



SunVTST[™] 2.1 User's Guide

Solaris[™] 2.5.1

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Contents

Contents iii

Figures ix

Tables xiii

1. Overview of SunVTS 2.1 19

Test Modes 21

User Interfaces 21

SunVTS Architecture 21

 SunVTS Kernel 22

 SunVTS User Interface 22

 SunVTS Hardware tests 22

SunVTS Features 24

2. Using SunVTS 31

Software Requirements 31

Starting SunVTS 32

 In a Window Environment 34

 In TTY Mode 34

 Using Other Commands to Start SunVTS 34

- ▼ To Connect to a Remote Machine's SunVTS Kernel 36
 - Using `vtstty` to Start the TTY Interface 36
- ▼ To Run the TTY Interface in a `telnet` or `tip` Window 37
- Using SunVTS on a Remote Machine 38
 - ▼ To Run SunVTS on a Remote Machine 41
- SunVTS on a Standalone System 42
 - ▼ To Run SunVTS on a Standalone System 42
 - Invoking the SunVTS Kernel (Auto Invoke) 42
- Quitting SunVTS 43
- Security 43
- Notification by Email 46
- Runtime Considerations 47
 - Managing Swap Space 47
 - Heavy System Loads 48
 - Running Other Applications and SunVTS 48
 - Using `vmem` to Reserve Swap Space 49
- 3. User Interfaces 51**
 - CDE User Interface 51
 - CDE Menu Bar 52
 - CDE Commands Menu 53
 - ▼ To Use the Reprobe Button 54
 - Using the Trace Test 55
 - ▼ To Enable Tracing 55
 - ▼ To Disable Tracing 56
 - CDE View Menu 56
 - CDE Options Menu 56
 - CDE Reports Menu 61

System Configuration	61
▼ To Print the Test System Hardware Configuration	62
Log Files	63
▼ To Display or Print Log Files	63
CDE Help Menu	64
CDE Tool Bar	64
CDE Buttons	65
CDE System Status Panel	67
CDE Device Selection and Status Window	67
▼ To Select a Device from the Test Option Menu	68
Displaying Status in the System Map Window	69
CDE Test Message Console	70
OPEN LOOK User Interface	72
OPEN LOOK System Status and Test Status	73
Test Status Buttons	73
OPEN LOOK Performance Meter	75
OPEN LOOK Control Panel	76
Using Control Selections	77
▼ To Reset Information in the Test Status Panel	78
▼ To Use the Connect to Button	80
▼ To Use the Reprobe Button	81
▼ To Use the Trace Test Button	82
▼ To Deselect a Test	83
▼ To Send Trace Messages to the Console or to a Log File	83
Using Option Choices	84
▼ To Use the Set Options Button	84
▼ To Use the Select Tests Button	88

- ▼ To Use the Option Files Button 88
- Information (Info) Choices 89
 - Using the Sys Config Button 89
- ▼ To Display the Hardware Configuration of the Test System 89
- ▼ To Print the Hardware Configuration of the Test System 90
 - Log Files 91
- ▼ To Access Files from the Log Files Window 91
 - Choosing the System View 91
 - Using the OPEN LOOK Test Selection Panel 92
 - OPEN LOOK Console Panel 94
- TTY Interface 94
 - TTY Main Window 95
 - Navigating Through the TTY Interface 96
 - Setting TTY Options 96
 - ▼ To Select and Change System Options from the TTY Option Window 96
 - Selecting Tests and Test Groups for Testing in TTY 99
 - ▼ To Select and Deselect Tests and Test Groups 99
 - Using the TTY Status_view Menu 100
 - ▼ To Scroll Through Tests Using the Status_view Menu 101
 - Using the TTY Log_Files Menu 102
 - ▼ To Display, Print, or Remove Log Files 102
- 4. SunVTS Testing Environment 105**
 - System Mapping 105
 - Test Selection 106
 - Choosing Tests in the Test Selection Panel 106
 - Test Modes 106
 - Connection Test Mode 106

Functional Test Mode	107
Functional Test Mode via Solstice SyMON	107
Test Execution Options	109
Setting Options	111
Advanced Options	112
Scalability of Tests	112
Preparing for SunVTS Testing	113
Loopback Connectors	113
Blank or Scratch CDs, Tapes, and Diskettes	114
Testing Frame Buffers	114
▼ To Activate the Frame Buffer Test	114
Testing Multiple Frame Buffers	115
Starting the Testing Session	116
Suspending the Testing Session	116
Resuming the Testing Session	116
Resetting the Test Environment	117
Stopping the Testing Session	117
Monitoring Test Status	117
Reviewing Log Files	119
Interpreting Failed FRU Information	122
Debug Features	123
Testing with Record and Replay Options	123
Installing <code>.customtest</code>	125
▼ To Copy the Test Binary to the <code>sunvts</code> Installation Directory	125
The <code>.customtest</code> File Format	125
The <code>vtsp</code> Utility	127
Using <code>vtsp</code> on a Local Machine	127

- ▼ To Display the Devices of a Machine Running the SunVTS Kernel 127
 - Using `vtsp` on a Remote Machine 129
- ▼ To Display Devices of a Remote Machine Running the SunVTS Kernel 129
 - Option Files 129
 - ▼ To Save an Option File 130
 - ▼ To Load a Previously Saved Option File 130
 - ▼ To Remove an Option File 131

5. Troubleshooting 133

Figures

FIGURE 1-1	CDE SunVTS Diagnostic Window	20
FIGURE 1-2	SunVTS Architecture	23
FIGURE 2-1	Using SunVTS Over Modem Lines	39
FIGURE 2-2	Using SunVTS Over the Network	40
FIGURE 2-3	Notify Options Pop-up Window	46
FIGURE 2-4	Swap Space Warning Message	48
FIGURE 3-1	Common Desktop Environment (CDE) Display	52
FIGURE 3-2	CDE Menu Bar	52
FIGURE 3-3	CDE Commands Pop-up Menu	53
FIGURE 3-4	CDE Reprobe Confirmation Pop-up Window	54
FIGURE 3-5	CDE Trace Test Window	55
FIGURE 3-6	CDE View Pop-up Menu	56
FIGURE 3-7	CDE Options Pull-Down Menu	57
FIGURE 3-8	CDE Options Pop-up Windows	60
FIGURE 3-9	CDE Reports Menu	61
FIGURE 3-10	Typical System Configuration Information	62
FIGURE 3-11	Log File Pop-up	64
FIGURE 3-12	CDE Tool Bar	65
FIGURE 3-13	CDE Connect to Host Window	66

FIGURE 3-14	CDE System Status Panel	67
FIGURE 3-15	CDE System Map, Logical View	68
FIGURE 3-16	CDE Device-Specific Option Menu	69
FIGURE 3-17	CDE Status Pop-up Window	69
FIGURE 3-18	CDE System Map Window Areas that Indicate Pass or Fail	70
FIGURE 3-19	CDE Test Message Console	71
FIGURE 3-20	OPEN LOOK Main Window	72
FIGURE 3-21	OPEN LOOK System Status Panel	73
FIGURE 3-22	OPEN LOOK Test Status Buttons	74
FIGURE 3-23	OPEN LOOK Test Status Button Menu	74
FIGURE 3-24	OPEN LOOK Performance Meter	75
FIGURE 3-25	OPEN LOOK Control Panel	76
FIGURE 3-26	OPEN LOOK Reset Button	78
FIGURE 3-27	OPEN LOOK Suspend/Resume Button	79
FIGURE 3-28	OPEN LOOK Terminate Kernel Only Window	79
FIGURE 3-29	OPEN LOOK Session Connection Window	80
FIGURE 3-30	OPEN LOOK Reprobe Confirmation Pop-up Window	81
FIGURE 3-31	OPEN LOOK Trace Test Pop-up Window	82
FIGURE 3-32	OPEN LOOK Selected Trace Tests on the Test Status Panel	83
FIGURE 3-33	OPEN LOOK Options Windows	85
FIGURE 3-34	OPEN LOOK Select Tests Pop-up Window	88
FIGURE 3-35	OPEN LOOK Option File Window	89
FIGURE 3-36	OPEN LOOK Typical System Hardware Configuration Window	90
FIGURE 3-37	OPEN LOOK Sample Print System Configuration	90
FIGURE 3-38	OPEN LOOK Log Files Menu	91
FIGURE 3-39	OPEN LOOK System View Selections	92
FIGURE 3-40	OPEN LOOK Test Selection Panel	92
FIGURE 3-41	OPEN LOOK Console Panel	94

FIGURE 3-42	TTY Main Window	95
FIGURE 3-43	TTY System Option Categories	97
FIGURE 3-44	Selecting a Menu Option in TTY	98
FIGURE 3-45	Changing a Text Field Option in TTY	98
FIGURE 3-46	Deselecting a Test Group in TTY	99
FIGURE 3-47	Selecting a Test in TTY	100
FIGURE 3-48	TTY Status_view Menu	101
FIGURE 3-49	Using the TTY Log Files Menu	102
FIGURE 3-50	Sample TTY Log File	103
FIGURE 4-1	Selecting and Deselecting Tests	109
FIGURE 4-2	Test Option Panel	112
FIGURE 4-3	Suspend/Resume Button	116
FIGURE 4-4	Test Status Icons	118
FIGURE 4-5	Log Files Menu	119
FIGURE 4-6	Info Log File	120
FIGURE 4-7	Log Files Display	122
FIGURE 4-8	Option File Window	130
FIGURE 4-9	Option File Name Menu	131

Tables

TABLE 1-1	SunVTS Features	24
TABLE 2-1	The <code>sunvts</code> Syntax	33
TABLE 2-2	The <code>vtsk</code> Syntax	35
TABLE 2-3	The <code>vtsui</code> Syntax	36
TABLE 2-4	The <code>vtstty</code> Syntax	37
TABLE 2-5	Notification by Email	47
TABLE 3-1	CDE Commands Pop-up Menu	53
TABLE 3-2	CDE Global Options	57
TABLE 3-3	OPEN LOOK Control Panel	76
TABLE 3-4	OPEN LOOK Global Options	86
TABLE 3-5	TTY Keyboard Commands	96
TABLE 3-6	Status_view Menu Options	101
TABLE 3-7	TTY Log_files Menu Options	102
TABLE 4-1	Test Execution Options	108
TABLE 4-2	System Options	110
TABLE 4-3	SunVTS Test Message Syntax	121
TABLE 4-4	The <code>vts_replay_file</code> Event String Descriptions	124

Preface

The SunVTS™ 2.1 application is a system exerciser that extends diagnostic test coverage and features. The *SunVTS 2.1 User's Guide* describes how to use the Common Desktop Environment (CDE), OPEN LOOK®, text-based terminal (TTY) user interfaces, and SunVTS command line interfaces, and discusses its features.

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

Use the table below to find the information you need.

How do I use SunVTS?	<i>page 31</i>
How do I start SunVTS?	<i>page 32</i>
What is unique about the SunVTS environment?	<i>page 21</i>
Where can I find a list of SunVTS features?	<i>page 24</i>
What do the hardware tests validate?	<i>page 22</i>
Where is the overview of the CDE interface?	<i>page 51</i>
Where is the overview of the OPEN LOOK interface?	<i>page 72</i>
Where can I find pointers on the TTY interface?	<i>page 94</i>

How This Book Is Organized

Chapter 1, “Overview of SunVTS 2.1,” describes the SunVTS architecture, and provides an annotated list of features.

Chapter 2, “Using SunVTS,” provides the information you need to start using SunVTS.

Chapter 3, “User Interfaces,” describes the CDE and OPEN LOOK SunVTS graphical user interfaces (GUIs) and the TTY command line interface.

Chapter 4, “SunVTS Testing Environment,” describes a sample SunVTS testing environment.

Chapter 5, “Troubleshooting,” provides problem-solving techniques for SunVTS.

Related Books

The following table lists other SunVTS documents and related manuals:

TABLE P-1 SunVTS Documents

Document Title	Part Number
<i>SunVTS 2.1 Test Reference</i>	802-7300
<i>SunVTS 2.1 Quick Reference Card</i>	802-7301
<i>Solstice SyMON 1.4 User's Guide</i>	802-7662
<i>Solaris System Administration Guide, Vol. 1, Part 8, Managing File Systems</i>	802-5750

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Typographic Conventions

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

TABLE P-2 Typographic Conventions

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

Shell Prompts in Command Examples

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

TABLE P-3 Shell Prompts

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

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Overview of SunVTS 2.1

This chapter describes SunVTS 2.1, the available test modes, user interfaces, its architecture, and explains some of the main uses of SunVTS.

TABLE 1-1 lists and describes SunVTS 2.1 features, commands, and options. This table also provides pointers to other sections in this book where you can find more information about a given topic.

SunVTS 2.1 is Sun's online validation test suite, which tests and validates Sun™ hardware by verifying the configuration and functionality of most hardware controllers, devices, and platforms.

SunVTS has a selectable device mapping feature. When *Physical* mapping is selected, tests are grouped according to the physical location of the devices that are tested. When *Logical* mapping is selected, tests are grouped according to the functionalities the tested devices perform.

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

SunVTS can be used to simulate a scenario and pinpoint potential problems. Use SunVTS to validate a system during development, production, receiving inspection, troubleshooting, and periodic maintenance or monitoring. Since the SunVTS tests cover a wide range of products and peripherals, proper test options need to be selected to maximize its effectiveness. While the available test options are pre-set for some test modes, the functional test mode provides the most flexibility.

Refer to the *SunVTS 2.1 Test Reference Manual* to select the proper test options before running any tests. The options selected can always be saved in an Option file and recalled at later test sessions.

The SunVTS tests rely on system calls and driver interfaces for testing. As a result, fault isolation capability is limited by these tasks. Error messages point to the fault location.

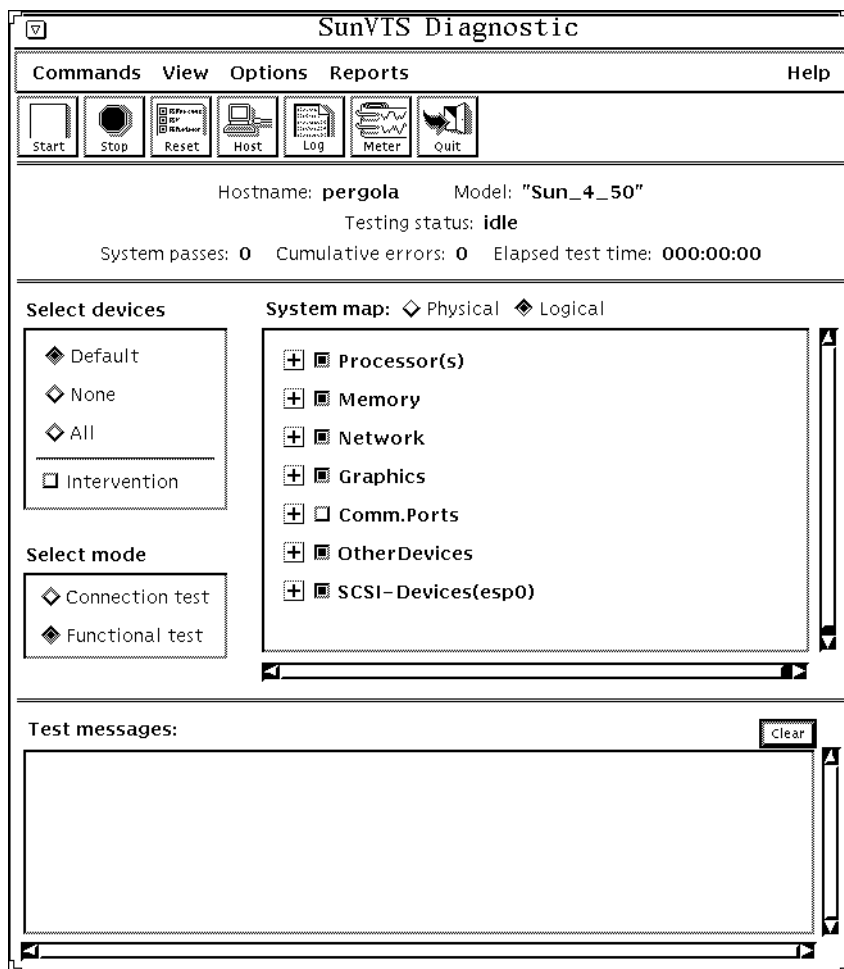


FIGURE 1-1 CDE SunVTS Diagnostic Window

Test Modes

You can run tests in different modes:

- Connection test mode—a low stress, quick testing of the availability and connectivity of the tested device.
- Functional test mode—a more robust testing capability that uses whatever system resources are required to do thorough testing, and assumes that there are no other applications running.

Functional test mode when executed from SyMON invokes non-intrusive tests, which do not significantly affect other applications.

A test may not support all of the test modes. In this case, the test is disabled and the test name displayed on the SunVTS test selection panel appears lighter, indicating that the test is unavailable for the selected test mode.

User Interfaces

You can run SunVTS from the following user interfaces:

- Window Interfaces—choose either CDE or OPEN LOOK environments. You can now run SunVTS with the Common Desktop Environment (CDE). When you start SunVTS using the `vtmui` command, the SunVTS CDE main window displays (FIGURE 3-1).
- 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.
- Solstice™ SyMON™—a system monitoring tool that makes online diagnostics more accessible.

For more information about these user interfaces, see Chapter 3, “User Interfaces” or refer to the Solstice SyMON documentation.

SunVTS Architecture

The SunVTS architecture is divided into three components: the SunVTS kernel, the user interface, and the hardware tests.

SunVTS Kernel

The following activities are scheduled and monitored by the kernel:

- Probes and saves the test system's hardware configuration upon start-up
- Logs messages reported from tests
- Maintains the status of all running tests
- Monitors the status requests or control commands from a user interface or other applications
- Schedules the tests that are enabled by the user
- Runs as a background process (daemon)

SunVTS User Interface

The SunVTS user interface is a separate process from the SunVTS kernel. The command `vtmui` invokes the default CDE GUI. To run SunVTS in the OPEN LOOK environment, use the command `vtmui.ol`. The user interface communicates with the SunVTS kernel through an application programming interface (API). The SunVTS API enables the user interface send and receive commands from the SunVTS kernel. Normally, the user interface runs on a different machine than the one being tested.

SunVTS Hardware tests

You can validate each hardware device supported by Sun using a corresponding hardware test. Each test is a separate process from the SunVTS kernel. The hardware tests send the status and messages to the SunVTS kernel through interprocess communication (IPC) protocols. 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 setup.

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 re-compiling the SunVTS source code.

FIGURE 1-2 is a diagram of the SunVTS architecture.

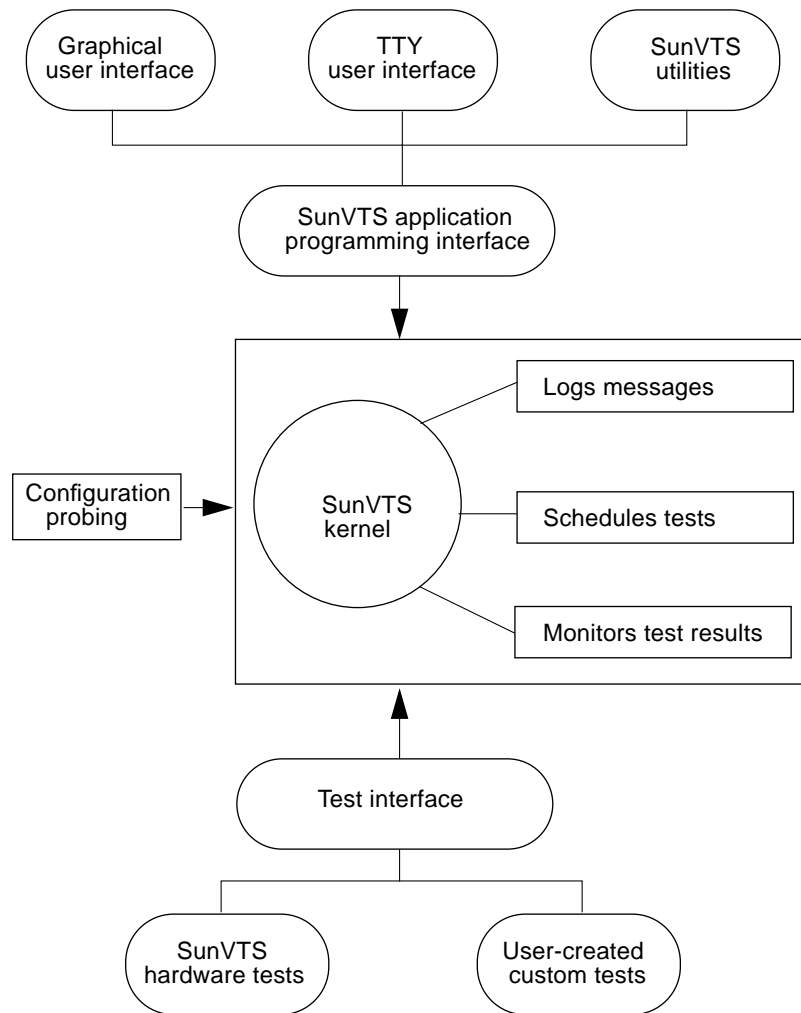


FIGURE 1-2 SunVTS Architecture

SunVTS Features

TABLE 1-1 lists and describes SunVTS features. You can find more information about a specific feature by going to the cited page number.

