



Contribution ID: 300

Type: poster

Optimization of dCache MSS tape efficiency through Virtual Volumes

Monday 3 September 2007 08:00 (20 minutes)

Small files pose performance issues for Mass Storage Systems, particularly those using magnetic tape. The ViVo project reported at CHEP06 solved some of these problems by using Virtual Volumes based on ISO images containing the small files, and only storing and retrieving these images from the MSS. Retrieval was handled using Unix automounters, requiring deployment of ISO servers with a separately managed cache. We report developments which extend the use of ISO-based Virtual Volumes to the dCache storage management system, using Castor1 or ENSTORE as the tape back-end. By using the MSS interface already implemented and documented in dCache, we have been able to catalog files into dCache, pack them into ISO volumes, store the ISO images to tape and then transparently allow retrieval of the individual files by dCache. A simple catalog of files and corresponding ISO images allows us to fetch from tape the precise ISO image containing the requested file when it is requested by the dCache MSS interface. We also have developed a cache read-ahead technique that allows the injection of all files in an ISO image from MSS into dCache, triggered by an original single file request at the user level. This can provide a high tape efficiency if the files in each ISO image have been chosen to have a high probability of being requested within a short period of time. This also allows delegation back to dCache of most of the ISO-related (or Virtual Volume related) cache management, simplifying implementation and maintenance.

Primary author: Prof. DELFINO REZNICEK, Manuel (Port d'Informació Científica (PIC))

Co-authors: Mr ALVAREZ, Daniel (Universitat Autònoma de Barcelona); Ms ACCIÓN, Esther (Port d'Informació Científica (PIC)); Prof. SENAR, Miquel-Angel (Universitat Autònoma de Barcelona)

Presenter: Prof. DELFINO REZNICEK, Manuel (Port d'Informació Científica (PIC))

Session Classification: Poster 1

Track Classification: Computer facilities, production grids and networking