Sun microsystems

Sun Fire™ 15K/12K Software Overview Guide

Contents

Preface

This *Sun Fire™ 15K/12K Software Overview Guide* document provides an overview of the software that runs on the Sun Fire 15K/12K systems. It shows you which related documents provide detailed information on the use of this software. It also provides experienced Sun Enterprise™ 10000 (Starfire™) system administrators with an overview of some key differences between the software that runs on these two systems.

How This Book Is Organized

Chapter 1 provides an overview of the software that runs on Sun Fire 15K/12K systems.

Chapter 2 describes the books that make up the Sun Fire 15K/12K software documentation set, as well as other Sun™ documentation that describes software that runs on Sun Fire 15K/12K systems.

Chapter 3 provides an overview of major differences between the software on Sun Fire 15K/12K systems and corresponding software on Sun Enterprise 10000 systems.

Chapter 4 provides an overview of the Solaris™ Operating Environment as it applies to Sun Fire 15K/12K systems.

Chapter 5 provides an overview of System Management Services (SMS) software.

Chapter 6 provides an overview of dynamic reconfiguration (DR) software.

Chapter 7 provides an overview of Sun™ Management Center software running on Sun Fire 15K/12K systems

Using UNIX Commands

This document might not contain information on basic UNIX® commands and procedures such as shutting down the system, booting the system, and configuring devices.

See one or more of the following for this information:

- *Solaris Handbook for Sun Peripherals*
- Online documentation for the Solaris™ Operating Environment
- Other software documentation that you received with your system

Typographic Conventions

Typeface or Symbol	Meaning	Examples
AaBbCc123	The names of commands, files, and directories; on-screen computer output	Edit your `.login` file. Use `ls -a` to list all files. `% You have mail.`
AaBbCc123	What you type, when contrasted with on-screen computer output	`%` **`su`** `Password:`
AaBbCc123	Book titles, new words or terms, words to be emphasized. Replace command-line variables with real names or values.	Read Chapter 6 in the *User's Guide*. These are called *class* options. To delete a file, type **rm** *filename*.

Shell Prompts

Shell	Prompt
C shell	*machine-name*%
C shell superuser	*machine-name*#
Bourne shell and Korn shell	$
Bourne shell and Korn shell superuser	#

Related Documentation

Application	Title
Usage	*System Management Services Administrator Guide*
Reference	*System Management Services Reference Manual*
Installation	*System Management Services Installation Guide*
Issues, Limitations, and Bugs	*System Management Services Release Notes*
Usage	*System Management Services Dynamic Reconfiguration User Guide*
Usage	*Sun Fire 15K/12K Dynamic Reconfiguration User's Guide*
Usage	*Sun Management Center Software User's Guide*
Usage	*Sun Management Center Supplement for Sun Fire 15K/12K Systems*
Installation	*Sun Management Center Software Installation Guide*

Application	Title
Issues, Limitations, and Bugs	*Sun Management Center Release Notes for Sun Fire 15K/12K Systems*
Issues, Limitations, and Bugs	*Sun Management Center Software Release Notes*
Installation and Configuration	*Sun Fire 15K/12K System Site Planning Guide*

In addition, SMS and DR error messages are described by an on-line help system whose use is explained in the user guides shown above.

Accessing Sun Documentation

You can view, print, or purchase a broad selection of Sun documentation, including localized versions, at:

`http://www.sun.com/documentation`

Sun Welcomes Your Comments

Sun is interested in improving its documentation and welcomes your comments and suggestions. You can email your comments to Sun at:

`docfeedback@sun.com`

Please include the part number (816-5322-10) of your document in the subject line of your email.

Introduction to Sun Fire 15K/12K Systems Software

The Sun Fire 15K/12K systems are members of the next-generation Sun Fire system family. Sun Fire 15K/12K software runs in the Solaris 8 and 9 Operating Environments.

The Sun Fire 15K/12K system is often referred to as the *platform*. System boards within the platform can be logically grouped together into separately bootable systems called *dynamic system domains*, or simply *domains*. Up to 18 domains on the Sun Fire 15K system can exist simultaneously on a single platform. Up to 9 domains on the Sun Fire 12K system can exist simultaneously on a single platform. System Management Services (SMS) software lets you control and monitor domains, as well as the platform itself.

