Sun StorEdge™ A7000 System Test Package Reference Manual

THE NETWORK IS THE COMPUTER™

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Preface

Sun StorEdge A7000 System Test Package Reference Manual describes a menu-driven test facility used to exercise the Sun StorEdge A7000 Intelligent Storage Server System. The System Test Package (STP) provides a method for configuring a variety of tests that you can run against a system. It also provides a central location for reviewing log files and allows you to set up test combinations and save them for later use. This manual contains information about:

- Starting and configuring STP
- STP Menu selections
- STP Error messages
- Building a test group and using single point of control to run the tests on multiple subsystems.

How This Book Is Organized

Chapter 1 "Starting and Configuring STP" describes how to access the System Test Package (STP) and the configuration requirements for using it. It also describes each of the selections available from the Main Menu and Configuration Menu and related error messages.

Chapter 2 "Using STP" describes how to build a test group and the commands used to start and stop test group execution and analyze test results.

Typographic Conventions

TABLE P-1 Typographic Conventions

Typeface or Symbol	Meaning	Examples
`AaBbCc123`	The names of commands, files, and directories; on-screen computer output.	`/.rhosts` `do_stp`
`AaBbCc123`	What you type, when contrasted with on-screen computer output.	`Enter Trusted Hosts for OE nettest separated by spaces. i.e. sysgem4 steroid manmax08...` `(<CR> for none):` **`sysgem4`**
AaBbCc123	Variable expressions; replaced with a real name or value.	`do_stp` *filename*

.
.
.
	The vertical ellipsis indicates continuation of system output.	In the following example, additional information would be displayed in place of the vertical ellipsis:
		`sysgem4 root`
		`gem60 root`
		`gem70 root`
		.
		.
		.

< >	In examples of command input, an item surrounded by a greater than and less than sign must be replaced with an action. The greater than and less than signs are omitted when performing the action.	`<CR>` means press the Return key.

Related Documentation

TABLE P-2 Related Documentation

Type	Title
Software reference	*Sun StorEdge A7000 Online Exerciser Reference Manual*

Sun Documentation on the Web

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CHAPTER 1

Starting and Configuring STP

Starting STP

To start the System Test Package (STP), log in to the system as user `stp` and become Super User. Then enter **`./stp`** to display the Main Menu in the following format:

```
 ********************************************************************

                      System Test Package        Rev: 10.x
 ********************************************************************
 1) CONFIGURATION MENU
 2) Online-Exerciser
 3) BSC-SDLC
 4) fsx
 5) Disk Read Write
 6) Disk Read Only
 7) Done Select
 8) List Selections
 9) Clear Selections
10) HELP
11) EXIT
Select from the above choices. Choose #7 to Continue:
```

Main Menu Selections

A brief description of each main menu selection follows.

1 Configuration Menu

Use this selection to display the Configuration Menu. The Configuration Menu allows you to configure the tests you want to execute.

2 Online-Exerciser

Use this selection to start the Online Exerciser (OE). The Online Exerciser runs a test group containing all the tests listed in the OE config file. You must set up the OE config file using the appropriate selection from the Configuration Menu.

3 BSC-SDLC

This selection is not supported on the Sun StorEdge A7000 Intelligent Storage Server System.

4 fsx

Use this selection to start the File System Exerciser, which causes heavy disk activity. You select the file systems to exercise from the Configuration Menu.

5 Disk Read Write

Use this selection to start the disk read/write test.

6 Disk Read Only

Use this selection to start the disk read only test.

7 Done Select

Selection of Main Menu items continues until you select this option. Use this option to start processing your selections.

8 List Selections

Use this selection to display the currently selected tests.

9 Clear Selections

Use this selection to clear the currently selected tests.

10 HELP

Use this selection to display the Help Menu. Choose the topic where help is needed.

11 EXIT

Use this selection to immediately end your STP session and return to the shell prompt.

Configuring STP

Before using the System Test Package, you must set up a Trusted Hosts (`/.rhosts`) file. To run STP you must have root privileges on the systems to be used as the Trusted Hosts for the tests. The `/.rhosts` file on each system must be modified to give you and your system root privileges. The following is an example of a `/.rhosts` file:

```
sysgem4 root
gem60 root
gem70 root
gemimax root
 .
 .
 .
```

Note – The `/.rhosts` file must be modified for each system that is used as a Trusted Host.

