Solaris SunOS

SunOS 5.0 System Administration

A White Paper

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SunOS 5.0 System Administration

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Executive Summary

This White Paper provides a glimpse of what system administration will be like under SunSoft's™ Solaris 2.0™ release. Solaris 2.0 is a single, integrated distributed computing solution comprised of SunOS™ 5.0, enhanced ONC™, OpenWindows™ V3, DeskSet™ V3, and OPEN LOOK®.

Topics covered include: system installation, differences between SunOS 4.x and SunOS 5.0, new configuration programs, new utilities, the new printing subsystem, and new NIS+ naming services.

What's New in SunOS 5.0?

- Dynamic kernel — source or compilers no longer needed to make changes to parameters or add drivers

- Framework for distributed administration applications, providing the basis for all future system and network administration products

- New installation and system configuration programs

- `ksh` — the Korn shell is now part of the release

- `lp` — new printing subsystem: enhanced printing management functionality, including compatibility with SunOS 4.x `lpr`

- New SunOS 5.0 utilities for administering modems and terminals

- CD-ROM ONLY — SunOS 5.0 **not** available on tape!

- NIS+ — the much vaunted replacement for the previous NIS

Important Highlights

- **Size of the release**. SunOS 5.0 in its entirety will consume approximately 250MB of disk space. However, new installation tools make it much easier to subset and install the OS.

- **Name Services**. NIS and NIS+ interoperability. NIS+ will be available on SunOS 4.x platforms. Compatibility and interoperability with multivendor heterogenous installations of NIS must be monitored.

- **Printing**. The ease of which customers can transition SunOS 4.x print servers and clients will depend on a customers' ability to migrate to the SunOS 5.0 release.

- **Heterogenous SunOS diskless/dataless support**. This is not planned until the next release.

Note – SunOS 5.0 will be installed only from CD-ROM.

Installing SunOS 5.0

SunOS 5.0 is a full system installation. **There is no partial installation support from any previous release**. There is also no tape support for SunOS 5.0 installation. Installation of SunOS 5.0 will be from CD-ROM only, whether from a local CD player or a remote server's CD player.

Installing SunOS 5.0 from CD-ROM
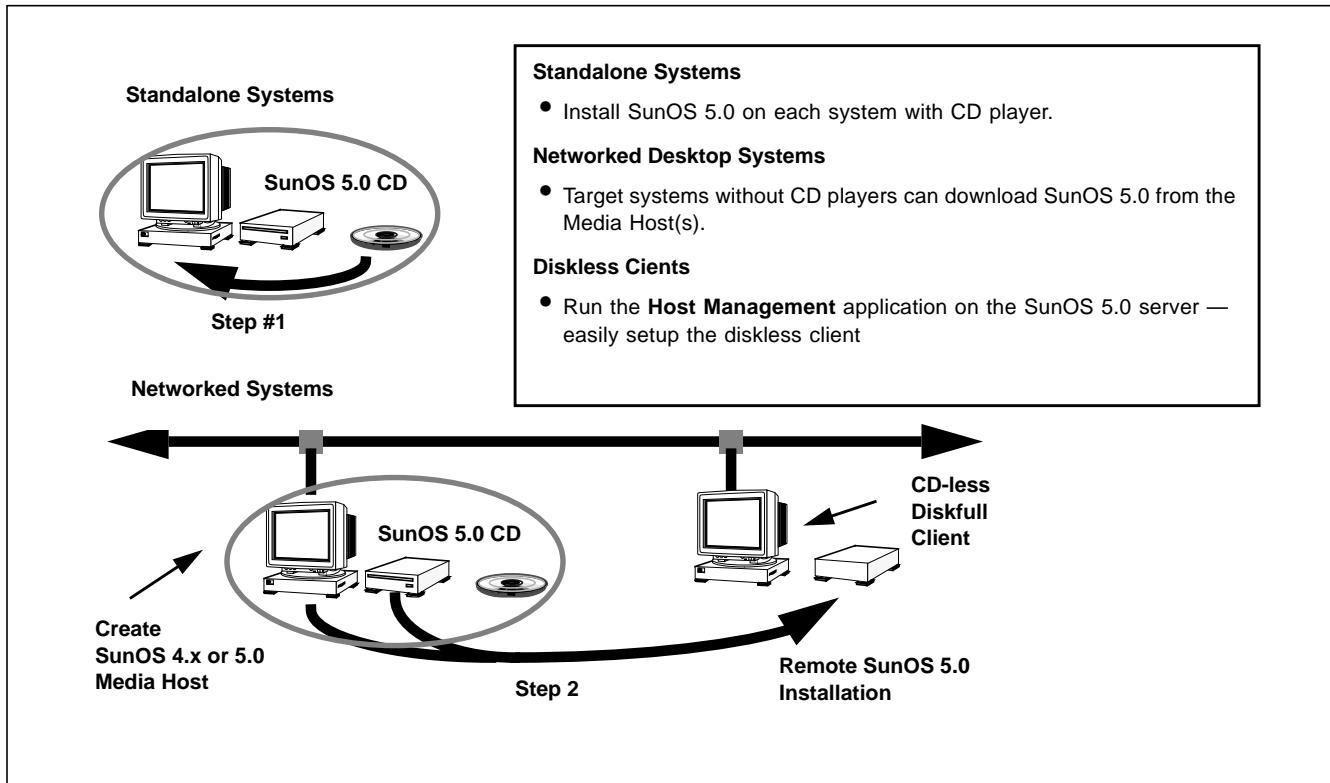
A particular advantage of CD-ROM distribution over tape is the capability of CD-ROM to support file system and mount access to the SunOS release media. The new installation tools will take advantage of this.

Differences with 4.X SunOS Installation

SunOS 4.X used the old `tty`-based `SunInstall` program for:

- Disk formatting and partitioning.
- Loading SunOS and additional "pieces," i.e., `man` pages, `dev` tools, etc., plus configuring host-specific network information.
- Optionally configuring access to remote `/usr` partition, usually called a `root+swap` "dataless" client.

The changes in SunOS installation programs and procedures from 4.x to 5.0 can be characterized as a migration to a more modular approach to the task of "system installation." Many of the older "SunInstall Tasks" have been broken out of SunInstall and are now separate. (In the next release, they will be accessible and extensible.) SunOS installation options will become much more flexible in the future.

The SunOS 5.0 installation procedure from CD-ROM is highlighted as follows:

- Boot a standard SunOS 5.0 kernel from the CD-ROM.

- A sysconfig program runs to analyze local and network configuration; it is compatible with and functionally similar to the "Quick Configuration" capability in SunOS 4.1.1 RevB.

- Start the new SunOS 5.0 SunInstall program.

- Modify disk properties.

- Install the SunOS 5.0 "Cluster(s):"
  - A minimum SCD-Compliant system cluster
  - A default end-user cluster containing the bulk of the runtime window system tools and utilities
  - A developer cluster containing program development tools
  - A SunOS "Install Everything" Cluster

- Reboot and log in as root.

Note – No MUNIX in-memory file system is used.

Setting Up a Network Installation Media Host

Not every SunOS 5.0 workstation client will have a local CD player. Diskfull SPARC® clients without CD players can be easily upgraded to SunOS 5.0 by performing a "Diskless Boot" from a target "Media Host." A Media Host is a SPARC system with a local CD-ROM on the same subnet as the diskfull client. (See section on CD-ROM support.)

The Media Host interacts with the SPARC client by allowing the client to boot diskless from a "mini diskless partition" that is really a set of symbolic links to the mounted SunOS 5.0 CD media. There is very little "Media Host" disk space overhead.