TABLE 1-1 SunVTS Features

Feature	Description	For More Info...
Advanced Options	Locks test or group options, preventing them from being reset by global option settings	<i>page 84, 112</i>
Auto Start	Runs SunVTS when first started	<i>TABLE 3-2 and page 60</i>
Connection Test Mode	Specifies very low stress testing of the available devices	<i>page 106</i>
Connect to	Displays the Connect to (Machine) window, where you can connect to another machine on a network that is running the SunVTS kernel, or reconnect to the SunVTS kernel	<i>page 65, 80</i>
Console Panel	Displays the error messages from the SunVTS kernel and the hardware tests	<i>page 71, 94, 95</i>
Core File Option	Sends messages to a Core file that is associated with the test	<i>TABLE 3-2 and page 97</i>
Custom Tests	Contains a set of custom-developed tests	<i>page 125</i>
Display	Displays the hardware configuration of the associated test selected	<i>page 61, 63, 89</i>
Elapsed Time	Displays how long (in the format hh:mm:ss) SunVTS has been testing your system	<i>page 67, 73</i>
Email Address	Specifies the email address where status mailings will be sent	<i>page 46</i>
Errors	Indicates the number of times a test, or a test within a test group, has exited with an error	<i>page 63, 120, 123</i>
Functional Test Mode	All system resources are available for testing in this mode; specifies testing at a higher level of stress than Connection Test Mode	<i>page 21, 107, 113</i>
Functional Test Mode via SyMON	Specifies a thorough but non-intrusive test mode	<i>page 107</i>

TABLE 1-1 SunVTS Features

Feature	Description	For More Info...
Graphics Test Group	Validates the system's graphics adapters; select this button to display group system options, where you can set the group system options for the tests in this group	<i>page 52, 92</i>
Group Concurrency	Sets this option to the number of tests you want to run at the same time in the same group	<i>page 113</i>
Group Lock	Protects changes in the Set Options window for this test group	<i>TABLE 3-2 and page 60, 111</i>
Group Override	Overrides any locked test options in the test group in favor of the options displayed in the Set Options window	<i>page 111</i>
Intervene or Intervention	Enables or disables running tests that require user intervention; these tests require you to either install loopback connectors or to intervene while the test validates the hardware	<i>page 108</i>
Log Files Option	Displays the Log Files window where you can display, print, or remove the SunVTS log files; these log files contain the messages created by the SunVTS kernel, tests, and the operating system (UNIX)	<i>page 66, 119, 122</i>
Log Period	States the time (in minutes) between testing status email messages	<i>TABLE 3-2</i>
Logical Mapping	Groups tests according to the tested device's function	<i>page 68, 91, 105</i>
Max Errors	States the maximum number of errors a test encounters before stopping (0=infinity)	<i>TABLE 3-2 and TABLE 4-2</i>
Max Passes	Specifies the maximum number of passes a test can run	<i>TABLE 3-2 and TABLE 4-2</i>
Max System Errors	States the maximum number of system errors that can occur before SunVTS stops all tests (a value of 0 makes the SunVTS kernel continue testing regardless of errors)	<i>TABLE 3-2 and TABLE 4-2</i>
Max Time	Specifies the maximum number of minutes that SunVTS continues testing; a value of 0 makes the SunVTS kernel run the selected tests until you click the Stop button	<i>TABLE 3-2 and TABLE 4-2</i>
Memory Tests	Validates the system's subsystem; select this button to display group system options, where you can set group system options for all tests in this group	<i>page 48, 93</i>

TABLE 1-1 SunVTS Features

Feature	Description	For More Info...
Network Tests	Validates the system's network adapters; select this button to display group system options, where you can set group system options for all tests in this group	<i>page 40, 66</i>
Notify Option	Instructs SunVTS how to announce testing status	TABLE 3-2
Number of Instances	Specifies the number of instances to run each scalable test	TABLE 3-2 and TABLE 4-2
Option Files	Displays the Option Files Window, where you can load, store, and remove option files; option files contain all the system and test options of a specific test session; once saved, you can load these options at a later test session	TABLE 3-3 and <i>page 60</i>
OtherDevices	Validates the devices that are <i>not</i> part of the Graphics, SCSI-Devices, Processes, Network, Memory, Comm.Ports groups; select this button to display a group system options window, where you can set group system options for all tests in this group	TABLE 4-2
Processor Affinity	Lets you specify the processor on which you want to run the tests; only available on multiprocessor systems	TABLE 3-2 and <i>page 113</i>
Passes	States the number of times a test (or test group) completes one pass	TABLE 3-2 and <i>page 118</i>
Performance Meter	Monitors the system performance, such as the percentage of CPU being used, the jobs being swapped per second, and the errors per second on receiving packets	<i>page 75</i>
Physical Mapping	Groups tests according to their physical location	<i>page 105</i>
Print	Prints the hardware configuration of a test system when accessed from the Sys Config sub-menu	<i>page 62, 102</i>
Processor(s)	Validates the system's Processes; select this button to display a group system options window, where you can set group system options for all tests in this group	TABLE 3-2 and <i>page 112</i>
Quit	Terminates the User Interface, the SunVTS kernel, or both	<i>page 67, 79, 117</i>
RePlay	Replays a recorded testing session	TABLE 4-4 and <i>page 123</i>
Reprobe System	Reprobes the test system devices; use this option when you add or remove devices from a system	<i>page 81</i>

TABLE 1-1 SunVTS Features

Feature	Description	For More Info...
Reset	Resets the information on the System Status and Test Status panels	<i>page 78</i>
Resume	Resumes a paused testing session	<i>page 78</i>
Run On Error	Continues testing until the default error count of three is reached	TABLE 3-4 and TABLE 4-1
Scalability	Increases test scale to fully stress single and multiprocessor systems; you can modify scalable tests to run multiple instances (or copies) of them on a device simultaneously	<i>page 112</i>
Schedule Option	Specifies when SunVTS runs enabled tests	TABLE 3-4
SCSI-Devices	Contains the tests that validate the system's SCSI-Devices; select this button to display a group system options window, where you can set the group system options for all the tests in this group	<i>page 81, 99</i>
Send Email	Sends test status messages via email	TABLE 3-2 and TABLE 4-2
Set Options	Sets the SunVTS kernel, test group, and test system options	TABLE 3-2 and TABLE 4-2
Single Pass	Runs only one pass of each selected test	TABLE 3-2 and TABLE 4-2
Start	Starts the testing session	<i>page 77</i>
Start with Record	Starts and records a testing session	<i>page 77</i>
Stop	Stops a testing session	<i>page 77</i>
Stress	Increases test performance; only available for some tests	TABLE 3-2 and TABLE 4-2
Suspend	Pauses a testing session; once selected, this button changes to Resume	<i>page 79</i>
System Concurrency	Runs a set number of tests at the same time in the entire system; overrides the Group Concurrency option	TABLE 3-2 and TABLE 4-2
Sys Config Menu	Displays the test system's hardware configuration, prints the test system's configuration, and reprobes the test system's devices	<i>page 61</i>
System Override	Supersedes the group and test options in favor of the options in the Set Options window	TABLE 3-2 and TABLE 4-2

TABLE 1-1 SunVTS Features

Feature	Description	For More Info...
System Passes	States the number of times all enabled tests are completed	<i>page 118</i>
System Status	Displays the status of the testing session, which can be idle, testing, stopping, recording, suspended, or replay	<i>page 118</i>
System Map	Selects the desired system device mapping (physical or logical)	<i>page 118</i>
Terminate Kernel Only	Quits the SunVTS kernel and not the user interface	<i>page 79</i>
Terminate User Interface and Kernel	Quits the SunVTS kernel <i>and</i> the user interface	<i>page 79</i>
Terminate User Interface Only	Quits the user interface and leaves the SunVTS kernel running in the background	<i>page 79</i>
Test Execution Option	Displays the system or group option window for a system or specific group of tests; the options on this window only affect the specified group of tests	TABLE 3-2 <i>and</i> TABLE 4-2
Test Lock	Protects the specific test options from being changed by the group or Set Options windows	TABLE 3-2 <i>and</i> TABLE 4-2
Test Mode	Selects the SunVTS testing modes (Connectivity, Online, Offline)	TABLE 3-2 <i>and</i> TABLE 4-2
Test Options	Displays the test options of the selected test; these options are different from the system options; for more information about a specific test option, refer to the <i>SunVTS Test Reference Manual</i>	TABLE 3-2 <i>and</i> TABLE 4-2
Test Set	Selects the default set of hardware tests, no tests, or all tests	<i>page 68</i>
Test Status Buttons	Changes the Test Status panel listing; use the buttons to page forward and backward on the Test Status panel and go to the vicinity of a specific test, or display only the tests that produce errors	<i>page 73</i>
Thresholds Option	Sets the maximum number of system passes, errors, and time; specifies when test execution should be stopped	TABLE 3-2 <i>and</i> TABLE 4-2

TABLE 1-1 SunVTS Features

Feature	Description	For More Info...
Total Errors	Displays the total number of fatal errors produced by the tests; these errors do not include the verbose messages and system call messages	<i>page 67, 78</i>
Trace Test	Traces system calls and signals for selected tests as described in the <code>truss(1)</code> manpage	<i>page 82, 83</i>
Verbose	Displays verbose messages in the SunVTS console window	<i>page 57, 94</i>

Using SunVTS

SunVTS 2.1 is not compatible with previous versions. Earlier user interfaces, tests, and option files will not work with the SunVTS 2.1 kernel, and vice versa.

Software Requirements

The default Graphical User Interface (GUI) is the Common Desktop Environment (CDE). The CDE GUI requires that the CDE End User Software be installed, or at least the `SUNWdtbas` package from it. See your system administrator for assistance in installing the CDE software.

Note – The CDE GUI is not designed to run in the OPEN LOOK environment.

You must meet the following requirements to run SunVTS with the OPEN LOOK GUI:

- Run Solaris operating system (Version 2.5 through 2.5.1).
- Run OPEN LOOK, Version 3.3.
- Set the correct `openwin` path.
Set the `OPENWINHOME` environment variable to point to the location where OPEN LOOK is installed on your system. You can ignore this requirement if you use the default location, `/usr/openwin`.

Otherwise, use the following command and substitute the *pathname* variable for the actual path where OPEN LOOK is installed.

```
ariela% setenv OPENWINHOME pathname
```

Check the existing `OPENWINHOME` by typing `env`.

- Set the correct library path.
Set the `LD_LIBRARY_PATH` environment variable to point to the location of the windows library directory on your system. If you use the default location, `/usr/openwin/lib`, you can ignore this requirement.

Otherwise, use the following command and substitute the *pathname* variable for the actual path where the OPEN LOOK library is installed.

```
ariela% setenv LD_LIBRARY_PATH pathname
```

Check the existing `LD_LIBRARY_PATH` by typing `env`.

Starting SunVTS

This section tells you how to start both the SunVTS kernel and a user interface of your choice. You can also start SunVTS remotely, on a standalone system, with or without starting the kernel or user interface. These options are covered in Chapter 3, “User Interfaces.”

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

Read the `sunvts` syntax descriptions in TABLE 2-1 before starting SunVTS. You can start SunVTS without using any of these options.

The SunVTS GUI interface is displayed if a window environment is running; if not, the SunVTS TTY interface is displayed. If the SunVTS kernel (`vtstk`) is already running on your system, `sunvts` starts only the user interface.

Note – When SunVTS is invoked, the default GUI is selected according to the following criteria:

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

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

If no window manager is running, then the TTY window is displayed.

TABLE 2-1 shows the full syntax of the `sunvts` command.

TABLE 2-1 The `sunvts` Syntax

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

* If the `-f` argument is exercised when running SyMON, a `logfile_directory` cannot be created.

In a Window Environment

- To start the SunVTS kernel (`vtsk`) and the CDE GUI (`vtsui`), type:

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

- To start the SunVTS kernel (`vtsk`) and the OPEN LOOK GUI (`vtsui.ol`), type:

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

In TTY Mode

- To start the SunVTS kernel (`vtsk`) and the TTY-based user interface (`vtstty`), specify the `-t` option by typing:

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

Using Other Commands to Start SunVTS

The `sunvts` command starts both the SunVTS kernel and a user interface. In some situations, however, you may not want to start both the kernel and the user interface. If the test machine is already running the SunVTS kernel, you may only want to start the user interface. On the other hand, you may want to start just the SunVTS kernel and leave it running as a background process.

- To start the SunVTS kernel using `vtsk`, type:

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

The SunVTS kernel then probes the system devices and waits for commands from an interface. See TABLE 2-2 for the `vtstk` application syntax.

TABLE 2-2 The `vtstk` Syntax

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

* If the `-f` option is exercised when running SyMON, a `logfile_directory` cannot be created.

- **To start only the CDE interface, type:**

```
% /opt/SUNWvts/bin/vtsui
```

- **To start only the OPEN LOOK interface, type:**

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

Note – You do not need to be superuser (root) to start the user interface.

If the SunVTS kernel is running on the test system, `vtsui` (or `vtsui.ol`) automatically connects to this kernel to start the CDE (or OPEN LOOK) interface.

▼ To Connect to a Remote Machine's SunVTS Kernel

- To start the CDE interface, type:

```
% ./vtsui -h hostname
```

- To start the OPEN LOOK interface type:

```
% ./vtsui.ol -h hostname
```

TABLE 2-3 contains a complete listing of the `vtsui` arguments.

TABLE 2-3 The `vtsui` Syntax

Argument	Description
<code>./opt/SUNWvts/bin/vtsui.ol</code> (or <code>vtsui</code>) [<code>-v</code>] [<code>-h hostname</code>] [<code>-q quit</code>]	
<code>-h hostname</code>	Starts the user interface and tries to connect to the SunVTS kernel (<code>vtsk</code>) of the specified host machine
<code>-q quit</code>	Quits <code>vtsui.ol</code> when testing is completed
<code>-v</code>	Prints the version number of <code>vtsui.ol</code>

Using `vtstty` to Start the TTY Interface

If the SunVTS kernel (`vtsk`) is already running on the test system, you can use the `vtstty` command to start the SunVTS TTY interface. This command is in the SunVTS `bin` directory, `/opt/SUNWvts/bin`.

- To start the TTY interface, type:

```
% /opt/SUNWvts/bin/vtstty
```

Note – You do not need to be superuser (`root`) to start the user interface.

If the SunVTS kernel is running on the test system, `vtstty` automatically connects to this kernel and starts the TTY interface.

- To connect to a remote machine's SunVTS kernel, type:

```
% /vtstty -h hostname
```

See TABLE 2-4 for a complete listing of the `vtstty` arguments.

TABLE 2-4 The `vtstty` Syntax

<code>/opt/SUNWvts/bin/vtstty [-v] [-h hostname]</code>	
Argument	Description
<code>-h hostname</code>	Starts the user interface (<code>vtsui</code> or <code>vtstty</code>) and tries to connect to the SunVTS kernel (<code>vtsk</code>) of the specified host machine
<code>-v</code>	Displays version information from <code>vtstty</code>

▼ To Run the TTY Interface in a `telnet` or `tip` Window

If you want to display the SunVTS TTY interface on a `telnet` or `tip` window, you need to set the correct terminal type and the number of columns and rows in the window *before* starting the interface.

1. Before starting the `telnet` session, type `stty` to display the settings of the terminal.

```
hostname% stty
speed 9600 baud; -parity hupcl
rows = 39; columns = 94; ypixels = 0; xpixels = 0;
swtch = <undef>;
brkint -inpck -istrip icrnl -ixany imaxbel onlcr
echo echoe echok echoctl echoke iexten
```

Note – Write down the values of the rows and columns settings. You will need these values for Step 4.

2. Connect to the test system using either the `tip` or `telnet` commands.

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

3. To set the correct terminal, type `set term=sun-cmd`.

In this example, the terminal is a Sun Workstation™.

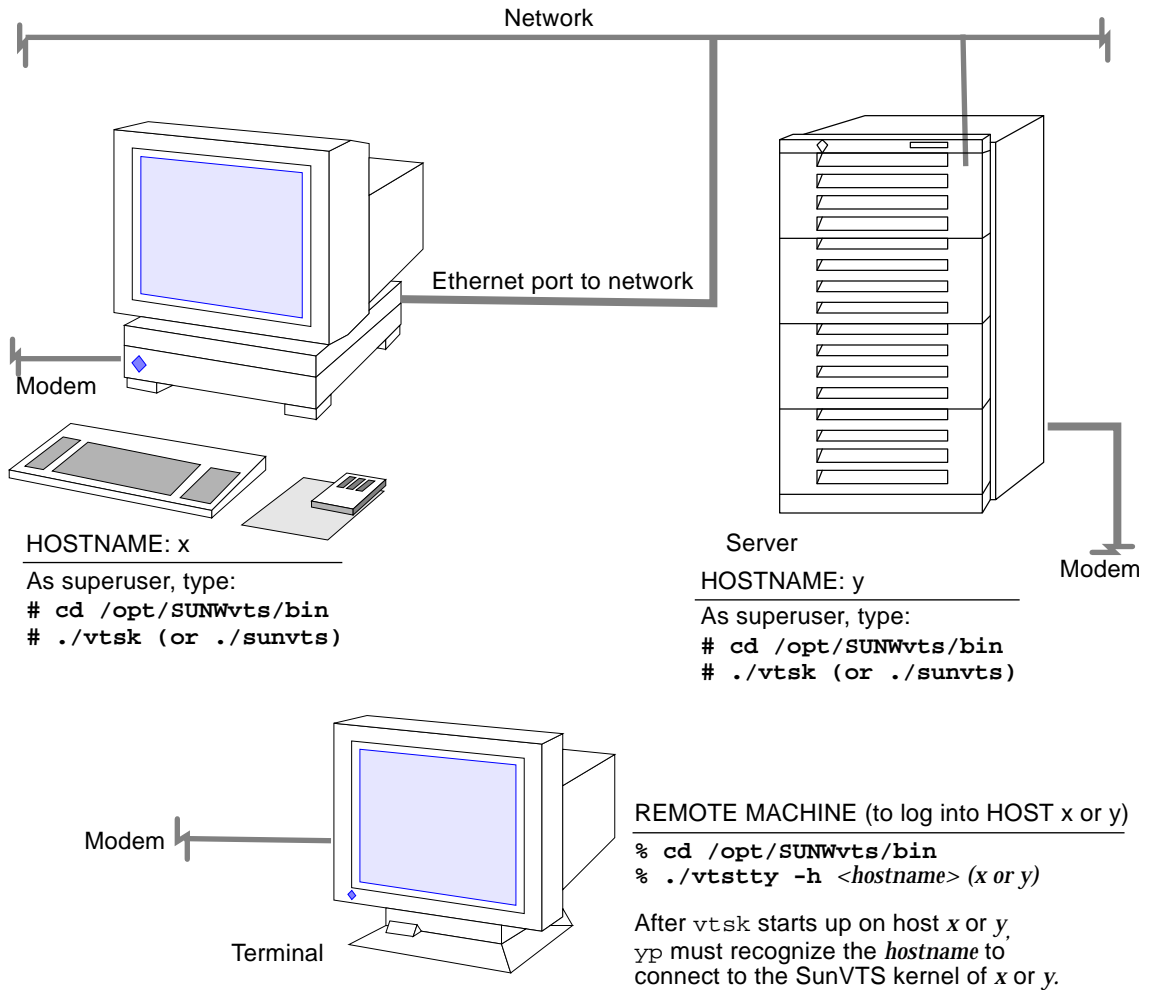
```
remotehost% set term=sun-cmd
```

4. Use the `stty` command to set the number of rows and columns in the window.

```
remotehost% stty rows 39
remotehost% stty columns 94
```

Using SunVTS on a Remote Machine

You can view and control a SunVTS testing session over modem lines or over a network. You can view the progress of a testing session, change testing options, and control all testing features of another machine on the network with a remote machine. FIGURE 2-1 and FIGURE 2-2 show examples of how to connect to a remote machine over modem lines and over a network.



NOTE: If you modified `/etc/inetd.conf` so that `vtsk` automatically responds to an RPC request from the user interface, you do not have to start `vtsk` manually. The `inetd.conf` file is normally modified during the SUNWvts package installation.

FIGURE 2-1 Using SunVTS Over Modem Lines

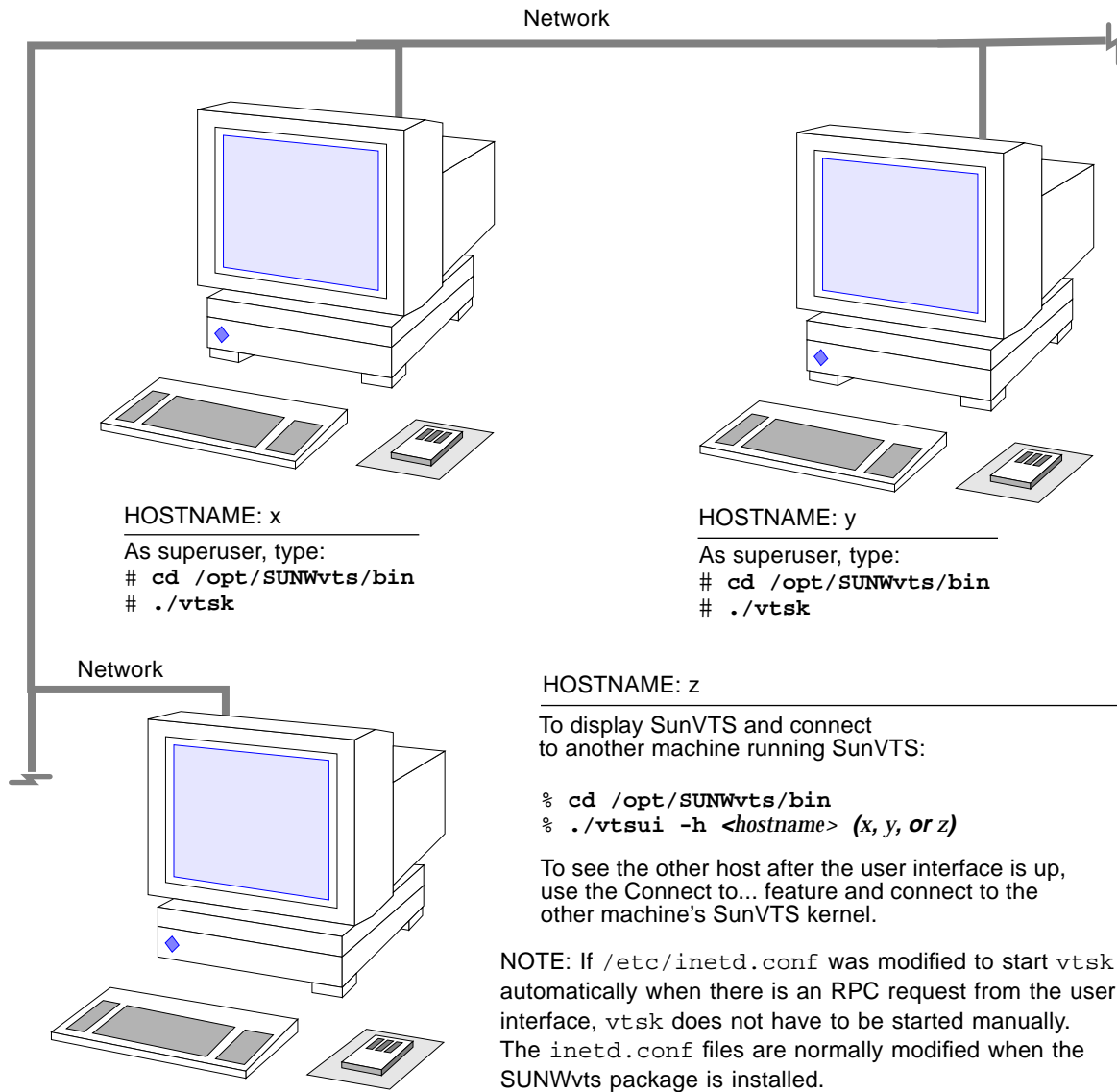


FIGURE 2-2 Using SunVTS Over the Network

You can run SunVTS on a remote machine in two ways:

- Connect the user interface to the SunVTS remote machine using the `-h hostname` option.

