Oracle Grid Computing optimized on HP BladeSystems

HP Reference Architectures for Oracle

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"HP BladeSystem architecture is very adaptive. The infrastructure is already wired, so we can augment capacity simply by adding blade servers to the cabinet. And because Oracle assesses its license fees by processor, having the fastest-in-class performance delivers greater value."

– Rob Edmiston, Vice President of Network and Computer Operations, DataRoad

DataRoad gains flexibility and high performance with HP BladeSystem solution for Oracle RAC. DataRoad, a leading provider of Oracle-related services to both the private and public sectors, understands the need for a flexible, high-performance infrastructure. To meet the demanding and dynamic needs of its customers, DataRoad must have an IT environment that is scalable, reliable, and easy to manage. That's why this fast-growing company built its infrastructure using HP Parallel Database Cluster for Oracle RAC, with the HP BladeSystem, an HP StorageWorks Fibre Channel (FC) storage area network (SAN), and HP management tools. With this centralized, "utility-based" infrastructure, DataRoad has been able to increase productivity, reduce labor, and improve flexibility for customers—all while reducing administrative requirements and lowering costs.

"HP engineering of the Parallel Database Cluster allows us to provide highly advanced, high-performance solutions. HP researched and integrated the software with Oracle, and we can build on that foundation to deliver exceptional solutions for our customers. We don't find that level of cooperation with other hardware vendors. That's why we selected HP."

– John Vaughan, Executive Vice President, DataRoad

Meeting the needs of today's dynamic enterprise

Oracle® Grid Computing is a powerful model for the virtualization and pooling of scarce IT resources, creating an environment that enhances business agility while optimizing quality of service and return on IT investments. As pioneers and innovators in grid computing, HP and Oracle share a rich set of complementary technologies that can be leveraged to accelerate your journey toward becoming an Adaptive Enterprise—the HP strategy in which business and IT are synchronized to capitalize on change.

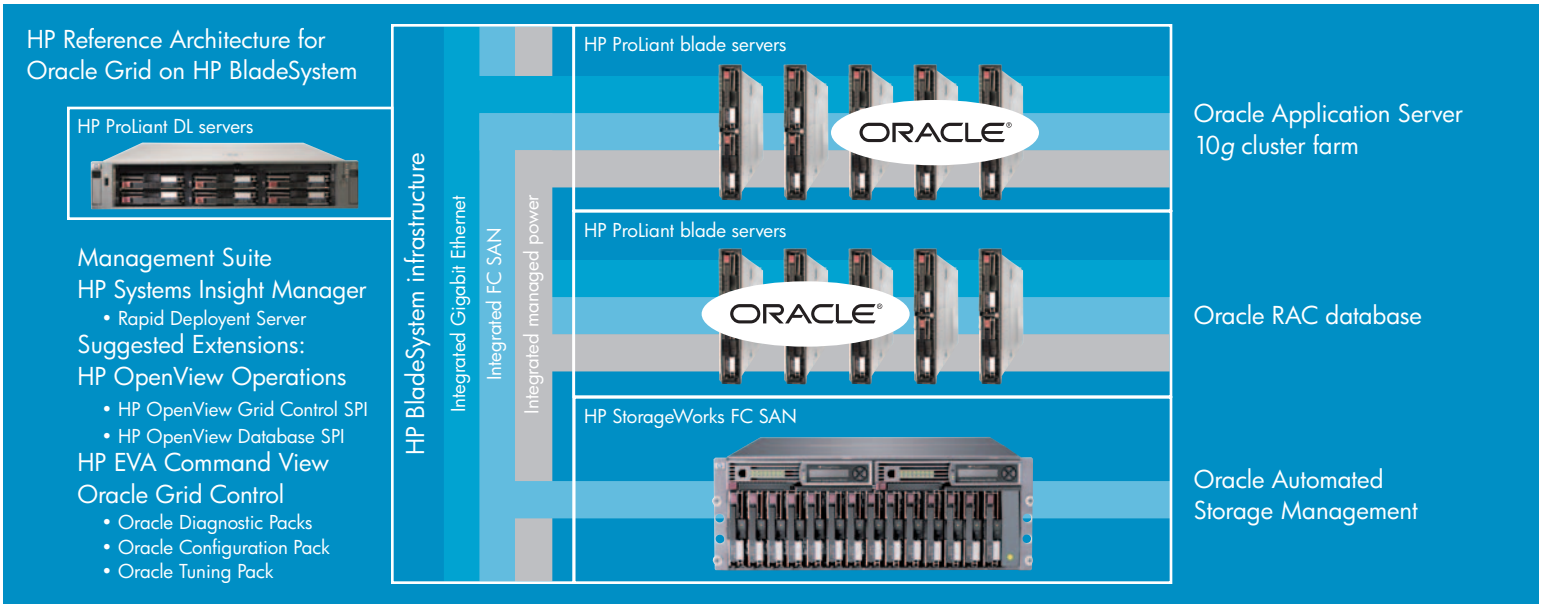
Oracle Grid Computing solutions are based on the Oracle 10*g* product suite, principally Oracle Real Application Clusters (RAC) 10*g*, which allows the Oracle Database to run enterprise applications on clusters of industry-standard servers, providing the highest levels of availability, performance, and scalability. To realize the full potential of Oracle RAC, however, organizations must have an infrastructure that supports grid computing. The HP Reference Architecture for Oracle provides a blueprint for such an infrastructure. This reference architecture is based on the HP Adaptive Enterprise design principles of simplification, standardization, and modularity and defines an infrastructure of industry-standard modular servers and storage in a consolidated, highly flexible, and easily managed environment. The combination of the HP Reference Architecture platform and Oracle 10*g* enables the pooling of IT resources into a single set of shared services that dynamically meets unpredictable computing needs.

