Sun microsystems

SunVTS™ 3.3 User's Guide

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Contents

Figures

Tables

Preface

SunVTS 3.3 is Sun's Validation Test Suite. SunVTS is a comprehensive software diagnostic package that tests and validates Sun™ hardware by verifying the connectivity and functionality of most hardware controllers, devices, and platforms.

The primary audience of this manual is hardware testing and verification personnel, qualified service-trained maintenance providers, and advanced system end users.

This book describes the installation, configuration, and use of SunVTS.

How This Book Is Organized

Chapter 1 provides an overview of SunVTS, the SunVTS user interfaces, SunVTS architecture, and SunVTS test modes.

Chapter 2 describes the SunVTS packages and installation procedures.

Chapter 3 covers all the different methods used to start SunVTS.

Chapter 4 describes the CDE and OPEN LOOK SunVTS graphical user interfaces (GUIs), the TTY interface and command line syntax for configuring the SunVTS test session.

Chapter 5 describes the concepts and features of SunVTS.

Chapter 6 provides problem-solving techniques for SunVTS.

Appendix A provides step by step instructions to start, configure, and run a SunVTS test session using the CDE, TTY, and command line user interfaces.

Using UNIX Commands

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

See one or more of the following for this information:

- *Solaris Handbook for Sun Peripherals*
- AnswerBook™ online documentation for the Solaris software environment
- Other software documentation that you received with your system

Typographic Conventions

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

TABLE P-1   Typographic Conventions

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

Shell Prompts

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

TABLE P-2   Shell Prompts

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

Related Documentation

The following table lists other SunVTS documents and related manuals:

TABLE P-3   SunVTS Documents

Document Title	Part Number
SunVTS 3.3 Test Reference	806-1595-10
SunVTS Quick Reference Card	806-1028-10

Sun Documentation on the Web

The `docs.sun.com` web site enables you to access Sun technical documentation on the Web. You can browse the `docs.sun.com` archive or search for a specific book title or subject at:

`http://docs.sun.com`

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`docfeedback@sun.com`.

Please include the part number of your document in the subject line of your email.

SunVTS 3.3 Overview

This chapter covers:

- "What Is SunVTS?" on page 1
- "SunVTS User Interfaces" on page 2
- "SunVTS Architecture" on page 5

What Is SunVTS?

SunVTS™ is Sun's Validation Test Suite. SunVTS is a comprehensive software diagnostic package that tests and validates Sun™ hardware by verifying the connectivity and functionality of most hardware controllers, devices, and platforms.

SunVTS can be tailored to run on various types of machines ranging from desktops to servers with modifiable test instances and processor affinity features.

SunVTS revisions 3.0 through 3.3 support device testing in a 32-bit or 64-bit Solaris environment. SunVTS determines the operating environment (32-bit or 64-bit) and initializes the appropriate tests.

Use SunVTS to validate a system during development, production, receiving inspection, troubleshooting, periodic maintenance, and system or subsystem stressing.

SunVTS has a sophisticated graphical user interface (GUI) that provides test configuration and status monitoring. The user interface can run on one system to display the SunVTS testing of another system on the network. SunVTS also provides a TTY-mode interface for situations in which running a GUI is not possible.

SunVTS comprises many individual tests for wide range of Sun products and peripherals.

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, Printer, Floppy) tests
■ Processor tests
■ Storage tests

You need to select the proper test modes and options to maximize the effectiveness of SunVTS. This book covers the overall test configuration modes and options of SunVTS. For Information regarding the configuration of individual tests, see the *SunVTS 3.3 Test Reference Manual.*

Note – SunVTS revision 3.3 was first introduced and designed to run in the Solaris 7 8/99 operating environment.

SunVTS User Interfaces

You can run SunVTS from the following user interfaces:

■ Window interfaces—choose either CDE or OPEN LOOK environments. FIGURE 1-1 shows the SunVTS CDE interface.
■ TTY interface—the command-line interface used to operate SunVTS from the Solaris command line. You can run SunVTS from a terminal, a shelltool, or a modem attached to a serial port using the TTY interface.
■ Individual test execution—run specific tests from the command line.

For more information about these user interfaces, see "SunVTS User Interfaces" on page 35.

Note – The SunVTS OPEN LOOK user interface may not support the latest SunVTS features. For full feature support, use the SunVTS CDE or TTY interface. The SunVTS OPEN LOOK user interface will be sustained, but not enhanced, as long as OPEN LOOK is supported in the Solaris environment.
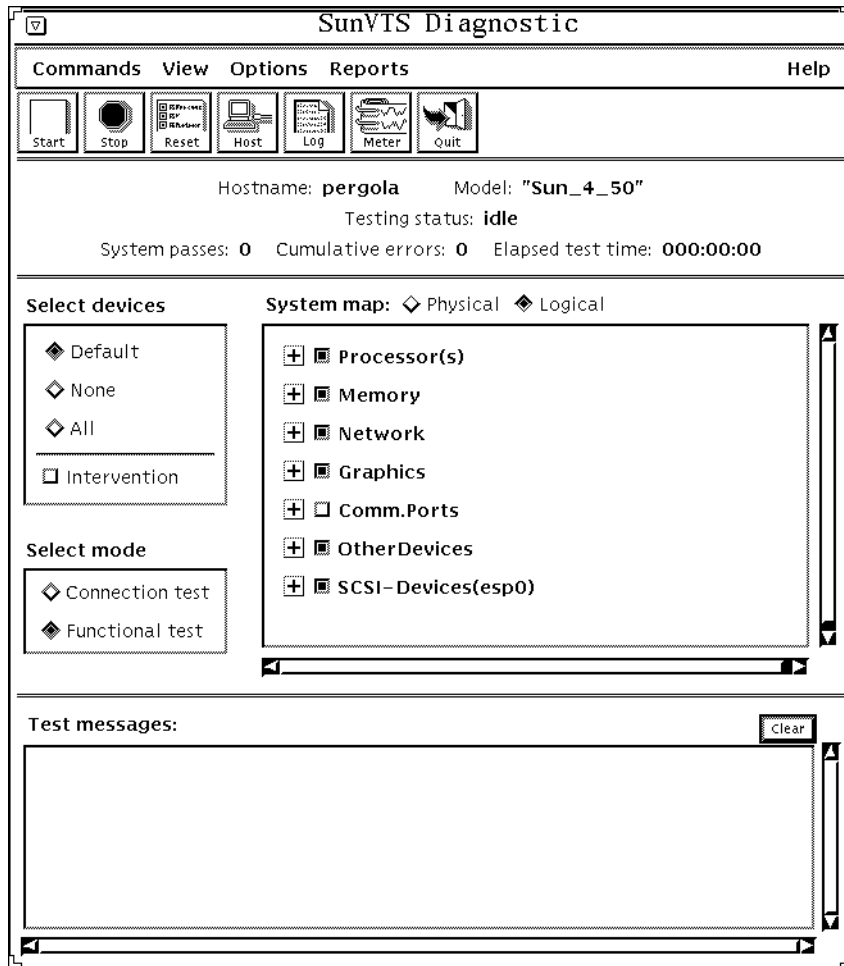
FIGURE 1-1   CDE SunVTS Diagnostic Window

SunVTS Test Modes

A SunVTS test session runs in one of two test modes – *Connection test mode* and *Functional test mode.*

In addition, Functional test mode runs differently based on whether SunVTS was invoked to run on a system in an *offline* or *online* state. TABLE 1-1 describes these differences. Chapter 3 describes how to start SunVTS in the different system states.

TABLE 1-1   SunVTS Test Modes

System State	Connection Test Mode	Functional Test Mode
`Offline`: No applications are running; all system resources are available for a test session; This is the default, assumed system state	Performs a low-stress, quick test to verify the availability and connectivity of the tested device; This mode is non-intrusive in offline and online states	In the offline state, performs robust testing that uses whatever system resources are required for thorough testing; All test options are modifiable for test refinement
`Online`: Other applications are running; the test session must not interfere with them; The SUNWodu package must be installed; SunVTS must be started through SyMON or with the `vtsui.online` command	Same as above	In the online system state, performs non-intrusive functional testing by running in a restricted fashion. Many test options are "fixed" to prevent modifications that could alter the non-intrusive test behavior

Note - Not all tests run in all test modes. For test specific information refer to the *SunVTS 3.3 Test Reference Manual.*

Note – As of SunVTS 3.0, access to SunVTS online testing is no longer available through SyMON. Use the `vtsui.online` command to start SunVTS on an online system.

SunVTS Architecture

The SunVTS architecture is divided into three components: the SunVTS kernel, the user interface, and the collection of hardware tests. FIGURE 1-2 is a block diagram representing the SunVTS architecture.
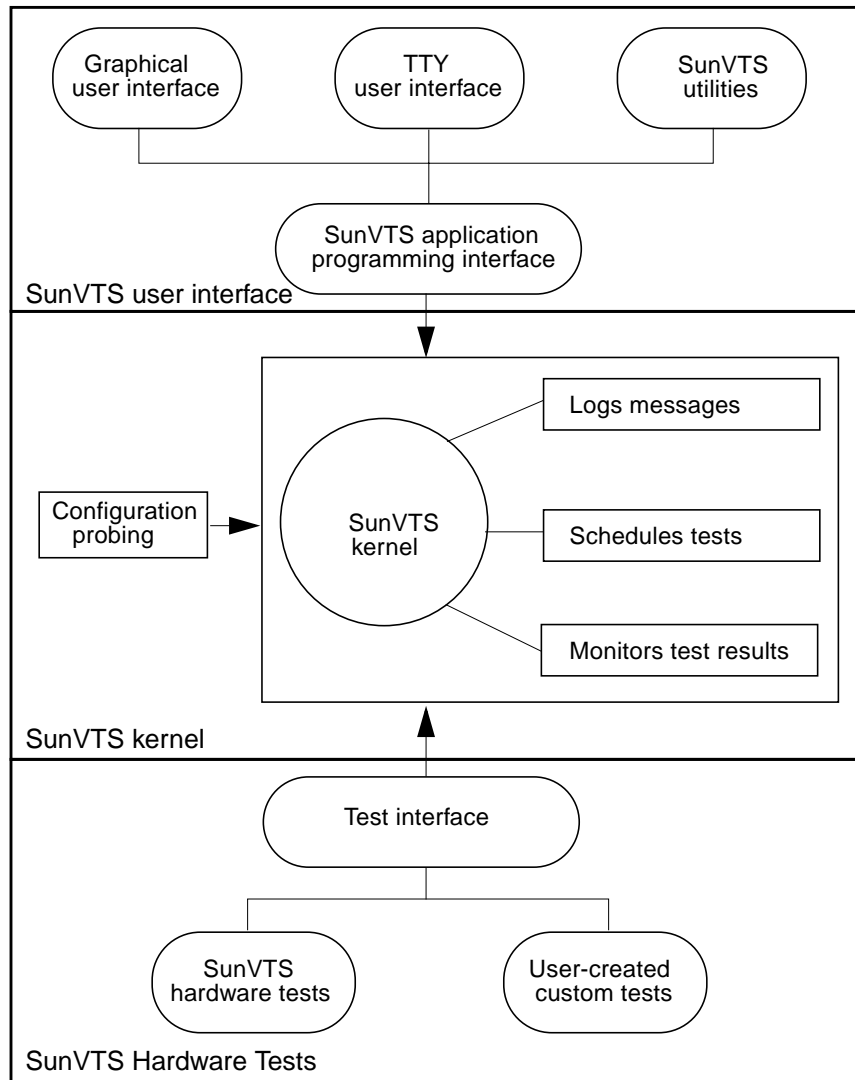
FIGURE 1-2   SunVTS Architecture

SunVTS Kernel

The following activities are scheduled and monitored by the kernel:

- Probing and saving the test system's hardware configuration at start-up
- Logging messages reported from tests
- Maintaining the status of all running tests
- Monitoring the status requests and controls the commands from a user interface or other applications
- Scheduling the tests that are enabled by the user
- Running as a background process (daemon)

There are two versions of the SunVTS kernel:

- 32-bit kernel: `/opt/SUNWvts/bin/vtsk`
- 64-bit kernel: `/opt/SUNWvts/bin/sparcv9/vtsk`

SunVTS User Interface

The SunVTS user interface is separate from the SunVTS kernel. The user interface communicates with the SunVTS kernel through an application programming interface (API). This gives SunVTS the ability to run the appropriate interface (CDE, OPEN LOOK, or TTY) based on the environment of the system. It also allows the user interface to run on a system other than the system under test.

SunVTS Hardware Tests

Many separate tests make up the collection of tests in the SunVTS application. Each test is a separate process from the SunVTS kernel.

When SunVTS is started, the SunVTS kernel automatically probes the system kernel to determine the installed hardware devices. Those 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 in the SunVTS interface.

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*

Note – If you use the `sunvts` command to run SunVTS with a user interface (not from the command line), SunVTS will automatically allocate 32-bit or 64-bit tests based on the 32-bit or 64-bit Solaris operating environment that is running.

If you are not sure which version (32-bit or 64-bit) operating system is running, refer to the *Solaris 7 System Administration* manuals. On Solaris 7 the following command can be used to identify the application support of your system.

```
# isainfo -v
```

Note – The `isainfo` command is not present on systems running Solaris 2.6 or earlier revisions.

Installing and Removing SunVTS

This chapter describes how to install and remove the SunVTS™ diagnostic program.

- "SunVTS Packages" on page 9
- "Setting up Access to the SunVTS Man Pages" on page 13
- "Installing SunVTS" on page 10
- "Removing SunVTS" on page 15

SunVTS Packages

Sun delivers software products in a form called a *package*. There are four packages and a README file that support SunVTS:

- SUNWvts—contains the SunVTS kernel, user interface, and the collection of 32-bit binary tests. This is the main diagnostic package. You must install it before running SunVTS.

- SUNWvtsx—an extension package that provides SunVTS 64-bit binary tests and kernel. This package should be loaded on systems that support 64-bit execution, but it is not necessary for SunVTS 32-bit functionality.

- SUNWodu—contains SunVTS online diagnostic utilities for testing systems that are in an online state.

- SUNWvtsmn—contains the SunVTS man pages (`vtsprobe.1m vtstty.1m vtsui.ol.1m vtsk.1m` and `vtsui.1m`). These files are installed in the `/opt/SUNWvts/man` directory by default. They are optional; however, they provide helpful information about SunVTS commands.

- SunVTS `README` file—is a text file that can be found in the SUNWvts directory once the SUNWvts package is installed. It provides brief descriptions of issues related to each release of SunVTS.

These packages are located on the Sun Computer Systems Supplement CD that ships with the Solaris™ release.

Installing SunVTS

There are several utilities available for installing packages. This chapter describes how to use the `pkgadd` utility to load SunVTS from a local CD-ROM drive. For information on how to install packages using `swmtool`, see the *Solaris 7 8/99 Sun Hardware Platform Guide.*

Installation Requirements

- Your Solaris environment must be installed and booted to the multiuser level.
- You must be superuser.
- There must be at least 35-Mbytes of available disk space in the partition where SunVTS will reside. The `/opt` directory is the default installation location.

Note – SunVTS revision 3.3 was first introduced, and designed to run in the Solaris 7 8/99 operating environment.

▼ To Install SunVTS With the `pkgadd` Command

1. **Log in to the system and become superuser.**

   At the prompt, type:

   ```
   ariela% su
   ```

2. **Check to see if any SunVTS packages are currently loaded on the system:**

   At the prompt, type:

   ```
   # pkginfo | egrep 'SUNWvts|SUNWodu'
   ```

   If the system does not display anything then *no* SunVTS packages are installed and you can proceed with the installation.

   If you see any messages such as the following message, then SunVTS *is* installed and you should read the note below:

   ```
   system        SUNWvts          SunVTS
   ```

   Note – Multiple versions of SunVTS should never be installed in the same directory. Use pkgrm to remove existing installations of SunVTS before reinstalling SunVTS. See "Removing SunVTS" on page 15.

3. **Load the** *Sun Computer Systems Supplement CD* **into the CD-ROM drive.**

   Volume Manager will automatically mount the CD.

4. **Install SunVTS using** pkgadd **as shown in one of the examples below.**

   - The following command will load SunVTS in the default directory (/opt):

   ```
   # pkgadd -d /cdrom/cdrom0/Product SUNWvts
   ```

   - The following command will prompt you to enter the directory where SunVTS will reside instead of using the default (/opt) directory.

   ```
   # pkgadd -a none -d /cdrom/cdrom0/Product SUNWvts
   ```

5. **Answer the installation questions.**

> **Note –** You may see this warning:
> ```
> Warning: The <SUNWsycfd> package "Sun Enterprise SyMON Agent"
> is a prerequisite package and should be installed.
> ```
> This warning will *not* prevent the successful installation or execution of SunVTS.
> This error indicates that the configd program (part of the SUNWsycfd) is not
> present. The configd program is necessary for the physical mapping feature of
> SunVTS. Load the SUNWsycfd package if the physical mapping feature is desired.
> SUNWsycfd is located on the Sun Computer Systems Supplement CD.

6. **Install the SunVTS supporting packages that are appropriate for your configuration. (See "SunVTS Packages" on page 9 for more details.)**

```
# pkgadd -d /cdrom/cdrom0/Product SUNWvtsx SUNWodu SUNWvtsmn
```

> **Note –** Use the -a none again if you used it for the installation of SUNWvts.

7. **Verify the presence of the SunVTS packages:**

```
# pkginfo   SUNWvts SUNWvtsx SUNWvtsmn SUNWodu
system      SUNWodu         Online Diagnostic Utilities
system      SUNWvts         SunVTS
system      SUNWvtsmn       SunVTS Man Pages
system      SUNWvtsx        64-bit SunVTS
```

▼ Setting up Access to the SunVTS Man Pages

The SunVTS man pages are installed in the *SunVTS_install_dir*/man (/opt/
SUNWvts/man by default) directory. To access them, add this directory to your
MANPATH shell variable in the initialization file that corresponds to your login
shell (usually .profile for the Bourne and Korn shells or .login for the C shell).

The steps that follow assume that the default SunVTS installation directory (/opt/
SUNWvts) was used when the SunVTS packages were installed. If this is not the case,
adjust the instructions to use the directory where the man pages were installed.

1. **Using an editor, add the SunVTS man directory (**/opt/SUNWvts/man by
default**) to the MANPATH variable in the appropriate initialization file.**

   Bourne, Korn Shell example:

   ```
   MANPATH=/usr/share/man:/usr/man:/opt/SUNWvts/man;export MANPATH
   ```

   C shell example:

   ```
   setenv MANPATH /usr/share/man:/usr/man:/opt/SUNWvts/man
   ```

2. **Have the system read the modified initialization file by sourcing it (with the .
(dot) or** source **command) or log out and back in.**

3. **To verify that the SunVTS man directory is part of the MANPATH variable type:**

   ```
   # echo $MANPATH
   /usr/share/man:/usr/man:/opt/SUNWvts/man
   ```

Note – For more information about customizing a user's work environment, shell
variables, and initialization files, refer to the System Administration Guide,
Volume 1.

Additional Instructions for Localized Environments

SunVTS software is available in English, and is Internationalization (I18N) Level4 compliant, which means it is structured in a way that a user who is familiar with internationalization can take advantage of this feature to run SunVTS in a localized environment.

In a localized environment, you can run SunVTS in English *or* with localized fonts. Perform one of the two following procedures based on how you want SunVTS to run.

▼ To Run SunVTS in English, in a Non-English Environment

Set the `LANG` variable to English before you start SunVTS. The following is an example using the C-shell:

● **Set the `LANG` variable:**

```
# setenv LANG C
```

▼ To Set Up the GUI `resource` File for Localized Environments

1. **As superuser, create a directory as follows:**

```
# mkdir -p /opt/SUNWvts/lib/locale/LANG/app-defaults
```

Where *LANG* is the language code (for example, `ja` for Japan EUC, or `fr` for French) for the language that you are using.

2. **Copy the SunVTS Xresource (`Vtsui`) file into the directory you just created:**

```
# cp /opt/SUNWvts/lib/Vtsui  /opt/SUNWvts/lib/locale/LANG/app-
defaults
```

Note – The example above is based on installing SunVTS in the default (`/opt`) directory. If SunVTS is installed in different directory, adjust the pathnames accordingly.

3. **Customize the font definitions in the `Vtsui` file to accommodate font specifications required by your localized environment.**

Removing SunVTS

It is necessary to remove SunVTS before installing a new version. The following instructions describe how to remove SunVTS using the `pkgrm` command.

▼ To Remove SunVTS With the `pkgrm` Command

1. **Log in to the system and become superuser.**

At the prompt, type:

```
ariela% su
```

2. **Remove the packages with `pkgrm`:**

```
# pkgrm  SUNWvtsx SUNWvtsmn SUNWodu SUNWvts
```

Answer **y** (yes) to the removal questions.

You should see `Removal of <package_name> was successful.`

Starting SunVTS

This chapter contains information that describes:

SunVTS Runtime Considerations

- System load—before you run SunVTS™ on your system you should consider the added system activity created by SunVTS and consider its effect on users. Depending on the mode that you select, testing can add significantly to your system load or be quite minimal. Added load is desirable when using SunVTS for system stress testing and validation.

- Other applications—some SunVTS tests stress the system resources (such as virtual memory) to the point that other applications may not run. However, if you are running SunVTS online diagnostics, tests are restricted to run in a way that will not impact other applications.

- System functionality—SunVTS only runs when your system is fully booted to run level 3. SunVTS will not run from single-user (maintenance mode) nor from run level 0 (monitor mode).

- Superuser access—for security reasons, only superuser is permitted to run SunVTS unless the SunVTS security file is modified.

- Graphics Tests—running tests on frame buffers has two key considerations: You must not run any other application or screen saver program that uses the frame buffer. The frame buffer graphic tests print test patterns on the display. This temporarily prevents you from working in your window environment.

- Swap Space—the amount of swap space required for testing varies widely with individual hardware and software configurations. If an adequate amount of swap space is not available on your machine, a window pops up and displays the amount of additional swap space needed.

- Latest SunVTS news—refer to the `/opt/SUNWvts/README` file for the latest SunVTS updates.

Requirements

Your system must meet the following requirements to run SunVTS:

- The SunVTS packages must be installed on the systems on which you plan to run SunVTS. Refer to "Installing and Removing SunVTS" on page 9 for installation information.

- The system must be booted to the multiuser level.

- To run SunVTS with a graphical user interface (GUI), that GUI must be installed (either CDE or OPEN LOOK). Otherwise, run SunVTS with the TTY interface.

Overview of SunVTS Procedures

The following table describes the process for testing your system with SunVTS. The table provides a brief description, and references to more detailed information that is presented in this book.

TABLE 3-1   SunVTS Procedures

Step	Procedure	Description
1	Become superuser	Log in as root, or use `su` to become root (superuser). Other users can be granted SunVTS execution privileges by modifying the SunVTS security file (see "Controlling SunVTS Security" on page 115).
2	Determine the online or offline state of the SUT	SunVTS should be invoked differently based on the online or offline state of the system under test (SUT). Refer to "SunVTS Test Modes" on page 4 for online and offline descriptions.
3	Prepare devices for Testing	Load the required test media and loopback connectors. When testing your tape, CD-ROM, and diskette drives in Functional mode test media is required. Communication port tests require loopback connectors. Refer to "To Prepare Devices for Testing" on page 20.
4	Start your desired window environment	SunVTS can run in CDE, OPEN LOOK window environments or in TTY mode.
5	Start SunVTS	There are several ways to start the SunVTS application. You can start it with the `sunvts` command and it will use a default interface, or use an option to specify a specific interface. You can start the SunVTS kernel and interface separately. You can start it so that testing is restricted to running in an online state. You can use `vtsprobe` to have the kernel reprobe for devices. For more details refer to: –"To Start SunVTS on a Local System" on page 21 –"To Start SunVTS on a Remote System" on page 27 –"The vtsprobe Utility" on page 32
6	Set up SunVTS with the desired test session configuration	The method for doing this depends on the SunVTS interface that you are using: –"CDE User Interface" on page 36 –"OPEN LOOK User Interface" on page 56 –"TTY Interface" on page 77 –"Running a Test From the Command Line" on page 88 For descriptions of configuration features refer to Chapter 5, "SunVTS Test Environment".

TABLE 3-1   SunVTS Procedures *(Continued)*

Step	Procedure	Description
7	Run the tests	To run the tests, select the start button in the SunVTS interface. The testing process may take as little as one second, or run indefinitely, based on how SunVTS is configured.
8	Review the test results	Test results are displayed *real-time* in the SunVTS interface, and logged in three log files. You can also configure SunVTS to notify you by email.
9	Quit SunVTS	Refer to "To Quit SunVTS" on page 31 for more details.

To Prepare Devices for Testing

Several tests require the installation of media or loopback connectors. Install such requirements *before* the SunVTS kernel probes for devices (when SunVTS is started, or the reprobe function is run) to allow the SunVTS kernel to properly identify each device.

You must install media in these devices if you plan to test them in Functional Mode:

- Tape drive—load a *scratch* tape in the tape drive that you plan to test. The tape test has a Read-only mode, but use a scratch tape to avoid inadvertently writing over data.
- CD-ROM drive—load a compact disc (CD) into the drive. It can be an audio or data CD.
- Diskette drive—load a *scratch* diskette in the drive. The diskette test has a Read-only mode, but use a scratch tape to avoid inadvertently writing over data.
- Communication ports—many of these tests require a loopback connector attached to the port. Attach any required loopback connectors for the ports you plan to test. For more information about loopback connectors refer to the *SunVTS 3.3 Test Reference Manual.*
- Printer ports—require connection to a printer.

To Start SunVTS on a Local System

This section describes the common ways to start SunVTS:

- "Using the sunvts Command" on page 21
- "To Start SunVTS With the Default Interface" on page 22
- "To Start SunVTS With the CDE Interface" on page 23
- "To Start SunVTS With the OPEN LOOK Interface" on page 23
- "To Start SunVTS With the TTY Interface" on page 24
- "Starting the SunVTS Kernel and Interface Separately" on page 24
- "Starting SunVTS to To Test an Online System" on page 26

Note – Do not use the ampersand (&) to run SunVTS in the background.

Using the `sunvts` Command

The common way to start SunVTS is to use the `sunvts` command. This command starts the SunVTS kernel, either the 32-bit or 64-bit version, and one of the SunVTS user interfaces, based on your system environment.

There are a variety of options that allow you to control how the kernel and user interface start. See TABLE 3-2 for details.

By default, only superuser on the SUT is permitted to run `sunvts` unless the `.sunvts_sec` is modified.

Note – The `sunvts` command starts SunVTS assuming that the SUT is in an offline state. All other system applications should be stopped.

The `sunvts` Command Syntax and Options

TABLE 3-2 The `sunvts` Syntax

`/opt/SUNWvts/bin/sunvts [-tqpvsel] [-o` *options_file*`] [-f` *logfile_directory*`] [-h` *hostname*`]`	
Argument	**Description**
`-e`	Disables the connection permission checking feature
`-f` *logfile_directory**	Specifies an alternative logfile directory other than the default directory `/var/opt/SUNWvts/logs`
`-h` *hostname*	Starts the user interface (`vtsui` or `vtstty`) on the local machine and tries to connect to the SunVTS kernel (`vtsk`) of the specified host machine. If *hostname* is the same hostname of the machine on which the tests are being run, `sunvts` starts the SunVTS kernel (`vtsk`). If `vtsk` is already running on the test system, the `sunvts` command ignores the `-o`, `-f`, `-q`, `-p`, and `-s` options
`-l`	Starts the OPEN LOOK user interface
`-o` *options_file*	Starts the SunVTS kernel with the test options loaded from the *options_file*; these options are saved by the user interface and are stored in the `/var/opt/SUNWvts/options` directory
`-p`	Starts the SunVTS kernel, but does not probe the test system's devices
`-q`	Automatically quits both the SunVTS kernel and the user interface when testing stops
`-s`	Automatically starts testing a selected group of tests; the flag must be used with the `-o` *options_file* flag
`-t`	Starts `vtstty`, a TTY-based program, instead of a GUI. If you do not specify this option and the system is running CDE, `sunvts` starts `vtsui`; or, if the system is running OPEN LOOK, `sunvts` starts `vtsui.ol`
`-v`	Displays version information from the SunVTS kernel and GUI

To Start SunVTS With the Default Interface

Type the following command:

```
# /opt/SUNWvts/bin/sunvts
```

The `sunvts` command determines if the system is running 32-bit or 64-bit Solaris[tm] and starts the corresponding 32-bit or 64-bit SunVTS kernel (`vtsk`).

As the kernel initializes, it probes the devices to determine the system configuration. It starts a user interface and passes the configuration information to the user interface.

The SunVTS user interface that starts is determined on the following criteria:

- When the CDE window manager (`DTWM`) is running, the default SunVTS GUI is CDE.
- When the OPEN LOOK window manager (`OLWM`) is running, the default SunVTS GUI is OPEN LOOK.
- If no window manager is running, then SunVTS starts the TTY mode interface.

Note – If you receive an error message such as:
```
connection to ":0.0" refused by server
Xlib: Client is not authorized to connect to Server
Error: Can't open display: :0.0
```
You may need to grant xhost permissions by typing: **xhost +**

For a list of command line options that can be used with the `sunvts` command refer to "The sunvts Syntax" on page 22.

