Lattice Propel 2.2 Installation for Linux

User Guide

FPGA-AN-02050-1.0

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1. About Lattice Propel™ 2.2

Lattice Propel™ 2.2 software is a complete set of graphical and command-line tools to create, analyze, compile, and debug both FPGA-based hardware and software processor systems.

2. System Requirement

Basic system requirements for installing and running Lattice Propel 2.2 software on Linux are:

- Intel Pentium or Pentium-compatible PC, or AMD Opteron system support
- Red Hat Enterprise Linux 64-bit Operating System
  - During the installation of RHEL 7.7, two environments are required on the SOFTWARE SELECTION installation page. Select Base Environment/Server with GUI and Add-Ons for Selected Environment/System Administration Tools.
  - During the installation of RHEL 8.4, two environments are required on the SOFTWARE SELECTION installation page. Select Base Environment/Server with GUI and Additional software for Selected Environment/System Tools.
- Ubuntu LTS Operating System
  - Ubuntu 20.04 LTS
- Free Disk Space: approximately 10 GB
- Network adapter and network connectivity for IP server access

3. Lattice Propel 2.2 on Linux

Lattice Propel software is installed with the Propel2.2_lin.run installation file. Follow steps below to install Lattice Propel 2.2 software:

3.1. Installing Lattice Propel 2.2

1. Go to Propel software installers directory and execute the Propel installation file.

   $ cd <directory_with_run>

   $ ./Propel2.2_lin.run
2. The Install Lattice Propel 2.2 dialog box opens.
3. Click **Next**. The Select Installation Folder dialog appears.
4. The default installation folder is */home/lattice/lscc/propel/2.2*. Click the **Browse** button to change to a desired folder for the installation.
5. Click **Next.** The Select Component(s) dialog opens. Select Propel 2.2. The Propel 2.2 component must be installed.
6. Click **Next**. The License Agreement dialog opens.
7. Read the license agreement. If you agree, choose **I accept the licenses** option. You must accept the terms contained in these agreements before continuing with the installation.
8. Click **Next**. The Ready to Install dialog opens.
9. Review the current settings, the destination folder and the selected components. If everything is correct, click **Install** to start the installation.
10. When the installation is completed, the Lattice Propel 2.2 Installation Completed Wizard pops up.
11. In the Installation Completed Wizard dialog box, read the confirmation note and click **Finish**.

    Note:

    Do not close the installation window manually. The window closes automatically once the installation is completed.

4. Licensing for Lattice Propel 2.2

To obtain a license file for your Propel 2.2 software:

1. Go to Lattice Semiconductor Software Licensing page www.latticesemi.com/license.
2. Select Lattice Propel. You can get the Propel Software Licensing page.
3. Follow the instructions step-by-step.
4. Place license.dat under the *<install_path>\license* directory, where your Propel is installed.

   Note:

   If you saved the license.dat file in a directory other than the default one mentioned above, change LM_LICENSE_FILE variable accordingly pointing to the exact directory where you place license.dat, for example *export LM_LICENSE_FILE=license.dat*. Before invoking Lattice Propel 2.2, make sure the environment variable is correctly set.

5. Lattice Propel Software 2.2 System Library Dependencies

The Lattice Propel software package depends on a set of 64-bit system libraries packages. Some of these system library packages may depend on lower-level packages or indirect dependencies. To fulfill the dependencies, all these packages must be installed before Lattice Propel software to be installed. You can use the Command Line to install these packages.

5.1. Installing System Library Packages on RHEL 64-bit Operating System

You can first check what packages are already in your system by entering the following command in the Command Prompt:

- *$ rpm -qa | grep <package name>*

Compare the result you got with the packages listed in the following table. You need all the following packages installed before you run the Propel 2.2 installation package, Propel_2.2_lin.run.

