Julio Ibarra
julio@fiu.edu

Presents…

AmericasPATH

FIU
Hope, Knowledge, and Opportunity

Global Crossing

Internet2

Cisco Systems
Empowering the Internet Generation

Lucent Technologies
Bell Labs Innovations

The AMPATH Project

- AMPATH is a project led by FIU, in collaboration with Global Crossing (GC), to interconnect the R&E networks in South and Central America, the Caribbean and Mexico to US and non-US R&E networks via Internet2's Abilene network.
- GC's terrestrial and submarine optical-fiber networks (SAC, PAC and MAC) are used to build the AMPATH network.

Continued…

The AMPATH Project

- GC has donated up to 10 DS3s for the AMPATH project representing a $25M donation over three years.
- Cisco donated a GSR 12012 router valued at $390,400.
- Lucent donated a CBX-500 ATM switch listing for $523,000.
- FIU will operate the AMPATH POP and offer cost-effective solutions for bandwidth and operational services.
- FIU offers its commitment, leadership and expertise to the success of the project.

AMPATH Project Goals

- To enable participating countries to contribute to the research and development of applications for the advancement of Internet technologies.
- To extend the Internet2 research and education community for high-performance networking to South and Central America, the Caribbean and Mexico.

- Doctoral/Research University-Extensive.
- A member of the State University System of Florida with 32,000 students.
- One of the nation's largest doctoral-granting majority-minority universities.
  - Largest contingent of Hispanic students of any doctoral-granting university in the country.
- GigaPOP with UM and FAU.

South Florida

- As a high-tech gateway, South Florida Profits
  NAP could spur an economic boom
  *(*August 13, 2000)
- The race for fiberspace
  Fiber-optic cable is being laid underground at a frantic and expensive pace in an effort to attract the telecommunications industry to South Florida
  (August 11, 2000)
- Telecomm Carriers Coming
  Group of 41 Vote to Occupy Center
  (August 5, 2000)
- State eyes fiber-optic cable off coastline
  (July 12, 2000)
- A Giant Step for NAP
  (June 16, 2000)
- The Internet Coast Dream Gains Critical Momentum
  (June 16, 2000)
- Linking continents
  GlobeNet Communications and other companies race to build fiber-optic Web connections between the U.S. and Latin America
  (March 7, 2000)

Global Crossing

Global Crossing

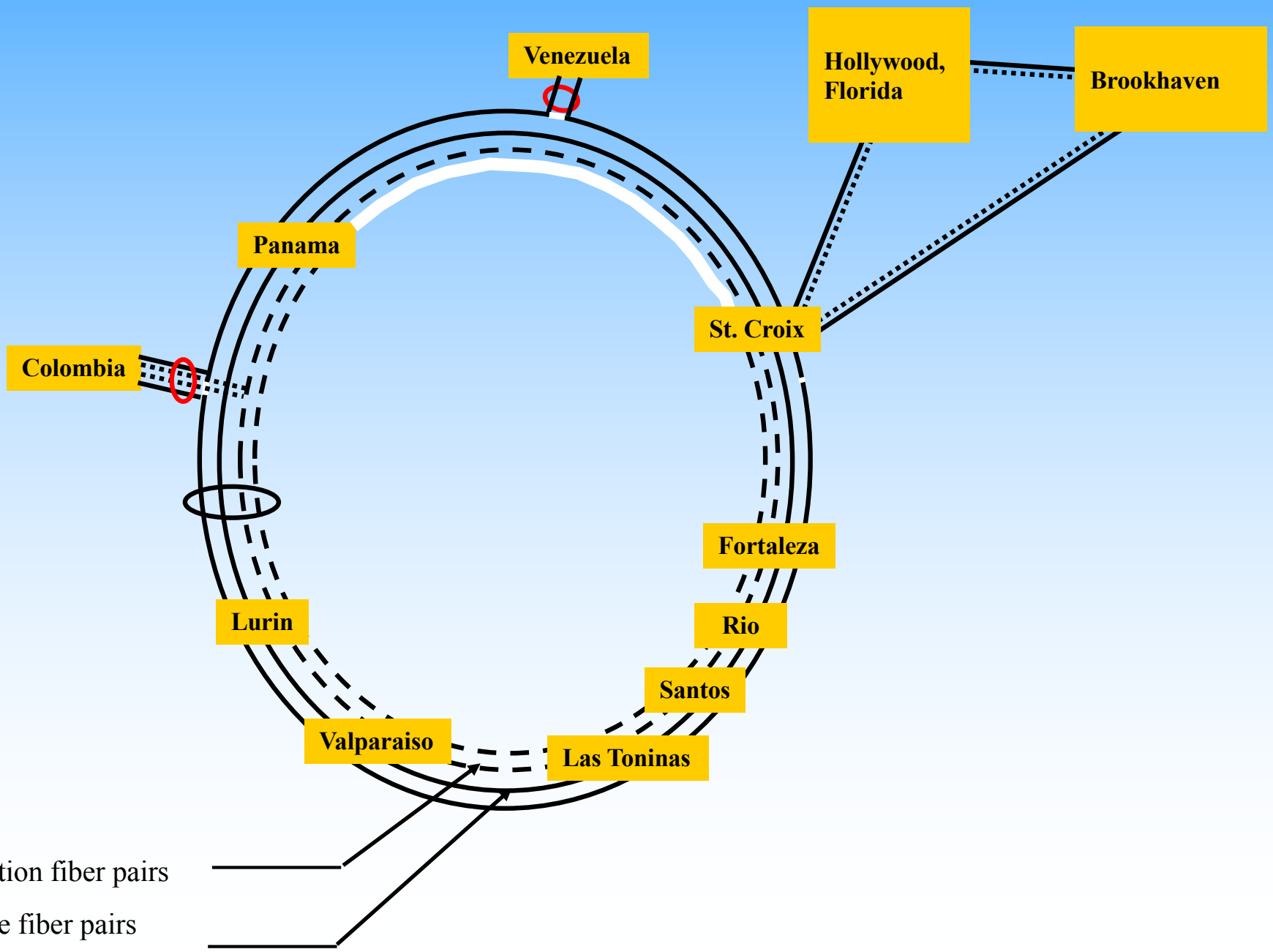
- GC is a world-class telecommunications service provider and a carrier's carrier.
- GC is building and offering services over the world's first global fiber-optic network with over 101,000 route miles, serving five continents, 27 countries and more than 200 major cities.