To Start SunVTS With the CDE Interface

1. **Start CDE if it is not already running.**

2. **Use the** `sunvts` **command as shown:**

```
# /opt/SUNWvts/bin/sunvts
```

To Start SunVTS With the OPEN LOOK Interface

Use the `-l` option:

```
# /opt/SUNWvts/bin/sunvts  -l
```

To Start SunVTS With the TTY Interface

Use the -t option:

```
# /opt/SUNWvts/bin/sunvts  -t
```

To View SunVTS Revision Information

Use the -v option:

```
# /opt/SUNWvts/bin/sunvts -v
vtsui: SunVTS, 3.3
```

Note – SunVTS revision 3.3 was first introduced and designed to run in the Solaris 7 8/99 operating environment.

Starting the SunVTS Kernel and Interface Separately

The sunvts command starts both the SunVTS kernel and the user interface that is appropriate for your system. However, there are commands that you can use to start just the SunVTS kernel, or to specify a specific user interface.

To Start the SunVTS Kernel (vtsk)

The vtsk command starts the SunVTS kernel. You can use command-line options (see TABLE 3-3 below) to control the behavior of this command.

■ For systems running in the 32-bit Solaris environment, use the following command:

```
# /opt/SUNWvts/bin/vtsk
```

- For systems running in the 64-bit Solaris environment, use the following command:

```
# /opt/SUNWvts/bin/sparcv9/vtsk
```

The vtsk command-line syntax and options are listed below:

TABLE 3-3 The vtsk Syntax

/opt/SUNWvts/bin/vtsk [-epqsv] [-o *options_file*] [-f *logfile_directory*]	
Argument	**Description**
-e	Disables the connection permission checking feature
-f *logfile_directory**	Specifies an alternative to the default logfile directory (/var/opt/SUNWvts/logs)
-o *options_file*	Starts the SunVTS kernel with the test options saved in the *options_file*; these options are saved and stored in the /var/opt/SUNWvts/options directory
-p	Starts the SunVTS kernel, but does not probe test system devices
-q	Quits both the SunVTS kernel and the user interface when testing is complete
-s	Starts testing a selected group of tests; this flag must be used with the -o *options_file* flag
-v	Displays only the version information from the SunVTS kernel, vtsk; this option does not start the vtsk daemon

To Start a Specific SunVTS User Interface

In most cases, when you use the sunvts command, the appropriate SunVTS user interface is started. For situations when you want to start a specific user interface without starting the SunVTS kernel, use one of the following:

To start the CDE interface:

```
# /opt/SUNWvts/bin/vtsui
```

To start the OPEN LOOK interface:

```
# /opt/SUNWvts/bin/vtsui.ol
```

To start the TTY interface:

```
# /opt/SUNWvts/bin/vtstty
```

In all cases, the user interface attempts to connect to the SunVTS kernel.

Note – You do not need to be superuser to start a SunVTS user interface.

Starting SunVTS to To Test an Online System

If other applications are running, and you want to make sure that no tests interfere with these applications, you can start SunVTS with the vtsui.online command.

The syntax is:

```
# /opt/SUNWvts/bin/vtsui.online -h hostname
```

SunVTS will only permit non-intrusive testing by running tests in a restricted fashion. For more information on offline and online descriptions refer to "SunVTS Test Modes" on page 4 and "Offline and Online Testing" on page 92.

Note – The SUNWodu package must be installed.

Note – The vtsui.online command only works on systems that are supported by the Sun Enterprise SyMON agent (from the SUNWsycfd package).

To Start SunVTS on a Remote System

You can start, view, and control SunVTS testing sessions over a network. There are several ways to do it, but the desired effect is to have SunVTS display the SunVTS user interface on the *local system* (the system that you are on), while the SunVTS kernel is running and testing a *remote system* (connected via Ethernet, modem lines, and the like).

The following procedures are described in this section:

■ "To Connect the User Interface to a Remote System" on page 27
■ "To Run SunVTS Through a Remote Login" on page 29
■ "To run SunVTS Through telnet or tip (TTY Interface)" on page 30

Requirements

In addition to the normal SunVTS requirements (refer to "Requirements" on page 18), the following requirements must be met to run SunVTS on a remote system:

■ There must be network connectivity between the local and remote system.
■ The same revision of the SunVTS must be installed on both the local and remote system.

▼ To Connect the User Interface to a Remote System

1. **Modify the security file on the remote system to permit access from the local system.**

   Refer to "Controlling SunVTS Security" on page 115 for details.

2. **Type the following command:**

```
# /opt/SUNWvts/bin/sunvts -h remote_hostname
```

Replace *remote_hostname* with the hostname or IP address of the remote system.

The sunvts command starts the SunVTS kernel (vtsk) on the remote system, and starts the SunVTS user interface on the local system. The user interface connects to the kernel and the displays the test session of the remote system. Refer to FIGURE 3-1 below.

The term *system under test* (*SUT*) refers to the system running the SunVTS kernel, which is the remote system in this example.

SunVTS
user interface

SunVTS
kernel

Local System   Remote System
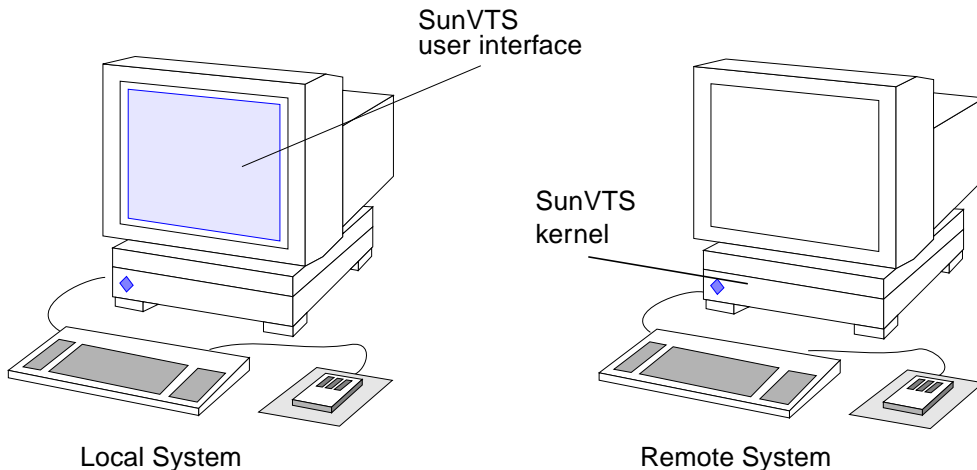
FIGURE 3-1 Running sunvts With the -h Option

Note – If the user interface is already running on your local system, you can use the "Connect to" button to connect to a remote machine's SunVTS kernel (See "To Use the Connect to Button" on page 64), provided that the security file is setup properly.

3. **Configure SunVTS for the test session and start the tests as described in the following sections:**

- "CDE User Interface" on page 36
- "OPEN LOOK User Interface" on page 56
- "TTY Interface" on page 77

4. **Review the SunVTS logs for test results.**

You can view the remote system test logs through the local SunVTS interface. The log files are stored on the system under test (SUT).

▼ To Run SunVTS Through a Remote Login

1. **Use the** `xhost` **command to allow the remote system to display on your local system.**

```
% /usr/openwin/bin/xhost + remote_hostname
```

Replace *remote_hostname* with the name of the remote system.

2. **Log in to the remote system as superuser.**

Use a command such as `rlogin`.

3. **Modify the security file on the remote system to permit access from the local system.**

Refer to "Controlling SunVTS Security" on page 115 for details.

4. **Start SunVTS:**

```
# /opt/SUNWvts/bin/sunvts -display local_hostname:0
```

Replace *local_hostname* with the name of the local system.

The SunVTS kernel starts on the remote system and the user interface displays on your system.

5. **Configure SunVTS for the test session and start the tests.**
   - "CDE User Interface" on page 36
   - "OPEN LOOK User Interface" on page 56
   - "TTY Interface" on page 77

6. **Review the SunVTS logs for test results.**

You can view the remote system test logs through the local SunVTS interface. The log files are stored on the system under test (SUT).

▼ To run SunVTS Through `telnet` or `tip` (TTY Interface)

You can run SunVTS on a remote system, with the TTY interface, through a `telnet` or `tip` session.

You need to set the correct terminal type and number of columns and rows *before* starting the interface. The steps below describe this process.

1. Use the `echo` command to display the value of the `TERM` variable:

This example, the `TERM` variable is a Korn or Bourne shell variable and the *value* is `sun-cmd`. Your display device may be something else like a Wyse, TeleVideo, or other kind of terminal. In this case your `TERM` value will be something different.

```
$ echo $TERM
sun-cmd
```

2. Use the `stty` command to display the settings of your terminal:

```
$ stty
speed 9600 baud; -parity hupcl
rows = 60; columns = 80; ypixels = 780; xpixels = 568;
swtch = <undef>;
brkint -inpck -istrip icrnl -ixany imaxbel onlcr
echo echoe echok echoctl echoke iexten
```

Note – You must have a minimum of 80 columns and 24 rows to run the SunVTS TTY interface.

3. Write down the values of your `TERM` variable and `rows` and `columns` settings.

You will need these values later.

4. Connect to the remote system using either the `telnet` or `tip` commands.

Refer to the `telnet(1)` and `tip(1)` man pages for more information about these commands.

5. Become superuser on the remote system.

6. **Identify your terminal type and settings in the** `telnet` **(or** `tip`**) session window:**

```
# TERM=sun-cmd
# stty rows 60
# stty columns 80
```

7. **Modify the security file on the remote system to permit access from the local system.**

   Refer to "Controlling SunVTS Security" on page 115 for details.

8. **Start SunVTS with the TTY interface:**

```
# /opt/SUNWvts/bin/sunvts -t
```

9. **Configure SunVTS for the test session and start the tests.**

   Refer to "Running SunVTS With the TTY Interface (Tutorial)" on page 143 and "TTY Interface" on page 77 for information on testing with the TTY interface.

10. **Review the SunVTS logs for test results.**

    You can view the remote system test logs through the local SunVTS TTY interface. The log files are stored on the system under test (SUT).

To Quit SunVTS

Before quitting SunVTS, you must stop any tests that are running. Some of the tests, such as the tape tests, do not stop immediately because they require time to rewind. You can stop any tests that are running as follows:

● **To stop testing from the CDE GUI toolbar, select the Stop button.**

● **To stop testing from the CDE GUI Commands pull-down menu, select Stop Testing.**

● **To quit SunVTS from the CDE GUI Commands pull-down menu, select the Quit SunVTS submenu and drag to display the following choices:**
   ■ `vts` kernel and `ui`—terminates the user interface and the SunVTS kernel
   ■ `vts` kernel—terminates only the SunVTS kernel
   ■ `vts ui`—terminates only the user interface

The `vtsprobe` Utility

Use the `vtsprobe` utility to display the results of the SunVTS kernel hardware device probe. `vtsprobe` lists all of the test machine's devices, their configuration information, and their corresponding hardware tests.

The SunVTS kernel must be running on the test machine for the `vtsprobe` command to work. See "Starting the SunVTS Kernel and Interface Separately" on page 24.

Any user or remote host that wishes to run `vtsprobe`, must be listed in the `.sunvts_sec` file. By default, root on the local host is listed. See "Controlling SunVTS Security" on page 115

▼ To Display the Devices for a Local System

● **Type the following command:**

CODE EXAMPLE 3-1   `vtsprobe` Example

```
example% /opt/SUNWvts/bin/vtsprobe

Processor(s)
    fpu(fputest)
    Architecture: sparc
    Type: TI TMS390Z50 SuperSPARC chip
    system(systest)
    System Configuration: sun4m SPARCstation 10 (1 X 390Z50)
    System clock frequency: 40 MHz
    SBUS clock frequency: 20 MHz
Memory
    kmem(vmem)
    Amount: 233580KB
    mem(pmem)
    Physical Memory size:48 Mb
Network
    isdn0(isdntest)
    le0(nettest)
    Host_Name: example
    Host Address: 131.155.56.122
    Host ID: 12347f61
    Domain Name: widget.com
```

```
SCSI-Devices(esp0)
    c0t0d0(rawtest)
    Logical Name: c0t0d0
    Capacity: 510.23MB
    Controller: esp0
    c0t0d0(fstest)
    Logical Name: c0t0d0
    Controller:esp0
    tape0(tapetest)
    Drive Type: Exabyte EXB-8200 8mm Helical Scan
Comm.Ports
    zs0(sptest)
    term/a & term/b
Graphics
    cgsix0(cg6)
    5000KB required for testing.
OtherDevices
    Controller:Intel 82077
    diskette(fstest)
    Logical Name: diskette
    Controller: Intel 82077
    sound0(audio)
    Audio Device Type: DBRI Speakerbox
```

▼ To Display Devices of a Remote System

Note – The SunVTS kernel (vtsk) must be running on the remote system, and the user or local host must be listed in the .sunvts_sec file on the remote system.

● **Type vtsprobe -h** *hostname*, **where** *hostname* **is the host name of the remote machine.**

The vtsprobe utility connects to the remote machine and displays the remote machine's hardware devices.

The output is displayed on the window in which you invoke vtsprobe.

SunVTS User Interfaces

Refer to one of the following sections based on the SunVTS user interface that you are using:

- "Overview of SunVTS User Interfaces" on page 35
- "CDE User Interface" on page 36
- "OPEN LOOK User Interface" on page 56
- "TTY Interface" on page 77
- "Running a Test From the Command Line" on page 88

Overview of SunVTS User Interfaces

SunVTS is designed to run with one of the following user interfaces:

- Window interfaces—either CDE or OPEN LOOK environments.
- TTY interface—an ASCII menu based interface used to operate SunVTS without a graphical user interface. You can run SunVTS from a terminal, a shelltool, or a modem attached to a serial port using the TTY interface.
- Command-line execution—run individual tests from the command line.

Note – The SunVTS OPEN LOOK user interface may not support the latest SunVTS features. For full feature support, use the SunVTS CDE or TTY interface. The SunVTS OPEN LOOK user interface will be sustained, but not enhanced, as long as OPEN LOOK is supported in the Solaris environment.

CDE User Interface

The SunVTS CDE interface is an easy-to-use graphical user interface (GUI) that provides a consistent look and feel across UNIX environments. For an example of the SunVTS display in the CDE environment refer to the following figure.

Note – To start SunVTS in the CDE environment refer to "Starting SunVTS" on page 17.

Note – For step by step instructions refer to "Running SunVTS With CDE (Tutorial)" on page 124.
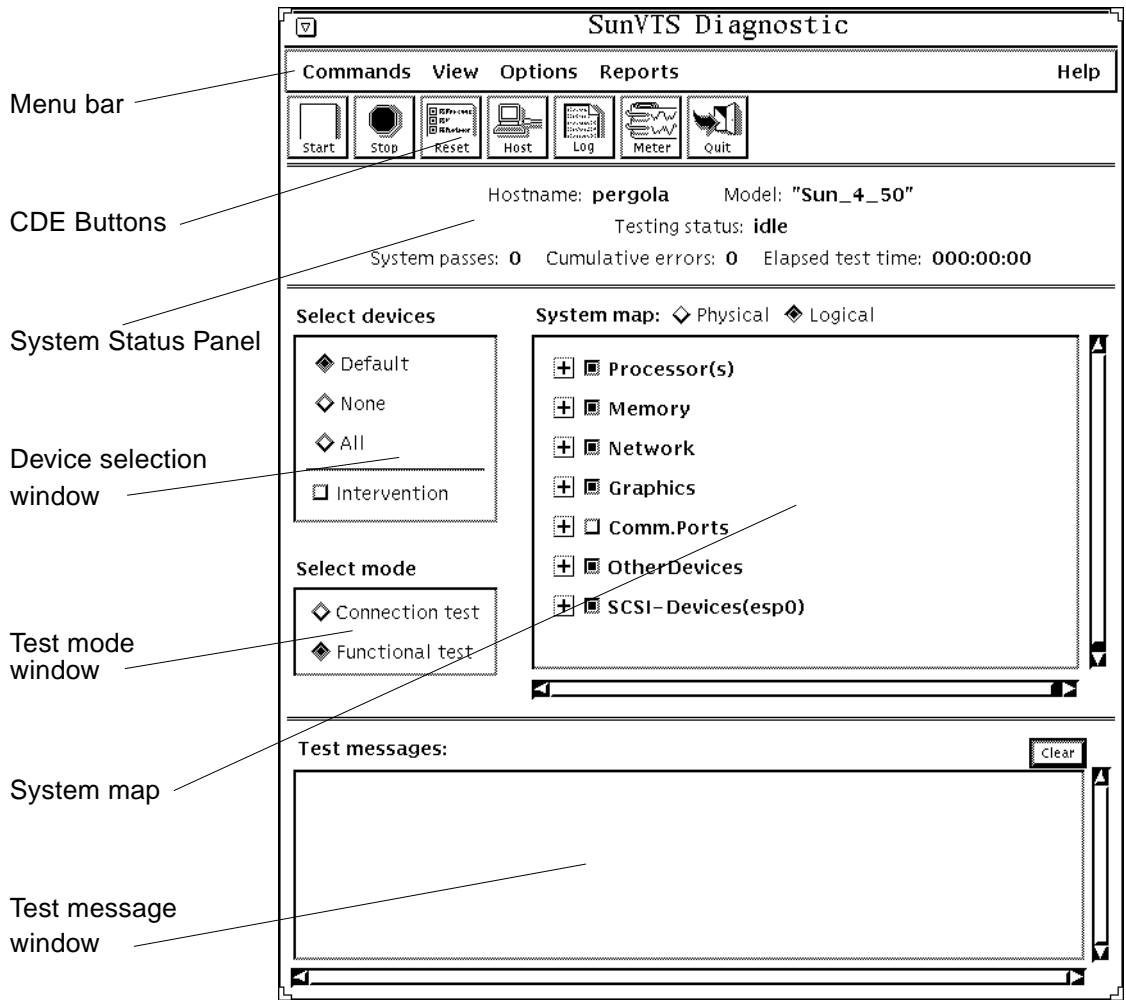
FIGURE 4-1 Common Desktop Environment (CDE) SunVTS Display

CDE Menu Bar

The menu bar is located the top of the main SunVTS display. (Refer to FIGURE 4-1 and FIGURE 4-2)

| Commands View Options Reports   Help |

FIGURE 4-2   CDE Menu Bar

The menu bar provides access to a variety of SunVTS commands:

- Commands menu—contains a list of SunVTS control commands
- View menu—expands or contracts the system map hierarchy
- Options menu—contains a list of the system option categories.
- Reports menu—lists the two types of viewable reports
- Help menu—provides SunVTS revision information

Detailed information about each Menu Bar function follows.

Commands Menu

From the Commands menu, you can set a variety of test parameters and functions (FIGURE 4-3).

TABLE 4-1 describes each item in the Commands menu.
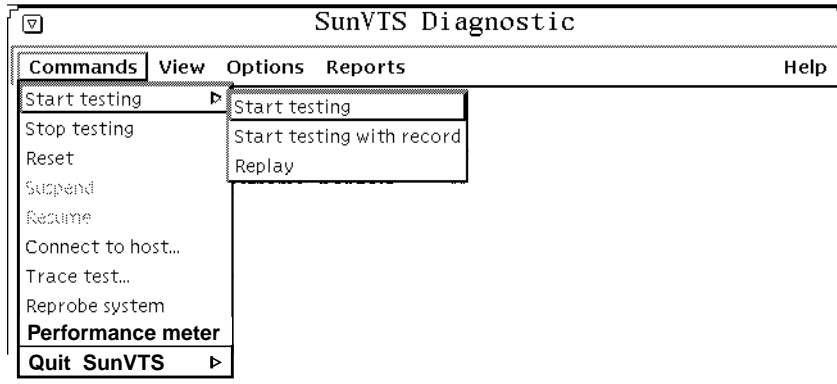
FIGURE 4-3   CDE Commands Menu

TABLE 4-1   CDE Commands Pop-up Menu

Menu Item	Description
Start Testing	Starts all enabled tests
Start Testing with record	Starts testing and records SunVTS kernel events
Replay	Replays the previous recorded test session
Stop testing	Stops all tests
Reset	Resets all pass and error counts
Suspend	Suspends all tests
Resume	Resumes testing
Connect to host	Connects user interface to the SunVTS kernel on another machine
Trace test	Uses the `truss` command to create a log of every system call made by a specific test. The messages logged by this feature give you a powerful debugging tool when isolating the specific cause of an error.

TABLE 4-1 CDE Commands Pop-up Menu *(Continued)*

Menu Item	Description
Reprobe system	`vtsk` reprobes the system. Refer to the note below.
Performance meter	Display the Perfmeter window for statistical information.
Quit SunVTS UI and kernel UI only Kernel only	Terminates the SunVTS user interface, the SunVTS kernel, or both.

Note – Reprobing the system is necessary when test media (CD-ROM or tape cartridges) are installed after SunVTS is started.
The reprobe function does not replace a reconfiguration boot for devices that are added to a system.

View Menu

Use the View menu (FIGURE 4-4) to choose the level of detail that you want to view in the system map.
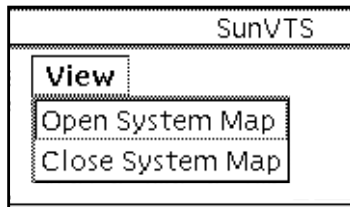
FIGURE 4-4 CDE View Menu

TABLE 4-2 CDE View Menu

Menu Item	Description
Open System Map	Expands and shows all the devices in the System Map
Close System Map	Collapses the view so that only major categories are displayed

Options Menu

The Options menu is where you set global SunVTS kernel and test options. See FIGURE 4-5 for the various option categories available for SunVTS.
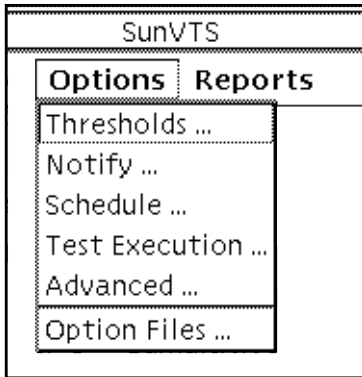
FIGURE 4-5   CDE Options Menu

To display the SunVTS Options pull-down menu, select Options. Each item in this list opens a pop-up window for configuring various test options (FIGURE 4-6). Each option is applied globally to subsequent test sessions.

After you select and change any options, click the Apply button.

To reset the options to their default settings, click the Reset button.

FIGURE 4-6 shows the sub-menus and TABLE 4-3 describes the SunVTS global options.

Options

- Thicksholds...
- Notify...
- Schedule...
- Test Execution...
- Advanced...
- Option Files...

Threshold Options

Options:

Max System Passes: ▲▼ I0

Max System Errors: ▲▼ I1

Max System Time: ▲▼ I0

[Apply] [Reset] [Cancel]

Notify Options

Options:

Send Email: ▽ Disabled

Email Address: Ivtstest@evan

Log Period: ▲▼ I500

[Apply] [Reset] [Cancel]

Schedule Options

Options:

Auto Start: enabled disabled

Single Pass: enabled disabled

System Concurrency: ▲▼ I0

Group Concurrency: ▲▼ I0

[Apply] [Reset] [Cancel]

Test Execution Options

Options:

Stress: ○ enabled ◉ disabled

Verbose: ○ enabled ◉ disabled

Core File: ○ enabled ◉ disabled

Run On Error: ○ enabled ◉ disabled

Max Passes: ▲▼ I0

Max Errors: ▲▼ I0

Max Time: ▲▼ I0

Num. of Instances: ▲▼ I0

Bound to:

Processor Affinity: Processor 10
Processor 11
Processor 14
Processor 15

[Apply] [Reset] [Cancel]

Advanced Options

Options:

System Override: ◉ enabled ○ disabled

Group Override: ◉ enabled ○ disabled

Group Lock: ○ enabled ◉ disabled

Test Lock: ○ enabled ◉ disabled

[Apply] [Reset] [Cancel]

Option Files

Option File:

Option File:

[Load] [Store] [Remove] [Close]

NOTE: Use arrows
to increase or decrease
option menu values.

FIGURE 4-6   CDE Options Pop-up Windows

TABLE 4-3   Options Menus

Option Menu	Option	Description
Thresholds	Max System Passes	States the maximum number of system passes before stopping all tests (0 causes the SunVTS kernel to run the tests until you click the Stop button)
	Max System Errors	States the maximum number of system errors before SunVTS stops all tests (0 causes the SunVTS kernel to continue testing regardless of errors)
	Max System Time	Specifies the maximum number of minutes that SunVTS continues testing (0 makes the SunVTS kernel run the selected tests until you click the Stop button)
Notify	Send Email	Determines when and if you want the test status messages sent to you by email. From this menu, you can choose: - Disabled (never send email) - Now (send email immediately) - On Error (send email when an error occurs) - Periodically (send email with a time period set in the `Log Period` option) - On Error & Periodically (send email periodically as well as when an error occurs)
	Email Address	Indicates the email address where the test status messages are sent (the address is `root` by default)
	Log Period	Specifies the time, in minutes, between sending test status email messages
Schedule	Auto Start	Eliminates the need to use the Start button to start a SunVTS testing session. To use this option: 1. Enable the Auto Start setting. 2. Save the System options and Test options to an option file (see "To Use the Option Files Button" on page 72 for more information). 3. Starts SunVTS from the command line, specifying the option file. SunVTS begins testing soon after the main window is displayed.
	Single Pass	Runs only one pass of each selected test
	System Concurrency	Sets the maximum number of test instances that can be run concurrently in the machine being tested
	Group Concurrency	Sets the number of tests you want to run at the same time in the same group
Test Execution	Stress	Runs certain tests in stress mode, working the system harder than normal

TABLE 4-3   Options Menus

Option Menu	Option	Description
	Verbose	Displays verbose messages in the SunVTS Console window
	Core File	Creates a core file. If the *<SunVTS bin>* directory is writable; `core.`*<testname>*.*xxxxxx* is the core file name, where *<testname>* is the test that dumped core, and where *xxxxxx* is a character string generated by the system in order to make the file name unique. When Core File is disabled, a message is displayed and logged, indicating the signal that caused the failure; see "The Log Files Button" on page 74 for more information
	Run On Error	Use the Max Errors option (described below)
	Max Passes	Specifies the maximum number of passes a test can run. 0=no limit
	Max Errors	States the maximum number of allowable errors before stopping the test (0 makes the SunVTS kernel continue testing regardless of errors)
	Max Time	States the time limit (in minutes) a test can run (0 = no limit)
	Number of Instances	Specifies the number of instances to run each scalable test
Advanced	System Override	Supersedes the specific group and test options in favor of the options set in a global options window; sets all options on all test group and test option menus
		Note: To save a set of options, use the Option Files window described in "To Use the Option Files Button" on page 72
	Group Override	Supersedes the specific test options in favor of the group options set in a group options window. the System override option supersedes this option
	Group Lock	Protects specific group options from being changed from the options set at the system level (the System Override option supersedes this option)

TABLE 4-3   Options Menus

Option Menu	Option	Description
	`Test Lock`	Protects specific test options from being changed from options set at the group or system level (the System Override and Group Override options supersede this option)
	`Processor Affinity`	Only available on multiprocessor systems; use to specify on which processor you want to run all tests. To select the specific processor, click the number. If no processor is specified, the operating system randomly distributes testing among all the processors. Note that when you use random distribution, you cannot verify that all processors have been tested
Option Files	Option Files	Creates an option file or selects a file from the Option File List, which can then be loaded, stored, or removed; For more information on option files see "Saving a Test Configuration" on page 102

Reports Menu

From the Reports pull-down menu, you can choose to view system configuration or log file reports (FIGURE 4-7).
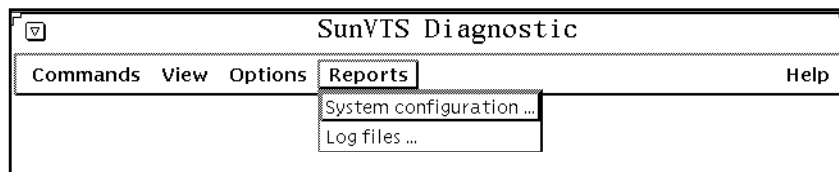
FIGURE 4-7   CDE Reports Menu

TABLE 4-4   Reports Menu

Sub Menu	Description
System configuration	Display and print the system configuration
Log files	Provides quick access to three test-related log files: `/var/opt/SUNWvts/logs/sunvts.err` `/var/opt/SUNWvts/logs/sunvts.info` `/var/adm/messages` For more information on log files refer "Reviewing Log Files" on page 108.

Help Menu

The Help menu is located at the far right side of the menu bar (FIGURE 4-2). Currently, the only information provided is the version of SunVTS.

CDE Buttons

The buttons are located below the menu bar (FIGURE 4-8). The buttons provide quick access to the most commonly used functions from the menu bar.

Each button is described below.
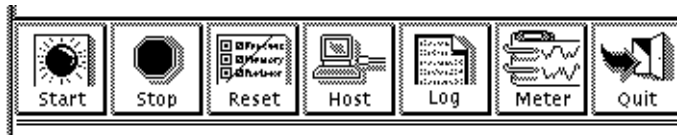
FIGURE 4-8   CDE Buttons

Start Button

Click the start button to begin testing. The tests that run depend on the configuration of SunVTS in the System map. When testing begins, the Start button dims and the System Status changes from *idle* to *testing*. The system map also displays the status for all active tests.

Stop Button

Click the Stop button to halt all active tests. The test results remain in the SunVTS display.

Note – Click the Stop button only once. Some tests do not stop immediately, so the System Status may take time to change from *stopping* to *idle*.

