Agenda

- Welcome

- Managing Identity and Billing in GCP, GCP's relationship with GSuite

- Network Integration for GCP

- Q&A

The GCP Virtual Event Series

- General Introduction to NET+ GCP (May 7) – 90 minutes

- Managing GCP On Campus (May 14) – 60 minutes

- Security in GCP with Andy Chang (May 21) – 60 minutes

- Using GCP in Research (May 28) – 60 minutes

Logistics

- Participants microphones and video are turned off

- Please submit your questions via the Q&A functionality
  - Questions will be moderated, but we may not have time for all
  - Limited offline follow-up afterwards

- Today's virtual event is being recorded and will be made available on the NET+ GCP Wiki site: https://spaces.internet2.edu/x/MRCJCQ

John Bailey
Manager of Cloud Services
Washington University in St. Louis

Bob Flynn
Manager of Cloud Technology Support
Indiana University

George Loftus
Associate Vice President, Network Services
Internet2

Linda Roos
Sr. Director, Service Implementation & Retention
Internet2

Oren Sreebny
Consultant, Internet2 Cloud Programs
Internet2

SPEAKERS

I2online

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Two Roads Converge

- Generally two starting points
  - Non-Google school
  - Google school

- Washington University – St. Louis
  - R1 private university
  - 36k users
  - O365 for all students, faculty, staff

- Indiana University
  - 9-campus R1 state university
  - 140K users
  - G Suite for all users

Getty Images

GCP in a non-G Suite school

- Will need to implement either:
  - G-Suite (with GCP and IAM only)
  - Google Cloud Identity
- May find a squatter on your G-Suite domain
- Collaboration with some entities may require GCP projects to remain "outside" your org

cc: JeepersMedia - https://www.flickr.com/photos/39160147@N03

GCP in a G Suite school

- Most control is with G Suite admin
- Enabling GCP
  - The Bad 'Ol Days – on by default
  - V2 – Project creation switch in G Suite admin console
  - Current – Enable all, OU or group
- Identity
  + Seamless
  – Any user can create a project and billing ID with the trial credits
  – Project and billing ID sprawl
  – Google keeps messing with controls

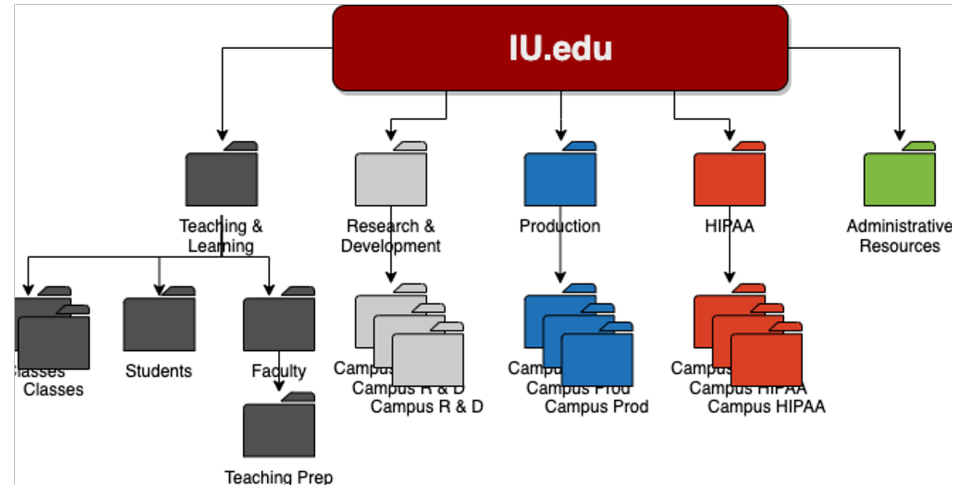cc: jonrussell - https://www.flickr.com/photos/13087003@N02

Architecting an EDU Org

- Learning – fully-open
- Teaching – billing constrained
- Research – open
- Development – open
- Production - constrained
- Sensitive - constrainted
- Admin

