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CETTE PUBLICATION EST FOURNIE “EN L’ETAT” SANS GARANTIE D’AUCUNE SORTE, NI EXPRESSE NI IMPLICITE, Y COMPRIS, ET SANS QUE CETTE LISTE NE SOIT LIMITATIVE, DES GARANTIES CONCERNANT LA VALEUR MARCHANDE, L’APTITUDE DES PRODUITS A RÉPONDRE A UNE UTILISATION PARTICULIÈRE, OU LE FAIT QU’ILS NE SOIENT PAS CONTREFAISANTS DE PRODUITS DE TIERs.
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Preface

SunVTS™ 2.0 is a system exerciser that extends diagnostic test coverage and features. The SunVTS 2.0 User’s Guide describes how to use the OPEN LOOK™, CDE™, text-based terminal (TTY), 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.

<table>
<thead>
<tr>
<th>Question</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>How do I start SunVTS?</td>
<td>14</td>
</tr>
<tr>
<td>How do I use SunVTS?</td>
<td>2</td>
</tr>
<tr>
<td>Where is the overview of the OPEN LOOK interface?</td>
<td>42</td>
</tr>
<tr>
<td>Where is the overview of the CDE interface?</td>
<td>36</td>
</tr>
<tr>
<td>Where can I find pointers on the TTY interface?</td>
<td>66</td>
</tr>
<tr>
<td>What is unique about the SunVTS environment?</td>
<td>3</td>
</tr>
<tr>
<td>Where can I find a list of SunVTS features?</td>
<td>6</td>
</tr>
<tr>
<td>What do these hardware tests validate?</td>
<td>1</td>
</tr>
</tbody>
</table>
How This Book Is Organized

Chapter 1, “Overview of SunVTS 2.0,” describes the SunVTS architecture, and provides an annotated list of the features.

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

Chapter 3, “User Interfaces,” describes the SunVTS Graphical User Interfaces (GUI).

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

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

Related Books

The following table lists other SunVTS documents:

<table>
<thead>
<tr>
<th>Table P-1</th>
<th>SunVTS Documents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Document Title</td>
<td>Part Number</td>
</tr>
<tr>
<td>SunVTS 2.0 Test Reference Manual</td>
<td>802-5330</td>
</tr>
<tr>
<td>SunVTS 2.0 Quick Reference Card</td>
<td>802-5329</td>
</tr>
</tbody>
</table>
Typographic Conventions

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

Table P-2   Typographic Conventions

<table>
<thead>
<tr>
<th>Typeface or Symbol</th>
<th>Meaning</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>AaBbCc123</td>
<td>The names of commands, files, and directories; on-screen computer output</td>
<td>Edit your .login file. Use <code>ls -a</code> to list all files. <code>machine_name% You have mail.</code></td>
</tr>
<tr>
<td>AaBbCc123</td>
<td>What you type, contrasted with on-screen computer output</td>
<td><code>machine_name% su</code> Password:</td>
</tr>
<tr>
<td>AaBbCc123</td>
<td>Command-line placeholder: replace with a real name or value</td>
<td>To delete a file, type <code>rm filename</code>.</td>
</tr>
<tr>
<td>AaBbCc123</td>
<td>Book titles, new words or terms, or words to be emphasized</td>
<td>Read Chapter 4 in User’s Guide. These are called class options. You must be root to do this.</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Shell</th>
<th>Prompt</th>
</tr>
</thead>
<tbody>
<tr>
<td>C shell</td>
<td><code>machine_name%</code></td>
</tr>
<tr>
<td>C shell superuser</td>
<td><code>machine_name#</code></td>
</tr>
<tr>
<td>Bourne shell and Korn shell</td>
<td><code>$</code></td>
</tr>
<tr>
<td>Bourne shell and Korn shell superuser</td>
<td><code>#</code></td>
</tr>
</tbody>
</table>
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<thead>
<tr>
<th>Country</th>
<th>Telephone</th>
<th>Fax</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>1-800-873-7869</td>
<td>1-800-944-0661</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>0-800-89-88-88</td>
<td>0-800-89-88-87</td>
</tr>
<tr>
<td>France</td>
<td>05-90-61-57</td>
<td>05-90-61-58</td>
</tr>
<tr>
<td>Belgium</td>
<td>02-720-09-09</td>
<td>02-725-88-50</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>32-2-720-09-09</td>
<td>32-2-725-88-50</td>
</tr>
<tr>
<td>Germany</td>
<td>01-30-81-61-91</td>
<td>01-30-81-61-92</td>
</tr>
<tr>
<td>The Netherlands</td>
<td>06-022-34-45</td>
<td>06-022-34-46</td>
</tr>
<tr>
<td>Sweden</td>
<td>020-79-57-26</td>
<td>020-79-57-27</td>
</tr>
<tr>
<td>Switzerland</td>
<td>155-19-26</td>
<td>155-19-27</td>
</tr>
<tr>
<td>Japan</td>
<td>0120-33-9096</td>
<td>0120-33-9097</td>
</tr>
</tbody>
</table>

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Overview of SunVTS 2.0

This chapter gives an overview of SunVTS 2.0 and describes its client/server architecture. This chapter also explains some of the main uses of SunVTS.

Table 1-1 is an alphabetical list of major SunVTS 2.0 features, commands, and options. Besides defining these features, this table also provides pointers to other sections in this book where you can find more information about a given topic.

SunVTS 2.0, Sun’s online validation test suite, tests and validates Sun™ hardware by verifying the configuration and functionality of most hardware controllers, devices, and platforms.

Also available in SunVTS is the selectable device mapping feature. In Physical mapping, tests are grouped according to the physical location of the devices that are tested. In Logical mapping, 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 type of machines ranging from desktops to servers at the runtime.

SunVTS is an online diagnostics tool and system exerciser that can be used to simulate the worst case scenario to pinpoint any potential problems. Use it to validate a system during development, production, receiving inspection, trouble shooting, and periodical maintenance or monitoring. Since the SunVTS tests cover a wide range of products and peripherals, proper test options need to be selected to make it most effective. Although SunVTS pre-sets the testing
options in both Connectivity and Online modes, it is quite flexible in Offline mode. Refer to the SunVTS 2.0 Test Reference Guide to select the proper options before running any tests. The selected options 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.

Test Modes

Under SunVTS, tests can be run in three test modes:

- Connectivity mode - a low stress, quick testing of the availability/connectivity of the tested device is run.
- Online mode - a more thorough but non-intrusive test is invoked, which does not affect other applications running at the same time.
- Offline mode - this test assumes that there are no other applications running and that it can use whatever system resources are required to do thorough testing.

Some tests may not support all three modes, in which case the tests are disabled (grayed out) from being selected.

User Interfaces

The SunVTS user interface can be launched directly from the Solstice™ SyMON™ system monitoring tool to make online diagnostics more accessible. Refer to the SyMON documentation for more information.

You can also use the ETI-based TTY interface or the command line interface to operate SunVTS from the Solaris command line.

SunVTS can be used with these interfaces:

- Window Interface - the SunVTS user interface runs in both OPEN LOOK and Common Desktop Environment (CDE) environments. See Chapter 3, "User Interfaces".
• TTY Interface - you can run SunVTS from a terminal, a shelltool, or a modem attached to a serial port using the TTY interface. See Chapter 3, “User Interfaces”.

**SunVTS Architecture**

The SunVTS architecture is divided into three components: the SunVTS kernel, the user interface, and the hardware tests. An overview of each component follows.

• SunVTS kernel
  The main functions of the SunVTS kernel are:
  • 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)

• User interface
  A separate process from the SunVTS kernel. The SunVTS user interfaces communicate with the SunVTS kernel through an application programming interface (API). The SunVTS API lets a user interface, send, and receive commands from the SunVTS kernel. Normally, the user interface is running on a different machine than the one being tested.

• Hardware tests
  Each hardware device supported by Sun can be validated by a corresponding hardware test. Each test is a separate process from the SunVTS kernel process. The hardware tests send the status and messages to the SunVTS kernel through interprocess communication (IPC) protocols. Tests are run on the machine that has the SunVTS kernel. The SunVTS kernel automatically probes the system kernel for 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. New tests can be added into the SunVTS environment without re-compiling the SunVTS source code.

