SunPlex™ Systems and Sun™ Cluster 3.0 Software

The premier application service delivery platform.

Sun™ ONE Open Net Environment

Sun microsystems

Key feature highlights

Integration of the SunPlex system and the Solaris Operating Environment: Core Solaris services, such as devices, file systems, and networks, can operate seamlessly across a tightly coupled SunPlex system, plus maintain full Solaris compatibility with existing applications.

Continuous Availability of the Core Services: IT professionals can deliver higher service levels, reduce IT risks, and lower service costs.

Service Level Management: Scaling can occur within a system or across multiple systems, enabling administrators to increase availability, capacity, and performance while continuing to maintain service levels.

Centralized SunPlex System Management: Resources, servers, and storage can be managed as a single entity within a cluster-wide environment.

Ease of Use: Complex tasks can be performed with ease; system administrators can manage any resource on a SunPlex system from anywhere on the network. An easy-to-use API and SunPlex Agent Builder tool help administrators cluster-enable applications.

Disaster Recovery: Using Campus Clusters, Sun Cluster 3.0 nodes can be separated by up to 10 Km to allow for continuity of services in the event a catastrophic failure brings down an entire campus.

Today's explosive levels of growth — in terms of bandwidth, networks, and digital devices — are driving an even greater shift towards a services model of computing. The Services on Demand approach moves the burden of a computing infrastructure from end users and their PCs to the organizations that provide the services. Since its inception in 1982, Sun has been driven by a singular vision — The Network Is The Computer™ — and has helped businesses harness the transforming power of the network in order to create, deploy, and deliver reliable Services on Demand.

As the foundation for the Sun™ Open Net Environment (Sun ONE) — Sun's vision, architecture, platform, and expertise for delivering Services on Demand — the Solaris™ 9 Operating Environment provides an integrated yet open architecture for building and deploying Services on Demand. The Solaris 9 Operating Environment (OE) offers new levels of performance in scalability, availability, manageability, and security, and delivers a complete and highly refined environment designed to enable customers to increase service levels while decreasing costs and reducing IT risks.

Sun Cluster 3.0 and the Solaris Operating Environment

Sun Cluster 3.0 software takes general-purpose clustering beyond the realm of high availability by adding the simplicity of single system manageability and the potential of seamless scalability. It provides a single, globally coherent process and resource management view for the multiple nodes of a cluster. In essence, the cluster becomes a single managed entity, and presents itself and its services to clients as if it were an individual server.

The Sun Cluster 3.0 framework extends the Solaris Operating Environment, enabling core Solaris services — devices, file systems, and networks — to operate seamlessly across a SunPlex™ system while maintaining full Solaris compatibility with existing applications.

Sun Cluster 3.0 provides high availability (HA) and scalability to everyday Solaris applications through continuous network and data availability. Services that are written to the easy-to-use Sun Cluster 3.0 API can achieve even higher levels of availability as well as scalability.

The SunPlex system is a key element of a services-driven computing environment. SunPlex systems deliver management capabilities in tightly coupled pools of resources, making it possible to *manage the service, not the server*. Sun Cluster 3.0 software is the key to building SunPlex systems, which also include the Solaris Operating Environment; Sun server, storage, and network connectivity products; and Sun support services.

The SunPlex system is the premier integrated application service delivery platform. Combined with Sun Cluster 3.0 software, SunPlex systems are designed to manage application services for tightly coupled environments, optimizing both the availability and scalability of these services.

SunPlex System Key Benefits

The SunPlex system offers a unique approach to application service management, and is the premier, integrated application service delivery platform. SunPlex systems enable an enterprise to respond to the scalability, availability, and complexity challenges that arise in today's services-driven model of computing. With the help of SunPlex systems, enterprises can increase service levels while decreasing service level cost and risk.

Makes Service Levels Easier to Manage

SunPlex systems provide a powerful, flexible environment where failover and scalable application services can be simultaneously deployed and easily managed. Application services running on SunPlex systems receive the full benefits of the Sun Cluster 3.0 HA framework. You can deploy them across the SunPlex system without worrying about how they will find and access network and file services.

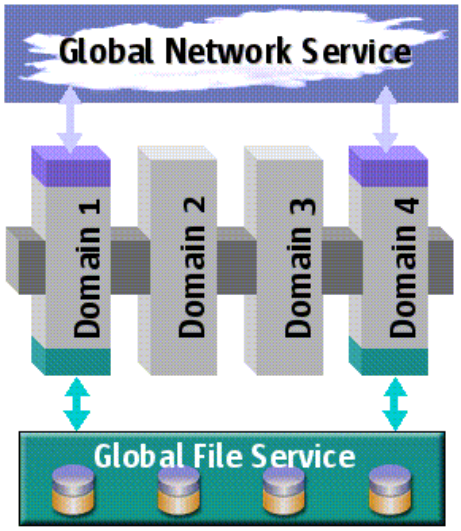
Provides Continuous Access

SunPlex systems deliver Global Network and File Services. Data, network, and devices are continuously available to all domains in the SunPlex system as well as to applications running on any domain.

