



Release Document

Foundation Series 1.4 Install and Release Document

January 1998

0401698

Read This Before Installation



Foundation Series 1.4 Install and Release Document



The Xilinx logo shown above is a registered trademark of Xilinx, Inc.

XILINX, XACT, XC2064, XC3090, XC4005, XC5210, XC-DS501, FPGA Architect, FPGA Foundry, NeoCAD, NeoCAD EPIC, NeoCAD PRISM, NeoROUTE, Timing Wizard, and TRACE are registered trademarks of Xilinx, Inc.



The shadow X shown above is a trademark of Xilinx, Inc.

All XC-prefix product designations, XACTstep, XACTstep Advanced, XACTstep Foundry, XACT-Floorplanner, XACT-Performance, XAPP, XAM, X-BLOX, X-BLOX plus, XChecker, XDM, XDS, XEPLD, XPP, XSI, BITA, Configurable Logic Cell, CLC, Dual Block, FastCLK, FastCONNECT, FastFLASH, FastMap, Foundation, HardWire, LCA, LogiBLOX, Logic Cell, LogiCORE, LogicProfessor, MicroVia, PLUSASM, Plus Logic, Plustran, P+, PowerGuide, PowerMaze, Select-RAM, SMARTswitch, TrueMap, UIM, VectorMaze, VersaBlock, VersaRing, WebLINX, XABEL, Xilinx Foundation Series, and ZERO+ are trademarks of Xilinx, Inc. The Programmable Logic Company and The Programmable Gate Array Company are service marks of Xilinx, Inc.

All other trademarks are the property of their respective owners.

Xilinx, Inc. does not assume any liability arising out of the application or use of any product described or shown herein; nor does it convey any license under its patents, copyrights, or maskwork rights or any rights of others. Xilinx, Inc. reserves the right to make changes, at any time, in order to improve reliability, function or design and to supply the best product possible. Xilinx, Inc. will not assume responsibility for the use of any circuitry described herein other than circuitry entirely embodied in its products. Xilinx, Inc. devices and products are protected under one or more of the following U.S. Patents: 4,642,487; 4,695,740; 4,706,216; 4,713,557; 4,746,822; 4,750,155; 4,758,985; 4,820,937; 4,821,233; 4,835,418; 4,855,619; 4,855,669; 4,902,910; 4,940,909; 4,967,107; 5,012,135; 5,023,606; 5,028,821; 5,047,710; 5,068,603; 5,140,193; 5,148,390; 5,155,432; 5,166,858; 5,224,056; 5,243,238; 5,245,277; 5,267,187; 5,291,079; 5,295,090; 5,302,866; 5,319,252; 5,319,254; 5,321,704; 5,329,174; 5,329,181; 5,331,220; 5,331,226; 5,332,929; 5,337,255; 5,343,406; 5,349,248; 5,349,249; 5,349,250; 5,349,691; 5,357,153; 5,360,747; 5,361,229; 5,362,999; 5,365,125; 5,367,207; 5,386,154; 5,394,104; 5,399,924; 5,399,925; 5,410,189; 5,410,194; 5,414,377; 5,422,833; 5,426,378; 5,426,379; 5,430,687; 5,432,719; 5,448,181; 5,448,493; 5,450,021; 5,450,022; 5,453,706; 5,466,117; 5,469,003; 5,475,253; 5,477,414; 5,481,206; 5,483,478; 5,486,707; 5,486,776; 5,488,316; 5,489,858; 5,489,866; 5,491,353; 5,495,196; 5,498,979; 5,498,989; 5,499,192; 5,500,608; 5,500,609; 5,502,000; 5,502,440; 5,504,439; 5,506,518; 5,506,523; 5,506,878; 5,513,124; 5,517,135; 5,521,835; 5,521,837; 5,523,963; 5,523,971; 5,524,097; 5,526,322; 5,528,169; 5,528,176; 5,530,378; 5,530,384; 5,546,018; 5,550,839; 5,550,843; 5,552,722; 5,553,001; 5,559,751; 5,561,367; 5,561,629; 5,561,631; 5,563,527; 5,563,528; 5,563,529; 5,563,827; 5,565,792; 5,566,123; 5,570,051; 5,574,634; 5,574,655; 5,578,946; 5,581,198; 5,581,199; 5,581,738; 5,583,450; 5,583,452; 5,592,105; 5,594,367; 5,598,424; 5,600,263; 5,600,264; 5,600,271; 5,600,597; 5,608,342; 5,610,536; 5,610,790; 5,610,829; 5,612,633; 5,617,021; 5,617,041; 5,617,327; 5,617,573; 5,623,387; 5,627,480; 5,629,637; 5,629,886; 5,631,577; 5,631,583; 5,635,851; 5,636,368; 5,640,106; 5,642,058; 5,646,545; 5,646,547; 5,646,564; 5,646,903; 5,648,732; 5,648,913; 5,650,672; 5,650,946; 5,652,904; 5,654,631; 5,656,950; 5,657,290; 5,659,484; 5,661,660; 5,661,685; 5,670,897; 5,670,896; RE 34,363, RE 34,444, and RE 34,808. Other U.S. and foreign patents pending. Xilinx, Inc. does not represent that devices shown or products described herein are free from patent infringement or from any other third party right. Xilinx, Inc. assumes no obligation to correct any errors contained herein or to advise any user of this text of any correction if such be made. Xilinx, Inc. will not assume any liability for the accuracy or correctness of any engineering or software support or assistance provided to a user.

Xilinx products are not intended for use in life support appliances, devices, or systems. Use of a Xilinx product in such applications without the written consent of the appropriate Xilinx officer is prohibited.

Copyright 1991-1998 Xilinx, Inc. All Rights Reserved.

Xilinx Development System



Contents

Chapter 1 Introduction

Contents.....	1-1
Operating System Compatibility	1-2
Online Help	1-2
Documentation	1-2
Guidelines	1-3

Chapter 2 Versions and Compatibility

Chapter 3 Features in This Release

Features Supported for Foundation Series 1.4	3-1
New Program Behavior For M1.4 Implementation Tools	3-3

Chapter 4 Device and Package Support

Chapter 5 Installing Foundation

System Requirements.....	5-1
Installing the Design Entry Tools.....	5-3
Starting Installation	5-3
File Permissions.....	5-3
Installing over Foundation 6.0.1	5-4
Installing the Design Implementation Tools	5-5
Installation Considerations.....	5-5
Installing the Software.....	5-6
Serial Number	5-7
Selecting and Deselecting Components	5-7
Typical Installation	5-7
Base (CPLD, FPGA devices up to 10,000 gates).....	5-7
Standard (all FPGA and CPLD devices).....	5-10
Design Entry Tool Components Only.....	5-11
Quick CPLD Installation	5-11
Lab Machine Installation	5-11

Foundation Series 1.4 Install and Release Document

Run from CD or Network.....	5-11
Other Considerations	5-11
Setting Up the Xilinx Environment.....	5-14
Setting Up the DynaText Browser	5-16
DynaText Browser System Requirements	5-16
Setting Up the DynaText Environment.....	5-16
Setting Up the Xilinx Environment Variables	5-16
Customizing the dynatext.ini File	5-18
Uninstalling Xilinx Software.....	5-19

Chapter 6 Setting Up Security

Design Entry Tools Security.....	6-1
Design Implementation Tools Security.....	6-2
Licensing for Existing 1.3 Customers.....	6-3
Existing Base or Standard License	6-3
Existing Base V or Standard V License	6-4
Licensing for New Customers	6-4
Setting Up Security Using Node-Locked Licenses	6-5
Setting Up the LM_LICENSE_FILE Variable	6-5
Obtaining Authorization Codes	6-8
Setting Up the license.dat File	6-11
Setting Up Security Using Floating Licenses	6-13
Selecting a License.dat File	6-13
Setting Up the LM_LICENSE_FILE Variable	6-13
License Management	6-16
Adding New Products	6-16
Preparing the License.dat File	6-17
Understanding License Codes.....	6-19
Starting the License Server	6-20
Security Tips for Design Implementation Tools	6-23
Verifying Your Environment Variables	6-24

Chapter 7 Getting Started

Starting the Software.....	7-1
Opening and Using the DynaText Browser	7-2
Opening Documents	7-2
Using the DynaText Browser	7-4
Documentation Categories.....	7-4
Xilinx Online Design Implementation Tools Documentation	7-4
Xilinx Hard Copy Documentation	7-7
Xilinx Foundation Series Online Help System	7-7
Xilinx Application Information	7-8

Chapter 8 Known Issues

Software	8-1
Installation	8-1
Design Entry	8-3
Translation	8-5
Implementation	8-7
Simulation	8-11
Timing Simulation	8-11
Downloading and Configuration	8-13
Documentation	8-13

Chapter 9 Xilinx Customer Support Information

Registration, Authorization, and Customer Service	9-1
Technical Support	9-1
Hotline Access and Hours	9-1
Training	9-2

Appendix A Registry Entries

Design Implementation Tools	A-1
Typical or Lab Install	A-1
Windows NT 4.0	A-2
Windows 95	A-2
Run From CD or Network	A-2
Windows NT 4.0	A-2
Windows 95	A-3
Design Entry Tools Components Only	A-3
Online Documentation	A-3
Typical	A-3
Run From CD or Network	A-4
Windows NT 4.0	A-4
Windows 95	A-4
Windows 95 Registry Entries For the Download Cable Driver	A-4
NT Registry Entries For the Download Cable Driver	A-5
Registry Entries for XABEL	A-6

Appendix B XABEL PLUSASM Flow For CPLD Designs

Foundation Series 1.4 Install and Release Document

Appendix C Troubleshooting

Installation	C-1
Insufficient Space for the Installation	C-1
Program Icons Were Not Created By Setup	C-1
Peripherals	C-3
Mouse Is Incompatible	C-3
Mouse Fails.....	C-3
Licensing	C-4
LM_LICENSE_FILE	C-4
License Validity	C-4
Design Entry Tools.....	C-4
Design Implementation Tools.....	C-5
PATH Environment Variable	C-5
XILINX Environment Variable	C-5
Registry Entries.....	C-5
DynaText Browser (for Online Documentation)	C-6

Appendix D Installing Esperan

Installing the Esperan Tutorial.....	D-1
Minimum System Requirements	D-1
Installation Instructions	D-1
Esperan Tutorial.....	D-2
Networked CD Drives	D-2
Displaying Version Information	D-2
Keyboard Commands	D-3
Selecting 8-Bit or 16-Bit Sound Files	D-4
Troubleshooting	D-4
Support	D-6

Appendix E Upgrading to Foundation 1.4 —Library Format Conversion

Appendix F Detailed Disk Space Requirements

Required Disk Space For Design Implementation Tools CD	F-1
Required Disk Space For Design Implementation Tools CD	F-4
Example Disk Space Calculations	F-5

Index

Chapter 1

Introduction

This manual explains how to install Xilinx Foundation™ software products and how to configure your system for use with the Xilinx Development software. This software offers the industry's most advanced and flexible timing-driven design system.

This document provides tips and workarounds that will help you to use the Xilinx tools. The document also describes how to use the Xilinx online help and documentation.

Contents

The Xilinx Foundation software is provided on four CD ROMs. It consists of the following.

CD-ROMS	Software Component
Design Entry Tools	Master installation program, schematic/VHDL design entry tools
Design Implementation Tools	Installation program, Xilinx implementation tools (Base and Standard), Xilinx-ABEL™ interface, Version 3.1 DynaText® browser, Xilinx online documentation
Esperan™ 2.0 Tutorial	VHDL Tutorial (Base-V and Standard-V only)
Foundation Express (optional, must be ordered to receive)*	Version 2.0 of the Synopsys® synthesis HDL software

* Refer to the *Foundation Express User Guide* for installation instruction.



Foundation Series 1.4 Install and Release Document

Operating System Compatibility

Xilinx Foundation runs on standard PC platforms. This version of the software operates on Windows NT[®] 4.0 and Windows 95[®].

Online Help

Complete online help and online documentation is provided with the Foundation Series software. The online help system can be invoked from the Project Manager's Help menu or from the Xilinx Foundation Series program group.

The online help for the design entry tools is provided in Windows help files on a per-application basis. The new online help system has an improved look-and-feel. In general, it is more consistent than the previous version and exhibits more extensive use of Windows 95 help features.

With this new version of the online help, Xilinx FPGA designers can find more information than they could previously, including a tutorial that teaches basic FPGA design techniques. In addition, the help system now includes links that take you directly to the Xilinx web site.

Documentation

The following Xilinx online documentation titles are available for the Xilinx Foundation 1.4 software. Refer to the "Documentation Categories" section of the "Getting Started" chapter for more information on these books.

- *Design Manager/Flow Engine Reference/User Guide*
- *Development System Reference Guide*
- *Development System User Guide*
- *EPIC Design Editor Reference/User Guide*
- *Foundation Series Quick Start Guide*
- *Foundation Series User Guide*
- *Hardware Debugger Reference/User Guide*
- *Hardware User Guide*



- *JTAG Programmer Guide*
- *Libraries Guide*
- *LogiBLOX Reference/User Guide*
- *PROM File Formatter Reference/User Guide*
- *Timing Analyzer Reference/User Guide*

The *Foundation Quick Start Guide 1.4* is also provided as a hard copy document. If you purchased Foundation Express, you also received the *Foundation Express User Guide* and the *Foundation Express Application Note Supplement*.

You also have access to DynaText's own online documentation. These titles explain how to use the DynaText browser to view online documents.

- *DynaText Reader's Guide for Windows*
- *DynaText Features Book*
- *Shuttle Press Kit*

Guidelines

The following is a summary of the steps to follow for getting ready to use your software.

- Fill out the enclosed registration card.
Fax or mail the card to Xilinx to receive future updates and product information.
- Read this release document.
- Install your Foundation software.

Follow the instructions in the "Installing Foundation" chapter.

If you do not want to install the design implementation software, you can execute it directly from the CD-ROM, as explained in the "Installing the Design Implementation Tools" section of the "Installing Foundation" chapter.



Foundation Series 1.4 Install and Release Document

- Install the online documentation.

You can access Xilinx documentation online on a PC running Windows 95 or Windows NT.

You must use the DynaText browser to read Xilinx online documentation.

The browser can be installed from the Foundation design implementation tools CD-ROM. You can also read online documents from the browser on the CD-ROM.

In addition, context-sensitive help is available for most Windows-based programs.

Context-sensitive help is available from the Help menu of each program. (Not all of the design entry help files are context-sensitive.) It is also available from selection dialog boxes that include a Help button. Refer to the manual for each of these programs for more information.

- License your Foundation software.

After installing your software, you must authorize it. To authorize software, refer to the "Setting Up Security" chapter. Also refer to the License and Registration Instructions located in your package.

- Address your questions and comments to the numbers shown in the "Xilinx Customer Support Information" chapter.



Chapter 2

Versions and Compatibility

The Foundation 1.4 product consists of the following software systems:

Vendor	Description	Vendor Version
Aldec [®]	Design Entry Tools	3.0
Data I/O [®]	XABEL HDL Design Entry Tools	6.0
Metamor [™]	VHDL Design Entry Tool	3.0.5
Synopsys	Foundation Express *	2.0
Esperan	MasterClass VHDL Tutorial	2.0
Xilinx	Design Implementation Tools	M1.4
Inso	DynaText Online Document Browser	3.1
Globetrotter	FLEXlm [™] security for Xilinx M1.4	5.12

* Foundation Express is an optional package



Foundation Series 1.4 Install and Release Document



Chapter 3

Features in This Release

This chapter lists the new features of this release. It also includes important information on 1.4 program behavior changes (for PAR, MAP, and Timing) that you will need to know if you are upgrading from Foundation 1.3.

Features Supported for Foundation Series 1.4

These are the major new features supported for this release:

- New architectures (XC3000A/L, XC3100A/L, XC4000XV, XC5200, and Spartan)
- Design entry tools
 - year 2000 compliant
 - larger design support
 - longer name support (127 characters) for design elements (macros, nets, buses, pins, and reference designators)
 - new file formats (Designs created prior to Foundation Series 1.4 are backed up before conversion.)
 - LogiBLOX™ import from the Schematic and HDL Editors
 - new Schematic Editor features
 - enhanced bus taps connectivity
 - improved Delete Symbol operation (Deleting a symbol leaves connected wires in place.)
 - enhanced Design Rule Checking (DRC checks for connections of named signals to unnamed buses at the time these connections are made.)

Foundation Series 1.4 Install and Release Document

- improved support for hanging wire terminators
- temporary symbol generation for missing symbols
- schematic tabs added to the main window to easily switch between pages. See the “Schematic Tabs” section of the “Schematic Design Entry” chapter in the *Foundation Series User Guide* for details.
- ARRAY symbol support for multiple instances of a symbol (\$ARRAY parameter) when importing a Viewlogic schematic.
- improved behavior when dragging groups of bus taps
- Replace Symbol option for replacing all instances of a selected symbol
- Simulate Current Macro option. See the “Simulate Current Macro” section of the “Schematic Design Entry” chapter in the *Foundation Series User Guide*.
- improved annotation for renumbering symbol references when merging schematic sheets
- integrated LogiBLOX interface
- New simulator features
 - support for large designs with a maximum of 32000 modules in each hierarchical level
 - Waveform Copy/Paste option for single waveforms
 - dragging of signal transitions in the Waveform Editor. See the “Waveform Editing Functions” section of the “Functional Simulation” chapter of the *Foundation Series User Guide* for details.
 - Simulate Macro Editor option. See the “Simulation Macro Editor” section of the “Functional Simulation” chapter of the *Foundation Series User Guide* for details.
 - new windows for managing simulation formulas
 - support for saving formulas and stimulators as ASCII Test Vectors



Features in This Release

- improved display and notification of timing violations
 - improved hierarchical simulation speed
 - faster loading of large EDIF netlists
- Design implementation tools
 - Place and Route improvements
 - improved map reports
- Updated documentation

With the new version of the online help, Xilinx FPGA designers can find more information than they could previously, including a tutorial that teaches basic FPGA design techniques. In addition, the help system now includes links that take you directly to the Xilinx web site.

New Program Behavior For M1.4 Implementation Tools

This section describes program behavior changes for this release.

- Place and Route (PAR): Significant changes in the default PAR behavior have been made with the primary goal of improving runtime in the “out-of-box” mode of operation. As a result, you may observe significantly different behavior from PAR on designs which were run using default switch settings in prior versions of the tools (including 1.3).

There are also improved messaging and report file functions, as well as better resource utilization reporting. The program also offers “next step” suggestions in the .par file to help improve routing and timing results.

The Overall PAR effort level control has been added to provide a simple means to control the behavior of PAR. The overall effort level corresponds directly to the “Place and Route Effort Level” slider bar in the Flow Engine GUI.