- Remotely log on to the machine as superuser, start the SunVTS kernel, and display the user interface on your machine.
- **To connect the User Interface to a Remote SunVTS Kernel, specify the `-h hostname` option, by typing:**

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

If the user interface is already running on your local machine, you can use the Connect to option to connect to a remote machine's SunVTS kernel. (See "Host (Connect to) Button" in Chapter 3, "User Interfaces" for more instructions.)

Note – If you run SunVTS in the OPEN LOOK environment, you must have display permissions.

▼ To Run SunVTS on a Remote Machine

1. Use `xhost` to give remote server access to your system before logging in.

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

2. Replace `remote_hostname` with the remote machine host name.
3. Log in to the remote machine as superuser (`root`).
4. Change directories to the SunVTS `bin` directory, which is `/opt/SUNWvts/bin` by default.
5. Use the `sunvts` command to start the SunVTS kernel and display the user interface on your machine:

```
# ./sunvts -display local_hostname:0
```

- a. Replace `local_hostname` with your local machine's host name.

SunVTS on a Standalone System

Some SunVTS applications require a network connection to run successfully. However, you can run SunVTS on a standalone system.

▼ To Run SunVTS on a Standalone System

1. **Edit the `/etc/rc2.d/S72inetsvc` script file, and comment out the following line:**

```
# /usr/sbin/ifconfig -au netmask + broadcast +
```

2. **Comment out any remotely mounted file systems from the `/etc/vfstab` file.**
Remotely mounted file systems are not required on a standalone system.
3. **Make sure `yplib` is not running on the standalone system.**
Doing this ensures that `yplib` is not started by the `rc` scripts.
4. **Reboot your system.**
Now you can run SunVTS on a standalone machine.

Invoking the SunVTS Kernel (Auto Invoke)

By using the `inetd` feature, you no longer have to start up the `sunvts` kernel before attempting to connect to it. This new feature uses the `inetd` system facility that automatically triggers the `sunvts` kernel when a user interface connection request is received.

When the `sunvts` package is installed, all relevant setup files are modified. These same files are later cleaned up when the package is removed.

Quitting 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

Security

The SunVTS user interface running on one host can control the SunVTS kernel running on a system under test, often referred to as SUT. The user interface has to connect to the SunVTS kernel *before* it can control the SunVTS kernel (see “Host (Connect to) Button” in Chapter 3, “User Interfaces” for more information).

The SunVTS kernel authenticates connect requests from the SunVTS interfaces based on one of the following attributes:

- The host from which the request is initiated—If this host belongs to the list of trusted hosts specified, then this request is granted without any authentication.
- The group `<groupname>` to which the user using a SunVTS UI to SunVTS kernel belongs—This is the user who initiates the Connect to request. If this group is a member of a list of groups specified, then the user interface will prompt the user for a password. The SunVTS kernel compares this password against the system's databases on the system being tested. If the password does not match, or if the user is not on the list, then the connection is rejected.
- The user `<username>` who initiates the Connect to request using a SunVTS user interface to the SunVTS kernel (`vtSk`)—If this user is a member of a list of users specified, then the user interface will prompt the user for a password. The SunVTS kernel compares this password against the system's databases on the system being tested. If the password does not match or the user is not on the list, then the connection is rejected.

The list of hosts, groups, and users are specified in the security file, `.sunvts_sec`, which is installed in the `<SunVTS2.1 install directory> /bin`. A plus (+) entry in one of these lists means all hosts, groups, or users, respectively. A template of the security file (`.sunvts_sec`) is located in the `<SunVTS2.1 install directory> /bin` (see CODE EXAMPLE 2-1).

Note – To enable security checking, remove the plus (+) sign in the HOST section of `.sunvts_sec`, the default.

CODE EXAMPLE 2-1 Security File Template

```
#This file should be <SunVTS2.1 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:
#user1
#user2
```

The SunVTS kernel authenticates the request(s) based on the entries in the security file. All access except `root` is denied on the local machine if the security file entry is invalid or if there is no entry in the file. You can correct an entry in this file even when the SunVTS kernel is running. When you specify the `-e` option with the SunVTS kernel, then the SunVTS kernel accepts Connect to requests from any host, regardless of the user identification of the SunVTS User Interface process that is initiating it.

Note – The user password needed for authentication purposes by `vtsk` is the same password used to log in to the system you are testing.

Notification by Email

The email notification feature instructs the SunVTS kernel to send the last couple of lines in the SunVTS error message file to a particular person or alias under certain circumstances during testing.

You can use the Notify pop-up menu in the Set Options menu to send a notification to the destination email address (see FIGURE 2-3 and TABLE 2-5).

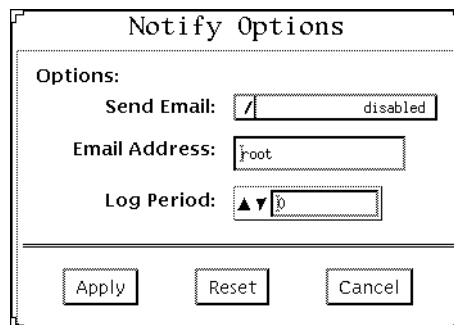


FIGURE 2-3 Notify Options Pop-up Window

Note – Send a test email to make sure the destination email address you specify is valid.

TABLE 2-5 Notification by Email

Option	Description
Email Address	Indicates the email address where the test status messages are sent (the address is <code>root</code> by default)
Log Period	Sets time periods for receiving emails
Send Email	Determines when and if you want the test status messages sent to you through email. From this menu, you can choose: <ul style="list-style-type: none">- Disabled (do not send mail)- Now (send mail immediately)- On Error (send mail when an error occurs)- Periodically (send mail with a time period set in the Log Period option)- On Error and Periodically (send mail when an error occurs as well as periodically)

Runtime Considerations

Managing your swap space and running other applications while running SunVTS requires special attention. A detailed discussion of these issues follows.

Managing Swap Space

The amount of SunVTS swap space required varies widely with individual hardware and software configurations. Most systems have enough swap space already configured to meet SunVTS testing requirements.

When you start using SunVTS, the amount of swap space required for testing is calculated. First, a calculation is done to determine the amount of available swap space on the system you are testing. Next, the amount of swap space needed to run the program, the selected tests, and virtual memory is calculated.

If an adequate amount of swap space is not available on your machine, a window pops up (see FIGURE 2-4) and displays the amount of additional swap space needed to run the selected diagnostic tests. In FIGURE 2-4, *lightspeed* is the host name and *audio* is an example of a test that could not be started.

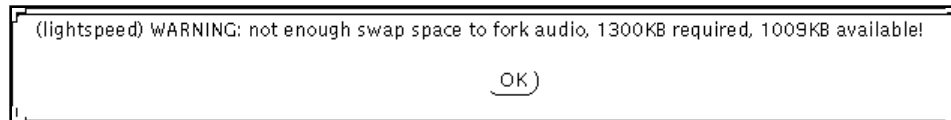


FIGURE 2-4 Swap Space Warning Message

If swap space is not available on your machine to run all of the SunVTS tests, you can either deselect some of the tests or you can add more swap space. (Refer to the *System Administration Guide, Volume 1, Part 8, Managing File Systems* for information about increasing swap space.)

Note – If your system does not have enough swap space configured, some SunVTS tests may run very slowly or the screen may freeze. If this occurs, the SunVTS kernel usually returns error messages, indicating that the problem is due to insufficient swap space.

Heavy System Loads

Sluggish response of the SunVTS user interface is normal during heavy testing loads. A slow SunVTS kernel response can cause the user interface to time out. If this happens, reconnect to the SunVTS kernel with the Connect to option.

The Suspend option temporarily stops testing. Use this option during heavy test loads, such as:

- To view log files or Sys Config files
- To invoke specific commands
- To change options

Select the Resume option to continue testing when user interface interaction is completed.

Running Other Applications and SunVTS

The SunVTS virtual memory test (`vmem`) stresses the system's virtual memory and uses most of the system's swap space. Because of this, you may not be able to run any other processes while testing the system with `vmem`.

Start non-SunVTS processes (for example, other OPEN LOOK applications) while using SunVTS *before* you begin running tests.

Using `vmem` to Reserve Swap Space

Use the `vmem` Reserve option to reserve swap space for other processes from each instance of the test.

If you plan to start other processes after you start the virtual memory test, you can use the `vmem` reserve option to set aside swap space for these processes *before* you begin testing.

For example, if you are running four instances of the test and you need 20 Mbytes of swap space for applications, you can reserve 5 Mbytes of swap space from each of the four instances of the test.

You can select the Reserve option from either the `vmem` Test Options menu (within the SunVTS control panel) or from the command line.



Caution – If `metadisk` (Online: DiskSuite™) is running, SunVTS may corrupt data on the metadisk. In this case, before starting SunVTS, set the system environment variable `BYPASS_FS_PROBE` to 1.

For example:

```
# BYPASS_FS_PROBE=1; export BYPASS_FS_PROBE
# ./sunvts
```

User Interfaces

SunVTS can be accessed using either the Common Desktop Environment (CDE) interface, the OPEN LOOK interface, or the TTY interface. These interfaces are described below.

CDE User Interface

SunVTS can now be used with the Common Desktop Environment (CDE). CDE is an easy-to use graphical user interface (GUI) that provides a consistent look and feel across UNIX environments. When you start SunVTS using `vtsui` command, the SunVTS CDE main window displays (FIGURE 3-1).

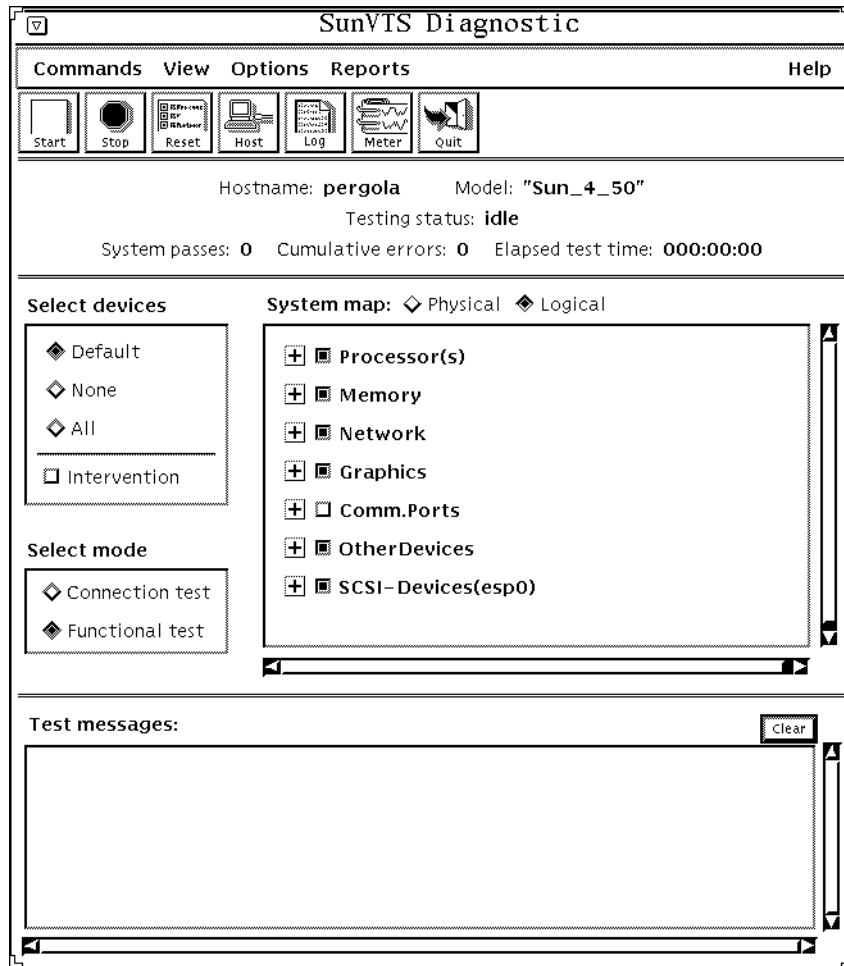


FIGURE 3-1 Common Desktop Environment (CDE) Display

CDE Menu Bar

The Menu Bar is located below the Main window title bar. The Menu Bar has a row of buttons and each button has a pull-down menu (FIGURE 3-2):

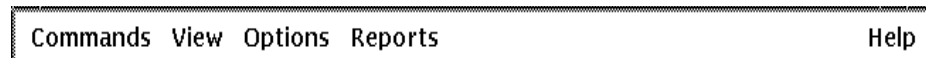


FIGURE 3-2 CDE Menu Bar

- 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: see TABLE 3-4 on page 86 for a description of system options
- Reports menu—lists the two types of viewable reports
- Help menu—provides online help

Detailed information about the CDE Menu Bar follows.

CDE Commands Menu

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

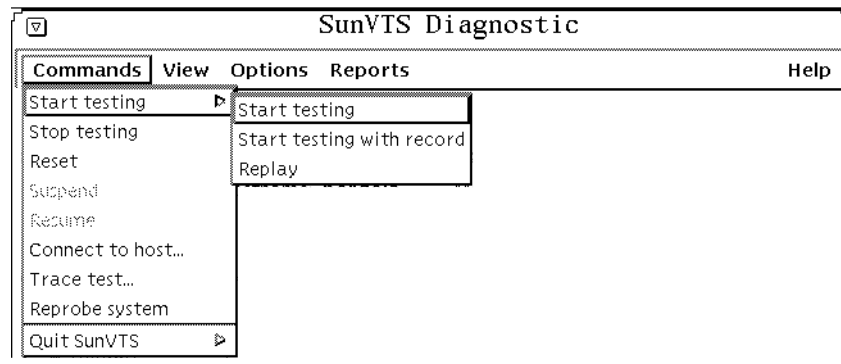


FIGURE 3-3 CDE Commands Pop-up Menu

TABLE 3-1 describes each item in the Commands menu.

TABLE 3-1 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 test session
Stop Testing	Stops all tests
Reset	Resets all pass and error counts
Suspend	Suspends all tests

TABLE 3-1 CDE Commands Pop-up Menu

Menu Item	Description
Resume	Resumes testing
Connect to Host	Connects user interface to the SunVTS kernel on another machine
Trace Test	Creates a log of every system call made by a specific test
Reprobe System	Reprobes the system
Quit SunVTS UI and kernel UI only Kernel only	Terminates the SunVTS user interface and/or the SunVTS kernel

▼ To Use the Reprobe Button

- **Click the Reprobe button to reprobe the hardware devices on the test system (FIGURE 3-4).**

For example, if you forgot to insert a blank tape into a tape drive before you started the SunVTS kernel, you may need to reprobe the system. By reprobing the system, you can use the `tapetest` command to test the tape drive.

Note – When you click the Reprobe button, a pop-up window is displayed. Select Yes to continue or No to stop.

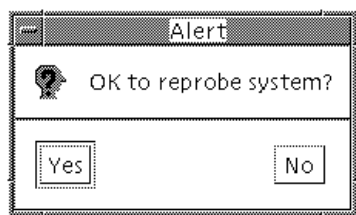


FIGURE 3-4 CDE Reprobe Confirmation Pop-up Window

If you add SCSI devices to your test system, you need to perform a reconfiguration boot on the system so these devices can be probed by the SunVTS kernel.

Using the Trace Test

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

▼ To Enable Tracing

- **Click Commands on the Menu Bar and pull down to Trace test...**

The Trace Test pop-up is displayed.

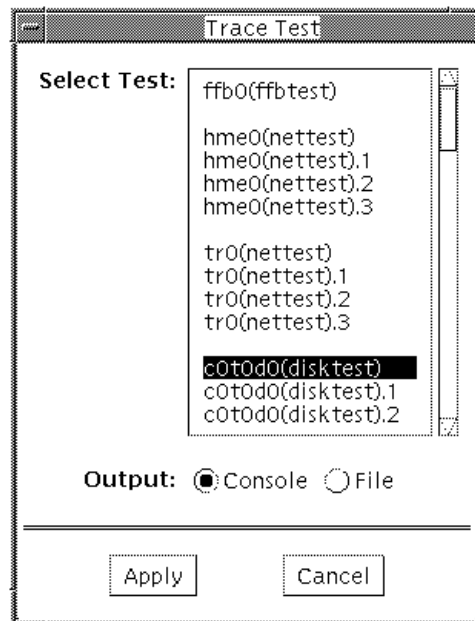


FIGURE 3-5 CDE Trace Test Window

- **Choose one or more tests to be traced from the scrollable list of test names and then select Apply, or double-click a test name to enable tracing and dismiss the pop-up 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.

- **Select File and Apply to write the Trace Test messages to a file on disk.**

▼ To Disable Tracing

- **Bring up the Trace Test pop-up window again and select the highlighted test name and Apply.**

This action removes the highlighting and disables tracing.

CDE View Menu

Use the View pull-down menu (FIGURE 3-6) to choose the devices that you want to view in the system map display.

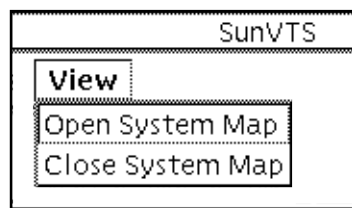


FIGURE 3-6 CDE View Pop-up Menu

- **Select Open system map to expand and show all the devices in the system map.**
- **Select Close system map to decrease so that only major categories are displayed.**

CDE Options Menu

The Options pull-down menu is where you set global SunVTS kernel and test options. See FIGURE 3-7 for the various option categories available for SunVTS.

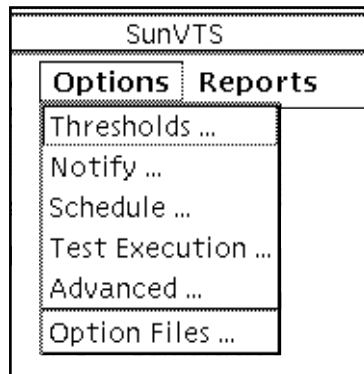


FIGURE 3-7 CDE Options Pull-Down Menu

- To display the SunVTS Options pull-down menu, select Options. Each category brings up a pop-up window of specific options. Select and change the options, then click the Apply button.
- To reset the options to their default settings, click the Reset button.

The option file category displays a pop-up window that lets you create, load, and delete option files.

TABLE 3-2 describes the SunVTS global and system options.

TABLE 3-2 CDE Global Options

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)

TABLE 3-2 CDE Global Options (Continued)

Global Options	System Option	Description
Notify...	Send Email	Determines when and if you want the test status messages sent to you by email. From this menu, you can choose: <ul style="list-style-type: none"> - 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 <code>root</code> 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: <ol style="list-style-type: none"> 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 88 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
	Verbose	Displays verbose messages in the SunVTS Console window
	Core File	Creates a core file. If the <code><SunVTS bin></code> directory is writable; <code>core.<testname>.xxxxxx</code> is the Core File name, where <code><testname></code> is the test that dumped core, and where <code>xxxxxx</code> 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 "Log Files" on page 91 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

TABLE 3-2 CDE Global Options (Continued)

Global Options	System Option	Description
	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 88
	Group Override	Supersedes the specific test options in favor of the group options set in a group options window
	Group Lock	Protects specific group options from being changed from the options set at the system level (the System Override option supersedes this option)
	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

FIGURE 3-8 shows the CDE Options Pop-up Windows.

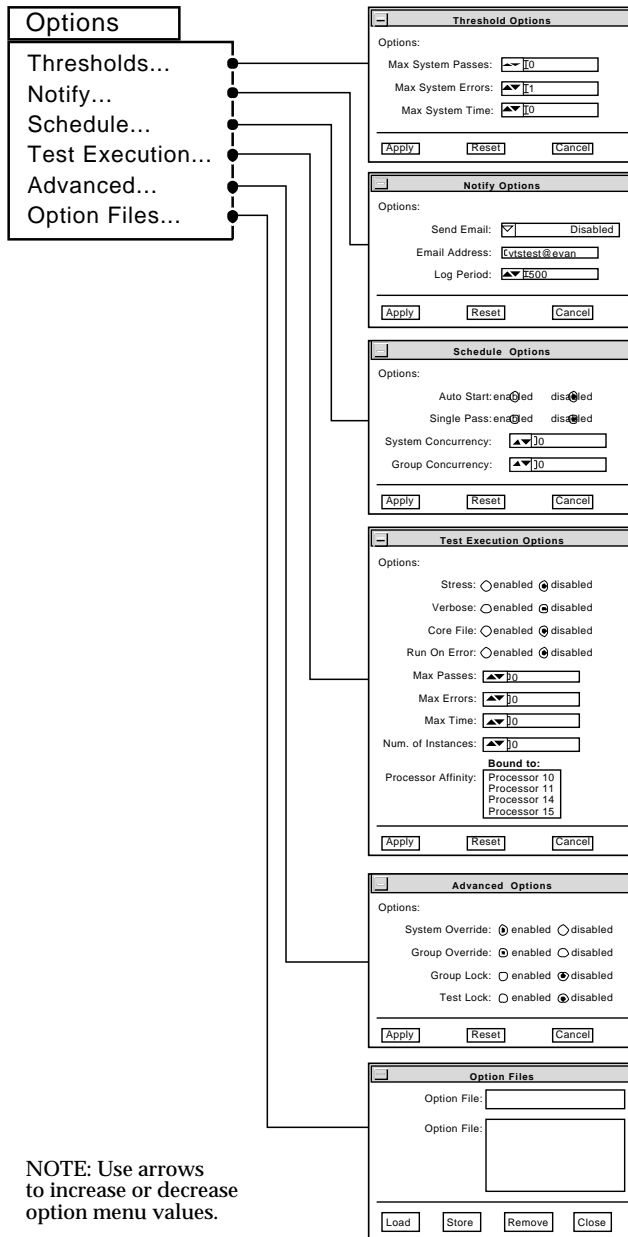


FIGURE 3-8 CDE Options Pop-up Windows

CDE Reports Menu

From the Reports pull-down menu, you can choose to view system configuration or log file reports (FIGURE 3-9).

