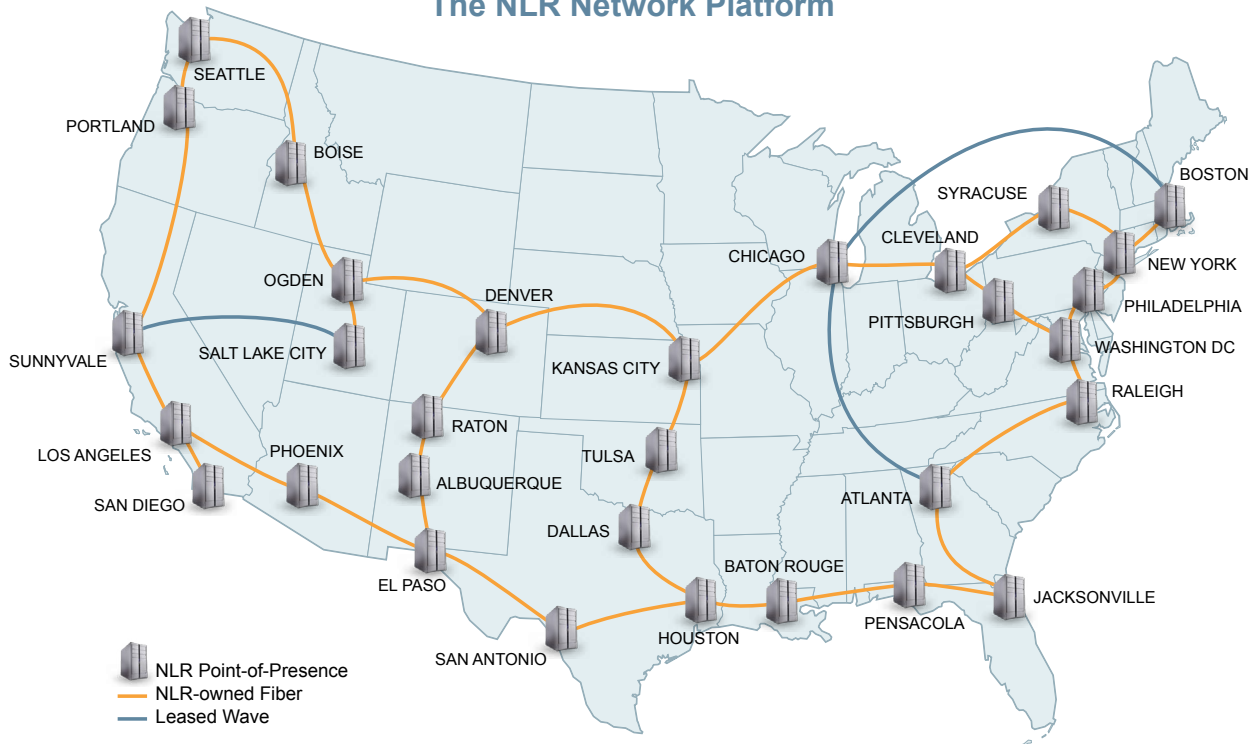




NATIONAL LAMBDA RAIL

National LambdaRail (NLR) is a high-speed, fiber-optic network infrastructure linking over 30 cities in 21 states and covering 12,000 miles across the U.S. Owned by the U.S. research and education community and dedicated to serving the needs of researchers and research groups, NLR is the innovation platform for a wide range of academic disciplines and public-private partnerships. NLR's high-performance network backbone offers unrestricted usage and bandwidth, a choice of cutting-edge network services and applications, and customized support for individual researchers and projects.

The NLR Network Platform



Key Facts

- Capacity: Up to 1600 Gigabits per second (Gbps)
- Ownership: U.S. research and education community
- Participating universities: 280+
- Participating federal agencies: Department of Energy, NASA
- Coverage: 30+ cities, 12,000 miles
- International peering: PacificWave, StarLight, Manhattan LAN (MAN LAN)
- Founded: 2003
- Headquarters: Cypress, CA

Innovation Leadership

- First high-performance national infrastructure owned by the research and education community
- First transcontinental production 10-gigabit Ethernet network
- First intelligently managed nationwide peering and transit program focused on research applications
- First national TelePresence exchange for the research and education community
- First international, first multi-point TelePresence sessions over a research and education network

Services on National LambdaRail (NLR)

National LambdaRail's (NLR) coast-to-coast, advanced optical network infrastructure offers a range of services and applications, capable of meeting the needs of the most demanding network and scientific research projects. Because NLR owns the underlying fiber optic cable and optical circuits, as well as other networking equipment, it can cost-effectively implement multiple, diverse experimental and production networks on its nationwide optical fiber footprint with unprecedented flexibility and responsiveness.

NLR WaveNet: Lambda-Based Services (Layer 1)

For those who need the flexibility and control from end to end including allocation of pathways and protocols at layer 1

NLR WaveNet offers point-to-point, high-capacity 10-gigabit Ethernet LAN-PHY or OC-192 lambdas between any two nodes on the NLR infrastructure. The NLR WaveNet service is a full-production, unprotected point-to-point wavelength. Users requiring protection may purchase a second wavelength and implement protection switching at their site. NLR may be able to provide diverse routing between the primary and protection circuit.

NLR FrameNet: Ethernet-Based Services (Layer 2)

For those who need a fixed, high-speed pathway with protocol flexibility at layer 2

NLR FrameNet offers Ethernet-based transport services over the nationwide NLR optical infrastructure. These services facilitate point-to-point or multi-point Ethernet transport at sub-gigabit, gigabit and multi-gigabit data rates. All Ethernet-based services are available from any of the FrameNet-enabled nodes of the NLR infrastructure. Dedicated and non-dedicated VLAN services are available as well as a dynamic circuit configuration tool.

NLR PacketNet: IP-Based Services (Layer 3)

For those who need a high-quality, managed nationwide backbone service with a high bandwidth entry point at layer 3

NLR PacketNet is a routed IP network on a 10-gigabit Ethernet backbone that provides a range of IP-based services, including IPv4 Unicast, IPv4 Multicast, IPv6 Unicast and IPv6 Multicast. This network connects to and peers with three international peering points: PacificWave, StarLight and Manhattan LAN (MAN LAN). Both 10-gigabit Ethernet and one-gigabit Ethernet connections are available. IP VPN service is also available for projects requiring an overlay IP network with separation of traffic, routing, and policy from the routed IP Service.

TelePresence

For those interested in a high-quality videoconferencing option for remote collaboration

NLR users can now take advantage of life-size, ultra-high definition and easy-to-use video conferencing for collaboration with colleagues across town, around the country or on the other side of the world. NLR is the first research and education network to become fully Cisco TelePresence-certified, and the NLR TelePresence Exchange enables both point-to-point and multi-point TelePresence sessions with up to 12 different physical locations. Pre-set TelePresence "meeting rooms" and a common directory and dialing system for TelePresence endpoints on NLR help provide users with a straightforward, high-quality experience.

