

CC* NETWORKING INFRASTRUCTURE:

**Expanding STEM Research
On Chicago's South Side**

Ophir Trigalo, PI
Vice Provost And CIO

ILLINOIS INSTITUTE
OF TECHNOLOGY

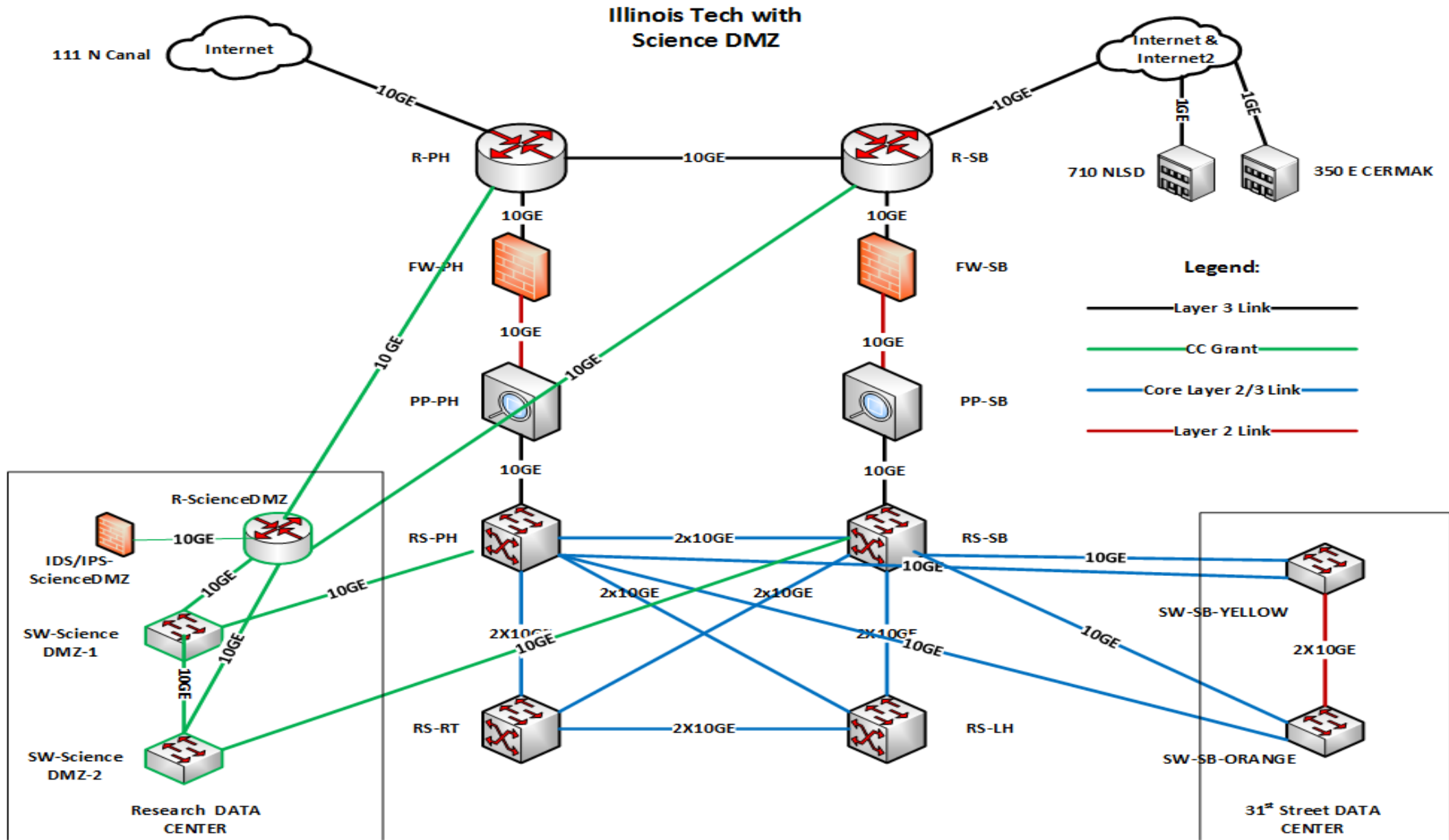


Illinois Tech and Its CC* Grant

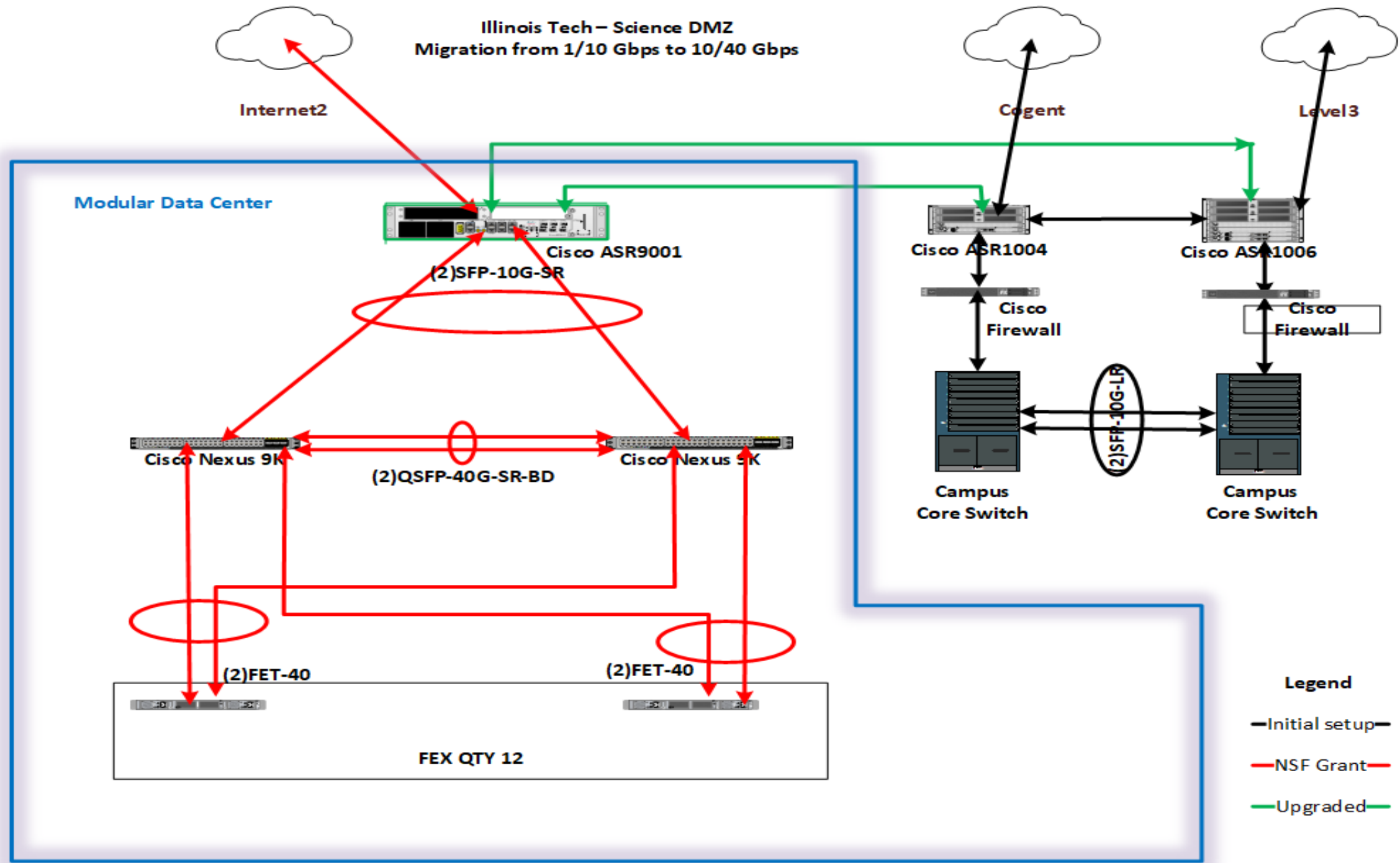
- Illinois Institute of Technology (Illinois Tech or IIT), a PhD-granting university, is the only Chicago metropolitan STEM-focused institution.
- The university's volume of research is continuously growing.
- Illinois Tech's *U.S. News and World Report* ranking of the top U.S. universities is up from #103 in 2018 to #96 in 2019.

