

Update of connectivity within/from Latin America

Michael Stanton, RNP

JET Meeting
Internet2 Joint Techs
02/02/2010
Salt Lake City/Utah



CLARA

This project is funded
by the European Union

A project implemented
by CLARA



Agenda

- ALICE2: RedCLARA2 connections 2009-2010
- Individual countries: situation and prospects
 - Brazil
 - Argentina



The ALICE2 Project

- € 18 M budget over 4 years (12/2008 thru 8/2012)
 - 2/3 to be provided by the EC, through EuropeAid
 - 1/3 by LA National R&E Networks (NRENs)
- **Emphasis on creating an upgraded, long-lasting, financially sustainable infrastructure**
 - **RedCLARA2**
 - Preference for facilities-based infrastructure (use of long-term IRUs) over leased circuits

ALICE2 Partners



Spain
France
Italy
Portugal
DANTE (UK)

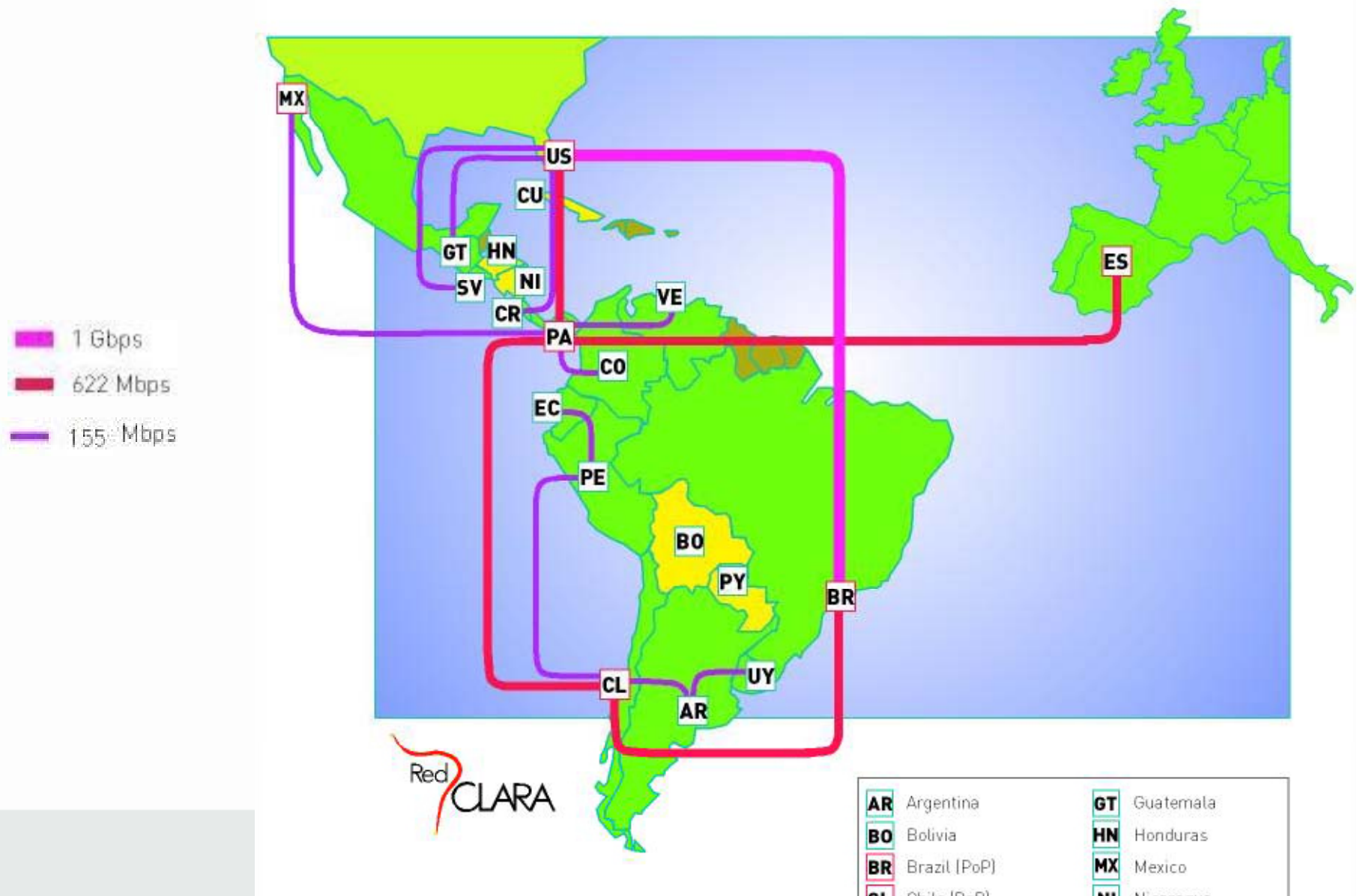


RedCLARA advances in 2009

- Backbone upgraded to ≥ 622 Mbps
 - S.Paulo, Santiago, Panama City, Miami
