

Teamcenter and Sun™

Product lifecycle management for up to 5,000 concurrent users



Once the focus of automotive and aerospace applications, product lifecycle management (PLM) is now used in many industries to track product data creation and management. As businesses rely on PLM tools to manage product development and streamline time-to-market in an increasingly global economy, finding reliable solutions can be key to maintaining a competitive edge. To help this effort, Sun™ offers a highly available Teamcenter configuration that uses Solaris Cluster and Oracle® Real Application Cluster (RAC) software to deliver powerful application and data reliability all day, every day.

Highlights

Web tier

- Sun Fire™ T2000 server, 8 GB RAM
- Web server software
- Solaris™ 10 Operating System (OS)

Business logic tier

- Four Sun Fire V490 servers, 64 GB RAM
- Solaris 10 OS
- Teamcenter 2007.1 software

Database tier

- Two Sun Fire V490 servers, 64 GB RAM
- Oracle® Database 10g R2 and Real Application Clusters 10g
- Sun StorageTek™ QFS software
- Solaris 10 OS and Solaris Cluster 3.2 software

Database storage

- Sun StorageTek™ 6140 array, dual controllers

Central file storage and vault data

- Sun StorageTek 5320 NAS appliance

Design features

Today's enterprises need access to scalable applications running on a reliable computing infrastructure to keep the business running. To help this effort, Sun and Siemens PLM Software designed a Teamcenter configuration that utilizes Oracle Real Application Clusters (RAC) and Solaris Cluster software to extend application scalability across the architecture and ensure optimal system availability and data protection.

Solution components

The Teamcenter solution employs a flexible four-tier architecture with client, Web, business logic, and database tiers. The Web tier utilizes application server software and incorporates Enterprise JavaBeans™ (EJB™) technology. The business logic tier consists of Teamcenter software, and the database tier utilizes Oracle database software. Figure 1 shows the topology.

The solution utilizes Oracle RAC software to enable the database to be shared across multiple servers and scale as it grows. Solaris Cluster 3.2 software running on the database server helps to ensure availability. Utilizing failover and recovery features to handle hardware, software, or network failures, the Solaris Cluster software fosters a robust, highly available solution.

Sun Fire™ V490 servers

The highly available Teamcenter configuration leverages the enterprise-class features and extensive capacity of Sun's versatile, midrange Sun Fire™ V490 servers. Sun Fire V490 servers utilize up to four 2.1 GHz UltraSPARC® IV+ processors and eight simultaneous compute threads for more than five times the performance of UltraSPARC III processor-based systems. In addition, Sun Fire V490 servers can be configured with high density, double-data-rate synchronous dynamic random access memory (DDR2 SDRAM). The memory capacity is doubled to 64 GB, making these systems even more suitable for compute-intensive applications.

Sun storage systems

The Sun StorageTek™ 6140 array hosts the Oracle database. Capable of handling fast growing data volumes, the Sun StorageTek 6140 array offers advanced data protection, high availability, and ample expansion. Surpassing the two-node limitation of SCSI array-based clusters, the Sun StorageTek 6140 array can connect directly to four-node Oracle RAC clusters using four fibre channel ports per controller, making the array an ideal platform for the Oracle database. Additional high availability and performance can be achieved by incorporating redundant dual controllers.

The PLM storage vault in this configuration resides on a Sun StorageTek™ 5320 NAS appliance. Designed for simple manageability, quick deployment, and seamless integration, the Sun StorageTek 5320 NAS appliance scales to 224 TB of capacity. In addition to simplifying file sharing and management across the Solaris™ Operating System (OS), UNIX®, and Windows environments, the Sun StorageTek 5320 NAS appliance provides data protection with advanced business continuity features.

Testing proves scalability and performance

Sun and Siemens recently joined forces to run extensive tests on the Teamcenter 2007.1 software running on Sun servers. Siemens engineers designed the tests to determine the number of concurrent users. In addition, with structured tests to ensure consistency from one run to the next, the efforts aimed to gather sizing information and validate the scalability and performance of configurations incorporating Solaris Cluster and Oracle RAC software. Testing scenarios consisted of typical PLM interactions for data analysis, review, and documentation users. Simulated users performed heavy CPU-intensive tasks, such as workflow, searching, checking CAD parts in and out of the PLM system, and working with bills of materials (BOMs).

Test Results

Testing demonstrates that the latest Teamcenter software, version 2007.1, works exceptionally well at evenly distributing the load across multiple business logic servers, proving the effectiveness of the horizontal scaling of the Teamcenter software.

Test results show that adding Oracle RAC software makes it possible to scale the Oracle database across multiple servers as more users or data are added. In fact, the configuration tested and identified in figure 1 supports a total of 5,000 concurrent users. In addition to providing high availability for the computing infrastructure, results also prove the Solaris Cluster software successfully provides the multiple Gigabit Ethernet or Infiniband cluster interconnects needed to synchronize the participating Oracle RAC nodes with essentially flat server response times.

Conclusion

The Teamcenter on Sun solution provides the scalability, reliability, and high availability demanded by 24x7 business environments. The addition of the Oracle RAC software supports growth and availability of the Oracle database across server nodes. Utilizing fibre channel storage arrays enhances scalability beyond a SCSI-based solution. Including a Solaris Cluster component in the configuration enables the solution to leverage Sun hardware and software features for high availability.

Learn More

Visit siemens.com/teamcenter, sun.com/siemens, or contact your local Sun sales representative for more information.

Indeed, the high speed interconnect used for Solaris Clusters provides optimal synchronization for Oracle RAC nodes. Combining Solaris Cluster and Oracle RAC software with redundant hardware and network components, the Teamcenter configuration gives enterprises a scalable, highly available PLM solution that can adapt as business needs change.

Sun and Siemens PLM Software

Siemens has helped clients speed time-to-market, improve quality, and increase revenue for nearly forty years. For over two decades, Sun has created scalable, innovative, and cost-effective solution infrastructures. Together, Sun and Siemens offer a PLM solution that can help businesses maintain a competitive edge.

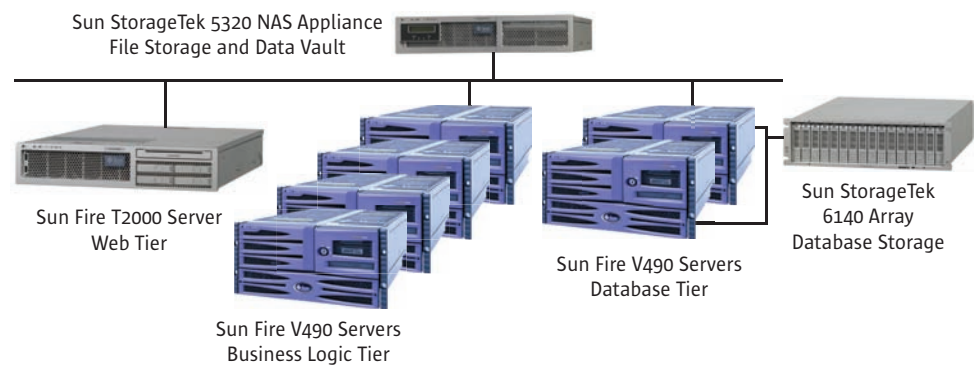
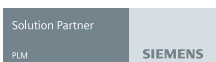


Figure 1. The Teamcenter multitier architecture.



Sun Microsystems, Inc. 4150 Network Circle, Santa Clara, CA 95054 USA Phone 1-650-960-1300 or 1-800-555-9SUN Web sun.com