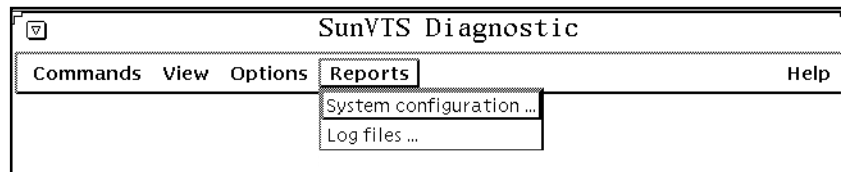


FIGURE 3-9 CDE Reports Menu

System Configuration

When you select System Configuration, you can check all of the connected devices, as follows:

- Display the test system configuration information
- Print the test system configuration information

The System Configuration window is displayed (FIGURE 3-10) and lists all of the hardware on the test system and their corresponding hardware tests.

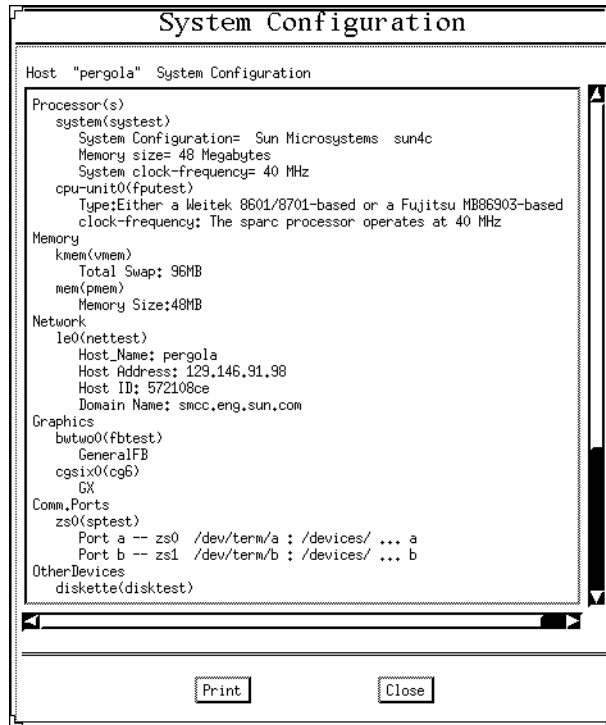


FIGURE 3-10 Typical System Configuration Information

▼ To Print the Test System Hardware Configuration

1. Click Reports from the Menu bar and then select System Configuration from the pull-down menu to display the System Configuration window.
2. Click the Print button at the bottom of this window and the System Configuration File Print pop-up window is displayed.
3. Select your default printer, or enter the name of another printer in the printer name field, and then click the OK button.
4. Click the Cancel button to cancel the print request.

Log Files

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

- SunVTS Error Status Log—the `sunvts.err` file contains SunVTS test error messages.

```
/var/opt/SUNWvts/logs/sunvts.err
```

- SunVTS Information Log—the `sunvts.info` file contains informative messages generated while SunVTS tests are running, plus start and stop times.

```
/var/opt/SUNWvts/logs/sunvts.info
```

- Solaris System Message Log—the `messages` file is a log of all the general UNIX messages.

```
/var/adm/messages
```

When you select Log Files, you can display or print information about error log files, information log files, or UNIX message log files.

▼ To Display or Print Log Files

1. **Select Log Files from the Reports pull-down menu (FIGURE 3-9).**

When the Log Files window is displayed, you can choose the type of log file from an option menu at the top of the window (FIGURE 3-11).

2. **Print or delete the displayed log file information, or close the pop-up window by clicking on one of the buttons at the bottom of the window.**
 - a. **To remove a Log File, click the Delete button.**
 - b. **To print a Log File, click the Print button and a print pop-up window is displayed.**

Note – These logs can be very long; consider this before deciding to print the log file.

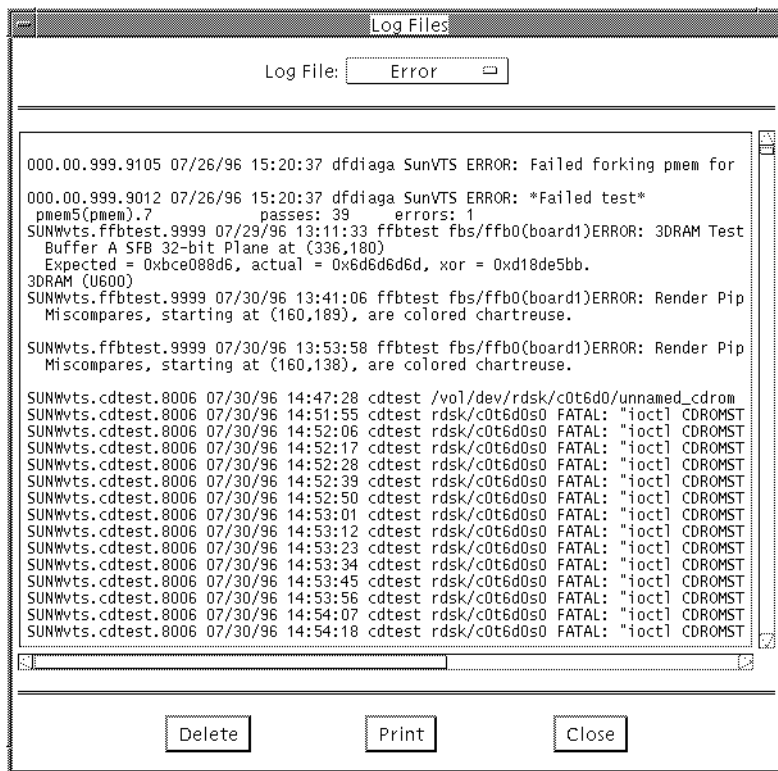


FIGURE 3-11 Log File Pop-up

CDE Help Menu

The Help menu is located at the far right side of the Menu Bar (FIGURE 3-2). Currently, the only information provided is the version of SunVTS.

CDE Tool Bar

The Tool Bar is located just below the Menu Bar (FIGURE 3-12). The Tool Bar contains a set of icons or buttons that represent the most commonly used functions from the Menu Bar. These buttons provide quick access to their functions.

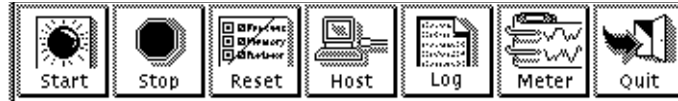


FIGURE 3-12 CDE Tool Bar

CDE Buttons



Start Button

Click the start button to begin testing, based on the defaults or the selections you made. When testing begins, the Start button dims and the System Status changes from idle to testing. The Test Status panel also starts displaying the status for all active tests (see “CDE System Status Panel” on page 67 for more information).



Stop Button

Click the Stop button to halt all active tests. The test results remain on 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 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.



Reset Button

The Reset button sets 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 and any colored test names revert to black.



Host (Connect to) Button

Use this feature to connect to another machine.

- Click the host button to display the Connect to Host window

From this window (FIGURE 3-13) you can connect the user interface to another machine on the network that is running the SunVTS kernel.

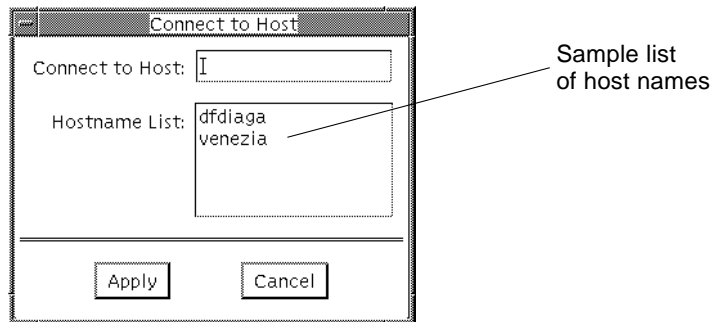


FIGURE 3-13 CDE Connect to Host Window

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

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

You can also connect to another host by double clicking on the name in the Hostname List panel, shown in FIGURE 3-13. Each time you connect to a different host name, that host name is added to the Hostname List.



Log Button

Use the Log button to display the log files pop-up. 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 (see the FIGURE 3-11 on page 64).



Meter Button

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



Quit Button

From the Quit button, you can quickly terminate SunVTS GUI.

CDE System Status Panel

The System Status panel is located below the Tool Bar (FIGURE 3-14) and provides system testing status. In addition, it includes the name and model number of the host being tested.

Hostname: dfdiaga Model: "Ultra-Enterprise"		
Testing Status: idle		
System Passes: 0	Cumulative Errors: 0	Elapsed Test Time: 000:01:52

FIGURE 3-14 CDE System Status Panel

CDE Device Selection and Status Window

The area below the System Status window is divided into two parts:

- The left side contains the Select Devices and Select Mode panels.
- The right side contains the System Map window. At the top of the System Map window are "radio buttons" used to select either a Physical or Logical view of the system hierarchy (FIGURE 3-15).

From the Tests Selection panel, you can select a set of tests as either default, none, or all. From the Testing Mode panel, you can select the test mode.

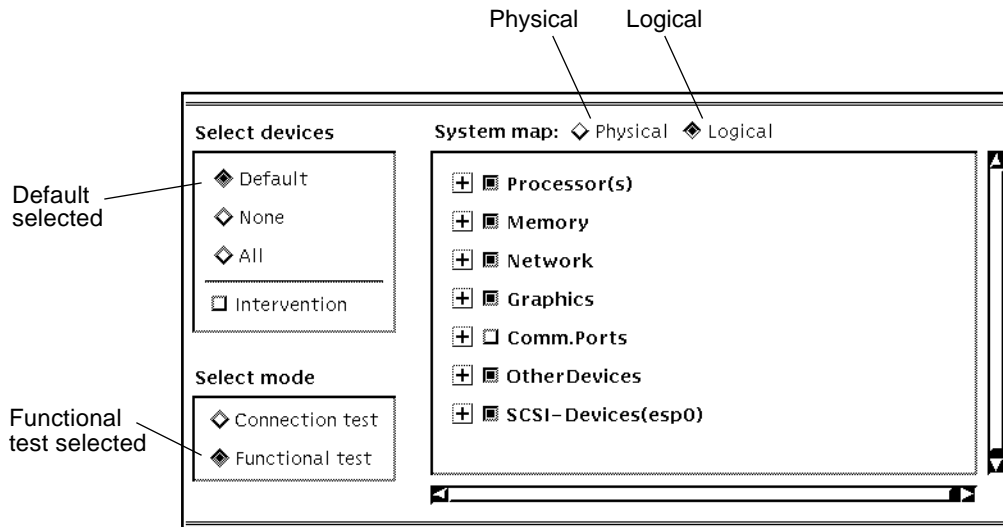


FIGURE 3-15 CDE System Map, Logical View

The Container checkbox is a square in front of each device listed; it has two states to indicate that the device contains more objects. Click the “+” (plus) checkbox to change to “-” (minus), or open state, and display the next level of devices. This sequence continues down a branch of the system hierarchy until the device names are at their lowest level.

▼ To Select a Device from the Test Option Menu

1. Click the left mouse button on the device name, or on the small checkbox to the left.
2. Click the right mouse button to display a pull-down menu of options for that device (FIGURE 3-16).

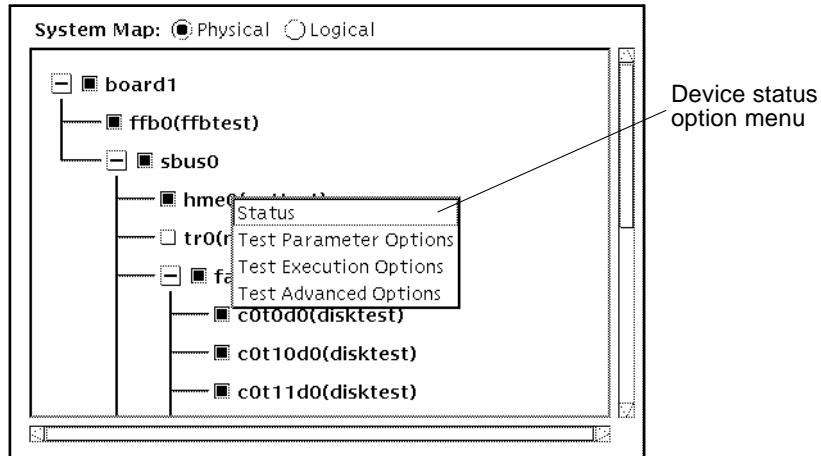


FIGURE 3-16 CDE Device-Specific Option Menu

In addition to the test option selections, the Test Option menu contains a status entry. When you select status from the pop-up menu, the status window for that device appears (FIGURE 3-17).

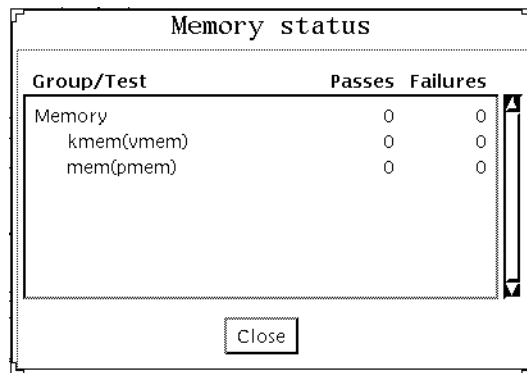


FIGURE 3-17 CDE Status Pop-up Window

Displaying Status in the System Map Window

The primary method of displaying status uses color within the System Map window (see the outlined areas in FIGURE 3-18). During testing, the name of any device changes color from black to green if it has at least one pass and no failures. The moment a device has at least one failure, the color of its name changes to red. This color information is propagated up an entire branch of the hierarchy, but keeps the

System Map hierarchy closed. You can then view the entire system at the highest level during a test session. A branch that has no failures is displayed in green; those with failures are in red. To investigate the test names in red, move down that branch of the hierarchy, using the container checkboxes until the lowest level indicates which particular device has failed.

A secondary level of status is the individual device pop-up window (mentioned above) that displays the testing Pass and Fail counts for the device and its immediate sub-devices. For the lowest level device, it displays the test status for that device and all of the test instances below it. You can selectively choose devices that you want to monitor during testing, and can display the corresponding status pop-up windows. They will be dynamically updated during testing.

Note – The boxed regions in FIGURE 3-18 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.

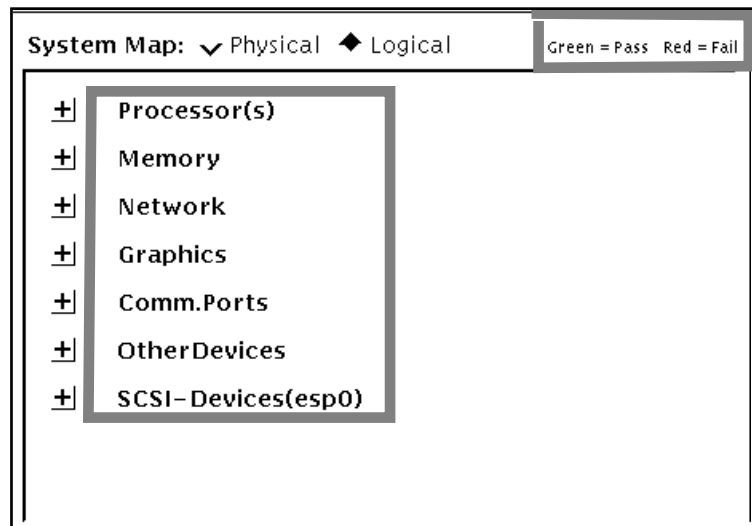


FIGURE 3-18 CDE System Map Window Areas that Indicate Pass or Fail

CDE Test Message Console

The Test Message Console contains test results and information. This panel is located at the bottom of the Main window (FIGURE 3-19).

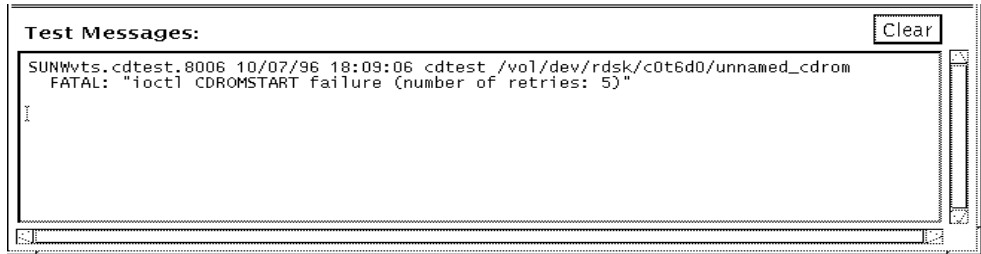


FIGURE 3-19 CDE Test Message Console

OPEN LOOK User Interface

When you start the SunVTS `vtstui.ol` application, the OPEN LOOK main window is displayed (FIGURE 3-20).

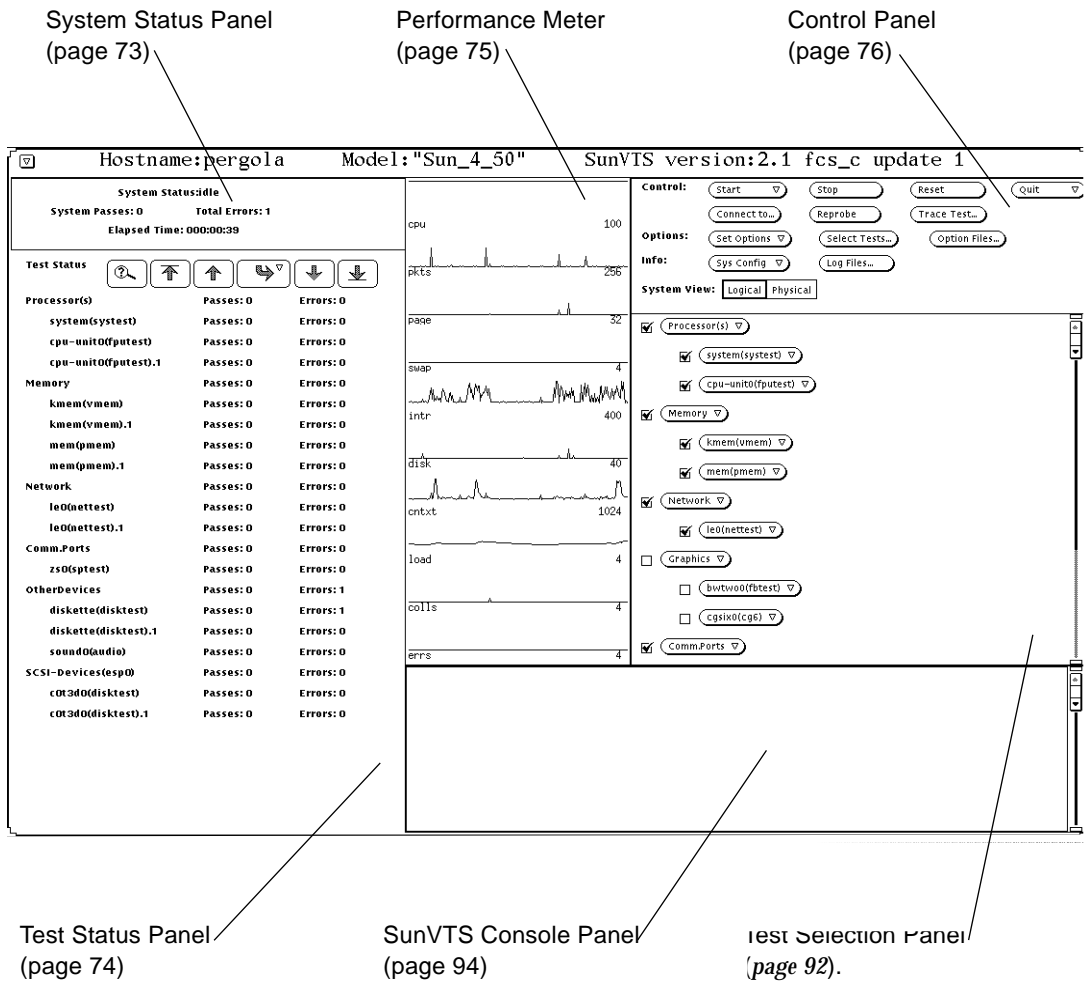


FIGURE 3-20 OPEN LOOK Main Window

OPEN LOOK System Status and Test Status

FIGURE 3-21 shows a typical System Status panel.