The system controller (SC) in the Sun Fire 15K/12K is a multifunction printed circuit board (PCB) that provides critical services and resources required for the operation and control of the Sun Fire system. SMS software packages are installed on the SC.

You can interact with the SC and the domains on the Sun Fire 15K/12K by using SMS commands. SMS provides a command line interface (CLI) to the various functions and features it contains. See Chapter 5 for more information about SMS software.

An alternative graphical user interface (GUI) for many of the commands in SMS is provided by Sun Management Center software. See Chapter 7 for more information about Sun Management Center software.

Dynamic reconfiguration (DR) software enables you to dynamically reconfigure a domain so that currently installed system boards can be logically attached to, or detached from, the operating system while the domain continues running in multiuser mode. A system board can be physically swapped in and out when it is not attached to a domain, even while the system continues running in multiuser mode. See Chapter 6 for more information about dynamic reconfiguration software.

Sun Fire 15K/12K Systems Software Documentation Set

Sun Fire 15K/12K systems software documentation comprises three categories of documents:

- Usage, reference, installation, and release note documents for software that runs only on Sun Fire 15K/12K systems. This category includes System Management Services (SMS) software documents.
- Sun software documentation that applies to other systems and workstations as well as to Sun Fire 15K/12K systems. This category includes Solaris Operating Environment usage, reference, installation, and release documents, as well as individual man page commands.
- Documentation for Sun software products that run on other Sun hardware platforms but require additional information and instructions when running on Sun Fire 15K/12K systems. This category includes Sun Management Center software documents.

In addition, some hardware and service documents are shipped with the Sun Fire 15K/12K hardware. One of these, the *Sun Fire 15K/12K System Site Planning Guide*, contains a preinstallation checklist that includes a necessary step for allocating a range of Internet Protocol (IP) addresses to be used by Management Network software.

See Chapter 3 for information about key differences between Sun Fire 15K/12K systems software and Sun Enterprise 10000 system software, including descriptions of the documentation that describes the new functionality.

Audience for This Document Set

Sun Fire 15K/12K systems are used in mission-critical data centers. The intended audience for the Sun Fire 15K/12K software documentation set is experienced system administrators who configure and maintain these high-end systems.

Sun Fire 15K/12K system administrators should be able to qualify as Sun-Certified System Administrators for the Solaris Operating Environment and as Sun-Certified Network Administrators for the Solaris Operating Environment. This certification, available from Sun Microsystems, is for system administrators tasked with performing essential system administration procedures on the Solaris Operating Environment, and for technical application support staff responsible for administering a networked system running the Solaris Operating Environment.

Sun Microsystems is creating certification guidebooks to help you understand the certification process. The guidebooks will contain the following information needed to learn how to prepare and register for Solaris Operating Environment certification examinations:

- Certification requirements
- Examination details
- Supporting courseware
- Testing objectives

For more information about the certification process, click the Certification link on this web page:

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http://suned.sun.com
```

Certification often accompanies coursework, and Sun Fire 15K/12K system administrators should be familiar with the contents of the standard Sun Educational Services courses in Solaris Operating Environment administration and network administration, especially:

- The Solaris Operating Environment System Administrator I course, which provides information about the essential tasks of standalone installation, file system management, backup procedures, process control, user administration, and device management.
- The Solaris Operating Environment System Administrator II course, which provides students with the skills necessary to administer Sun systems running Solaris software in a network environment. Students are taught how to maintain Sun systems, configure and troubleshoot the Network File System (NFS), and configure the Network Information Service (NIS) environment.
- The Solaris Operating Environment TCP/IP Network Administration course, which teaches students the advanced administration skills required to plan, create, administer, and troubleshoot a local area network (LAN). This course

provides hands-on experience with network planning, configuration, and troubleshooting, as well as Internet Protocol (IP) routing, Domain Name Service (DNS), Dynamic Host Configuration Protocol (DHCP), and IP version 6 (IPv6).

For more information about these courses and their contents, look for Solaris Operating Environment courses at this Web site:

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http://suned.sun.com/
```

Because some system administration procedures are delegated to operators who may be less familiar with the Solaris Operating Environment and with Sun Fire 15K/12K systems, step-by-step procedures such as installation and configuration are written more simply, with a single step for each action the operator must take, and ample examples of the messages the operator will see after these steps.

