Installation Guide

Version V-2003.12, December 2003

SYNOPSYS®

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Contents

Preface

This preface includes the following sections:

- What's New in This Release

- About This Guide

- Customer Support

The installation instructions in this guide reflect the latest version of Synopsys software for each product. Not all products are the same version.

All instructions in this guide are for UNIX systems unless otherwise indicated.

Important:
Install each version of the software in a new directory. Do not install different versions of Synopsys software in the same directory.

What's New in This Release

For information about new features and changes in specific Synopsys tools, see the individual product documentation. For links to Synopsys documentation, see "Related Publications" in the next section.

CosmosScope and SaberDesigner

Because of last-minute changes, installation instructions for CosmosScope and SaberDesigner are not included in this *Installation Guide*. For installation instructions for CosmosScope version V-2003.12, see the V-2003.12 INSTALL_README.wri file in the product download directory or on the product CD.

For installation instructions for SaberDesigner (or CosmosScope) version U-2003.09, see SOLD, version U-2003.09, or the U-2003.09 version of the *Installation Guide* at http://www.synopsys.com/support/Install_Guide.html.

About This Guide

The *Installation Guide* provides the basic information and procedures required to install Synopsys tools.

Audience

This guide is written for system administrators responsible for installing Synopsys software tools.

Related Publications

For additional information about Synopsys tools, see

- Synopsys Online Documentation (SOLD), which is included with the software for CD users or is available to download through the Synopsys Electronic Software Transfer (EST) system

- Documentation on the Web, which is available through SolvNet at http://solvnet.synopsys.com

- The Synopsys MediaDocs Shop, from which you can order printed copies of Synopsys documents, at http://mediadocs.synopsys.com

Conventions

The following conventions are used in Synopsys documentation.

Convention	Description
Courier	Indicates command syntax.
Courier italic	Indicates a user-defined value in Synopsys syntax, such as *object_name*. (A user-defined value that is not Synopsys syntax, such as a user-defined value in a Verilog or VHDL statement, is indicated by regular text font italic.)
Courier bold	Indicates user input—text you type verbatim—in Synopsys syntax and examples. (User input that is not Synopsys syntax, such as a user name or password you enter in a GUI, is indicated by regular text font bold.)
[ ]	Denotes optional parameters, such as *pin1 [pin2 ... pinN]*
|	Indicates a choice among alternatives, such as low | medium | high (This example indicates that you can enter one of three possible values for an option: low, medium, or high.)
_	Connects terms that are read as a single term by the system, such as set_annotated_delay
Control-c	Indicates a keyboard combination, such as holding down the Control key and pressing c.
\	Indicates a continuation of a command line.
/	Indicates levels of directory structure.
Edit > Copy	Indicates a path to a menu command, such as opening the Edit menu and choosing Copy.

Customer Support

Customer support is available through SolvNet online customer support and through contacting the Synopsys Technical Support Center.

Accessing SolvNet

SolvNet includes an electronic knowledge base of technical articles and answers to frequently asked questions about Synopsys tools. SolvNet also gives you access to a wide range of Synopsys online services including software downloads, documentation on the Web, and "Enter a Call to the Support Center."

To access SolvNet,

1. Go to the SolvNet Web page at http://solvnet.synopsys.com.

2. If prompted, enter your user name and password. (If you do not have a Synopsys user name and password, follow the instructions to register with SolvNet.)

If you need help using SolvNet, click SolvNet Help in the Support Resources section.

Contacting the Synopsys Technical Support Center

If you have problems, questions, or suggestions, you can contact the Synopsys Technical Support Center in the following ways:

- Open a call to your local support center from the Web by going to http://solvnet.synopsys.com (Synopsys user name and password required), then clicking "Enter a Call to the Support Center."

- Send an e-mail message to your local support center.

  - E-mail support_center@synopsys.com from within North America.

  - Find other local support center e-mail addresses at http://www.synopsys.com/support/support_ctr.

- Telephone your local support center.

  - Call (800) 245-8005 from within the continental United States.

  - Call (650) 584-4200 from Canada.

  - Find other local support center telephone numbers at http://www.synopsys.com/support/support_ctr.

Part I: Logical and Physical Synthesis, Simulation, Power, Test, and Verification

Synthesis	PrimePower
AMPS	PrimeTime
Arcadia	RailMill
Cadabra	System Studio
Floorplan Compiler	TetraMAX
Formality	TimeMill
FPGA Compiler II	VCS
NanoSim	Vera
PathMill	VHDL Simulation (Scirocco)
PowerMill	SOLD

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Preparing for Installation

This chapter provides information about steps to complete before you install Synopsys tools.

The chapter contains the following sections:

- Checking Your Hardware and Software Configuration

- Acquiring a License

- Finding Your Site Identification Number

- Creating the Synopsys Root Directory

- Defining the SYNOPSYS Environment Variable

Checking Your Hardware and Software Configuration

You must check your hardware and software configuration (including patch requirements) before you attempt to load any Synopsys tools.

Installation Changes

Beginning with the June, 2003 release of Synopsys software, the way the install.now script checks the software version has changed. This change affects overlay installation only.

When you attempt to install overlay software over an earlier release, the installation script now looks only at the foundation identifier, for example, U or V; it no longer looks for the release month and year.

For products that allow overlay installation, this change enables you to install a later tool version for the same foundation release over an earlier tool version. (For example, you could install TetraMAX version U-2003.09 over version U-2003.06 of the synthesis tools.)

Do not attempt to install an earlier version of an overlay tool (for example, U-2003.06) over a later version of the tool (U-2003.09). This installation is not supported, but the install.now script will not stop you from doing it if overlay installation is allowed for a product.

Supported Platforms and Operating Systems

Table 1-1 lists the supported platforms, operating systems, and corresponding Synopsys platform keywords for this release. Many platforms require operating system (OS) patches, including year 2003 patches. For detailed information, see the Supported Platforms Guide page on the Synopsys Web site. Go to

http://www.synopsys.com/products/sw_platform.html

and under Supported Platforms Guides, select the appropriate foundation for your release.

This Web page provides information about supported hardware, operating systems, and required OS patches. If the required patch described on this page is not available from the platform vendor, install the most recent patch instead.

Table 1-1   Supported Platforms, Operating Systems, and Keywords

Platform	Operating system	Synopsys platform keywords	Window environment
HP PA-RISC 2.0	HP-UX 11.0, 11i	hp32 (32-bit mode) hp64 (64-bit mode)	CDE
Sun Sparc	Solaris 8, 9	sparcOS5 (32-bit mode) sparc64 (64-bit mode)	CDE
Intel IA-32 or X86 32	Red Hat Linux 7.2	linux (32-bit mode)	GNOME
Intel IA-32 or X86 32	RHEL v3[1, 3]	linux (32-bit mode)	GNOME
IPF[2] 2	RHEL v2.1[1, 3]	linuxipf (64-bit mode)	GNOME
AMD Opteron	RHEL v3[1, 3]	amd64 (64-bit mode)	GNOME
IBM RS6000	AIX 5.1[3]	rs6000 (32-bit mode) aix64 (64-bit mode)	CDE

1.   Red Hat Enterprise Linux (RHEL)

2.   Itanium Processor Family (Intel Itanium 2 processor)

3.   The AIX 5.1 and Linux RHEL platforms are not available on CD. They will be available for download by electronic software transfer (EST) at a later date. For availability, check with your Synopsys sales representative.

HP-UX Requirements

The HP-UX operating system has the following requirements:

- Local (non-NFS) file systems must be configured for long file names.

  See the /etc/convertfs man page for details.

- The `chown` privilege must be switched off.

  To switch off `chown`, enter

  ```
  % setprivgrp -n chown
  ```

  See the `setprivgrp` man page for details.

Red Hat Linux 7.2 Shared Object File Problem

If you receive an error about libncurses.so.4 (cannot open shared object file: no such file or directory) when you run a Synopsys tool on a Red Hat 7.2 platform, install the ncurses4 package. This package is available on the Red Hat CD, or you can download it from the Red Hat FTP server at

ftp://ftp.redhat.com/pub/redhat/linux/7.2/en/os/i386/RedHat/RPMS/ncurses4-5.0-4.i386.rpm

64-Bit Platform Support

The Synopsys tools support 64-bit operation on HP-UX, Solaris, Linux, and AIX platforms. When you run the tools in 64-bit mode, the upper limit for virtual address space is extended beyond the 4-gigabyte limit imposed by the 32-bit mode, allowing you to process larger designs. With both the 32-bit and 64-bit platforms installed, you have the flexibility to run either 32-bit or 64-bit applications without running out of memory.

You can install the 64-bit version of the Synopsys tools in the same root directory as the 32-bit version or in a separate directory. When both 32-bit and 64-bit dc_shell executable files are installed and you specify dc_shell, the first executable file in the PATH environment is invoked.

Note:
    If you attempt to use the 64-bit mode executable file on a 32-bit platform, you will see an error message.

Multiple-Platform Installation

When you install tools on a network that connects different platforms, the result is the directory tree shown in Figure 1-1.

Figure 1-1   Illustration of a Multiple-Platform Installation
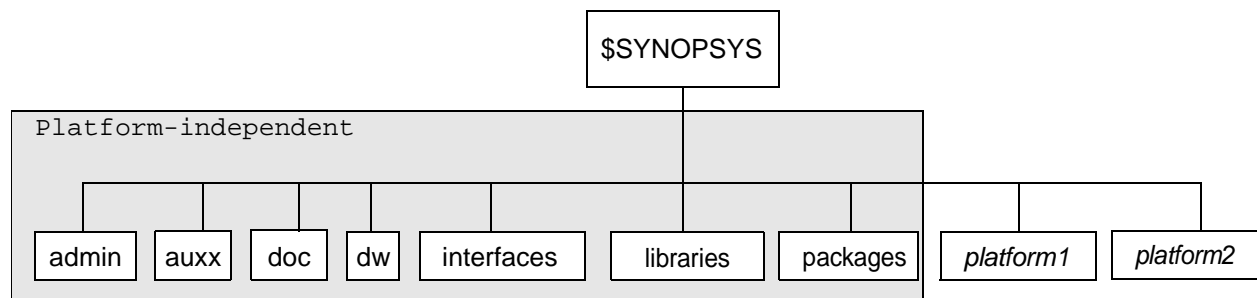
Each Synopsys product includes a platform-independent package (indicated by the shaded box in Figure 1-1) containing files common to all platforms. When you select multiple platforms, the installation script installs one platform-independent package and a platform-dependent package for each selected platform.

If you have previously installed a product on one platform and want to install it on another platform,

1. Rerun the installation script for the product.

2. In the installation script,

   - Answer **n** to the query about installing the platform-independent package.

   - Specify the new platform when queried about which platform to install.

Products and Platforms

Table 1-2 lists the products and their supported platforms. For the latest product-specific platform information, see the release notes for your tool.

Table 1-2 Products and Supported Platforms

Product	Product ID	Platform keyword
AMPS	amps	sparcOS5, hp32, linux
Arcadia	arc	sparcOS5, sparc64, hp32, hp64, rs6000
Cadabra	cadabra	sparcOS5, hp32, linux
Floorplan Compiler	fpc	sparcOS5, sparc64, linux
Formality	fm	sparcOS5, sparc64, hp32, hp64, rs6000, linux, linuxipf
FPGA Compiler II	fc2	sparcOS5, hp32, Windows
NanoSim (including ADFMI, NanoSim Integration with VCS, CosmosScope, turboWave, Verilog-A, and VTRAN)	ns	sparcOS5, sparc64, hp32, hp64, rs6000, linux, linuxipf

Table 1-2   Products and Supported Platforms (Continued)

Product	Product ID	Platform keyword
PathMill	pm	sparcOS5, sparc64, hp32, hp64, linux, linuxipf, rs6000
PowerMill (including ADFMI, VTRAN, and turboWave)	pw	sparcOS5, sparc64, hp32, hp64, rs6000
PrimePower	pps	sparcOS5, sparc64, hp32, hp64, linux
PrimeTime	pts	sparcOS5, sparc64, hp32, hp64, linux, linuxipf, rs6000
RailMill	rm	sparcOS5, sparc64, hp32, hp64, rs6000
Synthesis	syn	sparcOS5, sparc64, hp32, hp64, rs6000, linux, linuxipf
SYSTEMSIM, SYSTEMEX	systemsim systemex	sparcOS5, linux
System Studio	css	sparcOS5, hp32, linux gccsparcOS5
TetraMAX	tx/txs	sparcOS5, sparc64, hp32, hp64, linux, linuxipf
TimeMill (including ADFMI, VTRAN, and turboWave)	tm	sparcOS5, sparc64, hp32, hp64, rs6000
VCS	vcs, vcsi	sparcOS5, sparc64, hp11.0 PA2.0_32, 64, linux, AIX 32, dec_alpha_osfl_4.0_64,
Vera	vera	sparcOS5, sparc64, hp32, linux, rs6000
VHDL Simulation (Scirocco)	scirocco	sparcOS5, hpux10, linux, rs6000

Note:

> Products that support the AIX 4.3.3 (rs6000) and Linux Intel Itanium platforms will be available by EST at a later date. For more information, contact your local applications consultant.

Disk Space Requirements

Table 1-3 lists the amount of disk space required to install the various Synopsys tools. Each CD also includes this information in the top-level README.*product_name* file.

Table 1-3   Disk Space Requirements

Synopsys product	Required size in MB (approximate)
AMPS	
Platform independent	35
Per platform	110
Arcadia	
Platform independent	40
Per platform	450
Cadabra	
Platform independent	140
Per platform	75
Floorplan Compiler	
Platform independent	50
Per platform	400
Formality	
Platform independent	102
Per platform	132
FPGA Compiler II	
Platform independent	150
Per platform	100

Table 1-3   Disk Space Requirements (Continued)

Synopsys product	Required size in MB (approximate)
NanoSim	
Platform independent	50
Per platform	500
PathMill	
Platform independent	11
Per platform	172
PowerMill	
Platform independent	50
Per platform	300
sparcOS5	450
PrimePower	
Platform independent	492
Per platform	122
PrimeTime	
Platform independent	450
Per platform	350
RailMill	
Platform independent	125
Per platform	300
Synthesis tools	
Platform independent	400
Per platform	825
Synopsys online documentation (English)	385
Synopsys online documentation (Japanese)	350
System Studio	
Platform independent	700
Per platform	600
System Studio SOLD	100

Table 1-3   Disk Space Requirements (Continued)

Synopsys product	Required size in MB (approximate)
TetraMAX (overlay)	
Platform independent	9
Per platform	40
TetraMAX (stand-alone)	
Platform independent	9
Per platform	112
TimeMill	
Platform independent	50
Per platform	300
sparcOS5	450
VCS	
Per platform	400
Vera	
Per platform	400
VHDL Simulation (Scirocco)	
Platform independent	320
Per platform	500

Memory Requirements

The UNIX kernel defines hard per-process limits on the maximum amount of memory that can be used, and the `limit` command creates soft limits. If ignored, these limits can cause processes (jobs) to fail even when sufficient memory is available. For more information, see "Memory" on page 24-2.

Table 1-4 lists the general guidelines for the minimum amount of physical memory and swap space (virtual memory) required to run Synopsys tools.

Table 1-4   Minimum Memory Requirements

Tool	Physical memory (MB)	Swap space (MB)
AMPS	256 Recommended: 1GB	512 Recommended: 2GB
Arcadia	256	512
Cadabra	1 GB	256
Floorplan Compiler	256	512
Formality[1]	256	512
FPGA Compiler II	64	140
NanoSim	256 Recommended: 1GB	512 Recommended: 2GB
PathMill	256 Recommended: 1GB	512 Recommended: 2GB
PowerMill	256 Recommended: 1GB	512 Recommended: 2GB
PrimePower	128	256
PrimeTime	150	256
RailMill	256	512
Synthesis tools	128	256
System Studio	256	512
TetraMAX[2]	256	512
TimeMill	256 Recommended: 1GB	512 Recommended: 2GB

Table 1-4   Minimum Memory Requirements (Continued)

Tool	Physical memory (MB)	Swap space (MB)
VCS	256 Recommended: 2 GB	768
Vera	256 Recommended: 1GB	512 Recommended: 2GB
VHDL Simulation (Scirocco)	256 Recommended: 1GB	512 Recommended: 2GB

1.   *For large designs, the expected amount of required memory is approximately 1 million bytes per 2,000 gates.*

2.   *Physical memory and swap space requirements are dependent on design size. For the figures in the table, it is assumed that the design size is less than 1 million (equivalent NAND) gates.*

Physical Memory Requirements for Synthesis, PrimeTime, and Design Budgeting

For the synthesis, PrimeTime, or design budgeting tools to run efficiently, the physical memory must equal 25 to 50 percent of the swap space. For example, if you have 128 MB of swap space, you need at least 32 MB of physical memory. You might need as much as 64 MB, however. The more physical memory you have, the more quickly your job runs.

Swap Space Requirements for Synthesis Tools

The amount of swap space required by the synthesis tools depends on the size and type of each circuit design.

Use the following formula to help you determine the minimum amount of available swap space required for HDL designs:
16.3 MB + (5.9 x (size of the design in K gates)).

For example, a 5K-gate design requires 16.3 + (5.9 x 5) = 45.8 MB of available swap space.

Accessing Memory Beyond 2 GB With 32-Bit Synopsys Tools

In general, UNIX-based systems support a maximum memory of 2 GB for 32-bit processes. However, the following Synopsys tools can extend memory beyond 2 GB:

- Design Compiler

- DFT Compiler

- Floorplan Compiler

- Floorplan Manager

- Formality

- HDL Compiler (Presto Verilog)

- NanoSim

- Physical Compiler

- Power Compiler

- PowerMill

- PrimePower

- PrimeTime

- RailMill

- TimeMill

- VCS

- Vera

- VHDL Simulation (Scirocco)

  Note:

  Available memory is space not used by the OS, the windowing system, or other applications.

To access memory beyond 2 GB,

1. Do one of the following, depending on the platform you are using:

   - For HP-UX,

     Make sure your server has HP-UX 11.0 (or later) loaded.

   - For Solaris,

     Make sure your server has Solaris 8 (or later) loaded.

2. Make sure your server has at least 4 GB of memory (physical and swap space) available.

   Note:

   Physical memory equals data size plus stack size, and stack size is used before data size. Therefore setting stack size to a large value causes problems for designs that need to go over 2 GB. If you set the stack size too high, you cannot get enough memory for your data. To check the settings, use the `limit` command at the system prompt. For more information, see "Memory" on page 24-2.

3. Make sure the system you are using does not have restrictions that prevent you from using more than 2 GB of memory.

4. Create unlimited data size in the shell that you are using: C, Bourne, Korn, or Bash. If there are systemwide limits on the data size you can create, you can remove them or override them. You can do this in one of two ways:

- Enter one of the following commands:

  For the C shell,

  ```
  % limit datasize 3800000
  ```

  For the Bourne, Korn, or Bash shell,

  ```
  # ulimit -S -d 3800000
  ```

- Modify the kernel of your server. This approach allows everyone using your server to extend memory beyond 2 GB.

Note:

On HP-UX systems, you will see a data size of 2 GB. This value is accurate. After your process reaches the 2-GB limit, the Synopsys product extends the address space.

Acquiring a License

The Synopsys Common Licensing (SCL) system provides a single, common licensing base for all Synopsys tools. The SCL software and the documentation describing how to install and configure it are separate from the tools that use it.

Before you can use the Synopsys tools, you must do the following:

- If you have not already done so, retrieve your license keys from the SmartKeys Web page at http://solvnet.synopsys.com/smartkeys.

- Install the SCL software.

    Note:

    Installation of Synopsys tools and SCL is not order dependent. You can install SCL before or after you install your Synopsys tools. However, you cannot use your Synopsys tools until you have installed, configured, and started SCL.

Obtaining Your License Keys

To obtain your license key file from SmartKeys,

1. Go to the SmartKeys Web page at

    http://www.synopsys.com/smartkeys

2. On the SmartKeys Web page, click Key Retrieval.

3. In the Key Retrieval box, enter the following information:

    - Your site ID. This is the numeric site ID that identifies your customer site. If you have synthesis, test, or VHDL simulation tools installed, you can obtain the site ID by viewing your site_info file: $SYNOPSYS/admin/license/site_info.

    - Your host ID (optional). To obtain a license key file for a single host, enter its host ID. To obtain license keys for all hosts at the specified site, leave this field blank.

    - Your e-mail address. The default is your Synopsys e-mail address. This is the address that your key file will be sent to.

4. Click Continue to submit your request.

Installing Synopsys Common Licensing Software

You need to install, configure, and start a single copy of SCL software for all Synopsys tools. If you don't have the SCL software, you can download it by EST or FTP: See the http://www.synopsys.com/keys/#download_SCL Web page.

Alternatively you can order the SCL software CD from the Synopsys MediaDocs Shop at http://mediadocs.synopsys.com.

If you already have SCL running, you do not need to reinstall it. However, if you are updating your license key file, you need to notify the SCL daemons that the license file has changed. See the SCL documentation for instructions on this process.

Note:
>   Do not install SCL into an existing directory. You must install SCL into a stand-alone directory.

For more information about licensing, see the following documents:

- *Synopsys Common Licensing Quick Start*

- Synopsys Common *Licensing Installation and Administration Guide*

Soft copies of the *Synopsys Common Licensing Quick Start* document and the Synopsys Common *Licensing Installation and Administration Guide* are available in Portable Document Format (PDF) from http://www.synopsys.com/keys/#Info_SCL.

Finding Your Site Identification Number

Before you install any Synopsys product CD, locate and make a note of your Synopsys site identification number. Enter your site ID when prompted during the installation process.

Your site ID was shipped in the package with your Synopsys tools, or if you download the software, it is in your Synopsys Order Notification e-mail. If you have trouble locating it, contact your Synopsys sales representative.

Creating the Synopsys Root Directory

To create a new directory tree for this Synopsys release, enter

```
% mkdir -p /usr/synopsys/product_version
```

To set the permissions on the new directory tree, enter

```
% chmod 755 /usr/synopsys/product_version
```

Important:
Install each version of the software in a new directory. Do not install different versions of Synopsys software in the same directory.

Defining the SYNOPSYS Environment Variable

Set the SYNOPSYS environment variable ($SYNOPSYS) in the shell that you are using: C, Bourne, Korn, or Bash. In the following examples, the root_directory argument is the name of the Synopsys root directory.

If you are using the C shell, enter the following command to set the SYNOPSYS environment variable:

```
% setenv SYNOPSYS root_directory
```

If you are using the Bourne, Korn, or Bash shell, enter the following command to set the SYNOPSYS environment variable:

```
# SYNOPSYS=root_directory; export SYNOPSYS
```

2

Downloading and Installing the Software

This chapter provides information about downloading and installing Synopsys tools.

The chapter contains the following sections:

- Downloading and Installing the Software by EST

- Performing EST Installation

- Installing Product Files From a CD

Downloading and Installing the Software by EST

You can download Synopsys software in two ways:

- By FTP

- From the Web

For help with download problems, contact the Synopsys Electronic Software Transfer department:

E-mail support: est-adm@synopsys.com
Telephone support: 650-584-1631

Note:

The EST department does not help with installation or licensing issues. For help with such issues, contact your local Support Center.

To access the online EST Troubleshooting Guide, go to http://www.synopsys.com/cgi-bin/est.cgi.

Caution!

Install each version of the software in a new directory. Do not install different versions of Synopsys software in the same directory.

Using the Product Files

Depending on file size, product files are packaged by one of three processes, tar, tar.Z, or tar.gz. These instructions cover each process.