Figure 1-1 is a diagram of the SunVTS architecture.
Figure 1-1  SunVTS Architecture
## List of SunVTS Features

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

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Options</td>
<td>Provides a way to lock test or group options from being reset by global option settings</td>
<td>page 54, 84</td>
</tr>
<tr>
<td>Auto Start</td>
<td>Runs SunVTS when first started</td>
<td>page 54</td>
</tr>
<tr>
<td>Connectivity Test Mode</td>
<td>Specifies very low stress testing of the available devices</td>
<td>page 78</td>
</tr>
<tr>
<td>Connect to</td>
<td>Displays the Connect to(Machine) window, where you can connect to another machine on the network that is running the SunVTS kernel, or reconnect to the SunVTS kernel</td>
<td>page 50</td>
</tr>
<tr>
<td>Console Panel</td>
<td>Displays the error messages from the SunVTS kernel and the hardware tests</td>
<td>page 41</td>
</tr>
<tr>
<td>Core File</td>
<td>Sends messages to a Core file that is associated with the test</td>
<td>page 54</td>
</tr>
<tr>
<td>Custom Tests</td>
<td>Contains a set of custom-developed tests</td>
<td>page 100</td>
</tr>
<tr>
<td>Display</td>
<td>Displays the hardware configuration of the associated test selected</td>
<td>page 60</td>
</tr>
<tr>
<td>Elapsed Time</td>
<td>Displays how long (in the format of hh:mm:ss) SunVTS has been testing your system</td>
<td>page 38</td>
</tr>
<tr>
<td>Email Address</td>
<td>Specifies the email address where status mailings will be sent</td>
<td>page 54</td>
</tr>
<tr>
<td>Errors</td>
<td>Indicates the number of times a test, or a test within a test group, has exited with an error</td>
<td>page 38</td>
</tr>
<tr>
<td>Graphics</td>
<td>Contains the tests that validate 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</td>
<td>page 87</td>
</tr>
<tr>
<td>Group Concurrency</td>
<td>Sets this option to the number of tests you want to run at the same time in the same group</td>
<td>page 54</td>
</tr>
<tr>
<td>Group Lock</td>
<td>Protects changes in the Set Options window for this test group</td>
<td>page 54</td>
</tr>
<tr>
<td>Group Override</td>
<td>Overrides any locked test options in the test group in favor of the options displayed in the Set Options window</td>
<td>page 54</td>
</tr>
<tr>
<td>Intervention</td>
<td>Enables or disables running tests that require user intervention; these tests require the user to either install loopback connectors or to intervene while the test validates the hardware</td>
<td>page 54</td>
</tr>
</tbody>
</table>
Log Files 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)

Logical Mapping Groups tests according to the tested device’s function

Log Period States the time, in minutes, between testing status email messages

Max Errors States the maximum number of errors a test encounters before stopping (0=∞)

Max Passes Specifies the maximum number of passes a test can run

Max System Errors States the maximum number of system errors that can occur before the SunVTS stops all tests (a value of 0 makes the SunVTS kernel continue testing regardless of errors)

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

Memory Contains the tests that validate the system’s subsystem; select this button to display group system options, where you can set the group system options for all the tests in this group

Network Contains the tests that validate the system’s network adapters; select this button to display group system options, where you can set the group system options for all the tests in this group

Notify Instructs SunVTS how to announce testing status

Number of Instances Specifies the number of instances to run each scalable test

Offline Test Mode All system resources are available for testing in this mode; specifies testing at a higher level of stress

Online Test Mode Specifies a thorough but non-intrusive test mode

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, these options can be loaded during a later test session

OtherDevices Contains the tests that validate the devices that are not 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 the group system options for all the tests in this group

---

**Table 1-1** List of SunVTS Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log Files</td>
<td>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)</td>
<td>page 62</td>
</tr>
<tr>
<td>Logical Mapping</td>
<td>Groups tests according to the tested device’s function</td>
<td>page 77</td>
</tr>
<tr>
<td>Log Period</td>
<td>States the time, in minutes, between testing status email messages</td>
<td>page 54</td>
</tr>
<tr>
<td>Max Errors</td>
<td>States the maximum number of errors a test encounters before stopping (0=∞)</td>
<td>page 54</td>
</tr>
<tr>
<td>Max Passes</td>
<td>Specifies the maximum number of passes a test can run</td>
<td>page 54</td>
</tr>
<tr>
<td>Max System Errors</td>
<td>States the maximum number of system errors that can occur before the SunVTS stops all tests (a value of 0 makes the SunVTS kernel continue testing regardless of errors)</td>
<td>page 54</td>
</tr>
<tr>
<td>Max Time</td>
<td>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</td>
<td>page 54</td>
</tr>
<tr>
<td>Memory</td>
<td>Contains the tests that validate the system’s subsystem; select this button to display group system options, where you can set the group system options for all the tests in this group</td>
<td>page 82</td>
</tr>
<tr>
<td>Network</td>
<td>Contains the tests that validate the system’s network adapters; select this button to display group system options, where you can set the group system options for all the tests in this group</td>
<td>page 19</td>
</tr>
<tr>
<td>Notify</td>
<td>Instructs SunVTS how to announce testing status</td>
<td>page 31</td>
</tr>
<tr>
<td>Number of Instances</td>
<td>Specifies the number of instances to run each scalable test</td>
<td>page 54</td>
</tr>
<tr>
<td>Offline Test Mode</td>
<td>All system resources are available for testing in this mode; specifies testing at a higher level of stress</td>
<td>page 79</td>
</tr>
<tr>
<td>Online Test Mode</td>
<td>Specifies a thorough but non-intrusive test mode</td>
<td>page 79</td>
</tr>
<tr>
<td>Option Files</td>
<td>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, these options can be loaded during a later test session</td>
<td>page 59</td>
</tr>
<tr>
<td>OtherDevices</td>
<td>Contains the tests that validate the devices that are not 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 the group system options for all the tests in this group</td>
<td>page 59</td>
</tr>
</tbody>
</table>
### Table 1-1  List of SunVTS Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor Affinity</td>
<td>Lets you specify the processor on which you want to run the tests; only available on multiprocessor systems</td>
<td>page 54, page 97</td>
</tr>
<tr>
<td>Passes</td>
<td>States the number of times a test, or test group, completes one pass</td>
<td>page 38</td>
</tr>
<tr>
<td>Performance Meter</td>
<td>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</td>
<td>page 45</td>
</tr>
<tr>
<td>Physical Mapping</td>
<td>Groups tests according to their physical location</td>
<td>page 77</td>
</tr>
<tr>
<td>Print</td>
<td>Prints the hardware configuration of a test system when accessed from the Sys Config sub-menu</td>
<td>page 60</td>
</tr>
<tr>
<td>Processor(s)</td>
<td>Contains the tests that validate the system’s Processes; 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</td>
<td>page 54</td>
</tr>
<tr>
<td>Quit</td>
<td>Terminates the User Interface, the SunVTS kernel, or both</td>
<td>page 23</td>
</tr>
<tr>
<td>RePlay</td>
<td>Replays a recorded testing session</td>
<td>page 88</td>
</tr>
<tr>
<td>Reprobe System</td>
<td>Reprobes the test system devices; use this option when you add or remove devices from a system</td>
<td>page 43</td>
</tr>
<tr>
<td>Reset</td>
<td>Resets the information on the System Status and Test Status panels</td>
<td>page 48</td>
</tr>
<tr>
<td>Resume</td>
<td>Resumes a paused testing session</td>
<td>page 49</td>
</tr>
<tr>
<td>Run On Error</td>
<td>Continues testing until the default error count of three is reached</td>
<td>page 54</td>
</tr>
<tr>
<td>Scalability</td>
<td>Increases test scale to fully stress single and multiprocessor systems; scalable tests can be modified so that multiple instances (or copies) of them can be run on a device simultaneously</td>
<td>page 85</td>
</tr>
<tr>
<td>Scheduling</td>
<td>Specifies when SunVTS runs enabled tests</td>
<td>page 54</td>
</tr>
<tr>
<td>SCSI-Devices</td>
<td>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</td>
<td>page 54</td>
</tr>
<tr>
<td>Send Email</td>
<td>Sends test status messages via email</td>
<td>page 54</td>
</tr>
<tr>
<td>Set Options</td>
<td>Sets the SunVTS kernel, test group, and test system options</td>
<td>page 54</td>
</tr>
<tr>
<td>Single Pass</td>
<td>Runs only one pass of each selected test</td>
<td>page 54</td>
</tr>
<tr>
<td>Start</td>
<td>Starts the testing session</td>
<td>page 14</td>
</tr>
<tr>
<td>Start with Record</td>
<td>Starts and records a testing session</td>
<td>page 84</td>
</tr>
</tbody>
</table>
**Table 1-1**  List of SunVTS Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stop</td>
<td>Stops a testing session</td>
<td>page 48</td>
</tr>
<tr>
<td>Stress</td>
<td>Increases test performance; only available for some tests</td>
<td>page 54</td>
</tr>
<tr>
<td>Suspend</td>
<td>Pauses a testing session; once selected, this button changes to Resume</td>
<td>page 48</td>
</tr>
<tr>
<td>System Concurrency</td>
<td>Runs a set number of tests at the same time in the entire system; overrides the Group Concurrency option</td>
<td>page 54</td>
</tr>
<tr>
<td>Sys Config Menu</td>
<td>Displays the test system’s hardware configuration, prints the test system’s configuration, and reprobes the test system’s devices</td>
<td>page 60</td>
</tr>
<tr>
<td>System Override</td>
<td>Supersedes the group and test options in favor of the options in the Set Options window</td>
<td>page 54</td>
</tr>
<tr>
<td>System Passes</td>
<td>States the number of times all enabled tests are completed</td>
<td>page 38</td>
</tr>
<tr>
<td>System Status</td>
<td>Displays the status of the testing session, which can be idle, testing, stopping, recording, suspended, or replay</td>
<td>page 38</td>
</tr>
<tr>
<td>System Map</td>
<td>Selects the desired system device mapping (physical or logical)</td>
<td>page 63</td>
</tr>
<tr>
<td>Terminate Kernel Only</td>
<td>Quits the SunVTS kernel and not the user interface</td>
<td>page 23</td>
</tr>
<tr>
<td>Terminate User Interface &amp; Kernel</td>
<td>Quits the SunVTS kernel and the user interface</td>
<td>page 23</td>
</tr>
<tr>
<td>Terminate User Interface Only</td>
<td>Quits the user interface and leaves the SunVTS kernel running in the background</td>
<td>page 23</td>
</tr>
<tr>
<td>Test Execution</td>
<td>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</td>
<td>page 54</td>
</tr>
<tr>
<td>Test Lock</td>
<td>Protects the specific test options from being changed by the group or Set Options windows</td>
<td>page 54</td>
</tr>
<tr>
<td>Test Mode</td>
<td>Selects the SunVTS testing modes (connectivity, online, offline)</td>
<td>page 54</td>
</tr>
<tr>
<td>Test Options</td>
<td>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 SunVTS Test Reference Manual</td>
<td>page 54</td>
</tr>
<tr>
<td>Test Set</td>
<td>Selects the default set of hardware tests, no tests, or all tests</td>
<td>page 60</td>
</tr>
<tr>
<td>Test Status Icons</td>
<td>Changes the Test Status panel listing; use the icons to page forward and backward on the Test Status panel, goes to the vicinity of a specific test, or displays only the tests that produce errors.</td>
<td>page 43</td>
</tr>
<tr>
<td>Thresholds</td>
<td>Sets the maximum number of system passes, errors, and time; specifies when test execution should be stopped</td>
<td>page 54</td>
</tr>
</tbody>
</table>
### Table 1-1  List of SunVTS Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Errors</td>
<td>Displays the total number of fatal errors produced by the tests; these errors do not include the verbose messages and system call messages</td>
<td>page 91</td>
</tr>
<tr>
<td>Trace Test</td>
<td>Traces system calls and signals for selected tests as described in <code>truss(1)</code></td>
<td>page 51</td>
</tr>
<tr>
<td>Verbose</td>
<td>Displays verbose messages in the SunVTS console window</td>
<td>page 54</td>
</tr>
</tbody>
</table>
Using SunVTS

