



Grid Middleware & Testbed for the K*Grid

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MoreDream Overview

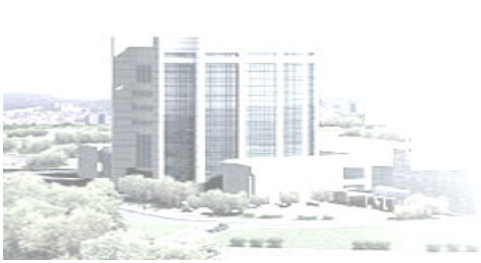
- Our main goal
 - is to develop a grid middleware which makes possible to organize a grid environment easily on demand
- Our research issues
 - Resource management: *GRASP*
 - Grid information: *GAIS*
 - Grid-enabled MPICH: *MPICH-GX*
- Our middleware implementation
 - conforms to OGSI specification



GRASP Overview

- Grid Resource Allocation Services Package (GRASP)
 - A package of Grid services which are related to resource allocation process in Grid
 - A tool for users to submit jobs easily to Grid environment
- Main Features
 - Resource brokering
 - Co-allocation (cross-site MPI-based job execution)
 - Fault tolerant job execution system
 - OGSi-compliant (based on OGSi implementation of GT3)
 - Collective and resource layer services





GAIS Overview

- Grid Advanced Information System (GAIS)
 - Package of Grid services which are related to provide mechanisms for discovery and monitoring, and hence for planning and adapting application behavior
 - Indexes Service Data carrying state information from multiple grid service instances
 - Manages the lifecycle of VO
- Main features
 - Universal VO management
 - Categorization of Grid Services
 - Classification of Service Data
 - Rich information provider



