LY PRODUCTIVE HIGH PERFORMANCE COMPUTING

SAS® COMPUTING GRIDS RUNNING ON WINDOWS HPC SERVER 2008 PLATFORM

JOB SCHEDULING. WORKLOAD BALANCING. PARALLELIZED WORKLOADS. WINDOWS HPC SERVER 2008 AND SAS® GRID-ENABLED APPLICATIONS COMBINED IN ONE SOLUTION FOR HPC CLUSTERS

PARTNER PROFILE

SAS is a leader in business analytics software and services, and the largest independent vendor in the business intelligence market. With innovative business applications supported by an enterprise intelligence platform, SAS helps customers at 45,000 sites improve performance and deliver value by making better decisions faster.

OVERVIEW

Meeting the computing demands of today's business environment with fixed and limited IT budgets is a challenge for every enterprise. Globalization, increasing competition, and new technologies are increasing the need to process more data in less time than before. Buying the latest and greatest servers to meet peak-demand computing loads is one way to meet those needs, but it can also be costly and inefficient.

SITUATION

High-performance computing (HPC), or grid computing, is another approach to coping with peak-demand computing loads. With HPC as an automatic capability, it is easier and more cost-effective to allocate compute-intensive applications appropriately across computing systems working in parallel.

Historically, grid computing has been Linux-based with a reputation for being costly, complex, and challenging to deploy and manage. These barriers prevented smaller organizations with smaller IT budgets, and fewer IT resources. from realizing the benefits of HPC. SAS wants to help their customers improve their performance by providing an SAS grid computing solution based on the Windows Server® platform.

SOLUTION

Windows® HPC Server 2008 platform combines the power of a 64-bit Windows Server platform with rich, out-of-the-box functionality to help improve the productivity, and reduce the complexity, of an HPC environment.

SAS Grid Computing delivers enterprise-class capabilities that enable SAS applications to automatically leverage grid computing, run faster, and takes optimal advantage of computing resources.

SAS Grid Manager helps automate the management of SAS computing grids with dynamic load balancing, resource assignment and monitoring, and job priority and termination management.

SAS Grid Computing runs on Windows Server 2008 HPC Edition and offers customers affordable HPC that works seamlessly with leading HPC technologies.

SAS GRID MANAGER

The key capabilities offered by SAS Grid Manager include enterprise job scheduling, workload balancing, and the ability to parallelize workloads to a virtual pool of resources in a distributed environment.

- Distributed enterprise scheduling is all about creating and scheduling workflows over multiple distributed machines. SAS Grid Manager will automatically find and select the best available resource to execute each job within that flow.
- Workload balancing becomes a requirement when multiple users are running and submitting SAS jobs to a large server or couple of servers but there is no management of that environment, no queuing of jobs, no prioritization of jobs, and no policy enforcement. SAS Grid Manager offers all of these capabilities for running SAS programs or SAS solutions for multiple users in a more managed, secured and balanced manner. Centralized policies can be put in place to allow administrators to determine and enforce policies to deliver the service levels and prioritization to meet the needs of different business units and the entire organization.
- Parallelized workload balancing is about breaking up a large SAS application or program into smaller tasks that can then run in parallel in a distributed environment.

SAS Grid Manager in combination with different SAS products and solutions, and Windows HPC Server 2008 platform, can take advantage of these capabilities across a virtualized pool of resources in a distributed environment.

Microsoft

Windows HPC Server 2008

WINDOWS HPC SERVER 2008

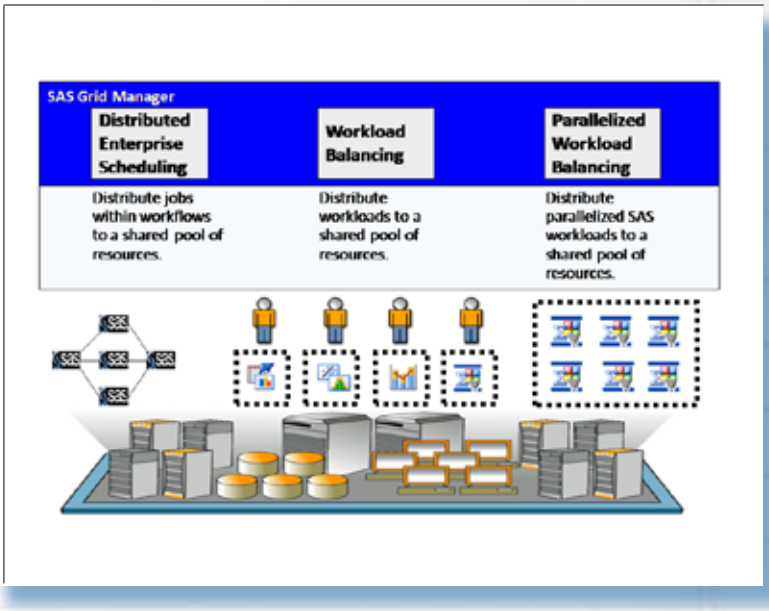
Windows HPC Server 2008 enables broader adoption of HPC and helps increase productivity by providing numerous end-user, administrator, developer features, and tools including:

- A rich and integrated end-user experience scaling from the desktop application to the clusters.
- Microsoft management tools that you can utilize to centrally manage the Windows Server infrastructure, including a to-do list, job scheduler, guided cluster deployment, and cluster health monitoring.
- Support for familiar development tools, such as the native parallel debugger in Microsoft Visual Studio® which is used to develop and troubleshoot parallel programs. This includes support for standard interfaces such as OpenMPI, Message Passing Interface (MPI), and Web Services.
- Windows Server 2008 Enterprise includes Failover Services. The combination of Windows Failover Services and Microsoft® SQL Server® database clustering provide head node redundancy in the event of a hardware failure.
- Windows HPC Server 2008 is comprised of two components. Both components can be licensed separately or combined as Windows HPC Server 2008.

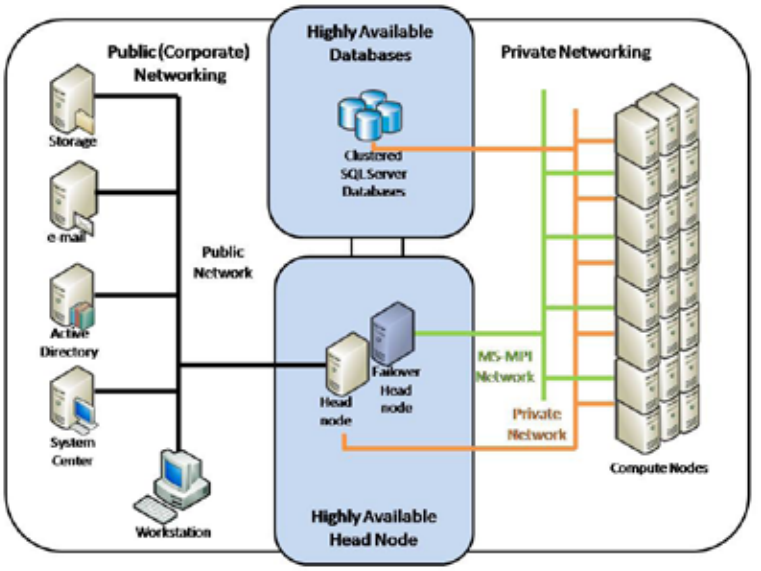
  — Windows Server 2008 HPC Edition is a 64-bit Windows Server operating system provided for the purpose of running clustered HPC applications.

  — Microsoft HPC Pack 2008 is the software for job scheduling, management, and high-speed networking.

SAS Grid Computing runs on Windows Server 2008 HPC Edition component of Windows HPC Server 2008.



SAS Grid Manager key capabilities.



A typical Windows HPC Server 2008 architecture.

BENEFITS

Enhanced performance.

Grid-enabled SAS applications running on Windows Server 2008 HPC Edition clusters can improve performance for all users since they can typically process more data or complex analysis in less time than before.

Utilize existing Windows expertise and IT investments.

A Windows-based HPC platform that is cost-effective, easy to deploy and maintain, allows companies to utilize their existing Windows-based infrastructure and expertise.

Centralized management and reduced complexity.

SAS Grid Manager provides a central point for administering policies and prioritization to achieve business goals across multiple users and multiple research groups. It also reduces complexity by de-coupling the infrastructure from the SAS application allowing you to focus on your business processes and not the infrastructure needed to run them.

Increased Flexibility.

Using grid technology, you can run multiple applications simultaneously, on different architectures and operating systems, giving central IT huge flexibility in allocating computing resources to their demanding users or new business units.

Reliable HPC hardware, software, and service.

An HPC cluster based on Windows HPC Server 2008 Edition running grid-enabled SAS applications delivers the reliability and end-to-end HPC service that customers expect from Windows and SAS.

FURTHER INFORMATION

For more information about Windows HPC Server 2008 and HPC, please visit http://www.microsoft.com/hpc

For more information about SAS grid-enabled applications, please visit http://www.sas.com/grid