Advanced Design System 1.5
Installation on PC Systems

February 2001
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Chapter 1: Before You Install/Quick Install

This chapter contains brief pre-installation guidelines, an installation procedure overview, and quick installation instructions. Please take a look at this chapter before starting to install Advanced Design System software.

Note For last-minute installation information, view the file readme.htm, located on the PC Setup disk or UNIX Disk 1. For last-minute program and documentation information, refer to the Release Notes document on our website at http://www.agilent.com/eesof-eda.

Pre-Installation Guidelines

- Read the guidelines listed in Chapter 2, Requirements on PC Systems. This will tell you how much RAM, disk space, and other requirements are needed to run Advanced Design System.

- Important: You can retain earlier installations of Advanced Design System (such as version 1.3) and 1.5 in separate directories on the same machine, but you cannot install version 1.5 over a previous Advanced Design System installation. (This also applies to a Beta 1.5 version.) If you decide to delete the installation of a previous version, you should first copy any needed projects, customized configuration files, or other data that is saved there to a temporary directory. Make sure to retain your previous license.dat file, which is located in $<install_dir>/licenses. (The default $<install_dir> is AdvDesSys1.3.) Then delete the hpeesof directory, located in your home directory, which by default is C:\users\default, and everything underneath it. Next, copy all needed files from your temporary directory to the appropriate locations in the new version 1.5 installation directory.

- You need to install the Globetrotter/Sentinel software security hardware key on your PC’s parallel port or link your codewords to your PC’s LAN ethernet card. The key is generally shipped with the software media. If you do not have one, contact Agilent EEsof Business Support, as explained in the next paragraph. Refer to Chapter 4, “Setting Up Licenses on PC Systems” on page 4-1 for more information on both methods of securing codewords to your PC.
Before You Install/Quick Install

• You need to obtain FLEXlm licenses or codewords for Advanced Design System before you will be able to use the software. Codewords can be requested on the Web at:

   http://contact.tm.agilent.com/tmo/hpeesof/forms/codereqform.html

   For those who do not have Web access, a Codeword Request form is included with your installation media. Please fill it out completely and fax it to the number indicated on the form. You may also contact Agilent EEs of Business Support at 1-800-507-6274 if you have trouble.

• PC installation of Advanced Design System software uses the CD-ROM labelled PC Setup.

• Install using a login that has permissions to write to the disk drive you want to install Advanced Design System to. The installation will also add entries to your PC’s Windows Registry. Make sure the install login has permissions to do so.

• The installation path for Advanced Design System software cannot contain any folder names that contain a space. For example, do not install to:

   C:\Program Files\AdvDesSys1.5

• You can install all components shown in the installation program, but you will only be able to run those you have purchased licenses for.

• You can re-run the installation program, setup.exe to install components you chose not to install the first time through.
Installation Procedure Overview

1. Insert installation CD "PC SETUP" in PC CD-ROM drive.
2. Carefully follow instructions in the Installation program.
3. After the installation is complete, install your codewords.
4. Request codewords, install security key or link to LAN card.
5. Setup program will automatically run or choose Start > Run.
Quick Installation

This section provides quick step-by-step installation instructions. Some steps contain a reference to other sections of this manual for more details. For complete Installation program instructions, refer to Chapter 3, Installation Procedures.

To Install Advanced Design System on a PC:

1. Request and obtain codewords from Agilent EESof. (Refer to page 1-1.)
2. Exit all Windows programs and insert Advanced Design System installation CD labeled PC Setup into your CD-ROM drive.
3. Setup program will automatically run, or if not, choose Start > Run and enter D:\setup, where D: is the drive letter of your CD-ROM drive.
4. The installation program starts and a Welcome screen appears. Click Next and fill out the Registration Information. (There are no special requirements for the information you enter and no connection with your licenses or codewords. This only appears the first time you run Setup). Click Next to continue.
5. In the Specify Program Folder screen, choose Next to install to the default destination. Choose Browse to specify a different destination folder. If you specify a folder that does not already exist, the installation program will create it for you.
6. In the Specify Your Home Folder screen, the folder you specify will become the default startup folder for Advanced Design System. This folder will also be used to create a folder named hpeesof that contains configuration data. Choose Next to accept the default or Browse to select a different folder.

Note If you are using a network, it is recommended that you choose a Home folder on your local computer, not on a network server, for best performance.

7. In the Advanced Design System Installation 1.5/PC Installation Options screen, you may choose to do a Typical, Complete, or Custom installation.

- Typical installs all ADS Design Suites, related modules (such as Momentum electromagnetic simulator, Digital Filter Designer, Vendor Component Libraries, etc.), examples and documentation. The disk space required is shown on the screen.

   Typical does not install ADS Design Libraries (such as W-CDMA, Digital TV,
Quick Installation 1-5

or GSM), DesignGuides, nor a few specialized tools (such as HDL Cosimulation or RF Compiler). For a list of what is installed with a Typical Installation, click the button to the left of the Typical label, choose your installation folder on the Folder Selection screen, and then review the list on the screen that follows.

- Complete installs all Advanced Design System suites, modules, examples, and documentation. The disk space required is shown on the screen.
- Custom allows you to choose the specific ADS components you want to install. Scroll as needed to find components. More about the Custom installation follows.

If you choose to do a Custom installation, and the machine you are installing to will be a network server, you must install the LAN Server for Clients component. (Refer to the section “Installing for a Network Server and Clients” on page 3-8 in Chapter 3, Installation Procedures.)

If you choose to do a Typical or Complete installation, skip to step 12.

8. If you chose to do a Custom installation, the next screen to appear allows you to choose the specific components you want to install. Scroll as needed to find components. Click on a component name to see a description. Make sure to check all boxes of the components you wish to install. Choose Next to continue.

9. In the Check Setup Information screen, you can view the choices you have made. Choose Next to begin the installation, or Back to go back and change your selections. This screen appears after other optional choices are made later in the program. The program starts copying files.

**Note** If necessary, the program will prompt you to switch CD-ROMs.

10. Next is the Select Online Manuals to Install screen. Choose either Online Documentation installed to hard disk or Documentation accessed from CD-ROM. This documentation includes all online help and manuals. If you have the disk space, it is recommended that you install the documentation to your hard disk. If you click Next without checking any boxes, no documentation files will be installed.

11. Next is the Select Examples to Install screen. These are the application examples shipped with Advanced Design System. You can choose the complete
set of examples or just the application(s) you’re interested in. If you click Next without checking any boxes, no examples will be installed.

12. In the Check Setup Information screen, you can view the choices you have made. Choose Next to continue the installation, or Back to go back and change your selections. The program continues copying files.

13. A dialog box appears indicating that Setup is complete and reminding you that you must also install the software license key (Globetrotter/Sentinel hardware key). Choose OK.

14. A final dialog box appears indicating that you will need licenses or codewords to run Advanced Design System and giving you information on how to obtain them. Choose OK and the Setup program exits.

15. If you are installing a network server, you are now ready to start setting up clients. (Refer to the section “Installing for a Network Server and Clients” on page 3-8 in Chapter 3, Installation Procedures.)

16. Install your codewords. (Refer to Chapter 4).

17. Install the Globetrotter/Sentinel software security hardware key to your PC’s parallel port or link your codewords to your PC LAN card’s ethernet ID. Refer to “Step 1: Install the Hardware Key on Your Parallel Port or Read Your LAN Card’s Ethernet ID” on page 4-3.

If you are running Windows NT only and using the key, you also have to install the driver for the security key. Refer to “Step 2: Install the Sentinel Driver For Your Hardware Key (Windows NT Only)” on page 4-5.

You are now ready to run Advanced Design System. To start the Advanced Design System applications:

From the Start menu, select Programs > Advanced Design System 1.5.
Chapter 2: Requirements on PC Systems

To successfully install and run Advanced Design System software, you need the hardware and software specified in Table 2-1.

Table 2-1. Hardware and Software Requirements

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating System</td>
<td>Microsoft® Windows® 95, Microsoft Windows 98, Microsoft Windows NT® 4.0, or Microsoft Windows 2000.</td>
</tr>
<tr>
<td>Display</td>
<td>High-resolution color only (Super VGA, 800x600, 15-inch monitor minimum).</td>
</tr>
<tr>
<td>RAM</td>
<td>128 MB RAM recommended minimum. Additional RAM will improve performance.</td>
</tr>
<tr>
<td>Virtual Memory</td>
<td>300 MB recommended minimum. Increased virtual memory may be required for larger designs. Note for NT 4.0 only: To avoid potential memory problems, make sure your virtual memory (swap space) is always larger than the amount of your RAM.</td>
</tr>
<tr>
<td>Web Browser</td>
<td>ADS documentation is HTML-based and displayed via browser. Netscape or Microsoft Internet Explorer version 4.0 or higher is required.</td>
</tr>
<tr>
<td>Hard Disk</td>
<td>135 MB for a minimum installation. 1.3 GB for a complete installation. It is recommended that you install Advanced Design System software on your local drive. Multiple drives or partitions are not supported. Recommended file systems are FAT32 and NTFS. Novell file servers are not supported. <strong>VFAT/FAT systems are not recommended for complete installations.</strong> For more information, refer to Appendix D, Chapter D, Ensuring Hard Disk Storage Efficiency.</td>
</tr>
<tr>
<td>Security Device</td>
<td>Advanced Design System software codewords are locked to an external device (Globetrotter/Sentinel software security key) attached to the PC's parallel port or locked to a PC's LAN ethernet card.</td>
</tr>
<tr>
<td>Supported Printers</td>
<td>Printers supported by the operating system used. (Note for HP LaserJet 3100 Only: There may be a conflict with the hardware key; if so, contact HP Printer Support by phone or on the web.)</td>
</tr>
<tr>
<td>Supported Plotters</td>
<td>Plotters supported by the operating system used.</td>
</tr>
<tr>
<td>Supported Media Type</td>
<td>CD-ROM required for program installation. 3.5-inch floppy disk drive required for codewords.</td>
</tr>
<tr>
<td>CPU</td>
<td>Intel Pentium® class/ 200 MHz CPU or higher.</td>
</tr>
<tr>
<td>Model Development Kit)</td>
<td></td>
</tr>
</tbody>
</table>
Requirements on PC Systems

HP-IB and GPIB Interfaces

Following are complete lists of HP-IB and GPIB interfaces that are supported for this version of Advanced Design System under PC operating systems.

Windows NT 4.0 and Windows 2000

Following is the HP-IB and GPIB hardware and software interface kits that can be used with Windows NT 4.0 and Windows 2000. Follow the installation instructions that come with each interface.

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hewlett-Packard LAN/HP-IB Gateway Interface/ SICL drivers</td>
<td>E2050A Opt AG6</td>
</tr>
<tr>
<td>Hewlett-Packard HP-IB PCI card / SICL drivers</td>
<td>82350A</td>
</tr>
<tr>
<td>Hewlett-Packard HP-IB EISA card / SICL drivers</td>
<td>82341C</td>
</tr>
<tr>
<td>National Instruments AT-GPIB/TNT card/NI-488.2M drivers</td>
<td>776836-01</td>
</tr>
<tr>
<td>National Instruments PCMCIA-GPIB card/NI-488.2M drivers</td>
<td>777332-02</td>
</tr>
<tr>
<td>National Instruments PCI-GPIB card/NI-488.2M drivers</td>
<td>777073-01</td>
</tr>
</tbody>
</table>

Windows 95 and Windows 98

Following is the HP-IB and GPIB hardware and software interface kits that can be used with Windows 95 and Windows 98. Follow the installation instructions that come with each interface.

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hewlett-Packard LAN/HP-IB Gateway Interface/ SICL drivers</td>
<td>E2050A Opt AG6</td>
</tr>
<tr>
<td>Hewlett-Packard HP-IB PCI card / SICL drivers</td>
<td>82350A</td>
</tr>
<tr>
<td>Hewlett-Packard HP-IB EISA card / SICL drivers</td>
<td>82341C or 82341D</td>
</tr>
<tr>
<td>National Instruments AT-GPIB/TNT card/NI-488.2M drivers</td>
<td>777074-01</td>
</tr>
<tr>
<td>National Instruments PCMCIA-GPIB card/NI-488.2M drivers</td>
<td>777156-02</td>
</tr>
<tr>
<td>National Instruments PCI-GPIB card/NI-488.2M drivers</td>
<td>777153-01</td>
</tr>
</tbody>
</table>

Note   HP SICL drivers are not supported with dual-processor PCs. For dual-processor PCs running the National Instruments AT-GPIB/TNT card, change the card’s default interrupt to IRQ=7. For more information, see National Instruments’ web site.
Configuring HP-IB and GPIB Interface Software

Note For most installations that use supported HP-IB or GPIB interface software versions in existence at the time of the current ADS release, the information presented in this section will not be needed. If you are experiencing problems or have newer interface software, please read this section.

Your HP-IB or GPIB interface includes the software necessary for an application to use the facilities the interface provides. That software typically has two components: a kernel driver (also known as a device driver) and an application interface DLL, which interfaces with the kernel driver. Because ADS is linked against a set of application interface DLLs, it is necessary to have the DLLs present in the search path in order for the ADS Instrument Server to run. ADS installs two such interface DLLs: one for use with Agilent's Standard Instrument Control Library (sicl32.dll); and one for use with National Instruments' NI-488 library (gpib-32.dll). ADS appends the path to access to these files, and with most installations the default directory (AdvDesSys1.5\bin), will work without problems.

The presence of these DLLs allows the instrument server to run. However, there may be problems when trying to control HP-IB/GPIB interfaces whose software is newer than the versions included with ADS.

If you have installed newer interface software, ensure that your system will select the appropriate DLLs by prepending the path to the directory that contains your DLLs to your search path environment variable. Do the following:

- For Windows NT and 2000, choose Start > Settings > System > Environment tab. Then append the DLL installation directories to your path by choosing path in the User Variables list and then typing the path in the Value field at the bottom.

- For Windows 95 and Windows 98, use any text editor to edit your autoexec.bat file and add the search paths to your PATH statement.

For example, if you installed the DLLs that came with your HP-IB or GPIB interface in the directory c\Program Files\GPIB\drivers, then you would add c\Program Files\GPIB\drivers to your path.

