

# PTXdist Application Note

## Installing PTXdist

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### Building Blocks

The main tool of the OSELAS.BoardSupport() Package is PTXdist. So before starting any work we'll have to install PTXdist on the development host.

PTXdist consists of the following parts:

**The `ptxdist` program** which is installed on the development host during the installation process. `ptxdist` is called to trigger any actions, like building a software packet, cleaning a tree etc. Usually the `ptxdist` program is used in a *workspace* directory, which contains all project relevant files.

**A configuration system** The config system is used to customize a *configuration*, which contains information about which packages have to be built and which options are selected.

**Patches** Due to the fact that some upstream packages are not bug free – especially with regard to cross compilation – it is often necessary to patch the original software. PTXdist contains a mechanism to automatically apply patches to packages. The patches are bundled into a separate archive. Nevertheless, they are necessary to build a working system.

**Package descriptions** For each software component there is a "recipe" file, specifying which actions have to be done to prepare and compile the software. Additionally, packages contain their configuration snippet for the config system.

**Toolchains** PTXdist does not come with a ready to use toolchain, it must build prior its first use. Instead PTXdist comes with various predefined toolchain projects to be build with PTXdist itself. Building a toolchain is not part of this application note, refer for application note "Building Toolchains" instead.

**Board Support Package** This is an optional component, mostly shipped aside with a piece of hardware. There are various BSP available, some are generic, some are intended for a specific hardware.

## Download required Archives

To follow this application note we will need some archives to download. Maybe we got these archives as a part of an evaluation board package or we can download it from anywhere in the world wide web.

One place we can download them is at <http://www.oselas.com>. The OSELAS pages providing all required packages.

In order to follow the steps below, at least these archives should be available on our host:

- `ptxdist-0.10.6.tgz`
- `ptxdist-0.10.6-patches.tgz`
- `OSELAS.Toolchain-1.1.0.tgz`

For a quick start it would be a good idea to also download the generic board support packages `ptxdist-0.10.6-projects.tgz`

## Extracting the Sources

To install PTXdist, at least two archives have to be extracted:

**ptxdist-0.10.6.tgz** containing the software

**ptxdist-0.10.6-patches.tar.gz** containing all patches for upstream packets

**ptxdist-0.10.6-projects.tar.gz** optional component, containing generic projects to be used as a starting point

The PTXdist and patches packets have to be extracted into some temporary directory, for example the `local/` directory in the user's home. If this directory does not exist, we have to create it and change into it

```
~$ cd
~$ mkdir local
~$ cd local
```

Next steps are to extract the archives:

```
~/local$ tar -zxvf ptxdist-0.10.6.tgz
~/local$ tar -zxvf ptxdist-0.10.6-patches.tar.gz
```

and if required the generic projects:

```
~/local$ tar -zxvf ptxdist-0.10.6-projects.tar.gz
```

If everything goes well, we now have a `PTXdist-0.10.6` directory, so we can change into it:

```
~/local$ cd ptxdist-0.10.6
~/local/ptxdist-0.10.6$ ls -l
```

```
total 168
-rw-r--r--  1 rsc ptx  1547 Jan 26 17:29 COMPILE-TEST
-rw-r--r--  1 rsc ptx 18361 Dec 27 12:46 COPYING
-rw-r--r--  1 rsc ptx  2084 Jan 31 08:20 CREDITS
-rw-r--r--  1 rsc ptx 41309 Feb  3 08:23 ChangeLog
drwxr-sr-x  3 rsc ptx  4096 Dec 27 12:46 Documentation
-rw-r--r--  1 rsc ptx   58 Dec 27 12:46 INSTALL
-rw-r--r--  1 rsc ptx  1275 Mar  8 18:05 Makefile
-rw-r--r--  1 rsc ptx  1216 Mar  8 18:03 Makefile.in
-rw-r--r--  1 rsc ptx  3415 Feb 19 22:58 README
-rw-r--r--  1 rsc ptx   949 Jan 26 17:29 README.Toolchains
-rw-r--r--  1 rsc ptx   835 Dec 27 12:46 SPECIFICATION
-rw-r--r--  1 rsc ptx  8927 Mar  1 07:36 TODO
-rw-r--r--  1 rsc ptx  1901 Jan 26 17:29 TOOLCHAINS
drwxr-sr-x  3 rsc ptx  4096 Mar  8 18:44 bin
drwxr-sr-x 11 rsc ptx  4096 Mar  8 19:36 config
-rwxr-xr-x  1 rsc ptx  2306 Mar  8 18:03 configure
drwxr-sr-x 106 rsc ptx  4096 Mar  5 16:12 patches
drwxr-sr-x  4 rsc ptx  4096 Dec 27 12:45 pending_patches
drwxr-sr-x 35 rsc ptx  4096 Mar  4 16:49 projects
drwxr-sr-x  4 rsc ptx 20480 Mar  8 20:03 rules
drwxr-sr-x  7 rsc ptx  4096 Mar  8 18:07 scripts
drwxr-sr-x  3 rsc ptx  4096 Feb 11 13:42 tests
```

## Prerequisites

Before PTXdist can be installed it has to be checked if all necessary programs are installed on the development host. The configure script will stop if it discovers that something is missing.

The PTXdist installation is based on GNU autotools, so the first thing to be done now is to configure the packet:

```
~/local/ptxdist-0.10.6$ ./configure
checking version=0.10.6
checking prefix=/usr/local
checking topdir=/home/username/tmp/ptxdist-0.10.6
checking instdir=/usr/local/lib/ptxdist-0.10.6
creating Makefile
creating rules/Kconfig
```

Without further arguments PTXdist is configured to be installed into `/usr/local`, which is the standard location for user installed programs. To change the installation path to anything non-standard, we use the `--prefix` argument to the `configure` script. The `--help` option offers more information about what else can be changed for the installation process.

