



used for storing the publication details are linked to the Personnel database of RRCAT to maintain consistency of employee details. Asynchronous JavaScript and XML (Ajax) technique is used for automatic pattern searching to avoid duplicate entry of publications.

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I.2: Development of information management systems at RRCAT

A) OASIS – Project Monitoring Software:

Web based software OASIS (On-line AccesS to project Information System) for comprehensive project monitoring has been developed and implemented, which can be used by all project coordinators on RRCATInfonet, to monitor XI plan projects efficiently. Access to the software is authenticated and only the project coordinators and authorized persons are able to access information related to respective projects. Various reports can be generated from the software, which are otherwise prepared manually by the project coordinators. This software, if used methodically, can substantially reduce the work done by project coordinators for preparing various reports. Project related data and reports can be exported to Microsoft Word. OASIS is single point access to the data retrieved from on-line Integrated Purchase-Stores-Audit Software, on-line Integrated Accounting Software and also from XI plan project report (entered by the project coordinators in this system). The software maintains information related to project sanction details, major activities, schedules of M&E / M&S / MW along with financial year wise project milestones and item wise breakup. It enables project coordinator to track the history of activities even if the project is closed or carried to next financial year. Item wise breakup related to project milestones can be maintained and Quarterly Progress Report can be generated along with information related to physical targets for the plan and reasons for shortfall.

Reports like 'Procurement Calendar' and 'Phasing of Plan Expenditure' can be generated, which are useful to monitor payments to be made during financial year with reference to delivery schedules. They also provide information for items to be indented from the schedules of M&E / M&S / MW contained in the project report. Reports for Budget Estimates (BE), Revised Estimates (RE), Variation between BE & RE can also be generated through this software. Report for 'Status of Project / Plan Schemes – Physical Progress' containing targets set up for each financial year and targets achieved can also be generated. Financial year wise statement of 'Outlays & Outcomes / Targets & Achievements' can be generated by this software. Some of the reports generated by the software can be used in totality, whereas some of the reports are suggestive in nature.

Budget Monitoring is another module of this software, which provides various reports for monitoring the procurement status of projects. Expenditure statement for project coordinators is generated containing details of budget provision, expenditure incurred and balance available with reference to annual plan as well as financial sanction. It also provides graphical representation of funds allocated to projects, expenditure incurred and balance left for each financial year. This web based software is developed using Java Servlets, Javascript and HTML. Oracle 10g database is used as back-end for storing the data. SQL queries have been optimized for improving the response time to the users.

B) Indus Usage Software:

Indus Usage Software is developed and implemented for keeping track of usage of various beam lines of Indus-1 and Indus-2. This software is released to the users on RRCATInfonet. Access to the software is fully authenticated and five-level authentication mechanism is implemented for different levels. Depending on the user level, restricted access to the beam line usage data is provided. The five different access levels are – Beam line user, Approving authority, Beam line in-charge, Shift in-charge and Administrator.

Different Beam line users can request for booking the beam lines of Indus-1 and Indus-2, one week prior to the actual requirement. Approving authority can approve or cancel the request of Beam line user. Approving authority can view reservation status of all beam lines, approved and cancelled beam requests, and feedback provided by the Beam line in-charge. Approved requests can be viewed by the Shift in-charge, so that beam can be provided for experiment. Shift in-charge can view reservation status of all beam lines along with approved requests and their feedback details. Beam line in-charge of each beam line can provide feedback for all the approved requests once experiment is over. Administrator can view date wise approved beam requests and feedback for all the beam lines.

Procurement Calendar - 2008-2

Sr. No.	Indent No./PO No.	Indent Date	Item Description	Payment Amount	Payment Date	Budget Code
1	38514 / 23990	Jul-2007	Integrated Service Network Router	15,58,800	Jun-2008	11C1000EL
2	38719 / 34295	Aug-2007	One U Rack Mount Server, Make: HP, Model: DL 140G3	5,08,830	Jun-2008	11C1000EL
3	38719 / 34163	Aug-2007	Linux Based NAS, Model: Datto RAID-LE2 NAS	9,10,800	Mar-2008	11C1000EL
4	38995 / 33830	Sep-2007	Multimedia Projector Toshiba TDP-T 350	1,02,468	Feb-2008	11C1000EL
Total Amount (in lakhs of INR)				30.81		

Sr. No.	Indent No./PO No.	Indent Date	Item Description	PO Value/Estimated Cost	PO Release Date/Estimated date of Order	Expected date of Expenditure	Budget Code
1	38717 / 34242	Aug-2007	PC-G401 With External 16 Bay 4 GFC-SAS RAID Sub. Systems	21,29,565	Mar-2008	Jul-2008	11C1000EL
2	39141 / 34860	Oct-2007	Supply & Installation Of xen Based Servers	8,98,560	Apr-2008	Aug-2008	11C1000EL
3	37865 / 33662	Jan-2007	SPECTRUM ANALYSER	5,67,440	Apr-2008	Jul-2008	11C1000EF
4	39131 / 34889	Oct-2007	MODULAR OTDR TEST PLATFORM WITH FIBER SPLICER	21,55,500	Mar-2008	Jun-2008	11C1000EL
5	39620 / 34310	Jul-2007	NETWORK CONTROLLER SERVER	18,45,223	Feb-2008	May-2008	11C1000EF

Fig. I.2.1: OASIS – Project Monitoring Software.

