Grids in the Enterprise

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July 2003

Agenda

- Grid computing today
- Scientific/Technical grids vs commercial grids
- Server consolidation and grids
- Commercial grids
- Grid-enabled applications
- Summary

Grid Computing Today

- Grid computing today is almost totally focused on the scientific and technical areas because of the research started there by several folks here today
- Significant compute resources are required to find solutions to HPC problems --- grid a natural

Scientific/Technical vs Commercial

- Scientific/technical community --- use grids to provide the compute resources to solve compute- and data-intensive problems
- Commercial community --- use grids to provide the compute resources to solve compute- and data-intensive problems and want to use grids to run some transaction-oriented workloads

Server Consolidation and Grids

- Enterprises are using server consolidation (moving many small servers to one or more larger, more powerful servers) as a means to reduce TCO
- Means moving workloads to Linux on mainframes, Linux on blade servers, etc., using new hardware and new operating system in many cases
- About 1 of 4 servers in an enterprise is being used to run production workloads

Server Consolidation and Grids (Con't)

- Are enterprises talking about grids nearly as much as server consolidation to reduce TCO?
- Grid computing is an ideal way to consolidate hardware and eliminate underutilized computers, replacing them with pools of compute resources
- In a focus group for IBM, about 40% of the companies (commercial customers) involved had reasonable knowledge of grid concepts
- Is that a big enough percentage? Should it be much higher? It would be for consolidation!

Server Consolidation and Grids (Con't)

- Today, the perception, not an entirely correct one, is that grids are used to solve compute- and data-intensive problems (HPC stuff)
- Some commercial enterprises are beginning to think about grids to reduce TCO for normal production, mission-critical workloads, but most commercial enterprises are still focusing on grid for solving compute- and data-intensive problems
- Are there problems with using grids to run production workloads?

Commercial Grids

- What does commercial mean?
- Has to do with business, not scientific and technical
- Commercial grids --- means using grids to build better products, provide better service for customers, etc.
- Commercial grids --- means using grid technology to create a business advantage

Commercial Grids (Con't)

- Many companies are using grid technology as an instance of HPC in commercial environment, such as research/development in a pharmaceutical company to accelerate the drug discovery process, financial services companies are other examples
- DataSynapse has several "commercial" clients using its GridServer product, but today most are using it to solve compute- and data-intensive problems

Commercial Grids (Con't)

- Commercial grids must be able to run transaction workloads
- Can transactions of short duration be run on a grid?
- Can interactive transactions such as those at bhphotovideo.com that involve ordering camera equipment on line be run on a grid?

Commercial Grids (Con't)

- There are examples where transactions are part of grid computing
- Financial --- combination of computing and transaction processing
- Life sciences and oil/gas exploration have mixed computing and transaction scenarios

Commercial Grids (Con't)

- Ford motor company has engineers sitting in front of dual processor workstations doing interactive tasks during design phase; the second CPUs (act as a grid during the day) on these machines integrating design info using sophisticated algorithms

Grid-enabled Applications

- What does grid-enabled mean?
- Placing applications in GridServer environment
- Using the Globus Resource Allocation Manager (GRAM) to map resource requests into commands understood by various schedulers and computers
- Hiding the heterogeneity and complexity of grid environments

Grid-enabled (continued)

- Application needs a service it gets it on the grid somewhere
- Application, such as Oracle 9i, generates database tasks, these tasks are fed off to grid resource allocation middleware, executed on the grid, and results returned

Q&A

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