Note – If you click the Stop button when a test is hung, and the user interface appears frozen, you can override this by deselecting the hung test from the System map.

Reset Button

The Reset button sets the pass and error counts to zero, and reverts the test colors to black for each test in the System map. It also resets the system passes, total errors, and elapsed time to zero. This button only works when all testing has stopped.

Host (Connect to) Button

Use the Host button to display the Connect to Host window.

From this window (FIGURE 4-9) you can connect your SunVTS interface to another machine on the network that is running the SunVTS kernel. Once you are connected to the SunVTS kernel on the test machine, your display controls the SunVTS kernel on the remote system and all the test results are for tests run on the remote system.
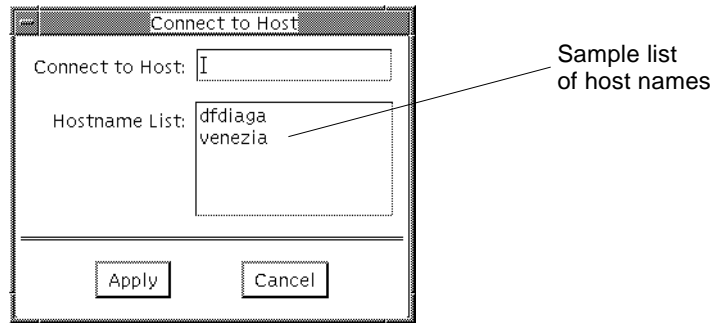
FIGURE 4-9   CDE Connect to Host Window

As you connect to various remote systems, SunVTS keeps track of those systems and displays them in the Hostname List. You can reconnect to one of those hosts by double clicking on the host name in this list, shown in FIGURE 4-9. The list is only maintained during your current SunVTS session (if you quit SunVTS, and start it again, the hostname list is reset).

Log Button

Use the Log button to display the log files pop-up window. From this pop-up window, you can view information about error log files, information log files, or UNIX message log files. You can either delete or print the displayed information, or you can close the pop-up window.
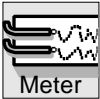
Meter Button

The Meter button displays the Perfmeter window which contains statistical information about the system. By clicking within the Perfmeter window, you can bring up the properties and modify which components are being monitored, how the Perfmeter window displays the information, the duration, or you can log the information. For more information on Perfmeter window, see the *Solaris User's Guide* or the *perfmeter*(1) man page in the *Reference Manual*.

Quit Button

Use the Quit button to quickly terminate the SunVTS user interface. The SunVTS kernel remains running. To quit the SunVTS kernel *and* user interface, use the Commands pull-down menu and select Quit SunVTS Kernel and UI.

CDE System Status Panel

The System Status panel (FIGURE 4-10) is located below the buttons and provides the following status information:

- Testing status—provides the following status of SunVTS:
  - *Idle* indicates that no testing is taking place
  - *Testing* indicates that SunVTS is running
  - *Suspend* indicates that testing is suspended
  - *Replay* indicates that a previously recorded session is displayed
  - *Stopping* is momentarily displayed as SunVTS stops testing
- System passes—displays the total number of successful system passes (a system pass is when all tests have been run once)
- Cumulative errors—reports the total number of errors from all tests
- Elapsed test time—indicates the total number of hours, minutes, and seconds that elapsed during testing

In addition, it includes the name and model number of the system under test.
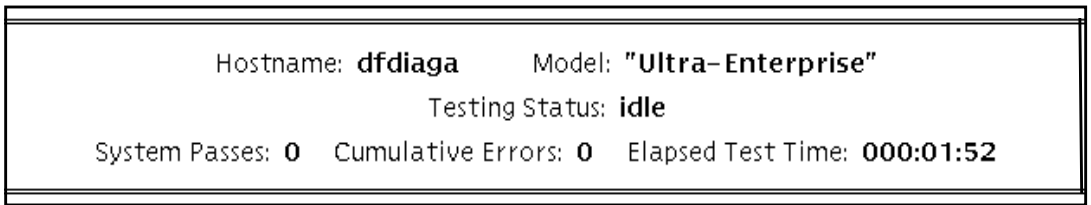
FIGURE 4-10 CDE System Status Panel

CDE System Map

The System map (FIGURE 4-11 and FIGURE 4-12) is used to display detailed information about the system under test. Scrollbars provide access to information that is beyond the window size. Such information includes:

- The devices that were identified by the SunVTS kernel probing. These devices are displayed in one of two ways:
  - Logical mapping (FIGURE 4-11)—organizes the list of devices, according to their function, into groups. For example, disk, tape, and CD-ROM drives are placed in the SCSI-Devices group. You can focus your testing on a specific group or on all of the groups on the system.
  - Physical mapping (FIGURE 4-12)—shows the exact location of each device on the system for Field Replaceable Unit (FRU) identification. From Physical mapping, you can determine the actual location of each device. When possible, the board number and controller type for the device are also displayed. This view is only supported on systems that have the `configd` program. See "To Install SunVTS With the pkgadd Command" on page 10 for more information.
- Each testable device and the name of the test used to test that device (when device groups are expanded), and access to device specific option menus.
  - A "+" (plus) indicates that the device group is *collapsed*, meaning individual devices are grouped together and hidden from view under a device category.
  - A "-" (minus) indicates that the device group is *expanded* so you see each individual testable device for a given category.
- Current state of the devices under test where:
  - Black indicates that the device is not tested
  - Green indicates that at least one test pass completed with no errors detected
  - Red indicates that at least one error has been detected

Mapping buttons

Group name   Device name   Test name   Window scroll bars
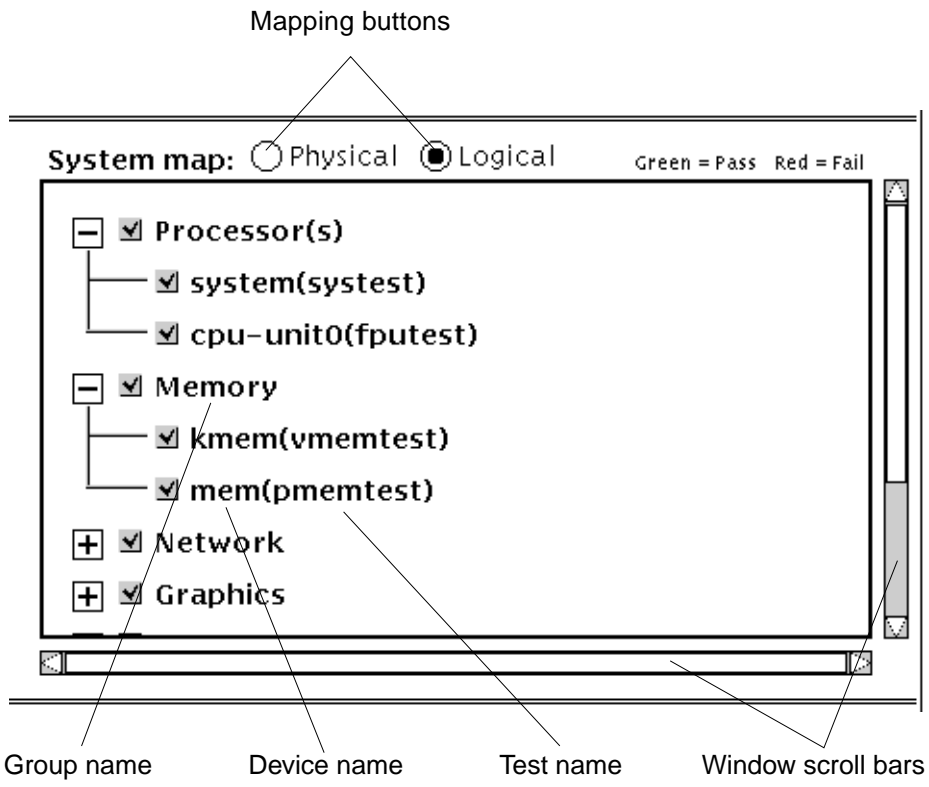
FIGURE 4-11 CDE System Map (Logical View)

Device-specific option menus

All groups expanded
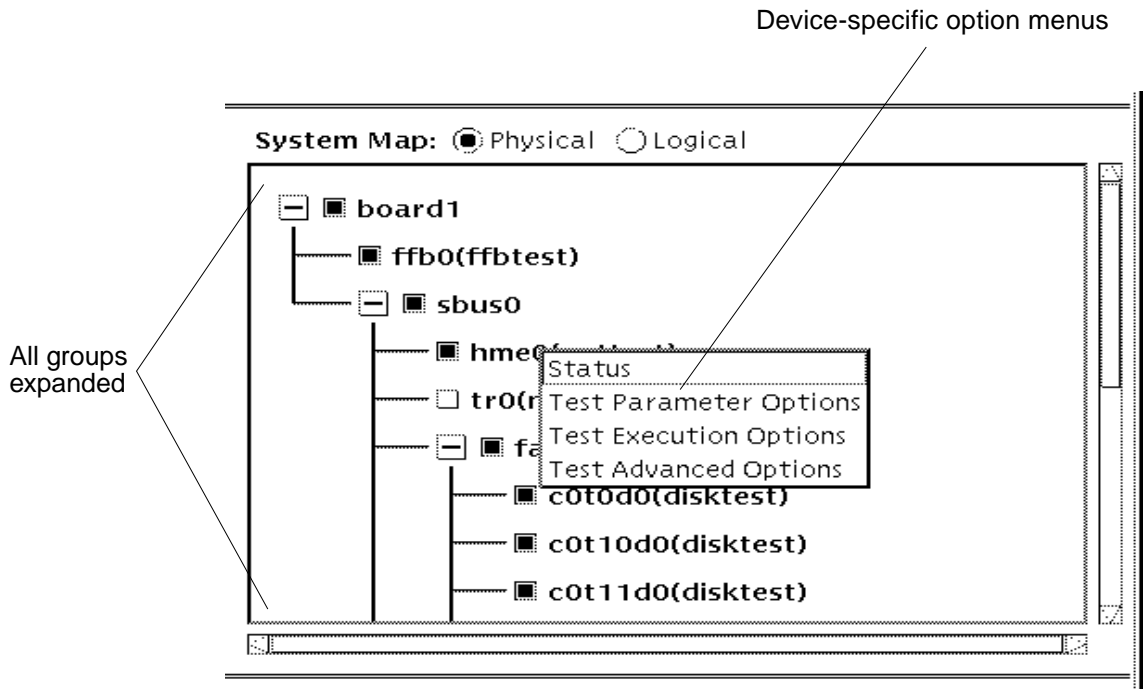
FIGURE 4-12 CDE System Map (Physical View)

▼ To Access the Device-Specific Option Menus

1. **Place the CDE pointer on the name of device that you want to access options for, hold the mouse menu button down, and click the menu you want to set up.**

   The option menus are described in TABLE 4-5 below.

2. **Set up the menu with the options you need and click Apply.**

Note – The Test Parameter Option menu provides Apply, Apply to Group, and Apply to All buttons. Refer to "Test-Specific Options" on page 99 for descriptions.

The Device-specific option menu provides access to test status information and three test option pop-up menus:

TABLE 4-5 Device-Specific Option Menu

Menu	Description
Status	Lists each test instance and a test pass and fail value for each instance
Test Parameter Options	Shows device configuration information and specifies test specific settings. This menu is different for each device. Refer to "Test-Specific Options" on page 99 and the *SunVTS 3.3 Test Reference Manual* for details.
Test Execution Options	Provides access to the same test execution options that can be set at the system level (See "Options Menu" on page 41) but these settings configure test execution for a specific device. The parameters are: ■ Stress—run the test for this device in stress mode, working the device harder than normal ■ Verbose—display verbose messages in the SunVTS Console window while device is tested ■ Core file—allows a failure to produce a core file for debugging, otherwise a message is displayed and logged indicating the signal that caused the failure ■ Run on Error—continue testing until the Max Errors number is reached ■ Max Passes—specifies the maximum number of test passes for this device (0=no limit) ■ Max Errors—states the maximum number of allowable errors before stopping the test for this device. A value of zero sets the SunVTS kernel to continue testing regardless of errors ■ Max Time—states the time limit, in minutes, that a test can run on this device. A value of zero enables testing with no time limit
Test Advanced Options	Provides a setting to "lock" the option settings for an individual device so that the system level setting will not affect the option setting for this test

▼ To Select Devices for Testing

Each device group and device has a checkbox. Refer to FIGURE 4-13.

● **Perform one of the following:**

■ Click the checkbox to place a checkmark in the checkbox. The checkmark indicates that the device or group is selected for testing. A blank box indicates that the device or group is not selected for testing.

■ Choose Default, None, or All in the Test mode selection window.

Note – Certain tests are not selectable until intervention mode is enabled. Refer to "Intervention" on page 96.
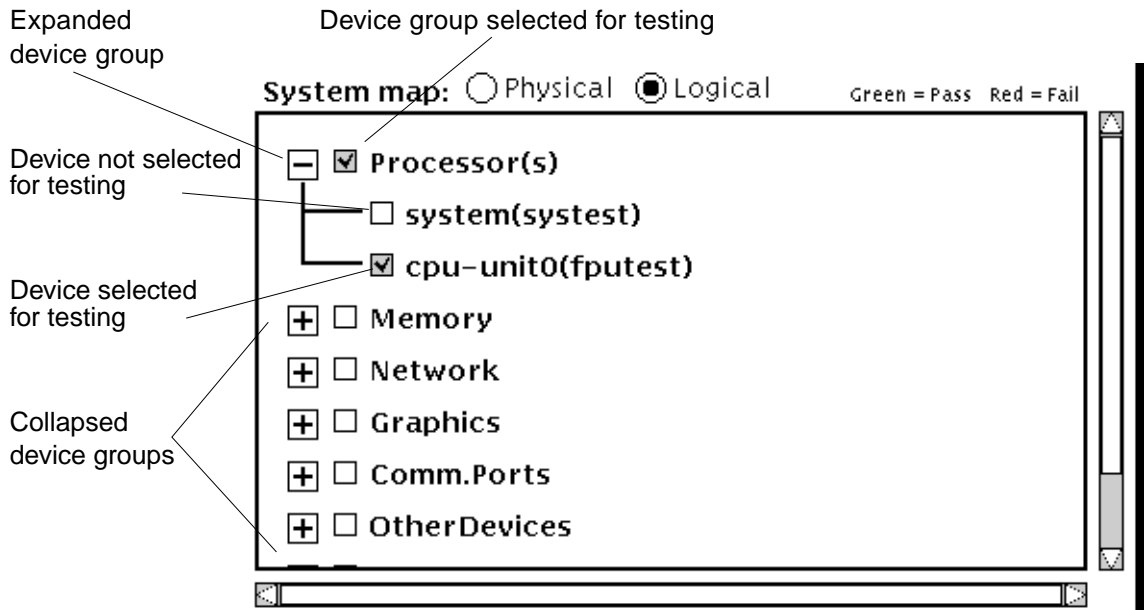
FIGURE 4-13 Viewing Devices in the System Map

▼ Viewing the Test Session Status in the System Map

The primary method of displaying pass and fail status uses color within the System Map window (see the outlined areas in FIGURE 4-14). During testing, the name of any device changes from black to green if it has at least one pass and no failures. The moment a device has at least one failure, it changes to red. This color information is propagated up an entire branch of the hierarchy, but keeps the System Map hierarchy closed.

A secondary level of status is the individual device pop-up window that displays the testing Pass and Fail counts for the device and its immediate subdevices. For the lowest level device, it displays the test status for that device and all of the test instances below it. You can choose devices that you want to monitor during testing, and you can display the corresponding status windows, which are dynamically updated during testing.

Note – The boxed regions in FIGURE 4-14 show areas that change color to indicate test status on color monitors. If you have a monochrome monitor, these changes cannot be detected; in this case, rely on the status pop-up windows.

● **View the System map any time during or after testing to identify pass/fail conditions.**
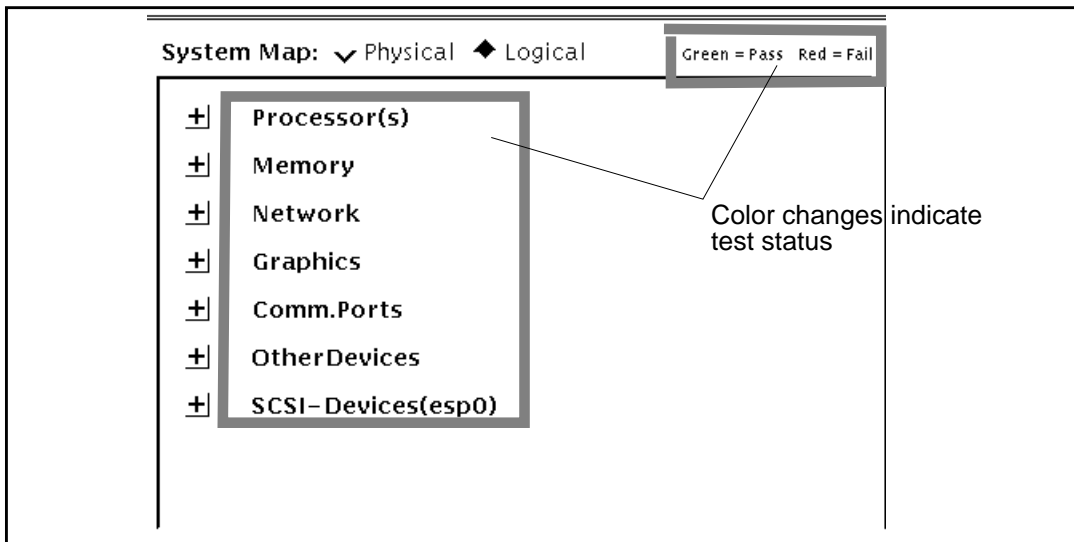
FIGURE 4-14 CDE System Map View for Test Status
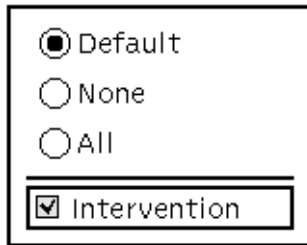
CDE Device Selection Region

The Device Selection region (shown in FIGURE 4-15) has buttons that control device selection. You can select a set of tests from the *default*, *none*, or *all* categories. The tests selected for the default category vary depending on the test mode (Functional or Connection), as well as the intervention mode (described below).

The intervention checkbox is used to enable the selection of certain tests. Devices like the comm-port, tape drive, CD_ROM, and diskette device tests require that you *intervene* before such devices can be selected for testing. These devices require the installation of media or loopback connectors (in Functional mode only).

Once the proper test media or loopback connector is in place, place a mark in the Intervention checkbox. These tests are now selectable.

Select devices

◉ Default
○ None
○ All
☑ Intervention

FIGURE 4-15 CDE Device Selection Region

CDE Test Mode Region

The buttons in this region control the SunVTS test mode (FIGURE 4-16):

- Connection test mode—provides a low-stress, quick testing of the availability and connectivity of selected devices. These tests are non-intrusive, meaning that they will release the devices after a quick test, and they will not place a heavy load on system activity.

- Functional test mode—provides more robust testing of your system and devices. It will use your system resources for thorough testing and it assumes that there are no other applications running.
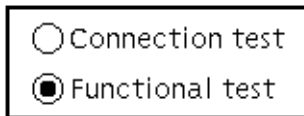
> **Note –** When SunVTS is started with the `vtsui.online` command, Functional test mode runs in a restricted fashion, only permitting tests and test options that are non-intrusive to be selected. For more information refer to "SunVTS Test Modes" on page 4.

For more information about test modes refer to "Test Modes" on page 92.

CDE Test Message Region

The Test Message Region contains test results and information. This panel is located at the bottom of the main window (FIGURE 4-17). Use the Clear button to clear this window.
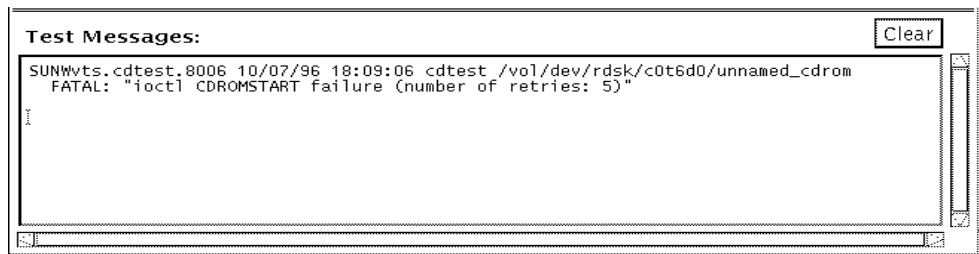
OPEN LOOK User Interface

The SunVTS OPEN LOOK user interface main window is shown below (FIGURE 4-18).

Note – To start SunVTS in the OPEN LOOK environment refer to Chapter 3, "Starting SunVTS".

Note – The SunVTS OPEN LOOK user interface may not support the latest SunVTS features. For full feature support, use the SunVTS CDE or TTY interface. The SunVTS OPEN LOOK user interface will be sustained, but not enhanced, as long as OPEN LOOK is supported in the Solaris environment.
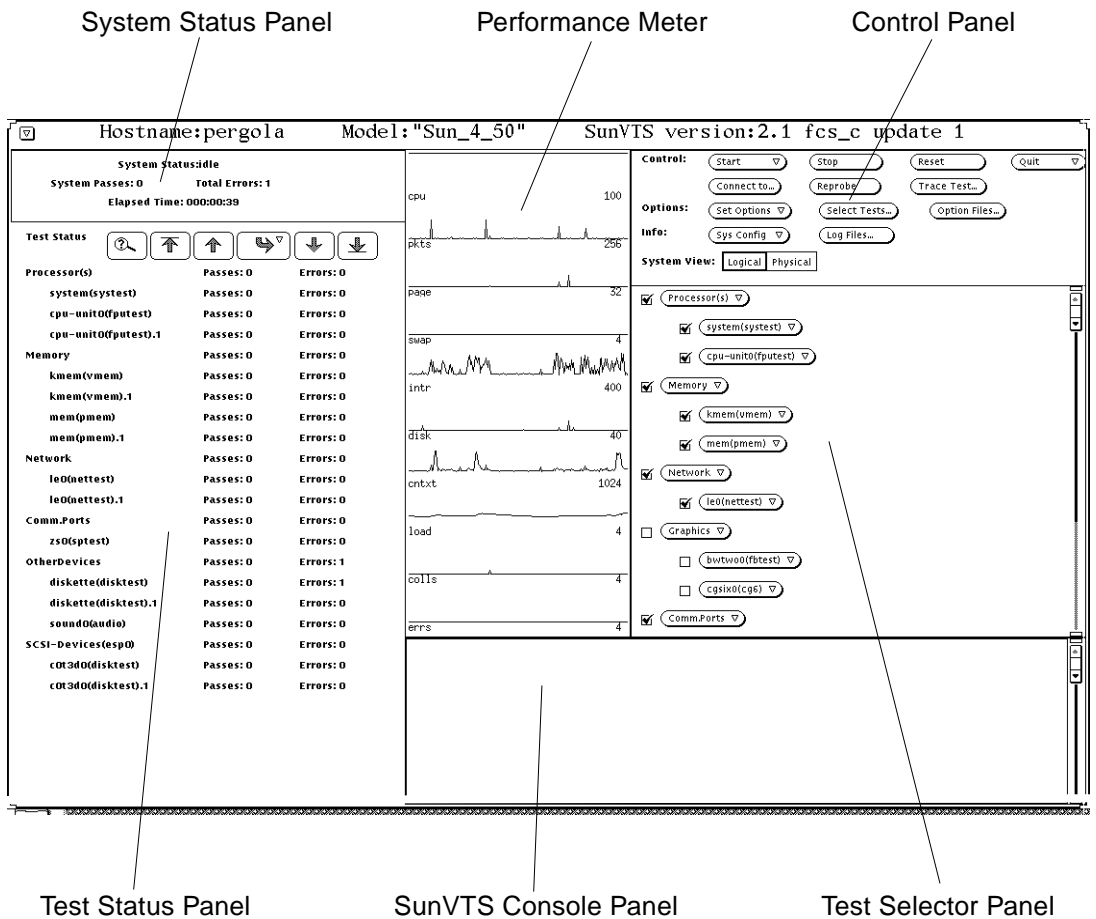
FIGURE 4-18 OPEN LOOK Main Window

OPEN LOOK System and Test Status Panel

The System and Test Status panel displays the test information. FIGURE 4-19 shows a typical System Status panel.
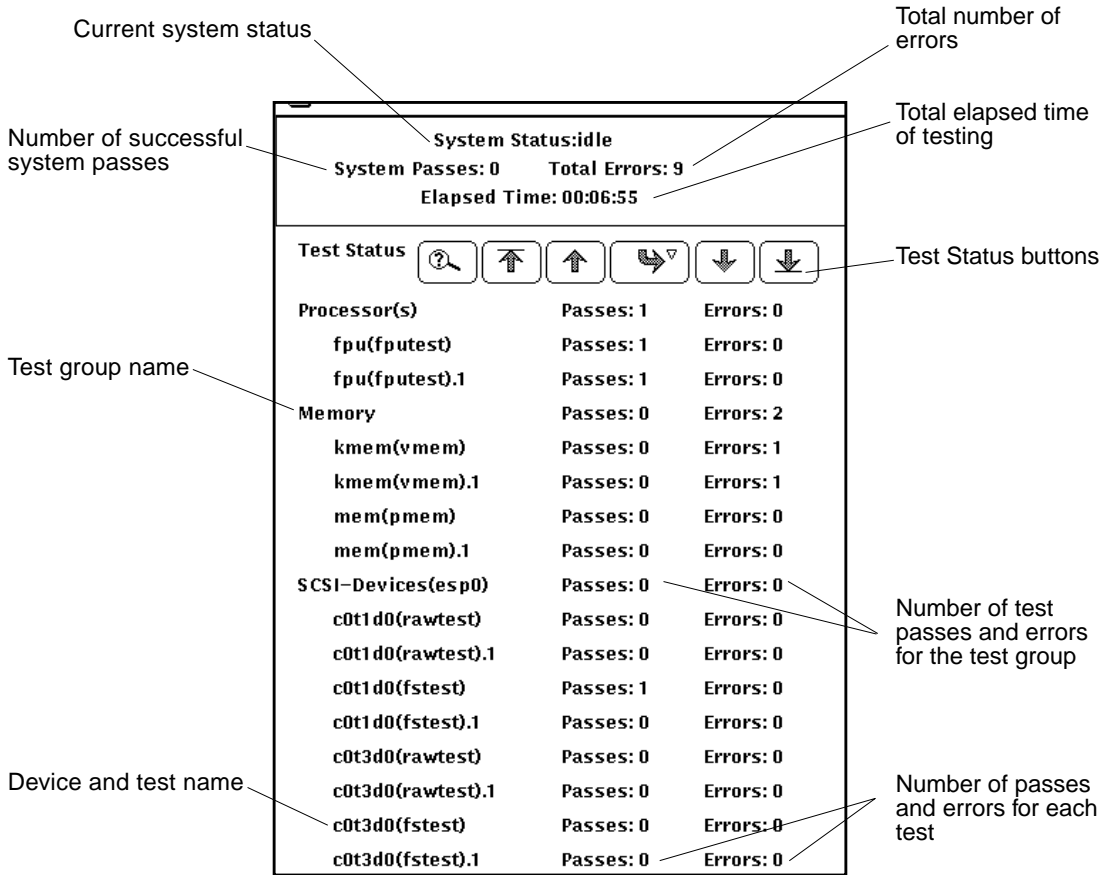
FIGURE 4-19 OPEN LOOK System Status Panel

Test Status Buttons

You can run more tests than can be displayed on the test status panel. For example, there may be as many as 100 disk drive tests running on a SPARCcenter™ 2000 system at one time. FIGURE 4-20 shows the Test Status buttons that you can use to view these tests.
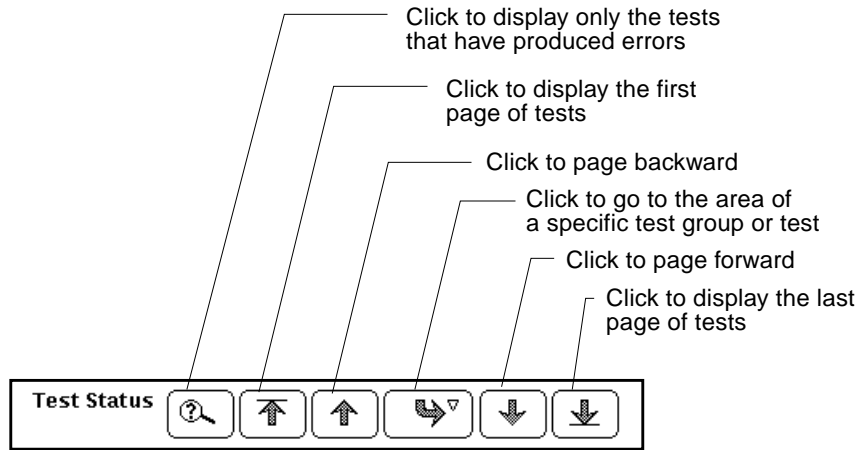
FIGURE 4-20 OPEN LOOK Test Status Buttons