Simplifies Administration, Lowers Costs

SunPlex systems incorporate system management tools, such as Sun Management Center and SunPlex Manager software, to create a centrally managed environment that provides easy administration and lower operating costs.

Summary of Features



Global Network Services

In the Sun Cluster 3.0 architecture, incoming requests from the network go to a global IP address, which is always available and shared by all domains in the SunPlex system. To clients on the network, the entire SunPlex system looks like a single computing resource.

Through load balancing of the incoming requests, Global Network Services help increase the performance of the scalable application services running on SunPlex systems. Application services can run on any domain in the SunPlex system, independent of the exact path taken by network requests and responses. Centralization of Global Network Services on behalf of the SunPlex system facilitates a simple "single point of management" paradigm.

Global Devices and Global File Services

Data access is significantly enhanced in Sun Cluster 3.0 with the addition of Global Devices and Global File Services. With Global Devices, every domain has access to any device on the SunPlex system — such as a disk or CD-ROM drive — even if that device is not physically connected to that domain.

Global File Services extend these capabilities by using shared storage devices — storage with physical connections to more than one domain — so that data is both highly available and accessible to application services running on any domain of the SunPlex system. Centralization of Global File Services on behalf of the SunPlex system facilitates a simple "single point of management" paradigm. Customers who prefer to failover the file system can use the Failover File Service feature of the Sun Cluster 3.0 5/02 release instead of the Global File Services.

Scalable Services

The Sun Cluster 3.0 framework allows a single application, or series of applications from a service, to run across multiple domains or systems. By adding more domains or systems to the SunPlex system, capacity and continuity are increased. Service levels are maintained in the event of any number of potential outages — planned or unplanned.

Failover Services

The Sun Cluster 3.0 architecture delivers inherent HA services. It enables IT organizations to maintain service levels on critical applications and services. Failover Services provide high availability to single instance applications by failing over the application to a backup node in the event of a failure.

Faster Failover

Sun Cluster 3.0 software provides fast error detection, fast software switch-over, and parallelized application and infrastructure restarts.

When a failover occurs, clients might see a brief interruption in service and may need to reconnect (depending on the characteristics of the application) after the failover has finished. However, once reconnected, the physical server from which they get applications and data is transparent.

Diskless Failover
With the foundation of these key abstracted capabilities — Global Network Services, Global Devices, and Global File Services — there is no concept of logical host in Sun Cluster 3.0. Services need not reside on servers physically attached to storage devices, which means service failover does not require storage device or file system failover. Diskless Failover enhances flexibility as well as minimizes failover time.

Centralized System Administration and Management Tools
The Sun Cluster 3.0 framework simplifies administration by enabling SunPlex system resources to be managed and administered as if they were on a single system. Administrators have access to all system management tools from any system in the SunPlex system. And because of the integration with the Solaris Operating Environment, familiar Solaris commands execute just as if only a single system were being administered.

SunPlex system management is accomplished through either a command-line interface (CLI) or GUI-based management tools (Sun Management Center or SunPlex Manager). The GUI-based tools allow complex tasks to be performed with ease by enabling system administrators to manage any resource on a SunPlex system from anywhere on the network. This provides tremendous cost savings for organizations where administrators are responsible for systems located in different buildings, cities, and even countries.

Easy Agent Development Environment
Sun provides a list of qualified Scalable and HA Agents. Alternatively, developers can use the SunPlex Agent Builder to develop Scalable or HA Agents. The SunPlex Agent Builder generates agent code in Ksh or C with two simple clicks. For fast agent deployment with no code writing or modification, developers can also use the Generic Agent functionality of the Agent Builder. The Generic Agent functionality generates a precompiled agent binary that shortens the agent deployment cycle. In the Sun Cluster 3.0 5/02 release, the Generic Agent functionality has been enhanced to offer tunable parameters that allow for customization of the Generic Agent.

Fast Application Messaging Via Remote Shared Memory Technology
Sun Cluster 3.0 software includes Remote Shared Memory (RSM) technology, which offers improved service levels for distributed applications running in the Sun Cluster environment. The RSM API offered in the Solaris 8 Operating Environment 10/01 release enables application developers to bypass the TCP/IP stack and access high-speed, high-bandwidth, and low-latency interconnect hardware directly for fast messaging in the Sun Cluster environment. RSM technology in the Sun Cluster 3.0 5/02 release has been tuned for optimal performance of Oracle9i RAC.

Dynamic Reconfiguration (DR) Support
Sun Cluster 3.0 software provides support for dynamic additions or removals of hardware resources such as processors, memory, and I/O devices. DR support checks the safety of a DR operation and rejects any unsafe operations.

Security Hardened
Security Hardening is supported on all of the Sun Cluster 3.0 supported agents with the exception of the BroadVision agent. The DB2 agent from IBM is also security hardened.