SunVTS 2.0 is not compatible with previous versions. Earlier user interfaces, tests, and option files will not work with the SunVTS 2.0 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. The CDE GUI will run on either the OPEN LOOK desktop or the CDE desktop.

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

- Run Solaris 2.5 operating system
- Run OPEN LOOK, Version 3.3 or later
- 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.

  ariel% 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 OPEN LOOK library is installed.

  ```
  ariel% setenv LD_LIBRARY_PATH pathname
  ```

Check the existing `LD_LIBRARY_PATH` by typing `env`

---

**Before Starting SunVTS**

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

Read the `sunvts` syntax descriptions in Table 2-1 before starting SunVTS. If you want to start SunVTS without using any of those options, type the `sunvts` command in the SunVTS `bin` directory, which is `/opt/SUNWvts/bin` by default.

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

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

**Note** – When SunVTS is invoked the default GUI is selected according to the following criteria: if CDE libraries are installed, the default GUI will be CDE; if `openwin` is installed the default GUI will be OPEN LOOK; if neither one of these GUIs is installed, the default will be TTY.
Table 2-1 shows the full syntax of the `sunvts` command.

Table 2-1  The sunvts Syntax

```
/opt/SUNWvts/bin/sunvts [-tgpsel] [-o options_file] [-f logfile_directory] [-h hostname]
```

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-e</td>
<td>Disables the connection permission checking feature</td>
</tr>
<tr>
<td>-f logfile_directory</td>
<td>Specifies an alternative logfile directory, other than the default directory /var/adm/sunvtslog</td>
</tr>
<tr>
<td>-h hostname</td>
<td>Starts the user interface (either vtsui or vtstty) on the local machine and tries to connect to the SunVTS kernel (vtsk) 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 (vtsk). If <code>vtsk</code> is already running on the test system, the <code>sunvts</code> application ignores the -o, -f, -q, -p, and -s options.</td>
</tr>
<tr>
<td>-l</td>
<td>Starts the OPEN LOOK user interface</td>
</tr>
<tr>
<td>-o options_file</td>
<td>Starts the SunVTS kernel with the test options loaded from the <code>option_file</code>; these options are saved by the user interface and stored in the <code>/var/opt/SUNWvts/options</code> directory</td>
</tr>
<tr>
<td>-p</td>
<td>Starts the SunVTS kernel, but does not probe the test system’s devices</td>
</tr>
<tr>
<td>-q</td>
<td>Automatically quits both the SunVTS kernel and the user interface when testing stops</td>
</tr>
<tr>
<td>-s</td>
<td>Automatically starts testing a selected group of tests; the flag must be used with the <code>-o options_file</code> flag</td>
</tr>
<tr>
<td>-t</td>
<td>Starts vtstty, a TTY-based program, instead of a GUI. If this option is not specified, 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></td>
</tr>
<tr>
<td>-v</td>
<td>Displays version information from the SunVTS kernel and GUI</td>
</tr>
</tbody>
</table>

### Adding and Removing Devices

Follow these procedures to add and remove device drivers in the Solaris operating system environment:

#### ▼ To Add a Device

1. Verify that the corresponding device driver is installed correctly.
2. Halt the system using the `init 0` command.
3. Connect the device to the system.

4. Reboot your machine with the `boot -r` command.

The system probes all attached hardware devices and assigns nodes in the file system to represent only those devices that are actually found. It also configures the logical namespace in `/dev`, as well as the physical namespace in `/devices`.

▼ To Remove a Device from the System

1. Halt the system using the `init 0` command.
2. Disconnect the device.
3. Reboot the system with the `boot -r` command before starting SunVTS.

Starting SunVTS

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

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:

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

**Using Other Commands to Start SunVTS**

The sunvts application 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:**

```bash
# /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 vtsk application syntax.

**Table 2-2 The vtsk Syntax**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>-e</code></td>
<td>Disables the connection permission checking feature</td>
</tr>
<tr>
<td><code>-f logfile_directory</code></td>
<td>Specifies an alternative logfile directory, other than the default /var/opt/SUNWvts/logs directory</td>
</tr>
<tr>
<td><code>-o</code></td>
<td>Starts the SunVTS kernel with the test options saved in the <code>option_file</code>; these options are saved and stored in the /var/opt/SUNWvts/options directory</td>
</tr>
<tr>
<td><code>-p</code></td>
<td>Starts the SunVTS kernel, but does not probe test system devices</td>
</tr>
</tbody>
</table>
To start only the OPEN LOOK interface, type:

% /opt/SUNWvts/bin/vtsui.ol

To start only the CDE interface, type:

% /opt/SUNWvts/bin/vtsui

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.ol (or vtsui) automatically connects to this kernel to start the OPEN LOOK (or CDE) interface.

To Connect to a Remote Machine’s SunVTS Kernel

To start the OPEN LOOK interface type:

% ./vtsui.ol -h hostname

To start the CDE interface type:

% ./vtsui -h hostname
Table 2-3 contains a complete listing of the \texttt{vtsui} arguments.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>\texttt{vtstty} \hspace{1cm} \texttt{-h} \hspace{1cm} \texttt{hostname}</td>
<td>Starts the user interface and attempts to connect to the SunVTS kernel (\texttt{vtsk}) of the specified host machine</td>
</tr>
<tr>
<td>\texttt{vtstty} \hspace{1cm} \texttt{-q}</td>
<td>Quits \texttt{vtsui.ol} when testing is completed</td>
</tr>
<tr>
<td>\texttt{vtstty} \hspace{1cm} \texttt{-v}</td>
<td>Prints the version number of \texttt{vtsui.ol}</td>
</tr>
</tbody>
</table>

\textbf{Using \texttt{vtstty} to Start the TTY Interface}

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

\textbullet{} To start the TTY interface, type:

\begin{verbatim}
% /opt/SUNWvts/bin/vtstty
\end{verbatim}

\textbf{Note} – You do not need to be superuser (\texttt{root}) to start the user interface.

If the SunVTS kernel is running on the test system, \texttt{vtstty} automatically connects to this kernel and start the TTY interface.

\textbullet{} To connect to a remote machine’s SunVTS kernel, type:

\begin{verbatim}
% /vtstty \hspace{1cm} \texttt{-h} \hspace{1cm} \texttt{hostname}
\end{verbatim}
See Table 2-4 for a complete listing of the vtstty arguments.

Table 2-4  vtstty Syntax

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-h hostname</td>
<td>Starts the user interface (vtsui or vtstty) and attempts to connect to the SunVTS kernel (vtsk) of the specified host machine</td>
</tr>
<tr>
<td>-v</td>
<td>Displays version information from vtstty</td>
</tr>
</tbody>
</table>

▼ 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 -ixanyimaxbel onlcr
echo echo echok echoctl echoke iexten
```

Note – Write down the values of the rows and columns settings. You will need these values in 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. Set the correct terminal type.
   In this example, the terminal is a Sun.

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

4. Use the `stty` command to set the number or 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. Using a remote machine, you can view the progress of a testing session, change testing options, and control all testing features of another machine on the network. Figure 2-1 and Figure 2-2 show examples of how to connect to a remote machine over modem lines and over a network.
As superuser, type:

```
# cd /opt/SUNWvts/bin
# ./vtsk (or ./sunvts)
```

After `vtsk` starts up on host $x$ or $y$, `yp` must recognize the `hostname` to connect to the SunVTS kernel of $x$ or $y$.