Configuration Menu Selections

Select item 1 on the Main Menu to display the Configuration Menu in the following format:

```
 ********************************************************************
                     System Test Package       Rev: 10.x
 ********************************************************************

CONFIGURATION MENU

 1) RETURN                          10) Change Disks to be Partitioned
 2) Show OE Test Configuration      11) Setup Disks to be Partitioned
 3) Show OE Trusted Hosts           12) Partition disks
 4) Show FSX Configuration          13) Make filesystems
 5) Check OE Test Configuration     14) Mount disks
 6) Change OE Trusted Hosts         15) Show Disk Test Configuration
 7) Change OE Test Configuration    16) Change Disk Test Configuration
 8) Change FSX Configuration        17) Setup Disk Test Configuration
 9) Show Disks to be Partitioned
Select from the above choices. Choose #1 to Continue:
```

A description of each menu selection and, if applicable, error messages with explanations follows.

1 RETURN

Use this selection to return to the Main Menu.

2 Show OE Test Configuration

Use this selection to show the current configuration of the Online Exerciser (OE) test.

3 Show OE Trusted Hosts

Use this selection to show the hostnames of the systems to which the Online Exerciser (OE) net test will be run.

4 Show FSX Configuration

Use this selection to show the directories where FSX is configured. The following display appears. This example shows that the File System Exerciser is configured in the directory `/user1`.

```
File System Exerciser -> configured on: /user1

(EOF)<q>uit <CR> to page through
```

5 Check OE Test Configuration

Use this selection to perform a check on the Online Exerciser (OE) config file. If an error is found, one of the following messages is displayed:

Message	Description
`Non-numeric field,` *xxx*`, found in` *yyy* `entry.`	The specific field, *xxx*, in entry *yyy* is expected to be numeric and it is not.
`Trusted Hosts has not been set up in stp.`	The selected Trusted Hosts for the OE net test have not been entered. To enter, select item 6 from the Configuration Menu and enter the desired Trusted Hosts.
xxx `is not responding`	The selected entry for the net test is not responding to the `ping` command.
`You do not have root privileges on` *xxx* `Check the /.rhosts file on` *xxx*.	The hostname is not in *xxx*'s `/.rhosts` file.
`Invalid number of fields (`*x* `of 8)->` *xxx* `entry in config file.`	An invalid number of fields is in the *xxx* entry.

Message	Description
`Error in RMS entry` `Field` *x* `must be in the form 0x....`	The short I/O address of the RMS must be in the following format: 0x0000 for 0xfff40000, 0x1000 for 0xfff41000, 0x2000 for 0xfff42000, etc.
`Unknown entry` *xxxx*	*xxxx* is not a known entry.
`There are no entries in your Config File!!`	You must have at least one valid entry in your Config File.

6 Change OE Trusted Hosts

Use this selection to enter the Trusted Hosts to be configured for the Online Exerciser (OE) net test. The following message is displayed. Enter a host or hosts separated by spaces or press the Return key to specify no host configuration.

```
Enter Trusted Hosts for OE nettest separated by spaces.
i.e. sysgem4 steroid manmax08...
(<CR> for none): sysgem4 <CR>
```

The STP program then performs a query to the `/.rhosts` file on the selected host (`sysgem4`) to verify root privileges.

```
Checking root privileges on sysgem4...
```

In the following example, the STP program determined that the user did not have root privileges and instructed the user to re-enter a Trusted Host. Pressing the Return key does not automatically configure root privileges on the specified host.

```
You do not have root privileges on sysgem4.
Check the /.rhosts file on sysgem4.

Enter Trusted Hosts for OE nettest separated by spaces.
i.e. sysgem4 steroid manmax08...
(<CR> for none): gemimax <CR>
```