Installing from a SunOS 4.X Media Host

A new program on the Solaris 2.0 CD assists in the setup and creation of the "mini diskless partition" on a SunOS 4.X server. The program takes as arguments: client architecture, hostname, and preferred mount points. The administrator then edits the `/etc/hosts,` `bootparams,` and `ethers` files and pushes any necessary NIS maps. At this point, the diskfull client can boot from the Media Host's "mini diskless partition," symbolically linked to the mounter SunOS 5.0 CD, and begin the normal installation process.

Once completed, the administrator can run another new command from the Solaris CD to clean up or remove the diskless partition, if required. This procedure MUST be completed for each diskfull client to be upgraded.

Installing from a SunOS 5.0 Media Host

Installing SunOS 5.0 on a diskfull client from a SunOS 5.0 server involves a similar operation, although the tools to accomplish the task are OPEN LOOK-based and require no manual editing of files. To build the "mini diskless booting" partition on a SunOS 5.0 server, the administrator simply invokes a new "Host Manager" program and fills in a property sheet which describes the SunOS 4.X diskfull client.

The client is then booted as diskless from the Media Host and completes a normal SunOS 5.0 full install from CD-ROM. In this scenario, cleanup on the server is accomplished automatically when the client installation is complete.

Installing SunOS 5.0 on a Server

During SunOS 5.0 installation, the installer will be asked whether or not the target machine will need to support diskless or dataless clients. If the answer is "yes," the new SunOS 5.0 `SunInstall` program will optimize the server's disks for partition size, client architecture support, and sharable `/usr` software.

> **Note** – Every SPARC-based server that needs to install SunOS 5.0 *must* have access to either a local SunOS-supported frame buffer or an X Windows server on the network. If the SunOS 5.0 `SunInstall` program detects the lack of a frame buffer, the installer will be prompted for the name of an appropriate system running an X Windows server in order to complete the remainder of the SunOS 5.0 installation process.

Installing a SunOS 5.0 Diskless Client on a SunOS 5.0 Server

The new SunOS 5.0 Host Management tool contains the equivalent functionality to the SunOS 4.X `add_client` program. The administrator runs the tool on the SunOS 5.0 server and sets up each SunOS 5.0 diskless client by filling out simple screens and menu choices.

Installing a SunOS 5.0 Dataless Client on a SunOS 5.0 Server

When the installer/administrator is configuring a diskfull client, he/she is asked if any of the `root`, `/tmp`, `swap`, and `/usr` file systems are to be mounted from a remote server. If so, the appropriate software is loaded on the client and the server.

Unsupported Configurations

Heterogenous (SunOS 4.X & 5.0) diskless/dataless support

There will be no software tool assistance for supporting any combination of SunOS 4.X diskless/dataless clients from a SunOS 5.0 server. There will also be no software assistance for connecting SunOS 5.0 diskless/dataless clients to any SunOS 4.X server. SunSoft software and documentation for these installation scenarios will appear in the next minor SunOS release (5.1).

Support for "headless" servers

The SunOS 5.0 software installation routines are OpenWindows-based tools and must be run on systems with a supported frame buffer. Those servers that don't have a frame buffer can have the software installed ONLY by redirecting the installation software to an X Windows server on the network.

SPARC systems and servers without a frame buffer or network access to an X Windows server will not be able to install SunOS 5.0 until the next minor SunOS release (5.1).

System Administration on SunOS 5.0

Printing

Printing services for SunOS 5.0 are based upon the new `lp` printing subsystem. `lp` contains interfaces which are compatible with the older Berkeley-style `lpd` subsystem. In general, the `lp` printing system is more robust than `lpd`, but will present some new challenges for administrators. To smooth over some of the transition issues, the SunOS 5.0 printing subsystem will be configured by default to work seamlessly with 4.X print servers. Configuring a SunOS 5.0 print server to accept print jobs from older 4.X-based clients will also be straightforward.

Differences Between SunOS 4.x and SunOS 5.0 Print Services

SunOS 4.x printing is provided by the BSD UNIX® print service, using the `lpd` daemon and `lpr`, `lpq`, `lprm`, and `lpc` commands. In the SunOS 5.0 release, the SunOS 4.x commands are provided as part of the BSD compatibility package. The command names are provided for compatibility with SunOS 4.x systems; however, the commands are actually an interface to the `lp` print services. When users initiate printing using the SunOS 4.x commands to request print service from a SunOS 5.0 system, the commands create message files which are handled by the `lp` print service scheduler. The services provided by the `/etc/printcap` file in SunOS 4.x are handled by the `terminfo` database in SunOS 5.0 and the files in the `/etc/lp` directory.

Users familiar with SunOS 4.x commands and options can continue to use them if they have installed (via initial installation or subsequent use of the Software Management program) the optional BSD/SunOS Package. The basic commands are:

- `/usr/ucb/lpr -Pprintername filename` (to submit print requests)
- `lpq -Pprintername` (to look at the print queue)
- `lprm -Pprintername jobnumber` (to cancel print jobs)

The SunOS 5.0 basic printing commands are:

- `/usr/lp -d printername filename` (to submit print requests)
- `lpstat -d printername` (to look at the print queue)
- `cancel jobnumber` (to cancel print jobs)

Here's an example for setting up a SunOS 5.0 client to print on a 4.x print server:

```
lpsystem -t bsd printer-server-name
lpadmin -p printer-name -s printer-server-name
/usr/lib/lpsched {first printer only}
accept printer-name
enable printer-name
```

What differences do administrators see?

Setup and administration of printing is significantly different in SunOS 5.0. The `/etc/printcap` file is not available in SunOS 5.0. Similar functionality is provided by the `terminfo` database and the hierarchy of configuration files in the `/etc/lp` directory. Administrators familiar with SunOS 4.x commands can continue to use the lpc command from the BSD compatibility package.

SunOS 5.0 has several daemons, a new hierarchy of configuration files, and 12 new administrative commands:

```
lpsched
lpfilter
lpshut
lpusers
lpmove
lpstat
lpsystem
lpmove
accept
reject
enable
disable
```

SunOS 5.0 provides additional functionality not provided in SVR3 or SunOS 4.x that allows you to control forms, print wheels, interface programs, and set up network print services.

SunOS 5.0 provides a set of PostScript® filters and device-independent fonts. Some 4.x TranScript™ filters have SunOS 5.0 equivalents; others do not. There is no TEX™ filter, no `pscat` (C/A/T) filter, and no raster image filter.

Terminals & Modems

Terminals and modems are administered using the SAC commands. Here's an example for setting up a sample terminal and modem.

For modems or terminals, verify that the `tty` port monitor is running:

```
sacadm -l

PMTAG    PMTYPE  FLGS   RCNT   STATUS   COMMAND

tcp      listen  -      0      ENABLED  /usr/lib/saf/listen tcp #

ttymonb  ttymon  -      0      ENABLED  /usr/lib/saf/ttymon #
```

If it isn't running, start it:

```
sacadm -a -p ttymon1 -t ttymon -c /usr/lib/saf/ttymon v 1
```

Next, add a login service on the serial port:

```
pmadm -a -p ttymon1 -s 21 -i root -f u -v 0 -m \

"`ttyadm -d /dev/ttya -1 9600 -s /usr/bin/login `"
```

SunOS 5.0 Name Services — NIS+

NIS+ is a new name service for SunOS 5.0 which replaces the older NIS name service found on SunOS 4.X systems. NIS+ is completely compatible with NIS and has many new, exciting features. New NIS+ features include a hierarchal name space, improved scalability, better performance (VERY fast updates), and a suite of database administration tools. (See the *Network Information Services Plus [NIS+]* White Paper.)

