ispLEVER 7.1 Installation Notice

Windows® XP
Windows 2000
Windows Vista (32-bit)

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Type Conventions Used in This Document

Convention	Meaning or Use
Bold	Items in the user interface that you select or click. Text that you type into the user interface.
<*Italic*>	Variables in commands, code syntax, and path names.
Ctrl+L	Press the two keys at the same time.
`Courier`	Code examples. Messages, reports, and prompts from the software.
. . .	Omitted material in a line of code.
. . .	Omitted lines in code and report examples.
[ ]	Optional items in syntax descriptions. In bus specifications, the brackets are required.
( )	Grouped items in syntax descriptions.
{ }	Repeatable items in syntax descriptions.
|	A choice between items in syntax descriptions.

Contents

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Installing ispLEVER Tools

This chapter provides installation instructions for the ispLEVER® 7.1 software for Windows.

During installation, you will be prompted to select the installation path for the ispLEVER and global constraints for JEDEC file options.

The ispLEVER software supports LatticeEC™, LatticeECP™, LatticeECP2™, LatticeECP2S, LatticeECP2M™, LatticeECP2MS, LatticeXP™, LatticeXP2™, LatticeSC™, LatticeSCM™, and MachXO™ designs.

System Requirements

- Intel Pentium or Pentium-compatible PC
- Windows XP, Windows 2000 Workstation, or 32-bit Windows Vista

Note

If your operation system is Windows Vista, make sure you have installed all the latest patches from Microsoft.

- Approximately 4.5 GB free disk space
- 1024 X 768 graphics display

- CD-ROM drive (2X or above) or DVD-ROM drive
- Microsoft-compatible mouse and mouse driver

Table 1 lists the minimum memory requirements and the recommended memory for the Windows operating system on 32-bit platforms for all the Lattice Semiconductor FPGA device families.

Table 1: Recommended Memory for Windows 32-Bit Platforms

Device	Size	Minimum	Recommended
MachXO	All	256 MB	512 MB
LatticeECP, LatticeXP, LatticeXP2	Up to 20K LUT	512 MB	768 MB
	Up to 50K LUT	768 MB	1 GB
LatticeECP2/S	Up to 20K LUT	768 MB	1 GB
	UP to 50K LUT	1 GB	1.5 GB
	Up to 70K LUT	1 GB	2 GB
LatticeECP2M/S	Up to 20K LUT	512 MB	768 MB
	Up to 50K LUT	768 MB	1 GB
	Up to 70K LUT	1 GB	1.5 GB
	Up to 100K LUT	1 GB	2 GB
LatticeSC/M	Up to 40K LUT	768 MB	1 GB
	Up to 115K LUT	1 GB	2.5 GB

Note

The standard Windows platform limits the amount of memory to a maximum of 2GB for any ispLEVER program. You can configure the Windows XP operating system to allow up to 3 GB of memory usage by adding the /3GB switch to the end of the startup line in the boot.ini file. Before you take advantage of this capability, it is important that you read the following information:

- Microsoft Knowledge Base Article #328269, which addresses a potential problem with the /3GB switch.
  Go to http://support.microsoft.com/?kbid=328269.
- Microsoft Bulletin Q17193, which explains the 4GT RAM Tuning feature of Windows NT Server Enterprise Edition.
  Go to http://support.microsoft.com/default.aspx?scid=kb;en-us;Q171793
- Microsoft article “Memory Support and Windows Operating Systems,” which explains the use of the physical address extension (PAE) for Windows XP Professional and Windows Server 2003 Memory Support.
  Go to http://www.microsoft.com/whdc/system/platform/server/PAE/PAEmem.mspx
- For instructions on modifying the boot.ini file, go to http://support.microsoft.com/default.aspx?scid=kb;en-us;q289022

Contacting Lattice Semiconductor

You can contact Lattice Semiconductor by any of the following means:

- Lattice Semiconductor Corporation
  5555 Northeast Moore Court
  Hillsboro, Oregon 97124-6421 U.S.A.
- Internet: www.latticesemi.com
- Literature Hotline: 1-888-ISP-PLDS (477-7537)
- Applications Support
  Domestic: 1-800-LATTICE (528-8423)
  International: (503) 268-8001
  Fax: (503) 268-8556

Installing ispLEVER 7.1 Software for Windows

The following sections describe product options and installation instructions for the ispLEVER software.

Software Product Options

Table 2 shows the product options for the installation of ispLEVER Design Tools.

Table 2: ispLEVER Design Tools Installation Options

Product Option	Description
ispLEVER for Windows	Installs the ispLEVER design tools for all Lattice Semiconductor FPGA designs. Table 3 lists the tools included in this option. This option includes subfeatures for setting checksum and SVF options.
ispVM System	Installs the ispVM® System programming software for multi-vendor device programming.
FPGAs	Installs Lattice FPGA devices. This option includes subfeatures for installing LatticeEC/ECP, LatticeECP2/LatticeECP2S, LatticeECP2M/LatticeECP2MS, LatticeXP, LatticeXP2, MachXO, or LatticeSC/LatticeSCM devices.
Synplify® for Lattice	Installs Synplicity® Synplify and Synplify Pro® for Lattice Semiconductor synthesis software.
Active-HDL® Lattice Edition	Installs Aldec® Active-HDL for Lattice Semiconductor simulation software.

Table 3 shows the tools included in the ispLEVER for Windows option.

Table 3: Tools included in the ispLEVER for Windows Option

Tool	Description
Project Navigator	Serves as the primary interface for the ispLEVER software to ease project management.
Block Modular Design Wizard	Guides you from initial design partitioning through parallel development and implementation to later reassembly.
Design Planner	Provides graphical interface tools for setting constraints and managing FPGA device real estate.
Design Entry Tools	Includes the Schematic Editor, Text Editor, and Symbol Editor, which offer schematic, VHDL, Verilog, EDIF, and mixed-mode design entry support.

Table 3: Tools included in the ispLEVER for Windows Option (Continued)

Tool	Description
EPIC Device Editor	Provides device editing capability for engineering change management and detailed manipulation of FPGA implementation.
Hierarchy Browser and Navigator	Enables you to navigate through a design consisting of any combination of schematic and HDL modules.
HTML Help and User Documentation	Includes complete instructions for designing with ispLEVER design tools and third-party tools. Also provides user manuals, tutorials, example design projects, and access to technical documentation from the Lattice Semiconductor Web site.
IPexpress™	Enables you to create and instantiate parameterized modules and IP cores for FPGAs.
ispLeverDSP Blockset	DSP function blockset for use with The MathWorks® MATLAB®/Simulink® design environment (available separately from The MathWorks).
Reveal Inserter and Logic Analyzer	Generate and integrate logic analysis cores to help you debug a device. They enable you to view the switching of internal nodes of an FPGA on-chip during live operation. **Note**: Reveal is a next generation FPGA debugging solution which replaces the functionality in ispTRACY. The ispTRACY users are recommended to migrate to Reveal.
ispTRACY Core Linker and Logic Analyzer	Generate and integrate logic analysis cores to help you debug a device. They enable you to view the switching of internal nodes of an FPGA on-chip during live operation. **Note**: The ispTRACY tools are supplied for backward compatibility. It is strongly recommended that all new projects use the Reveal software for debugging requirements.
Library Manager	Enables you to manage libraries of symbols that are used in your FPGA designs.
Performance Analyst™	Enables you to measure the performance of designs implemented in Lattice Semiconductor devices through static timing analysis.
Power Calculator	Calculates the estimated device power consumption. The Power Calculator also comes as a stand-alone tool.
Report Viewer	Enables you to view, but not edit, the various report files generated by the ispLEVER software.
Revision Control System	Enables you to manage multiple design revisions of your project.
Tcl/Tk Scripting Tool	Enables you to automate ispLEVER design processing.

Apart from the ispLEVER core design tools, additional software options shown in Table 4 are available in the ispLEVER Setup window.

Table 4: Additional Software Options

Product Option	Description
PAC-Designer	Installs the PAC-Designer® software, which includes all the tools you need for design and download of Lattice Semiconductor's Power Manager and ispClock™ device designs.
Adobe Reader 6.0	Installs the Adobe Acrobat Reader 6.0 software.

Installation Procedure

The ispLEVER 7.1 software can be installed from three ispLEVER CD-ROMs or one ispLEVER DVD-ROM.

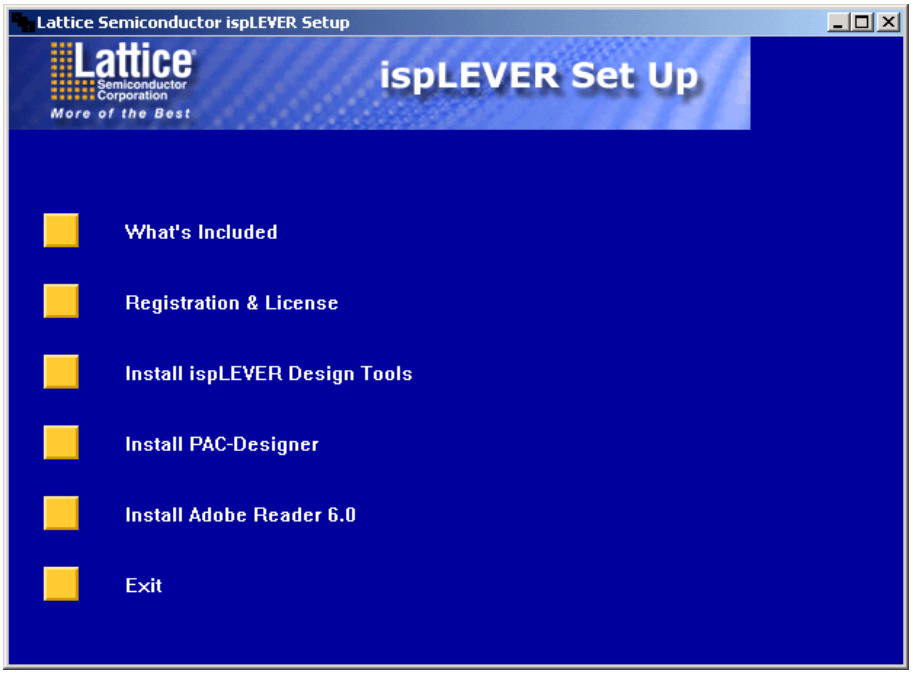
To install the Lattice Semiconductor ispLEVER software:

1. Close all applications before starting ispLEVER installation.
2. Insert the ispLEVER software CD-ROM 1 or the DVD-ROM into the drive. The ispLEVER Setup window automatically appears, as shown in Figure 1.

Note

After you insert the first CD-ROM, the software prompts you when you need to insert the second or third CD-ROM.

Figure 1: ispLEVER Setup Window

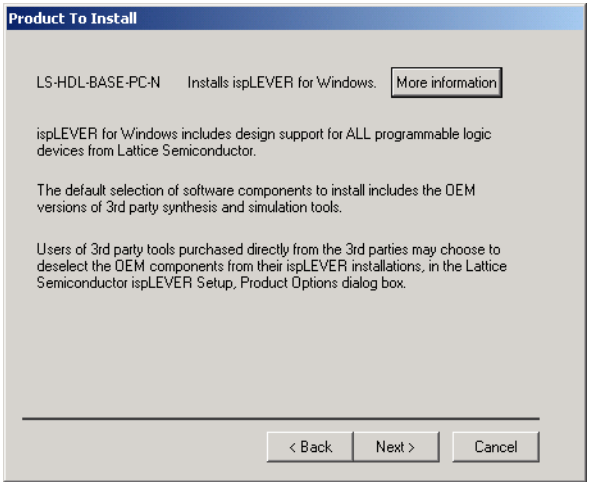


You can also run <*CD-ROM drive*>:\setup.exe to start the installation program manually.

3. Click **Install ispLEVER Design Tools**.

The Product To Install dialog box opens, as shown in Figure 2.

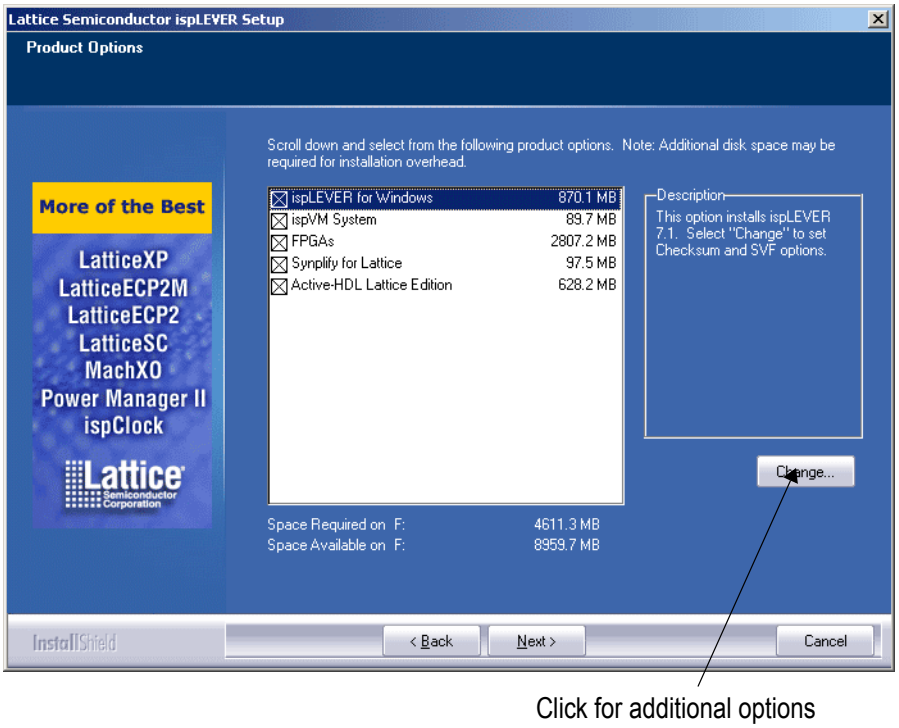
Figure 2: Product to Install Dialog Box



4. If you want to see a description of the installation components for the ispLEVER software and the minimum system requirements, click **More Information** to open the Help file.
5. Click **Next** to open the Welcome To Lattice Semiconductor ispLEVER Setup dialog box.
6. Click **Next** to open the Software License Agreement dialog box.
7. Read the license agreement. If you agree, click **Yes** to open the Choose Destination Location dialog box.
8. The default destination folder is C:\ispTOOLS7_1. Click **Browse** to change the drive or destination folder.

