

5

Yocto Project internal tools

08 noiembrie 2016

- Hob
- Toaster
- Autobuilder
- Devtool

- Application Development Toolkit
- Optional Eclipse Yocto plug-ins available
- Qemu support available
- Debugging, profiling and tracing
- The complete kit for application development

➤ Hob

➤ Toaster

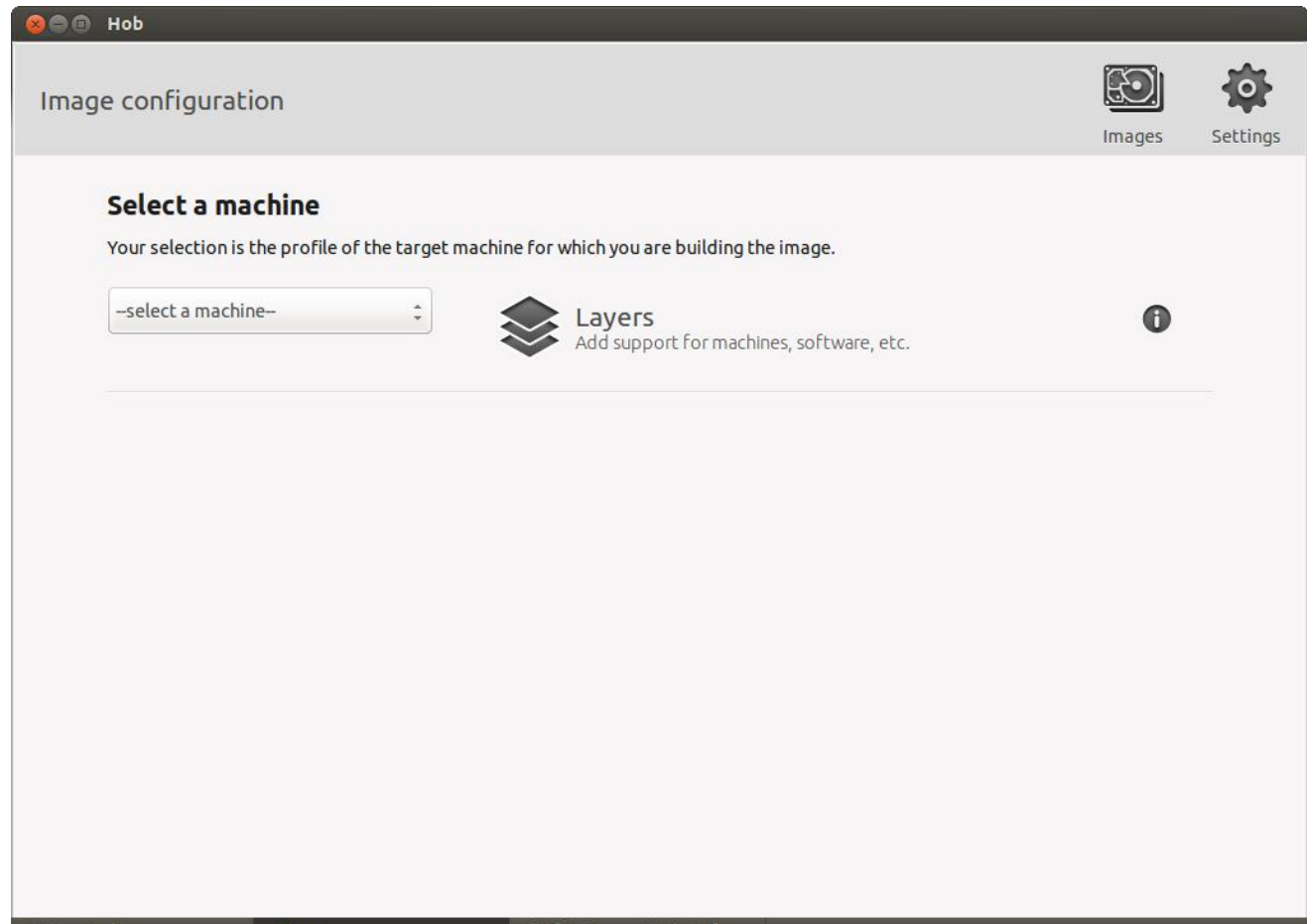
➤ Autobuilder

➤ Devtool

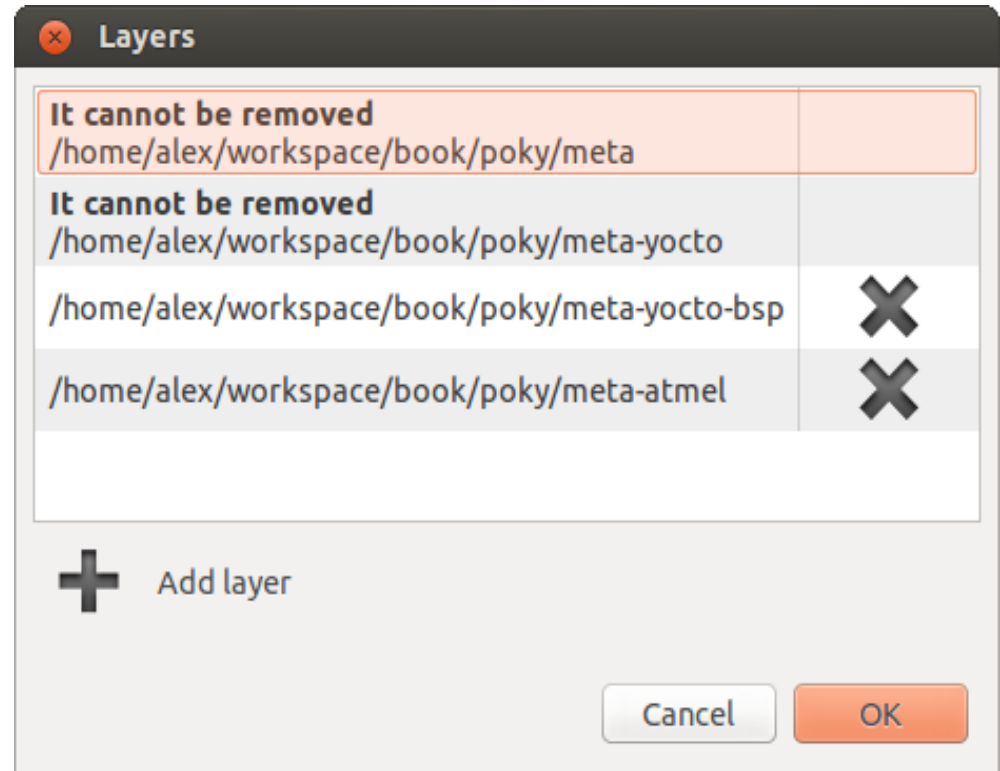
- GUI alternative for Bitbake? Not really
- Builds and updates image content easier
- Adds layers faster
- Runs image through Qemu
- USB deploy for live-booting
- Deprecated since Yocto 1.6

