



SPRACE Network Overview

(and brief discussion on future plans)

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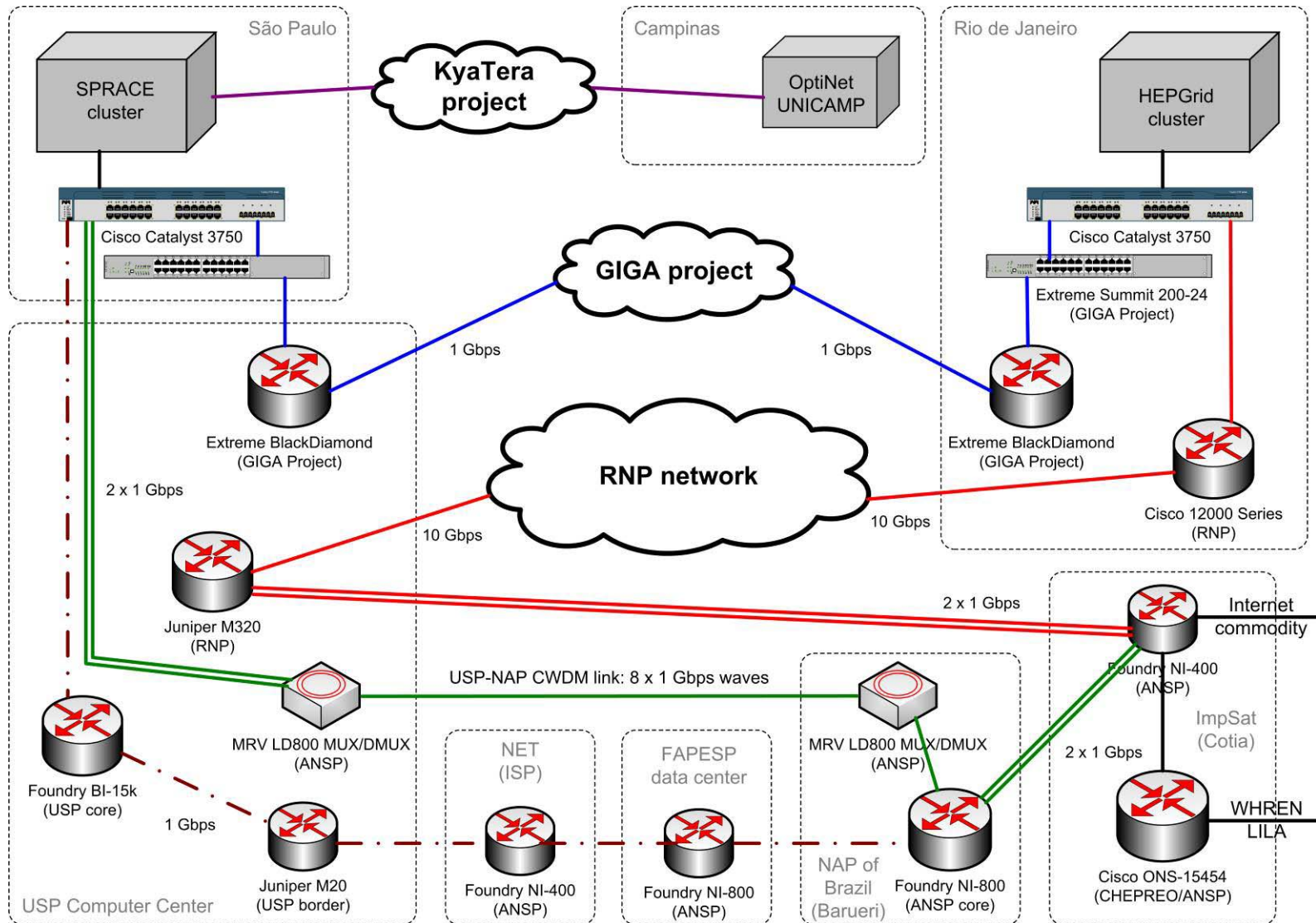
1st SPRACE Workshop

