FUJITSU

shaping tomorrow with you

Oracle Solaris command casebook for Linux users

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Fujitsu LIMITED

Revision History

Revision	Release date	Update page	Updated content
1.0	October, 2014		First Edition

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Introduction

・Command Reference in this document is based on the following environment.

```
Linux : Red Hat Enterprise Linux 6.5
Solaris : Oracle Solaris 11.1, SRU14031(11.1.17.5.0), ESF5.1
```

・Reference method of online documentation for Solaris.

```
man <command name> (or <configuration file name>)
```

・Settings for displaying the online manual.

```
# env
MANPATH=/usr/share/man
LANG=C
```

・Execution example

Command execution of this document is an example of running in the Solaris environment.

・Reference URL

Oracle Documentation

```
「Oracle Solaris 11.1 Information Library - User Commands」
http://docs.oracle.com/cd/E26502_01/html/E29030/toc.html

「Oracle Solaris 11.1 Information Library - System Administration Commands」
http://docs.oracle.com/cd/E26502_01/html/E29031/index.html
```

Fujitsu Hardware Manual

```
「Fujitsu M10-1 Manuals」
http://www.fujitsu.com/global/products/computing/servers/unix/sparc/downloads/manuals/m10-1/
```

1. Starting and Stopping the OS Environment

(1) Start the server from the XSCF

command / Intended use	Linux	Solaris	Comparison
	-	**poweron**	Solaris only
Intended use	**Option Details**		
Starts all of the specified PPARs	-	**poweron -p PPAR_ID**	Solaris only
Automatically responds to prompt with "y" (yes)	-	**poweron -y**	Solaris only

Execution example 1
Start the server from the XSCF

Linux	Solaris
-	XSCF> poweron -p 0 PPAR-IDs to power on :00 Continue? [y|n] :y 00 : Powering on *Note* This command only issues the instruction to power-on. The result of the instruction can be checked by the "showlogs power". XSCF>

(2) Start the OS

command / Intended use	Linux	Solaris	Comparison
	grub	**boot**	different
Intended use	**Option Details**		
Boot the OS	**Boot in the GRUB menu**	**boot**	Command is different
Boot the OS in single-user mode	**kernel /vmlinuz-... root=... 1**	**boot -s**	Command is different
Display a list of bootable OS	**Displayed in the GRUB menu**	**boot -L**	Command is different
Boot the OS by selecting a kernel	**Select in the GRUB menu**	**boot -Z <data_set>**	Command is different
Boot the OS from the specified device	**Select a device in the BIOS**	**boot <device>**	Command is different
Configuration file	**/boot/grub/menu.lst**	**- (Save to EEPROM by OBP command)**	different

Execution example 1
Boot the OS

Linux	Solaris
-	{0} ok boot Boot device: /pci@8000/pci@4/pci@0/pci@0/scsi@0...,0:a File and args: zfs-file-system Loading: /platform/sun4v/boot_archive ramdisk-root hsfs-file-system Loading: /platform/sun4v/kernel/sparcv9/unix SunOS Release 5.11 Version 11.1 64-bit Copyright (c) 1983, 2012, Oracle and/or its affiliates. All rights reserved. Hostname: solaris solaris console login:

Execution example 2
OS boot from the installation media

Linux	Solaris
-	{0} ok boot cdrom

Execution example 3
OS boot from saved BE

Linux	Solaris
-	{0} ok boot -L Boot device: /virtual-devices@100/channel-devices@200/disk@0 File and args: -L 1 Oracle Solaris 11.1 SPARC 2 be01 Select environment to boot: [1 - 2]: To boot the selected entry, invoke: boot [<root-device>] -Z rpool/ROOT/be01 Program terminated {0} ok boot -Z rpool/ROOT/be01

(3) Stop the OS

command / Intended use	Linux	Solaris	Comparison
	shutdown	**shutdown**	Same
Intended use	**Option Details**		
Stop the OS	**shutdown -h**	**shutdown -i5**	Options are different
Reboot the OS	**shutdown -r**	**shutdown -i6**	Options are different
Transition to single-user	**shutdown**	**shutdown**	Same
Transition to BIOS	**shutdown -r**	**-**	Linux only
Transition to OBP	**-**	**shutdown -i0**	Solaris only
A shutdown is performed after a designated time	**shutdown +<min>**	**shutdown -g<sec>**	Options are different
Specify the amount of time to perform a shutdown	**shutdown hh:ss**	**-**	Linux only
Automatically responds to prompt with "y" (yes)	**-**	**shutdown -y**	Solaris only

Execution example 1
Stop the OS

Linux	Solaris
# shutdown -h now Shutting down...Shutting dow[FAILED]tchdog: Stopping certmonger: [OK] Can't connect to default. Skipping. Stopping rhsmcertd... [OK] Stopping atd: [OK] Stopping cups: [OK] Stopping abrt daemon:... [OK] Stopping sshd:... [OK] Shutting down sm-client:... [OK] Shutting down sendmail:... [OK] Turning off swap: [OK] Turning off quotas: [OK] Unmounting file systems: [OK] init: Re-executing /sbin/init Halting system...	# shutdown -y -g0 -i5 Shutdown started. Wed Jul 30 16:47:48 GMT 2014 Changing to init state 5 - please wait Broadcast Message from root (console) on sol Jul 30 16:47... THE SYSTEM sol IS BEING SHUT DOWN NOW ! ! ! Log off now or risk your files being damaged showmount: sol: RPC: Program not registered root@sol:~# svc.startd: The system is coming down. Please wait. svc.startd: 125 system services are now being stopped. Mar 18 14:22:49 sol last message repeated 26 times Mar 18 14:22:50 sol syslogd: going down on signal 15 svc.startd: Killing user processes. Mar 18 14:22:56 The system is down. Shutdown took 9 seconds. syncing file systems... done

Execution example 2
Reboot the OS

Linux

```
# shutdown -r now

The system is going down for reboot NOW!
#
                        Shutting down...Shutting dow[FAILED]tchdog:
Stopping certmonger:                                       [  OK  ]

Can't connect to default. Skipping.
Stopping rhsmcertd...                                      [  OK  ]
Stopping atd:                                              [  OK  ]
Stopping cups:                                             [  OK  ]
Stopping abrt daemon:...                                   [  OK  ]
Stopping sshd:...                                          [  OK  ]
Shutting down sm-client:...                                [  OK  ]
Shutting down sendmail:...                                 [  OK  ]
Stopping mcelog
Stopping xinetd:...                                        [  OK  ]
Stopping crond:...                                         [  OK  ]
Turning off swap:                                          [  OK  ]
Turning off quotas:                                        [  OK  ]
Unmounting file systems:                                   [  OK  ]
init: Re-executing /sbin/init
Please stand by while rebooting the system…
Restarting system.

Red hat Enterprise Linux Server release 6.5 (Santiago)
Kernel 2.6.32-431.el6.x86_64 on an x86_64

rhel6 login:
```

Solaris

```
# shutdown -y -g0 -i6

Shutdown started.    Thu Mar 13 14:20:54 JST 2014

Changing to init state 6 - please wait
Broadcast Message from root (console) on sol Thu Mar 13 14:20:54...
THE SYSTEM sol IS BEING SHUT DOWN NOW ! ! !
Log off now or risk your files being damaged

root@sol:~# svc.startd: The system is coming down.  Please wait.
svc.startd: 132 system services are now being stopped.
syncing file systems... done
rebooting...
Resetting...

SPARC M10-4S, No Keyboard
Copyright (c) 1998, 2013, Oracle and/or its affiliates. All rights
 reserved.
OpenBoot 4.34.0, 16384 MB memory available, Serial #268894486.
[ 1.24.0 ]
Ethernet address b0:99:28:a0:58:16, Host ID: 90070116.

Boot device: disk  File and args:
SunOS Release 5.11 Version 11.1 64-bit
Copyright (c) 1983, 2012, Oracle and/or its affiliates. All rights
 reserved.
Hostname: sol

sol console login:
```

Execution example 3
Transition to single-user

Linux

```
# shutdown now

                        Shutting down...Shutting dow[FAILED]tchdog:
Stopping certmonger:                                       [  OK  ]

Can't connect to default. Skipping.
Stopping rhsmcertd...                                      [  OK  ]
Stopping atd:                                              [  OK  ]
Stopping cups:                                             [  OK  ]
Stopping abrt daemon:...                                   [  OK  ]
Stopping sshd:...                                          [  OK  ]
Shutting down sm-client:...                                [  OK  ]
Shutting down sendmail:...                                 [  OK  ]
Stopping mcelog
Stopping xinetd:...                                        [  OK  ]
Stopping crond:...                                         [  OK  ]
Turning off swap:                                          [  OK  ]
Turning off quotas:                                        [  OK  ]
Unmounting file systems:                                   [  OK  ]

Telling INIT to go to single user mode.
init: rc main process (2903) killed by TERM signal
#
```

Solaris

```
# shutdown -y -g0

Shutdown started.    Tue Jul 22 20:34:34 JST 2014

Changing to init state s - please wait
Broadcast Message from root (console) on hostname Tue Jul 22 20:34:34...
THE SYSTEM hostname IS BEING SHUT DOWN NOW ! ! !
Log off now or risk your files being damaged

svc.startd: The system is coming down for administration.  Please wait.
#
Enter user name for system maintenance (control-d to bypass): xxxxx
Enter xxxxx password (control-d to bypass):
single-user privilege assigned to user01 on /dev/console.
Entering System Maintenance Mode

Oracle Corporation      SunOS 5.11      11.1    April 2014
#
```

(4) Check the run level

command / Intended use	Linux	Solaris	Comparison
	who,runlevel	**who**	Same
Intended use	**Option Details**		
Display of the run level	**who -r**	**who -r**	Same
Display of the run level of the previous and current	**runlevel**	**who -r**	Command is different

Execution example 1
Check the run level

Linux

```
# who -r
        run-level 5  2014-07-22 11:38
#
```

Solaris

```
# who -r
   .       run-level 3   Jul 22 17:50     3      0  S
#
```

Execution example 2
Check the run level of the previous and current

Linux

```
# runlevel
N 5
#
```

Solaris

```
# who -r
   .       run-level 3   Jul 22 17:50     3      0  S
#
```