9. Click **Next** to open the Product Options dialog box, shown in Figure 3.

Figure 3: Product Options Dialog Box



10. Select the ispLEVER components that you want to install by selecting or clearing each of the listed options. If you have purchased third-party synthesis and simulation tools directly from the third-party vendors, you can clear these product options.

Some of the product options have additional options of their own, as shown in Table 5. To set the additional options, select a product option and click **Change**.

Table 5: Product Options

When you select:	Click Change to also select:
ispLEVER software	Use CHECKSUM as USERCODE default: Sets the default for USERCODE to CHECKSUM. With this option, the ispLEVER software inserts the JEDEC file's CHECKSUM value into the USERCODE field. If the ispLEVER software is generating an ISC data file, it inserts the CRC value into the USERCODE field. **Note**: For LatticeXP, LatticeXP2, and MachXO devices, CHECKSUM is the default for USERCODE. SVF Generation: Installs the ispVM System and sets the default for SVF generation.
FPGAs	Specific Lattice Semiconductor FPGA devices. You can install software for some or all of the Lattice FPGA devices: LatticeECP2/LatticeECP2S, LatticeECP2M/ LatticeECP2MS, LatticeSC/LatticeSCM, LatitceXP2, MachXO, LatticeXP, LatticeEC/ LatticeECP

11. Click **Next** to open the Select Program Folder dialog box. The default name of the program group is Lattice Semiconductor. If you want to change the name, change it in the Program Folder text box.
12. Click **Next** to open the Start Copying Files dialog box.
13. Verify the settings when displayed.
14. Click **Next** to start installing the ispLEVER components. If you are using the CD-ROMs, the installer will prompt you to swap disks during the installation.
15. If you have selected the ispVM System option, you will be prompted to install drivers for using the ispDOWNLOAD® cable. Click **Yes**, and follow the instructions in “Installing Parallel Port Driver and USB Driver” on page 12.
16. The Active Support dialog box appears toward the end of the installation. It requests your permission to allow Lattice Semiconductor to collect limited design information for product development purposes.

    Click either **I Accept** or **I Decline**.

    In either case, installation will finish normally so that you can use the software.

If you finish the installation and want to change your decision, choose **Start > All Programs > Lattice Semiconductor 7.1 > Accessories > Active Support**, then click **I Accept** or **I Decline**.

17. If you have selected the Active-HDL Lattice Edition option, you will be prompted to select a license option. Follow the instructions in “Selecting a License Option for Active-HDL” on page 13.
18. In the dialog box that follows, verify the environment variables. Click **Next**.
19. In the InstallShield Wizard Complete dialog box, click **Finish**.

Note

Do not close the installation window. The window will be automatically closed when the installation completes.

20. Wait for the original ispLEVER Setup window to be active again. In the ispLEVER Setup window, you can install other software, register and license the ispLEVER software, or exit the setup program. If you install the ispVM System driver, the system will prompt you to restart your computer.
21. After exiting the setup program, remove the CD-ROM or DVD-ROM from the drive.

Installing Parallel Port Driver and USB Driver

A parallel port or a USB driver is required to program Lattice devices using the ispDOWNLOAD Cables and the ispVM System software. You can install either or both of these drivers.

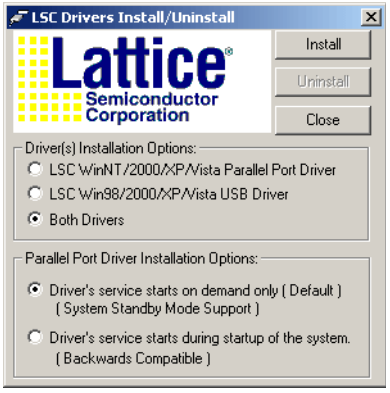
Note

For more information on ispDOWNLOAD Cables, see http://www.latticesemi.com/products/developmenthardware/programmingcables.cfm.

To install the parallel port driver, USB driver, or both:

1. In the LSC Drivers Install/Uninstall dialog box, select one driver or **Both Drivers** to be installed, as shown in Figure 4.

Figure 4: LSC Drivers Install/Uninstall Dialog Box



2. If you selected LSC WinNT/2000/XP/Vista Parallel Port Driver or Both Drivers in step 1, select the desired parallel port driver under Parallel Port Driver Installation Options:
   - Driver's service starts on demand only (Default) – This driver allows PCs and laptops to enter system standby mode when ispVM System is not running. This mode reduces the power consumption of your PC or laptop.
   - Driver's service starts during startup of the system (Backwards Compatible) – This driver is backward-compatible with previous versions of ispVM System and ispDCD. However, it might prevent some PCs and laptops from entering system standby mode.

3. If another driver is already installed, you can click **Uninstall** if you want to remove it.
4. Click **Install**.
5. Click **OK**, and follow the installation instructions on the screen.

At the end of the installation, you must reboot your PC to load the driver.

Note

If you skip the LSC Driver Install process during installation, you can always install the drivers later from the ispVM System menu command.

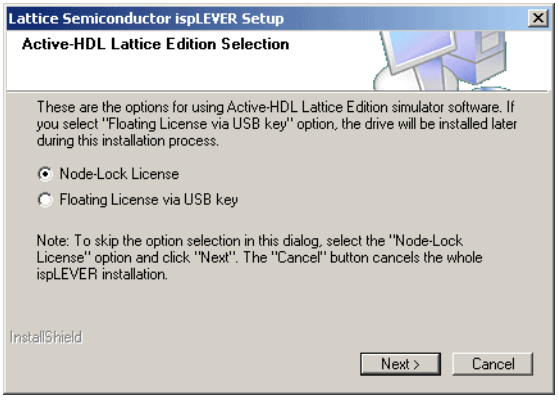
Selecting a License Option for Active-HDL

If you have selected the Active-HDL Lattice Edition option when installing ispLEVER, a dialog box will appear at the end of the installation, prompting you to select a license option for running Active-HDL.

To select a license option for Active-HDL:

- In the Active-HDL Lattice Edition Selection dialog box, select either **Node-Lock License** or **Floating License via USB key**, as shown in Figure 5.

Figure 5: Active-HDL Lattice Edition Selection Dialog Box



If you select **Floating License via USB key**, the system will start installing the driver for the Aldec dongle. When prompted "The operation was completed successfully," click **OK**.

Note

To skip the license selection in this dialog box, select **Node-Lock License** and click **Next**. The Cancel button cancels the entire ispLEVER installation.

You can also install the Aldec dongle driver separately. See "Aldec Dongle Driver Installation" on page 24 for more information.

Adding ispLeverDSP Paths to Matlab Search Path List

If you have installed Matlab/Simulink, the ispLEVER installation will automatically update the Matlab search path list to include the paths listed below. This enables you to use ispLeverDSP blockset in Matlab/Simulink.

<*isplever_install_path*>\ispLeverDSP
<*isplever_install_path*>\ispfpga\bin\nt

In case the automatic update fails, you can always use either of the following methods to add the paths manually.

To add ispLeverDSP paths using the "Set Path" menu command:

1. Start the Matlab software.
2. In Matlab desktop, choose **File > Set Path**.
3. In the Set Path dialog box, click **Add Folder**, browse to **<*isplever_install_path*>\ispLeverDSP**, and click **OK**.
4. Repeat Step 3 to add the **<*isplever_install_path*>\ispfpga\bin\nt** path.
5. Click **Save** to apply the settings, and then click **OK**.

To add ispLeverDSP paths from the command line:

- To add ispLeverDSP paths to the Matlab search path list, execute the **sub_mpath** program in the <*matlab_install_path*>\help\toolbox\ispleverdsp directory. The syntax is:

```
cd <matlab_install_path>\help\toolbox\ispleverdsp
sub_mpath -add <isplever_install_path>\ispLeverDSP -add
<isplever_install_path>\ispfpga\bin\nt
```

Troubleshooting

If you encounter any software-related problems after installing the ispLEVER software, review the following common troubleshooting scenarios before calling Lattice Semiconductor Technical Support:

- Ensure that your environment variable settings are set correctly, including the TEMP user variable. Your Windows XP, Windows 2000, or 32-bit Windows Vista system should contain the following system environment settings:

  ```
  SET LSC_INI_PATH=<boot_drive>:\LSC_ENV
  SET LM_LICENSE_FILE=<install_path>\license\license.dat
  ```

  You can verify these settings by choosing **Start > Settings > Control Panel > System**. Select the Advanced tab and the “Environment Variables” section.

  Note

  The LM_LICENSE_FILE variable is a single line entry.

- Make sure that your system video display is set to a screen resolution of 1024 x 768 or more and that your video display is set to use 256 or more screen colors.
- If the ispLEVER software is installed on a Windows XP or 32-bit Windows Vista system with administrator privilege and is to be used by an account in the “Users” group, make sure that the user account has permission to write the following folder and the configuration file in that folder:

  ```
  <boot_drive>:\LSC_ENV
  <boot_drive>:\LSC_ENV\lsc_7_1.ini
  ```

- If you have trouble viewing the ispLEVER Help using your default browser, check the browser’s options to make sure that JavaScript is enabled. If you are using Internet Explorer with the Windows XP operating system, a security feature that blocks active resident HTML files on your computer might issue a warning message when you try to open the ispLEVER Help. The message warns that these files can be useful but dangerous. You can safely ignore this warning. Follow the Internet Explorer's instructions to view the Help.

Licensing for the ispLEVER Software

At the end of the installation, you will use either the online registration form included in the installation setup program or the Web-based registration capability to register and license your ispLEVER software. To use the software, you must receive a permanent Lattice Semiconductor software license based on the identification of your network interface card (NIC) or alternate network interface, such as a wireless interface. The NIC ID or equivalent is the 12-character hexadecimal physical address. License your software early to avoid any down time.

The ispLEVER license requires your machine to be connected to the network or Internet. If your machine is not connected to the network, the license checkout process might fail when you try to start ispLEVER, even though you have a valid license for ispLEVER.

In the absence of a network connection, you can install the NWLink IPX/SPX protocol to force the recognition of your NIC card ID.

To install the NWLink IPX/SPX protocol:

1. Right-click **My Network Places** on the desktop and select **Properties**.

   A list of all the networks available opens.

2. Right-click **Local Area Network** and select **Properties**.
3. In the Local Area Connection Properties dialog box that appears, perform the following steps:
   a. Click **Install**.
   b. Select **Protocol** and click **Add**.
   c. Select **NWLink IPX/SPX**.
   d. Click **OK** and follow the instructions on the screen.
4. If needed, reboot your machine.

Licensing ispLEVER Through the Web Site

The quickest way to license your ispLEVER software is to use the Licensing form on the Lattice Semiconductor Web site.

To license ispLEVER through the Lattice Semiconductor Web site:

1. After installation is complete, click **Registration and License** in the ispLEVER Setup window. Or choose **Start > Programs > Lattice Semiconductor > ispLEVER Registration and License Request**.

The registration form appears.

2. Note the Network Interface Card ID and the hard disk ID in the form.
3. Go to the Licensing section of the Lattice Semiconductor Web site. (www.latticesemi.com/license).
4. On the Software Licensing page, under ispLEVER, click **Request a new license** or **Request a floating license** to request a node-locked, single user license, or a floating license. Then follow the on-screen instructions.

   You will receive your Lattice Semiconductor license file (license.dat) by e-mail.
5. Copy the license file (license.dat) to the ispLEVER software license directory, as shown here:

   `<install_path>\license\license.dat`

Note

- The license directory contains a file named license.txt, which is the Lattice Semiconductor license agreement. Do not rename your license.dat file to license.txt or in any way replace license.txt with another file.
- For information on floating license setup, see “Optional Floating License Setup” on page 18.

Licensing ispLEVER by E-mail or Fax

You can license and register the ispLEVER software by sending your completed registration and license request by e-mail or fax.

To license the ispLEVER software by e-mail or fax:

1. After installation is complete, click **Registration and License** in the ispLEVER Setup window. Or, exit the Setup program and choose **Start > Programs > Lattice Semiconductor > ispLEVER Registration and License Request**.

   The registration form appears.
2. Fill in the registration form completely. Your NIC ID is automatically scanned and displayed in the Network Interface Card ID field. The product serial number can be found on the Save This Serial Number card. You can choose to request a node-locked, single user license, or a floating license.
3. Click **OK**.

   Your registration information is saved automatically as a text file (pdspsreg.txt) in the default ispTOOLS7_1\prod_reg folder.

4. E-mail the completed registration file to lic_admn@latticesemi.com, or print the registration file and fax it to (503) 268-8556. The registration file must include your NIC ID.

   Lattice Semiconductor will send your ispLEVER software license file by e-mail or fax within one working day.

