

C@ribNET Development

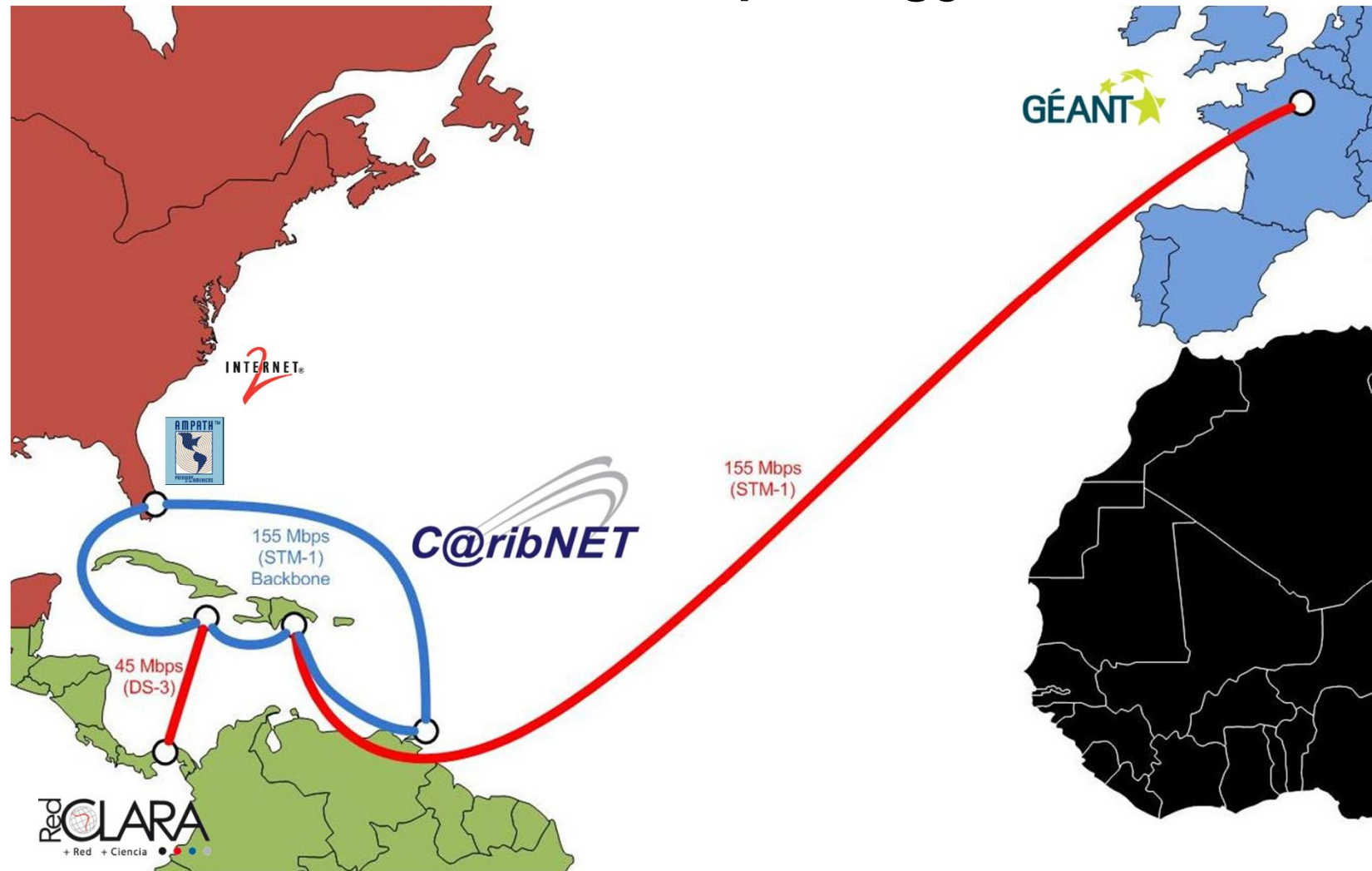
Eriko Porto (eriko.porto@ckln.org)