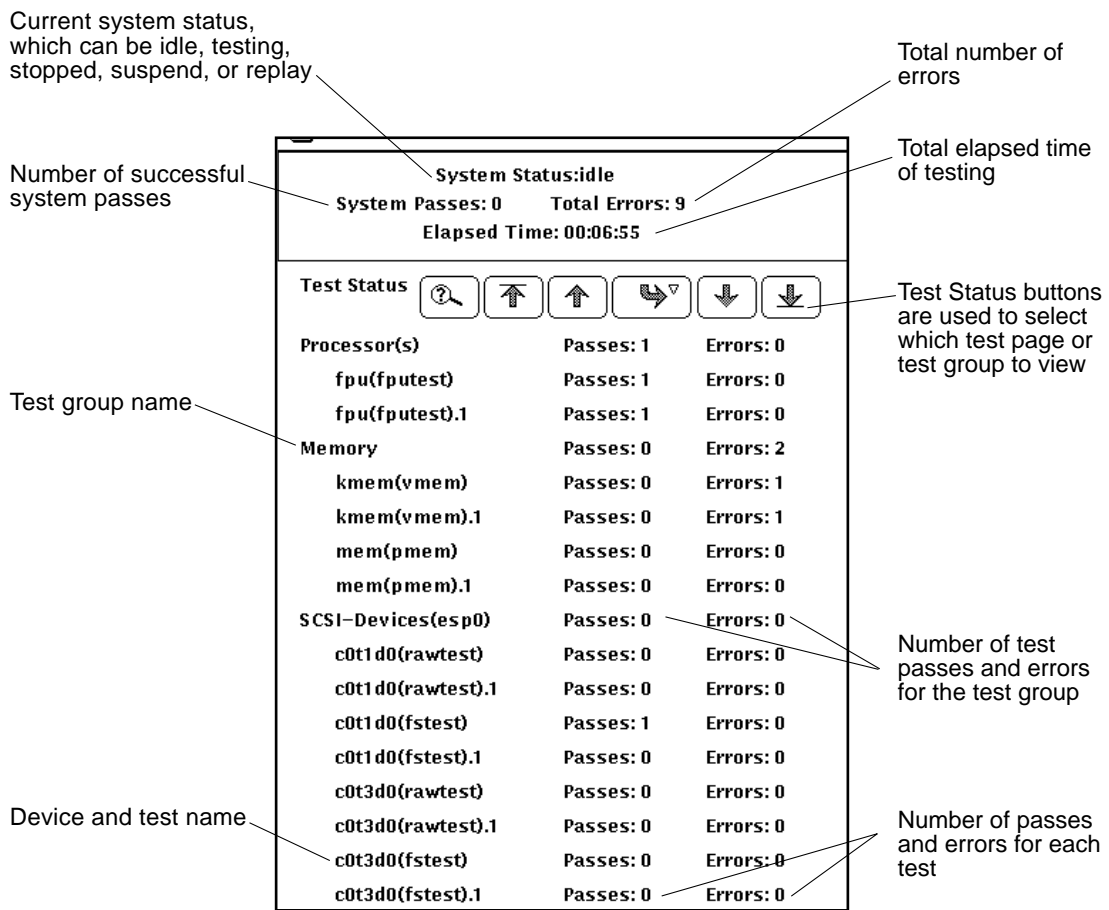


FIGURE 3-21 OPEN LOOK System Status Panel

Test Status Buttons

Quite often, more tests are run 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 3-22 shows the Test Status buttons that you can use to scroll through pages of tests.

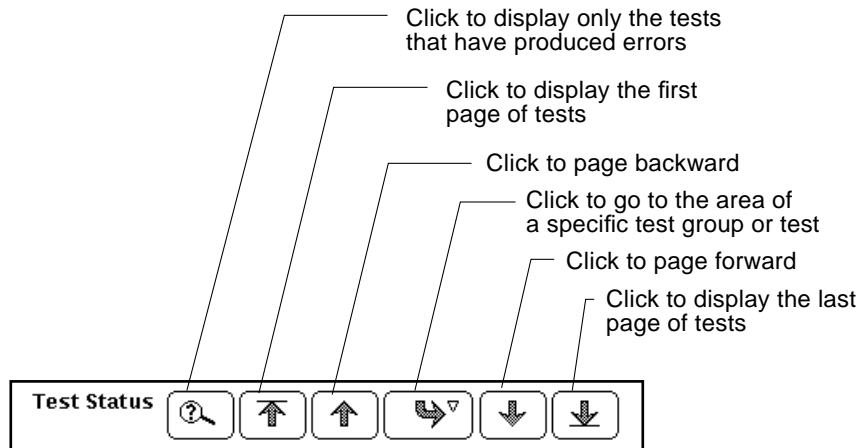


FIGURE 3-22 OPEN LOOK Test Status Buttons

FIGURE 3-23 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.

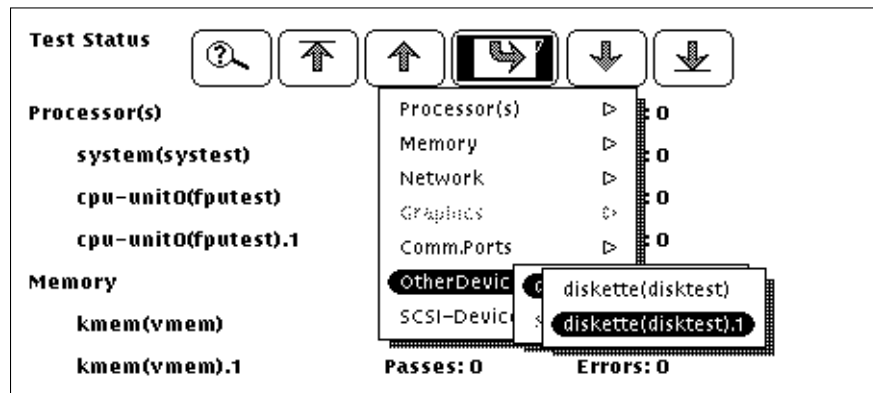


FIGURE 3-23 OPEN LOOK Test Status Button Menu

OPEN LOOK Performance Meter

The Performance Meter panel (FIGURE 3-24) shows a graphic display of the test system's performance statistics. This panel provides the same statistics as the `perfmeter` utility.

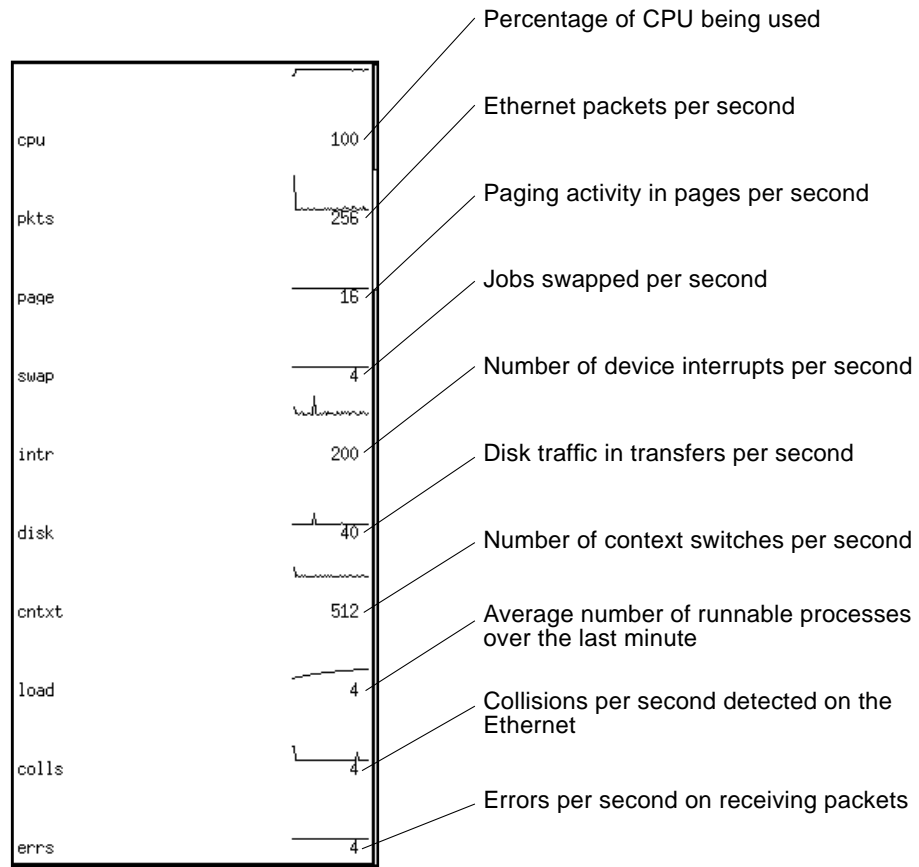


FIGURE 3-24 OPEN LOOK Performance Meter

OPEN LOOK Control Panel

You can control the SunVTS tests by using the Control panel menus and buttons (FIGURE 3-25 and TABLE 3-3).

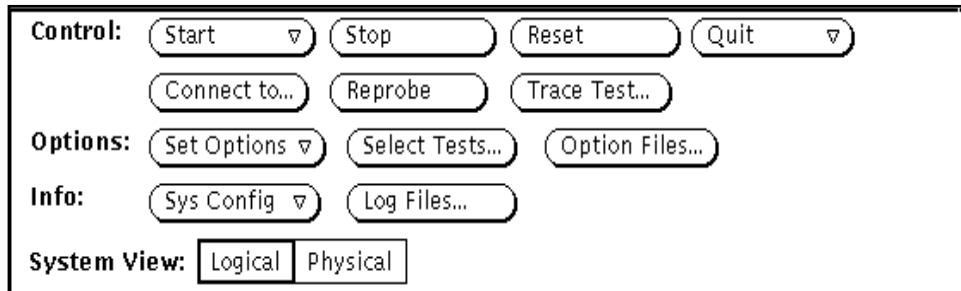


FIGURE 3-25 OPEN LOOK Control Panel

TABLE 3-3 shows where you can locate more information about each of the Control Panel selections.

TABLE 3-3 OPEN LOOK Control Panel

Selection	Button	Description	Page
Control	Start	Starts all enabled tests	<i>page 77</i>
	Stop	Stops all tests	<i>page 77</i>
	Reset	Resets all pass and error counts	<i>page 78</i>
	Quit	Terminates the SunVTS user interface and/or the SunVTS kernel	<i>page 79</i>
	Connect to	Connects to another machine	<i>page 80</i>
	Reprobe	Reprobes the system	<i>page 81</i>
	Trace Test	Creates a log of every system call	<i>page 82</i>
Options	Set Options	Sets the global SunVTS kernel and test options	<i>page 84</i>
	Select Tests	Sets global test options	<i>page 88</i>
	Option Files	Saves the current settings from the global test options and specific test settings	<i>page 88</i>

TABLE 3-3 OPEN LOOK Control Panel (*Continued*)

Selection	Button	Description	Page
Info	Sys Config	Displays or prints system configuration information	<i>page 89</i>
	Log Files	Displays the Log Files window	<i>page 91</i>
System View		Determines whether the view is Logical or Physical	<i>page 91</i>

Using Control Selections

Use the Control Selection area of the Main window to set up the testing environment.

The Start Button

From the Start button you can:

- Start all enabled tests.
- Start all enabled 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 also starts displaying the status for all active tests (see “CDE System Status Panel” on page 67).

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. (See “To Use the Option Files Button” on page 88 for additional information.)

The Stop Button

Click the Stop button to halt all active tests. The test results remain on 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 3-26) 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.

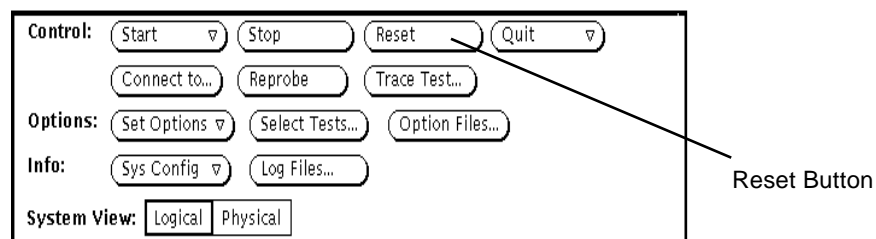


FIGURE 3-26 OPEN LOOK Reset Button

▼ To Reset Information in the Test Status Panel

- 1. Click the Reset button.**
Once testing has begun, the Reset button changes to Suspend.
- 2. Click the Suspend button to pause all SunVTS tests.**
The Suspend button changes back to Resume.
- 3. Click the Resume button to continue testing (FIGURE 3-27).**

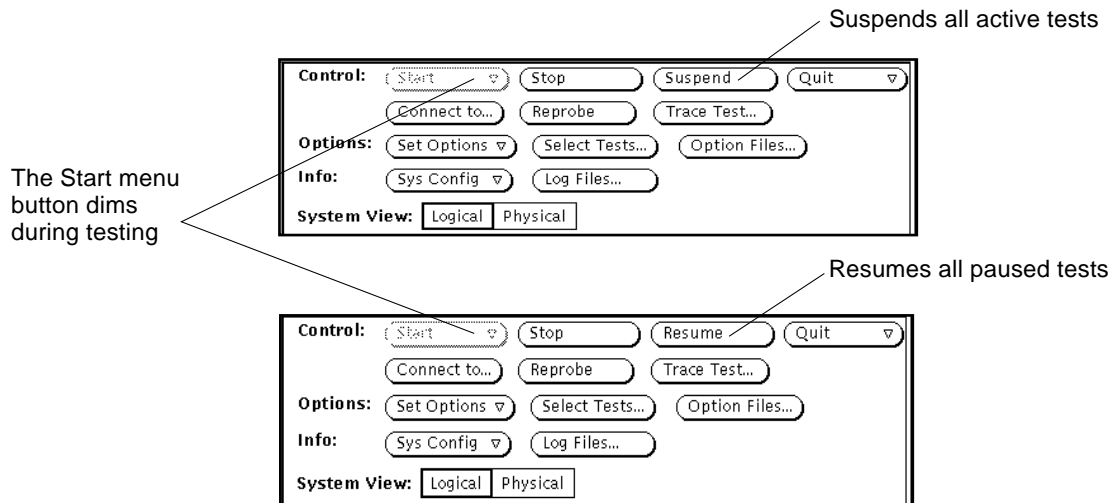


FIGURE 3-27 OPEN LOOK Suspend/Resume Button

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 pop-up message (FIGURE 3-28).

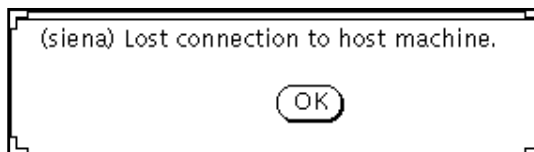


FIGURE 3-28 OPEN LOOK Terminate Kernel Only Window

The pop-up message notifies you that the connection to the host machine has been broken. The host name (shown in parentheses in FIGURE 3-28) is the name of the system where the SunVTS kernel terminated.

▼ To Use the Connect to Button

Use the Connect to button to access or link to another machine as follows:

1. **Click the Connect to button to display the Connect to Machine pop-up window.**

From this window (FIGURE 3-29) you can connect the user interface to another machine on the network that is running the SunVTS kernel.

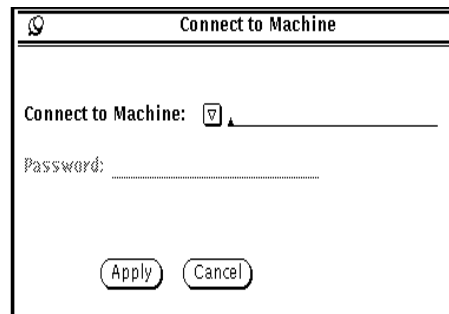


FIGURE 3-29 OPEN LOOK Session Connection Window

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

Usually, you don't need a password to connect to another machine, in which case the password field is grayed-out.

If you are setting up a machine with security restrictions that require a password, the password field will re-appear after you press Apply. You can then type the password and press 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.

▼ To Use the Reprobe Button

- **Click the Reprobe button to reprobe the hardware devices on the test system (FIGURE 3-30).**

For example, if you forgot to insert a blank tape into a tape drive before you started the SunVTS kernel, you may need to reprobe the system. By reprobing the system, you can use the `tapetest` command to test the tape drive.

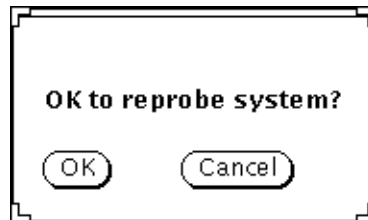


FIGURE 3-30 OPEN LOOK Reprobe Confirmation Pop-up Window

Note – When you click the Reprobe button, a pop-up window is displayed so you can confirm your selections.

If you add SCSI devices to your test system, you need to perform a reconfiguration boot on the system so these devices can be probed by the SunVTS kernel.

▼ To Use 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.)

- Choose one or more tests to be traced by selecting the test name from within the scrolling list (FIGURE 3-31).

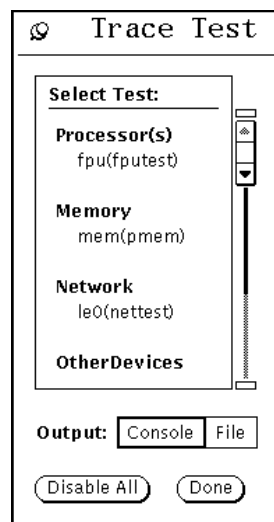


FIGURE 3-31 OPEN LOOK Trace Test Pop-up Window

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 3-32). This "T" lets you see which tests are being traced.

Test Status		
Processor(s)	Passes: 0	Errors: 0
T fpu(fputest)	Passes: 0	Errors: 0
fpu(fputest).1	Passes: 0	Errors: 0
Memory	Passes: 0	Errors: 0
T kmem(vmem)	Passes: 0	Errors: 0
kmem(vmem).1	Passes: 0	Errors: 0
T mem(pmem)	Passes: 0	Errors: 0
mem(pmem).1	Passes: 0	Errors: 0
SCSI-Devices(esp0)	Passes: 0	Errors: 0

FIGURE 3-32 OPEN LOOK Selected Trace Tests on the Test Status Panel

▼ To Deselect a Test

- Click the highlighted test name in the list displayed by the Trace Test window (FIGURE 3-32).

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.

▼ To Send Trace Messages to the Console or to a Log File

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

- Click either Console or File, respectively at the Output selection switch in the Trace Test window.

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).

Using Option Choices

This area of the Main window is where you set global options for each group of tests. There are three areas where you can make choices: Set options, Select tests and Option files, as follows:

Using 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 3-33 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 TABLE 3-4 on page 86 for a complete list and description of each available option)**

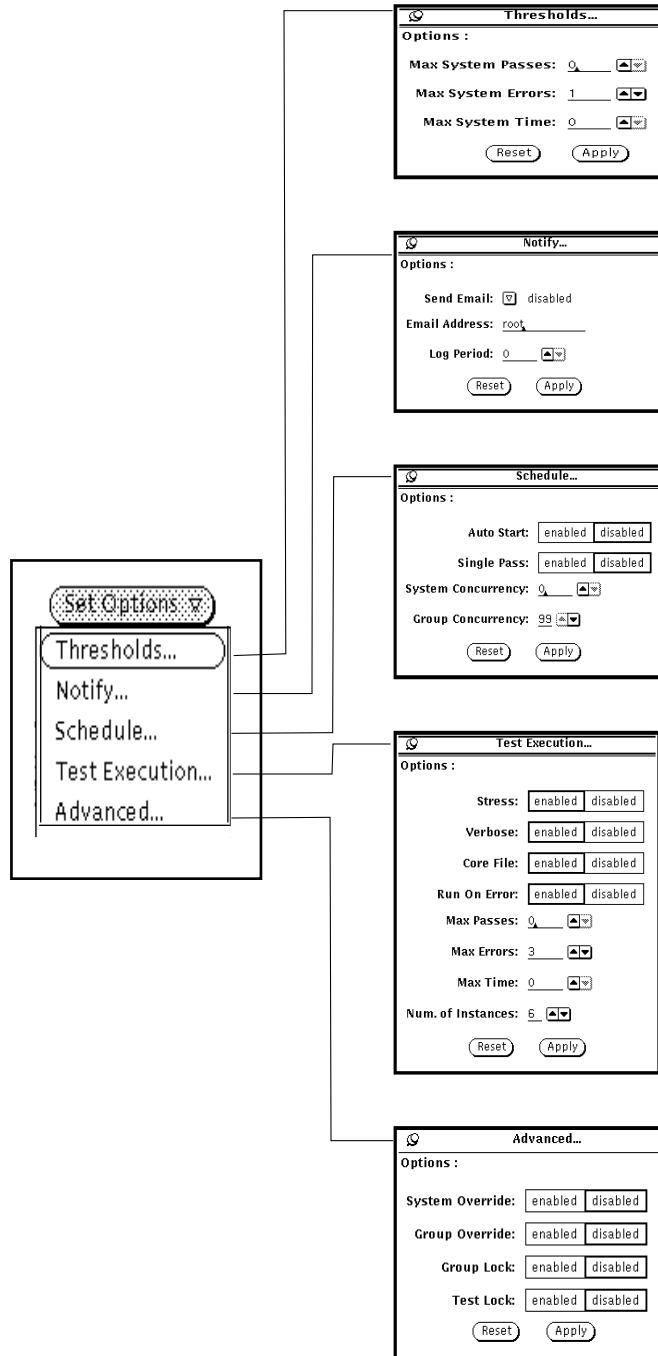


FIGURE 3-33 OPEN LOOK Options Windows

TABLE 3-4 OPEN LOOK Global Options

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: <ul style="list-style-type: none"> - 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: <ol style="list-style-type: none"> 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 88 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 3-4 OPEN LOOK Global Options (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 “Log Files” on page 91 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
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 88
	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)
	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.

▼ To Use the Select Tests Button

You can set global testing options using the Select Tests pop-up window.

1. **Click the Select Tests button to display the Select Tests pop-up window (FIGURE 3-34).**

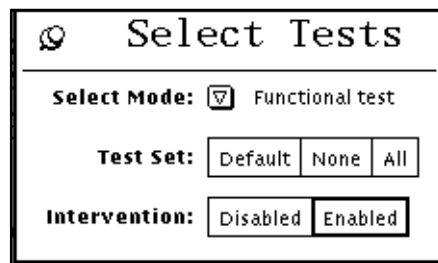


FIGURE 3-34 OPEN LOOK Select Tests Pop-up Window

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 to intervene.**

There are two categories of tests that require intervention mode:

- Tests of drives that require scratch media (tapes, disks, or diskettes)
- Tests that require loopback connectors

SunVTS cannot run these tests until you enable intervention mode. This setting does not change the test function; it just serves as a reminder that you must intervene before the test can be successfully completed.

▼ To Use the Option Files Button

You can Load, Store or Remove an 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.

