

# Teamcenter and Sun™

## Product lifecycle management for up to 2,500 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 move into an increasingly worldwide market, global expansion, manufacturing requirements, and the need for increased regulatory compliance require a PLM solution with the ability to scale horizontally to accommodate escalating computing demands. To help this effort, Sun™ and Siemens PLM Software developed a robust, scalable, high performance PLM solution configuration with exceptional horizontal scaling.

### Highlights

#### Web tier

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

#### Business logic tier

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

#### Database tier

- Sun Fire V490 server, 64 GB RAM
- Oracle® Database 10g R2
- Solaris 10 OS

#### Database storage

- Sun StorageTek™ 6140 array

#### Central file storage and vault data

- Sun StorageTek 5320 NAS appliance

### Design features

To address demands for price/performance and low total cost of ownership, Sun and Siemens PLM Software designed a highly scalable Teamcenter configuration that utilizes storage and server components that can accommodate significant growth. Based on extensive testing conducted by Sun and Siemens engineers, this configuration enables Teamcenter business logic to be scaled to support a growing number of users with greater system availability simply by adding more servers as needed.

### Solution components

The Teamcenter solution employs a 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.

### Sun Fire™ V490 servers

The scalable Teamcenter configuration leverages the enterprise-class features and extensive capacity of Sun's versatile, midrange Sun Fire™ V490 servers.

The Sun Fire V490 server utilizes up to four 2.1 GHz UltraSPARC® IV+ processors and eight simultaneous compute threads for more than five times the performance of previous generation UltraSPARC 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 scales to 64 GB, making these systems even more suitable for compute-intensive applications.

### Sun storage systems

The Sun StorageTek™ 6140 array provides an ideal platform for the Oracle database software used in this configuration. Capable of handling fast-growing data volumes, the Sun StorageTek 6140 array offers advanced data protection, high availability, and ample expansion to provide a highly scalable, yet compact storage platform. When compared to earlier Teamcenter solutions utilizing Sun StorageTek 3510 arrays, the Sun StorageTek 6140 array demonstrates an exponentially increased amount of I/O operations per second (IOPS) as well as significantly enhanced overall performance.

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

Utilizing a multitiered approach, the Teamcenter software is designed for powerful horizontal scaling. Sun and Siemens recently joined forces to test 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 the multitier architecture.

Sun and Siemens engineers ran extensive tests on Sun Fire V490 servers running the business logic and database tiers to test the scalability of the Teamcenter PLM configuration. A Sun Fire T2000 server comprised the Web tier for all tests. 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 Teamcenter 2007.1 software works exceptionally well at evenly distributing the load across multiple business logic servers, proving the effectiveness of its horizontal scaling. In fact, the configuration tested and identified in figure 1 supports a total of 2,500 concurrent users. The Sun Fire V490 servers tested utilized 1.8 GHz UltraSPARC IV processors. Today, Sun Fire V490 and Sun Fire V890 servers can be configured with even faster processors. The combination of enhanced processor speeds and new higher density memory significantly increases the number of concurrent users that can be supported.

The Teamcenter 2007.1 multitiered architecture delivers improved server transaction times over previous versions of the software. Logins take less than half the time, and most transactions complete in less than two seconds. In addition, Oracle software utilizes significantly fewer CPU resources while simultaneously supporting more concurrent users.

### Learn More

Visit [siemens.com/teamcenter](http://siemens.com/teamcenter), [sun.com/siemens](http://sun.com/siemens), or contact your local Sun sales representative for more information.

### Conclusion

Designed with the escalating computing needs of businesses in mind, the scalable Teamcenter and Sun solution lets companies configure only what is needed today, and add capacity tomorrow. As the business grows, the PLM system can adapt, scale, and expand when the need arises to provide a flexible, cost-effective PLM solution.

### 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 produced flexible, scalable, innovative, and cost-effective solution infrastructures. Together, Sun and Siemens offer a powerful, highly scalable solution for medium-sized PLM implementations.

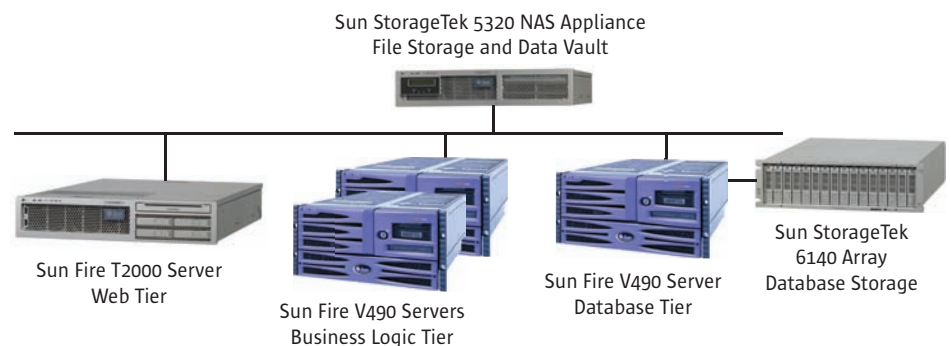


Figure 1. The Teamcenter multitiered architecture.