- Almost all other links to 155 Mbps
- External links:
 - Europe (GEANT): 622 Mbps
 - US (East): via Atlantic Wave
 - US (West): via Pacific Wave



RedCLARA2 (4Q2009)





RedCLARA access capacity (4Q2009)

Country	Network Name	Access b/w (Mbps)
Argentina	Innova Red	210
Brazil	RNP	1450
Chile	REUNA	210
Colombia	RENATA	100
Costa Rica	RedCONARE	155
Ecuador	CEDIA	22.5
El Salvador	RAICES	10
Guatemala	RAGIE	18
Mexico	CUDI	45
Panama	RedCYT	10
Peru	RAAP	14
Uruguay	RAU	100
Venezuela	REACCIUN	90



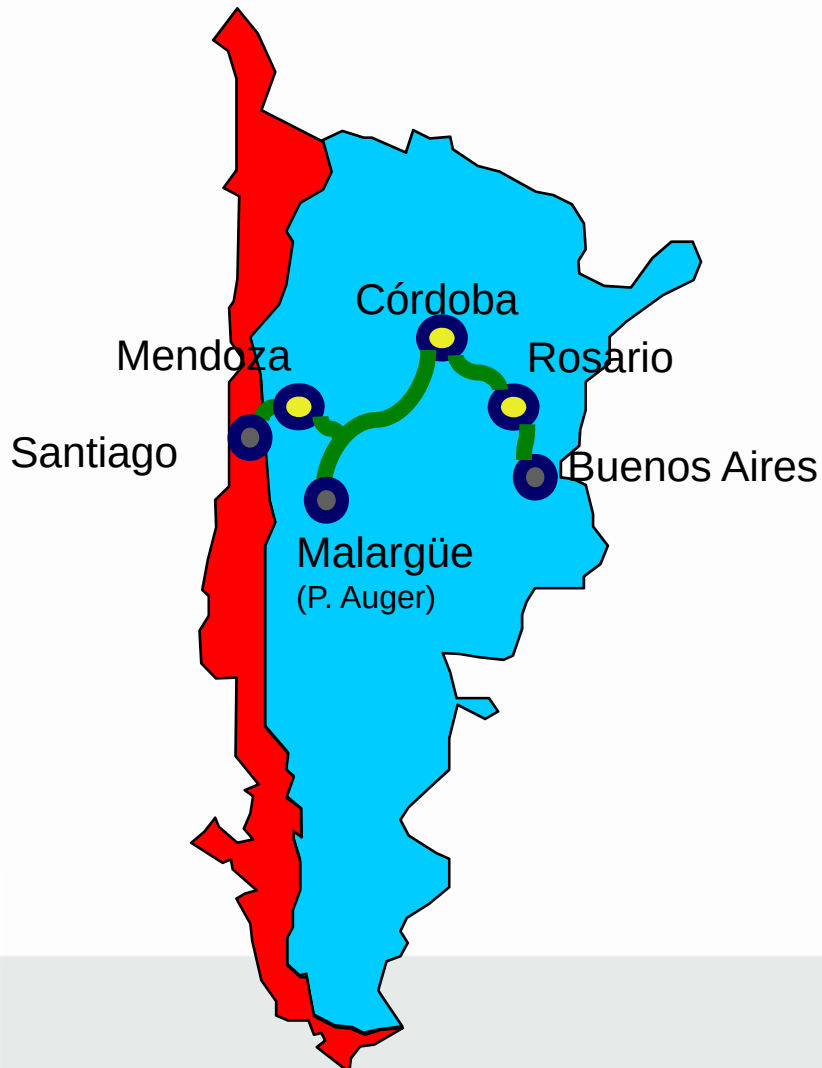
RedCLARA plans in 2010

- **Expansion of network coverage**
 - Connections to Bolivia, Paraguay and Nicaragua
- **Use of facilities-based connections**
 - Central America (tender for IRU):
 - Guatemala-El Salvador (2.5G)
 - South America (cooperative agreement w/telco):
 - Chile-Argentina (10G) with: Innova|Red, RNP, Auger
 - Argentina-Brazil (1G) with: Innova|Red, RNP
- **Increased bandwidth to Europe**