CaribNOG 5

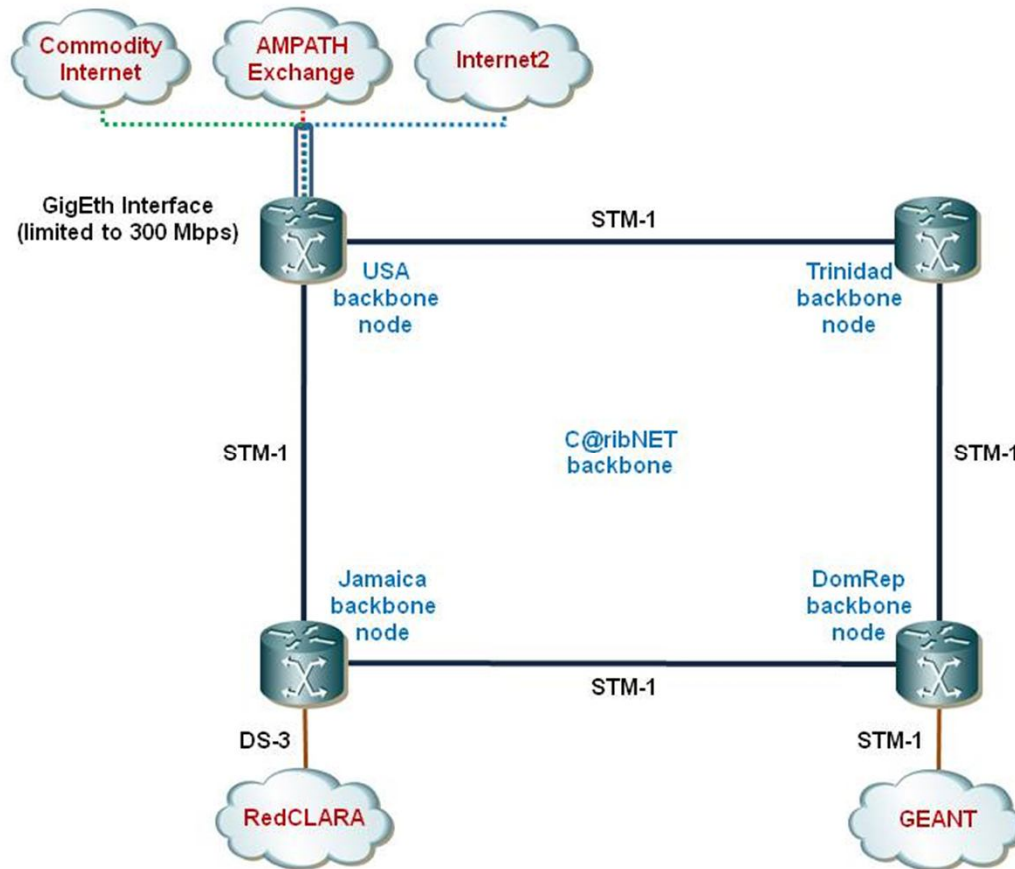
Barbados

April/2013

Global Topology



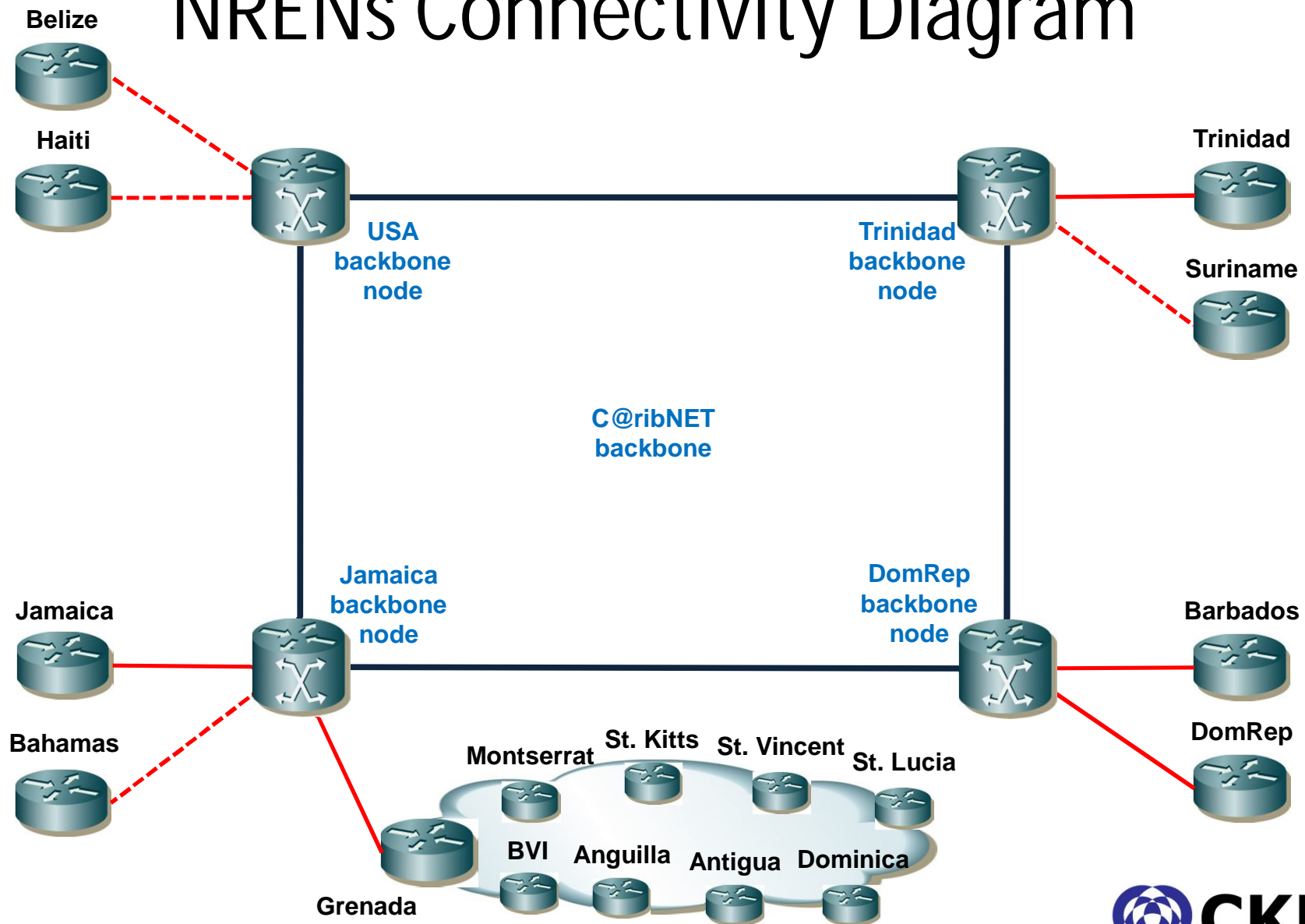
C@ribNET PoPs and Connectors



Backbone and NRENs



NRENs Connectivity Diagram



