Hacking with OpenEmbedded

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Embedded Linux Conference Europe 2009
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
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)
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

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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.
Use cases

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