The installation paths are configured in a way that several PTXdist versions can be installed in parallel. So if an old version of PTXdist is already installed there is no need to remove it.

One of the most important tasks for the `configure` script is to find out if all the programs PTXdist depends on are already present on the development host. The script will stop with an error message in case something is missing. If this happens, the missing tools have to be installed from the distribution before re-running the `configure` script.



In this early PTXdist version not all tests are implemented in the `configure` script yet. So if something goes wrong or you don't understand some error messages send a mail to [support@pengutronix.de](mailto:support@pengutronix.de) and help us improve the tool.

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When the `configure` script is finished successfully, we can now run

```
~/local/ptxdist-0.10.6$ make
```

All program parts are being compiled, and if there are no errors we can now install PTXdist into its final location. In order to write to `/usr/local`, this step has to be performed as root:

```
~/local/ptxdist-0.10.6$ su
[enter root password]
/home/username/local/ptxdist-0.10.6$ make install
[...]
```

If we don't have root access to the machine it is also possible to install into some other directory with the `--prefix` option. We need to take care that the `bin/` directory below the new installation dir is added to our `$PATH` environment variable (for example by exporting it in `~/ .bashrc`).

The installation is now done, so the temporary folder may now be removed:

```
~/local/ptxdist-0.10.6$ cd
~$ rm -fr local/ptxdist-0.10.6
```

## Configuring PTXdist

For the prime time PTXdist should be configured. Two settings are the most important ones: Where to store the source packages and if a proxy must be used to gain access to the world wide web.

Run PTXdist's setup:

```
~$ ptxdist setup
```

Due to PTXdist is working with sources only, it needs various source archives from the world wide web. If these archives are not present on our host, PTXdist starts the `wget` command to download them on demand.

## Proxy Setup

To do so, an internet access is required. If this access is managed by a proxy `wget` command must be advised to use it. PTXdist can be configured to advice the `wget` command automatically: Navigate to entry *Proxies* and enter the required addresses and ports to access the proxy in the form:

```
<protocol>://<address>:<port>
```

## Source Archive Location

Whenever PTXdist downloads source archives it stores it project locally. If we are working with more than one project, every project would download its own required archives. To share all source archives between all projects PTXdist can be configured to use only one archive directory for all projects it handles: Navigate to menu entry *Source Directory* and enter the path to the directory where PTXdist should store archives to share between projects.

## Generic Project Location

If we already installed the generic projects we should also configure PTXdist to know this location. If we already did so, we can use the command `ptxdist projects` to get a list of available projects and `ptxdist clone` to get a local working copy of a shared generic project.

Navigate to menu entry *Project Searchpath* and enter the path to projects that can be used in such a way. Here we can configure more than one path, each part can be delimited by a colon. For example for PTXdist's generic projects and our own previous projects like this:

```
/usr/local/lib/ptxdist-0.10.6/projects:/office/my_projects/ptxdist
```

Leave the menu and store the configuration. PTXdist is now ready for use.



If there is no toolchain available yet, the next step is to build one at least for the desired target architecture. Refer application note "Building Toolchains" for further details.

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## Additional questions?

Below a list of locations where you can get help in case of trouble or questions how to do something special within PTXdist or general questions about Linux in the embedded world.

## Mailing Lists

### About PTXdist in special

This is an english language public mailing list for questions about PTXdist. See web site

[http://www.pengutronix.de/maillinglists/index\\_en.html](http://www.pengutronix.de/maillinglists/index_en.html)

how to subscribe to this list. If you want to search through the mailing list archive, visit

<http://www.mail-archive.com/>

and search for the list *ptxdist*.

### About embedded Linux in general

This is a german language public mailing list for general questions about Linux in embedded environments. See web site

[http://www.pengutronix.de/maillinglists/index\\_de.html](http://www.pengutronix.de/maillinglists/index_de.html)

how to subscribe to this list. Note: You also can send english language mails.

## News Groups

### About Linux in embedded environments

This is an english language news group for general questions about Linux in embedded environments.

**comp.os.linux.embedded**

### About general Unix/Linux questions

This is a german language news group for general questions about Unix/Linux programming.

**de.comp.os.unix.programming**

## Chat/IRC

### About PTXdist in special

**irc.freenode.net:6667**

Create a connection to the **irc.freenode.net:6667** server and enter the chat group **#ptxdist**. This is an english language group to answer questions about PTXdist. Best time to meet somebody in there is at european daytime.

## Miscellaneous

### Online Linux Kernel Cross Reference

A powerful cross reference to be used online.

<http://lxr.linux.no/blurb.html>

### U-Boot manual (partially)

Manual how to survive in an embedded environment and how to use the U-Boot on target's side

<http://www.denx.de/wiki/DULG>

## Commercial Support

You can order immediate support through customer specific mailing lists, by telephone or also on site. Ask our sales representative for a price quotation for your special requirements.

Contact us at:

**Pengutronix**  
**Hannoversche Strasse 2**  
**D-31134 Hildesheim**  
**Germany**  
**Phone: +49 - 51 21 / 20 69 17 - 0**  
**Fax: +49 - 51 21 / 20 69 17 - 9**

or by electronic mail:

**[sales@pengutronix.de](mailto:sales@pengutronix.de)**



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Send your suggestions to [jbe@pengutronix.de](mailto:jbe@pengutronix.de)

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**Pengutronix**  
**Hannoversche Strasse 2**  
**D-31134 Hildesheim**  
**Germany**  
**Phone: +49 - 51 21 / 20 69 17 - 0**  
**Fax: +49 - 51 21 / 20 69 17 - 9**