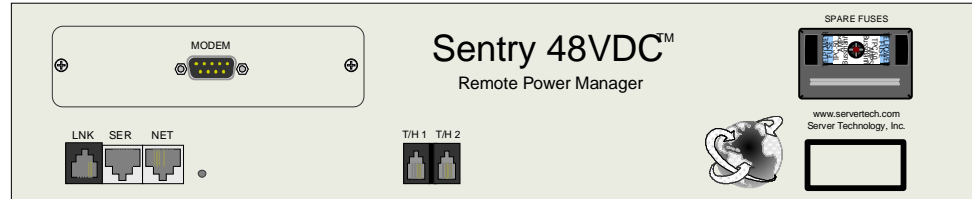
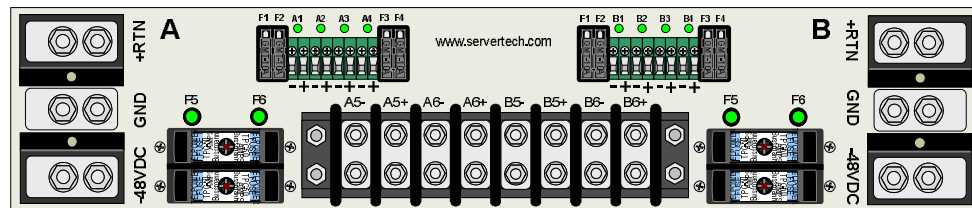
PoP Configuration



Rack Front View



Rack Rear View

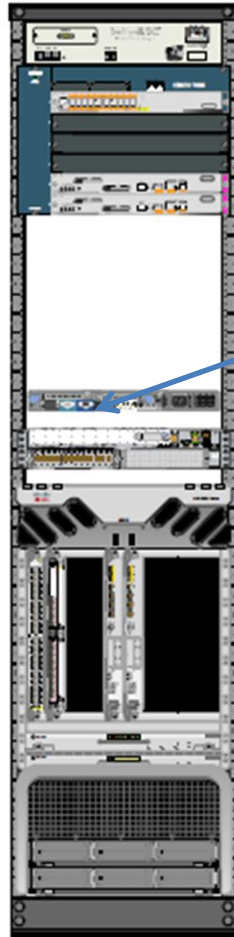


Remote PDU (Power Distribution Unit)