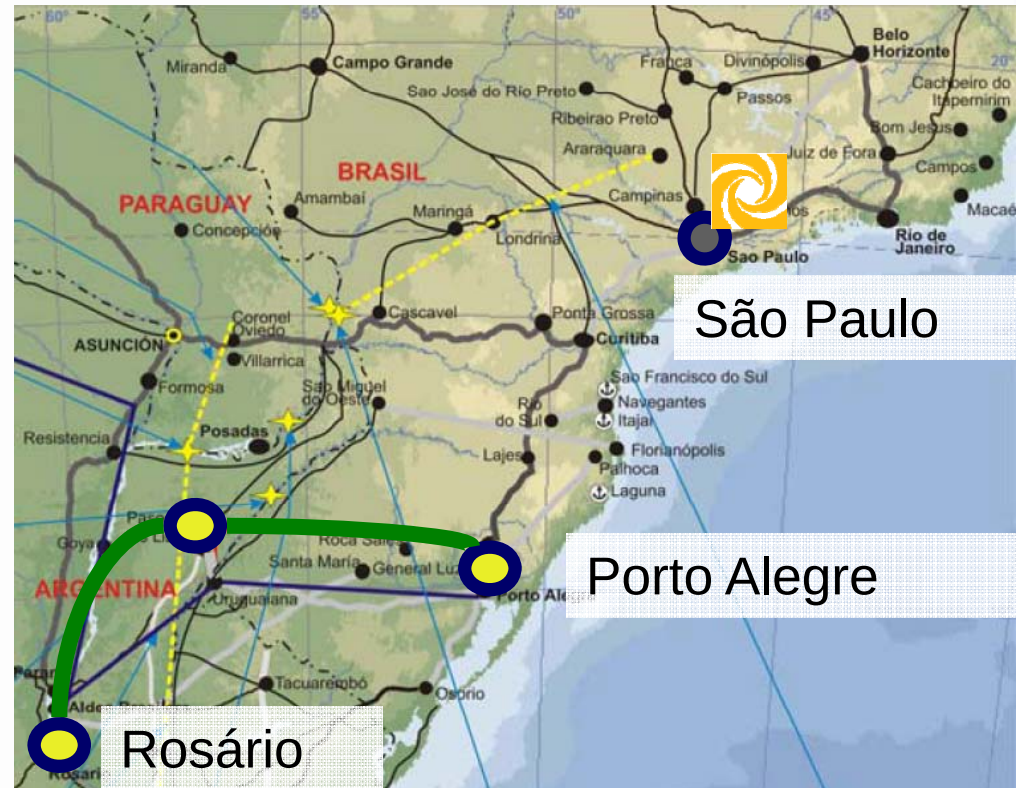


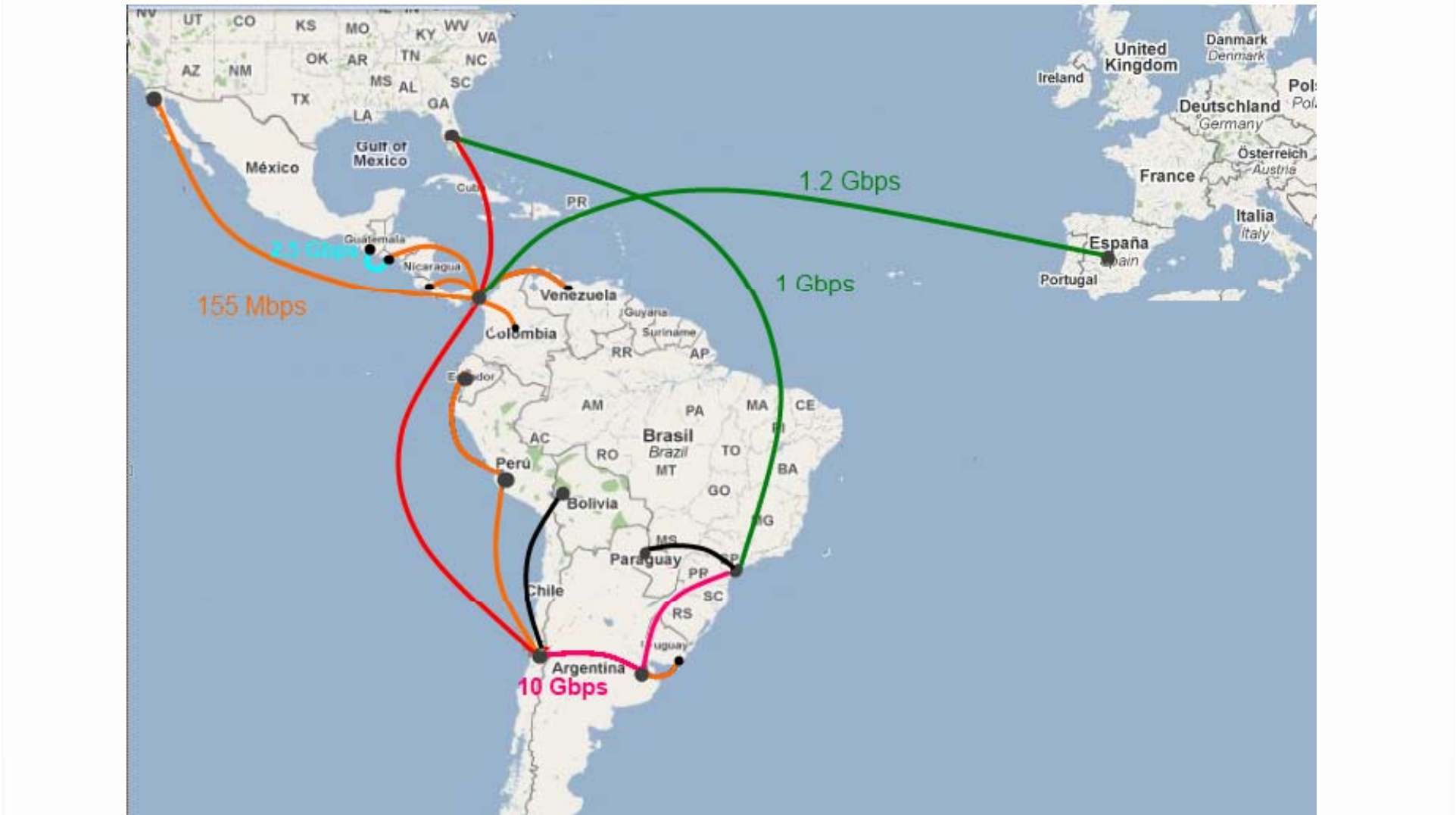
Cross-border fiber between Southern Cone countries

Chile – Argentina (1Q2010)



Argentina – Brazil (2Q2010)







