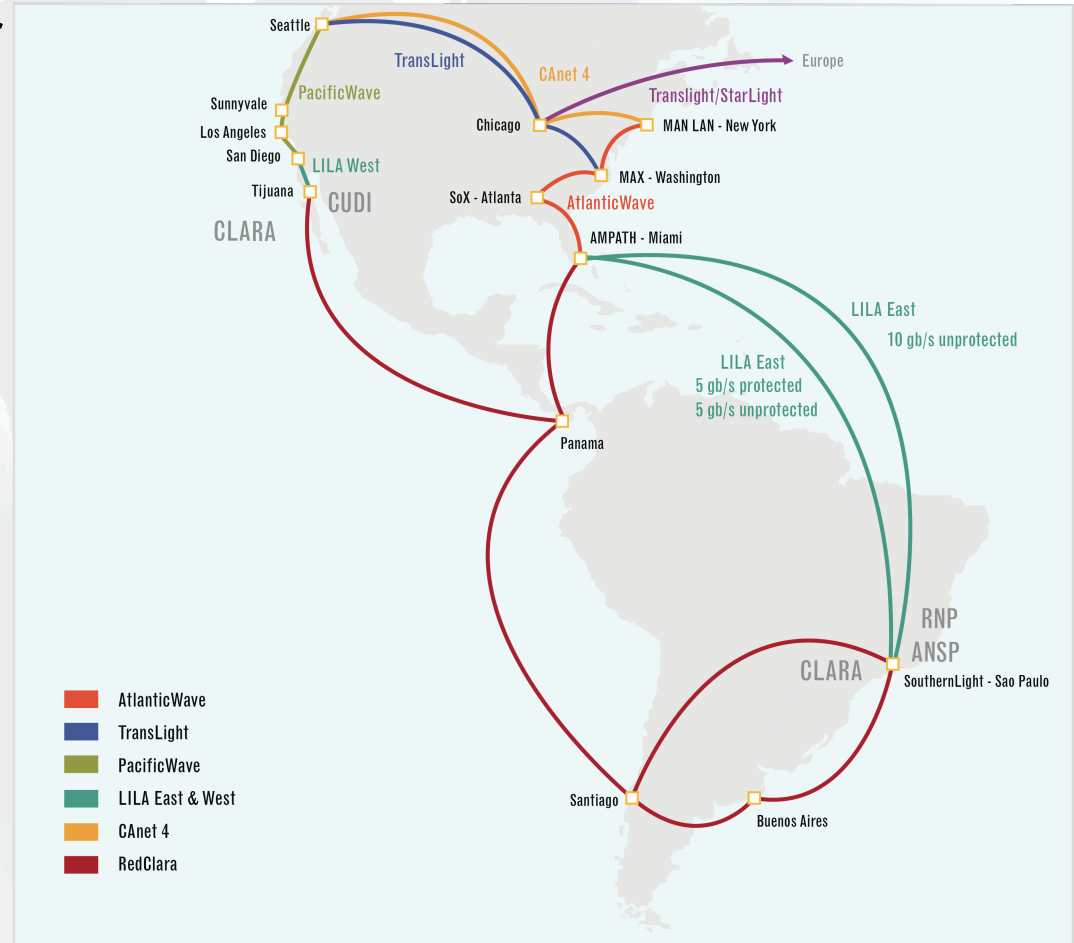




IRNC for Latin America



- FIU is the IRNC awardee for Latin America
- Connectivity to Latin America is supported through a coalition effort through the WHREN-LILA project
- Diverse paths between U.S and Latin America
 - Miami – Sao Paulo
 - Miami – Panama
 - Tijuana – San Diego
- International peering fabrics at AtlanticWave (east) and PacificWave (west)
- <http://www.irnclinks.net>



AtlanticWave

- AtlanticWave is a 10Gb Ethernet distributed exchange point and peering service along the Atlantic rim
- Interconnects U.S. and international networks at the key exchange points from NYC to Sao Paulo:
 - International Exchange Points MANLAN in NYC and AMPATH in Miami
 - MAX gigapop and NGIX-East in Washington, DC
 - SoX gigapop in Atlanta
 - Southern Light in Sao Paulo



Measurement activities



- Current measurement environment
- Goals
- Milestones

Current Measurement Environment

- Link utilization, link capacity, usage patterns: Cacti/RRD tools
- Bandwidth availability and throughput: iperf
- Delay: Nagios
- Circuit and connection status and reporting: Nagios

Measurement Goals

- Enhance interoperability with Latin America and the international community
 - Exchange of measurement data
 - Deployment of compatible bandwidth and latency measurement services
- Flow measurement
 - Anomaly detection and response

RedCLARA perfSONAR project

- RedCLARA adopted the pS-NPToolkit
- Deployed MPs at backbone POPs in Santiago, Buenos Aires, Sao Paulo, Panama City and Tijuaja
- CLARA is conducting a pilot project with 8 NRENs: RNP (Brazil), REUNA (Chile), RAU (Uruguay), CUDI (Mexico), InnovaRed (Argentina), RAGIE (Guatemala), RENATA (Colombia), RAAP (Peru)



Milestones

- Step 1: Deploy perfSONAR at AMPATH
- Step 2: Participate in pilot project with RedCLARA by deploying a perfSONAR Measurement Point (MP) and NPTToolkit at AMPATH
- Step 3: Work with CENIC, MANLAN and StarLight to interoperate with their perfSONAR MPs





**Thank You
Questions?
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