2. Package Management

(1) Package management

command / Intended use	Linux	Solaris	Comparison
	yum,rpm	pkg	different
Intended use	**Option Details**		
Install a new package	**yum install <package>**	**pkg install <package>**	Command is different
Update all packages	**yum update**	**pkg update**	Command is different
Update a specific package	**yum update <package>**	**pkg update <package>**	Command is different
Confirmation for the update package	**yum check-update**	**pkg update -nv**	Command is different
Search of installed package	**yum search <search string>**	**pkg search <search string>**	Command is different
Confirmation of the package to which the file belongs	**rpm -qf <file>**	**pkg search <file>**	Command is different
Display the files in the package	**rpm -ql <package>**	**pkg contents <package>**	Command is different
Display the installed package list	**yum list all**	**pkg list**	Command is different
Display the package information	**yum info <package>**	**pkg info <package>**	Command is different
Delete a package	**yum remove <package>**	**pkg uninstall <package>**	Command is different

Execution example 1
Install a new package

Linux

```
# yum install telnet
Loaded plugins: fastestmirror, refresh-packagekit, security
Loading mirror speeds from cached hostfile
 * base: xxxx.com
 * extras: xxxx.com
 * updates: xxxx.com
Setting up Install Process
Resolving Dependencies
--> Running transaction check
---> Package telnet.i686 1:0.17-47.el6_3.1 will be installed
--> Finished Dependency Resolution

Dependencies Resolved

================================================
 Package       Arch        Version                 Repository    Size
================================================
Installing:
 telnet        i686        1:0.17-47.el6_3.1       base          57 k

Transaction Summary
================================================
Install       1 Package(s)

Total download size: 57 k
Installed size: 102 k
Is this ok [y/N]: y
Downloading Packages:
telnet-0.17-47.el6_3.1.i686.rpm                 |  57 kB     00:00
Running rpm_check_debug
Running Transaction Test
Transaction Test Succeeded
Running Transaction
  Installing : 1:telnet-0.17-47.el6_3.1.i686                 1/1
  Verifying  : 1:telnet-0.17-47.el6_3.1.i686                 1/1

Installed:
  telnet.i686 1:0.17-47.el6_3.1

Complete!
#
```

Solaris

```
# pkg install pkg://solaris/network/telnet
           Packages to install:  1
       Create boot environment: No
Create backup boot environment: No

DOWNLOAD                                PKGS       FILES    XFER (MB)   SPEED
Completed                               1/1          8/8      0.1/0.1  3.4M/s

PHASE                                        ITEMS
Installing new actions                       23/23
Updating package state database                Done
Updating image state                           Done
Creating fast lookup database                  Done
#
```

Execution example 2
Update all packages

Linux

```
# yum update
Loaded plugins: fastestmirror, refresh-packagekit, security
Loading mirror speeds from cached hostfile
 * base: xxxxx.com
 * extras: xxxx.com
 * updates: xxxx.com
Setting up Update Process
Resolving Dependencies
--> Running transaction check
---> Package audit.i686 0:2.2-2.el6 will be updated

---> Package yum-utils.noarch 0:1.1.30-17.el6_5 will be an update
--> Finished Dependency Resolution

Dependencies Resolved

================================================
 Package                Arch    Version               Repository  Size
================================================
Installing:
 kernel                 i686    2.6.32-431.17.1.el6   updates     26 M
 kernel-devel           i686    2.6.32-431.17.1.el6   updates     8.7 M
Updating:
 audit                  i686    2.2-4.el6_5           updates     225 k

Transaction Summary
================================================
Install       3 Package(s)
Upgrade     133 Package(s)

Total download size: 308 M
Is this ok [y/N]:
Downloading Packages:
(1/136): audit-2.2-4.el6_5.i686.rpm               | 225 kB     00:00
(2/136): audit-libs-2.2-4.el6_5.i686.rpm          |  61 kB     00:00

(136/136): yum-utils-1.1.30-17.el6_5.noarch.rpm   | 102 kB   00:00
------------------------------------------------------------------------
Total                                   279 kB/s | 308 MB     18:51
Running rpm_check_debug
Running Transaction Test
Transaction Test Succeeded
Running Transaction
  Updating    : tzdata-java-2014d-1.el6.noarch                   1/270

  Cleanup     : 1:qt-sqlite-4.6.2-26.el6_4.i686                174/270

  Verifying   : nss-softokn-3.14.3-10.el6_5.i686                 9/270

Installed:
  kernel.i686 0:2.6.32-431.17.1.el6
  kernel-devel.i686 0:2.6.32-431.17.1.el6

Updated:
  audit.i686 0:2.2-4.el6_5
  audit-libs.i686 0:2.2-4.el6_5

  yum-utils.noarch 0:1.1.30-17.el6_5

Complete!
#
```

Solaris

```
# pkg update
Packages to remove:     1
Packages to install:      2
Packages to update:     180
Mediators to change: 1
Create boot environment: Yes
Create backup boot environment: No
DOWNLOAD       PKGS              FILES      XFER (MB)      SPEED
Completed    183/183 12578/12578 427.1/427.1    1.1M/s
PHASE ITEMS
Removing old actions 1126/1126
Installing new actions 2669/2669
Updating modified actions 13699/13699
Updating package state database Done
Updating package cache 181/181
Updating image state Done
Creating fast lookup database Done
#
```

Execution example 3
Update a specific package

Linux

```
# yum remove telnet
Loaded plugins: fastestmirror, refresh-packagekit, security
Setting up Remove Process
Resolving Dependencies
--> Running transaction check
---> Package telnet.i686 1:0.17-47.el6_3.1 will be erased
--> Finished Dependency Resolution

Dependencies Resolved

================================================
 Package         Arch         Version               Repository    Size
================================================
Removing:
 telnet          i686         1:0.17-47.el6_3.1     @base         102 k

Transaction Summary
================================================
Remove        1 Package(s)

Installed size: 102 k
Is this ok [y/N]: y
Downloading Packages:
Running rpm_check_debug
Running Transaction Test
Transaction Test Succeeded
Running Transaction
  Erasing    : 1:telnet-0.17-47.el6_3.1.i686                      1/1
  Verifying  : 1:telnet-0.17-47.el6_3.1.i686                      1/1

Removed:
  telnet.i686 1:0.17-47.el6_3.1

Complete!
#
```

Solaris

```
# pkg uninstall pkg://solaris/network/telnet
            Packages to remove:  1
       Create boot environment: No
Create backup boot environment: No

PHASE                                        ITEMS
Removing old actions                         19/19
Updating package state database                 Done
Updating package cache                           1/1
Updating image state                            Done
Creating fast lookup database                   Done
#
```

Execution example 4
Confirmation for the update package

Linux

```
# yum check-update
Loaded plugins: fastestmirror, refresh-packagekit, security
Determining fastest mirrors
 * base: xxxx.com
 * extras: xxxxx.com
 * updates: xxxx.com
base                                             | 3.7 kB     00:00
base/primary_db                                  | 3.5 MB     00:01
extras                                           | 3.4 kB     00:00
extras/primary_db                                |  18 kB     00:00
updates                                          | 3.4 kB     00:00
updates/primary_db                               | 3.0 MB     00:07

audit.i686                          2.2-4.el6_5                 updates
audit-libs.i686                     2.2-4.el6_5                 updates
autofs.i686                         1:5.0.5-89.el6_5.2          updates
bind-libs.i686                      32:9.8.2-0.23.rc1.el6_5.1   updates
bind-utils.i686                     32:9.8.2-0.23.rc1.el6_5.1   updates
ca-certificates.noarch              2013.1.95-65.1.el6_5        updates
coreutils.i686                      8.4-31.el6_5.1              updates
coreutils-libs.i686                 8.4-31.el6_5.1              updates
curl.i686                           7.19.7-37.el6_5.3           updates
device-mapper-persistent-data.i686 0.2.8-4.el6_5                updates
dmidecode.i686                      1:2.12-5.el6_5              updates
dracut.noarch                       004-336.el6_5.2             updates
dracut-kernel.noarch                004-336.el6_5.2             updates
ethtool.i686                        2:3.5-1.4.el6_5             updates

#
```

Solaris

```
# pkg update -nv
            Packages to remove:        1
           Packages to install:        2
            Packages to update:      180
           Mediators to change:        1
     Estimated space available: 20.14 GB
Estimated space to be consumed:  1.95 GB
       Create boot environment:      Yes
     Activate boot environment:      Yes
Create backup boot environment:       No
          Rebuild boot archive:      Yes

Changed mediators:
  mediator perl:
           version: None -> 5.12 (vendor default)
 "
Changed packages:
solaris
  consolidation/vpanels/vpanels-incorporation
    0.5.11,5.11-0.175.1.0.0.17.0:20120529T220223Z -> None
  library/libedit
    None -> 3.0,5.11-0.175.1.0.0.24.0:20120904T172539Z
  system/library/mmheap
    None -> 0.5.11,5.11-0.175.1.13.0.4.0:20131028T165001Z

#
```

Execution example 5
Display the installed package list

Linux

```
# yum list all
Loaded plugins: product-id, refresh-packagekit, security, subscription-
manager
This system is not registered to Red Hat Subscription Management. You
 can use subscription-manager to register.
Installed Packages
389-ds-base.x86_64          1.2.11.15-29.el6 @anaconda-Red...
389-ds-base-libs.x86_64     1.2.11.15-29.el6 @anaconda-Red...
ConsoleKit.x86_64           0.4.1-3.el6      @anaconda-Red...
ConsoleKit-libs.x86_64      0.4.1-3.el6      @anaconda-Red...
ConsoleKit-x11.x86_64       0.4.1-3.el6      @anaconda-Red...


yum-rhn-plugin.noarch       0.9.1-48.el6     @anaconda-Red...
yum-utils.noarch            1.1.30-14.el6    @anaconda-Red...
zd1211-firmware.noarch      1.4-4.el6        @anaconda-Red...
zenity.x86_64               2.28.0-1.el6     @anaconda-Red...
zip.x86_64                  3.0-1.el6        @anaconda-Red...
zlib.x86_64                 1.2.3-29.el6     @anaconda-Red...
zlib-devel.x86_64           1.2.3-29.el6     @anaconda-Red...
#
```