Renovation in LA NRENs

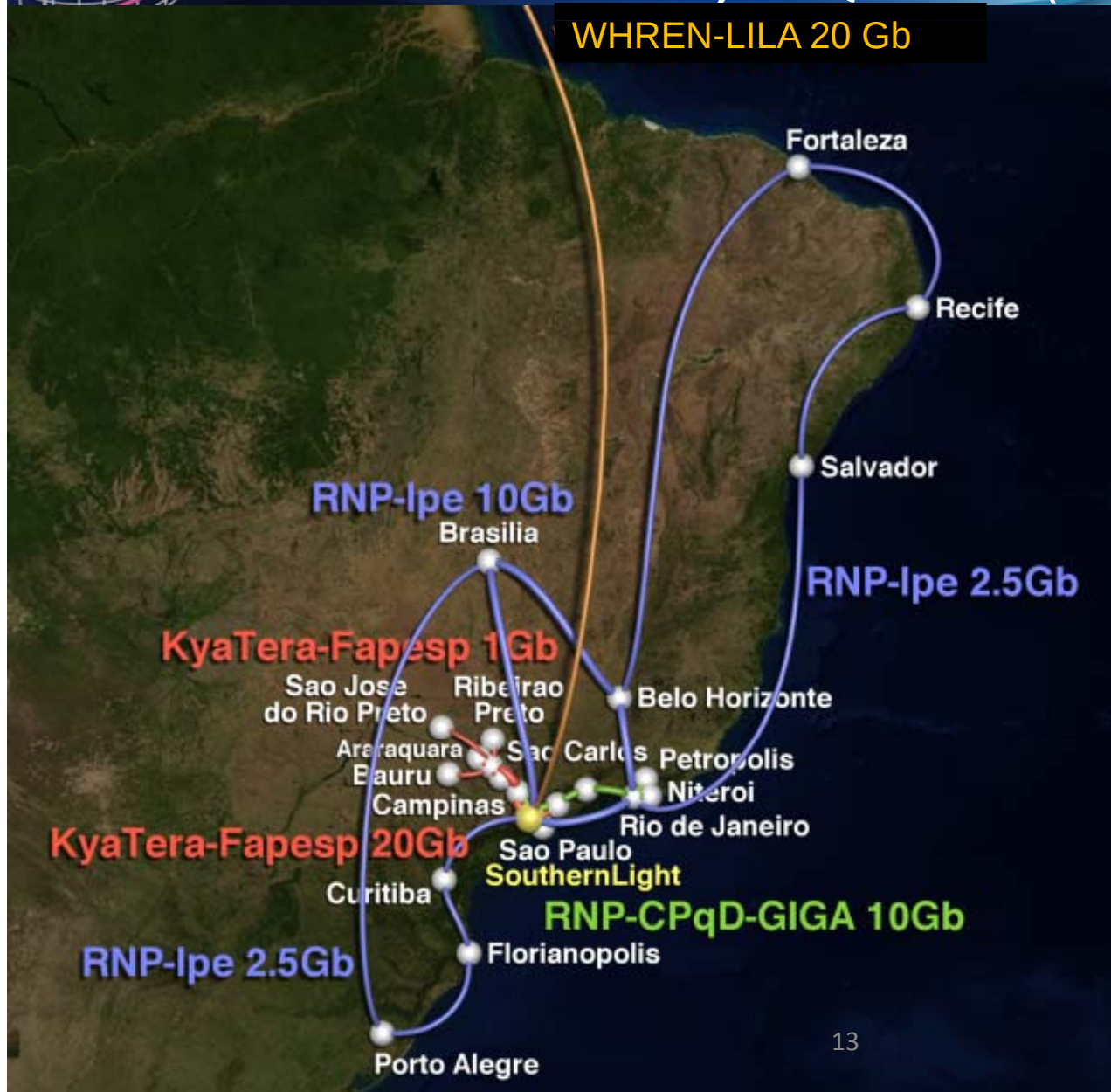
- Brazil
- Argentina
- These networks are (or soon will be, in the case of Argentina) the highest performance networks in Latin America, with large multi-Gbps core networks



Update on Brazil

- Upgrade of international link to US (via AMPATH):
 - **Since 2007 2.5 Gbps between S. Paulo and Miami**
 - IRNC1 WHREN-LILA: funded by NSF and FAPESP (Brazil)
 - Also used for GLIF link to Brazil networks
 - Also >3 Gbps of commodity via international ISP
 - **In 2009 upgrade to 20 Gbps of S. Paulo-Miami link**
 - 10 Gbps (FAPESP + NSF), 10 Gbps (RNP) – jointly managed
 - 5 G protected and 15 G unprotected (**outage since Jan 28**)
 - Use protected path for RedCLARA2 and commodity
 - Use unprotected path for scientific collaboration