1. **Click the Option Files button to display the Option Files pop-up window (FIGURE 3-35).**

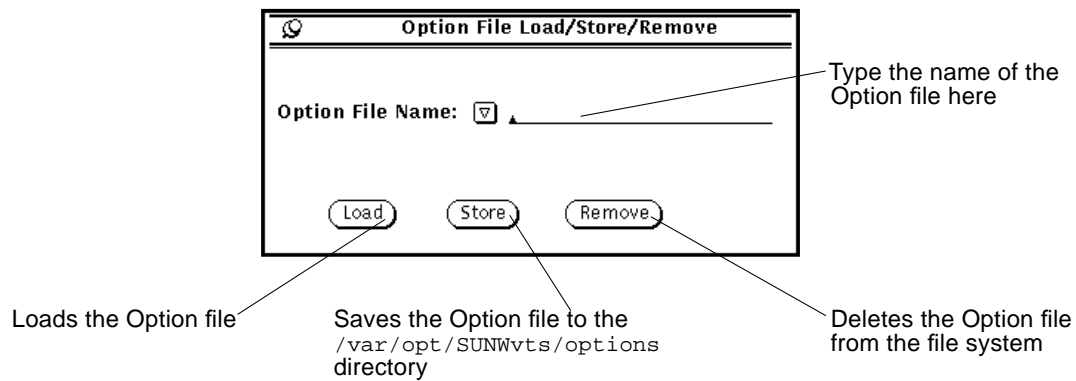


FIGURE 3-35 OPEN LOOK Option File Window

2. Type the file name or pull-down and select a listed file name.
3. Load, Store or Remove the specified Option File.

Information (Info) Choices

The Info area of the Main window lets you select various ways to view system information.

Using the Sys Config Button

From the pull-down 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 SysConfig button to display the pop-up window.
2. Select Display.

The Configuration window is displayed (FIGURE 3-36) listing all of the hardware on the test system and the corresponding hardware tests.

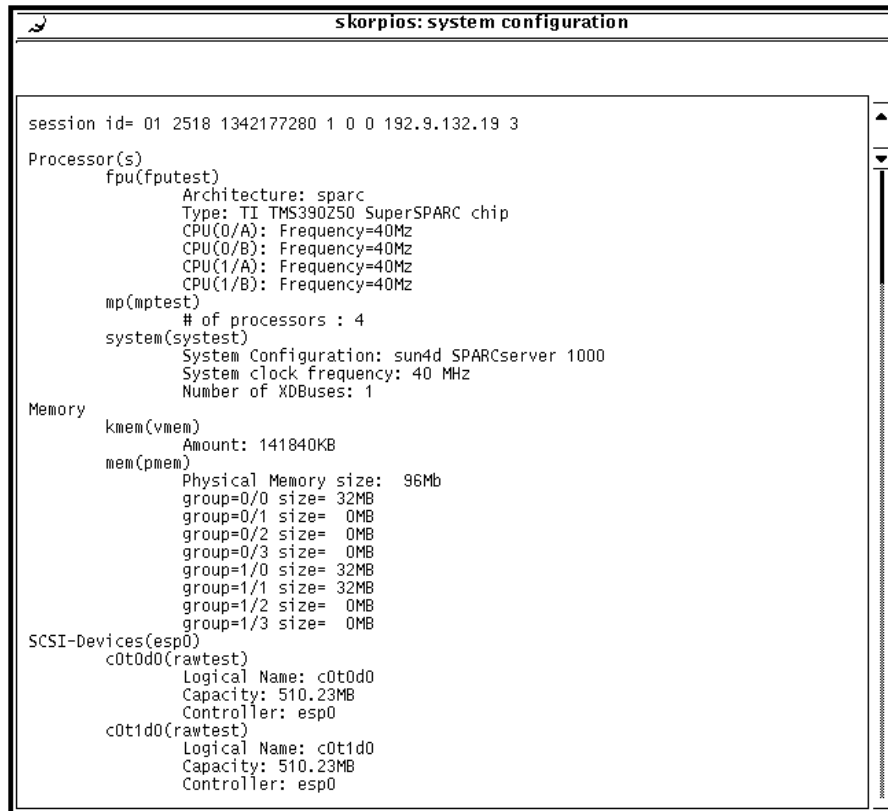


FIGURE 3-36 OPEN LOOK Typical System Hardware Configuration Window

▼ To Print the Hardware Configuration of the Test System

1. Select the Print option from the Sys Config pull-down menu.

A Print System Configuration window is displayed with your default local printer (FIGURE 3-37).

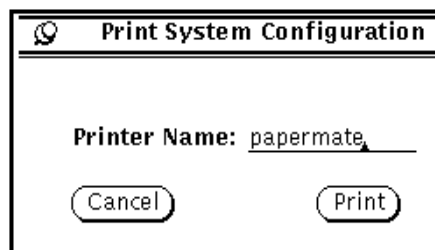


FIGURE 3-37 OPEN LOOK Sample Print System Configuration

2. If you want to use another printer, type that printer name in the Printer Name field.
3. Click the Print button.
4. If you want to end the print request, select the Cancel button.

Log Files

SunVTS saves the status of its progress in three kinds of log files—error, information, and UNIX messages.

▼ To Access Files from the Log Files Window

1. Click the Log Files button (FIGURE 3-38).

Refer to “Reviewing Log Files” on page 119 in Chapter 4 for more details.

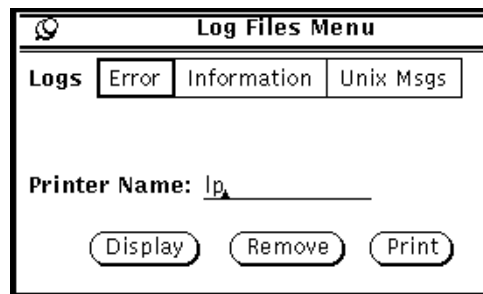


FIGURE 3-38 OPEN LOOK Log Files Menu

The three log files in this menu are:

- `/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)

2. Click to select one category of the log files.
3. Type the name of the printer if you want to print a file.
4. Select Display, Remove, or Print.

Choosing the System View

The System View area is where you choose to display either the Logical or Physical view of the system being tested (FIGURE 3-39).

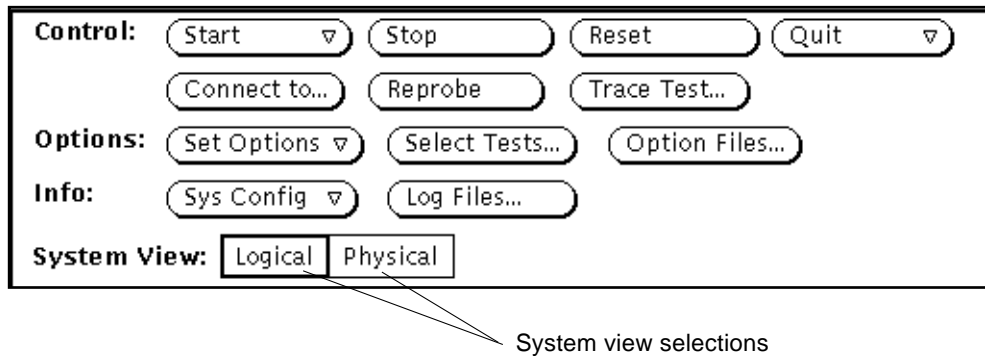


FIGURE 3-39 OPEN LOOK System View Selections

Using the OPEN LOOK Test Selection Panel

From the Test Selection Panel, you can select and deselect the tests you want to run. You can also change global and individual test options (FIGURE 3-40). Active or selected tests appear darker, while inactive tests have look grayed-out.

The content of this panel is determined by the test configuration.

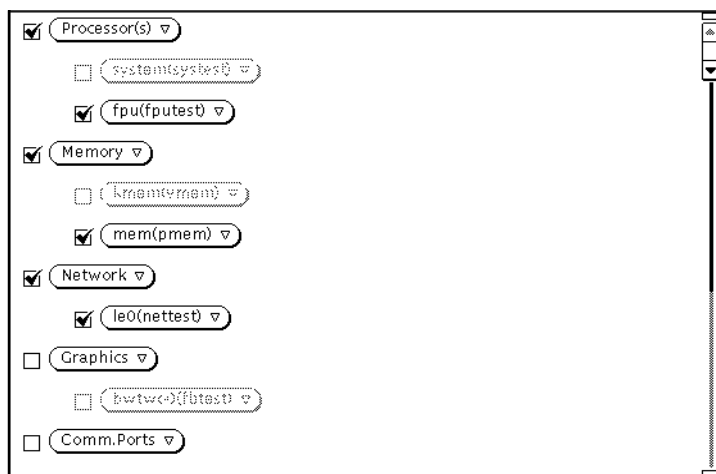


FIGURE 3-40 OPEN LOOK Test Selection Panel

Note – Some tests can only be selected if you are running SunVTS in intervention mode. See “Intervention” on page 80 in Chapter 4 for more information.

If you click 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 3-4 on page 86 for descriptions of these options.

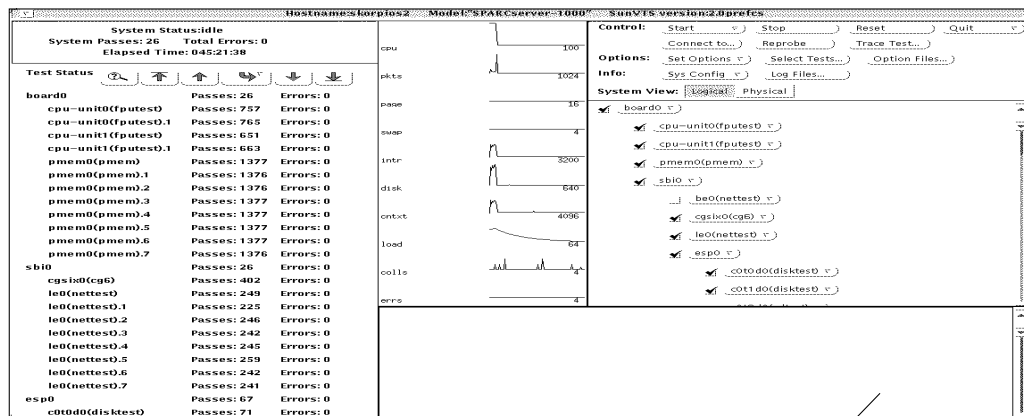
If you click an *individual* test (pmem0 (pmem), cpu-unit (fputest), and so on), the test system option window is displayed and you are given three choices for viewing and setting individual test options:

- Test Options
- Test Execution Options
- Test Advance Options

Each of these windows is test-dependent and is described in the *SunVTS 2.1 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 OPEN LOOK Main window (FIGURE 3-41).



Console panel

FIGURE 3-41 OPEN LOOK Console Panel

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

See “Using Option Choices” on page 84 for more information about setting up Option files.

TTY Interface

A screen-oriented TTY-based interface is also an option with SunVTS. You can use it in a command shell 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 also available through the GUI are available through the TTY interface.

TTY Main Window

The TTY Main window is divided into four main areas (FIGURE 3-42):

- Control panel
- Status panel
- Tests panel
- Console area

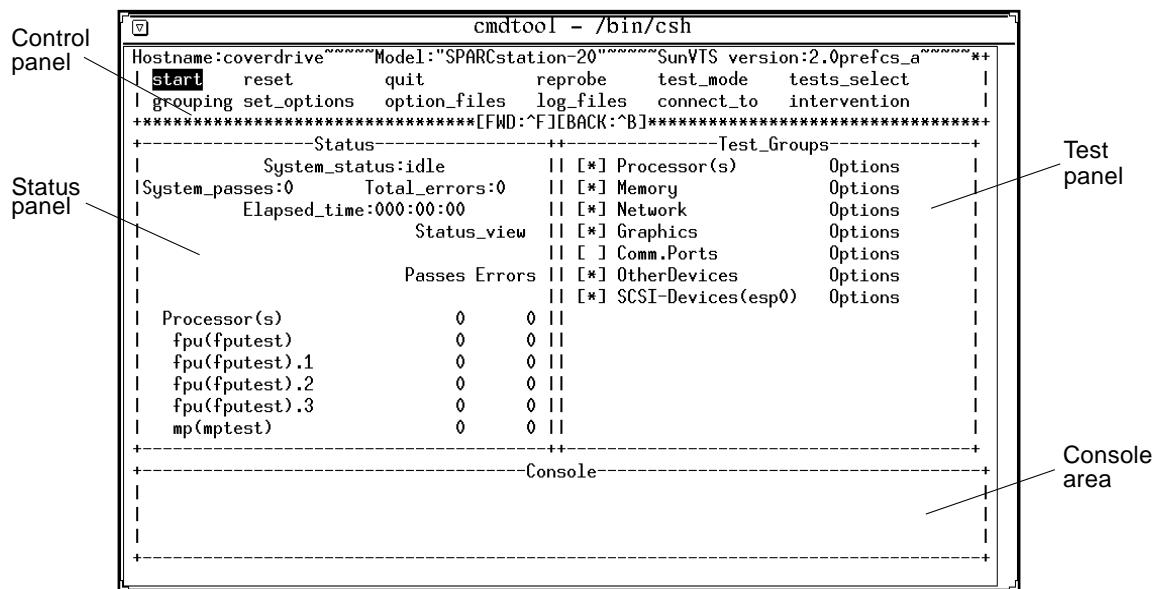


FIGURE 3-42 TTY Main Window

Navigating Through the TTY Interface

Common keyboard commands are used for navigating throughout the TTY interface. TABLE 3-5 summarizes these commands.

TABLE 3-5 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. 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	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

For a description of all the SunVTS options, see “Using Option Choices” on page 84.

▼ To Select and Change System Options from the TTY Option Window

1. **Select the Control panel with the Tab key** (FIGURE 3-43).

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

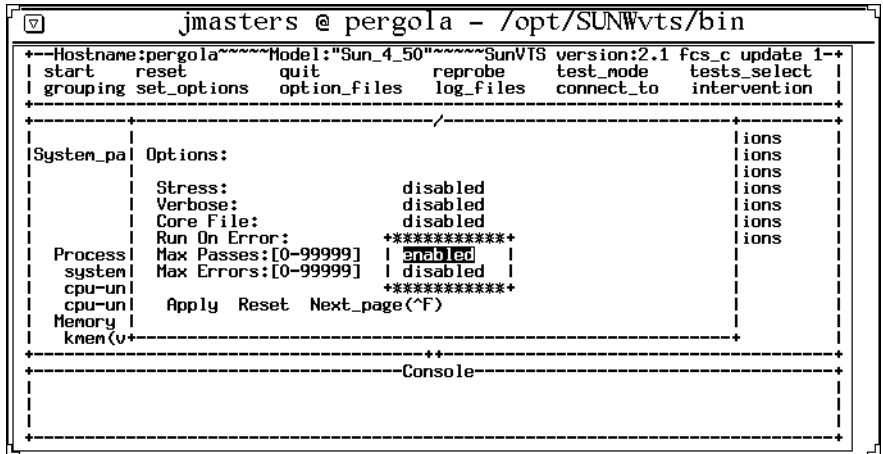


FIGURE 3-44 Selecting a Menu Option in TTY

d. Select this choice with the Return key.

The stress option changes from disabled to enabled.

e. View the second page of the Options menu by typing Control-F (FIGURE 3-45).

f. Select the num_instances text field.

g. Change the value to 10.

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

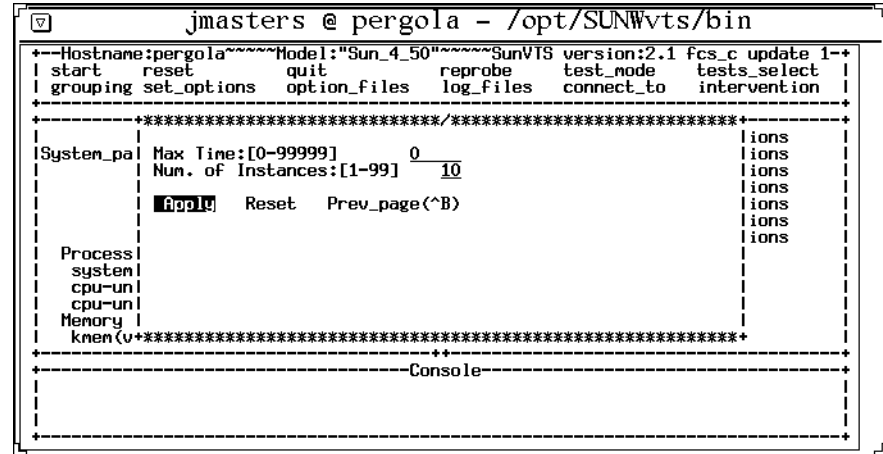


FIGURE 3-45 Changing a Text Field Option in TTY

5. Highlight Apply after you finish changing the options.
6. Apply the changes and remove 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 for Testing in TTY

▼ 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 3-46) 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.

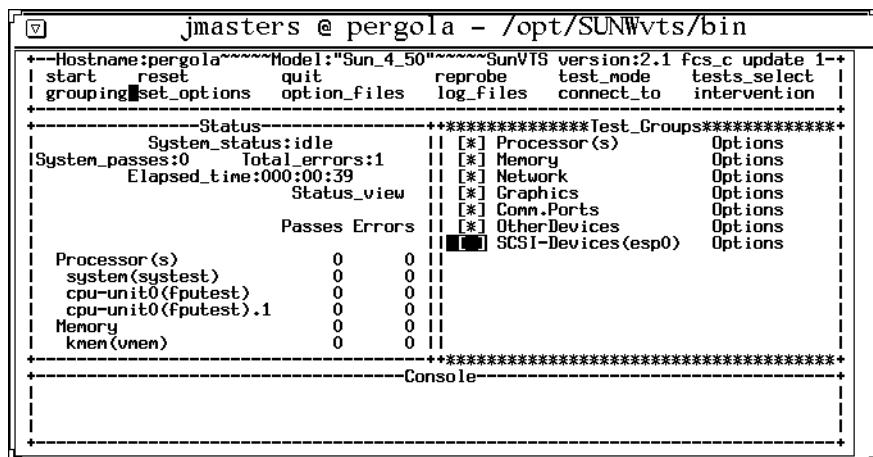


FIGURE 3-46 Deselecting a Test Group in TTY

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 3-47).

```
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) |
+-----+-----+-----+-----+-----+-----+
| System_sl | Groups | | |
| System_passes:0 | Options |
| Elapsed_ti | Options |
| Processor(s) | Options |
| system(system) | ***** [DONE;ESC]***** |
| cpu-unit0(fputest) | 0 0 || |
| cpu-unit0(fputest).1 | 0 0 || |
| Memory | 0 0 || |
| knen(vmem) | 0 0 || |
+-----+-----+-----+-----+-----+-----+
| Console |
+-----+-----+-----+-----+-----+-----+
```

FIGURE 3-47 Selecting a Test in TTY

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. Remove the test group window with 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 3-48 and TABLE 3-6).

▼ 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 3-48).

```

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 lory Options
Elapsed_time:000:01 Next_page(^F) lwork Options
St| Previous_page(^B) lphics Options
| First_page ln.Ports Options
Pas| Last_page lerDevices Options
| I-Devices(esp0) Options
-----
Processor(s) +****[DONE:ESC]****+
system(system) 0 0 ||
cpu-unit0(fputest) 0 0 ||
cpu-unit0(fputest).1 0 0 ||
Memory 0 0 ||
kmem(vmem) 0 0 ||
-----
-----Console-----
-----

```

FIGURE 3-48 TTY Status_view Menu

3. Move to the option you want with the Arrow keys (TABLE 3-6).

Choose one of the following options:

TABLE 3-6 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 3-49).

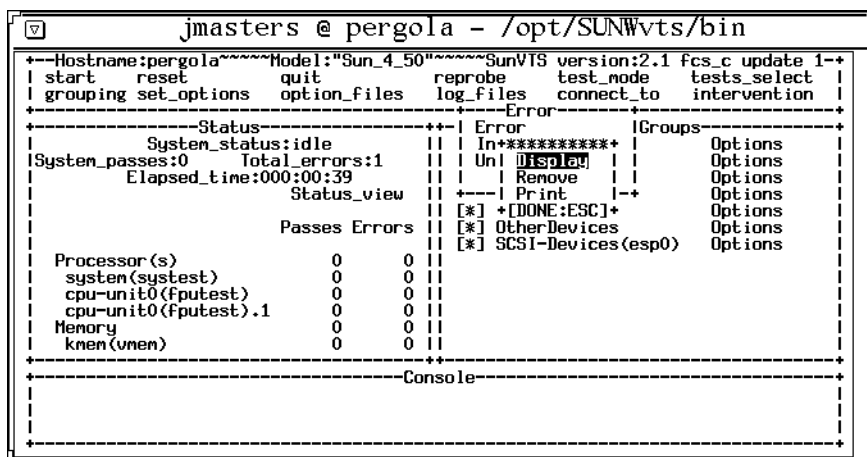


FIGURE 3-49 Using the TTY Log Files Menu

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 3-7).

Choose one of the following options:

TABLE 3-7 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 remove 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 3-7, for a description of these options.

6. Confirm your choice by pressing Return.

FIGURE 3-50 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.

A screenshot of a terminal window titled "cmdtool - /bin/csh". The terminal displays a sample SunVTS log file. The log entries include timestamps, component names (like nettest.2, audio, sound0), and error messages. For example, one entry says "No ICMP echo reply from gyver 192.9.132.32." with probable causes like "system load too heavy" and "No cable connection". Another entry shows a "FATAL" error for the audio component: "play: ioctl(filides=0x4, AUDIO_DRAIN=0x20004103, NULL=0x0) system call timeout. No response after 50 seconds." The log also shows test results like "passes: 46 errors: 1" and "passes: 13434 errors: 1". At the bottom, it indicates the log file path: "/tmp/sunvts_log" [Read only] 16 lines, 1720 characters.

FIGURE 3-50 Sample TTY Log File

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.

SunVTS Testing Environment

This chapter describes the more commonly used features of SunVTS in a typical testing environment. The examples in this chapter use the CDE user interface.

System Mapping

System mapping provides a consistent view of the system configuration, depending on the user's requirements. The SunVTS probe 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.

There are two types of system mapping:

- **Physical**—which shows the exact location of the device on the system for Field Replaceable Unit (FRU) identification. From the physical mapping, you can determine the actual location of the device(s). When possible, the board number and controller type for the device are also displayed.
- **Logical**—which organizes the devices being probed according to the functional device type, such as disks, graphics, and so forth. The Logical map is determined by the individual device probes. 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.

When you select either the physical or logical button from the user interface, the system mapping is displayed.