5. Copy the license file (license.dat) to the ispLEVER software license directory, as shown here:

   `<install_path>\license\license.dat`

Note

- The license directory contains a file named license.txt, which is the Lattice Semiconductor license agreement. Do not rename your license.dat to license.txt or in any way replace license.txt with another file.
- For information on floating license setup, see “Optional Floating License Setup” on page 18.

Finding the Installation History

When you install a service pack or control pack, the ispLEVER software records a log of the installation history, which you can find in the Project Navigator.

To view the installation history:

1. Open the Project Navigator.
2. Select **Help > About Project Navigator**.

Optional Floating License Setup

To enable a floating license, you must have a license server set up on a Windows NT server to monitor your ispLEVER software license. Each client PC must have the LM_LICENSE_FILE variable set to point to the license file on the server.

Before you start the server setup, ensure that TCP/IP is installed and that the client machines can communicate with the server by name. At the prompt in an MS-DOS window, type the following:

```
ping <hostname>
```

Table 6 lists the files used for license management.

Table 6: License Management Files

Filename	Location	Description
LMGRD.exe	<*install_path*>\ispcpld\bin	The license server program
LMUTIL.exe	<*install_path*>\ispcpld\bin	FLEXlm utility for diagnosing, reporting, and controlling licensing
LMTOOLS.exe	<*install_path*>\ispcpld\bin	Program that sets up the server for floating licenses
ispdsdmn.exe	<*install_path*>\ispcpld\bin	The Lattice Semiconductor licensing daemon

Note

The ispLEVER 7.1 software uses FLEXlm 11.4 license administration software. Users of the ispLEVER 3.1 or older software must bring down the previous license daemon and start the new license daemon.

Editing the License File

After obtaining a floating license from Lattice Semiconductor, you must edit the license file to specify the server name and the paths to the Lattice daemon. An example of a floating license file is shown in Figure 6.

Figure 6: Sample Floating License File

```
SERVER nodename 00609779b32b 7788

DAEMON lattice daemon_path

FEATURE LSC_ADVANCED lattice 8.0 01-jan-9999 1 78CF32A89262 \
VENDOR_STRING="ispLEVER Advanced"
FEATURE LSC_ADVANCED_DSP lattice 10.0 01-jan-9999 1
354CE2384BA4 \
VENDOR_STRING="ispLEVER DSP"
FEATURE LSC_ADVANCED_ORCA lattice 9.0 01-jan-9999 1
CDC69F53494F \
VENDOR_STRING="ispORCA System"
FEATURE LSC_ADVANCED_ORLI10G lattice 9.0 01-jan-9999 1
E961B68558D8 \
VENDOR_STRING="ORLI10G FPSC Design Kit"
FEATURE LSC_ADVANCED_ORSO42G5 lattice 9.0 01-jan-9999 1
7D6997657210 \
VENDOR_STRING="ORSO42G5 FPSC Design Kit"
FEATURE LSC_ADVANCED_ORSO82G5 lattice 9.0 01-jan-9999 1
55ADAB4D2EBC \
VENDOR_STRING="ORSO82G5 FPSC Design Kit"
FEATURE LSC_ADVANCED_ORT8850 lattice 9.0 01-jan-9999 1
979DD6A73EB6 \
VENDOR_STRING="ORT8850 FPSC Design Kit"
FEATURE LSC_ADVANCED_PLUS lattice 8.0 01-jan-9999 1
7189753BE7DC \
VENDOR_STRING="ispLEVER Advanced Plus"
FEATURE LSC_CLASSIC lattice 10.0 01-jan-9999 1 F4A166F5097A \
VENDOR_STRING=LSC_CLASSIC
FEATURE LSC_SYNPLIFY lattice 8.0 01-jan-9999 1 68ED4797009A \
VENDOR_STRING="ispLEVER System with Synplicity"
FEATURE LSC_WARRANTY lattice 10.0 09-may-2008 1 38054C63F04E \
VENDOR_STRING=LSC_WARRANTY
```

Note

The “\” followed by a carriage return indicates a line continuation.

To edit the license file:

1. Edit the `SERVER` line by replacing *`nodename`* with the host name of the server for which you requested your license.dat file. You may also need to change the PORT NUMBER (7788).
2. Edit the `DAEMON lattice` line by replacing *`daemon_path`* with the path to the lattice daemon, for example:

   ```
   C:\ispTOOLS7_1\ispcpld\bin\ispdsdmn.exe
   ```

3. When you are editing these lines, make sure that they are typed exactly as you received them.

License Server Setup

To set up your license manager as a system service:

1. Copy the license file (license.dat) to <*install_path*>\license**license.dat**.
2. Double-click the <*install_path*>\ispcpld\bin**lmtools.exe** file to open the LMTOOLS dialog box.
3. Choose the **Config Services** tab in the LMTOOLS dialog box.
4. Change Service Name to **Lattice FLEXlm Service 1**.
5. Browse and set lmgrd.exe to **<*install_path*>\ispcpld\bin\lmgrd.exe**.
6. Browse and set the license file to **<*install_path*>\license\license.dat**.
7. Browse and set the debug log file to **<*install_path*>\license\lattice.log**.
8. Click **Save Service**.
9. Select the **Start/Stop/Reread** tab.
10. Click **Start Server**.
11. Select the **Config Services** tab.
12. Select **View Log** to view the lattice.log file. Check to see if there are any problems starting the license server. If there are no problems, close the log file.
13. Choose **Start > Programs > Lattice Semiconductor > ispLEVER Project Navigator** to verify license checkout (this will be reflected in the lattice.log file). Close ispLEVER.
14. Choose the **Start/Stop/Reread** tab in the LMTOOLS dialog box.
15. Select **Stop Server**.
16. Select the **Config Services** tab. Select **Use Services** and **Start Server at Power-Up**.

17. Click **Save Service**, and then select **File > Exit.**
18. Restart the Windows server system.
19. Start the ispLEVER software again to verify that the license server is running as a service.

Floating License Configuration

In this configuration, the ispLEVER software is installed on your Windows license server (for license manager utilities and daemons) and on each client that uses the ispLEVER software. This configuration gives the best run-time performance.

Install the ispLEVER software on the license server first. After you receive your floating license and ensure that the license manager is running, install the ispLEVER software locally on each client that will use the floating license.

Set your system variable LM_LICENSE_FILE to point to the <*install_path*>\license\license.dat file on the license server.

Troubleshooting

If you encounter problems with your license, refer to Table 7 for common FLEXlm error messages and possible causes or solutions.

Table 7: FLEXlm Error Messages

FLEXlm Error Message	Possible Causes or Solutions
Invalid parameter [-42, 252]	◆ The LM_LICENSE_FILE variable has not been set properly. ◆ The license file is invalid. ◆ An invalid feature is specified in the license file.
Invalid parameter [-42, 252:10061] Winsock error code	◆ You have a floating license, and the license daemon has not been started at the Windows NT server. ◆ The network connection between the server and the client has not been established.
Invalid parameter [-12, 122] Invalid returned data from license server	The node name of the Windows NT server does not match the one in your floating license file.

Table 7: FLEXlm Error Messages

FLEXlm Error Message	Possible Causes or Solutions
Invalid parameter [-5, 222] No such feature exists	The feature could not be found in the license file.
! License Check Failed	You either have a node-locked license or you do not have a license file. Contact Lattice Semiconductor Technical Support for a valid floating license file.

If you encounter any software-related problems, review the following common troubleshooting scenarios before calling Lattice Semiconductor Technical Support:

- Ensure that your environment variable settings are set correctly, including the **TEMP** user variable. For Windows XP, Windows 2000, and 32-bit Windows Vista, your system should contain the following environment settings:

  ```
  SET LSC_INI_PATH=<boot_drive>:\LSC_ENV
  SET LM_LICENSE_FILE=<install_path>\license\license.dat
  ```

  You can verify these settings by choosing **Start > Settings > Control Panel > System**. Select the **Advanced** tab and the **Environment Variables** section.

- Make sure that your system video display is set to a screen resolution of 1024 x 768 or more and that your video display is set to use 256 or more screen colors.

If the ispLEVER software still does not run after you have installed your new license file and confirmed that your environment variables are correct, gather the following items:

- A screen capture showing the error message
- A text file that contains a listing of the environment setup for your PC. From an MS-DOS prompt window, issue the **set > env.txt** command.
- Your license.dat file

Combine these items in a zip file and e-mail it to techsupport@latticesemi.com. Include an explanation of the problem.

Aldec Dongle Driver Installation

During ispLEVER installation, you can select **Floating License via USB Key** to install the Aldec dongle driver, as shown in “Selecting a License Option for Active-HDL” on page 13. However, you can also install the Aldec dongle driver separately. For more information on the separate installation, refer to <*isplever_install_path*>\active-hdl\Drivers\install.txt. The drivers and additional information are located at <*isplever_install_path*>\active-hdl\Drivers\HASP.

Installing ispLEVER PRO

The ispLEVER PRO is a separate product that includes both ispLEVER and a suite of intellectual property cores. The following installation instructions apply only to users of the ispLEVER PRO software.

To install ispLEVER PRO, first install the ispLEVER software using the instructions in the “Installation Procedure” on page 6. Afterwards, install the following IP cores from the ispLEVER PRO IP Value Suite CD:

- DDR SDRAM Controller – Pipelined
- DDR2 SDRAM Controller – Pipelined
- FFT Compiler
- FIR Filter Generator
- Tri-Speed Ethernet MAC

The devices supported for each of the ispLEVER PRO IP cores are shown in Table 8

Table 8: IP Cores Installed by ispLEVER PRO

IP Name	LatticeSC/M	LatticeECP2/M	LatticeECP/EC	LatticeXP	LatticeXP2
DDR SDRAM Controller – Pipelined	✓	✓	✓	✓	✓
DDR2 SDRAM Controller – Pipelined	✓	✓			✓
FFT Compiler		✓	✓		✓

Table 8: IP Cores Installed by ispLEVER PRO (Continued)

IP Name	LatticeSC/M	LatticeECP2/M	LatticeECP/EC	LatticeXP	LatticeXP2
FIR Filter Generator		✓	✓		✓
Triple Speed Ethernet MAC	✓	✓	✓	✓	✓

All other supported IP cores are available from the ispLEVER IP Installation CD that is included with ispLEVER 7.1. They are also available for installation using the IP Express tool. See “Updating IP Files with IPexpress” on page 26.

You must close the Project Navigator before installing the ispLEVER PRO IP.

To install the ispLEVER PRO IP from the CD:

1. Insert the ispLEVER PRO IP Value Suite CD into the drive.

   The ispLeverCORE IP Setup window automatically appears.

   You can also run <*CD-ROM drive*>:\setup.exe to start the installation program manually.
2. Click **Next** to open the License Agreement window.
3. Read the License Agreement. If you agree with the terms, click **Yes** to open the Choose Destination Location window.
4. The default destination folder is C:\ispLEVERCore. Click **Browse** to change the drive or destination folder.
5. Click **Next** to open the Product Options window.
6. Select the IP cores that you want to install by selecting or clearing each one on the list.
7. Click **Next** to begin the installation.

   After they are installed, the IP cores are accessible from IPexpress.

Licensing ispLEVER PRO

The ispLEVER PRO requires a license from Lattice Semiconductor. The license is good for one year and can be renewed through an annual subscription.

To license the ispLEVER PRO, both the software and IP, follow the instructions in the “Licensing for the ispLEVER Software” on page 16.

Updating IP Files with IPexpress

You can always check for updates to Lattice IP cores using the IPexpress tool. You can then use IPexpress to download the latest IP files from the Lattice web site.

To download updated IP files using IPexpress:

1. In the Main Window of IPexpress, click the IP Server tab, located at the lower left portion of the window.
2. Expand the Lattice IPs Server tree in the left pane. IPexpress connects to the Lattice web site.
3. Highlight the IP that you want to download. If you want to view information on the IP before downloading, right-click and choose **View <*IP_name*> Document** from the pop-up menu.
4. Right-click the IP and choose **Download <*IP_name*>** from the pop-up menu, or click the **Download IP** button from the toolbar.
5. In the Save dialog box, specify the location where you want the IP to reside on your computer.
6. Click **Save**.

   The selected IP is downloaded to your computer.

Installing ispLEVER IP

All Lattice IP cores are available for evaluation from the ispLEVER IP Installation CD included with the ispLEVER 7.1 shipment. There are two methods for installing the Lattice IP cores:

- You can install new IP cores directly using the IPexpress tool included with ispLEVER. See “Updating IP Files with IPexpress” on page 26 for detailed instructions.
- You can install the Lattice IP cores using the ispLEVER IP Installation CD that is included with the ispLEVER 7.1 shipment.

Note

The ispLEVER IP Installation CD is included only in the Windows version.

For detailed descriptions of the Lattice IP cores, visit the Intellectual Property section of the Lattice website.

You must close the Project Navigator before installing the IP cores.

To install the Lattice IP from the CD:

1. Insert the ispLEVER IP Installation CD into the drive.

   The ispLeverCORE IP Setup window automatically appears.

   You can also run <*CD-ROM drive*>:\setup.exe to start the installation program manually.
2. Read the License Agreement. If you agree with the terms, click **Yes** to open the Choose Destination Location window.
3. The default destination folder is C:\ispLEVERCore. Click **Browse** to change the drive or destination folder.
4. Click **Next** to open the Product Options window.
5. Select from the IP Suites listed by selecting or clearing each one on the list. To select individual IP cores within the suite, click the **Change** button, and then select the IP you want to install.

   Note

   Clear the Value Suite selection if you have already installed the ispLEVER PRO IP.