March 29, 2007

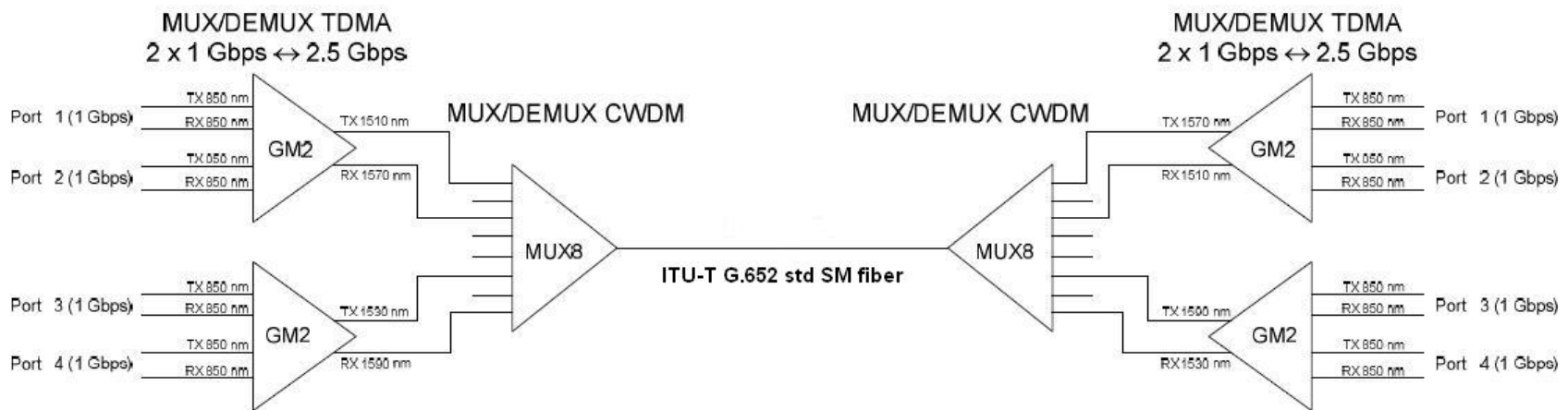
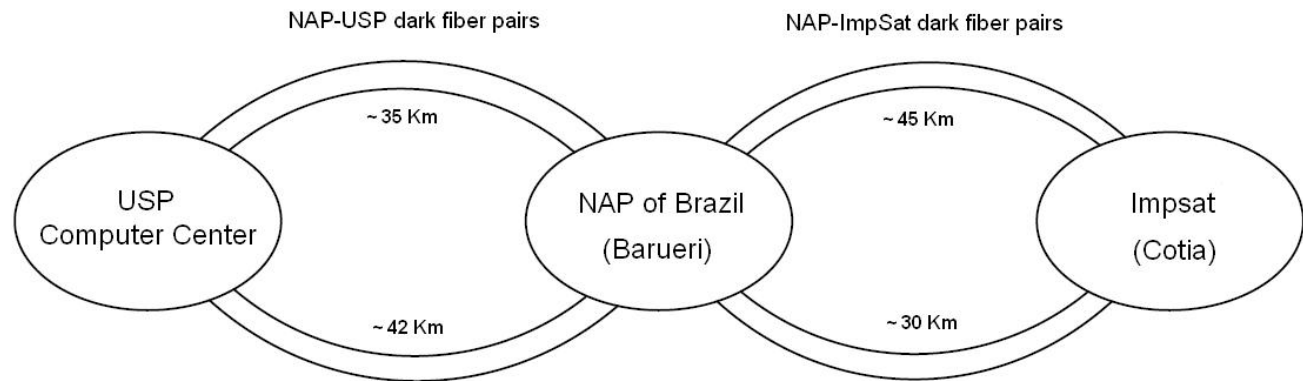
SPRACE Network - Historical evolution

- March 2004
 - SPRACE main server connected to USP Physics Institute through a 100 Mbps port in a shared Layer 2 switch
- September 2004
 - SPRACE connection evolved to 1 Gbps, but remained connected to the local Physics Institute network
- June 2005
 - SPRACE servers connected directly to ANSP core router at NAP of Brazil, through a Cisco Catalyst 3750 switch-router donated by Caltech
- January 2006
 - SPRACE gateway temporarily connected to USP network backbone due to a problem with dark fiber provider
- October 2006
 - SPRACE gateway reconnected to NAP of Brazil, using ANSP WDM MAN network: 1 Gbps production link (+ 1 Gbps experimental link)

