

NCCS Network Roadmap

Presented by

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NCCS network roadmap

Summary: Continuous improvement projects in both high-speed wide-area connectivity and ultra-high-speed local-area data movement are finding and fixing bottlenecks to meet the data management demands of groundbreaking scientific simulations

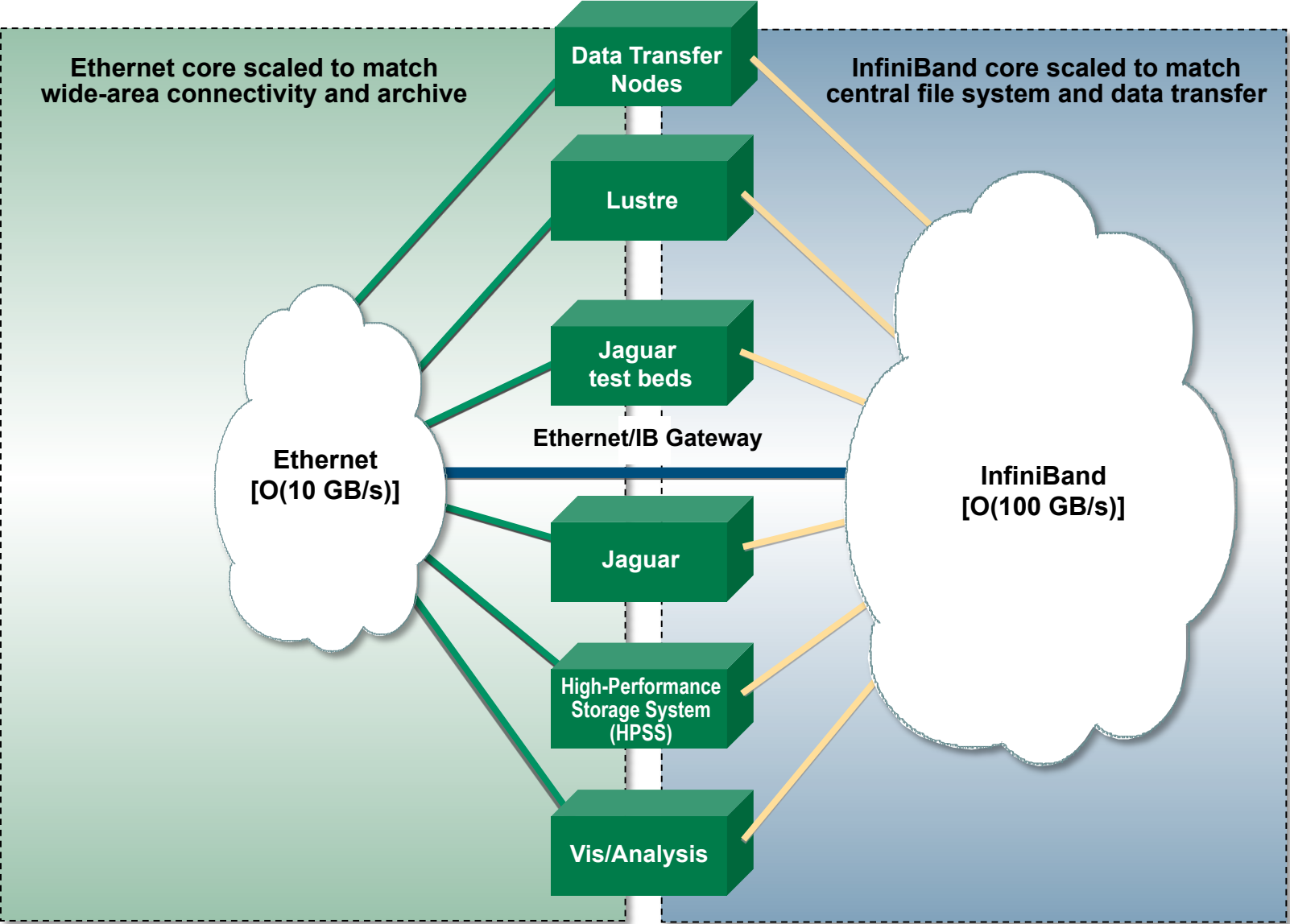
- **2011**

- New network for HPSS
- 10GbE firewalls for all systems except for high speed data movers (Data transfer nodes)
- Network upgrade that will support 40/100GbE

