Cisco GENI Rack

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GEC17 – July 2013

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Cisco GENI Rack

A collaboration between development partners (RENCI, NetApp, ePlus) to deliver a Data-center class ‘GENI Rack’ based on Cisco networking and server products

- **Compute** – UCS B-series servers and fabric
- **Network** – Nexus-series OpenFlow-enabled switch options
- **Storage** – NetApp FAS solution
  - NetApp FAS server(s) provide Data-center class scalable storage option (www.NetApp.com)
- **Software** – GENI software stack provided by RENCI’s ExoGENI project
  - (http://www.exogeni.net)
- **Installation and support services** – offered by ePlus
  - (www.eplus.com)

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Current status

- Development rack operational, used for testing
  - Entering GPO certification process soon
- First customer rack installed – expecting to go live soon

"WVNET will be the 1st customer for the UCS-based ExoGENI Rack, bringing a data-center class solution to the GENI community. The project to build the rack has been true collaboration between RENCI, NetApp, ePlus, Cisco and WVNET teams. We're looking forward to bringing the Rack live in the very near future"

Judge Dan O'Hanlon, Director, WVNET

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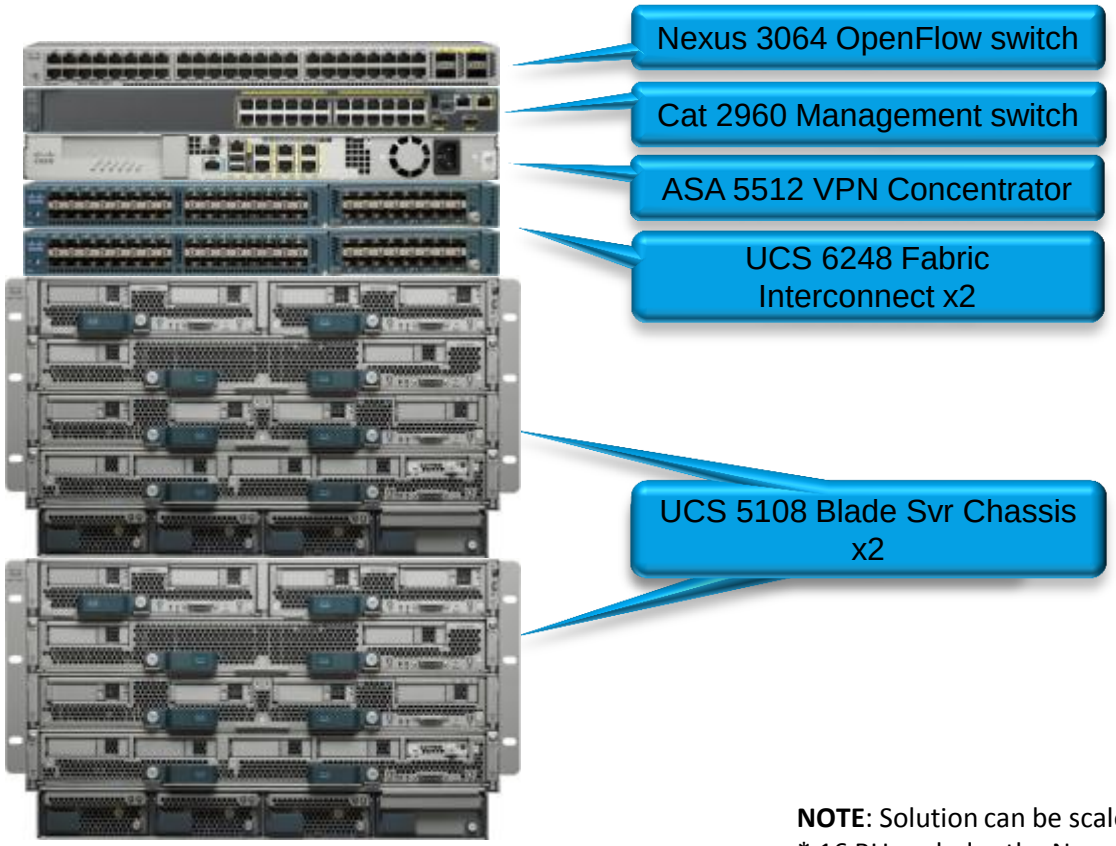
UCS B-Series Rack Components

