SunVTS™ 6.1 Patch Set 1 Documentation Supplement for SPARC® Platforms

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Preface

SunVTS™ is the Sun Microsystems™ Inc. Validation Test Suite. SunVTS is a comprehensive software diagnostic package that tests and validates Sun SPARC® and x86 hardware by verifying the configuration and functionality of controllers, devices, and platforms.

SunVTS is primarily used from a graphical user interface (GUI), in the Java Desktop System (JDS) or the Common Desktop Environment (CDE). This document describes SunVTS tests that run on machines with SPARC architectures. The descriptions include specific test options, procedures, and error messages.

This document is a supplement to the *SunVTS 6.1 Test Reference Manual for SPARC Platforms* (819-2362) and the *SunVTS 6.1 User's Guide* (819-2361). Refer to these documents for details on the full collection of SunVTS 6.1 tests and software features that are not new or enhanced in this release.

This document describes SunVTS Version 6.1 Patch Set 1 tests that are distributed on the Solaris 10 HW2 Software DVD and CDs.

Note – The Solaris™ release with which this version of SunVTS is delivered supports systems that use the SPARC families of processor architectures (UltraSPARC® and SPARC 64). The supported systems appear in the *Solaris 10 Hardware Compatibility List* at `http://www.sun.com/bigadmin/hcl`.

Before You Read This Book

To fully use the information in this document, you must have thorough knowledge of the topics discussed in these documents:

- *SunVTS 6.1 User's Guide*

- *SunVTS 6.1 Test Reference Manual for SPARC Platforms*
- *SunVTS Quick Reference Card*

Using UNIX Commands

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

Refer to one or more of the following for this information:

- *Solaris Handbook for Sun Peripherals*
- Software documentation that you received with your system
- Solaris Operating System documentation, which is at:

  `http://docs.sun.com`

Shell Prompts

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

Typographic Conventions

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

* The settings on your browser might differ from these settings.

Related Documentation

This document serves as a reference companion to the SunVTS documents listed below.

Application	Title	Part Number
Test Parameter Reference	*SunVTS 6.1 Test Reference Manual for SPARC Platforms*	819-2362
Installation and Navigation	*SunVTS 6.1 User's Guide*	819-2361
Quick Reference Card	*SunVTS Quick Reference Card*	819-2365

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CHAPTER 1

SunVTS Overview

The Sun™ Validation and Test Suite (SunVTS) software runs multiple diagnostic hardware tests from a single user interface. SunVTS verifies the connectivity, functionality, and reliability of most hardware controllers and devices. This manual is a supplement to the SunVTS™ 6.1 documentation.

For overall SunVTS features, test configuration modes, interfaces, and options refer to the *SunVTS 6.1 User's Guide* (819-2361). Refer to the *SunVTS 6.1 Test Reference Manual for SPARC Platforms* (819-2362) for detailed information on SunVTS test software and the full collection of tests.

Refer to the latest version of the *SunVTS 6.1 Patch Set 1 Release Notes* (819-5358) for important release information and open issues—the latest version of of all SunVTS documents are available at: `http://www.sun.com/documentation`

Caution – Ensure that the systems you are testing have sufficient system resources, such as memory allocation, before starting a SunVTS test. Lack of system resources can cause SunVTS tests to fail incorrectly. If you encounter an unexpected failure, use the `ipcs`(1) command to check for stale shared memory segments. If stale segments are found, remove them using the `ipcrm`(1) command. Once the stale segments are removed, perform the test again to see if the failure persists.

Introduction

SunVTS is composed of many individual tests that support testing of a wide range of products and peripherals. Most of the tests are capable of testing devices in a 32-bit or 64-bit Solaris environment.

Use SunVTS to test one device or multiple devices. Some of the major test categories are:

- Audio tests
- Communication (serial and parallel) tests
- Graphic/video tests
- Memory tests
- Network tests
- Peripherals (disks, tape, CD-ROM, DVD-ROM, printer, floppy) tests
- Processor tests
- Storage tests

Such flexibility means that the proper test modes and options need to be selected to maximize its effectiveness.

Note – When an error occurs in VTS testing, the test message window displays the error number, the error description, the probable cause of the error, and the recommended actions. Because this information is displayed at the time of the error, error messages are not included in this manual.

The default installation directory for SunVTS is `/opt/SUNWvts`. However, when you are installing SunVTS, you can specify a different directory. Refer to the *SunVTS 6.1 User's Guide* for installation information.

Test Requirements

SunVTS 6.1 and 6.1 Patch Set releases are supported in the Solaris 10 Operating System and future compatible Solaris releases.

The operating system kernel must be configured to support all peripherals that are to be tested.

