



NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

October 3-4, 2017 | Albuquerque, NM

Quad Chart for:

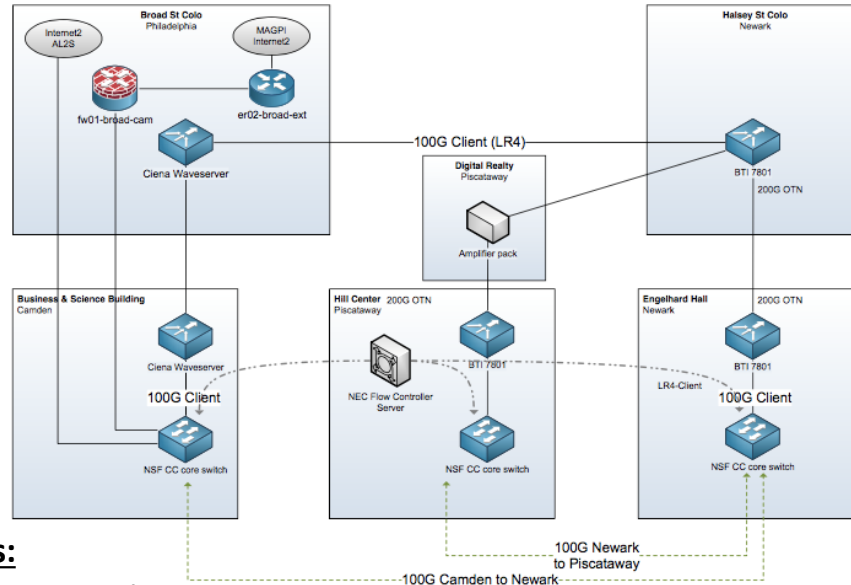
CC* Networking Infrastructure: CICNet - The One-Rutgers Next Generation Data Driven Research Network

Deliverables:

- Build a programmable “One Rutgers” data driven friction-less research network, connecting all campuses
- Deploy perfSONAR instances to monitor environment
- Design an Education, Outreach, and Training program around the platform to engage the research community
- Work closely with Brain Research, Medical Imaging, Genomics, Genetics, & Bioinformatics, Observational Astronomy, Experimental Physics, Climate Modeling, and Network Research communities to fully utilize CICNet

Broader Impact:

- Science Discovery
- Prototype for future enterprise solutions
- Technology Transfer
- Partnering with the Rutgers Women in Science, Engineering, and Mathematics Program
- Workforce Development