- Power, cooling, and space efficient, “Wire-once”, policy driven, self-provisioning environment
- UCS B-series uses the Intel e2590 CPU, offering 240 cores for VM hosting in 16RU*
- Data-center class solution with flexible expansion options
  – ability to scale to thousands of cores



	Configuration
# Total Hosts	16
# Management Node	1
CPU	2 Socket 8 Core E5-2690 2.9GHz
Memory	48GB
HDD	1x300GB 15K SAS, 1x500GB 7200 SATA
NIC	2x10GE - vNIC
# Worker Node	15
CPU	2 Socket 8 Core E5-2690 2.9GHz
Memory	192GB
HDD	1x300GB 15K SAS, 1x500GB 7200 SATA
NIC	2x10GE - vNIC
Management Switch	Cat-2960S
OpenFlow Switch	Nexus 3064
VPN Appliance	ASA5512

NOTE: Solution can be scaled down by using just a single UCS B-series shelf
* 16 RU excludes the Nexus Switch element & NetApp storage

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RENCI ExoGENI Software Stack

- ExoGENI is a collection of proven open-source software modules
- Federation and resource orchestration using *ORCA* (Open Resource Control Architecture) software funded by NSF and GENI

  Developed by Duke University and RENCI
- ExoGENI software successfully deployed in active GENI racks today
- Same ORCA and GENI AM API's as used on existing ExoGENI racks

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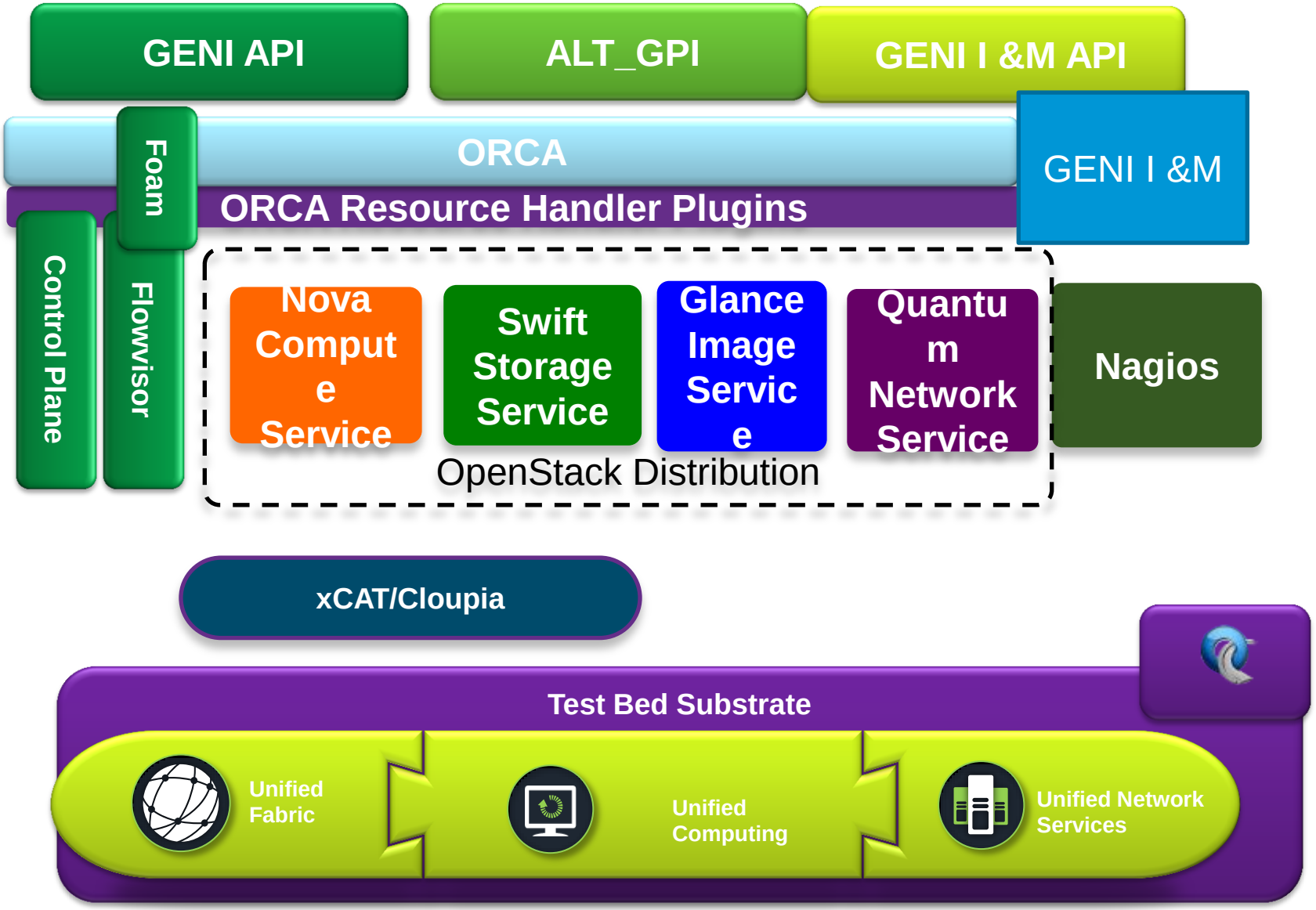
Cisco ExoGENI Integration Phase 1