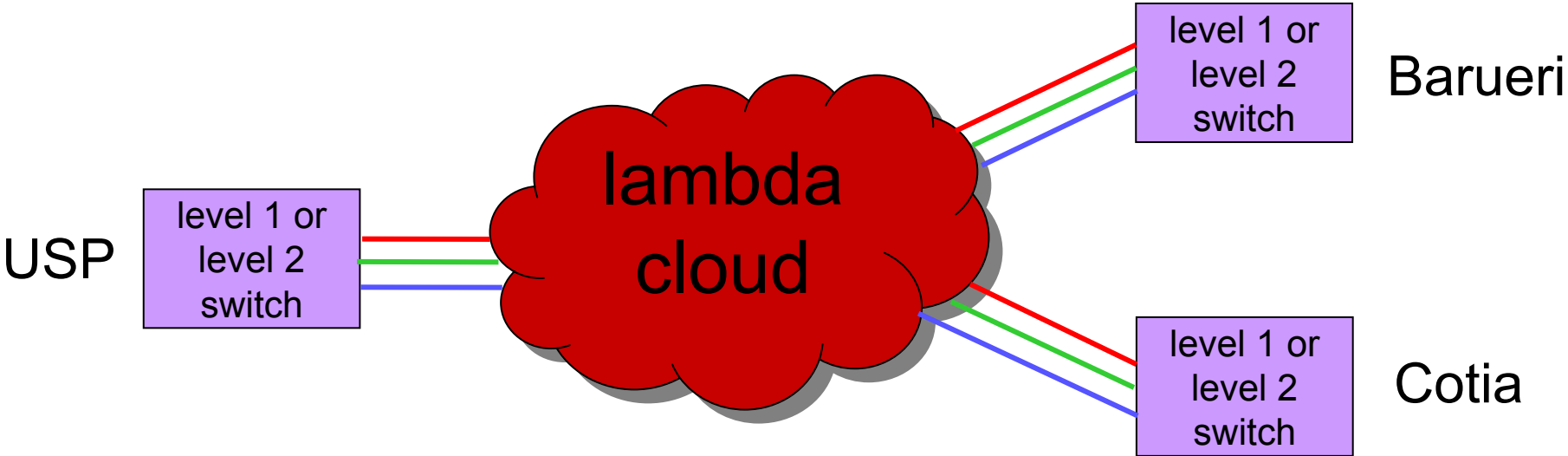
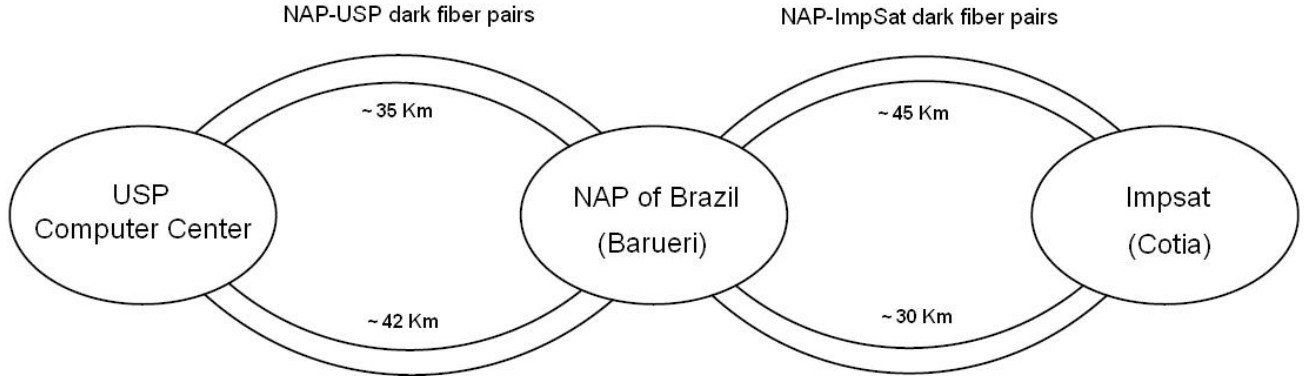
SPRACE Network - detailed view