Note – This feature is available only on the following server systems: SS1000, SS2000, and Ultra™ Enterprise™ Models 6000, 4000, 3000, and 450.

Test Selection

Use the Test Selection panel to selectively enable the tests you want to run during the testing session.

Choosing Tests in the Test Selection Panel

When you start SunVTS, the SunVTS kernel probes the test system devices. The results of this probe are displayed on the Test Selection panel. There is an associated SunVTS test for most hardware devices on your system.

Test Modes

Two modes of testing are available—Connection test and Functional test. These modes differ in their assumptions about the state of the system you are testing and your objectives.

To indicate the level of system usage, a distinction is made between Connection and Functional system states.

Connection Test Mode

In Connection test mode, the tests determine if the devices are connected to the system you are testing and if they are accessible. Functional testing is not done in this mode, but the devices are accessed to establish system connection and accessibility.

You can safely run this mode when the system is online. When SunVTS testing is started in Connection test mode, each test is run sequentially until all tests are run.

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 thoroughly checks the operation of the system devices. This mode finds any faults and exercises the system by running tests to increase the load and stress on the system.

Do not run critical applications on the system or use the system for production purposes in Functional test mode.

Note – Solaris is required to be running in Functional test mode. However, the system should not be running critical production software.

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 – You must be sure that the state of the system conforms to assumptions made regarding it before running the tests in the Functional test mode. SunVTS does not verify that the system is Functional test mode or that the assumption made above is true; it does not stop other applications or log out other users.

Functional Test Mode via Solstice SyMON

Solstice SyMON identifies a range of hardware and system status states quickly. For example, it can monitor a major condition such as a CPU failure or a minor condition such as low swap space. You can also monitor hardware performance to detect incipient hardware failures, such as soft read errors on a disk.

To give you this critical performance information, Solstice SyMON analyzes system performance in real time; when performance problems occur, the event system alerts you, if desired, to the status of most system components.

Solstice SyMON has an online diagnostic interface, so you can access SunVTS when running SyMON. In this case, Functional test mode does operational testing to find and isolate faults, while minimizing the impact on other applications and users.

When Functional test mode is accessed from SyMON, the system may be running critical production software. The tests are sensitive to this fact and usually try to achieve as much coverage as possible within the constraints imposed. In this mode, some of the test parameters, execution options, and some system level options are

fixed (have preassigned 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.

TABLE 4-1 shows the default values of the test execution options in different modes.

TABLE 4-1 Test Execution Options

Option	Connection Test Mode	Functional Test Mode	Functional Test Mode via SyMON
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)

Intervention

Certain tests like the serial port test (`sptest`), require that you intervene *before* running the test. Attach a loopback connector before running the serial port test. Other tests, like the tape drive test (`tapetest`), require that you insert scratch media into the device.

After selecting Enable on the Intervention switch, you can select all the tests (see “Test Set” on page 108 and “Selecting Test Groups and Individual Tests” on page 109). This switch serves as a reminder that you may need to intervene before running certain tests; it does not change the test.

Test Set

Use the Test Set switch to select test states. When you start SunVTS, a default set of tests appears on the Test Selection panel. This default selection of tests provides you with a set amount of coverage during the testing session.

You can select or deselect other tests besides the default test set. If you select a different group of tests, you can return to the default test selection by choosing the Default selection on the Tests switch.

If you enable Intervention, you can select all of the tests available by choosing All on the Test Set switch.

You can deselect all the tests with None. This selection is convenient when you only want to run a single test. You can first deselect all the tests and then select the single test you want to run.

Selecting Test Groups and Individual Tests

You can select entire test groups or individual tests from the Tests Selection panel. There are checkboxes in front of each test and test group (FIGURE 4-1). By clicking on the test group box, you can select or deselect all the tests in that group. Also, by clicking on a test box, you can select or deselect that one test.

Selecting only the tests you want to run fine-tunes your testing session.

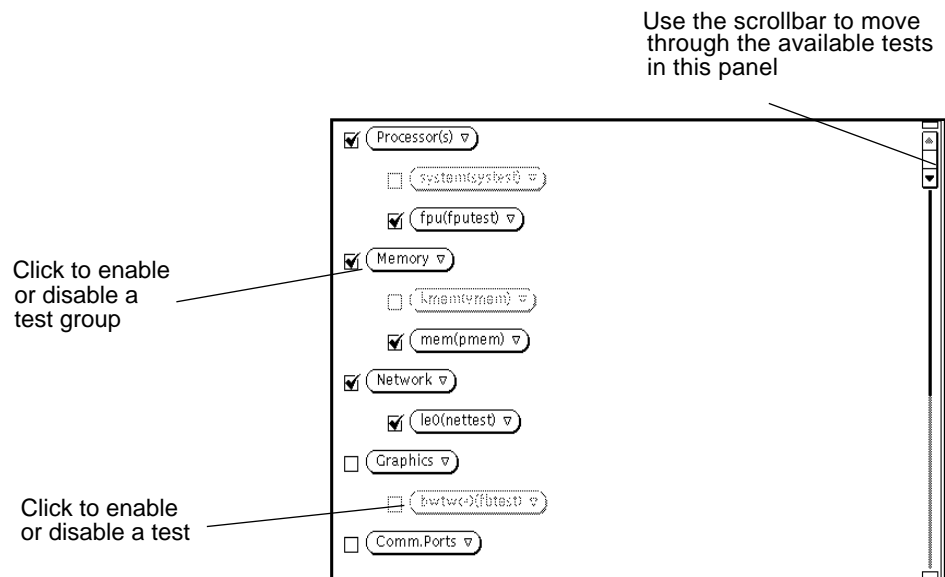


FIGURE 4-1 Selecting and Deselecting Tests

Test Execution Options

You can customize your SunVTS environment by setting option variables, as follows:

- **System options** affect the overall SunVTS environment, such as determining when to stop testing, whether verbose messages from a test are displayed, and so on.
- **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.

TABLE 4-2 System Options

System Option	Description
Stress	Performs stress testing
Core File	Creates a Core file. If the <i><SunVTS bin></i> directory is writable then <i>core.<testname>.xxxxxx</i> is the Core file name, where <i><testname></i> is the test that dumped core, and where <i>xxxxxx</i> is a character string generated by the system to make the file name unique. When <i>core_file</i> is disabled, a message indicating the signal that caused the failure is displayed and logged. See "Log Files" on page 91 in Chapter 3.
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
Processor Affinity	Tests can be bound to a specific processor via this option
Run On Error	Continues testing until the <i>max_errs</i> number is reached
Verbose	Displays verbose messages in the SunVTS console window

Some options in the Connection test mode or in Functional test mode when invoked through the Solstice SyMON diagnostic interface have preassigned values that cannot be changed. This prevents changing or setting values for these options that may not be safe when the system is online (see "Test Selection" on page 106 for more information on system states and testing modes).

The set of SunVTS option variables are classified into three categories:

- Options applied at the system or root level
- Options applied at the groups level
- Options applied at the test level

For example, Max Time is applied at the system level, Group Concurrency is applied at the group level, and Verbose is applied at the individual test level.

SunVTS provides a mechanism for setting the options so tests in all the groups are affected globally. You can restrict the settings to all the tests and sub-groups in one group, or you can limit the effect to just one test.

When you assign a value to an option globally, 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.

You can modify the effects of these options using locks and overrides. Use the Group Lock and Test Lock at the group and test levels; and use the System Override and Group Override at the global and group levels.

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. 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 Options

In the Test Option panel, you can select and deselect tests. You can also change the global options for each test group and change the specific options for each test (see FIGURE 4-2).

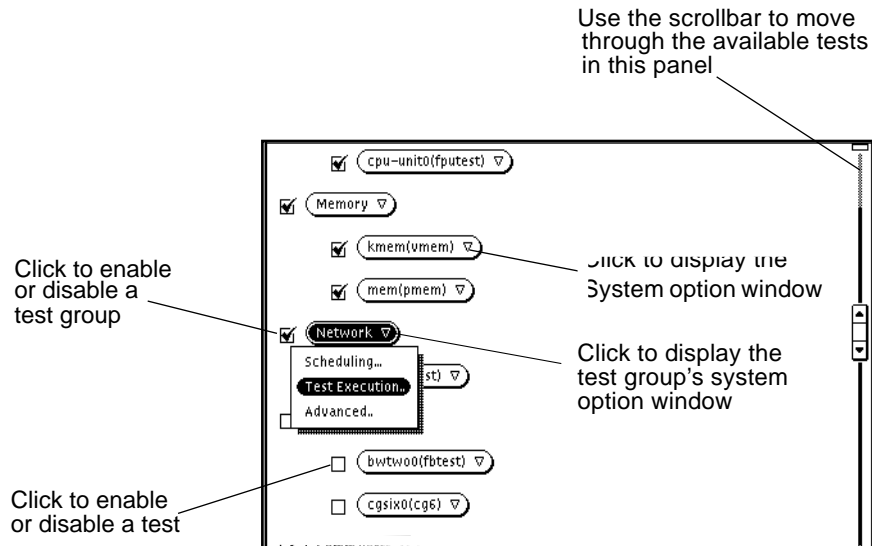


FIGURE 4-2 Test Option Panel

Note – Your test system configuration determines the appearance of this panel.

Advanced Options

Since options generally trickle down from the system level to the tests, there are ways to prevent test or group options from being reset by global option settings. However, to do this, the Global and Group option menus have Override buttons for the locks that exist below that level. You select these special options from the Advanced options menu.

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.
- **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.
- **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).
- **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.

Preparing for SunVTS Testing

Before you begin testing, you need to decide how you want to test your system. The SunVTS options let you fine-tune your test sessions. For example, you can choose to test only one specific piece of hardware, or you can test all of the system hardware. Similarly, you can set up SunVTS to verify the system’s overall functionality, or you can set it up to stress system capabilities. Stressing the system uses more resources, and requires more testing time.

Loopback Connectors

Certain SunVTS tests require loopback plugs or cables to run successfully. Refer to the *SunVTS 2.1 Test Reference Manual* for more information about loopback connectors, and which tests require them.

Normal production programs cannot run with the loopback connectors on these devices. Be sure to remove these plugs for normal operation.

Note – The loopback test is not applicable to connection test modes or, when accessed from SyMON, functional test modes, so no loopback connectors are not required under these two modes.

Blank or Scratch CDs, Tapes, and Diskettes

Note – You cannot write to a device in connection test mode or, when accessed from SyMON, in functional test mode.

Insert blank or scratch media (tape, diskette, or CD) into the drive(s), before the system is probed by the SunVTS kernel when first starting the `sunvts` software application.

- For CD tests, load a blank or scratch CD into the drive.
- Tape tests require 4mm, 8mm, one-half inch, or one-quarter inch scratch tapes (depending on the type of drive being tested). Make sure the tape heads are properly cleaned.
- For hard disk and diskette tests, be sure there is enough space on your disk partition. Double or triple density diskettes (1.4 Mbyte) are required, depending on the diskette drive in your system.

Note – Using old or damaged tapes or diskettes may cause errors in corresponding tests.

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

1. If you are using a GUI, from the Option menu of the graphic test, Select Enable.
2. If you are working from a command line, you can enable frame buffer locking by specifying a command line argument.

See the test command line arguments in the *SunVTS 2.1 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. For information about how to start the TTY interface and connect to a remote machine running the SunVTS kernel, see “In TTY Mode” on page 34 in Chapter 2.

If you are starting SunVTS with `vtsui` without running `vtsh` first, you must add the hostname to the `xserver` using the `xhost` command.

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 2.1 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.

Starting the Testing Session

Use the Start Button on the SunVTS Control Panel interface to start a test session. This will start testing on the peripherals. Refer to “The Start Button” on page 77 in Chapter 3 for details.

Suspending the Testing 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.

Click the Suspend button to pause all of the SunVTS tests. After the test is paused, the Suspend button becomes a Resume button. Click on the Resume button to continue the testing session.

Resuming the Testing Session

Once the testing session is suspended, it must be resumed before you can continue testing or stop testing. To resume testing, click the Resume button (see FIGURE 4-3). You can now stop the testing by clicking the Stop button.

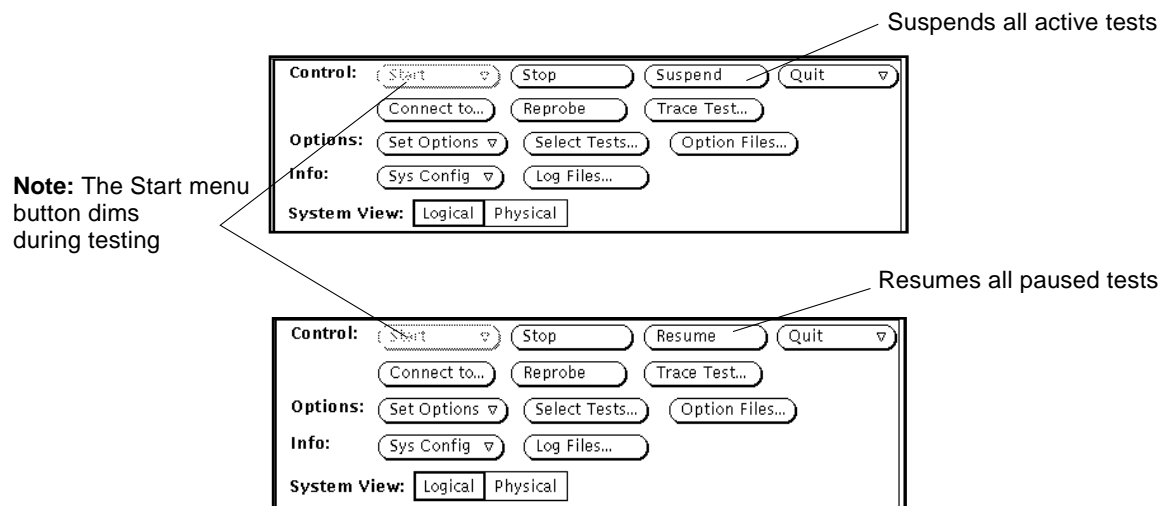


FIGURE 4-3 Suspend/Resume Button

Resetting the Test Environment

If you need to start the testing session over again, without quitting SunVTS, click the Reset button. Refer to “The Reset Button” on page 78” in Chapter 3 for details.

Stopping the Testing Session

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

SunVTS ends the test execution automatically for a number of reasons. For example, if you have enabled the Single Pass option on the Option menu, all enabled 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 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: xxx pass(es), x error(s)” when testing is complete.

After you stop the testing session, you can view the Test Status panel 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. Refer to “The Stop Button” on page 77 in Chapter 3 for details.

Monitoring Test Status

While SunVTS is testing the system, you can view the progress of the test by monitoring the panels, windows, and log files.

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.

Test Status Panel

This panel, located below the System Status 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 Test Status panel displays information on a limited number of tests. Use the icons on the top of the panel to page through the tests (FIGURE 4-4).

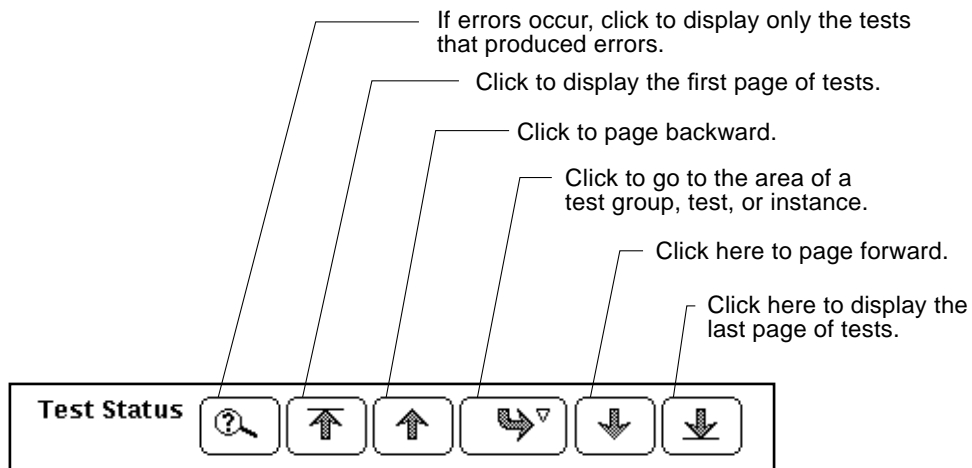


FIGURE 4-4 Test Status Icons

Performance Meter

This panel displays the performance statistics of the system you are testing. See “OPEN LOOK Performance Meter” on page 75 in Chapter 3 for details.

Console Panel

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.

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.

Log Files Menu

The status of testing is stored in three log files. These files contain error information messages. You can access these files from the Log Files menu, which is displayed when you click the Log Files button (see FIGURE 4-5).

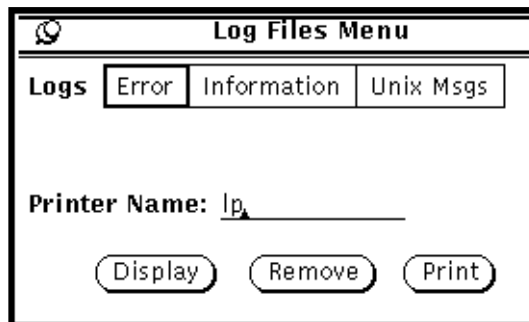


FIGURE 4-5 Log Files Menu

The three log files in this menu are:

- 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 start and stop times. The status 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.

Displaying Log Files

You can display any of the three log files by selecting the name of the Log file and then clicking the Display button.

A pop-up window displays the selected log file. Notice that the log file name appears at the top of the window (FIGURE 4-6).

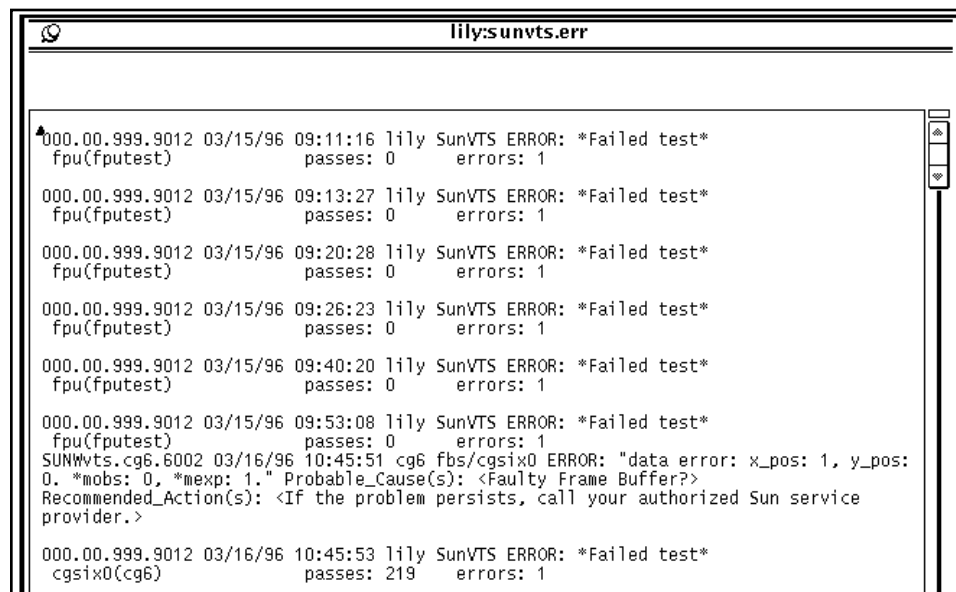


FIGURE 4-6 Info Log File

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 4-3 lists the SunVTS test message arguments and gives a brief description.

TABLE 4-3 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 122 for details
message	Contains test messages, in addition to probable cause and recommended action

- Click the Display button on the Log Files menu to display Log Files (FIGURE 4-7).

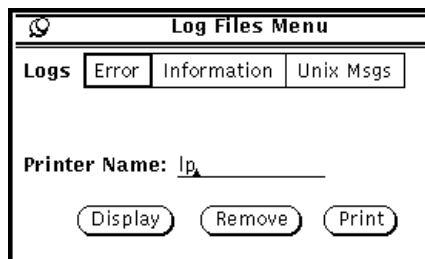


FIGURE 4-7 Log Files Display

- Click the Remove button on the Log Files pop-up window to remove Log Files.
- Click the Print button on the Log Files pop-up window to print Error Logs.

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

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 the server systems: SS1000, SS2000, Ultra Enterprise 6000, Ultra Enterprise 4000, and Ultra Enterprise 3000.

Debug 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**—Creates a Core file when selected. If the SunVTS `bin` directory is writable, `core.<testname>.xxxxxx` is the Core file name, where `<testname>` is the test that dumped core, and `xxxxxx` is a character string generated by the system in order to make the file name unique. When Core File is disabled, a message indicating the signal that caused the failure is displayed and logged.
- **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.

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 4-4 The `vts_replay_file` Event String Descriptions

Event String	Description
<code>event_type</code>	The type of event can be one of the following: START, STOP, SELECT, DESELECT, or INTERVENTION.
<code>rel_time</code>	The time (in seconds) since the preceding event.
<code>target_object</code>	The object involved in the event, for example, <code>fpu</code> (<code>fputest</code>). This field is ignored if the value is a dash (-) as in the case of an INTERVENTION event.
<code>instance_num</code>	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.
<code>event_specific</code>	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.

Installing `.customtest`

The SunVTS custom test capability provides an alternative interface to run user-developed tests.

- **To install a custom test, create a text file called `.customtest` in the current SunVTS bin directory.**

The options you set in the `.customtest` file become the default options for each test. You 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 you specify in the `.customtest` file.

- **To probe a specific device, or to always display a custom test, enter the test label, test name, and options specifications in the `.customtest` file.**

When invoked, SunVTS displays the custom test.

An example of a `.customtest` file is included in the SunVTS bin directory. The default path is `/opt/SUNWvts/bin`.