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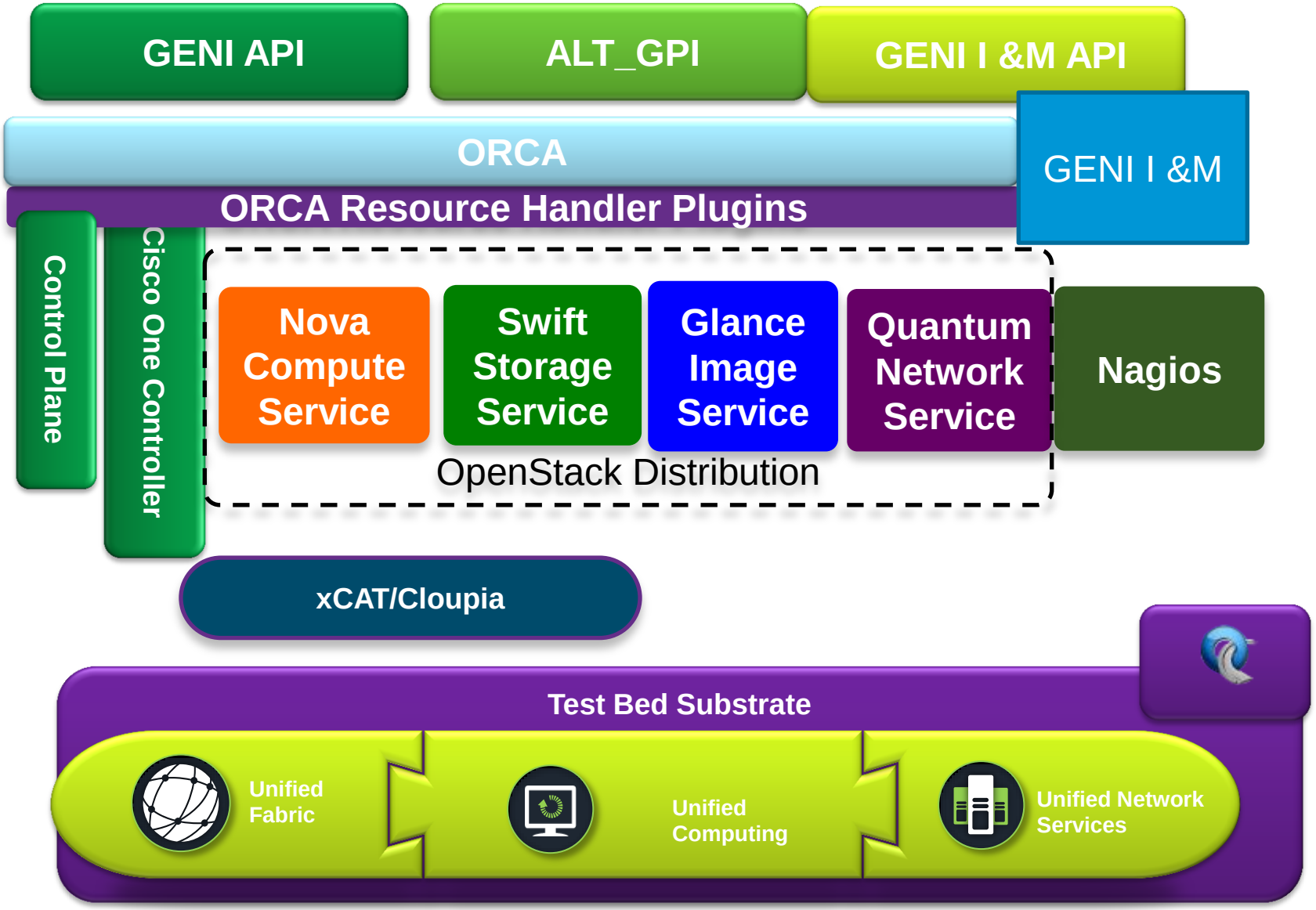
Cisco ExoGENI Integration Phase 2



