Established in 1970, Jawaharlal Nehru University (JNU) has 10 schools, each catering to various disciplines and four centres. JNU offers courses in arts and aesthetics, biotechnology, computer and systems sciences, environmental studies, computational and integrative studies, international studies, language, literature and culture studies, and life, physical and social sciences.

The centres include the Special Centre for Sanskrit Studies, Special Centre for Molecular Sciences, Special Centre for Nano Sciences and the Centre for the Study of Law and Governance.

JNU has collaborated with several foreign universities and institutions and has established academic linkages with 47 countries. These linkages are of two types, the agreement of cooperation at the school level and MoU at the university level.

With an increase in the number of students, the internet became increasingly important for academic requirements and JNU upgraded its communication set-up in four phases.

tele.net traces the development of the university’s telecom infrastructure…

The legacy system

In 1996, the university established a basic local area network (LAN) in the campus.

The LAN had an optic fibre backbone and supported 10-100 Mbps speeds with a single 128 kbps speed gateway provided through microwave connectivity sourced from the Software Technology Parks of India (STPI).

In 1997, the university established the Communication and Information Services (CIS) centre in order to centrally control operations. In 2001, CIS became part of the School of Information Technology.

The switch

The university has allotted Rs 20 million to each phase of network upgradation. In 2002, JNU established a hub-and-spoke LAN by using CISCO 4500 series core switches and CISCO 2950 edge switches.

It also procured additional bandwidth from STPI and ERNET. The same year, Powergrid Corporation of India Limited (Powergrid) and Mahanagar Telephone Nigam Limited (MTNL) laid optic fibre across the campus.

In 2008, the LAN was extended by laying additional optic fibre and upgrading the edge switches to the CISCO 2960 series. Additional bandwidth of 2x20 Mbps was procured from MTNL and Powergrid.

In 2009-10, the university upgraded its data centre to include N+1 redundancy in cooling and power. The bandwidth was further increased to 1 Gbps through the National Knowledge Network.

In 2010-11, JNU deployed a wireless LAN using 802.11n connectivity across the academic complex. The contract was awarded to Cisco. In addition, an MoU was signed with MTNL for using the operator’s MPLS network, which was integrated with the university LAN.

MTNL also provided 3G-based access to the LAN by broadcasting a specific access point name, which could be used by the entire university. This provided access to the LAN from outside the campus.

JNU has upgraded its trunk network to 10 Gbps, along with the creation of redundant paths. It is also planning to add L3 switch distribution layers, which is expected to be completed by July 2012.

Notably, JNU does not have a WAN set-up, as the university's network is contained on a single campus site.

However, the current network path, via a Cisco 6500 series router, allows virtual routing and forwarding. This is aimed at integrating geographically distant collaborators on a single project. A project where this has been implemented is the Garuda grid maintained by the Centre for Development of Advanced Computing.

For last mile, JNU uses RJ-45-based wired connectivity and 802.11n-based wireless connectivity.

To secure the network, the CIS uses firewalls that protect the network from hackers, and balances the load from separate optic fibre networks.

Moreover, a unified threat management solution has been implemented to secure the network from hackers, for filtering unnecessary traffic, streamlining traffic by specifying priorities, and blocking unwanted sites.

Also, mail software has been upgraded to Zimbra Open Source. This supports instant messaging, document sharing and archiving personal mailboxes.

Today all faculty, registered students and staff members have been issued usernames and passwords to access the JNU network. The number of users on this network is about 8,000.

Challenges and benefits

According to the respondent, the biggest challenge was to reduce the timeline for project deployment from years to months.

“Government procedures require detailed technical requirements and specifications and normal tendering procedures, which cannot be reduced by more than a few months, and are often implemented in over a year. Meeting these deadlines requires looking at technology road maps and at times taking decisions to implement untested standards in order to remain future ready,” says the respondent.

In terms of benefits, the respondent says that the upgraded set-up has increased both the throughput and the uptime of the network.