

Virtualisation and its application on the Grid

Abstract:

Distributed computing often suffers from bringing together application developers and resource providers to ensure that applications work well on the resources provided.

Inserting a layer of abstraction between resources and applications provides new possibilities for the development and acceptance of Grid technologies. Such a layer of abstraction is maybe provided by existing virtualisation environments.

This paper describes the virtualisation environment Xen, developed at the University of Cambridge, UK, and its performance and fields of application with particular emphasis on the LHC Computing Grid (LCG). This infrastructure is used by the High Energy Physics experiments at the Large Hadron Collider LHC in Geneva, Switzerland.

In the current implementation of the LCG software, several grid services require a dedicated operating system and should be installed on different machines for stability reasons.

Virtualisation of these services on one high-capacity machine eases maintenance of the system and reduces the hardware overhead for smaller clusters and training environments.

This concept is realised at an institute cluster at the University of Karlsruhe and has also been used for training environments implemented for a Grid computing school.

The latter will be presented in a live demonstration.

In addition, the concept of virtualisation circumvents dependencies on certain applications on specific Linux flavours required by different grid user groups.

Short Abstract:

Distributed computing often suffers from bringing together application developers and resource providers to ensure that applications work well on the resources provided.

Inserting a layer of abstraction between resources and applications provides new possibilities for the development and acceptance of Grid technologies.

This abstraction is provided by virtualisation environments like XEN, which is described with fields of application in grids.