



RedCLARA: regional network in Latin America

I2MM Spring 2009

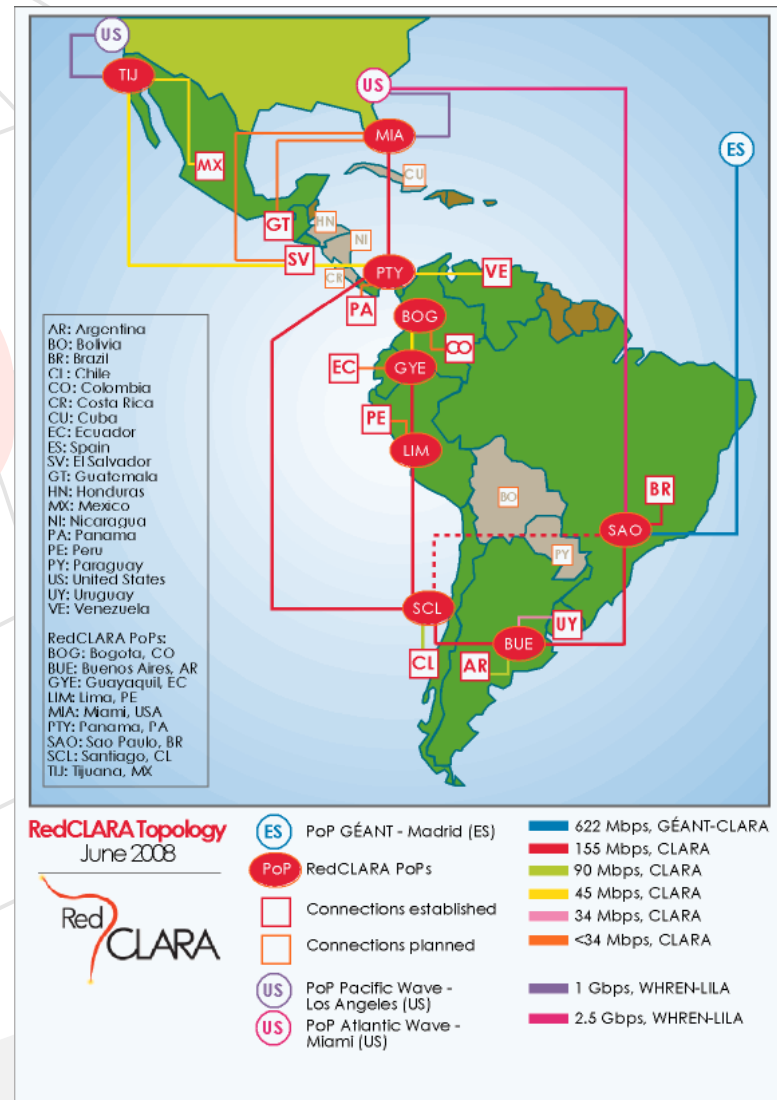
Michael Stanton
michael@rnp.br

Chair, CLARA Technical Committee



CLARA and CKLN/ C@ribnet

- CLARA is the regional association of NRENs in Latin America (LA)
- CLARA operates the LA regional R&E network – RedCLARA – which joins together NRENs from several countries bordering on the Caribbean
- Many of our international links cross the Caribbean
- We would like to offer our support for R&E networking initiatives in the Caribbean





The LA experience in advanced R&E networking

- After the establishment of Internet2 in 1996, “advanced networks” became a new paradigm to be pursued by the Research and Education (R&E) community
- The first steps in LA were taken by Mexico, with cross-border connections to the US, and by the AMPATH project at FIU, Miami, which began linking South American networks to the US