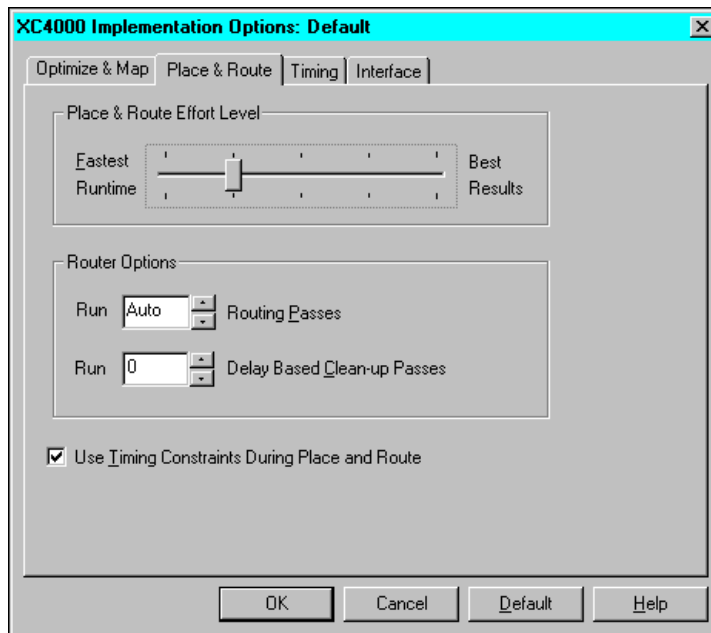
In addition to changing the place and router effort level selections, the default behavior is now set to be as shown in the following figure. The effect of this behavior change is to obtain significantly faster runtimes on most designs. However, using the default effort levels may not produce optimum results.





Foundation Series 1.4 Install and Release Document

In order to return to the behavior found in the default settings in 1.3 and earlier releases, set the PAR effort level slider bar to the 4th setting from the left.



- **MAP:** Most of the changes for the 1.4 release are in the report file. This file has been reorganized to have the Summary at the beginning and a table of contents has been added. All errors and warnings have been grouped into sections at the beginning of the report.

Substantial disk space is now saved in large designs, due to changes in the EXPANDED LOGIC, SIGNAL CROSS-REFERENCE, AND SYMBOL CROSS-REFERENCE sections. These sections, primarily used for debugging, are no longer generated by default.

- **TIMING:** There is now net fanout reporting included in the TRCE report.



Chapter 4

Device and Package Support

The following is a master table of Xilinx devices for this release. For more information on architectural families and specific device parameters, see *The Programmable Logic Data Book*.

Device	Packages	Speed Grades
XC3020A	PC68, PC84, PG84, CB100, PQ100	-6 -7
XC3030A	PC44, VQ64, PC68, PC84, PG84, PQ100, VQ100	-6 -7
XC3042A	PC84, PG84, PP132, PG132, CB100, PQ100, VQ100, TQ144	-6 -7
XC3064A	PC84, PP132, PG132, TQ144, PQ160	-6 -7
XC3090A	PC84, PQ160, TQ144, CB164, PP175, PG175, TQ176, PQ208	-6 -7
XC3120A	PC68, PC84, PG84, PQ100, CB100	-09 -1 -2 -3 -4 -5
XC3130A	PC44, PC68, PC84, PG84, PQ100, VQ100, VQ64	-09 -1 -2 -3 -4 -5
XC3142A	PC84, PG84, PP132, PG132, CB100, PQ100, VQ100, TQ144	-09 -1 -2 -3 -4 -5
XC3164A	PC84, PP132, PG132, PQ160, TQ144	-09 -1 -2 -3 -4 -5
XC3190A	PC84, PQ160, TQ144, CB164, PP175, PG175, TQ176, PQ208	-09 -1 -2 -3 -4 -5
XC3195A	PC84, PQ160, CB164, PP175, PG175, PQ208, PG223	-09 -1 -2 -3 -4 -5
XC3020L	PC84	-8
XC3030L	VQ64, PC84, VQ100	-8
XC3042L	PC84, VQ100, TQ144	-8
XC3064L	PC84, TQ144	-8
XC3090L	PC84, TQ144, TQ176	-8

Foundation Series 1.4 Install and Release Document

Device	Packages	Speed Grades
XC3142L	PC84, VQ100, TQ144	-2 -3
XC3190L	PC84, TQ144, TQ176	-2 -3
XC4003E	PC84, PQ100, VQ100, PG120	-1* -2 -3 -4
XC4005E	PC84, PG156, PQ100, PQ160, PQ208, TQ144, CB164	-1* -2 -3 -4
XC4006E	PC84, TQ144, PG156, PQ160, PQ208	-1* -2 -3 -4
XC4008E	PC84, PQ160, PG191, PQ208	-1* -2 -3 -4
XC4010E	PC84, PQ160, PG191, PQ208, HQ208, BG225, CB196	-1* -2 -3 -4
XC4013E	PQ160, PQ208, HQ208, PG223, BG225, PQ240, HQ240, CB228	-1* -2 -3 -4
XC4020E	PG223, HQ208, HQ240	-1* -2 -3 -4
XC4025E	PG223, HQ240, PG299, HQ304, CB228	-2 -3 -4
XC4028EX	HQ208, HQ240, HQ304, PG299, BG352	-2 -3 -4*
XC4036EX	HQ304, BG432, PG411, BG352, HQ240	-2 -3 -4 *
XC4005L	PC84, PQ100, PQ208	-5*
XC4010L	PC84, TQ176, PQ208	-5*
XC4013L	PQ208, BG225, PQ240	-5*
XC4002XL	PC84, PQ100, VQ100	-09 -1 -2 -3*
XC4005XL	PC84, PQ100, PQ160, PQ208, TQ144, VQ100	-09 -1 -2 -3*
XC4010XL	BG256, PC84, PQ100, PQ160, PQ208, TQ144, TQ176	-09 -1 -2 -3*
XC4013XL	BG256, HT144, HT176, PQ160, PQ208, PQ240	-09 -1 -2 -3*
XC4020XL	BG256, HT144, HT176, PQ160, PQ208, PQ240	-09 -1 -2 -3*
XC4028XL	BG256, BG352, HQ160, HQ208, HQ240, HQ304, PG299	-09 -1 -2 -3*
XC4036XL	BG352, BG432, HQ160, HQ208, HQ240, HQ304, PG411	-09 -1 -2 -3*
XC4044XL	BG352, BG432, HQ160, HQ208, HQ240, HQ304, PG411	-09 -1 -2 -3*
XC4052XL	BG560, BG432, HQ240, HQ304, PG411	-09 -1 -2 -3*
XC4062XL	BG432, HQ240, HQ304, BG560, PG475	-09 -1 -2 -3*
XC4085XL	BG560, PG559	-09 -1 -2 -3*
XC40125XV	BG560, PG559	-1 -2 **

Device and Package Support

Device	Packages	Speed Grades
XC5202	PC44, VQ64, PC84, PG156, PQ100, TQ144, VQ100	-3 -4 -5 -6
XC5204	PC84, PG156, PQ100, PQ160, TQ144, VQ100	-3 -4 -5 -6
XC5206	PC84, PG191, PQ100, PQ160, PQ208, TQ144, VQ100, TQ176	-3 -4 -5 -6
XC5210	PC84, PG223, BG225, PQ160, PQ208, PQ240, TQ144, TQ176	-3 -4 -5 -6
XC5215	HQ304, PG299, HQ208, HQ240, BG352, BG225, PQ160	-3 -4 -5 -6
XCS05	PC84, VQ100	-3 -4*
XCS10	PC84, VQ100, TQ144	-3 -4*
XCS20	VQ100, TQ144	-3 -4*
XCS30	VQ100, TQ144, PQ240, BG256	-3 -4*
XCS40	PQ240, BG256	-3 -4*
XC9536	PC44, VQ44	-5 -7 -10 -15
XC9572	PC44, PC84, PQ100, TQ100	-7 -10 -15
XC95108	PC84, PQ100, TQ100, PQ160	-7 -10 -15 -20
XC95144***	PQ100, PQ160	-7 -10 -15 -20
XC95216	HQ208, PQ160, BG352	-10 -15 -20
XC95288	HQ208, BG352	-10 -15 -20

* Preliminary

** Advanced

*** Not yet supported for JEDEC map creation

Note: The XC7300 device family is no longer supported.



Foundation Series 1.4 Install and Release Document





Chapter 5

Installing Foundation

This chapter describes how to install the Foundation Series software. To use the Foundation Series software, you must set up the Xilinx security software. This security system must be set up for network installations and standalone installations. After completing installation, refer to the “Setting Up Security” chapter for details.

Note: The IBM anti-virus program does not let the installer create a Xilinx folder. If you have this program installed, remove it before beginning installation.

System Requirements

Ensure the optimum use and operation of your new design tools by installing Foundation Series 1.4 on the recommended hardware with sufficient memory (RAM and swap). If you experience problems with either the installation, operation, or verification of your installation, please contact the Xilinx Technical Support hotline.

The Foundation Series 1.4 software is a PC-only release. Foundation runs on either Windows 95 or Windows NT (version 4.0 or later). The following list shows the type of PC you should have to perform designs for Xilinx FPGAs or CPLDs.

PC Requirements:

- Pentium[®] computer or compatible
- Windows 95[®] or Windows NT 4.0[®]
- 120 MHz clock speed
- Memory—32 MB to 64 MB (dependent on device)
- Swap Space—48 MB to 128 MB (dependent on device)



Foundation Series 1.4 Install and Release Document

- Disk space for typical installations:
Base Configuration - 242 MB
Standard Configuration - 369 MB
- CD-ROM drive

Note: Due to the size and complexity of the XC4000EX devices, Xilinx recommends that XC4000EX designs be compiled using a high-performance computer. 64MB of RAM as well as 64MB of swap space is required to compile XC4000EX designs, but Xilinx recommends that 128MB of both RAM and swap space be used.

Swap file size requirements also vary with the design and constraint set size. By default, Windows 95 manages its swap file size automatically, but for Windows NT, you may need to increase it. Typically, your Windows NT swap file size should be twice as large as your system RAM amount.

It is important to note that slower machines, or machines with less than the recommended RAM and/or swap space, will exhibit longer runtimes.

The various steps of designing Xilinx FPGAs or CPLDs require a substantial amount of memory, as shown in the following table.

Table 5-1 Memory Requirements

Xilinx Packages	RAM	Virtual Memory (Swap Space)
Base Base with Express	48 MB	64 MB
Standard Standard with Express	64 MB	128 MB

Note: The values given in the above table are for typical designs and include the normal load created by the operating system. Additional memory may be required for certain “boundary-case” or “extremely large” designs, as well as for concurrent operation of other non-Xilinx applications.

Directory Permissions:

Write permissions must exist for all directories containing design files to be edited.

Ports:

Two ports (one for a pointing device and one parallel port for the parallel download cable, if needed). A parallel port is also required for the security key (only necessary for XVHDL).

Network Compatibility:

The Xilinx installation program supports TCP-IP networks. If you are using an NT operating system, then the TCP-IP protocol needs to be installed first.

Installing the Design Entry Tools

This section explains how to install the design entry tools.

If you are an existing customer with Foundation 6.0.1, read the "Installing over Foundation 6.0.1" section *before* starting the installation.

If you want to install the design implementation tools without installing the design entry tools, proceed to the "Installing the Design Implementation Tools" section.

Starting Installation

To install the Design Entry Tools CD, proceed as follows:

1. Insert the Design Entry Tools CD into the CD-ROM drive. If your system has the Auto Run feature enabled, the Foundation Master Installer will start automatically. Select Install Design Entry Tools to begin installation. If you do not have the Auto Run enabled on your system, you can bypass the Master Installer utility by running the setup program located in the "setup" directory on the CD.
2. Follow the instructions on the screen to install the Design Entry Tools. You may wait until installing all portions of the software before restarting your PC.

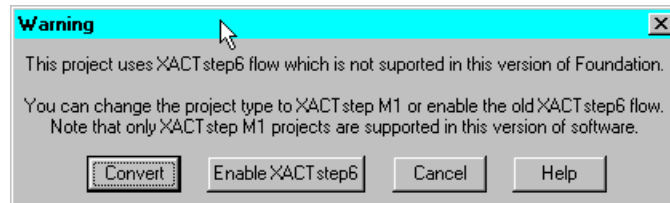
File Permissions

The permissions for the ALDEC.LOG and SUSIE.INI file must be set for read/write access. If the WINNT directory is set for read only, then the BTL.INI file must be modified; set the TRNFILE setting to a directory that has read/write access.

Installing over Foundation 6.0.1

If you are an existing customer with Foundation 6.0.1, Xilinx recommends that you install the new Foundation 1.4 design entry software in the same directory as the Foundation 6.0.1 tools.

If you then open an old XACTstep6 design, the following screen displays:



If you convert the XACTstep6 project, the project will be converted into an M1 project. If your old project was created using a device that is not supported in M1 (XC2000), you will need to convert to a supported M1 device or use Enable XACTstep6 flow.

If you select Enable XACTstep6, your old project will not be converted into the M1 flow; however you will be able to use the new design entry tools to work on your design. If you Enable XACTstep6 flow, you must still have the XACTstep6 Implementation tools installed on your system. Old XACTstep6 libraries are available in the File Download area of the Answers Page on the Xilinx Web Site. Again, if you are using a device not supported in 1.4, you need to convert the design to a supported M1 device.

You can also enable XACTstep6 projects for use in 1.4 by adding the following lines to the SUSIE.INI file, which is located in C:\Windows:

```
[flow_26]
XILINX6=ON
```

When you attempt to open your design in the schematic capture tool, you may receive the following message:

```
There are missing symbols in
[full_path_name_to_schematic] schematic
```

Generally, this message means that your design contains XBLOX modules. These modules must be converted to LogiBLOX designs. Refer to the *XACT Conversion Guide* for details. The conversion guide can be found on the Xilinx web site at the following address:

http://www.xilinx.com/techdocs/htm_index/docs_M1.htm

Xilinx does not recommend installing the Foundation 1.4 design entry software in a different directory than your existing Foundation software.

However, if you decide to install the new software in a different directory, make a backup copy of the existing SUSIE.INI file before beginning installation. When you install new software, the existing SUSIE.INI file is overwritten with a new file. After installation is complete, also make a backup copy of the new SUSIE.INI file.

To use the old software, replace the new file located in C:\Windows with the copy of the old XACTstep6 SUSIE.INI file.

Installing the Design Implementation Tools

This section explains how to install the design implementation software on a Windows NT 4.0 and Windows 95 using the design implementation CD. This CD contains Xilinx design implementation tools (Base and Standard), the XABEL interface, the DynaText browser, and documentation.

During installation, changes are made to the System Registry in Windows 95/NT. Refer to the "Registry Entries" appendix for details. You can also choose whether you want to set up the XILINX, XILINX_CD, and LM_LICENSE_FILE variables. For Windows NT, these variables are set up in the Registry. For Windows 95, these variables are set up in the autoexec.bat file.

Note: If you have a dual boot system (that is, you can boot either Windows 95 or Windows NT), registry changes are made only for the Window system from which you are installing the Xilinx software.

You must have System Administrator permissions to make changes to the Windows NT Registry when you install the software.

Installation Considerations

When performing an installation of the design implementation tools, the install program identifies if there is an existing version of the software that is earlier than Foundation 1.4. The install program then warns you that all directories and files created by a previous install will be removed. The install program accomplishes these tasks in the following manner:



Foundation Series 1.4 Install and Release Document

1. The install program prompts you for the destination directory to install the 1.4 software.
2. The install program looks for the "software_install" string in the currently installed lib*.dll files. For each string that it finds, the program checks to see if that string is actually "software_version:M1.4.12".
 - If the strings are not M1.4.12 strings, the install program proceeds as an upgrade, that is, it deletes all existing files and installs the M1.4 software. A warning dialog box displays indicating that existing files will be deleted.
 - If five M1.4.12 strings are found, the install program only installs the particular items that you have selected, that is, the install is considered as an add-on instead of an upgrade.

Installing the Software

1. Ensure that your system meets the requirements described in the "System Requirements" section.
2. Begin installing the Design Implementation Tools software in one of two ways:
 - From the Master Installer on the Design Entry Tools CD, select Install Design Implementation Tools. The following prompt displays:

Please insert CD labeled "Design Implementation Tools"

Insert the Design Implementation Tools CD into your CD-ROM drive and click OK. The setup program automatically executes. Proceed to step 3.
 - If you are not using the Master Installer, insert the Design Implementation Tools CD into your CD-ROM drive. Determine the source drive letter, *drive*, for example, d. Select **Start** → **Run**. Type *drive*:**setup.exe** in the Open field of the Run window and click OK.

Note: If you are using XABEL, the entire Foundation software package must be installed on your local PC's hard drive. The XABEL compiler does not run reliably over a network.

3. Follow the instructions in each of the windows.



If this is a new installation rather than an upgrade, the default installation directory is c:\fndtn. If you have a previous version of the Xilinx software, then the default destination for your install will display as the directory where your current implementation tools are installed.

Some basic information that you need to install the software is described in the following subsections.

Serial Number

Your serial number is printed in the lower right hand corner of the barcode label attached to the outside of the shipping package. The serial number is also printed on the registration card in your package.

Selecting and Deselecting Components

If you do not want a software component installed, you must deselect it from the Select Software Components to Install window. You must click *on* the check mark to deselect the component. You can reselect a component by clicking the blank space to the left of the document name.

Typical Installation

If you select this option, you will be able to choose from one of two install scenarios: Base or Standard.

Base (CPLD, FPGA devices up to 10,000 gates)

Allows you to choose from the following list of software and devices for install:

- Core Executables
- XABEL interface
- Shared DLLs

The shared DLLs are:

MSVCRT40.DLL

The run-time support for code created with MicroSoft Visual C 4.0

Foundation Series 1.4 Install and Release Document

MFC40.DLL
MFC40U.DLL

For Microsoft Foundation Classes 4.0 (object-oriented classes that programmers use for writing the software)

OLEPRO32.DLL

Supports Object Linking and Embedding, a program-to-program method of communication

CTL3D32.DLL

Supports common control dialogs (File open, for example)

MFCOLEUI.DLL

Supports XABEL

There are two versions, CTL3D95.DLL for Windows 95 and CTL3DNT.DLL for Windows NT. When copied to the System32 directory (Windows NT) or the System directory (Windows 95) from the CD, the file is renamed as CTL3D32.DLL.

If there are versions of these DLLs already installed on your system, the Xilinx versions are not installed (no overwrite).

If you do not have these installed, the Xilinx versions are installed in the System32 or System directory if the Shared DLLs option is selected.

These DLLs are also copied to %XILINX%\bin\nt if Core Executables is selected. The two versions of CTL3D32.DLL (CTL3D95.DLL and CTL3DNT.DLL) are also copied to %XILINX%\bin\nt.

The shared DLLs are also used for Unicode support, a 2-byte method of representing characters and other purposes.

- Network installation files

This option copies the necessary files so that users on other systems can run a network installation from your system.

- XC3000A
- XC3000L



Installing Foundation

- XC3100A
- XC3100L
- XC40003E, XC4005E, XC4006E, XC4008E, XC4010E
- XC4005L, XC4010L
- XC4002XL, XC4005XL, XC4010XL
- XC5202, XC5204, XC5206
- Spartan XCS05, XCS10
- XC9500
- Online documentation (18 sub-components)
 - Implementation Tools Online Help
 - Documentation browser (DynaText)
 - Core online book files
 - Xilinx tutorial files
 - Xilinx userware
 - LogiBLOX Reference/User Guide
 - Design Manager/Flow Engine Reference/User Guide
 - Development System Reference Guide
 - EPIC Design Editor Reference/User Guide
 - Foundation Series User Guide
 - Foundation Series Quick Start Guide
 - Hardware Debugger Reference/User Guide
 - JTAG Programmer Guide
 - Libraries Guide
 - PROM File Formatter Reference/User Guide
 - Timing Analyzer Reference/User Guide
 - Development System User Guide
 - Hardware User Guide

If you install the DynaText browser onto your system, you must also install the core online book files.