FIGURE 4-21 shows how to go directly to a specific test or test group by clicking the curved arrow button and dragging right to display the pop-up menu.
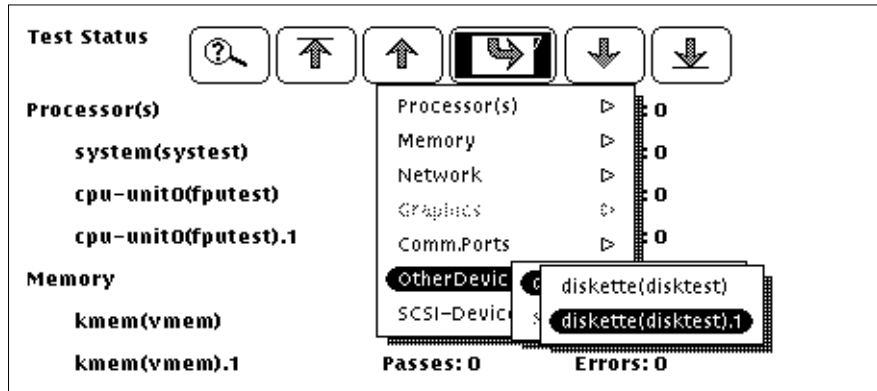
FIGURE 4-21 OPEN LOOK Test Status Button Menu

OPEN LOOK Performance Meter

The Performance Meter panel (FIGURE 4-22) shows a graphic display of the test system's performance statistics. This panel provides the same statistics as the UNIX `perfmeter` utility.
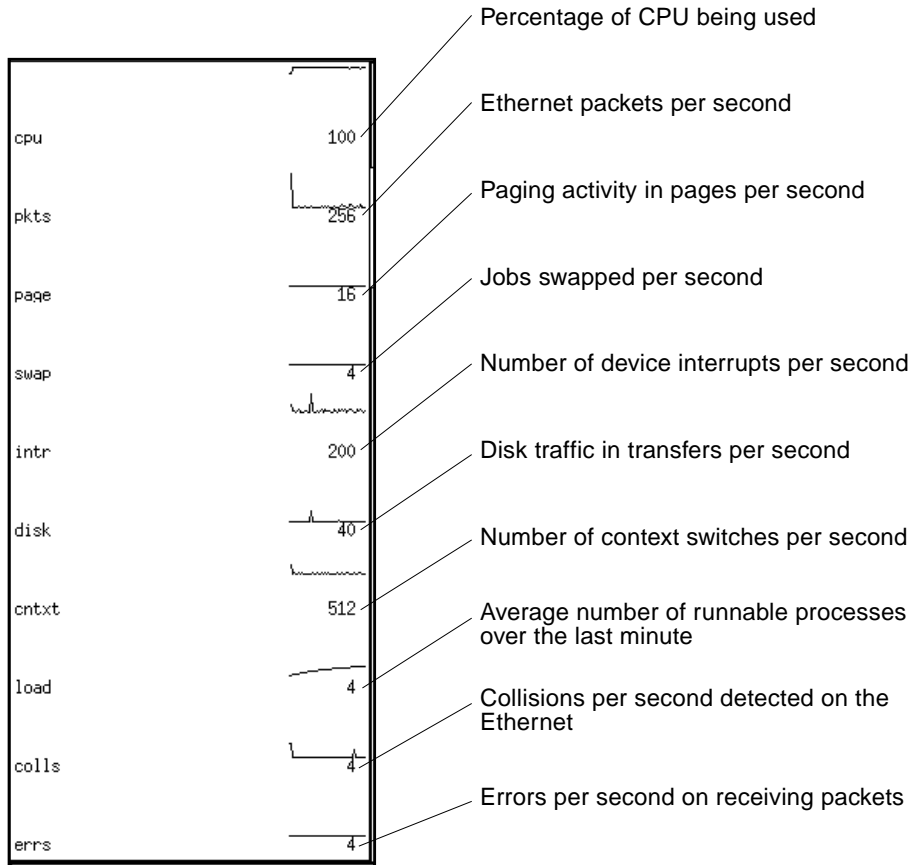
FIGURE 4-22 OPEN LOOK Performance Meter

OPEN LOOK Control Panel

You configure and control SunVTS by using the Control panel menus and buttons (FIGURE 4-23 and TABLE 4-6). Each control panel item is covered in detail below.
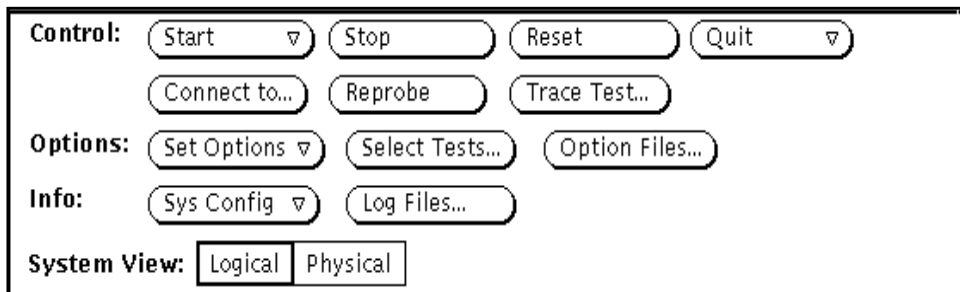
FIGURE 4-23 OPEN LOOK Control Panel

TABLE 4-6 explains each of the Control Panel selections.

TABLE 4-6 OPEN LOOK Control Panel

Selection	Button	Description
Control	Start	Starts all enabled tests
	Stop	Stops all tests
	Reset	Resets all pass and error counts and elapsed time
	Quit	Terminates the SunVTS user interface and／or the SunVTS kernel
	Connect to	Connects to another machine
	Reprobe	Reprobes the system
	Trace Test	Creates a log of every system call
Options	Set Options	Sets the global SunVTS kernel and test options
	Select Tests	Sets global test options
	Option Files	Saves the current settings from the global test options and specific test settings
Info	Sys Config	Displays or prints system configuration information
	Log Files	Displays the Log Files window
System View		Determines whether the view is logical or physical

The Start Button

From the Start button you can:

- Start all selected tests
- Start all selected tests with Record on
- Replay the previous test session

When testing begins, the Start button dims and the System Status changes from idle to testing. The test status panel displays the status for all active tests (see "CDE System Status Panel" on page 48.

If Start with Record is selected, the sequence of events that the SunVTS kernel goes through will be recorded. This lets you duplicate the same sequence of events again by selecting Replay the next time testing begins. This is helpful when trying to duplicate an error condition that is dependent upon the SunVTS kernel's sequence of events during testing.

The Stop Button

Click the Stop button to halt all active tests. The test results remain in the test status panel after testing is completed.

Note – Click the Stop button only once. Some tests do not stop immediately, so the System Status display may take time to change from stopping to idle.

Caution – If you click the Stop button when a test is hung, the user interface appears frozen. You can override this by deselecting these tests from the Test Option panel.

The Reset Button

The Reset button (FIGURE 4-24) resets the pass and error counts to zero for each test in the Test Status panel. It also resets the system passes, total errors, and elapsed time to zero. This button only works when all testing has stopped.
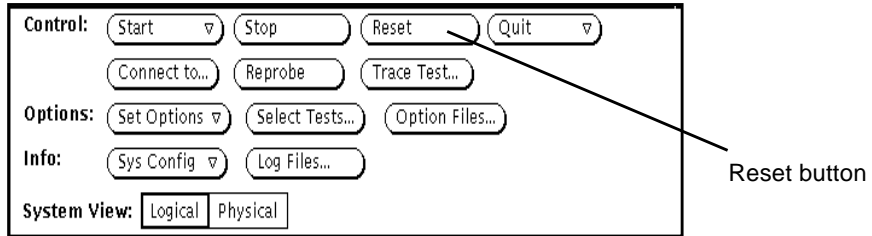
Reset button

FIGURE 4-24 OPEN LOOK Reset Button

The Quit Button

You can use the Quit button to terminate SunVTS in any of the following ways:

- Both the user interface and the SunVTS kernel
- Only the SunVTS kernel on the test system
- The user interface only

Terminating only the SunVTS kernel is helpful if you want to restart the kernel from the command line, or if you want to connect to another machine on the network.

If you select Terminate Kernel Only, the SunVTS user interface displays a message (FIGURE 4-25).
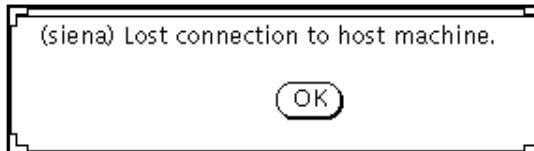
FIGURE 4-25 OPEN LOOK Terminate Kernel Only Window

The message notifies you that the connection to the host machine has been broken. The host name (shown in parentheses in FIGURE 4-25) is the name of the system where the SunVTS kernel terminated.

The Connect to Button

Use the Connect to button to connect your SunVTS user interface to the SunVTS kernel on another system.

▼ To Use the Connect to Button

1. Click the Connect to button to display the Connect to Machine pop-up window.
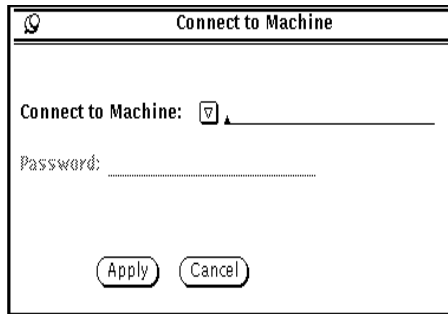
FIGURE 4-26 OPEN LOOK Session Connection Window

2. Type the host name of the machine you want to connect to and click Apply.

If a password is not required to connect to another machine the password field is disabled.

If you are setting up a machine with security restrictions that require a password, the password field will reappear after you click Apply. You can then type the password and click Apply again to make the connection.

Once you are connected to the SunVTS kernel on the test machine, you can view and control that system's testing status.

After you successfully connect to another system, you can use the Connect to Machine abbreviated pull-down menu button to display and select other machines.

The Reprobe Button

Use the Reprobe button to reprobe the hardware devices on the test system. This is usually only necessary if you intend to test your tape or CD-ROM drives and you have not install test media in them yet. In this case, install the test media and use the Reprobe button so the SunVTS kernel will establish the correct interfaces for those devices.

Note – When you click the Reprobe button, a window is displayed where you confirm this action.

Note – For devices that are newly added to your system, you must perform a reconfiguration boot so the Solaris kernel recognizes the new devices before the SunVTS kernel can recognize them.

The Trace Test Button

Use the System Call Tracing function to create a log of every system call made when a test is running. This feature logs the system calls using the standard `truss` UNIX command. The trace messages logged by this feature give you a powerful debugging tool when isolating the specific cause of an error. (See the `truss`(1) man page for more information.)

▼ To Use the Trace Test Button

1. **Choose one or more tests to be traced by selecting the test name from within the scrolling list (**FIGURE 4-27**).**
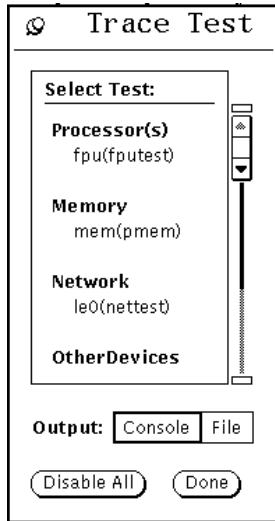
FIGURE 4-27 OPEN LOOK Trace Test Pop-up Window

You can only select test names; you cannot select test group names. Once a test is selected, system call tracing is immediately enabled. Therefore, if the test is already running when you select it, tracing begins immediately.

When a test is selected, the test name is highlighted in the list. In addition, a capital letter "T" appears next to the test name in the SunVTS Status panel (FIGURE 4-28). This "T" lets you see which tests are being traced.

FIGURE 4-28 OPEN LOOK Selected Trace Tests

2. **Click either Console or File at the Output selection switch in the Trace Test window.**

   Trace messages that are sent to a log file are placed in `/var/opt/SUNWvts/logs`.

   The system call trace messages are immediately redirected to either the console window or the log file.

   Note – Although you can select multiple tests, each traced test degrades system performance due to the large overhead involved when tracing a process. Consequently, select no more than three tests at one time. Be aware that if you decide to send the messages to the `sunvts.trace` log file, the log file size increases in size rapidly (approximately 1 Mbyte for each minute and a half of run time).

   ---

3. **Click the highlighted test name in the list displayed by the Trace Test window (**FIGURE 4-28**) to deselect a test to trace.**

   When a test is deselected, system call tracing stops immediately. However, several trace messages may continue to be displayed until the message buffer has been emptied.

   ### The Set Options Button

   From the Set Options window, you can set the global SunVTS kernel and test options for Thresholds, Notify, Schedule, Test execution, and Advanced. See FIGURE 4-29 for an overview of these options.

▼ To Use the Set Options Button

1. **Click the Set Options button to display the SunVTS Options window.**

2. **Drag to highlight and select from the various options, and click Apply. (See** FIGURE 4-29 **and** TABLE 4-7 **for a complete list and description of each available option)**
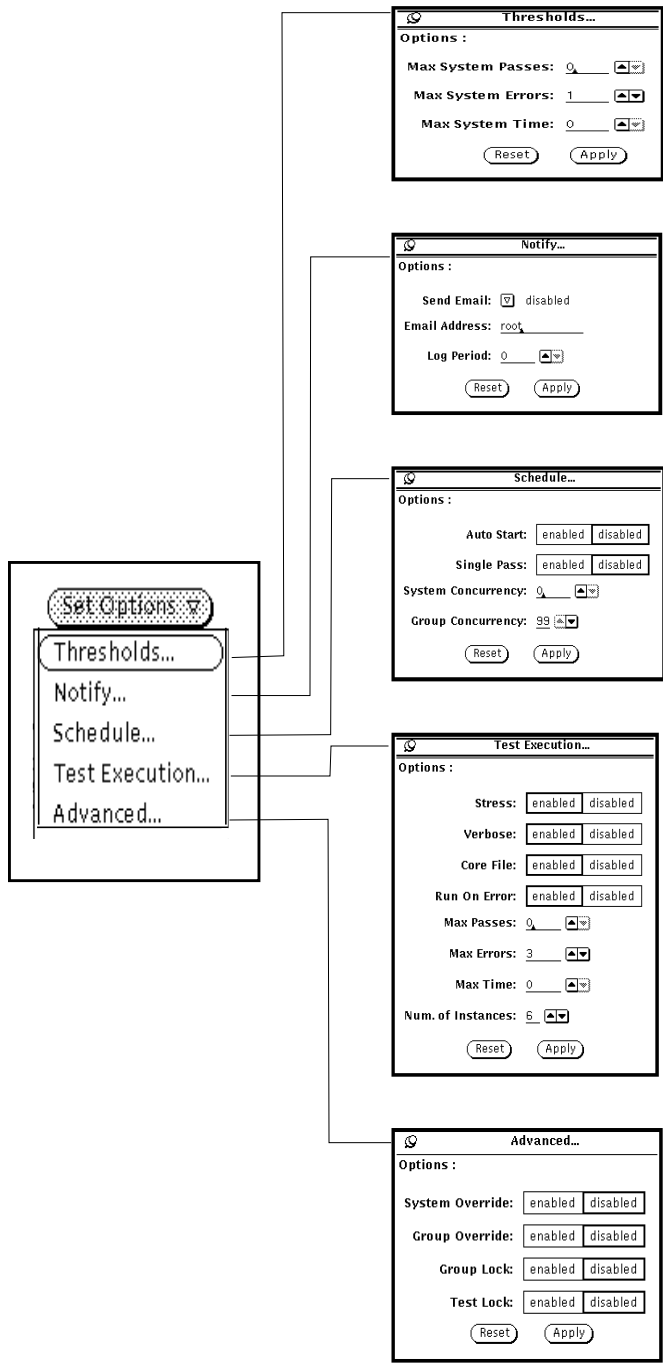
FIGURE 4-29 OPEN LOOK Options Windows

TABLE 4-7 OPEN LOOK Global Options Menu

Global Options	System Option	Description
Thresholds	Max System Passes	States the maximum number of system passes before stopping all tests (0 causes the SunVTS kernel to run the tests until you click the Stop button)
	Max System Errors	States the maximum number of system errors before SunVTS stops all tests (0 causes the SunVTS kernel to continue testing regardless of errors)
	Max System Time	Specifies the maximum number of minutes that SunVTS continues testing (0 makes the SunVTS kernel run the selected tests until you click the Stop button)
Notify	Send Email	Determines when and if you want the test status messages sent to you by email. From this menu, you can choose: - Disabled (never send email) - Now (send email immediately) - On Error (send email when an error occurs) - Periodically (send email with a time period set in the Log Period option) - On Error & Periodically (send email periodically as well as when an error occurs)
	Email Address	Indicates the email address where the test status messages are sent (the address is root by default)
	Log Period	Specifies the time in minutes, between sending test status email messages
Schedule	Auto Start	Eliminates the need to use the Start button to start a SunVTS testing session. To use this option: 1. Enable the Auto Start setting. 2. Save the System options and Test options to an option file (see "To Use the Option Files Button" on page 72 for more information). 3. Starts SunVTS from the command line, specifying the option file. SunVTS begins testing soon after the main window is displayed.
	Single Pass	Runs only one pass of each selected test
	System Concurrency	Sets the maximum number of test instances that can be run concurrently in the machine being tested
	Group Concurrency	Sets the number of tests you want to run at the same time in the same group
Test Execution	Stress	The amount of stress can be tuned by the number of test instances you select

TABLE 4-7   OPEN LOOK Global Options Menu *(Continued)*

Global Options	System Option	Description
	Verbose	Displays verbose messages in the SunVTS Console window
	Core File	Creates a core file. If the *<SunVTS bin>* directory is writable; `core.`*<testname>*.*xxxxxx* is the core file name, where *<testname>* is the test that dumped core, and where *xxxxxx* is a character string generated by the system in order to make the file name unique. When Core File is disabled, a message is displayed and logged, indicating the signal that caused the failure; see "The Log Files Button" on page 74 for more information
	Run On Error	Continues testing until the Max Errors number is reached
	Max Passes	Specifies the maximum number of passes a test can run
	Max Errors	States the maximum number of allowable errors before stopping the test (0 makes the SunVTS kernel continue testing regardless of errors)
	Max Time	States the time limit (in minutes), a test can run (0 = no limit)
	Number of Instances	Specifies the number of instances to run each scalable test
	Processor Affinity	Only available on multiprocessor systems; use to specify on which processor you want to run all tests. To select the specific processor, click the number. If no processor is specified, the operating system randomly distributes testing among all the processors. Note that when you use random distribution, you cannot verify that all processors have been tested.
Advanced	System Override	Supersedes the specific group and test options in favor of the options in this window; sets the options on the test group and test option menus Note: To save a set of options, use the Option Files window described in "To Use the Option Files Button" on page 72
	Group Override	Supersedes the specific test options in favor of the group options in this window
	Group Lock	Protects the specific group options from being changed in this window from the options set at the system level (the System Override option supersedes this option)
	Test Lock	Protects the specific test options from being changed in this window from options set at the group or system level (the System Override and Group Override options supersede this option)

The Select Tests Button

Use the Select Tests button to display the Select Tests window. This window provides access to global testing options such as the Test Mode (Connection Test Mode or Functional Test Mode), as well as test set selection and Intervention mode.

▼ To Use the Select Tests Button

1. Click the Select Tests button to display the Select Tests window (FIGURE 4-30**).**
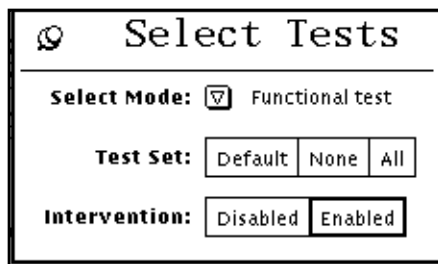
FIGURE 4-30 OPEN LOOK Select Tests Window

2. Select and pull down the Test Mode arrow so that your choice (Functional or Connection test mode) is displayed.

3. Select groups of tests (Default, None or All) from Test Set.

Note – Selecting None while tests are running stops the tests, but the System Status panel still displays the word testing, and the elapsed time indicator continues to increment. Click the Stop button to halt testing.

---

4. Select Disabled or Enabled for Intervention mode.

The following test categories require the enabling of Intervention mode:

- Tests of drives that require scratch media (tapes, CDs, and diskettes)
- Tests that require loopback connectors
- Tests for printers that require a printer to be connected
- Tests for communication ports that require loopback connectors

SunVTS cannot run these tests until you enable Intervention mode. This setting does not change the test function; it enables the selection of certain tests.

The Option Files Button

You can load, store or remove option files. Storing an Option file saves the current test settings to a file in the `/var/opt/SUNWvts/options` directory.

▼ To Use the Option Files Button

1. **Click the Option Files button to display the Option Files pop-up window (**FIGURE 4-31**).**
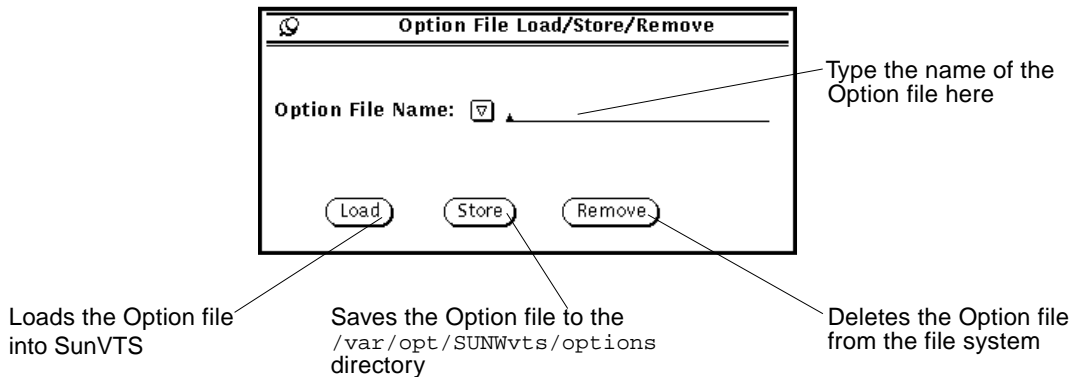
FIGURE 4-31 OPEN LOOK Option File Window

2. **Type the file name or select a file from the pull-down menu.**

3. **Load, store or remove the specified option file.**

The Sys Config Button
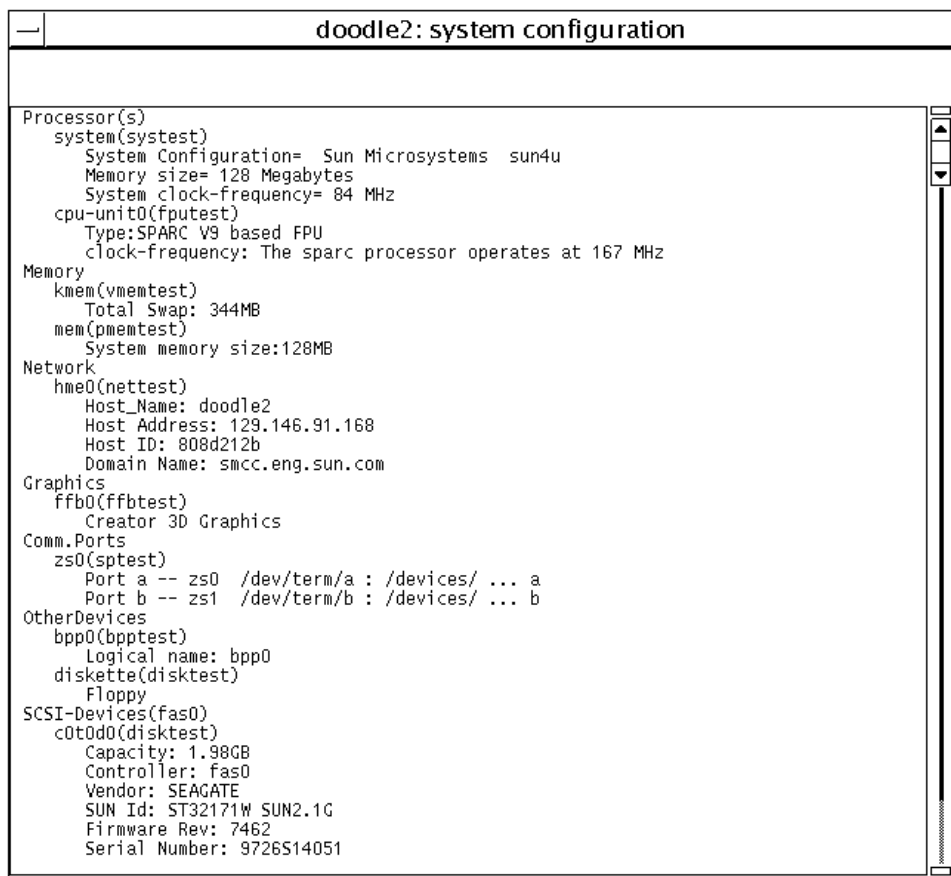
From the Sys Config menu, you can either display or print test system configuration information.

▼ To Display the Hardware Configuration of the Test System

1. **Click the Sys Config button to display the sys Config window.**

2. Select Display.

The Configuration window is displayed (FIGURE 4-32) listing all of the hardware on the test system and the corresponding hardware tests.


```
doodle2: system configuration

Processor(s)
    system(systest)
        System Configuration=  Sun Microsystems  sun4u
        Memory size= 128 Megabytes
        System clock-frequency= 84 MHz
    cpu-unit0(fputest)
        Type:SPARC V9 based FPU
        clock-frequency: The sparc processor operates at 167 MHz
Memory
    kmem(vmemtest)
        Total Swap: 344MB
    mem(pmemtest)
        System memory size:128MB
Network
    hme0(nettest)
        Host_Name: doodle2
        Host Address: 129.146.91.168
        Host ID: 808d212b
        Domain Name: smcc.eng.sun.com
Graphics
    ffb0(ffbtest)
        Creator 3D Graphics
Comm.Ports
    zs0(sptest)
        Port a -- zs0  /dev/term/a : /devices/ ... a
        Port b -- zs1  /dev/term/b : /devices/ ... b
OtherDevices
    bpp0(bpptest)
        Logical name: bpp0
    diskette(disktest)
        Floppy
SCSI-Devices(fas0)
    c0t0d0(disktest)
        Capacity: 1.98GB
        Controller: fas0
        Vendor: SEAGATE
        SUN Id: ST32171W SUN2.1G
        Firmware Rev: 7462
        Serial Number: 9726S14051
```

FIGURE 4-32 OPEN LOOK System Configuration Window

3. Select the Print option from the Sys Config menu.

The Print System Configuration window is displayed with your default printer (FIGURE 4-33).
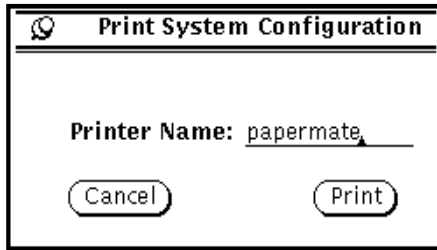
FIGURE 4-33 OPEN LOOK Print System Configuration

The Log Files Button

SunVTS saves the status of its progress in three log files:

- `/var/opt/SUNWvts/logs/sunvts.err` (SunVTS error status log)
- `/var/opt/SUNWvts/logs/sunvts.info` (SunVTS information log)
- `/var/adm/messages` (Solaris system message log)

The log file button provides easy access to each log file.

▼ To Access Log Files

1. Click the Log Files button (FIGURE 4-34**).**

Refer to "Reviewing Log Files" on page 108 for more details.
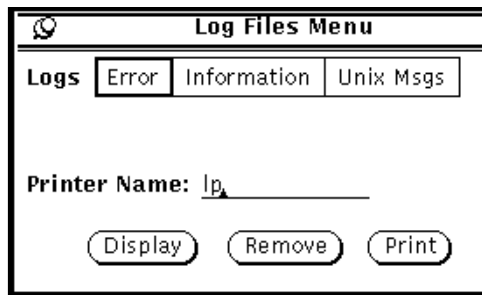
FIGURE 4-34 OPEN LOOK Log Files Menu

2. Click to select one category of the log files; Error, Information, or UNIX Msgs.

3. Type the name of the printer if you want to print a log file.

4. Select Display, Remove, or Print.

Choosing the System View

The System View is where you choose to display either the Logical or Physical view in the Test Status panel.
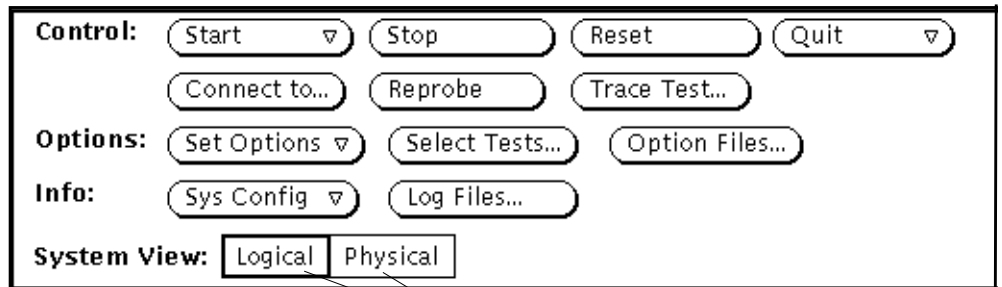
System view selections

FIGURE 4-35 OPEN LOOK System View Selections

Using the OPEN LOOK Test Selection Panel

From the Test Selection Panel (FIGURE 4-36), you can select and deselect the tests you want to run. You can also change individual test options.

FIGURE 4-36 OPEN LOOK Test Selection Panel

Note – Some tests can only be selected if you are running SunVTS in Intervention mode. See "Intervention" on page 96 for more information.

