

A light blue world map is centered in the background, overlaid with a white network diagram consisting of interconnected nodes and lines. The text "POWERED BY" is in large, bold, black capital letters, with "BOUNDLESS COLLABORATION." in smaller, black capital letters below it. Below that, the word "COMMUNITY" is in large, bold, black capital letters.

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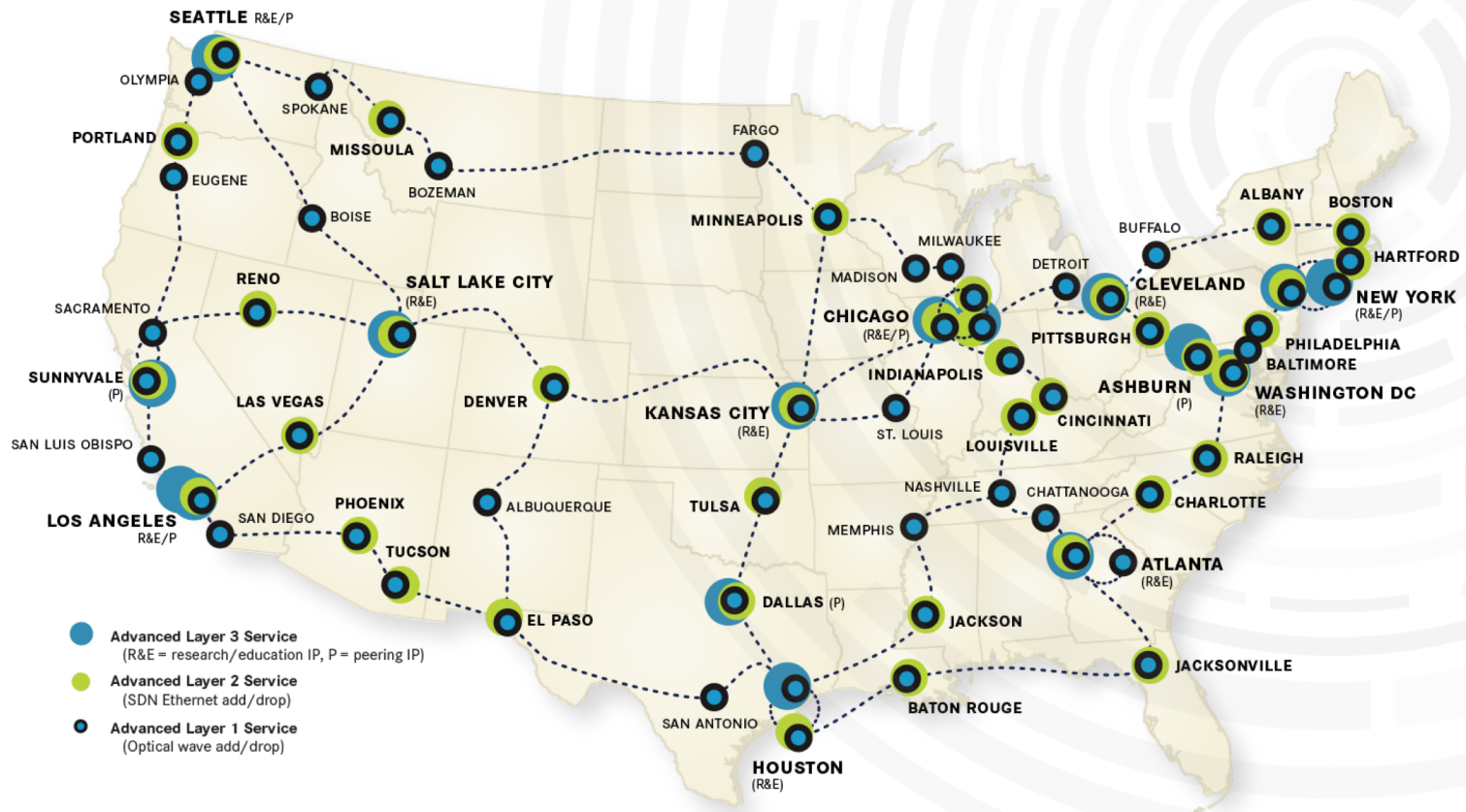
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Next-gen R&E Ecosystem Infrastructure: Planning and Experimentation