Some SunVTS tests have special requirements such as the connection of loopback connectors, installation of test media, or the availability of disk space. These requirements are listed for each test in the corresponding chapter in this book.

Displaying SunVTS Package and Version Information

Use the following command to display SunVTS package information:

```
# pkginfo -c SUNWvts SUNWvtsts SUNWvtsmn
```

You can also use either of the following commands to display additional SunVTS package information:

- # **pkginfo | grep vts**
- # **showrev -p | grep vts**

Use either of the following commands to display SunVTS version information:

- # sun**vts -v**
- # /opt/SUNWvts/bin/.version

Collection of SunVTS Tests

Many individual tests make up the collection of tests in the SunVTS application. Each test is a separate process from the SunVTS kernel. Each test can be run individually from the command line or from the SunVTS user interface.

When SunVTS is started, the SunVTS kernel automatically probes the system kernel to determine the hardware devices. The devices are then displayed on the SunVTS control panel with the appropriate tests and test options. This provides a quick check of your hardware configuration, and no time is wasted trying to run tests that are not applicable to your configuration.

During testing, the hardware tests send the test status and messages to the SunVTS kernel through interprocess communication (IPC) protocols. The kernel passes the status to the user interface and logs the messages.

SunVTS has a shared object library that contains test-specific probing routines. At runtime, the SunVTS kernel dynamically links in and calls these probing routines to initialize its data structure with test-specific information. You can add new tests into the SunVTS environment without recompiling the SunVTS source code.

As of SunVTS 3.0, the SunVTS kernel and most tests support 32-bit and 64-bit operating environments. When the `sunvts` command is used to start SunVTS, the appropriate tests (32-bit or 64-bit versions) are presented.

32-Bit and 64-Bit Tests

Because each test is a separate program, you can run individual tests directly from the command line. When this is done, care must be taken to run the appropriate test (32-bit or 64-bit) that corresponds to the operating system that is running (32-bit or 64-bit). This is done by running tests from specific directories as follows:

- 32-bit tests—`/opt/SUNWvts/bin/`*testname*
- 64-bit tests—`/opt/SUNWvts/bin/sparcv9/`*testname*
  - The test is an actual 64-bit binary test if *testname* is a binary file.

- The test is a 32-bit test capable of running in the 64-bit environment if *testname* is a symbolic link.

If you use the `sunvts` command to run SunVTS, SunVTS automatically allocates 32-bit or 64-bit tests based on the 32-bit or 64-bit Solaris operating environment that is running. Therefore, the only time that you need to be concerned with the 32-bit or 64-bit operation is when you run the SunVTS kernel or SunVTS tests from the command line.

If you are not sure which operating system is running, refer to the Solaris System Administration manuals. In Solaris 8 2/02, Solaris 9, Solaris 10 3/05, and Solaris 10 1/06, use the following command to identify the application support of your system.

```
# isainfo -v
```

Note – The `isainfo` command is not available in Solaris 2.6 or earlier releases.

SunVTS User Interfaces

You can run SunVTS tests from various interfaces: The CDE graphical user interfaces, or the TTY interface. SunVTS tests can also be run individually from a shell tool command line, using the command-line syntax for each test (refer to "Running a Test From the Command Line" on page 7). TABLE 1-1 describes the various SunVTS user interfaces. Refer to the *SunVTS 6.1 User's Guide* for more information on these interfaces.

TABLE 1-1 SunVTS System Interfaces

SunVTS System Interfaces	Description
Graphical user interfaces (GUIs)	Users can select tests and test options by pointing and clicking with a mouse button in the CDE or JDS desktop interface.
TTY interface	Users can run SunVTS from a terminal or modem attached to a serial port. This feature requires that users use the keyboard instead of the mouse, and it displays one screen of information at a time.
Command-line execution	Users can run each of the SunVTS tests individually from a shell tool command line using the command-line syntax. Each test description in this book contains the corresponding command-line syntax.

Note – To increase or decrease a numeric value in a SunVTS CDE dialog box, you can use either the up or down arrows, or type a new value in the text box and press Return. Select Apply to apply all dialog box changes.

Running a Test From a User Interface

The common way to run SunVTS testing is through a SunVTS user interface—GUI or the TTY interface.

Test configuration, control, and results are easily accessed through buttons and dialog boxes. These buttons and dialog boxes are covered in the *SunVTS 6.1 User's Guide*. However, the Test Parameter Options dialog box is unique for each test, and is therefore covered in this manual.

Test Parameter Options Dialog Box

The options displayed in this menu differ for each test, but the lower set of buttons are generic and are described below.