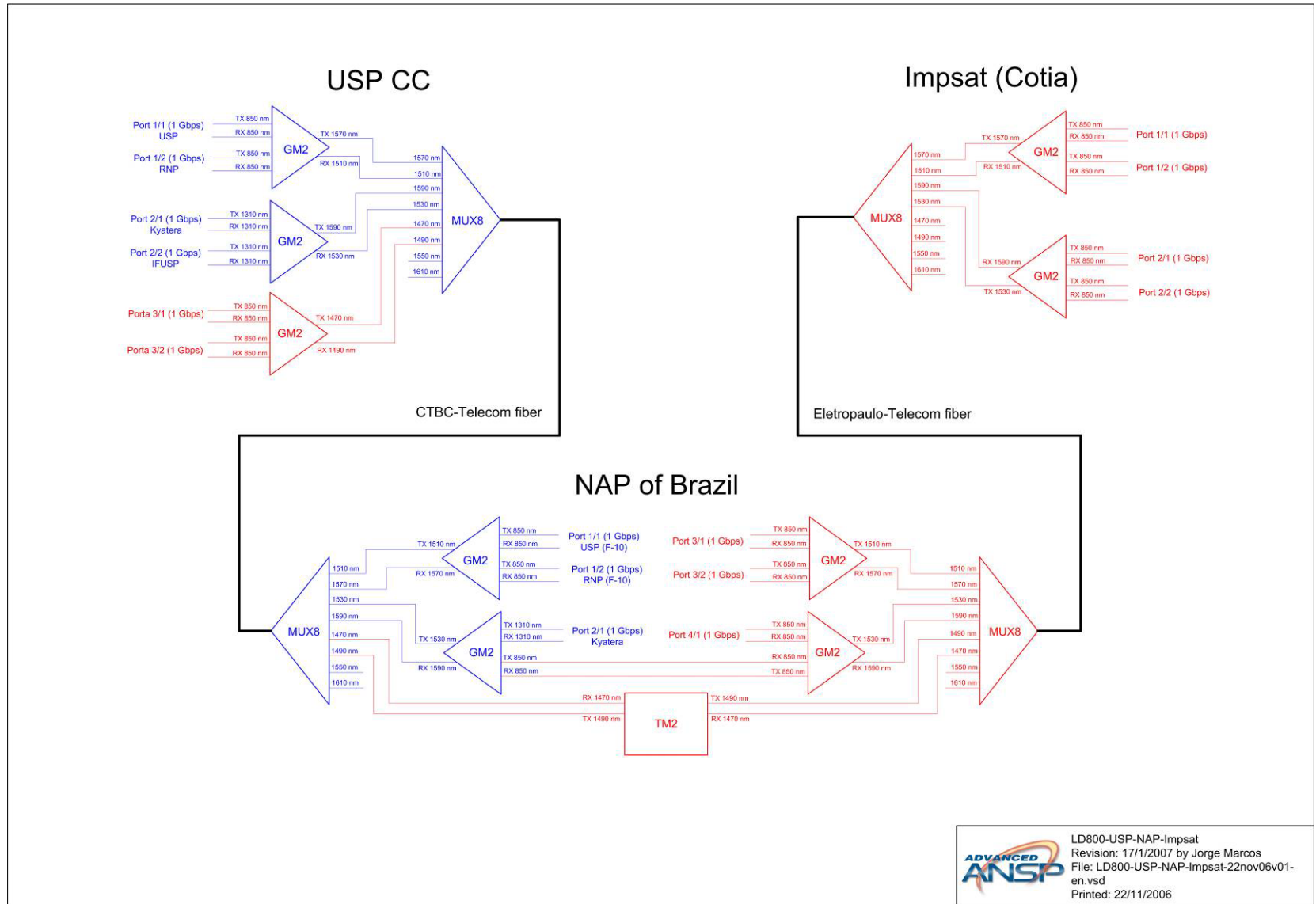
SPRACE / ANSP connectivity (today)



SPRACE / ANSP connectivity (near future)

