

Higher service levels. Lower costs.
Reduced risks.

SunPlex™ System and Sun™ Cluster Support for Sybase ASE



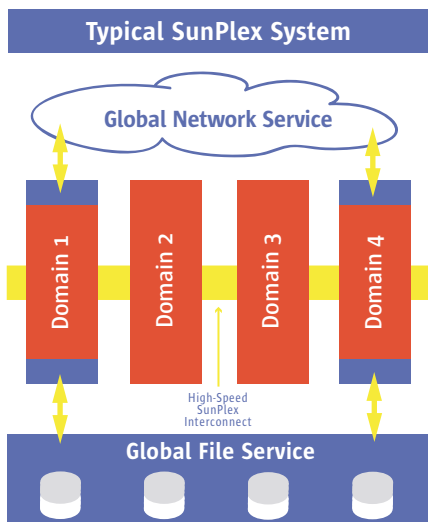
Sun™ Cluster 3 software is Sun's advanced clustering technology. It takes traditional high-availability clustering to the next level by delivering the simplicity of single system manageability and the potential of seamless scalability.

Sun Cluster 3 is part of the Sun Open Net Environment (Sun ONE), as well as a key element of the SunPlex™ system platform. Supporting and complementing Sybase Adaptive Server Enterprise (ASE) software, Sun Cluster 3 delivers improved service levels for Sybase ASE applications. It also helps reduce associated costs by easing operations and improving the resource utilization of the system.

The Sun Cluster 3 framework is the only high-availability clustering solution that is tightly integrated with and extends the Solaris™ Operating Environment. It provides continuous network, data, and service availability for Sybase ASE solutions. The unique combination of Sybase software and SunPlex systems helps improve service levels by making recovery from failure transparent to clients, simplifying management of the entire infrastructure, and providing the ease of joint customer support from both Sybase and Sun through the Sun Vendor Integration Program – the SunVIP™ program.

SunPlex Systems

SunPlex systems are designed to manage application services for tightly coupled environments, and are built on powerful Sun products such as Sun Cluster 3 software, the Solaris 8 or 9 Operating Environment, Sun Fire™ servers, Sun StorEdge™ storage arrays, network connectivity products, and Sun services. As a key element of SunPlex systems, Sun Cluster software is designed to deliver integrated availability, scalability, manageability, and ease of use.



Benefits of Deploying Sybase ASE Within a SunPlex System

Availability of Sybase ASE

SunPlex systems offer continuous availability with support for the companion server feature of Sybase ASE 12.5. In addition, Sun offers a SunPlex failover agent for ASE 12.0, providing a low-cost, warm standby solution. Both of these solutions are described below:

Continuous Availability

SunPlex systems help Sybase ASE deployments achieve the highest levels of availability with support for the ASE 12.5 Companion Server Option. This option enables you to configure two ASE servers as companions in either an asymmetric (master-slave) or a symmetric companion (active/active hot standby) configuration to create a hot standby capability that can further reduce unplanned downtime.

Using this approach involves the deployment of a two-node SunPlex system with two Sybase ASE servers running as companion servers to each other. In this configuration, both servers actively run applications. If the ASE server 1 on a SunPlex node goes down, the companion ASE server 2 on the second SunPlex node will open up the devices on which the primary's databases are built and perform a fast recovery to bring them online, while simultaneously continuing to handle the clients that have been running on the ASE server 2.

Sybase Open Client automatically tries to connect clients to the companion server in the event of a failover. In such a case, the only visible impact on the end user would be if he or she currently has a transaction in a partially completed state. If so, the user is made aware (through an error message) that the failover has occurred and that the current transaction must be resubmitted. The error message is delivered in exactly the same way as a deadlock error, so programmers can trap the error and resubmit the transaction without requiring the end user to reconnect. In this way, clients are insulated from failures in the infrastructure and perceive continuous levels of availability.

Warm Standby

This low-cost solution comprises the SunPlex HA Agent for Sybase ASE 12.0. The agent monitors the health of an ASE server on the primary SunPlex node. If a system or software failure impacts the availability of the primary ASE server, the HA agent detects the fault and tries to restart ASE on the same node. If the node itself is down, the agent automatically fails over the ASE server to a backup node within the SunPlex environment. The SunPlex HA agent can be used in conjunction with the Sybase Replication Server to create a warm standby that can be brought up in the event of a failure.

Enhanced, End-to-End Infrastructure Availability

The Sun Cluster 3 environment enhances availability of all key hardware and software components of a Sybase ASE deployment by optimizing recovery of failed components to ensure continuous service levels. In addition, it manages the availability of each component independently of the others, enabling the failure to be isolated and managed within the component without impacting uptime of the entire site. By monitoring and automatically recovering all components

SunPlex and Sybase ASE systems: Continuously available, totally efficient, and easy to manage. Just what your customers demand.

of the infrastructure – the servers, storage, public network interfaces, interconnects, operating environment, and ASE database – SunPlex systems enhance the end-to-end availability of a customer’s ASE deployment.

The SunPlex environment also ensures the availability of the private interconnect by providing for failover of one path to another. Application-level traffic can be carried over this high-bandwidth, low-latency private interconnect to allow for fast messaging, which delivers enhanced service levels offered for clients.

Redundant Storage Components

SunPlex systems require the use of redundant paths to the disk and mirrored disks to protect the database from failures in the host bus adapters, cables, or disks.