Restrictions

Contract

The Bills

Single Billing ID for entire Org

+ Speeds up account provisioning

– Requires more staff time

– Exceptions for credit recipients

Billing ID for each customer

+ Directly responsible for projects

+ Easy to deal with credits

+ Cleaner billing monitoring

– Slow turn around getting new IDs

(March 9, 2010 - Source: Chip Somodevilla/Getty Images North America)

Networking

- GCP Dedicated Interconnect:
  - Familiarized WashU Network Engineers with Google networking
  - Physical construction / new fiber
  - Substantial delays

- GCP partner interconnect:
  - May have been a better option
  - I2 Cloud Connect service
  - Leverage existing I2 network path

Getty Images

Security

- Roles – primitive, predefined, curated, custom

- Organizational policies

- Operations – log, monitor, troubleshoot

- Forseti – inventory, scan, enforce, explain

- Cloud Security Command Center - Prevent, detect, and respond

cc: henribergius - https://www.flickr.com/photos/15087210@N00

Clean-up

- Moving into a GCP Org
  - Migrating GCP projects
  - Migrating Google identities

- "Discovering" your GCP Org
  - Derelict projects and billing IDs
  - No structure, no status
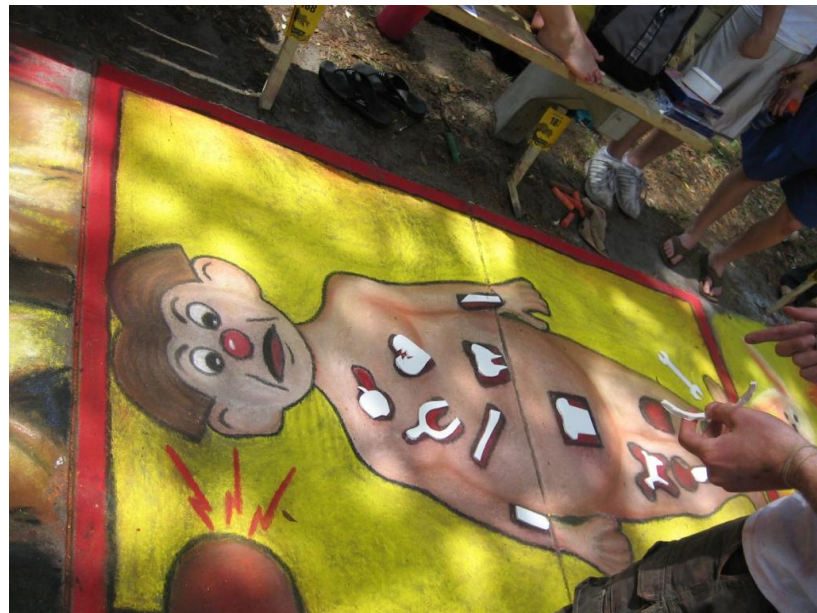 - No lifecycle with G Suite

Photo by Lester Public Library – cc: https://www.flickr.com/photos/7759477@N05

Operations

- Resellers
  - Can help streamline payment from different funding sources
- Orbitera
  - 3rd party billing tools
  - Budgets and Alarms
- Role-based Support
- G Suite complications
  - Apps Script
  - APIs

cc: National Cancer Institute - https://unsplash.com/@nci

(more) Operations

- Credits
    - Compute & Qwiklabs
    - Exploration & Training (stud/fac)
    - Teaching (faculty *for* students)
    - Research (faculty & PhD)
- Free accounts
    - $300 w/credit card
- Teaching support
    - Class folders
- Research support
    - Rapid onboarding

cc: ewige - https://www.flickr.com/photos/64671288@N00

Resources

GCP EDU page
https://edu.google.com/programs/

I2 STRIDES blog post
https://www.internet2.edu/blogs/detail/17661

IU CGP configuration guide
https://go.iu.edu/2c0c

Project discovery and clean-up instructions https://go.iu.edu/2d8H

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Getting to the Cloud

Google Cloud

Internet2 Peer Exchange
I2PX

Use of the community's existing 3Tbps of peering capabilities to the major cloud providers for access to cloud SaaS services (e.g. Zoom or Office 365)

