

Solaris Transition Guide Update

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Preface

The SolarisTM Transition Guide Update provides current information on topics documented in the Solaris Transition Guide. These books offer information for customers transitioning from SunOSTM release 4 to SunOS releases 5.7 and 5.8.

The *Solaris Transition Guide* was originally delivered with the Solaris 7 operating environment to cover differences between SunOS release 4 and SunOS release 5.7. That guide is being re-delivered for Solaris 8 to correct minor technical flaws and problems in table formatting. The basic content of the guide remains unchanged as it relates to SunOS release 4 and SunOS release 5.7 differences.

The Solaris Transition Guide Update documents changes and enhancements to SunOS release 5.8 which possibly affect users, system administrators and developers transitioning from SunOS release 4. The update also provides references to Solaris documentation with current information on topics covered in the Solaris Transition Guide. Use the update with the Solaris Transition Guide to identify areas of functionality affected by changes made between SunOS release 4 and SunOS release 5.8.

The structure of the *Solaris Transition Guide* has been preserved in this update to enable easy comparison between the two books.

Who Should Use This Update

This update is for users, system administrators, and software developers who are making the transition from SunOS release 4 to a SunOS release 5.8 work environment.

What to Expect From This Update

The purpose of this update is to direct you to current information on topics covered in *Solaris Transition Guide* and to overview features added or changed for SunOS release 5.8. Because the *Solaris Transition Guide Update* is an overview that covers a wide range of topics, detailed information and procedures are not included. The update references the *Solaris Transition Guide* and other Solaris 8 documentation to consult for more information.

How This Update Is Organized

This guide is divided into 2 parts with 19 chapters.

Part 1: Transition Information for Users and System Administrators

You can use this part to find current information for users and system administrators on the transition from SunOS release 4 to a SunOS release 5.8 computing environment.

The part contains:

- Chapter 1 references the *Solaris Transition Guide* on the benefits of migrating to the Solaris operating environment.
- Chapter 2 provides links to sections of the update with information on features added or enhanced in SunOS release 5.8.
- Chapter 3 includes references to current information on migrating from SunOS release 4 to a SunOS release 5.8 operating system.
- Chapter 4 briefly discusses the Source Compatibility Package and the Binary Compatibility Packages that enable you to use SunOS release 4 commands and applications during your migration.
- Chapter 5 describes the major differences between SunOS release 4 and Solaris 8 security. The chapter also provides references to information that supersedes the *Solaris Transition Guide*.
- Chapter 6 provides udated information on the on setting up the local user environment after installing the Solaris 8 Operating Environment.

- Chapter 7 describes SunOS release 5.8 changes to device administration and provides updated references to information included in the *Solaris Transition Guide*.
- Chapter 8 describes changes to booting and shutting down a system.
- Chapter 9 explains changes to file systems, directories, and files. It also describes changes to file system administration.
- Chapter 10 provides current information on the SUNWhinst package used to add SunOS release 4 to a SunOS release 5 server.
- Chapter 11 describes changes to printer Solaris 8 printer administration and provides updated references to information on serial port management.
- Chapter 12 outlines changes to the network services.
- Chapter 13 provides updated information on NIS, NIS+ and the domain name system (DNS).
- Chapter 14 provides references Solaris documentation on CDE.

Part 2: Transition Information for Developers

You can use this part of the update to find current information for developers on transitioning from SunOS release 4 to a SunOS release 5.8 programming environment.

This part contains the following chapters:

- Chapter 15 discusses which capabilities have been added to or removed from compilers, linkers, and debuggers.
- Chapter 16 discusses changes to tools and resources for the development environment including changes to ioctl() requests, ptrace() request values, libraries, and the make and SCCS facilities.
- Chapter 17 discusses Solaris 8 networking features as they relate to the programming environment. It also describes improved internationalization features.
- Chapter 18 provides references to Solaris documentation on system and device configuration.
- Chapter 19 provides references Solaris documentation on changes to device driver interfaces, the devinfo command, porting considerations, STREAMS, and the Solaris 8 driver architecture.

Related Books

For more information on the Solaris 8 operating environment, see the following documentation:

■ Solaris 8 Installation Collection

```
Solaris 8 Advanced Installation Guide
Solaris 8 (SPARC™ Platform Edition) Installation Guide
What's New in the Solaris 8 Operating Environment
```

■ Solaris 8 System Administrator Collection

```
Binary Compatibility Guide
```

NIS+ Transition GuideSolaris Naming Administration Guide Solaris Naming Setup and Configuration Guide Solaris Transition Guide System Administration Guide, Volume 1 System Administration Guide, Volume 2 System Administration Guide, Volume 3

■ Solaris 8 Software Developer Collection

International Language Environments Guide Linker and Libraries Guide International Language Environments Guide Source Compatibility Guide STREAMS Programming Guide System Interface Guide Writing Device Drivers

Ordering Sun Documents

Fatbrain.com, an Internet professional bookstore, stocks select product documentation from Sun Microsystems, Inc.

For a list of documents and how to order them, visit the Sun Documentation Center on Fatbrain.com at http://wwwl.fatbrain.com/documentation/sun.

Accessing Sun Documentation Online

The docs.sun.com $^{\text{SM}}$ Web site enables you to access Sun technical documentation online. You can browse the docs.sun.com archive or search for a specific book title or subject. The URL is http://docs.sun.com.

What Typographic Conventions Mean

The following table describes the typographic changes used in this book.

TABLE P-1 Typographic Conventions

Typeface or Symbol	Meaning	Example
AaBbCc123	The names of commands, files, and directories; on-screen computer output	Edit your .login file. Use ls -a to list all files. machine_name% you have mail.
AaBbCc123	What you type, contrasted with on-screen computer output	machine_name% su Password:
AaBbCc123	Command-line placeholder: replace with a real name or value	To delete a file, type rm filename.
AaBbCc123	Book titles, new words, or terms, or words to be emphasized.	Read Chapter 6 in <i>User's Guide.</i> These are called <i>class</i> options. You must be <i>root</i> to do this.

Shell Prompts in Command Examples

The following table shows the default system prompt and superuser prompt for the C shell, Bourne shell, and Korn shell.

TABLE P-2 Shell Prompts

Shell	Prompt
C shell prompt	machine_name%
C shell superuser prompt	machine_name#
Bourne shell and Korn shell prompt	\$
Bourne shell and Korn shell superuser prompt	#

Getting Help from Sun Microsystems WWW Site

You can get additional Solaris transition information by accessing the following URL:

http://www.sun.com/smcc/solaris-migration/index.html

The Solaris Migration Initiative home page is a central point for the distribution of tools, documentation, and information to aid you in your transition from SunOS release 4.

Transition Information for Users and System Administrators

Use this part of the update to find current information for users and system administrators on the transition from SunOS release 4 to a SunOS release 5.8 computing environment.

Introduction

The Solaris operating environment enhances your system's capabilities with powerful tools and features. The chapter in the *Solaris Transition Guide* discusses the benefits of migrating to the Solaris operating environment. It also summarizes the principal differences between SVR4 and the Solaris operating environment.

Advantages of Migrating to the Solaris Operating Environment

See the Solaris Transition Guide.

Comparison of SVR4 and the Solaris Operating Environment

See the Solaris Transition Guide.

Overview of Major Changes

This following sections of this update describe changes and enhancements made to SunOS release 5.8 following the publication of the *Solaris Transition Guide*.