If you click on a test *group* [(Processor(s), Memory, Network, and so on], the test group's system option window is displayed and you are given three choices for viewing and setting test group options:

- Scheduling
- Test Execution
- Advanced

See TABLE 4-7 on page 69 for descriptions of these options.

If you click an *individual* test [pmem0 (pmem), cpu-unit (fputest), and so on], the test system option window is displayed and you are given three choices for viewing and setting individual test options:

- Test Options
- Test Execution Options
- Test Advance Options

Each of these windows is test-dependent and is described in the *SunVTS 3.3 Test Reference Manual*.

OPEN LOOK Console Panel

SunVTS error messages are displayed in the Console panel. This panel is located in the lower right part of the SunVTS main window (FIGURE 4-37).
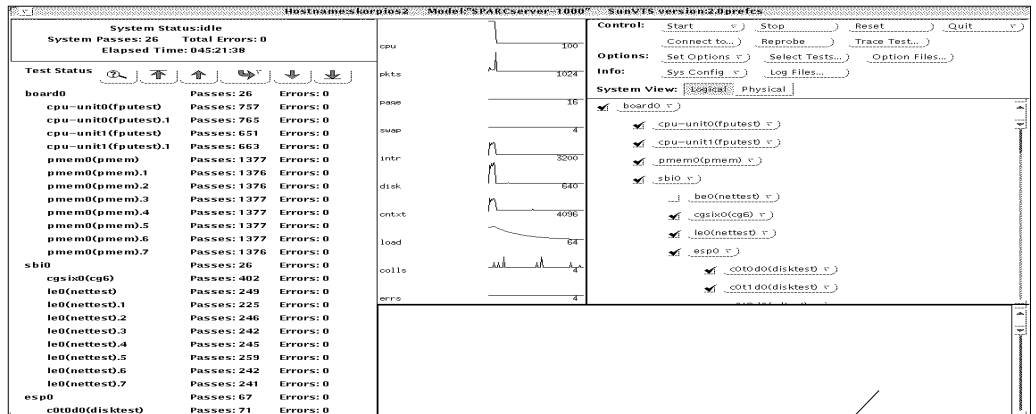
Console panel

FIGURE 4-37 OPEN LOOK Console Panel

- **To display verbose messages from either the SunVTS kernel or the tests, enable the Verbose option in the Set Options window in the Test Execution selection.**

See "Saving a Test Configuration" on page 102 for more information about setting up option files.

TTY Interface

A screen-oriented TTY interface is also available to use with SunVTS. You can use it in a CDE or OPEN LOOK window, from a `telnet`, `rlogin`, or `tip` session, or from a terminal attached to a serial port or connected to the system being tested through a modem. Most of the control and monitoring options available through the GUI are also available through the TTY interface.

Note – To start SunVTS with the TTY interface see Chapter 3, "Starting SunVTS".

Note – For step by step instructions refer to "Running SunVTS With the TTY Interface (Tutorial)" on page 143.

TTY Main Window

The TTY main window is divided into four areas (FIGURE 4-38):

- Control panel—access to SunVTS commands and options
- System map—shows the testable devices and provides access to test options
- Status panel—displays the SunVTS test status information
- Message area—test and error messages are displayed; no user input is accepted in this area

Control panel

System map

Status panel

Message area

```
                                    Terminal                              ·  □
  Window  Edit  Options                                                  Help

  ******Hostname:doodle2--------Model:"Ultra-1"------SunVTS version:3.0 beta2.2*****
  start    reset          quit          reprobe     test_mode    tests_select
  grouping set_options    option_files  log_files   connect_to   intervention
  ****************************[FWD:^F][BACK:^B]************************************
  ----------Status----------                              ----Test_Groups----
          System_status:idle                        [*]  Processor(s)       Options
  System_passes:0    Total_errors:0                 [*]  Memory             Options
          Elapsed_time:000:00:00                    [*]  Network            Options
                        Status_view                 [*]  Graphics           Options
                                                    [ ]  Comm.Ports         Options
                      Passes Errors                 [*]  OtherDevices       Options
                                                    [*]  SCSI-Devices(fas0) Options
   Processor(s)              0       0
    system(systest)          0       0
    cpu-unit0(fputest)       0       0
    cpu-unit0(fputest).1     0       0
   Memory                    0       0
    kmem(vmemtest)           0       0
    kmem(vmemtest).1         0       0
    mem(pmemtest)            0       0
    mem(pmemtest).1          0       0
   Network                   0       0
    hme0(nettest)            0       0
    hme0(nettest).1          0       0
   Graphics                  0       0
    ffb0(ffbtest)            0       0
   OtherDevices              0       0
    sound0(audiotest)        0       0
   SCSI-Devices(fas0)        0       0
    c0t0d0(disktest)         0       0
    c0t0d0(disktest).1       0       0



                              ----Console----



```

FIGURE 4-38 TTY Main Window

Navigating the TTY Interface

Keyboard commands are used for navigating and controlling the TTY interface. TABLE 4-8 summarizes these commands.

TABLE 4-8   TTY Keyboard Commands

Key	Description of Action
Tab	Moves the highlight or shifts the focus to another window. For example, if you are working in the Control panel and press the Tab key, the focus (or highlight) shifts to the Status panel. Highlighted panels are bordered by asterisks (*). Before you can change an option, you must first highlight that panel.
Return	- Displays a menu - Selects and applies a choice or a command in a menu
Spacebar	Selects or deselects an option checkbox; `[  ]=` select; `[*]=` deselect
Arrow keys	Moves between options in a highlighted panel
Backspace key	Deletes text in a text field
Escape	Discards a pop-up menu or window
Control-F	Scrolls forward in a scrollable window
Control-B	Scrolls backward in a scrollable window
Control-X	Quits the TTY user interface but leaves the SunVTS kernel running
Control-L	Refreshes the TTY window

The following sections lead you through some common testing procedures. In all cases, use these keyboard commands to select and apply your test options.

Setting TTY Options

▼ To Select and Change System Options

1. **Highlight the Control panel with the Tab key (**FIGURE 4-39**).**

   Asterisks (*) appear around the Control panel when it is highlighted.

2. **Select** `set_options` **with the arrow keys.**

3. **Display the SunVTS System options with the Return key.**

```
+------------------------------------------------------------------------------+
| ▽          jmasters @ pergola - /opt/SUNWvts/bin                              |
+------------------------------------------------------------------------------+
+--Hostname:pergola~~~~~Model:"Sun_4_50"~~~~~SunVTS version:2.1 fcs_c update 1-+
| start    reset         quit          reprobe      test_mode     tests_select |
| grouping set_options   option_files  log_files    connect_to    intervention |
+-----------------+*****************+-------+--------------------Test_Groups----+
+------------+ Thresholds      |       ++  [*] Processor(s)         Options   |
|          S| Notify          |       ||  [*] Memory              Options   |
|System_passe| Schedule       |s:1    ||  [*] Network             Options   |
|         Ela| Test_Execution |       ||  [*] Graphics            Options   |
|         | Advanced          |_view  ||  [*] Comm.Ports          Options   |
|         +***[DONE:ESC]****+          ||  [*] OtherDevices        Options   |
|                     Passes Errors    ||  [*] SCSI-Devices(esp0)  Options   |
|                                      ||                                    |
|  Processor(s)          0       0  ||                                       |
|   system(systest)      0       0  ||                                       |
|   cpu-unit0(fputest)   0       0  ||                                       |
|   cpu-unit0(fputest).1 0       0  ||                                       |
|  Memory                0       0  ||                                       |
|   kmem(vmem)           0       0  ||                                       |
+-----------------------------------++-------------------------------------+ |
+----------------------------------Console----------------------------------+ |
|                                                                          | |
|                                                                          | |
|                                                                          | |
+--------------------------------------------------------------------------+ |
+------------------------------------------------------------------------------+
```

FIGURE 4-39 System Option Categories (TTY Interface)

4. **Highlight** `Test_Execution` **using the arrow keys and press Enter.**

   When an option is highlighted, it can be changed. There are two ways to change the system options: from the menu and by typing in the text field.

   a. **Select the** `Core File` **option with the Return key.**

   b. **Select this option.**

   A menu is displayed listing the choices of the `Core File` option (FIGURE 4-40).

   c. **Highlight** `enabled`**.**

```
+------------------------------------------------------------------------------+
| ▽          jmasters @ pergola - /opt/SUNWvts/bin                              |
+------------------------------------------------------------------------------+
+--Hostname:pergola~~~~~Model:"Sun_4_50"~~~~~SunVTS version:2.1 fcs_c update 1-+
| start    reset         quit          reprobe      test_mode     tests_select |
| grouping set_options   option_files  log_files    connect_to    intervention |
+-----------+----------------------------/-----------------------------+-------+
|           |                                                          |ions   |
|System_pa| Options:                                                   |ions   |
|           |                                                          |ions   |
|           |   Stress:                   disabled                     |ions   |
|           |   Verbose:                  disabled                     |ions   |
|           |   Core File:                disabled                     |ions   |
|           |   Run On Error:      +***********+                       |ions   |
|  Process|   Max Passes:[0-99999] | enabled  |                        |       |
|  system|   Max Errors:[0-99999] | disabled  |                        |       |
|  cpu-un|                        +***********+                        |       |
|  cpu-un|    Apply  Reset  Next_page(^F)                              |       |
|  Memory |                                                            |       |
|   kmem(v+------------------------------------------------------------+       |
+----------------------------------++---------------------------------------+  |
+----------------------------------Console----------------------------------+ |
|                                                                          | |
|                                                                          | |
|                                                                          | |
+--------------------------------------------------------------------------+ |
+------------------------------------------------------------------------------+
```

FIGURE 4-40 Selecting a Menu Option (TTY Interface)

d. Select this choice with the Return key.

This option changes from disabled to enabled.

e. View the second page of the Options menu by pressing Control-F (FIGURE 4-41**).**

f. Select the `num_instances` **text field.**

g. Change the value to the number of test instances that you want to run.

Use the up or down arrow keys to move the cursor out of the text field.

```
+--------------------------------------------------------------------------+
| ▽           jmasters @ pergola - /opt/SUNWvts/bin                         |
+--Hostname:pergola~~~~~Model:"Sun_4_50"~~~~~~SunVTS version:2.1 fcs_c update 1-+
| start    reset        quit         reprobe     test_mode    tests_select |
| grouping set_options   option_files  log_files  connect_to   intervention |
+-----------------------------------------------------------------------+
|                                                                        |
|        +--------+*********************/**********************+--------+ |
|        |        |                                          |lions   | |
|        |System_pa| Max Time:[0-99999]      0                |lions   | |
|        |        | Num. of Instances:[1-99]    10            |lions   | |
|        |        |                                          |lions   | |
|        |        |  [Apply]   Reset    Prev_page(^B)         |lions   | |
|        |        |                                          |lions   | |
|        |        |                                          |lions   | |
|        |        |                                          |        | |
|        | Process|                                          |        | |
|        |  system|                                          |        | |
|        |  cpu-un|                                          |        | |
|        |  cpu-un|                                          |        | |
|        | Memory |                                          |        | |
|        |  kmem(v+*********************************************+        | |
|        +-------------------------------------------------++-----------+ |
|        +----------------------------Console--------------------------+ |
|        |                                                            | |
|        |                                                            | |
|        +------------------------------------------------------------+ |
+--------------------------------------------------------------------------+
```

FIGURE 4-41 Changing a Text Field Option in TTY

5. Highlight Apply after you finish changing the options.

6. Apply the changes and close the Options window by pressing the Return key.

Note – If you want to remove the Option window without changing any options, press the Escape key.

Selecting Tests and Test Groups

▼ To Select and Deselect Tests and Test Groups

1. Select the Tests panel with the Tab key.

When selected, the panel is bordered by asterisks.

2. **Highlight the checkbox by the test group name.**

   In this example (FIGURE 4-42) the checkbox associated with SCSI-Devices (`esp0`) group is selected, so it is highlighted.

3. **Deselect the test group with the spacebar.**

   Notice that the asterisk no longer appears between the brackets, and that the test names are removed from the Status panel.

```
+------------------------------------------------------------------------+
| ▽            jmasters @ pergola - /opt/SUNWvts/bin                      |
+------------------------------------------------------------------------+
+--Hostname:pergola~~~~~Model:"Sun_4_50"~~~~~SunVTS version:2.1 fcs_c update 1-+
| start     reset          quit          reprobe     test_mode    tests_select |
| grouping█set_options   option_files   log_files    connect_to   intervention |
+------------------------------------------------------------------------------+
+----------------Status---------------++************Test_Groups*************+
|           System_status:idle        || [*] Processor(s)         Options   |
|System_passes:0      Total_errors:1  || [*] Memory               Options   |
|          Elapsed_time:000:00:39     || [*] Network              Options   |
|                      Status_view    || [*] Graphics             Options   |
|                                     || [*] Comm.Ports           Options   |
|                      Passes Errors  || [*] OtherDevices         Options   |
|                                     ||█[ ]█ SCSI-Devices(esp0)   Options   |
| Processor(s)              0      0  ||                                    |
|   system(systest)        0      0  ||                                    |
|   cpu-unit0(fputest)     0      0  ||                                    |
|   cpu-unit0(fputest).1   0      0  ||                                    |
| Memory                   0      0  ||                                    |
|   kmem(vmem)             0      0  ||                                    |
+-------------------------------------++************************************+
+-----------------------------------Console----------------------------------+
|                                                                            |
|                                                                            |
|                                                                            |
+----------------------------------------------------------------------------+
```

FIGURE 4-42 Deselecting a Test Group (TTY Interface)

4. **Highlight the test group name using the right arrow key.**

5. **Display the tests within the test group by pressing the Return key.**

6. **Highlight the brackets in front of the test you want to enable, using the up and down arrow keys.**

7. **Select the test with the Spacebar.**

   An asterisk displays between the two brackets, and the test group and test name appears on the Status panel (FIGURE 4-43).
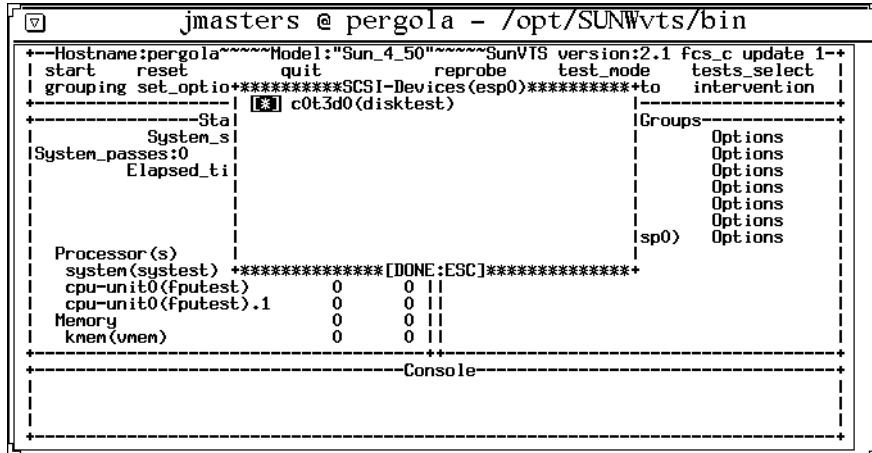
```
┌─────────────────────────────────────────────────────────────────────┐
│ ▽        jmasters @ pergola – /opt/SUNWvts/bin                       │
│ +--Hostname:pergola~~~~~Model:"Sun_4_50"~~~~~SunVTS version:2.1 fcs_c update 1-+│
│ │ start    reset       quit         reprobe      test_mode    tests_select │ │
│ │ grouping set_optio+**********SCSI-Devices(esp0)**********+to   intervention │ │
│ +------------------│ [✳] c0t3d0(disktest)              │--------------------+│
│ +----------------Sta│                                  │Groups-------------+│
│ │         System_s│                                  │              Options │ │
│ │System_passes:0  │                                  │              Options │ │
│ │       Elapsed_ti│                                  │              Options │ │
│ │                 │                                  │              Options │ │
│ │                 │                                  │              Options │ │
│ │                 │                                  │              Options │ │
│ │                 │                                  │sp0)    Options │ │
│ │  Processor(s)   │                                  │                    │ │
│ │    system(systest) +**************[DONE:ESC]**************+             │ │
│ │    cpu-unit0(fputest)      0        0 ││                               │ │
│ │    cpu-unit0(fputest).1    0        0 ││                               │ │
│ │  Memory                    0        0 ││                               │ │
│ │    kmen(vmem)              0        0 ││                               │ │
│ +----------------------------------------++----------------------------+│
│ +------------------------------------Console------------------------------+│
│ │                                                                       │ │
│ │                                                                       │ │
│ │                                                                       │ │
│ │                                                                       │ │
│ +-----------------------------------------------------------------------+│
└─────────────────────────────────────────────────────────────────────┘
```

FIGURE 4-43 Selecting a Test (TTY Interface)

Note – If you want to change the test options, highlight the test name and press the
Return key to display the test option menus.

---

8. Close the test group window by pressing the Escape key.

Using the TTY Status_view Menu

The Status_view menu has a scrollable area. It is possible to select more tests than
the status panel can display at one time. Use the Control-F and Control-B keys to
scroll forward and backward to view additional selections. You can also display only
those tests with errors by highlighting the Errors Only in the Status_view menu (see
FIGURE 4-44 and TABLE 4-9).

▼ To Scroll Through Tests Using the Status_view Menu

1. Highlight the Status panel with the Tab key.

When selected, the panel has asterisks around the border. Notice that the
Status_view option is also highlighted.

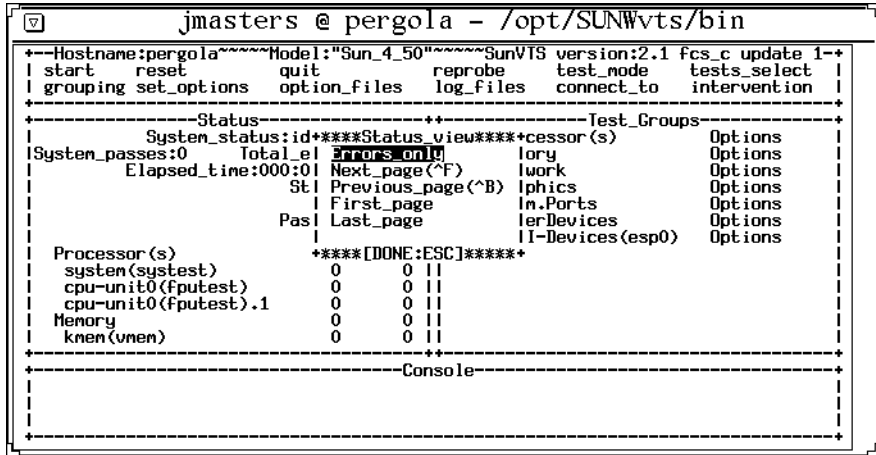**2. Display the Status_view menu with the Return key (**FIGURE 4-44**).**

```
+--------------------------------------------------------------+
| ▽        jmasters @ pergola  -  /opt/SUNWvts/bin            |
+--------------------------------------------------------------+
| +--Hostname:pergola~~~~Model:"Sun_4_50"~~~~SunVTS version:2.1 fcs_c update 1-+
| | start    reset        quit         reprobe     test_mode     tests_select | |
| | grouping set_options  option_files log_files   connect_to    intervention | |
| +----------------------------------------------------------------------------+
|                                                                              |
| +---------------Status---------------++-----------Test_Groups-------------+  |
| |       System_status:id+****Status_view****+cessor(s)       Options    |  |
| |System_passes:0      Total_el|Errors_only|     |ory         Options    |  |
| |          Elapsed_time:000:0I Next_page(^F)    |work        Options    |  |
| |                          StI Previous_page(^B)|phics       Options    |  |
| |                          I First_page         |m.Ports     Options    |  |
| |                        PasI Last_page         |erDevices   Options    |  |
| |                          I                    |I-Devices(esp0)  Options |  |
| |   Processor(s)           +****[DONE:ESC]*****+                          |  |
| |    system(systest)         0      0 II                                 |  |
| |    cpu-unit0(fputest)      0      0 II                                 |  |
| |    cpu-unit0(fputest).1    0      0 II                                 |  |
| |   Memory                   0      0 II                                 |  |
| |    kmem(vmem)              0      0 II                                 |  |
| +----------------------------------+-+------------------------------------+  |
| +--------------------------------Console--------------------------------+  |
| |                                                                       |  |
| |                                                                       |  |
| |                                                                       |  |
| +-----------------------------------------------------------------------+  |
+--------------------------------------------------------------+
```

FIGURE 4-44 TTY Status_view Menu

3. **Move to the option you want with the arrow keys (**TABLE 4-9**).**

   Choose one of the following options:

TABLE 4-9   Status_view Menu Options

Option	Description
Errors_only	Displays only the tests that produce errors
Next_page	Skips to the next page of tests
Previous_page	Goes back to the previous page of tests
First_page	Goes to the first page of tests
Last_page	Goes to the last page of tests

4. **Select your choice with the Return key.**

   The Status panel changes to reflect your choice.

Using the TTY Log_Files Menu

The following paragraphs describe how to display, print, and remove log files.

▼ To Display, Print, or Remove Log Files

1. **Highlight the Control panel with the Tab key.**

   When selected, the panel has asterisks around the border (FIGURE 4-45).

```
 ▽              jmasters @ pergola - /opt/SUNWvts/bin
+--Hostname:pergola~~~~~Model:"Sun_4_50"~~~~~SunVTS version:2.1 fcs_c update 1-+
| start     reset        quit          reprobe     test_mode    tests_select |
| grouping set_options   option_files  log_files   connect_to   intervention |
+--------------------------------------------+----Error----+------------------+
+----------------Status----------------+-+-| Error        |Groups------------+
|         System_status:idle           | | | In+**********+ |      Options    |
|System_passes:0     Total_errors:1    | | | Un| Display  | |      Options    |
|         Elapsed_time:000:00:39        | | |  | Remove   | |      Options    |
|                      Status_view     | | +---| Print   |-+      Options    |
|                                      | | [*] +[DONE:ESC]+        Options    |
|                   Passes Errors      | | [*] OtherDevices        Options    |
|                                      | | [*] SCSI-Devices(esp0)  Options    |
|   Processor(s)              0     0 ||                                      |
|     system(systest)         0     0 ||                                      |
|     cpu-unit0(fputest)      0     0 ||                                      |
|     cpu-unit0(fputest).1    0     0 ||                                      |
|   Memory                    0     0 ||                                      |
|     kmem(vmem)              0     0 ||                                      |
+--------------------------------------++------------------------------------+
+-------------------------------Console------------------------------------+
|                                                                          |
|                                                                          |
|                                                                          |
+--------------------------------------------------------------------------+
```

FIGURE 4-45 Log Files Menu (TTY Interface)

2. **Highlight the log_files option with the arrow keys.**

3. **Display the log_files menu with the Return key.**

4. **Select the option you want with the arrow keys (TABLE 4-10).**

   Choose one of the following options:

TABLE 4-10   TTY Log_files Menu Options

Option	Description
Error	Selects the Error log file
Information	Selects the Information log file
Unix Msgs	Selects the UNIX messages log file

Note – If you do not want to select a log file, press the Escape key to close the Log_files menu.

5. **Select the log file and display another menu by pressing Return.**

   From this menu, you can either display, remove, or print the selected log file. See TABLE 4-10, for a description of these options.

6. **Confirm your choice by pressing Return.**

   FIGURE 4-46 is a sample SunVTS log file displayed in TTY mode. You can use the commands Control-F and Control-B to page forward and backward through the log file.

```
┌──────────────────────────────────────────────────────────────────────┐
│ ▽                          cmdtool - /bin/csh                          │
├──────────────────────────────────────────────────────────────────────┤
│ SUNWvts.nettest.6002 02/21/96 14:15:38 nettest.2 hme0 ERROR: "No ICMP echo reply from│
│  gyver 192.9.132.32." Probable_Cause(s): <system load too heavy> <No cable connection│
│ > <target machine too busy> Recommended_Actions: <reduce system load or increase time│
│ out time> <Check cable connection!> <reduce target machine load>       │
│                                                                        │
│ 000.00.999.9012 02/21/96 14:15:39 plsrdiag SunVTS ERROR: *Failed test* │
│  hme0(nettest).2          passes: 46     errors: 1                     │
│ SUNWvts.audio.8027 02/26/96 23:06:12 audio sound/0 FATAL: "play: ´ioctl(fildes=0x4, A│
│ UDIO_DRAIN=0x20004103, NULL=0x0)´ system call timeout.  No response after 50 seconds.│
│   Device = /dev/sound/0" Probable_Cause(s): <Audio hardware (usually consistent failu│
│ res)> <System software problem (usually intermittent failures)>        │
│                                                                        │
│ 000.00.999.9012 02/26/96 23:06:13 plsrdiag SunVTS ERROR: *Failed test* │
│  sound0(audio)            passes: 13434  errors: 1                     │
│ SUNWvts.audio.8027 02/27/96 10:59:26 audio sound/0 FATAL: "play: ´ioctl(fildes=0x4, A│
│ UDIO_DRAIN=0x20004103, NULL=0x0)´ system call timeout.  No response after 50 seconds.│
│   Device = /dev/sound/0" Probable_Cause(s): <Audio hardware (usually consistent failu│
│ res)> <System software problem (usually intermittent failures)>        │
│                                                                        │
│ 000.00.999.9012 02/27/96 10:59:27 plsrdiag SunVTS ERROR: *Failed test* │
│  sound0(audio)            passes: 14628  errors: 2                     │
│ @                                                                      │
│ @                                                                      │
│ "/tmp/sunvts_log" [Read only] 16 lines, 1720 characters                │
└──────────────────────────────────────────────────────────────────────┘
```

FIGURE 4-46 Sample Log File (TTY Interface)

7. **Return to the main window by typing :q.**

Note – If you try to run a graphics test on a test machine that is not running OPEN LOOK, and you are running the SunVTS TTY interface on the test machine monitor, the graphics test may fail. You can avoid this failure by either running the SunVTS TTY interface on a terminal attached to a serial port on the test machine, or you can run the TTY interface from a remote machine.

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. 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.

There are two directories where tests reside:

- 32-bit tests– /opt/SUNWvts/bin/*testname*
- 64-bit tests– /opt/SUNWvts/bin/sparcv9/*testname*

Use the test pathname based on the type (32-bit or 64-bit) of operating system that is running. The SUNWvtsx package must be installed for 64-bit SunVTS support. If a test is not present in this directory, then it may only be available as a 32-bit test.

When you run a test from the command line, 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 4-11 below for details.
- Test specific arguments—unique to a specific test. Refer to the *SunVTS 3.3 Test Reference Manual* for details.

The standard syntax for command-line execution is:

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

The standard command-line argument usage for all SunVTS tests is:

TABLE 4-11   Standard Command-line Arguments

Argument	Definition
-s	Run a test as though it were invoked from the SunVTS kernel (`vtsk`). This causes the test to send output to an RPC port that the SunVTS kernel is using. 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

TABLE 4-11 Standard Command-line Arguments *(Continued)*

Argument	Definition
-u	Displays command line usage information
-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 function 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 SunVTS is started 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
-i number	Defines the number of instances for scalable tests
-p number	Defines the number of passes
-w number	For scalable tests, defines to which instance the test is assigned
-o	Used to indicate 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 – The `l`, `n`, or `f` options are mutually exclusive. Specify only one option at a time because only one test mode can be selected at a time.

Command Line Test Example

The following example shows the `audiotest` running from the command line with a combination of standard command-line arguments (`-vf`) and test specific options (`-o M,X`)

```
# /opt/SUNWvts/bin/audiotest -vf -p1 -o M,X
"Test Options: M,X"
"audiotest: Started."
"rec_play: read/write 8000 bytes"
"Audio music test"
"Audio crystal test, rate = 8000 Hz, time = 998289 usecs"
"Audio crystal test, rate = 48000 Hz, time = 999974 usecs"
"Starting loopback test: internal_codec"
"Play Gain = 230, Record Gain = 0"
"Sample Rate =  8000 Hz, Freq = 1000 Hz  MONO u-law"
"   snr = 40.59 dB"
"Sample Rate =  8000 Hz, Freq = 1000 Hz  MONO a-law"
"   snr = 44.79 dB"
"Sample Rate =  8000 Hz, left = 1000 Hz,  right = 1000 Hz"
"left  : snr = 68.25 dB, gain = -4.99 dB"
"right : snr = 68.32 dB, gain = -5.07 dB"
"audiotest: Stopped successfully."
```

Note – Refer to "Running a Test From the Command Line (Tutorial)" on page 152 and to the *SunVTS 3.3 Test Reference Manual* for more command line details.

SunVTS Test Environment

This chapter describes the commonly used features of SunVTS in a typical testing environment:

Offline and Online Testing

The first decision to make is whether you want to run SunVTS diagnostics when you system is in an *offline* state or an *online* state:

- Offline—No applications are running and all system resources are available for the SunVTS test session. Test options such as stress mode can be enabled to provide maximum test coverage. The following commands start SunVTS assuming that the system is in an offline state:

  ```
  Sunvts
  vtsk
  vtsui
  vtsui.ol
  vtstty
  ```

- Online—Other applications are running and a test session must not interfere with them. Functional test mode options are restricted to prevent resource contention. The following command starts SunVTS for online testing:

  ```
  vtsui.online
  ```

Note – The SUNWodu package must be installed for online testing.

Note – The `vtsui.online` command only works on systems that are supported by the Sun Enterprise SyMON agent (from the SUNWsycfd package).