**NOTE:** If `/etc/inetd.conf` was modified to start `vtsk` automatically when there is an RPC request from the user interface, `vtsk` does not have to be started manually. This `inetd.conf` file will normally be modified during SUNWvts package installation.
NOTE: If `/etc/inetd.conf` was modified to start `vtsk` automatically when there is an RPC request from the user interface, `vtsk` does not have to be started manually. This `inetd.conf` files will normally be modified during SUNWvts package installation.
You can run SunVTS on a remote machine two ways:

- Connect the user interface to the SunVTS remote machine using the `--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 `--hostname` option, by typing:**

```
# /opt/SUNWvts/bin/sunvts --hostname 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 “Connect to Button” in Chapter 3 for more instructions.)

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

**To Run SunVTS (Kernel and User Interface) 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 hostname.

3. Log into 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` application to start the SunVTS kernel and display the user interface on your machine:

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

6. Replace `local_hostname` with your local machine’s hostname.
Running 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 ypbind is not running on the standalone system.
   Doing this step ensures that ypbind is not started by the rc scripts.

4. Reboot your system.
   SunVTS can now run properly on a standalone machine.

Using inetd to Invoke the SunVTS Kernel (Auto Invoke)

With 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, click the Stop button at the top of the control panel to stop any tests that are running. Some of the tests, such as the tape tests, may be delayed before stopping because they require additional time to rewind.

You can quit from the Quit Option menu three ways.
Go into the Commands menu and select the Quit SunVTS sub-menu. This sub-menu displays 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 (SUT). The user interface has to connect to the SunVTS kernel before it can control the SunVTS kernel (see “Connect to Button” in Chapter 3 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 to. 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 SUT. If the password does not match, or the user is not in 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 SUT. 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 `<SunVTS2.0 install directory>/bin`. A (+) 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 `<SunVTS2.0 install directory>/bin`. See Code Example 2-1.
Note – To enable security checking, remove the plus (+) sign in the HOST section of the default `.sunvts_sec`.

Code Example 2-1

```bash
# This file should be <SunVTS2.0 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. Any invalid entry or no entries in the security file results in the denial of any access except root on the local machine. An incorrect entry in this file can be corrected even when the SunVTS kernel is running. If the -e
option is used 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 *vt.sk* is the same password used by the user to login to the SUT.

---

**System Configuration**

From the Sys Config menu you can check all the devices connected by:

- Displaying test system configuration information
- Printing test system configuration information
- Reprobing the test system

♦ **To see the hardware configuration of the test system, select Display from the Sys Config menu.**

The Configuration window appears (Figure 2-3) and lists all of the hardware on the test system and their corresponding hardware tests.
Printing System Configuration Data

▼ To Print the Hardware Configuration of the Test System

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

A Print Configuration window is displayed (see Figure 2-4).
2. Type the name of your printer in the Printer Name field.
3. Click the Print button.

▼ To Display 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 and start and stop times.

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

- SunVTS Information Log - the `sunvts.info` file contains informative messages generated while starting and stopping SunVTS.

```
/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
```

You can access these files from the Log Files Menu, which is displayed when you click the Log Files button (see Figure 2-5).
Select the type of Log file. Click the Display button.

A pop-up window displays the selected Log file. The Log file’s name appears at the top of the window. See Figure 2-6.
Figure 2-6  SunVTS Info Log File

♦ To remove Log Files click the Remove button on the Log Files pop-up window.

♦ To print Error Logs click the Print button on the Log Files pop-up window.

Note – These logs can be very long. Make sure you want the entire file before printing it.
Notification by Email

This 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 the testing.

You can use the Notify pop-up menu in the Set Options menu to send to the destination email address (see Table 2-5).

**Note** – Make sure the email address specified is valid by sending a test email.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Email Address</td>
<td>Indicates the email address where the test status messages are sent (the address is root by default)</td>
</tr>
<tr>
<td>Log Period</td>
<td>Sets time periods for receiving emails</td>
</tr>
<tr>
<td>Send Email</td>
<td>Determines when and if you want the test status messages sent to you through email. From this menu, you can choose:</td>
</tr>
<tr>
<td></td>
<td>- Disabled (do not send mail)</td>
</tr>
<tr>
<td></td>
<td>- Now (send mail immediately)</td>
</tr>
<tr>
<td></td>
<td>- On Error (send mail when an error occurs)</td>
</tr>
<tr>
<td></td>
<td>- Periodically (send mail with a time period set in the Log Period option)</td>
</tr>
<tr>
<td></td>
<td>- On Error &amp; Periodically (send mail when an error occurs as well as periodically)</td>
</tr>
</tbody>
</table>

Runtime Considerations

Managing your swap space and running other applications while running SunVTS require 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 being tested. Next, the amount of swap space needed to run the program, various 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 2-7). This pop-up window displays the amount of additional swap space needed to run the selected diagnostic tests. In this example, lightspeed is the hostname and audio is an example of a test that could not be started.

![Figure 2-7 Swap Space Warning Message](image)

If swap space is not available on your machine to run all of SunVTS tests, you can either deselect some of the tests or you can add more swap space. (Refer to the Solaris Administering File Systems manual 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 Load Response**

Sluggish response on the SunVTS user interface is normal during heavy testing loads. The SunVTS kernel response could cause the user interface to time-out. If this happens, reconnect to the SunVTS kernel by using the Connect to option.

During periods of heavy testing, use the Suspend option to suspend testing while viewing log files or Sys Config files, to invoke specific commands, or to change options. When the user interface interaction is completed, select the Resume option to continue testing.
Running Other Applications and SunVTS

The SunVTS virtual memory test (vmem) is designed to stress test the virtual memory of the system; doing this uses much of the system’s swap space. Because vmem may use all of the system’s remaining swap space, you may not be able to run any other process while testing the system.

The best way to run other non-SunVTS processes (for example, other OPEN LOOK applications) while using SunVTS, is to start these processes before you begin running the tests.

Reserve Option to vmem

The vmem Reserve option lets you 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 4 instances of the test and you need 20 Mbytes of swap space for the applications, you can reserve 5 Mbytes of swap space from each of the 4 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 disk suite) 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
```
SunVTS 2.0 Graphical User Interface (GUI) has been ported to the Common Desktop Environment (CDE). The new CDE GUI will run on both the OPEN LOOK desktop and CDE, although there are additional requirements if it is run on OPEN LOOK. See details under “Software Requirements” in Chapter 2. While the CDE GUI has a new look and feel, many OPEN LOOK GUI features have been retained. The main difference between the two interfaces is how the display of device selection and testing status are handled.
CDE User Interface

When you start SunVTS using the `vtsui` application, the SunVTS CDE main window displays (see Figure 3-1).

![Figure 3-1 Common Desktop Environment (CDE) Display](image)

CDE applications let you customize aspects of the GUI through a resource file. The SunVTS CDE GUI resource file lets you change font styles and colors.

The SunVTS CDE GUI resource file is in:

```
/usr/openwin/lib/app-defaults/Vtsui
```

Note – The main window is properly formatted with the default resource settings. Changing fonts and colors may distort the window and obscure important status information.
**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 (see Figure 3-2).

![Figure 3-2 CDE Menu Bar](image)

- Command Menu - contains a list of SunVTS control commands.
- View Menu - contains two items: The Open System Map expands each branch of the system hierarchy and displays it in the System Map window. The Close System Map closes each branch to the top level.
- Options Menu - contains a list of the system option categories. You can select a category to change system options. See Table 3-2 for a description of system options.
- Reports Menu - lists the two types of reports that you can view. The first entry lets you view system configuration information. The second entry lets you view the log files.
- Help Menu - provides online help.

**CDE Tool Bar**

The Tool Bar is immediately below the Menu Bar (see Figure 3-3). The Tool Bar has a set of buttons that represents the most commonly used functions from the Menu Bar. These buttons provide quick access to their functions.

![Figure 3-3 CDE Tool Bar](image)
CDE System Status Window

The System Status window is below the Tool Bar (see Figure 3-4) which provides testing status on the overall system. In addition, it includes the name and model number of the host being tested.

```
Hostname: siena    Model: "S240"
Testing Status: idle
System Passes: 0   Cumulative Errors: 0   Elapsed Test Time: 000:00:00
```

Figure 3-4  CDE System Status Window

CDE Device Selection/Status Window

The area below the system status window is divided into two parts. The left side contains the Tests Selection and Testing Mode selectors. The right side contains the System Map window. At the top of the window is a switch that lets you choose either a Physical or Logical view of the system hierarchy (see Figure 3-5).