6. Click **Next** to begin the installation.

   After they are installed, the IP cores are accessible from IPexpress.

Running Multiple Versions

The ispLEVER software enables you to run FPGA designs on platforms on which 7.1 and previous versions are installed.

For versions of ispLEVER software before 3.0, the %FOUNDRY% and %FPSC% environment variables must be defined specifically for that release, and %PATH% must contain an entry pointing to %FOUNDRY%/bin/nt. These variables, which were set up automatically by the previous release's installer, must not be removed if you wish to continue using the older ispLEVER release.

Versions 3.0 and newer of the FPGA tools no longer require these variables and are not affected by installations of previous versions of ispLEVER software.

If you want to use command-line versions of the FPGA tools, you can do the following:

- Run them in the ispLEVER console window as is.
- Include in PATH an entry pointing to the following directory, and then run the program in a window outside of the Project Navigator:

  `<installation_directory>\ispfpga\bin\nt`

Removing Old ispLeverDSP Blocksets

If you have multiple versions of ispLEVER software installed, you will have multiple versions of ispLeverDSP blocksets. The ispLeverDSP installer does not remove the paths of old ispLeverDSP versions from the MATLAB/Simulink software, so old blocksets might be used instead of the new blocksets. Follow these steps to manually remove paths of old ispLeverDSP from MATLAB/Simulink:

1. In MATLAB desktop, choose **File** > **Set Path**.

   The Set Path dialog box appears.

2. In MATLAB search path list, remove old ispLeverDSP paths. Save and close the dialog box.

Running ispLEVER from a Remote Client

You can install the ispLEVER software on a server and then set up a remote client to run the software across your network. A remote client setup program, remotecl.exe, can properly set up and prepare the client to run the ispLEVER software remotely. This feature works for any number of users, all ispLEVER software tools, and all supported devices.

Before You Start

Before you start installation, be aware of the following items:

- Microsoft Windows 2000, Windows XP, or 32-bit Windows Vista must be running on both PCs.
- Administrator privilege is required to install software and to share folders.
- Before installation, you should have all requested information. You will need to supply the following items:
  - Your name
  - Company name

- Address, city, state, zip/postal code, country
- Phone number and fax number
- Platform (Windows XP Professional, Windows 2000 Professional SP2 or later, or 32-bit Windows Vista)
- Software serial number (for multi-seat licenses, include all serial numbers)

Installation Procedure

To start the installation and run ispLEVER remotely, follow the procedures in this section.

To install ispLEVER software on the server:

1. On the server, install the ispLEVER 7.1 software in the designated folder—for example, C:\LATTICE_SW\ISPTOOLS7_1. Specify a proper program group, such as “ispTOOLS Server.”
2. Make sure that the ispLEVER software on the server runs correctly.
3. Share the installation folder on the network—for example, C:\LATTICE_SW\ISPTOOLS7_1.

To set up the remote client to run ispLEVER remotely:

1. Map the shared network folder on the server to a local drive on the client, as in this example:

   ```
   map \\<server_name>\LATTICE_SW to drive M:
   ```

2. Go to ispLEVER on the new drive at M:\ispTOOLS7_1 and double-click the remotecl.exe remote client setup program. This program installs examples and sets environment variables on the client machine.
3. Specify the location of the server software—for example, M:\ispTOOLS7_1. The client setup program will issue an error message if it does not find a key program in the specified location.
4. The remote client setup prompts you for the location on the client machine for installing the client files. Specify a proper location—for example, C:\isptools7_1_client. Make sure that no blank spaces are used in the program path.
5. Specify a proper program group, such as “ispTOOLS Client.”
6. When the remote client installation is finished, set the LM_LICENSE_FILE environment variable to be the location of your license file. When you use a client-server setup, it is recommended that you use a floating license.

Then set LM_LICENSE_FILE=7788@*nodename*. Confirm that it works by selecting and compiling one of the examples now on the client.

Minimal Installation Option

The remote client setup program, remotecl.exe, also allows the following command-line options:

```
remotecl.exe -v min:dir:<installed_directory path>
```

Here is an example:

```
remotecl.exe -v min:dir:m:\isptools
```

where m: is the server drive that contains the installed ispLEVER.

This command sets up the client remote system to have the minimum configuration for the ispLEVER software.

1. Create DEXP7_1.ini in the remote client Windows directory, and update the information and directory paths.
2. Create the LSC_INI_PATH environment variable in the remote client system. Set this variable to C:\lsc_env.
3. Create lsc_7_1.ini in the remote client directory defined by the LSC_INI_PATH environment variable and update the information and directory paths in this .ini file.

After this option is specified, the remote installation will not display any GUI dialog boxes and will run the installation in batch mode.

Installing PAC-Designer Software

In addition to the ispLEVER software, you have the option of installing the PAC-Designer software. The software includes all the tools you need for designing and downloading Lattice Semiconductor's ispPAC devices.

To install PAC-Designer on your PC:

1. Run the **setup.exe** file as you would for ispLEVER installation.
2. In the Lattice Semiconductor ispLEVER Setup window, click **Install PAC-Designer**. A setup wizard guides you through the installation.

3. Obtain a valid license from the Lattice Semiconductor Web site (www.latticesemi.com/license). Follow the instructions on the licensing page of the Web site to obtain a valid license.dat file.
4. Restart your computer before running the PAC-Designer software.
5. Configure the JTAG (programming) interface. The ispPAC family uses a JTAG serial interface for programming, uploading, and verification. Set up PAC-Designer with the port address through the JTAG Options dialog box.

Installing Adobe Acrobat Reader

Many of the documents in the Lattice Semiconductor ispLEVER documentation set require the Adobe Acrobat Reader for viewing and printing. If you do not have Acrobat Reader, version 6.0 or later, it is recommended that you install it to ensure proper viewing and printing of the documents.

To install Acrobat Reader 6.0 on your PC:

1. Run the setup.exe as you would for ispLEVER installation.
2. In the Lattice Semiconductor ispLEVER Setup window, click **Install Adobe Reader 6.0**.
3. In the Acrobat Reader 6.0 Setup window, click **Next**. You can click **Cancel** to exit the setup in the Exit Setup dialog box.
4. In the Software License Agreement window, click **Accept**.
5. In the Choose Destination Location dialog box, either accept the default folder location or use the **Browse** button to install in the folder of your choice.
6. Click **Next**.

   Acrobat Reader is installed in the location that you specified.
7. Click **Finish** to exit the wizard.

With Acrobat Reader installed, you can open PDF documents by browsing through the following ispLEVER documentation directories:

- <*install_path*>\ispcpld\manuals\
- <*install_path*>\ispcpld\Tutorial\

Updating the ispLEVER Software

After you have registered and licensed your installation, check the Lattice Semiconductor Web site for new software updates, device support, and enhancements. Make sure that you have the latest software by checking for updates regularly.

To activate ispUPDATE:

1. Choose **Start > Programs > Lattice Semiconductor > ispUPDATE**.

   The main ispUPDATE window appears, as shown in Figure 7.

Figure 7: ispUPDATE Window

2. In the main window, click **Setting**.

   The Internet Connection Setting dialog box now appears, as shown in Figure 8.

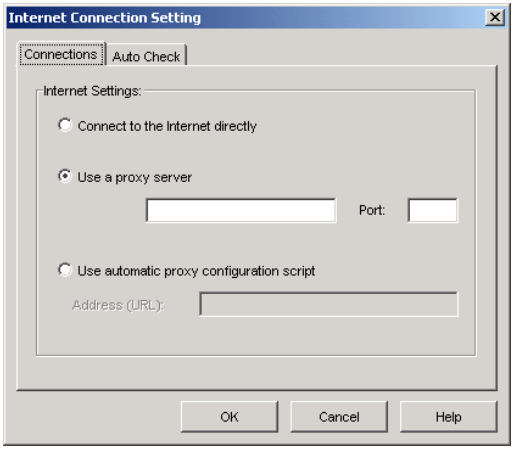
Changing the Connection Settings

To enable automatic checking, you must indicate how your computer accesses the Internet.

To change the Internet connection settings:

1. Select the **Connections** tab of the Internet Connection Setting dialog box, shown in Figure 8.

Figure 8: Connections Tab



2. Select one of the three Internet settings provided:
   - Connect to the Internet directly

     Select this option if you do not have to go through a proxy server.
   - Use a proxy server

     Select this option if you must go through a proxy server before connecting to the Internet. The proxy server prevents outsiders from breaking into your organization's private network. Ask your system administrator for the URL address and port assignment. This option is turned on by default.
   - Use automatic proxy configuration script

     Select this option if you have an automatic proxy configuration file. Ask your system administrator for the URL address and type it in the text box provided.

Changing the Automatic Checking Settings

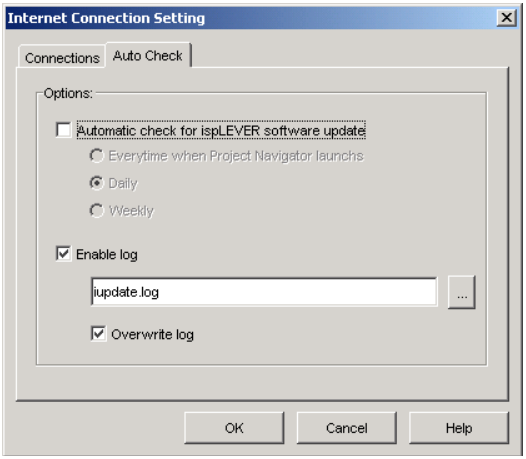
The Lattice Semiconductor software can automatically check for updates and activate a window showing the ispLEVER updates that are available.

If you want to turn off or change the automatic update checking, change the settings in ispUPDATE as follows:

1. Select the **Auto Check** tab of the Internet Connection Setting dialog box.
2. If you want to enable the automatic checking for software updates, make sure that the **Automatic check for ispLEVER software update** option is turned on. It is turned on by default.

   If you want to disable the automatic checking, turn off the **Automatic check for ispLEVER software update** option, as shown in Figure 9.

Figure 9: Disabling Automatic Checking in Auto Check Tab



3. If you turned on the **Automatic check for ispLEVER software update** option, indicate the frequency with which you want the checking to be performed: every time that the Project Navigator is started, daily, or weekly. A daily check is the default.
4. Select **Enable log** to keep a record of the ispLEVER update checking. When you select this option, a log is kept even if automatic checking is not implemented. This option is selected by default.
   - If desired, rename the log file and select a different directory for the log file.

- Select **Overwrite log** to save only the last log. This option is selected by default. Clear this selection to append each log to the previous one.

5. Click **OK**.

Installing a Recommended Service Pack

When you use the Auto Check feature, ispUPDATE notifies you whenever a new service pack becomes available. You receive notification when you open the Project Navigator.

To install the recommended service pack:

Do one of the following:

- Click **Upgrade Now** to immediately install the service pack.
- Click **Download** to save the service pack to a directory and install it later.
- Click **Upgrade Later** to do nothing now. You can wait for the next automatic check or update manually at a convenient time.

To manually check for and install a service pack:

1. Close all ispLEVER tools.
2. Choose **Start > Programs > Lattice Semiconductor > ispUPDATE**.
3. In the dialog box, click **Update**.

   The ispUPDATE software goes online to check for service packs. If one is available, the Select ispLEVER Pack Version dialog box opens.
4. In the top portion of the dialog box, choose the desired installed version of ispLEVER and a service pack.
5. Click **Update**.

To install a downloaded service pack:

1. Close all ispLEVER tools.
2. Go to the location where you saved the service pack.
3. Double-click the service pack file and follow the on-screen instructions.

When All Else Fails

If the ispLEVER software still does not run after you have installed your new license file and confirmed that your environment variables are correct, gather the following items:

- A screen capture showing the error message
- A text file that contains a listing of the environment setup for your PC. From an MS-DOS Prompt window, issue the **set > env.txt** command.
- Your license.dat file

Put these items into a zip file and e-mail it to techsupport@latticesemi.com, including an explanation of the problem.

2

Installing LatticeMico32 Development Tools

This chapter explains how to install the LatticeMico32 Development Tools.

You can install the LatticeMico32 Development Tools as a part of the ispLEVER software or as stand-alone software if ispLEVER is not installed.

- If the 7.1 version of ispLEVER is installed on your computer, the LatticeMico32 Development Tools will be installed by default in a folder called micosystem, which resides in the folder in which ispLEVER was installed. For example, the LatticeMico32 Development Tools could be installed in the <*install_drive*>:\ispTOOLS7_1\micosystem directory.
- If the 7.1 version of ispLEVER is not installed on your computer, the LatticeMico32 Development Tools will be installed by default in a folder called micosystem, which resides in the LatticeMico32 folder. For example, the LatticeMico32 Development Tools could be installed in the <*install_drive*>:\LatticeMico32\micosystem directory.

During installation, you are prompted to select the installation path for the LatticeMico32 Development Tools.

Installing LatticeMico32 with ispLEVER

To take advantage of the full features and functionality of the LatticeMico32 Development Tools, Lattice Semiconductor recommends that you install the 7.1 version of ispLEVER before installing the LatticeMico32 Development Tools. See “Installing ispLEVER Tools” on page 1 for detailed instructions on installing ispLEVER. This section describes how to install the LatticeMico32 Development Tools on top of the ispLEVER software. These procedures assume that you have already installed ispLEVER 7.1.

If you do not have the current version of ispLEVER installed, you can install the LatticeMico32 Development Tools as stand-alone tools. For information on this procedure, see “Installing LatticeMico32 as Stand-Alone Software” on page 48.

