Agenda

- Orchestration and virtualization of compute resources for agile IT
  - The real GRID Computing
  - IT Challenge
  - Data-center pain points
  - Requirements and benefits of an infrastructure platform
  - Introducing Platform EGO
  - Benefits

- Q & A
The Real GRID Computing

- Grid is key IT infrastructure technology to implement IT agility, On Demand computing, Utility computing, Service Oriented Infrastructure (SOI)
- Grid is about delivering IT resources to applications where and when needed based on business priorities
- Grid is complementary to other infrastructure technologies such as server virtualization and IT provisioning.
  - Virtualization happens at many levels, such as server, storage, and data center.
  - Grid technology helps virtualize distributed data center resources – it creates one virtual server to be shared out of many servers and other resources.
IT Challenge

Unpredictable infinite demand

Finite compute resources e.g. CPUs, Memory, & Software Licenses

Enterprise Applications

Result: under-provisioning or over-provisioning
Datacenter Business Pain Points

Common in the Data Center / Enterprise IT environment:

- Poor resource utilization - average 15% in the data center
- Inability to meet application SLAs
- Excess power consumption and heat or lack of real estate for additional hardware
- Time consuming and error prone manual management and co-ordination of resources, applications, and management utilities
- Unpredictable hardware failures resulting in lost work and revenue loss
Need for An Infrastructure Platform That…

- Forms a virtual, shared pool of resources supporting all applications
- Is application aware
  - Understands all classes of applications and the demand they generate
  - Manages to SLA’s
- Is infrastructure aware
  - Understands all classes of resources, physical and virtual
    - Heterogeneous network, storage, server, OS (and VM) resources
- Orchestrates
  - Manages allocation of workload onto resources
  - Manages allocation of resources to workload
- Employs policy-driven resource allocation and sharing
Requirements for Infrastructure Platform …

1. **Open interface & architecture** to on-board any application type

2. **Virtualizes resources & services** across a scaled out environment

3. **Orchestrates resources** to meet workload demands base on business-driven policies

4. **Scales as business needs grows**

5. **Secure**
1. **Scalability**

2. **Enhanced Robustness:** Reduces/eliminates the downtime to scheduler end-users while resources are being added or removed.

3. **Enhanced Reliability:** Monitor all scheduler daemons and other critical processes that the cluster needs i.e. license servers, and automatically restart them if they fail.

4. **Single reporting framework and Centralized Management & Administration framework** across various application heads residing on top of the Resource Broker
Platform’s Approach: Variable Resources for Variable Demand

Decouple the applications from resources

IT
Email

Marketing
Web Hosting

Sales
CRM

Finance
ERP

Marketing
ETL

Microsoft® Windows

Linux

IBM® AIX

Sun® Solaris™

Linux

Create a shared resource pool

The Result is IT Agility
Result: Model architecture that enables Enterprise Grid
Introducing Platform EGO

The only infrastructure platform that delivers a shared virtualized pool of IT resources to meet the demand of multiple application types based on business policies.

Enabling IT to allocate resources and accelerate application performance at the speed of business demand.
### Platform EGO - Key Features & Benefits

<table>
<thead>
<tr>
<th>Features</th>
<th>Benefits</th>
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<tbody>
<tr>
<td>Resource and Service Virtualization</td>
<td>Improved manageability and accessibility</td>
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<tr>
<td>Dynamic, Policy-Driven Resource Orchestration</td>
<td>Meet business SLAs &amp; increase resource utilization through ownership, borrow/lend sharing business policies</td>
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<td>Centralized Management Console</td>
<td>Improved operational and administration efficiency</td>
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<td>Failover Capability</td>
<td>Increased availability, reliability, fault tolerance of application services</td>
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<td>Scalable, Production-Proven, Extensible Architecture</td>
<td>Support business growth with mitigated risk</td>
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<tr>
<td>Software Development Kit</td>
<td>Enable on-boarding of any application type</td>
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<tr>
<td>Open, Standards-based Security Framework</td>
<td>Modular security model supports use of industry standard security architectures</td>
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Platform EGO in 3rd Party Schedulers Environments

EGO enables a multi-vendor strategy that enables co-existence (not replacement/fork-lift upgrades) of existing technologies.

Benefits:
- Increased resource utilization
- Removal of bottlenecks
- Prevent or delay need for additional hardware acquisition
- Allows customer to maintain a multi-vendor strategy
- Better manageability of and visibility into application resources
- Increase overall reliability of your applications
Enterprise-wide IT Infrastructure

Application Servers / J2EE Platforms
- Web Logic, WebSphere, Jboss

Business Applications
- SAP, SAS
- CRM, BI vendors

Message Oriented Middleware (MOM)
- Tibco, Tuxedo, IBM MQSeries

EGO GRID enables any application type

Provisioning
- Sun N1, Opsware, Altiris, Bladelogic, Veritas OpForce

Database
- Sybase, MySQL, SQL Server, Oracle

Infrastructure Services
- FTP, mail, web servers

System Management Tools
- CA Unicenter, HP

EGO enables you to expand your opportunities beyond Platform Computing solutions

Technical Computing Tools
- Cluster management: Rocks, Scali
- FlexIm Servers
- Data – DICE project

Financial Services
- Gemstone, Gigaspace, Tangosol, GGY
Summary: Enabling the Enterprise-wide Resource Utilization

- Constantly evolving IT environments has resulted in cluster or grid silos, each with its dedicated machines.
- Result; some cluster underutilized while others missing their SLAs
- Platform EGO offers an infrastructure platform which enables software applications to run and co-exist in a distributed heterogeneous environment.

- EGO can integrate IT resource silos together to create a shared enterprise-wide IT infrastructure.
- EGO enables extendable service management framework and can offer infrastructure as a service coinciding with SOI that orchestrates and virtualizes IT resources resulting in improved application efficiency.
Service Oriented Infrastructure (SOI) is virtual on-demand infrastructure that facilitates real-time lending and borrowing of compute resources and software licenses.

This resource virtualization requires a new software licensing mechanism that is cognizant of business efficiencies resulting from growing and shrinking of resources necessitated by SOI.

SOI built on EGO enables efficient hardware and software resources through better SLA achievement, lower TCO and higher resource utilization - resulting in IT agility and improved productivity.
Thank You
Q. What resources are available for my application based on current usage?
A. Resources available (Host1, Host2, etc) for Consumer

Q. Submit Allocation Request?
A. Allocate Hosts to Consumer

Q. Run my Services on EGO
A. Start Up required Application infrastructure (Activities and Services)