Building on our 25-plus years of collaboration with Oracle, HP has the business insights and technical expertise to deliver the ideal foundation for an Oracle Grid Computing environment that is optimized for agility. The HP Reference Architecture for Oracle is a complete specification of a fully tested hardware and software environment that leverages the industry-leading HP BladeSystem infrastructure and an HP StorageWorks FC SAN, tightly integrated with HP management tools and the Oracle Grid Computing environment. This reference architecture is a key element of the offerings from HP Services.

Delivering the ideal infrastructure for Oracle Grid

The scale-out environment of Oracle RAC offers high availability with multiple server nodes, providing redundancy and online recovery as well as the performance and scalability needed to support growing enterprise applications. It also helps to better align IT investment with business demand as requirements grow. With this model, more numerous yet smaller compute nodes mean greater flexibility for dynamic load balancing and allocation of resources. Oracle Enterprise Manager 10*g* with Grid Control manages this agile environment to ensure the highest quality of service.

The HP BladeSystem infrastructure perfectly complements the Oracle Grid Computing environment. The HP BladeSystem integrates multiple components, including blade servers, storage, and networking into a "wire-once" shared infrastructure controlled by an integrated system management framework. As a result, hardware and



HP Reference Architecture for Oracle
The HP Reference Architecture for Oracle recommends the HP ProLiant BL20 and BL40 p-Class blade servers with Intel® Xeon™ Processors or HP ProLiant BL25 and BL45 blade servers with AMD Opteron processors. These servers provide the I/O connectivity and memory capacity required for an Oracle database or application server. With 32-bit or 64-bit emulation supported on either Linux® or Microsoft® Windows®, these systems provide extremely flexible compute engines for a RAC cluster. To simplify administration and further enable flexibility, the reference architecture suggests integrating redundant Ethernet switches directly into the BladeSystem infrastructure and using virtual LAN partitioning to support isolation of the required RAC cluster interconnect and client LAN connectivity.

infrastructure elements can be easily repurposed or expanded to support changing Oracle Grid Computing environment requirements.

The HP BladeSystem Management Suite works in concert with Oracle Grid Control, providing centralized and simplified management of the entire environment. The cornerstone of BladeSystem management is HP Systems Insight Manager (SIM), providing everything from discovery and monitoring to configuration and provisioning—all from a single console. A vital component of HP SIM is the HP BladeSystem integrated management environment, which enables users quickly to navigate the entire BladeSystem infrastructure and conveniently configure, deploy, and manage individual or groups of BladeSystems in a grid environment. The HP BladeSystem integrated management environment also works seamlessly with HP ProLiant Essentials Value Packs, HP OpenView management software, and third-party plug-ins to HP SIM as part of an end-to-end enterprise management solution.

HP StorageWorks Fibre Channel SAN provides the final component of the reference architecture. In many ways this is the true enabler of the overall functionality. The capabilities of the HP StorageWorks SAN makes the flexibility of server repurposing and system load balancing possible with simple automated functions. The reference architecture offers both a mid-range (HP StorageWorks Modular Smart Array 1500) and high-performance array (Enterprise Virtual Array) architecture. The BladeSystem infrastructure offers optional integrated SAN switches, further simplifying cabling and repositioning.

Building on a solid track record of success

The technical foundation for this reference architecture is provided by HP Parallel Database Clusters (PDC) for Microsoft Windows and Linux, which have evolved through many years of joint engineering work with Oracle. These platforms have established Oracle TPC-C records and are proven in production deployments worldwide. What's more, to ensure trouble-free implementation of PDC-based solutions, HP performs systems-level integration and fault tolerance testing and provides detailed engineering documentation for both Microsoft Windows and Linux RAC environments.

Simplifying and accelerating implementation
To simplify and accelerate implementation, HP also provides do-it-yourself PDC installation kits, complete with customizable installation scripts that automate many complex and repetitive configuration tasks. In addition, HP Services offers a fixed-price PDC Startup Service to deploy a fully functional RAC cluster at your site. In addition, our integration partners offer custom, preinstalled solutions based on PDC specifications.

Optimizing for agility

In a business climate driven by relentless change, demand for higher quality IT service, and pressure to reduce costs, Oracle Grid solutions built on an HP BladeSystem infrastructure simply make sense. And with the HP Reference Architecture for Oracle, you have a proven and low-risk way to implement Oracle Grid Computing solutions using hardware and software specifications optimized for agility. It is the ideal way to accelerate time-to-value and maximize return on your IT investments.

For more information on how the HP Reference Architecture for Oracle can help you reduce the risk and maximize the value of implementing enterprise grid computing solutions, contact your HP representative or visit www.hp.com/go/oracle.

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