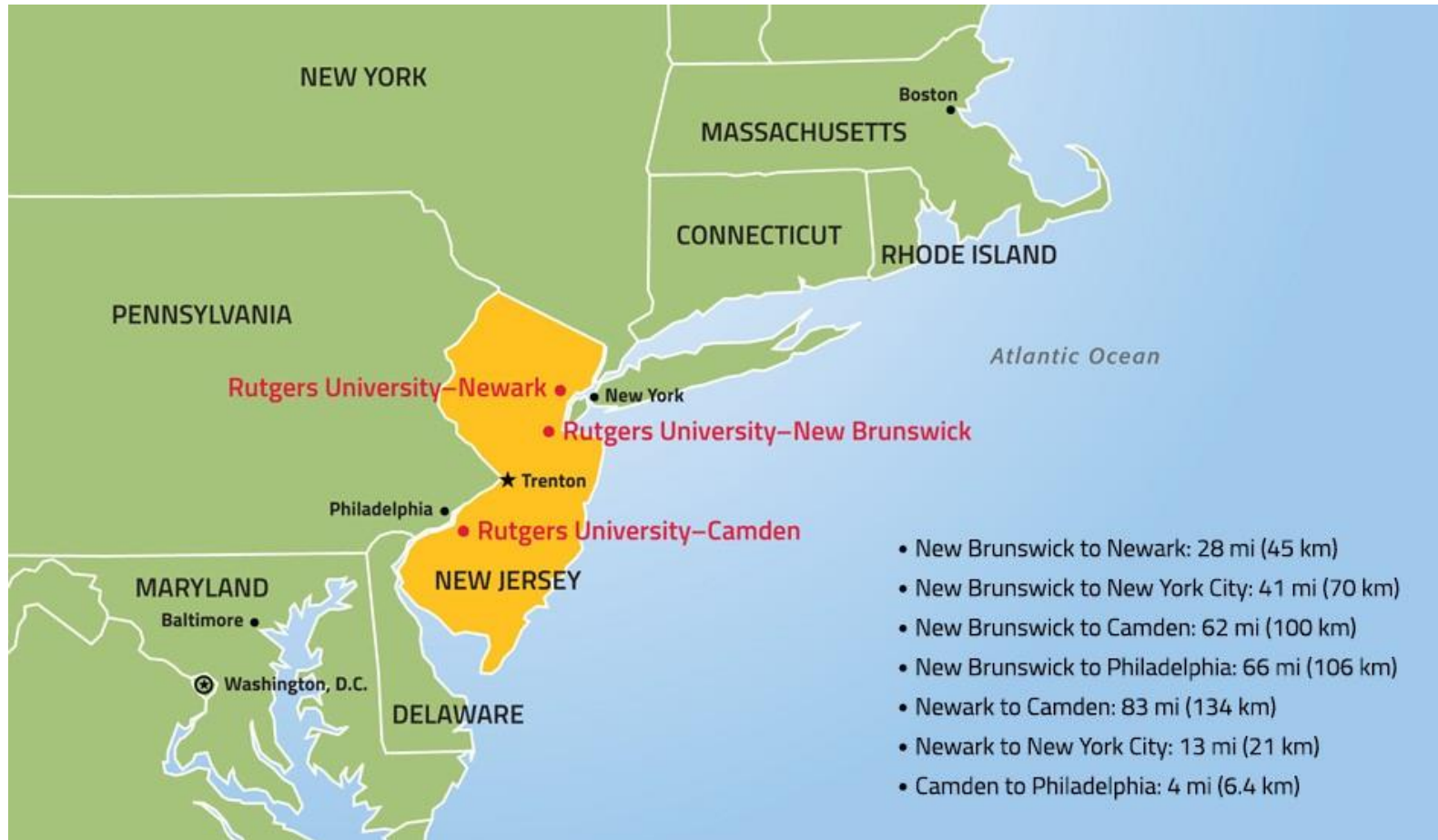
Challenges:

- Providing 100G Ethernet over DWDM between distant cities presents considerable challenges introduced by distance, fiber quality and path construction
- Working in an environment that hasn't had a network upgrade in years
- Over 1788 telecommunication rooms and 903 buildings
- Non-centralized IT services and support
- Introducing SDN to researchers and staff