Where to Find Information About Sun Fire 15K/12K Software

The Sun Fire 15K/12K systems software documentation includes user guides, reference manuals (including individual man pages that can be viewed separately using the man command), installation guides, release notes, and README files. With the exception of individual man pages and README files, these documents are available in Adobe® Acrobat PDF files on product CD-ROMs for all software releases.

For production software releases, these software documents are also available in both PDF and HTML formats on the Sun Microsystems Web site. You can navigate to them by clicking the High-End Servers link at this Web site:

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http://www.sun.com/products-n-solutions/hardware/docs/Servers/
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Solaris Operating Environment Information

Read the Solaris Operating Environment installation documents and release notes included in your Solaris Operating Environment media kit if you are installing or upgrading the Solaris Operating Environment on any Sun Fire 15K/12K domains.

SMS Software Information

Read the *System Management Services Administrator Guide* for platform administration information.

Read the *System Management Services Reference Manual,* and the individual SMS man pages it contains, for information about individual SMS command usage and syntax.

Read the *System Management Services Installation Guide* if you are upgrading or reinstalling SMS software on a main or spare system controller.

Dynamic Reconfiguration Software Information

Read the *System Management Services Dynamic Reconfiguration User Guide* to understand how to perform DR operations from the system controller as a platform administrator.

Read the *Sun Fire 15K/12K Dynamic Reconfiguration User's Guide* and the `cfgadm`(1M) and `dr`(7) man pages to understand the usage and syntax of DR operations performed while logged on to an individual domain.

Read the *Sun Management Center Supplement for Sun Fire 15K/12K Systems* for information about performing DR and other system management operations in the Sun Management Center environment.

Sun Management Center Software Information

Read the *Sun Management Center Software User's Guide* and *Sun Management Center Supplement for Sun Fire 15K/12K Systems* for information about using Sun Management Center on Sun Fire 15K ⁄ 12K systems.

Read the *Sun Management Center Software Installation Guide, Sun Management Center Supplement for Sun Fire 15K/12K Systems, Sun Management Center Software Release Notes,* and *Sun Management Center Release Notes for Sun Fire 15K/12K Systems* for information about installing, upgrading, or configuring Sun Management Center software on Sun Fire 15K/12K systems.

Read the *Sun Management Center Supplement for Sun Fire 15K/12K Systems* for information about performing DR and other system management operations in the Sun Management Center environment.

For more information about Sun Management Center and the other platforms it supports, or to download the software or the documentation, refer to the Sun Management Center Web site at:

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http://www.sun.com/sunmanagementcenter/
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Differences Between Sun Fire 15K/12K Software and Sun Enterprise 10000 Software

Many Sun Fire 15K/12K system administrators have significant experience with Sun Enterprise 10000 (Starfire™) systems. This chapter provides a quick overview of major differences between the software on the two systems.

The Sun Enterprise 10000 system is the predecessor of the Sun Fire 15K/12K systems, and the two families of systems share a number of architectural features. Most important, they both feature a single-chassis platform that contains sufficient processors, memory, and input-output (I/O) channels for many separately configured domains to run completely separated applications in separate instances of the Solaris Operating Environment within the same physical chassis.

For both Sun Enterprise 10000 systems and Sun Fire 15K/12K systems, the software monitors and enables control of the entire platform.

- Sun Enterprise 10000 system software is called System Service Processor (SSP) software. The SSP software runs in the Solaris Operating Environment on a physically separate Sun workstation.
- Sun Fire 15K/12K systems software is called System Management Services (SMS) software and runs on a single-board computer called a system controller (SC). A second system controller is configured inside the chassis as well so that platform monitoring and management operations can fail over to the spare SC in case a problem develops with the main SC.

System Management Services Software

System administrators familiar with SSP software will have little trouble adapting to SMS software. Both use similar command-line interface (CLI) commands to perform platform management. SMS software has several advantages over SSP software:

- SMS software is more flexible than SSP software.
- SMS software is more secure than SSP software.
- SMS software is sufficient for complete platform management.

Unlike SSP software, there is no equivalent of the SSP `hostview`(1M) graphical user interface (GUI). To perform Sun Fire 15K/12K systems monitoring and management with a GUI, use Sun Management Center software. See Chapter 7 for more information about Sun Management Center software.