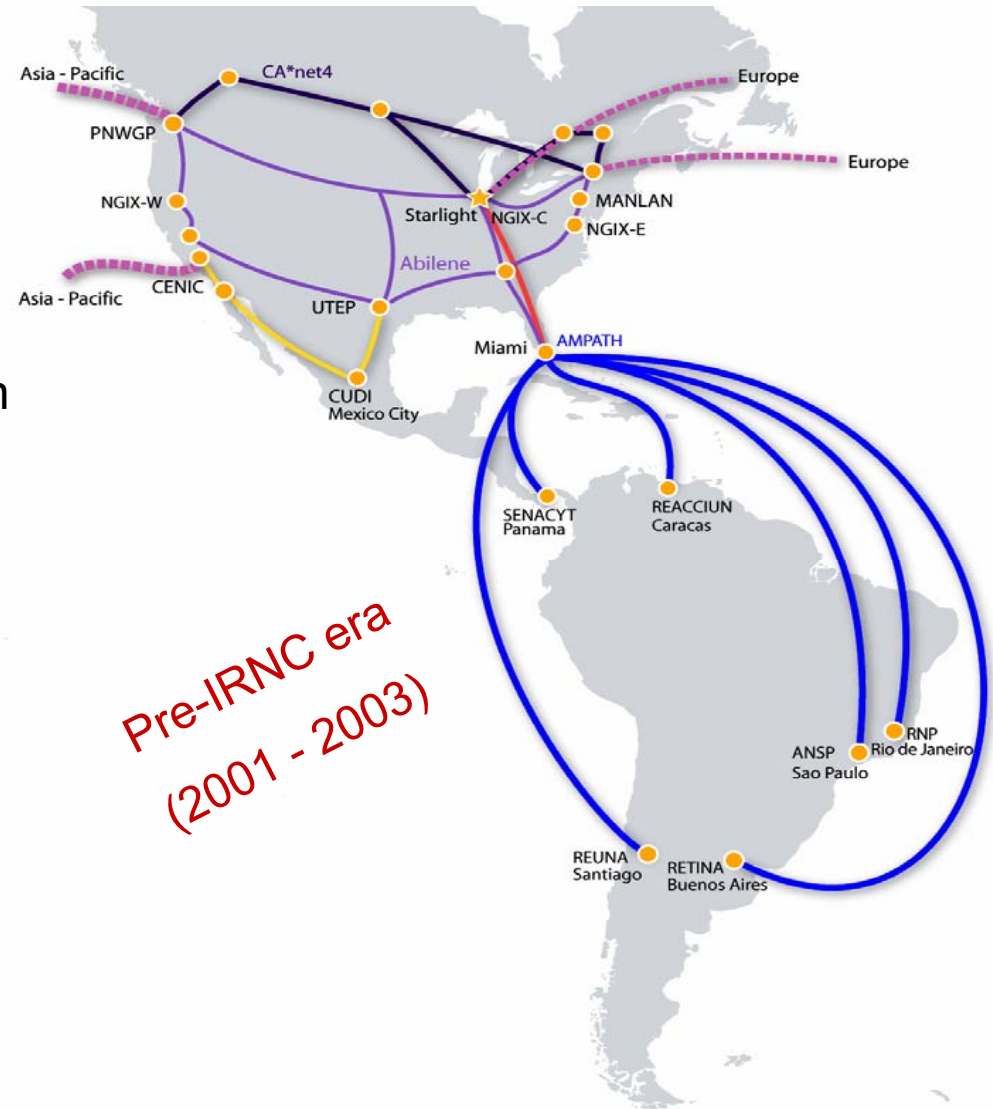


SPRACE / ANSP connectivity (near future)