- **2012**

- Titan, and Titan File system network deployments
- 40/100GbE Upgrades
- Enhance 10 GbE WAN monitoring and security capabilities

NCCS network roadmap summary



NCRC Network

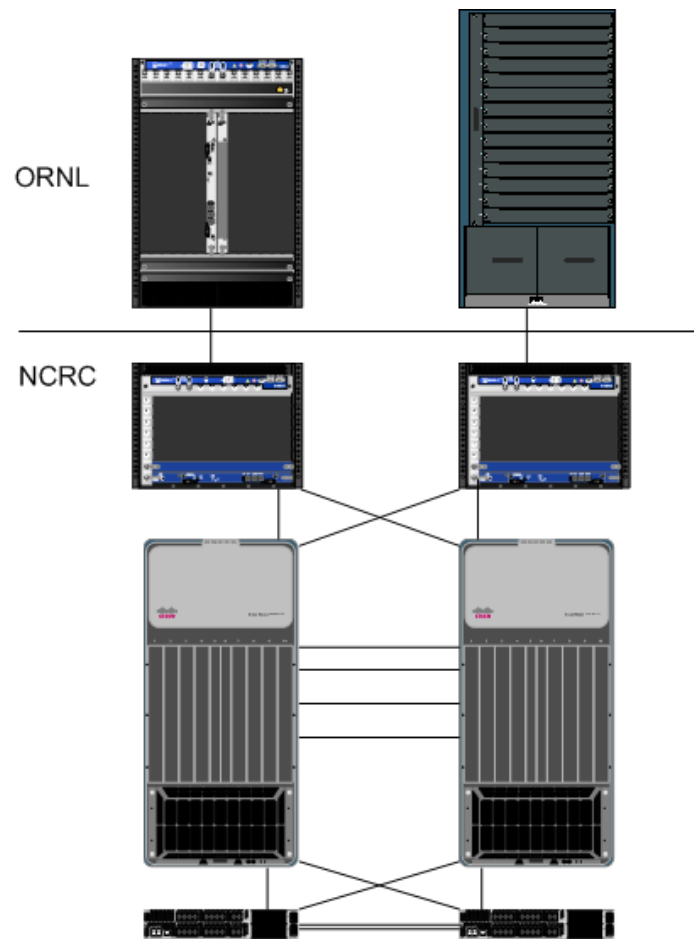
Juniper SRX 5600

The SRX5600 Services Gateway supports up to 60 Gbps firewall with 8 10 Gigabit Ethernet ports , 350,000 new connections per second and 9 million concurrent user sessions. Exhibiting extraordinary scalability, the SRX5600 Services Gateway is ideal for securing large enterprise data centers, service provider infrastructures, and next-generation services and applications, as well as enforcing unique per-zone security policies.

Cisco Nexus 7010

Scalable to 15 terabits per second (Tbps).