Prioritized Service Management (PSM)
PSM is a policy-based service level management feature that provides high service levels for a high-priority service in the event of its failover to a backup node. It automatically offloads low-priority services on the backup node to free resources for the high-priority service. The low-priority services can either be shut down or failed over to another node.

Campus Cluster Support
Both two-room (quorum device in the same room as the primary node) and three-room (quorum device in its own room) Campus Clusters are supported by SunPlex systems.

Easy Upgrades
Upgrading from the Sun Cluster 3.0 12/01 release to the Sun Cluster 3.0 5/02 release can be done with minimal downtime. Nodes can be upgraded one at a time without shutting down the entire cluster. This minimizes planned service downtime during the Sun Cluster 3.0 software upgrade.

Eight-Node Support
Sun Cluster 3.0 supports up to eight nodes in a SunPlex system. Customers can mix and match from Sun's extensive server offerings.

About Sun ONE
The Sun Open Net Environment (Sun ONE) is Sun's vision, architecture, platform, and expertise for delivering Services on Demand today and in the future. Based on open standards such as Java™ and XML technology, Sun ONE provides a highly scalable and robust framework for building and deploying a variety of Services on Demand — from traditional Web-based applications to future context-aware Web services. By simplifying the way Web services are created, assembled, and deployed, the Sun ONE platform can enhance productivity, speed time to market, and increase business opportunities for enterprises worldwide.

SunPlex™ Systems and Sun™ Cluster 3.0 Software

SunPlex System Configurations

A SunPlex system comprises two or more SunPlex system-qualified servers (up to eight nodes are supported), storage products, SunPlex system interconnects, and public networks running Solaris 9 software.

Supported Server Platforms

The following server platforms are supported. Additional platforms will be available in the future.

- Netra™ t 1120/1125, t 1400/1405, T1 AC200/DC200, and 20 servers
- Sun Enterprise™ 220R, 250, 280R, 420R, 450, 3500, 4500, 5500, 6500, and 10000 servers
- Sun Fire™ V880, 3800, 4800/4810, 6800, 12K, and 15K servers

Supported Storage Products

The following storage products are supported. Additional storage products will be available in the future.

- Sun StorEdge™ MultiPack, D1000, A3500 (SCSI/FC), A5000, A5100, A5200, T3, SE 3910/3960, 9910/9960, and S1 arrays
- Netra st D130 and st D1000 servers

Supported Third-Party Storage

- EMC Symmetrix[1]

Supported SAN Switches

- Sun StorEdge Network FC Switch-8 and Switch-16
- Brocade Silkworm 2400 and 2800

Supported Interconnects[2]

The following SunPlex system interconnects are supported. Additional SunPlex system interconnects will be available in the future.

- On-board 100 Mbits/sec port, Sun Quad FastEthernet™, SunFastEthernet™, and SunSwift™ adapters
- Sun Gigabit Ethernet adapter
- PCI-Scalable Coherent Interface (SCI)

Supported Public Networks

The following public networks are supported. Additional public networks will be available in the future.

- On-board 100 Mbits/sec port, Sun Quad FastEthernet, SunFastEthernet, and SunSwift adapters
- Sun Gigabit Ethernet adapter

Supported SunPlex Topologies

- Clustered Pairs
- N+1
- Pair+M

Supported Volume Managers

- Solaris Volume Manager software
- VERITAS Volume Manager (VxVM)

Supported SunPlex Agents

The following agents are available now:

- HA DNS
- HA NFS
- HA Oracle
- Oracle Parallel Server (OPS)
- Oracle9i RAC
- HA Sybase
- Scalable SAP
- HA Sun ONE Web Server[3]
- HA Sun ONE Messaging Server[3]
- HA Sun ONE Directory Server[3]
- HA Sun ONE Calendar Server[3]
- HA Netscape™ Directory Server (LDAP)
- HA Apache Web/Proxy Server
- HA NetBackup
- HA Solstice Backup™ software
- Scalable Sun ONE Web Server
- Scalable Apache Web/Proxy Server
- Scalable BroadVision One-To-One

Agents Available Through Third Parties

- IBM DB2 (EE and EEE)
- HA Informix Dynamic Server
- Sybase ASE

Sun Cluster Software Coexistence

- Solaris Resource Manager
- Sun StorEdge Instant Image
- Sun StorEdge Network Data Replicator

For More Information

To learn more about Sun Cluster 3.0 software and SunPlex systems, visit sun.com/clusters.

For more information on the Solaris 9 Operating Environment, visit sun.com/solaris.

For additional information on Sun ONE, visit sun.com/sunone.

1. Please contact your Sun Sales Representative for more information.
2. Up to six links of interconnects transferring data in parallel are supported in one SunPlex system.
3. Formerly iPlanet™ Web Server, iPlanet Messaging Server, iPlanet Directory Server, and iPlanet Calendar Server.

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