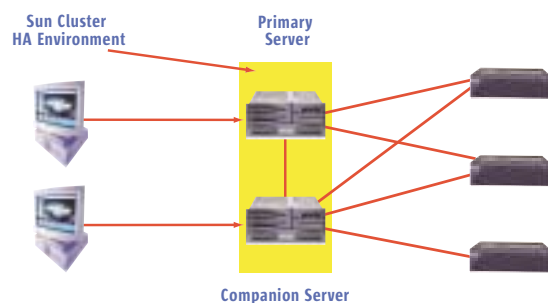
Independent Failure Management

Failure recovery of various SunPlex resources is managed independently of other resources such that the failure of one resource does not disable others. For example, if a network interface card fails, its IP address is failed over to a functioning network interface card without the need to also failover the database.

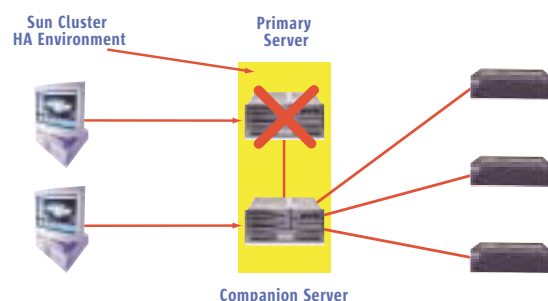
Efficient Resource Utilization

All tiers of the Sybase ASE stack (database and application instances) can be consolidated within the SunPlex environment, improving resource utilization by offering pools of resources within which a

Highly Available Sybase System – Active/Active Configuration with Applications Running on Both Servers



Companion Server Takes Over the Database of the Primary in the Event of a Failure



failed component can be recovered. Sun Cluster 3 works in conjunction with Solaris Resource Manager, guaranteeing resources to the software resource that has the higher priority to the customer's business process while at the same time optimizing the use of server resources. Sun Cluster 3 also has a Prioritized Service Management (PSM) feature that provides high service levels for a high-priority service in the event of its failover to a backup node. PSM automatically off-loads low-priority services running 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.

Disaster Recovery

SunPlex systems support Campus Clusters, which allow cluster nodes to be separated by a distance of several miles.

Reduced Risk

SunPlex systems deliver improved system and software availability as well as ease of operations. This helps reduce the probability of user errors and lower overall risk in the deployment.

Ease of Operations

Easy Administration

The Sun Cluster 3 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 tight 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 and 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

Sybase ASE deployments include application services that utilize the ASE database. Many customers enjoy the benefits and convenience of a single point of administration – running their entire software stack within SunPlex system control. To accomplish this, application services must have SunPlex agents written for them. Sun, and many ISVs, provide a number of ready-to-deploy agents. (A complete list of agents is available in the SunPlex Systems and Sun Cluster 3 Software datasheet, located at sun.com/clusters.) 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.

Flexible Configurations

As previously mentioned, the SunPlex environment supports a variety of high-availability scenarios with Sybase ASE – Companion Server Option, Open Client, and Replication Server. Customers also may like the breadth of hardware support available to SunPlex systems. For a comprehensive list of hardware and software supported on SunPlex systems, see the SunPlex Systems and Sun Cluster 3 Software datasheet available at sun.com/clusters.

Minimizing Risks

In addition to the well-architected, easily managed, and technologically superior HA solution, Sun provides customers with the benefit of joint customer support via the Sun Vendor Integration Program. The SunVIP program enables customers to place one support call to either Sun Microsystems or Sybase; both companies work collaboratively to swiftly resolve the customer problem, further minimizing the risk in the customer's environment.

For More Information.
To learn more about Sun Cluster 3 software and SunPlex systems, visit our Web site at sun.com/clusters.

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



Sun Worldwide Sales Offices: Argentina +5411-4317-5600, Australia +61-2-9844-5000, Austria +43-1-60563-0, Belgium +32-2-704-8000, Brazil +55-11-5187-2100, Canada +905-477-6745, Chile +56-2-3724500, Colombia +571-629-2323, Commonwealth of Independent States +7-502-935-8411, Czech Republic +420-2-3300-9311, Denmark +45 4556 5000, Egypt +202-570-9442, Estonia +372-6-308-900, Finland +358-9-525-561, France +33-134-03-00-00, Germany +49-89-46008-0, Greece +30-1-618-8111, Hungary +36-1-489-8900, Iceland +354-563-3010, India, Bangalore +91-80-2298989/2295454, New Delhi +91-11-6106000, Mumbai +91-22-697-8111, Ireland +353-1-8055-666, Israel +972-9-9710500, Italy +39-02-641511, Japan +81-3-5717-5000, Kazakhstan +7-3272-466774, Korea +82-2-193-5114, Latvia +371-750-3700, Lithuania +370-729-8468, Luxembourg +352-49 11 33 1, Malaysia +603-21161888, Mexico +52-5-258-6100, The Netherlands +00-31-33-45-15-000, New Zealand, Auckland +64-9-976-6800, Wellington +64-4-462-0780, Norway +47 23 36 96 00, People's Republic of China, Beijing +86-10-6803-5588, Chengdu +86-28-619-9333, Guangzhou +86-20-8755-5900, Shanghai +86-21-6466-1228, Hong Kong +852-2202-6688, Poland +48-22-8747800, Portugal +351-21-4134000, Russia +7-502-935-8411, Saudi Arabia +9661 273 4567, Singapore +65-6438-1888, Slovak Republic +421-2-4342-94-85, South Africa +27 11 256-6300, Spain +34-91-596-9900, Sweden +46-8-631-10-00, Switzerland, German 41-1-908-90-00, French 41-22-999-0444, Taiwan +886-2-8732-9933, Thailand +662-344-6888, Turkey +90-212-335-22-00, United Arab Emirates +9714-3366333, United Kingdom +44 0 1252 420000, United States +1-800-555-9SUN OR +1-650-960-1300, Venezuela +58-2-905-3800, Or Online at sun.com/store

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