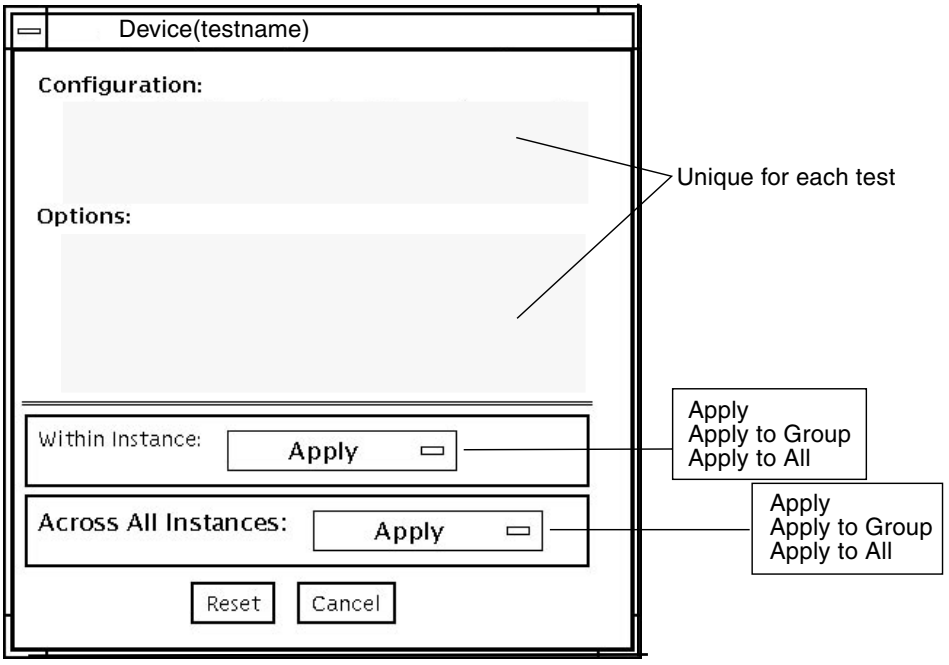

FIGURE 1-1 Test Parameter Options Dialog Box (CDE)

TABLE 1-2 Test Parameter Options Dialog Box Items

Menu Item	Description
Configuration	Information such as device type, capacity, revision, and serial numbers for the selected device. This information cannot be changed.
Options	A list of test options that are used to customize the testing of the selectable device, group, or all devices. The options are specific for each test and are covered in the test specific-chapters in this manual.
Within Instance	Provides the means to apply the settings: • to this device only with Apply, or • to all devices within this group with Apply to Group, or • to all devices (of the *same device type* for *all controllers*) with Apply to All. The option settings are only applied to one instance of the test.

TABLE 1-2 Test Parameter Options Dialog Box Items *(Continued)*

Menu Item	Description
Across All Instances	Provides the means to apply the settings globally: • to this device only with Apply, or • to all devices within this group with Apply to Group, or • to all devices (of the *same device type* for *all controllers*) with Apply to All. The option settings are applied to all instances.
Reset	Returns the option values to their default settings and closes the test parameter option menu.
Cancel	Ignores any changes made to option values and closes the test parameter option menu.

Note – The Test Parameter Options Dialog box descriptions also apply to the Test Parameter Options menu in the TTY interface.

Running a Test From the Command Line

In some cases it may be more convenient to run a single SunVTS test from the command line rather than through a SunVTS user interface. The following information describes how to do this.

Unless specified, the test runs without the SunVTS kernel (`vtsk`). All events and errors are sent to `stdout` or `stderr` and are not logged in the log files.

When you run a test in this way, you must specify all test options in the form of command-line arguments.

There are two types of command-line arguments:

- Standard arguments—common to all tests. Refer to TABLE 1-3 for details.
- Test specific arguments—unique to a specific test. Refer to the test-specific chapters in this book for details.

The standard syntax for all SunVTS tests is:

`testname` [**`-scruvdtelnf`**] [**`-i`** *number*] [**`-w`** *number*] [**`-o`** *test_specific_arguments*]

Note – 64-bit tests are located in the `sparcv9` subdirectory: `/opt/SUNWvts/bin/sparcv9/`*testname*. If a test is not present in this directory, then it may only be available as a 32-bit test. For more information refer to the *SunVTS 6.1 Test Reference Manual for SPARC Platforms*.