Solaris

```
# pkg list
NAME (PUBLISHER)                        VERSION                    IFO
archiver/gnu-tar                        1.26-0.175.1.0.0.24.0      i--
compress/bzip2                          1.0.6-0.175.1.0.0.24.0     i--
compress/gzip                           1.5-0.175.1.15.0.2.0       i--
compress/p7zip                          9.20.1-0.175.1.0.0.24.0    i--
compress/unzip                          6.0-0.175.1.0.0.24.0       i--
compress/xz                             5.0.1-0.175.1.0.0.24.0     i--
compress/zip                            3.0-0.175.1.0.0.24.0       i--
system/xopen/xcu4                       0.5.11-0.175.1.13.0.4.2    i--
system/xopen/xcu6                       0.5.11-0.175.1.0.0.24.2    i--


text/gnu-grep                           2.14-0.175.1.7.0.2.0       i--
text/gnu-patch                          2.5.9-0.175.1.0.0.24.0     i--
text/gnu-sed                            4.2.1-0.175.1.0.0.24.0     i--
text/groff                              1.19.2-0.175.0.0.0.0.0     i--
text/groff/groff-core                   1.19.2-0.175.0.0.0.0.0     i--
text/less                               436-0.175.1.0.0.24.0       i--
text/spelling-utilities                 0.5.11-0.175.1.0.0.24.2    i--
#
```

Execution example 6
Confirmation of the package to which the file belongs

Linux

```
# yum search apache
Loaded plugins: product-id, refresh-packagekit, security, subscription-
This system is not registered to Red Hat Subscription Management. You
 can use subscription-manager to register.
================================== N/S Matched
: apache ==================================
apache-tomcat-apis.noarch : Tomcat Servlet and JSP APIs
apr.x86_64 : Apache Portable Runtime library
apr-util.x86_64 : Apache Portable Runtime Utility library
httpd.x86_64 : Apache HTTP Server
httpd-manual.noarch : Documentation for the Apache HTTP server
httpd-tools.x86_64 : Tools for use with the Apache HTTP Server
mod_nss.x86_64 : SSL/TLS module for the Apache HTTP server
mod_ssl.x86_64 : SSL/TLS module for the Apache HTTP Server
  Name and summary matches only, use "search all" for everything.
#
```

Solaris

```
# pkg search apache
INDEX           ACTION VALUE
    PACKAGE
basename        dir    usr/apache2/2.2/lib/perl/Apache
    pkg:/web/server/apache-22/module/apache-perl@2.0.4-0.175.1.0.0.24.0
pkg.description set    Apache Ant is a Java-based build tool
    pkg:/developer/build/ant@1.8.4-0.175.1.3.0.1.0
pkg.description set    FastCGI plugin for Apache Web Server Version 2.2
    pkg:/web/server/apache-22/module/apache-fcgid@2.3.6-0.175.1.0.0.24.0
pkg.description set    Mod Security plugin for Apache Web Server Version
    pkg:/web/server/apache-22/module/apache-security@2.5.9-0.175.1.0…
pkg.description set    Perl plugin for Apache Web Server Version 2.2
    pkg:/web/server/apache-22/module/apache-perl@2.0.4-0.175.1.0.0.24.0


basename        dir    usr/share/doc/ant/manual/api/org/apache
        pkg:/developer/build/ant@1.8.4-0.175.1.3.0.1.0
#
```

Execution example 7
Display the package information

Linux

```
# yum info httpd
Loaded plugins: product-id, refresh-packagekit, security, subscription-
This system is not registered to Red Hat Subscription Management. You
 can use subscription-manager to register.
Installed Packages
Name        : httpd
Arch        : x86_64
Version     : 2.2.15
Release     : 29.el6_4
Size        : 2.9 M
Repo        : installed
From repo   : anaconda-RedHatEnterpriseLinux-201311111358.x86_
64
Summary     : Apache HTTP Server
URL         : http://httpd.apache.org/
License     : ASL 2.0
Description : The Apache HTTP Server is a powerful, efficient, and exte
nsible            : web server.
#
```

Solaris

```
# pkg info apache-22
          Name: web/server/apache-22
       Summary: Apache Web Server V2.2
   Description: The Apache HTTP Server Version 2.2
      Category: Web Services/Application and Web Servers
         State: Installed
     Publisher: solaris
       Version: 2.2.25
 Build Release: 5.11
        Branch: 0.175.1.11.0.4.0
Packaging Date: Thu Sep 05 16:06:32 2013
          Size: 8.68 MB
          FMRI: pkg://solaris/web/server/apache-22@2.2.25,5.11-0.175.…
#
```

Execution example 8
Find the package to which the file belongs

Linux	Solaris
# rpm -qf /usr/sbin/httpd httpd-2.2.15-29.el6_4.x86_64 #	# pkg search /usr/apache2/2.2/bin/httpd INDEX ACTION VALUE PACKAGE path file usr/apache2/2.2/bin/httpd pkg:/web/server/apache-22@2.2.…

Execution example 9
Display the file list in the package

Linux	Solaris
# rpm -ql httpd /etc/httpd /etc/httpd/conf /etc/httpd/conf.d /etc/httpd/conf.d/README /etc/httpd/conf.d/welcome.conf /etc/httpd/conf/httpd.conf /etc/httpd/conf/magic /etc/httpd/logs /etc/httpd/modules /etc/httpd/run /etc/logrotate.d/httpd /etc/rc.d/init.d/htcacheclean /var/www/icons/world2.gif /var/www/icons/world2.png #	# pkg contents apache-22 PATH etc etc/apache2 etc/apache2/2.2 etc/apache2/2.2/conf.d etc/apache2/2.2/conf.d/modules-32.load etc/apache2/2.2/conf.d/modules-64.load etc/apache2/2.2/envvars etc/apache2/2.2/httpd.conf etc/apache2/2.2/magic etc/apache2/2.2/mime.types etc/apache2/2.2/original var/apache2/2.2/logs var/apache2/2.2/proxy #

3. User Management

(1) Add a new user

command / Intended use	Linux	Solaris	Comparison
	useradd	**useradd**	Same
Intended use	**Option Details**		
Specify the user's comments	**useradd -c <comment>**	**useradd -c <comment>**	Same
Specify the user's home directory	**useradd -d <dir>**	**useradd -d <dir>**	Same
Display the default parameters	**useradd -D**	**useradd -D**	Same
Specify the expiration date for a login	**useradd -e YYYY-MM-DD**	**useradd -e mm/dd/yy**	Format is different
Specify the number of days of inactivity allowed for user	**useradd -f <days>**	**useradd -f <days>**	Same
Specify the group to which the user belongs	**useradd -g <group>**	**useradd -g <group>**	Same
Specify supplementary group if the user belongs to multiple groups	**useradd -G <group>**	**useradd -G <group>**	Same
Specify the skeleton directory	**useradd -k <dir>**	**useradd -k <dir>**	Same
Automatically create a home directory	**useradd -m**	**useradd -m**	Same
Allow the UID to be duplicated	**useradd -o**	**useradd -o**	Same
Specify a password	**useradd -p <Encrypted password>**	**-**	Option is the same but have different meanings
Specify the name of the project to be associated with the user	**-**	**useradd -p <project>**	
Specify the name of the profile to be associated with the user	**-**	**useradd -P <profile>**	Solaris only
Specify the role	**-**	**useradd -R <role>**	Solaris only
Specify the user's login shell	**useradd -s <shell>**	**useradd -s <shell>**	Same
Specify the user's ID	**useradd -u <userID>**	**useradd -u <userID>**	Same
Configuration file	**/etc/passwd**	**/etc/passwd**	Same

Execution example 1
Display the default parameters

Linux

```
# useradd -D
GROUP=100
HOME=/home
INACTIVE=-1
EXPIRE=
SHELL=/bin/bash
SKEL=/etc/skel
CREATE_MAIL_SPOOL=yes
#
```

Solaris

```
# useradd -D
group=staff,10  project=default,3  basedir=/export/home
skel=/etc/skel  shell=/usr/bin/bash  inactive=0
expire=  auths=  profiles=  roles=  limitpriv=
defaultpriv=  lock_after_retries=
#
```

Execution example 2
Add a user by specifying the parameters

Linux

```
# useradd -u 1001 -g 1001 -m -d /home/user1/ -s /bin/sh user01
#
```

Solaris

```
# useradd -u 1001 -g 1001 -m -d /home/user1/ -s /bin/sh user01
#
```

Execution example 3
Add a user by specifying a login possible date

Linux

```
# useradd -e 2014-06-03 user01
#
```

Solaris

```
# useradd -e 06/03/14 user01
#
```

(2) Update the user information

command / Intended use	Linux	Solaris	Comparison
	usermod	**usermod,passwd**	Same
Intended use	**Option Details**		
Specify the user's comments	**usermod -c <comment>**	**usermod -c <comment>**	Same
Specify the user's home directory	**usermod -d <dir>**	**usermod -d <dir>**	Same
Specify the expiration date for a login	**usermod -e YYYY-MM-DD**	**usermod -e mm/dd/yy**	Format is different
The maximum number of days allowed between uses of a login ID before that ID is	**usermod -f <days>**	**usermod -f <days>**	Same
Specify the group to which the user belongs	**usermod -g <group>**	**usermod -g <group>**	Same
Specify supplementary group if the user belongs to multiple groups	**usermod -G <group>**	**usermod -G <group>**	Same
Change the login name of the user	**usermod -l <new user>**	**usermod -l <new user>**	Same
Lock the user's password	**usermod -L**	**passwd -l**	Command is different
Move the user's home directory to the new directory specified with the -d option	**-**	**usermod -m**	Solaris only
Specify a password	**usermod -p <Encrypted password>**	**-**	Linux only
Specify the name of the profile to be associated with the user	**-**	**usermod -P <profile>**	Solaris only
Specify the role	**-**	**usermod -R <role>**	Solaris only
Specify the user's login shell	**usermod -s <shell>**	**usermod -s <shell>**	Same
Specify the user's ID	**usermod -u <userID>**	**usermod -u <userID>**	Same
Unlock the user's password	**usermod -U**	**passwd -u**	Command is different
Configuration file	**/etc/passwd**	**/etc/passwd**	Same