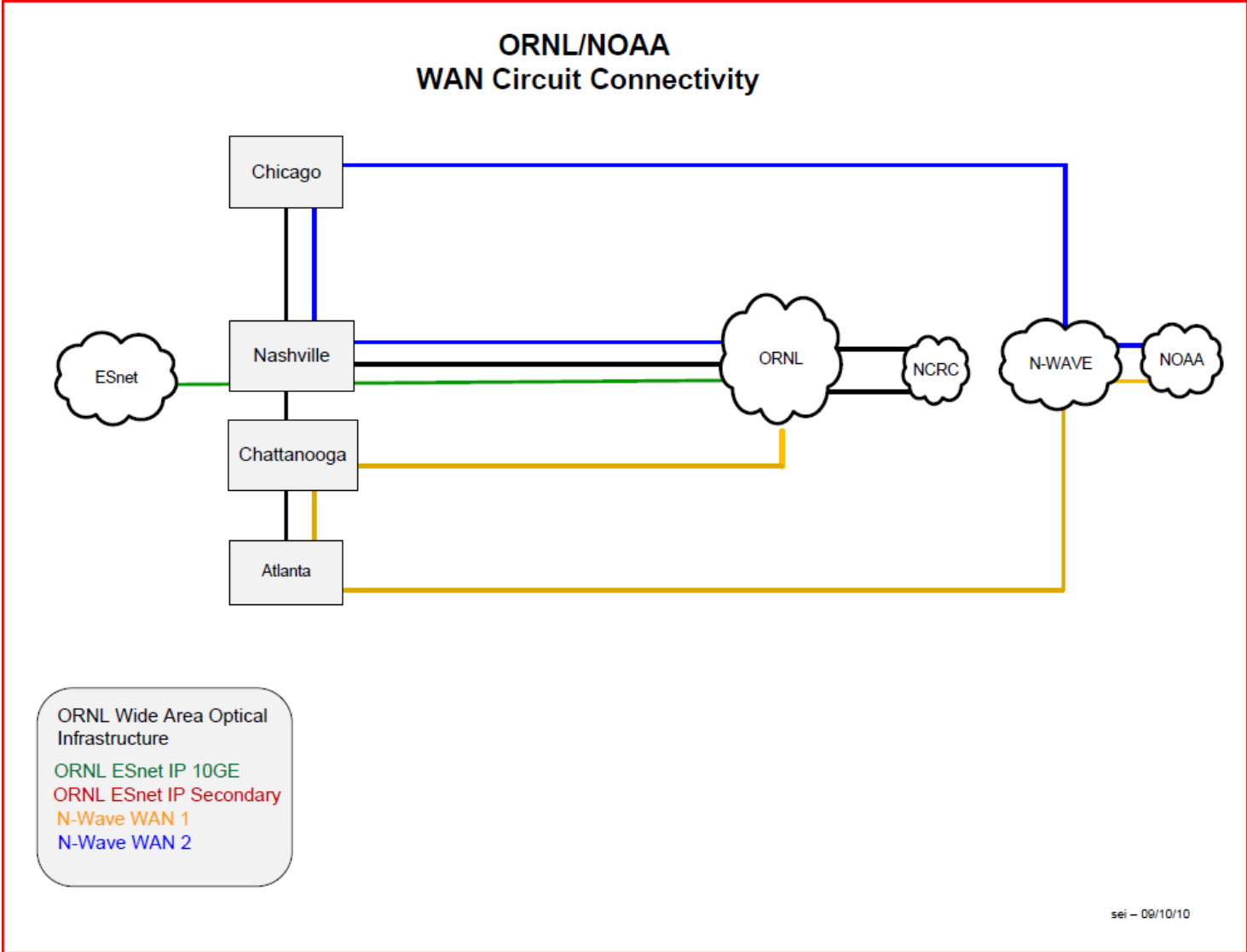
Support up to 256 10 Gigabit Ethernet or 384 10/100/1000 Ethernet ports in a single 10-slot chassis. Support for 40 Gbps and 100Gbps line cards. Highly scalable fabric architecture supporting up to five fabric modules for load-balanced, fault-tolerant operation and designed to deliver 230 Gbps per slot of bandwidth at release for 4.1 Tbps of forwarding capacity, with future support for more than 500 Gbps per slot.