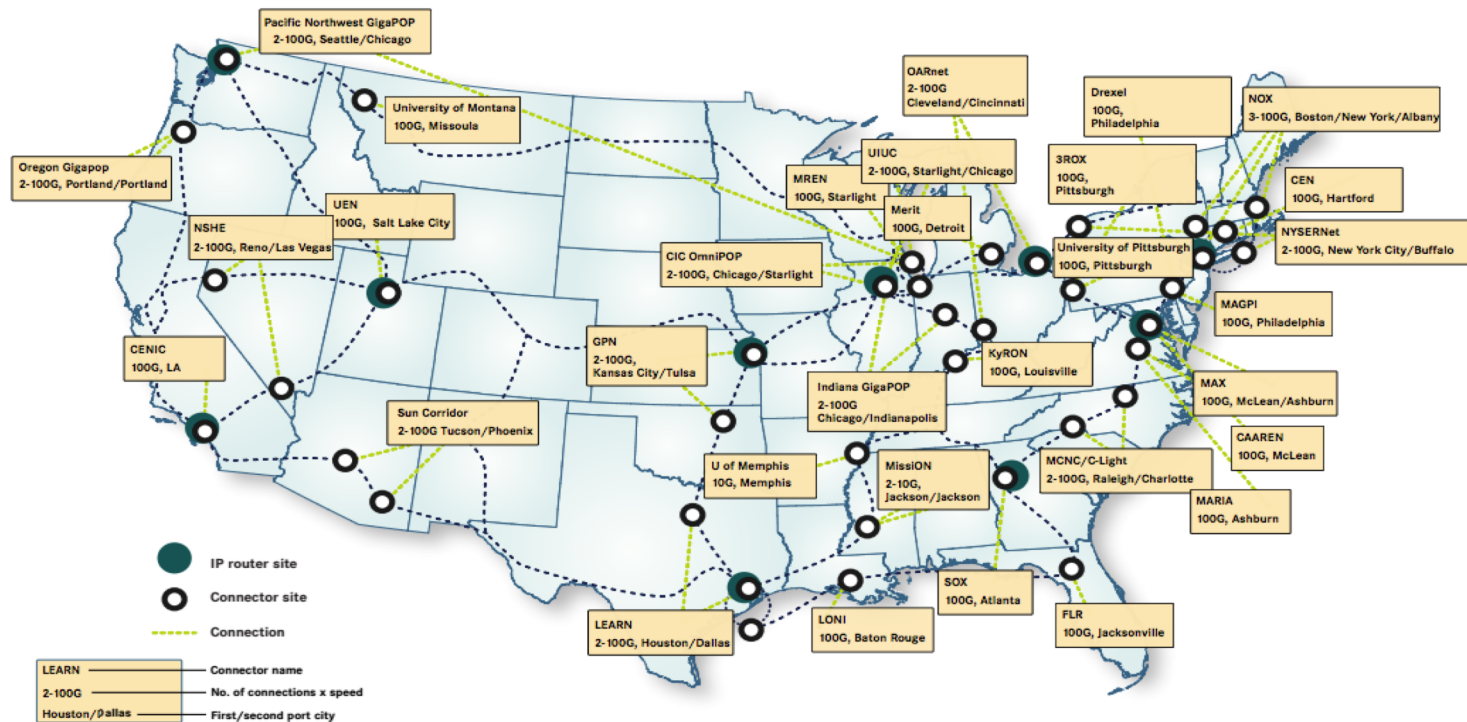
JET update March 2018
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100G Nationwide Network: **secure, stable and trusted network for R&E**



Regional network connections – touch points for collaboration



NETWORK
PARTNERS

ciena

INDIANA UNIVERSITY

BROCADE

JUNIPER
NETWORKS

Level(3)