Note When you use ADS, if the Instrument Server displays an error message in the Status window when you try an HP-IB symbolic name, copy the above-mentioned
Setting Environment Variables for Visual C++ (Windows 95/98 Only)

If you are installing Advanced Design System to run under Windows 95/98 and have installed Visual C++ for use with the Model Development Kit, you must set the following variables correctly to run VC++ from the command line:

- Add to the config.sys file:
  
  - SHELL = C:\COMMAND.COM /p /E:4096
  
  (The value of 4096 can be increased as necessary.)
- Add to the autoexec.bat file:
  
  - <msvc installation directory>\vcvars32.bat

Note that although the Visual C++ installation prompts you to create certain environment variables (in the 'Setup Environment Variables' dialog box), the default setting of the 'Register Environment Variables' option is off. You must select this option to create the variables. If Visual C++ was previously installed without setting the variables, you must reinstall and select the aforementioned option.

The variables are written to the file VCVARS32.BAT in your VC6 bin directory. Note for Win95: Edit your AUTOEXEC.BAT file to run the VCVARS32.BAT file. The path you specify is limited to 8 characters.

How To Set Environment Variables

If you have not set Environment Variables before, refer to the following:

- Windows NT—From the Start menu, choose Settings > Control Panel > System > Environment and set the variable name and value as needed, for example:

  Variable          Value
  HPTOLEMModel_PATH c:\users\default\my_prj\htolemy

- Windows 95/98—In any text editor, edit the autoexec.bat file (as shown in this example) and then reboot:

  SET HPTOLEMModel_PATH=c:\users\default\my_prj\htolemy
Checking Memory

It is recommended that you have a minimum of 128 MB of memory installed on your system. More memory results in better overall system performance for some design work. The amount of installed memory is displayed on the screen when your machine boots up.

To check the amount of memory on your system without rebooting, double-click the My Computer icon. Select Help, then select About Windows NT, About Windows 2000, About Windows 95 or About Windows 98.

Checking Disk Space

The amount of disk space required depends on the Advanced Design System products that you want to install. As you run the Setup installation program, the amount of space for various installation components is indicated, so you are aware of these requirements before you select the components to install.

To check the amount of disk space on your system without rebooting, double-click the My Computer icon. Select View > Details. Look in the Free Space column for each of your drives. (You might have to use the bottom scroll bar to see this column.)

Checking Virtual Memory

The recommended minimum virtual memory is 300 MB. Very large designs and designs with many hierarchical levels could require more. To check the current amount of virtual memory, select Start > Settings > Control Panel. Double-click the System icon. Select the Performance tab. Under Virtual Memory, choose Change. You can choose to let Windows manage your virtual memory (recommended) or set a specific amount. For more information, please consult the appropriate system manual.

Checking the Operating System Version

To check the operating system version:

Double-click the My Computer icon. Click the Help menu and select About Windows NT, About Windows 2000, About Windows 95. or About Windows 98.
Requirements on PC Systems
Chapter 3: Installation Procedures

This chapter provides detailed information for installing Advanced Design System on Windows NT/Windows 2000 and Windows 95/98 systems. For a brief procedure, refer to "Quick Installation" on page 1-4. The general installation procedure is followed by a procedure for Server/Client installations.

Note For last-minute installation information, view the file readme.htm, located on the PC Setup disk. For last-minute program and documentation information, refer to the Release Notes document on our website at http://www.agilent.com/eesof-eda.

Running Setup

Note If you have not done so, review the section, “Pre-Installation Guidelines” on page 1-1 in Chapter 1, Before You Install/Quick Install. Also, if you installed a pre-release Beta version of Advanced Design System, you should uninstall it before loading this release.

To Install Advanced Design System on PC:

1. Request and obtain codewords from Agilent EEsof (Refer to page 1-2).
2. Exit all Windows programs and insert Advanced Design System installation CD labeled PC Setup into your CD-ROM drive.
3. Setup program will automatically run, or if not, choose Start > Run and enter D:\setup, where D: is the drive letter of your CD-ROM drive.
4. The installation program starts and a Welcome screen appears. Click Next and fill out the Registration Information. (There are no special requirements for the information you enter and no connection with your licenses or codewords. This only appears the first time you run Setup). Click Next to continue.
5. In the Specify Program Folder screen, choose Next to install to the default destination. Choose Browse to specify a different destination folder. If you want a folder that is located on a different drive, choose the drive letter from the drop-down list at the bottom. If you specify a folder that does not exist, the
Installation Procedures

Setup program will ask if you want to create it. Once you have selected a destination folder, click OK and then Next to continue.

6. The Specify Your Home Folder box appears, showing \users\default as the default home folder. This folder will also be used to create a folder named hpeesof that contains configuration data. This is the location for the Advanced Design System program’s configuration data for an individual user, as well as the startup directory for Advanced Design System. If you want to specify a different home folder, choose Browse and follow the procedure described in step 5, above, otherwise click Next to accept the default.

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Note: If you are using a network, it is recommended that you choose a Home folder on your local computer, not on a network server, for best performance.

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7. In the Advanced Design System Installation 1.5/PC Installation Options screen, you may choose to do a Typical, Complete, or Custom installation.

- **Typical** installs all ADS Design Suites, related modules (such as Momentum electromagnetic simulator, Digital Filter Designer, Vendor Component Libraries, etc.), examples and documentation. The disk space required is shown on the screen.

  Typical does not install ADS Design Libraries (such as W-CDMA, Digital TV, or GSM), DesignGuides, nor a few specialized tools (such as HDL Cosimulation or RF Compiler). See Table 3-1 in this manual for a list of the components installed in the Typical installation.

- **Complete** installs all Advanced Design System suites, modules, examples, and documentation. The disk space required is shown on the screen.

- **Custom** allows you to choose the specific ADS components you want to install. Scroll as needed to find components. See Table 3-2 in this manual for a list of components you can install.

---

Note: While you choose here which ADS features you want to install, the ability to run them is determined by the licenses you have purchased.

---

3-2  Running Setup
Table 3-1. Typical Installation List of Components

<table>
<thead>
<tr>
<th>Simulators, Schematic Capture and Layout</th>
<th>This is the basic ADS software, including the Design Environment, Data Display, and Analog/RF Systems and Signal Processing simulators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design Rule Checker/Art Translators</td>
<td>Design Rule Checker verifies layouts and the artwork translators include MTOOLS (Gerber, DXF), IGES, GDSII, etc.</td>
</tr>
<tr>
<td>Digital Filter Designer</td>
<td>Synthesizes a wide-range of FIR and IIR digital filters based on user requirements</td>
</tr>
<tr>
<td>DSP Synthesis</td>
<td>Implements high-level DSP designs into ASICs or FPGAs</td>
</tr>
<tr>
<td>E-Syn</td>
<td>Synthesizes lumped- and distributed- element networks for filters, matching networks, etc.</td>
</tr>
<tr>
<td>Examples</td>
<td>Complete ADS application examples</td>
</tr>
<tr>
<td>LineCalc</td>
<td>Transmission line calculator program</td>
</tr>
<tr>
<td>Model Development Kit</td>
<td>For developing either Analog/RF Systems or Agilent Ptolemy user-defined models</td>
</tr>
<tr>
<td>Momentum Planar EM Simulator</td>
<td>The Momentum planar electromagnetic simulator</td>
</tr>
<tr>
<td>Online Documentation to Hard Disk</td>
<td>Online manuals, help, and search engine installed to your hard disk</td>
</tr>
<tr>
<td>Series IV &amp; MDS (Beta) to ADS Translators</td>
<td>Translate designs from Series IV or MDS into ADS 1.5. The MDS translator is Beta software</td>
</tr>
<tr>
<td>SPICE Model Generator</td>
<td>Generates SPICE models from S-parameter data</td>
</tr>
<tr>
<td>Vendor Component Libraries</td>
<td>Parts libraries, such as the RF Transistor Library or the Analog Parts Library</td>
</tr>
</tbody>
</table>

8. If you chose to do a Custom installation, and the machine you are installing to will be a network server, you must install the LAN Server for Clients component. (Refer to the section “Installing for a Network Server and Clients” on page 3-8.)

If you chose to do a Typical or Complete installation, skip to step 12.

8. If you chose to do a Custom installation, the next screen to appear allows you to choose the specific components you want to install. Scroll as needed to find components. Click on a component name to see a description. Make sure to
Installation Procedures

check the boxes of the components you wish to install. Next to each option is the disk space required in kilobytes. The following table shows the options:

**Note** If you want to install any of the options that follow, the Simulators, Schematic Capture and Layout option must be installed.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simulators, Schematic Capture and Layout</td>
<td>This is the basic ADS software, including the Design Environment, Data Display, and Analog/RF Systems and Signal Processing simulators</td>
</tr>
<tr>
<td>Design Rule Checker/Art Translators</td>
<td>Design Rule Checker verifies layouts and the artwork translators include MTOOLS (Gerber, DXF), IGES, GDSII, etc.</td>
</tr>
<tr>
<td>Digital Filter Designer</td>
<td>Synthesizes a wide-range of FIR and IIR digital filters based on user requirements</td>
</tr>
<tr>
<td>DSP Synthesis</td>
<td>Implements high-level DSP designs into ASICs or FPGAs</td>
</tr>
<tr>
<td>E-Syn</td>
<td>Synthesizes lumped- and distributed- element networks for filters, matching networks, etc.</td>
</tr>
<tr>
<td>HDL Cosimulation</td>
<td>Used to cosimulate components represented in a hardware description language</td>
</tr>
<tr>
<td>ISS Cosimulation</td>
<td>Instruction Set Simulator for cosimulation with Texas Instruments DSP chips or cores</td>
</tr>
<tr>
<td>LineCalc</td>
<td>Transmission line calculator program</td>
</tr>
<tr>
<td>Model Development Kit</td>
<td>For developing either Analog/RF Systems or Agilent Ptolemy user-defined models</td>
</tr>
<tr>
<td>Momentum Planar EM Simulator</td>
<td>The Momentum planar electromagnetic simulator</td>
</tr>
<tr>
<td>RF Compiler</td>
<td>Given a specification, generates a circuit along with the topology and component values</td>
</tr>
<tr>
<td>Series IV &amp; MDS (Beta) to ADS Translators</td>
<td>Translate designs from Series IV or MDS into ADS 1.5. The MDS translator is Beta software</td>
</tr>
<tr>
<td>SPICE Model Generator</td>
<td>Generates SPICE models from S-parameter data</td>
</tr>
</tbody>
</table>
### Table 3-2. Custom Installation List of Components

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vendor Component Libraries</td>
<td>Parts libraries, such as the RF Transistor Library or the Analog Parts Library</td>
</tr>
<tr>
<td>Agilent 89600 VSA Link</td>
<td>ADS link to the 89600 Vector Signal Analyzer</td>
</tr>
<tr>
<td>FLEXlm licensing software</td>
<td>An option included for installations with a license server on a separate machine</td>
</tr>
<tr>
<td>LAN Server Files for Clients</td>
<td>Be sure to select this option if you intend to establish the current installation as a network server. For complete details, refer to the following section: “Installing for a Network Server and Clients” on page 3-8.</td>
</tr>
<tr>
<td>CDMA Design Library</td>
<td>Design library of conforming behavioral models to develop CDMA communications products to TIA/EIA-95 standards</td>
</tr>
<tr>
<td>cdma2000-Compliant Design Library</td>
<td>Design library of conforming behavioral models to develop CDMA communications products to TIA/IS-2000 standards</td>
</tr>
<tr>
<td>Digital TV Design Library</td>
<td>Design library of conforming behavioral models to develop digital TV transmitters or receivers to ISDB-T or DVB-T standards</td>
</tr>
<tr>
<td>EDGE Design Library</td>
<td>Design library of conforming behavioral models to develop enhanced data-rate for GSM evolution (EDGE) communications products</td>
</tr>
<tr>
<td>GSM Design Library</td>
<td>Design library of conforming behavioral models to develop GSM communications products</td>
</tr>
<tr>
<td>W-CDMA Design Library</td>
<td>Design library of conforming behavioral models to develop W-CDMA communications products</td>
</tr>
<tr>
<td>3GPP W-CDMA Design Library</td>
<td>Design library of conforming behavioral models to develop 3rd-generation partnership project (3GPP) W-CDMA communications products</td>
</tr>
<tr>
<td>Linearizer DesignGuide</td>
<td>Tool kit to interactively explore dynamic linearization systems at the top level with templates</td>
</tr>
</tbody>
</table>
Installation Procedures

Table 3-2. Custom Installation List of Components

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oscillator DesignGuide</td>
<td>Smart library and interactive handbook for creating useful oscillator designs, interactively characterizing their components</td>
</tr>
<tr>
<td>Passive Circuits DesignGuide</td>
<td>Provides SmartComponents and automated assistants for the design of common passive microstrip structures</td>
</tr>
<tr>
<td>Phase-Locked Loop DesignGuide</td>
<td>Interactive handbook for the creation of useful PLL designs, including templates to assist in meeting performance specifications</td>
</tr>
<tr>
<td>Power Amplifier DesignGuide</td>
<td>Interactive tool kit that includes many simulation setups and data displays that are useful for power amplifier design</td>
</tr>
</tbody>
</table>

Choose Next to continue.

**Note** You can subsequently re-run the installation program to install anything you don't choose to install at this time.

9. In the Check Setup Information screen, you can view the choices you have made. Choose Next to begin the installation, or Back to go back and change your selections. This screen appears after other optional choices are made later in the program.

The program starts copying files. In the indicator on the left side:

- The left-most column shows the progress as files are copied to your hard disk.
- The right-most column indicates available disk space. When space is low, the Low sign is darkenened.
- In the indicator on the right side, the displayed percentage shows the amount of progress that has occurred in installing the indicated option or file.

**Note** If necessary, the program will prompt you to switch CD-ROMs.

10. Next is the Select Online Manuals to Install screen. Choose either Online Documentation installed to hard disk or Documentation accessed from
CD-ROM. This documentation includes all online help and manuals. If you have the disk space, it is recommended that you install the documentation to your hard disk. Leaving the files on the CD-ROM means that you will have to keep the CD-ROM PC Setup disk available to access online documentation. Choose **Browse** to specify a different destination folder. If you click **Next** without checking any boxes, no documentation files will be installed.

New to ADS 1.5 is HTML-based documentation displayed using your Web browser. Netscape or Microsoft Internet Explorer version 4.0 or higher is required. The ADS installation process assumes you have a default web browser installed.

