NSF Campus Cyberinfrastructure PI and
Cybersecurity Innovation for Cyberinfrastructure PI Workshop
September 23 – 25, 2019 | Minneapolis, MN

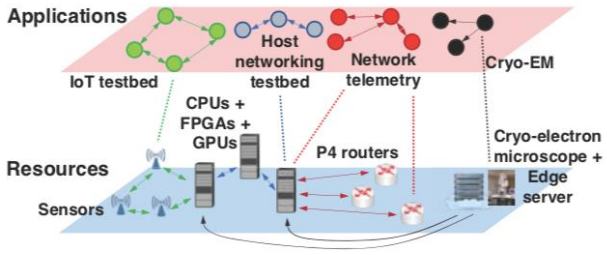
Quad Chart for: *CC* Integration: Rutgers University Next-Generation Edge Testbed (RU-NET)*

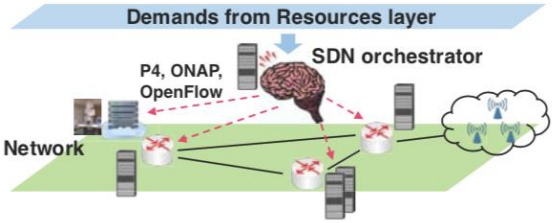
Challenge Project Seeks to Address:

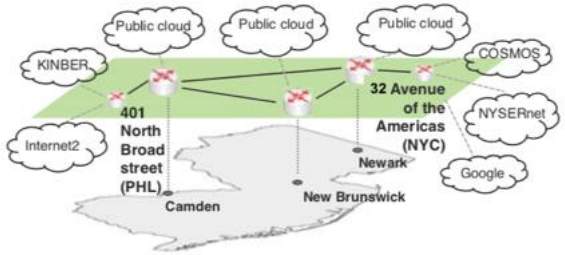
- Data transfers from the edge within a distributed federated hybrid environment
- Simplify the deployment of user owned devices at the edge
- Predictable network QoS
- Orchestration of services, including slices of the network
- How to couple AI/HPC with the network for real-time analysis + intelligence

Solution(s) or Deliverables:

- Programmable host networking testbed using new and emerging technologies
- Hardware, software, and processes to on-board new testbeds to RU-NET
- Work with real world use cases to figure out & implement data transfer and QoS requirements







Solution(s) or Deliverables Cont:

- Develop low-latency real-time traffic recognition and QoS with FPGAs
- Rapid re-programmable FPGA blocks for dynamic network management and flexible reporting

Scientific Impact or Broader Impact:

- Novel edge and core networking technology to support a flexible edge
- Development of labs and course material for students
- Act as a model for other campus and enterprise testbeds

Metadata tag:

- *We are interested in partnering with others who have interest in building edge solutions/testbeds*
- *Would like to know what QoS your edge applications require*
- *We are open to suggestions and feedback*

RU-Net Team

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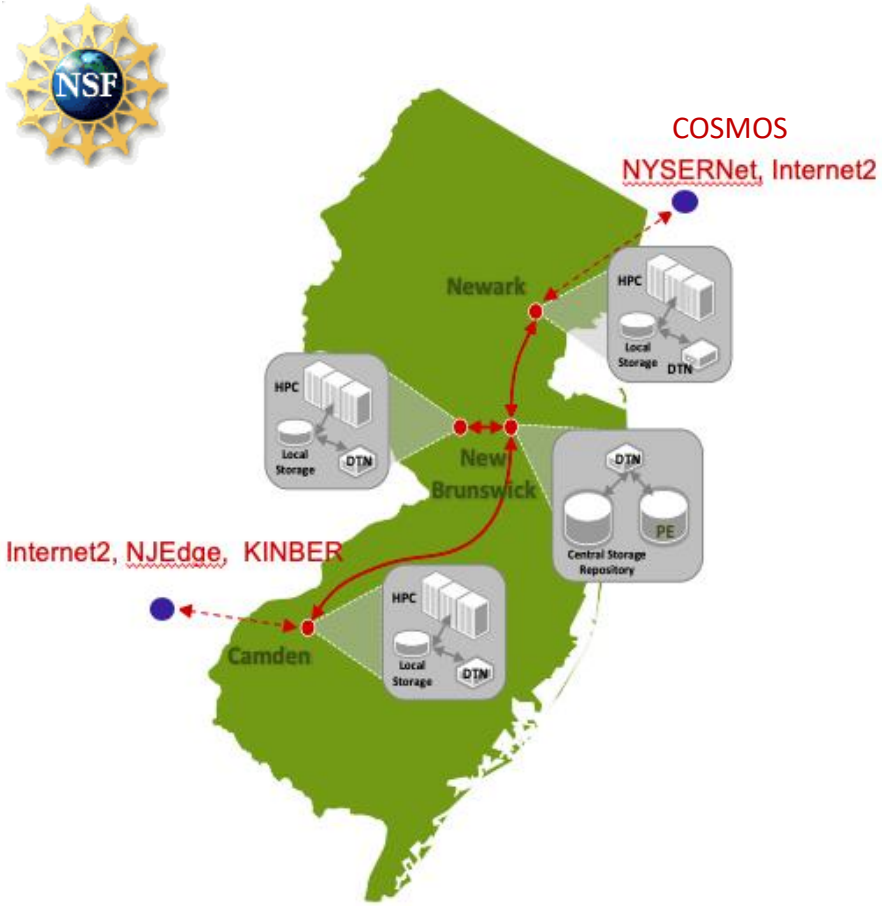
Initial Science Drivers