Foundation Series 1.4 Install and Release Document

Standard (all FPGA and CPLD devices)

Allows you to choose from a list of software and devices for install:

- Core Executables
- XABEL Interface
- Shared DLLs. See the “Base” section for details.
- XC3000A
- XC3000L
- XC3100A
- XC3100L
- XC4000E (3 sub-components)
(XC4003E, XC4005E, XC4006E, XC4008E, XC4010E)
(XC4013E)
(XC4020E, XC4025E)
- XC4000L (2 sub-components)
(XC4005L, XC4010L)
(XC4013L)
- XC4000EX (2 sub-components)
(XC4028EX)
(XC4036EX)
- XC4000XL (3 sub-components)
(XC4002XL, XC4005XL, XC4010XL, XC4013XL)
(XC4020XL, XC4028XL, XC4036XL, XC4044XL)
(XC4052XL, XC4062XL, XC4085XL)
- XC40125XV
- XC5200 (2 subcomponents)
(XC5202, XC5204, XC5206)
(XC5210, XC5215)
- XC9500
- Spartan (2 subcomponents)
(XCS05, XCS10)
(XCS20, XCS30, XCS40)
- Online documentation (18 sub-components)
See the description of Base online documentation.



Design Entry Tool Components Only

This option installs XABEL interface components.

Quick CPLD Installation

If you select this option, the design implementation software and the XC9500 CPLD device and its associated files are installed. The DynaText browser and the DynaText online books are not installed.

Lab Machine Installation

Select this option if you are planning only to use your system to download configuration information to a Xilinx programmable device. If you select this option, a screen displays allowing you to choose Shared DLLs, PROM File Formatter, Hardware Debugger, and JTAG CPLD Programmer for install. None of the normal executables will be installed—only those needed for Lab Install. The LAB Install option copies empty NPH files to your system. These files are only used in conjunction with the three Lab Install options.

Run from CD or Network

Select this option if you plan to access the Foundation design implementation tools software from the CD or from the network. The option copies shared DLLs to your system; it makes changes to your Registry and adds icons to a selected Start menu folder. If you are installing from the network, the system you are installing from must have the network installation files installed unless you are using the CD while performing a network install.

Other Considerations

- The LM_LICENSE_FILE environment variable is used by the FLEXlm 5.12 software to enable the various components of the Foundation design implementation tools.
- If you are not currently running FLEXlm software, the installation program will define the variable. Xilinx recommends you accept the default destination directory in the variable, %XILINX%\data for an evaluation license file. The standard default location for a permanent license file is c:\flexlm.



Foundation Series 1.4 Install and Release Document

If your PC already has the LM_LICENSE_FILE variable defined, the installation program will not modify the variable. After completing installation, you need to read the "Setting Up Security" chapter.

- The Environment Settings Options dialog box (Windows 95) or Registry Settings Options dialog box (Windows NT) lets you select default option settings for environment variables, your path, and the Registry. Following is a description of each option.

a) Set/Update XILINX

If this option is selected, the XILINX variable is set to point to C:\fndtn as the default or the directory you selected from the Select Foundation Destination Directory screen display. For Windows NT, the XILINX variable is set in the Registry. For Windows 95, this variable is set in the autoexec.bat file.

- b) If you selected Run From CD or Network from the Select Type of Installation screen display, then the value of the XILINX variable is set to your selection from the Select Foundation Source Directory screen display. You must set the XILINX variable to run the Foundation software.

c) Set/Update XILINX_CD

If this option is selected, the XILINX_CD variable is set to point to the directory from which the installation is being run as the default.

If you selected Run from CD or Network, the XILINX_CD variable is set to the directory that you choose from the Select Foundation Source Directory screen display.

For Windows NT, the XILINX_CD variable is set in the Registry. For Windows 95, this variable is set in the autoexec.bat file.

Currently, the XILINX_CD variable is used to locate the DynaText online documentation on the CD.



d) Set/Update PATH

If this option is selected, the location of the Xilinx software and the DLLs are added to your PATH. For Windows NT, the PATH variable is set in the Registry. For Windows 95, the PATH is set in the autoexec.bat file.

You must set the XILINX variable to run the Foundation software.

e) Set/Update LM_LICENSE_FILE

If this option is selected, the LM_LICENSE_FILE variable is set to point to %XILINX%\data for an evaluation license.dat file or C:\FLEXLM\license.dat for a permanent license file. The value may also be set to the value you choose from the Select Location of License Manager screen display. For Windows NT, the LM_LICENSE_FILE variable is set in the Registry. For Windows 95, this variable is set in the autoexec.bat file.

You must have a license.dat file to run the Xilinx software. If you do not set the LM_LICENSE_FILE variable, the license manager looks in the current directory for the license.dat file.

f) Initialize OLE Registry settings

OLE (Object Linking and Embedding) software enhances the transfer of data between programs (for example, between the Design Manager and EPIC editor). Xilinx recommends that you select this option. You can also initialize OLE settings by running the command, **revengine /REGISTER**, at a command line prompt from the %XILINX%\bin\nt directory.

g) Initialize Browser Registry settings

These settings must be loaded in the Registry to execute the DynaText browser. See the "Online Documentation" section of the Registry Entries appendix for a list of the registry settings.



Foundation Series 1.4 Install and Release Document

You can also initialize the browser registry settings by double-clicking the file ebtcom.reg. This file is located in %XILINX%\bin\nt.

h) Initialize XABEL Registry setting

This option adds registry values so that you can use the XABEL HDL compiler.

i) Install driver for Parallel Cable III

Select this option to install the driver for the Parallel Cable III. The parallel cable is required to download bitstreams using the Hardware Debugger (FPGAs) and the JTAG Programmer (CPLDs).

j) Create environment settings file

The xilinx.cmd file, which is created during installation, contains the settings for the XILINX, XILINX_CD, PATH, and LM_LICENSE_FILE variables. The file is located in %XILINX%. If necessary, you can double click on this file to set these variables.

Setting Up the Xilinx Environment

Verify that the following variables are set in your autoexec.bat file for Windows 95 or the Environment tab of System Properties dialog box for Windows NT 4.0. Look under "environment variables" in the Index tab of Windows NT Help to access the System Properties dialog box.

It is assumed that you have loaded the software noted in the previous step to the c:\fndtn directories on your PC. If the software has been installed in different areas, modify the following statements accordingly.

- The PATH variable sets the overall executable search path. It must include the directories where the Foundation software has been installed. The following command illustrates how to set your path in the autoexec.bat file for Windows 95.

PATH=C:\FNDTN\BIN\NT

Installing Foundation

For Windows NT 4.0, in the System Properties dialog box, enter the specified text in the Variables and Values fields:

Variables: **PATH**

Value: **C:\FNDTN\BIN\NT**

Variables: **XILINX**

Value: **C:\FNDTN**

Click Set in the System Properties dialog box and then click OK.

Note: The PATH variable cannot include any previous version of the XACTstep software. Be sure to remove all paths to older software.

- The XILINX variable is used by the Foundation software to locate data files. It must specify the directory where the Foundation software resides. This variable is automatically set up during installation.
- The LM_LICENSE_FILE variable directs the design implementation software to the license files. These files may be placed anywhere as long as this variable points to the license files themselves, not just the directory in which they reside.

For Windows 95, enter the following in the autoexec.bat as follows:

For a permanent license file:

SET LM_LICENSE_FILE=C:\FLEXlm\LICENSE.DAT

For an evaluation license file:

SET LM_LICENSE_FILE=%XILINX%\DATA\LICENSE.DAT

For Windows NT 4.0, in the System Properties dialog box, enter the specified text in the Variables and Values fields:

For a permanent license file:

Variables: **LM_LICENSE_FILE**

Value: **C:\FLEXlm\LICENSE.DAT**



Foundation Series 1.4 Install and Release Document

For an evaluation license file:

Variables: **LM_LICENSE_FILE**

Value: **%XILINX%\DATA\LICENSE.DAT**

Click Set in the System Properties dialog box and then click OK.

Setting Up the DynaText Browser

The browser and the DynaText online documentation are installed in %XILINX%\data\ntdtext. The Xilinx online documentation is installed in the %XILINX%\doc\usenglish\books directory.

DynaText Browser System Requirements

The system requirements for the DynaText browser are as follows:

- IBM PC or compatible PC with an 80486 25 Megahertz processor or greater
- Windows 95 or NT 4.0
- Minimum of 12 MB of RAM, 16 MB recommended
- Disk Space Requirements
9 MB minimum, 17 MB Full
- VGA Monitor, SVGA recommended

Note: Your system must have the Dynamic-Link Library (DLL) file CTL3D32.DLL to run the DynaText browser. This file is usually found in the System32 subdirectory under your Windows NT directory. There are two versions of the CTL3D32.DLL (CTL3D95.DLL for Windows 95 and CTL3DNT.DLL for Windows NT).

Setting Up the DynaText Environment

The following subsections discuss the XILINX environment variables and the dynatext.ini file.

Setting Up the Xilinx Environment Variables

When you install the Xilinx design implementation tools software, you can automatically set up the environment variables, XILINX and XILINX_CD, in the Registry for NT 4.0 or in the autoexec.bat for Windows 95. See the "Registry Entries" appendix for details.



Installing Foundation

The XILINX variable is set to point to the path where the software is installed. The XILINX_CD variable points to the CD-ROM path, which is usually d: or to a directory on the network. The specific value of each of these variables is referenced in the dynatext.ini file. Following is an example of a dynatext.ini file. Environment variable substitution in the dynatext.ini file adheres to the UNIX convention of using the \$ symbol, for example, \$XILINX\data.

```
; dynatext.ini configuration file
; *****
COLLECTION=$XILINX\data\ntdtext\ebtdocs\ebrowse=Browser documentation
COLLECTION=$XILINX\doc\usenglish=Xilinx books
COLLECTION=$XILINX\userware\utilities=Answers
COLLECTION=$XILINX_CD\userware\utilities=Answers on CD
COLLECTION=$XILINX_CD\doc\usenglish=Xilinx books (CD)
DATA_DIR=$XILINX\data\ntdtext\data
```

If you have not installed the Xilinx software or decided not to set up the XILINX and XILINX_CD variables during install, then these variables have not been set up. In that case, the XILINX variable will be set to the directory in which you installed the software and the XILINX_CD variable will be set to the CD_ROM path, which is usually d: or to a directory on the network. The settings in the dynatext.ini file are shown below.

```
COLLECTION=$XILINX\doc\data\ntdtext\ebtdocs\ebrowse=Browser documentation
COLLECTION=$XILINX\doc\data\doc\usenglish=Xilinx books
COLLECTION=$XILINX\doc\usenglish=Xilinx books on CD
COLLECTION=$XILINX\userware\utilities=Answers
COLLECTION=$XILINX_CD\userware\utilities=Answers on CD
DATA_DIR=$XILINX\doc\data\ntdtext\data
PUBLIC_DIR=$XILINX\doc\data\ntdtext\annots\public
PRIVATE_DIR=C:$XILINX\doc\data\ntdtext\annots\private
```

Foundation Series 1.4 Install and Release Document

Customizing the dynatext.ini File

The dynatext.ini file, which is located in %XILINX%\bin\nt, sets up the DynaText environment. Normally, you do not need to alter any of your settings in the dynatext.ini file; however, you can customize several DynaText variables by altering this file. Following is a description of the required variables.

COLLECTION	Set to the directory or directories where the Xilinx and DynaText books are located. The name as it appears in the DynaText Library window is set by using the equal sign to point to the collection directory path followed by another equal sign to point to the user-defined collection name.
DATA_DIR	Set to the location of the DynaText data files (\$XILINX\data\ntdtext\data).
PUBLIC_DIR	Sets up public annotations. Must be a writable location. If you are running the browser from the CD, annotations do not work.
PRIVATE_DIR	Sets up private annotations. Must be a writable location in a user protected area. If you are running the browser from the CD, annotations do not work.

When you have completed software installation and setup, proceed to the “Setting Up Security” chapter.



Uninstalling Xilinx Software

To uninstall Xilinx software, perform the following steps.

1. Double-click the My Computer icon.
2. Double-click the Control Panel icon.
3. Double-click the Add/Remove Programs icon.
4. Ensure that the Install/Uninstall tab is selected in the Add/Remove Program Properties window.
5. From the list, select the programs you want to remove and click Add/Remove. The Foundation items on the list are as follows:

Foundation Design Entry Tools

Xilinx Foundation Implementation Tools





Foundation Series 1.4 Install and Release Document





Chapter 6

Setting Up Security

This chapter explains how to set up security for the Design Entry Tools and the Design Implementation Tools.

Design Entry Tools Security

If you are a new customer installing the VHDL tools from the Design Entry Tools CD, you must install the preprogrammed security key on a parallel port.

If you already have an existing security key and are upgrading from non-VHDL tools to VHDL tools, you must install a new preprogrammed security key from Xilinx.

If you have an existing security key and have VHDL tools, you may use the existing key with the new software.

If you are not installing VHDL tools from the Design Entry Tools CD, you do not need a security key. The security key is supplied for the following customers:

- New customers ordering VHDL
- Existing XACTstep customers who wish to upgrade to VHDL

If you have an old key and are installing a new key, make sure you disconnect the old key. If both keys are installed, your security system will malfunction.

If you have the first version of Windows 4.0 NT, you must install the NT4.0 fix for ntvdm.exe from Microsoft. (You may install NT4.0 Service Pack 1, 2 or 3 instead of the ntvdm.exe fix.)

To determine if you have the first version of Windows 4.0 NT, select **Start** → **Programs** → **Windows NT Explorer**. Select **About Windows NT** from the Help pulldown menu.





Foundation Series 1.4 Install and Release Document

If this window does not indicate that you have Service Pack 1, 2, or 3, then you must install the Windows 4.0 NT ntvdm.exe patch or one of the Service Packs. The ftp site for the NT4.0 fix for ntvdm.exe is <ftp://ftp.microsoft.com/bussys/winnt/winnt-public/fixes/usa/nt40/hotfixes-postSP1/ntvdm-fix>.

Note: The JTAG Parallel Download Cable may interfere with the operation of the security key if it is connected to the parallel port through the security key. Please leave the download cable disconnected until after you are finished with XVHDL synthesis and you are ready for device programming.

The SUSIE.INI file is where the design entry tools store their configuration information; it resides in the c:\windows directory. If you are experiencing problems with the design entry tools not initializing correctly, make sure this file exists and has not been corrupted.

By default, some options are disabled from the menus, but can be enabled by editing SUSIE.INI. These options include:

- design export to VHDL
- recompile design in batch mode
- Verilog support in HDE and HDL wizard
- XACTstep 6.x flow

Refer to the “Design Entry Tools” section of the “Troubleshooting” appendix for more details.

Design Implementation Tools Security

Security for the Foundation design implementation tools is initiated using FLEXlm™ 5.12 license manager. (In the past, FLEXlm was known as the Highland License Manager.) For more information about FLEXlm, see the website, <http://www.globetrotter.com>.

This chapter explains how to set up FLEXlm on your PC.

To implement Xilinx security, you can use either of these types of licensing methods:

- Node-locked licenses—Node-locked licensing is the default PC licensing method. Xilinx supports node-locked on PCs only. It allows unlimited use of the product on a single PC. Access to the software is controlled by the settings in a licensing file called license.dat.





- Floating licenses—Allows multiple PCs on a network to access the Foundation design implementation software. Any computer on the network can use the software, up to a limit which is set in a licensing file called license.dat. Floating license security is implemented using a license manager daemon called lmgrd running on a server in conjunction with a Xilinx-specific license daemon called xilinxdl.

The following sections describe how to set up these two licensing systems.

- If you have Foundation 1.3 software installed, proceed to the “Licensing for Existing 1.3 Customers” section.
- If you are a new customer, proceed to the “Licensing for New Customers” section.

Licensing for Existing 1.3 Customers

The following subsections describe license scenarios for existing 1.3 customers.

Existing Base or Standard License

- If you are receiving an update to a Standard or Base package, then your current license is valid for the new 1.4 software; *you do not need to relicense your software.*
- If you are upgrading to the Foundation HDL tools (Metamor) that are part of the Foundation Project Manager but are not purchasing Foundation Express, then you need to call Customer Support. For a node-locked license, see the “Obtaining Authorization Codes” section. For a floating license, see the “Preparing the License.dat File” section.
- If you are upgrading to Foundation Express, load the Express software from the Express CD. Call Customer Support. For a node-locked license, see the “Obtaining Authorization Codes” section. For a floating license, see the “Preparing the License.dat File” section.





Foundation Series 1.4 Install and Release Document

Existing Base V or Standard V License

- If you are receiving an update to a Standard V or Base V package but are not purchasing Foundation Express, then your current license is valid for the new 1.4 software; *you do not need to relicense your software.*
- If you are upgrading to Foundation Express, load the Express software from the Express CD. You then need to modify your existing license.dat file with a new package definition. The new package definitions, which include the Foundation Express option, are contained in the file, pkgver.txt, which is located in the c:\fndtn directory, if you installed your software in the default location. Replace your existing package definition with one of the definitions in the pkgver.txt file.

For complete details, see the “Upgrading an Existing FND-STV or FND-BSV License File” section of the “Foundation Express Installation and Security” chapter of the *Foundation Express User Guide*.

Licensing for New Customers

There are basically two scenarios if you are a new customer:

- A new customer with no license.dat file installed and no LM_LICENSE_FILE variable set.

When you install the Foundation 1.4 software, an evaluation license file (license.dat) is copied to %XILINX%\data on your system. In addition, the LM_LICENSE_FILE file variable is automatically set up to point to this license.dat file. When you receive a permanent license.dat file, Xilinx recommends that you put this license outside the Xilinx software tree. A common location is c:\flexlm.

- A new customer with an existing license.dat file for another vendor and the LM_LICENSE_FILE variable is set.

An evaluation license file (license.dat) is copied to %XILINX%\data on your system. You must edit the existing LM_LICENSE_FILE to point to the license.dat file located in %XILINX%\data. For details, refer to the “Setting Up the LM_LICENSE_FILE Variable” section. When you receive a permanent license, Xilinx recommends that you put this license outside the Xilinx software tree. A common location is c:\flexlm.





The evaluation license allows you to begin using the Xilinx implementation tools immediately. Please register your software within 90 days to receive a permanent license to gain full Foundation 1.4 functionality. The evaluation license has two limitations:

- The license allows design of only Base components.
- No bitstreams can be created for downloading.

To obtain a permanent license, proceed as follows:

- For a node-locked license, see the “Obtaining Authorization Codes” section.
- For a floating license, see the “Preparing the License.dat File” section.

Setting Up Security Using Node-Locked Licenses

A node-locked license allows unlimited use of the product on a single PC. To set up security using node-locked licenses, you must:

1. Set up an LM_LICENSE_FILE environment variable pointing to the license.dat file.
2. Obtain license codes from Xilinx.
3. Set up a license.dat file as specified by the LM_LICENSE_FILE variable and place the license codes into this file. If you are a current user of FLEXlm 5.12 with Xilinx software, you can add the Xilinx license codes to the existing license.dat file.

The following sections describe how to perform these steps.

Setting Up the LM_LICENSE_FILE Variable

The LM_LICENSE_FILE environment variable points to the FLEXlm licensing file, named license.dat. You can set this variable when you install the Foundation software. The default (and recommended) LM_LICENSE_FILE setting for the permanent license file is c:\flexlm\license.dat.