The product files use the following naming convention:

For .tar files

```
productname_productversion_common.tar
productname_productversion_platform.tar
```

For tar.Z files

```
productname_productversion_common.tar.Z
productname_productversion_platform.tar.Z
```

For tar.gz files

```
productname_productversion_common.tar.gz
productname_productversion_platform.tar.gz
```

For each tool you want to install, substitute the appropriate product ID and version for *productname_productversion* and platform keyword for *platform*. (See "Products and Platforms" on page 1-6.)

Important:

For each product except SOLD, you must install one common file (platform-independent package) and one or more platform-specific files. (See Figure 1-1 on page 1-5.) For SOLD, install only the tar files. (SOLD version U-2003.09 does not have a common file and is platform independent.)

Downloading the Files by FTP

To download the files by FTP,

1. For each tool, you must create a separate empty directory to download your product files into. For example,

    ```
    % mkdir /tmp/product
    % cd /tmp/product
    ```

2. Start an FTP session to ftp.synopsys.com.

    ```
    % ftp ftp.synopsys.com
    ```

3. Enter your SolvNet user name and password.

4. At the ftp prompt, enter the following commands:

    ```
    ftp> binary
    ftp> cd rev
    ftp> cd productname_productversion
    ftp> get productname_productversion_common.tar
    ftp> get productname_productversion_platform.tar
    ```

    For a list of supported platforms and products for this release, see Table 1-2 on page 1-6.

5. Download the files into the directory you just created.

6. For installation instructions, see "Performing EST Installation" on page 2-6.

Downloading the Files From the Web

To download files from the Web,

1. For each tool, you must create a separate temporary directory to download your product files into. For example,

   ```
   % mkdir /tmp/product
   % cd /tmp/product
   ```

2. Go to the Electronic Software Transfer (EST) Web page at

   http://www.synopsys.com/cgi-bin/est.cgi

3. Click the Authenticated Access button.

4. Enter your SolvNet user name and password.

5. Read the legal page and, if you agree, click "Yes, I agree to the above terms."

6. Click the rev folder.

7. Click the file folder for the product and version you want to install.

8. Download the files into the temporary directory.

   Note:

   For each product, you must download one common file (platform-independent package) and one or more platform-specific files.

9. For installation instructions, see "Performing EST Installation," next.

Performing EST Installation

To install the software,

1. Untar the .tar files, or untar and uncompress the tar.Z or tar.gz files. For example,

   For tar files

   ```
   % tar xvf productname_productversion_common.tar
   % tar xvf productname_productversion_platform.tar
   ```

   For tar.Z files

   ```
   % cat productname_productversion_common.tar.Z | uncompress | tar xvf -
   % cat productname_productversion_platform.tar.Z | uncompress | \
     tar xvf -
   ```

   or

   ```
   % zcat productname_productversion_common.tar.Z | tar xvf -
   % zcat productname__productversion_platform.tar.Z | tar xvf -
   ```

   For tar.gz files

   ```
   % gzip -dc productname_productversion_common.tar.gz | tar xvf -
   % gzip -dc productname_productversion_platform.tar.gz | tar xvf -
   ```

   If you want to perform this process in two steps, do the following:

   ```
   % gzip -d productname_productversion_common.tar.gz
   % tar xvf productname_productversion_common.tar
   ```

   ```
   % gzip -d productname_productversion_platform.tar.gz
   % tar xvf productname_productversion_platform.tar
   ```

   Substitute the appropriate product ID and version for *productname_productversion* and the platform keyword for *platform*. (See "Products and Platforms" on page 1-6.)

Note:

If you don't want to see the list of unpacked files, omit the v from xvf -.

2. Execute the following command to install the software:

```
% ./install.now
```

To install Synopsys tools, it is recommended that you log on as root or have system administrator privileges. You need write permission for the installation directory.

3. Answer the installation program prompts.

Important:

When you are prompted to choose a location for installing the software, do not select the /tmp directory. You must specify a new directory. Do not install different versions of Synopsys software in the same directory.

Repeat steps 1 through 3 for each tool you want to install.

Installing Product Files From a CD

Use the same installation procedure to transfer the files from each CD (or CD set) to your system.

To install a CD,

1. Mount the CD.

2. Run the installation script.

3. Unmount the CD.

Complete information about these steps is given in the following sections.

Mounting the CD

Mounting the CD might require root access privileges. If you do not have root access privileges, see your system administrator for instructions on mounting the CD. If you have the proper privileges, complete the following steps.

To mount the CD,

1. Place the CD in the CD drive.

2. Create a CD directory. For example, enter

    ```
    % mkdir /cdrom
    ```

3. Mount the CD by using the appropriate command for your operating system. For example, enter

    ```
    % mount -o ro /dev/dsk/c2t1d4s0 /cdrom
    ```

Note:

Mounting instructions are different for each platform. See your system administrator for the correct CD mounting commands.

Also, for sparcOS5 with vold (the volume management daemon for managing CD and floppy devices), the /cdrom directory already exists and the CD is automatically mounted. Therefore, use cd /cdrom/cdrom0 instead of cd /cdrom (and use eject to unmount the CD).

Installing the Software From the CD

The following steps apply only to tools that use the standard installation. For CD installation of FPGA Compiler II, see "Installing the Software" on page 9-3.

To install the software,

1. Move to the CD-ROM directory. For example, enter

    ```
    % cd /cdrom
    ```

2. View the README.1ST file on the CD for more information. View the README.*productname* file for the most up-to-date disk space requirements.

3. Enter the installation command.

    ```
    % ./install.now
    ```

4. Answer the installation program prompts.

    If you receive an UNCOMPRESS/TAR ERROR during the installation script, rerun the installation command, using the -i option to correct the problem. For example, enter

    ```
    % ./install.now -i
    ```

Example 2-1 shows a sample Synopsys media installation script for the synthesis tools on the Sun Solaris platform; it applies to installation by EST and from the CD. Other tools are installed in a similar manner.

Note:

> To perform an overlay installation for TetraMAX, enter **tx** for TetraMAX when you are prompted to select the product you want to install. To perform a stand-alone installation, enter **txs** for TetraMAX stand-alone.

Example 2-1   Synopsys Media Installation Script for the Synthesis Tools

```
                 Synopsys Media Installation

Instructions:  The list within {} shows the choices for a given option.
               The entry within [] shows the default selection when you
               hit the Return key. You can cancel the installation by
               by entering quit when prompted for input.

_____

The current mounted Synopsys CD file system is V-2003.12.

         VERSION:       V-2003.12
         PRODUCTS:      syn sf3 sf4
         PLATFORMS:     sparcOS5
         PART NUMBER:   XXXXXX

_____

Install V-2003.12 release? {y,n} [y] y

Enter the full path to the directory where you want to install
Synopsys V-2003.12_syn products. If the directory does not exist,
it will be created.  [/usr/synopsys]: /usr/synopsys/syn_V-2003.12
Creating Synopsys root directory /usr/synopsys/syn_V-2003.12...

Select Synopsys product(s) to install:
         {
         syn - Core Synthesis Tools
         sf3 - Synopsys Integrator for Falcon Framework MentorC
           sf4 - Synopsys Integrator for Falcon Framework MentorD
         }
Enter the list of product(s) to install [syn sf3]: syn sf3

Product(s) selected: syn sf3

Platform Independent Package for a particular product contains
support files that are common to all the platforms.
```

```
You must install this package for each product if you
are installing it to the /usr/synopsys/syn_V-2003.12
directory for the first time.

Install Platform Independent Package for syn? {y,n} [y]: y

Install Platform Independent Package for sf3? {y,n} [y]: y
sparcos5

Verify cksum for ./syn.taz ...Pass.
Verify cksum for ./sparcos5/syn.taz ...Pass.
Verify cksum for ./sf3.taz ...Pass.
Verify cksum for ./sparcos5/sf3.taz ...Pass.

Platform(s) selected: sparcos5
_____

Here is your final selection for installing Synopsys Tools:

     VERSION:   V-2003.12
     PRODUCTS:  syn sf3
     PLATFORMS: sparcos5

     Synopsys Media Directory (from) : /cdrom
     Synopsys Install Directory (to) : /usr/synopsys/syn_V-2003.12

     Platform Independent Package(s) for : syn sf3

     Disk space required             : 1034 MB
     Disk space available            : 14649 MB


If all the information is correct, continue with the installation.

_____

Install? {y,n} [y]: y

Starting Installation ... Please do not interrupt.

INSTALLING syn product, platform_independent package, V-2003.12 version.
  uncompress < ./syn.taz | (cd /usr/synopsys/syn_V-2003.12; tar xvfp - )
sparcos5
INSTALLING syn product, sparcos5 package, V-2003.12 version.
uncompress < ./sparcos5/syn.taz | (cd /usr/synopsys/syn_V-2003.12; tar xvfp - )

INSTALLING sf3 product, platform_independent package, V-2003.12 version.
  uncompress < ./sf3.taz | ( cd /usr/synopsys/syn_V-2003.12; tar xvfp - )
sparcos5
```

```
INSTALLING sf3 product, sparcos5 package, V-2003.12 version.
  uncompress < ./sparcos5/sf3.taz | (cd /usr/synopsys/syn_V-2003.12; tar xvfp - )


Installing Design Compiler ...


Installing Module Compiler ...


Installing Library Compiler ...


Installing Physical Compiler ...
Setting up environment for Astro ...

Installing Synopsys Integrator for Falcon Framework version C


Synopsys Site Identification Number appears on the upper right corner
of your Synopsys License Key Certificate.

Synopsys Site Identification Number [Hit return for 000]: 000


Synopsys License Administrator is a person who must be contacted
for Synopsys product related administrative tasks at your site.

Local Synopsys License Administrator [Hit return for customer]:


License Administrator Contact is the current phone number and/or
Email address of customer.

License Administrator Contact [Hit return for ###-#### and/or user@email]:


Created site file /usr/synopsys/syn_V-2003.12/admin/license/site_info.

Installation is complete.


To use this software, you must be running the Synopsys Common Licensing
(SCL) version 8.4 daemon (snpslmd) on your license server. For more
information on SCL 8.4, see the Synopsys Licensing QuickStart Guide at
http//www.synopsys.com/keys.
```

```
For any post-installation setup requirements, see the product-specific chapters
in the Installation Guide at
http://www.synopsys.com/support/Install_Guide.html.

Thank you ...
```

Example 2-2 shows a sample Synopsys media installation script for version V-2003.12 of the PrimeTime tools; it applies to installation by EST and from the CD. Other version V-2003.12 tools are installed in a similar manner.

Example 2-2   Synopsys Media Installation Script for PrimeTime

```
Synopsys Media Installation

Instructions:  The list within {} shows the choices for a given option. The entry
within [] shows the default selection when you hit the Return key.  You can
cancel the installation by entering quit when prompted for input.
_____

The current mounted Synopsys CD file system is V-2003.12.

         VERSION:      V-2003.12
         PRODUCTS:     pts
         PLATFORMS:    sparcOS5 sparc64
         PART NUMBER: XXXXXX


_____
Install V-2003.12 release? {y,n} [y] y

NOTE:   The product(s) pts on this CD-ROM must be installed in a
        stand-alone directory.

Enter the full path to the directory where you want to install
Synopsys V-2003.12_pts products. If the directory does not exist,
it will be created.  [/usr/synopsys]: /usr/synopsys/pts_V-2003.12

Creating Synopsys root directory /usr/synopsys/pts_V-2003.12...

Product(s) selected: pts

The Platform Independent Package for a particular product contains support files
that are common to all the platforms.
You must install this package for each product if you are installing it to the
/usr/synopsys/pts_V-2003.12 directory for the first time.
```

```
Install Platform Independent Package for pts? {y,n} [y]: y

Select platform(s) to install:
        {
        sparcOS5 (for Solaris 8, 9)
        sparc64  (for Solaris 8, 9; 64-bit)
        }
Enter the list of platform(s) to install [sparcOS5]: sparcOS
Platform(s) selected: sparcos5
_____


Here is your final selection for installing Synopsys Tools:


    VERSION:   V-2003.12
    PRODUCTS:  pts
    PLATFORMS: sparcos5

    Synopsys Media Directory (from) : /cdrom
        Synopsys Install Directory (to) : /usr/synopsys/pts_V-2003.12

    Platform Independent Package(s) for : pts

    Disk space required           : 290 MB
    Disk space available          : 10063 MB


If all the information is correct, continue with the installation.

_____


Install? {y,n} [y]: y

Starting Installation ... Please do not interrupt.

INSTALLING pts product, platform_independent package, V-2003.12 version.
uncompress < ./pts.taz | ( cd /usr/synopsys/pts_V-2003.12; tar xvfp - ) sparcos5
INSTALLING pts product, sparcos5 package, V-2003.12 version.
  uncompress < ./sparcos5/pts.taz | (cd /usr/synopsys/pts_V-2003.12; tar xvfp - )

Installing PrimeTime ...


Synopsys Site Identification Number appears on the upper right corner of your
Synopsys License Key Certificate.

Synopsys Site Identification Number [Hit return for 000]:
000
```

```
Synopsys License Administrator is a person who must be contacted for Synopsys
product related administrative tasks at your site.

Local Synopsys License Administrator [Hit return for customer]:


License Administrator Contact is the current phone number and/or Email address
of customer.

License Administrator Contact [Hit return for ###-#### and/or user@email]:

Created site file /usr/synopsys/pts_V-2003.12/admin/license/site_info.

Installation is complete.

To use this software, you must be running the Synopsys Common Licensing
(SCL) version 8.4 daemon (snpslmd) on your license server. For more
information on SCL 8.4, see the Synopsys Licensing QuickStart Guide at
http//www.synopsys.com/keys.

For any post-installation setup requirements, see the product-specific chapters
in the Installation Guide at
http://www.synopsys.com/support/Install_Guide.html.

Thank you ...
```

Unmounting the CD

To unmount the CD,

1. Move to another directory. For example, enter

    `% cd /tmp`

2. Unmount the CD by using the appropriate command for your
    operating system. For example, enter

    `% umount /cdrom`

    Note:

    If you are running the volume management daemon, use the
    `eject` command to unmount the CD.

3. Remove the CD from the drive.

Note:

To run the Synopsys tools, Synopsys Common Licensing (SCL) software must be installed. For details about Synopsys licensing software, see the *Licensing Quick Start* document and the *Licensing Installation and Administration Guide*, which are available online at www.synopsys.com/keys.

3

Installing the Synopsys Synthesis Tools (version V-2003.12)

This chapter contains the following sections:

- Synthesis Tools

- Installing the Software

- Configuring the Synthesis Tools

- Installing Optional Tools

- Verifying the Synthesis Tools Installation

To ensure a successful installation, complete the following procedures before beginning the installation process:

- Create the Synopsys root directory (see "Creating the Synopsys Root Directory" on page 1-18).

- Define the SYNOPSYS environment variable (see "Defining the SYNOPSYS Environment Variable" on page 1-19).

- Have your license server running and have the appropriate license keys installed (see "Acquiring a License" on page 1-15).

Synthesis Tools

The Synopsys synthesis tools include the following:

- Core synthesis tools

   - Automated Chip Synthesis

   - BSD Compiler

   - Behavioral Compiler

   - Design Analyzer

   - Design Compiler

   - Design Vision

   - DesignWare

   - DFT Compiler

   - EDIF 2 0 0 Interface

   - Floorplan Manager

   - HDL Compiler (Presto Verilog)

   - Library Compiler

   - Module Compiler

- Physical Compiler

- Power Compiler

- SystemC Compiler

- VHDL Compiler

• Synopsys Integrator for Falcon Framework

- Mentor C version

- Mentor D version

If you have purchased any of these tools, you must install the synthesis tools suite.

Most synthesis tools install on all platforms (sparcOS5, sparc64, hp32, hp64, linux, and rs6000). The exceptions are noted in Table 3-1.

Table 3-1   Synthesis Tools That Do Not Install on All Platforms

	sparcOS5	hp32	linux	rs6000	gccsparcOS5
Behavioral Compiler	x	x	x	x	
SystemC Compiler	x	x	x		x
Design Analyzer	x	x	x	x	

Installing the Software

To download and install the synthesis tools from the Web or by FTP, follow the procedures described in "Downloading and Installing the Software by EST" on page 2-2.

To transfer the files from the Synthesis CD to your system, follow the installation procedure described in "Installing Product Files From a CD" on page 2-7.

On the sparcOS5 platform, you can choose to install either version C (sf3) or D (sf4) of the Synopsys Integrator for Falcon Framework product, but not both. On the hp32 platform, you can install only version D (sf4).

Example 2-1 on page 2-10 shows a sample Synopsys media installation script for the synthesis tools.

Configuring the Synthesis Tools

This section describes how to

- Set up the synthesis tools for each user

- Set up the systemwide defaults

- Set up SystemC Compiler for Each User

- Configure the Browser for Physical Compiler and Design Vision Online Help

Setting Up the Synthesis Tools for Each User

To set up a new synthesis tools user,

1. Add the directory for the synthesis executable files to the PATH environment variable.

    If you are using the C shell, add the following line to the .cshrc file:

    set path=($SYNOPSYS/*platform*/syn/bin $path)

    If you are using the Bourne, Korn, or Bash shell, add the following line to the .profile, .kshrc, or .bashrc file:

    PATH=$SYNOPSYS/*platform*/syn/bin:$PATH
    export PATH

    Replace *platform* with the appropriate platform (see "Products and Supported Platforms" on page 1-6).

    When you install the synthesis files, a copy of the synthesis setup file is placed in $SYNOPSYS/admin/setup/.synopsys_dc.setup. The .synopsys_dc.setup file contains the system defaults for the synthesis tools. You can modify this file to customize the settings for your environment.

2. Place a .synopsys_dc.setup file in the user's home directory.

    If you are using the C shell, enter

    % cp $SYNOPSYS/admin/setup/.synopsys_dc.setup ~/.synopsys_dc.setup

    If you are using the Bourne, Korn, or Bash shell, enter

    # cp $SYNOPSYS/admin/setup/.synopsys_dc.setup $HOME/.synopsys_dc.setup

    You can modify this file to customize the settings for each user.

3. To use a graphical user interface (GUI), such as Design Analyzer, you must also add the X Window System executable files to the PATH environment variable.

   If you are using the C shell, add the following line to the .cshrc file:

   set path=(/*usr*/dt/bin /*usr*/bin/X11 $path)

   For Solaris 8 or 9, add

   set path=(/*usr*/dt/bin /*usr*/openwin/bin $path)

   If you are using the Bourne, Korn, or Bash shell, add the following line to the .profile, .kshrc, or .bashrc file:

   PATH=/*usr*/dt/bin:/*usr*/bin/X11:$PATH
   export PATH

   For Solaris 8 or 9, add

   PATH=/*usr*/dt/bin:/*usr*/openwin/bin/X11:$PATH
   export PATH

Setting Up the Systemwide Defaults

If you are using the Design Analyzer product, you can customize the display for all users at a site by modifying the Design Analyzer application defaults (app-defaults) file. This file is placed in the following location during installation:

$SYNOPSYS/admin/setup/Design_analyzer

To see a list of available colors for the Solaris 7 and 8 platforms, enter

```
% more /usr/openwin/lib/X11/rgb.txt
```

For all other platforms, enter

```
% more /usr/lib/X11/rgb.txt
```

To see a list of available fonts, enter

```
% xlsfonts | more
```

To install the changes, copy the modified app-defaults file into the systemwide app-defaults location, which varies from site to site. To find the systemwide location at your site, contact your system administrator.

Note:
   You must have root access privileges to install this systemwide defaults file.

If your app-defaults location is in X11 (a common location), install the Design_analyzer file by entering a command similar to the one in the following example:

```
% cp $SYNOPSYS/admin/setup/Design_analyzer /usr/openwin/lib/X11/app-defaults

% cp $SYNOPSYS/admin/setup/Design_analyzer /usr/lib/X11/app-defaults
```

You can customize the GUI display for an individual Design Analyzer user by adding color and font definitions to the .Xdefaults file in each user's login directory. Values defined in the .Xdefaults file override the values in the systemwide app-defaults file.

If you are using the Design Vision or Physical Compiler GUI tools, see the appropriate online Help system for information about customizing the tool environment.

Setting up SystemC Compiler for Each User

To set up a SystemC Compiler user, in addition to the other synthesis settings, you must define the absolute path to a C++ compiler and the compiler options.

If you are using the C shell, add the following lines to the .cshrc file:

```
setenv SYSTEMC_CPP "compiler_home options"
```

If you are using the Bourne, Korn, or Bash shell, add the following lines to the .profile, .kshrc, or .bashrc file:

```
SYSTEMC_CPP=compiler_home options
export SYSTEMC_CPP
```

For the GNU C++ Compiler version 2.95.2 or later (or version 3.2 for Linux), replace *compiler_home* with the absolute path to the GNU C++ Compiler, and replace *options* with the typical compiler options you use. For example,

```
setenv SYSTEMC_CPP "/usr/local/bin/gcc -E -C"
```

For the Sun SparcWorks C++ Compiler (version 5.0 or later), replace *compiler_home* with the absolute path to Sun SparcWorks C++ Compiler, and replace *options* with the typical compiler options you use. For example,

```
setenv SYSTEMC_CPP "/usr/local/bin/cc -E -xCC -Xc"
```

The SystemC Compiler default path to the SystemC library include files is $SYNOPSYS/auxx/systemc/include. To define a different path to the SystemC library include files, specify the `-I` option for SYSTEMC_CPP. For example,

```
setenv SYSTEMC_CPP "/usr/local/bin/gcc -E -C -I /my_systemc/
include"
```

Configuring the Browser for Physical Compiler and Design Vision Online Help

The Physical Compiler and Design Vision online Help systems are browser-based HTML Help systems. For optimal viewing, use Netscape Navigator version 4.78 for UNIX. These Help systems are not supported in Netscape Navigator version 6 or later.

Important:

When you use online Help from within the GUI, the Netscape executable file must be on the UNIX path.

Both Help systems make extensive use of Java applets, JavaScript, and style sheets. In your browser preferences, select the Advanced category and make sure that

- The Enable Java, Enable JavaScript, and Enable Style Sheets options are all selected

- The Enable Java Plugin option is deselected

You can open either Help system from within its respective GUI tool or open it stand-alone in Netscape Navigator.

Installing Optional Tools

The synthesis media installation script automatically installs most of the synthesis tools. However, the following tools require manual setup or installations:

- Synopsys Integrator for Falcon Framework

- Power Compiler VPOWER

- SoCBIST

Installing Synopsys Integrator for Falcon Framework

To complete the setup for the Synopsys Integrator for Falcon Framework product, set the `SYNOPSYS_IFF_ROOT` environment variable to point to the Synopsys integrator directory.

When asked for the Falcon Framework version, enter

- C if you selected the sf3 product from the installation script

- D if you selected the sf4 product from the installation script

   Note:
      You can install Falcon Framework version C or D, but not both. Version C is supported only on the Solaris 8 (sparcOS5) operating system; version D is supported on both HP-UX 11.0 or 11i (hp32) and Solaris 8 (sparcOS5) operating systems.

If you are using the C shell, add the following line to the .cshrc file:

```
setenv SYNOPSYS_IFF_ROOT $SYNOPSYS/platform/syn/interfaces/mentorC
```

If you are using the Bourne, Korn, or Bash shell, add the following lines to the .profile file:

```
SYNOPSYS_IFF_ROOT=$SYNOPSYS/platform/syn/interfaces/mentorC
export SYNOPSYS_IFF_ROOT
```

Replace *platform* with one of the following: hp32 or sparcOS5.

Installing Power Compiler VPOWER

VPOWER is the Power Compiler interface to VCS, the Cadence Verilog-XL and NC-Verilog simulators, and the MTI Verilog simulator. VPOWER contains user tasks that allow you to monitor toggle activity during simulation and to output the information in a form readable by Power Compiler. To use VPOWER, link the user tasks to the executable file of your simulator.

The following sections describe the steps for static-linking VPOWER with Verilog-XL and VCS simulators only. For information about linking VPOWER with other simulators, see the *Power Compiler User Guide*.