Package Type	Package Name
System Library Package for Propel SDK	gtk3
	"Development Tools"
System Library Package for Propel Builder	glibc
	libjpeg
	libieee1284
	libusb
	libX11
	libICE
	libSM
	libXt
	libXext
	libXrender
	libXi
	libXft
	libxslt
	libXrandr
	libXfixes
	libXdamage
	libXcursor
	libXcomposite
	libGL
	libXinerama
	libXScrnSaver
	atk
	cairo
	pango
	pulseaudio
	nss
	xcb-util-wm
	xcb-util-image
	xcb-util-keysyms
	xcb-util-renderutil
	libxkbcommon-x11

Package Type	Package Name
System Library Package for ModelSim	glibc.i686
	libXext.i686
	libXft.i686
	libgcc.i686

Any package missing, use the following command to install that package:

- *$ sudo yum install <package name>*

You can install multiple packages at one time by adding all the desired packages after the command line:

- *$ sudo yum install <package name> <package name> <package name> …*

5.1.1. Installing System Library Packages for Propel SDK

- *$ sudo yum install gtk3*
- *$ sudo yum groupinstall "Development Tools"*

5.1.2. Installing System Library Packages for Propel Builder

- *$ sudo yum install glibc libjpeg libieee1284 libusb libX11 libICE libSM libXt libXext libXrender libXi libXft libxslt libXrandr libXfixes libXdamage libXcursor libXcomposite libGL libXinerama libXScrnSaver atk cairo pango pulseaudio nss xcb-util-wm xcb-util-image xcb-util-keysyms xcb-util-renderutil libxkbcommon-x11*

5.1.3. Installing System Library Packages for ModelSim

- *$ sudo yum install glibc.i686 libXext.i686 libXft.i686 libgcc.i686*

5.2. Installing System Library Packages on Ubuntu LTS Operating System

You can first check what packages are already in your system by entering the following command in the Command Prompt:

- *$ dpkg –l | grep <package name>*

Compare the result you got with the packages listed in the following table. You need all the following packages installed before you run the Propel 2.2 installation package, Propel_2.2_lin.run.

Package Type	Package Name
System Library Package for Propel SDK	build-essential
System Library Package for Propel Builder	libxcb-image0
	libxcb-shm0
	libxcb-util-dev
	libxcb-keysyms1
	libxcb-render-util0
	libxcb-render0
	libxcb-xinerama0
	libxcb-xkb-dev
	libxcb-xinput-dev
	libxkbcommon-x11-0
	libxkbcommon-dev
	libnss3
	libxcursor1

Package Type	Package Name
	libxss1
System Library Package for ModelSim	bzip2:i386
	libexpat1:i386
	libfontconfig1:i386
	libfreetype6:i386
	libncurses5:i386
	zlib1g:i386
	libxft2:i386
	libxrender1:i386
	libpng16-16:i386
	libuuid1:i386
	libx11-6:i386
	libxau6:i386
	libxcb1:i386
	libxext6:i386

Any package missing, use the following command to install that package:

- *$ sudo apt-get install <package name>*

You can install multiple packages at one time by adding all the desired packages after the command line:

- *$ sudo apt-get install <package name> <package name> <package name> …*

5.2.1. Installing System Library Packages for Propel SDK

- *$ sudo apt-get install build-essential*

5.2.2. Installing System Library Packages for Propel Builder

- *$ sudo apt-get install libxcb-image0 libxcb-shm0 libxcb-util-dev libxcb-keysyms1 libxcb-render-util0 libxcb-render0 libxcb-xinerama0 libxcb-xkb-dev libxcb-xinput-dev libxkbcommon-x11-0 libxkbcommon-dev libnss3 libxcursor1 libxss1*

5.2.3. Installing System Library Packages for ModelSim

- *$ sudo apt-get install bzip2:i386 libexpat1:i386 libfontconfig1:i386 libfreetype6:i386 libncurses5:i386 zlib1g:i386 libxft2:i386 libxrender1:i386 libpng16-16:i386 libuuid1:i386 libx11-6:i386 libxau6:i386 libxcb1:i386 libxext6:i386*

6. Installing and Configuring USB Cables

This section provides information on USB cable installation and configuration. These instructions are applicable to 64-bit Linux systems.