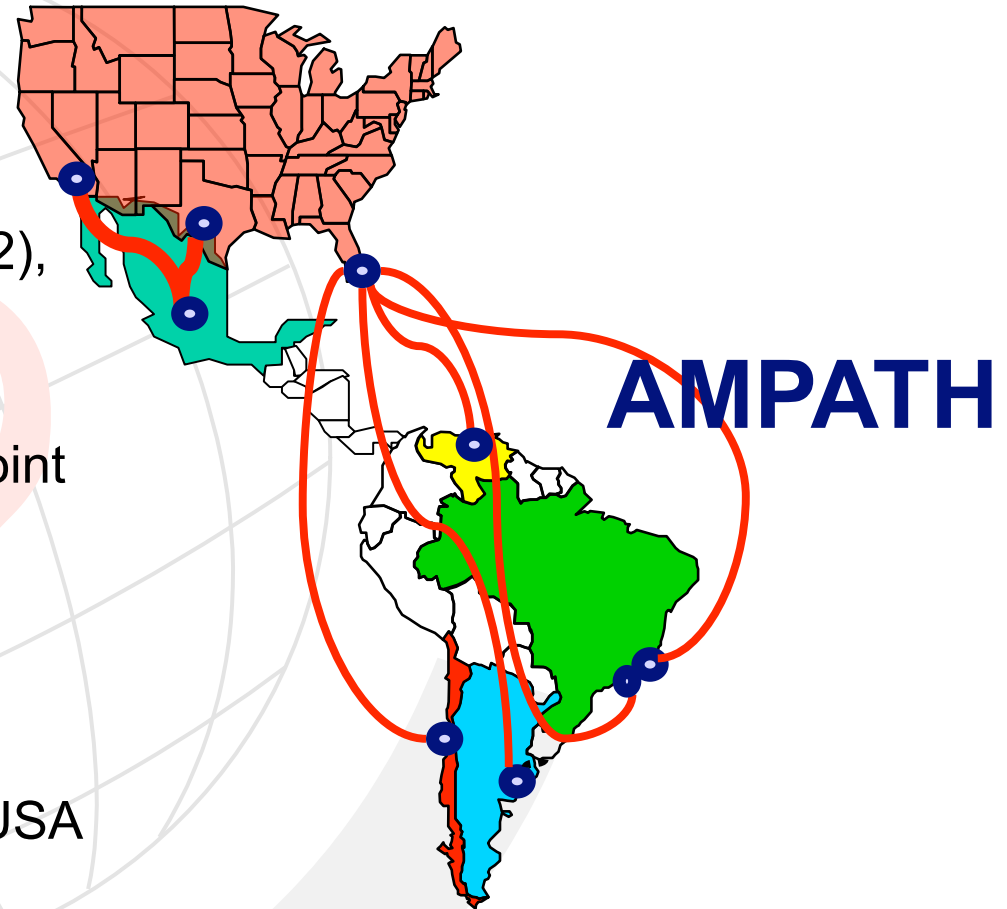
Internet2 Connectivity in Latin America by 2002

AMPATH

- used new submarine cable
- connected Argentina, Brazil (2), Chile, Venezuela
- 45 Mbps
- all connections are point to point from Miami, and thence to Abilene

Mexico

- cross-border connections to USA (Texas and California)





State of Latin American NRENs in 2002

Established education and research networks:

- With dedicated Internet2 connections:
Argentina, Brazil, Chile, Mexico, Venezuela
- Some with dedicated int'l connectivity:
Cuba, Uruguay

Education and research networks were being re-established
(present nat'l/int'l connectivity through commercial ISPs)

- Bolivia, Colombia, Costa Rica, Ecuador, Guatemala, Panama,
Peru, Paraguay, El Salvador

No education/research network (most connected to Internet via
commercial ISPs):

Nicaragua, Honduras



Europe and the @LIS initiative

- Through GÉANT, the European R&E community enjoyed high bandwidth connectivity with N. America
- Initiatives had already been taken to improve connectivity to Asian-Pacific, Mediterranean and Latin American regions, with support from the European Commission
- Next was Latin America:
@LIS: Alliance for the Information Society (2003-2005)
 - targeted at 18 LA countries
 - 62.5 M€ for EU-LA on Information Society Issues
 - 10 M€ for Interconnecting Europe & Latin American Researchers



CAESAR project

European initiative to prepare for the @LIS program

- Promote EU-LA connectivity through regional connectivity within LA plus a large pipe to Europe
- Participants: DANTE, NRENs of Spain and Portugal
- CAESAR Workshop 2002 in Toledo, Spain, with representatives from 12 LA countries, became the starting point for CLARA (*Toledo Declaration*)
 - create a cooperative organisation for advanced networking in LA
 - build a regional network:



CLARA organisation

Cooperación LatinoAmericana de Redes Avanzadas

- Association of NRENs in LA open to all LA Countries
 - constituted in Uruguay (like LACNIC)
- Principal objectives:
 - Build an “advanced” regional network in LA
 - Connect LA to the rest of the world
- CLARA created in 2003 and registered in Uruguay as a non-profit international organisation



CLARA Members (also @LIS target countries)

- Argentina
- Brazil
- Bolivia
- Chile
- Colombia
- Costa Rica
- Cuba
- Ecuador
- El Salvador
- Guatemala
- Honduras
- Mexico
- Nicaragua
- Panama
- Paraguay
- Peru
- Uruguay
- Venezuela



