



# Efinity<sup>®</sup> Software Installation User Guide

---

UG-EFN-INSTALL-v2.8

August 2022

[www.efinixinc.com](http://www.efinixinc.com)



# Contents

<b>Overview.....</b>	<b>3</b>
<b>Hardware and Software Requirements.....</b>	<b>3</b>
<b>Third-Party Simulator Support.....</b>	<b>5</b>
<b>Installing.....</b>	<b>5</b>
Installing the Linux USB Driver.....	5
Installing the Windows USB Driver.....	6
<b>Installing Patches.....</b>	<b>7</b>
<b>Efinity Quick Start.....</b>	<b>8</b>
<b>Where to Learn More.....</b>	<b>9</b>
<b>Revision History.....</b>	<b>9</b>

# Overview

The Efinity® software provides a complete tool flow for designing with Efinix® products. This document describes how to install the software.

## Hardware and Software Requirements

### General Requirements

- Computer with a minimum 32-bit or maximum 64-bit operating system.
  - A 32-bit Windows system is required for the Efinity standalone programmer.
  - A 64-bit Windows system is required for using the security tools in the Efinity standalone programmer.
- Machine memory requirements (when running Efinity design compilations):

**Table 1: Machine Memory Requirements**

Product	Model	Memory
Trion	T4, T8, T13, T20, T35	16 GB
	T55, T85, T120	32 GB
Titanium	Ti35, Ti60	16 GB
	Ti90, Ti120, Ti180	32 GB

- Your preferred text editor such as Notepad, gVim, Visual Studio

### Windows Requirements

- Windows 8.1 or later, 64 bit operating system
- Microsoft Visual C++ 2019 x64 runtime library (or latest version) redistributable  
<https://docs.microsoft.com/en-us/cpp/windows/redistributing-visual-cpp-files?view=msvc-170>





**Note:** If you want to use the stand-alone Programmer, you also need to install the x86 and x64 libraries (64-bit systems) or x86 library (32-bit systems).

- Zadig software to install USB drivers  
see [Installing the Windows USB Driver](#) on page 6
- Open-source Java 64-bit runtime environment; required for configuring the Sapphire RISC-V SoC and DMA Controller in the IP Manager; available from:
  - <https://www.java.com/en/download/manual.jsp> (Java 8)
  - <https://developers.redhat.com/products/openjdk/download> (OpenJDK 8 or 11)
  - <http://jdk.java.net/16/> (OpenJDK 16)

## Linux Requirements

Table 2: Linux Operating System

Operating System	Note
Ubuntu v18.04 or later	You may need to install some graphics related libraries before running the Efinity tools. An example list of libraries (not comprehensive) could be: <b>apt install libxcb-xinerama0 libxcb-icccm4 libxcb-image0 libxcb-keysyms1 libxcb-render-util0</b>
Red Hat Enterprise x86-64 v7.4 or later	<p>You may need to install some graphics related libraries before running the Efinity tools. An example list of libraries (not comprehensive) could be: <b>yum install libxkbcommon-x11 xcb-util-renderutil xcb-util-keysyms xcb-util-image xcb-util-wm xcb-util</b></p> <p> <b>Important:</b> If GUI is not working, set an environment variable, then launch the tool again using the following commands (applicable for both Ubuntu and Red Hat Enterprise Linux):</p> <pre>source/path/to/efinity/&lt;version&gt;/bin/setup.sh export QT_DEBUG_PLUGINS=1 efinity</pre> <p>The Qt verbose command line output can provide clues about which system libraries are missing and need to be installed via apt/yum.</p> <p> <b>Note:</b> Red Hat Enterprise x86-64 v9.0 has not yet been tested.</p>

- Linux X11 windowing system (for Efinity® GUI)
- Udev device manager for Efinix USB programming cable  
see [Installing the Linux USB Driver](#) on page 5

### Installing iVerilog

Icarus Verilog (iVerilog) is a free Verilog simulation tool you can use to compile and simulate Verilog HDL source code. The software is available as source code or as pre-compiled binaries.