- "Default File System and Directory Permissions" on page 28
- "Solaris 8 Role-Based Access Control" on page 28
- "Sun Enterprise[™] Authentication Mechanism (Kerberos V5) Client Support" on page 31
- "Using Mail" on page 35
- "Man Page Organization Differences" on page 35
- "Dynamic Reconfiguration" on page 39
- "Dynamic Host Configuration Protocol (DHCP)" on page 42
- "Universal Disk Format (UDF) file system" on page 46
- "/var Directory" on page 49
- "Summary of Printing Differences" on page 56
- "NFS Server Logging" on page 59
- "sendmail, Version 8.9.3" on page 60
- "SunOS release 4 and NIS-Compatibility Mode" on page 64
- "DNS" on page 65
- "Linkers" on page 72
- "Debuggers" on page 73
- "Device Naming From a Developer's Perspective" on page 86

For information on earlier changes from SunOS release 4 to SunOS release 5, see the *Solaris Transition Guide.*

Converting a SunOS 4.x System to the Solaris 8 Environment

This chapter updates information in the *Solaris Transition Guide* on the three-phase process involved in converting a SunOS release 4 system.

The chapter contains:

- "What's New About Installing" on page 23
- "What to Do Before You Install Solaris Software" on page 23
- "Backing Up Files and File Systems Before You Install" on page 24
- "Installing Solaris Software" on page 24
- "Restoring Files and File Systems After You Install" on page 24

What's New About Installing

See What's New in the Solaris 8 Operating Environment.

What to Do Before You Install Solaris Software

Read "What to Do Before You Install Solaris Software" in Solaris Transition Guide. Then carefully review "Getting Started" in Solaris 8 (SPARC Platform Edition) Installation Guide.

Backing Up Files and File Systems Before You Install

Read this section in the Solaris Transition Guide and carefully review "Backing Up and Restoring File Systems (Overview)" in System Administration Guide, Volume 1.

Installing Solaris Software

Install the Solaris 8 software using the software installation procedures given in "Getting Started" in Solaris 8 (SPARC Platform Edition) Installation Guide.

Preserve Option

The *Solaris Transition Guide* mentions a preserve option in the interactive installation program that allows you to save existing SunOS release 4 file systems during installation. For procedures on using the interactive installation program to preserve *data on the disk*, see "Using the Solaris 8 Interactive Installation Program" in *Solaris 8 Advanced Installation Guide*.

Restoring Files and File Systems After You Install

Read this section in the Solaris Transition Guide and carefully review "Backing Up and Restoring File Systems (Overview)" in System Administration Guide, Volume 1.

Using the Compatibility Packages

The Solaris 8 software is neither source nor binary compatible with the SunOS release 4 software. This means that SunOS release 4 programs and user applications based on those releases may not run correctly under the Solaris 8 operating environment. Compatibility packages make it possible for these programs to run on a Solaris 8 system.

This chapter replaces the corresponding chapter in the *Solaris Transition Guide*. It briefly discusses two compatibility packages: the Source Compatibility Package and the Binary Compatibility Package. These packages make the transition easier by enabling you to use SunOS release 4 commands and applications as you migrate to the SunOS release 5 computing environment.

- Binary Compatibility Guide
- Source Compatibility Guide

Source Compatibility Package

For detailed information about the Source Compatibility Package, see the Source Compatibility Guide

Binary Compatibility Package

See the *Binary Compatibility Guide* for procedures about setting up your environment to access this package. This guide also details the limitations of the Binary Compatibility Package.

Security

This chapter updates information in the *Solaris Transition Guide* on changes to security features made after SunOS release 4.

The chapter contains:

- "What's New in the Solaris 8 Operating Environment" on page 27
- "Solaris 8 Security Features" on page 28
- "Solaris 8 Security Related Documentation" on page 29
- "Other Security Features" on page 30
- "Security Options" on page 31
- "Other Security Options" on page 31

What's New in the Solaris 8 Operating Environment

See these sections for information on security features and options implemented for the Solaris 8 release:

- "Default File System and Directory Permissions" on page 28
- "Solaris 8 Role-Based Access Control" on page 28
- "Sun Enterprise[™] Authentication Mechanism (Kerberos V5) Client Support" on page 31

Solaris 8 Security Features

Most of the SunOS release 4 security features are available in the current release. The following sections describe changes and enhancements implemented for Solaris 8 release.

Default File System and Directory Permissions

Many system files and directories in the Solaris 8 release have different default ownership and stricter permissions than in previous releases. For complete information, see "Managing System Security (Overview)" in *System Administration Guide, Volume 2*

Note - Before you create packages for the Solaris 8 operating environment, refer to "Managing System Security (Overview)" in System Administration Guide, Volume 2.

Solaris 8 Role-Based Access Control

In previous releases, full superuser powers were granted to anyone with the superuser password. In the Solaris 8 operating environment, role-based access control (RBAC) enables administrators to assign limited superuser capabilities to normal users. This is achieved through three new features:

- Authorization—access granted to a restricted function.
- Execution profile—a grouping of authorizations and commands with special attributes. For example, uid, gid, and egid.
- Role—special types of user accounts assigned for the purpose of performing a particular set of administrative tasks.

The next sections describe databases that support the use of roles, authorizations, and profiles. For further information, see "Managing User Accounts and Groups (Overview)" in *System Administration Guide, Volume 1.*

/etc/user_attr

The user_attr database is used to store extended security attributes related to users and roles (a special type of user account). Specifically, the database associates users with authorizations, profiles, roles, and account type.

/etc/security/auth_attr

The auth_attr database lists and describes authorizations. It identifies associated help files and includes any additional authorization attributes.

/etc/security/prof_attr

The prof_attr database lists the available execution profiles and identifies the authorizations and help file associated with each profile.

/etc/security/exec_attr

The exec_attr database associates execution attributes with execution profiles. Each entry consists of the security policy in force, a command, and the values for any special attributes, such as real or effective UIDs or GIDs. Note that currently the only valid security policy is suser (superuser).

/etc/security/audit_user

The audit_user database stores preselection data for auditing.

Solaris 8 Security Related Documentation

This documentation provides up-to-date information on managing security at the file, system, and network level.

TABLE 5-1 Security Related Documentation

Subject	Book Title	Where to Find it
Managing System Security	System Administration Guide, Volume 2	Solaris 8 System Administrator Collection
NIS+ Name Service Authorization, Authentication	Solaris Naming Administration Guide	Solaris 8 System Administrator Collection
NIS+ Security	NIS+ Transition Guide	Solaris 8 System Administrator Collection

TABLE 5-1 Security Related Documentation (continued)

Subject	Book Title	Where to Find it
Secure NFS	System Administration Guide, Volume 3	Solaris 8 System Administrator Collection
Secure RPC	System Administration Guide, Volume 3	Solaris 8 System Administrator Collection
TCP/IP	System Administration Guide, Volume 3	Solaris 8 System Administrator Collection

Other Security Features

The following sections reference documentation that supersedes information in the *Solaris Transition Guide.*

Password Aging Changes

See "Managing User Accounts and Groups (Overview)" in *System Administration Guide, Volume 1* for current information about setting up and maintaining passwords.

Access Control Lists (ACLs)

See "Managing System Security (Overview)" in *System Administration Guide, Volume 2* for current information on ACLs.

Automated Security Enhancement Tool (ASET)

See "Managing System Security (Overview)" in System Administration Guide, Volume 2 for current information on ASET.

Security Options

The following sections reference documentation that supersedes information in the *Solaris Transition Guide.*

Kerberos 4.0 Security

"Using Authentication Services (Tasks)" in *System Administration Guide, Volume 2* provides step-by-step instructions for setting up Kerberos login authentication.

Sun Enterprise[™] Authentication Mechanism (Kerberos V5) Client Support

This feature provides the Kerberos V5 client-side infrastructure, an addition to the Pluggable Authentication Module (PAM), and utility programs that can be used to secure RPC based applications, such as the NFS service. Kerberos provides selectable strong user or server level authentication, integrity, or privacy support. The Kerberos clients can be used in conjunction with Sun Enterprise Authentication Mechanism (SEAM) (a part of SEAS 3.0) or other Kerberos V5 software (for instance, the MIT distribution) to create a complete single network sign-on solution. The section on the "Solaris NFS Environment" in *System Administration Guide, Volume 3* describes Kerberos support for the NFS environment.