Execution example 1
Specify the user's ID

Linux	Solaris
# usermod -u 10001 user01 #	# usermod -u 10001 user01 #

Execution example 2
Specify the expiration date for a login

Linux	Solaris
# usermod -e 2014-06-03 user01 #	# usermod -e 06/03/14 user01 #

Execution example 3
Lock the user's password

Linux	Solaris
# usermod -L user01 #	# usermod - l user01 #

(3) Delete a user

command / Intended use	Linux	Solaris	Comparison
	userdel	**userdel**	Same
Intended use	**Option Details**		
Delete the file in home directory	**userdel -r**	**userdel -r**	Same
Configuration file	**/etc/passwd**	**/etc/passwd**	Same

Execution example 1
Delete a user

Linux	Solaris
# userdel user01 #	# userdel user01 #

Execution example 2
Delete a user including the home directory

Linux	Solaris
# userdel -r user01 #	# userdel -r user01 #

(4) Change the expiration date of the user's password

command / Intended use	Linux	Solaris	Comparison
	chage	**passwd**	different
Intended use	**Option Details**		
Set the last modified date of the password	**chage -d YYYY-MM-DD**	**-**	Linux only
Set the date on which it is impossible to access your account	**chage -E YYYY-MM-DD**	**-**	Linux only
Number of days left until the lock period from expired	**chage -I <day>**	**-**	Linux only
Display deadline information	**chage -l**	**passwd -s**	Command is different
Specify the minimum number of days between password change	**chage -m <day>**	**passwd -n <day>**	Command is different
Specify the maximum number of days the password is valid	**chage -M <day>**	**passwd -x <day>**	Command is different
Specify the number of days before the password expires and the user is warned	**chage -W <day>**	**passwd -w <day>**	Command is different
Configuration file	**/etc/shadow**	**/etc/shadow**	Same

Execution example 1
Set expiration date to 90 days from now

Linux	Solaris
# chage -M 90 user01 #	# passwd -x 90 user01 #

Execution example 2
Set minimum number of days between password change to 30

Linux	Solaris
# chage -m 30 user01 #	# passwd -n 30 user01 #

Execution example 3
Display password expiry details

Linux	Solaris
# chage -l user01 Last password change : Jun 02, 2014 Password expires : never Password inactive : never Account expires : never Minimum number of days between password change : 0 Maximum number of days between password change : 99999 Number of days of warning before password expires : 7 #	# passwd -s user01 user01 PS #

(5) Change the default shell

command / Intended use	Linux	Solaris	Comparison
	chsh	**passwd**	different
Intended use	**Option Details**		
Set the shell non-interactively	**chsh -s /bin/bash user01**	**-**	Linux only
Set the shell interactively	**chsh /bin/bash user01**	**passwd -e user01**	Command is different

Execution example 1
Set the shell non-interactively

Linux	Solaris
# chsh -s /bin/bash user01 #	-

Execution example 2
Set the shell interactively

Linux	Solaris
# chsh user01 Changing shell for user01. New shell [/bin/sh]: /bin/bash Shell changed. #	# passwd -e user01 Old shell: /usr/bin/bash New shell: /bin/sh passwd: password information changed for user01 #

4. Network Management

(1) Set the IP address

command / Intended use	Linux	Solaris	Comparison
	ifconfig	**ipadm**	Solaris only
Intended use	**Option Details**		
Set the IP address to the specified interface	-	**ipadm create-addr -T static**	Solaris only
Set a temporary IP address	**ifconfig**	**ipadm create-addr -t**	Command is different
Set DHCP to the specified interface	-	**ipadm create-addr -T dhcp**	Solaris only
Create an IP interface	-	**ipadm create-ip**	Solaris only
Delete the IP interface from active configuration	-	**ipadm delete-ip**	Solaris only
Display the IP address of the interface	**ifconfig**	**ipadm show-addr**	Command is different
Delete the IP address of the interface	-	**ipadm delete-addr**	Solaris only

Execution example 1
Set the IP address

Linux

```
# vi /etc/sysconfig/network-scripts/ifcfg-eth0

IPADDR=192.168.0.1          <- Fixed IP address

# /etc/init.d/network restart
#
```

Solaris

```
# ipadm create-ip net0
# ipadm create-addr -T static -a 192.168.0.1/24 net0/v4
#
```

Execution example 2
Display the IP address

Linux

```
# ifconfig
eth0      Link encap:Ethernet  HWaddr 00:0C:29:1C:23:B9
          inet addr:192.168.0.1  Bcast:192.168.0.255  Mask:255.255.255.0
          inet6 addr: fe80::20c:29ff:fe1c:23b9/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:962955 errors:0 dropped:0 overruns:0 frame:0
          TX packets:14995 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:101308564 (96.6 MiB)  TX bytes:1488900 (1.4 MiB)

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:4 errors:0 dropped:0 overruns:0 frame:0
          TX packets:4 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:240 (240.0 b)  TX bytes:240 (240.0 b)
#
```

Solaris

```
# ipadm show-addr
DDROBJ           TYPE     STATE        ADDR
lo0/v4           static   ok           127.0.0.1/8
net0/v4          static   ok           192.168.0.1/24
lo0/v6           static   ok           ::1/128
#
```

(2) Set the gateway

command / Intended use	Linux	Solaris	Comparison
	route	**route**	Same
Intended use	**Option Details**		
Add a route	**route add**	**route add**	Same
Delete a route	**route del**	**route delete**	Options are different
Remove all entries from the routing table	**-**	**route flush**	Solaris only
Display the route to be applied at system startup	**-**	**route show**	Solaris only
Change is persistent across system reboots	**-**	**route -p**	Solaris only
Report information continuously in the routing information base	**-**	**route monitor**	Solaris only
Set the route to block	**route reject**	**-**	Linux only
Specify the host or network to target	**route target**	**-**	Linux only

Execution example 1
Change the gateway(enable permanently)

Linux

```
# vi /etc/sysconfig/network

GATEWAY=192.168.0.254       <- Fixed IP address

# /etc/init.d/network restart
#
```

Solaris

```
# route -p add default 192.168.0.254
#
```

Execution example 2
Display the gateway information

Linux

```
# netstat -rn
Kernel IP routing table
Destination  Gateway       Genmask        Flags   MSS Window  irtt Iface
192.168.0.0  0.0.0.0       255.255.255.0  U         0 0          0 eth0
169.254.0.0  0.0.0.0       255.255.0.0    U         0 0          0 eth0
0.0.0.0      192.168.0.254 0.0.0.0        UG        0 0          0 eth0
#
```

Solaris

```
# netstat -rn

Routing Table: IPv4
  Destination           Gateway           Flags  Ref     Use     Interface
-------------------- -------------------- ----- ----- ---------- ---------
default              192.168.0.254        UG        6     827272
192.168.0.0          192.168.0.1          U         8    9315985 net7
127.0.0.1            127.0.0.1            UH       14     292702 lo0

Routing Table: IPv6
 Destination/Mask            Gateway                 Flags Ref   Use    If
--------------------------- --------------------- ----- --- ------- -----
::1                         ::1                   UH      2      80 lo0
#
```

(3) Check the status of the network

command / Intended use	Linux	Solaris	Comparison
	netstat	**netstat**	Same
Intended use	**Option Details**		
Display the status of all physical and logical interfaces	**netstat -a**	**netstat -a**	Same
Display network addresses as numbers	**netstat -n**	**netstat -n**	Same
Display the routing table	**netstat -r**	**netstat -r**	Same
Display the status of the interface that is configured in the DHCP	**-**	**netstat -D**	Solaris only

Execution example 1
Check the status of the network

Linux

```
# netstat -rn
Kernel IP routing table
Destination  Gateway         Genmask         Flags   MSS Window  irtt Iface
192.168.0.0  0.0.0.0         255.255.255.0   U         0 0          0 eth0
169.254.0.0  0.0.0.0         255.255.0.0     U         0 0          0 eth0
0.0.0.0      192.168.0.254   0.0.0.0         UG        0 0          0 eth0
#
```

Solaris

```
# netstat -rn

Routing Table: IPv4
  Destination           Gateway           Flags  Ref     Use     Interface
-------------------- -------------------- ----- ----- ---------- ---------
default              10.20.66.1           UG        1          0 net0
10.20.66.0           10.20.66.134         U        15        104 net0
127.0.0.1            127.0.0.1            UH        2        242 lo0
192.168.1.0          192.168.1.250        U         2          0 net1

Routing Table: IPv6
  Destination/Mask        Gateway                   Flags Ref  Use   If
--------------------------- --------------------------- ----- --- ----- -----
::1                         ::1                         UH      2     8 lo0
fe80::/10                   fe80::214:4fff:fef8:18f1 U      2     0 net0
#
```

Reference example 1
Check traffic flow statistics.

```
# flowstat -i 5

FLOW          IPKTS   RBYTES   IDROPS      OPKTS   OBYTES   ODROPS
vnic0_flow   40.16K   59.87M       75     12.21K  807.72K        0
vnic0_flow   28.85K   43.01M      221     14.59K  968.18K        0
vnic0_flow   30.82K   45.94M      205     15.57K    1.03M        0
vnic0_flow   33.58K   50.06M       88     16.80K    1.11M        0
vnic0_flow   43.21K   64.41M      362     21.92K    1.45M        0
^C
#
```

Reference example 2
Report the run-time statistics about the data link.

```
# dlstat
          LINK    IPKTS   RBYTES    OPKTS   OBYTES
          net1        0        0        3      126
          net3        0        0        0        0
          net0        0        0        0        0
          net2        0        0        0        0
#
```

Reference example 3
Check the status of the IPMP subsystem.

```
# ipmpstat -a
ADDRESS                   STATE  GROUP        INBOUND     OUTBOUND
::                        down   ipmp0        --          --
ldom0                     up     ipmp0        net0        net0
#
```

(4) Check the status of the network device

command / Intended use	Linux	Solaris	Comparison
	ethtool	**dladm**	different
Intended use	**Option Details**		
Display driver information	**ethtool -i**	**-**	Linux only
Test is performed on an interface card	**ethtool -t**	**-**	Linux only
Display the data link configuration information for all	**-**	**dladm show-link**	Solaris only
Display attributes of the physical link and physical device	**ethtool <device>**	**dladm show-phys**	Command is different

