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About National LambdaRail

National LambdaRail is advancing the research, clinical, and educational goals of members and other institutions by establishing and maintaining a unique nationwide network infrastructure that is owned and controlled by the U.S. research community. Ownership of the underlying optical infrastructure ensures the research community unprecedented control and flexibility in meeting the requirements of the most advanced network applications and providing the resources demanded by cutting-edge network research. NLR aims to:

- support experimental and production networks,
- foster networking research,
- promote next-generation applications, and
- facilitate interconnectivity among high-performance research and education networks

NLR has acquired enabling technologies for its nationwide fiber optic infrastructure from Cisco Systems, which has provided optical DWDM multiplexers, Ethernet switches, and IP routers.

National LambdaRail will let people in the academic community experiment with network protocols and the basic network infrastructure in a way they haven't since the ARPAnet

*Scot Colburn, network engineer
National Center for Atmospheric Research*

Multiple Networks, Singular Capability

The defining characteristic of the NLR infrastructure is its ability to support many distinct networks for the U.S. research community using the same core infrastructure. Experimental and production networks exist side-by-side but are physically and operationally separate. Production networks support cutting-edge applications by providing users guaranteed levels of reliability, availability, and performance. At the same time, experimental networks enable the deployment and testing of new networking technologies, providing researchers national-scale test beds without the limitations typically associated with production networks.

The contiguousness of the many kinds of networks running over the NLR infrastructure provides researchers convenient and broad-based access to multiple networks, as well as access to real-world production network data. This same feature facilitates the migration of promising technologies into production, and permits research and development to transcend individual networking technologies. By enabling work across and on the potential interrelationships among traditionally separate network layers--optical networks, switched networks, routed networks, end-to-end transport protocols, as well as middleware and applications--NLR enhances system-level integration of new technologies and enables increasingly critical capabilities such as resource management and security.

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