Continued…

AMPATH Service Area

- Argentina
- Brazil
- Chile
- Colombia
- Costa Rica ?
- Mexico
- Panama
- Peru
- Puerto Rico ?
- US Virgin Islands
- Venezuela

SAC, with MAC and PAC Fiber Configuration

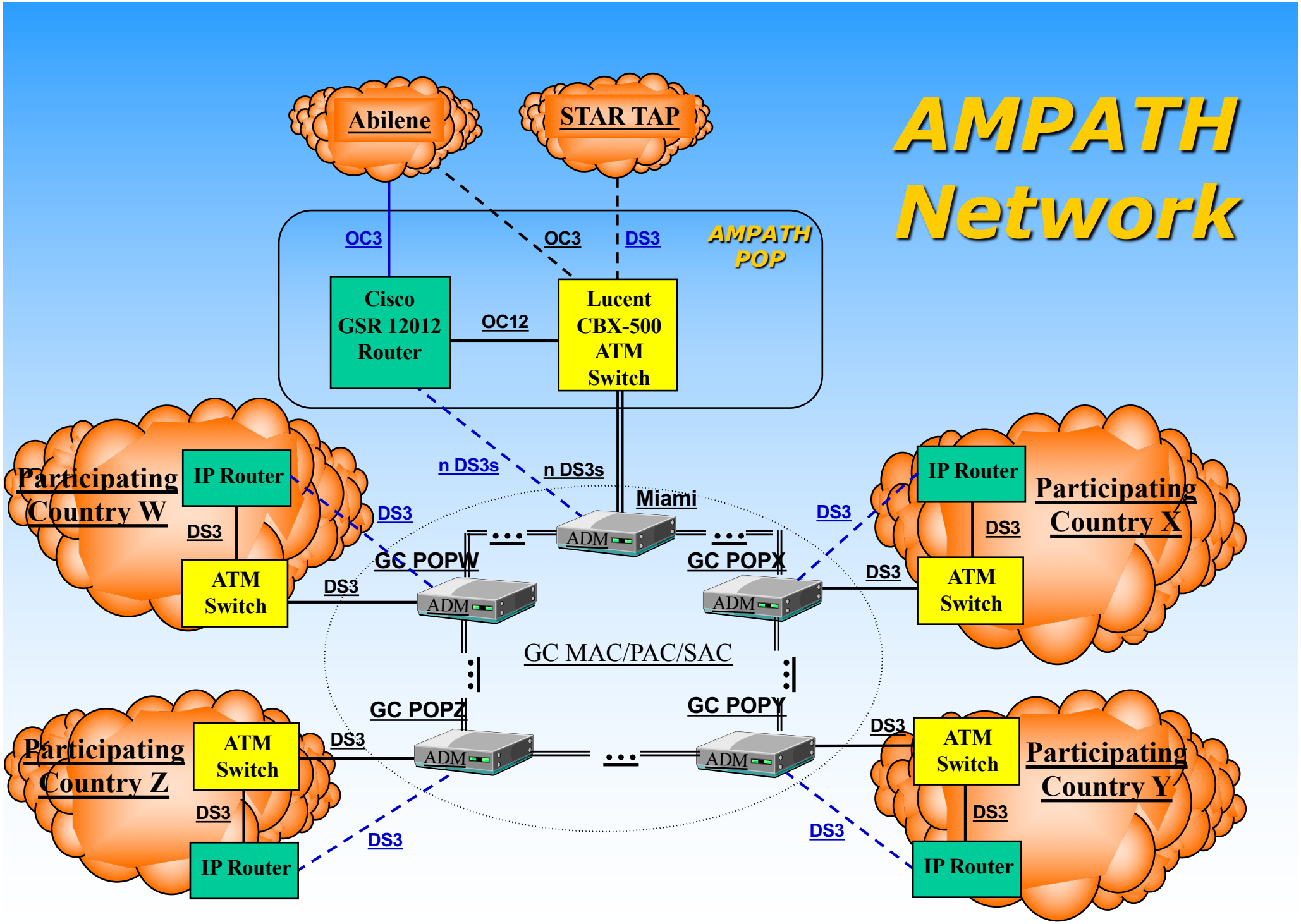


South American Crossing Cable System

- Total system length of SAC is 18,000 km
  - 16,000 km of submarine cable
  - 2,000 km terrestrial link across the Andes connecting Argentina with Chile
- Self-healing SDH ring architecture
- Segments include 4 undersea fiber
- Each DWDM channel operates at 10 Gbps of capacity (STM-64)
- Each fiber pair will ultimately carry 32 STM-64 wavelengths, or 320 Gbps of capacity, over 4-fiber pairs for a system total of 1.28 Tbps of capacity.

Service Availability of Global Crossing's Network

- **Miami, St. Croix, & Brookhaven, NY — *Available***
- **Miami Terrestrial Ring — *Available***
- **Panama— *Available***
- **Mexico — *Available***
- **Argentina 10/15/00**
- **Brazil 10/15/00**
- **Venezuela 10/15/00**
- **Chile Eastern Route 12/01/00**
- **Chile Western Route 4/15/01**
- **Peru 4/15/01**
- **Colombia TBD**
- **Grover Beach, CA 12/00 Estimated**


AMPATH Network
Abilene
STAR TAP
OC3
OC3
DS3
AMPATH POP
Cisco GSR 12012 Router
OC12
Lucent CBX-500 ATM Switch
n DS3s
n DS3s
Miami
ADM
GC POPW
GC POPX
GC MAC/PAC/SAC
GC POPZ
GC POPY
Participating Country W
IP Router
DS3
ATM Switch
DS3
Participating Country X
IP Router
DS3
ATM Switch
DS3
Participating Country Z
ATM Switch
DS3
IP Router
DS3
Participating Country Y
ATM Switch
DS3
IP Router
DS3

AMPATH Network

- ✓Flexible and Scaleable
- ✓SDH Infrastructure:
  - ➢Avoids ATM overhead
  - ➢Benefits Participant NRNs not using ATM
- ✓ATM infrastructure:
  - ➢PVCs, PVPs
  - ➢Direct peering between Participants

Participation in the AMPATH Project

What does each Participating country receive?

- Each participating country receives a DS3 of capacity to connect its R&E networks to AMPATH.
- Connectivity to US and non-US R&E networks via Abilene or STAR TAP.

Participant's Responsibilities

