The Grid Middleware for Your Business

N*Grid M/W 3.0

@GridWorld2006 Japan
Content

1. COMPANY INTRODUCTION
2. N*Grid M/W 3.0
### 1.1 Company Overview

<table>
<thead>
<tr>
<th>Item</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company</td>
<td>National Grid, Inc.</td>
</tr>
<tr>
<td>Registry No.</td>
<td>049-21-0955511</td>
</tr>
<tr>
<td>CEO</td>
<td>Kihwan Kim</td>
</tr>
<tr>
<td>Employee</td>
<td>15 (R&amp;D 8)</td>
</tr>
<tr>
<td>Business</td>
<td>N*Grid Middleware licensing</td>
</tr>
<tr>
<td></td>
<td>Grid Computing Power Service</td>
</tr>
<tr>
<td></td>
<td>Grid Computing Consulting</td>
</tr>
<tr>
<td>Address</td>
<td>3F, Chungnok Bldg., 721-29, Yeoksamdong, Kangnamgu, Seoul, Korea(135-920)</td>
</tr>
<tr>
<td>Established</td>
<td>13, May, 2003</td>
</tr>
<tr>
<td>Etc.</td>
<td>New Technology company (Certificated by Ministry of Finance and Economy)</td>
</tr>
<tr>
<td></td>
<td>Venture Certification (Certificated by Small and Medium Business Administration)</td>
</tr>
<tr>
<td></td>
<td>New Excellent Product (Certificated by Ministry of Commerce, Ind. &amp; Energy)</td>
</tr>
<tr>
<td></td>
<td>Grid R&amp;D center (Certificated by Ministry of Science)</td>
</tr>
</tbody>
</table>
Grid computing enables the virtualization of distributed computing and data resources such as processing, network bandwidth and storage capacity to create a single system image, granting users and applications seamless access to vast IT capabilities.
## 1.3 Why Grid Computing

| Efficiency | Utilizing existing super computer, cluster, and/or server pool, it runs various services on a non-restricted number of computers in a network. Partial HW or NW failure does not affect the entire system, and thus does not affect on job execution. |
| Scalability | IT budget gets limited even in various computing environments caused by company expansion, M&A, and cooperation between companies. The grid environment is the ultimate solution for the ever changing business environment: it offers platform independency, ease of system expansion, and shared computing resources over multi applications. |
| Dynamic | Many application vendors are shifting to fit dynamic computing environment in order to fulfill the customer needs and job requests. As data gets more massive and algorithms get more complicated, computer jobs demand more power which means money and cost to the customer. |
The “Pay per CPU” grid-based licensing business for enterprise such as finance, education, government, distribution, manufacturing, IT, and R&D sectors.

- Good morning shinhan securities
- KMA (Korea Meteorological Administration)
- Kyobo book store
- Macrozen DNA analysis
“Pay per S/W” : Grid-enabled S/W with Market Leading ISV

Enterprise S/W
- Finance : Risk Management, Stock Price Forecast
- Manufacture: CAD/CAE, EDA, Simulation
- Visual: 3D Animation, Rendering, Transcoding
- IT : Network Computing, Solution, Search

Government S/W
- Finance : Risk & Asset management
- Defense : Design, Simulation, Analysis, Observation
- Environment : Meteorological Forecast

R&D S/W
- Analysis, Simulation : Earth & Biological Sciences
- A New Drug Development
- Education : Cooperation, Analysis, Research, Compute

N*Grid Inside S/W

Enterprise
Government/ Public Institution
Research Facilities
In a computing farm built on grids, customers use computing power, application, and business process as much as they want and whenever they need.

The service platform provides the easy-to-use interface, and the system guarantees full utilization of computing resources for a given job.
Content

1. COMPANY INTRODUCTION

2. N*Grid M/W 3.0
2.1 \text{n*Grid M/W Features and Advantages}

\text{n*Grid M/W 3.0 is the grid middleware which recognizes computing resources through the network and makes them available for massive computing operations.}

**Features**

- System Management
- Resource Management
- Application Management
- Security
- Job Management
- Data Management

**Advantages**

- Designed and developed by grid experts of National Grid Inc.
- Platform Independency
- Plug-in type application installation
- Automated job re-direction when HW or NW failure occurs
- Easy integration with various applications
- WSRF supported
2.2 System Requirement

- **Broker**: the Grid Server that manages resources and jobs
- **Worker**: the job node that executes jobs and returns the results

**OS supported**
- Linux kernel 2.6 +
- Solaris 9 +
- Others
2.3 System Architecture: Service Layer

- **User Layer**
  - End User
  - Web browser
  - Manager console

- **N*Grid Broker Layer**
  - Broker App.

- **N*Grid Worker Layer**
  - Node (Worker)
2.3 System Architecture: Broker and Worker Layer
2.4 N^Grid M/W 3.0 Feature: Resource Management

Each and every computing resource is effectively managed and ready to be fully utilized when required.

- Group management of computing resources
- Applications share a system
- System built NOT based on peak-time capacity
- Easy grouping and regrouping of resources
- Auto allocation of non-defined resource group
2.4 N*Grid M/W 3.0 Feature: Application Management

Centralized application management for N*Grid M/W and its applied programs

- Unified application management
- SW distribution, installation, and execution
- Automated SW update
2.4 N*Grid M/W 3.0 Feature : Job Management

Monitoring and managing job status including jobs on hold, on processing, or finished

- Targeting best computing resources available
- Matching jobs with best resources to run on
- Job priority change and redirection
- Auto job redirection when system fails

Matching resources and jobs for the best

Work Load

N*Grid Broker

Re-direction

Task 1  Task 2  Task 3  Task 4  Task 5  Task 6

JOB

System Failure

Restart
Unified system management is available with all information of local and remote resources delivered from Worker to Broker.

- Monitoring current system usage
- Blocking particular resources
- Error recovery
  1) Alarms to an admin
  2) Auto recovery
  3) High availability
- Collected information delivered to Broker.
2.4 N*Grid M/W 3.0 Feature: Security

Data security to prevent non-authorized personnel from getting access

- Data encryption
- User and system authentication
  1. AES, Blowfish, DESede, or DES
  2. Administrator or user authentication
  3. Authentication between Broker and Worker
Thank You

Tel: 822- 508- 3447
Fax: 822- 508- 3647

e-mail: ngrid@ngrid.co.kr
Homepage: www.ngrid.co.kr