If you already had an LM_LICENSE_FILE variable defined when you ran the Foundation installation, the installation program will not modify the variable.





Foundation Series 1.4 Install and Release Document

Note: Make sure that you do not have the LM_LICENSE_FILE variable set in both the System Variables area and the User Variables area.

If you must set the LM_LICENSE_FILE variable after the Foundation installation, set it up as follows:

Windows NT 4.0

1. From the Start Menu, select the Settings folder and click on the Control Panel icon.
2. In the Control Panel, double click the System icon.
3. Select the Environment tab from the System Properties window.
4. In the Variable field, type LM_LICENSE_FILE.
5. In the Value field, type the drive letter or network letter and full path of the license.dat file. For example,

For the evaluation license file:

```
%XILINX%\data\license.dat
```

For the permanent license file:

```
c:\flexlm\license.dat
```

Note: If you are already running FLEXlm security as part of another vendor's software, you can set up the LM_LICENSE_FILE variable to point to the Xilinx license.dat file and the vendor's license file. You can specify multiple license files in the LM_LICENSE_FILE Value and separate each with a semicolon (;), as in the following example for the permanent license file.

```
c:\flexlm\license.dat;c:\other_vendor\license.dat
```

6. Select Set and Apply to set the variable. Log out and log in again to insure that the current value of the environment variable LM_LICENSE_FILE is being used.
7. Select OK.
8. To verify that you set the variable, select **Start** → **Programs** → **Command Prompt**. In the Command Prompt window, enter the following command:

```
echo %LM_LICENSE_FILE%
```



The full path that you set as the value of the variable should display.

Note: If you do not set the LM_LICENSE_FILE variable, FLEXlm looks for the license.dat file in the standard place, which is c:\flexlm\license.dat. If the file cannot be found in that location, the LM_LICENSE_FILE environment variable must be set as described previously.

Note: Make sure you do not have an LM_LICENSE_FILE variable set in the System Variables area and another one set in the User Variables area; the variable must be set in one area only.

Windows 95

1. Add the following line to your autoexec.bat file.

For the evaluation license file:

```
set LM_LICENSE_FILE=%XILINX%\data\license.dat
```

For the permanent license file:

```
set LM_LICENSE_FILE=c:\flexlm\license.dat
```

Note: If you are already running FLEXlm security as part of another vendor's software, you can set up the LM_LICENSE_FILE variable to point to the Xilinx license.dat file and the vendor's license file. You can specify multiple license files in the LM_LICENSE_FILE variable and separate each with a semicolon (;), as in the following example.

```
set LM_LICENSE_FILE=c:\flexlm\license.dat;c:\other_vendor\license.dat
```

2. Reboot your system so that the autoexec.bat file is reread. Otherwise, the change has no effect.
3. To verify that you set the variable, select **Start** → **Programs** → **MS-DOS Prompt**. In the DOS window, enter the following command:

```
echo %LM_LICENSE_FILE%
```

The full path that you set as the value of the variable should display.

Note: If you do not set the LM_LICENSE_FILE variable, FLEXlm looks for the license.dat file in the standard place, which is c:\flexlm\license.dat. If the file cannot be found in that location, the LM_LICENSE_FILE environment variable must be set as described previously.



Foundation Series 1.4 Install and Release Document

Obtaining Authorization Codes

You must obtain permanent authorization codes to operate the Foundation software. You write these codes into your license.dat file.

To obtain your authorization codes:

1. Be prepared to supply Xilinx Customer Service with the product name and serial number, the Ethernet address or C drive serial number, your end-user ID number, and the network name of your PC.

When you install the Xilinx software, all of this information with the exception of the nine-digit end-user ID number is automatically entered into the license.inp file. For a Run from CD or Network based installation, the license.inp is located in the Windows directory (c:\windows, c:\winnt, etc.). Otherwise, the file is in the root directory of the installation. For existing customers, the end-user ID number is located on the shipping box label (example 1234-01-01-A). New customers will receive their end-user ID after registering the product.

Use the license.inp file to obtain the information you need to submit to Customer Service. Following is a sample license.inp file.

```
Name:Joe Smythe
Company: Acme
Serial Number: PAS0105
Product: Foundation M1
Version: M1.4
Platform: PC
Computer Name: chekhov
License Input: 00609758ec89
```

where "Computer Name" is the network name of your PC and "License Input" is either your Ethernet hardware address or C: drive Volume Serial Number.

If for some reason you did not generate a license.inp file, you can obtain the required information as follows:

- The product name and serial number are located in the lower right hand corner of the barcode label located on the package or on the registration card inside the package.





Setting Up Security

- You can obtain the Ethernet address by logging onto the PC and running the lmtools.exe application located in c:\fndtn\bin\nt. When the lmtools window appears, click on Hostid.

You can obtain the C: drive Volume Serial Number for your PC by logging onto the PC, accessing a Command Prompt, and entering the following command at the C: prompt:

vol C:

Xilinx strongly recommends that you use the Ethernet address instead of the C: drive serial number.

- To obtain the network name of your PC, proceed as follows:
 - From the Start Menu, select the Settings folder and click on the Control Panel icon.
 - In the Control Panel, double click the Network icon.
 - Select the Identification tab to see the Computer name. This is the network name required for the license.
2. Contact Xilinx Customer Service to obtain the authorization codes in any of the following ways:

- Call Xilinx Customer Service. International customers may also contact their local distributor or sales representative.

US and Canada 1-800-624-4782
(Monday through Friday, from 8:00 a.m. to 5:00 p.m. Pacific Time)

United Kingdom 01932-333550

Belgium 0800-73738

France 0800-918333

Germany 0130-816027

Italy 1677-90403

Netherlands 0800-918333

Other European Countries (44) 1932-333550

Japan 81-3-3297-9153





Foundation Series 1.4 Install and Release Document

Southeast Asia/ROW and international countries not listed:
Contact your local Xilinx distributor

- Complete the M1 License Request Form enclosed in your package and FAX to:

United States and Canada 408-559-0115

United Kingdom 01932-828521

Other European Countries (44) 1932-828521

Japan 81-3-3297-9189

Southeast Asia/ROW and international countries not listed:
Contact your local Xilinx distributor

- Obtain authorization codes from the World Wide Web. Go to the Xilinx home page (<http://www.xilinx.com>), click on the Support hyperlink and then click on the Software Licensing and Registration hyperlink.
- If you are a European customer, you may provide the required information via email to m1license@xilinx.com

Your Xilinx Customer Service Representative will email or fax you a file with your authorization codes.



Setting Up the license.dat File

The file your Xilinx Customer Service Representative will email or fax to you includes information similar to the following file.

License Information With Ethernet Address

```
#-----
# Serial Number 860689725 10-APR-97 9:28
#
# This license is node-locked to host lefthand, id = 0020afea417a
#
INCREMENT FND-STD-PC xilinxd 1.000 10-JUL-97 0 1C9276EA70EC14BF6B9F \
"XSJ_davet" 0020afea417a
#
#-----
#
# Package Definitions Follow:
#
#-----
PACKAGE FND-STD-PC xilinxd 1.000 C0901041EBE4CB132AC6 \
COMPONENTS="system-PC bit-PC xc3000D-PC xc4000X-PC xc5200X-PC \
ngd2vhdl-PC verilog-PC " \
OPTIONS=SUITE
#
#-----
# Web-generated license.
#-----+
```

If you supply a disk drive serial number, the INCREMENT line will have the text "DISK_SERIAL_NUM". For the previous sample file, the INCREMENT line looks like the following:

```
INCREMENT FND-STD-PC xilinxd 1.000 10-JUL-97 0 1C9276EA70EC14BF6B9F \
"XSJ_davet" DISK_SERIAL_NUM=1DA33FF5
```



Foundation Series 1.4 Install and Release Document

The information in this file must appear in your license.dat file.

Xilinx strongly recommends that you use the Ethernet address as your host id instead of the C: drive serial number.

Note: If you received an evaluation license, it is located in %XILINX%\data. Xilinx recommends that you do not place your permanent license file in this directory. Instead, place your permanent license file in a directory that will not be overwritten if the software is reinstalled, that is, c:\flexlm\license.dat.

You can use the information you receive in these ways:

Note: You may have to create the directory c:\flexlm to place the permanent license.dat file in the correct location.

- If the Customer Service Representative sent the information by email, you can remove the email header from the file and copy the file to the correct location (usually c:\flexlm\license.dat for permanent licenses).
- If the Customer Service Representative sent the information in a fax, you can use a text editor to create a file containing the information and place the file in the correct location (usually c:\flexlm\license.dat for permanent licenses).

The default license file contains PACKAGE definitions for all the base packages Xilinx supports (devices with 10,000 or fewer gates). Most will not be relevant to your installation, but they may be left in the license file. You *must* include a package definition which corresponds to any products mentioned in INCREMENT lines. For example, the PACKAGE FND-STD-PC line in the sample file, License Information With Ethernet Address, must be matched by an INCREMENT FND-STD-PC line.

Each INCREMENT line must be a single line. If the text overflows to another line, use the backslash character as a continuation character at the end of the line.

If you use the backslash, make sure that it is the last character on the line. No tabs or spaces may follow the backslash.

- If you are adding the information to an existing license.dat file, place the new Xilinx information *before* any existing information pertaining to floating licensing. This information usually begins with a SERVER line.



When the license.dat file contains the proper information and is in the proper directory, you can run the Foundation software.

Setting Up Security Using Floating Licenses

This section describes how to implement security using floating licenses. Floating licenses allow multiple systems on a network to access the Foundation software. Any systems on the network can use the software, up to a limit which is set in a licensing file called license.dat. The evaluation license supplied during install is not a floating license. See the “Licensing for New Customers” section for information on how to set up an evaluation license.

Please note that this release includes FLEXlm version 5.12. If you are running an older version, including the FLEXlm versions 4.1 and 5.0 that were included in the earlier releases, you must restart your license manager and daemon using the new FLEXlm version 5.12 software.

Selecting a License.dat File

If you do not already have a permanent license.dat file, contact Xilinx Customer Service to obtain a license.dat file. Refer to the “Preparing the License.dat File” section for information about contacting Customer Service.

If you are a current user of FLEXlm 5.12 of Xilinx software, then your current license will work with this new software, and you do not have to change it. However, you may need to stop the license daemon and restart it.

If you are running in a networked environment, the license.dat file should be copied to the c:\flexlm directory on one of the servers accessible by your PC. Multiple users can then use the same copy of the license manager.

Setting Up the LM_LICENSE_FILE Variable

The LM_LICENSE_FILE environment variable points to the FLEXlm licensing file, named license.dat. You can set this variable when you install the Foundation software. The default (and recommended) LM_LICENSE_FILE setting for permanent licenses is c:\flexlm\license.dat.

Foundation Series 1.4 Install and Release Document

If you already had an LM_LICENSE_FILE variable defined when you ran the Foundation installation, the installation program will not modify the variable.

If you must set the LM_LICENSE_FILE variable after the Foundation installation, set it up as follows:

Windows NT 4.0

1. From the Start Menu, Select the Settings folder and click on the Control Panel icon.
2. In the Control Panel, double click the System icon.
3. Select the Environment tab from the System Properties window.
4. In the Variable field, type LM_LICENSE_FILE.
5. In the Value field, type in the drive letter or network letter and full path of the license.dat file. For example,

For an evaluation license:

```
%XILINX%\data\license.dat
```

For a permanent license:

```
c:\flexlm\license.dat
```

Note: If you are already running FLEXlm security as part of another vendor's software, you can set up the LM_LICENSE_FILE variable to point to the Xilinx license.dat file and the vendor's license file. You can specify multiple license files in the LM_LICENSE_FILE Value and separate each with a semicolon (;), as in the following example.

```
c:\flexlm\license.dat;c:\other_vendor\license.dat
```

6. Select Set to set the variable.
7. Select OK.
8. Log out and log in again to insure that the current value of the environment variable LM_LICENSE_FILE is being used.
9. To verify that you set the variable, select **Start** → **Programs** → **Command Prompt**. In the Command Prompt window, enter the following command:

```
echo %LM_LICENSE_FILE%
```

The full path that you set as the value of the variable should display.

Note: If you do not set the LM_LICENSE_FILE variable, FLEXlm looks for the license.dat file in the standard place, which is c:\flexlm\license.dat. If the file cannot be found in that location, the LM_LICENSE_FILE environment variable must be set as described previously.

Windows 95

1. Add the following line to your autoexec.bat file.

For the evaluation license file:

```
set LM_LICENSE_FILE=%XILINX%\data\license.dat
```

For the permanent license file:

```
set LM_LICENSE_FILE=c:\flexlm\license.dat
```

Note: If you are already running FLEXlm security as part of another vendor's software, you can set up the LM_LICENSE_FILE variable to point to the Xilinx license.dat file and the vendor's license file. You can specify multiple license files in the LM_LICENSE_FILE variable and separate each with a semicolon (;), as in the following example.

```
set LM_LICENSE_FILE=c:\flexlm\license.dat;c:\other_vendor\license.dat
```

2. Reboot your system so that the autoexec.bat file is reread. Otherwise, the change has no effect.
3. To verify that you set the variable, select **Start** → **Programs** → **MS-DOS Prompt**. In the DOS window, enter the following command:

```
echo %LM_LICENSE_FILE%
```

The full path that you set as the value of the variable should display.

Note: If you do not set the LM_LICENSE_FILE variable, FLEXlm looks for the license.dat file in the standard place, which is c:\flexlm\license.dat. If the file cannot be found in that location, the LM_LICENSE_FILE environment variable must be set as described previously.



Foundation Series 1.4 Install and Release Document

License Management

You will need to contact your Xilinx customer support to obtain authorization codes for your new Xilinx products.

To use the Xilinx software, you will need the following:

- FLEXlm license manager, Version 5.12 or greater
- Xilinx license.dat file
- Appropriate authorization codes to add to license.dat

The FLEXlm license manager is included on the media shipped to you by Xilinx, and is copied with the software into your installation directory by the Install program.

You must obtain your template license.dat file from Xilinx customer support. For information about how to contact Customer Service, refer to the “Preparing the License.dat File” section.

Adding New Products

If you are installing for the first time or are adding new products to your Xilinx installation, you must call Xilinx to obtain the authorization codes for the components you have purchased. Refer to the “Preparing the License.dat File” section for information about contacting Customer Service.

To enable an installation, you must update the template license.dat with the authorization codes and start the license manager as described in the following sections.

If you plan to add the Xilinx license information to an existing license file, you must ensure that you obtained authorization codes for the same server as the existing license and then you must ensure that the license.dat file contains the new DAEMON and INCREMENT lines, and that this file includes the PACKAGE section for each INCREMENT line. Please note that this release requires a new vendor daemon, xilinxd.



Preparing the License.dat File

The license.dat file is commonly located in c:\flexlm. (This is the default for FLEXlm.) The template license file has PACKAGE definitions for the Xilinx products. You will need to add the INCREMENT lines containing your authorization codes. You will also need to modify the DAEMON line so that it contains the correct path to your copy of xilind.

To obtain your authorization codes:

Be prepared to supply Xilinx Customer Service with the nine digit end-user ID number, product name and serial number, the Ethernet address or C drive serial number, and the network name of your PC.

When you install the Xilinx software, all of this information with the exception of the end-user ID number is automatically entered into the license.inp file. For existing customers, the end-user ID number is located on the shipping box label (example 1234-01-01-A). New customers will receive their end-user ID after registering the product.

Use this file to obtain the information you need to submit to Customer Service. For an example of a license.inp file, see the "Setting Up Security Using Node-Locked Licenses" section in this chapter.

If for some reason you did not generate a license.inp file, you can obtain the required information as follows:

- The product name and serial number are located in the lower right hand corner of the barcode label located on the package or on the registration card inside the package.
- You can obtain the Ethernet address by logging onto the PC and running the lmtools.exe application located in %XILINX%\bin\nt. When the lmtools window appears, click on Hostid.

You can obtain the C: drive Volume Serial Number for your PC by logging onto the PC, accessing a Command Prompt, and entering the following command at the C: prompt:

vol C:

Xilinx strongly recommends that you use the Ethernet address instead of the C: drive serial number.



Foundation Series 1.4 Install and Release Document

- To obtain the network name of your PC, proceed as follows:
 - a) From the Start Menu, select the Settings folder and click on the Control Panel icon.
 - b) In the Control Panel, double click the Network icon.
 - c) Select the Identification tab to see the Computer name. This is the network name required for the license.

If you plan to add the new Xilinx information to an existing license file, you should use the network name from the SERVER line(s) in the existing file. You *must* use the same information if you plan to use the same computer for your license server.

4. Contact Xilinx Customer Service to obtain the authorization codes in any of the following ways:

- Call Xilinx Customer Service. International customers may also contact their local distributor or sales representative.

US and Canada 1-800-624-4782
(Monday through Friday, from 8:00 a.m. to 5:00 p.m. Pacific Time)

United Kingdom 01932-333550

Belgium 0800-73738

France 0800-918333

Germany 0130-816027

Italy 1677-90403

Netherlands 0800-918333

Other European Countries (44) 1932-333550

Japan 81-3-3297-9153

Southeast Asia/ROW and international countries not listed:
Contact your local Xilinx distributor

- Complete the M1 License Request Form enclosed in your package and FAX to:

United States and Canada 408-559-0115

United Kingdom 01932-828521



Setting Up Security

Other European Countries (44) 1932-828521

Japan 81-3-3297-9189

Southeast Asia/ROW and international countries not listed:
Contact your local Xilinx distributor

- Obtain authorization codes from the World Wide Web. Go to the Xilinx home page (<http://www.xilinx.com>), click on the Support hyperlink and then click on the Software Licensing and Registration hyperlink.
- If you are a European customer, you may provide the required information via email to mllicense@xilinx.com

Your Xilinx Customer Service Representative will email or fax you a file with your authorization codes.

Understanding License Codes

The file your Xilinx Customer Service Representative will email or fax to you includes information similar to the following.

```
SERVER edapc89          DISK_SERIAL_NUM=C031946D 2200
DAEMON xilinxd C:\XILINX\BIN\NT\XILINXD.EXE
INCREMENT PR-4EX-PC xilinxd 1.000 28-MAY-97 1 0B242B17C9F07F15EA92
"XSJ_dan"
```

Note: You must use the full path name for the location in the DAEMON line. Also, you cannot use variable names such as %XILINX% in your path description. The INCREMENT line must be a single line. If the text overflows to another line, use the backslash character as a continuation character at the end of the line. If you use the backslash, make sure that it is the last character on the line. No tabs or spaces may follow the backslash.

You *must* retain the package definition which corresponds to any products mentioned in INCREMENT lines. For example, the INCREMENT above won't work without a package definition:

```
PACKAGE PR-4EX-PC xilinxd 1.000 0070A051667FD9D49EA8 \
  COMPONENTS="system-PC bit-PC xc3000D-PC xc4000X-PC \
  mentor-PC synopsys-PC viewlog-PC ngd2vhdl-PC verillog-PC " \
  OPTIONS=SUIE
```



Foundation Series 1.4 Install and Release Document

Note: The previous four lines are actually a single line. The backslash (\) at the end of the first three lines is a continuation character indicating that each line wraps to the next line. If you use the backslash character, it must be the last character on the line, and no tabs or spaces may follow the backslash. This package definition is only an example.

