PetaLinux SDK User Guide

Installation Guide

XILINX®

Revision History

Date	Version	Notes
2009-11-26	1.1	Initial version for SDK 1.1 release
2009-12-04	1.2	Updated host package dependency list
2010-12-02	1.3	Updated supported OS list
2011-04-04	2.1	Updated for PetaLinux SDK 2.1 release - 64-bit Ubuntu supported
2012-08-03	3.1	Updated for PetaLinux SDK 3.1 release
2012-09-03	12.9	Updated for PetaLinux SDK 12.9 release
2012-12-17	2012.12	Updated for PetaLinux SDK 2012.12 release

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About this Guide

This document provides information on how to install PetaLinux SDK.

Please note: the reader of this document is assumed to have basic Linux knowledge such as how to run Linux commands.

Related PetaLinux Documents

The following other documents exist to help you to make the most of your PetaLinux experience:

- Application Development Guide

- Getting Started Guide

- QEMU System Simulation Guide

Prerequisites

This getting started document assumes that the following prerequisites have been satisfied:

- Minimum workstation requirements:

    - 2GB RAM (recommended minimum for Xilinx tools)
    - Pentium 4 2GHz CPU clock or equivalent
    - 5 GB free HDD space
    - Recommended OS: CentOS RHEL 5 (32-bit), or Ubuntu 10.04 (32-bit or 64-bit)

- You have obtained the PetaLinux release package.

- You have obtained a license for PetaLinux.

- A number of common system packages and libraries are required to be installed on your workstation, and the installation process will check for these. See the section `Required Tools and Libraries` for more details.

PetaLinux SDK Installation

Extract the PetaLinux Package

Assuming all the prerequisites described in the last subsection are satisfied, PetaLinux installation is very straight forward.

Extract the compressed PetaLinux package by running the following command on your workstation:

```
$ tar zxf petalinux-v2012.12-final-full.tar.gz
```

PetaLinux will be installed in the `petalinux-v2012.12-final-full` directory, directly underneath the working directory of this command.

So, if you extract the package from your home directory `/home/user`, PetaLinux will be installed in `/home/user/petalinux-v2012.12-final-full`.

You may move the resulting `petalinux-v2012.12-final-full` directory to a preferred location before continuing.

Install License

PetaLinux licenses are managed using the same system as all other Xilinx Design Tools. For more details on licensing and setup of license please refer to the "Xilinx Design Tools: Installation and Licensing Guide (UG798)" (http://www.xilinx.com/support/documentation/sw_manuals/xilinx14_3/iil.pdf) section "Obtaining and Managing a License".

Setup PetaLinux Working Environment

After extracting the package, the remainder of the setup is completed automatically.

1. Go to the PetaLinux root directory by running this command on the command console:

```
$ cd <path-to-installed-PetaLinux>
```

e.g.:

```
$ cd /home/user/petalinux-v2012.12-final-full
```

2. Source the appropriate PetaLinux setup script by running this command on the command console:

- For Bash:

```
$ source settings.sh
```

- For C Shell:

```
$ . settings.csh
```

IMPORTANT:

- *Only run one of these scripts - whichever is appropriate for your command shell.*

- *You must run the settings script each time you open a new terminal window or shell. PetaLinux SDK will not operate correctly otherwise.*

- *You must be within the PetaLinux root directory (e.g. /home/user/petalinux-v2012.12-final-full) to source the settings file.*

The first time the setup script is sourced, it will perform some post installation tasks to check system dependencies and initialise the Linux kernel source tree.

Below is an example of the output from sourcing the setup script for the first time:

```
$ source settings.sh
PetaLinux environment set to '/home/user/petalinux-v2012.12-final-full'
INFO: Finalising PetaLinux installation
INFO: Checking free disk space
INFO: Checking installed tools
INFO: Checking installed development libraries
INFO: Checking network and other services
INFO: Checking for sudo permissions - you may be prompted to enter
your password
Password: *********
INFO: Initialising kernel tree. Please be patient.
INFO: PetaLinux post-installation completed successfully
```

The post-install step only occurs once. Subsequent runs of the settings script should be much quicker, and simply output a confirmation message such as that shown below:

```
$ source settings.sh
PetaLinux environment set to '/home/user/petalinux-v2012.12-final-full'
```

3. Verify that the PetaLinux working environment has been set:

```
$ echo $PETALINUX
/home/user/petalinux-v2012.12-final-full
```

Environment variable "`$PETALINUX`" should point to the path to the installed PetaLinux. Your echo output may be different from this example, depending upon where you installed PetaLinux.

PetaLinux BSP Installation Procedure

PetaLinux includes reference designs for you to to start working with and customise for your own projects. These are provided in the form of installable BSP (Board Support Package) files, and include all necessary design and configuration files, including pre-built and tested hardware and software images, ready for download to your board or for booting in the QEMU system simulation environment.