Test Modes

Two modes of testing are available: Connection Test mode and Functional Test mode. These modes differ in their assumptions about the state of the system you are testing and your objectives. Only one test mode can be selected per test session.

In addition, Functional mode runs in a *restricted* fashion if it is invoked with the `vtsui.online` command to run on a system in an online state.

Connection Test Mode

In Connection Test mode, the tests determine if the devices are connected to the system you are testing and verifies that they are accessible.

Device functionality is not verified, however, you can safely run this mode when the system is in an offline or online state.

The limited nature of the tests in this mode makes it possible to run periodic checks for configuration verification on the system.

Functional Test Mode

Functional test mode runs differently based on whether SunVTS is invoked to run on a system in an offline or online state (see "Offline and Online Testing" on page 92)

Offline Functional Test Mode

The tests fully exercise all aspects of the selected devices and their associated device drivers. You can run a single test to verify the functionality of a single device, or run multiple tests on all system devices for full system verification.

For thorough testing, the tests use a significant portion of the system resources. For this reason, do not run critical applications on the system or use the system for production purposes while testing in Functional Test mode.

In Functional Test mode, tests expect all system resources that are associated with the device to be available for testing. If the test cannot access a device, it registers a failure. The tests do not economize on runtime, but focus on achieving complete coverage and thoroughly exercising the device.

Note – SunVTS does not verify that the system is in a safe offline state for Functional mode testing. You must be sure that your applications and the SunVTS diagnostic will not compete for system resources. For more information regarding runtime considerations refer to "SunVTS Runtime Considerations" on page 17.

Online Functional Test Mode

Tests are restricted to performing operational testing to find and isolate faults, while minimizing the impact on other applications and users. In this mode, some of the test parameters, execution options, and some system level options are fixed values that cannot be changed. This ensures that the system state is not violated by selecting an option or combination of options which could trigger unsafe actions.

In addition to the fixed option values (described in the table below), online functional testing is restricted in the following ways:

- Only one instance of each scalable test, if selected, can be invoked.
- Selected tests will run sequentially until all are done.
- All selected tests will run one pass each.
- Testing will stop when the first error is encountered.
- No test option that could be considered unsafe in an online environment can be enabled.

TABLE 5-1 shows the default values of the test execution options in different modes.

TABLE 5-1   Test Execution Options

Option	Connection Test Mode	Functional Test Mode, Offline	Functional Test Mode, Online
Stress	Disabled (fixed)	Disabled	Disabled (fixed)
Verbose	Disabled (fixed)	Disabled	Disabled (fixed)
Core File	Disabled (fixed)	Disabled	Disabled (fixed)
Run On Error	Disabled (fixed)	Disabled	Disabled (fixed)
Max Passes	1 (fixed)	0	1 (fixed)
Max Time	0 (fixed)	0	0 (fixed)
Number of Instances	1 (fixed)	Dependent on the number of processors	1 (fixed)

Note – Online Functional Test Mode only works on systems that are supported by the Sun Enterprise SyMON agent. This agent is installed when the SUNWsycfd package is installed. Refer to "Installing SunVTS" on page 10.

System Mapping

System mapping provides a view of the system configuration, depending on your requirements. The System Map only displays the devices for which tests are present. Devices that are not testable, or for which there is currently no SunVTS test, are not displayed.

You can view your System Map in one of two ways:

- Physical view—lists the devices based on their physical location in the system. It shows the exact location of the device for Field Replaceable Unit (FRU) identification. For example, SCSI devices are listed under the SCSI controller, which is listed under the I/O bus that it is connected to. When possible, the board number and controller type for the device are also displayed. This view may not be available for your system, refer to the note below.

- Logical view—organizes the devices according to their function. For example, all the network devices are listed under the Network category, and all of the SCSI devices are listed under the SCSI devices category. From the Logical view, you can view the system through one or more logical device groups. You can focus on a specific group or on all of the groups on the system.

Switch your mapping view by selecting Physical view or Logical view from the SunVTS user interface.

Note – Physical mapping is available only on systems that have the `configd` program installed. For more information on package installation and administration, refer to the *System Administration Guides* and to "Installing and Removing SunVTS" on page 9.

Test Selection

There is a SunVTS test for most hardware devices on Sun systems.

When you start SunVTS, the SunVTS kernel probes the system devices. The results of this probe are displayed on the SunVTS interface where you are presented with list of devices to select for testing. Tests that are not pertinent to the configuration of your system are not listed.

Selecting Test Groups and Individual Tests

You can select entire test groups or individual tests. The test mode and tests that you choose to run depend on your desired test strategy.

For example, if you are using SunVTS to troubleshoot intermittent SCSI bus errors you might choose to test the entire SCSI group in Functional Test mode to thoroughly test the whole subsystem. Then you might select specific SCSI devices to see which device reproduces the error.

In another example, you might want to validate a newly installed system before you put it in production. In this case you would choose to test all the groups in Functional mode for a specified period of time.

If you want to verify the connectivity of a particular device such as an option card, peripheral, or communication device, you might choose the Connection Test mode for that device.

The method used to select a test or group of tests varies based on the SunVTS user interface that you are using. For more information refer to one of the following sections:

- CDE user interface–"To Select Devices for Testing" on page 53
- OPEN LOOK user interface—"Using the OPEN LOOK Test Selection Panel" on page 75
- TTY user interface—"Selecting Tests and Test Groups" on page 82

Intervention

Certain tests require that you *intervene* before such tests can be selected. These tests require you to load test media or install loopback connectors, and enable the intervention mode before the tests can be selected.

You must install media in these devices if you plan to test them in Functional mode:

- Tape drive—load a *scratch* tape in the tape drive that you plan to test. The tape test has a Read-only mode, but use a scratch tape to avoid inadvertently writing over data.
- CD-ROM drive—load a compact disc (CD) into the drive. It can be an audio or data CD.
- Diskette drive—load a *scratch* diskette in the drive. The diskette test has a Read-only mode, but use a scratch diskette to avoid inadvertently writing over data.
- Communication ports—many of these tests require a loopback connector attached to the port. Attach any required loopback connectors for the ports you plan to test. For more information about loopback connectors refer to the *SunVTS 3.3 Test Reference Manual.*

> **Note –** Install such requirements *before* the SunVTS kernel probes for devices (when SunVTS is started, or the reprobe function is run) to allow the SunVTS kernel to properly identify each device.

Intervention mode serves as a reminder that you may need to intervene before running certain tests; it does not verify that the appropriate test media or loopback connectors have been installed.

The location of the Intervention mode button varies based on the SunVTS interface that you are using. For specific details refer to:

- CDE interface—"CDE Device Selection Region" on page 55
- OPEN LOOK interface—"The Select Tests Button" on page 71
- TTY interface—"Setting TTY Options" on page 80

Test Execution Options

You can customize your SunVTS environment by setting Test Execution options (refer to the table below).

TABLE 5-2 Test Execution Options

Option	Description
Stress	Performs stress testing
Core File	Creates a core file. If the *<SunVTS bin>* directory is writable then core.*<testname>.xxxxxx* is the core file name, where *<testname>* is the test that dumped core, and where *xxxxxx* is a character string generated by the system to make the file name unique. When `core_file` is disabled, a message indicating the signal that caused the failure is displayed and logged. See "The Log Files Button" on page 74 in Chapter 4.
Max Errors	States the maximum allowable number of errors before stopping (0 makes the SunVTS kernel continue testing regardless of errors)
Max Passes	Specifies the maximum number of passes a test can run
Max Time	States, in minutes, the time limit a test can run (0 = no limit)
Number of Instances	Indicates the number of instances (processes) of scalable tests that can run on the same processor

TABLE 5-2   Test Execution Options *(Continued)*

Option	Description
Processor Affinity	Tests can be bound to a specific processor with this option
Run On Error	Continues testing until the `max_errs` number is reached
Verbose	Displays verbose messages in the SunVTS console window

Note – Some options have preassigned values when SunVTS is invoked with the `vtsui.online` command. These values cannot be changed. This prevents changing or setting values for these options that may not be safe when the system is online.

The Test Execution Options can be applied at the following three levels:

- Top level options—all tests are affected globally.
- Group level options— only affect those tests within the group.
- Individual test level options— only the specified test.

When you assign a value to an option at the top level, that value applies to all the groups and tests below it. Similarly, setting an option at the group level causes the value to trickle down to all the sub-groups and tests below it. This is a powerful way to customize the SunVTS testing environment. For example, you can disable the Verbose option at the system level and then enable it only for a particular group (or only a particular test) so that just the verbose messages from that particular group (or test) are displayed.

Test Execution Locks and Overrides

You can control the effects of the Test Execution options by using locks and overrides. These features are accessible through the Advanced menu in the user interface.

Locks

Enabling the group lock prevents an option set at a higher level from affecting a specific group or test and the sub-groups and tests below it. Similarly, you can set the test lock to protect the option setting of a test.

Overrides

You can use the overrides to void the lock protection. For example, setting system override nullifies all the locks, and setting group override for a particular group nullifies all the locks below that group.

Setting Test Execution Options, Locks, and Overrides

The steps you perform to set options differs based on the SunVTS user interface that you are using. For a description of these steps refer to the following:

- CDE user interface:
  - Setting top level options see "Options Menu" on page 41
  - Setting group and test level options see "To Access the Device-Specific Option Menus" on page 51
- OPEN LOOK user interface:
  - Setting top level options see "The Set Options Button" on page 67
  - Setting group and test level options see "Using the OPEN LOOK Test Selection Panel" on page 75
- TTY user interface see "Setting TTY Options" on page 80

Test-Specific Options

Test-specific options are the set of options that accompany each test and pertain to that test only. For example, the amount of media to test in a disk test, the amount of memory to test in memory test, the remote host address in a net test, and so on are test-specific options. These options differ from one device to another and are covered in detail in the *SunVTS Test Reference Manual* for each test.

The test-specific options are set using the Test Parameter menu from the SunVTS user interface. The generic portion of this menu is described below.

FIGURE 5-1 Test Parameter Option Menu (CDE)

TABLE 5-3 Test Parameter Option Menu 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 unique for each test and are covered in the test specific chapters in this manual.
Apply	Assigns the current option values to this selectable device and closes the test parameter option menu. The options are only applied to the current device.
Apply to Group	Assigns the current option values to all devices (of the *same device type* that are on the *same controller*) in this device group and closes the test parameter option menu. The values only apply to one instance of the test.
Apply to All	Assigns the current option values to all devices (of the *same device type* for *all controllers*) and closes the test parameter option menu. The values only apply to one instance of the test.

TABLE 5-3 Test Parameter Option Menu Items *(Continued)*

Menu Item	Description
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 Option menu descriptions also apply to the Test Parameter Option menu in the TTY interface.

Note – The Test Parameter Option menu descriptions also apply to the OPEN LOOK interface, however, the Apply to Group and Apply to All buttons are not available in the SunVTS OPEN LOOK user interface.

Scalability of Tests

Use the scalability feature to scale the number of test instances or processes to stress single or multiprocessor systems. You can modify the scalable test options so that each test instance runs simultaneously with a different option. Combined with the processor affinity mask, SunVTS provides a flexible testing environment. You can determine the amount of stress by the number of test instances you select using the options described below.

- Group Concurrency—sets the maximum number of tests you want to run at the same time in the same group. This option is available in the top level and group level Schedule options menu.

- System Concurrency—sets the maximum number of tests that you can run at the same time in the entire system; it overrides the Group Concurrency option. this option is available in the top level Schedule options menu.

- Instances—copies of a test that you can run simultaneously on the same device. For example, if a test has eight instances, then you can run eight copies of that test, and each copy can run on either one or all of the processors in the test system (see "Processor Affinity" below). You can set the number of instances with the Number of Instances option (this option only applies to scalable tests). This option is available in some test level Test Parameter option menus.

- Processor Affinity—lets you specify the processor on which you want to run the tests; it is only available on multiprocessor systems. Each instance of the test can have a different Processor Affinity. Only one processor can be bound to an instance of the test. When no Processor Affinity is specified, migrating is the default. This option is available in some test level Test Parameter option menus.

Saving a Test Configuration

Use the *Option Files* menu to save the current set of selected tests and SunVTS global, group and test-specific options to a file for later use. This is a convenient feature when you plan to use the same test parameters over and over again.

▼ To Create an Option File

1. **Configure the SunVTS main display with your desired tests and options.**

2. **Bring up the Option File menu based on the user interface that you are using:**
   - CDE interface—click Options in the Menu bar and select Option Files (refer to the figure below)

Select option files
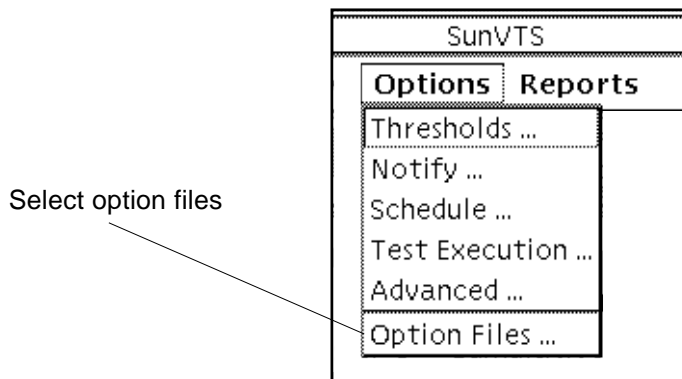
FIGURE 5-2   CDE Options Menu

- OPEN LOOK interface—Click on the Option Files button.
- TTY interface—Highlight `Option_files` from in the Control panel and press Return.

3. **Type a unique name in the Option file field as shown in the following figure:**

Unique name
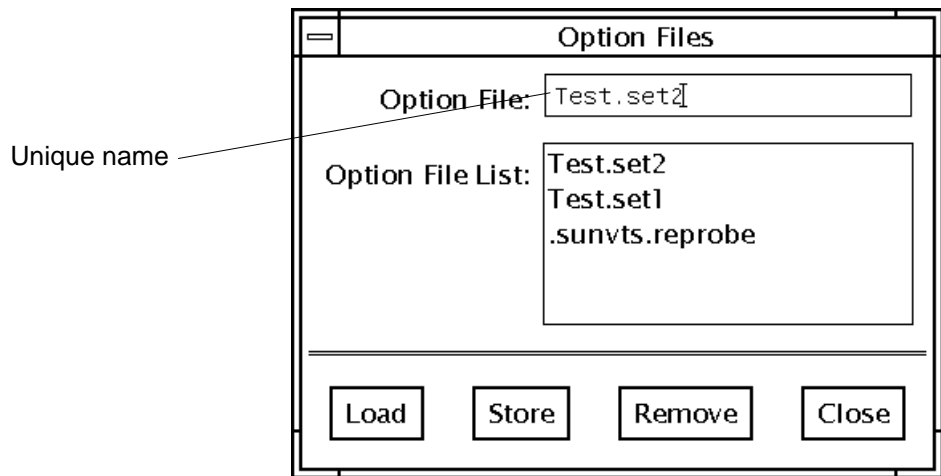
FIGURE 5-3   Option File Menu

4. Click on the Store button to save the current configuration to the option file.

Storing an option file saves the current settings from the global test options and specific test settings to a file in the `/var/opt/SUNWvts/options` directory.

Note – Although you can manually edit the option file, you must adhere to strict format requirements. Unnecessary or spurious characters in the option files may cause unexpected actions with the SunVTS kernel or user interface.

▼ To Load an Option File

1. Bring up the Option File menu (as described in Step 2 in the previous procedure)

2. Click on the name of the option file from the option file list.

3. Click on Load.

4. Click on the Close button.

All the tests and test options are set up for use by the SunVTS kernel, no time is spent on test parameter configuration.

▼ To Load an Option File From the Command Line

(The following example assumes that an option file called `Test.set2` was created as described "To Create an Option File" on page 102)

● **Use the** `-o` **option with the** `sunvts` **command (refer to the following example):**

```
# ./sunvts -o Test.set2
```

All the tests and test options are set up for use by the SunVTS kernel, no time has to be spent on test parameter configuration.

▼ To Remove an Option File

1. **Bring up the Option File menu (as described in Step 2 "Bring up the Option File menu based on the user interface that you are using:" on page 102).**

2. **Select the Option file from the option file list that you want to delete.**

3. **Click the Remove button.**

4. **Click on the Close button.**

Testing Frame Buffers

If you are running SunVTS on a frame buffer that is running a graphics test, a false error may occur. This is not a problem when you are running windows (OPEN LOOK or CDE).

No other graphic application can be run in the same window once you start the graphic test.

To Activate the Frame Buffer Test

■ If you are using the CDE or OPEN LOOK SunVTS interface, from the Option menu of the graphic test, select Enable for the frame buffer locking option.

■ If you are working from the command line, you can enable frame buffer locking by specifying a command-line argument.

(See the test command line arguments in the *SunVTS 3.3 Test Reference Manual.*)

```
# ./fbtest -o dev=cgthree0,lock=Enable
```

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

Note – If window locking is disabled (unlocked) on frame buffers that are running vtsui, or you move the mouse, you will receive spurious error messages. Even slight mouse movements can cause a test to fail.

Testing Multiple Frame Buffers

These rules apply when testing multiple frame buffers (displays) simultaneously:

- You can test multiple frame buffers on a system simultaneously, but only the console monitor can run windows. The console monitor is the monitor connected to the frame buffer appointed by /dev/fb.
- The frame buffer that is running windows must have frame buffer locking enabled to avoid spurious test failures. Other frame buffers must have frame buffer locking disabled.
- By default, SunVTS enables frame buffer locking for the console frame buffer (/dev/fb). If your system has more than one frame buffer, you must disable frame buffer locking for all frame buffers except the one running windows. If you are running a frame buffer test from a command line, you can disable or enable frame buffer locking by specifying a command-line argument. (See the test command-line descriptions in the *SunVTS 3.3 Test Reference Manual.*) For example, if you were running the generic frame buffer test (fbtest), you would use the lock=Disable/Enable option to disable frame buffer locking:

```
#./fbtest -o dev=cgthree0,lock=Enable
```

If you start SunVTS from a screen other than the console monitor, Frame buffer locking is not available. You must enable the frame buffer lock for the console monitor, as shown in the example above. The SunVTS user interface cannot display on a monitor if frame buffer locking is disabled.

Monitoring Test Status

While SunVTS is testing the system, you can view the progress of the test by monitoring the main SunVTS display and through log files.

Test Session Progress in the Panels

There are four main panels to view while monitoring the testing progress; the System Status panel, System Map, Performance Meter, and the Console window.

System Status Panel

The System Status panel displays the current activity of the SunVTS kernel. For example, the status can be idle (when not testing), testing, or stopped (when the maximum number of errors is reached, or when you stop the testing).

This panel also displays the total number of successful system passes (a system pass is when all tests have been run once), and the total number of errors from all tests. The total elapsed time is also displayed on this panel.

System Map Panel

This panel displays the status of all selected tests. The status of each selected test is listed as follows:

- The Passes count shows how many times the test has completed a run.
- The Errors count shows how many times the test exited with an error. If the test has an asterisk (*) by it, that test is currently being run.
- The letter "T" is displayed next to the test name when Trace mode is active. While monitoring this panel, you'll notice that some tests take longer to run than others.
- The System Map displays the current state of the devices under test where:
    - Black indicates that the device is not tested
    - Green indicates that at least one test pass completed with no errors detected
    - Red indicates that at least one error has been detected

Test Message Window (or Console Panel in OPEN LOOK)

The Console panel displays the messages sent from the tests and SunVTS kernel. If you enabled verbose messages or system call trace messages on one or more tests, the messages appear in this window. Use the scrollbar to view these messages.

Performance Meter

This panel displays the performance statistics of the system you are testing. See "Meter Button" on page 48 and the "OPEN LOOK Performance Meter" on page 59 in for details.

Suspending and Resuming the Test Session

During the testing session, you may need to suspend or pause all tests. For example, you may want to look at messages on the Console panel that have scrolled out of view, or you may want to view and print a log file.

The method for suspending and resuming the test session is slightly different based on the SunVTS user interface that you are using. Refer to the following sections:

- CDE—"Commands Menu" on page 38
- OPEN LOOK—"OPEN LOOK Control Panel" on page 60
- TTY—"Setting TTY Options" on page 80

Stopping the Test Session

Once you have adequately tested your system, you can stop the testing session and review the results by selecting the Stop button.

SunVTS ends the test execution automatically for a number of reasons. For example, if you have enabled the Single Pass option on the Schedule Option menu, all tests run once and stop, but the elapsed time continues to increment.

Testing stops if an error occurs and the run at error was not set (by default the value is set to stop when the first error is encountered) or, if run at error was set but the error count reached the maximum number of errors.

Stop Button

Click the Stop button to stop the testing session. The System Status panel temporarily displays "stopping" while the tests wind down. The amount of time it takes to stop depends on which tests you are running. For example, the `tapetest` requires time to rewind the tape or remove the mounted partitions and temporary files. A pop-up menu displays the message, "`testing completed: x pass(es), x error(s)`" when testing is complete.

After you stop the testing session, you can view the System Map to see how many passes and errors occurred per test, and you can display or print the log files.

If a test hangs, SunVTS remains in Stop mode, and waits for the test to terminate. (This is probably due to a hardware problem.) Deselect the test, which signals SunVTS to ignore the stopped test and return to Idle mode.

Resetting the Test Environment

If you need to start the testing session over again, without quitting SunVTS, click the Reset button.

Reviewing Log Files

This section provides information about displaying, printing, and deleting log files. The Log file error message formats are also discussed in this section.

The status of testing is stored in three log files:

- SunVTS error status log: `/var/opt/SUNWvts/logs/sunvts.err`
- SunVTS information log: `/var/opt/SUNWvts/logs/sunvts.info`
- Solaris system message log: `/var/adm/messages`

The `sunvts.err` file contains SunVTS test error messages and their time stamps. The information log file, `sunvts.info`, contains informative messages that are generated when you start and stop SunVTS. The `messages` file is a log of all the general UNIX messages.

Log Files Menu

You can access these files from the Log Files menu, which is displayed when you click the Log Files button (see FIGURE 5-4 and FIGURE 5-5).
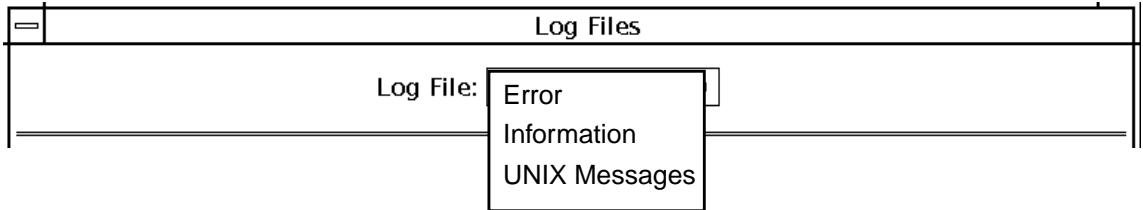
FIGURE 5-4 CDE Log Files Menu
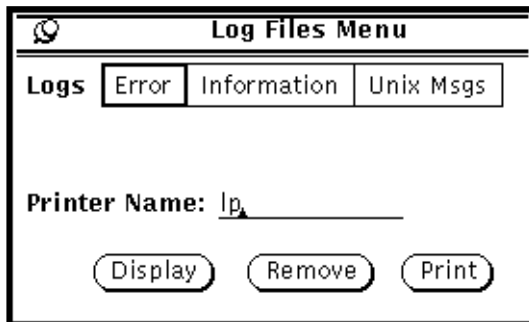
FIGURE 5-5 OPEN LOOK Log Files Menu

Displaying Log Files

You can display any of the three log files by selecting the name of the log file. You can print or remove them by selecting the print or remove button on the menu.

Note – These log files can be very long. Make sure you want the entire file before you print it.

SunVTS Test Message Syntax

All SunVTS test messages follow this format:

SUNWvts.testname[.subtest_name].message_number date time testname device_name
`[FRU_path]ERROR|FATAL|INFO|WARNING|VERBOSE message`

TABLE 5-4 lists the SunVTS test message arguments and gives a brief description.

TABLE 5-4   SunVTS Test Message Syntax

Argument	Description
SUNWvts	SunVTS package name
testname	SunVTS test name
subtest_name	The subtest module name (optional)
message_number	The message identifier, which is a unique number for the test. The number is usually within the following ranges: VERBOSE: 1 - 1999 INFO: 2000 - 3999 WARNING: 4000 - 5999 ERROR/FATAL: 6000 - 7999 FATAL: 8000 - 9998 (The number 9999 is reserved for any possible old message types in previous SunVTS releases for compatibility reasons.)
date time	Tells when the error occurred
testname	The name of the test reporting the error
device_name	The device being tested when the error occurred
FRU_path	A full Solaris device path of the failed FRU; this argument varies, depending on the type of test running when the error occurred; see "Interpreting Failed FRU Information" on page 111 for details
message	Contains test messages, in addition to probable cause and recommended action

Interpreting Failed FRU Information

When a test fails, SunVTS incorporates information about the failed FRU into the error message. The error message indicates the location of the failed FRU on the system. The location is indicated in the form of a path that starts with the board number to which the FRU is connected.

For example, the FRU path of `cpu-unit0` on board number 0 is:

```
cpu-unit0(board0)
```

The FRU path of a disk, `c0t0d0`, controlled by `esp0` on board 0 is:

```
c0t0d0(board0/sbi0/esp0)
```

The FRU path of a disk, `c1t0d0`, connected to a `soc` on board 1 is:

```
c1t0d0(board1/sbi1/soc1/pln1)
```

Note – The FRU path feature is available only on systems that support physical mapping.

Debugging Features

Use the following options to debug your system:

- Verbose—displays a verbose message indicating that the operation is being performed on the device you are testing.
- Core File—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 handled to prevent a core from being generated.
- Run On Error Option—continues testing until the Max Errors number is reached.
- Processor Affinity—lets you attach a process list to a specific processor. If you are an advanced user, you can use this option to isolate faults of a specific processor.

For a description on how to set these options refer to:

- CDE interface—"Options Menu" on page 41
- OPEN LOOK interface—"The Set Options Button" on page 67
- TTY interface—"Setting TTY Options" on page 80

Testing With Record and Replay Options

Use the Start with Record and Replay option to record a sequence of significant events during a testing session, and to replay or view this information at a later time. Once a testing session is recorded, you can use this information to drive the SunVTS kernel so it reproduces the recorded sequence of events. These record and replay features are an effective way to reproduce testing conditions, a helpful debugging tool.

The Record with Replay option can closely reproduce the ordering of the testing events, but it cannot reproduce the time periods of these events because the execution times may vary from one run to another. When scheduling a replay using this option, give consideration only to the ordering and relative scheduling time differences between events during the original run.

These options are limited in the way that they replay a test session because you can only control the Replay option when a command starts, not after the command completes.

The Record with Replay option records the following test events:

- Starting
- Stopping
- Enabling and disabling intervention mode
- Selecting and deselecting

The events are recorded in a file called `vts_replay_file`, which is saved in a log directory that you specify. If no log directory is specified, the `/var/opt/SUNWvts/logs` directory is used by default.

The first part of the `vts_replay_file` consists of the SunVTS kernel and test options settings you used when you started recording. This information is used during the replay to restore the original option settings.

The events are recorded after the option settings are saved. Information is recorded in the following format for each event:

```
event_type rel_time target_object [instance_num] [event_specific]
```

The following table describes each event string.

TABLE 5-5 The `vts_replay_file` Event String Descriptions

Event String	Description
event_type	The type of event can be one of the following: START, STOP, SELECT, DESELECT, or INTERVENTION.
rel_time	The time (in seconds) since the preceding event.
target_object	The object involved in the event, for example, `fpu (fputest)`. This field is ignored if the value is a dash (–) as in the case of an INTERVENTION event.
instance_num	The instance number of the test. A valid number is required for the START and STOP events. This field has a value of –1 for INTERVENTION, SELECT, and DESELECT events.
event_specific	Any additional event-specific information required to replay the event; this field contains the test command line arguments for the START event. For the INTERVENTION event, the value describes the state—either enabled or disabled. This field is blank in the case of STOP, SELECT, and DESELECT.

Tracing a Test

Use the Trace test option to create a log of every system call made when a test is running. This feature logs the system calls using the standard UNIX command `truss`. The trace messages logged by this feature give you a powerful debugging tool when isolating the specific cause of an error.

From a TTY command line, you can use the UNIX `truss(1)` command on any test while running SunVTS. (See the `truss(1)` man page for more information.)

Note – When using the physical map view, you can only see one level in the hierarchy (such as one controller on a system board). Therefore, some devices that are several levels down are not available to trace. In a situation such as this, use the logical view to select tracing for these devices.

▼ To Enable Tracing

1. **Click Commands on the Menu bar (CDE) and pull down to Trace test.**

   The Trace Test window is displayed as shown in the figure below.
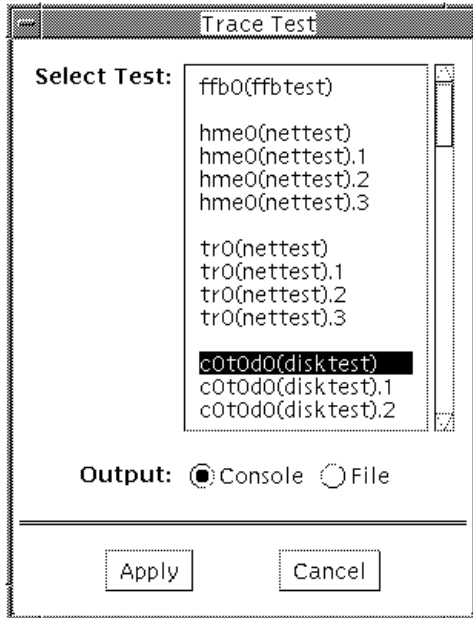
FIGURE 5-6   Trace Test Window (CDE Interface)

2. **Choose a test to trace from the scrollable list of test names and then select Apply, or double-click a test name to enable tracing and close the window.**

   When you select a test, system call tracing is enabled immediately. If the test is already running when you select it, tracing begins immediately and the trace test messages appear in the SunVTS console window.