➤ source poky/oe-init-build-env ../build-test

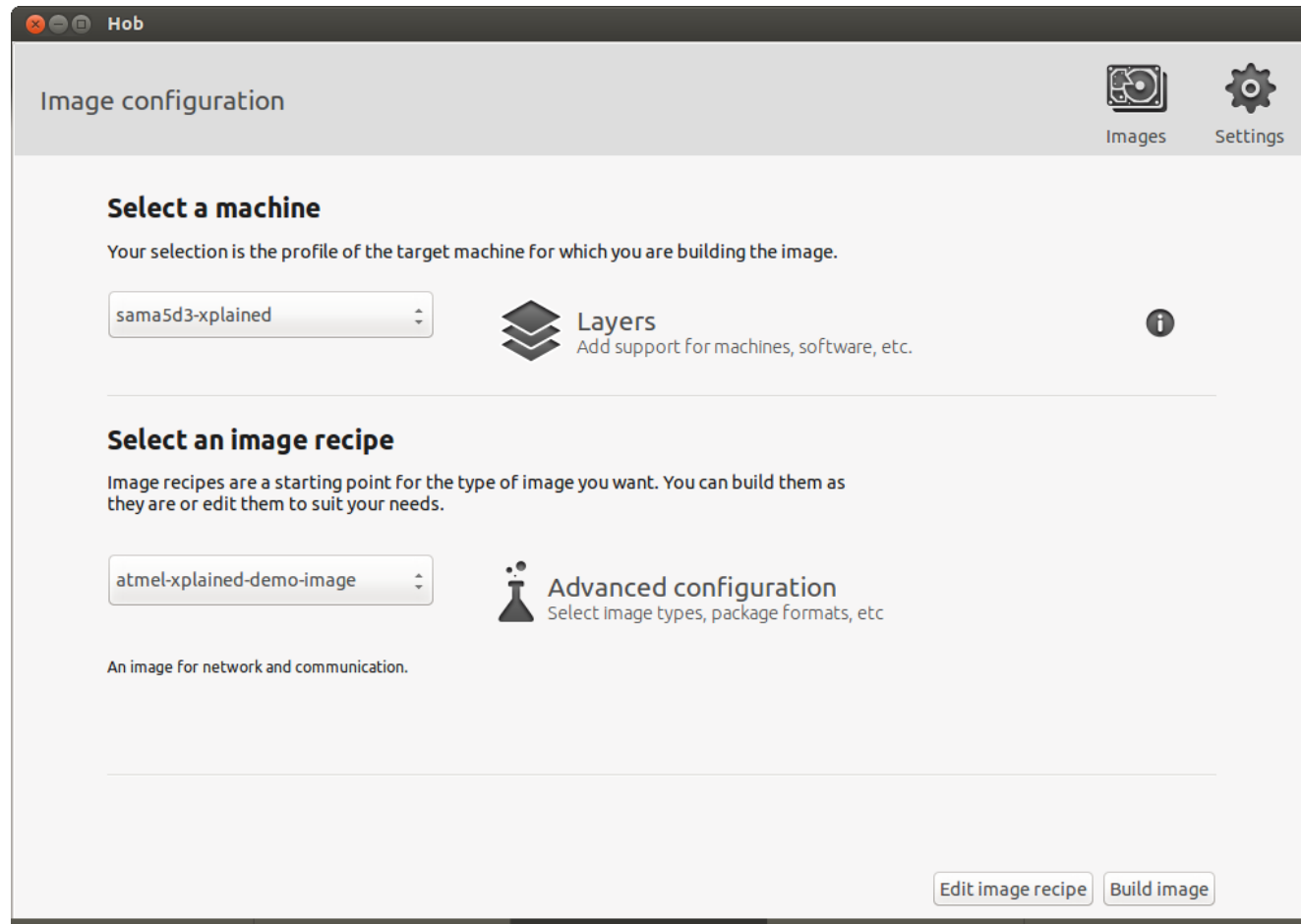
➤ Hob



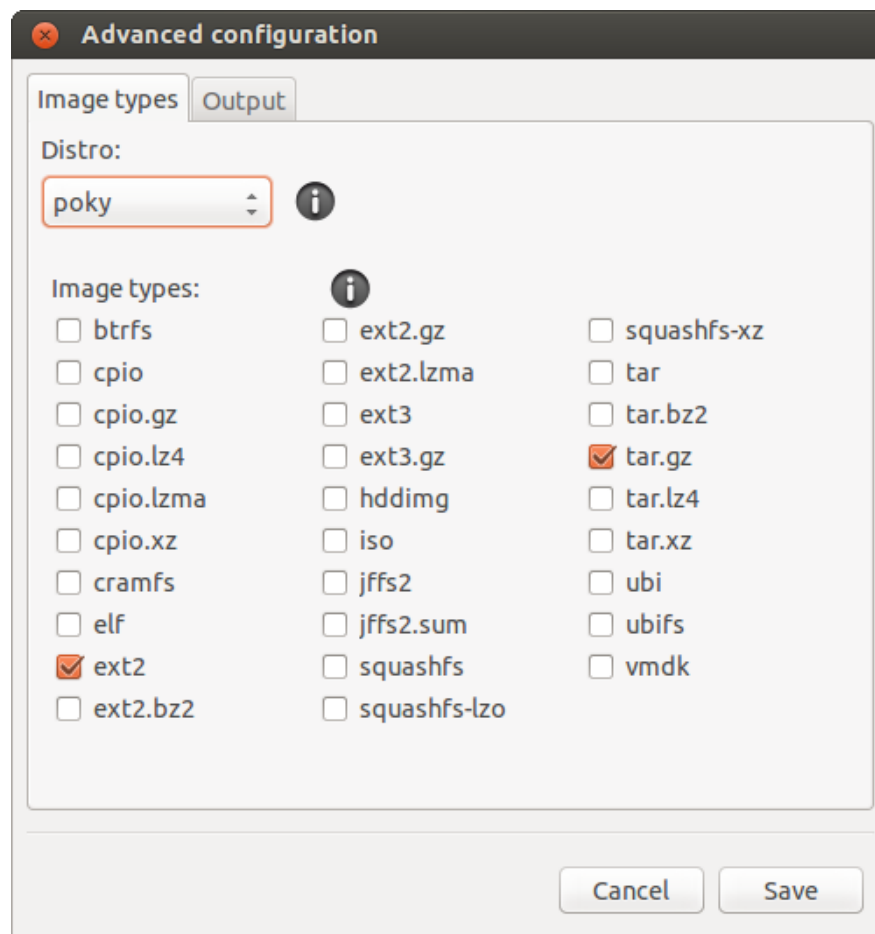
- After the corresponding BSP layer is added a MACHINE can be selected
- In case extra layers are required by the BSP layer, an error message will indicate lack of files/recipes
- The recipes location can be found using:
<http://layers.openembedded.org>



- Happens after the generation of the dependency tree
- Offers support for image advanced configurations



- Selection of the distribution type
- Selection of the image types
- A packaging format
- Rootfs output tweaks



➤ Hob

➤ Toaster

➤ Autobuilder

➤ Devtool

- Web-based interface
- Not developed as a replacement for Hob initially but as a complement to it
- Restructured Bitbake to a client-server format
- Learned from Hob`s mistakes
- Work from Hob moved onto Toaster
- Contains a build analysis component

- Structure of the image directory
- The available build configurations
- The outcome of a build along with the errors and registered warnings
- The packages present in an image recipe
- Recipes and packages that are built
- Tasks that are executed
- Performance data regarding executed tasks, such as CPU usage, time and disk I/O usage
- Dependency and reverse dependencies for recipes