Execution example 1
Check the status of the network device

Linux

```
# ethtool eth0
Settings for eth0:
        Supported ports: [ TP ]
        Supported link modes:   1000baseT/Full
                                10000baseT/Full
        Supported pause frame use: No
        Supports auto-negotiation: No
        Advertised link modes:  Not reported
        Advertised pause frame use: No
        Advertised auto-negotiation: No
        Speed: 10000Mb/s
        Duplex: Full
        Port: Twisted Pair
        PHYAD: 0
        Transceiver: internal
        Auto-negotiation: off
        MDI-X: Unknown
        Supports Wake-on: uag
        Wake-on: d
        Link detected: yes
#
```

Solaris

```
# dladm show-phys
LINK              MEDIA             STATE     SPEED  DUPLEX    DEVICE
net1              Ethernet          down      0      unknown   igb1
net3              Ethernet          unknown   0      unknown   igb3
net0              Ethernet          up        1000   full      igb0
net2              Ethernet          unknown   0      unknown   igb2
#
```

5. Service Management

(1) Service management

command / Intended use	Linux	Solaris	Comparison
	service,chkconfig	**svcadm**	different
Intended use	**Option Details**		
Start service	**service start**	**svcadm -t enable**	Command is different
Stop service	**service stop**	**svcadm -t disable**	Command is different
Start service and enable automatic startup	**service start** **chkconfig <service> on**	**svcadm enable**	Command is different
Stop service and disable automatic startup	**service stop** **chkconfig <service> off**	**svcadm disable**	Command is different
Restart the service	**service restart**	**svcadm restart**	Command is different
Reload the configuration information for the	**service reload**	**svcadm refresh**	Command is different
Clear errors and restart service	**-**	**svcadm clear**	Solaris only

Execution example 1
Start service

Linux	Solaris
# service httpd start #	# svcadm enable -t apache22 #

Execution example 2
Stop service

Linux	Solaris
# service httpd stop #	# svcadm disable apache22 #

Execution example 3
Start service and enable automatic startup

Linux	Solaris
# service httpd start # chkconfig httpd on #	# svcadm enable apache22 #

Execution example 4
Stop service and disable automatic startup

Linux	Solaris
# service httpd stop # chkconfig httpd off #	# svcadm disable apache22 #

(2) Show the status of the service

command / Intended use	Linux	Solaris	Comparison
	service,chkconfig	svcs	different
Intended use	**Option Details**		
Show the status of the service	**service <service> status**	**svcs**	Command is different
Show a list of services	**chkconfig --list**	**svcs -a**	Command is different
Show all available information	**-**	**svcs -l**	Solaris only
Show notification parameters of service state	**-**	**svcs -n**	Solaris only
Show the list of processes that are associated with the service	**-**	**svcs -p**	Solaris only

Execution example 1
Show the status of the service

Linux

```
# service httpd status
httpd is stopped
#
```

Solaris

```
# svcs svc:/ldoms/vntsd:default
STATE          STIME    FMRI
online         Aug_13   svc:/ldoms/vntsd:default
```

Execution example 2
Show a list of services

Linux

```
# chkconfig --list
NetworkManager  0:off   1:off   2:on    3:on    4:on    5:on    6:off
abrt-ccpp       0:off   1:off   2:off   3:on    4:off   5:on    6:off
abrtd           0:off   1:off   2:off   3:on    4:off   5:on    6:off
acpid           0:off   1:off   2:on    3:on    4:on    5:on    6:off
atd             0:off   1:off   2:off   3:on    4:on    5:on    6:off
auditd          0:off   1:off   2:on    3:on    4:on    5:on    6:off
autofs          0:off   1:off   2:off   3:on    4:on    5:on    6:off
blk-availability   0:off   1:on    2:on    3:on    4:on    5:on    6:off
bluetooth       0:off   1:off   2:off   3:on    4:on    5:on    6:off
bmc-watchdog    0:off   1:off   2:off   3:on    4:off   5:on    6:off
certmonger      0:off   1:off   2:off   3:on    4:on    5:on    6:off
cgconfig        0:off   1:off   2:off   3:off   4:off   5:off   6:off

xinetd based services:
        amanda:         off
        chargen-dgram:  off
        chargen-stream: off
        daytime-dgram:  off
        daytime-stream: off
        discard-dgram:  off
        discard-stream: off


#
```

Solaris

```
# svcs -a
STATE          STIME    FMRI
legacy_run     Aug_13   lrc:/etc/rc2_d/S40FJSVhrm
legacy_run     Aug_13   lrc:/etc/rc2_d/S47pppd
legacy_run     Aug_13   lrc:/etc/rc2_d/S81dodatadm_udaplt
legacy_run     Aug_13   lrc:/etc/rc2_d/S89PRESERVE
disabled       Aug_13   svc:/system/device/mpxio-upgrade:default
disabled       Aug_13   svc:/network/ipsec/manual-key:default
disabled       Aug_13   svc:/network/ipsec/ike:default
disabled       Aug_13   svc:/network/nis/domain:default
disabled       Aug_13   svc:/network/ipfilter:default
disabled       Aug_13   svc:/network/nis/client:default
disabled       Aug_13   svc:/system/name-service-cache:default
online         Aug_13   svc:/milestone/name-services:default
online         Aug_13   svc:/system/name-service/cache:default
online         Aug_13   svc:/system/auditset:default
online         Aug_13   svc:/network/nfs/fedfs-client:default
online         Aug_13   svc:/network/service:default
online         Aug_13   svc:/network/netmask:default
online         Aug_13   svc:/network/iscsi/initiator:default
online         Aug_13   svc:/application/font/fc-cache:default
online         21:30:00 svc:/application/pkg/update:default
offline        Aug_13   svc:/application/graphical-login/gdm:default
#
```

Execution example 3
Show all available information

Linux

```
-
```

Solaris

```
# svcs -l svc:/ldoms/vntsd:default
fmri         svc:/ldoms/vntsd:default
name         virtual network terminal server
enabled      true
state        online
next_state   none
state_time   Tue Jul 22 09:01:18 2014
logfile      /var/svc/log/ldoms-vntsd:default.log
restarter    svc:/system/svc/restarter:default
contract_id  131
manifest     /lib/svc/manifest/platform/sun4v/vntsd.xml
dependency   optional_all/error svc:/milestone/network (online)
dependency   optional_all/none svc:/system/system-log (online)
#
```

6. Storage Management and File System

(1) File system management

command / Intended use	Linux	Solaris	Comparison
	vgcreate,lvcreate,mkfs,mount,pvscan,vgscan,lvscan	zpool,zfs	different
Intended use	**Option Details**		
Create a volume group	vgcreate <volume group> <device>	-	Names are different, but the same purpose
Create a storage pool	-	zpool create <pool> RAID <device>	
Create a logical volume	lvcreate -L <size> -n <logical volume> <volume group>	-	Names are different, but the same purpose
Create a file system	mkfs -t <File System type> <logical volume>	zfs create <File System>	
Mount the file system	mount <logical volume> <mount point>	zfs mount <File System>	Command is different
Show the configuration of the volume group (ZFS pool)	pvscan	zpool status	Command is different
Show a list of volume groups (ZFS pool)	vgscan	zpool list	Command is different
Show a list of logical volumes (ZFS data set)	lvscan	zfs list	Command is different
Change the mount point for the OS boot	edit /etc/fstab	zfs set mountpoint=<mount point> <File System>	Command is different

Execution example 1
Create a storage pool (Create a volume group)

Linux
```
# vgcreate Volume00 /dev/sda1 /dev/sda2
#
```

Solaris
```
# zpool create mirpool mirror c2d3 c2d4
#
```

Execution example 2
Create a file system

Linux
```
# lvcreate -L 128M -n LogVol00 Volume00
# mkfs -t ext4 /dev/Volume00/LogVol00
# mount /dev/Volume00/LogVol00 /data
#
```

Solaris
```
# zfs create mirpool/data
# zfs get mountpoint mirpool/data
NAME           PROPERTY    VALUE           SOURCE
mirpool/data  mountpoint  /mirpool/data  default
# zfs set mountpoint=/data mirpool/data
#
```

(2) Collect the snapshot

command / Intended use	Linux	Solaris	Comparison
	lvcreate,lvscan,lvrename, lvconvert	zfs	different
Intended use	**Option Details**		
Create a snapshot	lvcreate -s -L <size> -n <snapshot> <path>	zfs snapshot <snapshot>	Command is different
Show a list of the snapshot	lvscan	zfs list -t <snapshot>	Command is different
Delete a snapshot	lvrename <snapshot>	zfs destroy <snapshot>	Command is different
Roll back from a snapshot	lvconvert --merge <snapshot>	zfs rollback <snapshot>	Command is different

Execution example 1
Create a snapshot

Linux
```
# lvcreate -s -L 50M -n LogVol_snap /dev/Volume00/LogVol00
#
```

Solaris
```
# zfs snapshot mirpool/data@snap
#
```

Execution example 2
Show a list of the snapshot

Linux
```
# lvscan
  ACTIVE   Original '/dev/Volume00/LogVol00' [3.00 GiB] inherit
  ACTIVE   Snapshot '/dev/Volume00/LogVol_snap' [52.00 MiB] inherit
#
```

Solaris
```
# zfs list -t snapshot
NAME                  USED  AVAIL  REFER  MOUNTPOINT
mirpool/data@snap        0      -    31K  -
#
```

Execution example 3
Roll back from a snapshot

Linux	Solaris
# lvconvert --merge /dev/Volume00/LogVol_snap #	# zfs rollback mirpool/data@snap #

Execution example 4
Delete a snapshot

Linux	Solaris
# lvremove /dev/Volume00/LogVol_snap #	# zfs destroy mirpool/data@snap #

(3) Backup the file system using a snapshot

command / Intended use	Linux	Solaris	Comparison
	dump,restore	**zfs**	different
Intended use	**Option Details**		
Backup the file system	**dump -0u -f <name> <snapshot>**	**zfs send <snapshot>**	Command is different
Restore the file system	**restore -r -f <name>**	**zfs receive <snapshot>**	Command is different

