

Buildroot BOF

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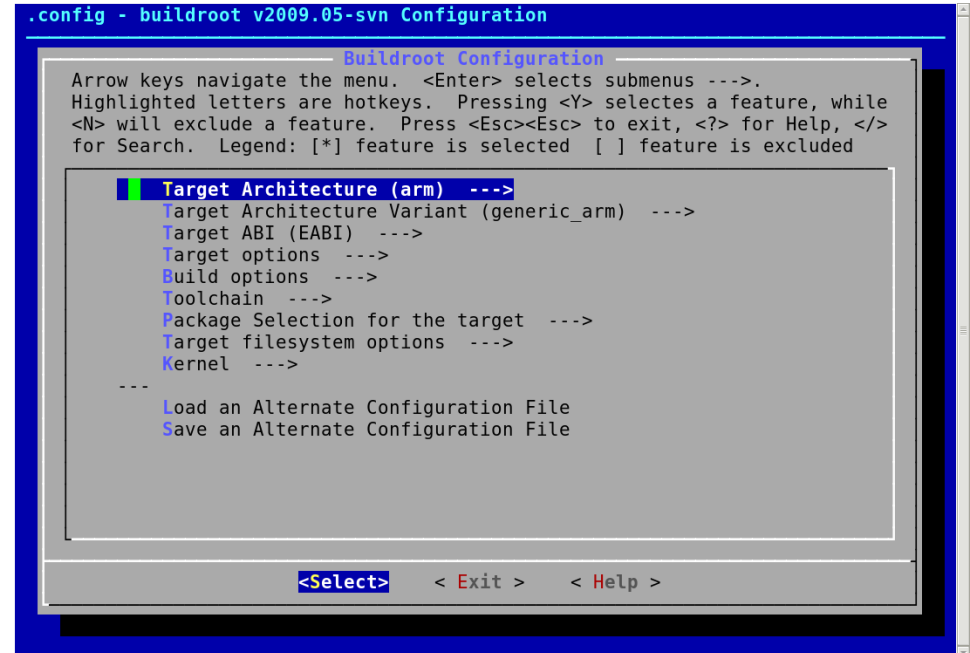
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What is Buildroot ?

- ▶ Buildroot is an embedded Linux build system
- ▶ It automates the process of downloading, extracting, configuring, compiling, installing and integrating the different components of an embedded Linux system
 - ▶ Makes your build reproducible
 - ▶ Makes your build easier, because Buildroot integrates known-working recipes and patches fixing issues encountered by other users
- ▶ Buildroot generates one or several of
 - ▶ The cross-compiling toolchain
 - ▶ The root filesystem from a very basic Busybox-based filesystem to a more complicated filesystem based on the hundred of packages supported
 - ▶ The kernel image and the bootloader image

- ▶ Buildroot is
 - ▶ Written entirely using Makefiles.
 - ▶ Uses the kconfig configuration system, providing menuconfig and xconfig interfaces to select the different options.



```
.config - buildroot v2009.05-svn Configuration

Buildroot Configuration
Arrow keys navigate the menu. <Enter> selects submenus --->.
Highlighted letters are hotkeys. Pressing <Y> selects a feature, while
<N> will exclude a feature. Press <Esc><Esc> to exit, <?> for Help, </>
for Search. Legend: [*] feature is selected [ ] feature is excluded

Target Architecture (arm) --->
Target Architecture Variant (generic_arm) --->
Target ABI (EABI) --->
Target options --->
Build options --->
Toolchain --->
Package Selection for the target --->
Target filesystem options --->
Kernel --->

---
Load an Alternate Configuration File
Save an Alternate Configuration File

<Select> < Exit > < Help >
```

- ▶ Buildroot has been initially developed by uClibc developers.
- ▶ For a long time, it had no maintainer
 - ▶ No releases were delivered
 - ▶ No real community support, no attention to bug reports and proposed patches
 - ▶ No review of integrated patches, leading to cluttered and over-complicated things
- ▶ Since January 2009, Buildroot now has an official maintainer, Peter Korsgaard
 - ▶ New releases shipped every 3 months: 2009.02, 2009.05 and 2009.08 so far
 - ▶ Much more active community
 - ▶ Cleanup process going on
 - ▶ Switch to Git

- ▶ Improvements to the external toolchain support, including glibc support
- ▶ Support for the Xtensa architecture
- ▶ QT based configurator (make xconfig)
- ▶ Major simplification of Buildroot generated tree
- ▶ Lots of packages added, obsolete packages removed, dozens of packages updated or fixed
- ▶ Better independence from host tools, which makes Buildroot more robust

- ▶ A lot of cleanup
 - ▶ Integration of bootloaders and kernel build, external source toolchains
- ▶ Testing
 - ▶ BuildBot going to be set up in order to guarantee that a set of well-known configurations build properly
- ▶ Support for external packages and boards
 - ▶ Will allow companies or projects to keep their packages and boards out of the tree in a nice way
- ▶ Support for partial rebuilding and package removal
 - ▶ Keep the toolchain, rebuild only the root filesystem
 - ▶ Remove this or that without recompiling everything
- ▶ Better support for external toolchains

- ▶ Maybe integration with Crosstool-NG for toolchain generation
- ▶ Simplification of package makefiles
 - ▶ Ease integration of new packages
 - ▶ Allow package-wide operations to be easily inserted

- ▶ Are you using Buildroot ?
- ▶ For what kind of projects ?
- ▶ In your opinion, what are Buildroot strengths and weaknesses ?
- ▶ What should we improve / implement in Buildroot ?

We have scheduled a **Buildroot Developer Day** on Saturday to let Buildroot developers meet and discuss your proposals.

Sponsored by Calao Systems and Free Electrons.



BuildRoot

Making Embedded Linux Easy

<http://www.buildroot.net>