HP and the Grid

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Purpose

Provide an overview of what HP is doing in Grid Computing and why

Agenda

Why Grids
HP Grid Strategy
Current Grid Products/Services
Research Directions
HP and the Grid

HP envisioned the concept of Grid in the late ’80s when Joel Birnbaum advocated the notion of “utility computing”

- Concept has gone through various iterations:
  
  * Pervasive, utility, and planetary scale computing

- Underlying concept has remained unchanged:
  
  * To harness computing power in a distributed fashion

Most importantly,

“*It (Infrastructure) always has to be always on, always available, always reliable, always secure...*”

(Carly Fiorina, Comdex Keynote, Nov 15, 1999)
HP Grid Strategy

• Contribute to open standards
• Ensure HP platforms are grid-enabled
• Provide consulting services for grids
• Pursue advanced development and research

HP products that will play important roles in implementing grids:
• HP Utility Data Center (UDC) for automated provisioning of resources
• HP OpenView for Web Services management
“The HP Stack”

HP’s value add is in providing the UDC, management and security, and consulting services to enhance and build upon industry standards.

- Management and Security
  - Applications
  - Web Services
  - Globus/OGSA
  - Grid-Enabled Resources and Resource Utilities (UDC)

- HP Consulting Services
Utility Computing through UDC

- UDC allows virtualization of all resources – storage, servers, and other compute elements
- UDC allows these resources to be dynamically allocated to any application via a GUI drag and drop interface today
  - The goal is to make this dynamic allocation fully programmable
- UDC enables simultaneous management of multiple hosted grid environments

- How does UDC make this possible?
  - Via Virtual LAN (VLAN) controlled by HP Utility Controller software and
  - Storage area networks (SANs)
Why UDC?

UDC enhances Globus/OGSA by providing management of resources.

without UDC:
- If no, request denied
- If yes, resources granted

with UDC:
- If no, ask UDC
  - UDC will configure the resources to match the request
- If yes, resources granted
Utility Data Center and the Grid: Example

UDC in San Francisco

- SAP
  - 20 servers
- HR
  - 8 servers
- Free Pool
  - 50 servers

External Grid
- UC Berkeley CITRIS
- 10 servers

Corporate Grid
- Globus, J2EE
- 50 servers

UDC in London

- HR
  - 10 servers
- Web Retail
  - 10 servers
- Free Pool
  - 80 servers
HP and Grid Standards

• Vendor neutral standards are key to wide adoption of grid technology

• We also encourage reuse of related standards
  
  Web Services standards; DMTF CIM; …

• Platinum Sponsor of the Global Grid Forum

• Support for Globus Toolkit
  
  The de-facto standard
HP and Globus

• HP engineers qualified the Globus Toolkit 2.2 and provided patches to ensure portability on HP computer systems
  
  For latest updates visit www.hp.com/products/Globus

• HP’s Intra-Grid is based on Globus
• HP provides customized installation and support services for Globus
• HP is committed to supporting evolution of new versions
Ensuring that HP Systems are Grid-Enabled

- Support Globus
- Alliances with Platform Computing and Avaki
- Intra-Grid within hp firewall
- Advanced Development Center for Grid Computing
- Collaborations with customers and research institutions
hp Intra-Grid

- Within the corporate firewall
- Connects high-performance computing sites
  - Annecy, France; Galway, Ireland; Marlboro, MA; Manalapan, NJ; Nashua, NH; Tokyo, Japan;
- Software:
  - Globus Toolkit 2.2, Cactus, Platform and Avaki products
- Cooperating with EC-C funded GridLab project
  - Using GridLab infrastructure and applications, including iPAQ
- Issues and learnings:
  - Logistics of Certificate Authority
  - Production applications: politics and trust issues
  - Need to interoperate with partners outside firewall
on the road to planetary computing

value

virtual data center

programmable data center

computing utility or GRID

gird-enabled systems

UDC

clusters

Tru64, HP-UX, Linux

Open VMS clusters, TruCluster, MC ServiceGuard

shared, traded resources

today
Requests

Please let us know about your priorities, requirements, and experiences as providers and users of Grid technologies

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