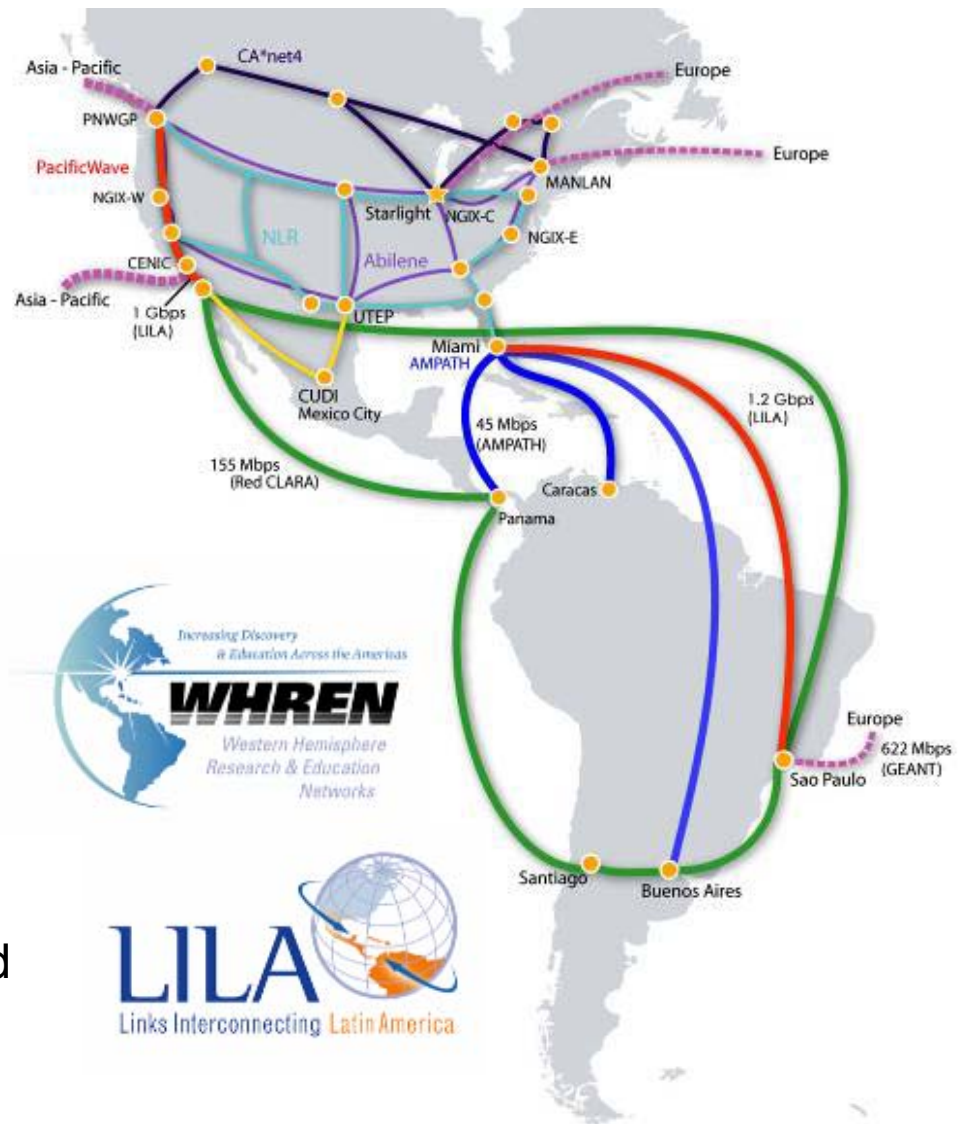
LA Network connectivity evolution

- DS3 channels (45 Mbps connections) between Miami and Argentina, Brazil, Chile, Panama, Venezuela
- Mexico connections through San Diego and El Paso
- Peerings with Internet2 and other US R&E networks through AMPATH, CalREN and UTEP
- International and FedNet peerings at STARTAP/Starlight from Miami provided by AMPATH



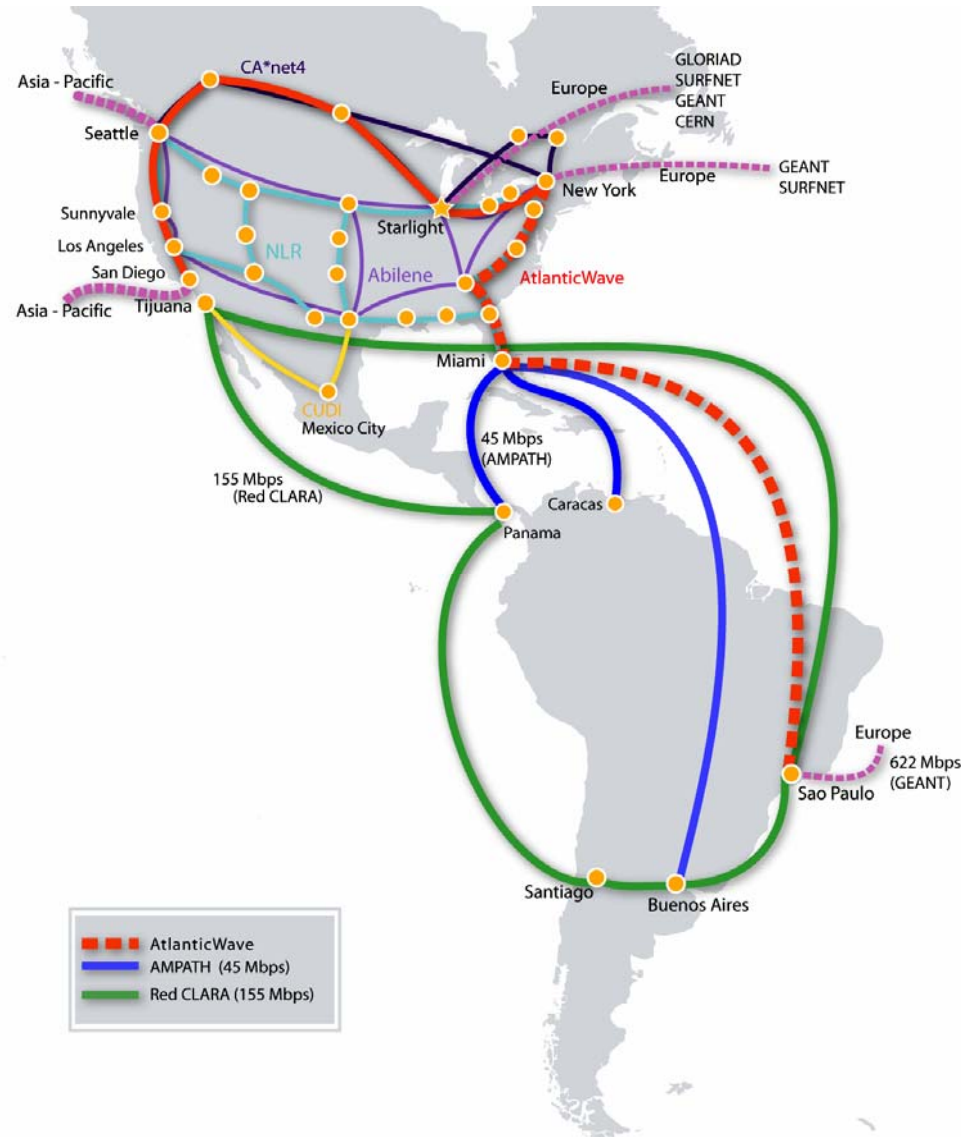
WHREN/LILA link - IRNC Award #0441095

- Improve U.S. – South American network connectivity
- Bridge regional network infrastructures with existing and emerging optical exchanges in the North and South
- Form a network collaborative that complements the Western Hemisphere's evolving regional networking activities
- Promote efficient peering through a distributed exchange model
- Enable communities of scientists to expand their research activities, teaching, and learning
- Evolve connections to 2.5 Gbps and more, as resources and economies permit

