AMPATH™: Pathway of the Americas

Internet2 Member Meeting
International Task Force
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About AMPATH™

- Launched in March 2000 as a project led by Florida International University (FIU), with industry support from Global Crossing (GX), Cisco Systems, Lucent Technologies, Juniper Networks and Terremark Worldwide
- Enables wide-bandwidth digital communications between the Abilene network and 10 National Research and Education Networks (NRNs) in South and Central America, the Caribbean and Mexico
- Provides connectivity to US research programs in the region
- AMPATH is a project of FIU and the National Science Foundation's Advanced Networking Infrastructure & Research (ANIR) Division

AMPATH IXP Services

- High-speed peering point for regional and international Research and Education networks
- Connectivity to Abilene and StarLight
- Available collocation facilities in the NAP of the Americas, in Miami
- Smart-Hands 24x7x365 services at the NAP
- NOC Services from the Indiana Global Research NOC
- Cross-connects through the Meet-Me Room or NAP Gigabit Ethernet fabric
- Policy-free ATM PVCs and 802.1q VLANs for bilateral peering
- Native IPv6, Multicast, VRVS services
- Flow-based and QoS-based monitoring using netflow tools

New Services and Announcements

- OC12c upgrade to Abilene
- Gigabit Ethernet Service to StarLight
  - Extended trial basis from Global Crossing
  - Providing AMPATH participants access to US FedNets
- IP Transit/Commodity Internet Services
- Venezuela is connecting to AMPATH
- University of Puerto Rico upgraded their connection to an OC3c

AMPATH Workshop: Fostering Collaborations and Next-Generation Infrastructure

- E-Science in the Americas
- Stimulate discussion between the networking community and the application community about e-Science in the Americas
- Working Groups
  - Astronomy
    - Chair: Eduardo Vera, Chile
  - High-Energy Nuclear Physics (HENP)
    - Chairs: Harvey Newman, Shawn McKee, Alberto Santoro
  - Digital Data Collaboration
    - Chairs: Liane Tarouco and Guido Lemos, Brazil
  - Atmospheric & Oceanographic
    - Chair: Azael Barrera, Panama
- Over 100 attendees

Undersea Optical Infrastructure

Submarine Fiber-Optic Cable System	Total Bandwidth Capacity (GB)
Americas 1	.560
Americas II	2.5
South American Crossing	1,280
Columbus II	.560
Columbus III	2.5
Telefonica's Emergia	1,920
ARCOS	960
Maya-1	60
360 Americas	10

The total aggregate bandwidth capacity Latin America and Caribbean region is estimated at 4,236 GB

NRNs' Bandwidth in Latin America

Country	Organization	Existing REN?	National connections	External Capacity	Number of Connected Sites	Connection to US Internet2
Argentina	RETINA	yes	256Kbps – 34 Mbps	59 Mbps	56	yes
Bolivia	BOLnet	yes	64 – 128 Kbps	1.5 Mbps	18	no
Brazil	RNP	yes	2 – 30 Mbps (backbone up to 622 Mbps	202 Mbps	369	yes
Chile	REUNA	yes	155 Mbps	45 Mbps via AMPATH	18	yes
Colombia	RedCETCol	Not known	Not known	Not known	Not known	Not known
Costa Rica	CRNet	yes	32 – 512 Kbps	Not known	34	no
Cuba	RedUniv	University Network	19.2 Kbps – 2 Mbps	Not known	23	no
Ecuador	FUNDACYT	In planning				no
El Salvador	CONACYT	In planning				no
Guatemala	Not known	Non-existent				no
Honduras	HONDUnet	Not known				no
Nicaragua		Not known				no
Panama	PANNET/ SENACYT	University/Gov. Network	256 – 512 Kbps	1.54 Mbps	11	no
Peru	CONCYTEC	In planning				no
Uruguay	RAU	yes	64 Kbps to 1 Mbps	6 Mbps	46	no
Venezuela	REACCIUN	yes		45 Mbps via AMPATH	78	January 2003

Source:

CAESAR - Review of Develop-ments in Latin America

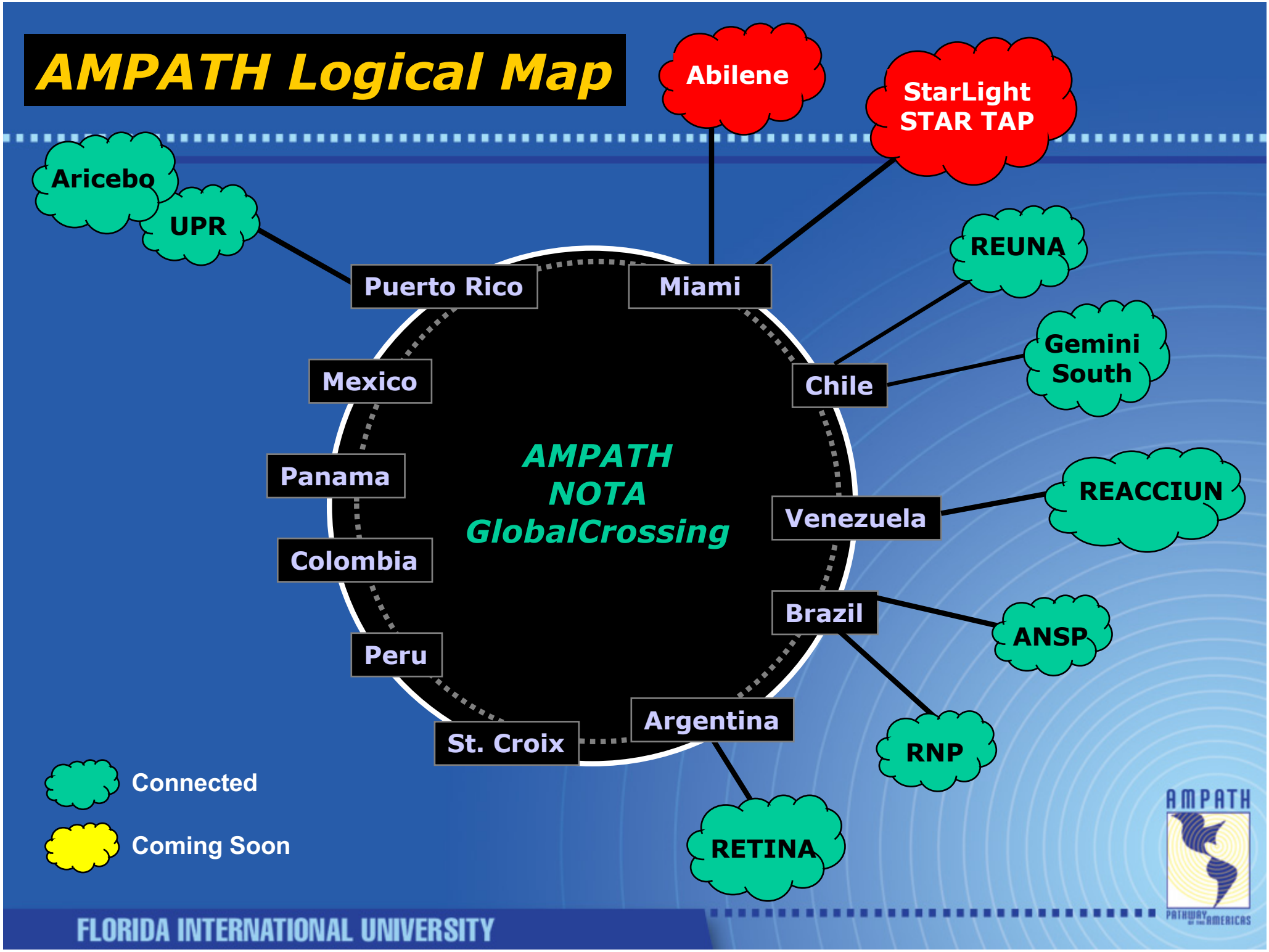
AMPATH
PATHWAY OF THE AMERICAS

Summary

- Total bandwidth capacity for the research and education community to access global RENs via AMPATH is 225Mbps
- Approximately 71.2Mbps is being utilized
  - http://www.net.fiu.edu/mrtg/ampathgsr.html
- There is 4,236Gbps of bandwidth capacity into the region

CHEPREO

- An interregional Grid-enabled Center for High-Energy Physics Research and Educational Outreach (CHEPREO)
- Fosters an integrated program of research, network infrastructure development, and education and outreach
  - Collaboration with FIU, Caltech, University of Florida, Florida State University and Brazil
- More about CHEPREO will be presented at the *Relationships & Partnerships: Taking Advantage of International Connectivity Leveraging Global Collaboration* session, Thursday, at 10:30 AM


AMPATH Logical Map
Abilene
StarLight
STAR TAP
Aricebo
UPR
Puerto Rico
Miami
REUNA
Gemini
South
Chile
Mexico
Panama
AMPATH
NOTA
GlobalCrossing
REACCIUN
Venezuela
Colombia
Brazil
ANSP
Peru
Argentina
St. Croix
RNP
RETINA
Connected
Coming Soon
AMPATH
PATHWAY TO THE AMERICAS
FLORIDA INTERNATIONAL UNIVERSITY

Thank You

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