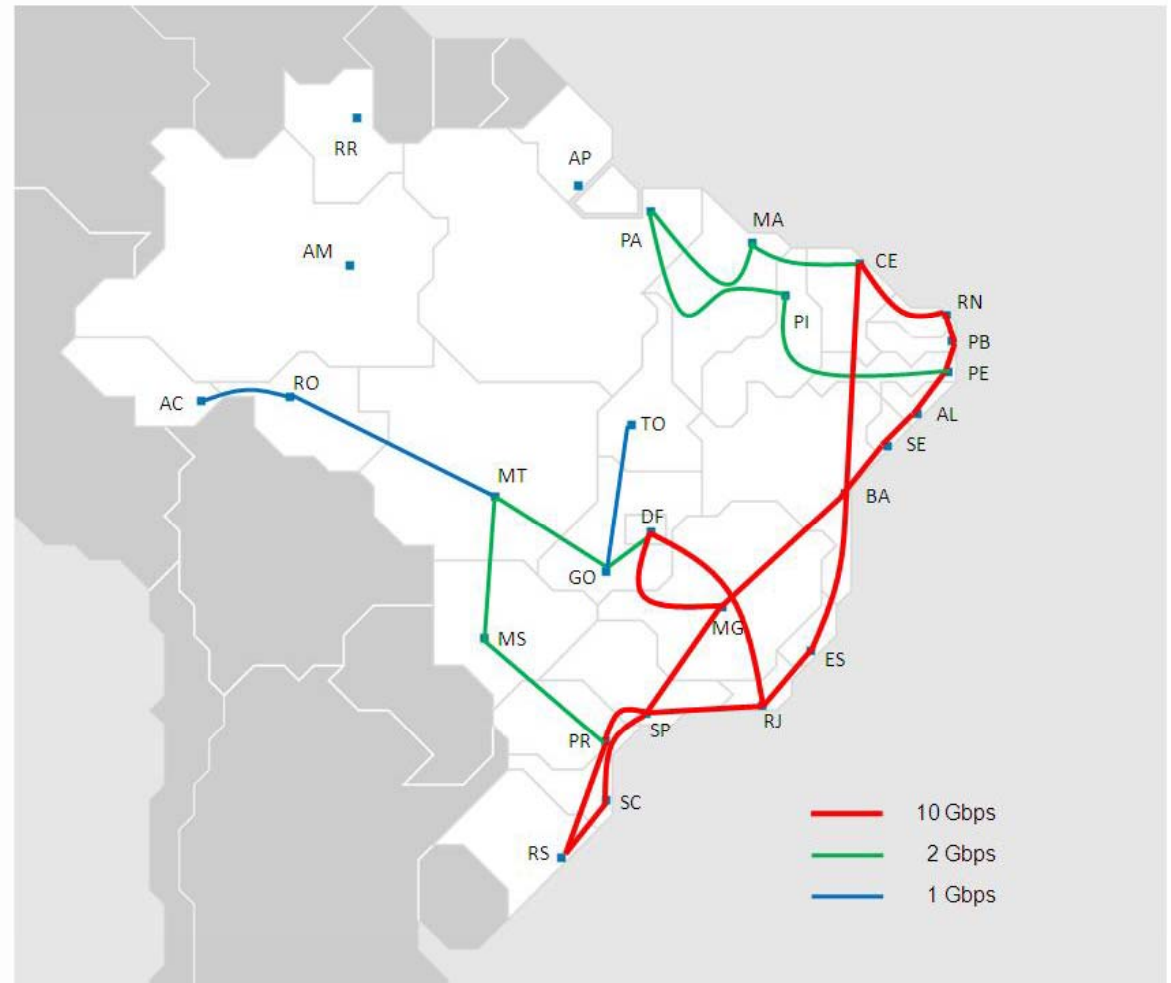
High-performance links to and within Brazil, 4Q2009 (from GLIF map 2008)



- RNP networks
 - Ipê backbone core
4x 10G nodes,
6x 2.5G nodes
(12,000 km)
 - metro networks in
state capitals
- Project GIGA optical
testbed, (RNP and CPqD)
 - links 20 research
institutions in 7 cities
(750 km)
- KyaTera research
network in S. Paulo
 - links research
institutions in 9 cities
(1000 km)

New RNP backbone: possible topology 3Q2010

- Result of brokered agreement with national telco
- **High-performance core:**
 - 15x 10G nodes
 - 6x 2G nodes
 - 3x 1G nodes
 - Total 28.000 km
- Plan to launch pilot DC service





Argentina

- Innova | Red is the principal R&E network in Argentina, funded by the national government
- Innova | Red is building a brand-new national network linking R&E institutions in the most populous parts of Argentina
 - **Facilities based: cooperation agreement with a local telco with two fiber routes from Buenos Aires to Chile**
 - 10G Northern route: BsAs to Santiago (with CLARA, RNP, Auger)
 - 10G Southern route: Bs As to Osorno
 - Operational in 2010
 - (following slides provided by Aníbal Gattone)