Distributed System Management Framework

SunOS 5.0 contains new technology for making current and future system administration tools aware of the network, its configuration, security, distributed databases and policy. The Distributed System Management (DSM) framework can be thought of as the `libadmin` for all administration tools. The framework allows an administration program to be unaware of the physical

nature of the network or system when attempting to access administration data. The framework is object-oriented such that, in the future, all administration applications will deal with "classes" of administrative "objects," rather than the discreet pieces of information on a separate basis. In fact, administration applications will contain nothing more than "methods" that deal with a particular administrative "class."

SunOS 5.0 `SunInstall` is an example of administrative methods built on top of the framework.

The SunOS 5.0 Distributed System Management interfaces and APIs are not documented in this release. An extensive suite of administration framework APIs will be available in the next minor SunOS release (5.1). (See Appendix C for the DSM Administration Application Roadmap.)

DSM applications for SunOS 5.0 include:

- Host Management
- Software Package Management
- System Database Management (including NIS+)

Software Installation (SunOS & Other)

Software Package Manager (similar to CD Manager), is a new tool for installing all SVR4 ABI installation-compliant unbundled software.

First, the OS is broken up into many small SVR4 ABI "packages." SVR4 from AT&T contains a suite of administration utilities for manipulating (`install`, `remove`, `inquire`, `list`, etc.) software packages. These utilities form the basis for a higher level, more advanced "Software Package Manager."

The entire SunOS 5.0 release contains two levels of SunOS software "packaging" granularity.

Finally, the presentation of the many SunOS 5.0 packages is managed through "package clusters." Package clusters are nothing more than selective grouping of SunOS 5.0 software to meet specific user needs. On top of all the SunOS 5.0 packages there will four clusters of SunOS software packages:

- A minimum SCD-Compliant system cluster
- A default end-user cluster containing the bulk of the runtime window system tools and utilities
- A developer cluster containing program development tools
- A SunOS "install everything" cluster

Beneath the cluster level are all the packages that make up the entire SunOS release.

Host Management

SunOS 5.0 contains a system management application for managing specific attributes of a client or server configuration, including:

- Hostname
- Ethernet and IP Addresses
- Root and Swap file paths
- Timezone variables
- Client type (diskless, dataless)

System Database Management

SunOS 5.0 contains a distributed management application for administering system databases whether they be `/etc` files, NIS or NIS+ databases. These files include those shown in Table 1.

Table 1   System Database Files

database	**field name**	**database**	**field name**
auto.home:	username	passwd:	username
	path		user ID
bootparams:	hostname		password
	file systems		GCOS field
ethers:	ethernet		home path
	addr		shell
	hostname		last mod date
	comment		min days
groups:	group name		max days
	group ID		warning days
	password		inactive days
	members list		expire date
			flag
hosts:	IP address	netmasks:	network number
	hostname		subnet mask
	aliases		comment
	comment	rpc:	rpc number
netgroup:	net group		rpc name
	members list		aliases
networks:	network number		comment
	network name	services:	port number
	aliases		protocol name
	comment		service name
protocols:	protocol number		aliases
	protocol name		comment
	aliases	timezone:	hostname
	comment		timezone name
			comment

Distributed System Management Application Roadmap

SunOS 5.0
- Software installation
- Name service management
- Host management

SunOS 5.1

- Improved software installation (includes spooling, upgrades, `tty`, and full heterogenous 4.x and 5.X install
- User and group account management
- Printer management
- Terminals and modems
- Easy backup and restore
- Automounter management
- Policy management
- Published administration APIs
- Application extensibility
- Framework security management

Appendix A: Solaris 2.0 SunOS 5.0 Directory Layout

/	root of the overall file system name space
/dev	primary location for special files
/dev/dsk	block disk devices
/dev/mt	block tape devices
/dev/pts	pty slave devices
/dev/rdsk	raw disk devices
/dev/rmt	raw tape devices
/dev/sad	entry points for the STREAMS Administrative Driver
/dev/term	terminal devices
/etc	host system administrative configuration files and databases
/etc/acct	accounting system configuration info
/etc/cron.d	configuration information for cron
/etc/default	defaults information for various programs
/etc/dfs	configuration information for exported file systems
/etc/fs	binaries organized by fs types for operations required before /usr is mounted
/etc/inet	config files for Internet services
/etc/init.d	scripts for transitioning among run levels
/etc/lp	config information for the printer subsystem
/etc/mail	mail subsystem configuration
/etc/master.d	kernel configuration information; unused in SunOS 5.0
/etc/net	config information for transport independent network services
/etc/opt	configuration information for optional packages
/etc/rc0.d	scripts for entering/leaving run level 0
/etc/rc1.d	scripts for entering/leaving run level 1
/etc/saf	Service Access Facility files (including FIFOs)
/etc/skel	default profile scripts for new user accounts
/etc/sm	status monitor info
/etc/sm.bak	backup copy of status monitor info
/etc/tm	trademark files; contents displayed at boot time
/etc/uucp	uucp configuration info
/etc/vtoc	similar to role of /etc/format.dat
/export	default root of the exported file system tree
/home	default root of a subtree for user directories
/mnt	default temporary mount point for file systems
/modules	subtree of loadable kernel modules
/opt	root of a subtree for add-on application packages
/opt/bin	primary executables for optional packages
/opt/man	root of a subtree for man pages for optional packages
/sbin	essential executables used in the booting process and in manual system failure recovery
/tmp	temporary files; cleared during boot sequence
/usr	mount point for /usr file system
/var	root of a subtree of varying files
/var/adm	system logging and accounting files
/var/crash	default depository for kernel crash dumps
/var/cron	cron's log file
/var/lp	line printer subsystem logging information
/var/mail	directory where users' mail is kept
/var/news	SVR4 "community service messages"
/var/nis	NIS+ databases
/var/opt	subtree for varying files associated with optional software
/var/preserve	backup files for vi and ex
/var/sadm	databases maintained by the software package utilities

/var/saf	SAF (service access facility) logging and accounting files
/var/spool	directories for spooled temporary files
/var/spool/cron	cron and at spool files
/var/spool/locks	spooling lock files
/var/spool/lp	line printer spool files
/var/spool/mqueue	mail queued for delivery
/var/spool/pkg	spooled packages
/var/spool/uucp	queued uucp jobs
/var/spool/uucppublic	files deposited by uucp
/var/tmp	directory for temporary files; not cleared during boot sequence
/var/uucp	uucp log and status files
/var/yp	NIS databases

Layout of the /usr file system

bin	location for standard system commands
bin/sunview1	SunView executables (when BCP installed)
ccs	the C compilation system
ccs/bin	binaries
ccs/lib	libraries and auxiliary files
games	game binaries and data
include	include header files (for C programs, etc.)
kvm	implementation architecture-specific binaries and libraries
lang	mount/installation point for unbundled language products
lib	binaries not invoked directly by the user
lib/acct	accounting scripts and binaries
lib/class	suntree of executables for priocntl and dispadmin commands
lib/font	troff font description files
lib/fs	file system type dependent modules; invoked by root
lib/iconv	conversion tables for iconv(1)
lib/libp	profiled libraries
lib/locale	internationalization localization databases
lib/lp	line printer subsystem databases and back-end executables
lib/mail	auxiliary programs for the mail subsystem
lib/netsvc	internet network services
lib/nfs	auxiliary NFS-related programs and daemons
lib/refer	auxiliary refer-related programs
lib/rfs	auxiliary RFS-related programs and daemons
lib/sa	scripts and commands for the system activity report package
lib/saf	auxiliary programs and daemons related to the SAF
lib/shlib.etc	PIC archives needed to build the run-time linker
lib/spell	auxiliary spell-related programs and databases
lib/uucp	auxiliary uucp-related programs and daemons
local	commands local to a site
openwin	mount/installation point for OpenWindows software
sadm/bin	"valtools" binaries for use by FMLI scripts
sadm/install	executables and scripts for pkg management
sbin	executables for system administration
sbin/static	statically linked programs from /usr/bin and /usr/sbin
share	architecture-independent sharable files
share/lib	architecture-independent databases
share/lib/keytables	keyboard layout description tables
share/lib/mailx	mailx-related help files
share/lib/nterm	nroff terminal tables

share/lib/spell	auxiliary spell-related databases and scripts
share/lib/tabset	tab setting escape sequences
share/lib/terminfo	terminfo-style terminal description files
share/lib/tmac	{nt}roff macro packages
share/src	source code for kernel, libraries, and utilities
ucb	Berkeley compatibility package binaries
ucbinclude	Berkeley compatibility package header files
ucblib	Berkeley compatibility package libraries