11. **Next** is the **Select Examples to Install** screen. These are the application examples shipped with Advanced Design System. You can choose the complete set of examples or just the application(s) you’re interested in. Note that Tutorial Examples and Training Examples are referenced in the various manuals and training materials as an aid to learning the software. Choose **Browse** to specify a different destination folder. If you click **Next** without checking any boxes, no examples will be installed.

12. In the **Check Setup Information** screen, you can view the choices you have made. Choose **Next** to continue the installation, or **Back** to go back and change your selections. The program continues copying files, or in the case of a complete install, starts copying files with indicators as described in step 9.

13. A dialog box appears indicating that Setup is complete and reminding you to install your licenses or codewords. Choose **OK**.

14. A final dialog box appears indicating that you will need licenses or codewords to run Advanced Design System and giving you information on how to obtain them. Choose **OK** and the Setup program exits.

15. If you are installing for a network server, you are now ready to start setting up clients. (Refer to the section “Installing for a Network Server and Clients” on page 3-8 in this chapter.)

16. Install your codewords (refer to Chapter 4).

17. Install the Globetrotter/Sentinel software security hardware key to your PC’s parallel port or link your codewords to your PC LAN card’s ethernet ID. Refer to “Step 1: Install the Hardware Key on Your Parallel Port or Read Your LAN Card’s Ethernet ID” on page 4-3.
Installation Procedures

If you are running Windows NT only and using the key, you also have to install the driver for the security key. Refer to “Step 2: Install the Sentinel Driver For Your Hardware Key (Windows NT Only)” on page 4-5.

18. If you are running Windows NT/2000 only, you also have to install the driver for the security key. Refer to “Step 2: Install the Sentinel Driver For Your Hardware Key (Windows NT Only)” on page 4-5.

19. If you are not setting up a Network Server installation, proceed to the section “Completing Installation and Starting ADS” on page 3-10.

Installing for a Network Server and Clients

To establish a network server and clients, you must perform some additional steps on both the server and client machines once the standard installation of Advanced Design System has been completed on the server machine, as described in the section, “Running Setup” on page 3-1. Start with the following procedure on the server machine.

Procedure on the Server Machine

The following procedure must be performed on the server machine.

1. Perform a standard installation on the server, making sure that the LAN client files are installed, as described in step 8 of the preceding section, “Running Setup” on page 3-1. This installs a folder named setup under the installation folder (for example: C:\AdvDesSys1.5\setup), which contains the files necessary to set up client machines.

2. Once the installation is completed, you need to share the installation directory so that client machines can access the software across the network. Please consult your system administrator or refer to your Microsoft Windows NT/2000 or Windows 95/98 documentation or help for instructions on sharing directories.

Procedure on the Client Machines

The following procedure must be performed on each client machine.

1. Map a drive on the client machine that connects to the shared Advanced Design System installation directory from the server machine. For example, you might create a mapped drive G: that accesses the C:\AdvDesSys1.5 directory on the
Installing for a Network Server and Clients

1. Please consult your system administrator or refer to the Microsoft Windows NT/2000 or Windows 95/98 documentation for instructions on mapping drives.

2. Once you have the mapped drive on the client machine, access the setup folder under the installation directory. For example, open Windows Explorer so you can navigate to the folder G:\ AdvDesSys1.5\ setup.

3. Double-click setup.exe.

4. The Advanced Design System PC/LAN Client Setup title screen appears, followed by the Welcome box, then the Registration Information box. Type in a user name and company name for the client installation. (There are no special requirements for these entries and no connection with the license file.)

5. The Specify Your Home Directory box appears, showing the default home folder. The home folder is the folder where one particular client will start the Advanced Design System applications from. To install to the default installation folder shown, choose Next. If you prefer to specify a different destination folder, choose Browse.

6. The subsequent screen gives you two installation options to select from:
   - Recommended network installation. Installs main program files on your computer and runs online manuals and component libraries from the network (requires approximately 350 MB of disk space on the client machine).
   - Maximum network installation. Runs all program files from the network. Only the PC shortcut is installed on the Start menu of the client machine.

7. Once you have specified an installation option, a box appears to confirm your choice of run-time directory. This is the path to files on the server. Choose Yes or No. (If you choose no, the LAN Setup program will end.)

8. For the Recommended network installation only, the Specify Program Folder box will appear. To install the client's program files to the destination directory shown, choose Next. To install them to a different location, choose Browse and select the proper directory.

9. In the Folder Selection dialog box, you can specify a name for the program folder where the Advanced Design System icons will be grouped. To retain the default Advanced Design System folder name, choose Next. If you prefer to use a name other than the default shown, choose Browse. For example: Agilent ADS (Client).
10. For the Recommended network installation only, the Client Setup Information box will appear. Choose Back to access previous dialog boxes and make changes, Next to proceed with the installation, or Cancel to exit the LAN Setup program without completing the client installation.

11. After the client installation is complete, a message appears confirming that the installation is complete. Choose OK.

Note Certain Lan-Client PC installation problems can occur unless you avoid the following setup: You access server files through a UNC path, or a path such as “\hostname\share\.” This path can come about by using the Network Neighborhood to attach to server files, where you assign a drive letter to it; or through the use of the Windows Explorer, where you use “\hostname\share” notation to access a shared drive.

Completing Installation and Starting ADS

To complete your installation requirements, your FLEXlm license file must be properly configured and installed. Follow the instructions in Chapter 4, Setting Up Licenses on PC Systems.

Starting Advanced Design System

To start the Advanced Design System applications:

From the Start menu, select Programs > Advanced Design System 1.5 > <name of application>.

where <name of application> is one of the following:

- **ADS Tools.** Displays a list of Advanced Design System tools, such as Digital Filter Designer, DSP Synthesis, E-Syn, or LineCalc. Choose the tool you want to launch (provided you have installed and licensed these features).

- **ADS Documentation.** Brings up your Web browser and the starting point for accessing Advanced Design System documentation. The documentation files are accessed from:
  - A location that you installed them to when you ran Setup (if you chose to install documentation), or
• The PC Setup disk placed in your CD-ROM drive

For more information, refer to Appendix A, Viewing Online Documentation, in the Advanced Design System User’s Guide

• **Advanced Design System**. Launches the Advanced Design System Main window, which enables the use of the various ADS Suites, features, and modules you have licensed. (If you have purchased the special RF Designer product, choose RF Designer, below, instead.)

Choose Help > Topics and Index > Quick Tour for help on getting started with Advanced Design System.

• **RF Designer**. Launches the ADS Main window for use with the RF Designer product, which is the lowest-cost ADS suite for RF design.

Choose Help > Topics and Index > Quick Tour for help on getting started with Advanced Design System.

• **Uninstall ADS**. Launches the Uninstall Program. For information on using this utility, refer to the section, “Is There an Easy Way to Delete All Installed Files?” on page A-4 in the appendix, Troubleshooting.

---

**Note** If you encounter startup problems, refer to the section, “ADS Will Not Start” on page A-1 in the appendix, Troubleshooting.
Installation Procedures
Chapter 4: Setting Up Licenses on PC Systems

This chapter describes how to set up Advanced Design System licensing. After you run the Setup program, as described in Chapter 3, Installation Procedures, you must properly set up your Advanced Design System software licenses before you run your applications.

Advanced Design System uses Globetrotter Software's Flexible License Manager (FLEXlm) software for all software security configurations. When you run the Advanced Design System Setup program, the FLEXlm software is installed to the folder

\[\text{<installation folder>\licenses\bin}\]

where \text{<installation folder>} is the destination folder you specified when you ran Setup.

\textbf{Note}  
For instructions on licensing needs required for special situations, refer to the section “Special Licensing Needs” on page 4-21 in this chapter.

---

Using LMTOOLs to Help Setup FLEXlm

Beginning with ADS 1.5, the Globetrotter Software utility LMTOOLS is included with the FLEXlm software installed with ADS on the PC platform. This utility does not replace the steps in this chapter regarding license installation, but can aid in the installation and use of FLEXlm licenses.

The utility can be found in the \texttt{\textbackslash AdvDesSys1.5\licenses\bin} folder and is named \texttt{lmtools.exe}. Using LMTOOLS, you can:

- Easily determine your system's settings for requesting codewords from Agilent EEsof EDA using the System Settings tab.
- You can configure your FLEXlm licenses to start from a license file or as a Service using the Service/License File tab. If you choose to start FLEXlm as a service, you can configure the FLEXlm service from the Configure Services tab.
- You can start, stop, and reread license.dat files and services using the Start/Stop/Reread tab.
Preparing to Install Your License

Follow the important instructions in this section to prepare to install your Advanced Design System licenses. These procedures are required whether you are installing a node-locked or a floating license. Refer to the flowchart in Figure 4-1.

Note If you have not received your security codewords from Agilent EEsof, refer to the section “Pre-Installation Guidelines” on page 1-1 in Chapter 1, Before You Install/Quick Install. You must have the codewords to complete your licensing.

Each procedural step identified in the flowchart corresponds to a section that you can refer to for more detailed instructions on that particular step.

### Figure 4-1. Preparing to Install Your Licenses

<table>
<thead>
<tr>
<th>Preparing to Install Your License</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1:</strong> Install hardware key on your parallel port or read your LAN card’s ethernet ID.</td>
</tr>
<tr>
<td><strong>Step 2:</strong> Install Sentinel driver (Windows NT only) Does not apply if using LAN card ID.</td>
</tr>
<tr>
<td><strong>Step 3:</strong> Check your codewords to confirm whether you are installing a node-locked or floating license. Then follow instructions in the appropriate section, as shown below.</td>
</tr>
</tbody>
</table>

- **Follow procedures in the section, “Installing Node-Locked.**
- **Follow procedures in the section, “Installing Floating Licenses On a PC Server.”**

### Floating licenses using a UNIX server

Refer to the section of this chapter, “Accessing Licenses From a UNIX License Server.”

Note: The FLEXlm software is installed to the folder: `<install_folder>/licenses/bin`

where `<install_folder>` is the installation destination folder that you specified during Advanced Design System installation.
Step 1: Install the Hardware Key on Your Parallel Port or Read Your LAN Card’s Ethernet ID

There are two methods to run the FLEXlm licensing system on your PC:

- Install a Globetrotter/Sentinel hardware key.
- Read your LAN card’s ethernet ID.

The Globetrotter/Sentinel hardware key method will be described first.

Globetrotter/Sentinel Hardware Key Method

One way to run the FLEXlm licensing system on your PC is to install the Globetrotter/Sentinel hardware key (also called a dongle) on a parallel port of your computer. In a node-locked environment, it is installed on the local machine. In a floating license environment, it is only required on the server machine.

Note: Before you install the key, make note of the hardware key ID number that is printed on the key (for example, Host id: B2860678). If you have not already received your security codewords from Agilent EEsof, you will need to identify this number on your Codeword Request Form, as explained in the section, “Step 3: Check Your Codewords to Determine License Type” on page 4-6.

If you are using Windows NT, you also must install the Sentinel driver on your system from the Advanced Design System installation CD. This driver enables Advanced Design System to communicate with the key. Refer to the following section, “Step 2: Install the Sentinel Driver For Your Hardware Key (Windows NT Only)” on page 4-5.

Read Your LAN Card’s Ethernet ID

The second method to run the FLEXlm licensing system on your PC is to read your LAN card’s ethernet ID and have Agilent EEsof Business Support tie this ID to your ADS codewords. To use this method, do the following:

1. Make sure that you have TCP/IP and IPX/SPX network protocols loaded on your PC. The IPX/SPX protocol is required by FLEXlm. To get help on network protocols, refer to your Windows Help for Network Protocols:

   - Choose Start > Help.
Setting Up Licenses on PC Systems

- Select the Index tab.
- Enter network protocols.
- Click on the Display button.
- Select To install a network protocol.
- Click on the Display button.
- Follow the help instructions, which will ask you to click in the help dialog box to continue.
- If you already have TCP/IP and IPX/SPX network protocols loaded, these items will be displayed. If you don't have both, choose the Add button and select the needed protocols from the list that appears. For example, select NWLink IPX/SPX Compatible Transport to add the IPX/SPX network protocol.

2. Verify that you can read your LAN card's ethernet address. For all versions of Windows, run the following FLEXlm command from the MS DOS Command Prompt:

   `cd \AdvDesSys1.5\licenses\bin`  
   `lmutil lmhostid`

3. Make a note of this ID.

   If lmutil lmhostid does not return the expected ethernet address of your LAN card, make sure you have the IPX/SPX (NWLink IPX/SPX Compatible Transport) protocol loaded.

**Note:** Before you can use your LAN card's ethernet ID, you will have to let Agilent EEsof Business Support tie this ID to your ADS codewords. If you have not already received your security codewords from Agilent EEsof, you will need to identify this number on your Codeword Request Form, as explained in the section, “Step 3: Check Your Codewords to Determine License Type” on page 4-6.
Step 2: Install the Sentinel Driver For Your Hardware Key
(Windows NT Only)

Note  This step does not apply if you are using the LAN card ethernet ID method.

Note  This procedure requires system administrator privileges. Globetrotter/Sentinel recommends that you install the Sentinel System Driver with their installer, which is included on the ADS PC Setup disk.

To install the Sentinel Driver Version 7.0d (required on Windows NT only):
1. Place the Advanced Design System PC Setup disk into your CD drive.
2. Select Start > Run.
3. In the Run box, click Browse.
4. Change to the CD-ROM drive, then change the current folder to \sentinel\Win_nt.
5. Double-click install and click OK.
   The Sentinel Driver Setup Program window appears.
6. From the menu bar, select Functions > Install Sentinel Driver.
   A dialog box with the default path for the NT driver is displayed.
7. Change the drive letter if necessary and click OK.
8. The Sentinel Driver and associated files are copied to the hard disk.
9. If the driver installation is successful, a dialog box with the message Sentinel Driver Files Copied Successfully is displayed.
10. When the process is complete, a dialog box with the message Driver Installed!
    Restart your system is displayed.
11. Click OK.
12. Restart your computer. The Sentinel driver will not become active until the PC is rebooted.
Step 3: Check Your Codewords to Determine License Type

The rest of the licensing procedure depends on whether you are installing a node-locked or a floating license. If you’re not sure, an easy way to determine this is to open the `license.dat` file in any text editor. What you will see depends on whether you are using the Sentinel hardware key or the LAN Card’s Ethernet ID method.