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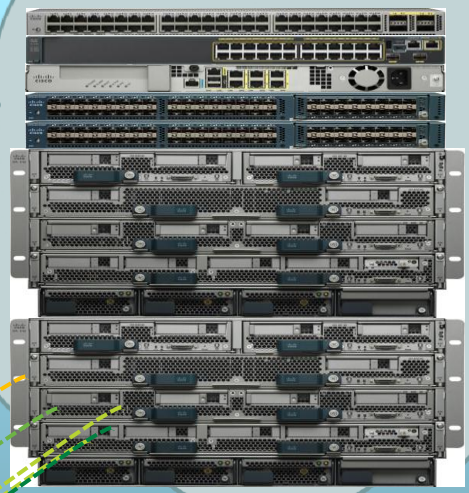
PhyPysical Layout of the test bed with live streaming data

NCSU/FREEDM
Power Grid

RENCI/UNC
Breakable Experimental
Network (BEN)

CISCO ExoGENI Rack



NLR/C-WAVE

IP Core
NCREN/Internet 2
Public Internet

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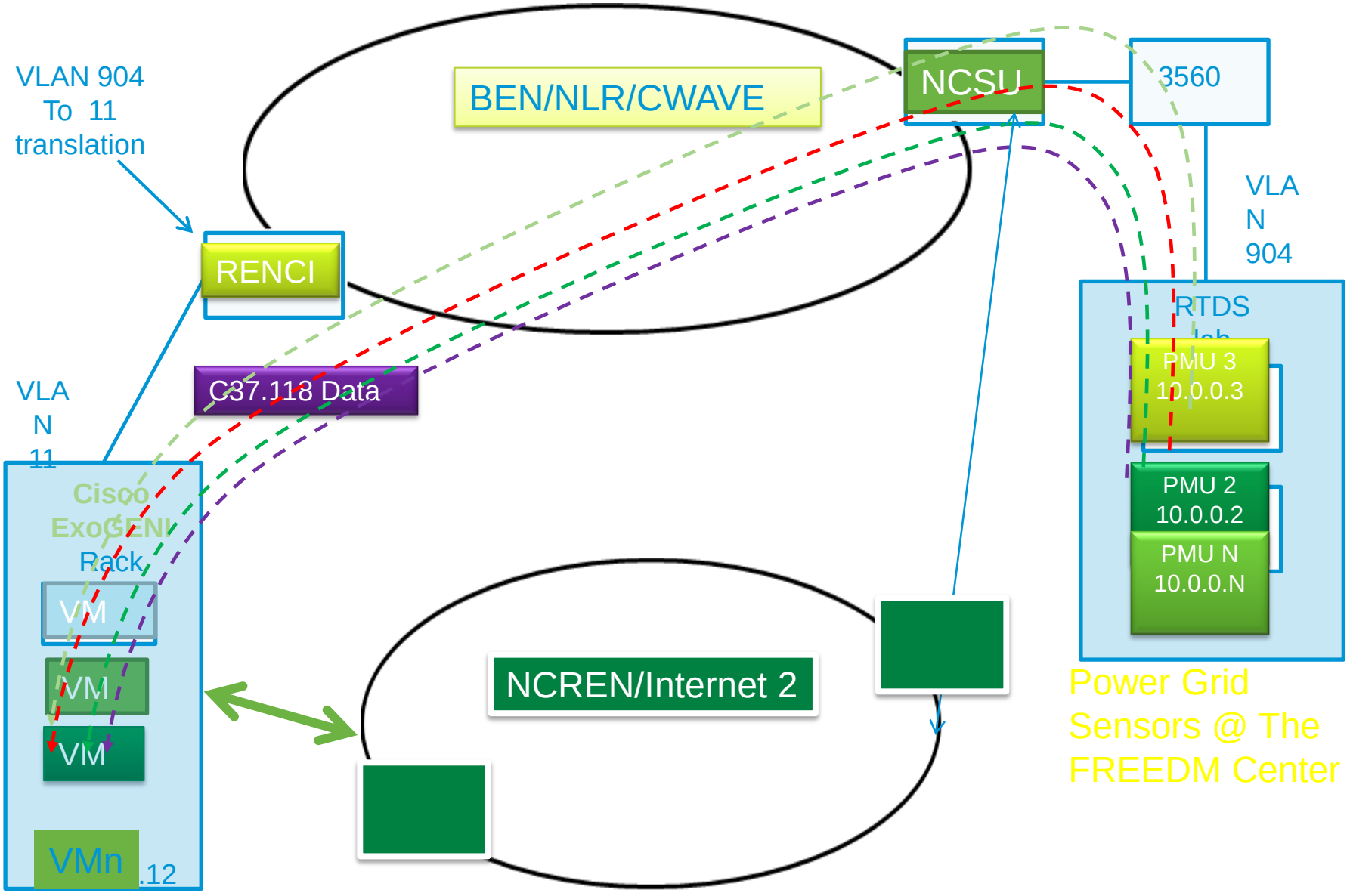
Live Test Bed with Closed Loop Control and Quality of Service