Grant Goals:

- Increase network throughput to support research;
- Connect with world-class universities and institutions at throughput speeds sufficient for practical end-to-end research collaborations;
- Establish a highly-secure research network; and
- Increase Chicago's South Side community's access to a high-throughput infrastructure and support economic development.



**Illinois Tech – Science DMZ
Migration from 1/10 Gbps to 10/40 Gbps**

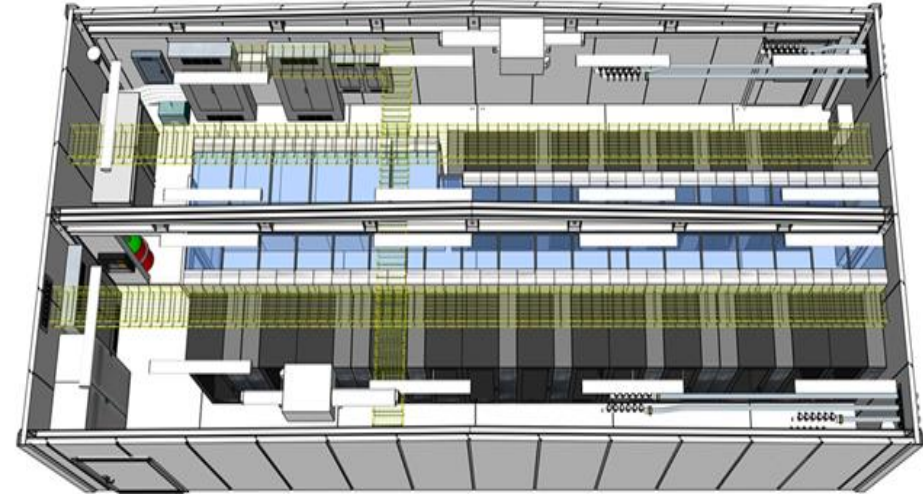


The New Prefabricated Data Center - Technical Specifications

- The continued growth of research at Illinois Tech has introduced hosting challenges that were resolved by ordering a new prefabricated data center.

Data Center Specifications

- 20 server racks at 20kW per rack plus 1 network rack
- 42 power distribution units (PDU's)
- In-row N+1 cooling solution
- 750kW Galaxy VX with lithium ion battery cabinets
- Modular air-cooled chiller system
- FM200 fire suppression system
- Data center expert-monitoring software and environmental monitoring



Remaining Milestones

Fall 2018

- Negotiating with Illinois Century Network to upgrade the university's Internet2 throughput.
- In discussions with the University of Chicago (4.5 miles away) to diversify our optical assets, improve connectivity between our organizations, and enhance resiliency.
- Negotiating with vendors as the university's commercial alternative to enable Internet2 redundancy.

Winter 2019

- Completion of the grant will coincide with the deployment of the prefabricated data center.

Broader Impacts

- Illinois Tech Research
 - The Science DMZ will benefit all research at IIT.
 - Students' involvement with research grows as the volume of research increases.
 - NSF's REU Program.
 - The Science DMZ will enhance researchers' connectivity to the Open Science Grid (OSG).
- Smart Chicago Collaborative
 - Array of Things.
 - An NSF-funded initiative led by the University of Chicago.
 - IIT's Wagner Institute for Sustainable Energy Research (WISER) operates Chicago's electric Microgrid, the only urban research electric smart grid in the country.
 - Diversification of optical assets between the universities.
- Economic Development of Chicago's South Side
 - IIT's Tech Park – research and incubators.
 - Many R&D and tech startups.
 - DMG MORI USA is moving its headquarters to be close to IIT.
 - The company's proximity to faculty and students “will promote synergy effects in research and development of new technologies.”

All of these broader impacts bring the fulfillment of the grant full circle:

- **Expanding Stem Research; and**
- **Improving Economic Development on Chicago's South Side.**

QUESTIONS

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