

# PetaLinux SDK User Guide

## *Installation Guide*

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## 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
2013-04-29	2013.04	Updated for PetaLinux SDK 2013.04 release
2013-11-25	2013.10	Updated for PetaLinux SDK 2013.10 release

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## Online Updates

Please refer to the PetaLinux v2013.10 Master Answer Record ( [Xilinx Answer Record #55776](#) ) for the latest updates on PetaLinux SDK usage and documentation.

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## About this Guide

This document provides information on how to install the PetaLinux SDK.

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

## 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
  - Supported OS:
    - RHEL 5 (32-bit or 64-bit)
    - RHEL 6 (32-bit or 64-bit)
    - SUSE Enterprise 11 (32-bit or 64-bit)
- PetaLinux release package downloaded.
- Valid PetaLinux license.
- Common system packages and libraries are installed on your workstation. The installation process will check for these. See the section Required Tools and Libraries for more details.



**IMPORTANT:** *If you are using a 64-bit Linux host, you must install the appropriate 32-bit compatible libraries. Please refer to section Required Tools and Libraries.*

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- Xilinx hardware tools (XPS or Vivado) and JTAG cable drivers are installed (only if you will be working with hardware projects and boards).

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## PetaLinux SDK Installation

### Run PetaLinux SDK Installer

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

Without any options, the installer will install as a subdirectory of the current directory. Alternatively, an installation path may be specific.

E.g. to install PetaLinux SDK under "/opt/pkg":

```
$ cd /opt/pkg
$ petalinux-v2013.10-final-installer.run
```

or

```
$ petalinux-v2013.10-final-installer.run /opt/pkg
```

Both approaches will install the SDK into "/opt/pkg/petalinux-v2013.10-final" directory.

### Install License

PetaLinux SDK 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 *ISE Design Suite 14: Release Notes, Installation, and Licensing (UG631)* ([http://www.xilinx.com/support/documentation/sw\\_manuals/xilinx14\\_7/irn.pdf](http://www.xilinx.com/support/documentation/sw_manuals/xilinx14_7/irn.pdf)) section Obtaining and Managing a License.

### Setup PetaLinux SDK Working Environment

After the installation, the remainder of the setup is completed automatically.

1. Source the appropriate settings script:

- For Bash:

```
$ source <path-to-installed-PetaLinux>/settings.sh
```

- for C shell:

```
$ source <path-to-installed-PetaLinux>/settings.csh
```

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

```
$ source /opt/petalinux-v2013.10-final/settings.sh
PetaLinux environment set to '/opt/petalinux-v2013.10-final'
INFO: Finalising PetaLinux installation
INFO: Checking free disk space
INFO: Checking installed tools
INFO: Checking installed development libraries
INFO: Checking network and other services
```

2. Verify that the working environment has been set:

```
$ echo $PETALINUX  
/opt/petalinux-v2013.10-final
```

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

## BSP Installation Procedure

Included are reference designs for you 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 BSP:

1. Change to the directory under which you want PetaLinux projects to be created. E.g.: I want to create projects under /home/user:

```
$ cd /home/user
```

2. Run petalinux-create command on the command console:

```
$ petalinux-create -t project -s <path-to-bsp>
```

You will see output similar to the following, according to which BSP you are installing:

```
INFO: Create project:  
  
INFO: Projects:  
INFO: * Xilinx-KC705-AXI-full-14.7  
INFO: * Xilinx-KC705-AXI-full-2013.3  
INFO: * Xilinx-KC705-AXI-lite-14.7  
INFO: * Xilinx-KC705-AXI-lite-2013.3  
INFO: has been successfully installed to /home/user  
INFO: New project successfully created in /home/user
```

In the above example, when the command runs, it tells you what projects has been extracted from the BSP and installed. If you run ls from "/home/user", you will see the installed projects.

## Going Further

PetaLinux SDK installation is complete. Please refer to the *PetaLinux SDK Getting Started Guide (UG977)* 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.