ALICE project: May 2003 to April 2008

ALICE - América Latina Interconectada Con Europa

- Funded by @LIS
- Coordinated by DANTE, with participation of NRENs from Italy, France, Spain, Portugal and the CLARA countries, and CLARA itself (once formally incorporated)
- 12.5 M€ budget (20% LA NRENs, 80% EC)
- Main objective: Build the RedCLARA network
 - Interconnect LA NREN (and new initiatives) and link the resulting network to GEANT
 - September 2004: first links operational

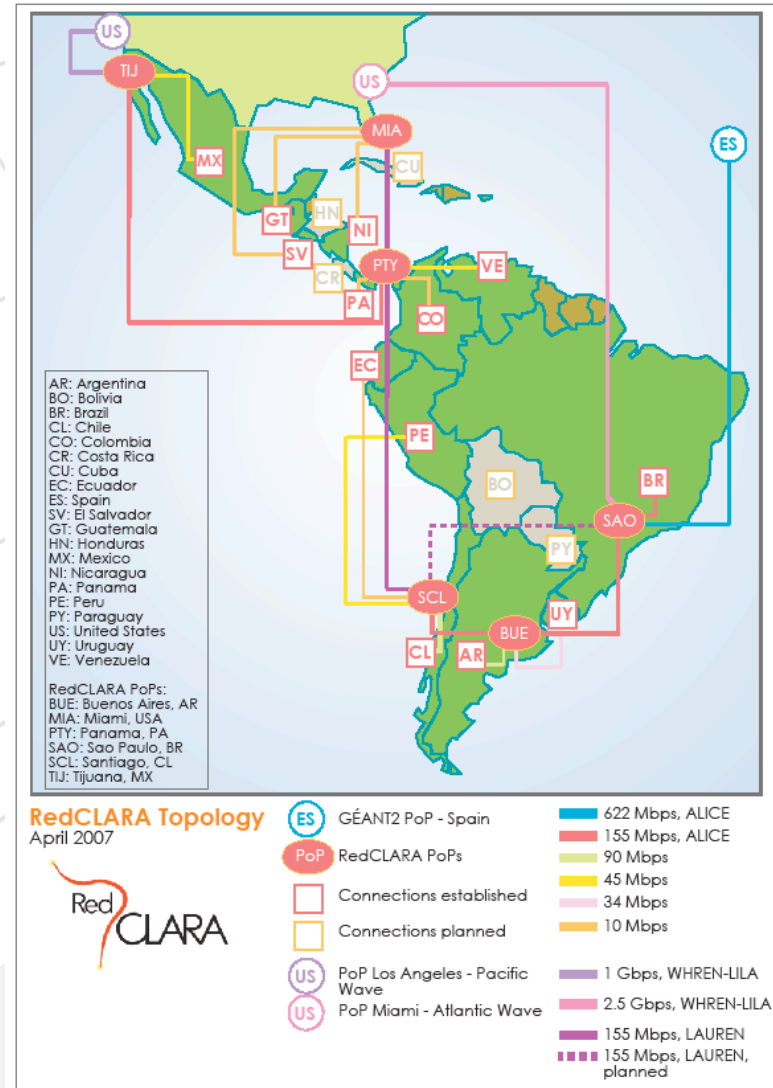
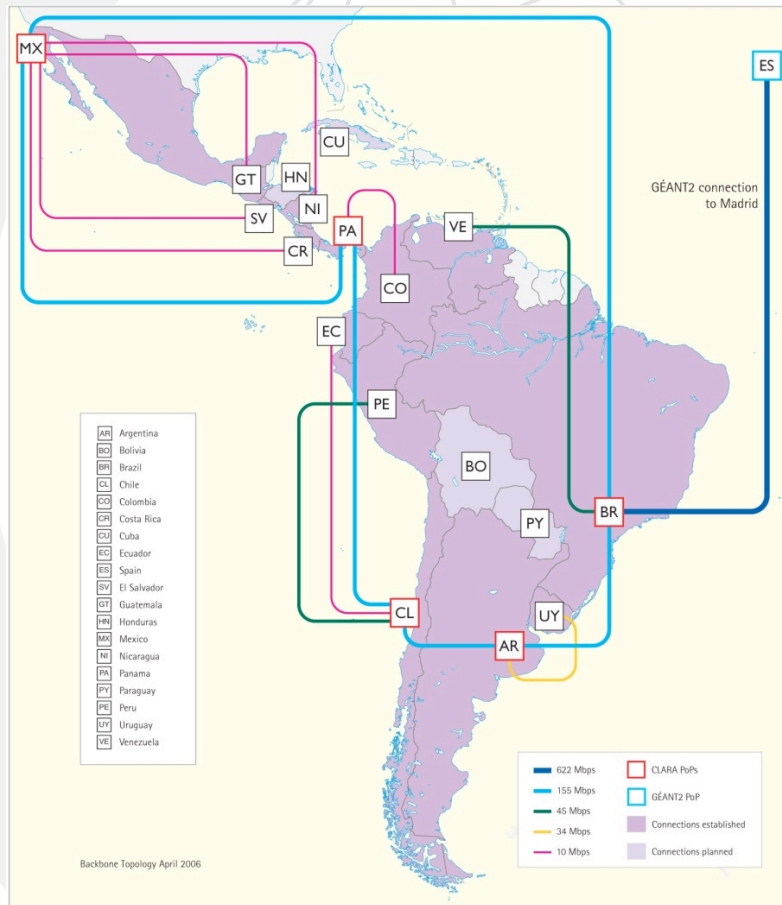