For more information on the simulator: [iverilog.icarus.com/page](http://iverilog.icarus.com/page)

To download the simulator: [bleyer.org/icarus](http://bleyer.org/icarus)

To download the simulator source code: [github.com/steveicarus/iverilog](https://github.com/steveicarus/iverilog)



**Note:** Efinix recommends iVerilog version 11.0 or later.

### Installing GTKWave

GTKWave is an open-source tool that analyzes post-simulation dumpfiles and displays the results in a graphical interface. It includes a waveform viewer and RTL source code navigator. You can use GTKWave with the iVerilog simulator to analyze and debug your simulation model, or to view any VCD waveform.

Download and install the software from [gtkwave.sourceforge.net](http://gtkwave.sourceforge.net).



**Note:** Linux users can use the following commands:

```
sudo apt-get update
sudo apt-get install gtkwave
```

## Third-Party Simulator Support

The Efinity tools do not include or explicitly integrate third-party simulators. However, Efinix has verified that the following simulators work with Efinity-generated Verilog HDL netlist files:

- Cadence Xcelium Logic Simulator
- Mentor Graphics QuestaSim Simulator
- Free Icarus Verilog (iVerilog) Simulator

To simulate an Efinity post-synthesis (or later compiler stage) Verilog HDL netlist, include the following library path as a resource in your third-party simulator:

```
<Efinity top-level path>/sim_models/verilog
```

## Installing

### Linux installation:

Unzip or untar the Efinity package into your user directory:

```
> tar -xjvf efinity-<version>.tar.bz2
```

### Optional:

Run the following script to install a shortcut in your Desktop directory:

```
> <installation directory>/bin/install_desktop.sh
```

### Windows installation:

Double-click the **efinity-*<version>*.msi** installer package and follow the on-screen instructions.

## Installing the Linux USB Driver

The following instructions explain how to install a USB driver for Linux operating systems.

1. Disconnect your board from your computer.
2. In a terminal, use these commands:

```
> sudo <installation directory>/bin/install_usb_driver.sh
> sudo udevadm control --reload-rules
```



**Note:** If your board was connected to your computer before you executed these commands, you need to disconnect and re-connect it.

## Installing the Windows USB Driver

On Windows, you use software from Zadig to install drivers. Download the Zadig software (version 2.7 or later) from [zadig.akeo.ie](http://zadig.akeo.ie). (You do not need to install it; simply run the downloaded executable.)



**Important:** For some Efinix development boards, Windows automatically installs drivers for some interfaces when you connect the board to your computer. You do not need to install another driver for these interfaces. Refer to the user guide for your development board for specific driver installation requirements.

To install the driver:

1. Connect the board to your computer with the appropriate cable and power it up.
2. Run the Zadig software.



**Note:** To ensure that the USB driver is persistent across user sessions, run the Zadig software as administrator.

3. Choose **Options > List All Devices**.
4. Repeat the following steps for each interface. The interface names end with *(Interface N)*, where *N* is the channel number.
  - Select **libusb-win32** in the **Driver** drop-down list.
  - Click **Replace Driver**.
5. Close the Zadig software.



**Note:** This section describes how to install the libusb-win32 driver for each interface separately. If you have previously installed a composite driver or installed using libusbK drivers, you do not need to update or reinstall the driver. They should continue to work correctly.

# Installing Patches

You download Efinity® patches separately from the software and then install them into your existing Efinity® installation directory.

## Linux

1. Download the patch from the Efinity® page in the Support Center.
2. Open a terminal window.
3. Unzip the patch into any temporary directory:

```
> unzip efinity-<version>-patch.zip
```

4. Setup the environment variables:

```
> source /path/to/efinity/<version>/bin/setup.sh
```

5. Run the patch installer:

```
> cd efinity-<version>-patch  
> ./run.sh
```

## Windows

1. Download the patch from the Efinity® page in the Support Center.
2. Unzip the patch into any temporary directory by double-clicking the patch filename in the Windows Explorer and choosing **Extract all**.
3. Setup the environment variables by typing these commands at a command prompt:

```
> \path\to\efinity\<version>\bin\setup.bat
```

4. Run the patch installer by typing these commands at a command prompt:

```
> cd efinity-<version>-patch  
> run.bat
```

# Efinity Quick Start

To launch the Efinity graphical user interface (GUI), double-click the Efinity desktop icon. To launch and use the Efinity tool from the command line, refer to the following sections.