- Interactive mode: released with Yocto Project 1.6, based on **toasterui** (build recording) and **toastergui** (build inspection and statistics) components.
- Managed mode: handles builds configuration
 - Remote managed mode: production defined, multiple users and customized instalation
 - Local managed mode or `_local_` permits running of builds using local machine code and build directory, used by anyone who interacts with Toaster for the first time

- `apt-get install mysql-server`
- `python bitbake/lib/toaster/manage.py syncdb`
- `python bitbake/lib/toaster/manage.py migrate orm`
- `python bitbake/lib/toaster/manage.py migrate bldcontrol`
- `python bitbake/lib/toaster/manage.py runserver`

- bitbake/lib/toaster/toastermain/ settings.py
 - DATABASES variable
- source toaster start
- conf/toaster.conf
 - INHERIT += "toaster"
 - INHERIT += "buildhistory"
 - BUILDHISTORY_COMMIT = "1"

- `bitbake --postread conf/toaster.conf --server-only -t xmlrpc -B localhost:0 && export BBSERVER=localhost:-1`
- `nohup bitbake --observe-only -u toasterui >toaster_ui.log &`
- `bitbake <recipe-name>/<image-name>`
- More info here: <https://youtu.be/qYgDZ8YzV6w>
- Documentation available here:
<http://www.yoctoproject.org/docs/2.2/toaster-manual/toaster-manual.html>