Problem/Error Message	Description and Solution
<p>WARNING: You have less than 1Gbyte free space on the installation drive</p>	<p><b>Problem Description:</b> 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.</p> <p><b>Solution:</b></p> <ul style="list-style-type: none"> <li>• Move the PetaLinux to another hard disk drive.</li> </ul> <p>Alternatively,</p> <ul style="list-style-type: none"> <li>• Cleanup the installation drive to clear some more free space.</li> </ul>
<p>WARNING: No tftp server found</p>	<p><b>Problem Description:</b> 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.</p> <p><b>Solution:</b> Enable the TFTP service on your workstation. If you are unsure how to enable this service, please contact your system administrator.</p>

Problem/Error Message	Description and Solution
<p>ERROR: GCC is not installed - unable to continue. Please install and retry</p>	<p><b>Problem Description:</b> This error message tells that you don't have gcc installed on your workstation.</p> <p><b>Solution:</b> Please install gcc using your Linux workstation's package management system. If you are unsure how to do this, please contact your system administrator.</p>
<p>ERROR: You are missing the following system tools required by PetaLinux: <i>missing-tools-list</i> <b>OR</b> ERROR: You are missing these development libraries required by PetaLinux: <i>missing-library-list</i></p>	<p><b>Problem Description:</b> This error message tells that you don't have the required tools or libraries listed in the "<i>missing-tools-list</i>" or "<i>missing-library-list</i>".</p> <p><b>Solution:</b> Please install the packages of the missing tools, Refer to section Required Tools and Libraries for details.</p>

Problem/Error Message	Description and Solution
<p>Failed to open PetaLinux lib.</p>	<p><b>Problem Description:</b>            This error message indicates that a PetaLinux library failed to load. The cause of this issue is one of the following:</p> <ul style="list-style-type: none"> <li>• The PetaLinux "settings.sh" has not been loaded.</li> <li>• If the Linux Kernel you are running has SELinux configured. This can cause issues with regards to security context and loading libraries.</li> </ul> <p><b>Solution:</b></p> <ol style="list-style-type: none"> <li>1. Source the "settings.sh" script from the top-level PetaLinux directory.</li> <li>2. If you have SELinux enabled, determine if SELinux is in 'enforcing mode'.</li> </ol> <p>If SELinux is configured in 'enforcing mode' either reconfigure SELinux to 'permissive mode' (refer to SELinux manual), or change the security context of the libraries to allow access (see below for details).</p> <pre style="border: 1px solid black; padding: 5px; margin-top: 10px;">\$ cd \$PETALINUX/tools/common/petalinux/lib \$ chcon -R -t textrel_shlib_t lib</pre>

## 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	RPM Package for SuSE
dos2unix	dos2unix	tofrodos	dos2unix
ip	iproute	iproute	iproute2
gawk	gawk	gawk	gawk
gcc	gcc	gcc	gcc
git	git	git-core	git-core
make	gnutls-devel	make	make
netstat	net-tools	net-tools	net-tools
ncurses	ncurses-devel	ncurses-dev	ncurses-devel
tftp server	tftp-server	tftpd	tftp-server
zlib	zlib-devel	zlib1g-dev	zlib-devel
flex	flex	flex	flex
bison	bison	bison	bison
32bit libs	libstdc++-4.4.6-4.el6.i686 glibc.i686 libgcc.i686	ia32-libs lib32ncursesw5	32-bit runtime environment



**WARNING:** Consult your system administrator if you are unsure about correct procedures for host system package management.

## Additional Resources

### References

- PetaLinux SDK Application Development Guide (UG981)
- PetaLinux SDK Board Bringup Guide (UG980)
- PetaLinux SDK Firmware Upgrade Guide (UG983)
- PetaLinux SDK Getting Started Guide (UG977)
- PetaLinux SDK Installation Guide (UG976)
- PetaLinux SDK QEMU System Simulation Guide (UG982)

PetaLinux SDK Documentation is available at <http://www.xilinx.com/petalinux>.