Starting the License Server

Once the license file has been updated, you must start (or restart) the license server. If you were not already running FLEXlm 5.12 or a higher version, you must use the new lmgrd, delivered with your Xilinx software. The command, **lmgrd -v**, will cause lmgrd to display its version number.

Note: The license server will not start automatically when you run the Xilinx software. You must start up the lmgrd daemon explicitly to allow the software to run.

Before starting a lmgrd (FLEXlm license manager), you must meet the following requirements.

- You must have a license file for a floating license.
- The DAEMON line in the license file must point to a valid path for the xilind daemon.

You can run lmgrd from either a GUI window or from the DOS command line.

Using the GUI Window on Windows NT 4.0

To invoke the lmgrd from a GUI window:

1. Copy the following files from the CD-ROM into the Windows system32 directory:

```
copy flexlm.cpl system-drive:\winnt\system32
```

```
copy lmgr325c.dll system-drive:\winnt\system32
```

The FLEXlm control panel, flexlm.cpl, is an applet that you install into the Windows NT Control Panel. You use it to control the execution of the FLEXlm license manager

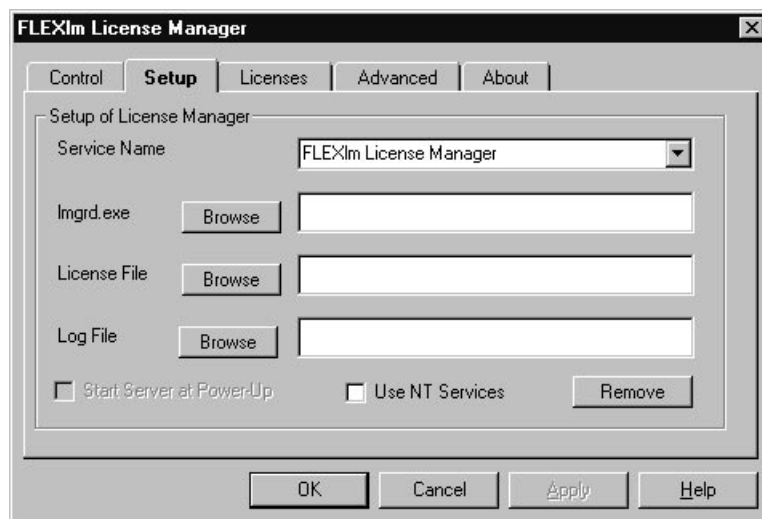
The library lmgr325c.dll is placed in the same directory as flexlm.cpl in this example, but it could be placed anywhere in the system search path.



Note: You can test FLEXlm by running lmgrd from a DOS prompt. This allows you to see diagnostic output and errors as they occur.

2. After placing flexlm.cpl into the system32 directory, open the Control Panel and launch the “Flexible License Manager”.

From the Control tab you can start, stop, and check the status of your license server. Select the Setup tab, shown in the following figure, to enter information about your license server.



3. You can change the default service name of “FLEXlm License Manager” to something else. Fill out the rest of the form to configure lmgrd to serve licenses for your use.

The information you enter is stored in the registry under the service name you created:

```
HKEY_LOCAL_MACHINE\SOFTWARE\FLEXlm License Manager\Service-Name\...
```

4. Select the Control tab and press the Start button to turn on your license server. lmgrd.exe will be launched as a background application with the license file and log file locations passed as parameters.
5. If you want lmgrd.exe to start automatically, select the “Use NT Services” box. This will install lmgrd.exe as an NT service. You



Foundation Series 1.4 Install and Release Document

can then use the NT's Services control panel to adjust the start/stop behavior of lmgrd.exe.

Because NT services do not have command line parameters, lmgrd.exe, when started as a service, locates its service name under "FLEXlm License Manager" in the registry. From there it recovers the license file and log file locations. Multiple instances of lmgrd.exe can be run as services as long as each has a different service name.

You can switch back and forth between different instances of lmgrd.exe by going to the Setup tab and changing the selection in the Service Name field (this is only necessary if you have more than one product that is licensed with FLEXlm).

6. Use the remaining tabs in the control panel to perform functions similar to those available with the command line lmutil program. The Licenses tab provides information about the license file. The Advanced tab allows you to perform diagnostics and check versions.

Using the GUI Window on Windows 95

The procedure for using the FLEXlm control panel on Windows 95 is the same as for Windows NT 4.0, with the following exceptions:

Copy the following files from the CD-ROM into the Windows system32 directory:

```
copy flexlm.cpl system-drive:\windows\system
```

```
copy lmgr325c.dll system-drive:\windows\system
```

Because services are not available on Windows 95, the "Use NT Services" check box is not available. Instead, a "Start Server at Power-Up" check box gives you the option to start the server when the system is booted.

On Windows 95, FLEXlm uses a registry feature that launches programs automatically. The "Microsoft\Windows\CurrentVersion\RunServices" registry is used to launch the program lmgrdw95.exe at power-on. This program scans the "FLEXlm License Manager" are of the registry and launches an instance of lmgrd.exe for each service name it finds.



Using the Command Line

To invoke the lmgrd from a command prompt:

1. Select **Start** → **Programs** → **Command Prompt**.
2. In the Command Prompt window, enter the following command:

```
lmgrd -app -c licensefile -l logfile
```

where *licensefile* is the actual name of your license file and *logfile* specifies the name you want for the log file. The log file stores information about checking out and checking in licenses.

If a security error occurs, read the log file to determine the cause of the error.

Note: You must have the %XILINX%\bin\nt directory in your path, so that the license manager can find the required .DLL files.

If you attempt to close the Command Prompt window while lmgrd is running, the End Task windows will display. If you choose to terminate lmgrd, you will not be able to access the Xilinx software. You must be running lmgrd to use the Xilinx software.

Security Tips for Design Implementation Tools

Following are some security tips:

- For a PC floating license, determine the correct server name by selecting **Start** → **Settings** → **Control Panel** → **Network** → **Identification**.
- Check that the PATH, XILINX, and LM_LICENSE_FILE variables are pointing to valid paths.
- Use 'lmutil lmcksum c:\full_path_name\license.dat' to give a checksum; Compare the checksum given by lmutil lmcksum with the checksum in the license.dat file.
- If you have multiple tools that use FLEXlm, then use the newest versions of lmgrd and lmutil to run the license manager software.
- Xilinx currently uses v5.12 of the FLEXlm software.
- To determine the version of the FLEXlm software on your system, run the following command in a DOS shell:

```
full_path_name\lmutil lmver lmgrd.exe
```

Foundation Series 1.4 Install and Release Document

On the PC open the lmtools window and click on Version.

- To start a license server of a PC, after setting up the PATH, XILINX, and LM_LICENSE_FILE variables, go to a DOS shell and run the following command:

```
full_path_name\lmgrd -app -c licensefile
```

where *licensefile* is the full path name to your license file

- If the license manager has trouble starting, or a licensed executable like NGDBuild or MAP gives a security error, run the following command to obtain additional information on your license manager:

```
lmutil lmdiag
```

On the PC open the lmtools window and click on Diagnostics.

- Confirm your license file name. It should be c:\flexlm\license.dat if using default values. Some PC applications such as Microsoft Word may append suffixes to the file name and cause licensing to fail. If the LM_LICENSE_FILE variable is not set, the file must be c:\fl;exlm\license.dat.
- To obtain a software license security code, please call Customer Service at 1-800-624-4782, fax information to 1-408-559-0115, or select the Support hyperlink from the Xilinx Web site, <http://www.xilinx.com>. Please provide the following information: end-user ID number, product type (for example, PR-FND-STD-PC), serial number from the registration card and your ethernet hardware address (12 hex digits) or your C: Drive serial number (PCs).

Verifying Your Environment Variables

Once you have set up all the required environment variables, it is worthwhile to verify that these variables have been set correctly. The following examples will help you debug your setup if a variable is incorrectly set.

In each of the examples, the test command is:

```
par
```




Setting Up Security

If all your setup is correct, PAR will run normally and return the command line information. If your setup has a variable incorrectly set, you will get an error similar to the following:

```
par: Command not found
```

In this case, you need to check both your PATH and XILINX environment variables.

A fatal error PAR may return is:

```
FATAL ERROR: The XILINX environment variable must be  
set. Exiting...
```

In this case, you need to check the value you have assigned to the XILINX environment variable.





Foundation Series 1.4 Install and Release Document



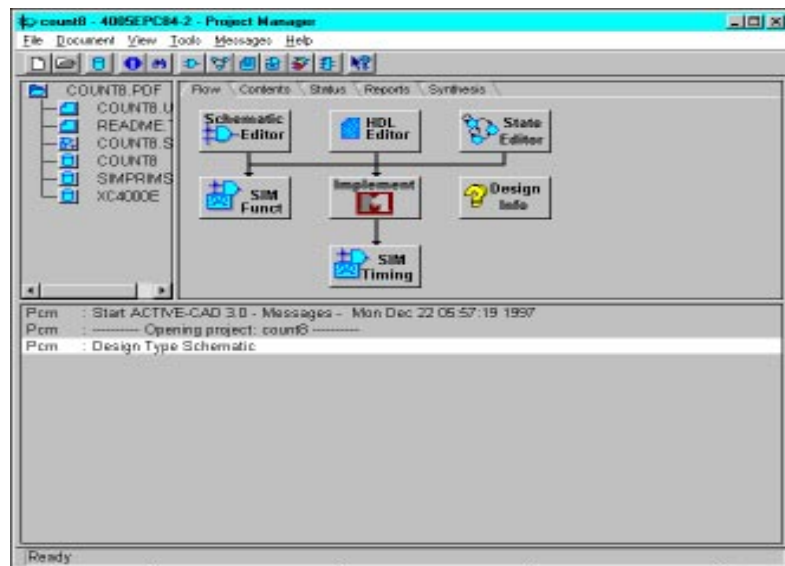
Chapter 7

Getting Started

This chapter explains how to start the Foundation software and how to open and use the DynaText browser.

Starting the Software

When you have installed the software and set up the license file, you are ready to use the Foundation software. To access the design entry and implementation tools, double click the Xilinx Foundation Series Project Manager icon. If you do not have an icon on your desktop, select **Start** → **Programs** → **Xilinx Foundation Series** → **Foundation Series Project Manager**. The main Project Manager window displays:





Foundation Series 1.4 Install and Release Document

The basic design entry tools consist of the Schematic Editor, HDL Editor, State Editor, and the Logic Simulator (SIM Funct). Click on the desired button to open one of the design entry tools.

You can access the Xilinx design implementation tools software via the Design Manager, which is the Graphical User Interface (GUI). To start up the Design Manager, select the Implement M1 button from the Project Manager. For a complete description of the Design Manager, see the online document, *Design Manager/Flow Engine Reference/User Guide*.

LogiBLOX is a graphical interactive tool for creating high-level modules, such as counters, shift registers, and multiplexers. LogiBLOX includes both a library of generic modules and a set of tools for customizing these modules. You can access LogiBLOX by selecting **Tools** → **LogiBLOX** from the Project Manager main window. You can also access LogiBLOX from the Schematic Editor and HDL Editor.

Note: LogiBLOX modules cannot be used with CPLD designs.

Opening and Using the DynaText Browser

The following subsections explain how to open documents and use the browser.

Opening Documents

To open Xilinx documents, follow these instructions:

1. With your browser installed on your hard disk drive, select **Start** → **Programs** → **Xilinx Foundation Series** → **DynaText Browser**.
2. Once the DynaText Library window displays, proceed as follows:
 - If you have installed the online documentation and browser on your system, click “Xilinx books” in the Collections window.
 - If you want to open a document from the CD-ROM, make sure that your CD-ROM is inserted into the CD-ROM drive. Select “Xilinx books (CD)” from the Collections window.

See the following figure.



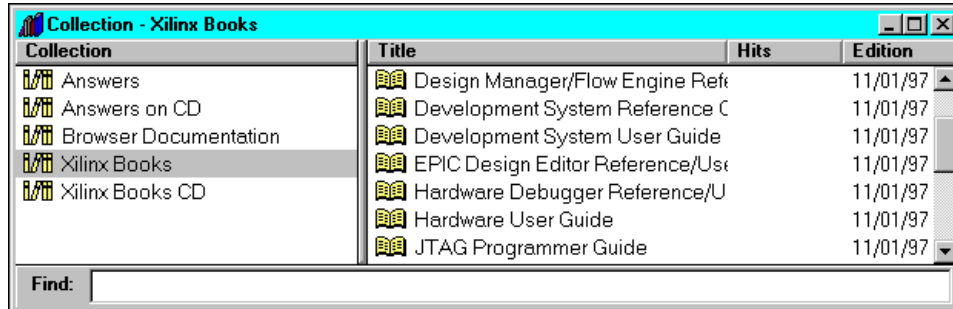


Figure 7-1 DynaText Library Window

A complete list of the Xilinx online documents displays in the window. Double click a document in the Books window pane of the DynaText Library window to open it.

The Table of Contents for the document displays in the left portion of the window. The first page of the document displays in the right side of the window. See the following figure.

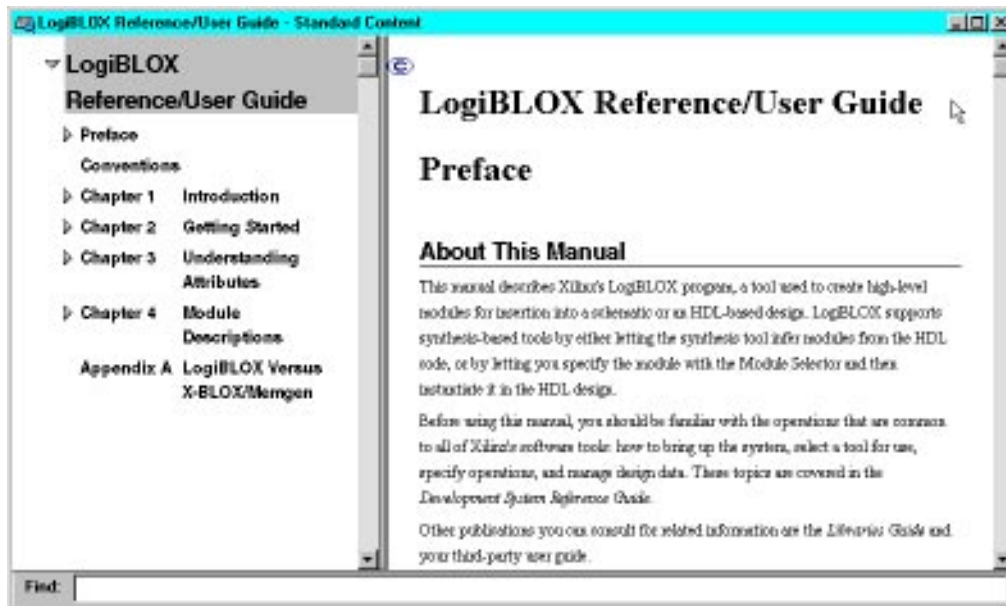


Figure 7-2 Typical Book Display

Using the DynaText Browser

To find out how to use the features of the DynaText browser, access the online help within the browser. You can also open online manuals for the browser by selecting “Browser Documentation” from the Collection window.

One of the most useful features of the browser is the Find tool. Note that you can perform a text search on the entire collection of the Xilinx online books by entering text in the Find box shown in the “DynaText Library Window” figure.

You can also display a list of tables or figures by selecting **view** → **TOC** → **figures** or **tables**.

To maximize the quality of text and figures, you may have to adjust your monitor display settings. For a 15-inch monitor, Xilinx recommends that you set your display characteristics to small fonts with 1024 x 768 resolution.

These properties can be set in the Settings tab of the Display Properties window which you can access by double clicking the Display icon from the Control Panel window.

If the browser text still displays poorly, from the DynaText Preferences window, select the Book Window icon. In the Zoom field, enter 125%.

Documentation Categories

This section describes the types of documents available for use with Xilinx products.

Xilinx Online Design Implementation Tools Documentation

This category refers to documents available in online format. The three subcategories are as follows:

- Windows implementation tools documentation
- Traditional design implementation software documentation
- CPLD software documentation

Table 7-1 Windows Implementation Tools Documentation

Reference/User Guides
<i>Design Manager/Flow Engine Reference/User Guide</i> This manual describes the Design Manager, a tool for managing multiple implementations of the same design. This manual also explains the Flow Engine, which implements designs, and explains how to interact with other programs that run in the Design Manager environment; namely, the Design Editor, the Timing Analyzer, the Hardware Debugger, the PROM File Formatter, and the PROM Programmer.
<i>EPIC Design Editor Reference/User Guide</i> EPIC is a graphical editor used to display and configure FPGAs. EPIC enables you to place and route critical components before running automatic place and route tools on an entire design, modify placement and routing manually, interact with the physical constraints file (PCF) to create and modify constraints, and verify timing against constraints.
<i>Hardware Debugger Reference/User Guide</i> This manual describes how to program, verify, and debug FPGA devices. It describes the XChecker cable and explains how to connect the cable pins to your target device for various functions: downloading, verification, and debugging. It also includes a tutorial for debugging a design using the demonstration boards as target devices.
<i>PROM File Formatter Reference/User Guide</i> This manual explains how to use a Windows-based tool to format bitstream files into HEX format files compatible with Xilinx and third-party PROM programmers. You use the PROM files to program a PROM device, which is then used to configure daisy chains of one or more FPGAs for one application (configuration) or several applications (reconfiguration).
<i>Timing Analyzer Reference/User Guide</i> This manual describes Xilinx's Timing Analyzer program, a graphical user interface tool that performs static analysis of a mapped FPGA or CPLD design. The mapped design can be partially or completely placed, routed, or both.

Foundation Series 1.4 Install and Release Document

Table 7-2 Traditional Design Implementation Tools Software Documentation

Reference/User Guides
<p><i>Development System Reference Guide</i> This book describes the Xilinx design implementation software, which includes programs to generate EDIF files, LCA files, and BIT files. The book covers all the program options and files that are generated by these programs.</p>
<p><i>Development System User Guide</i> This guide describes the Xilinx design flow, including design entry, implementation, and verification. It also addresses design entry methodology selection, configuration modes as well as readback and verification. This guide also describes boundary scan for XC4000 and XC5200 devices.</p>
<p><i>Foundation Series Quick Start Guide</i> This guide is intended to give an overview of the features and additions to Xilinx's newest product—Foundation 1.4. The primary focus of this guide is to show the relationship between the design entry tools and the design implementation tools. The guide also contains an in-depth tutorial.</p>
<p><i>Foundation Series User Guide</i> This guide provides a detailed description of the Foundation design methodologies, design entry tools, and both functional and timing simulation. The manual also briefly describes the Xilinx design implementation tools.</p>
<p><i>Hardware User Guide</i> This manual describes the Xilinx Demonstration hardware and its associated software interfaces. The hardware includes the FPGA and CPLD demonstration boards, which are used for design verification.</p>
<p><i>Libraries Guide</i> This book describes the logic elements (primitives or macros), that you use to create your designs as well as the attributes and constraints used to process elements during logic implementation. It also discusses relationally placed macros (RPMs), which are macros that contain relative location constraints (RLOC) information. The Xilinx libraries enable you to convert designs easily from one family to another.</p>
<p><i>LogiBLOX Reference/User Guide</i> This guide describes the high-level modules you can use to speed up design entry and the attributes that support logic synthesis, primarily for FPGA architectures. It also explains how to use the LogiBLOX program to create designs and the different types of logic synthesis completed by the LogiBLOX program.</p>

**Table 7-3 CPLD Software Documentation**

Design Guides
<i>JTag Programmer Guide</i> This guide documents the graphical interface used for in-system programming and verification of XC9500 parts. The guide also describes how to set up and use JTAG download cables.

