

Sun and Univa

Optimizing high-performance computing with Sun™ Grid Engine and UniCluster software

Today, organizations in many industries are running increasingly complex, compute-intensive applications to better inform critical business decisions in a more timely fashion. While users are turning to high-performance computing (HPC) to solve business problems faster, HPC models can add complexity and contribute hefty expenses to already large budgets for compute resources.

In HPC environments, software and devices must be configured to interoperate with other components. Different applications layered over the operating system can require one or more supporting programs or libraries to

UniCluster simplifies complex distributed computing environments

Setting a new standard for infrastructure management, UniCluster software integrates best-of-breed open-source solutions to provide a complete cluster software stack. This groundbreaking software simplifies the deployment and management of clusters from installation and configuration to job scheduling, monitoring, and remote access. The software even incorporates a Cluster Installer component to manage operating system installations.

Sun™ Grid Engine and UniCluster software work together to provide a robust management infrastructure that delivers groundbreaking high-performance computing.

Highlights

- Deploy a solution that integrates best-of-breed open-source software in a complete cluster software stack
- Simplify cluster operations from installation and configuration to job scheduling, monitoring, and remote access
- Provision new cluster nodes automatically
- Make better use of resources with the workload management features of Sun™ Grid Engine and UniCluster software

be installed, possibly across multiple nodes. These configuration tasks, along with ongoing maintenance and software updates, can be extremely labor-intensive and require skilled administrators.

In addition, homegrown HPC systems can result in lost computer cycles due to poor load balancing, system overhead associated with process-to-process functions, poorly-tuned systems, and more. These factors can prevent HPC environments from delivering expected performance and value.

The UniCluster software also includes template-based node configuration and management features that make it easy to provision new cluster nodes automatically. Key applications and tools are packaged as kits so that administrators can automatically install and configure software for the entire cluster, not just individual nodes. Univa supports all components of the UniCluster software, so organizations can rely on full commercial-grade support for every product feature.

Built on Sun Grid Engine software

Ongoing HPC infrastructure management tasks require resource management tools. The Sun™ Grid Engine software at the heart of the UniCluster architecture provides distributed resource management and job scheduling. Automatically installed and configured during a UniCluster installation, Sun Grid Engine software handles policy-based workload management and dynamic provisioning of application workloads. Its distributed resource management features aggregate compute resources for more flexible and efficient use, making it possible for UniCluster users to treat distributed systems as a single powerful computational resource.

Coordinate resources, accelerate processing

Efficient processing requires even distribution of jobs across the cluster to similar types of processors and interconnects, and to machines with sufficient capacity to get the task done. Parallelizing jobs allows users to handle massive processing tasks by running pieces of jobs on different systems simultaneously. Integrating Sun Grid Engine and UniCluster software makes it possible to divide large jobs into smaller pieces and easily distribute them among different systems within a grid. The Sun Grid Engine software can identify appropriate compute resources on the network and reassemble the jobs as they are completed. Big jobs can run faster, helping users accomplish more in less time.

Reduce total cost of ownership

Staying within stringent budget constraints requires smarter, more efficient computing resources to optimize workload management and get work done faster. Computing infrastructure can be underutilized or over-allocated — costly scenarios that waste

valuable compute cycles and prevent other users from completing jobs on the same systems.

UniCluster software bundles make it possible to streamline software acquisition, installation, and configuration for HPC infrastructure projects. As a result, administrators can deploy, configure, and manage compute resources quickly, easily, and cost-effectively, reducing tedious and repetitive busywork and freeing IT staff to focus on more important tasks. Organizations can also achieve better throughput, higher resource utilization, and reduced energy and operating costs by running UniCluster software on high-performance, energy-efficient Sun systems, such as Sun servers with chip multithreading technology.

Ready to go out of the box

Manual creation of HPC environments can be complex and time-consuming. By integrating a range of technologies into a single unified cluster stack, UniCluster software provides a superior alternative to commercial cluster schedulers and delivers far more capabilities than scheduling alone. The open-source UniCluster software provides everything organizations need to get up and running quickly, and can eliminate unnecessary licensing costs, freeing budgets for hardware investments. Organizations looking to speed deployment can utilize pre-integrated, turnkey solutions that combine UniCluster software and powerful Sun systems.

Moving to the cloud

Organizations with insufficient computing resources can find it difficult to compete effectively. UniCloud, Univa's cloud enablement software, helps enterprises to provision and scale compute capacity by

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taking advantage of public, private, and hybrid cloud computing environments. UniCloud supports an elastic computing infrastructure with a unified Web services-based framework. In this way, organizations can utilize clusters on an as-needed basis and accomplish large-scale processing not possible otherwise.

About Sun and Univa

Sun has a long history building solutions for scientists, researchers, and technical professionals. With a range of innovative high-performance system architectures and innovative workload management software, Sun solutions are demonstrating new ways to handle, manage, visualize, and collaborate around the world's most challenging computational problems. With over a decade of experience in challenging computing environments, Univa delivers application and infrastructure enablement software that increases efficiency while reducing complexity and time to value. From grids to virtualization and cloud computing solutions, Univa offers proven solutions.

Univa and Sun deliver targeted solutions for the full lifecycle of distributed computing, from entry-level offerings to complex, enterprise-wide solutions. The integration of Sun Grid Engine and UniCluster software supports the management of complex HPC infrastructures and workloads. With Sun and Univa, organizations can get up and running faster, reduce TCO, increase operational efficiency, and improve quality and innovation.