▼ To Copy the Test Binary to the `sunvts` Installation Directory

1. **Edit the `.customtest` file according to the format given below.**
2. **Restart `sunvts` or reprobe the system configuration.**

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

The `.customtest` File Format

The `.customtest` file is located in the SunVTS installation directory. 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:

```
% 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>, Slider<SLIDEBAR|0,10|5|slider>,
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` facility with a test probe attached. You must ensure that the binaries are compatible with the version of the Solaris kernel on which SunVTS is currently running.

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 and their configuration information, as well as their corresponding hardware tests.

Note – The SunVTS kernel must be running on the test machine for the `vtsprobe` command to work. See “Using Other Commands to Start SunVTS” on page 34 in Chapter 2 for instructions on how to start the SunVTS kernel.

Using vtsprobe on a Local Machine

Follow the instructions below to use `vtsprobe` on a local machine.

▼ To Display the Devices of a Machine Running the SunVTS Kernel

1. **Change directories to the SunVTS bin directory.**
The directory path is `/opt/SUNWvts/bin` by default.
2. **Type `vtsprobe` to display the list of hardware devices** (CODE EXAMPLE 4-1).

CODE EXAMPLE 4-1 `vtsprobe` Example

```
example% 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
```

CODE EXAMPLE 4-1 vtsprobe Example (Continued)

```
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
  bpp0(bpptest)
  Logical name: bpp0
  diskette(rawtest)
  Logical Name: diskette
  Controller: Intel 82077
  diskette(fstest)
  Logical Name: diskette
  Controller: Intel 82077
  sound0(audio)
  Audio Device Type: DBRI Speakerbox
```


Using `vtsp` on a Remote Machine

You can also display the hardware devices of a remote machine that is running the SunVTS kernel.

▼ To Display Devices of a Remote Machine Running the SunVTS Kernel

1. **Change directories to the SunVTS `bin` directory.**

This directory is `/opt/SUNWvts/bin` by default.

2. **Type `vtsp -h hostname`, where `hostname` is the host name of the remote machine.**

The `vtsp` utility then connects to the remote machine and displays the remote machine's hardware devices.

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

Option Files

Use the Option files to save the current SunVTS global and test-specific options to a file for later use.

The SunVTS user interface provides an Option Files button so you can load, store, or remove an Option file by name. The file name can be any ASCII file name.

When the Option file window is displayed, click the Load button to restore the SunVTS options selection specified.

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.

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 (see FIGURE 4-8).

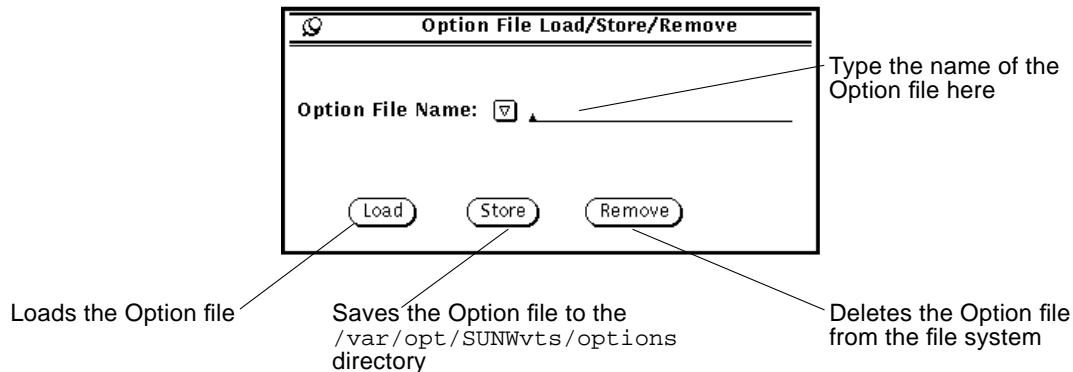


FIGURE 4-8 Option File Window

▼ To Save an Option File

Save all the current system and test options as a file, as follows:

1. **Type the Option file name in the test field.**
2. **Click the Store button.**

After you save an Option file, you can load it at the command line when you start the SunVTS kernel with the `-o` option. For example, if you create an Option file called `test_defaults`, you can load this Option file when you start the SunVTS software by typing:

```
# ./sunvts -o test_defaults
```

▼ To Load a Previously Saved Option File

Note – If the Option file name is `.sunvts`, it is loaded every time SunVTS comes up by default.

1. **Click the MENU mouse button on the Option File menu button to display the available Option files.**

All Option files saved in `/var/opt/SUNWvts/options` are displayed in the Option File Name menu.

2. Select the Option file that you want to load.

FIGURE 4-9 shows an example of selecting an Option file named `SystemTest.defaults` from the Option File Name menu.

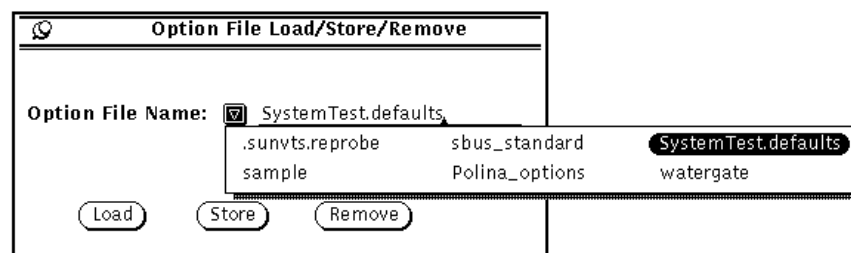


FIGURE 4-9 Option File Name Menu

3. Click the Load button.

After loading the Option file, the SunVTS Control Panel window displays the new Option values.

▼ To Remove an Option File

1. Press the MENU mouse button on the Option File Name menu button to display the available Option files.

2. Select the Option file you want to delete.

3. Click the Remove button.

After prompting you for confirmation, the Option file is deleted.

Troubleshooting

Problem:

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:

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:

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:

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 “Using Other Commands to Start SunVTS” on page 34 in Chapter 2. Select Connect to from the user interface to reconnect.

Index

SYMBOLS

“T”

- meaning of, 82
- next to test name, 82

A

adding

- scalability, 126
- swap space, 48

advanced test options, 112

affinity mask, 113

argument

- vtstty, 37

arrow keys, 96

audio test, 47

auto invoke, 42

B

background mode, 22

- running SunVTS in, 32

backspace key, 96

binary, copying, 125

button

- connect to, 80
- logical mapping, 105
- physical mapping, 105
- print, 91
- quit, 79

quit menu, 67

reset, 65, 78

select tests, 88

start, 77

stop, 65, 77

suspend, 79

sys config, 89

test group, 93

trace

- test, 55, 82

C

cancelling

- print request, 62

CDE menu bar

- command menu, 53
- options menu, 53
- reports menu, 53
- view menu, 53

changing windows, 96

checkboxes

- selecting/deselecting, 109
- test selection, 109

command

- examples, xvii
- stty, 38
- telnet, 37
- tip, 37
- vtstty, 36

command line

- argument, 114

- auto start, 58, 86
- concurrency
 - group, 58, 113
 - OPEN LOOK options, 86
 - system, 58, 113
- configuration
 - hardware, 89
 - system, 89
- connect to button, 80
- connection
 - test, 106
- connector
 - loopback, 108
- console
 - frame buffer, 115
 - panel, 119
 - panel messages, 116
- console panel, 94
- control
 - B, 103
 - F, 103
 - keys, 96
- conventions, typographic, xvii
- core file, 58, 87
 - in TTY, 97
- cpu_unit (fptest), 93
- cpu-unit0, 122
- customtest, 125
- customtest file format, 126

D

- debugging
 - core file, 123
 - tool, 55, 82
- default values, of test options, 108
- deleting text in field, 96
- deselecting
 - checkboxes, 109
 - tests, 99
- diagnostic interface
 - Solstice SyMON, 110
- disabling
 - tests or test groups, 109
- discarding pop-up menu or window, 96

- disk partition, space, 114
- display
 - log file, 120
 - terminal settings, 37
- displaying
 - a menu, 96
 - hardware configuration, 89
 - log file reports, 61
 - log files, 63
 - reports, 61
 - test
 - system configuration info, 89
 - test system configuration, 61
 - the log_files menu, 102

E

- elapsed time, 73
- email, sending, 47
- enabling
 - tests or test groups, 109
- error
 - log
 - printing, 122
 - TTY log_files option, 102
 - message, swap space, 48
- escape key, 96
- examples, command, xvii

F

- features
 - advanced options, 24
 - auto start, 24
 - connect to, 24
 - connectivity test mode, 24
 - console window, 24
 - core file, 24
 - custom tests, 24
 - display, 24
 - elapsed time, 24
 - email address, 24
 - errors, 24
 - graphics, 25
 - group concurrency, 25
 - group lock, 25

- group override, 25
- intervention, 25
- listing of, 24
- log files, 25
- log period, 25
- logical mapping, 25
- max errors, 25
- max passes, 25
- max system errors, 25
- max system time, 25
- memory, 25
- network, 26
- notify, 26
- number of instances, 26
- option files, 26
- other devices, 26
- passes, 26
- performance meter, 26
- physical mapping, 26
- print, 26
- processor affinity, 26
- processor(s), 26
- quit, 26
- replay, 26
- reprobe system, 26
- reset, 27
- resume, 27
- run on error, 27
- scalability, 27
- scheduling, 27
- SCSI-devices, 27
- send email, 27
- set options, 27
- single pass, 27
- start, 27
- start with record, 27
- stop, 27
- stress, 27
- suspend, 27
- sys config menu, 27
- system
 - call tracing, 55, 82
 - concurrency, 27
 - map, 28
 - override, 27
 - passes, 28
 - status, 28
- terminate
 - kernel only, 28
 - user interface & kernel, 28
 - user interface only, 28
- test
 - execution, 28
 - lock, 28
 - mode, 28
 - options, 28
 - set, 28
 - status icons, 28
 - thresholds, 28
 - total errors, 29
 - trace test, 29
 - verbose, 29
- file format
 - .customtest, 126
- fine tuning test session, 113
- frame buffer
 - locking, 115
 - testing, 114
 - testing multiple, 115
 - unit number, 115
- freezing screen, 48
- frozen, user interface, 65, 78
- FRU, 122
- functional test, 107
 - from SyMON, 113, 114
 - mode, 114

G

- global options, 92, 111
 - advanced, 59, 87
 - notify, 58, 86
 - schedule, 58, 86
- system option
 - auto start, 58, 86
 - core file, 58, 87
 - email address, 58, 86
 - group concurrency, 58, 86
 - group lock, 59, 87
 - group override, 59, 87
 - log period, 58, 86
 - max errors, 59, 87
 - max passes, 58, 87
 - max system errors, 57, 86
 - max system passes, 57, 86
 - max system time, 57, 86

- max time, 59, 87
- number of instances, 59, 87
- processor affinity, 59, 87
- run on error, 58, 87
- sending email, 58, 86
- single pass, 58, 86
- stress, 58, 86
- system concurrency, 58, 86
- system override, 59, 87
- test lock, 59, 87
- verbose, 58, 87
- test execution, 58, 86
- thresholds, 57, 86
- graphical user interface (GUI), 31
- grayed out, password field, 80
- group
 - override, 111
- group concurrency, 113
- GUI, 31, 32

H

- hardware configuration, 89
 - printing, 62, 90
- highlighting
 - checkbox, 99
 - log_files option, 102
- hung test, 65, 78

I

- icons
 - test status, OPEN LOOK, 73
- individual
 - device probes, 105
 - test level, 110
 - tests, 109
 - tests, selecting test groups, 109
- inetd, 42
- information log, 120
 - printing, 63
 - SunVTS, 91
 - TTY
 - log_files option, 102
- installing .customtest, 125

- instances
 - number, 113
- instances, running multiple, 113
- interface
 - GUI, 32
 - TTY, 21
 - user, 32
- interprocess communication protocols, 22
- intervention, 108
 - mode, 93
 - switch, 108
 - test set, 109
- intervention, in tests, 108
- invoking the SunVTS kernel, 42
- IPC (interprocess communication), 22

L

- list of features, 24
- local machine, 41
- log file
 - trace, 83
- log file test message syntax, 121
- log files
 - button, 77, 91, 119
 - deleting, 119
 - displaying, 63, 120
 - error, 63, 91, 119
 - error messages, 119
 - example, 120
 - information, 63, 91, 119
 - menu, 63, 91, 119
 - monitoring, 117
 - monitoring test status, 117
 - printing, 63
 - removing, 63, 122
 - reviewing, 119
 - suspend while viewing, 48
 - types of, 63, 91, 120
 - UNIX messages, 63, 91, 119
 - window, 63, 91, 119
- log period, 58
- logical view
 - system mapping, 105
- loopback
 - cables, 113

- connector, needed for sptest, 108
- connectors, 88, 113
- intervention, 108
- plugs, 113
- loopback connectors
 - not required in some cases, 113

M

- machine
 - local, 41
- managing swap space, 47
- mapping, 105
 - logical, 105
 - physical, 105
 - system, 105
- maximum number of tests, 113
- memory
 - test, 110
 - virtual, 47
 - virtual (vmem), 48
- message
 - system log, 63
- messages
 - console panel, 116
 - file, 63
 - sunvts.info, message file, 63
 - trace, 83
 - UNIX, 63, 102
- modem, 38
- monitoring
 - log files, 117
 - panels, 117
 - windows, 117
- mouse
 - locking movement, 115
 - movement, 115
 - moving may cause test to fail, 115
- moving
 - between options, 96
 - the cursor, 98
- moving to another window, 96
- multiple frame buffers, 115
- multiple tests, 83
- multiprocessor systems, 113

N

- network, 38

O

OPEN LOOK

- options
 - advanced, 87
 - auto start, 86
 - core file, 87
 - email address, 86
 - group lock, 87
 - group override, 87
 - log period, 86
 - max error, 87
 - max passes, 87
 - max system errors, 86
 - max system passes, 86
 - max system time, 86
 - max time, 87
 - notify, 86
 - number of instances, 87
 - processor affinity, 87
 - run on error, 87
 - schedule, 86
 - sending email, 86
 - single pass, 86
 - stress, 86
 - system concurrency, 86
 - system override, 87
 - test lock, 87
 - thresholds, 86
 - verbose, 87
- performance meter, 75

OPEN LOOK options

- advanced, 59
- auto start, 58
- core file, 58
- email address, 58
- group lock, 59
- group override, 59
- log period, 58
- max error, 59
- max passes, 58
- max system errors, 57
- max system passes, 57
- max system time, 57

- max time, 59
 - notify, 58
 - number of instances, 59
 - processor affinity, 59
 - run on error, 58
 - schedule, 58
 - sending email, 58
 - single pass, 58
 - stress, 58
 - system concurrency, 58
 - system override, 59
 - test execution, 58, 86
 - test lock, 59
 - thresholds, 57
 - verbose, 58
 - option
 - software, 32
 - testing, 38
 - option files, 129
 - auto start, 58, 86
 - button, 88, 129
 - earlier versions, 31
 - loading, 130
 - name menu, 131
 - removing, 131
 - saving, 130
 - storing, 129
 - test_defaults, 130
 - window, 88, 129
 - options
 - global, 111
 - setting, 111
 - system, 110
 - test specific, 110
 - test system, 110
 - override
 - group, 111
 - system, 111
- P**
- panel
 - console, 119
 - console messages, 116
 - monitoring, 117
 - system status, 72, 118
 - test selection, 72, 106
 - test status, 72, 118
 - performance meter, 119
 - OPEN LOOK, 75
 - statistics, 75
 - physical view
 - selecting, 91
 - system mapping, 67, 105
 - pmem test, 93
 - print
 - button, 91
 - request, cancelling, 62
 - printing
 - configuration
 - of test system, 90
 - information log, 63
 - log files, 63
 - message log files, 63
 - reports, 62
 - test system configuration, 61
 - processor affinity, 113
 - debug feature, 123
 - specifying mask, 123
 - protocol
 - telnet, 38
 - tip, 38
 - protocols, interprocess communication, 22
- Q**
- quit
 - menu button, 67
 - TTY user interface, 96
- R**
- refresh TTY window, 96
 - remote machine
 - connect to, 36
 - connecting to, 40
 - displaying devices, 129
 - run kernel and user interface on, 41
 - run on standalone system, 42
 - to start SunVTS, 32
 - TTY interface, running, 103
 - using SunVTS on a, 38
 - using vtsprobe, 129

- removing
 - log files, 63
 - options window, 99
- removing log files, 122
- reports
 - displaying, 61
 - menu, 61
 - printing, 62
- reprobe
 - system option, 54, 81
- requirements
 - tape test, 114
- reserve option,, 49
- reset button, 65, 78
- resources
 - stressing, 113
- return key, 96
- run on error
 - debug feature, 123
 - error
 - run on, 27, 58, 87
 - system option, 110
- runtime
 - other applications, 47
 - swap space, 47

S

- scalability, 112
 - adding, 126
- scratch media, 88, 114
 - tape drive test, 108
- screen
 - freezing, 48
- scrolling
 - backward, 96
 - forward, 96
- security, 43
 - checking, 44
 - file, 44
 - file template, 44, 45
- select tests button, 88
- selecting
 - an option, 102
 - and applying a menu choice, 96
 - checkboxes, 109

- individual tests, 109
 - tests, 99
- selection panel, test, 72
- sending email, 58, 86
- serial port, 94
 - testing, 108
- set options
 - button, 84
 - window, 84
- setting
 - options, 111
- shifting to another window, 96
- single pass option, 58, 86, 117
- software, options, 32
- Solstice, 21
- Solstice SyMON
 - diagnostic interface, 110
- space
 - disk partition, 114
 - swap, 47
- spacebar, 96
- specific options, 111
- sptest, serial port test, 108
- standalone machine
 - running SunVTS on, 42
 - starting SunVTS, 32
- start
 - button, 77, 116
 - user interface, 34
- starting
 - if metadisk is running, 49
 - SunVTS, 32
 - telnet, 37
 - with vtsui, 115
- statistics, 75
- status, 72
 - idle, 118
 - stopped, 118
 - system panel, 118
- stop button, 65, 77
- stressing system capabilities, 113
- stty, 37
- SunVTS
 - architecture, 21
 - bin directory, 36
 - connecting to a remote machine, 36

- features, 24
- starting, 32
 - in TTY mode, 34
 - user interface, 34
 - using vtsh, 34
 - with other commands, 34
 - using vstty to start TTY, 36
- sunvts
 - syntax, table, 33
- suspend button, 79
- swap space, 47
 - adding more, 48
 - error message, 48
 - managing, 47
 - not available, 48
 - not enough, 48
 - reserving, 49
 - runtime, 47
 - virtual memory and, 48
 - warning message, 48
- switch
 - intervention, 108
 - tests, 108
- SyMON, 21, 113
 - diagnostic interface, 110
- syntax
 - vstty, 37
- system
 - concurrency, 113
 - mapping, 105
 - override, 111
 - resources, 113
 - stressing resources, 113
- system configuration
 - window, 62
- system mapping
 - logical view, 105
 - physical view, 105
- system options, 110
 - core file, 110
 - max errors, 110
 - max passes, 110
 - max time, 110
 - number of instances, 110
 - processor affinity, 110
 - run on error, 110
 - stress, 110

- verbose, 110
- system status panel, 72, 118
 - errors, 118
 - passes, 118
 - time, 118
- systems
 - multiprocessor, 113

T

- tab key, 96
- tape
 - drive test, 108
- tapetest, 108, 117
 - requirements, 114
- telnet window, 37
- template
 - security file, 45
- terminal settings, 37
- test
 - advanced options, 112
 - binary, 125
 - checkboxes, 109
 - connection, 106
 - default values, 108
 - deselecting, 99, 111
 - disabling, 109
 - enabling, 109
 - execution options, 108
 - failure, 122
 - fbtest, 115
 - functional, 107
 - functional mode, 114
 - group concurrency, 113
 - groups, 109
 - hung, 65, 78
 - installing .customtest, 125
 - instances, 113
 - intervention, 108
 - maximum, 113
 - preparing for, 113
 - processor affinity, 113
 - requiring loopback connectors, 113
 - running copies of, 113
 - running slowly, 48
 - scalability, 112
 - selecting, 99, 111

- selecting groups, 109
- selecting individual, 109
- selection panel, 72, 106, 109
- serial ports, 108
- session, fine tuning, 113
- set, selecting, 88
- setting options, 111
- sptest, 108
- status panel, 72
- stress memory, 48
- stressing the system, 113
- switch, 108
- system concurrency, 113
- tape, 108, 114, 117
- tape drive, 54, 81
- tapedrive, 108
- tapetest, 108
- vmem, 48
- test execution option
 - core file, 108
 - max passes, 108
 - max time, 108
 - number of instances, 108
 - run on error, 108
 - stress, 108
 - verbose, 108
- test group
 - button, 93
 - disabling, 109
 - enabling, 109
 - selecting, 109
- test message syntax, 121
- test modes
 - connectivity, 21
 - online, 21
- test option
 - panel, 92, 111
- test options
 - setting, 111
- test status panel, 118
- test system
 - displaying configuration information, 89
 - options, 110
- test system configuration, 61
- testing session
 - resuming, 117
 - stopping, 117
- suspending, 117
- tip window, 37
- trace, 83
 - log file, 83
 - messages, 83
 - system calls, 88
 - test, 54, 55, 83, 88
 - test window, 55
 - window, 82
- tracing
 - system calls, 88
- TTY, 115
 - interface, 21
 - log_files options
 - error, 102
 - information, 102
 - UNIX messages, 102
 - main window, 95
 - console area, 95
 - control panel, 95
 - status panel, 95
 - tests panel, 95
 - mode, 103
 - options
 - errors_only, 101
 - first_page, 101
 - last_page, 101
 - next_page, 101
 - previous_page, 101
- TTY interface
 - telnet window, 37
 - tip window, 37
- TTY mode, 34
- typeface meanings, xvii
- typographic conventions, xvii

U

- user
 - interface
 - frozen, 65
- user interface, 21, 32
 - frozen, 78
 - starting, 34
- usertest
 - file options, 125

- syntax, 125
- text file, 125

V

- verbose, 58, 87, 110, 119
 - debug feature, 123
 - system option, 110
- viewing
 - log file reports, 61
- virtual memory (vmem)
 - stress, 48
 - test, 48
- vtspoke
 - example, 127
- vtspoke
 - utility, 127
- vtstty, 36
 - arguments, 37
 - syntax, 37
- vtstui, 36, 115

W

- warning message
 - swap space, 48
- window
 - locking
 - disabled, 115
 - mouse movement, 115
 - monitoring, 117
 - trace, 82
- windows
 - monitoring test status, 117

X

- xhost
 - remote server access, 41
- xserver, adding hostname, 115