- `sudo apt-get install python-pip python-dev build-essential`
- `sudo pip install --upgrade pip`
- `sudo pip install --upgrade virtualenv`
- `sudo pip install django==1.6`
- `sudo pip install South==0.8.4`
- Free the 8000 and 8200 ports
- `source init-build-env; source toaster start`
- `http:// localhost:8000`

Builds - Toaster - Mozilla Firefox

File Edit View History Bookmarks Tools Help

Builds - Toaster

[http://localhost:8000/toastergui/builds/?count=10&orderby=completed_on%3A-&page=1](#)

Search

This is Toaster

A web interface to [BitBake](#), the [Yocto Project](#) build system.

Show me the manual

I want to contribute

Recent builds

core-image-sato (+3) qemu86

ETA: 16:34

core-image-sato atom-pc (15:22)

4 warnings

Build time: 00:36:55

core-image-x11 qemu86 (12:01)

3 errors 10 warnings

Build time: 00:27:45

All builds

Search builds

Search

Edit columns

Show rows: 10

Outcome	Target	Machine	Completed on	Errors	Warnings	Output
	core-image-sato	atom-pc	11/06/13 at 13:22		4 warnings	ext3, hddimg, iso, tar.bz2
	core-image-x11	qemu86	11/06/13 at 12:01	3 errors	10 warnings	
	core-image-sato	atom-pc	11/06/13 at 11:54		4 warnings	ext3, hddimg, iso
	busybox	qemu86-64	04/12/13 at 10:08			
	busybox	qemu86-64	04/12/13 at 09:58			
	meta-recipes-extended	qemu86	11/06/13 at 17:16			ext3, hddimg

virtual/kernel qemu86 (2 minutes ago)

ETA: in 16 minutes from now

Firefox window: Toaster - Mozilla Firefox

Address bar: <http://localhost:8000/toastergui/build/1#errors>

Left sidebar:

- Recipes
- Packages
- PERFORMANCE
 - Time
 - CPU usage
 - Disk I/O

Build status banner: **Failed** on 01/02/15 02:38 with **4 errors** and **4 warnings** Build time: 02:57:53

Errors section: **4 errors**

Build summary

Configuration	Tasks	Recipes & Packages
Machine qemux86	Total number of tasks 386	Recipes built 53
Distro poky	Tasks executed ⓘ 380	Packages built 31
Layers meta meta-yocto meta-yocto-bsp	Tasks not executed ⓘ 6	
	Reuse ⓘ 1 %	

Configvars - Toaster - Mozilla Firefox

File Edit View History Bookmarks Tools Help

Configvars - Toaster

http://localhost:8000/toastergui/build/2/configvars?count=100&orderby=variable_name%3A%2B&filter=description_r

All builds → virtual/kernel qemu86 (01/02/15 13:52) → Configuration

BUILD

- Configuration
- Tasks
- Recipes
- Packages

PERFORMANCE

- Time
- CPU usage
- Disk I/O

304 variables found

Summary BitBake variables

Search BitBake variables Search Edit columns Show rows: 100

Variable	Value	Set in file	Description
ALLOW_EMPTY_\${PN}-dbg	1	/home/alex/workspace/book/poky/meta/conf/bitbake.conf	Specifies if an output package should still be produced if it is empty.
ALLOW_EMPTY_\${PN}-dev	1	/home/alex/workspace/book/poky/meta/conf/bitbake.conf	Specifies if an output package should still be produced if it is empty.
ASSUME_PROVIDED	bzip2-native chrpath-native git-native grep-native diffstat-native patch-native perl-native-runtime python-native-runtime tar-native virtual/libintl-n...	/home/alex/workspace/book/build-test-toaster/conf/local.conf	List of packages (recipes actually) that are assumed to be implicitly available. BitBake does not build these packages.