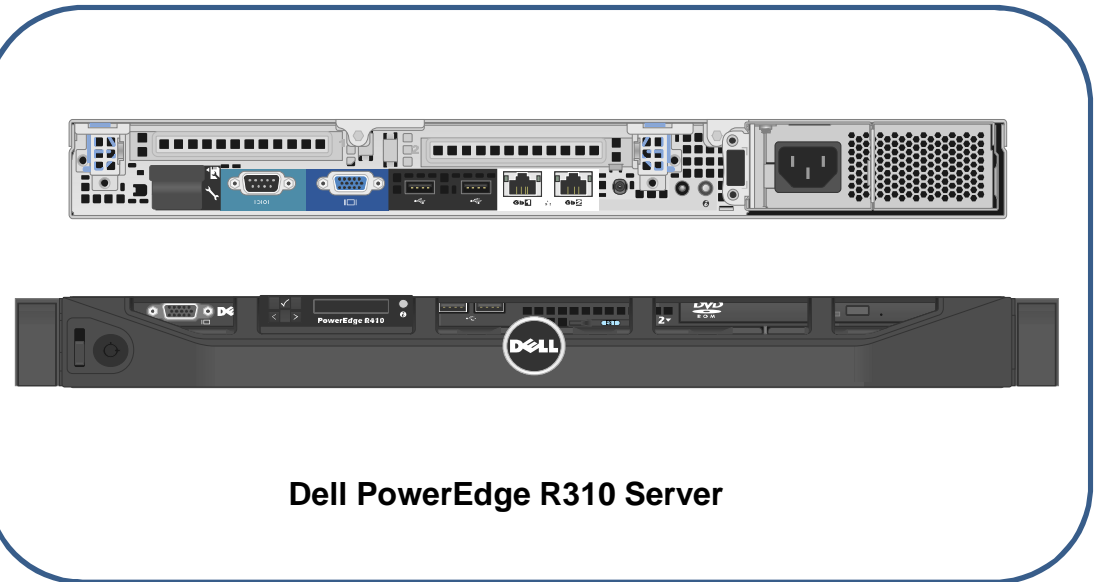
PoP Configuration



Rack Front View



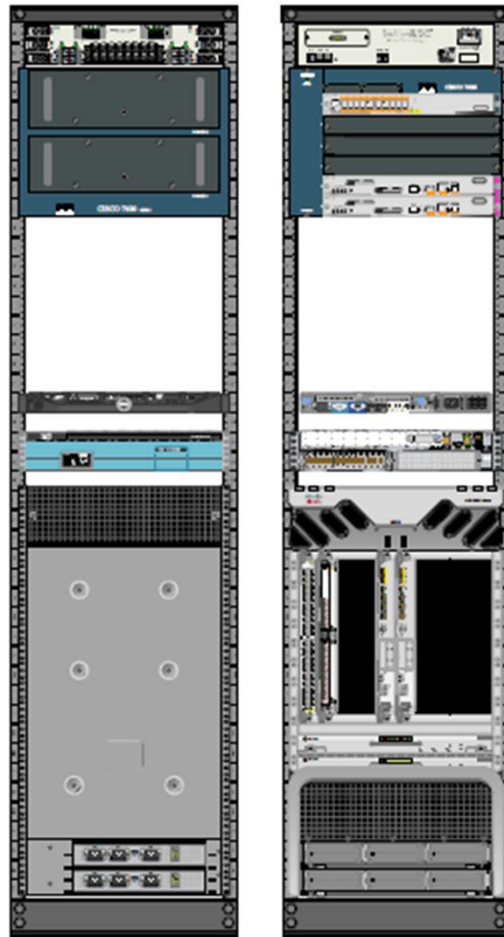
Rack Rear View



Dell PowerEdge R310 Server

PowerEdge R310 Chassis, Up to 4 Cabled Hard Drives and Quad Pack LED diagnostics
Intel® Xeon® X3480, 3.06 GHz, 8M Cache, Turbo, HT
8GB Memory (2x4GB), 1333MHz, Dual Ranked RDIMM
146GB 15K RPM Serial-Attach SCSI 3Gbps 3.5in Cabled Hard Drive
300GB 15K RPM Serial-Attach SCSI 6Gbps 3.5in Cabled Hard Drive