Internet2 Cloud Connect
I2CC

Enables StateNET members to use the Internet2 and StateNET infrastructure to obtain up to 5Gbps of "direct-connect" private Layer 2 and Layer 3 access to Microsoft, Amazon and Google cloud platforms at no additional fee. Extending your data center to the cloud. (Cloud provider fees apply)

Internet2 Rapid Private Interconnect
I2RPI

Provides private 10G interconnections at major peering points across the country at low annual rates. Leverages current investment in StateNET and Internet2 infrastructure to reach cloud providers, for dedicated access or improved resiliency. May be used to connect to any commercial provider located at the peering point

I2 Cloud
Networking For Cloud

Designed from the Ground Up to Meet R&E Needs
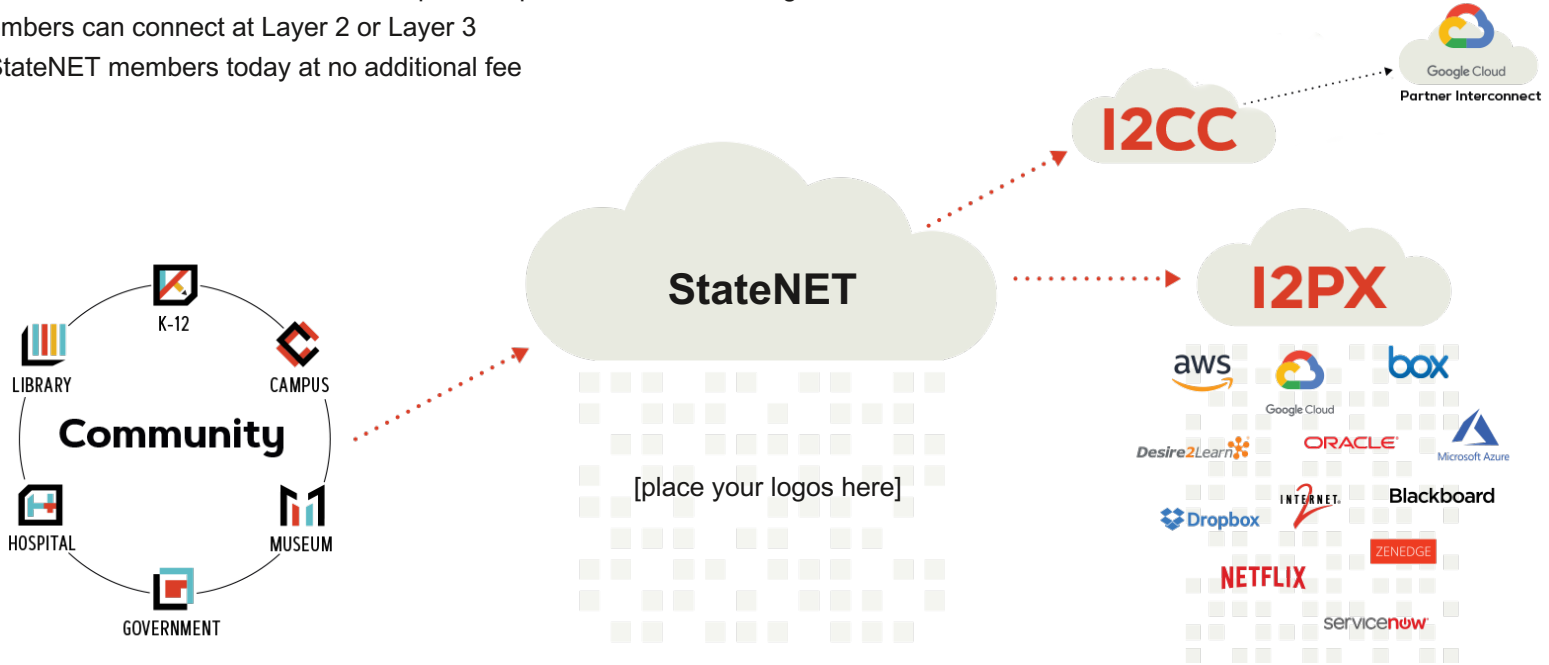
Internet2 Peer Exchange
I2PX