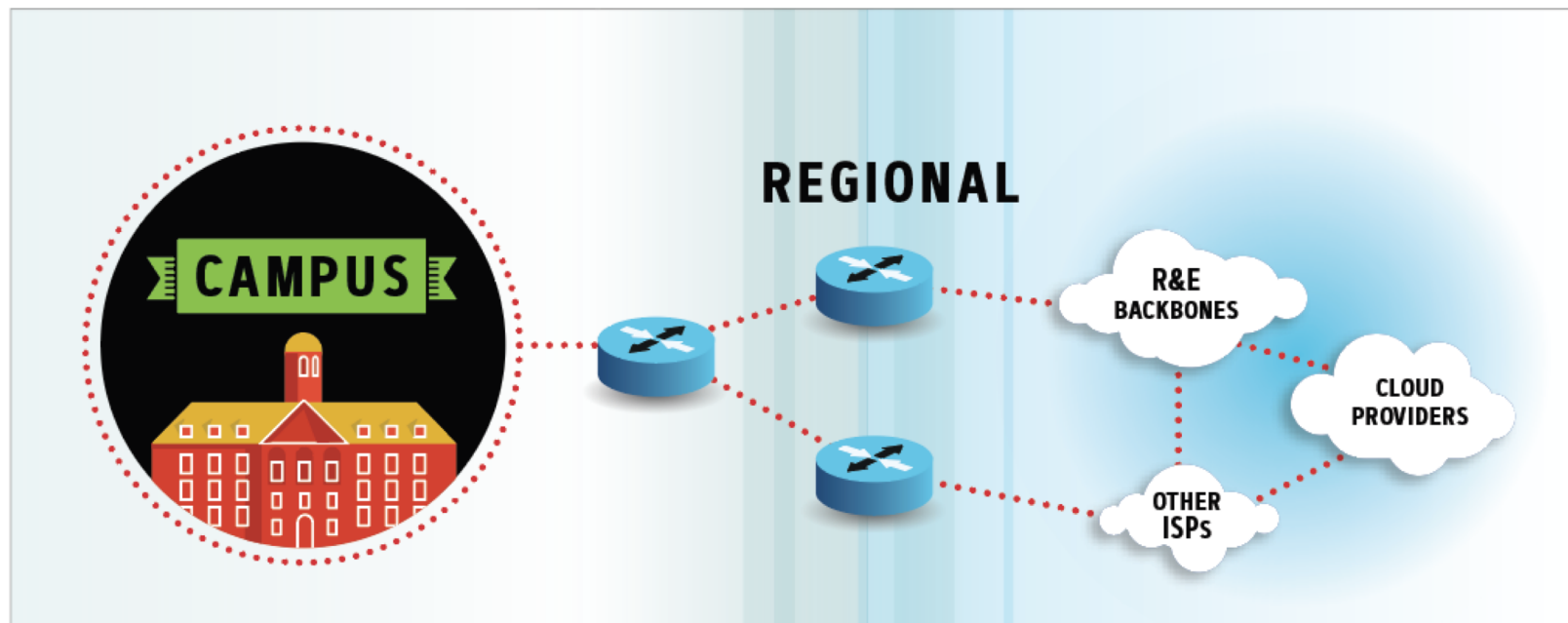
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Research and Education Network Ecosystem



Guiding principles

Ecosystem approach

- Focus on joint service delivery model - campus, regional, Internet2

Experimentation

- Try stuff, short term commit
- No impact on current production service

Target research end users

- Push service delivery edge close to user

Community Experimentation: Goals

Approach upcoming infrastructure investments as a community - coordinate efforts

Experiment during 2018 to provide insights into likely technical, operational and business model challenges

Experiment: Distributed HPC across campuses

Eastern Regional Network collaboration

Start with Rutgers multi-campus federated HPC service – shared scheduler (SLURM) allows jobs submitted locally to run on other clusters, subject to policy

Extend via Regional Networks (KINBER, NJEDge, NYSErNet, OSHEAN) to up to 10 campuses - experiment with connectivity options and service orchestration

Status:

- Planning and initial deployment in process
- Target operational and business model issues with ecosystem-wide service



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Experiment: Optimized Cloud Access

Commercial cloud exchange service delivered using R&E infrastructure

Two regional experiments: one with commercial vendor solution (OSHEAN) and one using a community-developed solution (MAX)

Extend services to multiple campuses via regionals and Internet2 and experiment with connectivity and service orchestration

Status:

- Planning and initial deployment in process
- Target operational and business model issues with ecosystem-wide service



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Experiment: Core Technology Evaluation

Data Center Interconnect (DCI) platforms in the wide area

Lab testing at NYSERNet with the Facebook-designed Voyager platform - *disaggregation model*

Next step – **Field trial** of mainline vendor DCI offerings. Aim is to achieve significant cost/bit reduction and simplification

Status:

- Lab test report in process, planning for field trial just starting
- Target operational and business model issues with ecosystem-wide service

Edge Workshop

Key aim - develop community-based view of what constitutes an appropriate set of services at “the edge” and some direction on one or more platforms to invest in on an incremental basis

Approach - work with community leaders specializing in this area to develop a workshop to assess current thinking and flesh out a plan for experimenting

Status:

- Program committee forming

Infrastructure Sharing

Finding ways to optimize, reduce TCO, simplify - community-wide

Regional-led working groups formed in January:

- Layer 1 infrastructure sharing – rules of the road (OARNet, LONI)
- Router virtualization (LEARN, ONENet)
- Peering architecture value proposition (FRGP, WiscNet)
- Fiber and colocation data collection (The Quilt, Internet2)



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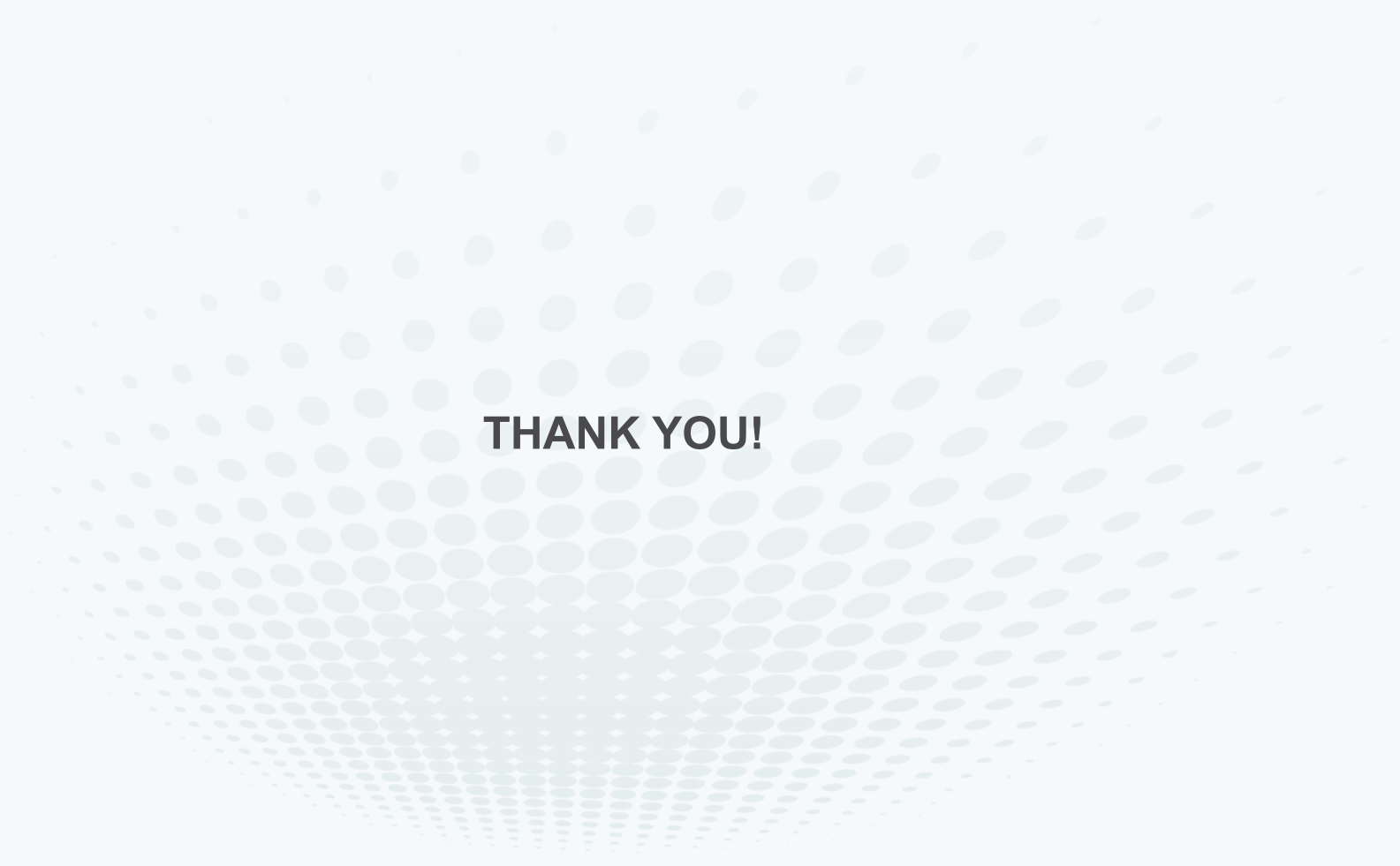
Upcoming community meetings



OCTOBER 15-18
ORLANDO FL



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THANK YOU!

"Any opinions, findings, conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the Networking and Information Technology Research and Development Program."

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