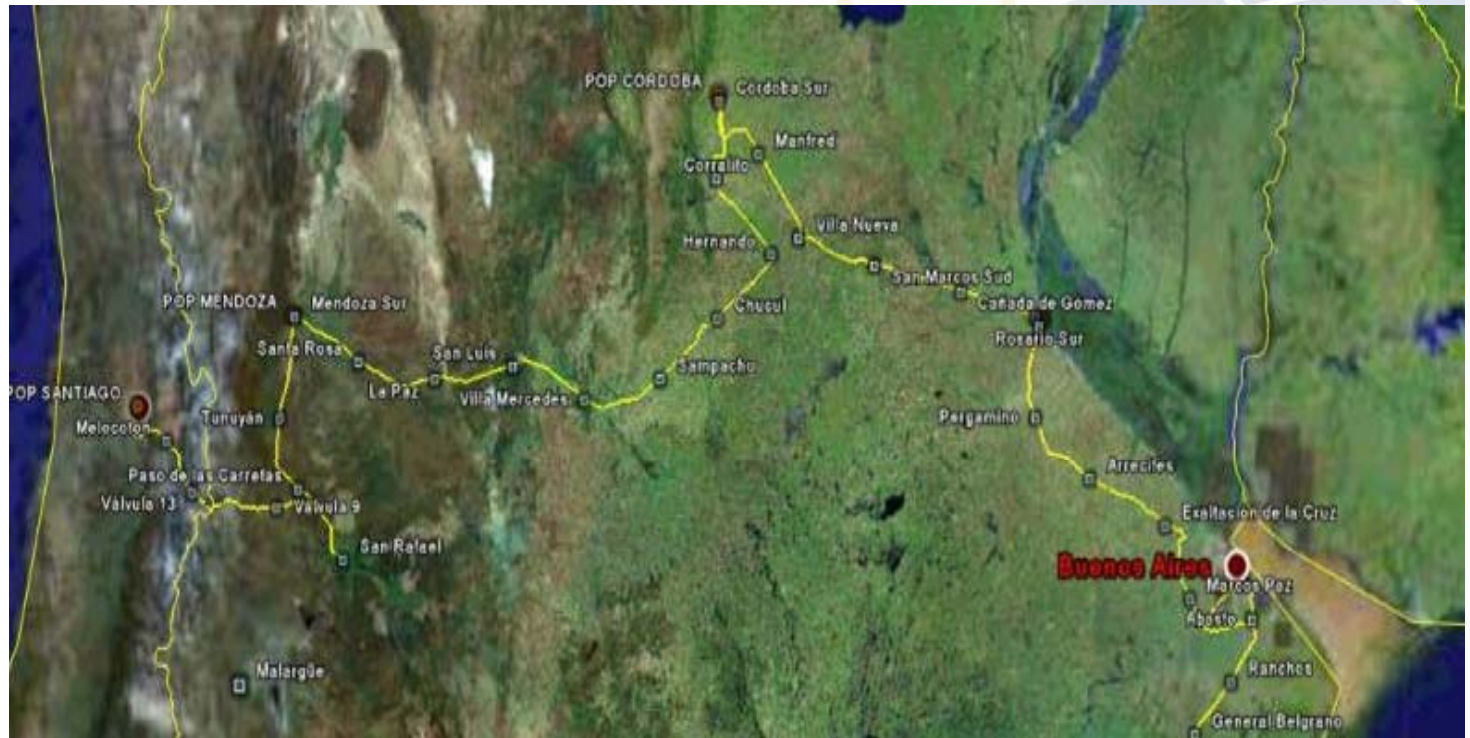


INNOVA|RED

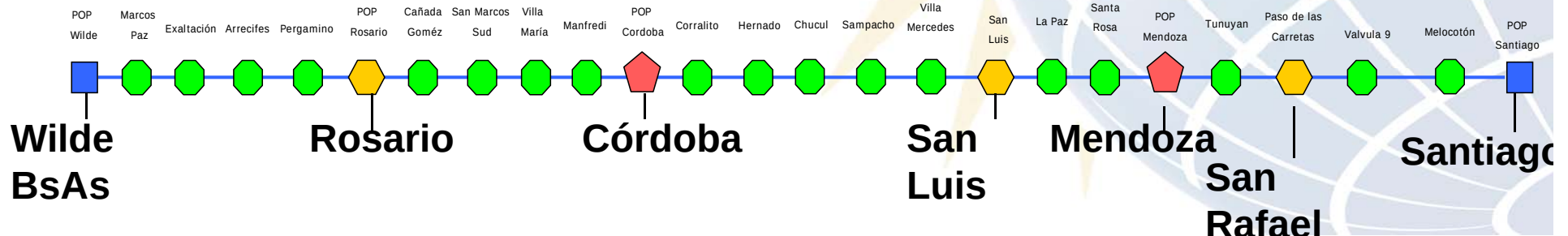
Red Nacional de Investigación
y Educación de Argentina

10G Northern route

Up to 16x 10G channel DWDM between Buenos Aires and Santiago, Chile, with a total length of more than 2,200 km.