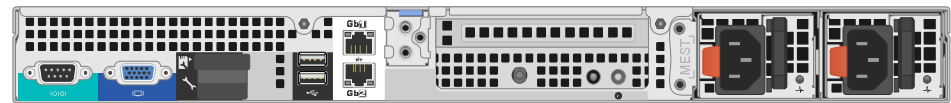
PoP Configuration



Rack Front View

Rack Rear View

Miami Node – Management Server



Dell PowerEdge R410 Server

PowerEdge R410 - Chassis for Up to 6, 3.5-Inch Hard Drives

Intel® Xeon® X5672 3.20GHz, 12M Cache, 6.40 GT/s QPI, 4C

Intel® Xeon® X5672 3.20GHz, 12M Cache, 6.40 GT/s QPI, 4C

32GB Memory (8x4GB), 1333MHz Dual Ranked LV RDIMMs for 2 Processors

RAID 5 for H700 or PERC 6/i Controllers

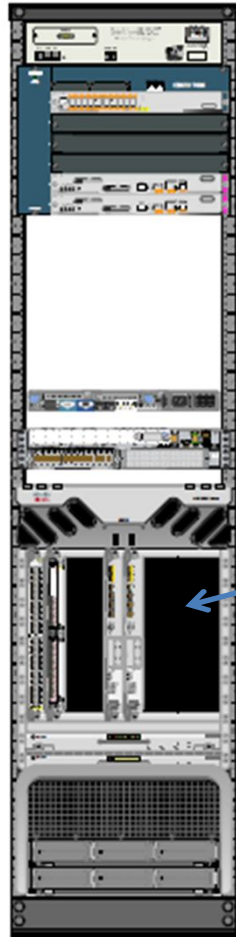
PERC 6/i SAS RAID Controller, 2x4 Connectors, Internal, PCIe, 256MB Cache, x6