```
Tests Selection:
- Default
- None
- All
- Intervention

Testing Mode:
- Connectivity
- Online
- Offline
```

```
System Map:  Physical  Logical
- Processor(s)
- Memory
- Network
- PCMCIA
- OtherDevices
- SCSI-Devices(esp0)
```

Figure 3-5  CDE Device Selection/Status Window
A new type of object called the Container button has two states to indicate that the device contains more objects. Click the “+” button to change to “-”, 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 click the left mouse button anywhere on the device name, or on the small check box to the left of it. Click the right mouse button to display a pull-down menu of options for that device (see Figure 3-6).

![System Map: Physical Logical](image)

**Figure 3-6** CDE Option Menu

The Option menu contains a status entry in addition to the option selections. Selecting status from the menu causes a status window to pop-up for that device (see Figure 3-7).

![fput(fputest) status](image)

**Figure 3-7** CDE Status Pop-Up Window
The status pop-up displays the testing Pass and Fail counts for the device and it’s 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-ups. They will be dynamically updated during testing.

Another status level that uses color displays within the System Map (see the shaded outline areas in Figure 3-8). 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, letting you keep the System Map hierarchy closed during testing. You can then view the entire system at the highest level during a test session. A branch that has no failures displays in green; those with failures are in red. To investigate any names in red, move down that branch of the hierarchy, using the container buttons, until the lowest level indicates which particular device failed.

**Note** – The shaded boxes in Figure 3-8 show areas that appear in color on color monitors.
CDE Console Panel

The Test Message console panel is at the bottom of the window (see Figure 3-9). It contains testing results and information.

![Test Messages](image)

**Figure 3-9** CDE Console Panel
When you start the SunVTS vtsui.ol application, the OPEN LOOK Main window is displayed (see Figure 3-10).

**System Status Panel**
Displays the system status. See page 43

**Performance Meter**
Displays the same statistics as the Solaris Performance Meter program. See page 45

**Control Panel**
The main control panel for the SunVTS interface and global test options. See page 46

**Test Status Panel**
Displays the status for each test and test group. See page 43

**SunVTS Console Panel**
Messages are displayed in this window. See page 65

**Test Selection Panel**
Controls group and individual testing option. See page 63

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OPEN LOOK System Status and Test Status Panels

Figure 3-11 shows a typical system status panel.
Test Status Icons

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 3-12 shows the Test Status icons that let you scroll through pages of tests.

![OPEN LOOK Test Status Icons](image)

Figure 3-12  OPEN LOOK Test Status Icons

Figure 3-13 shows how to quickly go to a specific test or test group by selecting the curved arrow icon and dragging right to display the pop-up menu.

![OPEN LOOK Test Status Icon Menu](image)

Figure 3-13  OPEN LOOK Test Status Icon Menu
OPEN LOOK Performance Meter

The Performance Meter panel (see Figure 3-14) shows a graphic display of the test system’s performance statistics. This panel provides the same statistics the `perfmeter` utility.

![Graph showing various performance metrics](image)

- Percent of CPU being used
- Ethernet packets per second
- Paging activity in pages per second
- Jobs swapped per second
- Number of device interrupts per second
- Disk traffic in transfers per second
- Number of context switches per second
- Average number of runnable processes over the last minute
- Collisions per second detected on the Ethernet
- Errors per second on receiving packets

*Figure 3-14  OPEN LOOK Performance Meter*
OPEN LOOK Control Panel

You can control the SunVTS tests using the Control panel menus and buttons (see Figure 3-15).

<table>
<thead>
<tr>
<th>Selection</th>
<th>Button</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>Start</td>
<td>Starts all enabled tests</td>
<td>page 47</td>
</tr>
<tr>
<td></td>
<td>Stop</td>
<td>Stops all tests</td>
<td>page 48</td>
</tr>
<tr>
<td></td>
<td>Reset</td>
<td>Resets all pass and error counts</td>
<td>page 48</td>
</tr>
<tr>
<td></td>
<td>Quit</td>
<td>Terminates the SunVTS User Interface and/or the SunVTS kernel</td>
<td>page 49</td>
</tr>
<tr>
<td>Options</td>
<td>Set Options</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Select Tests</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Option Files</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Info</td>
<td>Sys Config</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Log Files</td>
<td></td>
<td></td>
</tr>
<tr>
<td>System View</td>
<td></td>
<td>Logical Physical</td>
<td></td>
</tr>
</tbody>
</table>
Control Selections

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

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 Window” in this chapter).

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 “Option Files Button” in this chapter for additional information.)

Table 3-1  OPEN LOOK Control Panel

<table>
<thead>
<tr>
<th>Selection</th>
<th>Button</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Options</td>
<td>Set Options</td>
<td>Sets the global SunVTS kernel and test options</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td>Select Tests</td>
<td>Sets global test options</td>
<td>58</td>
</tr>
<tr>
<td></td>
<td>Option Files</td>
<td>Saves the current settings from the global test options and specific test settings</td>
<td>59</td>
</tr>
<tr>
<td>Info</td>
<td>Sys Config</td>
<td>Displays and/or prints the system’s configuration information</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>Log Files</td>
<td>Displays the Log Files Window</td>
<td>62</td>
</tr>
<tr>
<td>System View</td>
<td></td>
<td>Determines whether the view is Logical or Physical</td>
<td>63</td>
</tr>
</tbody>
</table>
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 force the interface to ignore the hung tests by deselecting these tests from the Test Option panel.

Reset Button
The Reset button (see Figure 3-16) resets the pass and error counts to zero for each test in the Test Status panel. It also resets the system passes, total errors, and elapsed time to zero. This button only works when all testing has stopped.

![Reset Button]

Figure 3-16  OPEN LOOK Reset Button

Once testing has begun, the Reset button changes to Suspend. Click the Suspend button to change this button to Resume and pause all SunVTS tests. To resume testing, click the Resume button (see Figure 3-17).
From the Quit menu button, you can terminate SunVTS for:

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

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 the following pop-up message (see Figure 3-18).

![Figure 3-18](image-url) OPEN LOOK Terminate Kernel Only Window
This tells you that the connection to this machine has been broken. The beginning of the message shows the machine host name (in parentheses) where the SunVTS kernel terminated.

**Connect to Button**

Use this feature to connect to another machine.

♦ **Click the Connect to button to display the Connect to Machine window**

From this window (see Figure 3-19) you can connect the user interface to another machine on the network that is running the SunVTS kernel.

![Connect to Machine Window](image)

*Figure 3-19  OPEN LOOK Session Connection Window*

♦ **Type the hostname 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.

In the case of a machine being setup to have security restrictions that require a password, the password field will appear fully after you press Apply. You can then type in 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.
Reprobe Button

♦ Click the Reprobe button to force the SunVTS kernel to reprobe the hardware devices on the test system (see Figure 3-20).

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 displays so you can confirm your selections.

![OK to reprobe system?](Figure 3-20 OPEN LOOK Reprobe Confirmation Pop-Up)

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. See the section “Adding and Removing Devices” in Chapter 2 for more information.

Trace Test Button

Use the System Call Tracing 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.)
From the Trace Test window (see Figure 3-21) you can choose one or more tests to be traced by selecting the test name from within the scrolling list. 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 for tracing, it will begin being traced immediately.

![Figure 3-21 OPEN LOOK Trace Test Window](image)
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 (see Figure 3-22). This “T” lets you see which tests are being traced.

To deselect a test, click the highlighted test name in the list displayed by the Trace Test window (see Figure 3-21). 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.

You can send the trace messages to either the SunVTS Console window, or to a log file in /var/opt/SUNWvts/logs. Click either the Console or File selection respectively at the Output selection switch in the Trace Test window. The system call trace messages are immediately redirected.

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

This area of the Main window is where you set global options for each group of tests.

Set Options Button

From the Set Options window, you can set the global SunVTS kernel and test options. See Figure 3-23 for an overview of the various options available on SunVTS.

1. Click the Set Options button to display the SunVTS Options window.
2. Select and change the options (see Table 3-2 for a complete list and description of each available option), and click the Apply button.
Figure 3-23  OPEN LOOK Options Windows
Table 3-2  OPEN LOOK Global Options

<table>
<thead>
<tr>
<th>Global Options</th>
<th>System Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thresholds...</td>
<td>Max System</td>
<td>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)</td>
</tr>
<tr>
<td></td>
<td>Passes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Max System</td>
<td>States the maximum number of system errors before SunVTS stops all tests (0 causes the SunVTS kernel to continue testing regardless of errors)</td>
</tr>
<tr>
<td></td>
<td>Errors</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Max System</td>
<td>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)</td>
</tr>
<tr>
<td></td>
<td>Time</td>
<td></td>
</tr>
<tr>
<td>Notify...</td>
<td>Send Email</td>