-  Terminal
-  Amplificación
-  OADM
-  OADM y Regeneración
-  Traza de FO (tipo G.652)



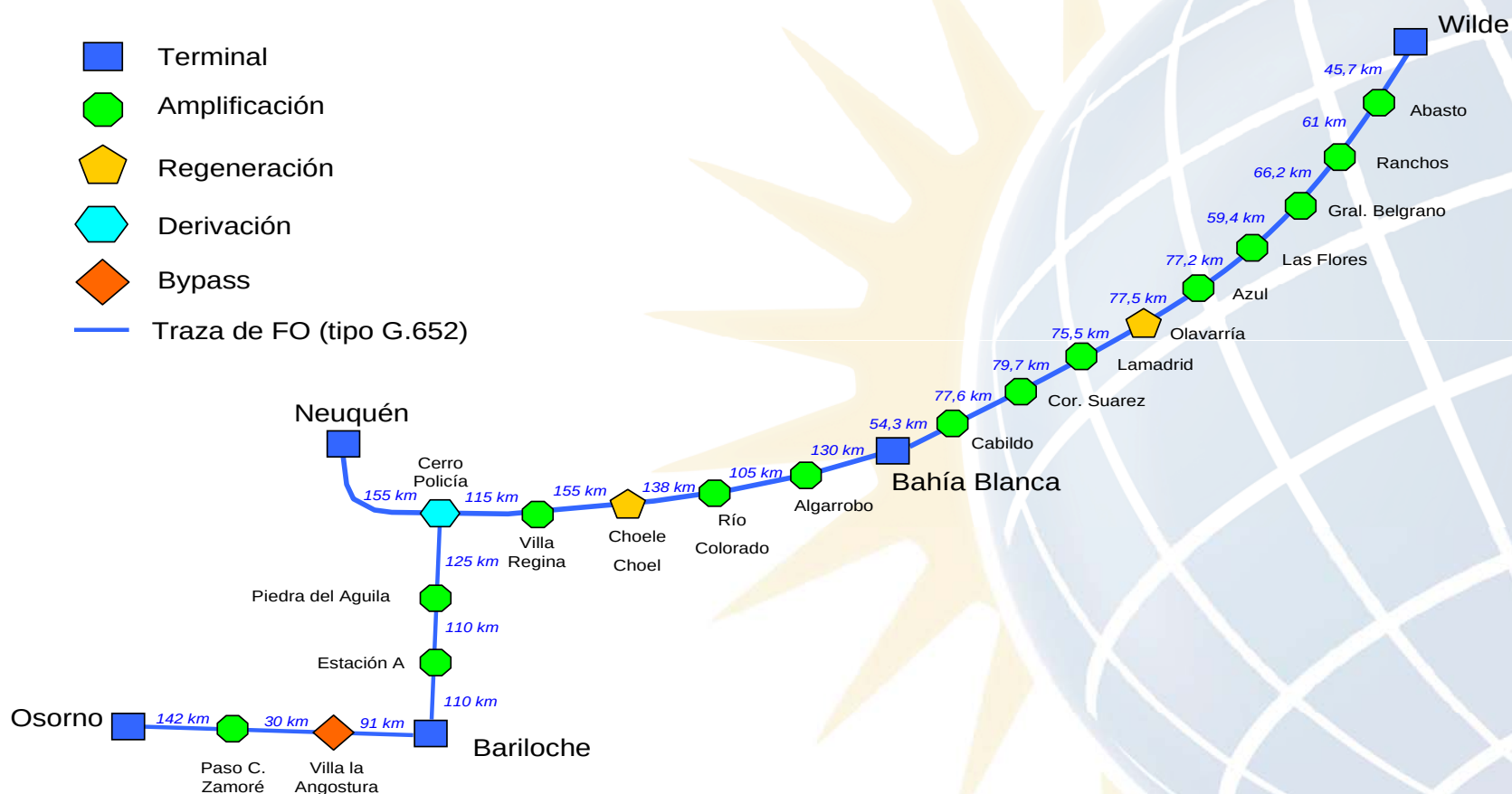


INNOVA|RED

Red Nacional de Investigación
y Educación de Argentina

10G Southern route

Up to 16x 10G channel DWDM between Buenos Aires and Osorno, Chile, with a total length of more than 1,900 km.





Thank you for your attention

michael@rnp.br

www.redclara.net

www.rnp.br

www.innova-red.net



CLARA