Execution example 1
Backup the file system

Linux	Solaris
# dump -0 -f /backup/LogVol00.dump /dev/Volume00/LogVol_snap #	# zfs send -vR mirpool/data@snap > /backup/data.snap #

Execution example 2
Restore the file system

Linux	Solaris
# restore -r -f /backup/LogVol00.dump #	# zfs receive -vF mirpool/data < /backup/data.snap #

(4) Partition management

command / Intended use	Linux	Solaris	Comparison
	parted,fdisk	**format**	different
Intended use	**Option Details**		
Show the partition	**parted <device>** **fdisk <device>**	**format**	Command is different

Execution example 1
Show the partition

Linux

```
# parted /dev/sda
GNU Parted 2.1
Using /dev/sda
Welcome to GNU Parted! Type 'help' to view a list of commands.
(parted) print
Model: VMware Virtual disk (scsi)
Disk /dev/sda: 17.2GB
Sector size (logical/physical): 512B/512B
Partition Table: msdos

Number  Start   End     Size    Type     File system  Flags
 1      1049kB  525MB   524MB   primary  ext4         boot
 2      525MB   17.2GB  16.7GB  primary               lvm

(parted) quit
#
# fdisk /dev/sda

WARNING: DOS-compatible mode is deprecated.  It's strongly recommended to
         switch off the mode (command 'c') and change display units to
```

Solaris

```
# format
Searching for disks...done


AVAILABLE DISK SELECTIONS:
       0. c0t50000394281A8EBCd0 <TOSHIBA-MBF2600RC-3706 cyl
 64986 alt 2 hd 27 sec 668>  hoge
          /scsi_vhci/disk@g50000394281a8ebc
          /dev/chassis/SYS/HDD00/disk
       1. c0t50000394281AA200d0 <TOSHIBA-MBF2600RC-3706-
558.91GB>  testvol1
          /scsi_vhci/disk@g50000394281aa200
          /dev/chassis/SYS/HDD01/disk
       2. c5d0 <SUN-DiskImage-137GB cyl 3900 alt 2 hd 96 sec 768>
          /virtual-devices@100/channel-devices@200/disk@0
Specify disk (enter its number): 0
selecting c0t50000394281A8EBCd0: hoge
[disk formatted]
/dev/dsk/c0t50000394281A8EBCd0s0 is part of active ZFS pool rpo
```

```
        sectors (command 'u').

Command (m for help): p

Disk /dev/sda: 17.2 GB, 17179869184 bytes
64 heads, 32 sectors/track, 16384 cylinders
Units = cylinders of 2048 * 512 = 1048576 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk identifier: 0x0005a3d4

   Device Boot      Start         End      Blocks   Id  System
/dev/sda1   *           2         501      512000   83  Linux
Partition 1 does not end on cylinder boundary.
/dev/sda2             502       16384    16264192   8e  Linux LVM
Partition 2 does not end on cylinder boundary.

Command (m for help): q

#
```

```
ol. Pleas
e see zpool(1M).

FORMAT MENU:
        disk       - select a disk
        type       - select (define) a disk type
        partition  - select (define) a partition table
        current    - describe the current disk
        format     - format and analyze the disk
        repair     - repair a defective sector
        label      - write label to the disk
        analyze    - surface analysis
        defect     - defect list management
        backup     - search for backup labels
        verify     - read and display labels
        save       - save new disk/partition definitions
        inquiry    - show disk ID
        volname    - set 8-character volume name
        !<cmd>     - execute <cmd>, then return
        quit
format> partition


PARTITION MENU:
        0      - change `0' partition
        1      - change `1' partition
        2      - change `2' partition
        3      - change `3' partition
        4      - change `4' partition
        5      - change `5' partition
        6      - change `6' partition
        7      - change `7' partition
        select - select a predefined table
        modify - modify a predefined partition table
        name   - name the current table
        print  - display the current table
        label  - write partition map and label to the disk
        !<cmd> - execute <cmd>, then return
        quit
partition> print
Volume:  hoge
Current partition table (original):
Total disk cylinders available: 64986 + 2 (reserved cylinders)

Part      Tag    Flag     Cylinders         Size            Blocks
  0       root    wm       1 - 64985      558.89GB    (64985/0/0) 1172
069460
  1 unassigned    wm       0                  0         (0/0/0)         0
  2     backup    wu       0 - 64985      558.89GB    (64986/0/0) 1172
087496
  3 unassigned    wm       0                  0         (0/0/0)         0
  4 unassigned    wm       0                  0         (0/0/0)         0
  5 unassigned    wm       0                  0         (0/0/0)         0
  6 unassigned    wm       0                  0         (0/0/0)         0
  7 unassigned    wm       0                  0         (0/0/0)         0

partition> quit
#
```

7. Monitoring

(1) Check the load on the I/O

command / Intended use	Linux	Solaris	Comparison
	iostat	**iostat**	Same
Intended use	**Option Details**		
Check the load on the I/O	**iostat <interval> <count>**	**iostat <interval> <count>**	Same

Execution example 1
Check the load on the I/O

Linux

```
# iostat 10 60
Linux 2.6.32-431.el6.x86_64 (rhel6)  07/31/14  _x86_64_  (2
 CPU)
avg-cpu:  %user   %nice %system %iowait  %steal   %idle
           0.03    0.00    0.04    0.02    0.00   99.91

Device:            tps   Blk_read/s   Blk_wrtn/s   Blk_read   Blk_wrtn
sda               0.12         1.08         1.60    1135492    1678992
sdb               0.00         0.00         0.00       2464          0
sdc               0.00         0.00         0.00       4860         16
sdd               0.00         0.00         0.00       2194          8
sde               0.00         0.00         0.00       2162          0
sdf               0.00         0.00         0.00       2690         32
dm-0              0.24         1.06         1.60    1107282    1678960
dm-1              0.00         0.00         0.00       2816          0
dm-2              0.00         0.00         0.00       3098         24
dm-3              0.00         0.00         0.00       1626         24
dm-4              0.00         0.00         0.00         80         16
dm-5              0.00         0.00         0.00        792          0
dm-6              0.00         0.00         0.00         80         16
dm-7              0.00         0.00         0.00        792          0
#
```

Solaris

```
# iostat 10 60
  tty        lofi1          sd0           sd1           vdc0          cpu
tin tout kps tps serv kps tps serv kps tps serv kps tps serv us sy wt id
  0    2   1   1    0  20   3    5  50   6    8   0   0    0  0  1  0 99
#
```

(2) Check the load on the CPU

command / Intended use	Linux	Solaris	Comparison
	mpstat	**mpstat**	Same
Intended use	**Option Details**		
Check the load on the CPU	**mpstat <interval> <count>**	**mpstat <interval> <count>**	Same

Execution example 1
Check the load on the CPU

Linux

```
# mpstat 10 60
Linux 2.6.32-431.el6.x86_64 (rhel6test) 07/31/14  _x86_64_
  (2 CPU)
15:44:38 CPU %usr %nice %sys %iowait %irq %soft %steal %guest  %idle
15:44:38 all 0.03 0.00  0.04 0.02     0.00 0.00  0.00   0.00    99.91

#
```

Solaris

```
# mpstat 10 60
CPU minf mjf xcal intr ithr csw icsw migr smtx srw syscl usr sys wt idl
0    0   0   11  228   15  10    0    0    0   0     0   0   0  0 100
1    0   0    4    8    7   0    0    0    0   0     0   0   0  0 100
2  182   0   84  254   47 323    4   16   16   1   585   1   1  0  98
3  176   0   82  251   42 320    4   16   17   1   565   1   2  0  98
4    5   0    4    7    0  25    0    0   10   3    50   0   1  0  99
5    1   0    1    3    1   6    0    0    2   0    30   0   0  0 100
6    0   0    2    3    2   0    0    0    0   0     0   0   0  0 100
7    0   0   17   19   18   0    0    0    0   0     0   0   0  0 100
#
```

Reference example 1
Show usage statistics for processor group(PG)

```
# pgstat 10 60
PG  RELATIONSHIP              HW      SW  CPUS
 0  System                     -    0.4%  0-7
 3   Data_Pipe_to_memory       -    0.4%  0-7
 2    Floating_Point_Unit      -    1.5%  0 1
 1     Integer_Pipeline     2.3%    1.5%  0 1
 5    Floating_Point_Unit      -    0.5%  2 3
 4     Integer_Pipeline     0.2%    0.5%  2 3
 7    Floating_Point_Unit      -    0.0%  4 5
 6     Integer_Pipeline     0.1%    0.0%  4 5
 9    Floating_Point_Unit      -    0.0%  6 7
 8     Integer_Pipeline     0.1%    0.0%  6 7
#
```

(3) Check the load on the memory

command / Intended use	Linux	Solaris	Comparison
	vmstat	**vmstat**	Same
Intended use	**Option Details**		
Check the load on the memory	**vmstat <interval> <count>**	**vmstat <interval> <count>**	Same
Show the total number of system events from boot time	**vmstat -s**	**vmstat -s**	Same
Report detailed paging activity	**-**	**vmstat -p**	Solaris only

Execution example 1
Check the load on the memory

Linux

```
# vmstat 10 60
procs -----------memory---------- -swap- ----io--- -system- -----cpu-----
 r  b swpd   free   buff  cache si so   bi   bo   in   cs us sy id wa st
 0  0    0 936616 165184 501244 0  0    0    0   13    4  0  0 100 0 0
#
```

Solaris

```
# vmstat 10 60
 kthr      memory            page            disk          faults      cpu
 r b w   swap  free  re mf pi po fr de sr lf s0 s1 vc  in sy  cs us sy id
 0 0 0 38598880 7483328 149 365 0 0 0 0  0  1  3  6  0  774 1231
   685  0  1 99
#
```

(4) Set the output destination of the log

command / Intended use	Linux	Solaris	Comparison
	rsyslogd	**syslogd**	different
Intended use	**Option Details**		
Service name	**rsyslog**	**system-log**	different
Configuration file	**/etc/rsyslog.conf**	**/etc/syslog.conf**	different

Execution example 1
Set the output destination of the log

Linux

```
# vi /etc/rsyslog.conf
*.info;mail.none;authpriv.none;cron.none                /var/log/messages
                  |
*.info;mail.none;authpriv.none;cron.none                /var/log/syslog

# service rsyslogd restart
#
```