Verilog-XL Simulator

The following procedure describes how to link VPOWER to a version of the Verilog-XL simulator that contains the standard features you normally use at your site and includes the toggle count utilities needed for Power Compiler.

Note:

> You must perform this installation on a machine that has access to your Verilog-XL simulator vendor distribution.

Consult your Verilog system administrator to obtain the following information before beginning the VPOWER installation:

- The directory path to your Verilog .o, .a, and .h files

- The directory location of your central Verilog distribution, for obtaining a current site copy of the veriuser.c file

This installation requires modification of your veriuser.c file. By obtaining a current site copy of the veriuser.c file, you can be sure to include any current site modifications when you modify this file.

To install VPOWER,

1. Change to the Synopsys vpower directory.

2. Modify a copy of your site veriuser.c file.

3. Link the VPOWER user tasks to the simulation executable file.

4. Copy the linked executable file.

The following sections describe these steps.

Changing to the Synopsys power Directory. All directories listed are relative to the root of the vpower directory: $SYNOPSYS/auxx/syn/power/vpower.

To change to the Synopsys vpower directory,

1. Make sure the environment variable $SYNOPSYS is set.

    ```
    % echo $SYNOPSYS
    ```

    If it is not set, set it to the correct value.

    ```
    % setenv $SYNOPSYS root_directory
    ```

2. Change to the Synopsys vpower directory.

    ```
    % cd $SYNOPSYS/auxx/syn/power/vpower
    ```

Modifying the veriuser.c File. To modify the veriuser.c file to define the new toggle count utilities,

1. Change to the vxl/vxl.sample directory, and review the sample veriuser.c file, which shows the edits you will have to make.

    ```
    % cd vxl/vxl.sample
    ```

2. Copy your current site version of veriuser.c into the sample directory. To copy veriuser.c, you must know the directory location of your central Verilog distribution.

    ```
    % cp site_location_dir_path/veriuser.c .
    ```

    By using a current site copy of veriuser.c, you ensure that any existing customizations are included in the VPOWER installation.

3. As shown in the sample veriuser.c file, make the following changes in your current site copy of veriuser.c:

- Add the following line:

```
# include "tc_extern.h"
```

- Add the following user tasks:

```
{usertask, 0, 0, 0, tc_set, tc_set_sync, "$toggle_set", 1},
{usertask, 0, 0, 0, tc_start, 0, "$toggle_start", 1},
{usertask, 0, 0, 0, tc_stop, 0, "$toggle_stop", 1},
{usertask, 0, 0, 0, tc_reset, 0, "$toggle_reset", 1},
{usertask, 0, 0, 0, tc_compatibility, 0, "$toggle_count", 1},
{usertask, 0, toggle_report_check, 0, toggle_report, 0, "$toggle_report", 0},
{usertask, 0, 0, 0, read_lib_saif, tc_lib_sync, "$read_lib_saif", 1},
{usertask, 0, 0, 0, read_rtl_saif, tc_set_sync, "$read_rtl_saif", 1},
```

- Comment out the following line:

```
char *veriuser_version_str = "";
```

4. Save your modified veriuser.c file.

5. Exit your text editor and remain in the sample directory to link the executable file.

Linking User Tasks to the Simulation Executable File.
VPOWER provides two ways to link the user tasks to your simulator executable file: by using the vconfig utility or by using a UNIX makefile. Each method links your simulator to the VPOWER user tasks. Choose the method that you find familiar or comfortable.

Using vconfig to Link the Executable File. The vconfig utility creates a script called cr_vlog. The cr_vlog script links your Verilog-XL simulator's executable file to the VPOWER user tasks. You must define the name of the executable file created by cr_vlog, for example, verilog_toggle.

To use the vconfig method to link your executable file,

1. Use your vconfig utility or an equivalent utility to generate the cr_vlog script or an equivalent script.

2. In the script, set an environment variable pointing to the directory of the generated library archive. For example (if you are using Solaris 7 or later),

    ```
    setenv PPLILIB "../../lib-sparcOS5/libvpower.a"
    ```

3. In cr_vlog, look for the line that includes the math libraries:

    ```
    -lm \
    ```

4. Add a line above this line to include the libvpower.a library. For example,

    ```
    $PPLILIB \
    -lm \
    ```

5. Run cr_vlog.

    ```
    % cr_vlog
    ```

    This script links your executable file to the VPOWER user tasks and creates the customized executable file called verilog_toggle. For details about linking the programmable language interface (PLI) by using the vconfig utility, see the *Power Compiler User Guide*.

Proceed to "Copying the Linked Executable File" on page 3-16.

Using a Makefile to Link the Executable File. Using the UNIX `make` command, you can use a makefile to link your Verilog-XL executable file to the VPOWER user tasks. The makefile creates a modified executable file called verilog_toggle.

Two makefiles exist: Makefile.sol and Makefile.hp.

To use the makefile method to link your executable file,

1. Using a text editor such as vi, edit the appropriate makefile to set variable values for VERILOG_LIB and VERILOG_INC.

   Modify the lines in the makefile to read according to your data. For example, enter

   ```
   VERILOG_LIB = path1
   VERILOG_INC = path2
   ```

   where *path1* is the path to your Verilog distribution .o and .a files, and *path2* is the path to your Verilog distribution .h files.

   The VERILOG_LIB variable must point to the directory path of the vlog.o and omnitasks.o files. The VERILOG_INC variable must point to the directory path of the acc_user.h and veriuser.h files.

2. Save the modified makefile and exit your text editor.

3. Use the make utility to link the executable file.

   ```
   % make -f Makefile.platform
   ```

   The *platform* extension is sol or hp.

   The make command uses the modified makefile to link your executable file, creating a customized executable file called verilog_toggle.

Copying the Linked Executable File. After you create your customized executable file, change the permissions so that the file is not writable, and copy it to a directory suitable for group access.

Enter the following commands at the UNIX prompt:

```
% chmod ogu-w verilog_toggle
```

This removes write access to other, group, and user.

```
% cp verilog_toggle site_verilog_bin_location
```

This copies the file to the site_verilog_bin_location directory for group access.

VCS Simulator

The following procedure describes how to link VPOWER to a version of VCS that contains the standard features you normally use at your site and includes the toggle count utilities needed for Power Compiler.

Note:
   The PLI library has been tested with VCS version 3.0 and later versions.

To install VPOWER,

1. Change to the Synopsys vpower directory.

2. Modify a copy of the PLI table file.

3. Compile the simulation executable file.

The following sections describe these steps.

Changing to the Synopsys vpower Directory. All directories listed are relative to the root of the vpower directory: $SYNOPSYS/auxx/syn/power/vpower.

1. Make sure the environment variable $SYNOPSYS is set.

   ```
   % echo $SYNOPSYS
   ```

   If it is not set, set it to the correct value.

   ```
   % setenv $SYNOPSYS synthesis_root_directory
   ```

2. Change to the Synopsys vpower directory.

   ```
   % cd $SYNOPSYS/auxx/syn/power/vpower
   ```

Modifying the PLI Table File. To modify the PLI table file (vpower.tab) to define the new toggle count utilities,

1. Change to the vcs/vcs.sample directory, and review the sample vpower.tab file, which shows the edits you will have to make.

   ```
   % cd vcs/vcs.sample
   ```

2. Make the necessary changes to the vpower.tab file.

Compiling the Simulation Executable File. VCS is a compiled simulator, so you must compile your designs along with VCS libraries to make a simulation executable file. To add PLI functionality to the simulation executable file, you need to link an extra PLI library when you compile your designs.

For Solaris the appropriate PLI library is

../../lib-sparcOS5/libvpower.a

You normally get a VCS simulation executable file by entering the following command at the UNIX prompt:

```
% vcs -Mupdate your_verilog_design_files compiler_options
```

To link with the PLI library, enter

```
% vcs -Mupdate \
    -P $SYNOPSYS/auxx/syn/power/vpower/vcs/vcs.sample/vpower.tab \
   your_verilog_design_files compiler_options \
   $SYNOPSYS/auxx/syn/power/vpower/lib-sparcOS5/libvpower.a
```

This generates an executable file called simv that includes PLI functionality.

Note:

You can copy vpower.tab and libvpower.a into any file locations that are convenient for you.

Using SoCBIST

To insert SoCBIST into your design, you need DFT Compiler, which installs with the synthesis tools. You also need TetraMAX if you want to use the SoCBIST pattern generation functionality. You can install TetraMAX as an overlay on the synthesis tools or as a stand-alone installation. For required SoCBIST environment variables, see "Setting Up the User Environment" on page 18-6.

Verifying the Synthesis Tools Installation

Note:

The Synopsys Common Licensing (SCL) software must be installed and `SNPSLMD_LICENSE_FILE` or `LM_LICENSE_FILE` must be defined before you can verify the synthesis tools installation. For information on installing SCL, see "Acquiring a License" on page 1-15.

To verify installation,

1. Make sure you are in a directory where you have read/write privileges:

   `% cd $HOME`

2. Invoke one of the synthesis tools on a licensed machine. For example, invoke Design Compiler, Library Compiler, Design Analyzer, or Design Vision by entering one of the following commands:

   `% $SYNOPSYS/platform/syn/bin/dc_shell`

   `% $SYNOPSYS/platform/syn/bin/lc_shell`

   `% $SYNOPSYS/platform/syn/bin/design_analyzer`

   `% $SYNOPSYS/platform/syn/bin/design_vision`

   Replace *platform* with the appropriate platform.

   For the most recent information about tool-specific platform support, see the documentation for your product.

Note:

You can verify other synthesis tools by using the preceding command. Simply replace the executable file name with the name of another synthesis tool.

If you get the correct prompt, or if a GUI appears, the installation was successful.

4

Installing AMPS (version U-2003.03)

This chapter contains the following sections:

- Installing the Software

- Setting Up AMPS for Each User

- Verifying the AMPS Installation

To ensure a successful installation, complete the following procedures before beginning the installation process:

- Create the Synopsys root directory (see "Creating the Synopsys Root Directory" on page 1-18).

- Define the `SYNOPSYS` environment variable (see "Defining the SYNOPSYS Environment Variable" on page 1-19).

- Have your license server running and have the appropriate license keys installed (see "Acquiring a License" on page 1-15).

Installing the Software

To download and install AMPS from the Web or by FTP, follow the procedures described in "Downloading and Installing the Software by EST" on page 2-2.

To install the AMPS software from the CD, follow the installation procedure described in "Installing Product Files From a CD" on page 2-7. Example 2-2 on page 2-13 shows a Synopsys media installation script for PrimeTime. AMPS is installed in a similar manner.

The AMPS tool is on the PathMill CD. AMPS is a stand-alone product and cannot be installed over an existing Synopsys product, including a prior version of AMPS. You must create a new directory for AMPS.

Setting Up AMPS for Each User

To set up a new AMPS tool user, add the AMPS directory containing the executable file to the PATH environment variable.

If you are using the C shell, add the following line to the .cshrc file:

```
set path=($SYNOPSYS/platform/amps/bin $path)
```

If you are using the Bourne, Korn, or Bash shell, add the following line to the .profile or .kshrc file:

```
PATH=$SYNOPSYS/platform/amps/bin:$PATH
export PATH
```

Replace *platform* with the appropriate platform (see "Products and Supported Platforms" on page 1-6).

Verifying the AMPS Installation

To verify the AMPS installation,

1. Make sure you are in a directory where you have read/write privileges:

    ```
    % cd $HOME
    ```

2. Invoke the tool by entering the following command:

    ```
    % $SYNOPSYS/platform/amps/bin/amps
    ```

    Replace *platform* with the appropriate platform (see "Products and Supported Platforms" on page 1-6).

    If you see information about the product version, production date, and copyright, the installation was successful.

5

Installing Arcadia (version U-2003.03)

This chapter contains the following sections:

- Installing the Software

- Setting Up Arcadia for Each User

- Verifying the Arcadia Installation

To ensure a successful installation, complete the following procedures before beginning the installation process:

- Create the Synopsys root directory (see "Creating the Synopsys Root Directory" on page 1-18).

- Have your license server running and have the appropriate license keys installed (see "Acquiring a License" on page 1-15).

Installing the Software

To download and install Arcadia from the Web or by FTP, follow the procedures described in "Downloading and Installing the Software by EST" on page 2-2.

To install the Arcadia software from the CD, follow the installation procedure described in "Installing Product Files From a CD" on page 2-7. Example 2-1 on page 2-10 shows a Synopsys media installation script for the synthesis tools. Arcadia is installed in a similar manner.

Arcadia is a stand-alone product and cannot be installed over an existing Synopsys product, including a prior version of Arcadia. You must create a new directory for Arcadia.

Setting Up Arcadia for Each User

To set up a new Arcadia tool user,

- If you are using the C shell, source the CSHRC_platform file located in the install directory.

```
% cd install_directory
% source CSHRC_platform
```

The install script for Arcadia creates a CSHRC_platform file for each platform installed. The term *platform* is replaced with the platform you installed.

The CSHRC_platform file contains the line

```
set path=(install_directory/platform/arc/bin $path)
```

where *install_directory* is the directory in which the tool has been installed.

If you don't source the CSHRC_platform file, copy the preceding line and set the path from that file.

- If you are using the Bourne or Korn shell, add the following line to the .profile file or .kshrc file:

```
PATH=install_directory/platform/arc/bin:$PATH
export PATH
```

Replace *platform* with the appropriate platform (see "Products and Supported Platforms" on page 1-6).

Verifying the Arcadia Installation

To verify the Arcadia installation,

1. Make sure you are in a directory where you have read/write privileges:

```
% cd $HOME
```

2. Invoke the tool by entering the following command:

```
% DBCONVERT --version
```

If you see information about the product version, production date, and copyright, the installation was successful.

3. Run the Arcadia GUI on each installed platform by entering the following command:

```
% $SYNOPSYS/platform/arc/bin/sviewer
```

4. Exit the GUI by choosing File > Exit in any GUI window.

6

Installing Cadabra (version 7.0)

This chapter contains the following sections:

- Installing the Software

- Setting the Environment Variables

- Verifying the Cadabra Installation

- Customer Support

To ensure a successful installation, complete the following procedure before beginning the installation process:

- Have your license server running and have the appropriate license keys installed (see "Acquiring a License" on page 15).

Installing the Software

Cadabra is a stand-alone product and cannot be installed over an existing Synopsys product, including a prior version of Cadabra. You must create a new directory for Cadabra.

To download and install Cadabra by electronic software transfer (EST),

1. Create a Cadabra installation directory and change to that directory. For example, enter

   ```
   % mkdir /u/edatools/cadabra-version
   % cd /u/edatools/cadabra-version
   ```

2. Download the software to the installation directory.

3. Uncompress and untar the files.

   ```
   % gzip -dc cadabra_platform_version.tar.gz | tar xvf -
   ```

   This command creates a Cadabra subdirectory named after the release of Cadabra that you are installing.

To install Cadabra from a CD,

1. Mount the CD by using the appropriate command for your operating system. For example, enter

   ```
   % mount -o ro /dev/dsk/c2t1d4s0 /cdrom
   ```

   Note:

   Mounting instructions are different for each platform. See your system documentation for the correct CD mounting commands.

Also, for sparcOS5 with vold (the volume management daemon for managing CD and floppy devices), the /cdrom directory already exists and the CD is automatically mounted. Therefore, use cd /cdrom/cdrom0 instead of cd /cdrom.

2. Create a Cadabra installation directory and change to that directory. For example,

```
% mkdir /u/edatools/cadabra-version
% cd /u/edatools/cadabra-version
```

3. Uncompress and untar the files.

```
% gzip -dc /cdrom/cadabra7.0/cadabra_platform_version.tar.gz | tar xvf -
```

This command creates a Cadabra subdirectory named after the release of Cadabra that you are installing.

4. Unmount the CD by using the appropriate command for your operating system. For example, enter

```
% umount /cdrom
```

Note:

If you are running the volume management daemon, use the eject command to unmount the CD.

Setting the Environment Variables

This section discusses the following environment variables:

- CADABRAHOME

- LM_LICENSE_FILE

It is recommended that you place these variables in your $HOME/.cshrc or $HOME/.profile file as your default settings.

Setting the CADABRAHOME Environment Variable

Follow these steps.

1. Set the $CADABRAHOME environment variable to point to your Cadabra installation subdirectory.

   - If you are using the C shell, add the following line:

     ```
     % setenv CADABRAHOME /u/edatools/cadabra-version
     ```

   - If you are using the Bourne shell, add these lines:

     ```
     % CADABRAHOME=/u/edatools/cadabra-version
     export CADABRAHOME
     ```

2. Add $CADABRAHOME/bin to your search path:

   - If you are using the C shell, enter

     ```
     set path=($CADABRAHOME/bin $path)
     ```

   - If you are using the Bourne shell, enter

     ```
     PATH=$CADABRAHOME/bin:$PATH
     export PATH
     ```

Setting the LM_LICENSE_FILE Environment Variable

To enable Cadabra to check out a license, you must set the
`LM_LICENSE_FILE` environment variable.

- If you are using the C shell, enter

    ```
    % setenv LM_LICENSE_FILE 27000@my_server
    ```

- If you are using the Bourne shell, enter

    ```
    % LM_LICENSE_FILE=27000@my_server
    export SNPSLMD_LICENSE_FILE
    ```

The port and host name variables correspond to the TCP port and
license server host name specified in the SERVER line of the
Synopsys license file. To ensure better performance, it is
recommended that you use *port@host* rather than using the path to
the license file.

You can specify multiple license files by separating each entry with a
colon (:).

Verifying the Cadabra Installation

To verify the Cadabra installation,

1. Make sure you are in a directory where you have read/write privileges.

   ```
   % cd $HOME
   ```

2. If you are using a display that is not local, set the DISPLAY environment variable.

   ```
   % setenv DISPLAY my_display:0.0
   ```

3. Invoke the tool by entering

   ```
   % tool_name
   ```

   Replace *tool_name* with abracad, abramap, or kazam.

   If the product GUI appears, the installation was successful.

4. Exit the GUI by choosing File > Exit in any GUI window.

Customer Support

For information about accessing customer support, see "Customer Support" on page xxi. You can also send an e-mail message to Cadabra Support at cadabrasupport@synopsys.com.

7

Installing Floorplan Compiler (version V-2003.12)

This chapter contains the following sections:

- Installing the Software

- Setting Up Floorplan Compiler for Each User

- Verifying the Floorplan Compiler Installation

To ensure a successful installation, complete the following procedures before beginning the installation process:

- Create the Synopsys root directory (see "Creating the Synopsys Root Directory" on page 1-18).

- Define the SYNOPSYS environment variable (see "Defining the SYNOPSYS Environment Variable" on page 1-19).

- Have your license server running and have the appropriate license keys installed (see "Acquiring a License" on page 1-15).

Installing the Software

To download and install Floorplan Compiler from the Web or by FTP, follow the procedures described in "Downloading and Installing the Software by EST" on page 2-2.

To install the Floorplan Compiler software from the CD, follow the installation procedure described in "Installing Product Files From a CD" on page 2-7. Example 2-1 on page 2-10 shows a Synopsys media installation script for the synthesis tools. Floorplan Compiler is installed in a similar manner.

Setting Up Floorplan Compiler for Each User

To set up a new Floorplan Compiler tool user, add the Floorplan Compiler directory containing the executable file to the PATH environment variable.

If you are using the C shell, add the following line to the .cshrc file:

```
set path=($SYNOPSYS/platform/fpc/bin $path)
```

If you are using the Bourne, Korn, or Bash shell, add the following line to the .profile or .kshrc file:

```
PATH=$SYNOPSYS/platform/fpc/bin:$PATH
export PATH
```

Replace *platform* with the appropriate platform (see "Products and Supported Platforms" on page 1-6).

Configuring the Browser for Floorplan Compiler Online Help

The Floorplan Compiler online Help system is a browser-based HTML Help system. For optimal viewing, use Netscape Navigator version 4.78 for UNIX. This Help system is not supported in Netscape Navigator version 6 or later.

Important:

When you use online Help from within the GUI, the Netscape executable file must be on the UNIX path.

Floorplan Compiler Help makes extensive use of Java, JavaScript, and style sheets. In your browser preferences, select the Advanced category and make sure that

- The Enable Java applets, Enable JavaScript, and Enable Style Sheets options are all selected

- The Enable Java Plugin option is deselected

You can open the Help system from within the Floorplan Compiler GUI tool or stand-alone in Netscape Navigator.

Verifying the Floorplan Compiler Installation

To verify the Floorplan Compiler installation,

1. Make sure you are in a directory where you have read/write privileges:

   ```
   % cd $HOME
   ```

2. Invoke the tool by entering the following command:

   ```
   % $SYNOPSYS/platform/fpc/bin/fpc_shell
   ```

   Replace *platform* with the appropriate platform (see "Products and Supported Platforms" on page 1-6).

   If you see information about the product version, production date, and copyright, the installation was successful.

3. Exit fpc_shell by entering `exit` on the command line.

4. Run the Floorplan Compiler GUI on each installed platform by entering the following command:

   ```
   % $SYNOPSYS/platform/fpc/bin/fpc_gui
   ```

   Replace *platform* with the appropriate platform (see "Products and Supported Platforms" on page 1-6).

5. Exit the GUI by choosing File > Exit in any GUI window.

8

Installing Formality (version V-2003.12)

This chapter contains the following sections:

- Installing the Software

- Setting Up Formality for Each User

- Verifying the Formality Installation

To ensure a successful installation, complete the following procedures before beginning the installation process:

- Create the Synopsys root directory (see "Creating the Synopsys Root Directory" on page 1-18).

- Define the `SYNOPSYS` environment variable (see "Defining the SYNOPSYS Environment Variable" on page 1-19).

- Have your license server running and have the appropriate license keys installed (see "Acquiring a License" on page 1-15).

Installing the Software

To download and install Formality from the Web or by FTP, follow the procedures described in "Downloading and Installing the Software by EST" on page 2-2.

To install the Formality software from the CD, follow the installation procedure described in "Installing Product Files From a CD" on page 2-7. Example 2-2 on page 2-13 shows a Synopsys media installation script for the PrimeTime tool. Formality is installed in a similar manner.

Formality is a stand-alone product and cannot be installed over an existing Synopsys product, including a prior version of Formality. You must create a new directory for Formality.

Setting Up Formality for Each User

To set up a new Formality tool user, add the Formality directory containing the executable file to the `PATH` environment variable.

If you are using the C shell, add the following line to the .cshrc file:

```
set path=($SYNOPSYS/platform/fm/bin $path)
```

If you are using the Bourne, Korn, or Bash shell, add the following line to the .profile, .kshrc, or .bashrc file:

```
PATH=$SYNOPSYS/platform/fm/bin:$PATH
export PATH
```

Replace *platform* with the appropriate platform (see "Products and Supported Platforms" on page 1-6).

For information about the Synopsys setup file, see the *Formality User Guide*.

Verifying the Formality Installation

To verify the Formality installation,

1. Make sure you are in a directory where you have read/write privileges:

   `% ` **`cd $HOME`**

2. Invoke the Formality shell by entering the following command:

   `% ` **`$SYNOPSYS/`*`platform`*`/fm/bin/fm_shell`**

   Replace *platform* with the appropriate platform (see "Products and Supported Platforms" on page 1-6).

   If you see information about the product version, production date, and copyright, the installation was successful.

3. Exit fm_shell by entering `exit` on the command line.

4. Run the Formality GUI on each installed platform by entering the following command:

   `% ` **`$SYNOPSYS/`*`platform`*`/fm/bin/formality`**

5. Exit the GUI by choosing File > Exit in any GUI window.

9

Installing FPGA Compiler II (version T-2003.09-FC3.8) on UNIX Platforms

This chapter explains how to install FPGA Compiler II on a workstation running Solaris or HP-UX. For instructions on how to install FPGA Compiler II on a system running a Windows NT platform, see Chapter 10, "Installing FPGA Compiler II (version T-2003.09-FC3.8) on Windows Platforms."

