About author
OpenEmbedded
Building native software
Building for non-OE distributions
Testing new machine

Hacking with OpenEmbedded

Marcin Juszkiewicz

marcin@juszkiewicz.com.pl
http://marcin.juszkiewicz.com.pl

Embedded Linux Conference Europe 2009

About author
OpenEmbedded
Building native software
Building for non-OE distributions
Testing new machine

Some information about me

- Bought Sharp Zaurus SL-5500 in February 2003
- Joined OpenEmbedded team in 2003
- OpenZaurus distribution maintainer in 2005-2006
- Created own company for OpenEmbedded & Poky consulting in 2006
- Became Poky Linux developer in 2007
- Bug Linux developer since 2008

About author
OpenEmbedded
Building native software
Building for non-OE distributions
Testing new machine

Introduction
What is OpenEmbedded

Introduction

For most people OpenEmbedded is a build system used to build whole filesystems or new distributions. But that does not cover all possibilities - it can be used for other things like:

- building missing tools for host system
- building software for distributions which are not OE based (like Maemo, SharpROM)

About author
OpenEmbedded
Building native software
Building for non-OE distributions
Testing new machine

Introduction
What is OpenEmbedded

What is OpenEmbedded

- Set of metadata which describe how to build software
- Fully open (MIT license) solution of all problems with cross-compilation
- System created and maintained by passionates
- Project independent from any commercial company
- Project which allows to create single apps, whole root filesystems by one command.
- Tool which generates root filesystems in many formats
- Answer for distributions which use 200MB for "base" system

About author
OpenEmbedded
Building native software
Building for non-OE distributions
Testing new machine

Building native software
Use cases
How to use results

Building native software

OE supports many types of target devices: palmtops, developer boards, routers, network storage devices etc. But it also can be used to build software for host system.

This is done by using MACHINE="native" configuration. Host toolchain is used instead of cross compilation.

About author
OpenEmbedded
Building native software
Building for non-OE distributions
Testing new machine

Building native software
Use cases
How to use results

Use cases

- Building applications (with all dependencies) on machines without root access
- Building tools not available in host distribution

About author
OpenEmbedded
Building native software
Building for non-OE distributions
Testing new machine

Building native software
Use cases
How to use results

How to use results

In OE all build results are stored in packages (IPK, DEB, RPM) with autogenerated dependencies. All what is needed is installing them on host system.

For OPKG package manager there is a "-offline-root" option for that, DPKG has "–root" option.

LD_LIBRARY_PATH needs to be used - otherwise system libraries will be used.

About author
OpenEmbedded
Building native software
Building for non-OE distributions
Testing new machine

Building for non-OE distributions
Supported distributions

Building for non-OE distributions

There are many distributions built with OpenEmbedded but there are moments when we need to build something for other distro. There can be many reasons:

- We do not like their tools (scratchbox for example)
- We do not have root access (again scratchbox)
- There is no environment to build software for distro (for example SharpROM)
- Their build system lacks packages present in OpenEmbedded

About author
OpenEmbedded
Building native software
Building for non-OE distributions
Testing new machine

Building for non-OE distributions
Supported distributions

Supported distributions

So far we support building for those distributions:

- Maemo4 - chinook and diablo versions (by DISTRO="chinook-compat")
- SharpROM - original system for Sharp Zaurus PDA devices (DISTRO="sharprom-compatible")
- OpenWRT - their SDK is used (by DISTRO="openwrt-sdk")

One warning - resulting packages can have a bit other dependencies then distribution ones.

About author
OpenEmbedded
Building native software
Building for non-OE distributions
Testing new machine

Testing new machine
Ångström online image builder

Testing new machine

What to do during it when we want to play with our fresh toy?
Building rootfs for new machine takes time.

This is a place when Ångström comes to the rescue. Currently
this OE based distribution supports most of devices handled by
OpenEmbedded.

We can build just kernel (or try to use vendor one) and use
rootfs built for other device.

About author
OpenEmbedded
Building native software
Building for non-OE distributions
Testing new machine

Testing new machine
Ångström online image builder

Ångström online image builder

About a year ago we created online image builder for Ångström.
It makes use of it's repositories to create target root filesystems.

Usage is simple - select machine, requested packages and
submit. In few minutes (depends on machine load) rootfs will
be ready to download.

```
http:
//www.angstrom-distribution.org/narcissus/
```