## INFRASTRUCTURE

### Computer Centre

#### Commissioning of Intel based computing server

A high end computing server using Intel P4 2.8 GHz processor, 4GB RAM and 120GB X 2 Hard disk capacity was commissioned. It has Red Hat Linux 9.0 as the operating system with gcc, gcc++, f 77, LF 95 with g 77 version 3.2.2 as compilers and IMSL, Nag Fortran (Mark 19 and 20) as libraries.
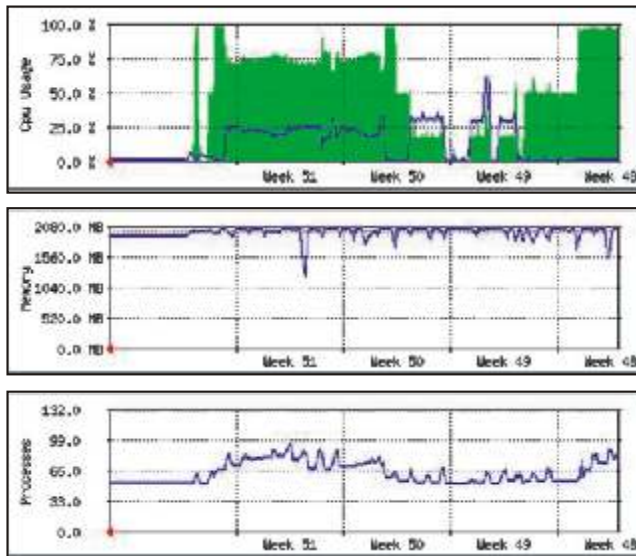


**Fig 1** Typical loads on computing servers

#### Porting of electron gamma shower software (EGSnrc MP) for alignment Health Physics and QA Section

This software was ported on server and made available to Alignment Health Physics and QA Section. This is GUI based software for generation of electron-gamma shower in any material.

#### Porting of Beta software for Beam Dynamics Section

This GUI based software was ported, configured and made available on the network to Beam Dynamics Section. It facilitates calculation of beam parameters like beta function, betatron tune, dispersion etc. for an electron storage ring.

### Revamping of the Email setup

The system was upgraded to Red Hat Linux 9.0 and various features like LDAP based account creation and administration, sending/receiving of emails directly to/from Internet, two levels of virus protection, web based email archiving, and detection of the SPAM at email gateways were configured. The neural network based SPAMASSASSIN software in conjunction with hash sharing systems namely

RAZOR2, PYZOR and DCC has been configured as ANTISPAM software on the email gateways.

#### CATnet, planning, expansion and up gradation

Phase-II of the OFC commissioning was completed in nine buildings, namely the Indus-I, MIA, B' Block, WS/B, LMD, LSL, HSL, Fabrication and Precision Lab.



**Fig 3** Phase-II networking rack installations of nine buildings

Planning for the Phase-III of the OFC commissioning, which is targeted towards increasing the reliability of CATnet has also been completed. Remote buildings like the Medical Center, AECS, Guard House and Fire Station have been provided high speed network connectivity (1 Mbps Upstream and 6 Mbps downstream) using the DSLAM setup.

### Internet access setup

For providing a secure setup for Internet related services, a number of firewall servers have been configured. To increase the uptime of the Internet services, the whole setup was duplicated so as to have standby firewall servers ready for use in case of the failure of any of them.

#### Enhancements to CAT Intranet

Intranet now includes forms for lodging AC complaint, Individual call certification, web based Purchase Supplier Data Review, information regarding expenditure related to Major works and TA, OT details for budget monitoring. Necessary updating for generating staff profile for all employees in a specified format has also been completed and

is available on the Intranet.

### Integrated Accounting package

An integrated accounting package has been developed in Oracle and D2K, which includes systems like Financial Accounting, Major Works, Minor Works, Cheque, Cash and Receipt, Temporary advance, Traveling allowance etc. It is also linked to the purchase, stores and audit system. The system integrates automatic flow of controlled data through multi-section modules; thus duplication of data entry is avoided resulting in less human errors.

### Pay Fixation software

Software for automatic calculation of the fixation of pay of the promoted employees was developed and put to use. This module has also been linked to the Promotion proposal software.

### Web site enhancements

Software was developed to incorporate information regarding tenders available for sale at IRPSU. The software also facilitates the archiving of the tender related information for future references.

### Anunet access

Telecommunication access to DAE units connected using Anunet was increased from 3 channels to 5 channels. This has facilitated 5 users to simultaneously establish voice communication to/from CAT EPABX extensions.

### Expansion of the telecommunication network

The telecommunication network was expanded to buildings including Indus-2, Project Office, 'A' Block Extension and New Administration. In all 60 new telephones were commissioned including both colony and Lab area.

### Replacement of old analog telephone instruments

To increase the uptime of the telecommunication services, approximately 800 old analog telephone instruments were changed to new telephone instruments.

### OFC based inter exchange connectivity

To increase the reliability of the inter exchange (colony and lab) connectivity, the inter-exchange copper based link was replaced with an OFC based HDSL link.

### Commissioning of lightening protection system

To thwart any problems occurring due to lightening strikes, in the EPABXs installed inside the LAB and COLONY area, lightening protection system was commissioned at both the places.

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### Civil & Services Division

During the year 2004, construction of several buildings were completed and handed over to users. These include extension of buildings for laser plasma and high power laser experiments, expansion of administration building, construction of inflammable stores, building for information technology, construction of 60 nos. Type III-C houses and construction of 6 nos. of Type V-E houses.

### Elevation of Laser Plasma lab & IT Building

Electrical works like installation, testing and commissioning of two substation one near Block 'C' and second one in colony, laying of OFC cable for colony exchange, 415 V, 160 A TPN Bus trunking system for equipment gallery of Indus-2 and HV cabling for Indus substation comprising of 6 runs of XLPE 11 kV cables from 132 kV substation to Indus substation were completed.



**Extension of Laser Plasma Lab**



**Information &Technology building**

Construction of 18 nos. Type III-C & 6 nos. Type V-E houses, training school hostel building, extension of CAP building, HT cabling work for enhanced reliability of power system, OFC cabling – second phase, telephone cabling works are in progress. Tendering action has been initiated for several construction works like 18 nos. Type IV-D houses, construction of 48 nos. Efficiency Apartments, training school building, lab building for agriculture radiation processing facility, RF & Microwave Lab building, Laser Lab & Target lab, control room for water supply automation, power conditioning system lab, Alignment lab and extension of LCW plant etc.

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