Find in page Highlight All Match Case

- `bitbake-cookerdaemon.log`: This log file is necessary for the BitBake server
- `.toastermain.pid`: This is the file that contains pid of the web server
- `.toasterui.pid`: It contains the DSI data bridge, pid
- `toaster.sqlite`: This is the database file
- `toaster_web.log`: This is the web server log file
- `toaster_ui.log`: This is the log file used for components of the user interface
- `source toaster stop`

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- Public QA and testing builds interface
- BuildBot based
- Nightly builds
- <http://trac.buildbot.net/>
- Publish testing and QA plans using Bugzilla
- Develop tools, tests and QA procedures
- <http://autobuilder.yoctoproject.org/>.

➤ `cat README-QUICKSTART`

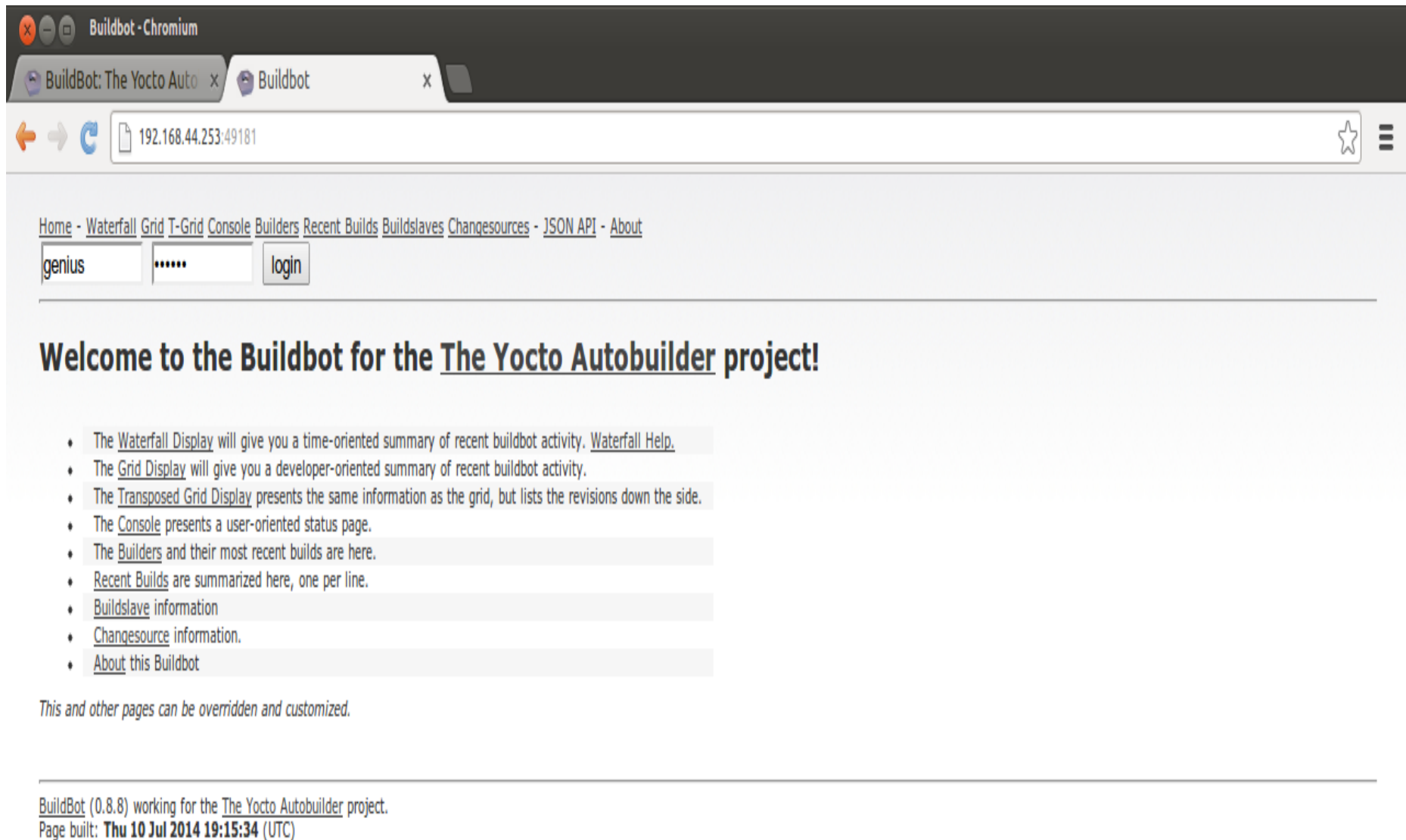
Setting up yocto-autobuilder in four easy steps:

```
git clone git://git.yoctoproject.org/yocto-autobuilder
```

```
cd yocto-autobuilder
```

```
./yocto-autobuilder-setup
```

```
yocto-start-autobuilder both
```