Sentinel Hardware Key Method

In the following example showing a portion of the `license.dat` file, notice that the hostid number for the hardware key is identified at the end of each INCREMENT line (SENTINEL KEY= <hostid>).

```
INCREMENT Circuit_convolution hpeesofd 1.500 05-Oct-2000 \ 0 BCC4E0550AE463085F2D "s=3c6762a7" SENTINEL_KEY=3c6762a7
INCREMENT Circuit_envelope hpeesofd 1.500 05-Oct-2000 \ 0 BC146085FB951D3F753E "s=3c6762a7" SENTINEL_KEY=3c6762a7
```

If such a SENTINEL KEY identifier is present in the INCREMENT lines of the file, you are installing a node-locked license. Follow the instructions in the section, “Installing Node-Locked Licenses” on page 4-7.

If no SENTINEL KEY identifier appears at the end of the INCREMENT lines in the file, you are installing a floating license. Follow the instructions in the section, “Installing Floating Licenses Using a PC Server” on page 4-11.

LAN Card’s Ethernet ID Method

In the following example showing a portion of the `license.dat` file, notice that the hostid number for the hardware key is identified at the end of each INCREMENT line.

```
INCREMENT Circuit_convolution hpeesofd 1.500 05-Oct-2000 \ 0 BCC4E0550AE463085F2D "0050DACA00F5" 0050DACA00F5
INCREMENT Circuit_envelope hpeesofd 1.500 05-Oct-2000 \ 0 BC146085FB951D3F753E "0050DACA00F5"
```

If such a ethernet identifier is present (in this example, s=3c6762a7) in the INCREMENT lines of the file, you are installing a node-locked license. Follow the instructions in the section, “Installing Node-Locked Licenses” on page 4-7.

If no ethernet identifier appears (as in the second case, above--the line ends with the quote symbol) at the end of the INCREMENT lines in the file, you are installing a
floating license. Follow the instructions in the section, "Installing Floating Licenses Using a PC Server" on page 4-11.

Installing Node-Locked Licenses

Note Before you attempt to install your node-locked licenses, make sure that you have followed the steps in the section, "Preparing to Install Your License" on page 4-2.

This section describes how to copy or create the license.dat file and place it in the proper folder to enable the program security system.

The license.dat file that implements FLEXlm security must be installed on your machine(s). The default path is: <installation folder>\licenses; for example, C:\AdvDesSys1.5\licenses). The license must be installed on your local machine.

Install the license.dat files using one of these methods:

• If you have a codeword diskette, follow the procedures in the section, "Installing Codewords From a Diskette (Floating Licenses)" on page 4-13.

• If you received your license.dat file via e-mail, copy this file to the <installation folder>\licenses folder, which was created when you ran the Setup program (for example: c:\AdvDesSys1.5\licenses).

• If you do not have either a codeword diskette or an e-mail copy of license.dat, you must manually create the file from the fax that you received. Follow the instructions in the section, "Manually Creating the license.dat File (Floating Licenses)" on page 4-14.

Note For node-locked installations in which the license.dat file is not placed in its default location: After installing the license.dat file using one of these three methods, follow the instructions in the section, "Completing the Installation for Node-Locked Licenses" on page 4-10. For node-locked installations using the default licenses directory, your licensing procedures are complete after your license.dat file is installed.
Setting Up Licenses on PC Systems

Installing Codewords From a Diskette
(Node-locked License)

Note For node-locked licenses, you do not have to edit the license.dat file that you receive from Agilent EEsof in any way. Simply make sure it is in the licenses folder under the installation folder, as described in the following procedure.

If you received a security codeword diskette, use this procedure to install the codewords. The procedures assume that you have installed your Advanced Design System software, as described in Chapter 3, Installation Procedures.

To install the codewords on your PC:

1. Insert the codeword diskette into the diskette drive.
2. Use the Windows Explorer to copy the license.dat file to the \installation folder\licenses folder, which was created when you ran the Setup program (for example, c:\AdvDesSys1.5\licenses).

Manually Creating the license.dat File
(Node-locked License)

If you did not receive a license.dat file on a diskette or via e-mail and must create it from a FAX, perform the following procedure to manually create the license.dat file.

To create a license.dat file:

1. Change to the licenses folder:
   
   cd <installation folder>\licenses

   For example:
   
   cd \AdvDesSys1.5\licenses

2. Using a text editor, create a file named license.dat and enter the codeword information supplied by Agilent EEsof. You must have the correct properties or permissions to write in the <installation folder>\licenses folder to perform this step.

   Following are some things to watch for as you create your license.dat file. A complete example file follows these guidelines.
• Type in the SERVER line first, then the DAEMON line, followed by the INCREMENT lines.

**Note**  
Do not modify the SERVER, DAEMON, or INCREMENT lines in any way. Make sure that you type them into your file exactly as shown.

• Each line in the license.dat file must be a single continuous line with each field separated by a single space. You may line-wrap lines using the backslash (\) character, but be very careful not to add a space after the backslash.

• Make sure that the lines contain no typographical errors.

3. Once you are sure that the license.dat file has been typed correctly, save the file. Following is an example of a properly set up license.dat file for a node-locked license.

SERVER unknown SENTINEL_KEY=3c6762a7 1700
DAEMON hpeesofd /eesof/licenses/vendors/hpeesofd /eesof/licenses/options/local.options
INCREMENT Circuit_convolution hpeesofd 1.500 05-Oct-2000 \ 0 BCC4E0550AE463085F2D "s=3c6762a7" SENTINEL_KEY=3c6762a7
INCREMENT Circuit_envelope hpeesofd 1.500 05-Oct-2000 \ 0 BC146085FB951D3F753E "s=3c6762a7" SENTINEL_KEY=3c6762a7
INCREMENT Circuit_harmonic hpeesofd 1.500 05-Oct-2000 \ 0 7C5410D5E5FA31210075 "s=3c6762a7" SENTINEL_KEY=3c6762a7
INCREMENT Circuit_linear hpeesofd 1.500 05-Oct-2000 \ 0 8C542025E979A093252B "s=3c6762a7" SENTINEL_KEY=3c6762a7
INCREMENT Circuit_nwa hpeesofd 1.500 05-Oct-2000 \ 0 9C147085F8E8ABDCE05E "s=3c6762a7" SENTINEL_KEY=3c6762a7
INCREMENT Circuit_transient hpeesofd 1.500 05-Oct-2000 \ 0 BC24F055ACF2B9845B77D "s=3c6762a7" SENTINEL_KEY=3c6762a7
INCREMENT Graphics_server hpeesofd 1.500 05-Oct-2000 \ 0 ECA44045DE20A9E5A672 "s=3c6762a7" SENTINEL_KEY=3c6762a7
INCREMENT Layout hpeesofd 1.500 05-Oct-2000 \ 0 AC54A095C1180848C59E "s=3c6762a7" SENTINEL_KEY=3c6762a7
INCREMENT Microwave_lib hpeesofd 1.500 05-Oct-2000 \ 0 4C64D0F5F5298A180FE6 "s=3c6762a7" SENTINEL_KEY=3c6762a7
INCREMENT Schematic hpeesofd 1.500 05-Oct-2000 \ 0 5C3470A5084E2CDD965C "s=3c6762a7" SENTINEL_KEY=3c6762a7
Completing the Installation for Node-Locked Licenses

For node-locked installations where the license.dat file is placed in the default location, the procedure described in this section is not necessary.

If your license.dat file has been placed in a directory other than its default location, the LM_LICENSE_FILE environment variable must be properly set to point to the right license file. The default location is:

`\<installation directory>\AdvDesSys1.5\licenses\license.dat`

The variable can be defined as follows:

- On Windows 95 or Windows 98, edit your autoexec.bat file.
  
  For example, set LM_LICENSE_FILE = c:\flexlm\license.dat.
  
  If you are using different Advanced Design System licenses on a single PC, make sure that a line similar to the following is included in your autoexec.bat file. Notice that each path containing a license file is delineated by a semi-colon:
  
  `set LM_LICENSE_FILE = C:\viewlogic\license.dat;d:\AdvDesSys1.5\license.dat`

- On Windows NT, select Start > Settings > Control Panel > System > Environment then add a new system environment variable named LM_LICENSE_FILE that points to the proper directory.

  For example the variable to be defined is LM_LICENSE_FILE and its value could be `c:\flexlm\license.dat`.

Windows NT users: Make sure that you add LM_LICENSE_FILE to the System Environment, not the user environment.

All users: If you are installing a node-locked license, you have completed your required tasks.
Installing Floating Licenses Using a PC Server

**Note**  Before you attempt to install your licenses on a PC server, make sure that you have followed the steps in the section, “Preparing to Install Your License” on page 4-2.

The flowchart in Figure 4-2 show the procedures for setting up floating licenses using a PC license server. Each procedural step identified in the flowchart corresponds to a section that you can refer to for more detailed instructions on that particular step.
Setting Up Licenses on PC Systems

Installing floating licenses using a PC license server

Step 1: Install or create license.dat file. Place it on server machine in licenses folder under the Advanced Design System <installation folder>.

Step 2: Set vendor daemon path in the license.dat file and correct the SERVER line information.

Step 3: Start FLEXlm on server.

Step 4: Ensure that each machine using Advanced Design System has access to c:\<installation folder>\licenses\license.dat or Set system environment variable LM_LICENSE_FILE = <port>@<server>, such as LM_LICENSE_FILE = 1700@joshua

Ready to run Advanced Design System.

Installing Floating license using a UNIX server

Refer to the section of this chapter, “Accessing Licenses From a UNIX License Server.”

Figure 4-2. Procedures for Floating License Configuration Using a PC Server

Step 1: Install or Create the license.dat File (Floating Licenses)

This section describes how to copy or create the license.dat file and place it in the proper folder to enable the program security system.
The license.dat file to implement FLEXlm security must be installed on your networked or stand-alone non-networked machine(s). The default path is:\installation folder\licenses; for example, c:\AdvDesSys\licenses). In a network environment, the file can be installed either of two ways:

- Strictly on the server
- On the server, with a local copy on each client machine

Install the license.dat files using one of these methods:

- If you have a codeword diskette, follow the procedures in the section, “Installing Codewords From a Diskette (Floating Licenses)” on page 4-13.
- If you received your license.dat file via e-mail, copy this file to the <installation folder>\licenses folder, which was created when you ran the Setup program (for example, c:\AdvDesSys\licenses).
- If you do not have either a codeword diskette or an e-mail copy of license.dat, you must manually create the file from the FAX that you received. Follow the instructions in the section, “Manually Creating the license.dat File (Floating Licenses)” on page 4-14.

Installing Codewords From a Diskette (Floating Licenses)

If you received a security codeword diskette, use this procedure to install the codewords. The procedures assume that you have installed your Advanced Design System software, as described in Chapter 3, Installation Procedures.

To install the codewords on your PC:

1. Insert the codeword diskette into the diskette drive.
2. Use the Windows Explorer to copy the license.dat file to the <installation folder>\licenses folder, which was created when you ran the Setup program (for example, c:\AdvDesSys\licenses)
3. If you have more than one license server, copy the license.dat file to all of the machines listed on the SERVER lines in your license.dat file. Make sure that you place the license.dat file in the <installation folder>\licenses folder on each of the license server machines.
Manually Creating the license.dat File (Floating Licenses)

If you did not receive a license.dat file on a diskette or via e-mail and must create it from a fax, perform the following procedure to manually create the license.dat file.

To create a license.dat file:

1. Change to the licenses folder. In a network environment, this must be on the machine that will be your master license server (the machine listed on the first (or only) SERVER line in the license.dat file).

   cd <installation folder>\licenses

   For example:
   cd c:\AdvDesSys1.5\licenses

2. Using a text editor, create a file named license.dat and enter the codeword information supplied by Agilent EEsof. You must have the correct properties or permissions to write in the <installation folder>\licenses folder to perform this step.

   Following are some things to watch for as you create your license.dat file. A complete example file follows these guidelines.

   • Make sure that your license.dat file starts with a SERVER line. The SERVER line(s) are followed by at least one DAEMON line, then INCREMENT lines.
   
   • Each line in the license.dat file must be a single continuous line with each field separated by a single space. You may line-wrap lines using the backslash (\) character, but be very careful not to add a space after the backslash.
   
   • The codewords begin with the first SERVER line and end at the last INCREMENT line.
   
   • By default, the SERVER line contains a port address of 1700. You may need to change this port address if you have another FLEXlm daemon or other process that already uses this port address. If you are not sure, leave the address as 1700.

   • Make sure that the hostname and hostid on the SERVER line(s) are correct for the license server. If the hostname is wrong, you can change it. If the hostid is wrong, you need to contact the Agilent EEsof License Administrator and request new licenses for the correct hostid. The hardware key ID number
is printed directly on the hardware security key (for example, Host id: B2860678).

• You must also make sure that the path to the hpeesofd vendor daemon is correct on the DAEMON line. Refer to the section, “Step 2: Setting the Vendor Daemon Path (Floating Licenses)” on page 4-16.

• Make sure that the INCREMENT lines contain no typographical errors.

3. Once you are sure that the license.dat file has been typed correctly, save the file. Make sure you save it as a plain ASCII text file.

4. If you have more than one license server, copy the license.dat file to all of the machines listed on the SERVER lines in your license.dat file. Make sure that you place the license.dat file in the <installation folder>\ licenses folder.

Following is an example of a properly set up license.dat file on a PC server. (Be sure to fill in the “unknown” entry with your server name.

```plaintext
SERVER unknown SENTINEL_KEY=3c6762a7 1700
DAEMON hpeesofd /hpeesof/licenses/vendors/hpeesofd
INCREMENT Circuit_convolution hpeesofd 1.500 05-Oct-00 \ 0 BC04E0550AE463085F2D "s=3c6762a7"
INCREMENT Circuit_envelope hpeesofd 1.500 05-Oct-00 \ 0 BC146085FB951D3F753E "s=3c6762a7"
INCREMENT Circuit_harmonic hpeesofd 1.500 05-Oct-00 \ 0 7C5410D5E5FA1210075 "s=3c6762a7"
INCREMENT Circuit_linear hpeesofd 1.500 05-Oct-00 \ 0 8C542025E979A093252B "s=3c6762a7"
INCREMENT Circuit_nwa hpeesofd 1.500 05-Oct-00 \ 0 9C147085F8E8ABDCE05E "s=3c6762a7"
INCREMENT Circuit_transient hpeesofd 1.500 05-Oct-00 \ 0 BC24F0550F9845B77D "s=3c6762a7"
INCREMENT Graphics_server hpeesofd 1.500 05-Oct-00 \ 0 ECA44045DE20A985A672 "s=3c6762a7"
INCREMENT Layout hpeesofd 1.500 05-Oct-00 \ 0 AC54A095C1180848C59E "s=3c6762a7"
INCREMENT Microwave_lib hpeesofd 1.500 05-Oct-00 \ 0 4C64D0F5F529A180FE6 "s=3c6762a7"
INCREMENT Schematic hpeesofd 1.500 05-Oct-00 \ 0 5C3470A5084E2CDD965C "s=3c6762a7"
```
Step 2: Setting the Vendor Daemon Path (Floating Licenses)

The DAEMON line of the license.dat file specifies the full path to the vendor daemon. This line contains a default path of \licenses\vendors\hpeesofd. This path may not be correct for your installation of Advanced Design System. Using a text editor such as Notepad, you must correct this path before you can successfully start the FLEXlm license manager and run your Advanced Design System software.