Other Security Options

The following sections reference documentation that supersedes information in the *Solaris Transition Guide.*

SunSHIELD Package

For information on the SunSHIELD™ Basic Security Module (BSM) package, see *Trusted Solaris Administration Overview* in the *Trusted Solaris 7 AnswerBook*.

PAM

See "Using Authentication Services (Tasks)" in *System Administration Guide, Volume 2* for step-by-step instructions on administering the Pluggable Authentication Module (PAM).

User Environment Administration

This chapter updates information in the *Solaris Transition Guide* on setting up the local user environment after installing the Solaris 8 operating environment.

The chapter contains:

- "What's New in the Solaris 8 Operating Environment" on page 33
- "Selecting a Default Shell" on page 34
- "Customizing User Environments" on page 34
- "Window Systems" on page 34
- "User and Group Administration" on page 34
- "Using Mail" on page 35

What's New in the Solaris 8 Operating Environment

New options and utilities have been added to sendmail and the Solaris 8 Reference Manual Collection has been reorganized.

See these sections for more information:

- "Using Mail" on page 35
- "Man Page Organization Differences" on page 35

Selecting a Default Shell

For information on the login shell that runs when you are logged in, see the *Solaris Transition Guide*.

Customizing User Environments

For current information on customizing the user environment, see "Customizing a User's Work Environment" in System Administration Guide, Volume 1

For information recreating the look and feel of your SunOS release 4 work environment, see the *Solaris Transition Guide*.

Window Systems

For information on changes previously made in the SunOS release 5 environment, see the *Solaris Transition Guide*.

For current information on using CDE as your Solaris 8 desktop, see:

- Solaris Common Desktop Environment: User's Guide
- Solaris Common Desktop Environment: User's Transition Guide

User and Group Administration

For information on adding, modifying or removing users and groups, see:

- Solaris Transition Guide—SunOS release 4 background information.
- "Managing User Accounts and Groups (Overview)" in System Administration Guide, Volume 1

Using Mail

See the Solaris Transition Guide for information on changes previously made in the SunOS release 5 environment.

In the Solaris 8 operating environment, sendmail 8.10 includes new a option, MaxHeadersLength, that limits the length of the sum of all header lines in any given message, which can prevent a denial-of-service attack. Also included is a new version of mail.local that implements the Local Mail Transfer Protocol, RFC 2033. This change allows for re-queuing of mail to the recipients that did not receive a message, rather than re-sending the message to all of the recipients if an error occurs. A new file called /etc/default/sendmail can be used to store options to start sendmail with, so that the options are not touched during a upgrade. In addition, a new utility called smrsh increases security by reducing the number of commands that can be run using the |program syntax of sendmail.

For detailed and current information, see "Mail Services Reference" in System Administration Guide, Volume 3.

Using Document Tools

See the Solaris Transition Guide for information on differences in:

- Solaris PostScript[™] filters and SunOS release 4TransScript filters (T_FX filter pscat raster image).
- Solaris and SunOS release 4 troff output.

Man Page Organization Differences

Man pages have been changed to be compatible with SVR4 organization. As a result, some sections of the SunOS release 4 man pages have been renamed. For example, man(8) is now man(1).

The Solaris 8 Reference Manual Collection has been reorganized. The following table describes the current sections of the Solaris 8 Reference Manual Collection.

 TABLE 6-1
 Man Page Documentation

Solaris 8 Reference Manual Section	Content
man pages section 1	User commands
man pages section 1M	System administration commands
man pages section 2	System calls
man pages section 3	Basic library functions
	Curses library functions
	Extended library functions
	Library interfaces and headers
	Networking library functions
	Threads and realtime library functions
man pages section 4	File formats
man pages section 5	Standards, environments, and macros
man pages section 6	Demos
man pages section 7	Device network interfaces
man pages section 9	DDI and DKI overview
man pages section 9E	DDI and DKI entry points
man pages section 9F	DDI and DKI kernel functions
man pages section 9S	DDI and DKI data structures

Device Administration

This chapter updates information in the *Solaris Transition Guide* on device administration.

The chapter contains:

- "What's New in the Solaris 8 Operating Environment" on page 37
- "Device Naming Conventions" on page 38
- "Obtaining Disk Information" on page 38
- "Adding Devices to the System" on page 38
- "Using Volume Management" on page 39

What's New in the Solaris 8 Operating Environment

The devfsadm command provides an improved mechanism for managing special device files in the /dev and /devices directories, including support for dynamic reconfiguration events. For more information, see "Device Naming From a Developer's Perspective" on page 86.

The cfgadm command is updated in this release to provide SCSI and PCI hot-plugging for supported SCSI and PCI controllers. For more information, see "Dynamic Reconfiguration" on page 39.

Device Naming Conventions

For information on changes made prior to SunOS release 5.8, see the *Solaris Transition Guide*.

For current information, see "What's New in Disk Management?" in System Administration Guide, Volume 1.

Obtaining Disk Information

The commands that report disk information changed in the SunOS release 5.7. df(1M) and du(1M) are still available, but have changed. dkinfo(8), and devinfo(1M) are replaced by prtvtoc and sysdef-d.

See the Solaris Transition Guide for detailed information on these changes.

See the following documentation for current information on these commands:

- df and du—"Managing Disk Use (Tasks)" in System Administration Guide, Volume 2
- prtvtoc "Administering Disks (Tasks)" in System Administration Guide, Volume 1.
- sysdef—"Displaying Device Configuration Information" in System Administration Guide, Volume 1.

Adding Devices to the System

For current information on adding devices to a system, see "Device Management (Overview)" in System Administration Guide, Volume 1.

Note - The reconfiguration boot -r command, described in the *Solaris Transition Guide*, does not currently remove file system entries for devices that are physically removed from the system. For more information, see boot(1M).

Dynamic Reconfiguration

The cfgadm command is updated in this release to provide SCSI and PCI hot-plugging for supported SCSI and PCI controllers.

Hot-plugging is the ability to physically add, remove, or replace system components while the system is running. Dynamic reconfiguration, available on certain SPARC servers, allows a service provider to remove and replace hot-pluggable system I/O boards in a running system, eliminating the time lost in rebooting. Also, if a replacement board is not immediately available, the system administrator can use dynamic reconfiguration to shut down a failing board while allowing the system to continue operation.

For more information, see "What's New in Device Management?" in System Administration Guide, Volume 1.

Using Volume Management

Volume Management, released with the Solaris 2.2 operating environment, mounts all removable media to provide access to CD-ROM and diskette drives under /vol/dev.

For more information, see "How Volume Management Works (Reference)" in System Administration Guide, Volume 1.

Startup and Shutdown

This chapter updates information in the *Solaris Transition Guide* on changes to booting and shutting down a system.

It contains:

- "What's New in the Solaris 8 Operating Environment" on page 41
- "Booting" on page 41
- "init" on page 42
- "Shutting Down" on page 43

What's New in the Solaris 8 Operating Environment

In this release, dynamic host configuration protocol (DHCP) functionality has been added to boot a system over the network. See "Dynamic Host Configuration Protocol (DHCP)" on page 42 for more information.

Booting

See the *Solaris Transition Guide* for information on changes to SunOS release 4 boot commands and processes.

Note - The reconfiguration boot -r command, described in the Solaris Transition Guide, does not currently remove filesystem entries for devices that physically removed from the system. For more information, see boot(1M).

See the System Administration Guide, Volume 1 and Volume 3 for current information.