RedCLARA development to 2008

- Initial network deployed in 2004
 - 155 Mbps backbone (PoPs in 5 countries: Brasil, Argentine, Chile, Panama, Mexico)
 - 622 Mbps link to GEANT in Madrid (Spain)
 - Spur links to other countries (maximum 9, currently 7)
- Linked to US from 2005 through IRNC project WHREN-LILA :
 - 2x1G fibre link from Tijuana (MX) to San Diego
 - later extended to Pacific Wave
 - submarine link from S. Paulo (BR) to Miami, shared with RNP and ANSP from Brazil (1.2G)
 - later extended to Atlantic Wave and upgraded to 2.5G
 - soon to be further upgraded to 2x10G
 - 6th RedCLARA PoP in Miami for simpler connectivity



RedCLARA development (fases 1 & 2)





Latin American NREN development to 2008

- New NRENs created:
 - InnovaRed (Argentina) in place of RETINA
 - RAAP (Peru)
 - CEDIA (Ecuador)
 - RENATA (Colombia)
 - REDCYT (Panama)
 - RAICES (El Salvador)
 - RAGIE (Guatemala)
- Expansion of existing NRENs in Brazil, Chile, México, Uruguay, Venezuela



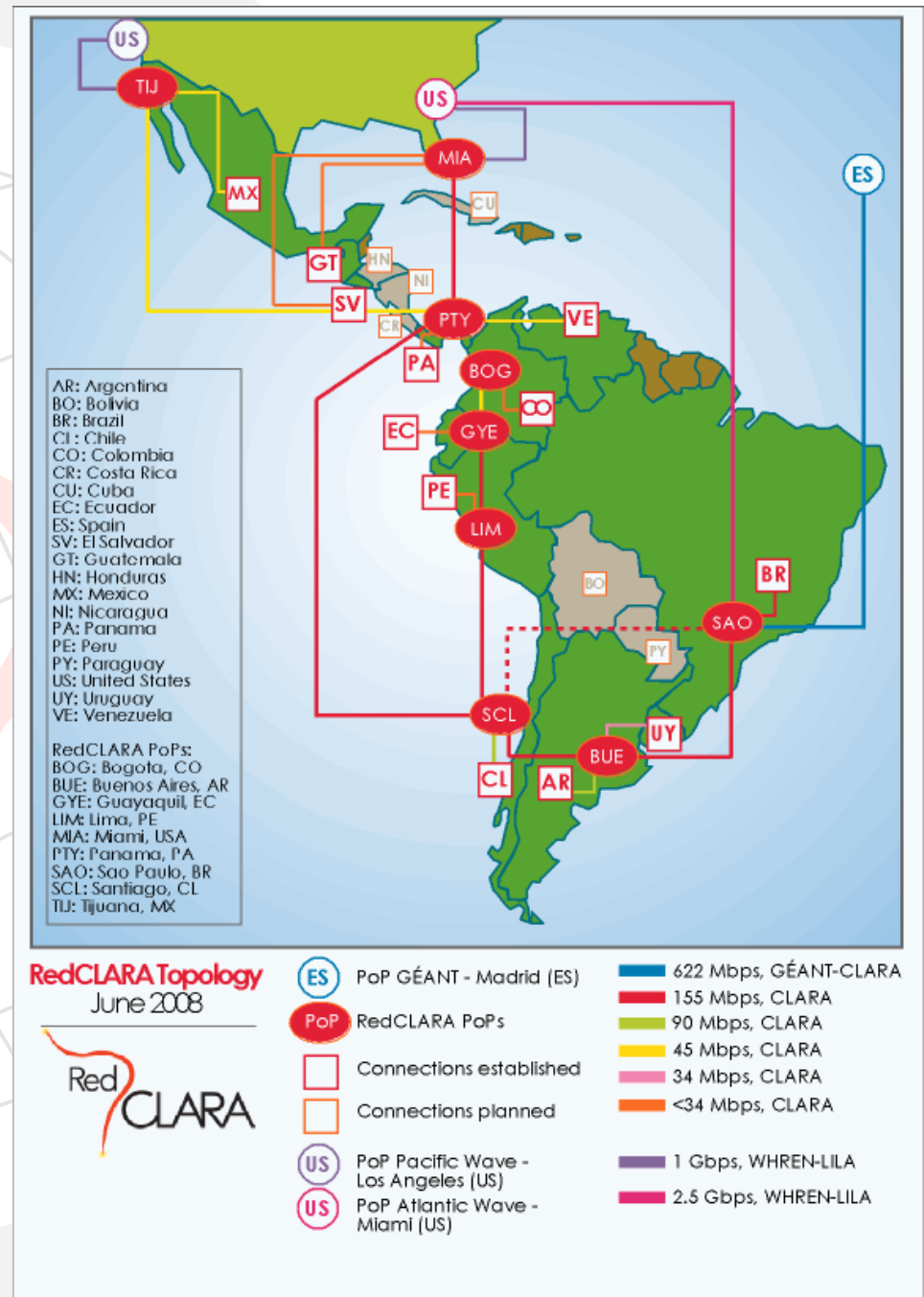
2008: waiting for ALICE2

- The ALICE project (financed by the EC) terminated in March, 2008.
- The EC was persuaded that a second project would be needed, before RedCLARA could become sustainable with regional funding
 - A new 4 year project (ALICE2) was approved by the EC and began in November, 2008
- RedCLARA has been maintained solely by LA-NREN funding during this interval
- A third topology was adopted in April 2007.



Red CLARA (fase 3)

- First wholly terrestrial links: Colombia – Ecuador – Peru
- AR-CL is part of GX “ring”





ALICE2 and the future of RedCLARA

- ALICE2 is a 18M€ project of the @LIS2 programme of the EC
 - 1/3 comes from LA NRENs, 2/3 from EC
 - coordinated by CLARA
- Objective is to build a new network (RedCLARA2) which will be sustainable at project end, by lowering Opex through non-use of leased circuits
 - seek terrestrial infrastructure to share between NRENs and RedCLARA
 - first steps in Argentina, with agreement with Silica Networks for sharing fibre between Buenos Aires and Santiago