For example, if you install Advanced Design System under

```
d:\ apps\ ads15
```

then the license.dat file would be located in

```
d:\ apps\ ads15\ licenses
```

and the Agilent EEsof vendor daemon would be located in

```
d:\ apps\ ads15\ licenses\ vendors
```

You would need to edit the license.dat file and change the DAEMON line from:

```
DAEMON  hpeesofd  c:\hpeesof\licenses\vendors\hpeesofd
```

to

```
DAEMON  hpeesofd  d:\apps\ads15\licenses\vendors\hpeesofd
```

Once you have correctly set the DAEMON line for your installation, proceed to the section, “Step 4: Starting FLEXlm (Floating Licenses)” on page 4-16.

Step 3: Connecting the Hostname on the SERVER Lines (Floating Licenses)

By default, all server lines are set with a hostname of unknown. Make sure the hostnames on the SERVER line are correct.

Step 4: Starting FLEXlm (Floating Licenses)

This section includes procedures for starting FLEXlm on the Windows NT, Windows 95, and Windows 98 operating systems. These procedures assume the following:

- Advanced Design System software has been successfully installed on your system, as described in Chapter 3, Installation Procedures.
- Your network allows TCP/IP communication between workstations.
• You have installed a license.dat file that contains the FLEXlm codewords. Every machine that will run Advanced Design System must be able to access the license.dat file used by the license server(s) to check out a license. Access to the license.dat file can be via a local copy of the license.dat file or through a network drive. Refer to the section, “Step 1: Install or Create the license.dat File (Floating Licenses)” on page 4-12.

• The vendor daemon line in your license.dat file has been properly set up. Refer to the section, “Step 2: Setting the Vendor Daemon Path (Floating Licenses)” on page 4-16.

**Note** After you start FLEXlm, all machines (server and clients) must have the LM_LICENSE_FILE variable set to point to the correct license path. Refer to the section, “Step 5: Ensure Each Machine has Access to the License File (Floating Licenses)” on page 4-19.

FLEXlm can be started two ways, as described in this chapter:

- Manually (Windows NT or Windows 95 or Windows 98)
- Automatically (Windows NT)

You must start the License Manager Daemon (lmgrd) on the license server(s) first. Once the license server(s) are running lmgrd and have started the vendor daemon(s), you can configure the other machines (client nodes) and user login accounts that need to access Advanced Design System.

**Starting FLEXlm Manually**

**Note** Starting FLEXlm manually is generally not recommend for a server machine, because it requires a dedicated Command Prompt to be open at all times. However, this manual usage of FLEXlm is recommended for debugging purposes.

To start the FLEXlm executable file, lmgrd.exe, from Windows 95, Windows 98, or Windows NT.

1. From a command prompt, change to the folder
   \<HPEESOF_DIR>\licenses\bin, where \<HPEESOF_DIR> is the folder where
Setting Up Licenses on PC Systems

you installed the Advanced Design System software when you ran the Setup program.

2. Enter

`lmgrd -app -c d:\flexlm\license.dat`

The command shown specifies the full path and location of the license file.

To shut the license manager down using either operating system, enter the following at a command prompt, from the `<HPEESOF_DIR>\licenses\bin` folder:

`lmutil lmdown -c d:\flexlm\license.dat`

**Starting FLEXlm Automatically (Windows NT only)**

On the Windows NT platform you can configure FLEXlm to start up automatically every time your system is booted by installing the license manager as a Control Panel service.

To start the license manager automatically:

1. From a command prompt, change to the folder `<HPEESOF_DIR>\licenses\bin`, where `<HPEESOF_DIR>` is the folder you installed the Advanced Design System software to when you ran the Setup program.

2. Enter: `install -e <path to lmgrd> -c <license file path>`

   For example:
   ```
   install -e d:\advdessys1.5\licenses\bin\lmgrd.exe -c d:\advdessys1.5\licenses\license.dat
   ```

   As shown, be sure to enter the full path and location of both the license executable file and the `license.dat` file. The default location for the executable file is `<HPEESOF_DIR>\licenses\bin\lmgrd.exe`.

3. Set an `LM_LICENSE_FILE` system environment variable that points to the `license.dat` file that you want lmgrd to read when it starts automatically. Select **Start > Settings > Control Panel > System > Environment** then add a new variable named `LM_LICENSE_FILE` that points to the full path to the `license.dat` file.

4. To configure lmgrd, select **Start > Settings > Control Panel > Services.**

5. Select **FLEXlm Licensing Service** in the Service column of the dialog box.

6. Choose **Startup.**
7. Select **Automatic** in the Startup Type field, then choose **OK**.

8. Choose **Close**.

9. If desired, review the log file, lmgrd.xxx, (for example, lmgrd.170) located in the Windows NT system32 folder.

**Note**
When you change the path or location of your license file while running the license manager as a service under Windows NT, you need to reboot your system.

10. To activate the license server, choose the Start button from Start > Control Panel > Services, or reboot the system.

   After this procedure is run successfully, lmgrd will start automatically each time your system is booted.

To remove the license manager from the service list and cancel the automatic FLEXlm startup:

   1. From your system prompt, change to the folder
      \AdvDesSys1.5\licenses\bin

   2. Enter: **install -r**

**Step 5: Ensure Each Machine has Access to the License File (Floating Licenses)**

You need to make sure the network server and each client machine are set to the correct license path. (You can have a single license.dat file on the server or copies installed on each client.)

The LM_LICENSE_FILE variable should be equal to the full path to license.dat (for example: c:\AdvDesSys1.5\licenses\license.dat).

- On Windows 95 or Windows 98, edit your autoexec.bat file and add a line similar to the following:
  
  set LM_LICENSE_FILE = c:\AdvDesSys1.5\licenses\license.dat.

- On Windows NT, select **Start > Settings > Control Panel > System > Environment** then add a new variable named **LM_LICENSE_FILE** that points to the license.dat file. For example:
Setting Up Licenses on PC Systems

LM_LICENSE_FILE = c:\ AdvDesSys1.5\ licenses\ license.dat

Accessing Licenses From a UNIX License Server

You can access licenses from a UNIX license server by doing the following:

1. Set up the UNIX license server(s) to use FLEXlm version 7.0d or higher lmgrd and hpeesofd daemons.
2. Set up the PC to access the UNIX license server's license.dat file.

Setting Up the UNIX License Server

You must use version 7.0d or higher of the FLEXlm daemons lmgrd and hpeesofd. You can check the version of lmgrd and hpeesofd you are using on the UNIX license server with the following commands:

   cd $HPEESOF_DIR/licenses/bin
   ./lmgrd -version

   cd $HPEESOF_DIR/licenses/vendors
   ./hpeesofd -v

Use the following procedure to update current FLEXlm daemons on your license server(s):

1. Stop the current FLEXlm daemons on the license server:

   cd $HPEESOF_DIR/licenses/bin
   ./lmutil lmdown -c ../license.dat

2. Replace the following files with the version 6.1 files:

   $HPEESOF_DIR/licenses/bin/lmgrd
   $HPEESOF_DIR/licenses/bin/lmutil
   $HPEESOF_DIR/licenses/vendors/hpeesofd

   If you have more than one license server, make sure you do this on all of them.

3. Restart the license daemons on the UNIX license server(s):

   cd $HPEESOF_DIR/licenses/bin
   ./lmgrd -c ../license.dat > ../flex.log
Setting Up the PC

The PC can access the UNIX license server’s license.dat file in either of two ways:

• By copying the license.dat file from the UNIX license server to the PC’s $HPEESOF_DIR\licenses folder
• By setting the LM_LICENSE_FILE variable on the PC to point to the UNIX license server as follows:

\> set LM_LICENSE_FILE=<port>@<host>

For example:

\> set LM_LICENSE_FILE=1700@joshua

where

1700 is the port number on the SERVER line in the license.dat file on the UNIX license server

joshua is the hostname of the UNIX license server

This can be done in the autoexec.bat file for Windows 95 or Windows 98 and in the System Environment variables for Windows NT.

Special Licensing Needs

Following is additional information that will be useful for certain special licensing requirements that you may have.

For additional updated information on FLEXlm, refer to the following Globetrotter Software website:

http://www.globetrotter.com

Using FLEXlm Options

An options file allows the license administrator to control various operating parameters of FLEXlm. Specifically the license administrator can:

• Allow the use of features based on user, hostname or display name.
• Deny the use of features based on user, hostname or display name.
• Reserve licenses based on user, hostname or display name.
Setting Up Licenses on PC Systems

- Control the amount of information logged about license usage.
Options files allow the license administrator to be as secure or open with licenses as desired.

Creating an Options File

To create an options file:

1. Use the appropriate options listed in the next section to create the options file using any text editor. You can put the options file anywhere. However, Agilent EEsof recommends locating the options file in the same directory as your license.dat file:
   
   HPEESOF_DIR\licenses\hpeesofd.opt

2. Add the pathname to the options file in the license.dat file as the fourth field on the DAEMON line for hpeesofd. For example:
   
   DAEMON hpeesofd /hpeesof/licenses/vendors/hpeesofd /
   hpeesof/licenses/hpeesofd.opt

Available Options

The available options are:

- **EXCLUDE**
  Deny a user access to a feature.

- **EXCLUDEALL**
  Deny a user access to all feature served by this vendor daemon.

- **GROUP**
  Define a group of users for use with any options.

- **INCLUDE**
  Allow a user to use a feature.

- **INCLUDEALL**
  Allow a user to use all features served by this vendor daemon.

- **NOLOG**
  Turn off logging certain items.
• REPORTLOG
  Specify that a logfile be written suitable for use by the FLEXadmin End-User Administration Tool.

• RESERVE
  Reserve licenses for a user.

• TIMEOUT
  Works only for specified simulator and library licenses.

• TIMEOUTALL
  Works for all simulator and library licenses.

You can include comments in your options file by starting each comment with a hash mark ‘#’. Everything in the options file is case-sensitive. Be sure that user names and feature names, for example, are entered correctly.

Refer to the appendix, The FLEXlm Options File, for more detailed information on the Options file.

**Updating the License.dat file**

If you have been running FLEXlm and receive updated codewords from Agilent EEsof, you can add the new licenses to the FLEXlm environment as follows:

1. Replace the existing licensed.dat files on the license servers and clients with the new licensed.dat file.
2. On the primary server, run `lmutil lmreread`. This causes the lmgrd on the primary server to re-read the licensed.dat file and update all of the other lmgrd processes on the network.
3. After you have done this, you can run `lmutil lmstat -a` to verify that the license servers have received the new license information.

If this does not work, you may need to stop all of the lmgrd processes on your network and then restart them as described in the section “Step 4: Starting FLEXlm (Floating Licenses)” on page 4-16.

**Merging Multiple Vendor Licenses into One File**

When you are running FLEXlm-licensed products from multiple vendors, you may need to take steps to prevent licensing conflicts during installation. There are three ways you can accomplish this:
Multiple license server nodes; each running one lmgrd and one license file

One license server node running one lmgrd and one license file

One license server node running multiple lmgrds and multiple license files

Note that each lmgrd can only read a single license file. In the first option mentioned, you will have more license servers to monitor. In the third option, you have only one server but multiple lmgrds to administer.

Your product's license file(s) define the license server(s) by hostname and hostid in the SERVER line(s) in the license file. If the license files for two or more products contain identical hostids on the SERVER line(s), then these files can be combined. If the license files for two products contain different hostids on a SERVER line, then the license servers for those products will be running on different nodes and the license files cannot be combined.

If you have two or more products whose license servers run on the same node (as specified by the SERVER lines in the license files), you may be able to combine the license files into a single license file. If the SERVER lines in those files have identical hostids, then you can combine the files into a single file. If the SERVER lines have different hostids, then you must keep the license files separate.

More precisely, you can combine two license files under the following conditions:

1. The number of SERVER lines in each file is the same.
2. The hostid field of each SERVER line in one file exactly matches the hostid field of each SERVER line in the other file.

Some possible reasons license files may not be compatible are:

- License files are set up to run on different server nodes, so hostids are different.
- One file is set up for single server (has only one SERVER line), the other is set up for redundant servers (has multiple SERVER lines).
- One vendor uses a custom hostid algorithm, so the hostids on the SERVER lines are different even though the files are for the same machine.

If your license files are compatible as described above, then you have the option of combining license files and running a single lmgrd, as described in the following section, "Combining License Files from Multiple Vendors" on page 4-25. If the license files are not compatible, then you must keep the license files separate and run separate copies of lmgrd for each license file, as described in the section, "Using Separate License Files on the Same Server Node" on page 4-26.
Note that you are not required to combine compatible license files. You always have the option of running separate lmgrds, and there is virtually no performance or system-load penalty for running separate lmgrd processes.

Combining License Files from Multiple Vendors

If your license files are compatible, you can combine them with any text editor. To combine license files, read all of the compatible license files into one file, then edit out the extra SERVER lines so that only one set of SERVER lines remains. Write out this data, and you have your combined license file.

If you combine license files from multiple vendors, it is a good idea to keep a copy of the combined license file in each vendor's default license file location. This way, your users can avoid having to set LM_LICENSE_FILE, because each package finds its license information in the default place. On UNIX, you can do this with a symbolic link from each default location to the location of the combined license file.

FLEXlm Version Component Compatibility

When you combine license files for two different FLEXlm-licensed products, it may be the case that those products do not use the same version of FLEXlm. FLEXlm is designed to handle this situation. There are two basic compatibility rules for FLEXlm:

1. A newer lmgrd can be used with an older vendor daemon, but a newer vendor daemon might not work properly with an older lmgrd.