Appendix B: SunOS 4.x Command Differences Under SunOS 5.0

Interface Notation

Notation	Meaning
Same	The interface in the standard or release that heads the column is identical to the interface in column one.
–	The interface does not exist in the standard or release that heads the column.
Changed	The interface was changed in the standard or release that heads the column, so an incompatibility was created with the interface in column one.
Enhanced	The interface was enhanced in the standard or release that heads the column, but no incompatibility was created.
–/Alternate	The interface does not exist in the standard or release that heads the column, but an alternate command set provides an equivalent interface.

SunOS 4.1 Command	SVR4 ABI	SVID	SVR4	SunOS 5.0	SunOS 5.0 Source Compatibility Package
ac(8)	–	–	–	–	–
accton(8)	–	Same	Same	Same	–
adb(1)	–	–	–	Same	–
adbgen(8)	–	–	–	Same	–
addbib(1)	–	–	–	Same	–
add_services(8)	–	–	–	–/Alternate	–
adjacentscreens(1)	–	–	–	–/Alternate	–
admin(1)	–	Change	Change	Change	–
adv(8)	–	–	–	Same	–
aedplot(1G)	–	–	–	–	Same
align_equals(1)	–	–	–	–/Alternate	–
analyze(8)	–	–	–	–	–
apropos(1)	–	–	–	Same	–
ar(1V)	–	Change	Change	Change	–
ar(1V) SysV	–	Change	Change	Change	–

SunOS 4.1 Command	SVR4 ABI	SVID	SVR4	SunOS 5.0	SunOS 5.0 Source Compatibility Package
arch(1)	–	–	–	–/Alternate	Same
arp(8C)	–	–	Same	Same	–
as(1)	–	Change	Change	Change	–
at(1)	–	Change	Change	Same	–
atq(1)	–	Change	Change	Change	–
atoplot(1G)	–	–	–	–	Same
atrm(1)	–	Change	Change	Change	–
audit(8)	–	–	–	–	–
audit_warn(8)	–	–	–	–	–
auditd(8)	–	–	–	–	–
automount(8)	–	–	Change	Change	–
awk(1)	–	Change	Change	Change	–
_					
banner(1V) SysV–		Same	Same	Same	–
bar(1)	–	–	–	–/Alternate	–
basename(1)	–	Same	Same	Same	Same
batch(1)	–	Change	Change	Change	–
bc(1)	–	–	Same	Same	–
biod(8)	–	–	Same	Same	–
bgplot(1G)	–	–	–	–	Same
biff(1)	–	–	–	–/Alternate	Same
boot(8S)	–	–	Change	Change	–
bootparamd(8)	–	–	Same	Same	–
_					
C2conv(8)	–	–	–	–	–
C2unconv(8)	–	–	–	–	–
cal(1)	–	Same	Same	Same	–
calendar(1)	–	Change	Change	Change	–
capitalize(1)	–	–	–	Changed	–
cancel(1)	–	Same	Same	Same	–
captoinfo(8V) SysV–		Same	Same	Same	–
cat(1V)	Change	Change	Change	Change	–
cat(1V) SysV	Same	Same	Same	Same	–
catman(8)	–	–	–	Same	–
cb(1)	–	–	Same	Same	–
cc(1V)	–	Change	Change	Change	Change
cc(1V) SysV	–	Change	Change	Change	–
cd(1)	Same	Same	Same	Same	–

SunOS 4.1 Command	SVR4 ABI	SVID	SVR4	SunOS 5.0	SunOS 5.0 Source Compatibility Package
cdc(1)	–	–	Change	Change	–
cflow(1V)	–	Same	Same	Same	–
cflow(1V) SysV	–	Same	Same	Same	–
change_login(8)	–	–	–	–	–
check4(8)	–	–	–	–	–
checkeq(1)	–	–	–	Same	–
checknr(1)	–	–	–	Same	–
chfn(1)	–	–	–	–	–
chgrp(1)	Change	Change	Change	Same	–
chkey(1)	–	–	Same	Same	–
chmod(1V)	Change	Change	Change	Change	–
chmod(1V) SysV	Change	Change	Change	Change	–
chown(8)	Change	Change	Change	Change	Same
chroot(8)	–	–	Same	Same	–
chrtbl(8)	–	–	Same	Same	–
chsh(1)	–	–	–	–	–
clear(1)	–	Same	Same	Same	–
cmp(1)	Same	Same	Same	Same	–
clear_colormap(1)	–	–	–	–	–
clear_functions(1)	–	–	–	Same	–
click(1)	–	–	–	–	–
client(8)	–	–	–	–	–
clock(1)	–	–	–	Change	–
clri(8)	–	–	–	-/Alternate	–
cluster(1)	–	–	–	–	–
cmdtool(1)	–	–	–	Change	–
col(1V)	–	Change	Change	Change	–
col(1V) SysV	–	Same	Same	Same	–
colcrt(1)	–	–	–	–	–
colldef(8)	–	–	–	-/Alternate	–
coloredit(1)	–	–	–	-/Alternate	–
colrm(1)	–	–	–	–	–
comb(1)	–	–	Change	Change	–
comm(1)	–	Same	Same	Same	–
compress(1)	–	Same	Same	Same	–
config(8)	–	–	–	Same	–
copy_home(8)	–	–	–	–	–
cp(1)	Change	Change	Change	Change	–

SunOS 4.1 Command	SVR4 ABI	SVID	SVR4	SunOS 5.0	SunOS 5.0 Source Compatibility Package
cpio(1)	Change	Change	Same	Same	–
cpp(1)	–	Change	Change	Same	–
crash(8)	–	–	Change	Change	–
cron(8)	–	–	Same	Same	–
crontab(1)	–	Same	Same	Same	–
crtplot(1G)	–	–	–	–	Same
crypt(1)	–	–	Same	Same	–
csh(1)	–	–	–	Same	–
csplit(1V) SysV	–	Same	Same	Same	–
ctags(1)	–	Change	Same	Same	–
ctrace(1V) SysV	–	–	Change	Change	–
cu(1C)	–	Same	Same	Same	–
cut(1V) SysV	–	–	Same	Same	–
cxref(1V)	–	Change	Change	Change	–
cxref(1V) SysV	–	Change	Same	Same	–
_					
date(1V)	Change	Change	Change	Change	–
date(1V) SysV	Same	Same	Same	Same	–
dbconfig(8)	–	–	–	–	–
dbx(1)	–	–	–	Same	–
dbxtool(1)	–	–	–	–/Alternate	–
dc(1)	–	–	Same	Same	–
dcheck(8)	–	–	–	–/Alternate	–
dd(1)	Change	Change	Change	Change	–
defaults_from_input(1)	–	–	–	–/Alternate	–
defaults_to_indentpro(1)	–	–	–	–/Alternate	–
defaults_to_mailrc(1)	–	–	–	–/Alternate	–
defaultsedit(1)	–	–	–	–/Alternate	–
delta(1)	–	Change	Change	Change	–
deroff(1)	–	–	Same	Same	–
des(1)	–	–	–	Same	–
devinfo(8S)	–	–	Change	Change/Alternate	–
devnm(8)	–	Change	Change	Change	–
df(1V)	Change	Change	Change	Change	Same
df(1V) SysV	Change	Change	Change	Change	–
diff(1)	–	Change	Change	Change	–
diff3(1V)	–	Same	Same	Same	–
diff3(1V) SysV	–	Same	Same	Same	–