Xilinx Hard Copy Documentation

The *Foundation Series Quick Start Guide 1.4* provides an overview of the features and additions to Xilinx's 1.4 software. This document describes design entry tools and design implementation tools.

The *Foundation Series 1.4 Install and Release Document* (this document) describes new features, supported devices, installation and security procedures, and the most critical known issues.

Xilinx Foundation Series Online Help System

The Xilinx Foundation Series online help system accesses help topics covering all design entry and implementation tools provided in the product. The online help system also contains in-depth information essential for designing with XC9500 CPLDs as well as FPGAs, including:

- CPLD design techniques
- CPLD timing specifications
- application notes
- several tutorials
- reference information on the schematic library, attributes, and implementation options

You can invoke the online help system from the Project Manager's Help pull-down menu or from the Xilinx Foundation Series program group.





Foundation Series 1.4 Install and Release Document

Xilinx Application Information

The *XACT Conversion Guide* is available on the Xilinx web site
(http://www.xilinx.com/techdocs/htm_index/docs_M1.htm).

This guide explains how to migrate existing design files for use with
Xilinx M1 software.



Chapter 8

Known Issues

This chapter describes the most critical known issues in the Foundation Series 1.4 release. For a complete, up-to-date listing of Known Issues, click Service and Support from the Xilinx Web home page (<http://www.xilinx.com>). If you cannot access the Web, the CD Answers DynaText online document, which is located on the Design Implementation CD, also contains 1.4 design implementation Known Issues.

Software

This section describes known issues for installation, design entry, translation, implementation, simulation, timing simulation, and downloading and configuration.

Installation

Uninstall program does not prompt to preserve Projects directory

Platform(s): PC

Architectures(s): All

Design Step(s): Install/Uninstall

Reference Number(s): CR: none; Solution: 3231

When uninstalling 1.4 software, the uninstall program does not prompt to preserve the project files in the *active*\Projects directory. However, the program *will* automatically preserve any user-created or user-modified projects in the Projects directory. The directory will not be removed if there are user-created or user-modified projects existing there.

Foundation Series 1.4 Install and Release Document

XABEL doesn't run if any other ABEL product is installed

Platform(s): PCs

Architecture(s): All

Design Step(s): Installation with XABEL

Reference Number(s): 100262

If any other ABEL software is installed on your PC, including Synario or Workview Office, you may get one of several error conditions including an OLE communication server error, a licensing error, an error about a corrupted encrypted file, or other installation-related error messages.

To allow Xilinx-ABEL to run, you must remove the registry keys for the non-Xilinx ABEL software from your Windows registry.

To remove the non-Xilinx ABEL registry keys:

1. Run the Registry Editor (Regedit.exe under your Windows directory).
2. Use **Edit** → **Find** to search for the folder named "DIOEDA".
3. Open DIOEDA and then open the Products folder. The keys for Xilinx-ABEL are stored in the folder XABELM1; the keys for any non-Xilinx ABEL product would be stored in an adjacent folder.
4. Before deleting the non-Xilinx ABEL folder, you may want to save a copy of it in a .reg file (using **Registry** → **Export Registry File**) in case you want to later restore those settings to run the non-Xilinx ABEL software.
5. Select the non-Xilinx ABEL folder and use **Edit** → **Delete** to remove it.
6. When finished, close the Registry Editor; then reboot your PC (to terminate any resident OLE communications server used by ABEL). If you need to remove the Xilinx-ABEL registry keys (in order to run a non-Xilinx ABEL product), you can restore XABEL by running the registry file, bin\nt\install\xabel.reg, located in your Foundation installation area; then re-boot your PC.

After installing design implementation tools, environment variables must be activated to use the software

Platform(s): NT only

Architecture(s): All

Design Step(s): Installation of design implementation tools

Reference Number(s): 15891

The environment variables are not automatically activated after install.

Workaround: There are two workarounds:

- Reboot the PC.
- Access the System Properties dialog box from the Control Panel by double clicking the System icon. Select the Environment tab and then click OK.

Design Entry

lbgui crashes when trying to execute non-executable editor

Platform(s): All

Architecture(s): All FPGAs

Design step(s): Design Entry

Reference Number(s): CR#101004

In the User Preferences window, if you select a file as your editor that does not have the execute permissions turned on, LogiBLOX will crash when you attempt to edit a file, such as a memory file.

Workaround: Verify that the path to the editor file is correct and that the file has the execute permissions turned on.

Foundation Series 1.4 Install and Release Document

ABEL State Machines encoded as one-hot will not power up to proper state

Platform(s): PC

Architecture(s): All

Design Step(s): State Editor Synthesis

Reference Number(s): CR #102184; Solution #3151

Finite State Machine designs created in the State Editor using Abel as the language and one-hot as the encoding scheme will synthesize to power-up to the "00...0" state, which is not a valid state for one-hot encoding.

Workaround:

Modify the generated Abel code by adding the following line:

```
init_state.ap = 0;
```

Foundation Express synthesizer does not infer carry logic for comparators

Platform(s): PC

Architecture(s): XC4000/XC5000

Design Step(s): Synthesis

Reference Number(s): CR #100437; Solution #3224

Foundation Express HDL compiler implements comparators using discrete logic. While smaller in area, this implementation may require additional constraints. Comparators implemented using carry-logic structures are generally larger, but offer a predictable physical implementation which is generally more tolerant of timing requirements. Users who desire a carry logic implementation should use the HDL coding style described in the workaround section.

Workaround:

For Verilog:

```
(A-B) >> 0; (instead of... A>>B;)
```

For VHDL, use either of the following:

```
VHDL: (A-B) > 0; (instead of A>B;)
```

or

```
Library IEEE;
```

```
use ieee.std_logic_unsigned.all;
```

```
Entity_name
```

JTAG parallel download cable may cause XVHDL security key to fail

Platform(s): PCs

Architecture(s): XC9500

Design Step(s): Design Entry with XVHDL

Reference Number(s): CR#18900

If you have the JTAG Parallel Download Cable connected to the Xilinx security key on your parallel port, the software may not be able to read the key. As a result, XVHDL (Metamor VHDL) synthesis and color-coding will be disabled in the HDL Editor. If this happens, disconnect the cable from the key and restart the Foundation Project Manager. Reconnect the cable only after you are finished with XVHDL synthesis and you are ready for device programming.

Translation

Some XNF files created before version 1.3 software cannot be read by 1.4 software

Platform(s): All

Architecture(s): XC9500

Design Step(s): Design Translation

Reference Number(s): NA

The following XNF netlists cannot be read by 1.4 for CPLD families:

- generated from a PLUSASM equation file (.pld) or XABEL's PLUSASM flow
- containing any DFF symbols with CE input pins

Workaround: For XNF files derived from PLUSASM, use the PLUSASM .pld file as the design input instead of the XNF file.



Foundation Series 1.4 Install and Release Document

Project Manager points to invalid menu option to perform Update of HDL Macros

Platform(s): PC

Architecture(s): All

Design Step(s): Netlist Creation

Reference Number(s): CR #102376; Solution #3206

When attempting to enter the Design Manager, if HDL macros are not up-to-date, the Project Manager prompts you to update these macros by selecting **Document** → **Update HDL Macros** from the Project Manager. This menu pick does not exist.

Workaround: The Update HDL Macros function is now located in the Synthesis Tab of the Project Manager.

XABEL INITIALSTATE Property doesn't work

Platform(s): PCs

Architecture(s): All FPGAs

Design Step(s): Design Translation with XABEL

Reference Number(s): CR#18344

If you have a one-hot encoded state machine in an ABEL module in an FPGA design, XILINX PROPERTY 'INITIALSTATE *state_name*' does not properly initialize your state register on power-up or GSR. Unless you have a signal that asynchronously resets your state machine, your state register will initialize to all zeroes, which is incorrect. As a workaround, add the ABEL ASYNCH_RESET statement to your state machine to define a new reset signal (if you do not already have one). Add a new pin declaration for the new reset input. If you only want to initialize your state register on power-up or GSR, leave the reset input unconnected on the ABEL macro symbol in your schematic. The definition of the ASYNCH_RESET will cause your state register to properly initialize even though the unconnected reset signal is trimmed away.



Default initial state may be reversed for some XABEL registers

Platform(s): All

Architecture(s): XC9500

Design Step(s): Design Translation with XABEL

Reference Number(s): CR#17742

By default, all registers in an XC9500 design should initialize to zero. However, in an XABEL design or module, registers with asynchronous preset (.AP equation) but without asynchronous reset (.AR) have their initial states reversed, so these registers will preload to one. This is because the register actually gets implemented as a reset-type flip-flop with inverters on its D-input and Q-output. To get a register with asynchronous preset in your design to preload to zero, you must apply the opposite preload condition to the negative-logic flip-flop by specifying the following in your ABEL declaration section:

```
Xilinx Property 'INIT=S signal_name';
```

Implementation**CPLD fitter core dump may result from properties applied to wrong type objects**

Platform(s): All

Architecture(s): XC9500

Design step(s): Implementation

Reference Number(s): CR#101712

If the CPLD fitter program hitop halts with a core dump, check to see if there is any I/O buffer, pad, or pad-net in your design that has a property attached to it that is intended only for macrocell-type objects. The macrocell-only type properties are COLLAPSE, INIT, KEEP, NOREDUCE, PWR_MODE, and WIREAND. Using any of these properties on an I/O object should normally produce an error or warning message.

Workaround: Remove any such properties from the I/O objects and attach them to the applicable macrocell objects (logic or flip-flop components) and then rerun the fitter.

Foundation Series 1.4 Install and Release Document

Some designs that fit in M1.3 do not fit as well in 1.4

Platform(s): All

Architecture(s): XC9500

Design Step(s): Implementation

Reference Number(s): CR#100457, 101350, Solution #2910

If you have difficulty using 1.4 to fit a design that successfully fit using M1.3, it may be due to two new default implementation options that are different than in M1.3:

- The default Collapsing Pterm Limit option has been increased from 15 to 20 in 1.4 to allow more thorough collapsing and typically higher performance.
- The new Multi-level Logic Optimization algorithm (enabled by default in 1.4) typically performs more efficient logic reduction to meet timespecs and optimizes for speed or density.

Workaround: If you need the fitter to perform logic optimization in a manner more consistent with M1.3, you should turn off Multi-level Logic Optimization and change the Collapsing Pterm Limit back to the value you originally used (default was 15) in the Advanced Optimization tab of the XC9500 Implementation Options template.

New multi-level logic optimization feature of CPLD fitter may resolve excessive run-time or bus error

Platform(s): All

Architecture(s): XC9500

Design Step(s): Implementation

Reference Number(s): CR#101503

The CPLD fitter program hitop may run for too long (more than an hour) or it may terminate with a bus error.

Workaround: You may be able to get results more quickly by turning on the new Multi-level Logic Optimization option in the XC9500 Implementation Options template (or in the CPLD command line).

XC7300 and XC9500F CPLD families no longer supported

Platform(s): All

Architecture(s): XC7300, XC9500F

Design Step(s): All

Reference Number(s): CR#100721, Solution Record # 2956

Support for the XC7300 CPLD family has been discontinued beginning with the 1.4 software release. The XC9500 In-System Programmable CPLDs offer faster speeds, wider range of densities, and superior pin-locking compared to the XC7300 family.

The XC9500F CPLD family has also been discontinued and is not supported in 1.4 software because the XC9500 family addresses all of the intended goals of the XC9500F family. The XC9500 family should be used for all new CPLD designs.

The software tools contained in this 1.4 release (including the Timing Analyzer, bitstream generator, and simulation model generator) cannot be used to process design database files produced by the M1.3 (or earlier) software that targeted XC7300 or XC9500F devices.

Workaround: Designs that have been implemented targeting XC7300 or XC9500F devices should be retargeted for the appropriate XC9500 device.

FAST, SLOW, and LOC properties on pad instances may be ignored

Platform(s): All

Architecture(s): XC9500

Design Step(s): Implementation

Reference Number(s): CR#102044

The fitter sometimes ignores some or all FAST, SLOW, or LOC properties if they are attached to instances of PAD components in your design.

Workaround: If the properties are attached to the pad nets or I/O buffer instances instead, they will work. Either move the properties to the pad nets connected to the pads or use a UCF file to assign the properties to the pad nets. For example, **NET pad_name LOC=P12;**

Please check the technical support area of the Xilinx web-site (www.xilinx.com) for the availability of a Version M1.4 CPLD fitter patch that you can download to fix this problem.



Foundation Series 1.4 Install and Release Document

PAR may not optimally place global clock buffers driven by input buffer (IBUF)

Platform(s): All

Architecture(s): All FPGAs

Design Step(s): PAR

Reference Number(s): CR#18586

If a global buffer is driven by an IBUF instead of directly by an IPAD, PAR may not place the PAD and global buffer close together. This can cause longer clock delays than desired.

Workaround: A global buffer driven directly by an IPAD will always be placed correctly. Either remove the IBUF or use placement constraints on both the global buffer and IPAD.

PAR message not clear enough about impossible timing constraints

Platform(s): All

Architecture(s): All FPGAs

Design Step(s): PAR

Reference Number(s): CR#100971

Before PAR begins to place and route a design, it evaluates the timing constraints in a design against the number of logic levels in each path. If it finds a path in which the logic delays by themselves exceed the requested timing constraint, PAR will issue error 97, stating:

Not all timing preferences could be satisfied.

PAR should be more explicit in stating that the timing constraint is impossible to meet.

Workaround: Either loosen the constraint or reduce the number of logic levels.





Too many timespec paths can cause out-of-memory failure

Platform(s): All

Architecture(s): XC9500

Design Step(s): Design Implementation

Reference Number(s): CR#18405, Solution #2243

If your timespecs are too general, you may create too many timespec paths.

Workaround: If the software aborts due to an out-of-memory error, try making your timespecs more specific, naming only the I/O pads and flip-flops that have critical timing requirements in your design.

Simulation

Last line of script file ignored if no carriage return at end

Platform(s): PC

Architecture(s): All

Design Step(s): Simulation

Reference Number(s): CR #102264; Solution #3223

If there is no carriage return at the end of the last line in the script file, the command will not be executed.

Workaround: Add a Return at end of last line.

Timing Simulation

XC3000 Timing Simulation gives unknowns on outputs due to GR not being driven

Platform(s): PC

Architecture(s): XC3000

Design Step(s): Timing Simulation

Reference Number(s): CR #102445; Solution #3219

The GR signal must be user-driven in the Timing Simulator in order to properly initialize the registers in the design. This GR signal is a dedicated net which exists in the simulation netlist and is used to simulate the power-on reset.

Workaround: Add the GR signal to the waveform viewer in the simulator (**Signals** → **Add**) and toggle it (**L** → **H**) at the start of the simulation.



Foundation Series 1.4 Install and Release Document

XC3000 Timing Simulation gives unknowns on outputs in some HDL designs

Platform(s): All

Architecture(s): XC3000

Design Step(s): NGDAnno/Timing Simulation

Reference Number(s): CR# 102433; Solution #3219

Timing Simulation gives unknown outputs due to a renaming problem in the back-annotation phase of the flow. This should only be an issue with HDL (XVHDL or ABEL) designs. (Foundation Express HDL designs should not be affected.)

Workaround: Run the following commands from a DOS prompt after Place and Route has completed.

```
ngdanno -o new_anno.nga project.ncd
```

```
ngd2edif new_anno.nga
```

Load the Timing Simulator as usual, then do **File** → **Load Netlist** and load *new_anno.nga*. Simulate as usual.

Please see Xilinx Solution #3219 for a complete description of the problem and workaround.

T-Flip-Flop outputs may be inverted during simulation

Platform(s): PCs

Architecture(s): XC9500

Design Step(s): Timing simulation

Reference Number(s): CR#17331

If your design contains a T-flop (like FTCP) followed by an inverter, during timing simulation your T-flop output net may show the inverted signal. Logic implementation, however, is correct.



Downloading and Configuration

JTAG programmer context-sensitive help does not work

Platform(s): All
Architecture(s): XC9500
Design Step(s): Downloading
Reference Number(s): CR#102067

The context-sensitive help feature does not work in the JTAG Programmer tool.

Workaround: Use the online help from the pull-down menu instead to access information directly.

Documentation

Automatic feedback optimization not yet supported for XC9500

Platform(s): All
Architecture(s): XC9500
Design Step(s): Documentation
Reference Number(s): CR#101596

The Automatic Feedback Optimization feature described in the CPLD Schematic Design Guide and the CPLD Synthesis Design Guide is not yet supported.

Workaround: XC9500 Local Feedback still requires logic to be explicitly mapped to the same function block using properties of the form LOC=FBnn.

JTAG Programmer documentation cannot be downloaded separately

Platform(s): PC
Architecture(s): XC9500
Design Step(s): Documentation
Reference Number(s): None

The JTAG Programmer documentation cannot be downloaded separately without using the DynaText reader.

Workaround: You must download at least the core documents with the DynaText reader and JTAG programmer documentation.





Foundation Series 1.4 Install and Release Document



Chapter 9

Xilinx Customer Support Information

For registration, authorization codes, update information, warranty status, shipping, product issues, and technical support, call Monday through Friday, 8 a.m. to 5 p.m. Pacific time.

Registration, Authorization, and Customer Service

- United States and Canada (1-800-624-4782)
- Europe (Contact your local Distributor)
- Japan (81-33-297-9912)
- Southeast Asia/All Other Countries (852-2424-5200)
- Facsimile Transmission (1-408-559-0115)

Technical Support

Hotline Access and Hours

Location	Telephone	Electronic Mail	Hours
U.S. and Canada	1-800-255-7778	hotline@xilinx.com	Mon, Tues, Wed, Fri: 6:30 a.m. – 5:00 p.m Thurs: 6:30 a.m. – 4:00 p.m Pacific Standard Time
Japan	81-33-297-9163	jhotline@xilinx.com	Mon, Tues, Thurs, Fri: 9:00 a.m. – 5:00 p.m Wed: 9:00 a.m. – 4:00 p.m

Foundation Series 1.4 Install and Release Document

Location	Telephone	Electronic Mail	Hours
France	33-1-3463-0100	frhelp@xilinx.com	Mon – Fri: 9:30 a.m. – 12:30 p.m. 2:00 p.m. – 5:30 p.m.
Germany	49-89-9915-4930	dlhelp@xilinx.com	Mon – Thurs: 8:00 a.m. – 12:00 p.m. 1:00 p.m. – 5:00 p.m. Fri: 8:00 a.m. – 12:00 p.m. 1:00 p.m. – 3:00 p.m.
United Kingdom	44-1-932-820821	ukhelp@xilinx.com	Mon – Thurs: 9:00 a.m. – 12:00 p.m. 1:00 p.m. – 5:30 p.m. Fri: 9:00 a.m. – 12:00 p.m. 1:00 p.m. – 3:30 p.m.

- Technical Support FAX (24 hours/7 days) (1-408-879-4442)
- Internet E-mail Address (24 hours/7 days) (hotline@xilinx.com)
- Xilinx Worldwide Web Site (<http://www.xilinx.com>)
- Xilinx Student Edition Users (For all technical support and further information, see <http://www.xilinx.com/programs/univ.htm>.)

Training

- Xilinx Training Administrator (1-408-879-5090)
- International customers, contact your local sales representative or distributor.