2. A newer vendor daemon (or lmgrd) can be used with an older client program, but a newer client program might not work properly with an older vendor daemon.

From these two compatibility rules come the simple rules for selecting which version of administration tools to use:

1. Always use the newest version of lmgrd and the newest version of each vendor daemon.

2. Use the newest FLEXlm utilities.

For specific application programs, you can use either the new or the old version (with the assumption that the vendor daemon for that application is at least as new as the application).
Using Separate License Files on the Same Server Node

You must run a separate copy of imgrd for each license file. When you run multiple copies of imgrd, there are two details to remember:

1. The port number on the SERVER line of each license file must be unique. You can use a standard text editor to change the port number in each license file so that they are all different.

2. You must make sure that you are using a compatible version of imgrd when you start it up for a particular license file. This can be done by using an explicit path to imgrd.

When running client programs (such as a licensed application), you can set the LM_LICENSE_FILE environment variable to point to multiple license files. For example, you may have a license file from vendor ABC and a license file from vendor XYZ with incompatible servers. You can place the license file from vendor ABC into:

```
\user\flexlm\abc.dat
```

and the license file from vendor XYZ into:

```
\user\flexlm\xyz.dat
```

then set the LM_LICENSE_FILE environment variable to point to both of them. LM_LICENSE_FILE can point to only one license file for FLEXlm v1.x applications.

Setting Up Redundant (Backup) License Servers

Some sites choose to set up redundant or backup license servers, in case a primary server is unavailable. If your license.dat file has an odd number of SERVER lines, that is, 3, 5, 7, etc., you have a redundant license server configuration. The license setup is identical to a single SERVER configuration, with the exception that no licenses will be available until a majority of the license servers are running.

For example, if you have 3 SERVER lines, at least 2 must be up and running before any licenses will be available for checkout. If you have 5 SERVER lines, at least 3 must be up and running.

If you have redundant license servers, make sure that the FLEXlm software is loaded on each of them. You also must start the FLEXlm software (imgrd) on each server. The licenses will not be available for checkout until a majority of the license servers are running.
Appendix A: Troubleshooting

Following are some useful tips for resolving problems that might occur after you have installed Advanced Design System.

ADS Will Not Start

It is possible to install programs or options for which you have not purchased licenses. Although the icons and features will appear in the software, you cannot access the applications without a license. Contact your Agilent EEsof sales representative to obtain additional licenses.

If your Advanced Design System applications will not start:

• Make sure all of your licensing requirements are correctly set up, as explained in Chapter 4, Setting Up Licenses on PC Systems.

• Using a text editor open and review the install.log file in your installation folder to see if there are any apparent problems with the installation structure. (You can re-run Setup if necessary to re-install.)

If you cannot find the problem, run ADS in verbose (debug) mode and contact Technical Support to help pinpoint the problem. Please see the next section.

Starting ADS in Verbose Mode (Debug Mode)

ADS 1.5 can be started in verbose (debug) mode to display more information about what is happening as ADS runs. This extra information can be very useful to debug a problem with ADS both at startup and in general operation. In verbose mode, ADS writes a log file to the root folder of your PC’s system disk. Typically, this is:

C:/ ads_daemon.log

The ads_daemon.log file can be sent by e-mail to Agilent EEsof EDA Technical Support for assistance.

To start ADS in verbose mode, do the following:

1. Open your Windows Explorer.
2. Navigate to the bin folder in the ADS installation folder. For example, c:/advdessys1.5\bin
3. Double click on the hpads_verbose.bat file.

This will start ADS. You will notice some extra message windows as ADS starts. Just click OK on each of the windows. Run ADS until the problem you are trying to debug occurs, then take a look at the ads_daemon.log file for errors.

If you can’t locate the trouble based on the contents of ads_daemon.log, please contact Agilent EEsof EDA Technical Support. You will want to e-mail the ads_daemon.log file to the support engineer you work with.

Resolving Startup Problems on the PC

The following are startup problems and their solutions.

Avoiding Lengthy Program Startup on DNS Networks

If your machine is configured with DNS (domain name services) and you need to occasionally disconnect your machine from the network, you must disable DNS. Otherwise, your Advanced Design System programs might take a long time to start up.

To disable DNS:

1. Click on the My Computer shortcut.
2. Click Control Panel.
3. Click Network.
5. In the Microsoft TCP/IP Properties dialog box, select the DNS tab.
6. Choose Disable DNS.
7. Choose OK.

Problems Starting Up ADS RF Designer Suite

You need to purchase a specific product license to access Advanced Design System’s RF Designer product, which is the lowest-cost ADS suite for RF design.

If you select RF Designer from the Startup menu and you don’t have this license installed, an error message will appear. If you want to purchase this product suite,
contact your Agilent EEsof Sales Representative. If you have purchased this suite and are encountering the same problem, check your licensedat file to make sure it is properly set up. Follow instructions in Chapter 4, Setting Up Licenses on PC Systems, for complete details on licensing procedures.

**Licenses Locked To Ethernet Address of LAN Cards Stop Working When Not Connected To The Network**

The FLEXlm software must be able to read the ethernet address of your LAN card for this to work properly. If you only have the TCP/IP protocol loaded on your PC, then FLEXlm will be unable to read the ethernet address and ADS will not work.

You must have the NWLink IPX/SPX protocol loaded in addition to the TCP/IP protocol.

To load the NWLink IPX/SPX protocol in Windows, do the following:

1. Choose Start > Settings > Control Panel
2. In Control Panel, double-click on Network
3. In the Network dialog box, select the Protocols tab.
4. Click on the Add button.
5. Select NWLink IPX/SPX Compatible Transport from the list that appears and click OK.
6. The protocol will be loaded. Once it is complete, select OK until out of the Network dialog box.
7. To complete this procedure, reboot your PC.

**Frequently Asked Questions For PC Installations**

Following are some frequently asked questions that occur regarding installation of Advanced Design System programs on the PC.

**How Do I Install Over Multiple Hard Disks?**

To install Advanced Design System applications over multiple hard disks, you need to re-run the Setup program as many times as necessary, installing selected installation components to a different destination each time.
Troubleshooting

Is There an Easy Way to Check the Nodelock ID of My Hardware Key?

It is necessary to know the nodelock ID of your hardware security key to secure security codewords from Agilent EEsof. It might also be useful to access this information when you place a call to Technical Support. There are two ways to check this:

- Before you install the hardware key on your PC, you can read the id directly from the key.
- If you have installed the hardware key on your PC, and have also already installed your codewords and the FLEXlm software, you can enter a command to check the nodelock id:
  
  \texttt{lmutil lmhostid -flexid}

Is There an Easy Way to Delete All Installed Files?

The Uninstall utility is available from the Advanced Design System PC shortcuts, as explained below. You don't have to uninstall all files before you run the Setup installation again. New installation will supersede previous installations. However, the Uninstaller is useful whenever you want to make sure you have deleted all installed Advanced Design System files, including registry entries.

To run the Uninstaller program:

1. Close all Advanced Design System applications.
2. Select \texttt{Start > Programs > Advanced Design Systems 1.5 > UninstallShield}.
3. Answer \texttt{yes} to the prompt that asks whether you want to remove all Advanced Design System applications and components.
4. When the uninstall process is complete, a prompt will indicate when the uninstall process is complete. Click \texttt{OK} to dismiss the dialog box.

\textbf{Note}  On Windows systems, particularly Windows 95, make sure you have exited all applications before running the Uninstaller program. If you have not, it is possible you will get errors regarding FrameViewer files upon re-installing Advanced Design System. If these errors occur, reboot your computer and start the new installation again, or search for and end the lingering application(s) through the
How Can I Change My Home Directory?

To change your Advanced Design System home directory, follow this procedure.

1. Open the registry editor as follows:
   On Windows 95 or Windows 98:
   Select Start > Run.
   Enter regedit
   Click OK.
   On Windows NT:
   Select Start > Run.
   Type regedt32.exe
   Click OK.

2. Inside the registry editor, find the folder or window titled HKEY_LOCAL_MACHINE on Local Machine. Select Software > Agilent > ADS > 1.5 > eeenv. You will see a registry entry called HOME:REG_SZ: C:\users\default.

3. Double-click this entry to open the string editor. Change this to reflect the path of your new home directory.

4. Change the Start directory of the Advanced Design System Main window's file browser. Select the following:
   Start > Settings > Taskbar > Start Menu Programs > Advanced.
   This opens the Explorer window.

5. On the right side of the Explorer window, double-click the Programs icon.

6. Open the Agilent Advanced Design System 1.5 icon. This displays the shortcuts to ADS executable.

7. Right-click the Advanced Design System icon and choose Properties

8. Choose the Shortcut tab.
9. Change the field Start in: to reflect the path of your new home directory.

**Agilent EEsof Technical Support**

Agilent EEsof worldwide technical support is available Monday through Friday. The toll-free North America hotline is open 6:00 am to 5:00 pm PT. Throughout Europe, the localized Online Technical Support Centers are open 8:30 am to 5:30 pm, local time; throughout Asia, the localized Customer Response Centers are open 9:00 am to 6:00 pm, local time.

The e-mail addresses for the various regions are listed below. However, for both the regional e-mail addresses and local telephone numbers for more than 25 countries, please refer to the Agilent EEsof Web site at

http://www.agilent.com/eesof-eda


**North America**
Phone: 1 800 47 EEsof (473-3763)
6:00 am to 5:00 pm Pacific Time · Fax: 818-879-6465
e-mail: eesof_support@agilent.com

**Europe**
e-mail: eesof-europe_support@agilent.com

**Japan**
e-mail: edasupport@pn.agilent.com

**Korea**
e-mail: eesof_korea@agilent.com

**Asia**
e-mail: eesof-asia_support@agilent.com
Appendix B: The FLEXIm Options File

This appendix provides an overview of the syntax of a complete options file and some samples intended to illustrate ways to effectively control access to your licenses.

For more detailed information on FLEXIm, refer to the following Globetrotter Software website:

http://www.globetrotter.com

Option Syntax

EXCLUDE

EXCLUDE featurename type name

Excludes a user, host, display, or group from the list of who is allowed to use the feature. Excluded users will not be allowed to use the feature.

- featurename (name of the feature being affected)
- type (one of USER, HOST, DISPLAY, or GROUP)
- name (name of the user or group to exclude)

To exclude the user hank from the list of users able to use feature f1:

EXCLUDE f1 USER hank

EXCLUDEALL

EXCLUDEALL type name

Excludes a user, host, display, or group from the list of who is allowed to use all features served by this vendor daemon.

- type (one of USER, HOST, DISPLAY, or GROUP)
- name (name of the user or group to exclude)

To exclude any user on the server chaos from using all features served by this vendor daemon:

EXCLUDEALL HOST chaos
GROUP

GROUP groupname usernamelist
Defines a group of users for use in INCLUDE, INCLUDEALL, EXCLUDE, EXCLUDEALL, and RESERVE option lines.
  • groupname (name of the group being defined)
  • usernamelist (list of user names in that group)
To define the group Hackers consisting of bob, howard, and james:
  GROUP Hackers bob howard james

HOST_GROUP

HOST_GROUP groupname hostnamelist
Defines a group of hosts for use in INCLUDE, INCLUDEALL, EXCLUDE, EXCLUDEALL, and RESERVE option lines.
  • groupname (name of the group being defined)
  • hostnamelist (list of host names in that group)
To define the group accounting consisting of node_a, node_b, and node_c:
  HOST_GROUP accounting node_a node_b node_c

INCLUDE

INCLUDE featurename type name
Includes a user, host, display, or group in the list of who is allowed to use the feature. Anyone not in an INCLUDE statement will not be allowed to use that feature.
  • featurename (name of the feature being affected)
  • type (one of USER, HOST, DISPLAY, GROUP, or HOST_GROUP)
  • name (name of the user or group to include)
To include user bob in the list of users able to use feature f1:
  INCLUDE f1 USER bob
INCLUDE is required for USER_BASED features. The system administrator specifies which users are allowed to use the product, via INCLUDE, and the license limits the number of users that can be INCLUDEd.

**INCLUDEALL**

INCLUDENALL type name  

Includes a user, host, display, or group in the list of who is allowed to use all features served by this vendor daemon. Anyone not in an INCLUDEALL statement will not be allowed to use these features.

- type (one of USER, HOST, DISPLAY, GROUP, or HOST_GROUP)
- name (name of the user or group to include)

To allow the user 'jane' to use all features served by this vendor daemon:

INCLUDENALL USER jane

**NOLOG**

NOLOG what  

Turns off logging of specific events by the FLEXlm daemons.

- what (what to turn off; one of IN, OUT, DENIED, or QUEUED)

To turn off logging of checkins:

NOLOG IN

To turn off logging of checkouts and queued requests two separate NOLOG lines are required:

- NOLOG DENIED
- NOLOG QUEUED

License administrators might use this option to reduce the size of the flex.log or debug log file.

**REPORTLOG**

REPORTLOG filename
The FLEXlm Options File

REPORTLOG specifies the file which will contain the report-writer log for this vendor daemon. If filename begins with a ‘+’ character, the file will be opened for append, otherwise the file will be overwritten each time the daemon is started. FLEXadmin, a separate product available from Globetrotter, can be used to read and report on REPORTLOG files.

This file is only useful with the FLEXadmin license administration utility.

RESERVE

RESERVE numlic featurename type name

Reserves licenses for a specific user.

- numlic (number of licenses to reserve)
- featurename (name of feature to reserve)
- type (one of USER, HOST, DISPLAY, GROUP, or HOST_GROUP)
- name (name of the user or group to reserve licenses for)

To reserve one license of feature f1 for user mel:

RESERVE 1 f1 USER mel

Any licenses reserved for a user are dedicated to that user. Even when that user is not actively using the license it will be unavailable to other users.

TIMEOUT and TIMEOUTALL

TIMEOUT which works only for specified simulator and library licenses, and TIMEOUTALL, which works for all simulator and library licenses, are now supported in ADS.

How the Vendor Daemon Uses the Options File

When the vendor daemon is started by lmgrd, it is passed the location of the options file. The location is specified in the license file for that product, on the DAEMON line. If no file is listed the daemon will not use any options file.

