Contribution ID: **476** Type: **oral presentation**

CHOS, a method for concurrently supporting multiple operating system

Monday 27 September 2004 15:40 (20 minutes)

Supporting multiple large collaborations on shared compute farms has typically resulted in divergent requirements from the users on the configuration of these farms. As the frameworks used by these collaborations are adapted to use Grids, this issue will likely have a significant impact on the effectiveness of Grids.
To address these issues, a method was developed at Lawrence Berkeley National Lab and is being used in production on the PDSF cluster. This method, termed CHOS, uses a combination of a Linux kernel module, the change root system call, and several utilities to provide access to multiple Linux distributions and versions concurrently on a single system. This method will be presented, along with an explanation on how it is integrated into the login process, grid services, and batch scheduler systems. We will also describe how a distribution is installed and configured to run in this environment and explore some common problems that arise. Finally, we will relate our experience in deploying this framework on a production cluster used by several high energy and nuclear physics collaborations.

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Session Classification: Computer Fabrics

Track Classification: Track 6 - Computer Fabrics