Dynamic Host Configuration Protocol (DHCP)

Dynamic Host Configuration Protocol enables you to boot a DHCP server over the network. Network boot technology based on RARP/bootparams is still available. For information on setting up a DHCP server, see "Configuring DHCP Service" in *System Administration Guide, Volume 3*.

init

See the Solaris Transition Guide.

Using the init Command

See "Shutting Down and Booting a System (Overview)" in *System Administration Guide, Volume 1* for current information on the init command.

init Command Changes

See the Solaris Transition Guide for changes to SunOS release 4 run levels.

Changing System Run Levels

For previous information on different run levels, see the *Solaris Transition Guide*. For current information, see "Run Levels and Boot Files (Tasks)" in *System Administration Guide*, *Volume 1*.

Shutting Down

For previous information on fasthalt, halt, and shutdown, see the $\it Solaris$ Transition Guide. For current information, see "Shutting Down a System" in System Administration Guide, Volume 1.

File System Administration

This chapter updates information in the *Solaris Transition Guide* on changes to file system administration.

The chapter contains:

- "What's New in the Solaris 8 Operating Environment" on page 45
- "File System Changes" on page 46
- "Default File Systems and Directories" on page 47
- "Virtual File System Architecture" on page 47
- "Directory and File Changes" on page 48
- "Using File System Administration Commands" on page 49
- "UFS Logging" on page 51

What's New in the Solaris 8 Operating Environment

New features added to the Solaris 8 Operating Environment include:

- The Universal Disk Format (UDF) file system that enables users to exchange data stored on CD-ROMs, disks, diskettes, DVDs, and other optical media. See "Universal Disk Format (UDF) file system" on page 46.
- A new TMPFS-mounted file system, /var/run, which provides a repository for temporary system files not needed across system reboots. See "/var Directory" on page 49.

■ The coreadm command that provides flexible core file naming conventions and better core file retention. See "Debuggers" on page 73.

File System Changes

This section gives you information on the Universal Disk Format file system. It also provides an updated reference to current documentation on virtual file systems.

Universal Disk Format (UDF) file system

The Universal Disk Format (UDF) file system is supported in the Solaris 8 Operating Environment. UDF is the industry-standard format for storing information on optical media. It can be used to exchange data between UDF file systems on the following components: CD-ROMs, Disks and diskettes, Digital versatile disc or digital video disc (DVD) – DVD-ROM on supported platforms. The UDF file system is provided as dynamically loadable 32-bit and 64-bit modules. It contains system administration utilities for creating, mounting, and checking the file system. When a UDF file system is mounted, users can read, write, or list files from the device and applications can access UDF file and directories with standard system calls. See the "Using the Universal Disk Format (UDF) File System" in *System Administration Guide, Volume 1* for more information.

Pseudo File Systems

See the "Managing File Systems (Overview)" in System Administration Guide, Volume 1 for current information on virtual file systems.

Added File Systems

See the Solaris Transition Guide for SunOS release 5 changes to /kernel, /opt and /vol directories.

Default File Systems and Directories

See "UFS File System Reference" in System Administration Guide, Volume 1 which supersedes information in the Solaris Transition Guide.

Virtual File System Architecture

For current information on virtual file systems, see "Managing File Systems (Overview)" in System Administration Guide, Volume 1.

Supported File System Types

For SunOS release 5 information on file system types, see the Solaris Transition Guide.

For current information, see "Managing File Systems (Overview)" in *System Administration Guide, Volume 1.*

Cache File System (CACHEFS)

For current information on CacheFS "The Cache File System (Tasks)" in System Administration Guide, Volume 1.

Swap File Changes

For SunOS release 5 swap file information, see the Solaris Transition Guide.

For current information, see "Configuring Additional Swap Space (Tasks)" in System Administration Guide, Volume 1.

Unsupported SVR4 File System Types

See the Solaris Transition Guide for SVR4 file system types that are not supported.

Generic File System Commands

For current information on file system commands, see "Managing File Systems (Overview)" in System Administration Guide, Volume 1.

Directory and File Changes

This section describes the changes to directories and files between the SunOS release 4 and SunOS release 5.8.

/dev Directory

See "UFS File System Reference" in System Administration Guide, Volume 1 which supersedes information in the Solaris Transition Guide on /dev directory structure.

/etc Directory

See Solaris Transition Guide for changes to the /etc directory and files, including the SunOS release 5 files /etc/vfstab and /etc/shadow.

See "Run Levels" in *System Administration Guide, Volume 1* for information on run control scripts such as rc0 that replace rc, rc.boot, rc.local, and rc.single in SunOS release 5.8.

See "UFS File System Reference" in System Administration Guide, Volume 1 which supersedes information in the Solaris Transition Guide on /etc directory structure.

/sbin Directory

See "UFS File System Reference" in System Administration Guide, Volume 1 which supersedes information in the Solaris Transition Guide on /sbin directory structure.

/usr Directory

See the Solaris Transition Guide for SunOS release 5 changes made to the /usr directory.

See "UFS File System Reference" in System Administration Guide, Volume 1 which supersedes information in the Solaris Transition Guide on /usr directory structure.

/var Directory

See the Solaris Transition Guide for SunOS release 5 information on the /var directory structure.

In SunOS release 5.8, the /var/run directory has been added as a repository for temporary system files that are not needed across system reboots. The /tmp directory continues to be repository for non-system temporary files.

For current information on /var directory, see "Managing File Systems (Overview)" in System Administration Guide, Volume 1.

/kernel Directory

See the Solaris Transition Guide for SunOS release 5 changes to the /kernel directory.

See "UFS File System Reference" in System Administration Guide, Volume 1 which supersedes information in the Solaris Transition Guide on /kernel directory structure.

/opt Directory

See the Solaris Transition Guide for SunOS release 5 changes to the /opt directory.

/sys Directory

See the Solaris Transition Guide for SunOS release 5 changes to the /sys directory.

Using File System Administration Commands

The following file system operations changed in SunOS release 5.7. See the System Administration Guide, Volume 1 for current information on SunOS release 5.8 file system administration.

- Mounting file systems
- Monitoring file systems
- Sharing file systems

- Creating a new file system
- Checking a file system
- Backing up and restoring files

When you are ready to administer file systems on , see for detailed information and procedures.

Mounting File Systems and autofs

See the *Solaris Transition Guide* for SunOS release 5 changes on mounting file systems.

See "Managing File Systems (Overview)" in System Administration Guide, Volume 1 for current information.

See "Mounting and Unmounting File Systems (Tasks)" in System Administration Guide, Volume 1 for current procedures.

Monitoring File Systems

See *Solaris Transition Guide* for SunOS release 5 changes to the information on monitoring file systems.

See "Managing Disk Use (Tasks)" in System Administration Guide, Volume 2 for current information.

Sharing File Systems

See the *Solaris Transition Guide* for SunOS release 5 changes to the information on exported (shared) file systems.

See "Remote File System Administration" in System Administration Guide, Volume 3 for current information.

Creating New File Systems

See the Solaris Transition Guide for SunOS release 5 changes to the information related to the mkfs(1M) command.

See "UFS File System Reference" in System Administration Guide, Volume 1 for current information on the newfs(1M) and mkfs(1M) commands.

Checking File Systems

See the Solaris Transition Guide for SunOS release 5 changes to the information related to the fsck(1M) command.

See "Checking File System Integrity" in System Administration Guide, Volume 1 for current information on the fsck(1M) command.

Backing Up and Restoring Files

See the Solaris Transition Guide for SunOS release 5 changes to the information related to backup and restore commands.

See "Backing Up and Restoring Data Topics" in *System Administration Guide, Volume 1* for references to information on backing up and restoring data and for current information on the commands:usfsdump, usfsrestore, dd, tar, and cpio.