Since the Sun Fire 15K/12K system controller is housed inside the Sun Fire 15K/12K systems chassis, there is no equivalent to the control boards found on the SSP. Hardware access, performed by the control boards on the SSP, is handled on the Sun Fire 15K/12K by the 1^2C, console and pci busses.

The Sun Enterprise 10000 public network provided DR and console communication. The Management Network hardware and software on the Sun Fire 15K/12K controls communication between the SC and individual domains. The Management Network is a closed network with no user interaction. Although no user involvement is required, it is necessary to configure a block of available IP addresses for the Management Network before the Sun Fire 15K/12K systems are put into service. For a checklist that includes this step, refer to the *Sun Fire 15K/12K System Site Planning Guide* shipped with the Sun Fire 15K/12K systems.

In addition to increases in size and performance, Sun Fire 15K/12K systems use a different system architecture, featuring the Sun™ Fireplane interconnect, a higher-bandwidth centerplane and bus architecture. As a result, the nomenclature for identifying devices and attachment points differs from that of Sun Enterprise 10000 systems. This nomenclature change also affects dynamic reconfiguration and Sun Management Center operations.

For enhanced security between domains, Sun Fire 15K/12K systems use and enforce a community separation model. This security model is different from that used on Sun Enterprise 10000 systems. Refer to *System Management Services Administrator Guide* for more information about community separation.

Administering Solaris Domains

The same Solaris Operating Environment runs on Sun Fire 15K/12K system domains and system controllers as on other Sun hardware platforms. This commonality is advantageous for customers who are adding Sun Fire 15K/12K systems to an existing Sun network, and to system administrators who are already familiar with the Solaris Operating Environment running on workstations and other systems.

The Solaris software release incorporates Sun Fire 15K/12K software commands, drivers, and support files, including domain-side Dynamic Reconfiguration and Management Network software components.

Installation documentation for the Solaris Operating Environment has been revised to accommodate platforms that support multiple domains, such as Sun Fire 15K/12K systems and Sun Enterprise 10000 systems. As a result, the separate installation instructions for Sun Enterprise 10000 systems found in the *Hardware Platform Guide* are now contained in the Solaris installation documentation and in the *System Management Services Administrator Guide.*

Dynamic Reconfiguration Software

Dynamic reconfiguration software enables you to move, remove, and add physical resources such as system boards and processors to and from operating domains. Unlike SMS software, DR operations can be performed on both the platform system controller, affecting multiple domains, and by logging directly on to an individual domain.

Dynamic reconfiguration on Sun Fire 15K/12K systems is more powerful and more streamlined than on Sun Enterprise 10000 systems, but the underlying concepts and operations are similar.

Syntax differs somewhat between the two systems when operations are performed while logged on to the system controller. DR operations performed while logged on to an individual domain, however, are similar.

Sun Management Center Software

Sun Management Center software on Sun Fire 15K/12K systems is very similar to Sun Management Center software on Sun Enterprise 10000 systems. There are, however, two important differences:

- Because the physical architecture of the two systems is substantially different, Sun Management Center will report different properties and values for many hardware components. These properties are displayed in different tables and with different names. The rules governing the alarms for these properties also have different names.

- In addition to the platform-monitoring capabilities found on both systems, Sun Management Center on Sun Fire 15K/12K systems enables you to perform platform-management operations such as dynamic reconfiguration. These operations are explained in the *Sun Management Center Supplement for Sun Fire 15K/12K Systems.*

IDN and AP Software

Inter-Domain Networking (IDN) and alternate pathing (AP) software is available for Sun Enterprise 10000 systems but does not exist on Sun Fire 15K/12K systems in the current release.

The AP functionality found in Sun Enterprise 10000 system software is superseded by functionality included in the Solaris Operating Environment.

Solaris Operating Environment for Sun Fire 15K/12K Systems

The Sun Fire 15K/12K systems can be divided into dynamic system domains. These domains are based on system board slots that are assigned to the domains. Each domain is electrically isolated into hardware partitions, which ensures that any failure in one domain does not affect the other domains in the system.

The Sun Fire 15K/12K systems run the Solaris Operating Environment on their domains and on the system controller. Previous versions of the Solaris Operating Environment are not supported on Sun Fire 15K/12K systems.

