N91-27041

The NASA Science Internet - An Integrated Approach to Networking

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An integrated approach to building a networking infrastructure is an absolute necessity for meeting the multidisciplinary science networking requirements of the OSSA science community. These networking requirements include communications connectivity between computational resources, databases, and library systems, as well as to other scientists and researchers around the world.

A consolidated networking approach allows strategic use of the existing science networking within the federal government, and it provides networking capability that takes into consideration national and international trends towards multivendor and multiprotocol service. It also offers a practical vehicle for optimizing costs and maximizing performance. Finally, and perhaps most important to the development of high-speed computing, is that an integrated network constitutes a focus for phasing to the National Research and Education Network (NREN).

The NASA Science Internet (NSI) program, established in mid 1988, is structured to provide just such an integrated network. NSI coordinates and consolidates science user requirements for non-mission-critical computer networking. It further designs and implements its networks to provide the computer protocols and performances needed by the scientists. In the process of consolidating circuits, NSI uses multiprotocol and interprotocol networking technology and works to facilitate sharing of applications software and services. NSI also coordinates the integration of Code SC information systems as well as advanced applications, such as remote visualization, wide-band video, etc., into the network. Throughout its operations, NSI is responsible for providing efficient management of NASA data communications facilities and for assuring resource control and security.

The initial step in gaining connectivity to NSI is for potential users to contact NSI's Customer Service Representatives. The CSRs gather the user's requirements on Network Service Request forms; when such requests are validated by NASA Headquarters as OSSA-supported projects, the requirements are passed on to NSI Engineers who configure the network architecture, acquire and test the circuits, and bring the circuits into full connectivity with NSI.

NSI provides users with full support. NSI's Network Information Center at Goddard Space Flight Center plans to provide user support services in the form of White- and Yellow-Page Directory Services, a User Help Desk, and periodic NSI User Working Group meetings. The Network Operations Center at Ames Research Center monitors NSI networks 24 hours a day, 7 days a week. The Operations Center monitors and analyses network traffic, manages problems that arise, and handles equipment installation, upgrades, and maintenance.

The integrated networking approach provided by NSI significantly increases scientific collaboration. It improves access to large-scale scientific computing, data processing tools, mail facilities, and other federal and international networks, and it makes more rapid and efficient exchange of scientific data possible.

NSI2-91c