Solaris

```
# vi /etc/syslog.conf
*.err;kern.debug;daemon.notice;mail.crit        /var/adm/messages
                        |
*.err;kern.debug;daemon.notice;mail.crit        /var/adm/syslog

# svcadm refresh system-log
#
```

Execution example 2
Change the output destination host

Linux	Solaris
# vi /etc/rsyslog.conf *.info;mail.none;authpriv.none;cron.none /var/log/messages | *.info;mail.none;authpriv.none;cron.none @192.168.0.1 # service rsyslogd restart #	# vi /etc/syslog.conf *.err;kern.debug;daemon.notice;mail.crit /var/adm/messages | *.err;kern.debug;daemon.notice;mail.crit @192.168.0.1 # svcadm refresh system-log #

(5) Perform log rotation

command / Intended use	Linux	Solaris	Comparison
	logrotate	**logadm**	different
Intended use	**Option Details**		
Perform log rotation	**logrotate <configure file>**	**logadm**	different
Configuration file	**/etc/logrotate.conf**	**/etc/logadm.conf**	different

Execution example 1
Set the rotation of the system log

Linux	Solaris

# vi /etc/logrotate.d/syslog 	
/var/log/cron
/var/log/maillog
/var/log/messages
/var/log/secure
/var/log/spooler
{
sharedscripts
postrotate
/bin/kill -HUP `cat /var/run/syslogd.pid 2> /dev/null` 2>
/dev/null || true
endscript
}
#
	# vi /etc/logadm.conf
	/var/adm/messages -C 4 -a '/usr/sbin/svccfg -s svc:/system/system-log
	refresh'
	
	#

Execution example 2
Run the log rotation

Linux	Solaris
# logrotate /etc/logrotate.conf #	# logadm #

(6) Check the communication of the network

command / Intended use	Linux	Solaris	Comparison
	ping	**ping**	Same
Intended use	**Option Details**		
Send a packet ICMP ECHO_REQUEST	**ping <host>**	**ping -s <host>**	Option is different
Specify the interval of continuous transmission	**ping -i 秒 <host>**	**ping -I 秒 <host>**	Option is different
Do not attempt to search for the host name	**ping -n <host>**	**ping -s -n <host>**	Option is different
Specify the size of the transmitted data packet	**ping -s <byte> <host>**	**ping -s <host> <byte>**	List of options is different

Execution example 1
Check the communication

Linux

```
# ping 192.168.0.1
PING 192.168.0.1 (192.168.0.1) 56(84) bytes of data.
64 bytes from 192.168.0.1: icmp_seq=1 ttl=255 time=0.161 ms
64 bytes from 192.168.0.1: icmp_seq=2 ttl=255 time=0.363 ms
64 bytes from 192.168.0.1: icmp_seq=3 ttl=255 time=0.409 ms
64 bytes from 192.168.0.1: icmp_seq=4 ttl=255 time=0.260 ms
^C
--- 192.168.0.1 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3289ms
rtt min/avg/max/mdev = 0.161/0.298/0.409/0.096 ms
#
```

Solaris

```
# ping 192.168.0.1
192.168.0.1 is alive
#
# ping -s 192.168.0.1
64 bytes from 192.168.0.1: icmp_seq=0. time=0.324 ms
64 bytes from 192.168.0.1: icmp_seq=1. time=0.272 ms
64 bytes from 192.168.0.1: icmp_seq=2. time=0.128 ms
^C
----192.168.0.1 PING Statistics----
3 packets transmitted, 3 packets received, 0% packet loss
round-trip (ms)  min/avg/max/stddev = 0.128/0.241/0.324/0.102
#
```

Execution example 2
Specify the interval of continuous transmission

Linux

```
# ping -i 5 192.168.0.1
PING 192.168.0.1 (192.168.0.1) 56(84) bytes of data.
64 bytes from 192.168.0.1: icmp_seq=1 ttl=255 time=0.161 ms
64 bytes from 192.168.0.1: icmp_seq=2 ttl=255 time=0.363 ms
64 bytes from 192.168.0.1: icmp_seq=3 ttl=255 time=0.409 ms
64 bytes from 192.168.0.1: icmp_seq=4 ttl=255 time=0.260 ms
^C
--- 192.168.0.1 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3289ms
rtt min/avg/max/mdev = 0.161/0.298/0.409/0.096 ms
#
```

Solaris

```
# ping -s -I 5 192.168.0.1
PING 192.168.0.1: 56 data bytes
64 bytes from 192.168.0.1: icmp_seq=0. time=0.546 ms
64 bytes from 192.168.0.1: icmp_seq=1. time=0.393 ms
64 bytes from 192.168.0.1: icmp_seq=2. time=0.302 ms
64 bytes from 192.168.0.1: icmp_seq=3. time=0.414 ms
^C
----192.168.0.1 PING Statistics----
4 packets transmitted, 4 packets received, 0% packet loss
round-trip (ms)  min/avg/max/stddev = 0.302/0.414/0.546/0.123
#
```

(7) Check the status of the process

command / Intended use	Linux	Solaris	Comparison
	ps	**ps**	Same
Intended use	**Option Details**		
Show in full format	**ps -f**	**ps -f**	Same
Show all processes	**ps -e**	**ps -e**	Same

Execution example 1
Check the status of the process

Linux

```
# ps -ef
UID        PID  PPID  C STIME TTY          TIME CMD
root         1     0  0 May30 ?        00:00:01 /sbin/init
root         2     0  0 May30 ?        00:00:00 [kthreadd]
root         3     2  0 May30 ?        00:00:00 [migration/0]
root         4     2  0 May30 ?        00:00:00 [ksoftirqd/0]
root         5     2  0 May30 ?        00:00:00 [migration/0]
root         6     2  0 May30 ?        00:00:01 [watchdog/0]
root         7     2  0 May30 ?        00:00:00 [migration/1]
root         8     2  0 May30 ?        00:00:00 [migration/1]
root         9     2  0 May30 ?        00:00:00 [ksoftirqd/1]
root        10     2  0 May30 ?        00:00:00 [watchdog/1]
root        11     2  0 May30 ?        00:00:22 [events/0]
root        12     2  0 May30 ?        00:00:26 [events/1]
root        13     2  0 May30 ?        00:00:00 [cgroup]
root        14     2  0 May30 ?        00:00:00 [khelper]
root        15     2  0 May30 ?        00:00:00 [netns]

#
```

Solaris

```
# ps -ef
     UID   PID  PPID   C      STIME TTY    TIME CMD
    root     0     0   0     Aug 13 ?     0:08 sched
    root     5     0   0     Aug 13 ?    10:15 zpool-rpool
    root     7     0   0     Aug 13 ?    13:39 zpool-upool
    root     8     0   0     Aug 13 ?     0:25 kmem_task
    root     1     0   0     Aug 13 ?     0:04 /usr/sbin/init
    root     2     0   0     Aug 13 ?     0:00 pageout
    root     3     0   0     Aug 13 ?     4:58 fsflush
    root     9     0   0     Aug 13 ?     0:05 intrd
    root    10     0   0     Aug 13 ?     0:58 vmtasks
    root    13     1   0     Aug 13 ?     0:08 /lib/svc/bin/svc.startd
    root    15     1   0     Aug 13 ?     6:28 /lib/svc/bin/svc.configd
    root   117     1   0     Aug 13 ?     0:06 /lib/inet/in.mpathd
   dladm    60     1   0     Aug 13 ?     2:43 /usr/sbin/dlmgmtd
  netcfg    43     1   0     Aug 13 ?     0:06 /lib/inet/netcfgd

#
```

Reference example 1
Repeatedly display all the active processes on the system

```
# prstat 10 60
   PID USERNAME  SIZE   RSS STATE   PRI NICE      TIME  CPU PROCESS/NLWP
  3168 root      239M  223M sleep    57    0   5:01:55 0.2% java/93
  1027 root       22M 9008K sleep     1    0   0:51:03 0.0% ldmd/23
  2875 root       32M 9880K sleep     1    0   0:09:25 0.0% pkg.depotd/64
    60 root     5072K 1896K sleep    29    0   0:02:42 0.0% dlmgmtd/15
     5 root       0K    0K sleep    99  -20   0:10:15 0.0% zpool-rpool/142
  2890 root       15M 6184K sleep     1    0   0:03:24 0.0% snmpd/1
 24379 root     5440K 3248K cpu5      1    0   0:00:00 0.0% prstat/1
    15 root       23M   18M sleep    29    0   0:06:27 0.0% svc.configd/22
   644 netadm   5312K 2160K sleep    56    0   0:00:00 0.0% nwamd/7
   335 root     3744K  408K sleep    29    0   0:00:00 0.0% dbus-daemon/1
   242 root     3608K 1256K sleep    29    0   0:00:00 0.0% ldmad/5
   254 root     3032K   80K sleep    60  -20   0:00:00 0.0% zonestatd/5
   864 daemon   3376K   56K sleep    59    0   0:00:00 0.0% statd/1
   103 daemon   8888K 3056K sleep    29    0   0:00:00 0.0% kcfd/3
  1113 root     2888K   72K sleep    59    0   0:00:00 0.0% evhandsd/1
  5119 user01   3408K 2456K sleep    59    0   0:00:00 0.0% bash/1
   128 root     2528K  720K sleep    29    0   0:00:06 0.0% pfexecd/5
  3167 root     2464K  128K sleep    59    0   0:00:00 0.0% launch/2
    76 netadm   5072K 1376K sleep    29    0   0:00:01 0.0% ipmgmtd/8
  1115 root     3288K   72K sleep    58    0   0:00:00 0.0% evmond/1
    43 netcfg   4136K 1520K sleep    29    0   0:00:06 0.0% netcfgd/4
   117 root     3136K 1016K sleep     1    0   0:00:05 0.0% in.mpathd/1
  5118 root     6928K 3328K sleep    59    0   0:00:00 0.0% login/1
    13 root       43M 7752K sleep    59    0   0:00:08 0.0% svc.startd/16
   793 root     1992K    8K sleep    57    0   0:00:00 0.0% efdaemon/1
    10 root       0K    0K sleep    60    -   0:00:58 0.0% vmtasks/9
     9 root       0K    0K sleep    60    -   0:00:04 0.0% intrd/1
Total: 82 processes, 801 lwps, load averages: 0.04, 0.05, 0.05

#
```