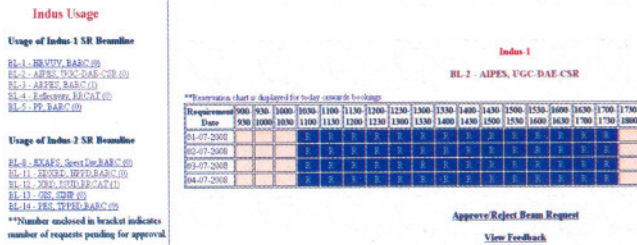


Fig. I.2.2: Snapshot of Beam Usage Software.

The software is developed using Javascript for client side validations and Java Servlets with Oracle 10g database as back-end. This software is being regularly used by all beam line users of Indus-1 and Indus-2.

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I.3: Development in networking and communication at RRCAT

A) RRCATNet Planning, Expansion and Upgradation:

Under phase IV of OFC networking, OFC connectorization work has been completed in RF and MIA buildings. CAT5E based internal networking of RF building is completed. All inter building links connected using the media converters are now connected using the GBIC modules. In all, 60 nodes are added to RRCATNet. Network port augmentation requirements of various buildings are analysed and indents are raised to procure switches and other hardware.

B) Enhancements to RRCAT Data Centre:

A high speed, network based, large capacity, data storage system has been integrated with the server network to facilitate faster D2D (disk to disk) backup and retrieval of the user data, web and email access logs. This has helped in reducing the backup and restoration window of the data by a factor of three.

C) Email and Internet Access Setup Enhancements:

The current email setup at our Centre has been further enhanced to include user level control for forwarding of emails. Any user using the Webmail interface for accessing emails can use the "Set Mail Forward" option under the "Options" menu for affecting his/her email forwarding.

To further bring down the number of spam emails reaching the users, a DNS based blacklisting feature has been enabled on the gateway email servers. This has resulted in reduction of spam emails received by a factor of five.

The network switches at all the three firewall levels are upgraded to support high speed internet links. Provisions in the form of adding extra network ports and carrying out necessary configuration changes are made on the network link concentrators to support more Internet links of high bandwidth.

D) Commissioning of 34 Mbps (1:4) Internet Link:

Internet leased link of 2 Mbps (1:4) capacity is upgraded to 34 Mbps (1:4) capacity. The new link has been commissioned using high speed routers and added to the already existing pool of Internet links. With this addition, the aggregated Internet bandwidth available at our center is 11 Mbps. Following are typical per day usage of the three links:

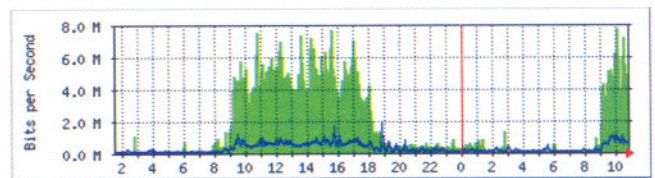


Fig. I.3.1: Usage pattern for 34 Mbps (1:4) link.

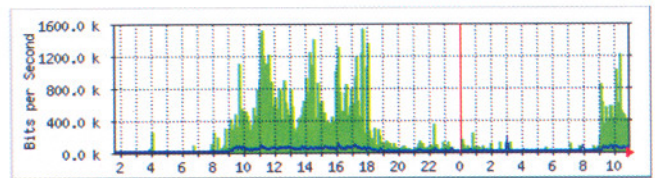


Fig. I.3.2: Usage pattern for 2 Mbps (1:1) link.

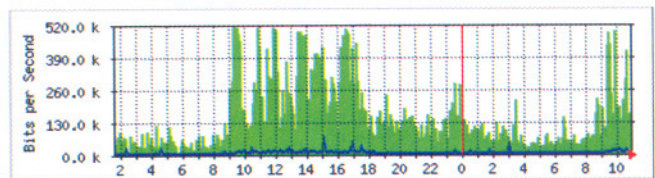


Fig. I.3.3: Usage pattern for 512 Kbps (1:1) link.

E) Commissioning of Sharable Data Repository (Z):

A Linux based NAS (Network Attached Storage) system with high speed network access and RAID (Redundant Array of Inexpensive Disks) configured storage has been commissioned, to provide a sharable data repository for facilitating file based collaboration among various groups and committees at our centre.

The sharable data repository incorporates necessary access control features to protect data from unwanted access. The relevant portions of the data repository are accessible to the authorized users as Z drive from any PC on RRCATNet running Windows. Following major goals of an organization wide, sharable data repository are achieved in this setup - Windows like drive and folder access, Authenticated write and read access, huge storage with Quota enforced access and Virus protected data.