• Allows StateNET to have high performing on-net access to cloud service providers, avoiding the commodity internet
• Designed from the ground up to focus on hosting cloud providers most valued by the Research and Education community
• Available to StateNET members today at no additional fee
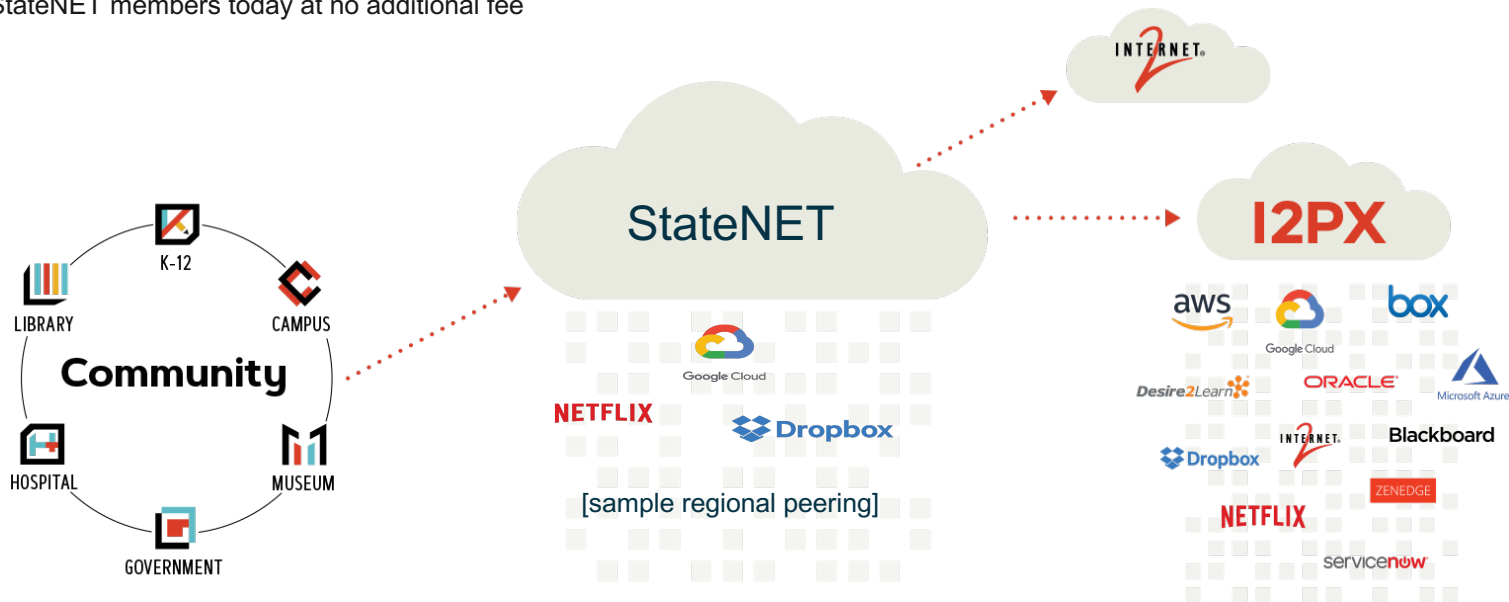
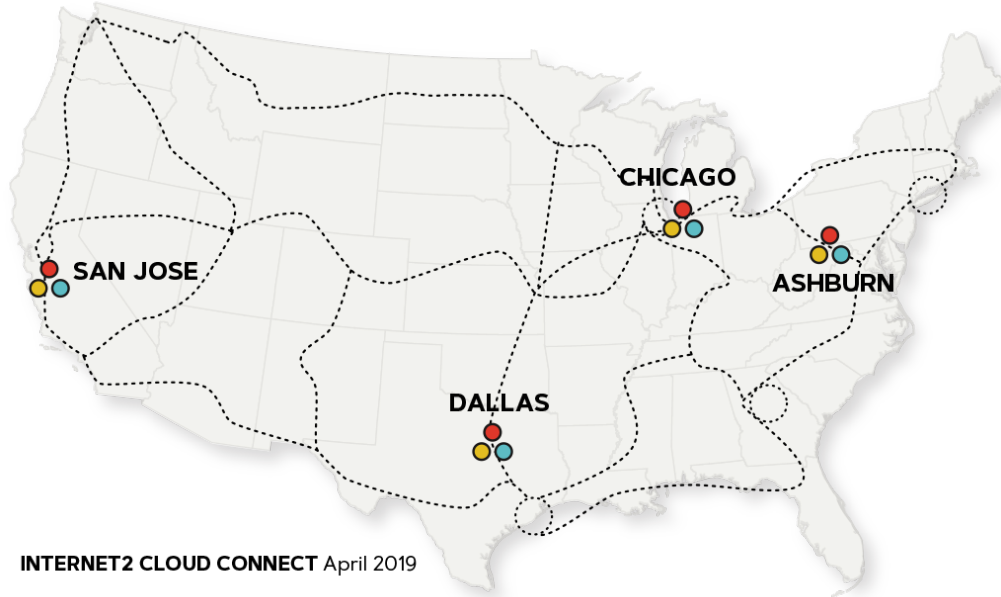# Leveraging R&E Networks for Direct Cloud Connections