This chapter contains the following sections:

- Product Support

- System Requirements

- Installing the Software

- Enabling Online Document Readers

Product Support

The FPGA Solutions Web page is regularly updated. Check it for application notes, online Help updates, and other valuable information:

http://www.synopsys.com/products/fpga/

For additional installation instructions, go to

http://www.synopsys.com/products/fpga/install_fc2.htm

System Requirements

Table 9-1 shows the minimum system requirements for UNIX installations of FPGA Compiler II.

Table 9-1   UNIX System Requirements

Operating system	Memory	Disk space for installation
Solaris 7, 8 (32-bit mode only)	64 MB of RAM 140 MB of swap space[1]	100–150 MB
HP-UX 11.0, 11.11 (11i) (32-bit mode only)	64 MB of RAM 140 MB of swap space[1]	100–150 MB

1.   *200 MB of virtual memory (RAM + swap space) is recommended for most designs. Larger designs might require more memory.*

Installing the Software

Mounting the CD might require root access privileges. If you do not have root access privileges, see your system administrator for instructions on mounting the CD.

To install FPGA Compiler II,

1. Mount the CD-ROM, following the instructions in "Mounting the CD" on page 2-8.

2. Make sure that your licensing software is installed. For information on Synopsys Common Licensing (SCL) software, see "Acquiring a License" on page 1-15.

3. Change directory to the UNIX directory of the CD-ROM. For example,

    ```
    % cd /cdrom0/UNIX
    ```

4. Run the setup script setup.csh from the UNIX directory of the CD-ROM drive and follow the instructions.

5. For a typical shared installation, choose option 1 to install the software and set up the license path.

6. Next, choose option 1 for Solaris, option 2 for HP-UX, or option 3 for both platforms.

7. Enter the path to the network keys in the format *port@hostname* (for example, 27000@keyserv).

Enabling Online Document Readers

The *FPGA Compiler II User Guide* is available online in Portable Document Format (PDF).

To read this online document, you must have version 4.0 or later of Adobe Acrobat Reader with Search plug-in installed on your system. To install Acrobat Reader with Search plug-in, download the latest version of Acrobat Reader from the Adobe home page, at

http://www.adobe.com

For more information, see "Downloading and Installing Acrobat Reader from the Web" on page 23-3.

10

Installing FPGA Compiler II (version T-2003.09-FC3.8) on Windows Platforms

You can install the FPGA Compiler II software to run PC running Windows. The procedure is explained in the following sections:

- Product Support

- System Requirements for Windows

- Installing FPGA Compiler II

- Enabling Online Document Readers

Product Support

The FPGA Solutions page on the Synopsys World Wide Web site is regularly updated with the latest information. Check this page to find application notes, online help updates, and other valuable information:

http://www.synopsys.com/products/fpga/

For additional installation instructions, go to

http://www.synopsys.com/products/fpga/install_fc2.htm

System Requirements for Windows

Table 10-1 shows the minimum system requirements for installing FPGA Compiler II on Windows.

Table 10-1   Windows System Requirements

Operating system	Memory	Disk space for installation
Windows NT 4.0 (Service Pack 4 or later), Windows 98, Windows ME, or Windows 2000	32 MB of RAM 70 MB of swap space[1]	50–270 MB, depending on file system and partition size (50 MB for NTFS or small FAT partition and 270 MB for large FAT partition)

1.   100 MB of virtual memory (RAM + swap space) is recommended for most designs. Larger designs might require more memory.

Installing FPGA Compiler II

You can install FPGA Compiler II on a PC running Windows by downloading the tool from the Web or installing it from the CD.

Note:

Make sure that your licensing software is installed. For information on Synopsys Common Licensing (SCL) software, see "Acquiring a License" on page 1-15.

To install FPGA Compiler II from the Web,

* Go to

    http://www.synopsys.com/products/fpga/download_fc2.html

    and follow the instructions.

To install FPGA Compiler II from the CD, do the following:

1. Insert the FPGA Compiler II CD into your computer's CD drive.

    In most cases, the setup program automatically starts. If the setup program does not start automatically, run setup.exe from the CD directory.

2. Follow the instructions on the screen.

    As you move through the installation screens, note the following:

    -   You can install a subset of the available target devices to save disk space. To do this, select Custom in the Setup Type dialog box and follow the instructions.

- The program installation directory path cannot contain space characters.

Enabling Online Document Readers

The *FPGA Compiler II User Guide* is available online in Portable Document Format (PDF). The setup program installs this document in the directory where you installed the software.

To read the Synopsys FPGA online document, you must have Adobe Acrobat Reader version 4.0 or later installed on your system. Install Acrobat Reader version 4.0 by one of the following methods:

- To install Acrobat Reader on a Windows system from within FPGA Compiler II, enter the following command:

  ```
  CD_ROM_drive:\acrosrch\32bit\setup
  ```

- Download the latest Acrobat Reader from the Adobe home page, at

  http://www.adobe.com

  For more information, see "Downloading and Installing Acrobat Reader from the Web" on page 23-3.

11

Installing NanoSim (version V-2003.12)

This chapter contains the following sections:

- Installing the Software

- Setting Up NanoSim for Each User

- Verifying the NanoSim Installation

To ensure a successful installation, complete the following procedures before beginning the installation process:

- Create the Synopsys root directory (see "Creating the Synopsys Root Directory" on page 1-18).

- Have your license server running and have the appropriate license keys installed (see "Acquiring a License" on page 1-15).

Installing the Software

To download and install NanoSim from the Web or by FTP, follow the procedures described in "Downloading and Installing the Software by EST" on page 2-2.

To install the NanoSim software from the CD, follow the installation procedure described in "Installing Product Files From a CD" on page 2-7. Example 2-2 on page 2-13 shows a Synopsys media installation script for PrimeTime. NanoSim is installed in a similar manner.

The NanoSim subtools (ADFMI, NanoSim Integration with VCS, TurboWave, Verilog-A, VTRAN, and CosmosScope) are automatically installed with the NanoSim installation.

NanoSim can be installed as a stand-alone installation or with any of the tools (PowerMill and TimeMill) it comes packaged with.

Setting Up NanoSim for Each User

To set up a new NanoSim tool user,

- If you are using the C shell, source the CSHRC_platform file located in the install directory.

  ```
  % cd install_dir
  % source CSHRC_platform
  ```

  The install script for NanoSim creates a CSHRC_platform file for each platform installed. The term *platform* is replaced with the platform you installed.

The CSHRC_*platform* file sets the path for NanoSim, CosmosScope, and the NanoSim man pages.

```
set path=(install_directory/platform/ns/utilities/ \
    cosmos/ai_bin $path)
```

```
setenv MANPATH install_directory/doc/ns/man:$MANPATH
```

where *install_directory* is the directory where the tool has been installed.

If you don't source the CSHRC_platform file, copy the above line and set the path from that file.

- If you are using the Bourne, Korn, or Bash shell, add the following line to the .profile, .kshrc, or .bashrc file:

```
PATH=install_directory/platform/ns/utilities/ \
 cosmos/ai_bin:${PATH}
export Path
```

```
MANPATH=install_directory/doc/ns/man:$MANPATH
export MANPATH
```

Replace *platform* with the appropriate platform (see "Products and Supported Platforms" on page 1-6).

Verifying the NanoSim Installation

To verify the NanoSim installation,

1. Make sure you are in a directory where you have read/write privileges.

    ```
    % cd $HOME
    ```

2. Invoke the tool by entering the following command:

    ```
    % nanosim
    ```

    If you see information about the product version, production date, and copyright, the installation was successful.

3. Run the NanoSim GUI on each installed platform by entering the following command:

    ```
    % nanosimgui
    ```

4. Exit the GUI by choosing File > Exit in any GUI window.

12

Installing PathMill (version V-2003.12)

This chapter contains the following sections:

- Installing the Software

- Setting Up PathMill for Each User

- Verifying the PathMill Installation

To ensure a successful installation, complete the following procedures before beginning the installation process:

- Create the Synopsys root directory (see "Creating the Synopsys Root Directory" on page 1-18).

- Define the SYNOPSYS environment variable (see "Defining the SYNOPSYS Environment Variable" on page 1-19).

- Have your license server running and have the appropriate license keys installed (see "Acquiring a License" on page 1-15).

Installing the Software

To download and install PathMill from the Web or by FTP, follow the procedures described in "Downloading and Installing the Software by EST" on page 2-2.

To install the PathMill software from the CD, follow the installation procedure described in "Installing Product Files From a CD" on page 2-7. Example 2-2 on page 2-13 shows a Synopsys media installation script for PrimeTime. PathMill is installed in a similar manner.

PathMill is a stand-alone product and cannot be installed over an existing Synopsys product, including a prior version of PathMill. You must create a new directory for PathMill.

Setting Up PathMill for Each User

To set up a new PathMill tool user, add the PathMill directory containing the executable file to the PATH environment variable.

If you are using the C shell, add the following line to the .cshrc file:

```
set path=($SYNOPSYS/platform/pm/bin $path)
```

If you are using the Bourne, Korn, or Bash shell, add the following line to the .profile or .kshrc file:

```
PATH=$SYNOPSYS/platform/pm/bin:$PATH
export PATH
```

Replace *platform* with the appropriate platform (see "Products and Supported Platforms" on page 1-6).

Verifying the PathMill Installation

To verify the PathMill installation,

1. Make sure you are in a directory where you have read/write privileges:

   ```
   % cd $HOME
   ```

2. Invoke the tool by entering the following command:

   ```
   % $SYNOPSYS/platform/pm/bin/pathmill
   ```

   Replace *platform* with the appropriate platform (see "Products and Supported Platforms" on page 1-6).

   If you see information about the product version, production date, and copyright, the installation was successful.

Installing PathMill (version V-2003.12)

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Installing PowerMill (version U-2003.03)

This chapter contains the following sections:

- Installing the Software

- Setting Up PowerMill for Each User

- Verifying the PowerMill Installation

To ensure a successful installation, complete the following procedures before beginning the installation process:

- Create the Synopsys root directory (see "Creating the Synopsys Root Directory" on page 1-18).

- Have your license server running and have the appropriate license keys installed (see "Acquiring a License" on page 1-15).

Installing the Software

To download and install PowerMill from the Web or by FTP, follow the procedures described in "Downloading and Installing the Software by EST" on page 2-2.

To install the PowerMill software from the CD, follow the installation procedure described in "Installing Product Files From a CD" on page 2-7. Example 2-2 on page 2-13 shows a Synopsys media installation script for PrimeTime. PowerMill is installed in a similar manner. The PowerMill subtools (ADFMI, TurboWave, and VTRAN) are automatically installed with the PowerMill installation.

PowerMill can be installed as a stand-alone installation or with any of the tools (NanoSim and TimeMill) it comes packaged with.

Setting Up PowerMill for Each User

To set up a new PowerMill tool user,

- If you are using the C shell, source the CSHRC_platform file located in the install directory.

  ```
  % cd install_dir
  % source CSHRC_platform
  ```

  The installation script for PowerMill creates a CSHRC_platform file for each platform installed. The term *platform* is replaced with the platform you installed.

The CSHRC_*platform* file sets the path for NanoSim and the NanoSim man pages.

```
set path=(install_directory/platform/ns/bin $path)

setenv MANPATH install_directory/doc/ns/man:$MANPATH
```

where *install_directory* is the directory where the tool has been installed.

If you don't source the CSHRC_*platform* file, copy the preceding line and set the path from that file.

- If you are using the Bourne, Korn, or Bash shell, add the following lines to the .profile or .kshrc file:

```
PATH=install_directory/platform/ns/bin:$PATH
export PATH

MANPATH=install_directory/doc/ns/man:$MANPATH
export MANPATH
```

Replace *platform* with the appropriate platform (see "Products and Supported Platforms" on page 1-6).

Verifying the PowerMill Installation

To verify the PowerMill installation,

1. Make sure you are in a directory where you have read/write privileges:

    ```
    % cd $HOME
    ```

2. Invoke the tool by entering the following command:

    ```
    % powrmill
    ```

    If you see information about the product version, production date, and copyright, the installation was successful.

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Installing PrimePower (version V-2003.12)

This chapter contains the following sections:

- Installing the Software

- Setting Up PrimePower for Each User

- Verifying the PrimePower Installation

To ensure a successful installation, have your license server running and have the appropriate license keys installed (see "Acquiring a License" on page 1-15).

Installing the Software

Beginning with version version V-2003.12, PrimePower can be
installed as a stand-alone tool only: It no longer overlays the
synthesis tools. You must install PrimePower in its own directory.

To install the software,

1. Download and install PrimePower from the Web or by FTP,
   following the instructions described in "Downloading and
   Installing the Software by EST" on page 2-2.

   Or

   Install the files from the PrimePower CD to your system, as
   explained in "Installing Product Files From a CD" on page 2-7.
   Example 2-1 on page 2-10 shows a Synopsys media installation
   script for the synthesis tools. PrimePower is installed in a similar
   manner.

   Note:
      When you are prompted to select the product you want to
      install, enter **pps**.

2. Make sure that your licensing software is installed. For
   information on SCL software, see "Acquiring a License" on
   page 1-15.

Setting Up PrimePower for Each User

To set up a new PrimePower tool user, add the PrimePower directory
containing the executable file to the PATH environment variable.

- If you are using the C shell, add the following line to the .cshrc file:

  ```
  set path=(/install_directory/platform/syn/bin $path)
  ```

- If you are using the Bourne, Korn, or Bash shell, add the following line to the .profile or .kshrc file:

  ```
  PATH=/install_directory/platform/syn/bin:$PATH
  export PATH
  ```

  Replace *platform* with the appropriate platform (see "Products and Supported Platforms" on page 1-6).

Verifying the PrimePower Installation

To verify the PrimePower installation,

1. Make sure you are in a directory where you have read/write privileges.

   ```
   % cd $HOME
   ```

2. Invoke the tool by entering the following command:

   ```
   % pp_shell
   ```

   If you see information about the product version, production date, and copyright, the installation was successful.

3. Exit pp_shell by entering `exit` on the command line.

4. Run the PrimePower GUI on each installed platform by entering the following command:

   ```
   % primepower &
   ```

5. Exit the GUI by choosing File > Exit in any GUI window.

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Installing PrimeTime (version V-2003.12)

This chapter contains the following sections:

- Installing the Software

- Setting Up PrimeTime for Each User

- Verifying the PrimeTime Installation

To ensure a successful installation, complete the following procedures before beginning the installation process:

- Create the Synopsys root directory (see "Creating the Synopsys Root Directory" on page 1-18).

- Have your license server running and have the appropriate license keys installed (see "Acquiring a License" on page 1-15).

Installing the Software

To download and install PrimeTime from the Web or by FTP, follow the procedures described in "Downloading and Installing the Software by EST" on page 2-2.

To install the PrimeTime software from the CD, follow the installation procedure described in "Installing Product Files From a CD" on page 2-7. Example 2-2 on page 2-13 shows a Synopsys media installation script for PrimeTime.

PrimeTime is a stand-alone product and cannot be installed over an existing Synopsys product, including a prior version of PrimeTime. You must create a new directory for PrimeTime.

Note:
   You can not install PrimeTime as an overlay product in the same directory as the synthesis tools.

Setting Up PrimeTime for Each User

PrimeTime does not require the $SYNOPSYS variable. If you have installed other Synopsys tools, such as the synthesis tools, that use the $SYNOPSYS variable, a conflict might arise. To avoid this, do the following:

- Set another variable for PrimeTime, for example, $STATIC.

- Set the PrimeTime $SYNOPSYS variable in a tool-specific setup file, not in the .profile or .cshrc file.

- Create an alias for PrimeTime in the .cshrc, .profile, or .bashrc files. For example,

For .cshrc files,

```
% alias pt_setup 'setenv SYNOPSYS /path/to/
PrimeTime_root; echo "PrimeTime tools setup "'
```

For .profile or .bashrc files,

```
% alias pt_setup = 'set SYNOPSYS=/path/to/PrimeTime_root;
echo "PrimeTime tools setup"'
```

Execute the alias before executing PrimeTime.

To set up a new PrimeTime user,

1. Add the PrimeTime directory containing the executable file to the PATH environment variable.

   If you are using the C shell, add the following line to the .cshrc file:

   ```
   set path=($SYNOPSYS/platform/syn/bin $path)
   ```

   If you are using the Bourne, Korn, or Bash shell, add the following line to the .profile, .kshrc, or .bashrc file:

   ```
   PATH=$SYNOPSYS/platform/syn/bin:$PATH
   export PATH
   ```

   Replace *platform* with the appropriate platform (see "Products and Supported Platforms" on page 1-6).

   Note:
   If you are using another variable "such as $STATIC" to define the PrimeTime root directory, substitute that variable for $SYNOPSYS in the remainder of this chapter.

2. Place a .synopsys_pt.setup file in the user's home directory.

   If you are using the C shell, enter

```
% cp $SYNOPSYS/admin/setup/.synopsys_pt.setup ~/.synopsys_pt.setup
```

If you are using the Bourne, Korn, or Bash shell, enter

```
# cp $SYNOPSYS/admin/setup/.synopsys_pt.setup $HOME/.synopsys_pt.setup
```

You can modify this file to customize the settings for each user.

Verifying the PrimeTime Installation

Note:

The Synopsys Common Licensing (SCL) software must be installed and SNPSLMD_LICENSE_FILE or LM_LICENSE_FILE must be defined before you can verify the PrimeTime tools installation. For information on installing SCL, see "Acquiring a License" on page 1-15.

To verify installation of PrimeTime,

1. Make sure you are in a directory where you have read/write privileges:

   ```
   % cd $HOME
   ```

2. Invoke the tool by entering one of the following commands on a licensed machine:

   ```
   % $SYNOPSYS/platform/syn/bin/pt_shell
   ```

   ```
   % $SYNOPSYS/platform/syn/bin/primetime
   ```

   Replace *platform* with the appropriate platform (see "Products and Supported Platforms" on page 1-6).

If you get the correct prompt, or if a GUI appears, the installation was successful.

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Installing RailMill (version U-2003.03)

This chapter contains the following sections:

- Installing the Software

- Setting Up RailMill for Each User

- Verifying the RailMill Installation

To ensure a successful installation, complete the following procedures before beginning the installation process:

- Create the Synopsys root directory (see "Creating the Synopsys Root Directory" on page 1-18).

- Have your license server running and have the appropriate license keys installed (see "Acquiring a License" on page 1-15).

Installing the Software

To download and install RailMill from the Web or by FTP, follow the procedures described in "Downloading and Installing the Software by EST" on page 2-2.

To install the RailMill software from the CD, follow the installation procedure described in "Installing Product Files From a CD" on page 2-7. Example 2-1 on page 2-10 shows a Synopsys media installation script for the synthesis tools. RailMill is installed in a similar manner.

RailMill is a stand-alone product and cannot be installed over an existing Synopsys product, including a prior version of RailMill. You must create a new directory for RailMill.

Setting Up RailMill for Each User

To set up a new RailMill tool user,

- If you are using the C shell, source the CSHRC_platform file located in the install directory.

```
% cd install_directory
% source CSHRC_platform
```

The install script for RailMill creates a CSHRC_platform file for each platform installed. The term *platform* is replaced with the platform you installed.

The CSHRC_platform file contains the line

```
set path=(/install_directory/platform/rm/bin $path)
```

where *install_directory* is the directory where the tool has been installed.

If you don't source the CSHRC_platform file, copy the above line and set the path from that file.

- If you are using the Bourne, Korn, or Bash shell, add the following line to the .profile or .kshrc file:

```
PATH=install_directory/platform/rm/bin:$PATH
export PATH
```

Replace *platform* with the appropriate platform (see "Products and Supported Platforms" on page 1-6).

Verifying the RailMill Installation

To verify the RailMill installation,

1. Make sure you are in a directory where you have read/write privileges.

```
% cd $HOME
```

2. Invoke the tool by entering the following command:

```
% railmill
```

If you see information about the product version, production date, and copyright, the installation was successful.

3. Run the RailMill GUI on each installed platform by entering the following command:

```
% $SYNOPSYS/platform/rm/bin/chipviewer
```

4. Exit the GUI by choosing File > Exit, and clicking Yes in the dialog box.

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Installing System Studio (version V-2003.12)

This chapter contains the following sections:

- Installing the Software

- Setting Up System Studio for Each User

- Verifying the System Studio Installation

- Troubleshooting Startup Problems

To ensure a successful installation, complete the following procedures before beginning the installation process:

- Create the Synopsys root directory (see "Creating the Synopsys Root Directory" on page 1-18).

- Define the `SYNOPSYS` environment variable (see "Defining the SYNOPSYS Environment Variable" on page 1-19).

- Have your license server running and have the appropriate license keys installed (see "Acquiring a License" on page 1-15).

Note:

For detailed information on operating systems and acquiring patches, see "Supported Platforms and Operating Systems" on page 1-2.

Installing the Software

To download and install System Studio from the Web or by FTP, follow the procedures described in "Downloading and Installing the Software by EST" on page 2-2.

To install the System Studio software from the CD, follow the installation procedure described in "Installing Product Files From a CD" on page 2-7. Example 2-1 on page 2-10 shows a Synopsys media installation script for the synthesis tools. System Studio is installed in a similar manner.

Setting Up System Studio for Each User

Set the defaults for each user according to the user's shell and operating system. Table 17-1 lists the path name and description of systemwide defaults for System Studio.

Table 17-1   System Studio Systemwide Defaults

Path name	Description
SYNOPSYS_CCSS	Identifies the System Studio installation directory. For example, $SYNOPSYS/sparcOS5/ccss.
CCSS_SIM_DIR	Path to the directory for code generation and simulation results (defaults to $HOME/ccss/sim)
CCSS_KEYS	Specifies the complete file name of the license file. If CCSS_KEYS is not set, the tool searches for other license keys in the following order: - SNPSLMD_LICENSE_FILE - LM_LICENSE_FILE

For C Shell Users

To use the C shell to set up a new System Studio tool user,

1. Add the System Studio executable directory to the `PATH` environment variable.

   Add the following line to the .cshrc file:

   ```
   setenv SYNOPSYS_CCSS ccss_home/platform/ccss
   setenv CCSS_SIM_DIR ccss_sim_dir
   set path = ($SYNOPSYS_CCSS/bin $path)
   ```

   Replace *platform* with the appropriate platform (see "Products and Supported Platforms" on page 1-6).

Note:

You can define CCSS_SIM_DIR, but if it is not set, the GUI provides a reasonable default.

2. Point to your license key file by adding one of the following lines to your ~/.cshrc file:

setenv CCSS_KEYS   /path/to/synopsys.lic

3. If the paths to the C++ compiler, debugger, and `make` command are not already included in your ~/.cshrc file, add the following line to your ~/.cshrc file:

```
set path = (compiler_home/bin make_home/bin $path)
```

4. To source the CCSS setup file, add the following line to your ~/.cshrc file:

```
 source $SYNOPSYS_CCSS/../gnupackages/source_me.csh
```

5. Make these changes effective by logging out and logging in again or by entering the following command:

```
% source ~/.cshrc
```

For Bourne Shell Users

To use the Bourne, Korn, or Bash shell to set up a new user,

1. In your $HOME directory, add the following lines to the appropriate user setup file (.profile, .kshrc, or .bashrc).

```
SYNOPSYS_CCSS=ccss_home/platform/ccss
export SYNOPSYS_CCSS

CCSS_SIM_DIR=ccss_sim_dir
export CCSS_SIM_DIR
```

```
PATH=$SYNOPSYS_CCSS/bin:$PATH
export PATH
```

Replace *platform* with the appropriate platform (see "Products and Supported Platforms" on page 1-6).