Standard Command-Line Arguments

The following table defines the standard SunVTS command-line arguments:

TABLE 1-3 Standard Command-Line Arguments

Argument	Description
`-x`	Runs the test in exclusive test mode. This mode assumes that the test has exclusive access to the device and the system. The testing done in exclusive mode is usually more stressful compared to functional mode. Also, running a test in exclusive mode usually assumes exclusive access to all resources and assumes no other SunVTS test is running at the same time.
`-s`	Runs a test as though it were invoked from the SunVTS kernel (`vtsk`). The default is to send the output to `stdout` or `stderr`.
`-c`	Enables a core image of the test process to be created in the current working directory upon receipt of certain signals, otherwise those signals are caught and handled to prevent a core from being generated. The default is to disable the creation of a core image.
`-r`	Enables run on error so that when an error occurs, the test continues with the next test sequence instead of exiting. The default is false.
`-v`	Runs the test in Verbose mode and displays messages with more detailed information about the testing process. The default is false.
`-d`	Runs the test in debug mode and displays messages to help programmers debug their test code. The default is false.
`-t`	Runs the test in test Trace mode and displays messages that track function calls and sequences currently in use by the test code. The default is false.
`-e`	Runs the test in Stress mode by increasing the system load. The default is false.
`-l`	Runs the test in Online Functional mode. This is the same mode that tests run in when executed with the `vtsui.online` command. It is a non-intrusive version that will not significantly affect other applications. See the note below. The default is true.
`-n`	Runs the test in Connection mode. See the note below. The default is false.
`-f`	Runs the test in full Functional test mode. This mode assumes that the test has complete control of the device under test. See the note below. The default is false.

TABLE 1-3 Standard Command-Line Arguments *(Continued)*

Argument	Description
`-i` *number*	Defines the number of instances for scalable tests.
`-w` *number*	Defines to which instance the test is assigned; this option is for scalable tests.
`-o`	Indicates that the options and arguments that follow are test specific.

Note – Separate each test-specific argument by commas, with no space after each comma.

Note – If you choose to specify a test mode with the `l`, `n`, or `f` option, specify only one option at a time because only one test mode can be selected at a time.

Test-Specific Arguments

There are test-specific arguments, as described in TABLE 1-4. Test-specific arguments follow the format specified in the `getsubopt(3c)` man page. For information about test-specific arguments refer to the specific test chapter in this book.

TABLE 1-4 SunVTS Test-Specific Arguments

Argument	Description
`-o`	Separate each test-specific argument by commas, with no space after the comma. For example: `#`**`./sample -v -o dev=/dev/audio,volume=78`** The test option format is specified by the man page `getsubopt`(3C).

SunPCi-3 Card Support

`sunpci2test` now supports the SunPCi-3 cards. Solaris 10 supports SunPCi-3 Version 3.2.2 with Patch 118591-01 only. Solaris 10 does not support the SunPCi-2 card.

Testing Frame Buffers

Before running a frame buffer test, determine whether the test requires frame buffer locking. Not all frame buffer tests have a locking option. Some tests set the lock automatically. Check the test chapter for each individual test to see if this step is needed. If locking is required, you can set the lock in one of two ways:

- If you are using the CDE SunVTS interface, go to the Option menu of the graphic test and select Enable for the frame buffer locking option.
- If you are working from the command line, you can enable frame buffer locking with the `lock=e/d` option. For example, to run the generic frame buffer test (`fbtest`) with a locked frame buffer, enter:

```
# ./fbtest -o dev=pfb0,lock=enable
```

(See the test command line argument descriptions in the individual test chapters.)

Caution – If frame buffer locking is disabled (unlocked) on frame buffers that are running `vtsui`, or if you move the mouse, you will receive false error messages. Even a slight mouse movement can cause a test to fail.

Caution – Disable the Power Management screen saver option and the Save/Resume option before you run any of the SunVTS frame buffer tests. For information on disabling these Power Management features, refer to the Power Management Chapter in the Solaris User Collection. This document is available at: `docs.sun.com`.

Caution – If you are using the GUI interface for SunVTS, do not conduct frame buffer tests through the `dtlogin` window. Log in as `root` and disable the auto-logout option.

Caution – Do not run TTY mode and frame buffer tests concurrently on the console monitor. The frame buffer test may fail.

Testing Multiple Frame Buffers

The following rules apply when you test multiple frame buffers (displays) simultaneously:

- Only the console monitor can run the window environment (such as CDE or GNOME). The console monitor is the monitor connected to the frame buffer appointed by
`/dev/fb`. SunVTS enables frame buffer locking on the console monitor by default.
- The frame buffer that is running the window environment must have window locking enabled to avoid false test failures. All other frame buffers must have window locking disabled.

Remote Testing of Frame Buffers

If you start `sunvts` or `vtsk` from a screen other than the console monitor, frame buffer locking is not available. In this case:

- Disable the window locking option on the remote screen by setting it to `d`.
- Enable frame buffer locking for the console monitor, as shown in the example above. The SunVTS user interface cannot display on a monitor if locking is disabled.

Do not run any graphic programs (including `vtsui`) on the remote frame buffer during graphic testing.