Internet2 Cloud Connect
I2CC

• StateNET members can use Cloud Connect for up to 5Gbps connections to Google Cloud Partner Interconnect

• StateNET members can connect at Layer 2 or Layer 3

• Available to StateNET members today at no additional fee

Community

LIBRARY
K-12
CAMPUS
MUSEUM
GOVERNMENT
HOSPITAL

StateNET

[place your logos here]

I2CC

Google Cloud
Partner Interconnect

I2PX

aws
Google Cloud
box
Desire2Learn
ORACLE
Microsoft Azure
INTERNET2
Blackboard
Dropbox
ZENEDGE
NETFLIX
servicenow

I2 Cloud
Networking For Cloud

Nationwide Connectivity

Internet2 Cloud Connect
I2CC

INTERNET2 CLOUD CONNECT April 2019

Microsoft ExpressRoute
- 4x1x10G in Ashburn + GovCloud
- 2x1x10G in Chicago
- 2x1x10G in Dallas
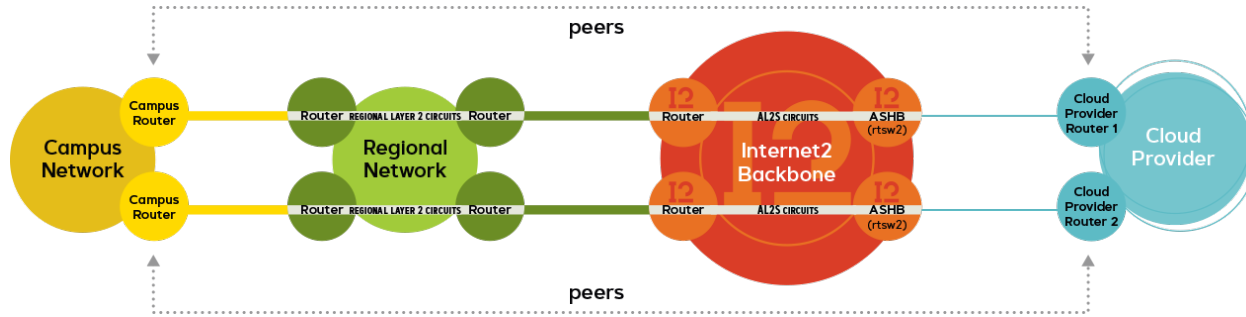- 2x1x10G in San Jose + GovCloud

Amazon Direct Connect
- 4x1x10G in Ashburn
- 2x1x10G in Chicago
- 2x1x10G in Dallas
- 2x1x10G in San Jose

Google Cloud Interconnect
- 2x1x10G in Ashburn
- 2x1x10G in Chicago
- 2x1x10G in Dallas
- 2x1x10G in San Jose