The Solaris Operating Environment offers the best of UNIX-class reliability, availability, and serviceability at a fraction of the cost of mainframe operating systems.

The Solaris Operating Environment provides:

- Stability, high performance, capacity, and precision
- 32- and 64-bit operating environments
- Easy-to-use tools
- High quality and reliability
- Integrated graphics with industry-standard API support
- Over 12,000 leading technical and business applications

System Management Services Software

SMS software supports Sun Fire 15K/12K domains that are running the Solaris Operating Environment. The commands provided with the SMS software can be used remotely.

SMS software enables the platform administrator to perform the following tasks:

- Administrate domains by logically grouping domain configurable units (DCU) together. DCUs are system boards, such as CPU and I/O boards. Domains are able to run their own operating systems and handle their own workloads.
- Dynamically reconfigure a domain so that currently installed system boards can be logically attached to or detached from the operating system while the domain continues running in multiuser mode. A system board can be physically swapped in and out when it is not attached to a domain, even while the system continues running in multiuser mode.
- Perform automatic dynamic reconfiguration of domains using a script.
- Monitor and display the temperatures, currents, and voltage levels of one or more system boards or domains.
- Monitor and control power to the components within a platform.
- Execute diagnostic programs such as power-on self-test (POST).

The following features are provided in this release of Sun Fire 15K/12K SMS software:

- Dynamic system domain (DSD) configuration
- Configured domain services
- Domain control capabilities
- Domain status reporting
- Hardware control capabilities
- Hardware status monitoring, reporting, and handling
- Hardware error monitoring, reporting, and handling
- System controller (SC) failover

- Configurable administrative privileges
- Ability to allocate, activate, and monitor additional processing resources through the Capacity on Demand (COD) option

System Architecture

SMS software uses a distributed client-server architecture. The init(1M) command starts, and restarts as necessary, one process: ssd(1M). The ssd command is responsible for monitoring all other SMS processes and restarting them as necessary.

The Sun Fire 15K/12K platforms, the SC, and other workstations communicate over the Ethernet. You perform SMS operations by entering commands on the SC after remotely logging on to the SC from another workstation on the local area network. You must log in as a user with the appropriate platform or domain privileges if you want to perform SMS operations such as monitoring and controlling the platform.

Dual system controller boards are supported within the Sun Fire 15K/12K systems. One board is designated as the primary or main system controller board, and the other is designated as the spare system controller board. If the main system controller fails, the failover capability automatically switches to the spare system controller.

SMS Administration Environment

Administration tasks on the Sun Fire 15K/12K are secured by group privilege requirements. Upon installation, SMS installs the following UNIX groups to the /etc/group file.

- platadmn identifies a platform administrator.
- platoper identifies a platform operator.
- platsvc identifies a platform service.
- dmn[*A...R*]admn - domain [*domain_id* | *domain_tag*] identifies the administrator of one of the eighteen available domains.
- dmn[*A...R*]rcfg - domain [*domain_id* | *domain_tag*] identifies the configurator of one of the eighteen available domains.

Management Network

One of the system controller's main functions is to provide administration services for the Sun Fire 15K/12K platform and its domains. The Sun Fire 15K/12K Management Network (MAN) is a combination of hardware and software providing the network architecture by which such administration services are delivered.

The primary services provided by the Management Network include:

- Domain consoles
- Message logging
- Time synchronization
- Dynamic reconfiguration
- Network boot and Solaris installation
- System controller heartbeats

Access to the Management Network is restricted to the SC and the domains in the platform. No external IP traffic should be routed across the Management Network.

Capacity on Demand

Your Sun Fire 15K/12K system is configured with a specific number of processors (CPUs) that reside on CPU/Memory boards. These boards were purchased as part of your initial system configuration or as add-on components. The purchase of the boards includes the right to use the CPUs on those boards.

The Capacity on Demand (COD) option provides additional processing resources that you pay for as you use them. Through the COD option, you receive and install unlicensed CPU/Memory boards. These boards, which are identified as COD CPU/Memory boards, contain four CPUs. However, you do not have the right to use the CPUs on COD CPU/Memory boards until you also purchase the COD right-to-use (RTU) licenses for them. The purchase of a COD RTU license entitles you to receive a license key, which enables the appropriate number of COD processors.

