

PTXdist Application Note

Adding files into the build

PTXdist's build system can be simply expanded to integrate some project specific files into the automatic build process. This application note describes a way to do so.



Adding files into the build

Most projects handled by PTXdist are needing more than a simple root filesystem. So there is a cause for additional files in every project to be automatically installed when the `ptxdist go` command is running. These files could be HTML files to be provided by a web server running on the target or some special kind of configurations files that PTXdist does not support natively.

This application note describes with a simple example the rules to follow to integrate everything required.

Basically we must add three files:

Kconfig This file describes the whole menu we will see when we run the `ptxdist menuconfig` command.

rules/adding_file.in This file describes one part of the whole menu. It will be referenced by *Kconfig*. It is called a *menu file*.

rules/adding_file.make This file describes what to do while the `ptxdist go` command is running. It is called a *rule file*.

The name *adding_file* was arbitrarily selected. We can name these files with any name we like.

To make PTXdist be aware of new rules we must extend the menu. Refer application note "Extending the Menu" for further details how it works.

Defining an additional Menu Entry

First we need the *menu file*. We start our favoured editor and create the file `rules/adding_file.in` in our active project. This should be its content:

```
config ADDING_FILE
bool
prompt "Install additional files"
help
    Install additional files into target's root filesystem
```

Extending the Menu

Now we must integrate the new menu entry in PTXdist's menu. This is controlled by a project local *Kconfig* file, with the following content:

```
source "config/Kconfig"
source "workspace/rules/adding\_file.in"
```

Due to a project local *Kconfig* file will replace the whole menu definition, the first line in this file ensures the presence of the standard menu. Starting with the second line the extensions are listed.

Note: As the "Extending the Menu" application note mentioned PTXdist provides a *Kconfig* template we could use to simplify this step.

We can copy `<ptxdist-installdir>/rules/templates/kconfig/Kconfig` to our active project and modify it instead of generating the file.

If we now run `ptxdist go` nothing special will happen. There will be no error message, but also no installation of any additional file.

Creating a Rule File

To do the installation we need the additional rule file `rules/adding_file.make` mentioned above. This is more or less a large file, so we should use PTXdist's template mechanism to create this file, instead of writing our own.

```
$ cd rules/  
$ ptxdist newpacket simple
```

```
ptxdist: creating a new packet from template-smp:
```

```
ptxdist: enter packet name.....: adding-file  
ptxdist: enter version number....:  
ptxdist: enter URL of basedir....:  
ptxdist: enter packet author.....: Juergen Beisert  
ptxdist: enter suffix.....:
```

We answer the questions we can answer, all other we left empty. For example we do not have a URL, nor an archive suffix.

This command creates a new rule file: `adding_file.make`.

Adapt the generic Rule File

As this rule file is only a generic one, we now must add the instructions to do the job. We open `rules/adding_file.make` with our favoured editor and navigate to line 66 and/or 91.

It depends on the use of our files where they should get installed. If the files are used on the host side to build other packets the *install* stage in line 66 and below is the right one. Follow the *TODO* text in the *install* stage.

If the files are required by the target the *targetinstall* stage is the right one. For the target we cannot use any simple native copy command, we must create an ipkg package instead. Uncomment all macro calls here and call the *install_copy* macro for each file to be installed on the target root filesystem.

There is no restriction where the files are come from to insert them into target's root filesystem. We can give any source path and filename. If we are using a special directory not already existing on target's root filesystem we should also create it.

The *install_copy* call

The generic *install_copy* call is defined as:

```
$(call install_copy, pname,uid,gid,perms,source,dest,strip)
```

pname packet name. Must be the same as used in macro call *install_init*.

uid user id of the destination. Numerical values only.

gid group id of the destination. Numerical values only.

perms permission of the destination. Numerical values only.

source path and name of file on host to be installed on target

dest path and name in the target root filesystem

strip if the file should be stripped while installing (for binary files only)

Some examples on how to use *install_copy*:

- Create directory `/opt/my_dir` on target's root filesystem, owner should be root, everyone can read this directory:

```
$(call install_copy, pname,0,0,0755,/opt/my_dir)
```

Note: For this call we can omit the *source* and *strip* arguments.

- Copy executable binary from `projectroot/bin/my_exec` to target's `bin/` directory, owner should be root, everyone can execute it. It should be stripped to remove the debug info:

```
$(call install_copy, pname,0,0,0755,  
    $(PTXDIST_WORKSPACE)/projectroot/bin/my_exec,  
    bin/my_exec,y)
```

Note: `$(PTXDIST_WORKSPACE)` is used to be independent from project's location in the host filesystem.

- Copy a shell script from `projectroot/bin/my_script` to target's `bin/` directory, owner should be root, everyone can execute it:

```
$(call install_copy, pname,0,0,0755,  
    $(PTXDIST_WORKSPACE)/projectroot/bin/my_script,  
    bin/my_script,n)
```

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

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

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>

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