<td>Determines when and if you want the test status messages sent to you through email. From this menu, you can choose:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Disabled (never send mail)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Now (send mail immediately)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- On Error (send mail when an error occurs)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Periodically (send mail with a time period set in the Log Period option)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- On Error &amp; Periodically (send mail periodically as well as when an error occurs)</td>
</tr>
<tr>
<td></td>
<td>Email Address</td>
<td>Indicates the email address where the test status messages are sent (the address is root by default)</td>
</tr>
<tr>
<td></td>
<td>Log Period</td>
<td>Specifies, in minutes, the time between sending test status email messages</td>
</tr>
<tr>
<td>Schedule...</td>
<td>Auto Start</td>
<td>Eliminates the need to use the Start button to start a SunVTS testing session. To use this option:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1) Enable the Auto Start setting.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2) Save the System options and Test options to an option file (see “Option Files Button” in this chapter for more information).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(3) Starts SunVTS from the command line, specifying the option file. SunVTS begins testing soon after the main window is displayed.</td>
</tr>
<tr>
<td></td>
<td>Single Pass</td>
<td>Runs only one pass of each selected test</td>
</tr>
<tr>
<td></td>
<td>System</td>
<td>Sets the maximum number of test instances that can be run concurrently in the machine being tested</td>
</tr>
<tr>
<td></td>
<td>Concurrency</td>
<td></td>
</tr>
</tbody>
</table>
### Table 3-2  OPEN LOOK Global Options (Continued)

<table>
<thead>
<tr>
<th>Global Options</th>
<th>System Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Concurrency</td>
<td>Sets the number of tests you want to run at the same time in the same group</td>
<td></td>
</tr>
<tr>
<td>Test Stress Execution...</td>
<td>The amount of stress can be tuned by the number of test instances you select</td>
<td></td>
</tr>
<tr>
<td>Verbose</td>
<td>Displays verbose messages in the SunVTS Console window</td>
<td></td>
</tr>
<tr>
<td>Core File</td>
<td>Creates a core file. If the <code>&lt;SunVTS bin&gt;</code> directory is writable; <code>core.&lt;testname&gt;.xxxxx</code> is the Core File name, where <code>&lt;testname&gt;</code> is the test that dumped core, and where <code>xxxxx</code> 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. See “Log Files Button” in this chapter for more information</td>
<td></td>
</tr>
<tr>
<td>Run On Error</td>
<td>Continues testing until the Max Errors number is reached</td>
<td></td>
</tr>
<tr>
<td>Max Passes</td>
<td>Specifies the maximum number of passes a test can run</td>
<td></td>
</tr>
<tr>
<td>Max Errors</td>
<td>States the maximum number of errors a test allows before stopping (0 makes the SunVTS kernel continue testing regardless of errors)</td>
<td></td>
</tr>
<tr>
<td>Max Time Number of Instances</td>
<td>States, in minutes, the time limit a test can run (0 = no limit)</td>
<td></td>
</tr>
<tr>
<td>Advanced... System Override</td>
<td>Supersedes the specific group and test options in favor of the options in this window; sets all of the options on all of the test group and test option menus Note: To save a set of options, use the Option Files window described in “Option Files Button” in this chapter</td>
<td></td>
</tr>
<tr>
<td>Group Override</td>
<td>Supersedes the specific test options in favor of the group options in this window</td>
<td></td>
</tr>
</tbody>
</table>
From the Select Tests Window, you can set the global testing options (see Figure 3-24).

![Select Tests Window](image)

- **Select Test Mode** to choose Online or Offline mode for testing.
- **Select Test Set** for a quick way to select groups of tests
  - Default enables the default group of tests.
  - None enables none of the individual tests.
  - All selects all of the tests.

### Table 3-2 OPEN LOOK Global Options (Continued)

<table>
<thead>
<tr>
<th>Global Options</th>
<th>System Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Lock</td>
<td></td>
<td>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)</td>
</tr>
<tr>
<td>Test Lock</td>
<td></td>
<td>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 supersedes this option)</td>
</tr>
<tr>
<td>Processor Affinity</td>
<td></td>
<td>Only available on multiprocessor systems: lets you 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.</td>
</tr>
</tbody>
</table>
Note – Selecting None while tests are running stops the tests, but the System Status panel still displays the word testing, and the Elapsed Time continues to increment. Click the Stop button to halt testing.

♦ Select Intervention to enable or disable tests that require you to intervene before or while a test is running.

There are two categories of tests that require intervention mode:
• Tests of drives that require scratch media (tapes, discs, 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.

Option Files Button

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 3-25).

![Figure 3-25](open.png)

Figure 3-25  OPEN LOOK Option File Window

Please refer to “Option Files” in Chapter 4 for more details.
Info Selections

This area on the Main window lets you select various ways to view system information.

Sys Config Button

From the Sys Config menu, you can:

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

▼ To Display the Hardware Configuration of the Test System

1. Select Display from the Sys Config menu.

   The Configuration window appears (see Figure 3-26) listing all of the hardware on the test system and their corresponding hardware tests.
To Print the Hardware Configuration of the Test System to a Local Printer

1. Select the Print option from the Sys Config pull-down menu.
   A Print Configuration window displays (see Figure 3-27).
2. Type the name of your printer in the Printer Name field.

3. Click the Print button.

**Log Files Button**

SunVTS saves the status of its progress in three log files. These files contain error, information, and UNIX messages. You can access these files from the Log Files Window, which is displayed when you click the Log Files button (see Figure 3-28).

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)

Please refer to “Reviewing Log Files” in Chapter 4 for more details.
System View Selections

This selection gives you a choice of displaying either the Logical or Physical view of the system being tested (see Figure 3-29).

![System View Selections](image)

**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 (see Figure 3-30).
**Note** – The content of this panel is determined by the test configuration.

![Diagram of OPEN LOOK Test Selection Panel]

**Figure 3-30** OPEN LOOK Test Selection Panel

**Note** – Some tests can only be selected if you are running SunVTS in Intervention mode. See “Intervention” 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 displays and gives you three options for viewing and setting test group options:

- Scheduling
- Test Execution
- Advanced

See Table 3-2 for descriptions of these options.

If you click an *individual* test (pmem0(pmem), cpu-unit(fputest), and so on), the test system option window displays and gives you three options for viewing and setting individual test options:
• Test Options
• Test Execution Options
• Test Advance Options

Each of these windows are test dependent and are described in the *SunVTS 2.0 Test Reference Manual*.

**OPEN LOOK Console Panel**

SunVTS error messages are displayed in the Console panel, located in the lower right portion of the SunVTS OPEN LOOK Main window (see Figure 3-31).

![Console Panel](image)

**Figure 3-31** 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 “Option Files Button” in this chapter for more information about setting up Option files.
TTY Interface

A screen-oriented TTY-based interface is 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 available through the GUI are available through the TTY interface also.

TTY Main Window

The TTY Main window is divided into four main areas (see Figure 3-32):

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

![TTY Main Window Diagram](image)

Figure 3-32  TTY Main Window
Navigating Through TTY

Throughout the TTY interface, there are common keyboard commands used to navigate through the interface. Table 3-3 summarizes these commands.

Table 3-3  TTY Keyboard Commands

<table>
<thead>
<tr>
<th>Key</th>
<th>Description of Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tab</td>
<td>Shifts focus to another window. For example, if you are working in the Control panel and hit the Tab key, you will shift the focus (or highlight) the Status panel. A highlighted panel will be bordered by asterisks (*). You must first highlight a panel before you can change an option in that panel.</td>
</tr>
<tr>
<td>Return</td>
<td>Depends on the context:</td>
</tr>
<tr>
<td></td>
<td>- Displays a menu, or</td>
</tr>
<tr>
<td></td>
<td>- Selects and applies a choice or a command in a menu</td>
</tr>
<tr>
<td>Spacebar</td>
<td>Selects or deselects an option checkbox; select is represented by open double brackets [ ] and deselect is represented by an asterisk within double brackets [*]</td>
</tr>
<tr>
<td>Arrow Keys</td>
<td>Moves between options in a highlighted panel</td>
</tr>
<tr>
<td>Backspace Key</td>
<td>Deletes text in a text field</td>
</tr>
<tr>
<td>Escape</td>
<td>Discards a pop-up menu or window</td>
</tr>
<tr>
<td>Control-F</td>
<td>Scrolls forward in a scrollable window</td>
</tr>
<tr>
<td>Control-B</td>
<td>Scrolls backward in a scrollable window</td>
</tr>
<tr>
<td>Control-X</td>
<td>Quits the TTY user interface, but leaves the SunVTS kernel running</td>
</tr>
<tr>
<td>Control-L</td>
<td>Refreshes the TTY window</td>
</tr>
</tbody>
</table>

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 “Options Selections” in this chapter.

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

1. Press the Tab key until the Control panel is selected (see Figure 3-33). When asterisks (*) appear around the Control panel, it is selected.

2. Use the arrow keys until the set_options choice is highlighted.

3. Press the Return key to display the SunVTS System options.

4. Use the up/down arrow keys to highlight Test_Execution and press Enter.

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

   a. Use the up and down arrow keys to select the Core File option.
b. Press the Return key to select this option.
   A pull-down menu displays on the machine that shows the choices for
   the Core File option (see Figure 3-34).

c. Use the arrow keys to highlight enabled.