UFS Logging

See "Managing File Systems (Overview)" in System Administration Guide, Volume 1 for current information on UFS logging.

Setting Up a Solaris 8 Server to Support SunOS Release 4.x Diskless Clients

See the section called "Setting Up a Solaris 7 Server to Support SunOS Release 4 Diskless Clients" in *Solaris Transition Guide* for information on adding SunOS release 4 support to a SunOS release 5 server. The section tells you how to use discover4x, install4x, and convert4x programs available in the SUNWhinst package.

Note - For Solaris 8 release, the Sunwhinst package is available on the Solstice $^{\text{TM}}$ AdminSuite $^{\text{TM}}$ 2.3/Solstice $^{\text{TM}}$ AutoClient $^{\text{TM}}$ 2.1 CD.

Managing Printers, Terminals, and Modems

This chapter updates information in the *Solaris Transition Guide* on changes to print, terminal, modem and SAF administration.

The chapter contains:

- "What's New in the Solaris 8 Operating Environment" on page 55
- "Printing" on page 56
- "Serial Port Management" on page 57

What's New in the Solaris 8 Operating Environment

Solaris Print Manager is a JavaTM-based graphical user interface that enables you to manage local and remote printer access. This tool can be used in the following name service environments: NIS, NIS+, NIS+ with Federated Naming Service (xfn), and files. You must be logged in as superuser to use this tool.

Solaris Printer Manager is the preferred method for managing printer access rather than Admintool. Solaris Print Manager centralizes printer information in a name service environment.

Adding printer information to a name service makes access to printers available to all systems on the network and generally makes printer administration easier because all the information about printers is centralized.

In this release, you can manage printer configuration information in the NIS+ name service without the underlying xfn application layer with Solaris Printer Manager. This provides better performance when accessing printer configuration information.

Printing

This section provides updated references to documentation on printer set up and administration.

Summary of Printing Differences

See the *Solaris Transition Guide* for information on the SunOS release 5.7 LP print service commands that replaced the SunOS release 4 lpd daemon and the lpr, lpq, lprm, and lpc commands.

The Solaris 8 printing software provides an environment for setting up and managing client access to printers on a network. The Solaris printing software contains these components:

- Solaris Print Manager, a graphic user interface, provides the ability to make printers available to print clients via a name service.
- Admintool, a graphical user interface, manages printing on a local system.
- The LP print service commands, a command line interface used to set up and manage printers that also provides functionality above and beyond the other print management tools. Even if you do use Solaris Print Manager to set up printing, you will have to use some of the LP commands to completely manage printing in the Solaris environment. See "Administering Printers (Tasks)" in *System Administration Guide, Volume 2* for more information.

Print Commands and the Compatibility Package

See the *Solaris Transition Guide* for information using the SunOS/BSD Source Compatibility Package to run SunOS release 4 print commands on a SunOS release 5 system.

For current information, see the Source Compatibility Guide.

See the *Solaris Transition Guide* for information on SunOS release 5 changes to printer administration and troff printing.

Serial Port Management

This section describes serial port management (which enables terminal and modem connections) through Admintool or the Service Access Facility (SAF).

System Administration Guide, Volume 2 describes current setup and installation procedures for serial devices.

Terminal and Modem Management

For current information on setting up and modifying serial port software on terminals and modems, see "Managing Terminals and Modems (Overview)" in System Administration Guide, Volume 2.

Service Access Facility (SAF)

For current information, see "Managing Terminals and Modems (Overview)" in System Administration Guide, Volume 2.

Network Service Administration

This chapter updates information in the *Solaris Transition Guide* on TCP/IP, NFS changes, PPP, and UUCP.

The chapter contains:

- "What's New in the Solaris 8 Operating Environment" on page 59
- "Changes to TCP/IP" on page 61
- "Changes to NFS" on page 61
- "PPP" on page 61
- "LDAP" on page 61
- "IIIMP" on page 62
- "UUCP" on page 62

What's New in the Solaris 8 Operating Environment

NFS server logging and the new 8.9.3 version of sendmail have been added to SunOS release 5.8.

NFS Server Logging

NFS server logging allows an NFS server to provide a record of file operations performed on its file systems. The record includes information to keep track of what is accessed, when it is accessed and who accessed it. The location of the logs that

contain this information can be specified through a set of configuration options. These options also can be used to select the operations that should be logged. This feature is particularly useful for sites that make anonymous FTP archives available to NFS and WebNFS $^{\text{TM}}$ clients.

For instructions on how to enable NFS server logging, see "Automatic File-System Sharing" in *System Administration Guide, Volume 3*

sendmail, Version 8.9.3

Version 8.9.3 of sendmail includes the following changes:

- A new configuration file option, called MaxHeadersLength, limits the length of the sum of all header lines in a given message. The default value is 32768 bytes. Incoming messages with headers that exceed this value are rejected.
- A new file called /etc/default/sendmail can be used to store options to start sendmail with, rather than adding these options to the init script. The file makes it easier to upgrade systems, since the init scripts do not need to change.
- The mail.local program has been extended to use the Local Mail Transfer Protocol. The protocol allows error codes to be returned for each recipient, so that the message is resent to just the recipients that did not receive the message rather than having to re-queue the message to all of the recipients. This protocol was added to sendmail in the Solaris 7 release.
- A new command, named /usr/bin/praliases, can be used to turn the data in the alias database into plain text. If an argument is included on the command line, the command prints out a key:value pair, if the argument matches a key.
- A new program called smrsh can be used to limit the number of commands that can be run using the "|program" syntax of sendmail. Only programs included in /var/adm/sm.bin can be run if this feature is enabled. Adding FEATURE('smrsh') in the main configuration file enables this feature (see /usr/lib/mail/README for details.)
- New options have been added to the vacation program: -f can be used to select an alternate database instead of ~/.vacation.ext; -m can be used to select an alternate message file instead of ~/.vacation.msg; and -s can be used to specify the reply address instead of the UNIX From line in the incoming message.
- A change to the mailx program, allows for the From: header to be used as the basis of the sender instead of the envelope sender. This change makes mailx work like mailtool and dtmail.

For further information, see "What's New for the Solaris 8 Release?" in *System Administration Guide, Volume 3.*

Changes to TCP/IP

See "Overview of TCP/IP" in System Administration Guide, Volume 3 for current information on TCP/IP.

Changes to NFS

See "Accessing Remote File Systems Reference" in System Administration Guide, Volume 3 for information on:

- share shareall, and /etc/dfs/dfstab which replace exportfs and /etc/exports.
- lockd, and mountd which replace SunOS release 4 daemons rpc.statd, rpc.lockd, and rpc.mountd.
- a modified version of nfsd which no longer spawns multiple copies to handle concurrent requests. Checking the process table with ps shows only one copy of the daemon running.

PPP

See "Overview of Solaris PPP" in System Administration Guide, Volume 3 for current information on PPP.

LDAP

See "FNS and Global Naming Systems" in Solaris Naming Administration Guide for current information on LDAP (Lightweight Directory Access Protocol).

IIIMP

See the Solaris Transition Guide.

UUCP

See the *Solaris Transition Guide* for a description of UUCP (UNIX-to-UNIX Copy) related to HoneyDanBer UUCP available with SunOS release 4 systems.

See "Overview of UUCP" in System Administration Guide, Volume 3 for current information.

Using Name Services

This chapter updates information in the *Solaris Transition Guide* on NIS, NIS+ and DNS name services.