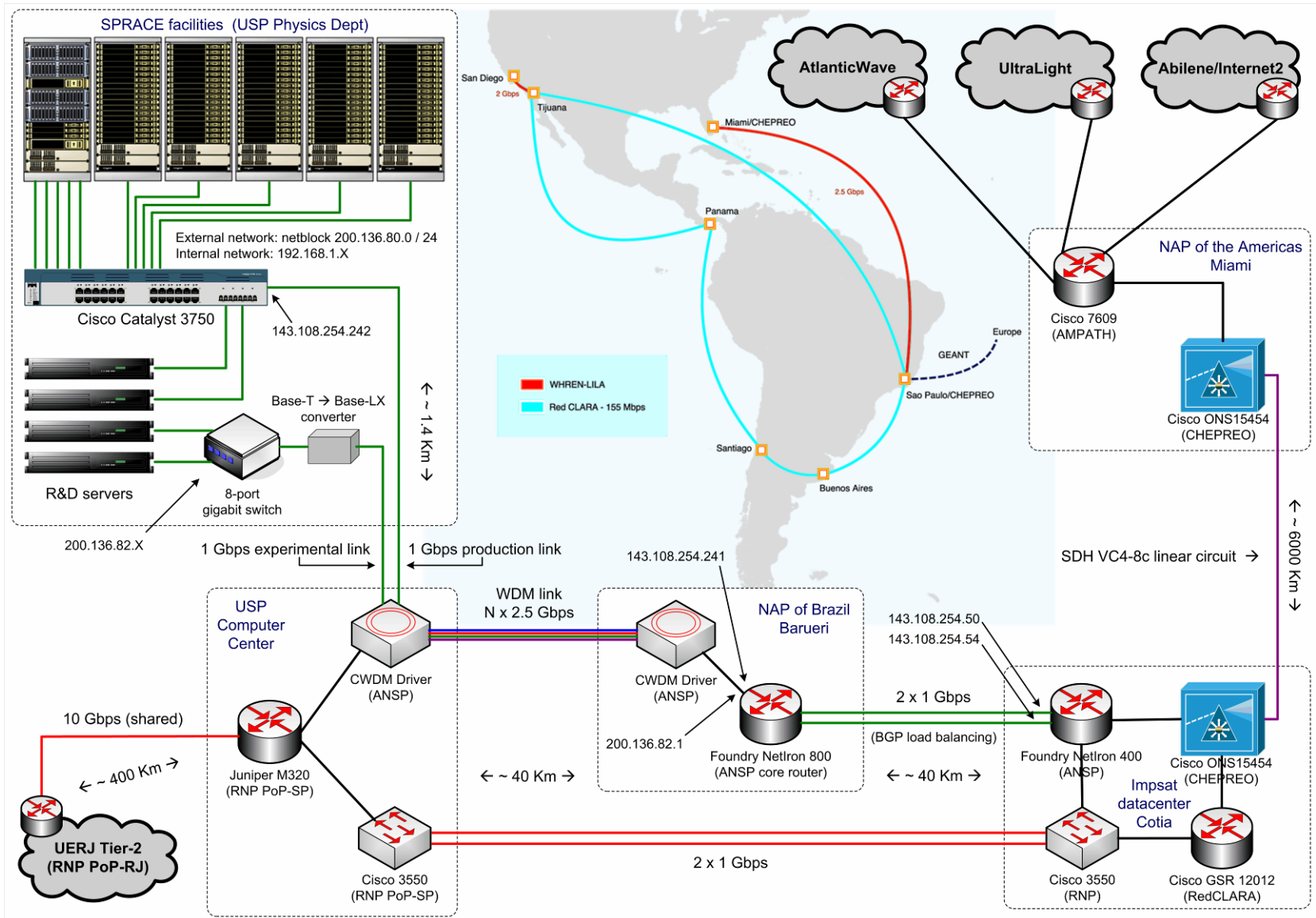


WHREN/LILA - AtlanticWave topology

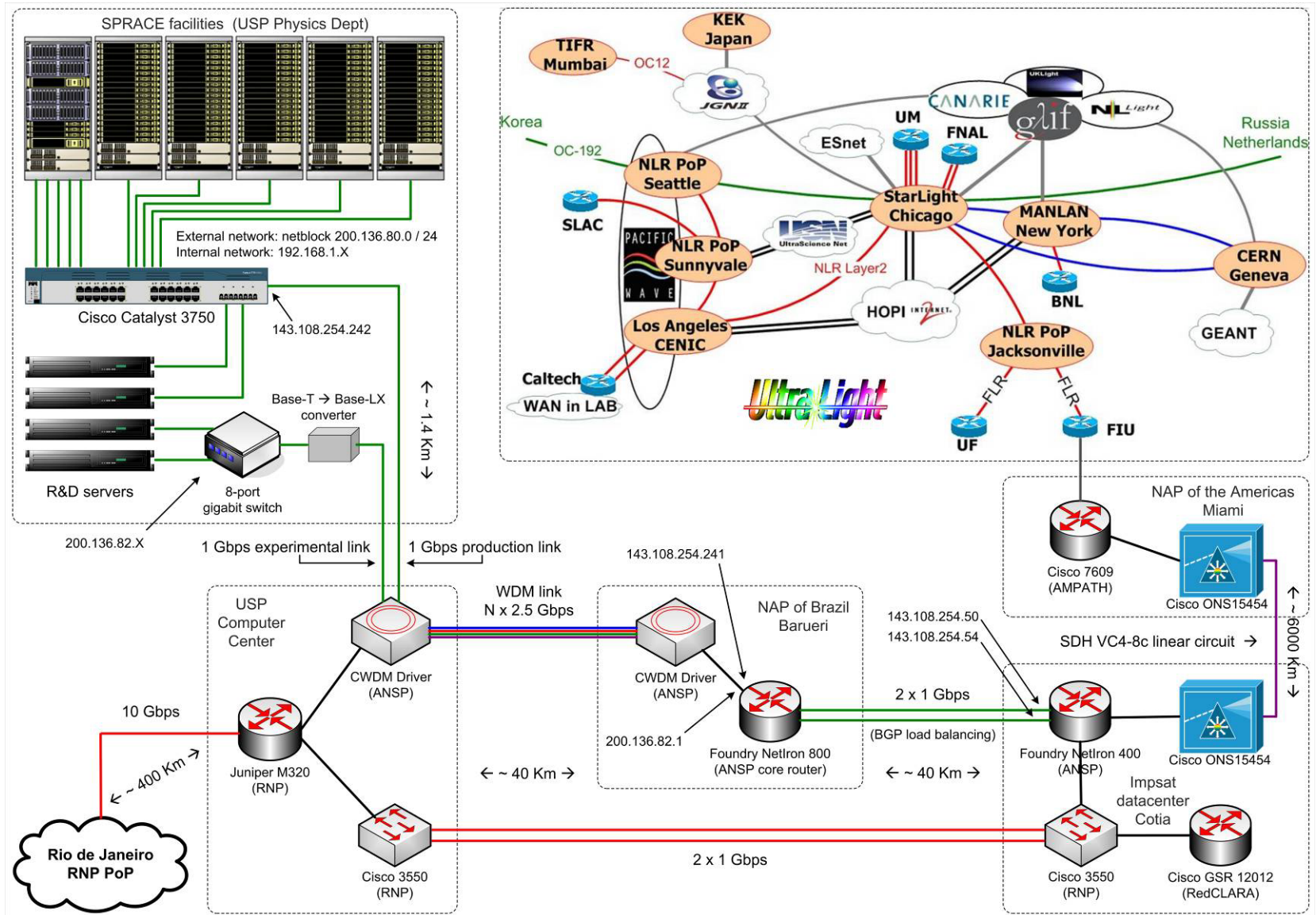
- A-Wave provides multi-layer/multi-protocol services between participating networks
 - Layer 3 peering services over ethernet
 - GLIF “light path” services
 - Others (to be defined)
- A-Wave will to provide a production Layer 3 distributed exchange capability
 - Ethernet based
 - Best effort packet exchange
 - Linear topology – unprotected (NLR based)
 - 1 GE, 10GE LAN, 10GE WAN client access
 - Jumbo frame support



SPRACE International Connectivity



SPRACE and the UltraLight Collaboration



SPRACE network evolution - future plans

- Network infrastructure upgrade (to 10 Gbps)
 - new switch-router: 48 x 1 Gbps + 2 x 10 Gbps ports
 - new network distribution rack
- Improvements on cluster external connectivity
 - new dCache pools to accomplish parallel network transfers
- Network integration with GridUNESP and UFABC
- Closer cooperative partnerships with
 - ANSP engineers (e.g. GLIF partnership)
 - USP network engineers (PhD student)
 - UltraLight partners (e.g. Fast TCP deployment)