Programmable Supernetworks,
Science DMZ based Networking

Rodney G. Wilson
Sr. Director, External Research Programs
CTO - Ciena
Industry Interests

Issues in moving large dataflows

We have issues with trust & security

Tomorrow’s problems today
Putting theory into practice...

- Internet
- Peer ISP's
- Super centers (NCSA, ANL, LBNL)
- ISP
- NFV
- SDX
- DTN

Clients: client 1, client 2, client 3, client 4, client n...

Interesting to Industry
Field lab
CENI “client resource”
NFV Engines
DMZ vs. lockdown

8700 Packet Wave Platform
- 4 Slot with 560G of L2 Capacity
- 4x40G (2 PSLM-200-2)
- 2x100G (1 PSLM-200-2)
- 20x10GE (1 PSLM-200-20)

CENI Ottawa System Specifications
- 14 Dell Servers
  - 180 Physical Cores -> approx. 330 Virtual Core Machines Running Linux RedHat 6.0
  - Up to ~ 80 VMs (using 4 Cores each.)
  - 808 GB of Physical RAM -> approx. 1,2TB VRAM
  - 36 TB of HD -> more than 12TB Virtual Disk Capacity
- 100GE Upload Capacity, first of its kind for GENI
- 20GE in Management Ethernets ports (approx 48 ports) via 5142 and 5150
- All DC powered (approx. 100A)
- 175 Public IP addresses on CANARIE Network

Canarie Public IPs
162.244.229.64/26

OPn Research Testbed
CENI “client resource”
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CENI Ottawa System Specifications

8700 Data Plane Switch
100G Uplink to ICAIR Chicago
10G Uplink to NetherLight
10G Uplink from Canarie

3942 Management Switch

3x Worker Nodes, Storage Node
5x 10G Bare Metal Servers and 3x 40G Bare Metal Servers

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Field Lab Architecture