The chapter contains:

- "What's New in the Solaris 8 Operating Environment" on page 63
- "Name Service Switch" on page 64
- "NIS+" on page 65
- "NIS and NIS+ Comparison" on page 65
- "Planning an NIS+ Upgrade" on page 65
- "DNS" on page 65

What's New in the Solaris 8 Operating Environment

Features added for Solaris 8 release include:

- Native LDAP Native Lightweight Directory Access Protocol (LDAP) that provides the Naming Service switch back-end support for LDAP based directory service. See "SunOS release 4 and NIS-Compatibility Mode" on page 64.
- Support for domain name system (DNS) in system identification utilities. See "DNS" on page 65.

Name Service Switch

See "The Name Service Switch" in Solaris Naming Administration Guide for current information.

SunOS release 4 and NIS-Compatibility Mode

NIS+ can be used on SunOS release 4 or SunOS release 5 workstations running NIS. In other words, machines within an NIS+ domain can have their nsswitch.conf files set to nisrather than nisplus. To access NIS+ service on machines running NIS, you must run the NIS+ servers in NIS-compatibility mode.

NIS-compatibility mode enables an NIS+ server running Solaris operating environment to answer requests from NIS clients while continuing to answer requests from NIS+ clients. NIS+ does this by providing two service interfaces. One responds to NIS+ client requests, while the other responds to NIS client requests.

This mode does not require any additional setup or changes to NIS clients. In fact, NIS clients are not even aware that the server that is responding isn't an NIS server–except that an NIS+ server running in NIS-compatibility mode does not support the <code>ypupdate</code> and <code>ypxfr</code> protocols and thus it cannot be used as a replica or master NIS server. For more information on NIS-compatibility mode, see the <code>NIS+Transition Guide</code>.

Two additional differences are:

- The instructions for setting up a server in NIS-compatibility mode differ slightly from those used to set up a standard NIS+ server. For details, see *Solaris Naming Setup and Configuration Guide*.
- NIS-compatibility mode has security implications for tables in the NIS+ namespace. The NIS client software does not have the capability to provide the credentials that NIS+ servers expect from NIS+ clients. Consequently, NIS client requests are classified as unauthenticated. To enable NIS client access, NIS+ tables must provide access rights to unauthenticated requests. To understand more about the authentication process and NIS-compatibility mode, see "Security Overview" in Solaris Naming Administration Guide.

NIS+

See "Introduction to NIS+" in Solaris Naming Administration Guide for current information on NIS+ which has significant advantages over NIS in the areas of security, performance, scalability, and administration.

NIS and NIS+ Comparison

See "Differences Between NIS and NIS+" in Solaris Naming Administration Guide

Planning an NIS+ Upgrade

See NIS+ Transition Guide.

DNS

Domain name system (DNS) has been added to the list of name services that can be configured through the system identification utilities. See "Introduction to DNS" in Solaris Naming Administration Guide for current information on DNS.

Solaris Common Desktop Environment

See the following documentation for current information on the Solaris Common Desktop Environment (CDE):

- Solaris Common Desktop Environment: Advanced User's and System Administrator's Guide
- Solaris Common Desktop Environment: User's Guide
- "Common Desktop Environment Desktop Enhancements" in What's New in the Solaris 8 Operating Environment

PART II Transition Information for Developers

Use this part of the update to find current information for developers on transitioning from SunOS release 4 to a SunOS release 5.8 programming environment.

Compilers, Linkers, and Debuggers

This chapter updates information in the *Solaris Transition Guide* on compilers, linkers, and debuggers.

The chapter contains:

- "What's New in the Solaris 8 Operating Environment" on page 71
- "Compilers" on page 72
- "Linkers" on page 72
- "Debuggers" on page 73

What's New in the Solaris 8 Operating Environment

Features added for this release include:

- Extensions to run time link auditing. For more information, see "Linkers" on page 72.
- Secure path name change from /usr/lib to /usr/lib/secure. For more information, see "Linkers" on page 72.
- \$ISALIST token support. For more information, see "Linkers" on page 72.
- coreadm command, core file management and debugging. For more information, see "Debuggers" on page 73.
- apptrace utility, a new application debugging tool. For more information, see
 "Debuggers" on page 73.

Compilers

See the Solaris Transition Guide for previous compiler related changes.

Visit http://www.sun.com to find current information on Sun Workshop $^{\text{\tiny TM}}$ and Sun Visual Workshop $^{\text{\tiny TM}}$ compiler products.

Linkers

See the *Solaris Transition Guide* for previous information on the link-editor and executable and linking format (ELF).

New linker related features added to the Solaris 8 operating environment are:

- Extensions to run time link auditing—additional means of invoking run time link auditing libraries is provided by the link editor options ¬p and ¬P. Additional run time link auditing interfaces la_activity() and la_objsearch() have been added. For more information, see the Linker and Libraries Guide.
- Secure path name change from /usr/lib to /usr/lib/secure—secure directory from which files can be pre-loaded is now /usr/lib/secure for 32-bit objects and /usr/lib/secure/sparcv9 for 64-bit SPARCV9 objects. For more information, see the Linker and Libraries Guide.
- \$ISALIST token support—greater flexibility in establishing instruction set specific dependencies is provided with the new \$ISALIST dynamic string token. For more information, see the *Linker and Libraries Guide*.

Link Editor Option Differences

See the *Solaris Transition Guide* for a comparison of SunOS release 4 and SunOS release 5.7 1d options.

See "Link-Editor" in *Linker and Libraries Guide* for current information on the link-editor.

Building Shared Libraries

See the Solaris Transition Guide or information on previous changes to shared libraries.

See the section on building shared libraries in the "Link-Editor Quick Reference" in Linker and Libraries Guide for current information.

Building Executables

See the Solaris Transition Guide for information on creating dynamic and static executables. Examples compare the behavior of SunOS release 4 -Bdynamic and -Bstatic options with SunOS release 5-dy and -dn options in building executables.

See the section on building shared libraries in the "Link-Editor Quick Reference" in Linker and Libraries Guide for current information.

See the Solaris Transition Guide information on SunOS release 5.7 library search path changes and version numbering.

Debuggers

The Solaris 8 Operating Environment introduces:

- The coreadm command that provides flexible core file naming conventions and better core file retention. You can use the coreadm command, for example, to configure a system in which all process core files are placed in a single directory. Core files in a specific directory can then be examined whenever a Solaris process or daemon terminates abnormally. See the man page coreadm(1M).
- The apptrace utility that enables application and system level debugging by tracing calls directly from an executable object to the shared libraries it depends upon. Call-tracing enabled by apptrace is more reliable than the previously available sotruss command. See the man page apptrace(1).

See the "Troubleshooting Solaris Software Topics" in System Administration Guide, Volume 2 for current information on debugging.

Tools and Resources

This chapter updates information in the *Solaris Transition Guide* on changes to tools and resources for the development environment.

- "ioctl() Requests" on page 75
- "ptrace() Request Values" on page 76
- "Libraries" on page 77
- "Using make" on page 77
- "Using SCCS" on page 77
- "Determining Application Compatibility" on page 77
- "Packaging Applications" on page 77
- "Toolkits" on page 78
- "Finding SunOS Release 4.x Tools" on page 78

ioctl() Requests

The section replaces information on ioctl's in the Solaris Transition Guide.

All ioctl's related to filio, sockio, streamio, termio, termios, mtio, and dkio, as well as ioctl's supported by the older version 7 and 4BSD terminal drivers are supported. Otherwise, only the ioctl's pertaining to standard devices of Solaris 8 platforms are provided. Discrepancies between the ioctl numbers (for the ioctl's supported) in the two versions are handled transparently. The ioctl parameters are mapped whenever necessary.

