

# GENI and Campus Science Data Flows

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# In a nutshell

- GENI
  - Research SW/HW + **Campus (Infrastructure & Operation & Support)**
  - Focus: programmability & automation
  - Outcome: technology innovation
- Science Data Flows
  - Science Data + **Campus (Infrastructure & Operation & Support)**
  - Focus: reliable & high performance transfer
  - Outcome: science discovery
- ***Overlap – Campus (Infrastructure & Operation & Support)***

# Current Parallel Efforts

- GENI
  - CIO decision to host GENI SW/HW + network provisioning
  - GENI runs bleeding edge SW/HW
  - CS researchers asks GENI for SW/HW (compute + network)
- Science Data Flows
  - CIO budget for production service solution + network provisioning
  - IT staff runs production SW/HW
  - Science researchers asks IT for service
- ***What's in Common – Campus IT hosting, provisioning, user support***

# Current State

- Many efforts being treated as "one offs"
  - Desperate researchers contact someone locally
  - Alex example
- PRP is an innovative effort to build persistent high speed end to end connectivity.....
  - doesn't happen naturally on the internet
- Internet2 soliciting input from community on next generation backbone
  - End to end repeatedly comes up
  - Need scalable solutions that are generally transferable

# Challenges & Realities

- GENI
  - Challenge: GENI needs campus participation in long term sustainment
- Science Data Flows
  - Challenge: Campus need community-tested, least-overhead solutions instead of one-offs
- ***Realities***
  - **Limited IT budget & man power, cannot scale with one-off needs**
  - **Need to align efforts when possible**

# Projects Wrestling with End-to-End Data Issues

- Pacific Research Platform - UCSD, UC Berkeley, CENIC led
- Internet2
- Regional Networks e.g., Great Plains Network; FLR
- ACI REF - NSF-funded network of research facilitators
- XSEDE - Campus Bridging
- PEARC17 – Practices and Experiences in Advanced Research Cyberinfrastructure
  - XSEDE + ARCC + LCI and more

# Above Efforts Could be Enhanced by...

- Working collaborations with the network research community
- E.g., PRP setup for campuses can take hundreds of emails and many months
  - DTN + network + dashboard + Jupyter
- Bidirectional leverage
  - Campuses went through similar efforts for GENI, can PRP leverage GENI to more easily broaden deployment
  - GENI adopts, e.g., PRP, as a data transfer element as well as an interface to other science communities