 - CLARA + NRENs pay for DWDM; capacity divided with Silica
 - Possible model for future opportunities



RedCLARA2 tender

- Published in 2009, to be opened May 4th
- Both facilities (IRUs) and leased circuits requested
- The new network will be built by a mixture of both kinds of links
- The topology should be similar to the fase 3 topology, with some new terrestrial links between Colombia, Venezuela and Panama
- In future, we seek a terrestrial backbone from Brazil to Mexico, built on an infrastructure shared with the NRENs in each country crossed.



CLARA-TEC

- Starting in 2004, in Rio de Janeiro, one of the main activities of CLARA has been the twice yearly technical meetings
- These involve technical representatives of CLARA and LA NREs, as well as invited specialists from elsewhere
- The meetings organised by the CLARA Technical Committee, with representatives of 7 NREs
- Meeting agenda normally includes:
 - updates on RedCLARA and NREN networks
 - reports on Working Group activities
 - invited presentations on selected topics (services or applications)
 - technical training in selected areas



CLARA-TEC WGs

- Working groups are composed of technical representatives and other interested persons
 - explore a specific theme and bring proposals for action within the CLARA community
 - original themes included:
VoIP, Videoconferencing, Advanced Routing, Multicast, Measurements, IPv6, Security, Training
 - in 2009 reformed to include:
VoIP, Videoconferencing, Measurements, IPv6, Security, Training, Eduroam, IPTV, Hybrid Networking



CLARA-TEC Training

- Since 2005, technical training has been provided on the following themes (typically 2 to 3 days):
 - VoIP
 - Videoconferencing
 - Network management
 - IPv6
 - Network security
 - Advanced routing
 - Optical networks
 - NOC tools



CLARA-TEC futures

- Next meeting in Tegucigalpa, Honduras June 29th – July 3rd
- Agenda is not so far defined
- We would welcome participation from CKLN/
C@ribnet members



Thank you !

Michael Stanton: michael@rnp.br

CLARA: www.redclara.net