Appendix A

Registry Entries

This appendix describes entries that are made to the Registry during Foundation Series 1.4 installation.

Design Implementation Tools

The following sections describe the environment variables and paths that are added to the Registry for various installation options. Four keys to HKEY_LOCAL_MACHINE\SOFTWARE are added.

Xilinx\Foundation M1\vM1.4\user

Xilinx\Foundation M1\vM1.4\company

Xilinx\Foundation M1\vM1.4\serial

Xilinx\Foundation M1\vM1.4\setup

The setup is created with values based on what type of install you performed.

For Windows NT 4.0, the global environment variables, XILINX and XILINX_CD and the path to the bin\nt directory are added to the following environment:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\SessionManager
\Environment.
```

For Windows 95, the global environment variables, XILINX and XILINX_CD and the path to the bin\nt directory are added to the autoexec.bat file instead of the Registry.

Typical or Lab Install

All of the updates are made to the System area of the environment, not to the User area. If you install the DynaText browser, 64 keys are also added. Refer to the “Online Documentation” section for details.



Foundation Series 1.4 Install and Release Document

Windows NT 4.0

If during installation you decided to have your environment variables and path updated, the XILINX variable is set to the destination directory that you specify. The XILINX_CD variable is set to the source directory from which the software is being installed.

The value %XILINX%\bin\nt is added to the beginning of the existing path variable if it is not already there; for example,

%XILINX%\bin\nt; %PATH%

If there is no value, %XILINX%\bin\nt is added.

Windows 95

In the autoexec.bat file, the path %XILINX%\bin\nt is added to the beginning of the PATH statement, if there is an existing path statement:

PATH=%XILINX%\bin\nt; %PATH%

If there is no PATH statement, %XILINX%\bin\nt is set up as the PATH:

PATH=%XILINX%\bin\nt

Run From CD or Network

The XILINX variable is set to the destination directory that you specify. The default is the source directory.

Windows NT 4.0

The value %XILINX_CD%\bin\nt is added to the beginning of the existing path variable if it is not already there; for example:

%XILINX_CD%\bin\nt; %PATH%

If there is no path, %XILINX_CD%\bin\nt will be added.

Note: Make sure there is a CD drive in the path.



Windows 95

In the autoexec.bat file, the path %XILINX_CD%\bin\nt is added to the beginning of the PATH, if there is an existing path statement:

```
PATH=%XILINX_CD%\bin\nt; %PATH%
```

If there is no PATH statement, %XILINX%\bin\nt is set up as the PATH:

```
PATH=%XILINX_CD%\bin\nt
```

Design Entry Tools Components Only

If you select this installation option, XABEL registry entries are created. To see a list of these Registry entries, see the file xabel.reg located in %XILINX%\bin\nt\install. The XABEL registry entries are also created if you select the XABEL Interface option from the Select Software Components to Install window during a Typical installation.

Note: If your Registry entries have not been created, you can enter them by double clicking on the .reg file.

Online Documentation

The following subsections describe the environment variables and paths that are added to the Registry for various installation options.

Typical

Keys for the DynaText browser are added to HKEY_CLASSES_ROOT. These keys are also listed in the %xilinx%\bin\nt\ebtcom.reg file.

The XILINX variable is set to the destination directory that you specify. The default is the current value of XILINX.

The XILINX_CD variable is set to the source directory from which the software is being installed.

The value %XILINX_CD%\bin\nt is added to the beginning of the existing path variable if it is not already there; for example:

```
%XILINX_CD%\bin\nt; %PATH%
```

If there is no path, %XILINX_CD%\bin\nt will be added.

Note: Make sure there is a CD drive in the path.

Run From CD or Network

The XILINX variable is set to the destination directory that you specify. The default is the source directory.

Windows NT 4.0

The value %XILINX_CD%\bin\nt is added to the beginning of the existing path variable if it is not already there; for example:

```
%XILINX_CD%\bin\nt; %PATH%
```

If there is no path, %XILINX_CD%\bin\nt will be added.

Note: Make sure there is a CD drive in the path.

Windows 95

In the autoexec.bat file, the path %XILINX_CD%\bin\nt is added to the beginning of the PATH, if there is an existing path statement:

```
PATH=%XILINX_CD%\bin\nt; %PATH%
```

If there is no PATH statement, %XILINX_CD%\bin\nt is set up as the PATH:

```
PATH=%XILINX_CD%\bin\nt
```

Note: Make sure there is a CD drive in the path.

Windows 95 Registry Entries For the Download Cable Driver

This section describes the Registry entries that are created when loading or using the driver for the download cable. For users of Foundation Series 1.4, a new driver must be installed. If you answer Yes to the question "Do you want to load the CPLD driver needed to use the download facility?", the following keys must be added.

HKEY_LOCAL_MACHINE:

System\CurrentControlSet\Services\VxD\WinDriver\Start

(value= 0)

System\CurrentControlSet\Services\VxD\WinDriver\StaticVxD

(value=*windrvr)

NT Registry Entries For the Download Cable Driver

This section describes the NT Registry entries that are created when loading or using the driver for the download cable. If you answer Yes to the question “Do you want to load the CPLD driver needed to use the download facility?”, the following entries are made to HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services on your NT:

System\System\CurrentControlSet\Services\WinDriver\Start

(value=2)

System\System\CurrentControlSet\Services\WinDriver\Type

(value=1)

System\System\CurrentControlSet\Services\WinDriver\ErrorControl

(value=1)

System\System\CurrentControlSet\Services\WinDriver\Group

(value=Extended Base)

System\System\CurrentControlSet\Services\WinDriver\Image-Path

(value=\\SystemRoot\\System32\\dr)

System\System\CurrentControlSet\Services\WinDriver\DisplayName

(value=WinDriver)

Note: For NT users, Xilinx also installs the windrvr.sys as a Service.



Foundation Series 1.4 Install and Release Document

Registry Entries for XABEL

The following registry entries are added to the Windows NT or Windows 95 registry when you install XABEL (unless you instruct the installer not to do so).

```
HKEY_CLASSES_ROOT\DIOEDA\Products\XABELM1 = Xilinx ABEL
HKEY_CLASSES_ROOT\DIOEDA\Products\XABELM1\strings\ProductTitle = XABEL
HKEY_CLASSES_ROOT\DIOEDA\Products\XABELM1\strings\ProductPrefix = ABL
HKEY_CLASSES_ROOT\DIOEDA\Products\XABELM1\strings\ProductVersion = 6.30
HKEY_CLASSES_ROOT\DIOEDA\Products\XABELM1\strings\ProductName = ABEL
HKEY_CLASSES_ROOT\DIOEDA\Products\XABELM1\paths\Bin = c:\fndtn\bin\nt
HKEY_CLASSES_ROOT\CLSID\{1B713A1C-27FD-11ce-8D37-080009965984} = Data IO
Data Transfer Object
HKEY_CLASSES_ROOT\CLSID\{1B713A1C-27FD-11ce-8D37-
080009965984}\LocalServer = c:\fndtn\bin\nt\ntolesrv.exe
HKEY_CLASSES_ROOT\CLSID_DIO_Xfer_Object = Data IO Data Transfer Object
HKEY_CLASSES_ROOT\CLSID_DIO_Xfer_Object\CLSID = {1B713A1C-27FD-11ce-8D37-
080009965984}
```

Note: The path values beginning with "c:\fndtn" are automatically updated to reflect your actual installation path, if different.



Appendix B

XABEL PLUSASM Flow For CPLD Designs

If you have an existing ABEL CPLD design that contains XEPLD PROPERTY (or PLUSASM PROPERTY) statements, you must either replace these properties with the supported EDIF-compatible XILINX PROPERTY statements described in the Foundation Online Help System or you must enable the PLUSASM flow as described below. If your existing design does not contain PLUSASM based properties, you should be able to use the standard EDIF-based flow described in the user documentation without modification to your design. If you are developing a new ABEL CPLD design, *do not use PLUSASM based properties*.

Note: PLUSASM language will no longer be accepted for design entry in later releases of Xilinx design implementation software.

The PLUSASM flow is supported only for top-level ABEL CPLD designs. If you have an ABEL module used in a schematic-based design, you must replace any PLUSASM based properties with EDIF-compatible properties and use the standard EDIF-based flow.

To enable the PLUSASM flow for ABEL CPLD designs containing PLUSASM properties, use the following procedure:

1. In the Foundation Project Manager, select **File** → **Configuration**.
2. In the Configuration window, click on "View Ini File".
3. In the Report Browser window that appears, find the lines containing

[EXTENSIONS]

;XABELNETLIST=PLUSASM



Foundation Series 1.4 Install and Release Document

4. Delete the semicolon (;) in front of XABELNETLIST to enable the feature.
5. Save the file (**F**ile → **S**ave) and close the Report Browser window.
6. Click OK in the Configuration window to close it.
7. Exit the Foundation Project Manager (**F**ile → **E**xit) and restart it.

After the PLUSASM flow is enabled, the Foundation system creates PLUSASM formatted .PLD files for all top-level ABEL CPLD designs and the CPLD fitter software uses the .PLD files for implementation instead of EDIF netlists. FPGA designs and all ABEL macros used in schematic-based designs will continue to use EDIF netlists for implementation.

Note: The Foundation system continues to create EDIF netlist files in addition to the .PLD files for simulation purposes. But only the .PLD files will be used for design implementation.

To disable the PLUSASM flow and resume using the standard EDIF based flow, replace the semicolon (;) in front of the XABELNETLIST keyword in the INI file and restart the Foundation Project Manager. If you have already run your design using the PLUSASM flow and wish to rerun the same design using the standard EDIF based flow, you must create a new project and copy your design files. Otherwise, the implementation software will continue to use the existing .PLD file instead of the new EDIF netlist.

For more information in using the PLUSASM flow, refer to Solution #2776 on the Answers page at the Xilinx Web Site or see the online DynaText Answers Book.





Appendix C

Troubleshooting

This appendix describes possible errors or problems you might have when installing the software on personal computers.

Installation

This section describes installation errors.

Insufficient Space for the Installation

The Setup program indicates if sufficient space is not available. If this error occurs, then you need to increase your disk space or install the core executables and a limited set of the remaining software.

Program Icons Were Not Created By Setup

If the Xilinx Setup program did not create a program group for your Windows tools and program icons for each individual tool, use the following instructions to create program groups and icons for products you have installed. The following procedure applies to both Windows 95 and Windows NT 4.0.

1. To create a new program folder, click the right mouse button on **Start**. Select **Open**.
2. After the C:\WINDOWS\Start window displays, select **File** → **New** → **Folder**. A new folder displays in the window.
3. Type a name for the new folder and press Return.
4. With the new folder selected, click **File** → **New** → **Shortcut**. The Create Shortcut window displays.



Foundation Series 1.4 Install and Release Document

5. From the “Program Paths” table, select the path corresponding to the shortcut you want to create. The table assumes the software is installed in c:\fndtn.

Table C-1 Program Paths

Program Description	Path	Working Directory
Design Manager	c:\fndtn\dsgnmgr.exe	drive:\xilinx_user
Timing Analyzer	c:\fndtn\timingan.exe	drive:\xilinx_user
Hardware Debugger	c:\fndtn\hwdebugr.exe	drive:\xilinx_user
PROM File Formatter	c:\fndtn\promfmtr.exe	drive:\xilinx_user

6. Click Next. When the Select a Title for the Program window displays, enter a name for the shortcut and click Finish.
7. When the Select an Icon window displays, select one of the icons and click Finish.
8. In the C:WINDOWS\Start window, drag the new shortcut icon into the new program folder.
9. Move the new folder containing the shortcut into the main Program folder.

Peripherals

The following subsections describe peripheral problems that can occur.

Mouse Is Incompatible

If your mouse is incompatible with the installation program, use the keyboard commands listed in the following table to navigate and select objects on the screen.

Table C-2 List of Keyboard Commands

Key	Action
Tab	Traverse objects forward and highlight them
Shift-Tab	Traverse objects backward
Enter	Activate selection button or highlighted list item, including menu items Highlight list item
Arrow keys	Scroll up or down inside selection boxes, including menus
Alt-Character	Select menu
Esc	Unselect menu Exit Help window

Mouse Fails

The following covers possible solutions for failures you might have with your mouse.

- Your installation program does not have a built-in mouse driver. Make sure the mouse driver that you are using is compatible with Windows 95 or Windows NT.
- If you do not have a Windows-compatible mouse, refer to the “List of Keyboard Commands” table for information on how to enter commands from the keyboard.



Licensing

The followings subsections describe licensing problems.

LM_LICENSE_FILE

If you see messages indicating you are having problems getting a license, check the value of LM_LICENSE_FILE. The environment variable LM_LICENSE_FILE should point to the permanent license file at `c:\flexlm\license.dat`. If you have an evaluation license, the LM_LICENSE_FILE variable should point to `%XILINX\data\license.dat`.

License Validity

Some Xilinx licenses, for example evaluation licenses, are designed to expire at a certain time. If your license has expired, you must call your Xilinx customer service representative to obtain valid license and authorization codes to place in the license.dat file. The phone numbers to use to contact your customer service representative are listed in the “Setting Up Security” chapter.

Design Entry Tools

The SUSIE.INI file is where the design entry tools store their configuration information; it resides in the `c:\windows` directory. If you are experiencing problems with the design entry tools not initializing correctly, make sure this file exists and has not been corrupted.

By default, some options are disabled from the menus, but can be enabled by editing SUSIE.INI. These options include:

- design export to VHDL
[extensions]
ExportVHDL=On
- recompile design in batch mode (causes the current design to be implemented without running Xilinx Design Manager GUI)
[extensions]
RecompileM1=On





- Enables Verilog support in HDL Editor and HDL wizard
[extensions]
verilog=On
- XACTstep 6.x flow
[Flow_26]
XILINX6=On

Please note that enabling the Verilog HDL option or the Export VHDL option is not officially supported in Foundation 1.4; these switches are documented for your convenience only.

Design Implementation Tools

Many problems running software result from problems in your environment. When using Xilinx products, you need to make sure that your environment (your path) is pointing to the correct sets of libraries.

PATH Environment Variable

The PATH variable sets the overall executable search path.

XILINX Environment Variable

The XILINX variable is used by Foundation 1.4 to locate data files. It must specify the directory where the Foundation design implementation software resides. This variable is automatically set up during installation.

Registry Entries

When the Foundation 1.4 software is installed, several entries are made to the Windows NT Registry by the install program. If you are curious to know more specific information about Registry entries, refer to the “Registry Entries” chapter of the Release Notes.

For Windows 95, the global environment variables, XILINX and XILINX_CD and the path to the bin\nt directory are added to the autoexec.bat file instead of the Registry.





DynaText Browser (for Online Documentation)

The DynaText browser is used to view the online documentation for the design implementation tools.

When you install the Xilinx core tools software, you most likely set up the environment variables, XILINX and XILINX_CD, in the Registry for NT 4.0 or in the autoexec.bat for Windows 95. The XILINX_CD variable points to the CD-ROM path, which is usually d: or to a directory on the network. One or both of these variables must be defined if you intend to view the online documentation.

The specific value of each of these variables is referenced in the dynatext.ini file, an initialization file used by DynaText to ascertain which collections to display. Following is an example of a dynatext.ini file:

```
; dynatext.ini configuration file
; *****
COLLECTION=$XILINX\data\ntdtext\ebtdocs=Browser Docs
COLLECTION=$XILINX\userware\utilities=Answers
COLLECTION=$XILINX_CD\userware\utilities=Answers on CD
COLLECTION=$XILINX\doc\usenglish=Xilinx books
COLLECTION=$XILINX_CD\doc\usenglish=Xilinx books (CD)
DATA_DIR=$XILINX\data\ntdtext\data
```

The first collection listed is a collection that explains the features of the DynaText browser. The second collection is the Xilinx design implementation documentation, if you have opted to install it on the hard disk. The third collection is the Xilinx design implementation documentation on the CD-ROM.





Appendix D

Installing Esperan

The Esperan 2.0 tutorial explains how to use the VHSIC Hardware Description Language (VHDL).

Installing the Esperan Tutorial

The following subsections explain how to install the Esperan tutorial.

Minimum System Requirements

Installation of the Esperan 2.0 tutorial requires the following:

- 486-based or higher PC at 25 MHz or faster running Windows 95 or Windows NT 4.0
- 12 MB of RAM minimum, 16 MB recommended
- 10 MB of free hard-disk space
- Double-speed CD-ROM drive local to the PC
- Mouse or similar pointing device
- 8- or 16-bit Soundblaster™ -compatible sound card (optional)

Installation Instructions

Follow these steps to install and run the Esperan tutorial on your PC.

1. Load the CD in your CD drive.
2. Select **Start**→**Run**.

The Run dialog box appears.

3. Type the following:

`R:\mcvhdl\program\setup.exe`

where *R* is the drive letter of your CD drive.





Foundation Series 1.4 Install and Release Document

4. When the Welcome message appears, click on **Continue**.
The installation directory dialog box appears.
5. Delete the directory name suggested and enter the letter of your hard disk and a full directory name, for example, c:\esperan. You can load up to 5 MB of files.
6. Click on **Continue**.
7. When the installation is complete, click the **OK** button.
8. Further installation steps are required if you are using an 8-bit sound card. See the "Selecting 8-Bit or 16-Bit Sound Files" section.

Esperan Tutorial

This section contains information about the Esperan tutorial that accompanies the Foundation Series VHDL packages.

Networked CD Drives

Esperan is designed to operate from the CD drive local to your PC and cannot be accessed over a network.

Displaying Version Information

You can obtain the version number of the Esperan executables any time that Esperan is running by pressing Alt V.



Keyboard Commands

You can access the Esperan user interface from keyboard commands rather than menu commands. The keys are assigned as follows.

Keystroke	Function
Return	Next point
Right arrow	Next point
Left arrow	Previous point
Down arrow	Next topic
Up arrow	Previous topic
Alt A	Answer A
Alt B	Answer B
Alt C	Answer C
Alt D	Answer D
Alt V	Version information
Ctrl I	Index
Ctrl C	Contents
Ctrl R	Reference guide
Ctrl T	Tutorial
Ctrl O	Home
Ctrl S	Getting started
Ctrl E	Exit Esperan
Ctrl H	Help
Ctrl P	Code "Cut and paste"
Alt 1	Display point 1
Alt 2	Display point 2
Alt 3	Display point 3
Alt 4	Display point 4



Selecting 8-Bit or 16-Bit Sound Files

Sound can be recorded on a PC with either 8-bit or 16-bit resolution. The tutorial offers both 8- and 16-bit files and uses the 16-bit files by default. If you cannot hear the sound on your system, it is probably because your sound card only supports 8-bit sound files.

To enable the tutorial to access the supplied 8-bit sound files, edit the following text file:

```
mc_root\variable\user.var
```

where *mc_root* is the directory that you specified during the installation of Esperan.

You will find the following two lines:

```
@AUDIO_PATH  
audio16
```

Change these lines to read as follows, then re-invoke the tutorial.