SunOS 4.1 Command	SVR4 ABI	SVID	SVR4	SunOS 5.0	SunOS 5.0 Source Compatibility Package
diffmk(1)	–	–	–	Same	–
dircmp(1V) SysV	–	Change	Same	Same	–
dirname(1V) SysV	–	Same	Same	Same	–
dis(1)	–	Change	Change	Change	–
disablenumlock(1)	–	–	–	–	–
dkctl(8)	–	–	–	–	–
dkinfo(8)	–	–	–	-/Alternate	–
dmesg(8)	–	–	–	Same	–
domainname(1)	–	–	Same	Same	–
dorfs(8)	–	–	–	-/Alternate	–
dos(1)	–	–	–	–	–
dos2unix(1)	–	–	–	–	–
du(1V)	–	Change	Change	Change/Alternate	Same
du(1V) SysV	–	Same	Same	Same	–
dumbplot(1G)	–	–	–	–	Same
dump(8)	–	–	Change	Change	–
dumpfs(8)	–	–	–	-/Alternate	–
dumpkeys(1)	–	–	–	Same	–
e(1)	–	–	–	-/Alternate	–
echo(1V)	Same	Same	Same	Same	Same
echo(1V) SysV	Same	Same	Same	Same	–
ed(1)	Same	Same	Same	Same	–
edit(1)	–	–	Same	Same	–
edquota(8)	–	–	Same	Same	–
eeprom(8S)	–	–	–	Same	–
egrep(1V)	–	Change	Change	Same	–
eject(1)	–	–	–	Same	–
enablenumlock(1)	–	–	–	–	–
enroll(1)	–	–	–	–	–
env(1)	–	Same	Same	Same	–
eqn(1)	–	–	–	Same	–
error(1)	–	–	–	–	–
etherd(8C)	–	–	–	Same	–
etherfind(8C)	–	–	–	Same	–
ex(1)	Same	Same	Same	Same	–
expand(1)	–	–	–	Same	–
exportfs(8)	–	–	–	-/Alternate	–

SunOS 4.1 Command	SVR4 ABI	SVID	SVR4	SunOS 5.0	SunOS 5.0 Source Compatibility Package
expr(1V)	Change	Change	Change	Change	Same
expr(1V) SysV	Same	Same	Same	Same	–
extract_unbundled(8)	–	–	–	-/Alternate	–
false(1)	Same	Same	Same	Same	–
fastboot(8)	–	–	–	-/Alternate	Same
fasthalt(8)	–	–	–	-/Alternate	Same
fdformat(1)	–	–	–	–	Change
fgrep(1V)	–	Change	Change	Same	–
file(1)	–	Change	Change	Change	Same
find(1)	Change	Change	Change	Change	–
finger(1)	–	–	Same	Same	–
fmt(1)	–	Change	Same	Same	–
fmt_mail(1)	–	–	–	–	–
fold(1)	–	Change	Same	Same	–
fontedit(1)	–	–	–	–	–
foption(1)	–	–	–	–	–
format(8S)	–	–	Change	Same	–
fpa_download(8)	–	–	–	–	–
fparel(8)	–	–	–	–	–
fpaversion(8)	–	–	–	–	–
fpurel(8)	–	–	–	–	–
fpuversion4(8)	–	–	–	-/Alternate	–
from(1)	–	–	–	–	Same
fsck(8)	–	Change	Change	Change	–
fsck-cdrom(8)	–	–	–	–	–
fsirand(8)	–	–	–	Same	Same
ftp(1C)	–	–	Same	Same	–
fumount(8)	–	Same	Same	Same	–
fusage(8)	–	Same	Same	Same	–
fuser(8)	–	–	Same	Same	–
gcore(1)	–	Same	Same	Same	–
generic_args(1)	–	–	–	–	–
get(1)	–	Change	Change	Change	–
get_alarm(1)	–	–	–	–	–
get_selection(1)	–	–	–	-/Alternate	–
getopt(1V) SysV	–	–	Same	Same	–

SunOS 4.1 Command	SVR4 ABI	SVID	SVR4	SunOS 5.0	SunOS 5.0 Source Compatibility Package
getoptcvt(1)	–	–	Same	Same	–
getopts(1)	–	–	Same	Same	–
gettable(8C)	–	–	Same	Same	–
getty(8)	–	–	Same	Same	–
gigiplot(1G)	–	–	–	–	–
gpconfig(8)	–	–	–	–	–
gprof(1)	–	–	–	Same	–
graph(1G)	–	–	–	–	–
grep(1V)	Change	Change	Change	Same	–
grep(1V) SysV	Change	Change	Change	Change	–
groups(1)	–	Same	Same	Same	Same
grpck(8V)	–	Same	Same	Same	–
gxtest(8S)	–	–	–	–	–
_
halt(8)	–	–	–	Same/Alternate-	
hashcheck(1)	–	–	Same	Same	–
hashmake(1)	–	–	Same	Same	–
head(1)	–	Same	Same	Same	–
help(1)	–	–	Same	Same	–
help_viewer(1)	–	–	–	–	–
hostid(1)	–	–	–	-/Alternate	Same
hostname(1)	–	–	–	-/Alternate	Same
hostrfs(8)	–	–	–	Same	–
hpplot(1G)	–	–	–	–	Same
htable(8)	–	–	Same	Same	–
_
i386(1)	–	–	–	Same	–
iAPX286(1)	–	–	–	Same	–
icheck(8)	–	–	–	Same	–
iconedit(1)	–	–	–	Change	–
id(1V) SysV	Same	Same	Same	Same	–
idload(8)	–	Same	Same	Same	–
ifconfig(8C)	–	–	Same	Same	–
implot(1G)	–	–	–	–	Same
in.comsat(8C)	–	–	Same	Same	–
in.fingerd(8C)	–	–	Same	Same	–
in.ftpd(8C)	–	–	Same	Same	–
in.named(8C)	–	–	Same	Same	–

SunOS 4.1 Command	SVR4 ABI	SVID	SVR4	SunOS 5.0	SunOS 5.0 Source Compatibility Package
in.rexecd(8C)	–	–	Same	Same	–
in.rlogind(8C)	–	–	Same	Same	–
in.routed(8C)	–	–	Same	Same	–
in.rshd(8C)	–	–	Change	Change	–
in.rwhod(8C)	–	–	Same	Same	–
in.talkd(8C)	–	–	Same	Same	–
in.telnetd(8C)	–	–	Same	Same	–
in.tftpd(8C)	–	–	Same	Same	–
in.tnamed(8C)	–	–	Same	Same	–
in.uucpd(8C)	–	–	–	Same	–
indent(1)	–	–	–	–	–
indentpro_to_defaults(1)	–	–	–	-/Alternate	–
indxbib(1)	–	–	–	Same	–
inetd(8C)	–	–	Same	Same	–
infocmp(8V)	–	Change	Change	Change	–
infocmp(8V)	–	Change	Change	Change	–
init(8)	–	Change	Change	Change	–
inline(1)	–	–	–	Same	–
input_from_defaults(1)	–	–	–	–	–
insert_brackets(1)	–	–	–	Change	–
install(1)	–	–	Change	Change	Same
installboot(8S)	–	–	–	Same	–
installtxt(8)	–	–	–	-/Alternate	–
ipcrm(1)	–	Same	Same	Same	–
ipcs(1)	–	Same	Same	Same	–
intr(8)	–	–	–	–	–
iostat(8)	–	–	–	Same	–
ipallocd(8C)	–	–	–	–	–
join(1)	–	Change	Change	Change	–
kadb(8S)	–	–	–	Same	–
keyenvoy(8C)	–	–	–	–	–
keylogin(1)	–	Same	Same	Same	–
keylogout(1)	–	–	–	Same	–
keyserv(8C)	–	Same	Same	Same	–
kgmon(8)	–	–	–	–	–
kill(1)	Same	Same	Same	Same	–