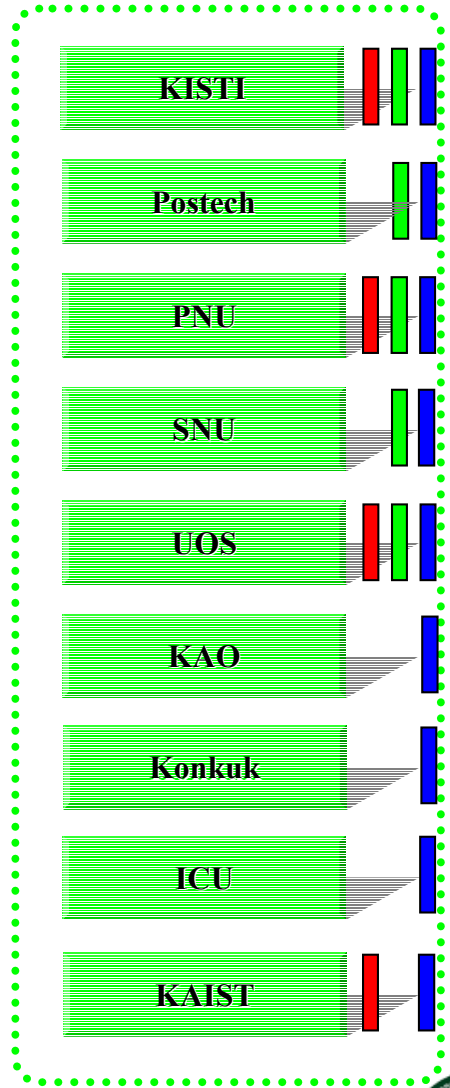
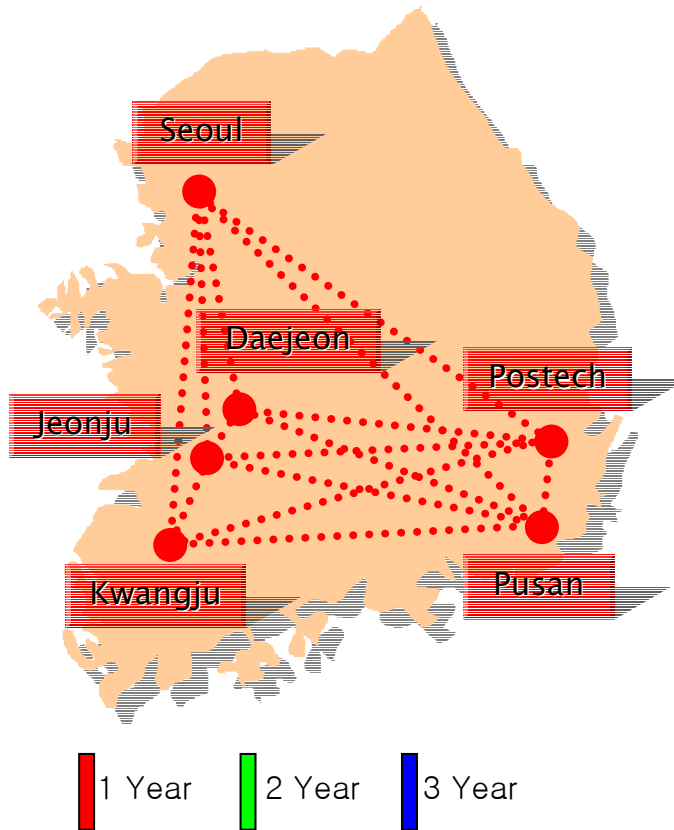
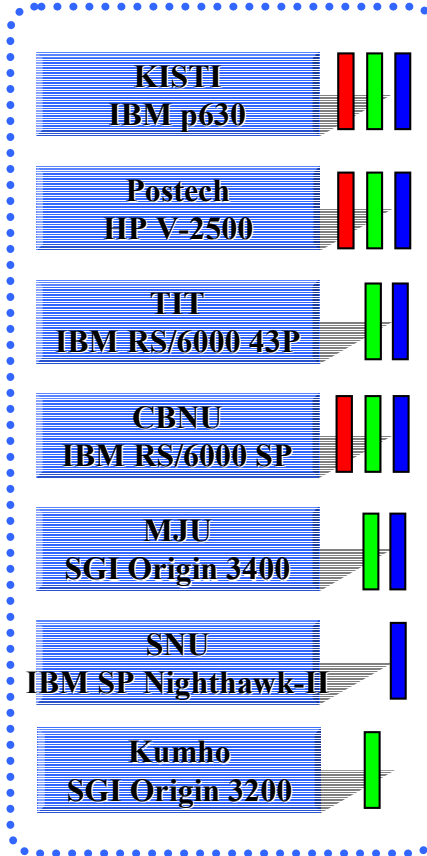


MPICH-GX Overview

- MPICH-GX
 - Enable a MPI Job to Execute through Grid Middleware such as Globus Toolkit 3 by File based initialization
 - MPICH-GF
 - Fault tolerant MPICH by Checkpoint mechanism
 - Integration with GRASP
 - MPICH-GP
 - MPI Job Support in Private IP Environment
 - MPICH-GS
 - Security MPI messaging based on PKI



K*Grid Testbed



Commercial SMP
Linux cluster

1 Year 2 Year 3 Year



Status of K*Grid Testbed

- Consists of 13 resource providers
 - 7 Supercomputers + 9 High performance clusters
- Includes heterogeneous computing architectures
 - Linux, AIX, HP-UX, IRIX
- Installs Globus Toolkit v2.4 and other S/Ws
- Supports application scientists to adapt the Grid environment
- Provides production CA service based on APGrid PMA (Policy Management Authority)
- Collaborates other international Grid communities
 - PRAGMA, iHPC, GridLab, iVDGL and TeraGrid





Other Research Issues

- Development of Grid Accounting System
 - Prof. Seong Jong Chung (Chonbuk National Univ.)
- Research on Grid Task Scheduling Methods
 - Prof. Sunggu Lee (Pohang Univ. of Science and Technology)
- Development of Grid based Fault-tolerant System
 - Prof. Heon Y. Yeom (Seoul National Univ.)
- Development of Network-based Heterogeneous Storage Data Management System for Computing Grid Environment
 - Prof. Jaechun No (Sejong Univ.)
- Other Network Related Research Projects





Thank You