Table 16-1 shows SunOS release 4 ioctl's that are not supported for use in the Solaris 8 operating environment:

 TABLE 16-1
 ioctl's Not Supported in the Solaris 8 Operating Environment

ioctl()	Description
DKIOCGCONF	/usr/lib/libcThis ioctl is not available in this release, but it is supported by the Binary Compatibility Package. This ioctl is replaced by DKIOCINFO, which now includes the combined information of the SunOS release 4 DKIOCGCONF and DKIOCINFO structures.
DKIOCGLOG	This ioctl is not supported in Solaris 8. With the Binary Compatibility Package, it returns EINVAL.
DKIOCWCHK	In SunOS release 4 this ioctl toggles the write check on the floppy device. With the Binary Compatibility Package, this ioctl does not toggle the write check on the floppy device, but it returns success.
DKIOCSCMD	This ioctl is available only for the $xd(7)$, $xy(7)$, and $ipi(7)$ drives. This ioctl will fail for SCSI devices. Use the USCSI ioctl for these devices.
_O_TIOCCONS	This ioctl is obsolete and is not supported by the Solaris 8 release or this package.
O_TIOCGSIZE	This ioctl is obsolete and is not supported by the Solaris 8 release or this package.
TIOCMODG	This ioctl is obsolete and is not supported by the Solaris 8 release or this package.
TIOCMODS	This ioctl is obsolete and is not supported by the Solaris 8 release of this package.

ptrace() Request Values

See the Solaris Transition Guide for information on changes to ptrace() request values and symbolic constants for SunOS release 5.

See the Binary Compatibility Guide for current information.

Libraries

See the Solaris Transition Guide for information on libraries and dynamically allocated resources in SunOS release 5.

Using make

See the Solaris Transition Guide for information on new make utilities available in SunOS release 5 environment.

Using SCCS

See the Solaris Transition Guide for information on differences in the SunOS release 5 source code control system (SCCS).

Determining Application Compatibility

See the Solaris Transition Guide for information on using the Binary Compatibility Package.

Packaging Applications

See the Solaris Transition Guide for information on application packaging.

Packaging Utilities

See the Solaris Transition Guide for information on packaging utilities.

Toolkits

See the Solaris Transition Guide for information OPEN LOOK $^{\text{TM}}$ Intrinsics ToolKit (OLIT) and XView $^{\text{TM}}$.

Finding SunOS Release 4.x Tools

See the *Solaris Transition Guide* for information on where to find SunOS release 4 and SunOS release 5 programming tools.

Networking and Internationalization

This chapter updates *Solaris Transition Guide* information on networking features related to the programming environment. It also discusses issues concerning the improved internationalization features.

- "What's New in the Solaris 8 Operating Environment" on page 79
- "Networking" on page 80
- "Internationalization" on page 81

What's New in the Solaris 8 Operating Environment

Native LDAP Native Lightweight Directory Access Protocol (LDAP) provides the Naming Service switch back-end support for LDAP based directory service. For more information, see "The Name Service Switch" in *Solaris Naming Administration Guide*.

Domain name system (DNS) has been added to the list of name services that can be configured through the system identification utilities. For more information, see "DNS" on page 65.

The Solaris 8 operating environment provides support for over 90 locales, a new, intuitive interface for installing languages, expanded Unicode support, and improved data interoperability utilities. See "Internationalization" on page 81.

Networking

The Solaris 8 operating environment continues to provide networking features discussed in the following sections in addition to offering support for LDAP and DNS.

See NIS+ Transition Guide and NFS Administration Guide for more information.

NIS, NIS+

The Solaris 8 operating environment supports the network information service (NIS), the SunOS release 4 name service, and the network information services plus (NIS+), an enterprise-naming service of heterogeneous distributed systems.

See "Introduction to NIS+" in Solaris Naming Administration Guide for current information on NIS+.

See "Differences Between NIS and NIS+" in *Solaris Naming Administration Guide* or a comparison information on NIS and NIS+.

nsswitch.conf File

See "The Name Service Switch" in Solaris Naming Administration Guide for current information.

Network Interface Tap

See the *Solaris Transition Guide* for background information on network interface tap (NIT), no longer required in SunOS release 5.

See the *STREAMS Programming Guide* for current information on STREAMS drivers that can be opened and communicated with directly.

Sockets

The section replaces information on sockets in the Solaris Transition Guide.

The Binary Compatibility Package enables you to run SunOS release 4 dynamically-linked socket applications on SunOS release 5.8 systems. In order do so:

- You must explicitly specify the socket library (-lsocket or -libsocket) on the compilation line.
- You may need to link with libnsl also (use -lsocket -lnsl, not -lnsl -lsocket).
- You must recompile all SunOS release 4 socket-based applications with the socket library to run under SunOS release 5.8.

Internationalization

See the Solaris Transition Guide for changes to internationalization made between SunOS release 4 and SunOS release 5.7.

For current and complete information on Solaris 8 internationalization support, see International Language Environments Guide.

Character Support

The SunOS release 4 software supported single-byte representation of non-ASCII characters. The Solaris 8 operating environment supports:

- Multibyte Support Environment (MSI) programming model that enables multibyte characters (such as Chinese, Japanese, or Korean characters) to be read in as logical units and stored internally as wide characters. These wide characters cannot be stored in a single byte, but they can be processed by the program as logical entities in their own right. Finally, wide characters can be written out (undergoing appropriate translation) as logical units. The MSE allows programs to be written to handle multibyte characters using the same programming model that is used for single-byte characters.
- Code Set Independence (CSI) that removes EUC dependencies on specific codesets or encoding methods from Solaris OS libraries and commands. The CSI architecture allows the Solaris operating environment to support any UNIX file system safe encoding. CSI supports a number of new codesets, such as UTF-8, PC-Kanji, and Big-5.
- Extended Unicode support that adds new Unicode (UTF-8) locales for Simplified Chinese and Traditional Chinese. Proper rendering of bidirectional text and context-sensitive characters is fully supported for Complex Text Layout (CTL) scripts such as Arabic, Hebrew and Thai in the en_US.UTF-8 locale.

For detailed information, see International Language Environments Guide.

Message Catalogs

See the Solaris Transition Guide for a brief summary on creating message catalogs.

For detailed information, see Solaris 8 internationalization support, see *International Language Environments Guide*.

Locale Database

The Solaris 8 operating environment provides support for over 90 locales.

For detailed information, see Solaris 8internationalization support, see International Language Environments Guide.

Commands

See the *Solaris Transition Guide* for information on changes to SunOS release 4 commands.

Libraries

See the *Solaris Transition Guide* for information on changes to internationalization libraries in SunOS release 5.

Solaris 8 CSI-enabled Libraries

Nearly all functions in Solaris 8 libc (/usr/lib/libc.so) are CSI-enabled. However, the following functions in libc are not CSI-enabled because they are EUC-dependent functions:

```
csetcol() csetlen() euccol()
euclen() eucscol() getwidth()
```

The following macros are not CSI-enabled because they are EUC dependent

```
csetno() wcsetno() euccol()
```

In the Solaris 8 product, libgen (/usr/ccs/lib/libgen.a) are internationalized, but not CSI enabled.

In the Solaris 8 product, libcurses (/usr/ccs/lib/libcurses.a) are internationalized, but not CSI enabled.

Here are the five deliverables:

■ The utility (32-bit application): /usr/bin/geniconvtbl

■ 32-bit and 64-bit special iconv shared objects:

```
/usr/lib/iconv/geniconvtbl.so
/usr/lib/iconv/sparcv9/geniconvtbl.so
```

■ Sample geniconvtbl(1) input source files and system-provided binary table files for both 32-bit and 64-bit Solaris platforms:

```
/usr/lib/iconv/geniconvtbl/srcs/
```

```
ISO8859-1_to_ISO646.txt
ISO646_to_ISO8859-1.txt
ISO8859-1_to_UTF-8.txt
UTF-8_to_ISO8859-1.txt
ShiftJIS_to_eucJP.txt
eucJP_to_ShiftJIS.txt
/usr/lib/iconv/geniconvtbl/binarytables/
ISO8859-1%ISO646.bt
ISO646%ISO8859-1.bt
```

■ Changed iconv_open(3) at 32-bit and 64-bit libc.so.1s:

```
/usr/lib/libc.so.1
/usr/lib/sparcv9/libc.so.1 (sparcv9 example)
```

■ Man pages:

```
/usr/share/man/sman1/geniconvtbl.1
/usr/share/man/sman4/geniconvtbl.4
```

System and Device Configuration

This chapter updates information in the *Solaris Transition Guide* on changes in the Solaris operating environment that affect kernel and system developers.