3 x 600GB 15K RPM Serial-Attach SCSI 6Gbps 3.5in Hotplug Hard Drive

PoP Configuration

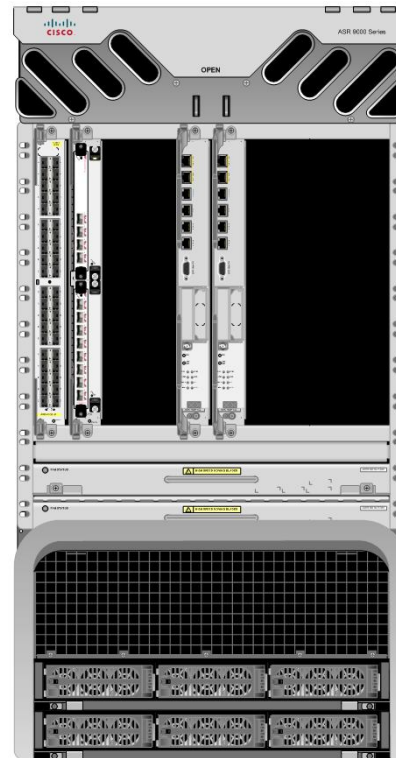


Rack Front View



Rack Rear View

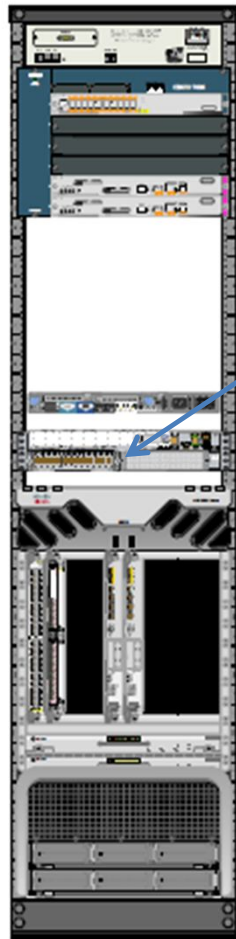
ASR 9010
Core Router



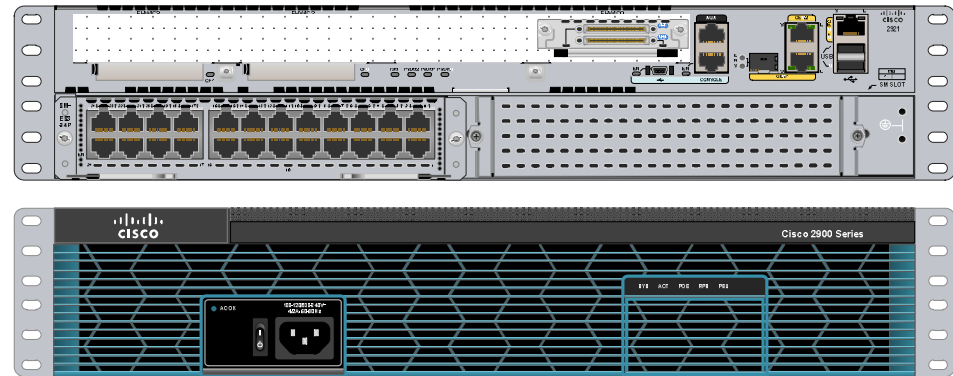
PoP Configuration



Rack Front View



Rack Rear View



Cisco 2921 Terminal Server

C@ribNET-NOC

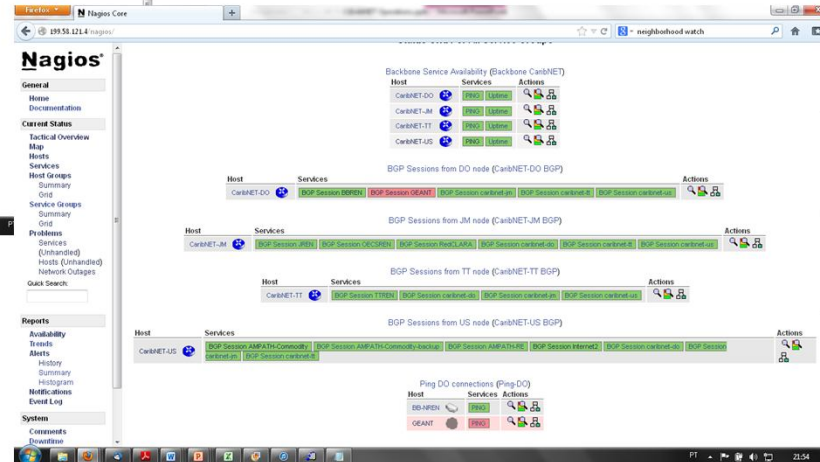
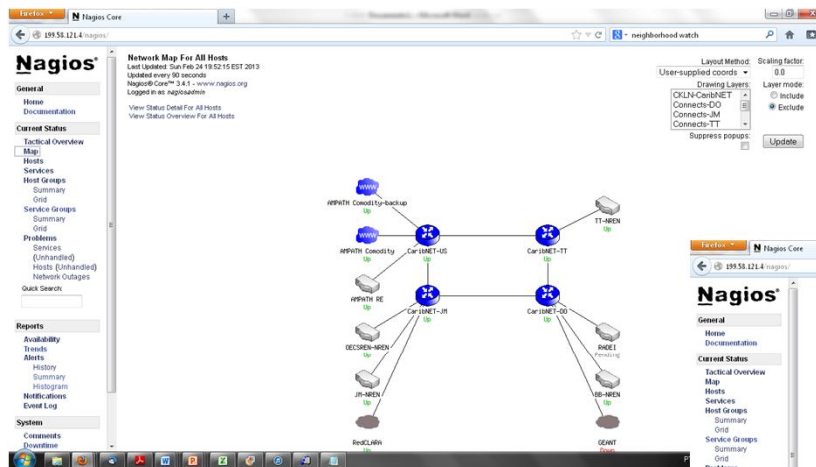
- C@ribNET-NOC services awarded to Mexican NREN – CUDI
- Operating hours: MON–FRI 8AM to 8PM UTC-6
- SLA for Maximum Response Time: NBD (Next Business Day)
- Contract period: 1 Year
- Services Included:
 - Monitoring Service
 - Help Desk
 - Issue Tracking System
 - Follow-up with provider

Management Functional Areas

- Fault Management
- Configuration Management
- Performance Management

Fault Management

- Nagios software installed



Configuration Management

- Cisco ASR maintain log of configuration changes

RP/0/RSP0/CPU0: caribnet-us#show cli history detail location 0/RSP0/CPU0

No.	Username	Line	Client	Time	Command
3	eporto	vty1	config	Tue Jun 26 19:35:41.114 UTC	show configuration
4	eporto	vty1	config	Tue Jun 26 19:35:47.576 UTC	commit
5	eporto	vty1	config	Tue Jun 26 19:36:11.392 UTC	do ping 190.103.184.65
6	eporto	vty1	config	Tue Jun 26 19:36:23.736 UTC	do ping 190.103.184.66
7	eporto	vty1	config	Tue Jun 26 19:36:39.963 UTC	exit

RP/0/RSP0/CPU0: caribnet-us#show configuration commit list

SNo.	Label / ID	User	Line	Client	Time Stamp
1	1000000134	eporto	vty0: node0_RSP0_CP	CLI	Tue Jan 29 15:49:27 2013
2	1000000133	eporto	vty0: node0_RSP0_CP	CLI	Wed Jan 23 18:25:04 2013
3	1000000132	eporto	vty0: node0_RSP0_CP	CLI	Tue Jan 22 20:06:47 2013
4	1000000131	eporto	vty0: node0_RSP0_CP	CLI	Tue Jan 22 19:27:35 2013
5	1000000130	eporto	vty0: node0_RSP0_CP	CLI	Tue Jan 22 19:24:17 2013
6	1000000129	eporto	vty0: node0_RSP0_CP	CLI	Wed Jan 9 18:33:30 2013
7	1000000128	eporto	vty0: node0_RSP0_CP	CLI	Wed Jan 9 18:32:40 2013