```
User Interfaces
```

```
Figure 3-34  Selecting a Menu Option in TTY
```

d. Press the Return key to select this choice.
   The stress option changes from disabled to enabled.

e. Type Control-F to view the second page of the Options menu (see
   Figure 3-35).

f. Use the up and down arrow keys to 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.
5. When you finish changing the options, use the arrow keys to highlight Apply.

6. Press the Return key to apply the changes and remove the Options window.

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. Press the Tab key until the Tests panel is selected. When selected, the panel is bordered by asterisks.

2. Use the arrow keys to highlight the checkbox by the test group name. In this example (see Figure 3-36) the checkbox associated with SCSI-Devices (esp0) group is selected, so it is highlighted.

3. Press the Spacebar to deselect the test group. Notice that the asterisk is no longer between the brackets, and the test names are removed from the Status panel.

4. Use the right arrow key to highlight the test group name.

5. Press the Return key to display the tests within the test group.

Figure 3-36 Deselecting a Test Group in TTY

![cmdtool - /bin/csh](image)
6. Use the up and down arrow keys to highlight the brackets in front of the test you want to enable.

7. Press the spacebar to select the test.
   An asterisk displays between the two brackets, and the test group and test name appears on the Status panel (see Figure 3-37).

8. Press the Escape key to remove the test group window.
Using the TTY Status_view Menu

Because of the small size of the Status panel, often more tests are selected than can be shown on the panel. Use Control-F and Control-B keys to scroll forward and backward respectively. You can also use the Status_View menu to scroll through the pages and also to display only those tests that have errors.

▼ To Scroll Through Tests Using the Status_view Menu

1. Press the Tab key until the Status panel is highlighted. When selected, the panel has asterisks around the border. Notice that the Status_view option is also highlighted.

2. Press the Return key to display the Status_view menu (see Figure 3-38).

![TTY Status_view Menu](image)

Figure 3-38 TTY Status_view Menu
3. Use the up and down arrow keys to select the option you want.
   Choose one of the following options:

   Table 3-4  Status_view Menu Options

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Errors_only</td>
<td>Displays only the tests that produce errors</td>
</tr>
<tr>
<td>Next_page</td>
<td>Skips to the next page of tests</td>
</tr>
<tr>
<td>Previous_page</td>
<td>Goes back to the previous page of tests</td>
</tr>
<tr>
<td>First_page</td>
<td>Goes to the first page of tests</td>
</tr>
<tr>
<td>Last_page</td>
<td>Goes to the last page of tests</td>
</tr>
</tbody>
</table>

4. Press the Return key to select your choice.
   The Status panel changes to reflect your choice.

Using the TTY log_files Menu

▼ To Display, Print, or Remove log_files

1. Press the Tab key until the Control panel is highlighted.
   When selected, the panel has asterisks around the border (see Figure 3-39).

2. Use the arrow keys to highlight the log_files option.

3. Press the Return key to display the log_files menu.

4. Use the Up and Down arrow keys to select the option you want.
   Choose one of the following options:

   Table 3-5  TTY log_files Menu Options

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Error</td>
<td>Selects the Error log file</td>
</tr>
<tr>
<td>Information</td>
<td>Selects the Information log file</td>
</tr>
<tr>
<td>Unix_Msgs</td>
<td>Selects the UNIX messages log file</td>
</tr>
</tbody>
</table>
Note – If you do not want to select a log file, press the Escape key to remove the log_files menu.

Figure 3-39 Using the TTY log_files Menu

5. Press the Return key to select the log file, and display another menu.
   From this menu, you can either display, remove, or print the selected log file. See Table 3-5, for a description of these options.

6. Press the Return key to select your choice.
   Figure 3-40 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.
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.
This chapter describes a SunVTS testing environment. The examples in this chapter use the OPEN LOOK 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 - 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 - organizes 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 as being made up of one or more logical device groups. You can focus on a specific group or on all of the groups found on the system.

When you select either the physical or logical button from the user interface, the system mapping displays.
This feature is available only on the following server systems: SS1000, SS2000, Ultra Enterprise 6000, Ultra Enterprise 4000, and Ultra Enterprise 3000.

Test Selection

The Test Selection panel lets you 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

Three modes of testing are available: Offline, Online, and Connectivity. These modes differ from each other in their assumptions about the state of the system being tested and its objectives.

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

Connectivity Mode

In this mode, the tests determine if the devices are connected to the system being tested and are accessible. Functional testing is not done in this mode, but the device is accessed to establish system connection and accessibility.

Tests can safely be run in this mode when the system is online (see “Online Mode” for assumptions regarding the Online system state). As in the case of Online mode, some system and test options are fixed. When SunVTS testing is started in this 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.
Online Mode

Online mode does functional testing to find and isolate faults, while minimizing the impact on other applications and users.

In Online mode the system is 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 the user selecting an option or combination of options, which could trigger unsafe actions when SunVTS is run in Online mode.

Offline Mode

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

During Offline mode, do not run critical applications on the system or use the system for production purposes.

**Note** – Solaris is required to be running. However, the system should not be running critical production software.

In Offline 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** – It is the responsibility of the system administrator (or whoever is running SunVTS) to ensure that the state of the system conforms to assumptions made regarding it before running the tests in the Offline mode. SunVTS does not verify that the system is offline or that the assumption made above is true; it does not stop other applications or log out other users.
Table 4-1 shows the default values of the test execution options in different modes.

<table>
<thead>
<tr>
<th>Option</th>
<th>Offline</th>
<th>Online (fixed)</th>
<th>Connectivity (fixed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stress</td>
<td>disabled</td>
<td>disabled</td>
<td>disabled</td>
</tr>
<tr>
<td>Verbose</td>
<td>disabled</td>
<td>disabled</td>
<td>disabled</td>
</tr>
<tr>
<td>Core File</td>
<td>disabled</td>
<td>disabled</td>
<td>disabled</td>
</tr>
<tr>
<td>Run On Error</td>
<td>disabled</td>
<td>disabled</td>
<td>disabled</td>
</tr>
<tr>
<td>Max Passes</td>
<td>0</td>
<td>1 (fixed)</td>
<td>1 (fixed)</td>
</tr>
<tr>
<td>Max Time</td>
<td>0</td>
<td>0 (fixed)</td>
<td>0 (fixed)</td>
</tr>
<tr>
<td>Number of Instances</td>
<td>depends on the number of processors</td>
<td>1 (fixed)</td>
<td>1 (fixed)</td>
</tr>
</tbody>
</table>

**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” and “Selecting Test Groups and Individual Tests” in this chapter). This switch serves as a reminder that you may need to intervene before running certain tests; it does not change the test.

**Test Set**

The Test Set switch lets you 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.
To deselect all of the tests, choose None on the switch. You can deselect all the tests with None. This selection comes in handy 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 check boxes 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](image)
Test Execution Options

SunVTS lets you customize your SunVTS environment by setting option variables. There are two types of options:

- **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 each test can have, 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

<table>
<thead>
<tr>
<th>System Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stress</td>
<td>Performs stress testing</td>
</tr>
<tr>
<td>Core File</td>
<td>Creates a Core file. If the <code>&lt;SunVTS bin&gt;</code> directory is writable then core.&lt;testname&gt;.xxxxxx is the Core file name, where &lt;testname&gt; is the test that dumped core, and where xxxxxx is a character string generated by the system to make the file name unique. When core_file is disabled, a message indicating the signal that caused the failure is displayed and logged. See “Log Files Button” in Chapter 3</td>
</tr>
<tr>
<td>Max Errors</td>
<td>States the maximum number of errors a test allows before stopping (0 makes the SunVTS kernel continue testing regardless of errors)</td>
</tr>
<tr>
<td>Max Passes</td>
<td>Specifies the maximum number of passes a test can run</td>
</tr>
<tr>
<td>Max Time</td>
<td>States, in minutes, the time limit a test can run (0 = no limit)</td>
</tr>
<tr>
<td>Number of Instances</td>
<td>Indicates the number of instances (processes) of scalable tests that can be running on the same processor</td>
</tr>
<tr>
<td>Processor Affinity</td>
<td>Tests can be bound to a specific processor via this option</td>
</tr>
<tr>
<td>Run On Error</td>
<td>Continues testing until the max_errs number is reached</td>
</tr>
<tr>
<td>Verbose</td>
<td>Displays verbose messages in the SunVTS console window</td>
</tr>
</tbody>
</table>
Some options in Online and Connectivity modes of testing 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” in this chapter 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. The settings can be restricted to all the tests and sub-groups in just one group, or the effect could be restricted to just one test.

When the user assigns a value to an option globally, that value applies to all the groups and tests below. 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 mechanism for customizing the SunVTS testing environment. For example, the Verbose option can be disabled at the system level and enabled only for a particular group (or only a particular test) so that just the verbose messages from that particular group (or test) are displayed.

The effects of these options can be modified by using locks and overrides. The Group Lock and Test Lock can be used at the group and test levels; and 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, the Test Lock can be set to protect the option setting of a test. The overrides can be used to void the protection of locks. For example, setting System Override will nullify all the locks, and setting Group Override for a particular group will nullify 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).

![Test Option Panel]

*Figure 4-2 Test Option Panel*

**Note** – The visual appearance of this panel is determined by your test system configuration.

### 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/Group option menus have Override buttons for the locks that exist below that level. These special options can be selected from the Advanced options menu.
**Scalability of Tests**

The Scalability feature lets you scale the number of test instances or processes to stress single and multiprocessor systems. The scalable test’s options can be modified so that each test instance can run simultaneously with a different option. Combined with the processor affinity mask, SunVTS provides a flexible testing environment. The amount of stress can be tuned 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 can be run at the same time in the entire system; it overrides the Group Concurrency option.

- **Instances** - copies of a test that can be run simultaneously on the same device. For example, if a test has eight instances, then eight copies of that test can be run, and each copy can be run on either one or all of the processors in the system being tested (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

Decide how you want to test your system before you begin testing. 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 2.0 Test Reference Manual for more information about loopback connectors, and which tests need them.

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

However, the loopback test is not applicable to online and connectivity modes, hence the loopback connectors are not required under these two modes.

Blank or Scratch CDs, Tapes, and Diskettes

**Note** – Writing to a device is not allowed in Online and Connectivity modes.

Before invoking `sunvts`, insert blank or scratch media (tape, diskette, or CD) into the drive(s), before the system is probed by the SunVTS kernel.

- For CD tests, load a blank or scratch CD into the drive.
- Tape tests require 4mm, 8mm, ½”, or ¼” 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 has a graphics test running, a false error may occur. This is not a problem when you are running windows (OPEN LOOK or CDE). To activate this feature, select Enable from the option menu of the graphic test. No other graphic application can be run in the same window once you start the graphic test.

If you are running a frame buffer test from a command line, you can enable frame buffer locking by specifying a command line argument. (See the test command line descriptions in the *SunVTS 2.0 Test Reference Manual*.)

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

**Caution** – Do not run TTY mode on the console monitor and frame buffer tests concurrently; the frame buffer tests may fail. For information about how to start the TTY interface and connect to a remote machine’s SunVTS kernel, see “In TTY Mode” in Chapter 2.

If you are starting SunVTS with `vtsui` without running `vtsk` first, you must add the host name 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, the SunVTS tests will return 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 windowsd 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 on the console frame buffer (/dev/fb). If your system has more than one frame buffer, you must disable frame buffer locking on all of them 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 2.0 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
```

Frame buffer locking is not available if SunVTS is started from a screen other than the console monitor. The frame buffer lock for the console monitor must be turned off. SunVTS user interface will not be displayed on a monitor that has frame buffer locking 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. Please refer to “Start Button” in Chapter 3 for more 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.

Clicking the Suspend button causes all of the SunVTS tests to pause. After the test has paused, the Suspend button changes and becomes a Resume button. Clicking on the Resume button continues the testing session.

### Resuming the Testing Session

Once the testing session has been 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.
Resetting the Test Environment

If the testing session needs to start all over again, without quitting SunVTS, click the Reset button. Please refer to “Reset Button” in Chapter 3 for more 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, the software runs all enabled tests once and stops, but the elapsed time continues to increment.

SunVTS 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 will display the message “testing completed: xxx pass(es), x error(s)” when the testing is completed.

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 situation is probably due to a hardware problem.) Deselect the test, which signals SunVTS to ignore the stopped test and return to Idle mode. Please refer to “Stop Button” in Chapter 3 for more 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 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.
Performance Meter
This panel displays the performance statistics of the system being tested. See “OPEN LOOK Performance Meter” in Chapter 3 for more details.