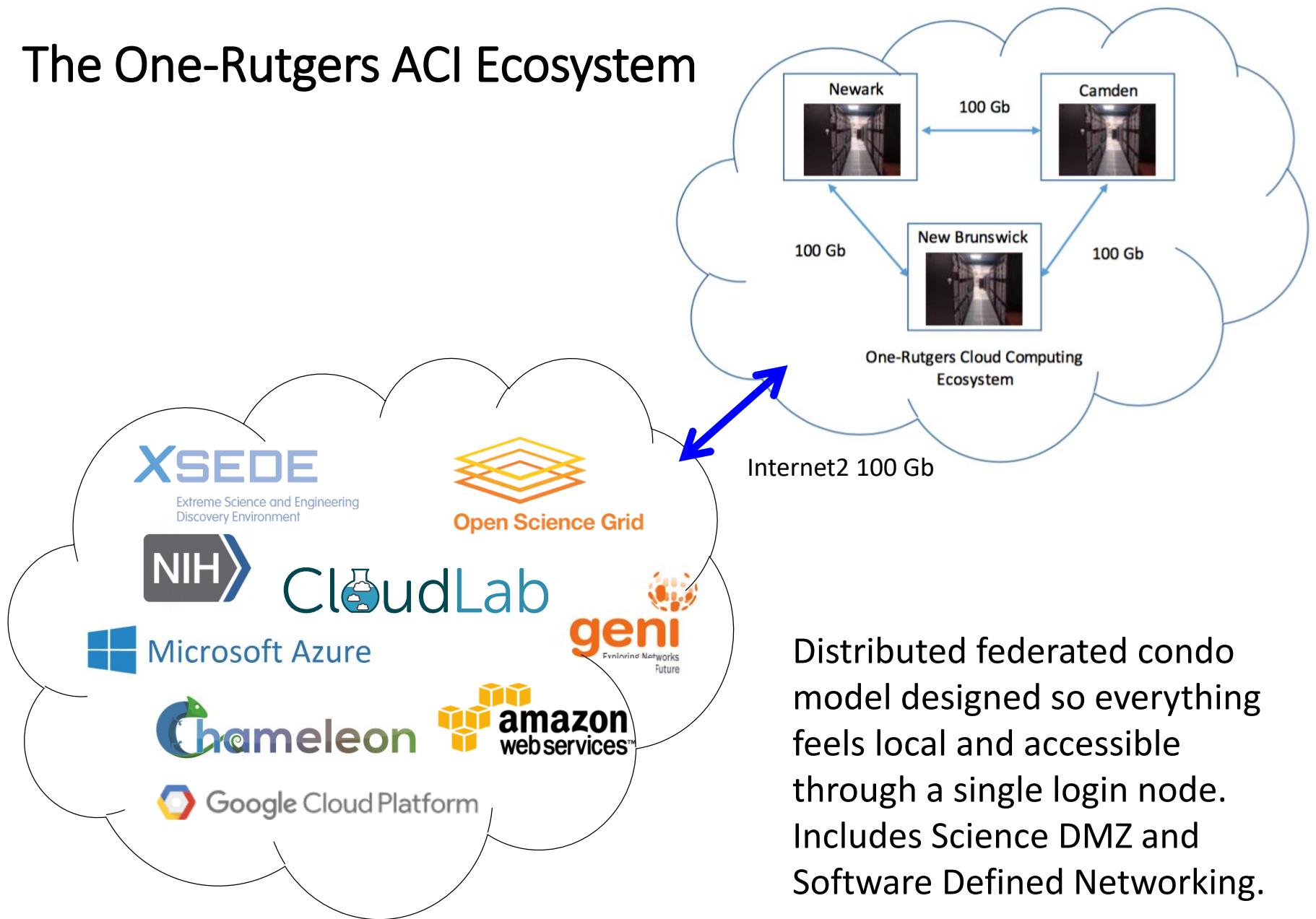
Metadata tag:

- *Local Research Platform*
- *Deployment of Data Transfer Nodes*
- *Data DMZ*
- *Engaging Women in Science, Engineering, and Mathematics*
- *Open Environment*
- *Test-Bed for research and Industry*
- *Need CI Engineer*
- *Collaborations Welcome*