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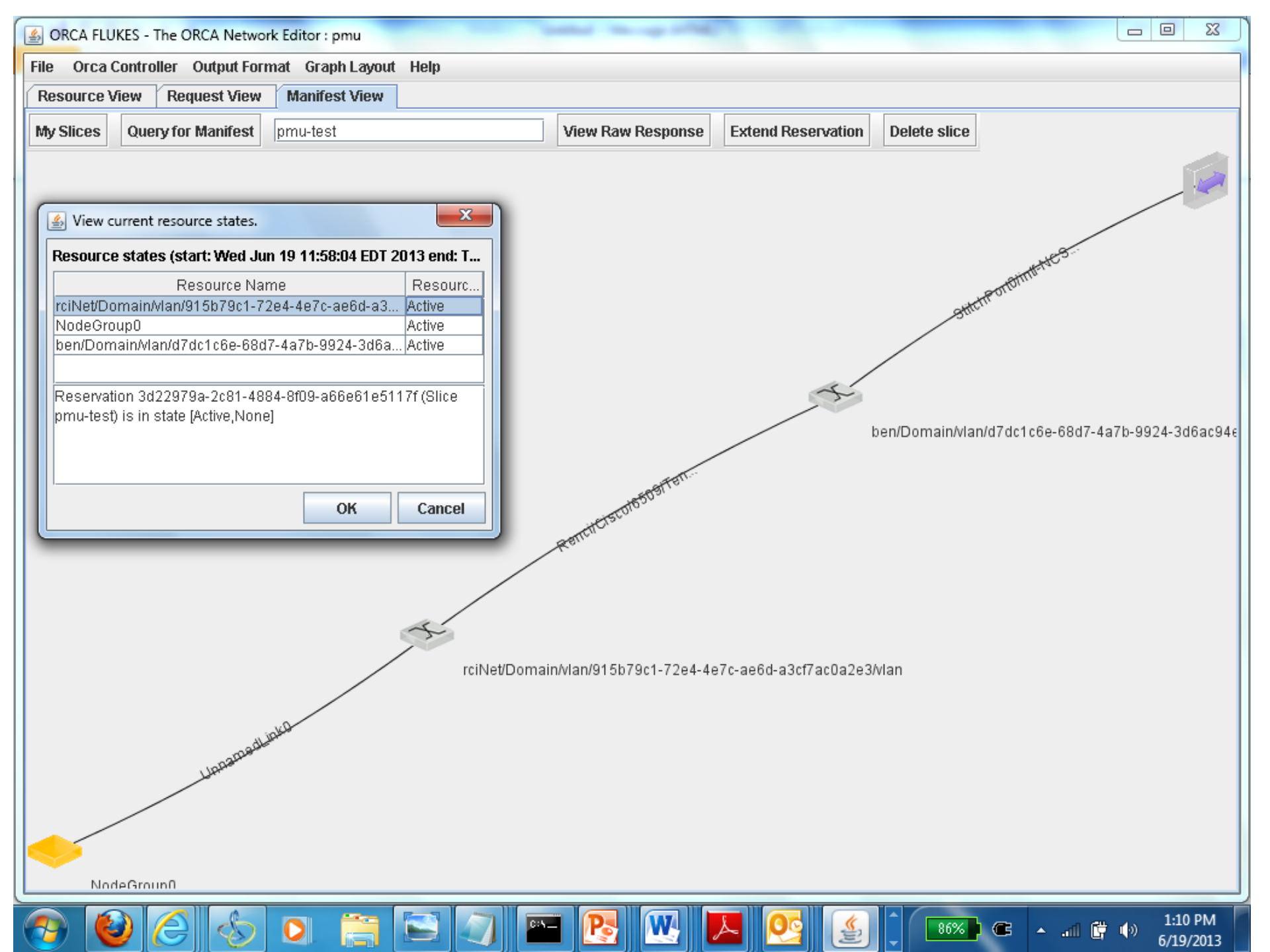
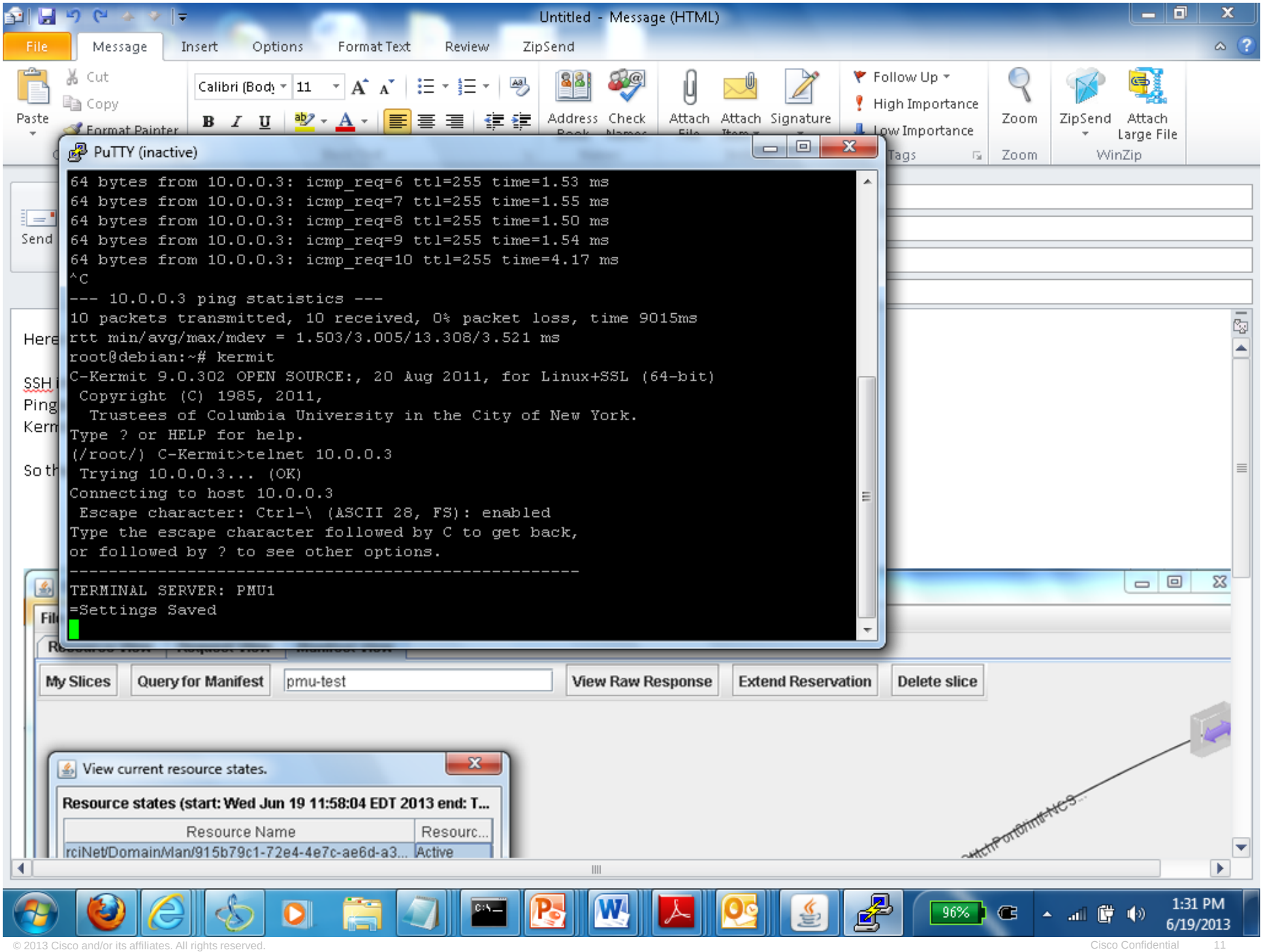

ORCA FLUKES - The ORCA Network Editor : pmu
File
Orca Controller
Output Format
Graph Layout
Help
Resource View
Request View
Manifest View
My Slices
Query for Manifest
pmu-test
View Raw Response
Extend Reservation
Delete slice
View current resource states.
Resource states (start: Wed Jun 19 11:58:04 EDT 2013 end: T...
Resource Name
Resourc...
rciNet/Domain/vlan/915b79c1-72e4-4e7c-ae6d-a3...
Active
NodeGroup0
Active
ben/Domain/vlan/d7dc1c6e-68d7-4a7b-9924-3d6a...
Active
Reservation 3d22979a-2c81-4884-8f09-a66e61e5117f (Slice pmu-test) is in state [Active,None]
OK
Cancel
ben/Domain/vlan/d7dc1c6e-68d7-4a7b-9924-3d6ac94e
rciNet/Domain/vlan/915b79c1-72e4-4e7c-ae6d-a3cf7ac0a2e3/vlan
NodeGroup0
86%
1:10 PM
6/19/2013



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Contacts

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General Cisco email alias – geni-racks@cisco.com

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