The chapter contains:

- "What's New in the Solaris 8 Operating Environment" on page 85
- "System Configuration" on page 86
- "Reconfiguration Boot" on page 86
- "Device Naming From a Developer's Perspective" on page 86

What's New in the Solaris 8 Operating Environment

The devfsadm command provides an improved mechanism for managing special device files. For more information, see "Device Naming From a Developer's Perspective" on page 86.

System Configuration

SunOS release 5 changes related to system configuration include the dynamically loaded kernel and kernel layout, the config and boot commands, and the /etc/system file.

Dynamically Loaded Kernel

See the *Solaris Transition Guide* for information on the dynamically-loaded kernel and changes to modunload(1M) and modunload(1M) commands.

See "Loading and Unloading Drivers" in Writing Device Drivers for current information on using modunload(1M) and modunload(1M) commands.

Kernel Layout

For current information, see "SunOS Kernel and Device Tree" in *Writing Device Drivers*

Reconfiguration Boot

See the *Solaris Transition Guide* for information on the SunOS release 5 reconfiguration boot.

Note - The reconfiguration boot -r command, described in the *Solaris Transition Guide*, does not currently remove file system entries for devices that are physically removed from the system. For more information, see boot(1M).

Device Naming From a Developer's Perspective

This section supersedes "Device Naming From a Developer's Perspective" in *Solaris Transition Guide*. It focuses on the SunOS 5.8 devfsadm command that provides an

improved mechanism for managing special device files in the /dev and /devices directories, including support for dynamic reconfiguration events.

In earlier SunOS 5 releases, device configuration was handled by drvconfig, which managed the physical device entries in the /devices directory, and five link generators, devlinks, disks, tapes, ports, and audlinks, which managed the logical device entries in the /dev directory. For compatibility purposes, dryconfig and the other link generators are symbolic links to the devfsadm utility.

Both reconfiguration boot processing and updating the /dev and /device directories in response to dynamic reconfiguration events are handled by devfsadmd, the daemon version of the devfsadm command. This daemon is started from the /etc/rc* scripts when a system is booted.

Since devfsadmd, the devfsadm daemon, automatically detects device configuration changes generated by any reconfiguration event, there is no need to run this command interactively.

For more information, see "What's New in Disk Management?" in System Administration Guide, Volume 1.

Device Drivers and STREAMS

This chapter updates *Solaris Transition Guide* information on device drivers and STREAMS.

- "Device Drivers and STREAMS Device Drivers" on page 89
- "Device Driver Commands" on page 90

Device Drivers and STREAMS Device Drivers

See the *Solaris Transition Guide* for information on SunOS release 5 device driver interfaces, the devinfo command, porting considerations, and Solaris driver architecture.

STREAMS

Some areas of change for STREAMS modules are transparent I/O controls, new message types, and the $\mathtt{autopush}(1M)$ facility that automatically pushes a list (/etc/iu.ap) of modules on a stream. For current information on these features, see sections on the following topics in the STREAMS Programming Guide:

- Module and Driver ioctl
- Kernel-Level Messages
- autopush

Transparent ioctl()s

See the $\it Solaris \ \it Transition \ \it Guide \ for \ information \ on \ \it SunOS \ release \ 4 \ {\tt ioctl}$ () requests.

See the STREAMS Programming Guide for current information.

See "ioctl() Requests" on page 75 of this update for related information.

autopush Command

See the $\it Solaris \ \it Transition \ \it Guide \ for \ information \ on \ \it SunOS \ release \ 5 \ {\tt autopush()} \ command.$

See STREAMS Programming Guide for current information about pushing STREAMS modules.

Device Driver Commands

See the Solaris Transition Guide for information on SunOS release 5 device driver commands.

Glossary

Architecture The specific components of a computer system and the way they

interact with one another. From a SunOS release 5.8 kernel perspective, "architecture" refers to the type of CPU chip in the system. In this manual, the only architecture discussed is the kernel

architecture.

Binary Compatibility Package An optional package that enables existing SunOS release 4 applications, both statically and dynamically linked, to run under

SunOS release 5.8 without modification or recompilation.

Client A system that uses NIS, NFS, or other services provided by another

system.

Cluster A functional collection of software packages.

Configuration cluster

A default selection of clusters representing typical software

selections.

Dataless A system whose /usr and /usr/kvm file systems are provided by

a file server, and whose root and swap disk partitions are on a

directly connected disk.

DDI Device Driver Interface. Facilitates both source and binary

portability across successive releases of the operating system on a

particular system.

DKI Driver Kernel Interface. A defined service interface for the entry

point routines and utility functions specified for communication between the driver and the kernel. It does not encompass the driver/hardware or the driver/boot software interface.

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Disk partition See disk slice.

Disk slice A discrete portion of a disk, configured during installation. Slices

were referred to as partitions in SunOS 4.1 releases and System V

Release 3.

Diskless A system whose root, swap, and /usr file systems (disk

partitions) are provided by an NFS server (or file server) instead of

a directly connected disk.

DNS Domain name system. The distributed name/address mechanism

used in the Internet.

ELF Executable and linking format. The native object format of SunOS

release 5.8 executables.

Heterogeneous

server

A server of diskless clients that is a mix of its own architecture and

other kernel architectures.

Homogeneous

server

A server of diskless clients that has only clients with the same

kernel architecture.

Install server A machine that provides boot service and network access to the

SunOS release 5.8 distribution. This can be on either a local CD-ROM or a file system containing a copy of the distribution.

IP address A unique number that identifies each host in a network. The address

is partitioned into two distinct parts: a network part and a host part.

Kernel architecture The hardware portion of a SunOS release 5.8 kernel. Two systems

have the same kernel architecture if the same SunOS release 5.8 kernel runs on both of them. Not all Sun-4 systems have the same

kernel architecture.

Multiple OS

operation

The operation that enables a SPARC server to continue serving SunOS 4.1 clients while the server is running the SunOS release 5.8

release. In this special case, a heterogeneous server could be serving

clients of the same kernel architecture.

Netmask A number used by software to separate additional network

information (called the "subnet") from the host part of an IP address. The netmask is also referred to as the subnet mask.

NIS The network information service. NIS provides information about

machines and services in a local area network.

NIS+ An enhanced version of the network information service software.

These enhancements include secure updates, better performance,

and hierarchical naming.

OLIT Abbreviation for OPEN LOOK Intrinsics Toolkit.

Package A functional grouping of software. AllSunOS release 5.8 software is

grouped and distributed in packages. Packages are also the standard

way to deliver unbundled Sun and third-party software.

SAF Services Access Facility. A tool for managing access to local and

network system services, such as modems and terminals

SAC Service Access Control. Commands used to set up and manage

services.

Server A system that provides services to the network. These services

include NFS system and NIS database access.

Source Compatibility

Compatibility Package

An optional package that contains a collection of SunOS release 4 and BSD commands, library routines, and header files otherwise not

available with SunOS release 5.8 software.

Standalone A system that does not depend on a server for its root, swap, or

/usr disk partitions.

Time zone Any of the 24 longitudinal divisions of the earth's surface for which

a standard time is kept.

Unbundled Software products not delivered as part of SunOS release 5.8

software distribution.

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