Note:

You can define CCSS_SIM_DIR, but if it is not set, the GUI provides a reasonable default.

2. If the System Studio license file will not be installed in the default location, add the following lines to your setup file:

```
CCSS_KEYS=lic_file
export CCSS_KEYS
```

3. If the paths to the C++ compiler, debugger, and `make` command are not already included in your setup file, add the following lines to it:

```
PATH=compiler_home/bin:make_home/bin:$PATH
export PATH
```

4. To source the CCSS setup file, add the following line to your setup file:

```
. $SYNOPSYS_CCSS/../gnupackages/source_me.sh
```

5. Make these changes effective by logging out and logging in again, or by entering

```
$. $HOME/setup_file
```

where *setup_file* is .profile, .kshrc, or .bashrc.

VHDL Simulation

If you intend to use the external simulation interface for VHDL cosimulation under the algorithmic domain of System Studio, you must ensure that the VHDL packages are analyzed before you use them. Your system administrator should analyze the files when System Studio is installed.

The relevant commands are

```
% cd $SYNOPSYS_CCSS/packages/vsscli/src
% vhdlan -nc ccss_vsscli_package.vhdl
% cd $SYNOPSYS_CCSS/platform/ccss/packages/bittrue/
vhdlsynopsys/src
% vhdlan -nc ccss_PACKAGE_SYNOPSYS.vhdl
LIB_0_0_1_PACKAGE_SYNOPSYS.vhdl
```

Verifying the System Studio Installation

To verify the System Studio installation,

1. Make sure you are in a directory where you have read/write privileges:

    ```
    % cd $HOME
    ```

2. Invoke the tool by entering the following command:

    ```
    % ccss &
    ```

If System Studio is correctly installed, this command invokes System Studio, displays the System Studio welcome screen, and then opens System Studio.

Troubleshooting Startup Problems

This section addresses common startup problems.

Key File Problems

To test the System Studio installation, start the System Studio Design Center. If the software does not start, check the contents of the key file as follows:

1. If you are using a network license file, check the first line of the key file and make sure the host name and the host ID match those of the machine on which the license is running.

   ```
   SERVER hostname hostid 26585
   ```

2. If you are using a network license file, check the second line of the key file and make sure the path to snpslmd exists and is correct.

   ```
   VENDOR snpslmd scl_root/platform/bin/snpslmd
   ```

   In this line, *platform* is the operating system keyword (see Table 1-1 on page 1-3). Make sure there are no blank lines and no leading or trailing spaces in the license file.

3. For all types of license files, make sure that all System Studio users have read access to the key file.

   Set the file permission for the key file with the following command:

   ```
   % chmod 644 $CCSS_KEYSS/ccss/admin/license/CCSS.keys
   ```

   Or, if you have defined the symbol CCSS_KEYS, use this command:

```
% chmod 644 $CCSS_KEYS
```

Then use the following command to check that the read access is correct:

```
% ls -l $SYNOPSYS_CCSS/../../ccss/admin/license/
CCSS.keys
```

You should see a report something like this:

```
-rw-r--r-- 1 thisuser group 4623 Apr 26 11:09 ccss.keys
```

Insufficient Interprocess Communication (IPC) Semaphores

When starting System Studio or DAVIS on Solaris 5.x platforms, if you see the following report,

```
sem_create->semget->IPC_CREATE: No space left on device
GMA failed
FATAL: Exec_ .../sparcOS5/ccss/bin/ccss_exec_ failed:status = 139
```

you need to increase the number of system semaphores. Add the following command to the /etc/system file (see the man page system(4) for details):

```
set semsys:seminfo_semmnu=0x100
```

After you change the /etc/system file, restart your system by using boot -r.

Caution!

Changing the /etc/system file incorrectly will prevent the system from starting.

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Installing TetraMAX (version V-2003.12)

This chapter contains the following sections:

- Installing TetraMAX

- Setting Up the User Environment

- Verifying the TetraMAX Installation

If you are installing TetraMAX stand-alone, to ensure a successful installation complete the following procedures before beginning the installation process:

- Create the Synopsys root directory (see "Creating the Synopsys Root Directory" on page 1-18).

- Define the `SYNOPSYS` environment variable (see "Defining the SYNOPSYS Environment Variable" on page 1-19).

- Have your license server running and have the appropriate license keys installed (see "Acquiring a License" on page 1-15).

Installing TetraMAX

This section describes Synopsys license key requirements and the two types of installation for TetraMAX ATPG and TetraMAX IddQTest, version V-2003.12:

- Stand-alone

  Install TetraMAX stand-alone in its own directory.

- Overlay

  Install TetraMAX overlay in the same directory as the V-2003.12 synthesis tools.

License Key Requirements

TetraMAX version V-2003.12 uses the Synopsys Common Licensing (SCL) system. For information on installing SCL, see "Acquiring a License" on page 1-15.

Note:

  Optional features such as Diagnosis, IddQTest, PatternMap, and transition delay fault ATPG each require a separate license. For specific information on the licenses required for TetraMAX options, install the product and see the online Help for the "Understanding TetraMAX License Usage."

64-Bit Mode on HP-UX and Solaris Platforms

In 64-bit mode, TetraMAX supports both the shell and GUI on HP-UX and Solaris platforms.

To invoke TetraMAX ATPG in 64-bit mode, use the `-64` switch.

```
% tmax -64 [other options]
```

An alternative method is to set the `TMAX_64BIT` environment variable to true (or to any string other than null).

```
% setenv TMAX_64BIT true
% tmax [other options]
```

Stand-Alone Installation

TetraMAX stand-alone is a complete installation of all TetraMAX applications. It must be installed in its own directory and not over an existing synthesis release.

To perform stand-alone installation,

1. Download and install TetraMAX from the Web or by FTP, as the described in "Downloading and Installing the Software by EST" on page 2-2.

   Or

   Install the files from the TetraMAX CD to your system, as explained in "Installing Product Files From a CD" on page 2-7. Example 2-1 on page 2-10 shows a Synopsys media installation script for the synthesis tools. TetraMAX is installed in a similar manner.

Note:

When you are prompted to select the product you want to install, enter **txs** to perform a stand-alone installation.

2. Make sure that your licensing software is installed. For information on SCL software, see "Acquiring a License" on page 1-15.

Overlay Installation

Install TetraMAX version V-2003.12 over version V-2003.12 of the synthesis tools only. (Do not install it over any other versions of the synthesis tools.)

You perform overlay installation in the directory in which you installed the Synopsys synthesis tools ($SYNOPSYS). You must log on as the same user who installed the Synopsys synthesis tools so that you have write permission in the $SYNOPSYS directory.

Note:

If you have not installed the Synopsys synthesis tools, install them before proceeding with overlay installation (see Chapter 3, "). If you do not have the synthesis tools installed, the installation of TetraMAX overlay will not be allowed.

To perform overlay installation,

1. To download and install TetraMAX from the Web or by FTP, follow the procedures described in "Downloading and Installing the Software by EST" on page 2-2.

Or

Install the files from the TetraMAX CD to your system, as explained in "Installing Product Files From a CD" on page 2-7. Example 2-1 on page 2-10 shows a Synopsys media installation script for the synthesis tools. TetraMAX is installed in a similar manner.

Note:

When you are prompted to select the product you want to install, enter **tx** to perform an overlay installation.

2. Make sure your Synopsys license server and license key file are set up to work with the synthesis tools. If you encounter problems, see the SCL documentation, *Licensing Quick Start* and *Licensing Installation and Administration Guide*.

Optional Installation of IddQTest

The IddQTest option of TetraMAX is installed separately from TetraMAX ATPG and requires a special license.

To install IddQTest,

1. Run the same installation script again, but enter **idq** at the "Product(s) Selected" prompt.

2. For the IddQTest target directory, specify the location where you installed the TetraMAX overlay product.

Note:

The installation script does not allow you to install IddQTest into a TetraMAX stand-alone installation. To create a stand-alone installation of IddQTest, you must specify a completely separate directory. Once you have done this, manually copy IddQTest into the same directory as the TetraMAX stand-alone product.

Setting Up the User Environment

The procedure for setting up a new TetraMAX user has changed. When you define the TetraMAX root directory, you can now use the `$SYNOPSYS` environment variable.

Note:

For backward compatibility, you can still set $SYNOPSYS_TMAX. If `$SYNOPSYS_TMAX` is set, it will override $SYNOPSYS.

To set up a new TetraMAX tool user, add the TetraMAX directory containing the executable file to the `PATH` environment variable.

If you are using the C shell, add the following line to the .cshrc file:

```
set path=($SYNOPSYS/bin $path)
```

If you are using the Bourne, Korn, or Bash shell, add the following line to the .profile or .kshrc file:

```
PATH=$SYNOPSYS/bin:$PATH
export PATH
```

To set up the user environment by using an alias, perform one of the following procedures. Note that these examples are for the C shell. Setups in other shells will differ.

- To set up the user environment by using an alias, enter

  ```
  % alias tmax '$SYNOPSYS/bin/tmax \!*'
  ```

- To set up the user environment by using a path, enter

  ```
  % set path=($SYNOPSY/bin $path)
  ```

- To set up the user environment for using SoCBIST, enter

  `% set path=($SYNOPSYS/bin $SYNOPSYS/platform/bin $path)`

  Replace *platform* with the required platform.

  Note:

  If you used `$SYNOPSYS_TMAX` to define the TetraMAX root directory, set the user environment for SOCBIST as follows:

  `% set path=($SYNOPSYS_TMAX/bin $SYNOPSYS/platform/bin $path)`

Verifying the TetraMAX Installation

To verify installation of the TetraMAX tools,

1. Make sure you are in a directory where you have read/write privileges.

   `% cd $HOME`

2. Invoke the TetraMAX GUI by entering the following command on a licensed machine:

   `% tmax`

   If the GUI appears, the installation was successful.

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Installing TimeMill (version U-2003.03)

This chapter contains the following sections:

- Installing the Software

- Setting Up TimeMill for Each User

- Verifying the TimeMill Installation

To ensure a successful installation, complete the following procedures before beginning the installation process:

- Create the Synopsys root directory (see "Creating the Synopsys Root Directory" on page 1-18).

- Have your license server running and have the appropriate license keys installed (see "Acquiring a License" on page 1-15).

Installing the Software

To download and install TimeMill from the Web or by FTP, follow the procedures described in "Downloading and Installing the Software by EST" on page 2-2.

To install the TimeMill software from the CD, follow the installation procedure described in "Installing Product Files From a CD" on page 2-7. Example 2-2 on page 2-13 shows a Synopsys media installation script for PrimeTime. TimeMill is installed in a similar manner. The TimeMill subtools (ADFMI, TurboWave, and VTRAN) are automatically installed with the TimeMill installation.

TimeMill can be installed as a stand-alone installation or with any of the tools (NanoSim and PowerMill) it comes packaged with.

Setting Up TimeMill for Each User

To set up a new TimeMill tool user,

- If you are using the C shell, source the CSHRC_platform file located in the install directory.

  ```
  % cd install_dir
  % source CSHRC_platform
  ```

  The installation script for TimeMill creates a CSHRC_platform file for each platform installed. The term *platform* is replaced with the platform you installed.

The CSHRC_platform file sets the path for Nanosim and the NanoSim man pages.

```
set path=(install_directory/platform/ns/bin $path)
setenv MANPATH install_directory//doc/ns/man:$MANPATH
```

where *install_directory* is the directory where the tool has been installed.

If you don't source the CSHRC_platform file, copy the preceding line and set the path from that file.

- If you are using the Bourne, Korn, or Bash shell, add the following lines to the .profile, .kshrc, or .bashrc file:

```
PATH=install_directory/platform/ns/bin:$PATH
export PATH
```

```
MANPATH=install_directory/doc/ns/man:$MANPATH
export MANPATH
```

Replace *platform* with the appropriate platform (see "Products and Supported Platforms" on page 1-6).

Verifying the TimeMill Installation

To verify the TimeMill installation,

1. Make sure you are in a directory where you have read/write privileges:

   ```
   % cd $HOME
   ```

2. Invoke the tool by entering the following command:

   ```
   % timemill
   ```

   If you see information about the product version, production date, and copyright, the installation was successful.

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Installing VCS (version 7.0.2)

This chapter contains the following sections:

- Installing the Software

- Setting the Environment Variables

- Verifying the VCS and VCSi Installation

- Customer Support

To ensure a successful installation, complete the following procedure before beginning the installation process:

- Have your license server running and have the appropriate license keys installed (see "Acquiring a License" on page 1-15).

The instructions in this chapter also apply to VCSi.

Note:

The VirSim GUI installs with VCS. If you want to install the GUI as a stand-alone tool, see Appendix A, "Installing VirSim (version 4.3)."

Installing the Software

VCS is a stand-alone product and cannot be installed over an existing Synopsys product, including a prior version of VCS. You must create a new directory for VCS.

To download and install VCS by electronic software transfer,

1. Create a VCS installation directory and change to that directory. For example, enter

   ```
   % mkdir /u/edatools
   % cd /u/edatools
   ```

2. Download the software to the installation directory.

3. Uncompress and untar the files.

   ```
   % gzip -dc /u/edatools/vcs_platform_version.tar.gz | tar
   xvf -
   ```

   This command creates a VCS subdirectory named after the release of VCS that you are installing.

To install VCS from a CD,

1. Create a VCS installation directory and change to that directory. For example,

   ```
   % mkdir /u/edatools/vcs
   % cd /u/edatools/vcs
   ```

2. Mount the CD by using the appropriate command for your
    operating system. For example, enter

    ```
    % mount -o ro /dev/dsk/c2t1d4s0 /cdrom
    ```

    Note:

    Mounting instructions are different for each platform. See your
    system documentation for the correct CD mounting
    commands.

    Also, for sparcOS5 with vold (the volume management
    daemon for managing CD and floppy devices), the /cdrom
    directory already exists and the CD is automatically mounted.
    Therefore, use cd /cdrom/cdrom0 instead of cd /cdrom (and
    use `eject` to unmount the CD).

3. Unmount the CD by using the appropriate command for your
    operating system. For example, enter

    ```
    % umount /cdrom
    ```

    Note:

    If you are running the volume management daemon, use the
    `eject` command to unmount the CD.

Setting the Environment Variables

This section discusses the following environment variables:

- `$VCS_HOME` or `$VCSI_HOME`

- `SNPSLMD_LICENSE_FILE`

- `LM_LICENSE_FILE`

It is recommended that you place these variables in your $HOME/
.cshrc or $HOME/.profile file as your default settings.

Setting the $VCS_HOME Environment Variable

Follow these steps.

1. Set the `$VCS_HOME` environment variable to point to your VCS
   installation subdirectory.

   - If you are using the C shell, add the following line:

     ```
     % setenv VCS_HOME /u/edatools/vcs7.0.2
     ```

   - If you are using the Bourne shell, add these lines:

     ```
     % VCS_HOME=/u/edatools/vcs7.0.2
     export VCS_HOME
     ```

2. Add $VCS_HOME/bin to your search path:

   - If you are using the C shell, enter

     ```
     set path=($VCS_HOME/bin $path)
     ```

   - If you are using the Bourne shell, enter

     ```
     PATH=$VCS_HOME/bin:$PATH
     export PATH
     ```

3. (Optional) To include the optional utilities shipped with VCS in the path,

 - If you are using the C shell, enter

```
set path = ($VCS_HOME/bin \
     $VCS_HOME/'$VCS_HOME/bin/vcs -platform'/bin \
     $VCS_HOME/'$VCS_HOME/bin/vcs -platform'/util \
     $path)
```

 - If you are using the Bourne shell, enter

```
PATH=$VCS_HOME/bin \
     $VCS_HOME/'$VCS_HOME/bin/vcs -platform'/bin \
     $VCS_HOME/'$VCS_HOME/bin/vcs -platform'/util \
     $PATH
     export PATH
```

Setting the SNPSLMD_LICENSE_FILE or LM_LICENSE_FILE Environment Variable

To enable VCS to check out a license, you must set the SNPSLMD_LICENSE_FILE or the LM_LICENSE_FILE environment variable.

• If you are using the C shell, enter the following line:

```
% setenv LM_LICENSE_FILE 27000@my_server
```

• If you are using the Bourne shell, enter these lines:

```
% SNPSLMD_LICENSE_FILE=27000@my_server
export SNPSLMD_LICENSE_FILE
```

The port and host name variables correspond to the TCP port and license server host name specified in the SERVER line of the Synopsys license file. To ensure better performance, it is recommended that you use *port@host* rather than using the path to the license file.

Each license file can contain licenses for many packages from multiple vendors. You can specify multiple license files by separating each entry with a colon (:).

Verifying the VCS and VCSi Installation

To verify the VCS and VCSi installation,

1. Make sure you are in a directory where you have read/write privileges.

    ```
    % cd $HOME
    ```

2. Invoke the tool by entering

    ```
    % vcs -ID
    ```

    If you see information about the product version, production date, and copyright, the installation was successful.

3. Run the VirSim GUI on each installed platform by entering

    ```
    % vcs -RPP
    ```

4. Exit the GUI by choosing File > Exit in any GUI window.

Customer Support

The VCS support page on the Synopsys Web site is regularly updated with the latest information. Check this page for application notes, online help updates, and other valuable information:

http://www.synopsys.com/products/simulation/simulation.html

You can also send an e-mail message to VCS Support at vcs_support@synopsys.com.

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Installing Vera (version 6.2.0)

This chapter contains the following sections:

- Downloading and Installing the Software

- Setting the Environment Variables

- Customer Support

Downloading and Installing the Software

1. Create a Vera installation directory. For example,

   ```
   % mkdir -p /usr/synopsys/vera
   ```

2. Download the Vera release to the installation directory. The latest Vera download instructions can be obtained from the SolvNet Release Library or from vera-support@synopsys.com.

   If a Vera directory does not already exist, you must create one.

3. Uncompress and untar the files.

   ```
   % pwd /usr/synopsys/vera
   % gzip -dc vera-version-platform.tar.gz | tar xvf -
   ```

   This will create a subdirectory in the Vera installation directory. For example,

   ```
   /usr/synopsys/vera/vera-version-platform
   ```

   In the remainder of this chapter, this subdirectory is referred to as the Vera installation directory.

4. To set the file permissions on the new directory tree and its contents, enter

   ```
   % chmod -R 755  /usr/synopsys/vera
   ```

5. Remove the vera-version-platform.tar.gz file.

   ```
   % rm vera-version-platform.tar.gz
   ```

6. For each user, set the required environment variables. See "Setting the Environment Variables" on page 21-3.

Setting the Environment Variables

This section discusses the following environment variables:

- VERA_HOME

- SNPSLMD_LICENSE_FILE

- LM_LICENSE_FILE

It is recommended that you place these variables in your $HOME/.cshrc or $HOME/.profile file as your default settings.

Setting the $VERA_HOME Environment Variable

1. Set the $VERA_HOME environment variable to point to your Vera installation directory.

   - If you are using the C shell, add the following line:

     setenv VERA_HOME *install_directory*

   - If you are using the Bourne shell, enter these lines:

     VERA_HOME=*install_directory*
     export VERA_HOME

2. Add $VERA_HOME/bin to your search path.

   - If you are using the C shell, enter

     set path=($VERA_HOME/bin $path)

   - If you are using the Bourne shell, enter

     PATH=$VERA_HOME/bin:$PATH
     export PATH

Setting the SNPSLMD_LICENSE_FILE or LM_LICENSE_FILE Environment Variable

1. To enable Vera to check out a license,
   set the `SNPSLMD_LICENSE_FILE` or the `LM_LICENSE_FILE`
   environment variable.

   - If you are using the C shell, add the following line:

     setenv SNPSLMD_LICENSE_FILE *port@hostname*

   - If you are using the Bourne shell, enter these lines:

     SNPSLMD_LICENSE_FILE=*port@hostname*
     export SNPSLMD_LICENSE_FILE

   The port and host name variables correspond to the TCP port
   and license server host name specified in the SERVER line of the
   Synopsys license file. To ensure better performance, it is
   recommended that you use *port@host* rather than using the path
   to the license file.

2. Each license file can contain licenses for many packages from
   multiple vendors. You can specify multiple license files by
   separating each entry with a colon (:).

Customer Support

You can get support for Vera from the following locations:

- For technical Issues, enhancement requests, and feedback,
  contact Customer Support at vera-support@synopsys.com.

- For documentation Issues, send e-mail to
  vera-doc@synopsys.com

For general information on Synopsys licensing, see http://solvnet.synopsys.com/keys.

For information on Vera licensing, see

- The *Vera Installation Guide*, which is packaged in Portable Document Format (PDF) with the product files

- SolvNet article 900006, "VERA Licensing Structure," at http://solvnet.synopsys.com/retrieve/900006

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Installing VHDL Simulation (Scirocco) (version 2002.12.2)

This chapter contains instructions about installing the VHDL Simulation (Scirocco) tool in the following sections:

- Installing the Software

- Setting the Environment Variables

- Setting Up VHDL Simulation (Scirocco) for Each User

- Verifying the VHDL Simulation (Scirocco) Installation

The instructions in this chapter also apply to Scirocco-i.

To ensure a successful installation, have your license server running and have the appropriate license keys installed (see "Acquiring a License" on page 1-15).

Note:

>The VirSim GUI installs with Scirocco. If you want to install the GUI as a stand-alone tool, see Appendix A, "Installing VirSim (version 4.3)."

Installing the Software

VHDL Simulation (Scirocco) is a stand-alone product and cannot be installed over an existing Synopsys product, including a prior version of VHDL Simulation (Scirocco). You must create a new directory for VHDL Simulation (Scirocco).

Note:

>The installation procedure for VHDL Simulation (Scirocco) has changed with this release.

To download and install VHDL Simulation (Scirocco) by electronic software transfer,

1. Create a VHDL Simulation (Scirocco) installation directory and change to that directory. For example, enter

```
% mkdir /u/edatools
% cd /u/edatools
```

2. Download the software to the installation directory.

3. Uncompress and untar the files.

```
% gzip -dc /u/edatools/vcs_mx/
vcs_mx_platform_version.tar.gz | tar xvf –
```

This command creates a VHDL Simulation (Scirocco) subdirectory named after the release of VHDL Simulation (Scirocco) that you are installing.

To install VHDL Simulation (Scirocco) from a CD,

1. Create a VHDL Simulation (Scirocco) installation directory and change to that directory. For example,

```
% mkdir /u/edatools/vcs_mx
% cd /u/edatools/vcs_mx
```

2. Mount the CD by using the appropriate command for your operating system. For example, enter

```
% mount -o ro /dev/dsk/c2t1d4s0 /cdrom
```

   Note:

   Mounting instructions are different for each platform. See your system documentation for the correct CD mounting commands.

   Also, for sparcOS5 with vold (the volume management daemon for managing CD and floppy devices), the /cdrom directory already exists and the CD is automatically mounted. Therefore, use cd /cdrom/cdrom0 instead of cd /cdrom.

3. Uncompress and untar the files.

```
% gzip -dc /u/edatools/vcs_mx/
vcs_mx_platform_version.tar.gz | tar xvf -
```

   This command creates a Scirocco subdirectory named after the release of VHDL Simulation (Scirocco) that you are installing.

4. Unmount the CD by using the appropriate command for your operating system. For example, enter

```
% umount /cdrom
```

Note:

> If you are running the volume management daemon, use the `eject` command to unmount the CD.

Setting the Environment Variables

This section discusses the following environment variables:

- SYNOPSYS_SIM

- SNPSLMD_LICENSE_FILE

- LM_LICENSE_FILE

It is recommended that you place these variables in your $HOME/.cshrc or $HOME/.profile file as your default settings.

Setting the $SYNOPSYS_SIM Environment Variable

Set the SYNOPSYS_SIM environment variable in the shell that you are using in which the root_directory argument is the name of the Scirocco root directory.