SunOS 4.1 Command	SVR4 ABI	SVID	SVR4	SunOS 5.0	SunOS 5.0 Source Compatibility Package
labelit(8)	–	–	–	–	–
last(1)	–	Same	Same	Same	–
lastcomm(1)	–	–	–	Same	–
ld(1)	–	Change	Change	Change	Same
ldconfig(8)	–	–	–	–	–
ldd(1)	–	–	Same	Same	–
leave(1)	–	–	–	–/Alternate	–
lex(1)	–	Change	Change	Change	–
line(1)	Same	Same	Same	Same	–
link(8V)	–	Same	Same	Same	Same
lint(1V)	–	Change	Change	Change	Same
lint(1V) SysV	–	Change	Change	Change	–
listen(8)	–	–	Same	Same	–
ln(1V)	Change	Change	Change	Change	Same
ln(1V) SysV	Change	Change	Change	Change	–
load(1)	–	–	–	–/Alternate	–
loadc(1)	–	–	–	–/Alternate	–
load_package(8)	–	–	–	–	–
loadkeys(1)	–	–	–	Same	–
lockd(8C)	–	–	Same	Same	–
lockscreen(1)	–	–	–	–/Alternate	–
logger(1)	–	–	–	–	Same
login(1)	Same	Same	Same	Same	–
logintool(8)	–	–	–	–	–
logname(1)	Same	Same	Same	Same	–
look(1)	–	–	–	Same	–
lookbib(1)	–	–	–	Same	–
lorder(1)	–	Same	Same	Same	–
lp(1)	Same	Same	Same	Same	–
lpc(8)	–	–	–	–	Same
lpd(8)	–	–	–	–/Alternate	Same
lpq(1)	–	–	–	–/Alternate	Same
lpr(1)	–	–	–	–/Alternate	Same
lprm(1)	–	–	–	–/Alternate	Same
lpstat(1)	–	Same	Same	Same	–
lptest(1)	–	–	–	–	Same
ls(1V)	Change	Change	Change	Change	Same

SunOS 4.1 Command	SVR4 ABI	SVID	SVR4	SunOS 5.0	SunOS 5.0 Source Compatibility Package
ls(1V) SysV	Change	Change	Change	Change	–
lsw(1)	–	–	–	Same	–
_
m4(1V)	–	Change	Change	Change	–
m4(1V) SysV	–	Same	Same	Same	–
m68k(1)	–	–	–	–	–
mach(1)	–	–	–	-/Alternate	Same
Mail(1)	–	–	–	-/Alternate	–
mail(1)	–	Change	Change	Change	–
mail(1) UCB	–	–	–	-/Alternate	Same
mailrc_to_defaults(1)	–	–	–	-/Alternate	–
mailstats(8)	–	–	–	Same	–
mailtool(1)	–	–	–	Change	–
make(1)	–	Change	Change	Change	–
makedbm(8)	–	–	–	Change	–
MAKEDEV(8)	–	–	–	Same	–
makekey(8)	–	–	Same	Same	–
man(1)	–	–	–	Change	–
mc68881version(8)	–	–	–	–	–
mconnect(8)	–	–	–	–	–
mesg(1)	–	Same	Same	Same	–
mkdir(1)	Same	Same	Same	Same	–
mkfile(8)	–	–	–	Same	–
mkfs(8)	–	Change	Change	Change	–
mknod(8)	–	Change	Change	Change	–
mkproto(8)	–	–	–	–	–
mkstr(1)	–	–	–	–	Same
modload(8)	–	–	–	Same	–
modstat(8)	–	–	–	Same	–
modunload(8)	–	–	–	Same	–
more(1)	–	Same	Same	Same	–
mount(8)	–	Change	Change	Change	–
mountd(8C)	–	–	Same	Same	–
mount_tfs(8)	–	–	–	-/Alternate	–
mt(1)	–	–	–	Same	–
mv(1)	Change	Change	Change	Change	–
_
ndbootd(8C)	–	–	–	–	–

SunOS 4.1 Command	SVR4 ABI	SVID	SVR4	SunOS 5.0	SunOS 5.0 Source Compatibility Package
ncheck(8)	–	Same	Same	Same	–
neqn(1)	–	–	–	Same	–
netconfig(8C)	–	–	–	–	–
netstat(8C)	–	–	Same	Same	–
newaliases(8)	–	–	–	Same	–
newgrp(1)	–	Same	Same	Same	–
newkey(8)	–	Same	Same	Same	–
newfs(8)	–	–	–	Same	–
nfsd(8)	–	–	Same	Same	–
nfsstat(8C)	–	–	–	Same	–
nice(1)	–	Change	Change	Change	–
nl(1V) SysV	–	Same	Same	Same	–
nlsadmin(8)	–	–	Change	Change	–
nm(1)	–	Change	Change	Change	–
nohup(1V)	–	Change	Change	Change	–
nohup(1V) SysV	–	Same	Same	Same	–
nroff(1)	–	–	–	Same	–
nslookup(8C)	–	–	Same	Same	–
nsquery(8)	–	Same	Same	Same	–
objdump(1)	–	–	–	–	–
od(1V)	–	Same	Same	Same	–
od(1V) SysV	–	Same	Same	Same	–
old-analyze(8)	–	–	–	–	–
old-ccat(1)	–	–	–	–	–
old-compact(1)	–	–	–	–	–
old-eyacc(1)	–	–	–	–	–
old-filemerge(1)	–	–	–	–	–
old-make(1)	–	–	–	–	–
old-prmail(1)	–	–	–	–	–
old-pti(1)	–	–	–	–	–
old-setkeys(1)	–	–	–	–	–
old-sun3cvt(1)	–	–	–	–	–
old-syslog(1)	–	–	–	–	–
old-uncompact(1)	–	–	–	–	–
old-vc(1)	–	–	–	–	–
on(1C)	–	–	–	Same	–
organizer(1)	–	–	–	–	–

SunOS 4.1 Command	SVR4 ABI	SVID	SVR4	SunOS 5.0	SunOS 5.0 Source Compatibility Package
overview(1)	–	–	–	–	–
—					
pac(8)	–	–	–	–	–
pack(1V) SysV	–	Change	Same	Same	–
page(1)	–	Same	Same	Same	–
pagesize(1)	–	–	–	–	Same
passwd(1)	Change	Change	Change	Change	–
paste(1V) SysV	–	Same	Same	Same	–
pax(1V)	–	–	–	–/Alternate	–
paxcpio(1V)	–	–	–	–/Alternate	–
pcat(1V) SysV	–	Same	Same	Same	–
pdp11(1)	–	–	Same	Same	–
perfmeter(1)	–	–	–	Change	–
pg(1V) SysV	Same	Same	Same	Same	–
ping(8C)	–	–	Same	Same	–
plot(1G)	–	–	–	–	Same
plottoa(1G)	–	–	–	–	Same
pnp.s386(8C)	–	–	–	–	–
pnpboot(8C)	–	–	–	–	–
pnpd(8C)	–	–	–	–	–
portmap(8C)	–	–	–	–/Alternate	–
pr(1V)	Change	Change	Change	Change	–
pr(1V) SysV	Same	Same	Same	Same	–
praudit(8)	–	–	–	–	–
printenv(1)	–	–	–	–/Alternate	Same
prof(1)	–	Change	Change	Change	–
prs(1)	–	Change	Change	Change	–
prt(1)	–	–	–	Same	–
ps(1)	–	Change	Change	Change	Same
pstat(8)	–	–	–	Same	–
ptx(1)	–	–	–	Same	–
pwck(8V)	–	Same	Same	Same	–
pwd(1)	Same	Same	Same	Same	–
pwdauthd(8C)	–	–	–	–	–
—					
quot(8)	–	–	Same	Same	–
quota(1)	–	–	Same	Same	–
quotacheck(8)	–	–	Same	Same	–

