



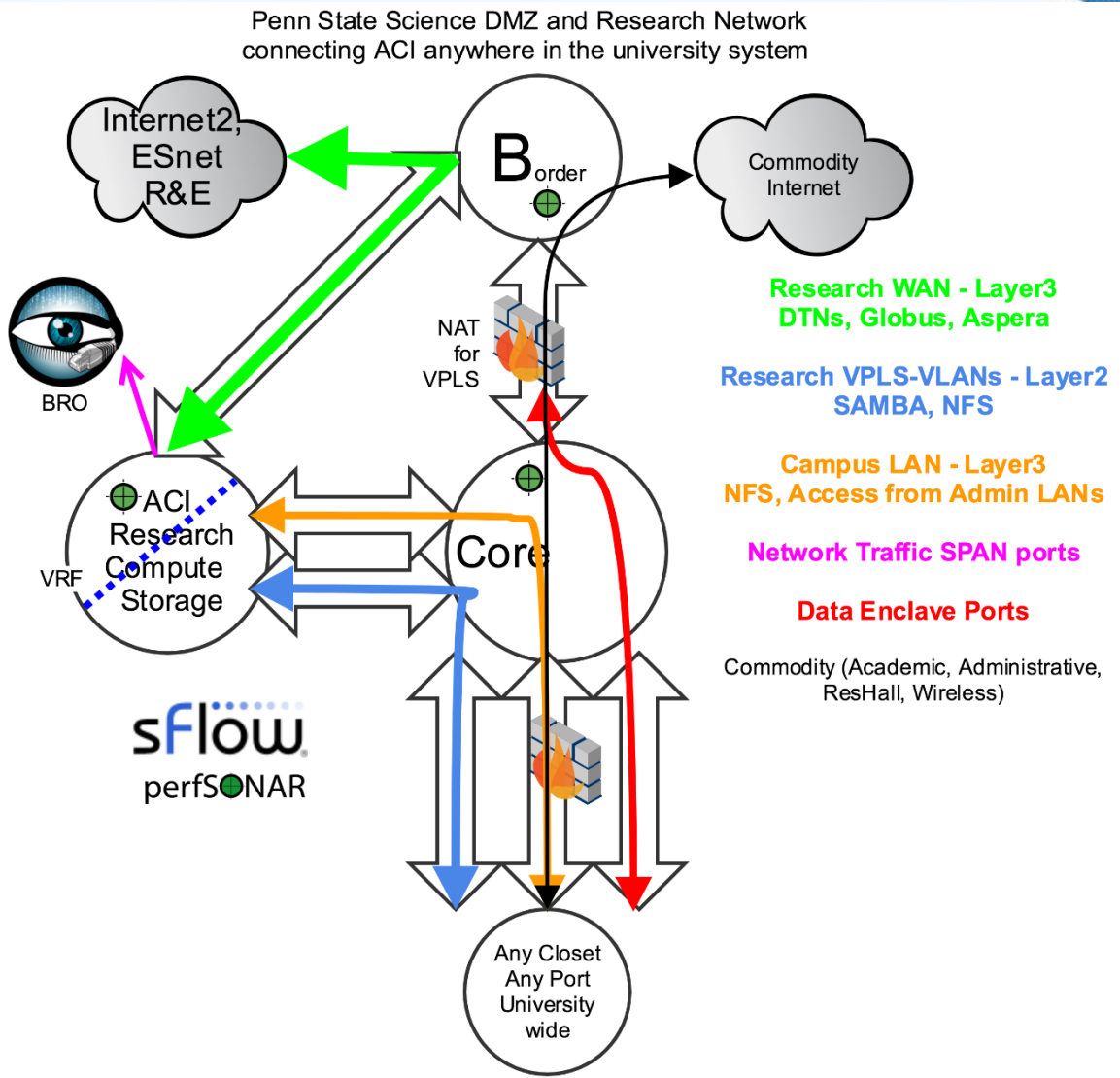
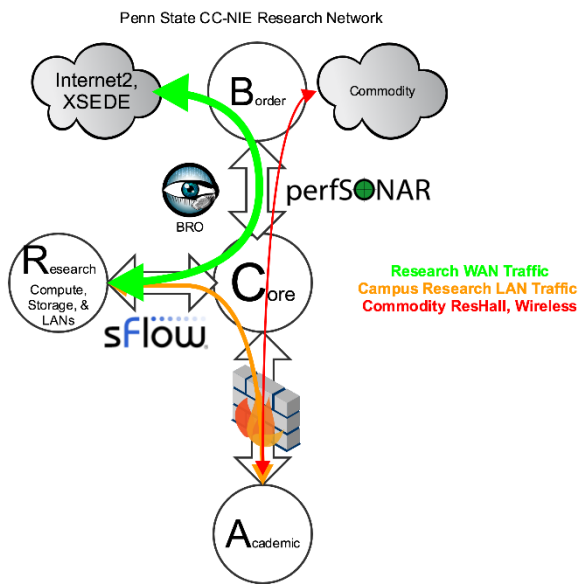
# **From our NSF CC-NIE grant to a Science DMZ as a Service through Penn State's Research Networking Engagement**