- If you are using the C shell, enter

  ```
  % setenv SYNOPSYS_SIM /u/edatools/vcs_mx/
  scirocco2002.12.2
  ```

- If you are using the Bourne shell, enter

  ```
  % SYNOPSYS_SIM=/u/edatools/vcs_mx/scirocco2002.12.2
  export SYNOPSYS_SIM
  ```

Setting the **SNPSLMD_LICENSE_FILE** or **LM_LICENSE_FILE Environment Variable**

To enable Scirocco to check out a license, you must set the SNPSLMD_LICENSE_FILE or the LM_LICENSE_FILE environment variable.

- If you are using the C shell, enter the following line:

   ```
   % setenv SNPSLMD_LICENSE_FILE 27000@my_server
   ```

- If you are using the Bourne shell, enter these lines:

   ```
   % SNPSLMD_LICENSE_FILE=27000@my_server
   export SNPSLMD_LICENSE_FILE
   ```

The port and host name variables correspond to the TCP port and license server host name specified in the SERVER line of the Synopsys license file. To ensure better performance, it is recommended that you use *port@host* rather than using the path to the license file.

Each license file can contain licenses for many packages from multiple vendors. You can specify multiple license files by separating each entry with a colon (:).

Setting Up VHDL Simulation (Scirocco) for Each User

To set up a new Scirocco user, add the directory containing the Scirocco executable files to the PATH environment variable.

- If you are using the C shell, add the following line to the .cshrc file:

  ```
  set path=($SYNOPSYS_SIM/bin $path)
  ```

- If you are using the Bourne, Korn, or Bash shell, add the following line to the .profile or .kshrc file:

  ```
  PATH=(path:$SYNOPSYS_SIM/bin)
  export PATH
  ```

Verifying the VHDL Simulation (Scirocco) Installation

To verify Scirocco installation, enter

```
% $SYNOPSYS_SIM/admin/install/sim/bin/verify_install
```

If Scirocco is correctly installed, the system responds by printing the following information and various copyright messages:

```
Info: Checking files in image
.........................................................
.........................................
.........................................................
...............................
Info: Checking file permissions - passed
Info: Running Scirocco existence tests - passed
Verification of /u/edatools/vcs_mx/scirocco2002.12.2
PASSED
```

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Installing Synopsys Online Documentation (version V-2003.12)

This chapter contains the following sections:

- About SOLD

- Acquiring and Installing the Acrobat Reader Software

- Verifying Your Adobe Acrobat Software

- Installing SOLD

- Verifying the SOLD Installation

- Configuring SOLD for Each User

- Searching SOLD on Linux

To ensure a successful installation, complete the following procedures before beginning the installation process:

- Create the Synopsys root directory (see "Creating the Synopsys Root Directory" on page 1-18).

- Define the SYNOPSYS environment variable (see "Defining the SYNOPSYS Environment Variable" on page 1-19).

The V-2003.12 version of SOLD contains documentation for the V-2003.12, U-2003.09, U-2003.06, and U-2003.03 releases of Synopsys tools. You can access the documentation by clicking the product name on the SOLD front panel.

About SOLD

This chapter describes how to install and verify Synopsys Online Documentation (SOLD). The SOLD CD and the SOLD directory contain document files in the cross-platform Adobe Portable Document Format (PDF), as well as Portable Document Index files (PDX) that enable full-text searching across all SOLD documents.

To read and search these files, you need version 4.0 or later of Adobe Acrobat Reader with Search plug-in or Adobe Acrobat. You can download Acrobat Reader with Search plug-in free of charge from the Adobe Web site. For more information, see "Acquiring and Installing the Acrobat Reader Software" on page 23-3.

The online documentation for System Studio (System Studio SOLD) is distributed to System Studio customers on a separate CD. The installation instructions in this chapter apply to both SOLD and System Studio SOLD.

Acquiring and Installing the Acrobat Reader Software

You can acquire the Acrobat Reader software by downloading the freeware Acrobat Reader from the Web.

Note:
> Windows users: Beginning with version 6.0, Acrobat Reader is called Adobe Reader.

Downloading and Installing Acrobat Reader from the Web

To download Acrobat Reader from the Acrobat Web site,

1. Go to http://www.adobe.com/ and click the Get Acrobat Reader button. Follow the instructions on the Web page.

2. Uncompress the tar.Z file or use the gunzip utility for the tar.gz file. For example,

   ```
   % gzip -d sol-508.tar.gz
   ```

3. Untar the resulting file. For example,

   ```
   % tar xvf sol-508.tar
   ```

4. Enter ./install to start the installation script.

For more information, consult the ReadMe.html file or instguid.txt file that comes packaged with Acrobat Reader.

Verifying Your Adobe Acrobat Software

To view SOLD, you must have Acrobat Reader version 4.x or later.

To search SOLD, you must have the Search plug-in. For information about searching SOLD on the Linux platform, see "Searching SOLD on Linux" on page 23-10.

The following sections describe how to determine your current software configuration.

Checking the Version Number

If you are using 3.x or an earlier version of Acrobat, you must upgrade to view SOLD. Follow the instructions in "Acquiring and Installing the Acrobat Reader Software" on page 23-3.

To check the version number,

1. Open Acrobat Reader.

2. Choose Help > About Acrobat Reader (or Help > About Adobe Acrobat).

3. In the window that appears, verify that the words "Acrobat Reader 4.0" or "Adobe Acrobat 4.0" appear. (Later versions of Acrobat Reader are also supported.)

4. Close the About screen by clicking anywhere in the window.

Checking for the Search Plug-In

If you are using Acrobat Reader without the Search plug-in, you must upgrade to have full-text searching capability in SOLD. The Search plug-in cannot be downloaded from the Adobe site as a separate file; to upgrade, you must download the entire Acrobat Reader with Search plug-in package. Follow the instructions in "Acquiring and Installing the Acrobat Reader Software" on page 23-3.

To check for the Search plug-in,

1. Open Acrobat Reader (if it is not already open).

2. Choose Help > About Plug-Ins or About Adobe Acrobat Plug-Ins to verify that Acrobat Search is on the list of installed plug-ins.

Installing SOLD

You can install SOLD by electronic software transfer (EST) or from the SOLD CD.

Contents of SOLD

The SOLD documentation set contains PDF document files, the index (PDX) files that enable full-text searching, and the UNIX installation scripts.

SOLD contains several collections of documents. Each collection describes a particular subject area and resides in its own directory. Each collection directory contains all the PDF files for the books in its subject area, as well as the index files for searching in that collection.

The README.1ST file in the SOLD directory and on the SOLD CD lists the contents of SOLD.

Installation Options

There are two ways to install SOLD:

- As a stand-alone installation

- As an overlay installation, installed over an existing Synopsys installation directory

Note:
   You cannot install a stand-alone product over a stand-alone SOLD installation. To install SOLD and a stand-alone product together, install the product first, then install SOLD as an overlay installation.

The SOLD installation procedure copies files from the SOLD directory (for EST) or SOLD CD into the appropriate places in the Synopsys root directory structure.

SOLD offers the following installation options:

- Full installation on hard drive

- Partial installation on hard drive

- No installation on hard drive (read from CD)

The installation script performs a full installation. Most sites use a full installation for shared access by many users. If disk space is at a premium, you can create a partial installation by removing unused directories after the installation is complete (see "Partial Installation" on page 23-8).

Installing SOLD CDs on HP-UX Platforms

When SOLD is installed on HP-UX platforms, the entire content of the CD is not copied to the disk. To copy all of SOLD, you must download and install the following patches before installing SOLD:

For HP-UX 11.00
PHCO_26449, PHKL_26450, PHKL_28060

For HP-UX 11.11 (11.i)
PHKL_28025, PHKL_26269

To download the patches, go to http://itrc.hp.com.

Electronic Software Transfer Installation

To download and install SOLD from the Web or by EST, follow the procedures described in "Downloading and Installing the Software by EST" on page 2-2.

To access the complete collections of SOLD, download ssd1 and ssd2. The SOLD files use the following convention:

```
sold_V-2003.12_ssd1.tar.Z
sold_V-2003.12_ssd2.tar.Z
```

Two additional SOLD CDs are available: one for the Japanese version of SOLD and one specifically for System Studio customers.

- If you want to download only J-SOLD, download the sold_V-2003.12_jsd3.tar.Z file.

- To download only System Studio SOLD, download the sold_V-2003.12_ssd4.tar.Z file.

Example 2-1 on page 2-10 shows a Synopsys media installation script for the synthesis tools. SOLD is installed in a similar manner.

CD Installation

The SOLD collections are packaged on four CDs.Volume 1, 2, and 3 are packaged together. Volume 4, System Studio SOLD, is packaged separately and is provided only to System Studio customers.

To install SOLD from the CD, follow the installation procedure described in "Mounting the CD" on page 2-8.

To access all documentation except for Japanese SOLD (J-SOLD on volume 3) and System Studio, copy the volume 1 and volume 2 CDs to your hard disk by running the install.now script.

To install only J-SOLD, install the volume 3 CD (sold_V-2003.12_jsd3).

To install only documentation for System Studio, install the System Studio Online Documentation CD (sold_V-2003.12_ssd4).

Example 2-1 on page 2-10 shows a Synopsys media installation script for the synthesis tools. SOLD is installed in a similar manner.

Partial Installation

Because each collection directory is self-contained, partial installations of SOLD are possible.

To effect a partial installation of SOLD, perform a standard installation, then delete from $SYNOPSYS/doc/online those collection directories you do not need at your site.

Note:

> Do not delete the top.pdf file; it contains the SOLD front panel, which lists the products that are documented. Do not delete the solid directory; it contains the *SOLD User Guide.*

Keep the remaining collection directories intact: Do not remove files from them or move the files in a collection relative to each other. Such modifications can cause hypertext links and the search mechanism to fail.

Verifying the SOLD Installation

Verify the installation by opening SOLD. To open SOLD, issue the command

```
% $SYNOPSYS/sold
```

If SOLD is correctly installed, this command invokes Acrobat and displays the SOLD welcome screen in the Acrobat window.

Configuring SOLD for Each User

The search engine uses index files to perform full-text search and retrieval on a document. SOLD provides an index file (index.pdx) with each collection.

When you open a document, the associated index file is automatically available to the search engine. However, to search SOLD before opening a document, you can manually make an index available to the search engine.

To manually make an index available to the search engine,

1. Choose Edit > Search > Select Indexes in the Acrobat window.

2. Click the Add button.

3. Navigate to one of the collection directories, for example, $SYNOPSYS/doc/online/synth.

4. Select the index.pdx file.

5. With the index.pdx file selected, click the Apply button.

    The selected index is added to the list of available indexes.

For information about using SOLD, see the *SOLD User Guide.* To access the *SOLD User Guide*, open SOLD and click the hypertext link labeled "Using Synopsys Online Documentation."

Searching SOLD on Linux

Only the Find command (Edit > Find) is available for searching the Linux version of SOLD. To locate information with the Find command, use the print version of a document. From the SOLD front page, select a document set, then click the print version icon ( ) next to the document you want.

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Troubleshooting

This chapter contains the following sections:

- Memory

- X Window System

Memory

Some common memory problems and possible solutions are described in this section.

Why Do I Get an "out of memory" Message?

Here is a possible scenario: A large job is running on a machine that has abundant swap space. You try to run a Design Compiler job on this machine and assume that you don't need to be concerned about running out of swap space. But the application terminates with a fatal out-of-memory message before the machine runs out of swap space.

UNIX limits the amount of memory a job or process can consume while it is running. If a job reaches these limits before the system runs out of swap space, the job terminates with the fatal out-of-memory error message. These limits are built into the UNIX OS to prevent a single job or process from consuming all system resources (swap space, CPU time, number of processes, and so on), thereby depleting resources for other jobs. Some limits applicable to Synopsys applications are

- Data size—The maximum data size (including stack) for the process

- CPU time—The maximum CPU seconds per process

- Core dump size—The maximum size of a core dump

The data-size limit is the most important. It can be set at two levels:

- The system level

Limits are enforced for everyone who runs on that system.

- On a per-user basis

  On all machines except those running HP-UX, you can change your personal limits by using the `limit` command (C shell) or `ulimit -s -d` command (Bourne, Korn, or Bash shell). On the HP-UX platform, only the system administrator can set the limits. Personal limits cannot exceed the systemwide limit. For example, the limits on a Sun client (Solaris 8) might look like this:

  ```
  % limit
  cputime         unlimited
  filesize        unlimited
  datasize        524280 kbytes
  stacksize       8192 kbytes
  coredumpsize    unlimited
  descriptors     256
  memorysize      unlimited
  ```

  Note:

  In this example, any jobs or processes started on the Sun client can grow to 524 MB before limits are enforced.

  On some solaris systems, setting the data size to `unlimited` defaults to a data size of only 2 GB. To set a larger data size, set the data size explicitly. For example, set it to 3.8 GB by using the following command:

  `% limit datasize 3891 MB`

If the data size is sufficient, check the stack size. A stack size that is larger than the default (8,192 KB) can cause the data size to be smaller than required. Because the stack size is taken at the beginning of the process, it uses memory that would normally be available for data. Therefore you should set the stack size higher than the default only when absolutely necessary.

Most system administrators do not adjust the limits unless they are confronted with problems. If you do not adjust the limits, it is possible for a tool requiring a lot of swap space (such as Design Compiler) to experience an out-of-memory problem.

Note, however, that it is possible to extend memory (physical and swap space). For more information, see "Accessing Memory Beyond 2 GB With 32-Bit Synopsys Tools" on page 1-13.

What Should I Do When an "out of memory" Error Occurs?

Make sure that you are not running out of swap space on the system. Use the `swap -l` command for Sun SPARC systems to obtain swap space information. For example,

```
% swap -l
swapfile             dev    swaplo   blocks    free
/dev/dsk/c0t3d0s1  32,25        8    822520    628872
```

To determine available swap space on systems other than Sun SPARC, contact your system administrator.

If you have enough swap space but still encounter OS limits, use the `limit` command to find out what the `datasize` variable is set to (for all machines except HP). The `limit` command displays user-level limits.

```
% limit
cputime            unlimited
filesize           unlimited
datasize           524280 kbytes
stacksize          8192 kbytes
coredumpsize       unlimited
descriptors        256
memorysize         unlimited
```

If your user-level data-size limit is too low, you can increase it by entering `limit datasize xxxxm` at the UNIX prompt, where xxxx is the number of megabytes and m stands for megabytes. For example,

```
% limit datasize 3891m
```

Note:
   The `limit` command is a built-in C shell (csh) command. Make sure you are in csh before you execute `limit`.

For additional information about the `limit` command, see the appropriate man page. On HP systems you cannot change the user-level limits. User-level limits can be changed only at the system level.

The procedure for making limit changes varies from platform to platform. The system administrator at each site should be familiar with the procedure. If you still encounter problems, contact your ncuSynopsys technical representative.

X Window System

Some common X Window System problems and possible solutions are the following:

- If you cannot use the vi text editor in the xterm window, add an xterm entry in your /etc/termcap file.

- If, after an upgrade, you can no longer open Design Analyzer from your host, verify that the fonts assigned in .synopsys_dc.setup or the server default fonts are loaded. A fatal error results if the fonts are not available.

- Your ~/.xinitrc script might not be read on startup because it is a C shell script. In this case, you must rewrite it as a Bourne (/bin/sh) script.

Part II: Physical Implementation

Astro, Astro Interactive Ultra, JupiterXT, and Columbia

Astro-Rail

Hercules

HSPICE

Star-RCXT

StarSim-XT

TCAD

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Installing Astro, Astro Interactive Ultra, JupiterXT, and Columbia

Note:

The installation instructions in this chapter are the most up-to-date available at the time of production. However, changes might have occurred. For the latest installation information, see the product release notes or documentation.

The tool versions for this release are

- Astro version U-2003.09

- Astro Interactive Ultra version U-2003.09

- JupiterXT version U-2003.09

- Columbia version V-2003.12

This chapter contains the following sections:

- Media Availability and Supported Platforms

- Installing the Software

- Setting Up Astro for a New User

- Verifying the Astro Installation

Media Availability and Supported Platforms

The U-2003.12 version of the Astro tool is available on CD or by FTP download. Obtain the appropriate binary executable files based on the operating system you need. Table 25-1 shows the supported platforms for the U-2003.12 release.

Table 25-1   Supported Operating Systems and Platform Keywords

Operating system	Platform keyword
Solaris 8	SUN.32, SUN.64
HP-UX 11.0, 11i	HP.64
Red Hat Linux 7.2	IA.32

Installing the Software

The steps in this procedure describe how to install Astro on the Red Hat Linux 32-bit platform. For other platforms, use the appropriate file name and platform for the tool you want to install.

To install the Astro software on your server,

1. Change directory to the installation directory by entering

    ```
    % cd install_dir
    ```

    where *install_dir* is the directory where you want to install the software.

2. Examine the contents of your directory.

    ```
    % ls /cdrom/volume_name
    ```

    You should see the following file:

    /cdrom/*volume_name*/U-2003.09.astro.ia.32.tar.gz

3. Unzip the file.

    ```
    % gzip -dc /cdrom/volume_name/U-2003.09.astro.ia.32.tar.gz | tar  -vxf -
    ```

4. Change to the bin directory. For example,

    ```
    % cd bin/ia.32
    ```

5. Copy the Synopsys license daemon to the /etc directory:

    ```
    % cp -p avantd /etc
    ```

6. Create a license directory.

    ```
    % mkdir /usr/local/flexlm /usr/local/flexlm/licenses
    ```

7. Copy the license to the license directory.

```
% cp source_dir/license.dat /usr/local/flexlm/licenses
```

where *source_dir* is where the license.dat (and package.dat) file resides.

8. Start the license server.

```
% install_dir/bin/ia.32/lmgrd -c /usr/local/flexlm/licenses/ \
    license.dat -l /usr/local/flexlm/licenses/license.log
```

9. To automatically start the license server whenever you reboot the server, add the following line to the /etc/rc.local file:

```
% install_dir/bin/ia.32/lmgrd -c /usr/local/flexlm/licenses/ \
    license.dat -l /usr/local/flexlm/licenses/license.log
```

where *install_dir* is the directory where you installed the software.

For more information about the license server, see www.synopsys.com/keys or the *FLEXlm End User Manual*.

Setting Up Astro for a New User

This section describes how to set up a local machine for Solaris so that it can access the Synopsys software. Perform this procedure for each machine on the network.

1. To set up your machine, update your environment variables by adding the following variables in your .cshrc file:

```
setenv LM_LICENSE_FILE /usr/local/flexlm/licenses \
 /license.dat:$LM_LICENSE_FILE
set path = (install_dir/bin/platform $path)
```

where *install_dir* is the directory in which the Synopsys software is installed and *platform* is the appropriate platform.

2. Update your path variable by entering

```
% source .cshrc
```

Make sure the XKeysymDB file resides in or is linked from */usr/lib/X11*.

Verifying the Astro Installation

To verify the Astro installation,

1. Make sure you are in a directory where you have read/write privileges.

```
% cd $HOME
```

2. Invoke the tool by entering the following command:

```
% Astro
```

If you see information about the product version, production date, and copyright, the installation was successful.

Installing Astro, Astro Interactive Ultra, JupiterXT, and Columbia

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Installing Astro-Rail (version V-2003.12)

Note:

> The installation instructions in this chapter are the most up-to-date available at the time of production. However, changes might have occurred. For the latest installation information, see the product release notes or documentation.

This chapter contains the following sections:

- Media Availability and Supported Platforms

- Installing the Software

- Setting Up Astro-Rail for a New User

- Verifying the Astro-Rail Installation

Media Availability and Supported Platforms

Astro-Rail is available on CD or by FTP download. Obtain the appropriate binary executable files based on the operating system you need. Table 26-1 shows the supported platforms for the V-2003.12 release.

Table 26-1   Supported Operating Systems and Platform Keywords

Operating system	Platform keyword
Solaris 8, 9	SUN.32, SUN.64
HP-UX 11.0, 11i	HP.64
Red Hat Linux 7.2	IA.32

Installing the Software

The steps in this procedure describe how to install Astro-Rail on the Sun Solaris 64-bit platform. For other platforms, use the appropriate file name and platform for the tool you want to install.

To install the Astro-Rail software on your server,

1. Change directory to the installation directory by entering

   ```
   % cd install_dir
   ```

   where *install_dir* is the directory where you want to install the software.

2. Examine the contents of your directory.

    ```
    % ls /cdrom/volume_name
    ```

    You should see the following file:

    /cdrom/*volume_name*/astrorail_V-2003.12_SUN.64.tar.gz

3. Unzip the file.

```
% gzip -dc /cdrom/volume_name/astrorail_V-2003.12_SUN.64.tar.gz | tar  -vxf -
```

4. Change to the bin directory. For example,

    ```
    % cd bin/SUN.64
    ```

5. Copy the Synopsys license daemon to the /etc directory.

    ```
    % cp -p avantd /etc
    ```

6. Create a license directory.

    ```
    % mkdir /usr/local/flexlm /usr/local/flexlm/licenses
    ```

7. Copy the license to the license directory.

    ```
    % cp source_dir/license.dat /usr/local/flexlm/licenses
    ```

    where *source_dir* is the location of the license.dat (and package.dat) file.

8. Start the license server.

```
% install_dir/bin/SUN.64/lmgrd -c /usr/local/flexlm/licenses/ \
    license.dat -l /usr/local/flexlm/licenses/license.log
```

9. To automatically start the license server whenever you reboot the server, add the following line to the /etc/rc.local file:

```
% install_dir/bin/SUN.64/lmgrd -c /usr/local/flexlm/licenses/ \
   license.dat -l /usr/local/flexlm/licenses/license.log
```

where *install_dir* is the directory where you installed the software.

For more information about the license server, see www.synopsys.com/keys or the *FLEXlm End User Manual*.

Setting Up Astro-Rail for a New User

This section describes how to set up a local machine for Solaris so that it can access the Synopsys software. Perform this procedure for each machine on the network.

To set up your machine,

1. Update your environment variables by adding the following variables in your .cshrc file:

```
setenv LM_LICENSE_FILE /usr/local/flexlm/licenses \
 /license.dat:$LM_LICENSE_FILE
set path = (install_dir/bin/platform $path)
```

where *install_dir* is the directory in which the Synopsys software is installed and *platform* is the appropriate platform.

2. Update your path variable by entering

```
% source .cshrc
```

Make sure the XKeysymDB file resides in or is linked from /*usr*/lib/X11.

Verifying the Astro-Rail Installation

To verify the Astro-Rail installation,

1. Make sure you are in a directory where you have read/write privileges.

   ```
   % cd $HOME
   ```

2. Invoke the tool by entering

   ```
   % AstroRail
   ```

   If you see information about the product version, production date, and copyright, the installation was successful.

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Installing Hercules (version V-2003.12)

Note:

The installation instructions in this chapter are the most up-to-date available at the time of production. However, changes might have occurred. For the latest installation information, see the product release notes or documentation.

This chapter contains the following sections:

- Media Availability and Supported Platforms

- Installing the Software

- Setting the Environment Variables

- Setting Up Hercules for Each User

- Verifying the Hercules Installation

Media Availability and Supported Platforms

The Hercules and Hercules-Explorer tools are available on CD or by EST download. Obtain the appropriate binary executable files based on the operating system you need. Table 27-1 shows the supported platforms for the V-2003.12 release.

Table 27-1   Supported Operating Systems and Platform Keywords

Operating system	Platform keyword
Solaris 8	SUN32_58, SUN64_58
HP-UX 11.0	HP32_U11, HP64_U11
Red Hat Linux 7.2	IA32_L24
Red Hat Advanced Server 2.1	IA64_L24
AIX 5.1[1]	RS64_AIX51
Amd Opteron (RHEL v3[1])	amd64 (64-bit mode)

1.   The AIX 5.1 and Red Hat Enterprise Linux platforms are not available on CD. They will be available for download by electronic software transfer (EST) at a later date. For availability, check with your Synopsys sales representative.

