reading/writing data is also described. Home made software will be employed to drive the robotic parts.

ABS_56

Data Access and Management using the DMI Filesystem Interface

M. GASTHUBER (DESY)

Several months ago DESY started using a new scheme to access the physics data from UNIX based batch machines using the hierarchical Mass-Storage system called OSM (Open Storage Manager). This system provides a network based, file-oriented put/get repository together with a simple set of user commands for access and management. The applications usually requires random access, where the Mass-Storage system only supports a sequential byte stream. This fact leads to the use of dedicated staging systems. These staging systems seem to be sufficient in the case where enough disk (stage) space is available and/or the staging rate is moderate. To allow a better disk-cache efficiency one need to have extended knowledge about the access statistics which recently is only available through the UNIX filesystem. To incorporate site specific access policies this tight connection to the filesystem is also required. The connection between a migration capable filesystems and the hierarchical Mass-Storage system is the first goal. The second goal is the ability to manage large amount of diskspace, distributed between various machines and building something like a 'data-domain' while still having a high performance distributed data access. The Data Management Interface (DMI) recently becomes available and offers all requested functionalities for efficient filesystem controlling and management. It allows standard, kernel independent filesystem control and IO operations and will be available on various UNIX flavors soon.

This talk will show the design and first practice of such a system using Silicon Graphics DMI implementation and the OSM as the hierarchical Mass-Storage system managing large tape libraries.

ABS_25

Data Access and Data Storage in H1

R. GERHARDS (DESY)
U. Kruener-Marquis (DESY)

The electron proton collider HERA at the DESY laboratory in Hamburg and the H1 experiment are now in successful operation for more then three years. Electrons and protons collide at a bunch crossing rate of 10.41 Mhz, placing demanding requirements on the data acquisition system but also on the data storage and data access.

The H1 experiment is logging data at an average rate of 500 KB/sec which results in a yearly raw data volume of several Terabytes (e.g. 2.5 TB in 1994). The data are reconstructed with a delay of only a few hours, yielding another Terabytes of reconstructed data after physics oriented event classification. Both the data logging and the quasi-online event reconstruction are performed on an multiprocessor SGI Challenge computer which is in particular providing a very powerful I/O performance. An Ampex DST 800 mass storage system with 3 DST 600 recorders has been connected to this Challenge to store both the raw and reconstructed data. This allows much faster and more convenient access to the data at rate of up 10 MB/sec.

Physics analysis is performed on another SGI Challenge computer, equipped with about 500 GB of disk and, since a couple of months, direct access to a StorageTek ACS 4400 silo, using the Open Storage Manager (OSM) software. The disk space is mainly devoted to store the reconstructed data in very compressed format (typically 5 to 10 KB per event). This allows for very efficient and fast physics analysis which needs random access to the data. Monte Carlo data, on the other hand, are kept in the ACS silo and staged to disk on demand.

A detailed report will be given on the experience with this system in a demanding comuting environment at HERA.

B.2 DATA ACCESS SOFTWARE

ABS_101

The RITA network. How the high energy tools can be used in order to transmit clinical hadrontherapic data

S. SQUARCIA (GENOVA)
M. Ferrari, P. Risso (Genova)