

International Operations with Brazil

**Campus/Operations, Management, Integration and
Security working group**

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Jason Liu, PI

Julio Ibarra, Co-PI

Heidi Alvarez, Co-PI

Florida International University

Outline

- International Operations with Brazil
 - Americas Lightpaths (AmLight) project
- AmLight NOC Activities
- Experiences
- PrimoGENI
- Next steps
- For background information on PrimoGENI, AMPATH, Southern Light, RNP, ANSP, etc., please see my presentation at GEC8 at http://groups.geni.net/geni/attachment/wiki/Gec8Agenda/GEC8_ibarra_primoGENI-international_v4.pptx

International Operations with Brazil



- Operate NSF IRNC links between the USA and Latin America in coordination with project collaborators



AmLight: Americas LightPaths



- AmLight: NSF IRNC Production Network (ProNet) award for USA-Latin America science & engineering research and education, OCI-0963053
- Interconnects key points of aggregation
 - Miami & Sao Paulo
 - Sao Paulo & Santiago
 - San Diego and Tijuana
 - San Antonio & Mexico
- Operation of links is collaborative, involving multiple organizations
- U.S. - Brazil focus



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International Operations with Brazil

- Operate NSF IRNC links between the USA and Brazil (including Latin America) in coordination with project collaborators
- Domains:
 - U.S. R&E networks (Internet2, NLR, Esnet, etc.)
 - Brazil's R&E networks (RNP, ANSP)
 - Domains intersect at exchange points (AMPATH, SouthernLight)
- Production services
 - IP
 - Point-to-point circuits
 - Dynamic Circuit provisioning services
 - Predictable performance
 - Latency, Throughput capacity, connection status, etc.
 - Highly available: bandwidth, transport, transit
- Experimental services
 - Testbeds, demonstrations, pilot projects, etc.
 - Typically built upon end-to-end circuits

AmLight NOC Activities

Activity	Description	Implementation
Provisioning	Circuit acceptance	Local: acceptance by each NOC. Coordinated suite of end-end tests.
Monitoring	Connection and circuit status	Local: each NOC monitors its resources. Distributed: perfSONAR.
Detection	Status change; thresholds exceeded	Local: Detection by each NOC; eg., using Nagios. Distributed: perfSONAR.
Reporting	Notification of responsible parties	Centralized: shared ticket process between AMPATH, RNP, ANSP. Local: multiple disjoint databases.
Troubleshooting	Problem discovery and solution	Local: engineers in problem domain. Coordination with engineers in other domains
Escalation	Increase awareness and severity	Local: resources in domain's control. Coordination between NOCs; eg. Carrier event
Resolution	Notification problem resolved	Centralized: shared ticket process between AMPATH, RNP, ANSP. Local: multiple disjoint databases.

Experiences

- Important to not disrupt each collaborating organizations operation's model
- Resource management is primarily a local responsibility
 - Must keep in mind this is a project
- Engineer for failure recovery
 - Failures result from undersea cable system service disruption events

PrimoGENI

- PrimoGENI is an aggregate operating at FIU
- PrimoGENI will deploy aggregates in Brazil at two sites:
 - Kyatera via ANSP domain
 - GIGA via RNP domain
- Local NOCs will monitor and manage PrimoGENI nodes and aggregates
- PrimoGENI will export aggregates operational status information to the Global Meta Operations Center (GMOC)

Next Steps

- Goal is to implement a distributed NOC between the U.S. and Latin America R&E collaborators
 - GENI can leverage
- Exploring dvNOC as a distributed NOC solution



Thank You
Jason Liu <liux@cis.fiu.edu>
Julio Ibarra <julio@fiu.edu>
Heidi Alvarez <heidi@fiu.edu>