Your Sun Fire 15K/12K system can have any combination of active CPU/Memory boards and COD CPU/Memory boards, up to the maximum capacity allowed for the system. You must have at least one active CPU for each domain in your system.

Contact your Sun sales representative or authorized Sun reseller to purchase COD CPU/Memory boards and the appropriate number of COD RTU licenses. After the COD CPU/Memory boards are installed, use the SMS software to allocate COD RTU licenses, activate COD CPUs, and monitor the COD CPUs used.

For More Information

See "SMS Software Information" on page 6 to determine which documents to read for more information about SMS software.

Dynamic Reconfiguration Software for Sun Fire 15K/12K Systems

Dynamic reconfiguration software running on the Sun Fire 15K/12K systems enables you to perform hardware configuration changes to a live domain that is running the Solaris Operating Environment, without causing machine downtime.

You can perform DR operations from the SC or from an individual domain.

You can perform DR operations from the SC using the `addboard`(1M), `moveboard`(1M), `deleteboard`(1M), and `rcfgadm`(1M) SMS commands.

Dynamic Reconfiguration software also enables you to hot-swap system boards without bringing the system down. It is used to unconfigure the resources on a faulty system board from a domain so that the system board can be removed from the system. The repaired or replacement board can then be inserted into the domain while the Solaris Operating Environment is running.

DR software then configures the resources on the board into the domain. If you use the DR feature to add or remove a system board, DR always leaves the board in a known configuration state.

System boards include:

- CPU/Memory boards
- I/O boards
- WCI boards
- Controller boards
- Compact PCI controller boards

System Board Slots and Logical Domains

Sun Fire 15K and Sun Fire 12K domain configuration is determined by the domain configuration in the platform configuration database (PCD), which resides on the SC. The PCD controls how the system board slots are logically partitioned into domains. Thus, the configuration can include empty slots and populated slots.

The physical domain is determined by the logical domain. The logical domain is the set of slots that belong to the domain. The physical domain is the set of boards that are physically interconnected. A slot can be a member of a logical domain without having to be part of a physical domain.

The number of slots available to a given domain is controlled by an available component list (ACL) maintained on the system controller. A slot must be assigned or available to a domain before you can use a cfgadm(1M) command to change its state.

After a slot has been assigned to a domain, it becomes visible to that domain and unavailable and invisible to any other domain. Conversely, you must unassign and disconnect a slot from its domain before you can assign and connect it to another domain.

After the domain is booted, the system boards and the empty slot can be assigned to or unassigned from a logical domain. However, they are not allowed to become a part of the physical domain until the operating system requests it.

System board slots that are not assigned to any domain are available to all domains. These boards can be assigned to a domain by the platform administrator; however, an available component list can be set up on the SC to allow users with appropriate privileges to assign available boards to a domain.

DR Administration Models

The ACL controls what administrative tasks can be performed, based on the name and group identification of the user. For instance, the platform administrator can add, delete, or move boards to or from a domain, as well as assign and unassign boards to or from a domain. However, the domain administrator or a domain configurator cannot assign or unassign boards to or from a domain.

SC State Models

On the Sun Fire 15K/12K SC, a board can be in one of four states: unavailable, available, assigned, or active. You can use the `showboards`(1M) command to view the state of a specific board. You must have appropriate privileges for the specified domain. Unavailable boards cannot be viewed by the domain administrator. Only the platform administrator can see every board in the system.

The names and descriptions of the states for boards on the SC are described in the sections that follow. The state of a board on the SC is not the same as the state of a board on the domain.

unavailable

The board is unavailable to the domain. This means that the board has not been added to the available component list for the specified domain or that the board is currently assigned to another domain. Note that boards that are not in the available component list are invisible to the domain. In the unavailable state, the board is not considered part of the specified domain.

available

The board is available to be added to the domain. This means that the board is in the available component list (ACL) for the domain. Note that the board can be available to any number of domains. In the available state, the board is considered to be part of the logical domain.

assigned

The board has been assigned to the domain, which means that the board is in the available component list for that domain and that it is unavailable to any other domain. In the assigned state, the board is considered to be part of the physical domain.

active

The board has been connected or the board has been connected and configured into the Solaris Operating Environment and is available for use by the operating system. In the active state, the board is considered part of the physical domain.