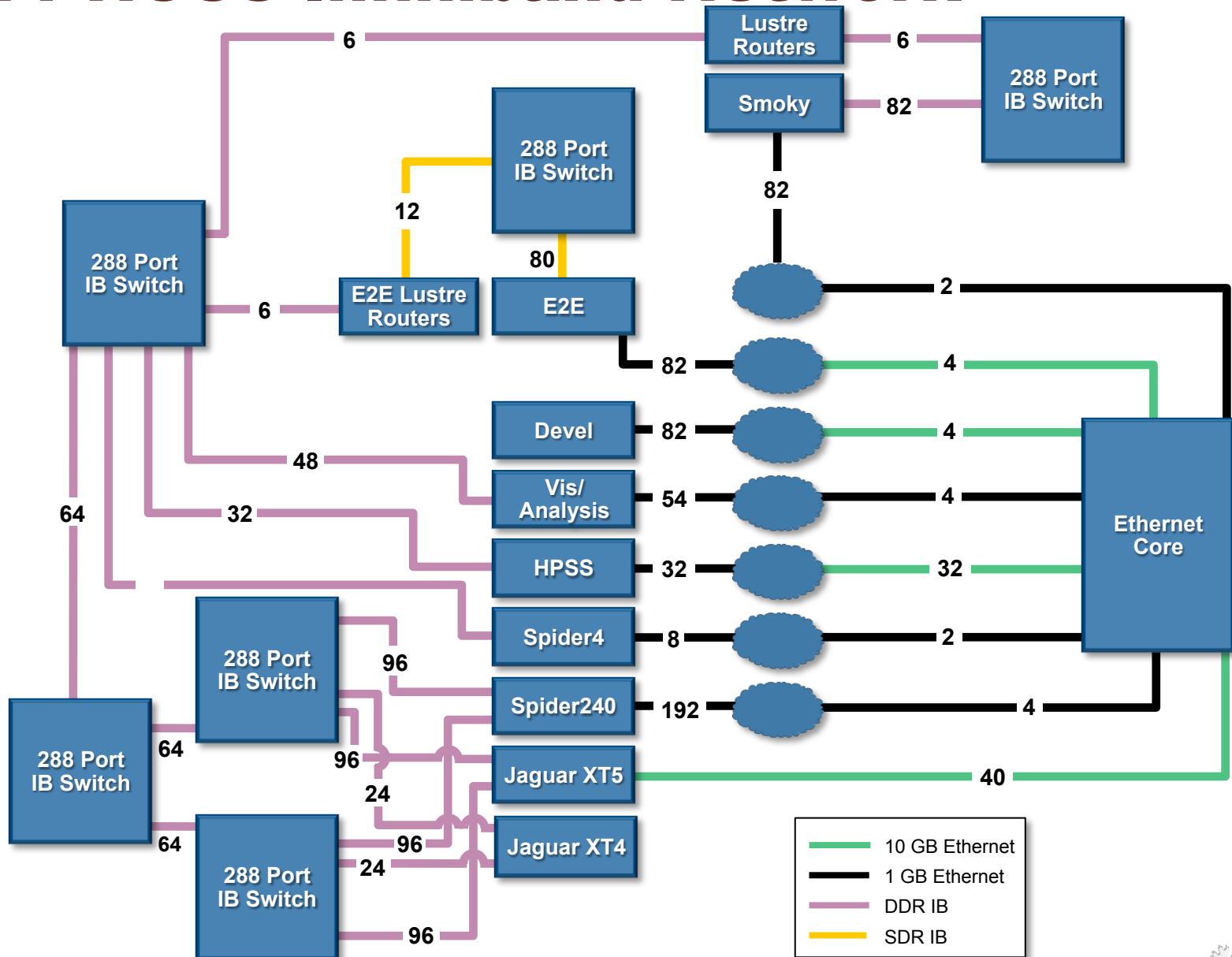
Cisco Nexus 5020

The Cisco Nexus 5020 is a two-rack-unit (2RU), 10 Gigabit Ethernet switch built to provide 1.04 terabits per second (Tbps) throughput or 773.8 million packets per second (mpps) It has 40 fixed 10 Gigabit Ethernet Small Form-Factor Pluggable Plus (SFP+) ports with line-rate traffic throughput on all ports