September 25, 2018

Ken Miller

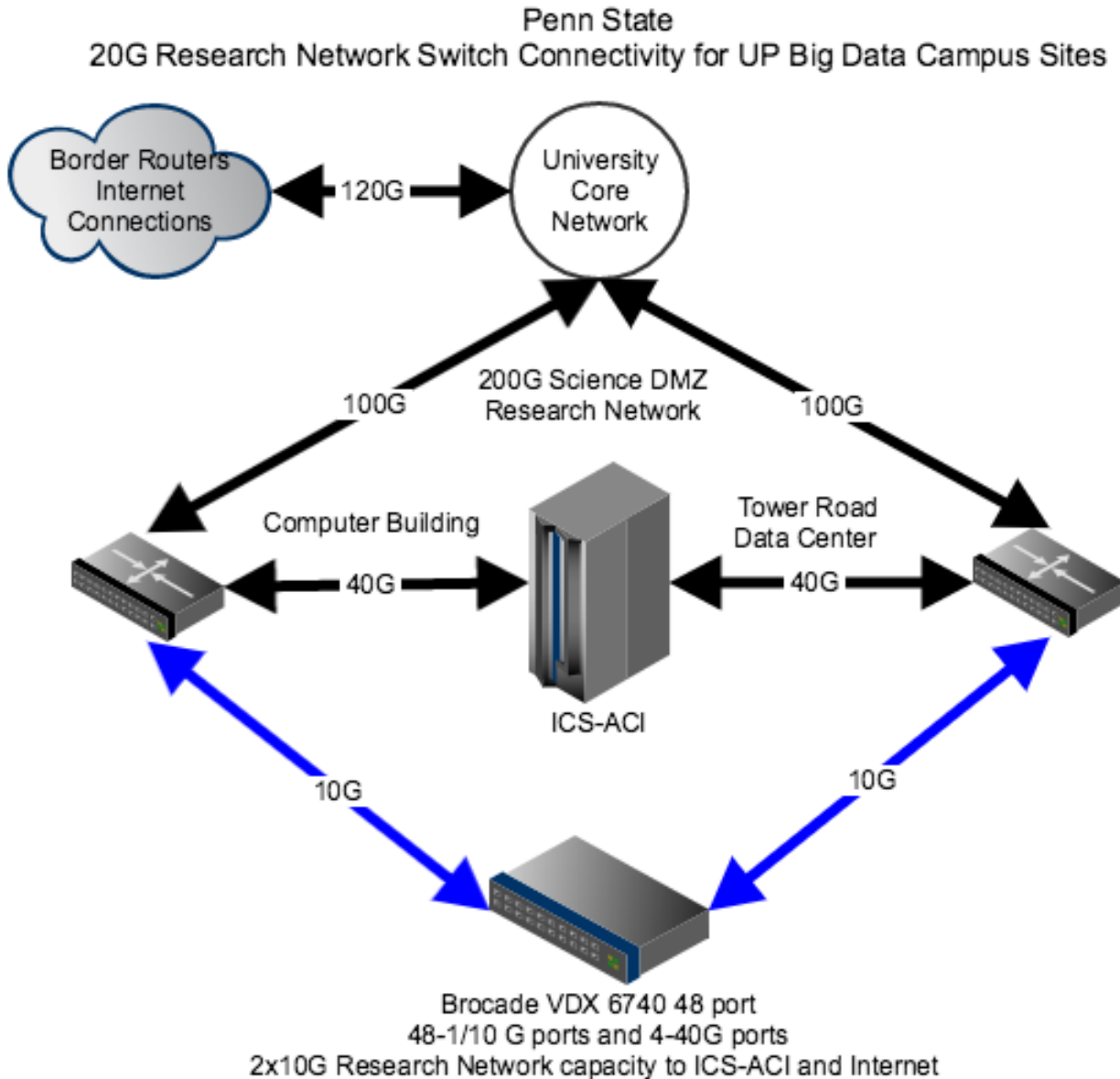
[kdm193@psu.edu](mailto:kdm193@psu.edu)