There can only be one options file per vendor daemon and each vendor needs a separate options file.
Rules of Precedence in Options Files

Before you can use options to utilize licenses effectively you must understand the options file precedence. INCLUDE and EXCLUDE statements can be combined in the same options file and control access to the same features. When doing so, keep in mind the following:

• If there is only an EXCLUDE list, everyone who is not on the list will be allowed to use the feature.
• If there is only an INCLUDE list, only those users on the list will be allowed to use the feature.
• If neither list exists, then everyone is allowed to use the feature.
• The EXCLUDE list is checked before the INCLUDE list; so someone who is on both lists will not be allowed to use the feature.

Once you create an INCLUDE or EXCLUDE list everyone else is implicitly outside the group. This feature allows you, as an administrator, the ability to control licenses without having to explicitly list each user that you wish to allow or deny access to. In other words there are two approaches; you can either:

• Give most users access and list only the exceptions
  or
• Severely limit access and list only the those users that have access privileges.

Simple Options File Example

A sample options file is:

RESERVE 1 compile USER robert
RESERVE 3 compile HOST mainline
EXCLUDE compile USER lori
NOLOG QUEUED

This options file would:

• Reserve one license for the feature “compile” for the user “robert.”
• Reserve three licenses for the feature “compile” for anyone on a computer with the hostname mainline.
The FLEXlm Options File

- Prevent the user “lori” from using the “compile” feature on any node on the network.
- Cause QUEUED messages to be omitted from the debug log file.

The sum total of the licenses reserved must be less than or equal to the number of licenses specified in the FEATURE line. In the example above, there must be a minimum of four licenses on the “compile” FEATURE line. If fewer licenses are available, only the first set of reservations (up to the license limit) is used.

If this data were in file /usr/local/flexlm/options/local.options, you would modify the license file DAEMON line as follows:

```
DAEMON xyzd /usr/local/xyzd /usr/local/flexlm/options/local.options
```

### Limiting Access for Multiple Users

Each INCLUDE, INCLUDEALL, EXCLUDE, EXCLUDEALL, and RESERVE line must have a single user name (or group) listed. To affect more than one user name create a GROUP. For example to exclude bob, howard, and james from using the feature called “toothbrush” we could create the following options file:

```
EXCLUDE toothbrush USER bob
EXCLUDE toothbrush USER howard
EXCLUDE toothbrush USER james
```

There is an easier way though. Create a GROUP and exclude the list of users from using the feature. Like the previous example, the following options file would exclude bob, howard and james from using the feature called toothbrush:

```
# First define the group “Hackers”
GROUP Hackers bob howard james

# Then exclude the group
EXCLUDE toothbrush GROUP Hackers
```

Now when you want to allow or deny access to any feature to that group, you have an alias list to make it simple.

The GROUP function works for a list of user names prior to FLEXlm v4.0. To control access to multiple displays (and hosts in pre-v4.0 FLEXlm) you must use multiple option lines in your options file. For example, in pre-v4.0 FLEXlm to exclude all users logged in on the hosts fred and barney from using a feature called f1, add these lines to your options file:

```
# First define the group “Hackers”
GROUP Hackers fred barney

# Then exclude the group
EXCLUDE f1 GROUP Hackers
```
EXCLUDE f1 USER fred
EXCLUDE f1 USER barney

In FLEXlm v4.0, you can use HOST_GROUP to allow, deny or reserve licenses for multiple hosts. For example, to exclude all users logged in on the hosts fred and barney from using a feature called f1 add these lines to your options file:

```plaintext
HOST_GROUP writers fred barney
EXCLUDE f1 HOST_GROUP writers
```

**EXCLUDE Example**

An example using the EXCLUDE option is:

```plaintext
#First Define the group “painters”
GROUP painters picasso mondrian klee
EXCLUDE spell GROUP painters
EXCLUDE spell USER bob
EXCLUDE spell HOST bigbrush
```

This options file would:

- Prevent the users picasso, mondrian, and klee from using the feature spell on any machine on the network.
- Prevent the user bob from using the feature spell on any machine on the network.
- Prevent any user logged into the host bigbrush from using the feature spell.
- Allow any other user, as long as they are not on bigbrush, and they are not in painters and they are not bob to use the feature spell (By implication.)

Note that bob could have been added to the group painters. However, painters might be used for some other purpose in the future so the license administrator chose to handle bob as a special case here. In this case, the two EXCLUDE statements concatenate to create a list of four users.

**INCLUDE Example**

An example using the EXCLUDE option is:
The FLEXlm Options File

INCLUDE paint USER picasso
INCLUDE paint USER mondrain
INCLUDE paint HOST bigbrush

This options file would:

• Allow the user picasso to use the feature paint on any machine on the network.
• Allow the user mondrain to use the feature paint on any machine on the network.
• Allow any user, as long as they are on the host bigbrush, to use feature paint.
• Deny access to the feature paint to anyone except picasso, mondrain or anyone from the host bigbrush (by implication).
Appendix C: Background Information on FLEXlm

This appendix provides some general introductory information on the FLEXlm software, provided by Globetrotter Software. For more detailed information on FLEXlm, refer to the following Globetrotter Software website:

http://www.globetrotter.com

This section explains the basics of floating (network) licensing, and gives a quick overview of the components of FLEXlm. It explains where license administrators have control and where Advanced Design System users have control.

Introduction to FLEXlm

FLEXlm is best known for its ability to allow software licenses to be available (or float) anywhere on a network, instead of being tied to specific machines. Floating licensing benefits both users and license administrators. Users can make more efficient use of fewer licenses by sharing them on the network. License administrators can control who uses the licensed application, and the node(s) where the licenses will be available.

FLEXlm Components

The four main components of FLEXlm are:

- License manager daemon
- Vendor daemon
- License file
- Application program

The License Manager Daemon (lmgrd)

The license manager daemon (lmgrd) handles the initial contact with the client application programs, passing the connection on to the appropriate vendor daemon. It also starts and restarts the vendor daemons. FLEXlm permits multiple redundant license manager daemons on three server nodes, allowing you to make your license
Background Information on FLEXlm

available if any two out of the three server nodes is running. Redundancy can be achieved with 3-server redundant servers, or by using a license file list with any number of servers.

The Vendor Daemon

In FLEXlm, licenses are granted by running processes (unless they're node-locked (uncounted), in which case they need only read the license file to run). There is one process for each vendor who has a FLEXlm-licensed product on the network. This process is called the vendor daemon. The vendor daemon keeps track of how many licenses are checked out, and who has them. If the vendor daemon terminates for any reason, all users lose their licenses (though this does not mean the applications suddenly stop running). Users normally regain their license automatically when lmgrd restarts the vendor daemon, though they may exit if the vendor daemon remains unavailable.

Client programs communicate with the vendor daemon, usually through TCP/IP network communications. The client application and the daemon processes (the license server) can run on separate nodes on your network, across any size wide-area network. Also, the format of the traffic between the client and the vendor daemon is machine-independent, allowing for heterogeneous networks. This means the license server and the computer running an application can be either different hardware platforms or even different operating systems (Windows and UNIX, for example).

The License File

Licensing data is stored in a text file called the license file. The license file is created by the software vendor, and edited and installed by the license administrator. It contains information about the server nodes and vendor daemons, and at least one line of data (called FEATURE or INCREMENT lines) for each licensed product. Each FEATURE line contains a license key based on the data in that line, the hostids specified in the SERVER lines, and other vendor-specific data.

In some environments, the licensing information for several vendors may be combined into a single license file. The default location for UNIX systems is:

```
/usr/local/flexlm/licenses/license.dat
```

You can usually override this location by setting the environment variable LM_LICENSE_FILE to point elsewhere, or by following instructions supplied with the licensed application. If your site has software from multiple vendors with
incompatible license files (due to different sets of servers), you can keep the data in separate files and set the LM_LICENSE_FILE variable to reference multiple files.

It’s strongly recommended that you keep a copy or link (on UNIX of the license file in the vendor’s default location, so that you don’t need to set LM_LICENSE_FILE to run your applications.

**The Application Program**

The application program using FLEXlm is linked with the program module (called the FLEXlm client library) that provides the communication with the license server. During execution, the application program communicates with the vendor daemon to request a license.

**The License Request Process**

When you run a counted FLEXlm-licensed application, the following occurs:

1. The license module in the client application finds the license file, which includes the host name of the license server node and port number of the license manager daemon, lmgrd.
2. The client establishes a connection with the license manager daemon (lmgrd) and tells it what vendor daemon it needs to talk to.
3. The lmgrd daemon determines which machine and port correspond to the master vendor daemon and sends that information back to the client.
4. The client establishes a connection with the specified vendor daemon and sends its request for a license.
5. The vendor daemon checks in its memory to see if any licenses are available and sends a grant or denial back to the client.
6. The license module in the application grants or denies use of the feature, as appropriate.

Uncounted features (where the number of licenses is 0) do not require a server, and the FLEXlm client library routines in the application grant or deny usage based solely upon the license contents.
Background Information on FLEXlm

Configuring FLEXlm

Most of the parameters of FLEXlm are configurable by the license administrator. The license administrator can set:

- The location of the license file (though it's recommended that a copy or link of the license remains at the location where the application expects it)
- The location of all executables
- The location of all log files
- The TCP/IP port number used by the license manager process, lmgrd

In addition, the license administrator can reserve licenses for specific users, nodes, or groups, and control other license-related options.

The following sections provide a quick overview of how to set up and use licensing for FLEXlm-licensed products. By scanning the list, you should be able to quickly find the areas of interest.

Installing Licensed Software

As a license administrator you are responsible for setting up licensing on your system or network. This section tells you how to do that. If you are an end-user of the application and you will not be involved in installing it, refer to the section of this chapter, “Notes for Users” on page C-6.

Remember that your specific Advanced Design System installation instructions in this manual give specific directions for installing and configuring FLEXlm for Advanced Design System.

Generally, installing FLEXlm licensing requires the following steps:

1. Select your license server nodes and get their hostids.
2. Give the hostids to your software vendor and get a license file (or the data to enter in the license file) in return.
3. Consider combining the new license file with any existing license files.
4. Determine if an options file is desired, and if so, set it up.
5. Determine where to install the FLEXlm utility programs such as lmgrd, and lmutil (lmstat/lmdown/etc.) and install them unless your vendor's installation script does so for you.
6. Start lmgrd (the license daemon) manually. You may also want to set it up to start automatically at boot time.

**License Servers and Hostids**

Before running any FLEXlm-licensed program using floating licenses, you will need to set up your license server node (or nodes). You must select which node or nodes to run your license servers on, and provide the hostid of those machines to your software vendor.

You can get the hostid of the server machine by running FLEXlm's lmhostid utility on that machine. If you don't have lmhostid, you can get the hostid of your machine by using the appropriate command as described in Appendix A of the FLEXlm documentation, accessible from the web (http://www.globetrotter.com).

Using the hostid of your server machines your vendor will send you a license file that enables their application software.

**License and lmgrd Files**

Once you have received a license file from your vendor, you must install it on your system and start up the license manager daemon, lmgrd.

Your software vendor may have selected a default location for your license file. If not, you can use any location you wish.

Some vendors provide special scripts to start up the license daemon. If not, you can run lmgrd directly. To start lmgrd automatically at boot time, you will have to modify your system files.

**Administration Tools**

GLOBEtrotter Software supplies administration tools to your software vendor. The vendor usually includes them with their product. The recommended location for the tools is /usr/local/bin but you can install them in a different location (or not at all). Agilent EEsof installs lmutil to the directory $HPEESOF_DIR/licenses/bin.

**Options Files**

The options file controls various options such as reservations and timeouts of licenses. Most users run without an options file, but you may decide you want to use...
Background Information on FLEXlm

some options. For example, many administrators use an option to limit the quantity and content of logged messages.

Notes for Users

As a user of a FLEXlm-licensed application, you may need to know a few things to use the system effectively. The main things you need to know are:

- How to tell an application which license file to use
- How to query the system to find out who is using a license
- How to specify a license file

The license file determines what features are available to a program. It also contains information telling the application how to connect to the license server.

To find out who is using a license, run lmstat with the following syntax:

\[ \text{lmutil lmstat -a} \]

For more information, refer to the FLEXlm End Users manual, accessible from the Web at

Appendix D: Ensuring Hard Disk Storage Efficiency

This appendix provides an overview of the effects different types of file systems and different partition sizes have on the disk space required for installation of your Advanced Design System applications.

See the table below for definitions of some important storage terminology.

<table>
<thead>
<tr>
<th>Storage Terminology</th>
</tr>
</thead>
<tbody>
<tr>
<td>A sector is the smallest unit of disk space that the hardware can read or write to, and it equals 512 bytes.</td>
</tr>
<tr>
<td>A cluster is a group of one or more contiguous sectors and is the smallest unit that a file system can allocate (hence it is also referred to as an allocation unit). For partitions larger than 16 MB, there are normally 4, 8, 16, 32, or 64 sectors per cluster. The number of sectors per cluster is determined when the hard disk is formatted.</td>
</tr>
<tr>
<td>A file system is the means used by an operating system to store and retrieve files from a hard disk.</td>
</tr>
<tr>
<td>A partition is a logical hard disk and appears on a PC as having a unique drive letter such as C:. A physical hard disk can be divided into one or more partitions.</td>
</tr>
</tbody>
</table>

An Advanced Design System installation typically contains thousands of files. Although many of these files are only a few kilobytes in size, they can occupy a lot more disk space than their individual sizes suggest. For instance, it is not uncommon for a 1 kilobyte file to occupy 32 kilobytes of space.

The amount of space occupied will depend on the type of file system that Advanced Design System is installed on and the size of that particular disk partition. Identical installations can differ in space requirements by as much as 300% between different file systems.

Adding a new hard disk is a relatively inexpensive and common way to compensate for poor hard disk storage efficiency. However there are other options that can provide additional space without adding hardware. The options available to you will depend in part on whether you have chosen to run Advanced Design System under Windows 95, Windows 98, or Windows NT. Options include changing disk partition sizes, changing file system types, and using disk compression software.
Ensuring Hard Disk Storage Efficiency

**FAT/VFAT File Systems**

To record data to a location, FAT and VFAT file systems write one or more entries to a data structure called the Virtual File Allocation Table (VFAT) in Windows 95 or Windows 98 or File Allocation Table (FAT) in Windows NT. The original FAT file system was designed for early 8-bit, DOS-based PCs that featured very small hard disks. A 16-bit version of FAT that supported partitions greater than 32 MB did not appear until the release of DOS version 3.2. The 16-bit legacy of FAT and VFAT cause them to become inefficient for storing files on partitions that approach or exceed 1 GB.