   Note – You can only select one test at a time to trace when using the SunVTS CDE user interface. You can select multiple tests to trace when using the SunVTS OPEN LOOK user interface.

   ---

3. **Select File and click Apply to write the trace test messages to a file.**

▼ To Disable Tracing

● **Bring up the Trace Test window again, select the highlighted test name, and click Apply.**

This action removes the highlighting and disables tracing.

Controlling SunVTS Security

The SunVTS interface (`vtsui`, `vtsui.ol`, and `vtstty`) must connect to the SunVTS kernel (`vtsk`) *before* it can be used to control testing. The SunVTS kernel selectively accepts "connect to" requests from the SunVTS interface based on entries in the *SunVTS_install_dir*/bin/`.sunvts_sec` file. Connection permission is governed by three categories in this file as follows:

■ HOSTS—if the requesting user is on a host that belongs to the HOSTS category, then this request is granted without any authentication.

■ GROUPS—if the requesting user is a member in a group that is a member of GROUPS category, then the user interface will prompt the user for a password. The SunVTS kernel compares this password against the password database on the system under test (SUT). If the password does not match, or if the user is not on the list, then the connection is rejected.

■ USERS—if the requesting user is a member of the USER category, then the user interface will prompt the user for a password. The SunVTS kernel compares this password against the password database on the SUT. If the password does not match, or the user is not on the list, then the connection is rejected.

A plus (**+**) entry in one of these categories means *all* hosts, groups, or users, are trusted.

The user password needed for authentication is the same password used to log in to the system under test.

The check for connection permission starts by with the HOSTS category, then the GROUP category, and finally, the USERS category. A connection is granted as soon as the connection request matches an entry.

If a security file entry is invalid or if there is no entry in the file, all access except `root` is denied on the local machine. However, you can correct an entry in this file even while the SunVTS kernel is running.

When you specify the `-e` option while starting the SunVTS kernel, the kernel accepts "connect to" requests from any host, regardless of the entries in the `.sunvts_sec` file.

> **Note –** As of SunVTS 3.1, the `.sunvts_sec` file, by default, is configured for root on the SUT. All other "connect to" requests are rejected. This configuration provides maximum security.

The following shows the contents of the default `.sunvts_sec` file.

Security File (.sunvts_sec):

```
#This file should be <SunVTS 3.3 install directory>/bin/.sunvts_sec
#
#Any line beginning with a # is a comment line
#
# Trusted Hosts entry
# One hostname per line.
# A "+" entry on a line indicates that ALL hosts are Trusted Hosts.
# No password authentication is done.
# The line with the label HOSTS: is required to have the list of hosts
#
HOSTS:
#+
#host1
#host2
#
# Trusted Groups entry
# One groupname per line.
# A "+" entry on a line indicates that ALL groups are Trusted Groups.
# User password authentication is done.
# The line with the label GROUPS: is required to have the list of groups
#
GROUPS:
#group1
#
# Trusted Users entry
# One username per line.
# A "+" entry on a line indicates that ALL users are Trusted Users.
# User password authentication is done.
# The line with the label USERS: is required to have the list of users.
USERS:
root
#user1
#user2
```

Installing a Custom Test

Developers can add their own custom tests to the SunVTS environment. This book does not describe custom test development, but does list the tasks necessary to integrate a custom test into the SunVTS environment.

▼ To Install a Custom Test

1. **Copy the custom test binary to the SunVTS binary directory.**

   The default location of this directory is `/opt/SUNWvts/bin`.

2. **Modify the text file called** `.customtest` **according to the file format described below.**

   The options you set in the `.customtest` file become the default options for each test. The tester can change these options using the pop-up option menus on the SunVTS window interface. However, the Reset button returns the options to the default settings that are specified in the `.customtest` file.

3. **Restart SunVTS or reprobe the system.**

   When invoked, SunVTS displays the custom test in the SunVTS user interface.

The `.customtest` File Format

The `.customtest` file is located in two places:

- **32-bit:** `/opt/SUNWvts/bin/.customtest`
- **64-bit:** `/opt/SUNWvts/bin/sparcv9/.customtest`

Modify the 32-bit or 64-bit `.customtest` file according to the Solaris environment that is appropriate for the custom test.

Each line in this file is made up of two or more fields that are separated by a semicolon where:

- The first field is the label or device name (mandatory field).

- The second field is the test name (mandatory field).

- The third field is an option line (optional field). If used, this field must be in the format specified.

- The fourth field is used if the test is scalable. If used, append the keyword SCA to this field.

A user test definition requires a minimum of two fields, separated by a semicolon, as shown in the following `.customtest` file format examples.

- To add a test with no options:

```
% your_label_name;your_test_name
```

- To add the scalability option, append the keyword SCA:

```
% your_label_name;your_test_name;SCA
```

- To custom build an option menu, add an option specification:

```
% Option_Name<Option_Type|Value|Default_Value|Command_Line_Option>
```

- To specify more than one option, separate each option by a comma:

```
% label_name;test_name;Numeric<NUMERIC|0,100|50|numeric>,
Exc_Choice<EXC_CHOICE|Top,Middle,Bottom|Middle|exc_choice>,
Inc_Choice<INC_CHOICE|Left,Center,Right|Left+Center+Right|inc_cho
ice>,Toggle<TOGGLE|This,That|This|toggle>, Text
<TEXT|20|Type_Here|text>, Slidebar<SLIDEBAR|0,10|5|slidebar>,
Errors<CYCLE|Yes,No|No|errors>,
Cycle<CYCLE|First,Second,Third|First|cycle>;SCA
```

SunVTS invokes the above test as follows:

```
% ./test_name -s[vq..] [-i n]
-o dev=user[0,1..],Command_Line_Option=Value...
```

You cannot use the `.customtest` file when a test has a probe attached. You must ensure that the binaries are compatible with the version of the Solaris kernel on which SunVTS is currently running.

Note – If `.customtest` is renamed as `.customtest-<group>`, all its user tests will +appear under the specified <*group*>.

Troubleshooting

Problems and Solutions

Problem: `inetd`

The `inetd` invoked kernel takes a long time to come up.

Solution:

The user interface or `vts_cmd` call can return prematurely. You can reset it by determining the `pid` (process id) of the `inetd` process and sending a HUP signal to it. To do this, type:

```
# ps _ale:grep inetd
# kill -HUP <pid>
```

Problem: Device Probe Failure

A device probe failed due to a problem in the device. If this occurs, information about the failed device is displayed on the command line.

Solution:

Fix or disconnect the failed device, reboot (boot -r), and start SunVTS again.

Problem: TT Session Unavailable

If OPEN LOOK software is not installed, the TT (ToolTalk) session is not available to the SunVTS kernel. In this case, the SunVTS kernel is running but is not accessible.

Solution:

Install the OPEN LOOK software and start SunVTS again.

Problem: SunVTS kernel Not Responding

If the SunVTS kernel is not running when `vtsui` is invoked, the user interface starts and indicates that the host name SunVTS kernel is not responding.

Solution:

Start the SunVTS kernel on the *<host>* system using the procedure described in **"Starting the SunVTS Kernel and Interface Separately" on page 24**. Select "Connect to" from the user interface to reconnect.

SunVTS Tutorial

Follow the procedures in this appendix to become familiar with the basic methods used to configure and run SunVTS.

Tutorials in this appendix:

- "Overview of SunVTS Procedures" on page 123
- "Running SunVTS With CDE (Tutorial)" on page 124
- "Running SunVTS With the TTY Interface (Tutorial)" on page 143
- "Running a Test From the Command Line (Tutorial)" on page 152

Overview of SunVTS Procedures

The following list describes typical steps that you perform to test your system with the SunVTS diagnostic:

1. Become superuser

2. Load required test media and/or loopback connectors

3. Start your desired window environment (CDE, OPEN LOOK, or none)

4. Start the SunVTS diagnostic

5. Configure SunVTS with the desired options

6. Run the tests

7. Review the test results

Note – The tutorials in this chapter guide you through these steps, however, numbered steps in this list do not correspond to the numbered steps in the tutorials.

Running SunVTS With CDE (Tutorial)

This section is divided into the following subsections:

- "Initial Steps" on page 124
- "Start SunVTS on Your System" on page 125
- "SunVTS Testing (Part 1 – Basic Concepts)" on page 125
- "SunVTS Testing (Part 2 – Using Additional Features)" on page 133

▼ Initial Steps

Follow these steps when you start SunVTS:

1. **Log in to the system and become superuser.**

2. **Insert test media (optional, see the note below):**

Several devices require media or loopback connectors for testing. Install such requirements before starting SunVTS to allow the SunVTS kernel to properly identify each device.

You must install media in these devices if you plan to test them in Functional mode:

- Tape drive—load a *scratch* tape in the tape drive that you plan to test. The tape test has a Read-only mode, but use a scratch tape to avoid inadvertently writing over data.
- CD-ROM drive—load a compact disc (CD) into the drive. It can be an audio or data CD.
- Diskette drive—load a *scratch* diskette in the drive. The diskette test has a Read-only mode, but use a scratch diskette to avoid inadvertently writing over data.
- Communication ports—many of these tests require a loopback connector attached to the port. Attach any required loopback connectors for the ports you plan to test. For more information about loopback connectors refer to the *SunVTS 3.3 Test Reference Manual.*

Note – This tutorial does not assume that you have a tape, CD-ROM, or diskette drive or loopback connectors attached to the system that you are testing. Therefore, the following procedures in this tutorial do not require installation of test media or connectors.

▼ Start SunVTS on Your System

The following steps assume that the SunVTS package and the CDE environment is installed on your system, and that you have performed the steps in "Initial Steps".

1. **Start the CDE graphical user interface environment if it is not already running.**

2. **Start the SunVTS application:**

```
# /opt/SUNWvts/bin/sunvts
```

The sunvts command starts the SunVTS kernel (vtsk) and the SunVTS user interface (vtsui, the CDE GUI, in this case). As the kernel initializes, it determines what devices are connected to your system, probes the devices, and passes this information to the user interface.

The user interface that starts is determined on the following criteria:

- When the CDE window manager (DTWM) is running, the default SunVTS GUI is CDE.

- When the OPEN LOOK window manager (OLWM) is running, the default SunVTS GUI is OPEN LOOK.

- If no window manager is running, then SunVTS starts the TTY mode interface.

Note – If you receive an error message such as:
```
connection to ":0.0" refused by server
Xlib: Client is not authorized to connect to Server
Error: Can't open display: :0.0
```
You may need to grant xhost permissions by typing: **xhost +**

There are command line options that *can* be used on the SunVTS command line. For details refer to "To Start SunVTS on a Local System" on page 21.

▼ SunVTS Testing (Part 1 – Basic Concepts)

After performing the steps in the previous section, the SunVTS CDE user interface is displayed on your screen as shown below. SunVTS is in an idle state with all testing parameters set to default values.

This section will step you through basic SunVTS configuration concepts, test execution, and review of test results.
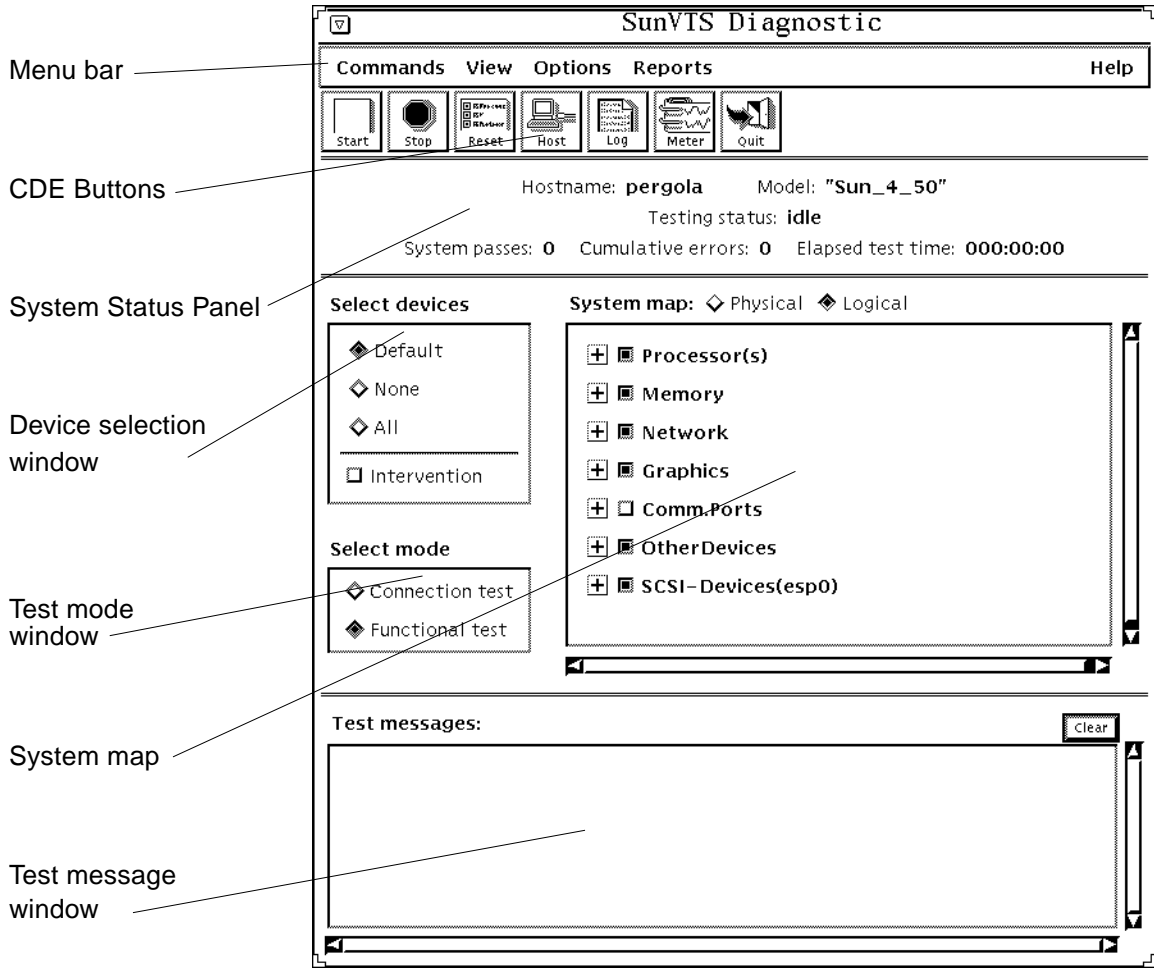
FIGURE A-1 SunVTS Display (CDE)

Note – Refer to "CDE User Interface" on page 36 for more detailed information on the CDE User Interface.

---

1. Select the test mode (refer to FIGURE A-2**):**

Test modes:

- Connection test mode—provides a low-stress, quick testing of the availability and connectivity of selected devices. These tests are non-intrusive meaning they will release the devices after a quick test, and they will not place a heavy load on system activity.

- Functional test mode—provides more robust testing of your system and devices. It will use your system resources for thorough testing and it assumes that there are no other applications running.

Note – When SunVTS in started with the `vtsui.online` command, Functional test mode is restricted to tests and options that do not significantly affect other applications. Refer to "SunVTS Test Modes" on page 4 for more information.

---

a. Click on the Connection test button.

b. Click on the Functional test button.

As you change modes, the tests that are selectable change.

Select mode

- ● Connection test
- ○ Functional test
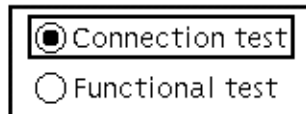
FIGURE A-2   SunVTS Select Mode Buttons

2. **Identify the configuration of your system in the System Map:**

The devices that SunVTS identified on your system are listed in the System Map window of the SunVTS display (see FIGURE A-3).

SunVTS can display devices in two ways:

- Physical mapping—which shows the exact location of each device on the system for Field Replaceable Unit (FRU) identification. From physical mapping, you can determine the actual location of the devices. When possible, the board number and controller type for the device are also displayed. This view is only available on systems that have the `configd` program installed (part of the SyMON `SUNWsyc` package). **Do not select Physical Mapping at this time.**

- Logical mapping— organizes the list of devices, according to their function, into groups. For example, disk, tape, and CD-ROM drives are placed in the SCSI-Devices group. You can focus your testing on a specific group or on all of the groups on the system.
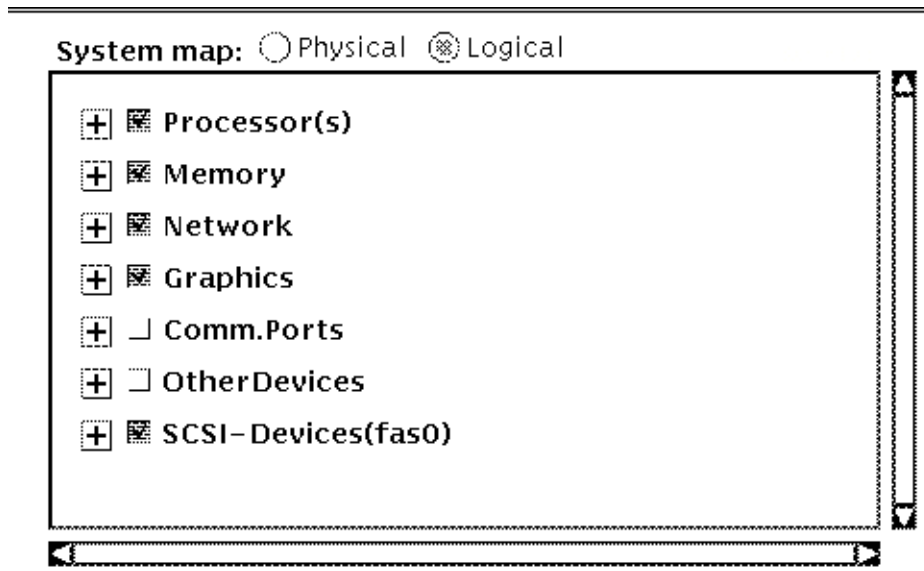
FIGURE A-3 SunVTS System Map (Logical View)

3. Expand the Processor(s) device group to show the individual testable devices by clicking on the plus symbol. (See FIGURE A-4 below.)

A "+" (plus) indicates that the device group is *collapsed,* meaning individual devices are grouped together and hidden from view under a device category.

A "-" (minus) indicates that the device group is *expanded* so you see each device for a given category.

For example, clicking on the plus symbol next to "Processors(s)" expands the Processor category to show the types of testable devices for that group (such as "system" and "CPU-init0") as well as the name of the SunVTS test in parenthesis (such as `systest` and `fputest`) that is used to test each device.

Note – Detailed information about each SunVTS test is located in the *SunVTS 3.3 Test Reference Manual.*
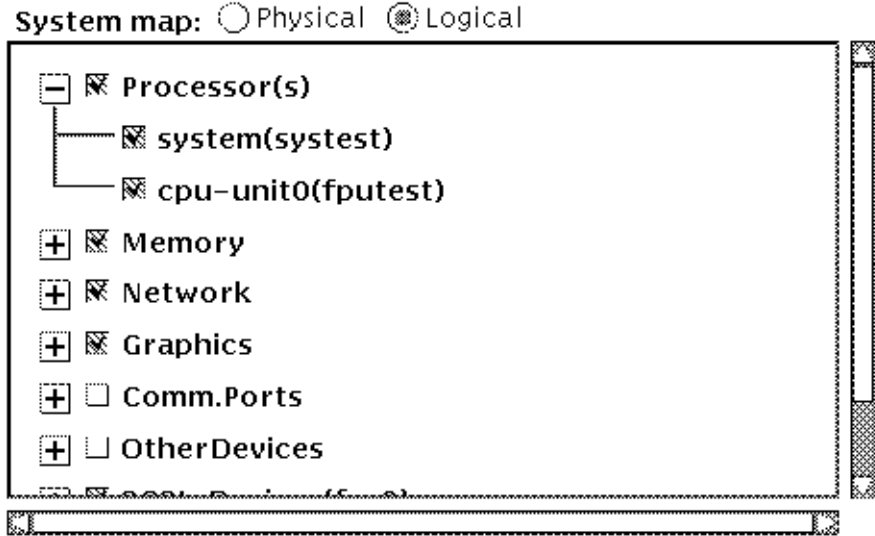
FIGURE A-4 SunVTS System Map (Processor Group Expanded)

4. Click on the check mark next to "system" and "cpu" to deselect these devices for testing.

If a check mark is present then the device is selected for testing.

Some devices are initially selected when SunVTS is first started. These devices are the *default* set of devices to test in Functional mode.

When you select or deselect a *device group*, all devices in that group become selected or deselected.

You will not be able to select some devices such as the Comm-ports and other devices at this time. They require that Intervention mode to be enabled (refer to the next step).

5. Click on the Intervention button (see FIGURE A-5**) to enable the selection of additional tests.**

Certain devices like the Comm-port, tape drive, CD_ROM, and diskette device tests require that you *intervene* before such devices can be selected for testing. These devices require the installation of media or loopback connectors (in Functional mode only).

This tutorial does not test these devices, however, if you wish to run such tests, and you have not loaded the required media, do so now. Afterwards, click the Intervention button (refer to FIGURE A-5 below) to indicate that the required media is

in place. These tests are now selectable, however SunVTS does not verify that the proper media is installed. If you attempt to run such tests without the media, the test will fail.

Note – If you are loading test media *after* SunVTS is started, it may be necessary to have the SunVTS kernel reprobe the system. Refer to "CDE Commands Menu" on page 39 for details.

---

6. **Use the Select devices buttons (see** FIGURE A-5**) to select and deselect devices to test:**

   a. **Click on the "None" button.**

   All tests for all devices are deselected.
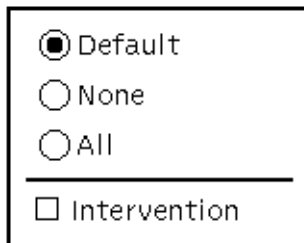
   b. **Click on the "All" button.**

   All tests for all devices are selected. However, if intervention is not enabled then those tests that require intervention will not be selected.

   c. **Click on the "Default" button.**

   SunVTS selects the default set of tests. If interventions is selected then the default tests may be the entire set of tests for your system.

FIGURE A-5   SunVTS Select Devices Button

7. **Set up the following test configuration:**

   a. **Select Connection mode.**

   b. **Select None from the Select devices box.**

   c. **Select (place a check mark in the box) of the Comm-port box.**

> **Note –** If you don't have comm-port displayed, you may not have such a device on your system. In this case, choose another device group such as the Processor(s) device group.

8. **Start the test by clicking on the green Start button in the upper left corner.**

   Testing starts immediately. Since SunVTS is in Connection mode, only one pass of the selected test runs and SunVTS Returns to an idle state.

   Messages are displayed in the Test message window in the lower section of the SunVTS display. Error messages, if they occur, are also reported in this window.

   Colors in the system map indicate pass or fail conditions. During testing, the name of a device changes color from black to green if it has at least one pass and no failures. The moment a device has a failure, the name changes to red.

9. **View the results of the test:**

   a. **Look at the Status area of the display (see** FIGURE A-6**).**

   The following is reported:

   - Testing status—provides the following status of SunVTS:
     - *Idle* indicates that no testing is taking place
     - *Testing* indicates that SunVTS is running
     - *Suspend* indicates that testing is suspended
     - *Replay* indicates that a previously recorded session is displayed
     - *Stopping* is momentarily displayed as SunVTS stops testing
   - System passes—displays the total number of successful system passes (a system pass is when all selected tests have been run once).
   - Cumulative errors—reports the total number of errors from all selected tests.
   - Elapsed test time—indicates the total number of hours, minutes, and seconds that elapsed during testing.

Hostname: **pergola**   Model: **"Ultra-1"**

Testing status: **idle**

System passes: **1**   Cumulative errors: **0**   Elapsed test time: **000:00:01**
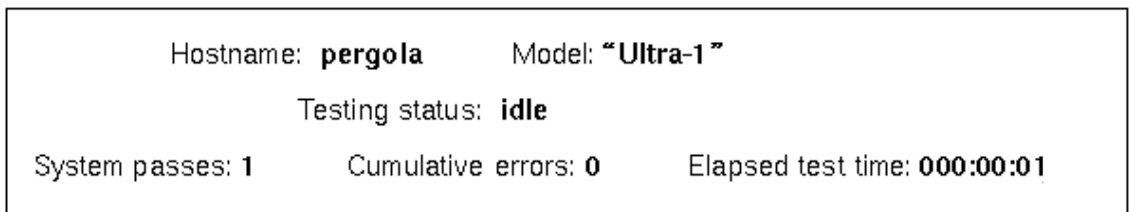
FIGURE A-6   Test Status Area

b. Look at the Test messages window:

This window displays the test status and error messages. There is a scrollbar that gives you access to messages that exceed the window size.
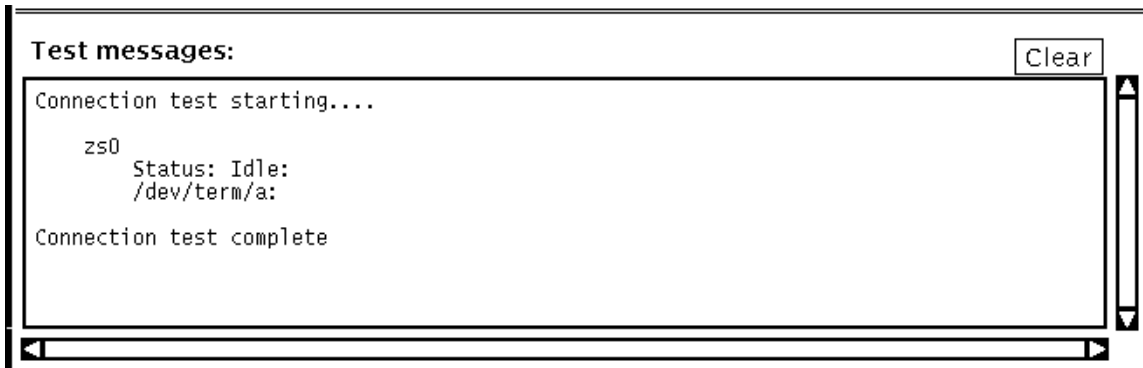
FIGURE A-7 Test Messages Window

c. Look at the Test logs:

   i. Click on the Log button at the top of the display.

   The log file window is displayed. Three different files contain test results:

- SunVTS error status log (`/var/opt/SUNWvts/logs/sunvts.err`)—contains test error messages.
- SunVTS information log (`/var/opt/SUNWvts/logs/sunvts.info`)—contains informative messages that are generated when you start and stop SunVTS. These messages include start and stop times, as well as information that appears in the Status area of the main display.
- Solaris^{tm} system message log (`/var/adm/messages`)—contains a log of all the general UNIX messages (as determined by the `/etc/syslog.conf` file).

   The Log file button in the top of this window allows you to switch between three logs files. The Delete and Print buttons give you quick access to such functions.

   ii. Click on the Log file button to select a different log file to view.

iii. **Click on the Close button.**

The Log file window is dismissed.

10. **Reset the current test statistics by clicking on the Reset button (at the top of the display).**

The test status information is reset to zero. This does not clear the log files.

11. **Clear the Test messages window by clicking on the Clear button (lower right corner of the SunVTS display).**

The window is cleared. This does not clear the log files.

The previous steps introduced you to important SunVTS functionality. To investigate additional SunVTS features continue with the tutorial below. Or, if you want to quit the SunVTS diagnostic, select Quit SunVTS from Commands in the menu bar, and click on UI and Kernel.

▼ SunVTS Testing (Part 2 – Using Additional Features)

The following steps assume that SunVTS is started and that you are familiar with its basic operation as described in part 1.

This section will have you run more thorough tests.

1. **Select Functional test mode.**

2. **Use SunVTS to get a report of your system configuration (see** FIGURE A-8 **):**

a. **Click on Reports from the Menu bar.**

The Reports menu appears.

b. **Click on System configuration from the menu.**

A window showing your system configuration is displayed.

If you have access to a printer and you wish to print a copy of this list, click on the Print button, specify your printer name in the window, and click OK.

c. **Click on the Close button in the system configuration window.**

The configuration window is dismissed.
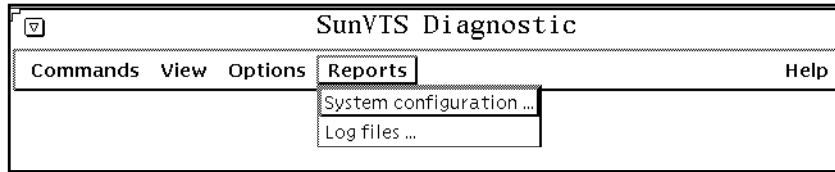
FIGURE A-8   CDE Reports Menu

3. **Use the SunVTS Notify option to receive email:**

   a. **Click on Options from the Menu bar**

      The Option menu appears.

   b. **Click on Notify from the menu.**

      The Notify window appears (see the figure below). The following options are available:

   ■ Send Email—determines how email notification will be handled:

      ■ Disabled (never send email)

      ■ Now (send email immediately)

      ■ On Error (send email when an error occurs)

      ■ Periodically (send email every *x* number of minutes, as defined by *Log Period*)

      ■ On Error & Periodically (send on error and periodically)

   ■ Email Address—indicates the email address where the test status messages are sent.