I2 Cloud
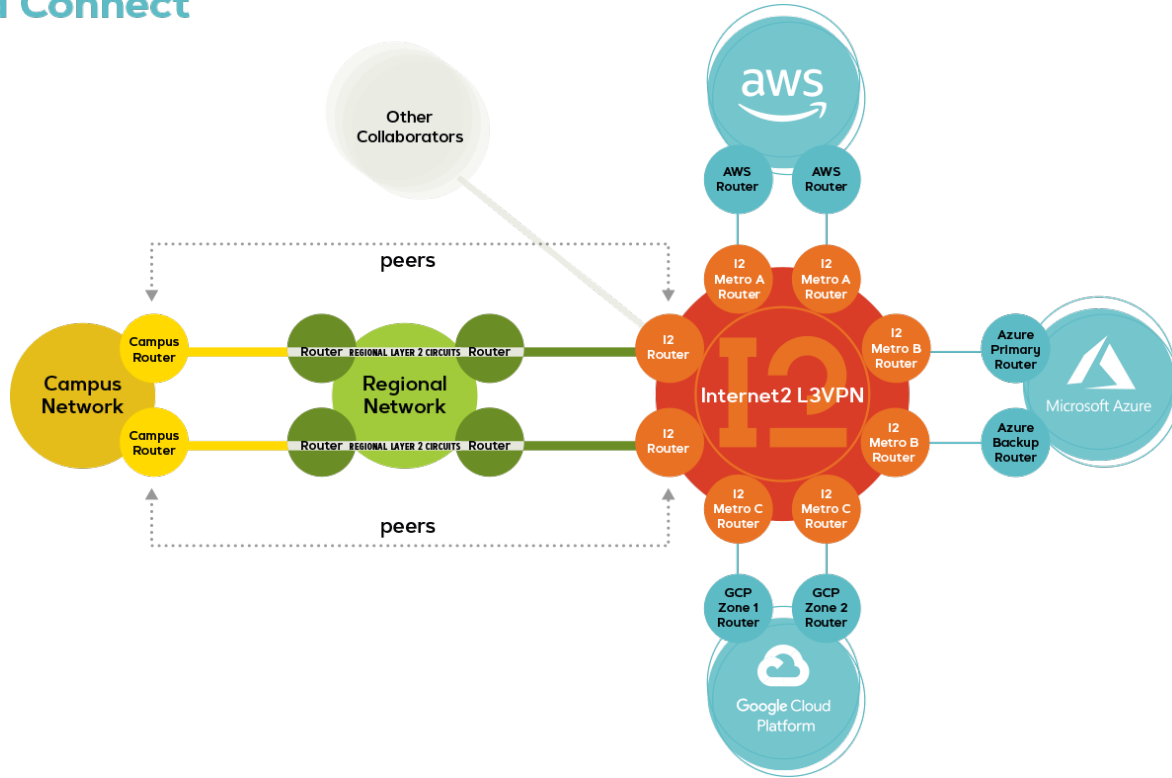Networking For Cloud

Layer 2 Connection Option

## Internet2 Cloud Connect
I2CC

Layer 3 Connection Option

Internet2 Cloud Connect
I2CC

Nationwide Connectivity
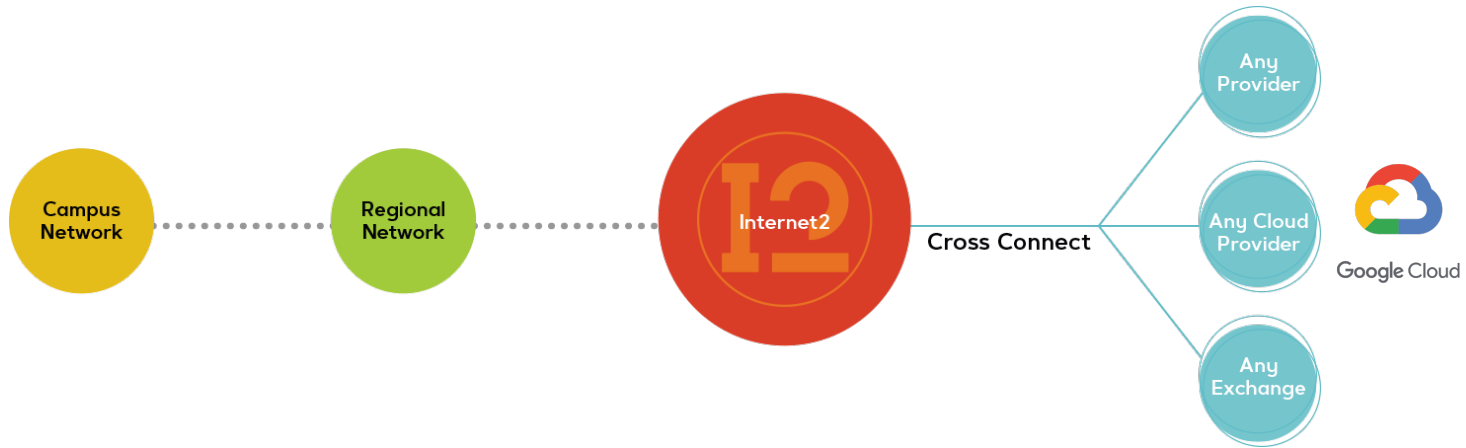
Internet2 Rapid Private Interconnect
I2RPI