Reference example 2
Keep track of system calls and signals

```
# truss find . -print >find.out
execve("/usr/bin/find", 0xF8275EA4, 0xF8275EB4)  argc = 3
sysinfo(SI_MACHINE, "sun4v", 257)               = 6
mmap(0x00000000, 32, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANON, -1, 0) = 0xF2070000
mmap(0x00000000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANON, -1, 0) = 0xF2060000
memcntl(0xF2080000, 38496, MC_ADVISE, MADV_WILLNEED, 0, 0) = 0
memcntl(0x00010000, 6932, MC_ADVISE, MADV_WILLNEED, 0, 0) = 0
resolvepath("/usr/lib/ld.so.1", "/lib/ld.so.1", 1023) = 12
resolvepath("/usr/bin/find", "/usr/bin/find", 1023) = 13
stat64("/usr/bin/find", 0xF82759C0)             = 0
open("/var/ld/ld.config", O_RDONLY)             Err#2 ENOENT
stat64("/lib/libc.so.1", 0xF8275128)            = 0
resolvepath("/lib/libc.so.1", "/lib/libc.so.1", 1023) = 14
open("/lib/libc.so.1", O_RDONLY)                = 3
mmapobj(3, MMOBJ_INTERPRET, 0xF2060BF8, 0xF82751BC, 0x00000000) = 0
close(3)                                        = 0
mmap(0x00000000, 16384, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANON, -1, 0) = 0xF1EC0000
memcntl(0xF1ED0000, 253204, MC_ADVISE, MADV_WILLNEED, 0, 0) = 0
mmap(0x00010000, 24576, PROT_READ|PROT_WRITE|PROT_EXEC, MAP_PRIVATE|MAP_ANON|MAP_ALIGN, -1, 0) = 0xF1EB0000
getcontext(0xF8275838)
getrlimit(RLIMIT_STACK, 0xF8275828)             = 0
getpid()                                        = 24965 [24964]
setustack(0xF1EB2AC8)
brk(0x00000000)                                 = 0x00B3A380
brk(0x00B3A380)                                 = 0x00000000
brk(0x00B3C380)                                 = 0x00000000
stat64("/usr/lib/locale/ja_JP.UTF-8/ja_JP.UTF-8.so.3", 0xF8274BF8) = 0


#
```

Reference example 3
Show the process tree

```
# ptree -a `pgrep ssh`
1      /usr/sbin/init
  1053  /usr/lib/ssh/sshd
#
```

(8) Check the status of the power

command / Intended use	Linux	Solaris	Comparison
	powertop	**powertop**	Same
Intended use	**Option Details**		
Specify the CPU to monitor	-	**powertop -c <CPUID>**	Solaris only
Specify the interval at which the tool analyzes the system	**powertop --time <interval>**	**powertop -t <interval>**	Option is different
Show the details	-	**powertop -v**	Solaris only

Execution example 1
Check the power usage

Linux

```
# powertop
PowerTOP 2.3      Overview   Idle stats   Frequency stats   Device stats
   Tunables
Summary: 8.9 wakeups/second,  0.0 GPU ops/seconds, 0.0 VFS ops/sec
 and 0.1% CPU use

      Usage       Events/s    Category       Description
   19.9 µs/s        3.0       Process        [events/0]
  154.8 µs/s        2.0       Process        powertop
   67.2 µs/s        1.0       Process        lldpad -d
   44.8 µs/s        1.0       Process        /usr/sbin/fcoemon --syslog
   13.0 µs/s        1.0       Process        [vmmemctl]
  103.8 µs/s       0.00       Process        sshd: root@pts/0
   60.8 µs/s       0.00       Interrupt      [3] net_rx(softirq)
   34.6 µs/s       0.00       Timer          tick_sched_timer
   25.0 µs/s       0.00       Timer          hrtimer_wakeup
   17.8 µs/s       0.00       Process        /sbin/dmeventd
   15.8 µs/s       0.00       Interrupt      [9] RCU(softirq)
    9.5 µs/s       0.00       Timer          delayed_work_timer_fn
    4.7 µs/s       0.00       Interrupt      [57] eth0-rxtx-0
    4.5 µs/s       0.00       Interrupt      [7] sched(softirq)
    1.9 µs/s       0.00       Timer          ipmi_timeout
    1.8 µs/s       0.00       Timer          sched_rt_period_timer
    1.5 µs/s       0.00       Interrupt      [58] eth0-rxtx-1
    1.3 µs/s       0.00       Timer          tcp_write_timer
    1.3 µs/s       0.00       Interrupt      [1] timer(softirq)

#
```

Solaris

```
# powertop
                          Solaris PowerTOP version 1.3

Idle Power States       Avg     Residency       Frequency Levels
C0 (cpu running)                (14.1%)         2800 Mhz        100.0%
C1                      3.4ms   (85.9%)


Wakeups-from-idle per second: 692.8     interval: 5.0s
no power usage estimate availableMay  2 15:47:11 sol11 last message
 repeated 1 time

Top causes for wakeups:
28.9% (200.2)                 sched :  <xcalls> unix`dtrace_sync_func
14.5% (100.2)               <kernel> :  genunix`clock
 9.8% ( 67.8)               <kernel> :  genunix`cv_wakeup
 7.2% ( 50.0)               <kernel> :  SDC`sysdc_update
 5.7% ( 39.2)                 sched :  <xcalls> unix`setsoftint_tl1
 0.7% (  5.0)               <kernel> :  vnet`vgen_tx_watchdog
 0.7% (  5.0)               <kernel> :  c2audit`au_queue_kick
 0.1% (  1.0)                 sched :  <xcalls> unix`cbe_xcall_handler
 0.1% (  1.0)               <kernel> :  TS`ts_update


Q - Quit R - Refresh

#
```

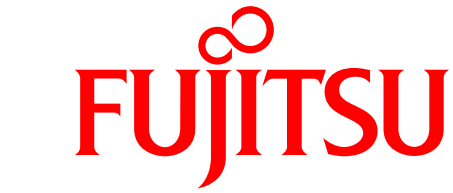
(9) Solaris-specific commands

Intended use	Command
Check CPU, memory, and extension cards	**prtdiag**

Reference example 1
Check CPU, memory, and extension cards

```
# prtdiag
System Configuration:  Oracle Corporation  sun4v SPARC M10-1
Memory size: 12288 Megabytes

============================== Virtual CPUs ==============================
CPU ID Frequency Implementation         Status
------ --------- ---------------------- -------
0      2800 MHz  SPARC64-X              on-line
1      2800 MHz  SPARC64-X              on-line
2      2800 MHz  SPARC64-X              on-line
3      2800 MHz  SPARC64-X              on-line
4      2800 MHz  SPARC64-X              on-line
5      2800 MHz  SPARC64-X              on-line
6      2800 MHz  SPARC64-X              on-line
7      2800 MHz  SPARC64-X              on-line
====================== Physical Memory Configuration ======================
Segment Table:
--------------------------------------------------------------
Base            Segment  Interleave   Bank     Contains
Address         Size     Factor       Size     Modules
--------------------------------------------------------------
0x7e0000000000 64 GB    4            16 GB    /SYS/MBU/CMP0/MEM00A
                                               /SYS/MBU/CMP0/MEM01A
                                      16 GB    /SYS/MBU/CMP0/MEM02A
                                               /SYS/MBU/CMP0/MEM03A
                                      16 GB    /SYS/MBU/CMP0/MEM10A
                                               /SYS/MBU/CMP0/MEM11A
                                      16 GB    /SYS/MBU/CMP0/MEM12A
                                               /SYS/MBU/CMP0/MEM13A
========================================= IO Devices =========================================
Slot +            Bus   Name +                              Model      Max Speed  Cur Speed
Status            Type  Path                                           /Width     /Width
--------------------------------------------------------------------------------------------
/SYS/MBU/SASHBA   PCIE  scsi-pciex1000,87                   LSI,2308_2 5.0GT/x8   5.0GT/x8
                        /pci@8000/pci@4/pci@0/pci@0/scsi@0
/SYS/MBU/NET0     PCIE  network-pciex8086,10c9                          2.5GT/x2   2.5GT/x2
                        /pci@8000/pci@4/pci@0/pci@1/network@0
/SYS/MBU/NET1     PCIE  network-pciex8086,10c9                          2.5GT/x2   2.5GT/x2
                        /pci@8000/pci@4/pci@0/pci@1/network@0,1
/SYS/PCI0         PCIE  network-pciex108e,abcd                SUNW,pcie-qgc 2.5GT/x8   2.5GT/x8
                        /pci@8000/pci@4/pci@0/pci@8/network@0
/SYS/PCI0         PCIE  network-pciex108e,abcd                SUNW,pcie-qgc 2.5GT/x8   2.5GT/x8
                        /pci@8000/pci@4/pci@0/pci@8/network@0,1
/SYS/MBU/NET2     PCIE  network-pciex8086,10c9                          2.5GT/x2   2.5GT/x2
                        /pci@8100/pci@4/pci@0/pci@0/network@0
/SYS/MBU/NET3     PCIE  network-pciex8086,10c9                          2.5GT/x2   2.5GT/x2
                        /pci@8100/pci@4/pci@0/pci@0/network@0,1
/SYS/PCI2         PCIE  QLGC,qlc-pciex1077,2532              QLE2562    5.0GT/x8   2.5GT/x8
                        /pci@8100/pci@4/pci@0/pci@9/QLGC,qlc@0
/SYS/PCI2         PCIE  QLGC,qlc-pciex1077,2532              QLE2562    5.0GT/x8   2.5GT/x8
                        /pci@8100/pci@4/pci@0/pci@9/QLGC,qlc@0,1
MB                PCIX  usb-pciclass,0c0310                           --         --
                        /pci@8000/pci@4/pci@0/pci@2/pci@0/usb@4
MB                PCIX  usb-pciclass,0c0320                           --         --
                        /pci@8000/pci@4/pci@0/pci@2/pci@0/usb@4,1
========================== Environmental Status ==========================
============================ FRU Status ============================
All FRUs are enabled.
#
```



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