Whether you install LatticeMico32 Development Tools with ispLEVER or as stand-alone tools, you can use either of two methods to install them:

- You can install them from a CD.
- You can download them from the Lattice Semiconductor Web site at http://www.latticesemi.com/mico32.

The following sections describe these two methods.

Installing LatticeMico32 from a CD

Installation of the LatticeMico32 Development Tools starts automatically when you insert the CD into the drive. However, if it does not start automatically, you can start it manually.

By default, the LatticeMico32 Development Tools are installed in a folder called micosystem in the same folder in which you installed ispLEVER.

Installing LatticeMico32 Automatically

This section explains how to install the LatticeMico32 Development Tools automatically from the CD.

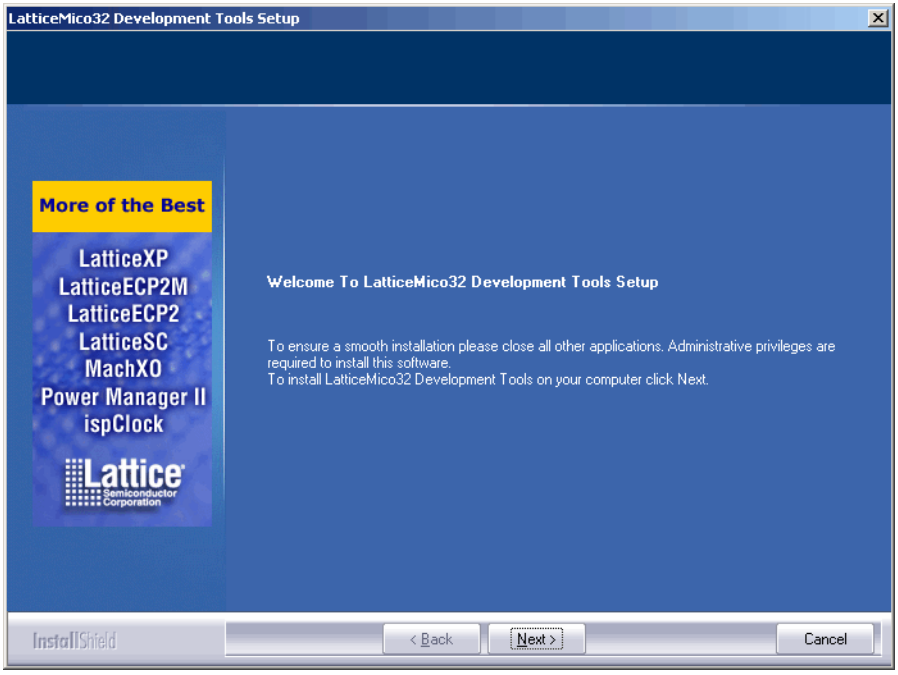
To install the LatticeMico32 Development Tools automatically from a CD:

1. Insert the LatticeMico32 System CD into the CD-ROM drive.

   InstallShield starts automatically. If it does not start, see “Installing LatticeMico32 Manually” on page 46 for instructions.

The LatticeMico32 Development Tools Setup dialog box automatically appears, as shown in Figure 10.

Figure 10: LatticeMico32 Development Tools Setup Dialog Box

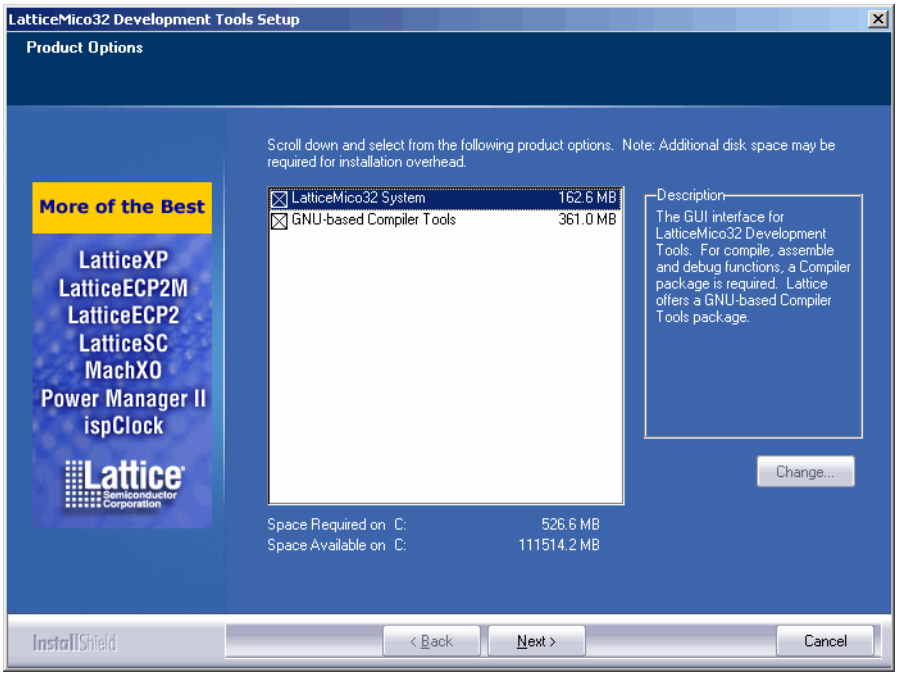


2. Click **Next**.
3. For full functionality, be sure that both the **LatticeMico32 System** and the **GNU-based Compiler Tools** options are selected, as shown in Figure 11, and then click **Next**.

Note

You can install LatticeMico32 System and the GNU-based Compiler Tools separately by checking only one box, but Lattice Semiconductor recommends that you accept the defaults and install both tools at the same time.

Figure 11: Selecting the Product Options



When you select the LatticeMico32 System option, the LatticeMico32 Development Tools do the following:

- Install the Eclipse graphical user interfaces, which are components, or plug-ins, of the Eclipse development environment on which the LatticeMico32 System is based.
- Enable Mico System Builder (MSB) to access all ispLEVER executables and functions.
- Add the LatticeMico32 System icon to the ispLEVER Windows Accessories Start folder.
- Add the LatticeMico32 System icon to the ispLEVER Project Navigator.
- Add the LATTICEMICO32SYSTEM environment variable.

If LatticeMico32 System is not installed, you cannot use the LatticeMico32 System graphical user interface. You can only use the LatticeMico32 Development Tools through the command line.

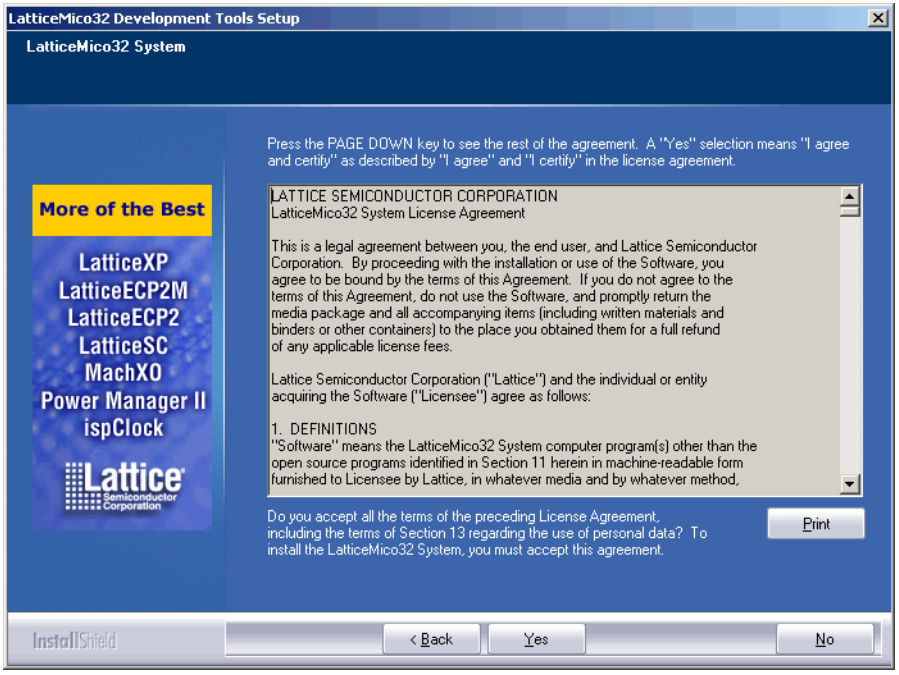
When you select the GNU-based Compiler Tools option, the LatticeMico32 Development Tools do the following:

- Install gtools (C++/C tool chain) and cygwin.
- Add the LatticeMico32 System SDK shell icon to the ispLEVER Windows Accessories Start folder.
- Enable the command-line mode for building C/C++ source codes.
- Add the LATTICEGNUTOOLS environment variable.

If the GNU-based compiler is not installed, the C++/C and debug graphical user interfaces will not function correctly.

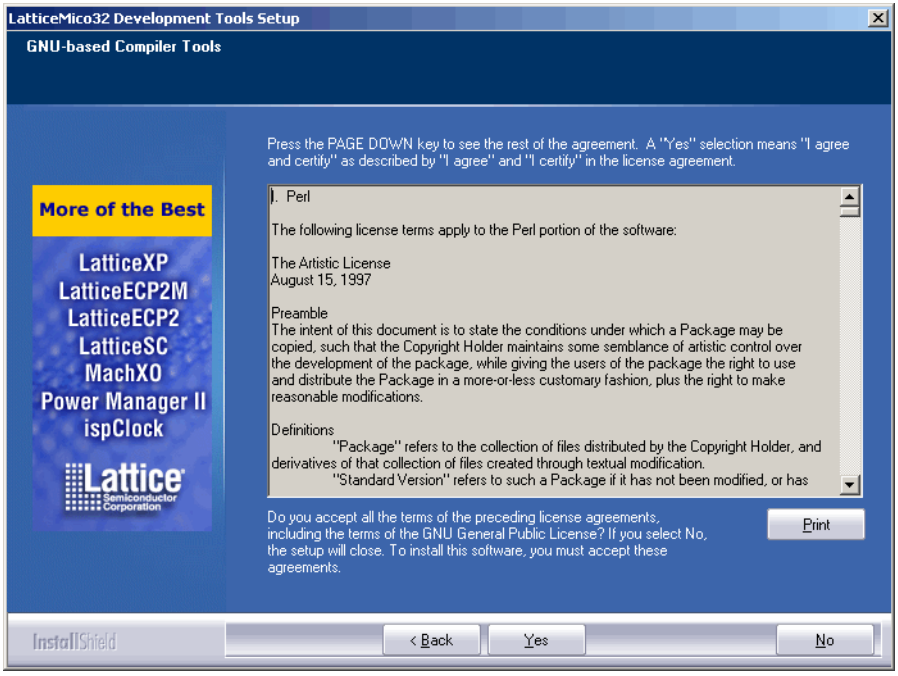
4. Click **Yes** to accept the terms of the licensing agreement for LatticeMico32 System, shown in Figure 12.

Figure 12: Accepting the License for LatticeMico32 System



5. Click **Yes** to accept the terms of the licensing agreement for the GNU-Based Compiler Tools, shown in Figure 13.

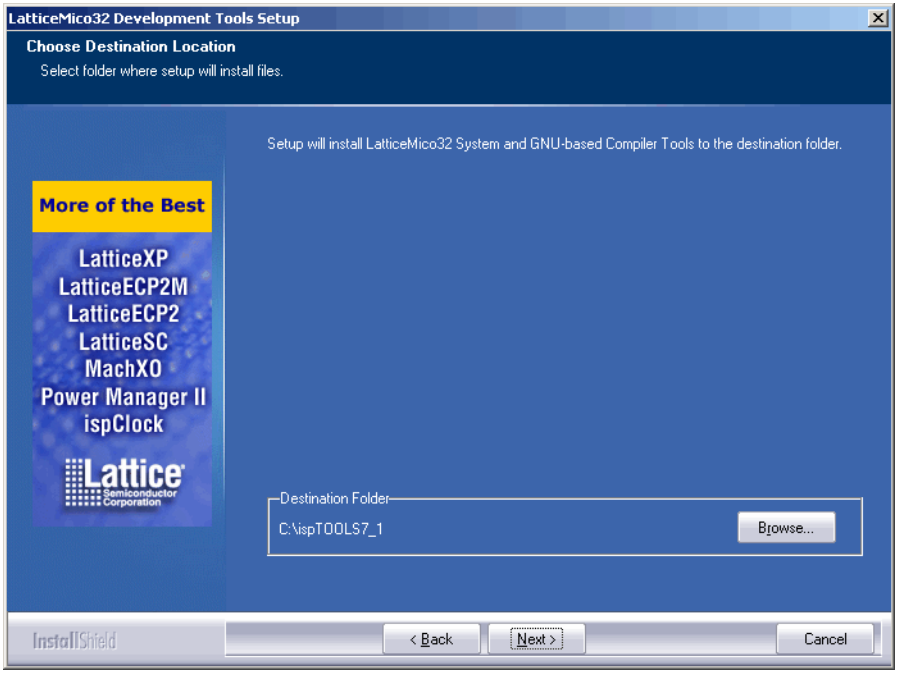
Figure 13: Accepting the License for the GNU-Based Compiler Tools



The Choose Destination Location part of the LatticeMico32 Development Tools Setup dialog box now appears, as shown in Figure 14, so that you can choose the folder in which the LatticeMico32 Development Tools will be installed. If the current version of ispLEVER is installed, the default destination folder will be the same folder in which ispLEVER was installed. If the current version of ispLEVER is not installed or you select a destination folder other than the default, the installation will be treated as a stand-alone installation. The path of the destination folder will then be the path of the previous installation of the LatticeMico32 Development Tools or the GNU-Based Compiler Tools. If there was no previous installation of either, the default destination folder will be the C:\LatticeMico32 folder.

