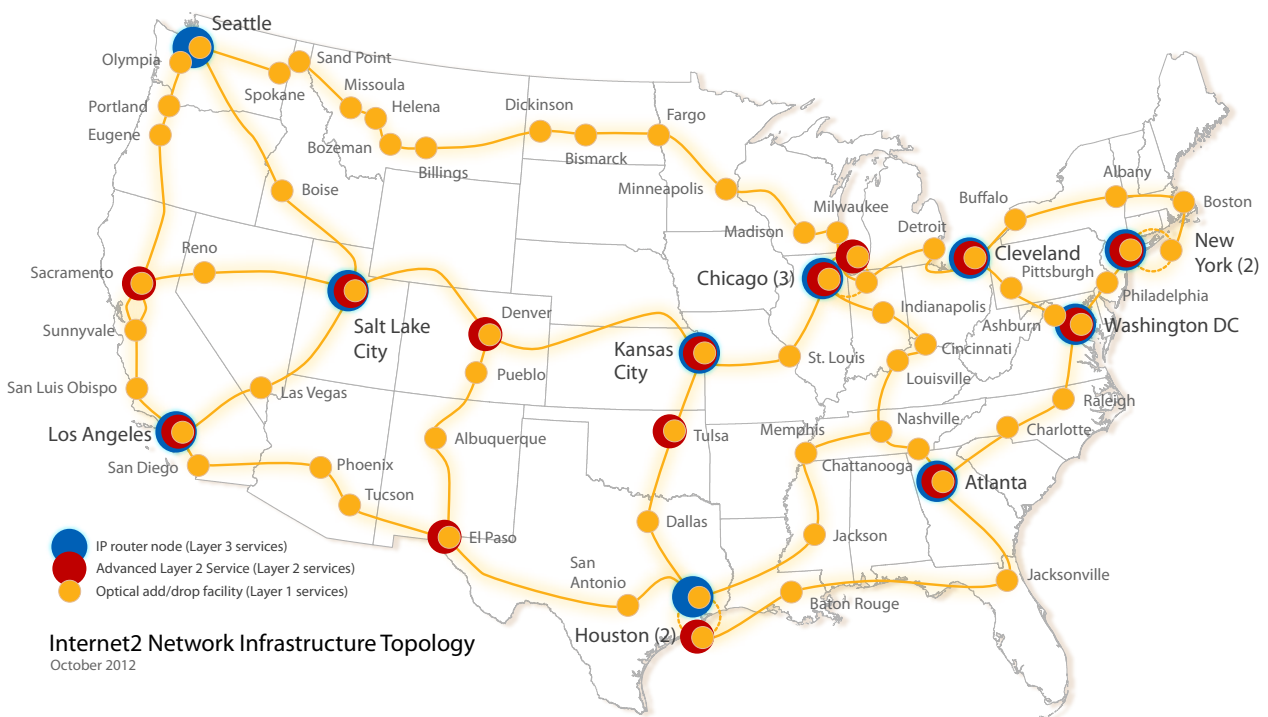# INTERNET 2

Advanced Layer 3 Service

Dependable IP solutions—*engineered specifically for research & education*

The **Internet2 Advanced Layer 3 Service** delivers a specialized Research and Education (R&E) network service, just for our community. A network *engineered* to allow wide reachability across the R&E community with abundant "headroom" for peak performance. Average use and traffic congestion are not part of the discussion when it comes to planning for this network. Internet2 members take advantage of a national and global network *dedicated* to specialized R&E traffic. A network that's highly reliable, and connects to a fabric of other national R&E networks *around the globe.*

The **Internet2 Research and Education Internet Protocol (R&E IP)** service is optimized for the most demanding, high performance peak-plus-potential network traffic. The goal of this service is for users to never experience the dropping packets, jitter or other underperformance characteristics of commodity networks. Additionally, the R&E IP service provides:

- Hybrid Port that provides broad range of services and capabilities on Internet2's R&E IP backbone

- IPv4 and IPv6 connectivity to all Internet2 Advanced Layer 3 network users and peer networks

- Wide range of options to provide scalable bandwidth to meet campus and research needs: 2x5G, 10G, 2x10G, 3x10G, 100G

Internet2 Network Infrastructure Topology
October 2012

Legend:
- 🔵 IP router node (Layer 3 services)
- 🔴 Advanced Layer 2 Service (Layer 2 services)
- 🟠 Optical add/drop facility (Layer 1 services)

Cities shown: Seattle, Olympia, Sand Point, Portland, Eugene, Spokane, Missoula, Helena, Bozeman, Billings, Boise, Dickinson, Fargo, Bismarck, Minneapolis, Madison, Milwaukee, Detroit, Reno, Sacramento, Sunnyvale, San Luis Obispo, Los Angeles, San Diego, Salt Lake City, Las Vegas, Phoenix, Tucson, El Paso, Denver, Pueblo, Albuquerque, Kansas City, Tulsa, Dallas, San Antonio, Houston (2), Baton Rouge, Jackson, St. Louis, Memphis, Nashville, Chattanooga, Atlanta, Jacksonville, Chicago (3), Indianapolis, Cincinnati, Louisville, Cleveland, Pittsburgh, Buffalo, Albany, Boston, New York (2), Philadelphia, Ashburn, Washington DC, Raleigh, Charlotte

- Layer 2 service capabilities: provision VLANs over Layer 3 service to connect with other Internet2 Advanced Layer 2 service users and peers.

Internet2 members have commercial traffic needs, too. **Internet2's Commercial Internet Peering Service (TR-CPS)** provides connectivity to the public Internet and peering relationships with select entities that offers:

- High performance, low latency, and efficient (1 hop) access to some of the top content destinations in the world including: Google, Yahoo, Amazon, and other commercial content providers

- IPv4 & IPv6 routes available

- IPv6 and multicast capabilities into commercial peering arrangements

- Allows unused capacity on R&E pipes with/for high value peers

- Over 80 peers currently connected,

- Over 70% coverage of the public Internet

Speeds and Fees

Advanced Layer 3 Service	Annual Fee
100G	$800,000
2x10G	$525,000
10G	$480,000
2x5G	$375,000

Transparent Operations

Focused on the unique needs of the research and education community, the Internet2 Network provides transparent operations and is under constant evaluation and analysis by the community, to deliver leading edge network characteristics— such as maximum availability and adequate headroom—to meet the constantly evolving needs of high-speed research and collaboration.

Community input into the design and management of the network is done though the Advanced Network Services program advisory group (NS-PAG) and the Network Technical Advisory Committee (NTAC).

Network design, development, deployment, management and support are collaborations between the Internet2 Network Services staff and Internet2's world class Global Network Operations Center (GlobalNOC) at Indiana University Current Internet2 Network information can be found there, including live network data, maps and documentation and research data.

The **Global Network Operations Center** (GlobalNOC), provides world-class production and research and development support services to Internet2 Network participants as well as more than 20 other R&E networks.

FOR MORE INFORMATION

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For more information about how Internet2's Advanced Layer 3 Service can help meet your organization's unique needs, contact *network@internet2.edu*.

Internet2 Network services web page: *internet2.edu/network/services*

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