Rutgers University

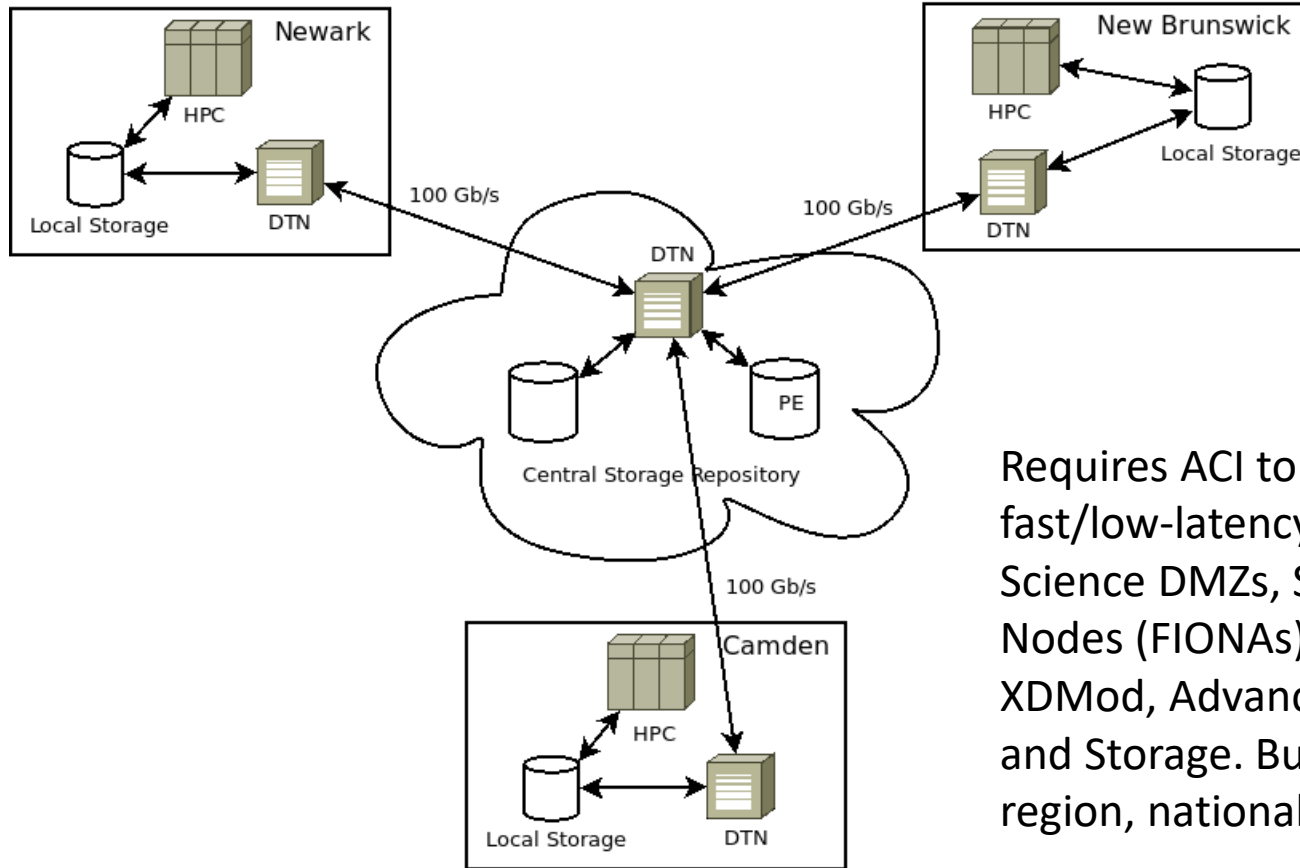


The One-Rutgers ACI Ecosystem



Distributed federated condo model designed so everything feels local and accessible through a single login node. Includes Science DMZ and Software Defined Networking.

Rutgers Data DMZ (Local Research Platform)



Requires ACI to be in place – fast/low-latency networks, Science DMZs, SDN, Data Transfer Nodes (FIONAs), perfSONAR, XMod, Advanced Computing, and Storage. Building block for region, national...

One-Rutgers Research Platform

- Requires ACI to be in place – fast/low-latency networks, Science DMZs, SDN, perfSONAR, Advanced Computing, Storage, Data Transfer Nodes (DTNs), and a 100 Gb/s connection to the outside world
- Resources will be distributed across New Brunswick/Piscataway, Newark, and Camden
- Tiered Storage solution that will include HIPAA/FISMA compliance
- Designed to be a testbed to serve multiple research needs (including industry)
- Elastic in the sense that we will grow and shrink into cloud resources based on demand and job type (OSG, Amazon, Azure)
- Couples NSF funded national projects and commercial cloud services directly into our environment creating a one-stop shop for the researcher
- Designed to be a Plug-N-Play environment with deployment of DTNs (FIONAS)
- As network is upgraded, more research groups will be added

Questions for Discussion

- How has Science DMZ related technologies enabled or facilitated research within your organization or across organizations? How are you selling this environment to your research community?
- In what ways has the Science DMZ failed or not performed/delivered as expected?
- What policy implications have you encountered with your project and how have they been addressed?
- What is the biggest challenge you have encountered so far in implementing your project including working with the research community.
- What is the path for sustaining your Science DMZ related technologies after the completion of the award period? Do you see a role for cyberinfrastructure professionals as part of the long-term sustainability?
- How are you collaborating with other universities who are in the process of deploying or already deployed a similar environment?