Buildbot - Chromium

BuildBot: The Yocto Auto x Buildbot x

192.168.44.253:49181

Home - [Waterfall](#) [Grid](#) [T-Grid](#) [Console](#) [Builders](#) [Recent Builds](#) [Buildslaves](#) [Changesources](#) - [JSON API](#) - [About](#)

Welcome to the Buildbot for the The Yocto Autobuilder project!

- The [Waterfall Display](#) will give you a time-oriented summary of recent buildbot activity. [Waterfall Help](#).
- The [Grid Display](#) will give you a developer-oriented summary of recent buildbot activity.
- The [Transposed Grid Display](#) presents the same information as the grid, but lists the revisions down the side.
- The [Console](#) presents a user-oriented status page.
- The [Builders](#) and their most recent builds are here.
- [Recent Builds](#) are summarized here, one per line.
- [Buildslave](#) information
- [Changesource](#) information.
- [About](#) this Buildbot

This and other pages can be overridden and customized.

BuildBot (0.8.8) working for the [The Yocto Autobuilder](#) project.
Page built: **Thu 10 Jul 2014 19:15:34** (UTC)

BuildBot: The Yocto Autobuilder - Chromium

BuildBot: The Yocto Auto x BuildBot: The Yocto Auto x

192.168.44.253:49181/waterfall

Home - [Waterfall](#) [Grid](#) [T-Grid](#) [Console](#) [Builders](#) [Recent Builds](#) [Buildslaves](#) [Changesources](#) - [JSON API](#) - [About](#)
 genius [genius@localhost] | [Logout](#)

Waterfall

[waterfall help](#)

last build	nightly none	eclipse- plugin- juno none	eclipse- plugin- kepler none	nightly- arm none	nightly- arm-lsb none	nightly- mips none	nightly- mips-lsb none	nightly- ppc none	nightly- ppc-lsb none	nightly- x86-64 none	nightly- x86-64-lsb none	nightly- x86 none	nightly- x86-lsb none	nightly- x32 none	nightly- multilib none	nightly- world none	nightly- non-apl3 none	nightly- oecore none	nightly- intel-apl none	pok n	
current activity	idle	idle	idle	idle	idle	idle	idle	idle	idle	idle	idle	idle	idle	idle	idle	idle	idle	idle	idle	i	
UTC	changes	nightly	eclipse- plugin- juno	eclipse- plugin- kepler	nightly- arm	nightly- arm-lsb	nightly- mips	nightly- mips-lsb	nightly- ppc	nightly- ppc-lsb	nightly- x86-64	nightly- x86-64-lsb	nightly- x86	nightly- x86-lsb	nightly- x32	nightly- multilib	nightly- world	nightly- non-apl3	nightly- oecore	nightly- intel-apl	pok
19:05:18	?																				

