E) Enhancements to RRCATInfonet:

Authenticated module for Project Monitoring has been released on RRCATInfonet, which provides various reports for monitoring the procurement status of XI Plan projects. The online information is made available from the Integrated Purchase-Stores-Audit System and Integrated Accounting Software. The access is authenticated and only the authorized persons will be able to access the information related to their respective projects.

Modules for logging network related complaints and viewing complaint status, have also been added to RRCAT Infonet. Changes were carried out on RRCAT Infonet server to incorporate connection pooling feature for connectivity to Oracle 10g database. This has resulted in increased number of concurrent users for the services provided by RRCATInfonet.

F) Enhancements to RRCAT Website:

RRCAT website has been enhanced with new look and feel. The web pages have been re-designed and re-arranged with updated contents. The look and feel has been changed using pull down menus and cascading style sheets. The contents for RRCAT Newsletters from the year 1988 to 2007 are provided in electronic form by conversion from paper copy. The contents of divisional pages have been re-arranged as per the changes in organizational structure.

G) Deployment of APAC-07 Proceedings:

Proceedings of APAC-07 (Asian Particle Accelerator Conference 07) were generated electronically and deployed on http://jacow.org website. Contributions to the conference were classified into different groups based on invited papers, contributed papers, and poster presentations. Proceedings of conference can be viewed based on Session, Classification, Author, Keyword or Institute. All the contributions are available in PDF format.

H) Deployment of JAS-08 Website:

A website for Joint Accelerator School 2008 has been developed and deployed on http://jas08.cat.ernet.in. This site contains information related to Programme schedule, Registration details, Committee details and Contents of the delivered talks, in PDF format.

Contributed by:
A. Rajan (alpana@cat.ernet.in) and A. Rawat

I.2 Development in networking and communication at RRCAT

A) RRCATNet planning, expansion and upgradation:

Under phase IV of network expansion, internal - CAT5E based - networking of few buildings namely, Laser R&D H - Block, Fire Station, AECS, TSH, and Old Production building was completed. In all, 200 nodes were added to RRCATNet. All the above mentioned buildings have been connected to the RRCATNet using DSLAM links and CAT6 cables. The commissioning of optical fiber backbones to various buildings under phase IV is underway and is expected to be completed in few months time.

B) Enhancements to RRCAT Data Centre:

The data centre at RRCAT, houses all the shared computing and IT resources of our centre. Due to addition of more number of such resource over the past few months, the electrical and AC facilities of the data centre had to be augmented. Necessary augmentation was carried out to support the requirements and thereby ensure smooth operations of the data centre.

User data on the email servers at our centre is increasing day by day, hence the backup related setup has to be constantly revamped. Backup of the various email server related log files and user data is currently being performed on network attached storage using the ethernet connectivity. The backup is performed using the tar and gzip utility over the network, with a full backup being performed on Sunday morning and incremental backups on other week days. Enhancements were made to the backup setup, for reducing the backup window from the previous duration of more than 24 hours to about 9 hours at present in full backup mode and to 2 hours in incremental mode. This has resulted in faster access of email services during working hours.

C) Email and Internet access setup enhancements:

Designing of a new email setup, utilizing fast and high capacity SAN based disk storage systems in cluster mode was completed and necessary hardware and software has been processed for procurement.

The current email setup at our centre was further enhanced to include facilities for forwarding of emails received in INBOX folder only, thereby excluding all unwanted DETECTED_SPAM folder emails from being forwarded, thus increasing our usable internet bandwidth.

Various unified threat management products were evaluated for incorporation in our network, to provide clean virus free traffic flow from and into our network. The

selected solution is now under implementation.

D) Anunet and DAEGrid Setup:

DAEGrid network was secured from external networks by the commissioning of a firewall based on unified threat management product from Fortinet Inc.. This implementation has allowed us to build customised firewall for using various applications with varied security requirements on the DAEGrid setup, thus enhancing the security of the setup on the whole.

E) Inter DAE Video Conferencing setup:

Promotion interviews were successfully conducted for the first time ever in RRCAT, using the video conferencing facilities, commissioned at RRCAT and BARC. The process involved setting up a video conference between BARC and RRCAT with an interview committee attending the video conference at BARC and the candidate and his DR attending the video conference at RRCAT. In all, 14 candidates were successfully interviewed.

F) Expansion of the telecommunication network:

Telecommunication facilities were extended to the new Laser R&D block H and Alignment Lab buildings. Mobile access facilities were enabled on 20 extensions and 80 new telephone connections were installed inside RRCAT campus. To take care of near future requirements, two number of 400 pair cables were terminated at laboratory area exchange. Revamping of 40 number of TDPs was carried out to strengthen the telephone cabling network in our campus, thus increasing the uptime of the telephone network.

G) Workshop on Unix operating system:

Unix is a preferred operating system in any R&D organization. Two weeks workshop on Unix was organized by Computer Centre during 9-20 July 2007 at User Hall. workshop was aimed at providing basic understanding of the Unix operating system and user level commands, useful to perform day to day operations on the Unix systems. workshop was attended by 24 candidates nominated from various Divisions/ Sections in RRCAT.

H) ANSYS training programme:

The resources in User Hall were utilized by engineers of our centre to conduct ANSYS training programme to get updated about the latest features available in this software package. About 30 participants from various Divisions/ Sections of RRCAT benefited from this training.

Contributed by:
S. S. Tomar (tomar@cat.ernet.in) and A. Rawat

I.3 Development of vacuum brazing furnace

Fig.I.3.1: Photograph of the vacuum brazing furnace.

In joining of components, where welding process is not possible, brazing processes are employed. Value added components, high quality RF systems, UHV components of high energy accelerators, carbide tools etc. are produced using different types of brazing methods. Furnace brazing under vacuum atmosphere is the most popular and well accepted method for production of the above mentioned components and systems. For carrying out vacuum brazing successfully it is essential to have a vacuum brazing furnace with latest features of modern vacuum brazing technology.

A vacuum brazing furnace has been developed and installed at Accelerator Components Engineering & Fabrication Division, RRCAT, for carrying out brazing of components of copper, stainless steel and components made of dissimilar metals/materials. The above furnace has been designed to accommodate jobs of 700 mm diameter x 2000 mm long sizes with job weight of 500 kgs up to a maximum temperature of 1250°C at a vacuum of $5x10^{-5}$ Torr. Oil diffusion pumping system with a combination of rotary and mechanical booster pump have been employed for obtaining vacuum. However, this pumping system will be replaced with a dry vacuum pumping system in the near future for