7 Change OE Test Configuration

Use this selection to display a file you can edit to change the information in the OE Test configuration. Use the `vi` text editor to edit the file. The OE configuration file is displayed in the following format:

```
# Test Name ->  The name of the test to run.
#               Valid Names are: core,disk,cd,tape,mem,umax,net,rms,
#               vssc,tapecar,umaxhsdv,readmem and hsd
#
#               ************************************************
#               If the test name is not one of the above it is
#               assumed to be a hostname for remote tests.
#               ************************************************
#
#               core      ->  includes disk,tape,mem,cd and umax
#               disk      ->  runs OE disk test on all disks
#                             currently configured in the system
#                             (msd,m328d)
#               tape      ->  runs OE tape test on all tapes
#                             currently configured in the system
#                             (mst,m328t)
#               cd        ->  runs OE cd test on all cd's currently
#                             configured in the system(cdr)
#               tapecar   ->  runs OE Tape Carousel test on
#                             specified tape
#               mem       ->  runs OE mem test on specified size of
#                             memory
#               readmem   ->  runs OE Read-Only memtest on specified
#                             size of memory
#               lp        ->  runs OE generic test as follows:
#                             ~stp/lp/lptest | lp
#               umax      ->  runs OE Umax test
#               net       ->  runs OE net test on specified host
#                             or hosts
#               rms       ->  runs OE rms test in loopback or
#                             remotely on specified host
#               vssc      ->  runs OE vssc test on specified boards
#               hsd       ->  runs OE hsd test on specified boards
#               umaxhsdv  ->  runs OE hsd test on specified boards
#
# Passes    ->  The number of passes of this test to run.(0 means
#               run forever) If 0 is pass count for core, tape is
#               set to 10.
#
#
```

```
# Copies    ->  The number of copies of a particular test to run.
#               ONLY “1” IS VALID FOR core.(core runs 1 copy of each
#               test)
#               ONLY “1” IS VALID FOR rms. (rms can only run 1 copy
#               at a time)
#               ONLY “1” IS VALID FOR vssc.(vssc can only run 1 copy
#               at a time)
#               ONLY “1” IS VALID FOR hsd. (hsd can only run 1 copy
#               at a time)
#               ONLY “1” IS VALID FOR umaxhsdv.(can only run 1 copy
#               at a time)
#               ONLY “1” IS VALID FOR lp. (lp can only run 1 copy
#               at a time)
#
#   !!!!!!!!!!  WARNING:      The following tests gang cpu's: hsd,
#   !!!!!!!!!!                mem(gang), readmem and umax. You can
#   !!!!!!!!!!                not run more copies of these tests
#   !!!!!!!!!!                together, than your system has
#   !!!!!!!!!!                (cpu's - 1).
#
#   !!!!!!!!!!  WARNING:      When Multiple RMS Boards are
#   !!!!!!!!!!                configured to be tested on the same
#   !!!!!!!!!!                machine, they must be placed in
#   !!!!!!!!!!                descending order with respect to their
#   !!!!!!!!!!                memory size.(i.e. 64 before 16 before
#   !!!!!!!!!!                4)
#
# Field1    ->  This field has different meanings for the following
#               tests.
#               disk,cd       NO MEANING -> MUST BE "------"
#
#               tape          Delay between passes in seconds
#               core          Umaxtest run Mode(must be gang or
#                             ungang)
#               umax          Test run Mode(must be gang or ungang)
#               tapecar       Logical tape id   0  -> /dev/rmt/0h
#                                               1  -> /dev/rmt/1h
#                                               2  -> /dev/rmt/2h
#                                               v0 -> /dev/rmt/v0h
#                                               v2 -> /dev/rmt/v2h
#               mem           Size of memory area in Megabytes
#               readmem       Address of memory area in hex
#                             Only valid if test run in USER mode!!!
#               net           Host to test.(must be a valid hostname
#                             or TRUSTED_HOSTS) TRUSTED_HOSTS means:
#                             use the response from OE Trusted
#                             Hosts(CONFIG MENU) for test host(s).
```