# Scalability and Sustainability





# B1G Data Instrumentation Site



## Pricing\*:

- VDX 6740  
1/10/40G Switch  
~\$125 each
- 10G Core Router  
Port (2) ~\$6 each
- 10G Core LR  
Optics (4) ~\$15  
each

## SFPs:

- 40G Edge SR  
Optics ~\$25 each
- 10G Edge SR  
Optics ~\$5.00  
each
- 1G Edge Copper  
~\$2 each

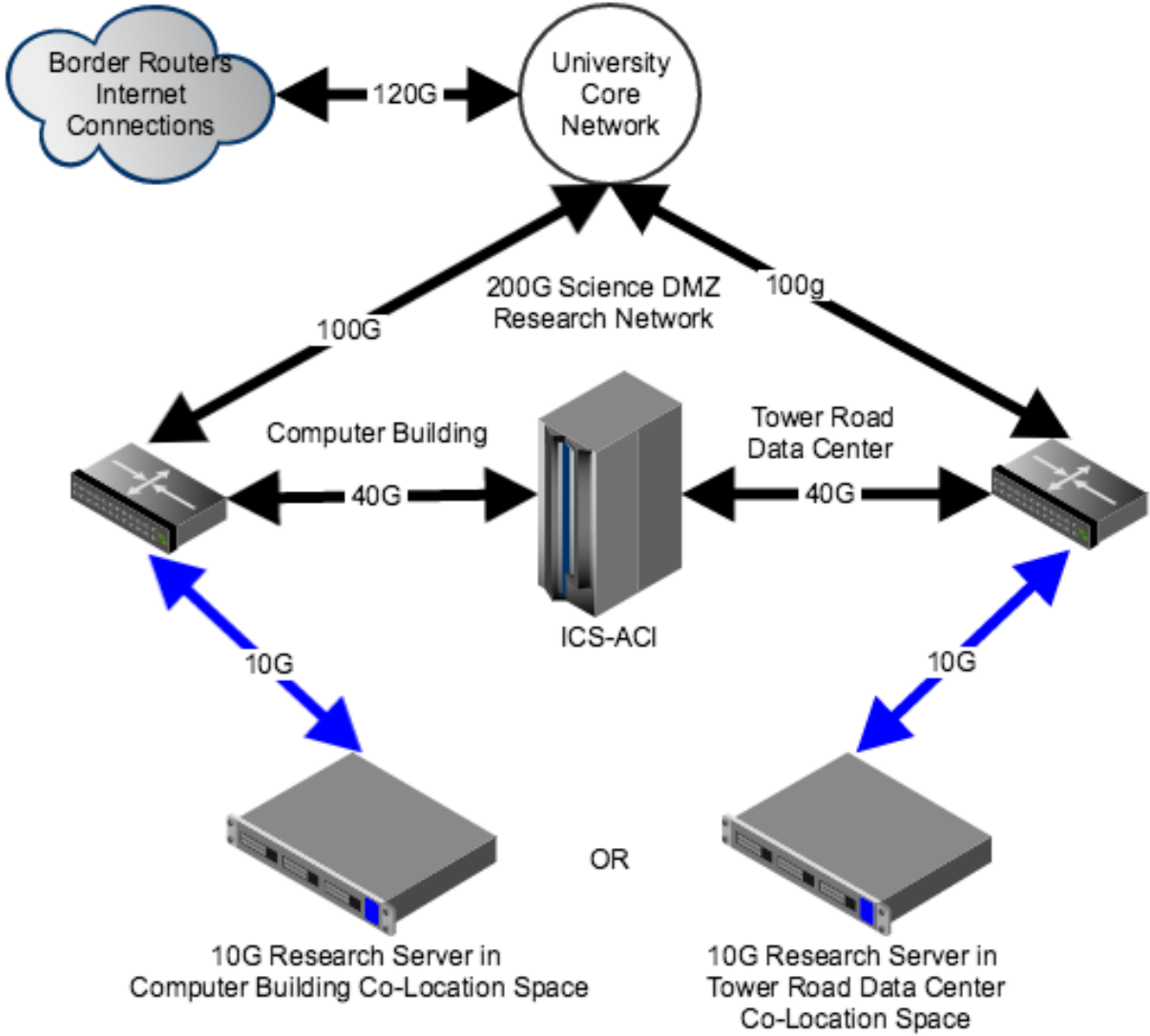
\* Existing equipment from original grant only pays for support, around 25% of above