Configuration Management

- Cisco ASR maintain log of configuration changes

```
RP/0/RSP0/CPU0: caribnet-us#show configuration commit changes ?
```

```
last          Changes made in the most recent <n> commits
since         Changes made since (and including) a specific commit
1000000134    Commit ID
1000000133    Commit ID
1000000132    Commit ID
1000000131    Commit ID
1000000130    Commit ID
```

```
RP/0/RSP0/CPU0: caribnet-us#show configuration commit changes 1000000134
```

```
Mon Feb 25 01:02:58.889 UTC
```

```
Building configuration...
```

```
!! IOS XR Configuration 4.0.3
```

```
control-plane
```

```
management-plane
```

```
inband
```

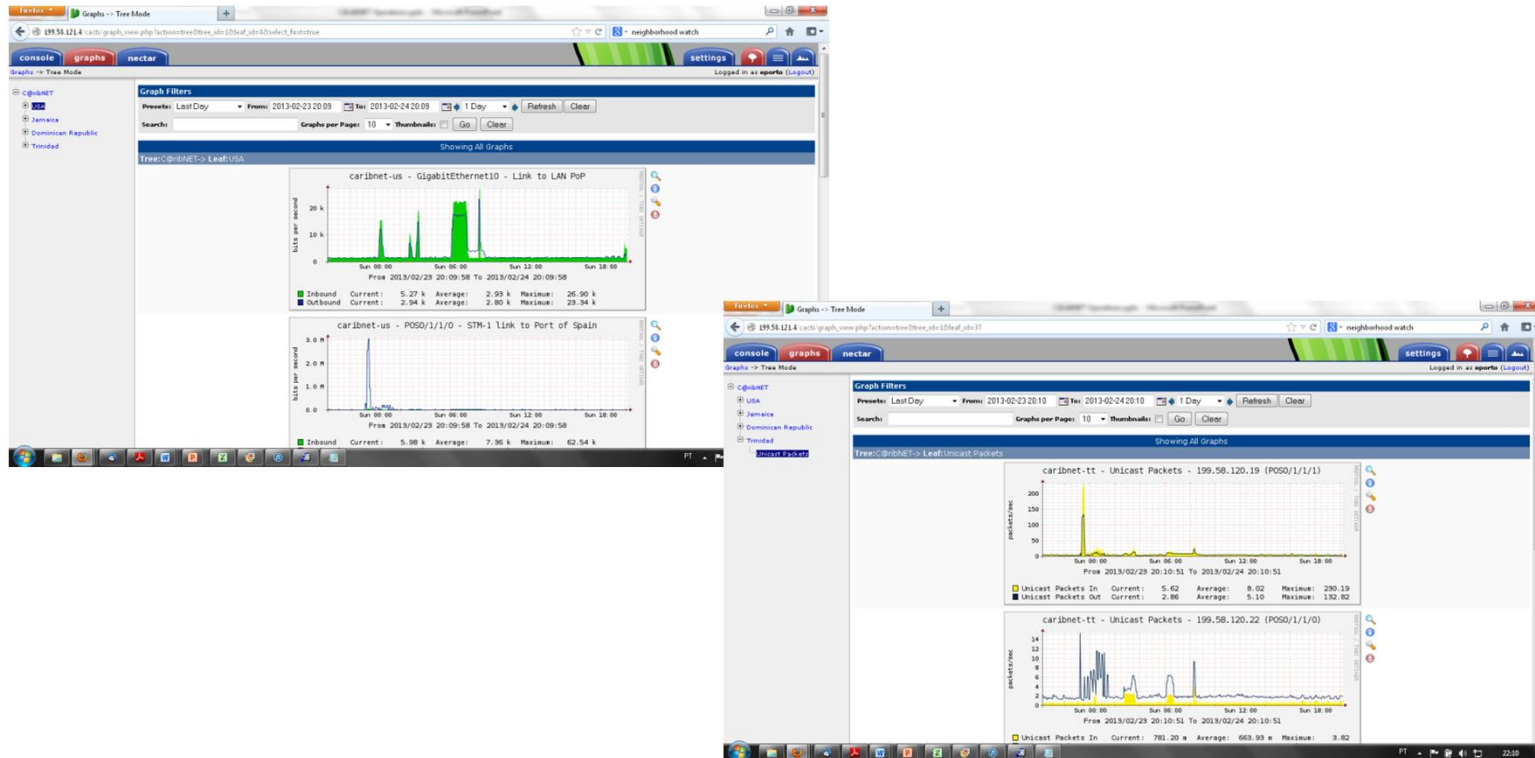
```
interface all
```

```
allow SSH peer
```

```
address ipv4 148.243.81.0/24
```