```
#               rms           Number of rms_tests to run per board
#               vssc          Number of vssc's to run
#               hsd           Number of VMIC HSD's
#               umaxhsdv      First hsdv device e.g. hsdv0
#               lp            Number of Columns on page
#
# Field2    ->  This field has different meanings for the following
#               tests:
#               disk,tape,net,cd and
#               umax          NO MEANING -> MUST BE “------”
#
#               core          Tapetest Delay in seconds
#               mem           Test run Mode(must be gang or ungang)
#               readmem       Size of memory area in Megabytes
#                             Only valid if test run in USER mode!!!
#               tapecar       Carousel drive number(must be 1 or 2)
#               rms           Short IO address of board on local
#                             host
#               vssc          Internal Pass count(0 means only 1
#                             download)
#               hsd           VMIC HSD MODE(EFC,IBLE or IBL)
#               umaxhsdv      Second hsdv device e.g. hsdv1
#               lp            Number of pages to print
#
# Field3    ->  This field has different meanings for the following
#               tests:
#               core,disk,tape,vssc,net,mem,cd,umaxhsdv and
#               umax          NO MEANING -> MUST BE “------”
#
#               readmem       Test run mode(must be CPU, EXP, ALL or
#                             USER)
#               tapecar       Serial port connected to tape Carousel
#                             (must be tty01, tty02 or tty03.)
#               rms           Size of board in Megabytes
#               hsd           Number of HSDV's
#               lp            Number of lines per page
#
# Field4    ->  This field has different meanings for the following
#               tests.
#               core,disk,tape,vssc,net,mem,readmem,cd,umaxhsdv and
#               umax          NO MEANING -> MUST BE “------”
#
#               tapecar       Tape slot number must be in the range
#                             0-40.
#               rms           Remote Host(Local or a Trusted Host)
#               hsd           HSDV MODE(EFC,IBLE or IBL)
#               lp            Name of lp printer
#
```

```
# Field5    ->  This field has different meanings for the following
#               tests.
#               core,disk,tape,vssc,net,mem,readmem,umax,cd,umaxhsdv,
#               and lp        NO MEANING -> MUST BE “------”
#
#               tapecar       Blocksize for sequential read test
#               hsd           ENVIRONMENT(umpx, uarte, rtu and urtt)
#               rms           Short IO address of board on remote
#                             host
#
# THE FOLLOWING ARE EXAMPLES OF VALID ENTRIES IN THE OE CONFIG FILE
#
# Test     Passes   Copies   Field1       Field2   Field3   Field4   Field5
# Name
# HOST1
# core     0        1        gang         0        ------   ------   ------
# disk     5        1        ------       ------   ------   ------   ------
# cd       5        1        ------       ------   ------   ------   ------
# tape     10       1        0            ------   ------   ------   ------
# tapecar  10       1        0            1        tty03    0        512
# tapecar  10       1        1            2        tty03    40       1024
# tapecar  10       1        v1           2        tty03    39       512
# umax     2        1        ungang       ------   ------   ------   ------
# mem      0        1        20           gang     ------   ------   ------
# mem      0        4        10           ungang   ------   ------   ------
# readmem  0        1        0x3f000000   16       CPU      ------   ------
# readmem  0        1        0x44000000   1        USER     ------   ------
# HOST2
# net      0        5        TRUSTED_HOSTS ------   ------   ------   ------
# net      0        4        manmax08     ------   ------   ------   ------
# rms      0        1        4            0x0000   64       Local    0x0000
# rms      0        1        4            0x1000   16       Local    0x1000
# rms      0        1        4            0x2000   4        Local    0x2000
# HOST3
# rms      0        1        4            0x0000   16       gemimax  0x1000
# HOST3
# vssc     0        1        2            100      ------   ------   ------
# hsd      0        1        4            EFC      0        IBLE     rtu
# umaxhsdv 0        1        hsdv0        hsdv1    ------   ------   ------
# umaxhsdv 0        1        hsdv2        hsdv3    ------   ------   ------
# lp       5        1        132          10       60       laser    ------
```