- Each participating country is responsible for connecting its R&E networks to a designated Global Crossing POP:
  - ✓ Provisioning Local Loop and backhaul (if necessary).
  - ✓ Providing required hardware.
- Signing MOUs with FIU and Internet2.
- Budgeting a cost-sharing component to help pay for bandwidth to Abilene and AMPATH's operational costs. Please contact the AMPATH Project Director for details.

AMPATH's Responsibilities

- Coordinate and assist participants in establishing connectivity to AMPATH.
- Provide 24x7x365 NOC services (Indiana University NOC).
- Provide leadership and coordination to ensure Participants can reach desired US and non-US R&E networks.

Benefits of AMPATH

- Provides high-speed connectivity to Internet2, US and non-US R&E networks at a very low cost:
  - DS3s to Miami are free (most expensive and challenging part).
  - Circuits to transit networks, engineering and operations are cost-shared among all participants.
- Funding Model includes cost-sharing and aggressive pursuit of grants.

Accomplishments and Project Timeline

Dec 1999	NLANR Meeting @ FIU, Miami
Feb 2000	FIU presents proposal to GC & asks for a donation of available bandwidth
Mar 8, 2000	FIU hosted an International Meeting to introduce AMPATH to the Service Area
May 2000	FIU & GC sign an MOU formalizing the donation to the AMPATH project
Jul 2000	FIU & AURA submit a collaborative proposal to NSF to connect Gemini South to Internet2 and STAR TAP via AMPATH
Sep - Dec 2000	Sign MOUs with Participants from the Service Area
Oct 2000	Complete AMPATH POP
Nov 2000	Connect Panama, USVI, Mexico, Brazil, Argentina, Venezuela
Dec 2000	Provided that GC fiber crosses the Andes in time, test with 20 Mbps from Gemini South to Miami; Connect Chile
Mar 2001	Go Live with dedicated DS-3 bandwidth for Gemini South to Internet2
Apr 2001	Connect Peru; TBD - Colombia, Puerto Rico, Costa Rica

More Information …

www.ampath.fiu.edu

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Thank You !

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