# Data Center/CoLo Server

Penn State

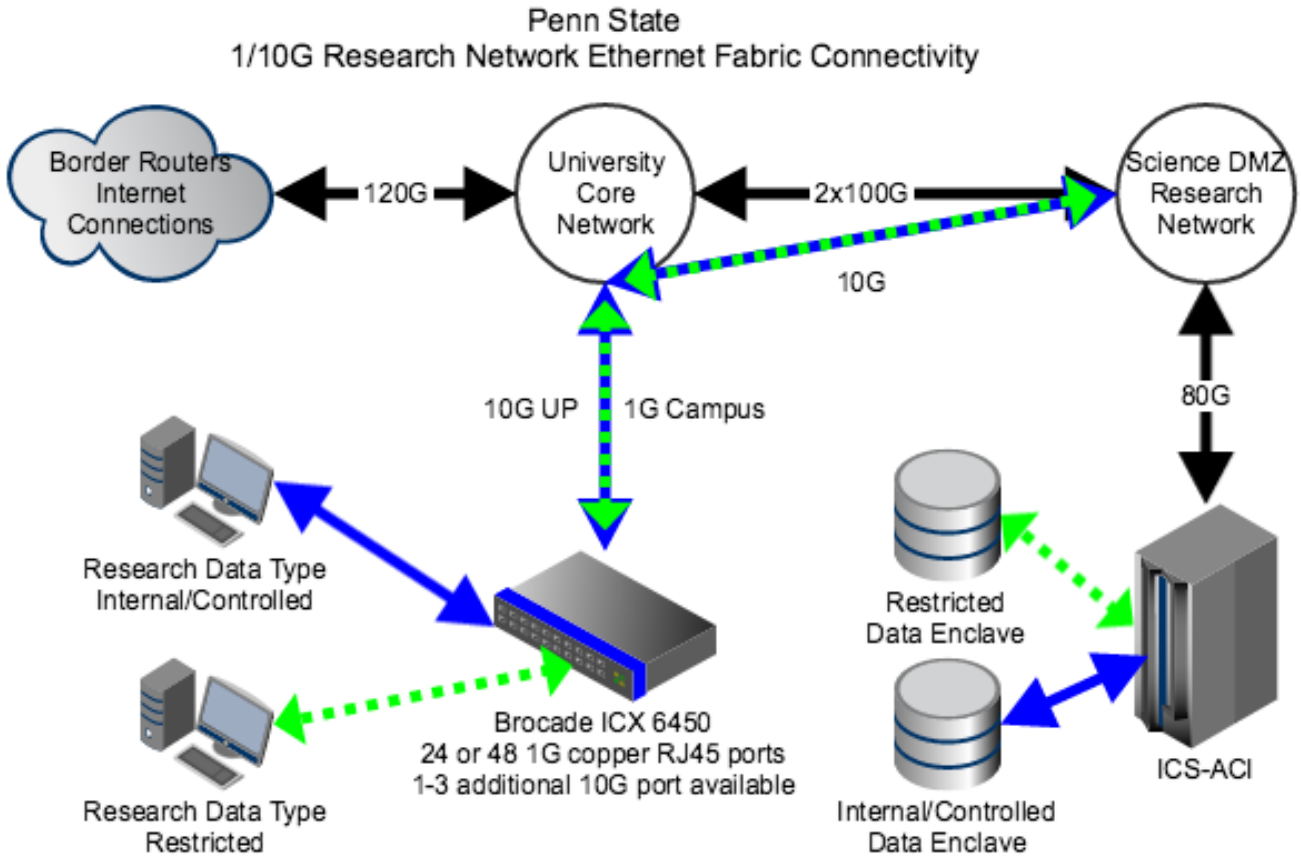
10G Research Network Connectivity when moving a research server to a Data Center CoLo