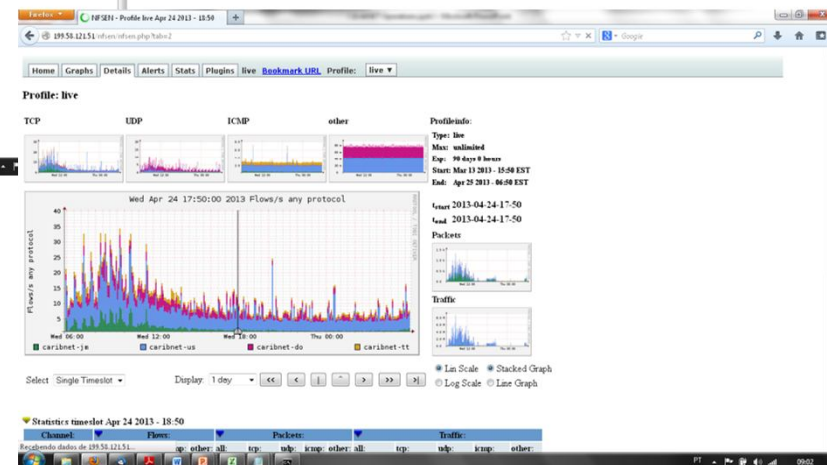
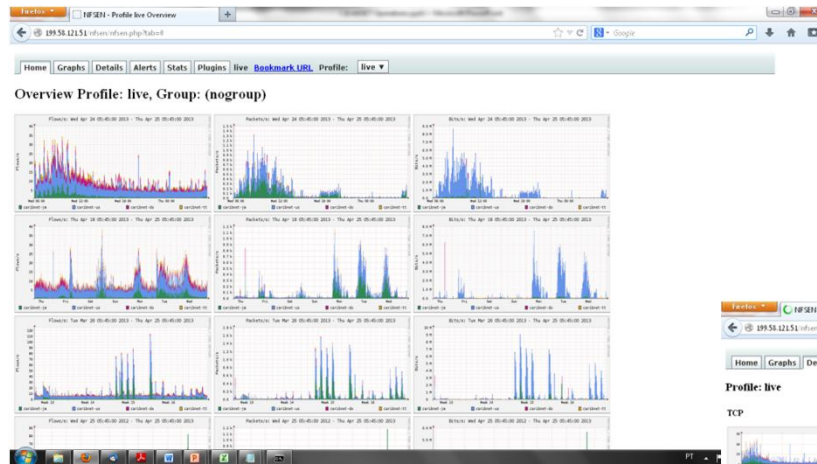
Performance Management

- Cacti software installed



Performance Management

- NfSen – NetFlow front end installed



NREN Procedures

- Access Point Manager (APM)
 - Each Caribbean NREN must appoint at least one person to liaise with C@ribNET engineering and operations
 - This person is designated APM
 - The APMs are the main technical interface between the NREN and C@ribNET

NREN Procedures

- Equipment Related Problems (access node)
- General Network Problems
- Responsible for VLLs – locally contact with the provider
- Receiving performance indicators reports

C@ribNET Mailing Lists

- caribnet-noc@ckln.org - operations and security notifications or alerts
- caribnet-eng@ckln.org - Engineering requests or communications
- caribnet-tec@ckln.org – C@ribNET Technical Community Discussions
- caribnet-apm@ckln.org – APM notifications, alerts or communications

C@ribNET Further Development

- C@ribNET backbone configuration:
 - Configuration of IPv6
 - Configuration of Multicast routing (IPv4 & IPv6)
 - Enhance BGP routing security
 - Improve the Community Policy
 - DNS implementation (.net .org domains)
- Operations & Management:
 - Implementation of more management tools
 - C@ribNET-NOC technical development
- NRENs:
 - Activation of NRENs (configuration of nodes)
 - Development of knowledge to NREN technical groups
 - Institutions connectivity
 - Community Colleges connectivity
 - Phase two countries connectivity and installation of remaining hardware

Thanks!