Installing the Software

The steps in the following procedure describe how to install Hercules on the Sun Solaris 32-bit platform. The procedure for other platforms is similar.

Before you begin the installation,

- Make sure you have enough disk space for Hercules and Hercules-Explorer installation. For a full installation on one platform, 120 MB is recommended.

- To install Synopsys tools, it is recommended that you log on as root or have system administrator privileges. You need write permission for the installation directory.

Note:

The Hercules software is configured so that multiple platforms of this version can be installed in a single installation directory (*install_dir*).

To install the Hercules software on your server,

1. Create a Hercules installation directory if one does not already exist. For example,

   ```
   % mkdir -p /usr/synopsys/hercules
   ```

   In the rest of this chapter, this directory path is referred to as *install_dir*.

2. Download the Hercules release to the installation directory.

   You can get the latest Hercules download instructions from the SolvNet Release Library.

3. Uncompress and untar the files.

```
% gzip -dc hercules-version-platform.tar.gz | tar xvf -
```

This command creates a subdirectory in the Hercules installation directory. For example,

% /*usr*/synopsys/hercules/*necessary_files_and_directories*

In the remainder of this chapter, this subdirectory is referred to as the Hercules installation directory.

4. To set the file permissions on the new directory tree and its contents, enter

```
% chmod -R 755 install_dir
```

5. Remove the hercules-version-platform.tar.gz file.

```
% rm hercules_version_platform.tar.gz
```

Setting the Environment Variables

This section discusses the following environment variables:

- `$HERCULES_HOME_DIR`

- `$LM_LICENSE_FILE`

It is recommended that you place these variables in your $HOME/ .cshrc or $HOME/.profile file as your default settings.

Setting the $HERCULES_HOME_DIR Environment Variable

Follow these steps.

1. Set the $HERCULES_HOME_DIR environment variable by replacing *TOP-LEVEL-INSTALL-DIR* in *install_dir*/hercules_setup.csh and *install_dir*/hercules_setup.sh files with *install_dir*.

2. Update your environment by entering the following lines:

   - If you are using the C shell, enter

     ```
     % source .cshrc
     ```

   - If you are using the Bourne shell, enter

     ```
     % . .profile
     ```

Setting the $LM_LICENSE_FILE Environment Variable

The `$LM_LICENSE_FILE` environment variable defines the full path name to the location where the license files have been loaded on your machine.

To enable Hercules to check out a license, set the `$LM_LICENSE_FILE` environment variable. For example,

- If you are using the C shell, add the following line:

  setenv $LM_LICENSE_FILE *port@hostname*

- If you are using the Bourne shell, enter these lines:

  set $LM_LICENSE_FILE=*port@hostname*
  export $LM_LICENSE_FILE

The port and host name variables correspond to the TCP port and license server host name specified in the SERVER line of the Synopsys license file. To ensure better performance, it is recommended that you use *port@host* rather than using the path to the license file.

Each license file can contain licenses for many packages from multiple vendors. You can specify multiple license files by separating each entry with a colon (:).

Note:

To obtain your license key file from SmartKeys, go to the SmartKeys Web page at

http://www.synopsys.com/smartkeys

Setting Up Hercules for Each User

To set up a new user, you must

- Source the .cshrc or . kshrc files

- Enter the path information

- Set up a license variable that points to the license server

It is recommended that the following information be added to the .cshrc, .kshrc, or a Hercules source file:

1. Add the Hercules executable files to your search path.

   - If you are using the C shell, enter

     set path=(*install_dir*/bin/platform $path)

   - If you are using the Bourne shell, enter

     PATH=*install_dir*/bin/*platform*: $PATH
     export PATH

2. Set the following licensing variable:

   LM_LICENSE_FILE

Verifying the Hercules Installation

To verify the Hercules installation,

1. Make sure you are in a directory where you have read/write privileges.

    ```
    % cd $HOME
    ```

2. Invoke the tool by entering

    ```
    % hercules -V
    ```

    If you see information about the product version, production date, and copyright, the installation was successful.

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Installing HSPICE (version U-2003.09) on UNIX or Windows Platforms

Note:

The installation instructions in this chapter are the most up-to-date available at the time of production. However, changes might have occurred. For the latest installation information, see the product release notes or documentation.

This chapter includes the following sections:

*   Media Availability and Supported Platforms

*   Installing the Software on UNIX or Linux Platforms

*   Configuring HSPICE and AvanWaves for UNIX and Linux

*   Setting Up HSPICE and AvanWaves for Each User

*   Verifying the HSPICE and AvanWaves Installation

- Installing the Software on Windows Platforms

- Related Documentation and Customer Support

Media Availability and Supported Platforms

HSPICE, Interface, AvanWaves, and Metaencrypt are available on CD and by EST download on all platforms, with the following exceptions:

- Interface is not available on Linux, Dec Alpha, SGI, or Windows platforms.

- AvanWaves is not available on the Linux platform.

Obtain the appropriate binary executable files for your operating system. Table 28-1 lists the supported platforms for this release.

Table 28-1   Platforms and Keywords

Operating system	Synopsys platform keywords
HP-UX 10.20, 11.0,	hp32 (32-bit mode) hp64 (64-bit mode)
Solaris 2.5, 8	sparcOS5 (32-bit mode) sparc64 (64-bit mode)
Red Hat Linux 6.2, 7.2	linux (32-bit mode)
AIX 4.3.	rs6000
Windows NT, 2000, XP	winnt, win2000, winxp
SGI IRIX 6.5.1	sgimips
DEC Alpha OSF 4.0	alpha

Note:

   When you use HSPICE with Windows platforms that use AMD
   Athlon CPUs, only a single processor is supported.

Installing the Software on UNIX or Linux Platforms

To install HSPICE and AvanWaves from the CD,

1. Make sure you have enough disk space for HSPICE and
   AvanWaves installation. For a full installation on one platform,
   120 MB is recommended.

2. To load the software, enter

   ```
   % path_to_cdrom/install_dir/synopsys_install
   ```

   The Synopsys Installation Program dialog box appears.

3. Enter the name of the installation directory in which you want to
   load the products.

4. Select the products and platforms that you want to load, and then
   click Load.

5. After the loading is completed, click Exit.

Note:

   If you have problems reading the CD on the Solaris 7 platform,
   contact Sun to obtain OS patch version 107465-04 or later
   (/kernel/fs/hsfs/patch).

To install HSPICE and AvanWaves by electronic software transfer,

1. If necessary, create an HSPICE installation directory. For
   example,

```
% mkdir -p /usr/synopsys/hspice
```

2. Change to the HSPICE installation directory.

```
% cd /usr/synopsys/hspice
```

3. Download the HSPICE binary files to the installation directory.

   You can get the latest HSPICE download instructions from the SolvNet Release Library.

4. Uncompress and untar the files.

```
% cd /usr/synopsys/hspice
```

```
% gzip -dc hspice_version_platform.tar.gz | tar xvf -
```

   If you don't want to see the list of unpacked files, omit the v from xvf -. For other methods of handling tar files, See "Performing EST Installation" on page 2-6.

   Note:

   This creates a subdirectory in the HSPICE installation directory. For example,

   /usr/synopsys/hspice/version

   In the remainder of this chapter, this subdirectory is referred to as the installation directory or $installdir.

5. To set the file permissions on the new directory tree and its contents, enter

```
% chmod -R 755  /usr/synopsys/hspice
```

6. Remove the hspice-version-platform.tar.gz file.

```
% rm hspice_version_platform.tar.gz
```

7. Configure HSPICE and AvanWaves for your site.

8. Verify the HSPICE and AvanWaves installations.

9. For each user, set the required environment variables.

To configure the tools, verify the installations, and set the environment variables for each user, see the following sections.

Configuring HSPICE and AvanWaves for UNIX and Linux

To configure HSPICE and AvanWaves for UNIX and Linux platforms,

1. Verify the platform on which you want to configure the products.

2. Invoke the configuration program by entering

    ```
    % installation_directory/bin/config
    ```

    The Configure Products dialog box appears.

3. If you want to configure AvanWaves, select Configure AvanWaves.

    No option is required.

4. If you want to configure HSPICE, select Configure HSPICE.

    The configuration options are "versions file...," "meta.cfg file ...," "hspice.ini file ...," and setup buttons. If you do not select these options, the default settings apply.

5. After selecting your options, click the Configure button.

    The configuration log is shown in the middle of the dialog box.

6. Click Exit when the configuration has finished.

Setting Up HSPICE and AvanWaves for Each User

To set up a new tool user,

- Enter the path information.

- Set up a license variable that points to the license server.

- Source the cshrc.meta file, or use a dot (.) with the kshrc.meta file (where . is a Bourne or Korn shell command).

Add the following information to the cshrc, . kshrc, or an HSPICE source file:

1. Add the HSPICE and AvanWaves executable files to your search path.

    - If you are using the C shell, enter

      set path=(*installation_directory*/bin $path)

    - If you are using the Bourne or Korn shell, enter

      PATH=*installation_directory*/bin:$PATH

2. Set one of the following licensing variables:

   LM_LICENSE_FILE

   or

   AVANTD_LICENSE_FILE

   For example,

    - If you are using the C shell, add the following line:

      setenv LM_LICENSE_FILE *port@hostname*

- If you are using the Bourne or Korn shell, enter these lines:

```
set LM_LICENSE_FILE=port@hostname
export LM_LICENSE_FILE
```

3. Source the cshrc.meta or .kshrc.meta file.

- For C shell users, enter

```
% source installation_directory/bin/cshrc.meta
```

- For Bourne or Korn shell users, enter

```
$ . installation_directory/bin/kshrc.meta
```

Verifying the HSPICE and AvanWaves Installation

After you set up the licensing and HSPICE software packages, do the following:

- For C shell users, enter

```
% source installation_directory/bin/cshrc.meta
```

- For Bourne or Korn shell users, enter

```
$ . installation_directory/bin/kshrc.meta
```

If this step fails, or if the cshrc.meta file does not exist, the installation program failed. To find the problem, review the installation log file:

```
installation_directory/bin/synopsys_config.log_pid
```

Verifying the HSPICE Installation

To verify the HSPICE installation,

1. Make sure you are in a directory where you have read/write privileges.

    ```
    % cd $HOME
    ```

    The `$installdir` environment variable refers to the HSPICE installation directory. This variable is created when you source the cshrc.meta file.

2. To run a demonstration simulation, enter

    ```
    % hspice $installdir/demo/hspice/bench/demo.sp >
    demo.lis
    ```

3. To view the simulation output, enter

    ```
    % vi demo.lis
    ```

4. If you are able to get a license, you will see a message about licenses near the top of the listing.

    ```
    lic: Checkout hspice; Encryption code: xxx
    ```

    If you get a `***** job concluded` statement near the bottom of the listing, the simulation was successful.

Verifying the AvanWaves Installation

To verify the AvanWaves installation,

1. Change to the installation directory.

    ```
    % cd $installdir/bin/
    ```

    The $installdir environment variable refers to the
    AvanWaves installation directory. This variable is created when
    you source the cshrc.meta file.

2. To start AvanWaves, enter

    ```
    % awaves &
    ```

Installing the Software on Windows Platforms

This section describes how to install and set up the license server for
HSPICE on a PC. To run HSPICE, your system must have

*   A Pentium or compatible processor or later

*   At least 64 MB of memory (128 MB or more is recommended)

*   A parallel port for the security key (if you are using a dongle-
    based license)

*   Windows NT, Windows 2000, or Windows XP operating system

*   Approximately 100 MB of free disk space for a full installation of
    HSPICE, AvanWaves, and MetaEncrypt

Installing With Windows Explorer

To install HSPICE by using Windows Explorer,

1. Insert the HSPICE CD into the CD drive.

2. In Windows Explorer, double-click the CD drive icon.

3. Double-click the pchspice folder icon.

4. Double-click the Setup application icon.

5. To install the software, follow the screen prompts.

Installing With Windows DOS Shell

To install HSPICE by using the Windows DOS shell,

1. Insert the HSPICE CD into the CD drive.

2. At the DOS shell command prompt, enter

    `c:\> CD-ROM drive letter:\pchspice\setup.exe`

3. To install the software, follow the screen prompts.

Installing the Sentinel System Drivers

Installation of Sentinel drivers is required only when you use dongle-based licenses. For information about the Win32 sentinel_key driver (dongle key), see the README.txt file located in the %installdir% installation directory.

In Windows Explorer,

1. Double-click the %installdir%\DRIVERS\flexid.exe file to install the driver.

2. Set the `LM_LICENSE_FILE` environment variable.

   This variable is normally set in the Control Panel. (For Windows NT, choose Control Panel > System > environment. For Windows 2000 or WindowsXP, choose Control Panel > System > Environment Variables.)

   LM_LICENSE_FILE=path_to_license_file

For detailed information about the FLEXlm licensing, see the *FLEXlm End User Manual*.

Note:
   If you have multiple dongles connected to each other, the Synopsys dongle must be connected directly to the PC.

Running HSPICE on Windows

You can run HSPICE in any of the following ways:

• Double-click the HSPUI icon and then click the Simulate button.

• Double-click the HSPICE icon. You are prompted to enter names for the input netlist file and output list files. If you do not name an output file, all of the .lis, .st0, and .tr0 files will be written in the directory in which you run HSPICE or hspice.exe.

• At the DOS prompt in Windows, enter

   ```
   c:\> cd work_directory
   c:\> %installdir%\BIN\HSPICE -i netlist -o listfile
   ```

Running AvanWaves on Windows

Start AvanWaves in any of the following ways:

- Double-click the HSPUI icon and then click the AvanWaves button.

- Double-click the AvanWaves icon.

- At the DOS prompt in Windows, enter

  ```
  c:\> %installdir%\BIN\AWAVES
  ```

Important:

> If you start AvanWaves by using a method other than selecting the HSPUI icon and then you open online Help, you must delete the Galaxy Help Server task from the Task Manager after you exit AvanWaves. Otherwise the next invocation of HSPICE can have a memory conflict with the AvanWaves Galaxy Help server.

Running Older Versions of HSPICE

You can use the HSPUI utilities to run different versions of HSPICE that are already installed on your computer. In the installation directory (%installdir%), the versions.txt file contains all the information about different versions of HSPICE.

An example of a versions.txt file follows:

```
<BOF>
  c:\avanti\Hspice2001.2\BIN\hspice.exe    HSPICE 2001.2
  c:\avanti\Hspice2002.2\BIN\hspice_mt.exe HSPICE 2002.2
<EOF>
```

You can add different HSPICE executable file full paths to subsequent lines in the versions.txt file. The second column contains comments as a version reminder and is ignored by the HSPUI utility. After invoking HSPUI, you can select the HSPICE version in the combo box of the HSPUI window. HSPICE will run according to the path selected in the combo box.

The following executable files are provided on the HSPICE, AvanWaves, and Utility disks:

```
*.EXE File
%installdir%\bin\lmutil (lmutil hostid - sentinel; run from
the DOS prompt)
\%installdir%\bin\hspice (HSPICE executable running in a PC
Windows environment)
%installdir%\bin\awaves (AvanWaves executables running in a
PC Windows environment)
%installdir%\bin\hspui (GUI utility that launches HSPICE.EXE
and AWAVES.EXE)
```

The hspice.ini File

On Windows platforms, the hspice.ini file is the configuration file that contains HSPICE options such as the search path. For example,

```
.Option Post =1
.Op
.Option Post_version = 9601
.................
```

If you have installed more than one version of HSPICE on the same PC, more than one hspice.ini file will exist, but only one takes effect when you start the tool.

The %installdir%\meta.cfg file points to the current hspice.ini file.

Related Documentation and Customer Support

For documentation about using HSPICE and AvanWaves, see the

- *AvanWaves User Guide*

- *Device Models Quick Reference Guide*

- *Elements and Device Models Manual*

- *HSPICE Applications Manual*

- *HSPICE Quick Reference Guide*

- *HSPICE Signal Integrity Guide*

- *HSPICE Simulation and Analysis User Guide*

- *MOSFET Models Manual*

All documentation is available on SOLD or through Documentation on the Web. Print versions are available only for the *HSPICE Quick Reference Guide* and the *Device Models Quick Reference Guide*. For information about accessing the documentation, see "Related Publications" on page xix.

For information about contacting Customer Support, see "Customer Support" on page xxi.

If you cannot solve a problem, use an editor to review the following files for system error messages:

- /tmp/*pid*/synopsys_install.log_*pid* (which is generated during installation)

- /tmp/*pid*/synopsys_config.log_*pid* (which is generated during configuration)

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Installing Star-RCXT (version V-2003.12)

Note:

The installation instructions in this chapter are the most up-to-date available at the time of production. However, changes might have occurred. For the latest installation information, see the product release notes or documentation.

This chapter includes the following sections:

- Media Availability and Supported Platforms

- Installing the Software

- Setting Up Star-RCXT for Each User

- Verifying the Star-RCXT Installation

- Customer Support

Media Availability and Supported Platforms

Star-RCXT is available on CD or by EST download. Obtain the appropriate binary executable files based on the operating system you need. Table 29-1 shows the supported platforms for the V-2003.12 release.

Table 29-1   Supported Operating Systems and Platform Keywords

Operating System	Platform keyword
Solaris 5.7+	Sun.32, Sun.64
HP-UX B.11.00+	HP.32, HP.64
Red Hat Linux 7.2	IA.32
Red Hat Linux Advanced Server 2.1	IA.64

Installing the Software

To install Star-RCXT,

1. Create a Star-RCXT installation directory if one does not already exist. For example,

   ```
   % mkdir -p /usr/synopsys/star-rcxt
   ```

2. Change to the Star-RCXT installation directory.

   ```
   % cd/usr/synopsys/star-rcxt
   ```

3. Download the Star-RCXT binary files to the installation directory.

   You can get the latest Star-RCXT download instructions from the SolvNet Release Library.

4. Uncompress and untar the files. For example,

```
% gzip -dc platform_star-rcxt-version.tar.gz | tar xvf -
```

Substitute the appropriate platform keyword for *platform*. (See "Media Availability and Supported Platforms" on page 29-2.)

Note:

This command will create a subdirectory in the Star-RCXT installation directory. For example,

```
/usr/synopsys/star-rcxt/platform_star-rcxt
```

5. To set the file permissions on the new directory tree and its contents, enter

```
% chmod -R 755 /usr/synopsys/star-rcxt
```

6. Remove the *platform*_star-rcxt-version.tar.gz file.

```
% rm platform_star-rcxt-version.tar.gz
```

Setting Up Star-RCXT for Each User

To set up a new tool user, each user must

- Source .cshrc or . kshrc

- Enter the path information

- Set up a license variable that points to the license server

It is recommended that the following information be added to the .cshrc, .kshrc, or an Star-RCXT source file:

1. Add the Star-RCXT executable files to your search path.

   - If you are using the C shell,

     ```
     set path=(installation_directory/bin $path)
     ```

   - If you are using the Bourne shell,

     ```
     PATH=installation_directory/bin:$PATH
     export PATH
     ```

2. Set the following licensing variable:

   ```
   LM_LICENSE_FILE
   ```

Verifying the Star-RCXT Installation

To verify the Star-RCXT installation,

1. Make sure you are in a directory with read/write privileges.

   ```
   % cd $HOME
   ```

2. Run the Star-RCXT GUI on each installed platform by entering the following command:

   ```
   % StarXtract -gui
   ```

   The GUI will appear on your screen.

3. Exit the GUI by choosing File > Exit in any GUI window.

Customer Support

For information about using Star-RCXT, see the *Star-RCXT User Guide*.

For information about accessing Star-RCXT documentation, see "Related Publications" on page xix.

For information about contacting Customer Support, see "Customer Support" on page xxi.

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Installing StarSim-XT (version V-2003.12)

This chapter contains the following sections:

- Media Availability and Supported Platforms

- Downloading and Installing the Software

- Setting the Environment Variables

- Verifying the StarSim-XT Installation

- Customer Support

Media Availability and Supported Platforms

StarSim-XT is available on CD or by EST download. Obtain the appropriate binary executable files based on the operating system you need. Table 30-1 shows the supported platforms for the V-2003.12 release.

Table 30-1   Supported Operating Systems and Platform Keywords

Operating system	Platform keyword
Solaris 7, 8	sparcOS5
(Solaris 5.5, 5.6 are also supported)	sparc64
HP-UX 11.0, 11i	hp32
(HP-UX 10.2 is also supported)	hp64
Red Hat linux 7.2	linux
(Red Hat linux 7.1 is also supported)	

Downloading and Installing the Software

To download and install StarSim-XT,

1. Create a StarSim-XT installation directory if one does not already exist. For example,

   ```
   % mkdir -p /usr/synopsys/starsimxt
   ```

2. Download the StarSim-XT release to the installation directory.

   You can get the latest StarSim-XT download instructions from the SolvNet Release Library.

3. Uncompress and untar the files:

   ```
   % gzip -dc starsimxt_version_platform.tar.gz | tar xvf -
   ```

This command creates a subdirectory in the StarSim-XT installation directory. For example,

/*usr*/synopsys/starsimxt/starsimxt_*version_platform*

In the remainder of this chapter, this subdirectory is referred to as the StarSim-XT installation directory.

4. To set the file permissions on the new directory tree and its contents, enter

```
% chmod -R 755  /usr/synopsys/starsimxt
```

5. Remove the starsimxt_*version_platform*.tar.gz file.

```
% rm starsimxt_version_platform.tar.gz
```

6. For each user, set the required environment variables, as described in the next section.

Setting the Environment Variables

This section discusses the following environment variables:

- `starsimxt_HOME`

- `LM_LICENSE_FILE`

It is recommended that you place these variables in your $HOME/.cshrc or $HOME/.profile file as your default settings.

Setting the $starsimxt_HOME Environment Variable

Follow these steps.

1. Set the `$starsimxt_HOME` environment variable to point to your StarSim-XT installation directory.

   - If you are using the C shell, enter

     ```
     % setenv starsimxt_HOME starsimxt_installation_directory_path
     ```

   - If you are using the Bourne shell, enter

     ```
     % setenv starsimxt_HOME=starsimxt_installation_directory_path
      EXPORT starsimxt_HOME
     ```

2. Add $starsimxt_HOME/bin to your search path.

   - If you are using the C shell, enter

     ```
     set path=($starsimxt_HOME/bin $path)
     ```

   - If you are using the Bourne shell, enter

     ```
     PATH=$starsimxt_HOME/bin:$PATH
     export PATH
     ```

Setting the LM_LICENSE_FILE Environment Variable

To enable StarSim-XT to check out a license, you must
set the `LM_LICENSE_FILE` environment variable. For example,

- If you are using the C shell, enter the following line:

  ```
  setenv LM_LICENSE_FILE port@hostname
  ```

- If you are using the Bourne shell, enter these lines:

  ```
  set LM_LICENSE_FILE=port@hostname
  export LM_LICENSE_FILE
  ```

The port and host name variables correspond to the TCP port and license server *hostname* specified in the SERVER line of the Synopsys license file. To ensure better performance, it is recommended that you use *port@host*name rather than using the path to the license file.

Each license file can contain licenses for many packages from multiple vendors. You can specify multiple license files by separating each entry with a colon (:).

Verifying the StarSim-XT Installation

To verify the StarSim-XT installation,

1. Make sure you are in a directory with read/write privileges.

   ```
   % cd $HOME
   ```

2. To run StarSim-XT, enter

   ```
   % star_simxt filename
   ```

   where *filename* is the name of your netlist. For example,

   ```
   % star_simxt ckt.in
   ```

StarSim-XT directs the simulation output to an ASCII text file named ckt.lis. If you specified the HTML keyword in the configuration file, StarSim-XT directs the output to a file named ckt.html.

