

Ubuntu kernel build alternatives

From OMAPpedia

This page gathers several options for building an Ubuntu kernel, either as a binary package or directly using the standard kernel make command, both natively (on an ARM board) or cross-compiled.

Several ways for generating an Ubuntu kernel are described here. Preferred way is described here Ubuntu kernel for OMAP4:

- kernel packaging using debuild
- kernel packaging using dpkg-build-package
- kernel packaging using debian/rules
- standard kernel building (kernel Makefile)

Contents

- 1 A note on required tools / packages
- 2 Native compilation
 - 2.1 debuild
 - 2.2 dpkg-buildpackage
 - 2.3 debian/rules
 - 2.4 kernel Makefile
- 3 Cross-compilation
 - 3.1 debuild
 - 3.2 dpkg-buildpackage
 - 3.3 debian/rules
 - 3.4 kernel Makefile
- 4 ABI and modules change verification
- 5 kernel source package
- 6 Links

A note on required tools / packages

If you need to generate kernel packages, you will have to install additional tools. Most of the tools can be installed by running:

```
sudo apt-get build-dep linux-image-$(uname -r)
```

Here is a non-exhaustive list of the packages that are usually required for packaging: git-core debhelper build-essential fakeroot kernel-wedge libelf-dev debhelper xmlto docbook-utils gs transfig sharutils pbuilder binutils-dev libdw-dev asciidoc

Native compilation

debuild

debuild is a wrapper on top of dpkg-buildpackage. It is installed with the devscripts package: `sudo apt-get install devscripts`

```
debuild -b -uc -us
```

dpkg-buildpackage

```
fakeroot debian/rules clean  
dpkg-buildpackage -B
```

debian/rules

```
fakeroot debian/rules clean  
export $(dpkg-architecture -aarmel)  
do_tools=false fakeroot debian/rules binary-arch
```

kernel Makefile

```
cp debian.ti-omap4/config/config.common.ubuntu .config  
make  
make uImage
```

Cross-compilation

Here, you will need a cross toolchain. The cross-toolchains usually used are:

- Linaro one: <https://wiki.linaro.org/MarcinJuszkiewicz/Projects>

/UbuntuCrossToolchains (<https://wiki.linaro.org/WorkingGroups/ToolChain/CrossCompilerOnLucid>)

- CodeSourcery one (2010q1 link): <http://www.codesourcery.com/sgpp/lite/arm/portal/release1293>

Linaro toolchain is preferred as more up to date, and in line with the gcc shipping with Ubuntu.

The examples below assume you are using the CodeSourcery 2010q1 toolchain. If you want to use Linaro instead, just replace arm-none-linux-gnueabi- by arm-linux-gnueabi-.

Note: the do_tools=false option is required with CodeSourcery 2010q1. It will prevent the generation of the tools binary package (including perf) that would fail with CodeSourcery 2010q1 toolchain (to be checked with Linaro or more recent CodeSourcery).

debuild

```
debuild -eCROSS_COMPILE=arm-none-linux-gnueabi- --prepend-path=<path to your codegen ../bin/> -edo_tools
```

(replace <path to your codegen ../bin/> with the correct path)

dpkg-buildpackage

```
fakeroot debian/rules clean
CROSS_COMPILE=arm-none-linux-gnueabi- do_tools=false dpkg-buildpackage -B -aarmel -uc -us
```

debian/rules

```
fakeroot debian/rules clean
export $(dpkg-architecture -aarmel)
CROSS_COMPILE=arm-none-linux-gnueabi- do_tools=false fakeroot debian/rules binary-arch
```

kernel Makefile

```
cp debian.ti-omap4/config/config.common.ubuntu .config
ARCH=arm CROSS_COMPILE=arm-none-linux-gnueabi- make
ARCH=arm CROSS_COMPILE=arm-none-linux-gnueabi- make uImage
```

ABI and modules change verification

The kernel packaging tools will fail package creation if the kernel ABI or modules-list changed since the last packaged version. This test can be skipped to complete the package creation in spite of ABI or modules list change. Add the following option depending on your build method:

- debuild: add '-eskipabi=true -eskipmodule=true' to your command line
- dpkg-buildpackage and debian/rules: add 'skipabi=true skipmodule=true' to your command line

kernel source package

The kernel source package contains the kernel sources. Here is an easy way to generate it:

```
git clean -fdx
fakeroot debian/rules clean
time debuild -S -sa -uc -us -I.git -I.gitignore -i'\.git.*'
```

Links

Retrieved from "http://www.omappedia.com/wiki/Ubuntu_kernel_build_alternatives"

Category: Ubuntu

- This page was last modified on 27 September 2011, at 14:26.
- This page has been accessed 9,275 times.
- Content is available under Creative Commons Attribution-Share Alike 3.0 license..
- Privacy policy
- About OMAPpedia
- Disclaimers