Console Panel
The Console panel displays all 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
SunVTS saves the status of its progress 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).
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 generated while starting and stopping 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’s name appears at the top of the window (see Figure 4-6).
Figure 4-6  Info Log File

SunVTS Test Message Syntax

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
```

```bash
000.0.999.9912 03/15/96 08:11:18  Tly SunVTS ERROR: "Failed test"
  pass= 0    errors= 1
000.0.999.9912 03/15/96 08:11:27  Tly SunVTS ERROR: "Failed test"
  pass= 0    errors= 1
000.0.999.9912 03/15/96 08:20:28  Tly SunVTS ERROR: "Failed test"
  pass= 0    errors= 1
000.0.999.9912 03/15/96 08:20:33  Tly SunVTS ERROR: "Failed test"
  pass= 0    errors= 1
000.0.999.9912 03/15/96 08:40:20  Tly SunVTS ERROR: "Failed test"
  pass= 0    errors= 1
000.0.999.9912 03/15/96 08:53:08  Tly SunVTS ERROR: "Failed test"
  pass= 0    errors= 1
SUNWvts.cg5.5002 03/15/96 10:45:51  cg5 fbs/cg5}0 ERROR: "data error: x..pos:1,y..pos: 0, "nobs": 0, "nvec": 1," Probable_Cause(): Faulty Frame Buffer?"
Recommended_Action(): "If the problem persists, call your authorized Sun service provider."
000.0.999.9912 03/15/96 10:45:53  Tly SunVTS ERROR: "Failed test"
  cg51x0(cg5)
  pass= 218    errors= 1
```
To display Log Files, click the Display button on the Log Files menu (Figure 4-7).

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUNWvts</td>
<td>SunVTS package name</td>
</tr>
<tr>
<td>testname</td>
<td>SunVTS test name</td>
</tr>
<tr>
<td>subtest_name</td>
<td>The subtest module name (optional)</td>
</tr>
<tr>
<td>massage_number</td>
<td>The message identifier; which is a unique number for the test. The</td>
</tr>
<tr>
<td></td>
<td>number is usually within the following ranges:</td>
</tr>
<tr>
<td></td>
<td>VERBOSE: 1 - 1999</td>
</tr>
<tr>
<td></td>
<td>INFO: 2000 - 3999</td>
</tr>
<tr>
<td></td>
<td>WARNING: 4000 - 5999</td>
</tr>
<tr>
<td></td>
<td>ERROR/FATAL: 6000 - 7999</td>
</tr>
<tr>
<td></td>
<td>FATAL: 8000 - 9998 (The number 9999 is reserved for any possible</td>
</tr>
<tr>
<td></td>
<td>old message types in previous SunVTS releases for compatibility reasons)</td>
</tr>
<tr>
<td>date time</td>
<td>Tells when the error occurred</td>
</tr>
<tr>
<td>testname</td>
<td>The name of the test reporting the error</td>
</tr>
<tr>
<td>devicename</td>
<td>The device being tested when the error occurred</td>
</tr>
<tr>
<td>FRU_path</td>
<td>A full Solaris device path of the failed FRU; this argument varies,</td>
</tr>
<tr>
<td></td>
<td>depending on the type of test running when the error occurred; see</td>
</tr>
<tr>
<td></td>
<td>“Interpreting Failed FRU Information” in this chapter for</td>
</tr>
<tr>
<td></td>
<td>details</td>
</tr>
<tr>
<td>message</td>
<td>Contains test messages plus probable_causes and</td>
</tr>
<tr>
<td></td>
<td>recommended_actions</td>
</tr>
</tbody>
</table>
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 will be:

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

That of a disk, c0t0d0, controlled by esp0 on board 0 will be:

```
c0t0d0(board0/sbi0/esp0)
```
That of a disk, clt0d0, connected to a soc on board 1 will be:

\[ \text{clt0d0(board1/sbi1/socl/pln1)} \]

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

## Debug Features

The following options can be used to debug your system.

- **Verbose** - displays a verbose message indicating that the operation is being performed on the device being tested.

- **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. Advanced users can use this option to isolate faults of a specific processor.

## Testing with Record and Replay Options

The purpose of the Start with Record and Replay options is 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 in such a way as to reproduce the recorded sequence of events. These record and replay features provide a way to reproduce testing conditions, a process that is helpful for debugging.
The Record with Replay option can closely reproduce the ordering of the 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, only the ordering and relative scheduling time differences between events during the original run are considered.

These options are limited in the way they replay a testing session because the Replay option can only be controlled when a command is started, not when the command is completed.

The Record with Replay option records the following test events:

- Starting
- Stopping
- Enabling/Disabling Intervention mode
- Selecting and Deselecting

The events are recorded in a file called `vts_replay_file`, which will be saved in the log directory 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 at the time when recording was started. This information is used during the replay to restore the option settings to what they were during recording.

The events are recorded following the saved option settings. For each event, information is recorded in the following format:

```
  event_type rel_time target_object [instance_num]
  [event_specific]
```
The following table describes the significance of each event string.

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

**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, but the Reset button returns the options to the default settings specified 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 this 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 .customtest according to the following format.
2. Restart sunvts or reprobe the system configuration.

Note – If .customtest is renamed as .customtest-<group>, all it’s user tests will appear under the specified <group>.

.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/device name (MANDATORY FIELD).
• The second field is the test name (MANDATORY FIELD).
• The third field may be 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, add “SCA” in 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:

\[
\begin{align*}
\% \text{ label\_name;test\_name;Numeric<NUMERIC|0,100|50|numeric>,} \\
\text{Exc\_Choice<EXC\_CHOICE|Top,Middle,Bottom|Middle|exc\_choice>,} \\
\text{Inc\_Choice<INC\_CHOICE|Left,Center,Right|Left+Center+Right|inc\_choice>,} \\
\text{Toggle<TOGGLE|This,That|This|toggle>, Text <TEXT|20|Type\_Here|text>,} \\
\text{Slidebar<SLIDE\_BAR|0,10|5|slidebar>, Errors<CYCLE|Yes,No|No|errors>,} \\
\text{Cycle<CYCLE|First,Second,Third|First|cycle>; SCA}
\end{align*}
\]

SunVTS invokes the above test as follows:

\[
\% ./\text{test\_name} -s[vq..] [-i n] -o \text{dev=user[0,1..]},\text{Command\_Line\_Option=Value...}
\]

The customtest facility does not allow a test probe to be attached. You must ensure that the binaries are compatible with the version of the Solaris kernel on which SunVTS is currently running.

**vtsprobe Utility**

Use the vtsprobe utility to display the results of the SunVTS kernel’s 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” in Chapter 2 for instructions on how to start the SunVTS kernel.

**Using 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 \texttt{vtsprobe} to display the list of hardware devices.

\textit{Code Example 4-1  vtsprobe Example}

```
example% vtsprobe

Processor(s)
  fpu(fputest)
    Architecture: sparc
    Type: TI TMS390250 SuperSPARC chip
  system(systest)
    System Configuration: sun4m SPARCstation 10 (1 X 390250)
    System clock frequency: 40 MHz
    SBUS clock frequency: 20 MHz

Memory
  kmem(vmem)
    Amount: 233580KB
  mem(pmem)
    Physical Memory size: 48 Mb

Network
  isdn0(isdntest)
  le0(nettest)
    Host Name: example
    Host Address: 131.155.56.122
    Host ID: 12347f61
    Domain Name: widget.com

SCSI-Devices(esp0)
  c0t0d0(rawtest)
    Logical Name: c0t0d0
    Capacity: 510.23MB
    Controller: esp0
  c0t0d0(fstest)
    Logical Name: c0t0d0
    Controller: esp0
  tape0(tapetest)
    Drive Type: Exabyte EXB-8200 8mm Helical Scan

Comm.Ports
  zs0(sptest)
  term/a & term/b

Graphics
  cgsex0(cg6)
    5000KB required for testing.

OtherDevices
```
Using vtsprobe 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 vtsprobe -h hostname, where hostname is the hostname of the remote machine.
   The vtsprobe utility then connects to the remote machine, and displays the remote machine’s hardware devices.

   The output will be displayed on the window from which vtsprobe is invoked.
Option Files

Option files provide a method by which the current SunVTS global and test-specific options can be saved to a file for later use.

The SunVTS user interface provides an Option Files button that lets you to load, store, or remove an Option file by name. The file name can be any ascii file name.

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

Although hand editing of the Option file is allowed, the file is fairly strict regarding format requirements. Unnecessary or spurious characters in the Option files may cause unexpected actions with the SunVTS kernel/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).

To Save an Option File

1. Type the Option file name in the test field.
2. Click the Store button.
   All the current system and test options can now be saved as a file.

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 \texttt{test_defaults}, you can load this Option file when you start the SunVTS software by typing:

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

\textbf{To Load a Previously Saved Option File}

\textbf{Note} – If the Option file name is \texttt{.sunvts}, it is loaded by default every time SunVTS comes up.

1. Press the MENU mouse button on the Option File menu button to display the available Option files.
   All Option files saved in \texttt{/var/opt/SUNWvts/options} are displayed in the Option File Name menu.

2. Select the Option file you want to load.
   Figure 4-9 shows an example of selecting an Option file named \texttt{SystemTest.defaults} from the Option File Name menu.

\textbf{Figure 4-9}  Option File Name Menu

3. Click the Load button.
   After loading the Option file, the SunVTS Control Panel window reflects 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 from the system.
Problem:
The *inetd* invoked kernel takes an unusually long time to come up.

Solution:
The user interface or *vts_cmd* call can return prematurely. It can be reset 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, TT (ToolTalk) session is not available to the SunVTS kernel. In this case, the SunVTS kernel is running, but it 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 hostname 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” in Chapter 2 and from the user interface select Connect to, to reconnect.
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