8 Change FSX Configuration

Use this selection to specify the directories used by the FSX tests. The directories you specify MUST exist. The following prompt is displayed:

```
On which directories do you want the File System Exerciser to run?
Enter directories separated by spaces. i.e. /user0 /user1 /
user2...
(<CR> for none): /user2 <CR>
```

If the directory you specify does not exist, the following message is displayed and the prompt is reissued:

```
/user2 directory does not exist!!! Try Again

On which directories do you want the File System Exerciser to run?
Enter directories separated by spaces. i.e. /user0 /user1
/user2...
(<CR> for none): /user1 <CR>
```

The following prompt is displayed:

```
How many passes of FSX to run?
```

Enter a 1 for one pass, 2 for two passes, etc. Entering a 0 (zero) will run an infinite number of passes.

If an invalid response is entered, the question is repeated. After a valid response is received, the program displays a message in the following format, builds an `stp/fsx` subdirectory, and puts the necessary files in it.

```
Creating /user1/stp/fsx directory
```

9 Show Disks to be Partitioned

Use this selection to show a list of VME disks to be partitioned.

Caution – All data on selected disks will be destroyed. Be careful in choosing the disks to be configured.

10 Change Disks to be Partitioned

Use this selection to modify the list of disks to be partitioned.

11 Setup Disks to be Partitioned

Use this selection to perform the initial setup of the disks to be partitioned.

12 Partition Disks

Use this selection to partition the disks.

13 Make Filesystems

Use this selection to make the filesystems on the disks.

14 Mount Disks

Use this selection to mount the disks.

15 Show Disk Test Configuration

Use this selection to show the disk configuration used for disk testing. An example follows.

```
msd 2 16 1 0 0 454
msd 3 16 2 0 0 454
msd 5 24 1 0 0 454
msd 6 20 2 0 0 454
msd 7 24 2 0 0 454
(EOF)<q>uit <CR> to page through
```

16 Change Disk Test Configuration

Use this selection to modify the disk test.

17 Setup Disk Test Configuration

Use this selection for the initial set up for the disk tests. It creates a default list and allows you to select the number of passes.

CHAPTER 2

Using STP

Single Point Of Control (SPOC)

The Online Exerciser (OE) tests can be run with a single point of control. That is, the tests can be run on multiple subsystems from one single subsystem. This subsystem starts the tests, collects all data from the other subsystems, kills the tests, and finally analyzes all the results.

Note – STP must be installed on all the subsystems.

The Online Exerciser is the only test that runs in this mode. This test should be run from only one subsystem at a time and STP places the results of the test on that one subsystem.

Note – Do not run the SPOC tests from different subsystems at the same time.

To use single point of control, edit the config files as explained in Chapter 1.

OE Test

To run the OE tests on several subsystems using single point of control, place the host name on a line by itself followed by all the tests to run on that system. The host name must be a valid network name, and the single point of control subsystem must have root privileges on the remote subsystem.

Test Selection

To create a test group using STP, select the tests to run together, one at a time from the Main Menu. Some of the tests must be previously configured before they can be selected to run. If a selected test has not been configured, an error message is displayed.

When a valid choice is made, the selected choices appear on the top of the screen above the Main Menu selections. If this display disappears due to an error message in a subsequent selection, select option 8, `List Selections`, to display choices again. If after reviewing your selections, you decide that you do not want to run them, select option 9, `Clear Selections`. You may now reenter your test choices.

Once selection of the tests which comprise the test group is finished, choose the Done Select option from the menu. STP displays the following message:

```
*****************************************************************
                System Test Package        Rev: 10.x
*****************************************************************

Test Configuration Selected
---------------------------
FSX YES


Is this correct? (y/n/q):
```

There are three options:

1. Enter `Y` if the tests are correct.
2. Enter `N` if the tests are incorrect. The tests selections are cleared and the Main Menu is returned.
3. Enter `Q` to quit without doing anything.

If you enter `Y` to continue, the following prompt is displayed:

```
Enter the Test Group Name[default(stp)]:
```

Enter a meaningful name that describes the test group created. The name must be a contiguous string with no spaces. To access this test group in the future, use the name entered for the test group. To use the default for the name, press the Return key. After you either enter a name or press the Return key, the following message is displayed:

```
Configuration selected and saved: Run tests? (y/n):
```

The test group has now been saved for future use. You can enter `y` to start the tests at this time or enter `n` to exit.

STP Commands

The following commands are used when running the STP program:

- `do_stp`
- `kill_stp`
- `analyze`
- `clean_stp`

do_stp

The `do_stp` command starts all the tests that have been configured in `./stp`. To run a specific test group, type `do_stp` *test_group*. The tests run indefinitely until killed.

kill_stp

Use the `kill_stp` command to stop test execution in an orderly fashion. To kill a specific test group, type `kill_stp` *test_group*.

analyze

Once the tests start, their output is directed to different files. STP displays the pathname to the file location. Use the analyze command to scan the log files for errors and place the results in the `./RESULTS` directory. This saves you from having to read all of the log files. To analyze the results from a specific test group, type `analyze` *test_group*.

clean_stp

The `clean_stp` command removes all the following files from previous runs:

- All OE temporary files (`oetmp`.***)
- All test groups
- All results
- All FSX work files