RPI can be used to provide private direct connects to any provider with some examples being 10G connections to SIP service providers, esports exchanges, or Oracle Cloud.

CHICAGO

SAN JOSE

ASHBURN

DALLAS

● Any Provider

I2 Cloud
Networking For Cloud
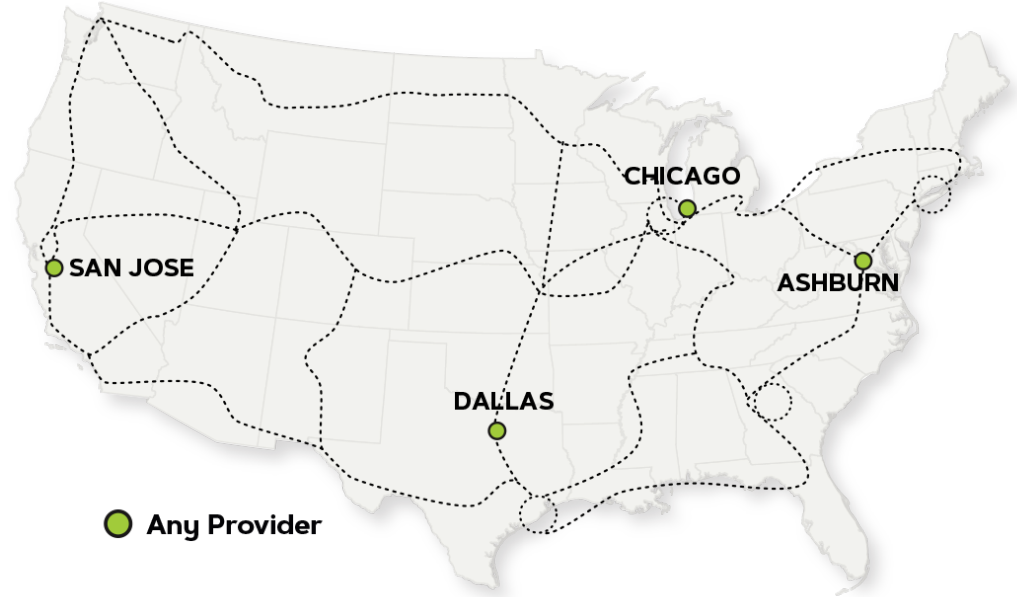
Flexible Connections to Any Provider

Internet2 Rapid Private Interconnect
I2RPI

- StateNET members can use RPI for private 10G direct connections to ANY commercial service provider at major peering points
- StateNET members can use RPI for private 10G direct connections to Amazon Direct Connect, Google Cloud Interconnect, or Microsoft Azure ExpressRoute Direct services
- StateNET members can connect at Layer 2 or Layer 3
- Available to StateNET members today at an additional annual fee

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I2Cloud
Networking For Cloud

I2 Cloud

Networking For Cloud

If you would like additional information about ANY of our Networking for Cloud solutions, please contact us at:

cloudconnect_request@internet2.edu

INTERNET2®

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Please tell us how we did today!

- Take our survey:
  - https://bit.ly/ManagingGCPCampus

Want to follow up with one of our speakers?

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Washington University in St. Louis

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