



Infrastructure

I.1 : Computing and information management development at RRCAT

DAE-Grid portal for RRCAT : BARC, RRCAT, IGCAR and VECC are commissioning DAE-Grid to share computing resources. One Linux cluster (Aksha-Itanium) comprising of ten Itanium nodes (20 CPUs) was commissioned at BARC for DAE-Grid. Each DAE unit requires grid-portal to access computing resources available on the grid. Genius based grid-portal on Scientific Linux was commissioned, and DAE-Grid facility was released to computing users in RRCAT.

Users from RRCAT can submit their parallel and sequential applications on DAE-Grid using Intel Fortran and C compilers, gcc, g77 compilers, Intel Math Kernel Library and MPICH.

Parallel software CPMD (Car-Parrinello Molecular Dynamics - Electronic Structure and Molecular Dynamics Program) is ported by Computer Centre, RRCAT on Aksha-Itanium cluster, and the same is available to users of DAE-Grid.

Porting of parallel software: Updated version of parallel software ADF (Amsterdam Density Functional, version 2006.01 - a Fortran program for calculations on atoms and molecules) and parallel software DDSCAT (To calculate scattering and absorption of electromagnetic waves by targets with arbitrary geometries and complex refractive index using discrete dipole approximation) were successfully ported on 32-node Nalanda cluster at RRCAT.

Enhancements to DAE HR-MIS software package - Vivaranika : A new module was added for Extraction, Transformation and Loading cycle of DAE HR-MIS package Vivaranika. This web-based module integrates HR data from various DAE Unit into Vivaranika's central repository. This module ensures that there is consistency among naming conventions, encoding structures, physical attributes, and other data characteristics. The module helps in extracting, aggregating, transforming and validating data to ensure accuracy and consistency. It also provides summarized subset of the HR data specific to a functional area to support view/report and analysis.

PyCORAL software for LHC: Under DAE-CERN collaboration, Computer Centre completed a project to develop python interface to CORAL (Common Object Relational Access Layer) APIs for LHC. PyCORAL is a complete module designed to provide CORAL functionality to python users. It allows LHC users to write programs in python and access relational storage (ORACLE, MySQL) facilities.

PyCoral is an extension module of python, developed using the python C API. It is a python interface to the CORAL package or in other words it provides CORAL equivalent functionalities to python programmers. This module has been released to users in CERN.

Web site for APAC-07: APAC-2007 (Asian Particle Accelerator Conference - 2007) was held from January 29 to February 2, 2007. The website for APAC 2007 was http://apac07.cat.ernet.in (Fig. I.1). It was designed, developed and implemented at RRCAT Computer Center. Apart from keeping general, organaizational information, programme information (Scientific, Oral, Poster session information) and providing online information for participating authors, the website was also used for posting news and important notices for participants. The website has links for pre-publication version of the Conference Proceedings. Scientific Program Management System (SPMS) was used for the first time in APAC series of conferences, for complete program management.

Computer Centre also executed complete JACoW (Joint Accelerator Conference on Web) cycle for publication of proceedings of APAC 07, which included electronic paper submission, on-line editing and preparation of web based proceedings.



Fig.I.1: APAC-2007 web site home page.

Contributed by: A. Rawat (rawat@cat.ernet.in)