

Building and Promoting a Linux-based Operating System to Support Virtual Organizations for Next Generation Grids.

NEC Linux R&D Group of NEC Deutschland GmbH



XtreemOS: A New GRID OS based on Linux

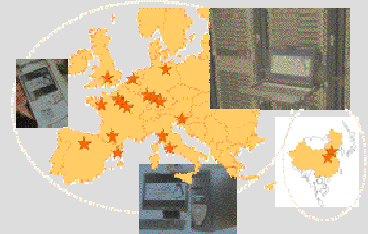
The emergence of Grids enables the sharing of a wide range of resources to solve large-scale computational and data intensive problems in science, engineering and commerce. While much has been done to build Grid middleware on top of existing operating systems, little has been done to extend the underlying operating systems to enable and facilitate Grid computing, for example by embedding important functionalities directly into the operating system kernel.

The first public release of XtreemOS will be available in June 2008, while demo prototypes of individual components are already available.



Main Objective

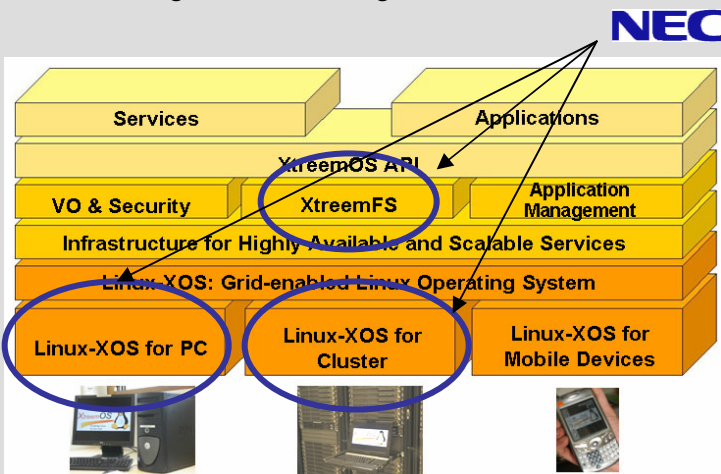
Installed on each participating machine (personal computer, cluster of workstations, mobile devices), the XtreemOS system will provide for the Grid what a traditional Operating System offers for a single computer: abstraction from the hardware and secure resource sharing between different users. It will thus considerably ease the work of users belonging to virtual organizations giving them the illusion of using a traditional computer, and releasing them from dealing with the complex resource management issues of a typical Grid environment.



Implementation: Contributions from NEC

NEC working areas cover the support for virtual organizations, Cluster Resource Management and Grid Data Management.

- Building scalable Single System Image mechanisms based on Kerrighed
- Grid Filesystem XtreemFS
- Virtual organizations: Resource enforcement and isolation
- Checkpoint / Restart / Migration for Linux
- Kernel Integration and Porting



Project Time Line



- Phase 1 Capture of requirements from user cases
Specification of XtreemOS
Preliminary experiments with LinuxSSI
- Phase 2 Design & implementation of XtreemOS basic version
- Phase 3 Integration of all XtreemOS components
Public release of first XtreemOS prototype (by May 2008)