SunOS 4.1 Command	SVR4 ABI	SVID	SVR4	SunOS 5.0	SunOS 5.0 Source Compatibility Package
quotaoff(8)	–	–	Same	Same	–
quotaon(8)	–	–	Same	Same	–
ranlib(1)	–	–	–	–/Alternate	
rarpd(8C)	–	–	Same	Same	–
rasfilter8to1(1)	–	–	–	–	–
rastrepl(1)	–	–	–	–	–
rc(8)	–	–	–	–	–
rc.boot(8)	–	–	–	–	–
rc.local(8)	–	–	–	–	–
rcp(1C)	–	–	Same	Same	–
rdate(8C)	–	–	Same	Same	–
rdist(1)	–	–	–	Same	–
rdump(8)	–	–	–	–/Alternate	–
reboot(8)	–	–	–	Same	–
red(1)	–	–	Same	Same	–
refer(1)	–	–	–	Same	–
remove_brackets(1)	–	–	–	Change	–
renice(8)	–	–	–	–/Alternate	Same
repquota(8)	–	–	Same	Same	–
reset(1)	–	–	Change	Change	Same
restore(8)	–	–	Change	Change	–
rev(1)	–	–	–	–	–
rfadmin(8)	–	Same	Same	Same	–
rfpasswd(8)	–	Same	Same	Same	–
rfstart(8)	–	Same	Same	Same	–
rfstop(8)	–	Same	Same	Same	–
rfuadmin(8)	–	–	Same	Same	–
rfudaemon(8)	–	–	Same	Same	–
ring_alarm(1)	–	–	–	–	–
rlogin(1C)	–	–	Change	Change	–
rm(1)	Change	Change	Change	Change	–
rm_client(8)	–	–	–	–	–
rmail(8C)	–	–	–	Same	–
rmail(8)	–	Change	Change	Change	–
rmdel(1)	–	Change	Change	Change	–
rmdir(1)	Same	Same	Same	Same	–
rmntstat(8)	–	Same	Same	Same	–

SunOS 4.1 Command	SVR4 ABI	SVID	SVR4	SunOS 5.0	SunOS 5.0 Source Compatibility Package
rm_services(8)	–	–	–		–
rmt(8C)	–	–	–	Same	–
roffbib(1)	–	–	–	Same	–
route(8C)	–	–	Change	Change	–
rpc.etherd(8C)	–	–	–	–	–
rpc.lockd(8C)	–	–	–	Same	–
rpc.mountd(8C)	–	–	–	Same	–
rpc.rexd(8C)	–	–	–	Same	–
rpc.rquotad(8C)	–	–	–	Same	–
rpc.rstatd(8C)	–	–	–	Same	–
rpc.rusersd(8C)	–	–	Same	Same	–
rpc.rwalld(8C)	–	–	Same	Same	–
rpc.showfhd(8C)	–	–	–	-/Alternate	–
rpc.statd(8C)	–	–	–	–	–
rpc.sprayd(8C)	–	–	Same	Same	–
rpc.user_agentd(8C)	–	–	–	–	–
rpc.yppasswdd(8C)	–	–	–	Same	–
rpc.ypupdated(8C)	–	–	–	-/Alternate	–
rpcgen(1)	–	Same	Same	Same	–
rpcinfo(8)	–	Change	Same	Same	–
rrestore(8)	–	–	–	-/Alternate	–
rsh(1C)	–	Same	Same	Same	–
rup(1C)	–	–	–	Same	–
ruptime(1C)	–	–	Same	Same	–
rusage(8)	–	–	–	Same	Same
rusers(1C)	–	–	Same	Same	–
rwall(1C)	–	–	Change	Same	–
rwho(1C)	–	–	Same	Same	–
sa(8)	–	–	–	-/Alternate	–
sact(1)	–	Change	Change	Change	–
savecore(8)	–	–	–	Same	–
sccs(1)	–	–	–	Same	–
sccsdiff(1)	–	–	Change	Change	–
screenblank(1)	–	–	–	-/Alternate	–
screendump(1)	–	–	–	–	–
screenload(1)	–	–	–	–	–
scrolldefaults(1)	–	–	–	-/Alternate	–

SunOS 4.1 Command	SVR4 ABI	SVID	SVR4	SunOS 5.0	SunOS 5.0 Source Compatibility Package
script(1)	–	–	Same	Same	–
sdiff(1V) SysV	–	–	Same	Same	–
sed(1V)	Change	Change	Change	Change	Same
sed(1V) SysV	Same	Same	Same	Same	–
selection_svc(1)	–	–	–	–/Alternate	–
sendmail(8)	–	–	–	Same	–
set4(8)	–	–	–	–	–
set_alarm(1)	–	–	–	–	–
setsid(8V)	–	–	–	–	–
setup_client(8)	–	–	–	–	–
setup_exec(8)	–	–	–	–	–
sh(1)	Change	Change	Change	Change	–
shelltool(1)	–	–	–	Change	–
shift_lines(1)	–	–	–	Change	–
showfh(8C)	–	–	–	Same	–
showmount(8)	–	–	–	Same	–
shutdown(8)	–	–	Change	Change	Same
size(1)	–	Change	Change	Change	–
skyversion(8)	–	–	–	–	–
sleep(1)	Same	Same	Same	Same	–
soelim(1)	–	–	Same	Same	–
sort(1V)	Change	Change	Change	Change	–
sort(1V) SysV	Same	Same	Same	Same	–
sortbib(1)	–	–	–	Same	–
snap(1)	–	–	–	–	–
sparc(1)	–	–	–	Same	–
spell(1)	–	Change	Change	Change	–
spellin(1)	–	–	Same	Same	–
spline(1G)	–	–	–	Same	–
split(1)	–	Same	Same	Same	–
spray(8C)	–	–	Change	Change	–
strings(1)	–	–	Same	Same	–
strip(1)	–	Change	Same	Same	–
stty(1V)	Change	Change	Change	Change	Same
stty(1V) SysV	Change	Change	Change	Change	–
stty_from_defaults(1)	–	–	–	–	–
su(1V)	Change	Change	Change	Change	–
su(1V) SysV	Same	Same	Same	Same	–