- Computer Science
- Cryo-EM
- Genomics
- Chemistry
- Marine and Coastal
- Brain Imaging

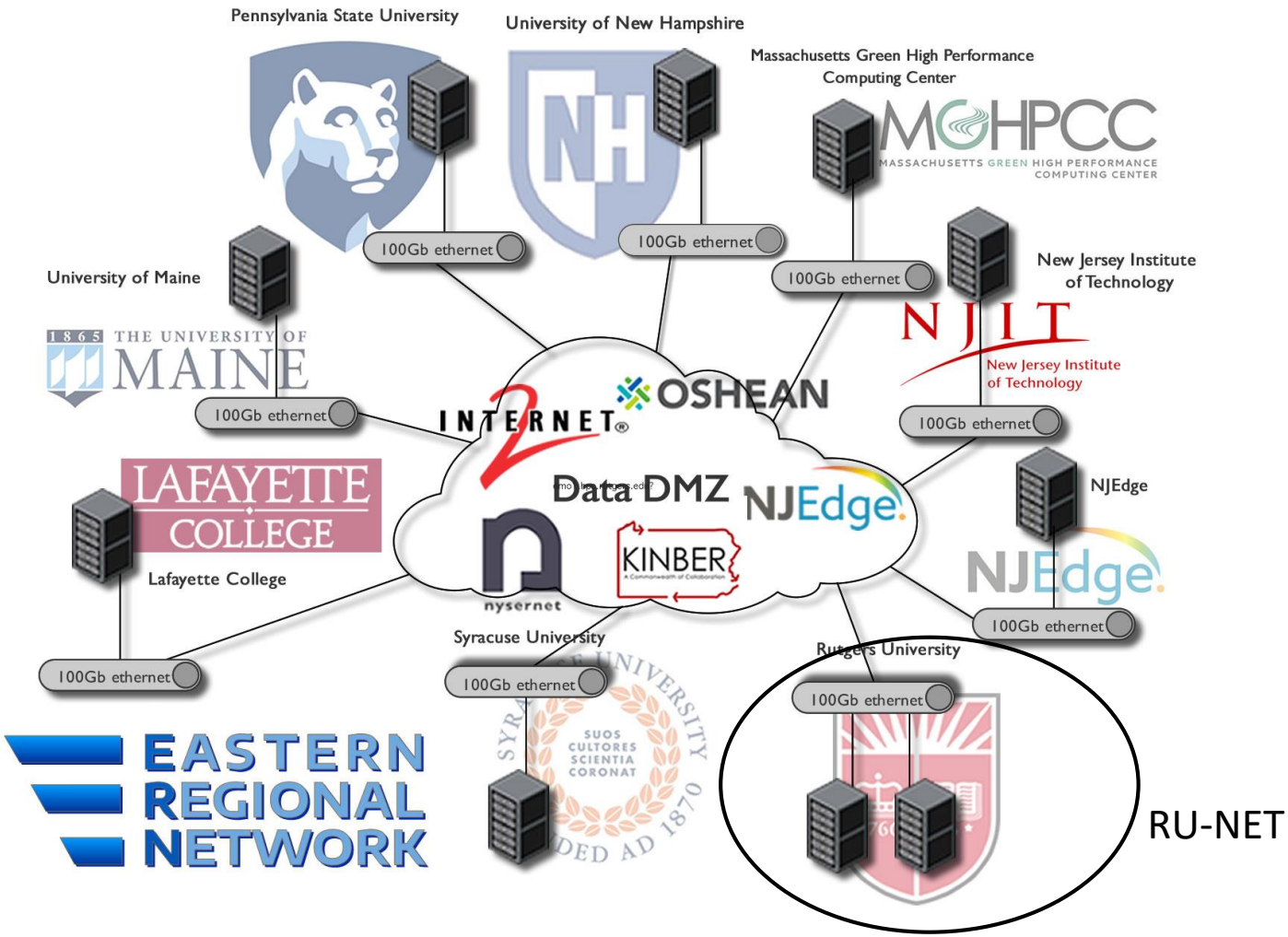
Leveraging NSF Funded CICNet



State-wide multi-campus, distributed HPC and storage, fast, low-latency network that is part of global Science DMZs:

- NSF CC* Funded (OAC-1659232)
- SDN Based 100 Gbps Network Core
- Data Transfer Nodes
- Advanced Computing and Storage
- Performance and monitoring support (perfSONAR, XDMoD)
- Containerized workflows
- Federated across campuses and Commercial Cloud
- Policy driven priorities levels

Eastern Regional Network



FABRIC: Adaptive Programmable Research Infrastructure for Computer Science and Science Applications