## Linux

Set up your environment and PATH:

```
source bin/setup.sh
```

Launch the Efinity GUI from the command line:

```
efinity
```

Run Efinity from the command line:

```
cd $EFINITY_HOME/project/<project name> // Change to project directory
efx_run.py <project name>.xml           // Run Efinity
```

For command-line help:

```
efx_run.py --help
```

## Windows

Set up your environment and PATH:

```
bin\setup.bat
```

Launch the Efinity GUI from the command line:

```
bin\setup.bat --run
```

Run Efinity from the command line:

```
cd %EFINITY_HOME%\project\<project name> // Change to project directory
efx_run.bat <project name>.xml           // Run Efinity
```

For command-line help:

```
efx_run.bat --help
```



## Where to Learn More

The Efinity® software includes documentation as PDF user guides and on-line HTML help. This documentation is provided with the software. You can also access the latest versions of PDF documentation in the Support Center:

- [Efinity Software User Guide](#)
- [Efinity Synthesis User Guide](#)
- [Efinity Timing Closure User Guide](#)
- [Efinity Software Installation User Guide](#)
- [Efinity Trion Tutorial](#)
- [Efinity Debugger Tutorial](#)
- [Titanium Interfaces User Guide](#)
- [Trion Interfaces User Guide](#)
- [Efinity Interface Designer Python API](#)
- [Quantum Trion Primitives User Guide](#)
- [Quantum Titanium Primitives User Guide](#)

In addition to documentation, Efinix field application engineers have created a series of videos to help you learn about aspects of the software. You can view these videos in the Support Center.

## Revision History

*Table 3: Document Revision History*

Date	Version	Description
August 2022	2.8	Updated Efinity 2022.1 platform in <a href="#">Hardware and Software Requirements</a> on page 3 Updated Installing USB Drivers topics.
June 2022	2.7	Pointed to new sourceforge location for GTKWave download. (DOC-797)
December 2021	2.6	Updated machine memory requirements (RAM).
October 2021	2.5	When using the stand-alone Programmer on 64-bit Windows, install both the x86 and x64 libraries. (DOC-576)
September 2021	2.4	JRE required for running the DMA Controller in the IP Manager. (DOC-549)
June 2021	2.3	Supported Ubuntu version is v18.04 or higher. v16.04 is end of life. (DOC-433) Added the Java runtime environment as a software requirement for configuring the Sapphire SoC in the IP Manager. Updated the Windows USB driver installation topic.
December 2020	2.2	Added the requirement to install the Microsoft Visual C++ 2015 x64 and x86 runtime libraries for the standalone Programmer.
November 2020	2.1	Updated instructions on installing USB drivers for Windows.

Date	Version	Description
June 2020	2.0	Added instructions on how to install software patches. Windows 7, Red Hat v6, and CentOS v6 no longer supported. Provided new driver when installing USB drivers on Windows with Zadig software. Added FTDI Dual RS232 HS mini module in steps to install the USB driver.
December 2019	1.7	Updated Zadig USB driver information for Windows.
August 2019	1.6	Updated Quick Start command-line instructions.
January 2019	1.5	Added instructions on installing the USB driver for Windows.
October 2018	1.4	Added Python 3 to the software requirements list. For Windows, if you do not have a full version of Python, the .py extension may not be correctly associated with Python.
June 2018	1.3	Removed Python requirement; as of this release, Python is included with the software. Added the requirement that Windows users install the Microsoft Visual C++ 2015 x64 runtime library.
April 2018	1.2	No changes.
November 2017	1.1	Removed references to OPM family. Removed instructions for setting external code editor (this version embeds a Code Editor).
May 2017	1.0	Initial release.