Below are the steps to install a PetaLinux BSP:

1. Run petalinux-install-bsp command on the command console:

```
$ petalinux-install-bsp <Path-to-BSP0> [Path-to-BSP1]...
```

To install a single BSP, simply provide the path to the `.bsp` file:

```
$ petalinux-install-bsp ~/bsps-to-install/Xilinx-SP605-v2012.12-final.bsp
```

You will see output similar to the following:

```
INFO: Processing BSP package 'Xilinx-SP605-v2012.12-final.bsp'
INFO:   BSP package contents:
   * Xilinx-SP605-AXI-full-14.4
   * Xilinx-SP605-AXI-lite-14.4
   * Xilinx-SP605-PLB-full-14.4
   * Xilinx-SP605-PLB-lite-14.4
INFO:    Extracting package...
      * Xilinx-SP605-AXI-full-14.4
      * Xilinx-SP605-AXI-lite-14.4
      * Xilinx-SP605-PLB-full-14.4
      * Xilinx-SP605-PLB-lite-14.4
INFO:   Updating BSP(s)...
INFO: Default BSP settings restored
INFO: Default BSP settings restored
INFO: Default BSP settings restored
INFO: Default BSP settings restored
INFO: BSP successfully installed.
```

IMPORTANT: *The command texts are all in one line.*

You may install more than one BSP at a time, simply specified the filenames of each on the command line. You may also install all available BSPs in a single directory, as follows:

```
$ petalinux-install-bsp ~/path/to/*.bsp
```

Going Further

Congratulations, you have completed the installation of PetaLinux SDK! Next, please refer to the `"Getting started with PetaLinux SDK"` document to build and boot your first PetaLinux projects.

Troubleshooting

This section describes some common issues you may experience when installing PetaLinux, and ways to solve them.

If the PetaLinux installation fails, the file `"$PETALINUX/post-install.log"` will be generated in your PetaLinux installation directory. Please open a support ticket, and attach the log file to that ticket.

Problem/Error Message	Description and Solution
WARNING: You have less than 1Gbyte free space on the installation drive	***Problem Description:*** This warning message tells that installation drive is almost full. You may not have enough free space to develop your hardware project and/or software project after the installation. ***Solution:*** • Move the PetaLinux to another hard disk drive. Alternatively, • Cleanup the installation drive to clear some more free space.
WARNING: No tftp server found - please install or enable before continuing	***Problem Description:*** This warning message tells that you don't have a TFTP service running on your workstation. Without TFTP service, you cannot download Linux system images to your MicroBlaze system using u-boot's network/TFTP capabilities. ***Solution:*** Enable the TFTP service on your workstation. If you are unsure how to enable this service, please contact your system administrator.

Problem/Error Message	Description and Solution
WARNING: You do not have sudo permission - please refer to `"PetaLinux SDK Installation Guide"` for its impact and solution	**Problem Description:** This is only a warning message indicates that you do not have `sudo` permission. PetaLinux will continue to install however certain features will not function without `sudo` permission. The following tools require `sudo` permission: • PetaLinux QEMU Software Simulator System (please refer to *"QEMU System Simulation Guide"* for more details) **Solution:** Please contact your system administrator to get `sudo` permission. Alternatively you can use PetaLinux without `sudo` permission, with certain features unavaliable.
ERROR: GCC is not installed - unable to continue. Please install and retry	**Problem Description:** This error message tells that you don't have gcc installed on your workstation. **Solution:** Please install gcc using your Linux workstations package management system. If you are unsure how to do this, please contact your system administrator.
ERROR: You are missing the following system tools required by PetaLinux: *missing-tools-list* **OR** ERROR: You are missing these development libraries required by PetaLinux: *missing-library-list*	**Problem Description:** This error message tells that you don't have the required tools or libraries listed in the "*missing-tools-list*" or "*missing-library-list*". **Solution:** Please install the packages of those missing tools referring to section `"Required Tools and Libraries"`.

Problem/Error Message	Description and Solution
ERROR: Unable to perform initial kernel tree checkout	**_Problem Description:_** This error message tells that you failed to checkout the Linux kernel tree. **_Solution:_** 1. Check whether `"$PETALINUX/software/linux-2.6.x"` exists. If this directory doesn't exist, it probably means that the PetaLinux package extraction failed to complete, possibly due to a lack of disk space. Make sure you have at least 5Gbyte free space on your installation drive at first, and then extract PetaLinux from the PetaLinux package again. 2. Source the settings script again in the PetaLinux root directory. 3. If this error continues, please raise a support ticket and attach the `post-install.log` file.

Required Tools and Libraries

PetaLinux requires a number of standard development tools and libraries to be installed on your Linux host workstation. The PetaLinux installation process checks for these packages, and reports an error if any are missing, however it does not attempt to install them - you must do this manually. This section describes the required packages, and how to install them on different Linux workstation environments.

Tool/Library	YUM/RPM Package for RHEL/CentOS/Fedora	APT Package for Debian/Ubuntu
dos2unix	dos2unix	tofrodos
ip	iproute	iproute
gawk	gawk	gawk
gcc	gcc	gcc
git	git	git-core
gpg	gnupg	gnupg
make	gnutls-devel	Make
netstat	net-tools	net-tools
ncurses	ncurses-devel	ncurses-dev
tftp server	tftp-server	tftpd
zlib	zlib-devel	zlib1g-dev
flex	flex	flex
bison	bison	bison

For RedHat/CentOS/Fedora type systems, the `"yum"` package manager is used. To install a package, perform the following command:

```
$ sudo yum install -y <yum-package-name>
```

For Debian/Ubuntu type systems, the `"apt"` package manager is used. To install a package, perform the following command:

```
$ sudo apt-get install -y <apt-package-name>
```