INFRASTRUCTURE



I.3: Development in Networking and Communication at RRCAT

A) Commissioning of NKN router and 1Gbps link on RRCATnet

NKN, the acronym of "National Knowledge Network" is a nationwide high speed network connecting various computing/information resources, installed at various research and education institutes all over India. Objective of NKN is to build a national highway - parallel to Internet - to enable different initiatives to leverage the common infrastructure. Our center is a part of the NKN and recently a high end router and 1 Gbps leased link to National Informatics Centre (NIC), Bhopal has been commissioned. Currently the 1 Gbps link has been configured to act as a primary link for applications requiring secure channel for communication within DAE units. Figure I.3.1 shows the front view of the NKN router installed at our Data Center.



Fig. I.3.1: NKN router and 1 Gbps link

B) Design of framework and Development of scripts for proactive management of RRCATnet

A framework for administration of various network services and facilities at our center has been designed and developed to meet the 24X7 network uptime requirements. As a result we have gained immensely in increasing the uptime of the related network components and services. As a first hand



Fig. I.3.2: Proactive management framework.

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Fig.	1.3.3: Snapshot of the realtime Internet
	Links status monitoring page



Fig. I.3.4: Snapshot of the email events generated by the change of status of various network services

implementation of this framework necessary scripts were developed for utilizing the framework for increasing the uptime of Internet access services and the networking switches at our center. The framework for proactive network management is as given in Figure I.3.2. Snapshot of the web based realtime monitoring setup is as shown in Figure I.3.3 and snapshot of the email events generated by change of status of various services is shown in Figure I.3.4.

C) Commissioning of Network Access Control system for enhancing RRCATNet security

A network access control system has been installed on RRCATNet to provide necessary physical layer level security on the local area network. With its commissioning, only registered network devices are granted access to the network resources of RRCATNet. All the existing 1200 PCs and other networked devices have been registered in the system. The system is being further configured to provide end point security policy compliance reports of the end user systems. Figure I.3.5 shows a snapshot of the main page of the network access control system.

D) Enhancement to Anunet / DAEGrid

The DAEGrid leased line network at our center has been configured to support voice calls to/from BARC and BARC-VIZAG.





Fig. I.3.5: Snapshot of the Network Access Control system main page.

E) Expansion of communication Network

Mobile facilities were enabled on 15 extensions, 25 telephone connections were shifted, 21 new telephone connections were installed and 5 numbers of digital reflex phones were installed with voice mail facility in RRCAT campus.

F) RRCATNet Planning, Expansion and Upgradation

Planning for installation of 100 number of network nodes, distributed across various existing building networks including LFL, ADL, Colony Exchange, Admin, PLAVT, LMD and AECS have been carried out and necessary minor fabrication job has been initiated. New network planning for 12 port network in CME Lab and 48 port network in TSH was also carried out.

The "Enhanced Phase-IV" of the network expansion plan, which includes replacement of the aging, unmanaged/managed network switches in various buildings with the new managed switches was completed. The old managed switches of LSL, HSL and Purchase building were replaced with new managed switches. The 24 port old aging hubs of LFL, A-Block, Purchase, Guard House and C1-Block were also replaced with new managed switches. Installation of a new 13 port network in Library extension building and 24 port network in new chemical treatment building was also carried out. Laser Work Centre building and Cryomodule Engineering Lab were connected to RRCATNet using the 10 Mbps DSL mode of connectivity. Networking for 5 number of nodes in LSL and 2 number of nodes in Central Complex building was also carried out. In all, five number of 24 port switches and four number of 48 port switch were installed. In all, 40 nodes were added to RRCATNet.

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I.4: Construction and Services

A) Construction of lab buildings for R&D programmes.

Construction of a number of lab buildings is in progress. The construction of pre engineered building for SCRF cavity development lab, Laser R&D block "G" extension and I.T. building extension are in advanced stage. The pre engineered building includes construction of high bay enclosure for having clean rooms for SCRF cavity development programme. The building for UHV & MFL is being constructed as combined building to optimize cost of construction for common utilities. Building for housing UHV labs and Magnet fabrication and measurement lab was taken up. Construction of various labs for R&D programmes is being undertaken for LBAID, LMDDD, SCLS, SSLD, Ferrite lab and Indus-II users are in progress. The buildings are being constructed near the existing set up of respective laboratories to enable use of available infrastructure.



Fig. 1.5.1 View showing the erection work in SCRF laboratory

Further construction of Optical work shop and Hydrogen furnace laboratories was also started.

About 55 % work of construction of 18 number of "type IV D" houses has been completed. Numerous other infrastructure works are also in progress. About 85% work of construction of 'PG' hostel, security office at main gate along with related development works, extension of fire station, extension of C&S division office, construction of oil shed & other store units, drill tower, CI pipe line work for water line in colony and fire water line in plant area have been completed.