SunOS 4.1 Command	SVR4 ABI	SVID	SVR4	SunOS 5.0	SunOS 5.0 Source Compatibility Package
sum(1V)	–	Change	Change	Change	Same
sum(1V) SysV	–	Same	Same	Same	–
sun(1)	–	–	–	Same	–
sundiag(8)	–	–	–		–
suninstall(8)	–	–	–	Change	–
sunview(1)	–	–	–	-/Alternate	–
swapon(8)	–	–	–	-/Alternate	–
swin(1)	–	–	–	–	–
switcher(1)	–	–	–	–	–
symorder(1)	–	–	–	–	–
sync(1)	–	Same	Same	Same	–
sys-config(8)	–	–	–	–	–
syslogd(8)	–	–	–	Same	–
sys-unconfig(8)	–	–	–	–	–
sysex(1)	–	–	–	–	–
syswait(1)	–	–	–	–	–
t300(1G)	–	–	–	–	Same
t300s(1G)	–	–	–	–	Same
t4013(1G)	–	–	–	–	Same
t450(1G)	–	–	–	–	Same
tabs(1V) SysV	–	Change	Same	Same	–
tail(1)	Same	Same	Same	Same	–
talk(1)	–	Change	Change	Change	–
tar(1)	–	Change	Change	Same	–
tbl(1)	–	–	–	Same	–
tcopy(1)	–	–	–	Same	–
tcov(1)	–	–	–	-/Alternate	–
tee(1)	Same	Same	Same	Same	–
tek(1G)	–	–	–	–	–
tektool(1)	–	–	–	–	–
telnet(1C)	–	–	–	Same	–
test(1V)	Change	Change	Change	Change	Same
test(1V) SysV	Same	Same	Same	Same	–
textedit(1)	–	–	–	Change	–
textedit_filters(1)	–	–	–	Change	–
tfsd(8)	–	–	–	Same	–
tftp(1C)	–	–	Same	Same	–

SunOS 4.1 Command	SVR4 ABI	SVID	SVR4	SunOS 5.0	SunOS 5.0 Source Compatibility Package
tic(8V)	–	Same	Same	Same	–
tip(1C)	–	–	–	–/Alternate	–
time(1V)	–	Change	Change	Change	–
time(1V) SysV	–	Same	Same	Same	–
toolplaces(1)	–	–	–	–	–
touch(1V)	Change	Change	Change	Change	Same
touch(1V) SysV	Same	Same	Same	Same	–
tput(1V) SysV	–	Same	Same	Same	–
tr(1V)	Change	Change	Change	Change	Same
tr(1V) SysV	Same	Same	Same	Same	–
trace(1)	–	–	–	–/Alternate	–
traffic(1C)	–	–	–	–	–
troff(1)	–	–	–	Same	–
trpt(8C)	–	–	Same	Same	–
true(1)	Same	Same	Same	Same	–
tset(1)	–	–	Change	Change	Same
tsort(1)	–	Same	Same	Same	–
tty(1)	Same	Same	Same	Same	–
ttysoftcar(8)	–	–	–	Same	–
tunefs(8)	–	–	Same	Same	–
tvconfig(8)	–	–	–	–	–
tzsetup(8)	–	–	–	–	–
u3b(1)	–	–	Same	Same	–
u3b15(1)	–	–	Same	Same	–
u3b2(1)	–	–	Same	Same	–
u3b5(1)	–	–	Same	Same	–
uid_allocd(8C)	–	–	–	–	–
ul(1)	–	–	–	Same	–
umask(1)	Same	Same	Same	Same	–
umount(8)	–	Change	Change	Change	–
umount_tfs(8)	–	–	–	–/Alternate	–
unadv(8)	–	–	–	Same	–
uname(1)	Same	Same	Same	Same	–
uncompress(1)	–	Same	Same	Same	–
unconfigure(8)	–	–	–	–	–
unexpand(1)	–	–	–	Same	–
unget(1)	–	Change	Change	Change	–

SunOS 4.1 Command	SVR4 ABI	SVID	SVR4	SunOS 5.0	SunOS 5.0 Source Compatibility Package
unifdef(1)	–	–	–	Same	–
uniq(1)	–	Same	Same	Same	–
units(1)	–	–	Same	Same	–
unix2dos(1)	–	–	–	–	–
unlink(8V)	–	Change	Same	Same	–
unload(1)	–	–	–	-/Alternate	–
unloadc(1)	–	–	–	-/Alternate	–
unpack(1V)	SysV-	Same	Same	Same	–
unset4(8)	–	–	–	–	–
unwhiteout(1)	–	–	–	Same	–
update(8)	–	–	–	-/Alternate	–
uptime(1)	–	–	–	Same	–
users(1)	–	–	–	-/Alternate	Same
ustar(1V)	–	–	–	-/Alternate	–
uucheck(8C)	–	–	Same	Same	–
uucico(8C)	–	–	Same	Same	–
uucleanup(8C)	–	–	Same	Same	–
uucp(1C)	Change	Change	Same	Same	–
uudecode(1C)	–	Same	Same	Same	–
uuencode(1C)	–	Same	Same	Same	–
uulog(1C)	Change	Change	Change	Change	–
uuname(1C)	–	Change	Same	Same	–
uupick(1C)	–	Same	Same	Same	–
uusched(8C)	–	–	Same	Same	–
uusend(1C)	–	–	–	–	–
uustat(1C)	Change	Change	Same	Same	–
uuto(1C)	–	Same	Same	Same	–
uux(1C)	Change	Change	Same	Same	–
uuxqt(8C)	–	–	Same	Same	–
—					
vacation(1)	–	–	Change	Change	–
val(1)	–	Same	Same	Same	–
vax(1)	–	–	Same	Same	–
vedit(1)	–	–	Same	Same	–
vfontinfo(1)	–	–	–	–	–
vgrind(1)	–	–	–	Same	–
vi(1)	Same	Same	Same	Same	–
view(1)	–	–	Same	Same	–

SunOS 4.1 Command	SVR4 ABI	SVID	SVR4	SunOS 5.0	SunOS 5.0 Source Compatibility Package
`vipw(8)`	–	–	–	–	Same
`vmstat(8)`	–	–	–	Same	–
`vplot(1)`	–	–	–	–	–
`vswap(1)`	–	–	–	–	–
`vtroff(1)`	–	–	–	–	–
`vwidth(1)`	–	–	–	–	–
_					
`w(1)`	–	–	–	Same	–
`wait(1)`	Same	Same	Same	Same	–
`wall(1)`	–	Change	Change	Same	–
`wc(1)`	–	Same	Same	Same	–
`what(1)`	–	Same	Same	Same	–
`whatis(1)`	–	–	–	Change	–
`whereis(1)`	–	–	–	–	Same
`which(1)`	–	–	–	–	–
`who(1)`	Same	Same	Same	Same	–
`whoami(1)`	–	–	–	–/Alternate	Same
`whois(1)`	–	–	Same	Same	–
`write(1)`	–	Same	Same	Same	–
_					
`xargs(1V) SysV`	–	Same	Same	Same	–
`xget(1)`	–	–	–	–	–
`xsend(1)`	–	–	–	–	–NoneN/A
`xstr(1)`	–	–	–	–	–
_					
`yacc(1)`	–	Same	Same	Same	–
`yes(1)`	–	–	Same	Same	–
`ypbatchupd(8C)`	–	–	–	–	–
`ypbind(8)`	–	–	–	Same	–
`ypcat(1)`	–	–	–	Same	–
`ypinit(8)`	–	–	–	Same	–
`ypmatch(1)`	–	–	–	Same	–
`yppasswd(1)`	–	–	–	Same	–
`yppoll(8)`	–	–	–	Same	–
`yppush(8)`	–	–	–	Same	–
`ypserv(8)`	–	–	–	Same	–
`ypset(8)`	–	–	–	Same	–
`ypupdated(8C)`	–	–	–	Same	–

SunOS 4.1 Command	SVR4 ABI	SVID	SVR4	SunOS 5.0	SunOS 5.0 Source Compatibility Package
ypwhich(8)	–	–	–	Same	–
ypxfr(8)	–	–	–	Same	–
ypxfrd(8)	–	–	–	Same	–
zcat(1)	–	Same	Same	Same	–
zdump(8)	–	Same	Same	Same	–
zic(8)	–	–	Same	Same	–