   ■ Log Period—specifies the time, in minutes, for sending test status email messages.
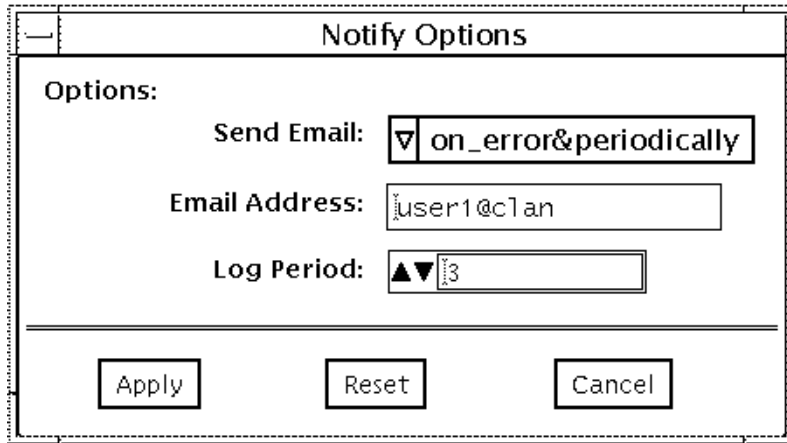
FIGURE A-9   Notify Option Menu

   c. Set up the Notify menu as follows:

      i. Send Email—On Error and Periodically

     ii. Email Address—*your* email address (e.g., user1@pergola)

    iii. Log Period—15 (fifteen minutes)

    iv. Click on Apply.

   Email will be sent to you the next time that SunVTS testing is started, provided that testing exceeds the time specified in the log period, or an error was detected.

4. Set up test execution options:

   a. Click on Options in the Menu bar.

   b. Select Test Execution from the menu (see FIGURE A-10).

   Global test execution parameters are displayed. Use these parameters to control the overall testing activity. These parameters can also be set on individual groups and on individual devices (covered later). The following list summarizes each setting. Additional descriptions are located in "Options Menu" on page 41.

- Stress—runs certain tests in stress mode, working the device harder than normal.
- Verbose—displays verbose messages in the SunVTS Console window
- Core File —when enabled, creates a core file if certain events occur. When disabled, no core file is created, but the event is displayed in the message window and logged in the error log.

- Run On Error—when disabled, SunVTS stops testing when an error occurs. When enabled, SunVTS continues testing until the Max Errors value (see below) is met.
- Max Passes—specifies the maximum number of test passes to perform. If this value is zero, Functional Mode tests will run indefinitely, or until the number of errors meets the Max Error value or Max Time value.
- Max Errors—specifies the maximum number of allowable errors before testing is stopped. If this value is zero, testing continues regardless of errors.
- Max Time—states the time limit (in minutes) for testing. If this value is zero, there is no time limit.
- Number of Instance —specifies the number of test instances (simultaneous copies of a test) for each test that supports multiple instances.

c. **Apply the following settings:**

- Stress – disabled
- Verbose – enabled
- Core – disabled
- Run-on Error – enabled
- Max Passes – 2
- Max Errors – 10
- Max Time – 0
- Num. of Instances – 2

Note – These parameters are not applicable when SunVTS is in Connection test mode.
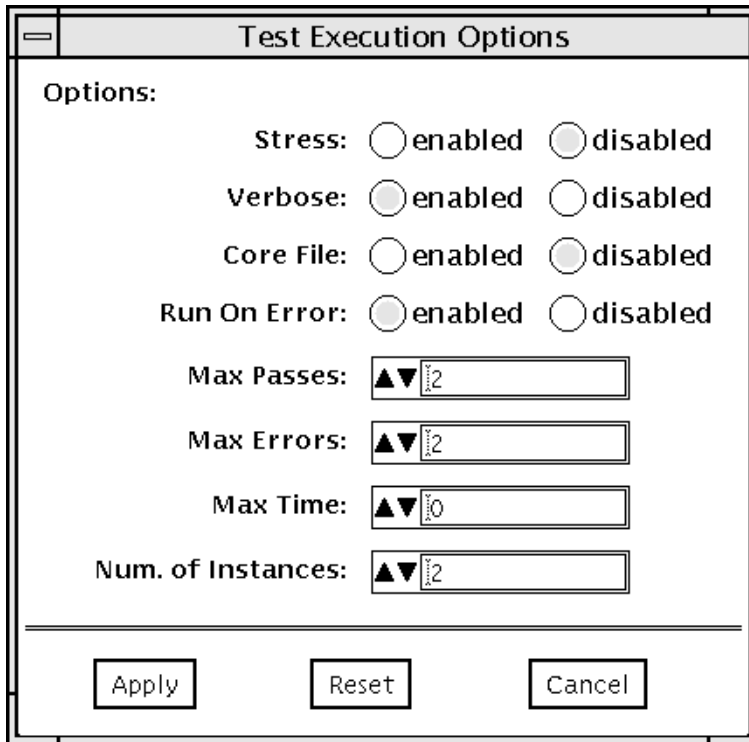
FIGURE A-10 Test Execution Option Menu

d. Click on apply.

The Test Execution menu is dismissed.

5. Expand all Device Groups:

Instead of expanding each device group by clicking on each plus in the System Map, you can accomplish the same thing through the View commands as follows:

a. Click on View in the Menu bar.

b. Click on Open system map.

All device groups are expanded in the system map, showing each device and the test associated with it.

6. Access the Test Parameter Options for a specific device:

These options allow you to specify specific test options for each test. The menu that is displayed is different for each test. This tutorial looks at the options for `nettest` as an example. To see the options for other tests, bring up the Test Parameters menu the same way. For detailed information about each test and associated options, refer to the *SunVTS 3.3 Test Reference Manual*.

a. Click the right mouse button (menu button) on `nettest` **to display a pull-down menu.**

b. Click on Test Parameter Options.

The Test Parameter Options menu is displayed (see the figure below).

Print warning enabled
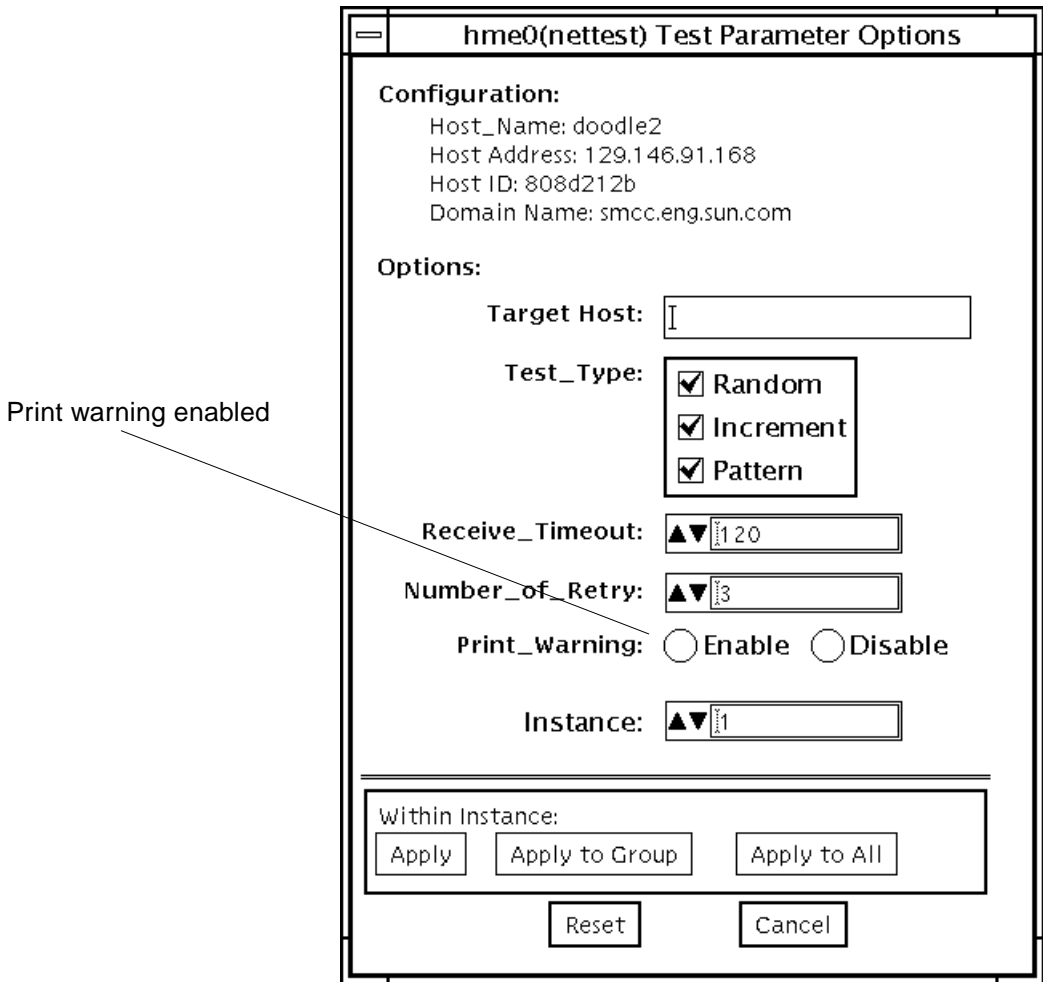
FIGURE A-11 Example of a Test Parameter Menu

c. Click on Enable for the Print_Warning option (refer to the above figure).

d. Click on Apply.

The modified option is assigned and the menu is closed.

Note – For descriptions of the Apply to Group and Apply to All buttons refer to "Test Parameter Option Menu (CDE)" on page 100.

---

7. Access the Test Execution Options for a device group:

The Test Execution Options pop-up menu provides the access to the same options as Test Execution under Options in the Menu bar. The difference is that these Test Execution options apply only to a specific device or device group (used in this tutorial) and are not global settings. For descriptions on each setting refer to "Options Menu" on page 41.

a. Click the right mouse button (menu button) on Processor(s).

The pull-down menu provides access to configuration menus for all devices within that *device group*.

b. Select Test Execution.

c. Change the Max Passes parameter to 4.

In an earlier step, you set the global Max Passes parameter to 10. By changing this parameter, all device tests will be limited to ten passes, but all devices in the Processor group will be limited to 4.

d. Click on Apply.

8. View the performance statistics for the system by clicking on the Meter button (at the top of the display).

The Sun Performance Meter panel is displayed (see FIGURE A-12). This meter shows a graphical display of the system performance statistics even while SunVTS is in the idle state. It may be convenient to watch these meters when you are performing stress testing.

The following statistics are reported:

- CPU—percentage of CPU being used
- pkts—Ethernet packets per second
- page—paging activity in pages per second
- swap—jobs swapped per second
- intr—number of device interrupts per second
- disk—disk traffic in transfers per second
- contxt—number of context switches per second
- load—average number of processes over the last minute
- colls—Ethernet collisions per second
- errs—receiving packet errors per second
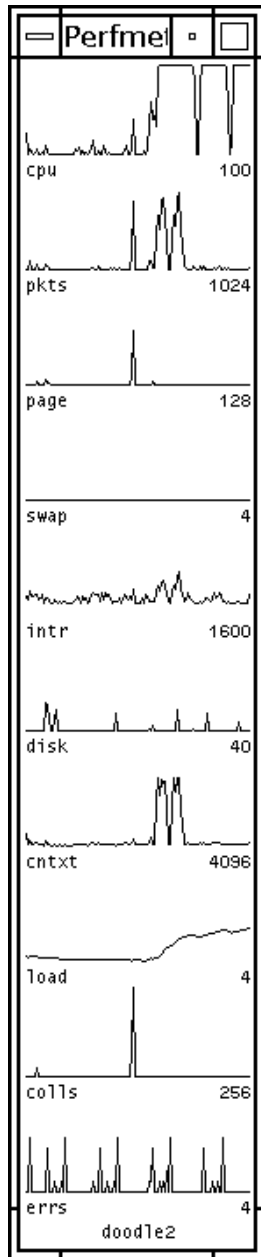
FIGURE A-12 The Performance Meter Panel

9. **Set up the following test configuration:**

   a. **Select Functional Test Mode.**

   b. **Select None from the Select devices box.**

   c. **Select the following devices to test:**

      i. **Processor(s) device group**

      ii. **Network device group**

10. **Click on the Start button.**

    Testing starts and will run for quite a while.

11. **Observe the following while testing is in progress:**

    ■ Many messages are displayed in the Test message window because the SunVTS Verbose option is enabled.

    ■ Asterisks appear next to the device indicating which devices are currently being tested.

    ■ The devices under test change color. Green indicates that at least one pass is complete and there are no errors. Red indicates that at least one error has occurred.

    ■ The Performance meter panel indicates changes in system activity levels.

    ■ You may have received email, provided the log period has been met.

12. **Click on the Stop button.**

13. **Check the status of individual tests as follows:**

    a. **Click the right mouse button (menu button) on** `systest`.

    b. **Select Status from the menu.**

       A menu displays the test, number of passes, and number of failures.

    c. **Click on Close to dismiss the status window.**

14. **To quit the SunVTS diagnostic, select Quit SunVTS from Commands in the menu bar, and click on UI and Kernel.**

Note – Before quitting SunVTS, you must stop any tests that are running. Some tests, such as the tape test, do not stop immediately because they require time to rewind.

This concludes the "Running SunVTS With CDE (Tutorial)".

Additional SunVTS features are described throughout this book.

Running SunVTS With the TTY Interface (Tutorial)

▼ To Use SunVTS With the TTY Interface

The TTY interface is a ASCII based, screen-oriented interface that does not require a graphical window environment. Most of the control and monitoring options that are available in the SunVTS GUI interface are also available in the TTY interface.

You can use the TTY interface to run SunVTS from a terminal, shelltool, command tool, or a modem attached to a serial port.

1. Start SunVTS with the TTY interface:

The TTY main window is displayed (figure below):

```
# /opt/SUNWvts/bin/sunvts -t
```

Control
panel

System
map

```
-******Hostname:doodle2~~~~~Model:"Ultra-1"~~~~~SunVTS version 3.0 beta2.2******-
 start     reset      quit         reprobe      test_mode     tests_select
 grouping set_options  option_files log_files   connect_to    intervention
L***************************[FWD:^F][BACK:^B]*****************************
         -Status-                         -Test_Groups-
       System_status:idle        [*] Processor(s)          Options
System_passes:0    Total_errors:0 [*] Memory               Options
       Elapsed_time:000:00:00     [*] Network              Options
                   Status_view    [*] Graphics             Options
                                  [ ] Comm.Ports           Options
                   Passes Errors  [*] OtherDevices         Options
                                  [*] SCSI-Devices(fas0)   Options
  Processor(s)          0     0
   system(systest)      0     0
   cpu-unit0(fputest)   0     0
   cpu-unit0(fputest).1 0     0
  Memory                0     0
   kmem(vmemtest)       0     0
   kmem(vmemtest).1     0     0
   mem(pmemtest)        0     0
   mem(pmemtest).1      0     0
  Network               0     0
   hme0(nettest)        0     0
   hme0(nettest).1      0     0
  Graphics              0     0
   ffb0(ffbtest)        0     0
  OtherDevices          0     0
   sound0(audiotest)    0     0
  SCSI-Devices(fas0)    0     0
   c0t0d0(disktest)     0     0
   c0t0d0(disktest).1   0     0

                   -Console-
```

Status
panel

Console
Area

FIGURE A-13 TTY Main Window

2. **Identify the four main areas in the display (see** FIGURE A-13**):**

- Control panel—access to SunVTS commands and options.
- System map—shows the testable devices (categorized in test groups) and provides access to their test options.
- Status panel—displays the SunVTS test status information
- Console Area—the area where test and error messages are displayed. No user input is possible in this area.

3. **Review these keyboard commands:**

Keyboard commands, instead of mouse and pointer action, are used to control SunVTS with the TTY interface. The following steps lead you through some of the common procedures. In all cases, use these keyboard commands to select and apply your test input.

TABLE A-1   TTY Keyboard Commands

Key	Description of Action
Tab	Moves the highlight or shifts the focus to the next window. For example, if you are working in the Control panel and press the Tab key, the focus (or highlight) shifts to the Status panel. A panel that is highlighted will be bordered by asterisks (*). Before you can change an option, you must first highlight that panel.
Return	- Displays a menu - Selects and applies a choice or a command in a menu
Spacebar	Selects or deselects an option checkbox; [ ]= select; [*]= deselect
Arrow keys	Moves between options in a highlighted panel
Backspace key	Deletes text in a text field
Escape	Closes a pop-up menu or window
Control-F	Scrolls forward in a scrollable window
Control-B	Scrolls backward in a scrollable window
Control-X	Quits the TTY user interface but leaves the SunVTS kernel running
Control-L	Refreshes the TTY window

4. **Move between the main display areas (press the Tab key several times).**

As you use the Tab key, your position in the display is indicated by dark rectangle. It is important to keep track of your position in the display. When the dark triangle is over a word or command, it is *highlighted* (ready to be selected).

As you press the Tab key, you move from the Control panel to the Status panel to the System Map, and back.

5. **Select your test mode:**

   a. **Use the Tab key until you are in the Control panel area (`Start` will be highlighted).**

   b. **Use the right arrow key to highlight `test_mode`.**

   c. **Use the Return key to display the `test_mode` menu.**

   d. **Use the down arrow to highlight `Connectivity` (Connection mode).**

      (The up and down arrows are used to move between options.)

      For descriptions of Connection and Functional test modes refer to "Test Modes" on page 92.

   e. **Press Return to apply the change and exit the menu.**

   f. **Press the Return key again to reenter the `test_mode` menu.**

   g. **Use the arrow key to highlight `Functional` and press Return.**

      SunVTS prompts you to verify this change.

   h. **Use the arrow key to highlight `OK` and press Return.**

6. **Use the Tab key to move to the System map (`Test_Group` area).**

   The asterisk(`[*]`) in the brackets, next to group name, indicates that all devices in that group are selected for testing.

7. **To see devices listed inside a group:**

   a. **Use the right arrow key to highlight `Processors`.**

   b. **Use the Return key to display a menu that shows you the individual devices and their tests (see the following figure).**

```
┌─************Processor(s)************─┐
│ ██[*]█ system(systest)              │
│  [*] cpu-unit0(fputest)             │
│                                     │
│                                     │
│                                     │
│                                     │
│                                     │
│                                     │
│                                     │
│                                     │
│                                     │
│                                     │
│                                     │
│                                     │
│                                     │
└─*************[DONE:ESC]*************─┘
```

FIGURE A-14 Processor Group Tests (TTY Interface)

    c. Press the Escape key to Return to the main menu.

8. Deselect test groups:

    a. Press the Tab key to move to the Control panel area.

    b. Use the arrow key to highlight `test_select`**.**

    c. Press the Return key to open the `test_select` **menu.**

    d. Highlight None, and press Return.

    All asterisks next to each test groups are no longer displayed indicating that no tests are selected.

9. Modify device specific test options:

    a. Press the Tab key to move to the System Map.

    b. Use the arrow key to highlight `Network` **and press Return.**

    Your network device(s) are shown in the menu.

    c. Highlight `nettest` **(or whatever network test is available on your system), and press Return.**

    d. Highlight `Test_Parameters` **and press Return.**

    The Test Parameters menu for nettest is displayed. For the purpose of this tutorial, you will only be directed to change the `Print_Warning` option.

    e. Use the arrow keys to highlight the word `Disabled` **(next to** `Print_Warning`**, refer to the following figure).**

```
                      ──── Network ────
              ┌────────────────────────────────┐
              │      [ ] hme0(nettest)          │
      ┌───────────────────────hme0(nettest)────────────────────┐
      │ **********************hme0(nettest)********************* │
      │ Configuration:                                          │
      │                                                         │
      │ Host_Name:   doodl2                                     │
      │ Host Address:   129.144.41.164                          │
      │ Host ID:   808d4444                                     │
      │ Domain Name:   lmr.com                                  │
      │                                                         │
      │ Options:                                                │
      │                                                         │
      │   Target Host:                   _____   │
      │   Test_Type:                 Random+Increment+Pattern   │
      │   Receive_Timeout: [1-600]       120                    │
      │   Number_of_Retry: [0-128]       3__                    │
      │   Print_Warning:                 Enable                 │
      │   Instance:                      1__                    │
      │                                                         │
      │    Apply      To Group      To All      Reset           │
      │                                                         │
      │ ********************************************************* │
      └─────────────────────────────────────────────────────────┘
```

FIGURE A-15 `nettest` Test_Parameters (TTY Interface)

f. Press Return once to open the `enable/disable` **menu, and again to select**
   `enable`.

The `Print_Warning` value is set to `enable`. Do not press the Escape key; the change must be *applied*.

g. Use the arrow keys to highlight `Apply`**, and press Return.**

The change is applied and you return to the previous menu.

Note – Refer to "Test-Specific Options" on page 99 and the SunVTS 3.3 Test Reference Manual for more information about the test-specific menus.

---

h. Press Return to enter the `nettest` **option menu again.**

i. Highlight `Test_Execution`**, and press Return.**

j. Highlight the `Verbose` **option "disabled", and press Return twice to change it to** `enabled`**.**

k. Use the arrow keys to highlight `Apply`**, and press Return.**

10. **Select a device for testing:**

Any number of tests can be selected. For the purpose of this tutorial, you will only be directed to select one test (`nettest`).

a. **Use the arrow key to highlight the brackets (**[ ]**) next to** `nettest`**.**

b. **Press the space bar.**

An asterisk appears in the brackets indicating that this test is selected.

c. **Press Escape to return to the main TTY window.**

The system map will show an asterisk next to the Network group (refer to the following figure).

```
┌***************Test_Groups**************┐
│  [ ] Processor(s)          Options     │
│  [ ] Memory                Options     │
│  [*] Network               Options     │
│  [ ] Graphics              Options     │
│  [ ] Comm.Ports            Options     │
│  [ ] OtherDevices          Options     │
│  [ ] SCSI-Devices(fas0)    Options     │
│                                        │
│                                        │
│                                        │
│                                        │
│                                        │
│                                        │
│                                        │
│                                        │
│                                        │
│                                        │
└****************************************┘
```

FIGURE A-16 Network Group Selected in the System Map (TTY Interface)

11. **To set global options:**

a. **Use the Tab key to move to the Control panel area.**

b. **Use the down arrow to move to the second row of commands.**

c. **Use an arrow key to highlight** `set_options`**.**

d. **Press Return to open the** `set_options` **menu.**

e. **Press Return again to open the** `Thresholds` **menu.**

f. **Type** 3 **next to** `Max_System_Passes`**.**

g. **Use the arrow keys to highlight** `Apply` **and press Return.**

12. **To start testing:**

a. **Use the arrow keys to highlight** Start **in the Control panel area.**

b. **Press Return once to get the start menu, and again to select** Start.

Testing begins. The Console window displays messages because the verbose option is enabled. The Status panel displays the testing status such as the system status, passes, errors, and the elapsed time.

Note – nettest checks all the networking hardware on the system CPU board and separate networking controller cards. For this test to be meaningful, the system must be attached to a network.

---

13. **Review the test results:**

a. **Observe the message window that appears when testing is done (refer to the figure below).**

This window displays the test results for all of the tested devices.

```
**************************************Message***************************************
(doodle2)Testing completed:  3 pass(es), 0 error(s)
press [ESC] to dismiss
***********************************************************************************
```

FIGURE A-17 TTY Message Window

b. **Press Escape to dismiss the Message window.**

No other commands will work until this window is dismissed.

14. **Review the log files:**

SunVTS events are recorded in three log files. Refer to "The Log Files Button" on page 74 for details. This tutorial directs you to view the contents of the Information log.

a. **Tab to the Control panel area.**

b. **Highlight** log_files **and press Return.**

c. **Highlight** Information **and press Return.**
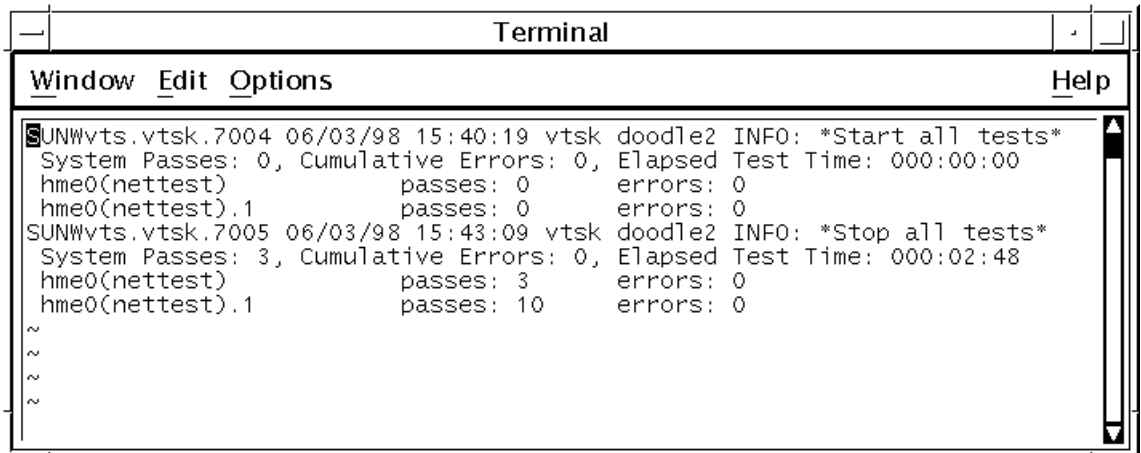
d. Highlight `Display` **and press Return.**

The contents of the SunVTS Information log are displayed.

To display the log file, SunVTs opens a temporary file using the default editor for the shell (Bourne, korn, or c-shell, and so on) that you are using. In many cases, this is the `vi` editor. All of the standard editor commands are valid in this file, however, no changes will alter the permanent log file.

Assuming that you are using the `vi` editor, use the following `vi` commands to view the log file contents:

- Arrow keys—move the cursor one line, or character at a time.
- Control-F—display the next screen
- Control-B—display the previous screen
- /string—search forward for string
- Esc,Q—quit

FIGURE A-18 SunVTS Information Log (TTY Interface)

e. When you are done reading the information log file, press the Escape key, then `:q` **to dismiss it.**

f. Press Escape again to dismiss the `log_file` **menu.**

15. **To reset the current test status information:**

It is a good idea to reset previous test status information before you begin another test session.

a. Tab to the Control panel area.

b. Highlight `reset` **and press Return.**

The Status panel is cleared.

Note – The messages in the lower Console window are not cleared by reset.

---

16. **To Exit SunVTS:**

   a. **If you are not in the Control panel area, move there now (Tab key).**

   b. **Highlight** `quit` **and press Return once to get the Quit menu, and again to select** `quit UI and kernel`.

   SunVTS is closed and your display is cleared.

Running a Test From the Command Line (Tutorial)

In some cases it may be more convenient to run a single SunVTS test from the command line. 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.

There are two directories where tests reside:

- 32-bit tests– `/opt/SUNWvts/bin/`*testname*
- 64-bit tests– `/opt/SUNWvts/bin/sparcv9/`*testname*

Use the pathname based on the type (32-bit or 64-bit) of operating system that is running.

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 A-2 below for details.
- Test specific arguments—unique to a specific test. Refer to the *SunVTS 3.3 Test Reference Manual* for details.

The standard syntax for command line execution is:

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

The standard command-line argument usage for all SunVTS tests is:

TABLE A-2   Standard Command-line Arguments

Argument	Definition
-s	Run a test as though it were invoked from the SunVTS kernel (vtsk). This causes the test to send output to an RPC port that the SunVTS kernel is using. 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.
-u	Displays command line usage information.
-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 SunVTS is started 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.
-i *number*	Defines the number of instances for scalable tests.
-p *number*	Defines the number of passes.
-w *number*	For scalable tests, defines to which instance the test is assigned.
-o	Used to indicate 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.

▼ Run A Single Test from the Command Line

1. Review the command line syntax and arguments for the test you plan to run:

There are nearly fifty individual SunVTS tests. The tests that you choose to run depends on the configuration of your system. For this exercise you are directed to run one of three tests (for devices that are somewhat common to all configurations.) Choose the test that matches your system configuration (choices are listed below). For information on command line syntax and test options refer to the *SunVTS 3.3 Test Reference Manual.*

2. Load any required test media (tape, CD, or diskette) or loopback connectors required by the test.

> **Note –** This is a necessary step for several tests, however, none of the examples in this exercise require test media or loopback connectors.

3. Run the test (choose one of the examples below):

To test your audio device:

```
# /opt/SUNWvts/bin/audiotest -vf -p1 -o M,X
```

In this example, `-vf -p1 -o` are standard arguments (common to all tests), and `M,X` are two arguments specific to the `audiotest`. Notice that the test specific arguments are separated by a comma and no spaces.

To test your disk drive:

```
# /opt/SUNWvts/bin/disktest -n -p2 -o dev=c0t0d0
```

This example tests a disk drive called `c0t0d0`. You may need to replace this device name with a device name of a disk that is connected to your system.

To test your CPU:

```
# /opt/SUNWvts/bin/systest -v -f -p3 -i5
```

4. Watch the display as the tests run.

If an error occurs, an error message will be reported to the screen. Since the test is running without the SunVTS kernel, events and error are not logged in log files.

Index

V

W