6. To accept the default destination folder, click **Next**. Otherwise, click **Browse** to change the drive or destination folder, and then click **OK** and click **Next**.

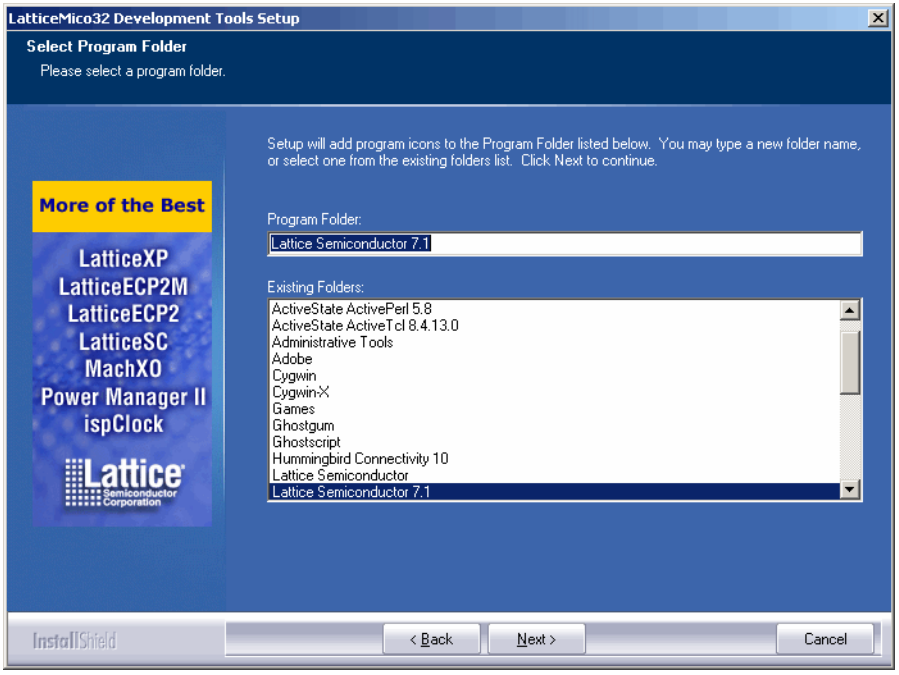
Figure 14: Selecting the Destination Directory



7. In the Select Program Folder part of the dialog box, shown in Figure 15, select or type the name of the default program folder, which is the folder that contains the Lattice Semiconductor programs that you can choose

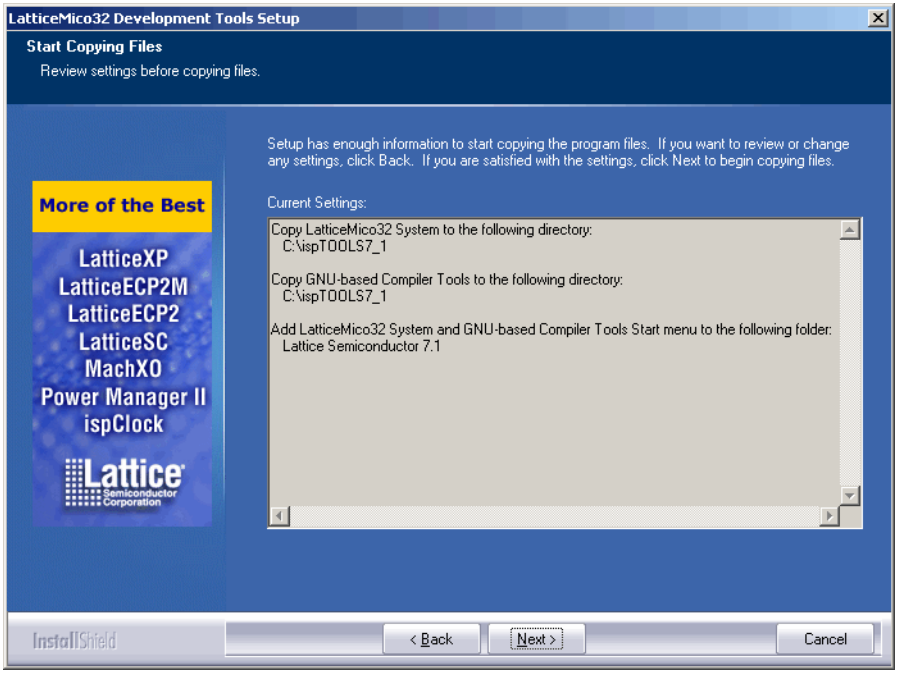
through the Start menu. If ispLEVER is installed, the default folder is the same as that for ispLEVER. Click **Next**.

Figure 15: Selecting the Program Folder



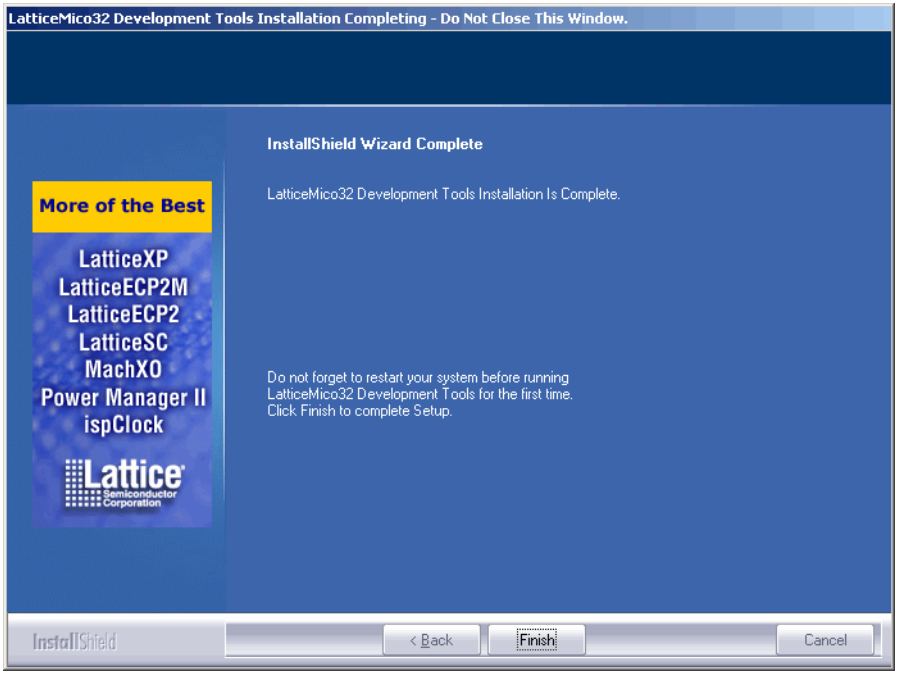
8. In the Start Copying Files part of the LatticeMico32 Development Tools Setup dialog box, shown in Figure 16, click **Next**.

Figure 16: Starting the Installation



The installation begins. When it is finished, the LatticeMico32 Development Tools Installation Completing dialog box appears, as shown in Figure 17.

Figure 17: LatticeMico32 Development Tools Installation Completing Dialog Box



9. Click **Finish**.
10. Because the installation process added new environment variables, reboot your computer.

Installing LatticeMico32 Manually

If the installer fails to start when you insert the CD into the CD-ROM drive, you can start it manually.

To install the LatticeMico32 Development Tools manually from a CD:

1. Insert the CD into the CD-ROM drive.
2. Do one of the following:
   - Double-click **setup.exe**.

- From the Start menu, choose **Run**. In the Run dialog box, type or select **cmd**. In the command-line window, type ***disk_drive*:\setup.exe**, where *disk_drive* is the name of the CD-ROM drive in which you inserted the CD.

InstallShield now starts, and you see the screen shown in Figure 10. To install the LatticeMico32 Development Tools when ispLEVER is installed, follow the steps given in “Installing LatticeMico32 Automatically” on page 38. To install the LatticeMico32 Development Tools as stand-alone software, follow the steps given in “Installing LatticeMico32 Automatically” on page 48.

Installing LatticeMico32 from the Web Site

Follow the instructions in this section to install the LatticeMico32 Development Tools from the Lattice Semiconductor Web site.

To install the LatticeMico32 Development Tools from the Lattice Semiconductor Web site:

1. Go to the LatticeMico32 Web page at the following URL:

   http://www.latticesemi.com/mico32

2. Download the LatticeMico32_<*version_number*>.exe executable.
3. Save the executable in a directory.
4. Double-click the executable to begin the installation.
5. Follow the procedure outlined in “Installing LatticeMico32 Automatically” on page 38 after step 1.

Installing LatticeMico32 as Stand-Alone Software

If you do not have the current version of ispLEVER installed, you can still install the LatticeMico32 Development Tools, but their functionality will be curtailed. Mico System Builder (MSB) will not be fully functional. You can create platforms, but the platform generator will not be fully functional because of missing ispLEVER executables and functions. The design-rule checker will also not be fully functional. However, the graphical user interfaces of the C/C++ Software Project Environment (C/C++ SPE) and the debug environment will be fully functional.

Installing LatticeMico32 from a CD

The procedure for installing the LatticeMico32 Development Tools as stand-alone tools from a CD is similar to the procedure for installing the LatticeMico32 Development Tools from a CD on top of ispLEVER, but the content of some of the dialog boxes is different. You can start the procedure automatically or manually.

By default, the LatticeMico32 Development Tools are installed in the C:\LatticeMico32\micosystem folder when you install them as stand-alone tools.

Installing LatticeMico32 Automatically

This section explains how to install the LatticeMico32 Development Tools automatically from the CD.

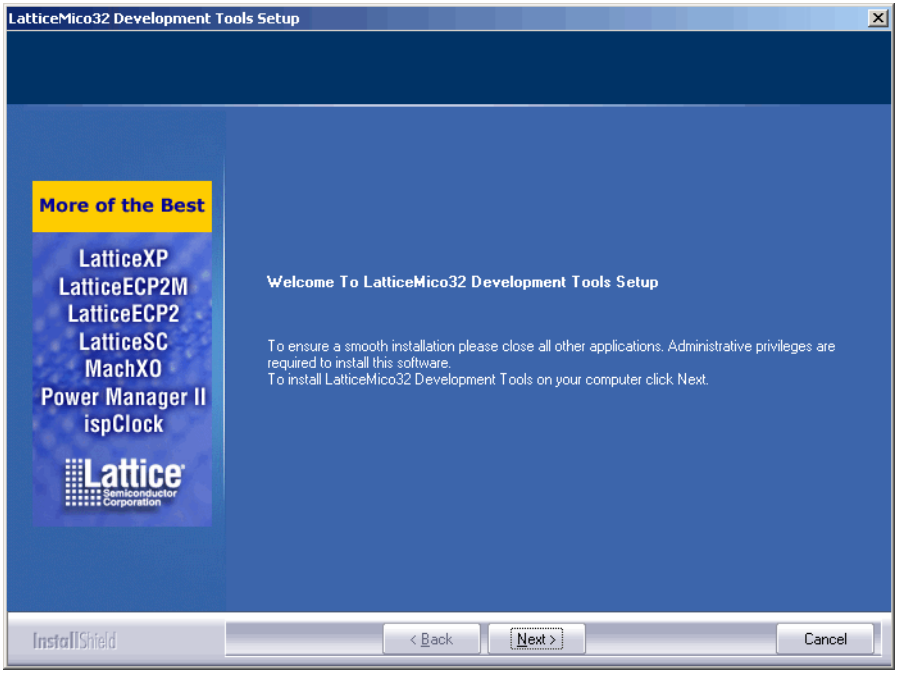
To install the LatticeMico32 Development Tools automatically from a CD:

1. Insert the CD into the CD-ROM drive.

   InstallShield starts automatically. If it does not start, see “Installing LatticeMico32 Manually” on page 46 for instructions.

The LatticeMico32 Development Tools Setup dialog box automatically appears, as shown in Figure 18.

Figure 18: LatticeMico32 Development Tools Setup Dialog Box

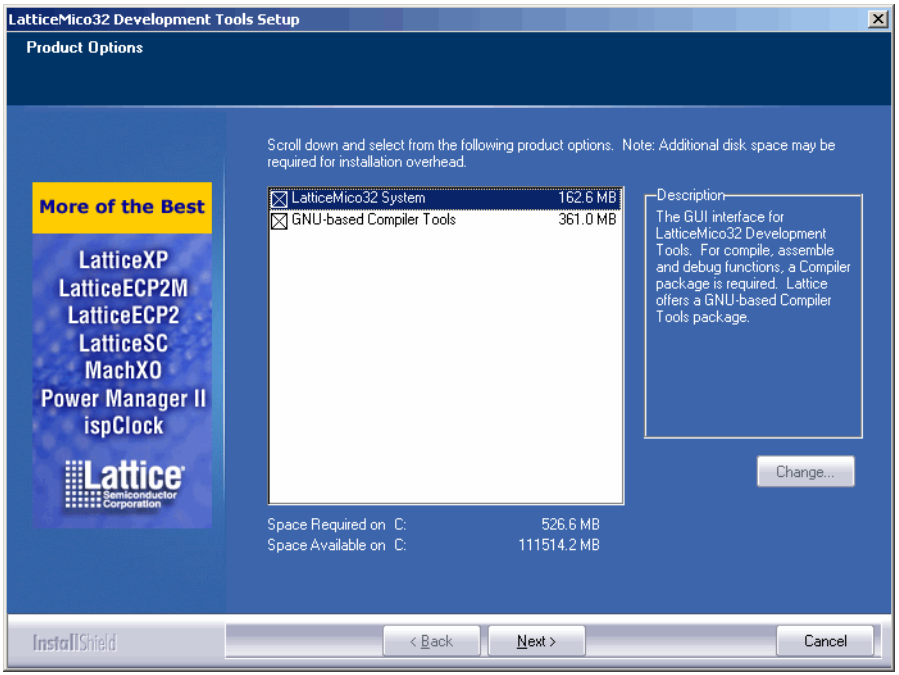


2. Click **Next**.
3. For full functionality, be sure that both the **LatticeMico32 System** and the **GNU-based Compiler Tools** options are selected, as shown in Figure 19, then click **Next**.