```
@AUDIO_PATH  
audio8
```

Troubleshooting

If you have difficulty running Esperan, consult the following list of problems and possible solutions.

No Sound Commentary Plays During the Tutorial

Is your MCI Sound driver installed? To check this in Windows 95 or Windows NT 4.0, perform the following instructions:

1. Double click the My Computer icon.
2. Double click the Control Panel icon.
3. Double click the Multimedia icon. The Preferred Devices drop-down list box in the Multimedia Properties dialog box lists the audio hardware available on your system. Select the MCI Sound driver.

If you do not have the specific sound driver available, contact your sound card manufacturer and request the driver for the Windows operating system.





Installing Esperan

Also, is your sound card Soundblaster-compatible? If not, use a PC that contains a Soundblaster-compatible sound card.

The Text Appears Distorted In a Specific Part of the Application

The correct fonts may not be installed on your PC. The following table shows the fonts used in each part of the Esperan display:

Arial 18-point bold	Title
Arial 14-point bold	Points
Arial 10-point regular	Exercises
Arial 11-point regular	Commentary
Arial 17-point bold	Contents page

Ensure that your PC displays each of these fonts in the specific size just given.

Tutorial Appears with No Graphics

When invoking Esperan, you receive the following message:

Do you wish to continue your previous session?

You select Yes, and the tutorial window appears but contains no graphics.

If this message appears when invoking the tutorial, always respond with No.

Unable to Run Setup.iw

During installation, or when setup.iw is invoked, you receive the following message:

Unable to run setup.iw

The disk that you specified during the installation procedure is full.

Remove all of the files that were created by the installation, and ensure that at least 8 MB of free space is available before re-installing the Esperan demonstration.





Foundation Series 1.4 Install and Release Document

Support

If the solutions listed in the previous section do not correct the issues that arise in running Esperan, please contact Xilinx technical support. Your first contact should be by e-mail (hotline@xilinx.com) or fax (1-408-559-0115), specifying the following information:

- Make of PC
- Processor and speed
- Memory installed (RAM)
- Make and model of sound card (if applicable)
- Versions of Windows that you are running
- A description of the problem



Appendix E

Upgrading to Foundation 1.4 —Library Format Conversion

The Foundation 1.4 Library Manager allows using long names (up to 255 characters) for library objects. Foundation 1.3 and earlier versions of the Library Manager allowed names up to 24 characters only. Due to this modification, the library format has been changed from version 4.0 to 5.0.

When you open a project which was created in pre-Foundation 1.4 software, the Project Manager asks you if you wish to convert the library to the new 5.0 format. If you select Yes, the library is converted and you will be able to make changes to it in Foundation 1.4. If you select No, the 4.0 format will be preserved, and the library will be read-only in Foundation 1.4.

Libraries in the 4.0 format can be converted to the 5.0 format in order to enable using them in access modes other than R/O.

To convert a 4.0 library to the new 5.0 format:

1. Go to the Library Manager.

This can be done by selecting **File** → **Project Libraries** and then double clicking on the Lib Manager button, or by selecting **Tools** → **Library Manager**.

2. Select the library that you want to convert.
3. Select Convert to Version 5.0 from the Library menu.

The original 4.0 format library is saved in the BAK_24 folder which is created under the *project_name*\Lib directory. The conversion affects two library files (DIR and SYN). If it is necessary to revert back to the 4.0 format library, simply copy the contents of the BAK_24 directory into the LIB directory.



Foundation Series 1.4 Install and Release Document

Note: During the start of the Foundation Series suite, the system checks the format of all libraries. If it finds the 4.0 library, then the library access mode is automatically changed to R/O. Conversion to the 5.0 format is run automatically when you change the library access mode to R/W or R/A. The R/S access mode of system libraries is not changed.

The 5.0 format libraries cannot be used with older tools sets (Foundation 1.3 and earlier). Foundation 1.4 does not contain a conversion tool that converts from 5.0 to 4.0 format. To revert back to 4.0 format, you must copy the backed-up library, as described above.



Appendix F

Detailed Disk Space Requirements

This appendix provides detailed information about disk space requirements for the Foundation design implementation tools and online documentation.

Required Disk Space For Design Implementation Tools CD

The following table details the disk space needed for installation of the various parts of the Foundation Series design implementation tools. The online documentation is also included on the Design Implementation CD. A separate table details online documentation disk space requirements. Examples are given showing how to determine the required disk space for the tools you will be installing.

Table 9-1 Required Disk Space for Design Implementation Tools

Software Components	Data	95/NT
Xilinx core executables ¹	~10 MB	~35 MB
XABEL Interface	3 MB	
Shared DLLs	3 MB	
Network Installation files	2 MB	
XC3000 ²	~4 MB	~1 MB
XC3000A ³	~4 MB	N/A
XC3000L ³	~2 MB	N/A
XC3100 ⁴	~2 MB	N/A
XC3100A ⁵	~4 MB	N/A
XC3100L ⁶	~2 MB	N/A

Foundation Series 1.4 Install and Release Document

Table 9-1 Required Disk Space for Design Implementation Tools

Software Components	Data	95/NT
XC4000 ⁷	~2 MB	~2 MB
XC4000E ⁸ 4003E, 4005E, 40006E, 4008E, 4010E 4013E 4020E, 4025E	~29 MB total ~15 MB ~4 MB ~8 MB	~165 KB
XC4000L ⁹ 4005L, 4010L 4013L	~2 MB total ~1 MB ~1 MB	N/A
XC4000EX ¹⁰ 4028EX 4036EX	~17 MB total ~7 MB ~8 MB	~25 KB
XC4000XL ¹¹ 4002XL, 4005XL, 4010XL, 4013XL 4020XL, 4028XL, 4036XL, 4044XL 4052XL, 4062XL, 4085XL	~86 MB total ~24 MB ~25 MB ~35 MB	~425 KB
XC40125XV ¹²	~18 MB	~80 KB
XC5200 5202, 5204, 5206 5210, 5215	~11 MB ~4 MB ~6 MB	~1 MB
XC9500 ¹³	~90 KB	~1 KB
Spartan ¹⁴ XCS05, XCS10 XCS20, XC230, XCS40	~6 MB ~2 MB ~3 MB	
Non-numeric XC4000E	~3 MB	
Non-numeric XC4000EX	~3 MB	

¹ The DynaText browser and its online books are not included. To calculate installation of core executables, include the data files.

data (10 MB) + 95 or NT (35 MB) = 45 MB

² Installed once when any number of XC30* or XC31* software components are installed. For example, if you install the XC3100A, then all files in the xc3000/data, xc3000a/data, and the xc3000/bin/nt directories are also automatically installed.



Detailed Disk Space Requirements

- ³ If you install the XC3000A or XC3000L, then all files in the xc3000/data and the xc3000/bin/nt directories are also automatically installed.
- ⁴ Installed once when any number of XC31* software components are installed. For example, if you install the XC3100A, then all files in the xc3100/data and xc3000a/data directories are also automatically installed.
- ⁵ If you install the XC3100A, then all files in the xc3000/data, xc3000/bin/nt, xc3100/data, and xc3000a directories are also automatically installed.
- ⁶ If you install the XC3100L, then all files in the xc3000/data, xc3000/bin/nt, xc3100/data, and xc3000l directories are also automatically installed.
- ⁷ Installed once when any number of XC4* software components are installed. For example, if you install the XC4000EX, then all files in the xc4000/data, xc4500e/data, xc4000e/data, and the xc4000/bin/nt directories are also automatically installed.
- ⁸ If you install any of the XC4000E software components, then all files in the xc4000/data and the xc4000/bin/nt directories are also automatically installed.
- ⁹ The files not beginning with a numeral in the xc4000e/data directory and the xc4000e/bin/nt directory are also installed when the xc4000l is installed.
- ¹⁰ The files not beginning with a numeral in the xc4000e/data directory and the xc4000e/bin/nt directory are also installed when the xc4000ex is installed.
- ¹¹ The files not beginning with a numeral in the xc4000e/data and the xc4000e/bin/nt directories are installed when the xc4000xl is installed. In addition, the files not beginning with a numeral in the xc4000ex/data and the xc4000ex/bin/nt directories are also installed when the xc4000xl is installed.
- ¹² The files not beginning with a numeral in the xc4000e/data and the xc4000e/bin/nt directories are installed when the xc4000xv is installed. In addition, the files not beginning with a numeral in the xc4000ex/data and the xc4000ex/bin/nt directories are also installed when the xc4000xv is installed.



Foundation Series 1.4 Install and Release Document

¹³ Platform-specific files are installed for XC9500 devices.

¹⁴ The files not beginning with a numeral in the xc4000e/data directory and the xc4000e/bin/nt directory are also installed when any of the spartan software components are installed.

Required Disk Space For Design Implementation Tools CD

Table 9-2 Required Disk Space For Online Documentation

Software Components	Data
Documentation TOTAL	~117 MB
Online Help	~2 MB
Documentation Browser	~11 MB
Core online book files	~8 MB
Xilinx Tutorial Files	~1 MB
Xilinx userware	~4 MB
LogiBLOX Reference/User Guide	~4 MB
Design Manager User Guide	~20MB
Development System Reference Guide	~3 MB
EPIC Design Editor Reference/User Guide	~ 7 MB
Foundation Quick Start Guide 1.4	~14 MB
Foundation Series User Guide	~5 MB
Hardware Debugger Reference/User Guide	~8 MB
JTAG Programmer Guide	~ 3MB
Libraries Guide	~13 MB
PROM File Formatter Reference/User Guide	~4 MB
Timing Analyzer Reference/User Guide	~7 MB
Development System User Guide	~2 MB
Hardware User Guide	~1 MB

Example Disk Space Calculations

Example 1: Design Implementation Tools Installation with FPGAs

Assume that you have installed all the subcomponents for the XC4000XL, the online help and documentation browser subcomponents.

Disk space requirements are as follows:

Xilinx Core executables = 10 MB (Data) + 35 MB (NT) = 45 MB

xc4000xl = 86 MB (Data + 95/NT files)

non-numeric xc4000e/data files + 95/NT = 3 MB

non-numeric xc4000ex/data files + 95/NT = 3 MB

xc4000 = ~2 MB (Data) + ~2 MB (95/NT) = 4 MB

Online Help (2 MB) + Documentation browser (11 MB) + Core Online book files (8 MB) = 21MB

Total = 45 MB + 86 MB + 3 MB + 3 MB + 4 MB + 21 MB = 162 MB

Example 2: Design Implementation Tools Installation with CPLDs

Assume that you have installed the XC9500, the online help, documentation browser, and Tutorial files.

Disk space requirements are as follows:

Core = ~10 MB (Data) + ~35 MB (NT) = ~45 MB

xc9500 = ~1 MB (Data + NT files)

2 MB (Help) + 11 MB (browser) + Core Online book files (8 MB) + 1 MB (tutorial) = 22 MB

Total = 45 MB + 1 MB + 22 MB = 68 MB



Foundation Series 1.4 Install and Release Document



Index

A

ABEL state machines, 8-4
 architectures, new, 3-1
 authorization codes, 6-8
 automatic feedback optimization, 8-13

B

Base install, 5-7
 batch mode, C-4

C

C drive Volume Serial Number, 6-9, 6-17
 CD-ROMs
 contents, 1-1
 Collapsing Pterm Limit, 8-8
 COLLECTION variable, 5-18
 conversions
 library format, E-1
 XACTstep6 designs, 5-4
 CPLDs
 fitter known issues, 8-7
 fitter optimization, 8-8
 known issues, 8-5, 8-12
 PLUSASM, B-1
 unsupported families, 8-9
 CTL3D95.DLL, 5-8
 CTL3DNT.DLL, 5-8
 customer support, 9-1

D

DATA_DIR variable, 5-18
 design entry tools
 accessing, 7-2
 installation, 5-3
 known issues, 8-3
 new features, 3-1
 security, 6-1
 Design Entry Tools Components Only, A-3
 design implementation tools
 accessing, 7-2
 disk space requirements, F-1
 installation, 5-5
 installation example, F-5
 known issues, 8-7
 new features, 3-3
 Registry entries, A-1
 security, 6-2
 devices, supported, 4-1
 directory permissions, 5-2
 disk space
 design implementation tools, F-1
 online documentation, F-4
 DLLs, shared, 5-7
 documentation, known issues, 8-13
 download cable driver, A-4, A-5
 downloading and configuration,
 known issues, 8-13

Foundation Series 1.4 Install and Release Document

DynaText browser
 environment variables, 5-16
 opening, 7-2
 Registry settings, 5-13
 setting up, 5-16
 system requirements, 5-16
 using, 7-4
 dynatext.ini file, 5-17, 5-18

E

enabling, XACTstep6 designs, 5-4
 end-user ID number location, 6-8, 6-17
 environment settings file, 5-14
 Environment Settings Option dialog box, 5-12
 environment variables
 check setup with PAR, 6-25
 DynaText browser, 5-16
 LM_LICENSE_FILE, 5-13
 setting up, 5-14
 setting up XILINX, 5-12
 XILINX_CD variable, 5-12
 Esperan
 displaying version information, D-2
 installing, D-1
 keyboard commands, D-3
 sound files, D-4
 system requirements, D-1
 troubleshooting, D-4
 Ethernet address, 6-9, 6-17
 existing customers, licensing, 6-3

F

Fast property, 8-9
 features, supported, 3-1
 feedback optimization, known issues, 8-8
 Find tool, DynaText browser, 7-4
 Flexible License Manager, 6-21
 floating licenses
 adding new products, 6-16
 description, 6-3

license.dat file, 6-13, 6-17
 LM_LICENSE_FILE, 6-13
 setting up, 6-13
 Foundation 6.0.1 software, 5-4
 Foundation Express
 known issues, 8-4
 synthesizer, 8-4

H

help system, 1-2

I

icons, creating, C-1
 implementation, known issues, 8-7
 INCREMENT lines, 6-12
 installation
 Base install, 5-7
 design entry tools, 5-3
 design implementation example, F-5
 design implementation tools, 5-5
 Esperan, D-1
 known issues, 8-1
 Lab Machine, 5-11
 Quick CPLD, 5-11
 Run from CD or Network, 5-11
 Standard install, 5-10
 system requirements, 5-1

J

JTAG Programmer known issues, 8-5

K

keyboard commands
 Esperan, D-3
 mouse incompatibility, C-3
 known issues
 CPLD fitter, 8-7
 CPLDs, 8-5, 8-12
 design entry, 8-3
 documentation, 8-13
 downloading and configuration, 8-13

- feedback optimization, 8-8
 - Foundation Express, 8-4
 - implementation, 8-7
 - installation, 8-1
 - JTAG, 8-5
 - PAR, 8-10
 - simulation, 8-11
 - timespecs, 8-11
 - timing simulation, 8-11, 8-12
 - translation, 8-5
 - XABEL, 8-2, 8-3, 8-6, 8-7
- L**
- Lab Machine Installation, 5-11
- lbgui, 8-3
- Library format conversion, E-1
- license GUI
 - Windows 95, 6-22
 - Windows NT, 6-20
- license.dat file
 - existing customers, 6-4
 - floating licenses, 6-13
 - new customers, 6-4
 - node-locked licenses, 6-11
- license.inp file, 6-8, 6-17
- licensing
 - existing customers, 6-3
 - new customers, 6-4
- LM_LICENSE_FILE
 - description, 5-11
 - floating licenses, 6-13
 - node-locked licenses, 6-5
 - setting up, 5-13
 - Windows 95, 5-15, 6-7, 6-15
 - Windows NT, 5-15, 6-6, 6-13
- lmgrd
 - from command line, 6-23
 - from Windows 95 GUI, 6-22
 - from Windows NT GUI, 6-20
- lmtools, 6-9
- lmtools window, 6-17
- lmtools.exe, 6-17
- LOC property, 8-9
- LogiBLOX
 - accessing, 7-2
- M**
- M1 License Request Form, 6-10
- MAP improvements, 3-4
- Multi-level Logic Optimization, 8-8
- N**
- network
 - compatibility, 5-3
 - installation files, 5-8, 5-11
 - name, 6-9, 6-18
- new customers, licensing, 6-4
- node-locked licenses
 - description, 6-2
 - license.dat file, 6-11
 - LM_LICENSE_FILE, 6-5
 - obtaining authorization codes, 6-8
 - setting up, 6-5
- ntvdm.exe fix, 6-1
- O**
- OLE Registry settings, 5-13
- online documentation
 - description, 7-4
 - disk space requirements, F-4
 - Registry entries, A-3
 - supported documents, 1-2
- online help, 1-2
- operating systems supported, 1-2, 5-1
- P**
- package support, 5-2
- packages, supported, 4-1
- PAR
 - errors, 6-25
 - improvements, 3-3
 - known issues, 8-10
 - verify setup, 6-24

Foundation Series 1.4 Install and Release Document

PATH statement, 5-13, 5-14
 PATH variable, C-5
 PC network name, 6-9, 6-18
 pkgver.txt file, 6-4
 platforms, supported, 5-1
 PLUSASM
 disabling, B-2
 enabling for ABEL CPLDs, B-1
 XABEL, B-1
 ports requirement, 5-3
 PRIVATE_DIR variable, 5-18
 product name location, 6-8, 6-17
 program icons, creating, C-1
 Project Manager, 7-1, 8-6
 PUBLIC_DIR variable, 5-18

Q

Quick CPLD installation, 5-11

R

Registry entries
 design implementation tools, A-1
 download cable driver, A-4, A-5
 Lab install, A-1
 online documentation, A-3
 Typical install, A-1
 Registry settings
 DynaText browser, 5-13
 OLE, 5-13
 XABEL, 5-14
 Registry Settings Options dialog box, 5-12
 Run from CD or Network, 5-11, A-2
 runtimes, minimizing, 5-2

S

Schematic Editor, new features, 3-1
 security
 design entry tools, 6-1
 design implementation tools, 6-2
 Windows NT 4.0 design entry, 6-1

serial number location, 6-8, 6-17
 Service Packs, 6-2
 shared DLLs, 5-7
 simulation
 known issues, 8-11
 new features, 3-2
 SLOW property, 8-9
 software, third party, 2-1
 sound files, D-4
 speed grades, 4-1
 Standard install, 5-10
 SUSIE.INI file, 5-4, 5-5, 6-2
 swap space required, 5-2
 system requirements, 5-1
 DynaText browser, 5-16
 Esperan, D-1
 memory, 5-2
 swap space, 5-2

T

third party software, 2-1
 timespecs
 known issues, 8-11
 paths, 8-11
 timing simulation, known issues, 8-11
 translation, known issues, 8-5
 troubleshooting
 data removal, C-1
 Esperan, D-4
 insufficient disk space, C-1
 missing program icons, C-1
 mouse failure, C-3
 mouse incompatibility, C-3

U

uninstall program, 8-1
 uninstalling software, 5-19

V

verify setup, 6-24

Verilog

enable support in HDL Editor and
HDL wizard, C-5

VHDL design export, C-4

vol command, 6-9, 6-17

Volume Serial Number, 6-9, 6-17

W

Waveform Editor, 3-2

website, Xilinx, 6-10

Window 4.0 NT security fixes, 6-1

Windows 95/NT, 5-1

World Wide Web, Xilinx, 6-10

X

XABEL

interface components, 5-11

known issues, 8-2, 8-3, 8-6, 8-7

PLUSASM, B-1

Registry settings, 5-14

XABELNETLIST, B-2

XACTstep 6.x flow, enabling, C-5

XACTstep6, 5-4

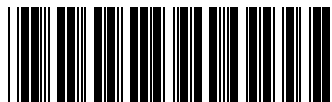
XILINX variable, 5-12, 5-15, A-2, C-5

Xilinx website, 6-10

xilinx.cmd file, 5-14

XILINX_CD variable, 5-12, A-2

XNF files, 8-5



0401698

Printed in U.S.A.

© 1998 Xilinx, Incorporated

