

Internet2 Middle East Emerging NREN Special Interest Group

An Update on Internet2's Programs and Priorities

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Seven focus areas

Advanced network and
network services leadership

Services at scale:
'Net+' Services

U.S. UCAN

National/Regional collaboration

Global reach and leadership

Research community development
and engagement

Industry partnership development
and engagement



Bandwidth and Innovation

2.4 Kb – 10 Mb
*innovation accelerates
R&E out in front*

Ethernet
introduced in
R&E

World Wide
Web

Video

Search
Engines

Chat/IM

Social
Networkin
g

10 Mb – 10 Gb
*innovation slows
R&E leadership fades*

Uncompressed
Video?

Large data
exchange

*BUT MOSTLY,
New bandwidth
Was used mainly for
Aggregation and scale*

10 Gb – 100 Gb
*innovation opportunity
where is R&E?*

?

?

?

?

*software
defined
networking*

INTERNET

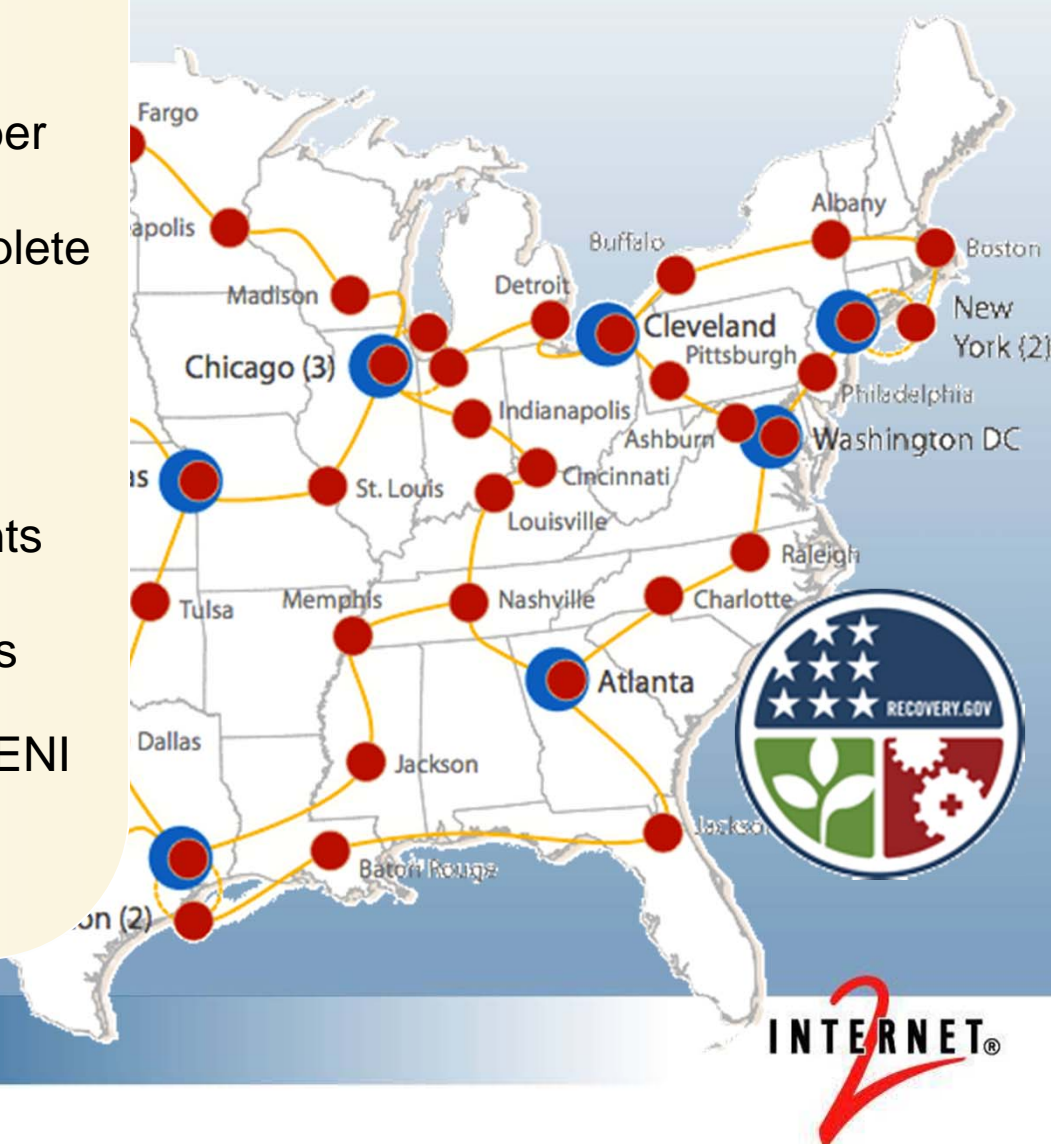


Internet2 Network 100G Infrastructure

By the numbers...

50+ colocation facilities
250+ amplification racks
17,500 miles community dark fiber
8.8 Tbps of optical capacity
40+ planned SDN nodes-5 complete
100+ Gbps of IP capacity
10 Juniper T1600 routers (R&E)
7 Juniper MX960's (peering)
.7->1 Petabytes a day of traffic
300+ Ciena 6500 optical elements
8 International peering points
100 Global network collaborators

Partners: ESnet, NOAA, NSF/GENI
35+ state and regional networks



Network Development and Deployment Initiative

- **GENI** - Global Environment for Network Innovations
 - NFS funded
 - Virtual lab for network research at scale
- **Phoebus** – High-Performance Data Transfer
 - Supports Dynamic Circuit Networks like ION
- **perfSONAR** –Performance Measurement
 - Open performance monitoring framework
 - Department of Energy, Internet2, GEANT, RNP
- **NDDI** – Network Development and Deployment Initiative
 - Stanford University, Indiana University, Internet2
 - Software Defined Networking (SDN)
 - OpenFlow protocol
 - Open Science, Scholarship and Services Exchange



An Ecosystem Built on Partnerships