Note

You can install LatticeMico32 System and the GNU-based Compiler Tools separately by checking only one box, but Lattice Semiconductor recommends that you accept the defaults and install both tools at the same time.

Figure 19: Selecting the Product Options



When you select the LatticeMico32 System option, the LatticeMico32 Development Tools do the following:

- Install the Eclipse graphical user interfaces, which are components, or plug-ins, of the Eclipse development environment on which the LatticeMico32 System is based.
- Enable Mico System Builder (MSB) to access all ispLEVER executables and functions.
- Add the LatticeMico32 System icon to the ispLEVER Windows Accessories Start folder.
- Add the LatticeMico32 System icon to the ispLEVER Project Navigator.
- Add the LATTICEMICO32SYSTEM environment variable.

If LatticeMico32 System is not installed, you cannot use the LatticeMico32 System graphical user interface. You can only use the LatticeMico32 Development Tools through the command line.

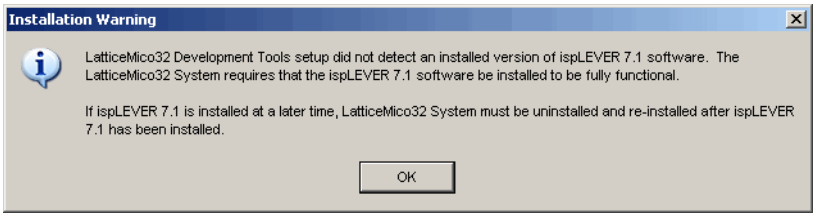
When you select the GNU-based Compiler Tools option, the LatticeMico32 Development Tools do the following:

- Install gtools (C++/C tool chain) and cygwin.
- Add the LatticeMico32 System SDK shell icon to the ispLEVER Windows Accessories Start folder.
- Enable the command-line mode for building C/C++ source codes.
- Add the LATTICEGNUTOOLS environment variable.

If the GNU-based compiler is not installed, the C++/C and debug graphical user interfaces will not function correctly.

The warning shown in Figure 20 now appears.

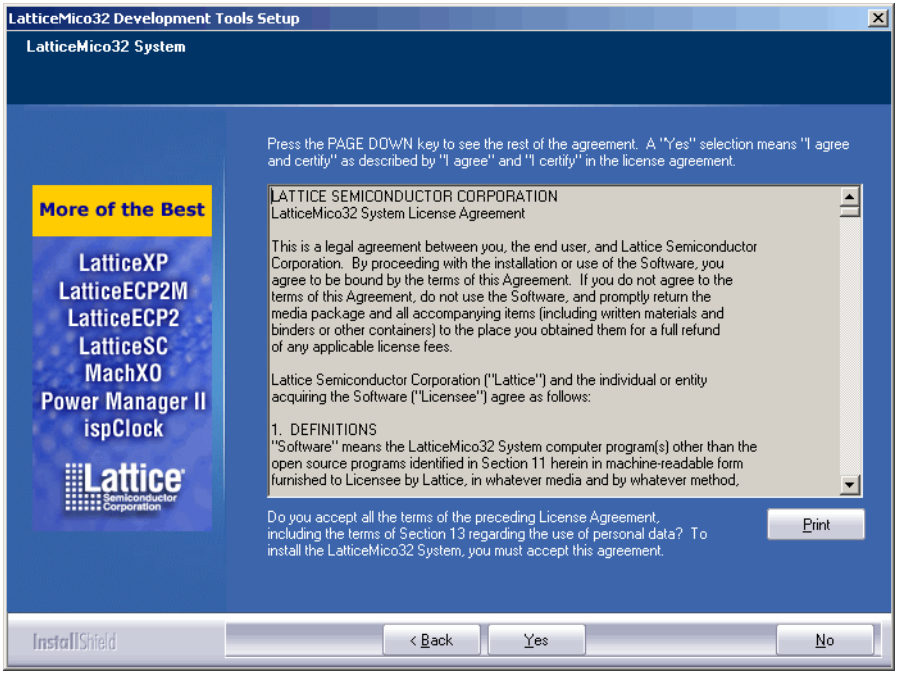
Figure 20: Installation Warning Message Box



4. Click **OK**.

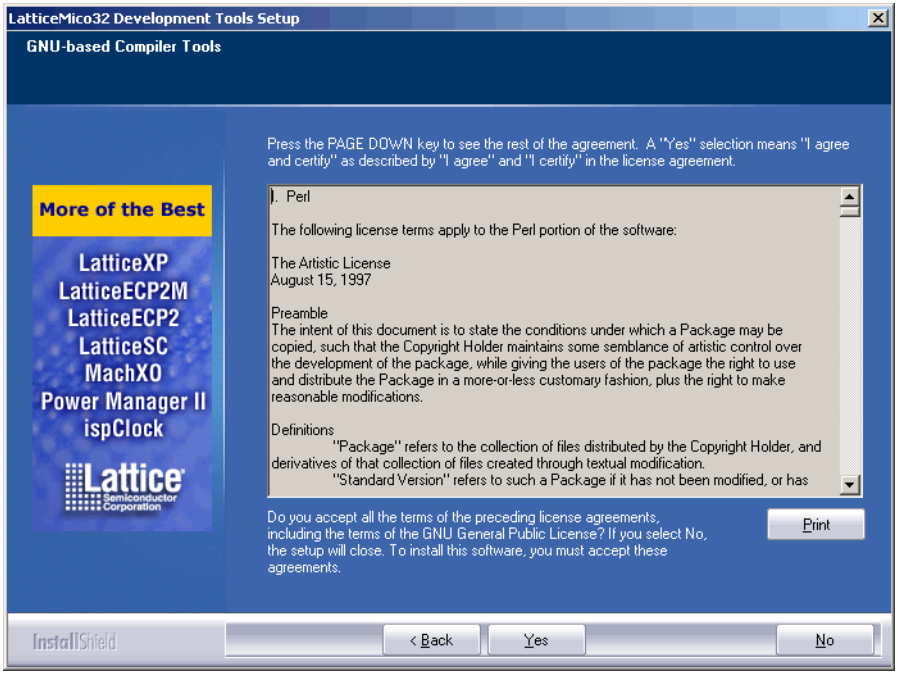
5. Click **Yes** to accept the terms of the licensing agreement for LatticeMico32 System, shown in Figure 21.

Figure 21: Accepting the License for LatticeMico32 System



6. Click **Yes** to accept the terms of the licensing agreement for the GNU-Based Compiler Tools, shown in Figure 22.

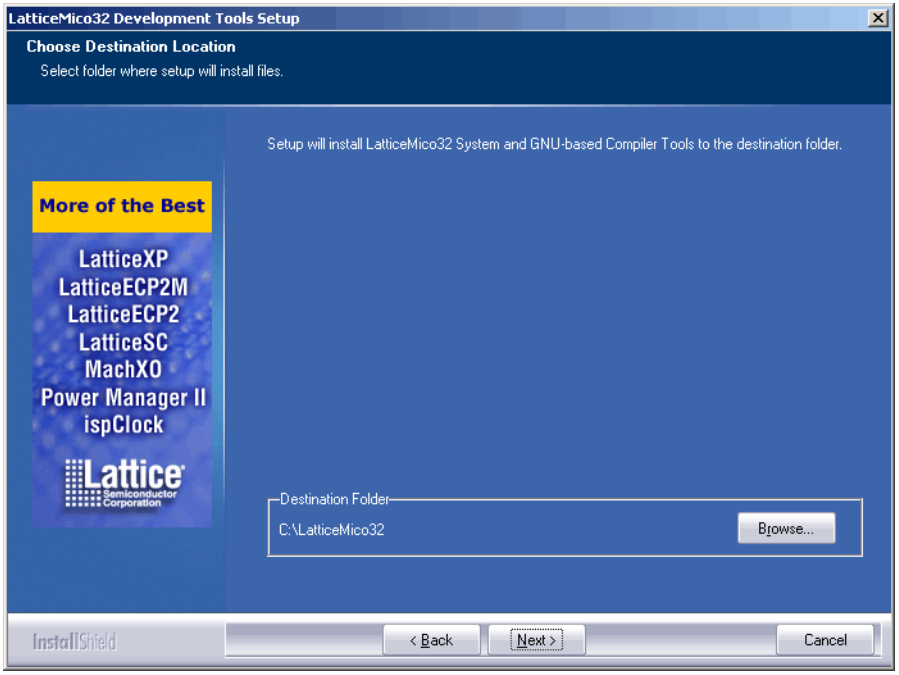
Figure 22: Accepting the License for the GNU-Based Compiler Tools



The Choose Destination Location part of the LatticeMico32 Development Tools Setup dialog box now appears, as shown in Figure 23, so that you can choose the folder in which the LatticeMico32 Development Tools will be installed. If the current version of ispLEVER is installed, the default destination folder will be the same folder in which ispLEVER was installed. If the current version of ispLEVER is not installed or you select a destination folder other than the default, the installation will be treated as a stand-alone installation. The path of the destination folder will then be the path of the previous installation of the LatticeMico32 Development Tools or the GNU-Based Compiler Tools. If there was no previous installation of either, the destination folder will be the C:\LatticeMico32 folder.

7. To accept the default destination folder, click **Next**. Otherwise, click **Browse** to change the drive or destination folder, and then click **OK** and click **Next**.

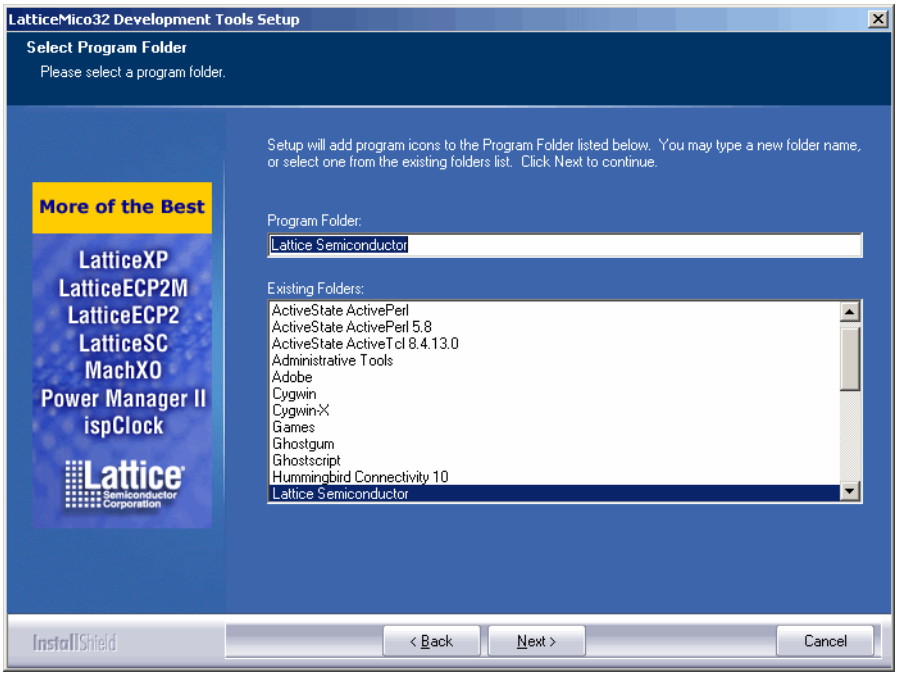
Figure 23: Selecting the Destination Directory



8. In the Select Program Folder part of the dialog box, shown in Figure 24, select or type the name of the default program folder, which is the folder that contains the Lattice Semiconductor programs that you can choose

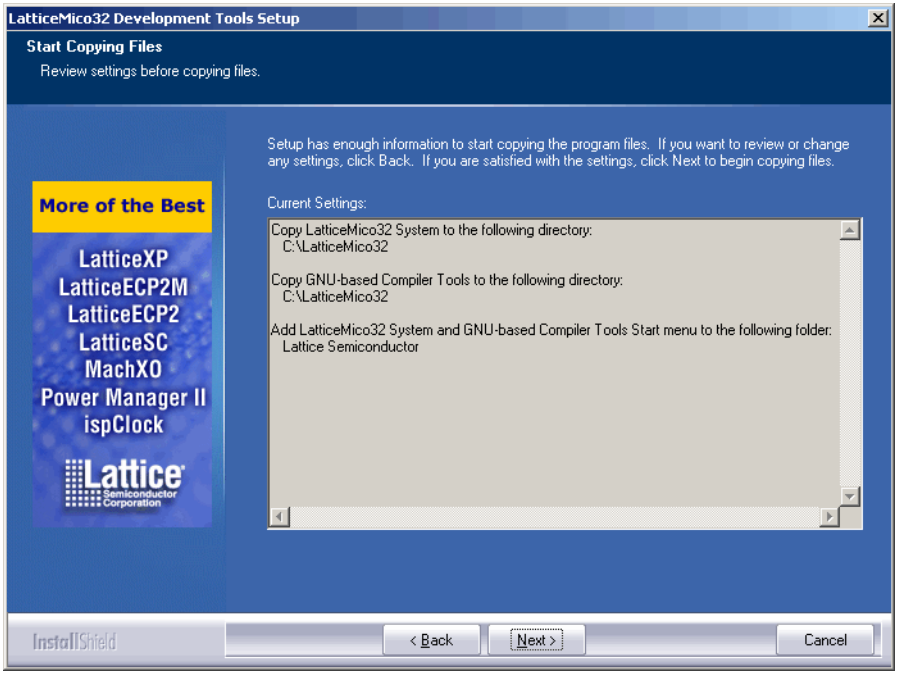
through the Start menu. If ispLEVER is installed, the default folder is the same as that for ispLEVER. Click **Next**.