DR on I/O Boards

You must use caution when you add or remove system boards with I/O devices. Before you can remove a board with I/O devices, all its devices must be closed and all its file systems must be unmounted.

If you need to remove a board with I/O devices from a domain temporarily and then add it back before any other boards with I/O devices are added, reconfiguration is not necessary and need not be performed. In this case, device paths to the board devices remain unchanged. But if you add another board with I/O devices before the first board has been put back, reconfiguration is required because the paths to devices on the first board have changed.

Automatic DR

Automatic DR enables an application to execute DR operations without requiring user interaction. This ability is provided by an enhanced DR framework that includes the reconfiguration coordination manager (RCM) and the `sysevent` system event facility. The RCM enables application-specific loadable modules to register callbacks. The callbacks perform preparatory tasks before a DR operation, error recovery during a DR operation, and cleanup after a DR operation.

The system event framework enables applications to register for system events and receive notifications of those events. The automatic DR framework interfaces with the RCM and with the system event facility to enable applications to automatically give up resources prior to unconfiguring them, and to capture new resources as they are configured into the domain.

The automatic DR framework can be used locally from the domain by using the `cfgadm`(1M) command, or from the SC. The automatic DR operations that are initiated locally on the domain are referred to as local automatic DR, and the automatic DR operations initiated from the SC are referred to as global automatic

DR. The global automatic DR operations include moving system boards from one domain to another, configuring hot-swapped boards into a domain, and removing system boards from a domain.

For More Information

See "Dynamic Reconfiguration Software Information" on page 6 to determine which documents to read for more information about Dynamic Reconfiguration software.

Sun Management Center Software for Sun Fire 15K/12K Systems

Sun Management Center software easily integrates into heterogeneous IT environments and scales from a single system to thousands of systems and desktop systems. Sun Management Center software is an open, extensible system-monitoring and -management application that uses Java™ software and the Simple Network Management Protocol (SNMP) to provide an integrated and comprehensive enterprise-wide management of Sun products and their subsystems, components, and peripheral devices.

Sun Management Center offers a single point of management for Sun systems and storage components, for the Solaris Operating Environment, and for applications running on the Solaris Operating Environment. With Sun Management Center software, organizations can deliver monitoring and management capabilities that optimize performance, enhance application availability, and simplify management of the IT environment.

Sun Management Center Add-On Sun Fire 15K/12K Software Packages

The add-on Sun Fire 15K/12K software packages provide support for the Sun Fire 15K/12K platform and domains. For the Sun Fire 15K/12K platform, hardware configuration information resides on both system controllers and on each of the individual Sun Fire 15K/12K platform domains. Hardware configuration information, process monitoring, and management operations for the Sun Fire 15K/12K system are provided by Sun Fire 15K/12K agent modules.

Sun Management Center software provides the only graphical user interface (GUI) available for monitoring and managing Sun Fire 15K/12K systems. Sun Management Center software also provides flexible integration with most major enterprise management software packages.

Core Features of Sun Management Center Software

- It manages thousands of Sun systems.
- Its three-tier architecture provides a single point of management.
- The Java GUI offers a common look and feel.
- It can be integrated with leading third-party vendors to address enterprise-wide, heterogeneous environments.
- The Sun Management Center Developer's Environment enables you to create and modify customized modules.

New Features of Sun Management Center Software

- Grouping of objects provides an easy way to define and invoke complex tasks on a set of managed objects.
- Enhanced alarm management and predictive failure analysis increase system availability.
- Comprehensive online hardware diagnostic testing identifies faults before the system is affected.
- A web-based interface simplifies administration.
- A GUI module builder provides a powerful, easy-to-use interface for developing custom modules.
- New filtering capabilities help pinpoint problems quickly, even in systems with thousands of objects or nodes.
- Secure management controls enable dynamic reconfiguration and domain management through an easy-to-use GUI.

Sun Management Center Software Pricing

Sun offers its Sun Management Center base package free of charge and downloadable from the Web. This package enables you to manage an unlimited number of nodes, and is sufficient to perform monitoring and management of Sun Fire 15K/12K systems.

The Advanced Systems Monitoring and Premier Management Applications packages are licensed per node or per Solaris Operating Environment image.

For More Information

See "Sun Management Center Software Information" on page 6 to determine which documents to read for more information about Sun Management Center software.