- 10G Core Port ~\$6 each
- 10G Edge SR Optics ~\$5 each



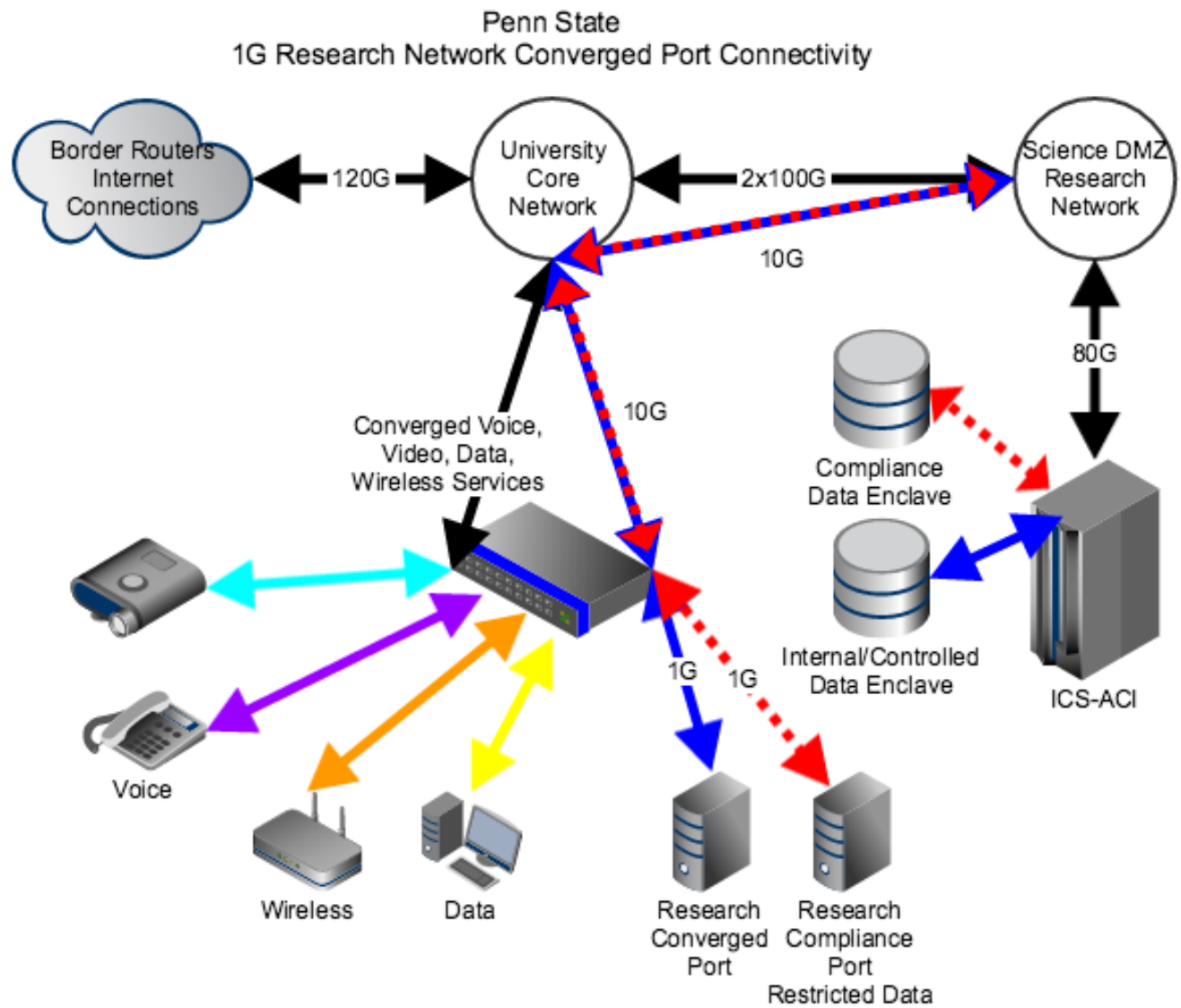
# Dedicated Ethernet Fabric Switch



- 1/10G Edge 24 port Switch ~\$30
- 1/10G Edge 48 port Switch ~\$45
- 10G Core Optics \$15 each
- 10G Edge SR Optics ~\$5
- 1G Edge Copper No Cost



# 1G Converged/Compliance Port



- 10G Core Port \$12.58 each
- 10G Core Optics \$22.38 each
- 1G Edge Copper \$2.95 each



# Science transfer trends from network data

- We use sFlow switch packet sampling on all Science DMZ switches
- Each switch interface becomes a sensor of science data transfers and workflow
- Providing statistics on the data transfers has assisted greatly with science engagement

	VLAN In	Destination Subnet	Value
■	2905	192.5.158.0/24	659.93M
■	3000	EXTERNAL	201.90M
■	3000	192.5.158.0/24	12.69M
■	4000	192.5.158.0/24	11.62M
■	3000	172.16.0.0/12	7.76M
■	4000	172.29.0.64/24	628.05K
■	3000	172.29.193.0/24	624.58K
■	3000	146.186.0.0/16	241.72K
■	3000	224.0.0.0/4	192.76K
■	2905	146.186.0.0/16	104.93K