6.1. Lattice USB Download Cable Configuration

To verify that you have the USB library installed, do the following:

1. Plug in the USB cable.
2. In the Command Prompt, enter:

   $ lsusb

   You should see the entry similar to the following:

   > Bus 001 Device 015: ID 0403:6010 Future Technology Devices International, Ltd FT2232C/D/H Dual UART/FIFO IC
3. If you get an error after you enter lsusb, you probably do not have libusb installed. To install libusb, go to: http://libusb.sourceforge.net/

   The recommended version to install is libusb-0.1.4-3.el7.x86_64.rpm
4. Unplug the USB cable.

6.2. Giving HW-USBN-2B (FTDI) USB Drivers Read/Write Permission to Selected Individuals on Ubuntu LTS Operating System

Note:

After hot plugging USB cable every time, you need to complete the following steps.

1. Plug in the USB cable.
2. In the command line, type:

   $ lsusb

   You should see an entry similar to the following:

   > Bus 001 Device 015: ID 0403:6010 Future Technology Devices International, Ltd FT2232C/D/H Dual UART/FIFO IC
3. This means the FTDI chip is in Bus 001 and device 015. Grant execute permissions to the device. In the Terminal window, type:

   $ sudo chmod 777 -R /dev/bus/usb/001/015
4. Unload the ftdi_sio driver if it is attached to your device.

   $ sudo /sbin/rmmod ftdi_sio
5. Unload the usbserial driver if it is attached to your device.

   $ sudo /sbin/rmmod usbserial
6. If the cable still cannot be detected, you should grant execute permissions to the folder. In the Terminal window, type:

   *$ sudo chmod 777 -R /dev/**

6.3. Driver Setup for Lattice USB2A and HW-USBN-2B (FTDI) USB Download Cable on RHEL 64-bit Operating System

Note:

First, you need download and install libusb-0.1.4-3.el7.x86_64.rpm in RHEL 64-bit Operating System.

1. Find your username which is given in /etc/group file. Log out, if required.

   For example :

   username:x:1000:username

2. Create a working file, *10-local.rules*.
3. Add the following information to *10-local.rules*:
   #Lattice
   SUBSYSTEM=="usb",ACTION=="add",ATTRS{idVendor}=="1134",ATTRS{idProduct}=="8001",MODE=="0660",GROUP=="username",SYMLINK+="lattice-%n"
   #FTDI
   SUBSYSTEM=="usb",ACTION=="add",ATTRS{idVendor}=="0403",ATTRS{idProduct}=="6010",MODE=="0666",GROUP=="username",SYMLINK+="ftdi-%n"
   SUBSYSTEM=="usb",ATTRS{idVendor}=="0403",ATTRS{idProduct}=="6010",RUN+="/bin/sh -c 'basename %p > /sys/bus/usb/drivers/ftdi_sio/unbind'"
   Note:
   Replace the username with your username in above rules.
4. Copy *10-local.rules* you created in Step 2 above to the /etc/udev/rules.d/ directory using the following command:

   $ sudo cp 10-local.rules /etc/udev/rules.d/

   If a file with the same name *10-local.rules* already exists in the /etc/udev/rules.d/ directory, simply append the working file to it, using the following command:

   $ sudo cat 10-local.rules >>/etc/udev/rules.d/10-local.rules
5. Give permission to *10-local.rules* as follows:

   $ sudo chmod 755 10-local.rules
6. Reload the udev rules by adding the following:

   $ sudo udevadm control --reload-rules
7. Plug in the USB cable.

7. Running Lattice Propel 2.2 Software

Propel 2.2 software Linux version has a graphical user interface (GUI). After Lattice Propel 2.2 software is installed, you can open it via command line.

To invoke Propel 2.2:

- *$ <install_path>/launch_propel.sh*

To invoke Propel Builder 2.2:

- *$ <install_path>/launch_builder.sh*

Revision History

Revision 1.0, May 2022

Section	Change Summary
All	Initial release.

www.latticesemi.com