Customer Support

A new e-mail alias has been created for Star-SimXT users. To subscribe to this mailing list, send an e-mail to starsim-user-request@synopsys.com, and include subscribe in the body of the e-mail. To unsubscribe, type unsubscribe.

For information about using StarSim-XT, see the *Star-Sim XT User Guide*. To find out how to access StarSim-XT documentation, see "Related Publications" on page xix.

For information about contacting Customer Support, see "Customer Support" on page xxi.

31

Installing TCAD Products and Utilities

Note:

> The installation instructions in this chapter are the most up-to-date available at the time of production. However, changes might have occurred. For the latest installation information, see the product release notes or documentation in SolvNet.

For tool versions for this release, see Table 31-2 on page 31-3.

This chapter includes the following sections:

- Supported Platforms and Media Availability

- Installing TCAD Products

- Setting the User Environment to Find the TCAD License

- Running TCAD Products

- Using Graphics Devices

- Troubleshooting

- TCAD Utilities

Supported Platforms and Media Availability

Table 31-1 lists the supported platforms, operating systems, and corresponding Synopsys platform keywords for this release. For detailed information, see "Supported Platforms and Operating Systems" on page 1-2.

Table 31-1   Supported Platforms, Operating Systems, and Keywords

Platform	Operating system	Synopsys platform keywords	Window environment
HP	HP-UX 11.0, 11	hp32 (32-bit mode)	CDE
Sun	Solaris 8, 9	sparcOS5 (32-bit mode) sparc64 (64-bit mode)	CDE
IBM	AIX 4.3.3	rs6000	CDE
Intel IA-32	Red Hat Linux 7.2	linux (32-bit mode)	GNOME
DEC ALPHA	Digital UNIX 4.0	alpha64	

TCAD products are available on CD or by FTP download. Obtain the appropriate binary executable files for your operating system.

Table 31-2 lists the version U-2003.09, U-2003.06, and U-2003.03 TCAD products and their supported platforms. For the latest product-specific platform information, see the release notes for your tool.

Table 31-2   TCAD Products and Supported Platforms

Product	Version	Platform keyword
Aurora	U-2003.09	sparcOS5, hp32, linux, rs6000, alpha64
Raphael	U-2003.09	sparcOS5, sparc64, hp32, rs6000, alpha64
Raphael NES[1]	U-2003.03	sparcOS5, hp32, rs6000
Taurus-Layout	U-2003.09	sparcOS5, hp32, rs6000, alpha64
Taurus-Medici	V-2003.12	sparcOS5, hp32, rs6000, linux, alpha64
Taurus-TSuprem4	V-2003.12	sparcOS5, hp32, rs6000, linux, alpha64
Taurus-Visual	U-2003.09	sparcOS5, hp32, rs6000, alpha64
Taurus-Workbench	U-2003.09	sparcOS5, hp32, rs6000, alpha64

1.   These products might require government-issued export licenses prior to
sale to certain countries. Contact your sales representative for additional information.

Installing TCAD Products

The general procedure for installing a TCAD product consists of the following steps:

1. Obtain a SolvNet account.

2. Download TCAD software or request CD media.

3. Establish a TCAD directory.

4. Run the product installation script.

5. Obtain the license.dat file and start the license daemon.

   To obtain the license.dat file, go to the SmartKeys Web page at http://www.synopsys.com/smartkeys.

   For information on starting the license daemon, go to the Licensing QuickStart Guide at www.synopsys.com/keys.

Obtaining a SolvNet Account

SolvNet is the online gateway to Synopsys service and support. Through SolvNet, customers can retrieve software, request media, retrieve license files, and view online documentation.

If you do not have a SolvNet account, register for an account by visiting the SolvNet Web site (http://solvnet.synopsys.com) and following the instructions to register with SolvNet.

Note:
   To access Synopsys online services in SolvNet, you need to register with a valid Synopsys site ID.

Downloading TCAD Software or Requesting CD Media

After establishing a SolvNet account by using your Synopsys site ID, you can download the TCAD software from the Synopsys electronic software transfer (EST) system or, if eligible, request CD media.

To download the software, follow these steps:

1. Go to ftp.synopsys.com.

   ```
   % ftp ftp.synopsys.com
   ```

2. When prompted for a name and password, enter your SolvNet logon name and password.

3. At the ftp prompt, set the transfer mode to binary.

   ```
   ftp> binary
   ```

4. Change directory to the revenue vault.

   ```
   ftp> cd /rev
   ```

5. Change directory to the appropriate product directory (for example, a_tcad-medici_version).

   ```
   ftp> cd product_directory
   ```

6. List the directory contents.

   ```
   ftp> dir
   ```

7. For each file that you want, retrieve the file by using the get command.

   ```
   % get filename
   ```

   For example,

   ```
   % get tcad-medici_version_platform.install
   ```

8. After retrieving the product files, quit the FTP session.

```
ftp> quit
```

To request CD media,

- Log on to the SolvNet Web site (http://solvnet.synopsys.com) and click the MediaDocs link.

  Note:
  Because of contract restrictions, only certain sites are authorized to order CD media. If you are not sure about your site's eligibility, contact your Synopsys account manager.

Establishing a TCAD Directory Tree

If a TCAD product has previously been installed on your system, a TCAD directory with a name such as /*usr*/tcad should already exist. If you are uncertain about the directory name, contact your system administrator for assistance.

If a TCAD directory does not exist, decide where to store the TCAD products on your system. Consult Table 31-3 to determine the approximate disk space required for the products you need. Make sure you select a location with sufficient disk space to install these products and allow room for future installations.

Table 31-3   TCAD Disk Requirements

Product	Disk (MB)
Aurora	190
Raphael	125
Raphael-NES	75
Taurus-Layout	20

Table 31-3   TCAD Disk Requirements (Continued)

Product	Disk (MB)
Taurus-Medici	250
Taurus-Tsuprem4	125
Taurus-Visual	125
Taurus-WorkBench	355

Running the Installation Script

If you are installing from a file retrieved from the FTP site, make sure the file has the correct file permissions:

```
% chmod 755 product_version_platform_install
```

If you are installing from CD, mount the CD and change directory to the CD drive. Contact your system administrator if you require assistance in mounting the CD.

Next you must run the installation script:

```
% ./product_version_platform_install
```

The installation script creates the appropriate directories and installs the product. During execution of the script, several actions take place, and some require you to respond to prompts.

1. The installation script prompts you for your TCAD directory. Enter the full path to your TCAD directory. The installation script then extracts the product into your TCAD directory.

2. Upon successful completion of the installation, the script displays a summary. A copy of this summary, as well as a log of your responses to the system prompts, is located in the install_*program*.log file in the program directory.

Caution!

You must add the tcad/bin directory to your search path if it is not already there. For example, if your TCAD directory is /*usr*/tcad, your search path must include /*usr*/tcad/bin. For details, see "Setting Up Your Search Path," next.

After the installation is completed, the directory tree shown in Table 31-4 exists as subdirectories of the TCAD directory.

Table 31-4   TCAD Subdirectories

Subdirectory	Contents
bin/	Contains links to the TCAD executable files.
program_version/	Contains the TCAD product files and directories, including the *install_program* product installation script.
utility/	Contains various utilities for use with TCAD products. For a discussion of the contents of the utility directory, see the "TCAD utility Directory" on page 31-21.
license/	Contains the TCAD Network License Software and the license.dat license data file.
license_tma/	Contains the TCAD Network License Software for all supported platforms in compressed tar format.

Setting Up Your Search Path

A search path is a list of directory paths. The system searches through directories to find an executable file. Each TCAD product user must have a search path that contains the TCAD bin directory. This section explains how to set up your search path so that you can run a TCAD product from any directory.

Checking Your Search Path

If a TCAD product has already been installed on your system with the installation script, the TCAD bin directory might already exist in your search path. To determine whether it does, enter

```
% which program
```

where *program* is a TCAD executable file such as medici, raphael, or taurus.

If you get a response similar to

```
/usr/tcad/bin/program
```

your search path is set correctly.

If you get a response similar to

```
no program in /bin /usr/bin /usr/local/bin
```

you must modify your search path as described in the following section.

Modifying Your Search Path

Your search path is defined by the `PATH` environment variable. Determine your current search path by entering

```
% echo $PATH
```

Note:

PATH must be entered in uppercase letters.

This is an example of a search path:

```
.:/bin:/usr/bin:/usr/local/bin
```

Modifying Your Path in the C shell

The following example illustrates the commands used to modify your path. In this example, the TCAD directory on your system is named /*usr*/myaccount/tcad.

- To permanently add this directory to your search path, add the following line to your $HOME/.profile:

  ```
  set path=(/usr/myaccount/tcad/bin $path)
  ```

  Save your changes.

- Enter the following command:

  ```
  % source .cshrc
  ```

Modifying Your Path in the Bourne or Korn Shell

To modify your path you must use specific commands. In this example, the TCAD directory on your system is named /usr/myaccount/tcad.

- To permanently add this directory to your search path, add the following line to your $HOME/.profile or $HOME/.kshrc file:

```
PATH=/usr/myaccount/tcad/bin:$PATH
export PATH
```

Save your changes.

- Enter one of the following commands:

```
$ . profile
```

or

```
$ . kshrc
```

Setting the User Environment to Find the TCAD License

When you start a TCAD tool, the tool looks for a license in this order:

- The default location, *TCAD directory*/license/license.dat

- TMALIC

- LM_LICENSE_FILE

The TMALIC and LM_LICENSE_FILE environment variables point to the license server. For example,

```
setenv LM_LICENSE_FILE /path/to/license.dat
```

Running TCAD Products

Table 31-5 lists the general format for most TCAD products. (For product availability for this release, see "Supported Platforms and Media Availability" on page 31-2.) If you install multiple versions of a product, the executable name is whatever you chose during installation. For most products, if you run them without specifying an input file, you are in interactive mode.

Table 31-5   Products and Keywords

Product	Format	Description
Aurora	aurora *input_filename*	Runs Aurora with an input file.
Aurora	auroragui	Runs the Aurora GUI.
Davinci	davinci *input_filename*	Runs Davinci (30,000 nodes) with an input file.
Davinci	dv30k *input_filename*	Runs Davinci (30,000 nodes) with an input file.
Davinci	dv60k *input_filename*	Runs Davinci (60,000 nodes) with an input file.
Davinci	dv100k *input_filename*	Runs Davinci (100,000 nodes) with an input file.
Medici	medici *input_filename*	Runs Medici (10,000 nodes) with an input file.
Medici	md3200 *input_filename*	Runs Medici (3,200 nodes) with an input file.
Medici	md10000 *input_filename*	Runs Medici (10,000 nodes) with an input file.
Medici	md20000 *input_filename*	Runs Medici (20,000 nodes) with an input file.

Table 31-5   Products and Keywords (Continued)

Product	Format	Description
Medici	md60000 *input_filename*	Runs Medici (60,000 nodes) with an input file.
Raphael	raphael_*program input_filename*	Runs Raphael with an input file.
Raphael	dplot *input_filename*	Runs Dplot with an input file.
Taurus-Device	tdevice *input_filename*	Runs Taurus Device with an input file.
Taurus-Layout	tlayout *input_filename*	Runs Taurus-Layout with an input file.
Taurus-Process	tprocess *input_filename*	Runs Taurus Process with an input file
Taurus-Visual	tv	Runs Taurus-Visual.
Taurus-WorkBench	twb	Runs Taurus-WorkBench.
TSUPREM-4	tsuprem4 *input_filename*	Runs TSUPREM-4 with an input file.

Using Graphics Devices

This section discusses how graphics devices are described to TCAD products and how they are specified with parameters of program statements.

Graphics Device Hierarchy

With TSUPREM-4, the graphics device used is determined as follows:

- If a graphics device is specified in the input file with the DEVICE parameter on the OPTION statement, TSUPREM-4 uses that device.

- Otherwise, if the DEFPDEV environment variable is defined, TSUPREM-4 uses its value as the graphics device.

- Otherwise, if the TERM environment variable is defined, TSUPREM-4 uses its value as the graphics device.

- Otherwise, TSUPREM-4 uses the default device specified in the s4pcap file, which is initially set to ps for Postscript. The s4pcap file contains a description of each device known to the program. You can modify the file to make the default device refer to any available real plotting device. The default device specified in the s4pcap file is used if neither DEFPDEV nor TERM is defined.

With the other simulators, the graphics device used is determined as follows:

- If a graphics device is specified in the input file with the DEVICE parameter on the PLOT statement, that device is used.

- Otherwise, if the `DEFPDEV` environment variable is defined, its value is used as the graphics device.

- Otherwise, the default graphics device is used. The default graphics device is defined by the first line in the *pr*pdev file that contains an asterisk (*) as the first nonblank character. The *pr*pdev file is located in your TCAD directory in *program_version*/*platform*.

  Note:

  The *pr* notation in *pr*pdev refers to the product code (md, dv, and so on) that you are using. See Table 31-5 on page 31-12.

Specifying a Graphics Device

With TSUPREM-4, you can specify the graphics device in the input file with the `DEVICE` parameter on the `OPTION` statement. For example, the following statement sets the graphics device to X:

```
OPTION DEVICE=X
```

If you do not specify a graphics device in the input file, the `DEFPDEV` environment variable is used if it is set. You can set `DEFPDEV` to specify the graphics device by entering the following command:

```
% setenv DEFPDEV graphics device
```

If you are using the Bourne or Korn shell, you can use DEFPDEV to specify a graphics device by entering the following command:

```
$ DEFPDEV=graphics device
  export DEFPDEV
```

If you are using the C shell, you can set `DEFPDEV` so that the X graphics device is used by entering the following command:

```
% setenv DEFPDEV x
```

Note:

The graphics device must be entered in lowercase letters.

By setting the value of the DEFPDEV environment variable, you can set the graphics device to any device you want to use without disrupting work in progress by other TCAD software users.

With TSUPREM-4, if neither OPTION nor DEFPDEV is specified, TSUPREM-4 checks the TERM environment variable. TSUPREM-4 looks for the graphics device specified by TERM in the s4pcap file. If the graphics device is not found, and neither OPTION nor DEFPDEV is specified, TSUPREM-4 prints the following messages:

```
** Plot device vt100 not found in s4pcap file.
** Plotting to default device in s4pcap file.
```

In the first message, vt100 is the name of the device to which TERM is set.

With TSUPREM-4, if OPTION is not used and neither DEFPDEV nor TERM is set, TSUPREM-4 uses the default graphics device set in the s4pcap file. By default, the graphics device is set to ps in the s4pcap file.

With most other simulators, you can specify the graphics device in the input file with the DEVICE parameter on the PLOT statement. For example, the following statement sets the graphics device to X:

```
PLOT.2D TITLE="EXAMPLE" DEVICE=X
```

With the other TCAD simulators, if the PLOT statement does not specify a graphics device and DEFPDEV is not set, the simulator uses the default graphics device. The default graphics device is defined by

the first line in the *pr*pdev file that contains an asterisk (*) as the first nonblank character. (The *pr*pdev file is located in your TCAD directory in *program_version*/library.)

For example, if you want to change the default graphics device from Sun to X, edit the *pr*pdev file and move the asterisk (*) from the Sun entry to the X entry.

Before modification:

```
*SUN       29  20.32  15.24   33.0    33.0   -1   F   F   FTFF 9999
 I/SUN      29  20.32  15.24   33.0    33.0   -1   F   F   FTFT 9999
 X          30  20.32  15.24  500.0   500.0   -1   F   F   FTFF 9999
```

After modification:

```
SUN        29  20.32  15.24   33.0    33.0   -1   F   F   FTFF 9999
I/SUN      29  20.32  15.24   33.0    33.0   -1   F   F   FTFT 9999
*X          30  20.32  15.24  500.0   500.0   -1   F   F   FTFF 9999
```

For further information on the *pr*pdev file and possible graphics devices, see the manual for the TCAD product you are installing.

Sun, X, and tmaplot

Both Sun and X drivers use the tmaplot graphics utility to generate graphics by piping graphics output through the tmaplotx executable program. The tmaplot utility automatically remembers up to 200 plots and allows you to scroll through them.

Use the following means to control the display:

- Right mouse button: Scroll backward

- Left mouse button: Scroll forward

- Control-c: Kill tmaplot display

To use X graphics, you must set the DISPLAY environment variable to your display machine. Usually, DISPLAY is set to the name of your computer followed by :0.0. For example, if the name of your machine is *mymachine*, enter the following command to set DISPLAY:

```
% setenv DISPLAY mymachine:0.0
```

Note:

> To Sun users—You must also set the LD_LIBRARY_PATH environment variable to your OpenWindows library directory. For example,
>
> ```
> % setenv LD_LIBRARY_PATH /usr/openwin/lib
> ```

Troubleshooting

Error Message:

```
Xlib:  connection to "machine:0.0" refused by server
Xlib:  Client is not authorized to connect to Server
Bad return from XOpenDisplay
```

Explanation:

The program does not have permission to open a window on the display.

- Check to be sure the DISPLAY environment variable is set correctly.

- If the DISPLAY environment variable is set correctly on the console of the display, enter the following command:

    ```
    % xhost +
    ```

Error Message:

```
tmafork: command not found
```

Explanation:

The tmafork TCAD utility cannot be found.

- Check to be sure the TCAD bin directory is in the search path.

- Check to be sure the TCAD utilities are installed correctly and that tmafork is linked to the TCAD bin directory.

Error Message:

```
*** Open Pipe = signal 13 code 0
```

Explanation:

The TCADPLOT process is terminating abnormally, leaving the TCAD program piping data to a broken pipe.

- Check to be sure TCADPLOT works correctly outside the TCAD program by entering the following command:

```
% tmaplot x test
```

- If TCADPLOT works correctly outside the TCAD program, the error is most likely caused by insufficient system resources to start the TCADPLOT process. Check your system resources when running the TCAD program to be sure there are enough resources to run the TCADPLOT process.

Error Message:

```
window: Base frame not passed parent window in environment
Cannot create base frame. Process aborted.
```

Explanation:

You are attempting to run a SunView application when you are not running in the SunView window environment. This error can occur during STUDIO if your path is not set correctly.

- If you are running OpenWindows, be sure the OpenWindows bin directory precedes the /bin and /usr/bin directories.

TCAD Utilities

The TCAD utilities are a set of programs designed to help you use TCAD products more effectively. TCAD utilities are installed automatically as part of a TCAD product installation.

TCAD utility Directory

The utility directory for all new releases of TCAD products (after June 1991) is product independent. The utility directory contains a file named V#.# (where # is a number). V#.# is the version number of the utility in that directory.

Table 31-6 lists the utilities that TCAD provides.

Table 31-6   TCAD Utilities

Utility	Description
tmaplot	Generates Sun (SunView) and X graphics. For products released after June 1991, you must use tmaplot if you use Sun or X graphics.
tmafork	Allows systems that do not have a vfork system call to run a TCAD product without temporarily doubling the virtual memory required.
replot	Allows you to re-create TCAD graphical output without rerunning a simulation.
rfbtoa	Takes a TCAD binary output file, such as a structure file, and converts it to ASCII format.
tfatob	Takes a TCAD formatted (ASCII) file and converts it to binary format.

The tfatoa and tfbtob utilities are useful if you have TCAD products on multiple machine types. A binary file can be transferred between machines by converting it to ASCII on one machine and then transferring it to the second machine. Then it can be converted back to binary on the second machine.

Following is the directory structure of the utility directory, as it exists in a standard installed TCAD directory tree. The directories are shown with a trailing slash.

```
TCAD directory/bin/TCAD product/utility/
V#.#
install_utility
          replot/
                  replot
                  replotx
                  rppdev
                  rperr0
                  tfatob/
                  tfatob
                  tfatovx
                  tfbtoa
                  tfbtoax
                  tferr0
                  tmafork/
                  tmafork
                  tmaplot/
                  tmaplot
                  tmaplotx
                  tfbtoa
                  tfbtoax
                  tferr0
```

Note:

The TCAD utilities do not require licenses. You can use them on any machine under the direct control of your organization. However, you are not allowed to copy or distribute the TCAD utilities elsewhere.

Executing the TCAD Utilities

To execute the TCAD utilities, you must include the tcad/bin directory in your search paths, as described in "Setting Up Your Search Path" on page 31-9.

If you install updates to the TCAD utilities in the future, the installation script creates links from the new version of the TCAD utilities to the tcad/bin directory. Therefore once the search path has been modified to include tcad/bin, it is already set up for updates.

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Installing VirSim (version 4.3)

This appendix contains the following sections that give instructions for installing the stand-alone VirSim GUI:

- Installing the Software

- Setting Up VirSim for Each User

- Setting the SNPSLMD_LICENSE_FILE or LM_LICENSE_FILE Environment Variable

- Verifying the VirSim Installation

- Customer Support

Important:
The stand-alone installation instructions in this chapter apply only to customers who do not have the VCS or VHDL Simulation (Scirocco) tools. VirSim installs automatically with those tools.

Installing the Software

To download and install VirSim from the Web or by FTP, e-mail virsimsupport@synopsys.com.

Table A-1 shows the supported platforms for the 7.1 release.

Table A-1   Supported Platforms and Keywords

Operating system	Platform keyword
Solaris 7, 8	sparcOS5 (32-bit platform) sparc64 (64-bit platform)
HP-UX 11.0, 11i	hp32 hp64
Red Hat Linux 7.2	linux for Intel (2.4 kernel)

To download and install VirSim,

1. Create a VirSim installation directory and change to that directory. For example,

   ```
   % mkdir virsim_install_dir
   % cd virsim_install_dir
   ```

2. Download the software to the installation directory.

3. Uncompress and untar the files:

   ```
   % gzip -dc virsim_platform_version.tar.gz | tar xvf –
   ```

Setting Up VirSim for Each User

To set up a new VirSim tool user, add the VirSim directory containing the executable file to the PATH environment variable.

1. Set the VIRSIMHOME environment variable to point to the installation directory. For example,

   If you are using the C shell, enter

   ```
   % setenv VIRSIMHOME virsim_install_dir
   ```

   If you are using the Bourne, Korn, or Bash shell, enter

   ```
   % VIRSIMHOME=virsim_install_dir
     export VIRSIMHOME
   ```

2. Update your PATH environment variable as follows:

   If you are using the C shell, enter

   ```
   set path=($VIRSIMHOME/bin $path)
   ```

   If you are using the Bourne, Korn, or Bash shell, enter

   ```
   PATH=$VIRSIMHOME/bin:$PATH
   export PATH
   ```

Setting the SNPSLMD_LICENSE_FILE or LM_LICENSE_FILE Environment Variable

To enable VirSim to check out a license, you must set the `SNPSLMD_LICENSE_FILE` or the `LM_LICENSE_FILE` environment variable as follows:

- If you are using the C shell, add the following line:

    setenv SNPSLMD_LICENSE_FILE *port@hostname*

- If you are using the Bourne, Korn, or Bash shell, enter these lines:

    SNPSLMD_LICENSE_FILE=*port@hostname*
    export SNPSLMD_LICENSE_FILE

The port and host name variables correspond to the TCP port and license server host name specified in the SERVER line of the Synopsys license file. To ensure better performance, it is recommended that you use *the port@host* name rather than using the path to the license file.

Verifying the VirSim Installation

To verify the VirSim installation,

1. Change directories to an examples directory.

   ```
   % cd $VIRSIMHOME/examples/verilog/risc
   ```

2. To invoke VirSim, enter

   ```
   % virsim +vpdfile+risc.vpd +cfgfile+risc.cfg -f run.f
   ```

3. Exit the GUI by choosing File > Exit in any GUI window.

Customer Support

The support page on the Synopsys Web site is regularly updated with the latest information. Check this page for application notes, online help updates, and other valuable information:

http://www.synopsys.com/products/simulation/simulation.html

You can also send an e-mail message to VirSim Support at virsimsupport@synopsys.com.

Installing VirSim (version 4.3)

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