To understand the efficiency problem, it is important to understand how these systems operate. The (virtual) file allocation table contains one entry for each cluster in a disk partition. Each entry is 16 bits long and contains the address of the next cluster in the allocation chain. The starting cluster address is stored separately, along with the filename and other information. Since a FAT/VFAT entry is 16 bits, there cannot be more than 65536 clusters in the partition (2^16 = 65536).

Because disk space is allocated in clusters, no file (no matter how small) can occupy less than one full cluster. In a partition that is formatted with clusters that are 4 sectors long, each cluster will be 2048 bytes (512 x 4 = 2048). Even a 1-byte file will consume 2048 bytes (one byte for the file, and the remaining 2047 bytes are not usable). The unusable portion of a cluster is called overhang.

Since FAT and VFAT file systems limit the number of clusters, the larger the partition size, the larger the cluster size must grow. The cluster size is set by the format command. In the FAT and VFAT systems, the user has no control over the size chosen. The only way you can control it is to vary the partition size. Partitions up to 128 MB use 2 KB clusters (4 sectors). Each time the partition size doubles above that, the cluster size is doubled as well.

<table>
<thead>
<tr>
<th>Partition size</th>
<th>Cluster size set by FAT and VFAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 128 MB</td>
<td>2 KB</td>
</tr>
<tr>
<td>Up to 256 MB</td>
<td>4 KB</td>
</tr>
<tr>
<td>Up to 512 MB</td>
<td>8 KB</td>
</tr>
<tr>
<td>Up to 1024 MB</td>
<td>16 KB</td>
</tr>
<tr>
<td>Up to 2048 MB</td>
<td>32 KB</td>
</tr>
</tbody>
</table>
Drives of 1.2 GB are quite common. If such a drive is configured as one partition, the cluster size will be 32 KB. If the same drive is configured as three equal sized partitions, the cluster size would be 8 KB.

If you want to reduce file overhang and increase your storage efficiency, you should keep the partition sizes of your hard disk below 512 MB or 1024 MB. Advanced Design System does not require the entire installation to reside in a single disk partition. In fact, you may wish to keep the program on a local disk but the libraries on a network server. You can also keep the electronic versions of the manuals on your CD-ROM.

**NTFS File System for Windows NT**

Windows NT offers you a choice of file systems between FAT and the Microsoft file system, NT File System (or NTFS). NTFS is more efficient than FAT and offers greater file security, but it cannot be seen by DOS, Windows 3.1 or Windows 95 or Windows 98. This is an important consideration if you run multiple operating systems on your PC.

NTFS is fundamentally a 32-bit system and, therefore, the possible number of cluster addresses is much larger (\(2^{32}\)). Instead of limiting the number of cluster addresses, NTFS allows it to grow beyond the FAT/VFAT limitation of 65536.

The `format` command on an NTFS partition selects cluster sizes of 512, 1024, 2048, or 4096 bytes, based on its examination of the hard disk. On a typical 1.2 GB drive, the default NTFS cluster size will remain 512 bytes. However, in Windows NT, you can override the automatic setting of cluster size and specify a particular size if desired. This is done by using the `/a` option, which is available with Windows NT `format` command.

**Use of Disk Compression Utilities**

File compression utilities are programs that create virtual hard disk partitions out of large hidden files on your hard drive. On Windows 95/98 systems with smaller hard disks, these programs can be an option. Special algorithms are used to compress and decompress files as they are written and read from these virtual drives. Since compression ratios of 2:1 are quite common, these utilities can easily provide 500 MB of storage space from only 250 MB of actual disk space. Compression utilities will degrade your file access time slightly but other than that, the risks associated with them are relatively low.
Ensuring Hard Disk Storage Efficiency

Advanced Design System has been tested with two file compression utilities; DriveSpace and DriveSpace 3. DriveSpace is provided with Windows 95 or Windows 98 and replaces the MSDOS utility called DoubleSpace. DriveSpace can compress up to 256 MB to produce compressed drives of about 512 MB. DriveSpace 3 is an updated version of DriveSpace that is bundled with Microsoft Plus! for Windows 95 or Windows 98. DriveSpace 3 breaks through the 256 MB limit of DriveSpace and offers greater administration control of the compressed drive.

There are several other brands of disk compression utilities. The most common one is Stacker by Stac Electronics. Advanced Design System has not been tested with this utility.

If you plan to use Windows NT and Windows 95 or Windows 98, you may not want to use a disk compression utility. Most (if not all) disk compression utilities written for Windows 95 or Windows 98 are not compatible with Windows NT. The compressed drive created for Windows 95 or Windows 98 cannot be viewed when running Windows NT.
Appendix E: Using Remote Simulation

Following are instructions for enabling and running remote Advanced Design System simulations using a PC client from which to start a remote simulation. Before starting the client process, it is necessary to first set up a server (host) computer on which to run remote simulations.

In this chapter, the term server has the same meaning as host or remote computer, and the term client has the same meaning as local computer.

Note These procedures are not exactly the same for the Momentum Electromagnetic simulator. For Momentum remote simulation, refer to Performing Remote Simulations in the Momentum manual.

Supported Operating Systems for Use as a Server (Host):

- Windows NT 4.0 and Windows 2000.
- UNIX systems.

Supported Operating Systems for Use as a Client (Local Computer):

- Any supported PC operating system (Windows NT 4.0 or Windows 2000, 95, or 98).

Note Windows 95 or Windows 98 systems cannot be used as a server.

Setting up Your Simulation Server (Host) Computer

Setting up a PC Server

To prepare your PC server (remote computer) perform the following steps:

1. Set the TCP communication port in the server PC in one of the following ways:

   - The port can be manually hard-coded in the hpeesof.cfg file. To do so, open hpeesof.cfg file located in the <ADS_home>\config directory and add the following line to it:
Using Remote Simulation

EEDAEMON_SOCKET = 1537

• Or, create a new hpeesof.cfg file in the c:\users\default\hpeesof\config directory and add the above line to it.

If EEDAEMON_SOCKET variable is not set to any port, then by default, port 1537 will be assigned to it.

Note  Momentum requires an additional line in the hpeesof.cfg file, which is:
MOMENTUM_SIM_PATH=<remote_computer_name>
Refer to Performing Remote Simulations in the Momentum manual for more information.

2. Start the Remote Simulation daemon with the command:
<ADS_home>\bin\hpremote -d remote_sim.log
from an MS-DOS shell or from the Windows >Start >Run menu.
The -d option is for debugging purposes. It allows you to see the screen messages and save them in the remote_sim.log file for later verification. This file will be stored in <ADS_home>\bin.

Note  Do not terminate the MS-DOS window that pops up. Doing so will immediately terminate the daemon as well.

The Server (remote) PC is now ready to run ADS simulations started on a client.

Setting up a UNIX Server

To prepare a UNIX Server (remote computer), perform the following steps:

1. Log in to the remote computer.

2. Set the HPEESOF_DIR, PATH and DISPLAY environment variables as you normally would when running Advanced Design System. See Chapter 1, section on Quick Installation, in the Installation on UNIX Systems manual for more information.

Note  DISPLAY has to be set if you are running Agilent Ptolemy simulations.
with TkPlots in them. This allows the server to display the TkPlots on the client machine.

3. Set the TCP communication port in the UNIX server in one of the following ways:
   • The communication port can be manually hard-coded in the hpeesof.cfg file. This might require root or super-user privileges to make the change (ask your IT department to help you). Open the hpeesof.cfg file located in 
     `<ADS_home>/config` directory and add the following line to it:

     \[
     \text{EEDAEMON_SOCKET = 1537}
     \]

     If access to the IT department is slow, then create a new hpeesof.cfg file in your `<home>/hpeesof/config` directory and add the above line to it.

     While this socket is generally not used, make sure 1537 does not appear in `/etc/services` file. If it does, then choose another number for the socket (e.g., 5332).

     • The eedaemon line in `/etc/services` provides the communication port to `hpremote`. (See “Defining the EMX Daemon Remote Address” on page E-7 and ask your IT department for help on setting it up.)

     • If `EEDAEMON_SOCKET` variable is not set to any port, then by default port 1537 will be assigned to it.

   \[\text{Note}\quad \text{Momentum requires an additional line in the hpeesof.cfg file, which is:} \]

   \[
   \text{MOMENTUM_SIM_PATH = <remote_computer_name>}
   \]

   Refer to Performing Remote Simulations in the Momentum manual for more information.

4. Run the following script on the server:

   \[\text{hpremote -d /tmp/remote_sim.log} \]

   The `-d` option is for debugging purposes. It allows you to see the screen messages and save them in the remote_sim.log file for later verification. This file will be stored in the `/tmp` directory.

   If you get an error message, see “Error Messages” on page E-5.

   To view the last part of the file, use the following command:
Using Remote Simulation

```
tail -f /tmp/remote_sim.log
```

5. You can verify that the hpremote daemon is running by checking the process:
```
ps -ef | grep hpeesofemx
```

---

**Note**  
If another user has already launched the hpremote, then it must not be launched a second time. Subsequent remote users (you in this situation) can connect to this daemon as well. Make sure that the HPEESOF_DIR is set correctly for your simulation.

---

### Setting up the Client (Local) PC

A client machine should now be ready to run remote simulation. Do the following:

1. Start ADS.
2. Open or create a project.
3. Open or create a design.
4. From the Schematic window, choose **Simulate > Simulation Setup**.
5. In the dialog box that appears, type in the Host name (or Host's IP address) in the Remote Simulation Host field.
6. Click on Simulate.

If Remote Simulation succeeds, the Status window will open and show the progression of the simulation.

Whether you need any other setup on the client PC depends on user preferences and if an OPEN_SIMULATOR error message occurs (see “Error Messages” on page E-5).

### User Preferences

Multiple servers may be available on your system. Multiple servers are particularly useful when you intend to compare circuit simulation results as quickly as possible. Once multiple servers are set up, they can be accessed by typing in each name at a client computer, or by generating a listing on a client.

This listing appears when you click the down arrow next to the Remote Simulation Host field. Normally this is a list of one, defaulting to local and no others. However,
you may write a list of hosts into the \texttt{de\_sim.cfg} file on a client computer. Edit the \texttt{de\_sim.cfg} file, located in your \texttt{<ADS\_home>\config} directory, or \texttt{c:\users\default\hpeesof\config} (on PC) or \texttt{<home>/hpeesof/config} (on UNIX) directory, to include the following line:

\begin{verbatim}
SIMULATION\_HOST\_LIST=[hostname1] [hostname2]...
\end{verbatim}

where each \texttt{[hostname]} must be separated by a single space. After making this edit, start ADS. From the Schematic window, choose Simulate > Simulation Setup. In the dialog box that appears, click the down arrow just to the right of the Remote Simulation Host field, highlight the host you want, and click the Simulate button.

\section*{Error Messages}

\subsection*{Error Message 1}

For either a PC or UNIX Server, if you get the following error message when running Remote Simulation on the client:

\begin{verbatim}
(send\_server\_command) OPEN\_SIMULATOR
server error
\end{verbatim}

there could be multiple causes, including:

The EMX daemon may not be running on the Server. Check the Server, as described next by operating system:

\begin{itemize}
  \item **PC** Try using \texttt{hpremote -d <filename>} to start the daemon. If a failure re-occurs, you can check the log file \texttt{<filename>} saved in the \texttt{<ADS\_home>\bin} directory to search for causes. On the client side, try typing in the Server's IP address instead of its machine name in the Remote Simulation Host field of the box that pops up from Simulate > Simulation Setup.
  \item **UNIX** Please be sure you edited and ran \texttt{hpremote} as described above. Remember that adding \texttt{EEDAEMON\_SOCKET = 1537} to \texttt{hpeesof.cfg} is recommended before running \texttt{hpremote}.
  \item **PC and UNIX** If you are sure \texttt{hpeesofemx} is running on the Server, it may be listening to a different socket address than the client seeks. Please verify that both client and Server computers are using the same TCP socket. It is recommended to use socket 1537, the default setting in ADS sought by clients.
\end{itemize}
Error Message 2
For remote simulations using a UNIX server, if you receive an error message such as the following when running the hpremote script:

[1] + Stopped (tty output) -hpeesofemx-d remote.log &

this might be an indication that you are running from a shell that does not write messages to tty for a background process (tty gets the terminal name).

In this situation, use the following command in the hpremote script:

hpeesofemx 2>&1 &

Note that this message also appears if you are using remote simulation with Momentum.

Ending Remote Operation
It is recommended that you end the remote simulation process or task on the server once a remote simulation is finished. To end a remote simulation process, do the following:

1. On the local machine, exit Advanced Design System.
2. Terminate the hpeesofemx daemon that is running on the remote server. In Windows, go to the Task Manager and End the Process.
   In UNIX, to find the process, do the following:
   ps -ef | grep hpeesofemx
   and then kill the process as follows:
   kill -9 <process ID>
   The next time Advanced Design System is launched, it will default to simulate locally again.

Remote Simulation Restrictions
Please note that the following restriction applies to remote simulation:

In the Momentum simulator, if a substrate computation is required, the user must set the <ADS_home>/momentum/lib/substrates directory and the files under it
Defining the EMX Daemon Remote Address

Remote simulation requires fixed socket addresses for the client(s) and server(s) computers. By default, the EMX daemon started by the hpremote script uses a socket address of 1537. However, relying on this default setting may or may not result in a successful remote simulation. Thus, it is recommended to explicitly set the socket address by one of the two options below:

- Edit the `<ADS_home>/config/hpeesof.cfg` file for each client(s) and server(s) computer (PC or UNIX) to include:
  
  ```
  EEDAEMON_SOCKET = xxxx
  ```
  
  where `xxxx` is a port number not in use by the `/etc/services` file or the Windows Services (for instance `xxxx` could be “1537” if that port is free). This socket address should be known and fixed across all associated platforms (client(s), host(s)...).

- Edit the `/etc/services` file to set a socket address for EEDAEMON, such as
  
  ```
  eedaemon xxxx/tcp eedaemon
  ```
  
  where `xxxx` is a number such as 1537 or 5332. This method is useful in a multi-node environment. However, the `/etc/services` entry must be identical on every node. This approach has greater power, but requires root or super-user privileges to make the change. If access to a system administrator is slow, it may be overall easier to use the first option.
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