Figure 24: Selecting the Program Folder



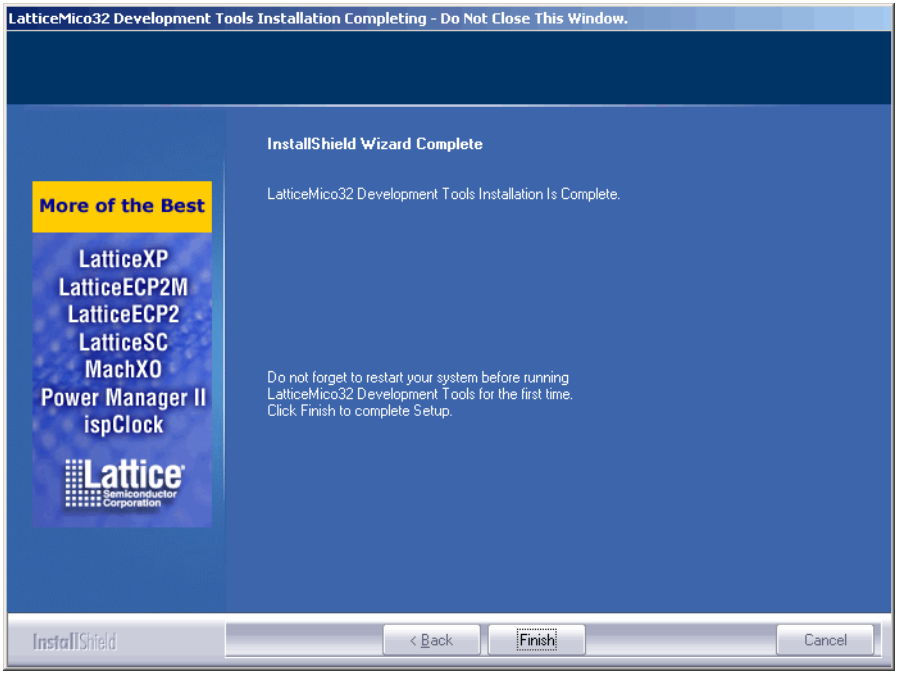
9. In the Start Copying Files part of the LatticeMico32 Development Tools Setup dialog box, shown in Figure 25, click **Next**.

Figure 25: Starting the Installation



The installation begins. When it is finished, the LatticeMico32 Development Tools Installation Completing dialog box appears, as shown in Figure 26.

Figure 26: LatticeMico32 Development Tools Installation Completing Dialog Box



10. Click **Finish**.
11. Because the installation process added new environment variables, reboot your computer.

Installing LatticeMico32 from the Web Site

Follow the instructions in this section to install the LatticeMico32 Development Tools from the Lattice Semiconductor Web site.

To install the LatticeMico32 Development Tools from the Lattice Semiconductor Web site:

1. Go to the LatticeMico32 Web page at the following URL:

   http://www.latticesemi.com/mico32

2. Download the LatticeMico32_<*version_number*>.exe executable.
3. Save the executable in a directory.
4. Double-click the executable to begin the installation.
5. Follow the procedure outlined in “Installing LatticeMico32 Automatically” on page 48 after step 1.

Starting LatticeMico32 Development Tools

You can start the LatticeMico32 Development Tools from the ispLEVER Project Navigator software, or you can run them as stand-alone tools.

Starting LatticeMico32 Development Tools from the ispLEVER Project Navigator

You can use one of three methods to run LatticeMico32 Development Tools from the ispLEVER Project Navigator.

To start the LatticeMico32 Development Tools from the ispLEVER Project Navigator:

Do one of the following:

- In the ispLEVER Project Navigator, choose **Tools > LatticeMico32 System**.
- In the ispLEVER Project Navigator toolbar, click the  button.
- From the Start menu, choose **Programs > Lattice Semiconductor > Accessories > LatticeMico32 System**.

Starting LatticeMico32 Development Tools as Stand-Alone Software

When you use the LatticeMico32 Development Tools as stand-alone software, you must access them through the Windows Start menu.

To start the LatticeMico32 Development Tools as stand-alone software:

- From the Start menu, choose **Programs > <*program_folder*> > LatticeMico32 System**.

Configuring Proxy Servers

If you are running the LatticeMico32 Development Tools on a computer that has a proxy server, you must set your local area network (LAN) settings to use the proxy server to view the LatticeMico32 Help. This section explains how to set up a proxy server on computers running a Microsoft Internet Explorer browser or a Mozilla Firefox browser.

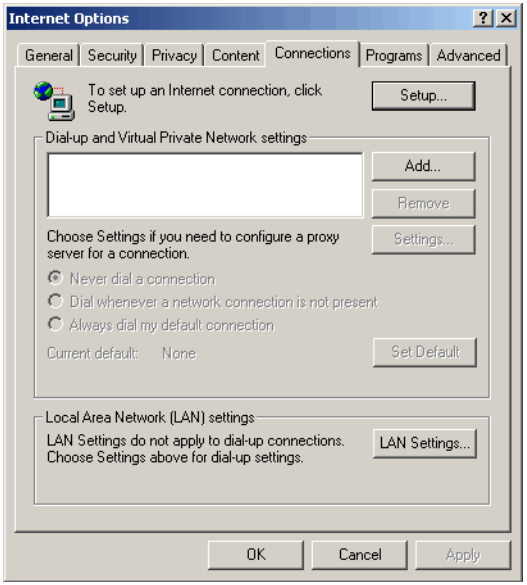
Setting Up a Proxy Server on Microsoft Internet Explorer

This section gives instructions for setting up a proxy server on computers running Microsoft Internet Explorer.

To set up a proxy server on computers running Microsoft Internet Explorer:

1. In Microsoft Internet Explorer, choose **Tools > Internet Options** to open the Internet Options dialog box.
2. Click the **Connections** tab of the dialog box, shown in Figure 27.

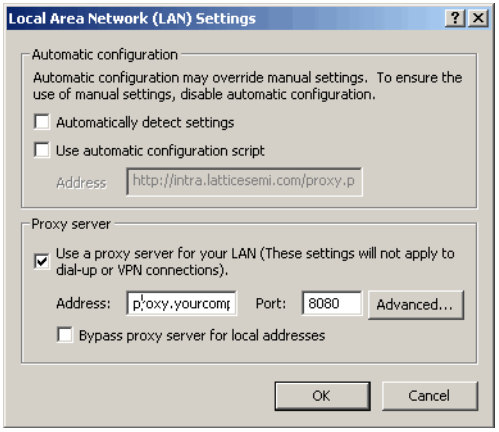
Figure 27: Connections Tab of the Internet Options Dialog Box



3. In the Connections dialog box, click **LAN Settings** to open the Local Area Network (LAN) Settings dialog box.
4. In the dialog box, select **Use proxy server for your LAN**.
5. In the **Address** box, type the name of the proxy server.
6. In the **Port** box, type the port number of the proxy server.

   The completed Local Area Network (LAN) Settings dialog box is shown in Figure 28.

Figure 28: Local Area Network (LAN) Settings Dialog Box



7. Click **OK** in the Local Area Network (LAN) Settings dialog box.
8. Click **OK** in the Internet Options dialog box.

Setting Up a Proxy Server on Mozilla Firefox

This section gives instructions for setting up a proxy server on computers running Mozilla Firefox.

To set up a proxy server on computers running Mozilla Firefox:

1. Open LatticeMico32 System.
2. In MSB, choose **Window > Preferences** to activate the Preferences dialog box.
3. In the Preferences dialog box, do the following:
   a. In the left pane, click the plus sign (+) next to **General**.
   b. Click **Web Browser**.

If Firefox is installed on the PC, the Firefox option should appear in the main window of the dialog box.

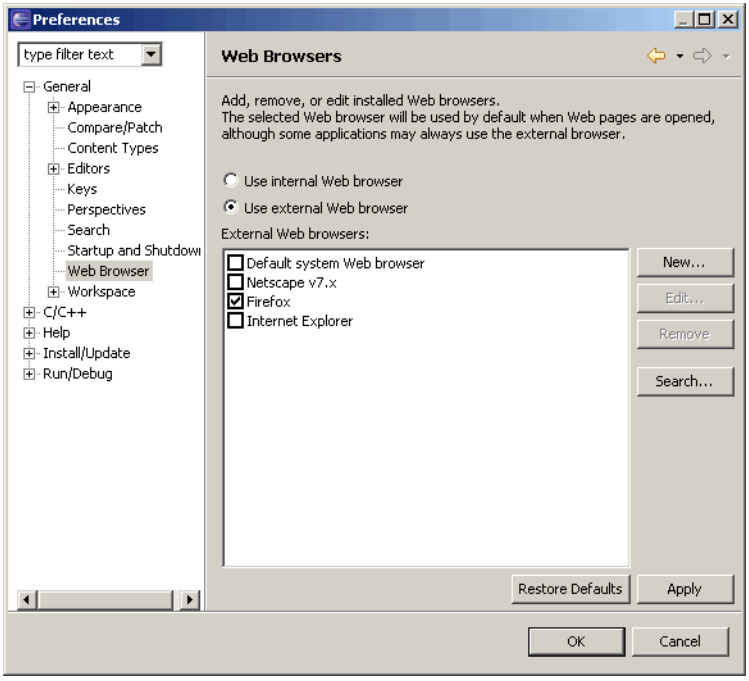
c. Select **Use external Web browser**.

d. Select **Firefox**.

e. Click **Apply**.

The Preferences dialog box should resemble the example shown in Figure 29.

Figure 29: Preferences Dialog Box After Setting of Web Browser Options



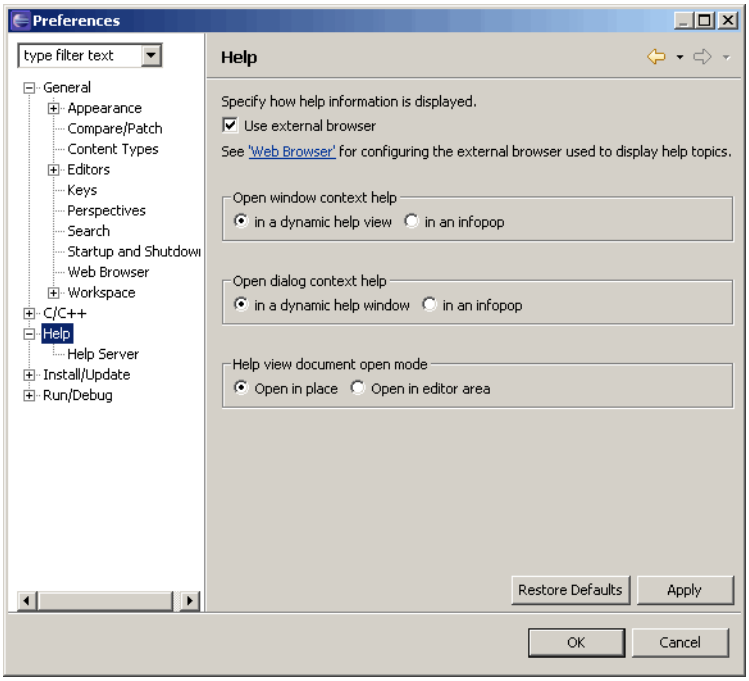
f. In the left pane of the Preferences dialog box, click the plus sign (+) next to **Help**.

g. Select **Use external browser**.

h. Click **Apply**.

The Preferences dialog box should now resemble the illustration shown in Figure 30.

Figure 30: Preferences Dialog Box After Setting of Help Options

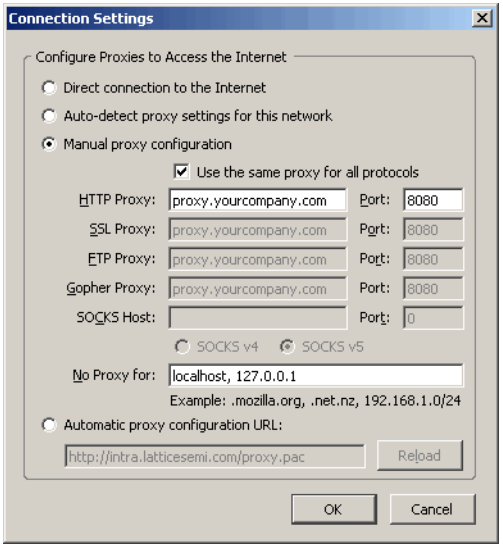


i. Click **OK**.

4. Activate the Mozilla Firefox browser.
5. In the Firebox browser, choose **Tools > Options** to activate the General dialog box.
6. In the Connections section of the dialog box, click **Connection Settings**.
7. In the Connection Settings dialog box, select **Manual proxy configuration**.
8. Select **Use the same proxy for all protocols**.
9. In the **HTTP Proxy** box, type the name of the proxy server.
10. In the **Port** box next to the HTTP Proxy box, enter the port number of the proxy server.

The completed Connection Settings dialog box is shown in Figure 31.

Figure 31: Connection Settings Dialog Box



11. Click **OK**.