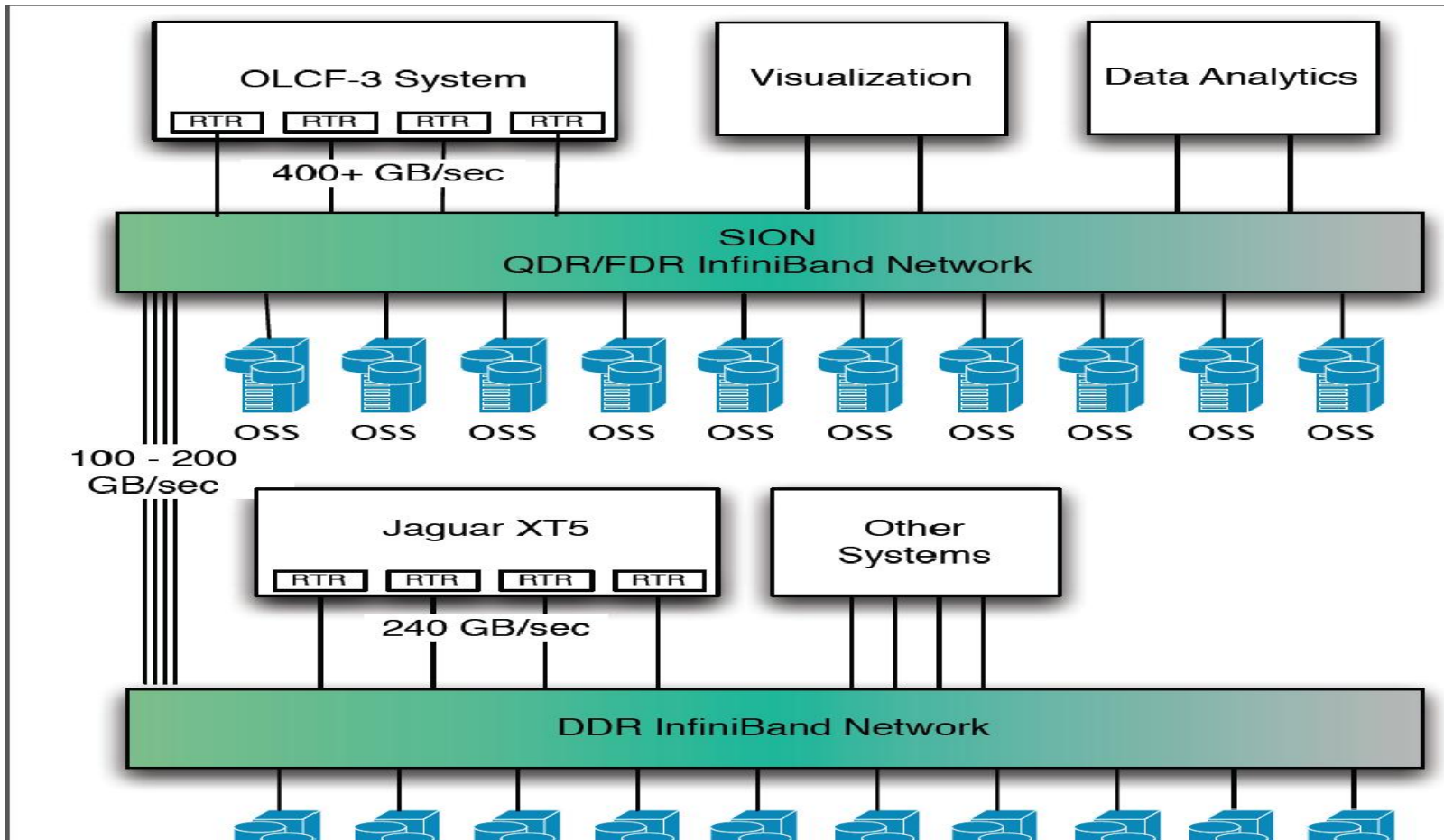
NCRC WAN



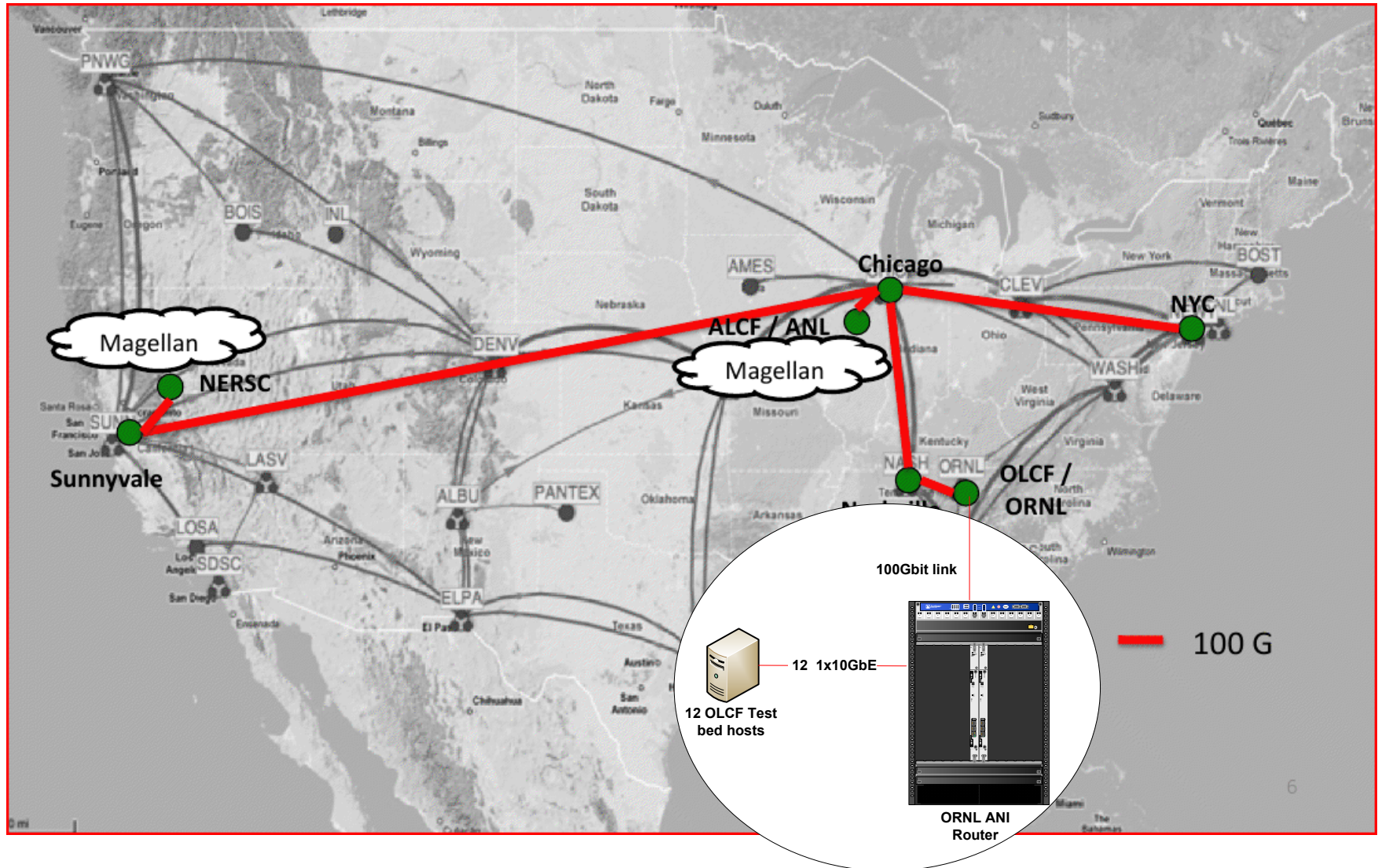
2011 NCCS Infiniband Network



2012 NCCS Infiniband Network



2011 ANI OLCF Testbed



2011 ANI – OLCF Testbed

- 12 Intel Dual Xeon 5606 2.13GHz 2U servers
- Myrinet 10G-PCIE2-8B2L-2S (Dual Port 10GB SFP+)
- Mellanox MHQH29C-XTR Dual Ports ConnectX II QSFP QDR 40GB
- Each system has 4 OCZ 40GB SSD capable of 250MB/s sustained reads or write.
- 1 Gigabyte/second of SSD IO per node.
- File system has 160GB storage capacity per node, with 12Gigabytes/sec aggregate performance.
- Connectivity to OLCF Storage Testbed that supports new hardware from several vendors/ and Lustre file system.

2011 milestones

March–April 2011: Deployed Cisco Nexus 7010

April–September 2011: Deployed 10 GbE firewalls for all systems except high speed data movement (Data Transfer Nodes)

Fall 2011: Deployed HPSS network upgrades allowing for 160Gb/s upstream

Late 2011: Evaluate new security solutions and application filtering firewalls

2012 milestones

January 2012: Deploy network infrastructure for Titan

Spring 2012: Deploy network infrastructure for Titan file system

Summer 2012: Deploy 40/100 GbE upgrades

Late calendar year 2012: Deploy 10 GbE line rate firewalls, and application filtering firewalls

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