[next page](#)

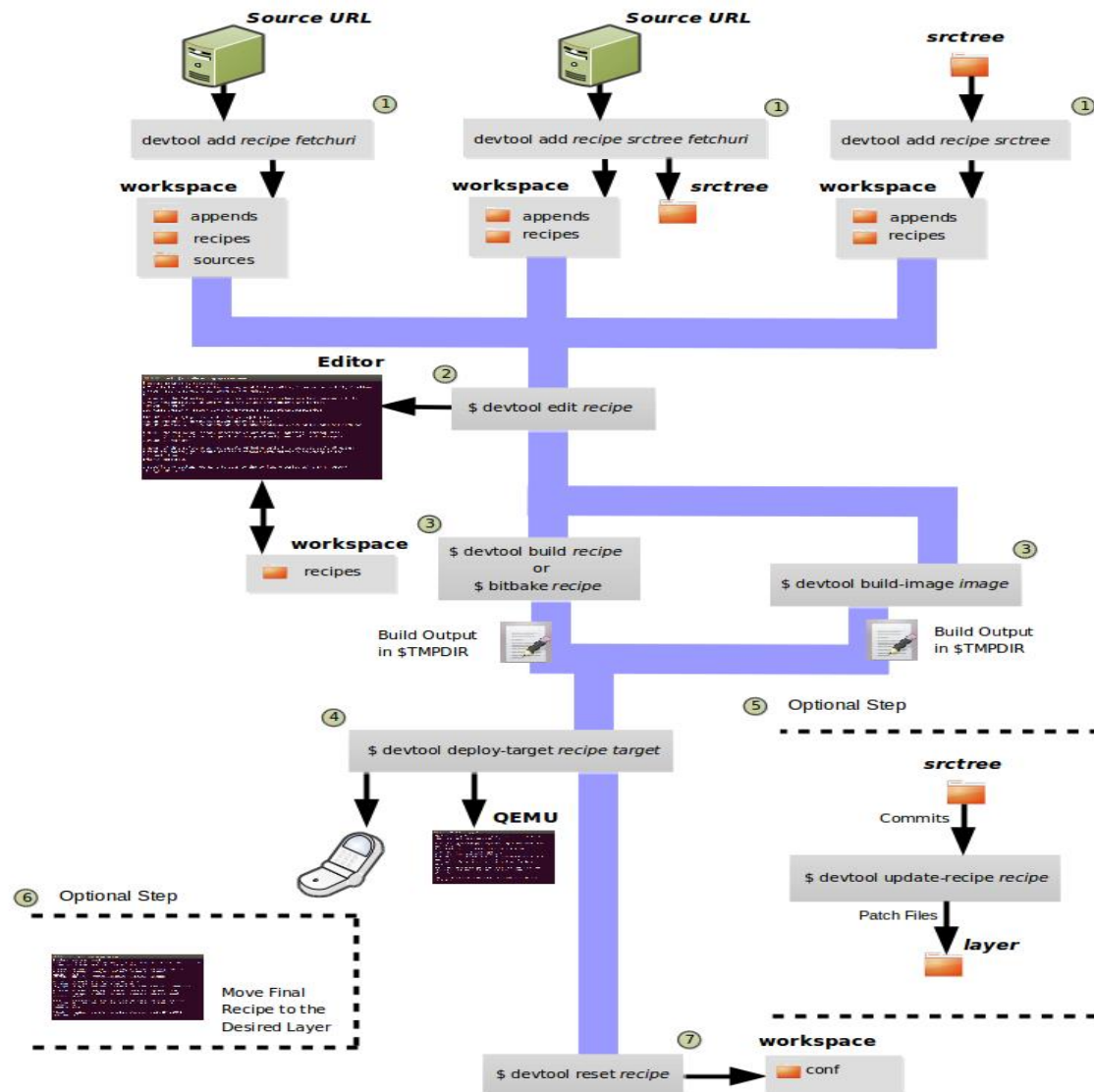
BuildBot (0.8.8) working for the [The Yocto Autobuilder](#) project.
 Page built: **10 Jul 2014** (UTC)

- Hob
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- Devtool

- Easily develop projects whose build output must be part of an image built. What does that mean?
- Automatic recipe interaction tool
- Functionalities:
 - devtool add
 - devtool modify
 - devtool upgrade
- Based on two main components:
 - recipetool
 - externalsrc

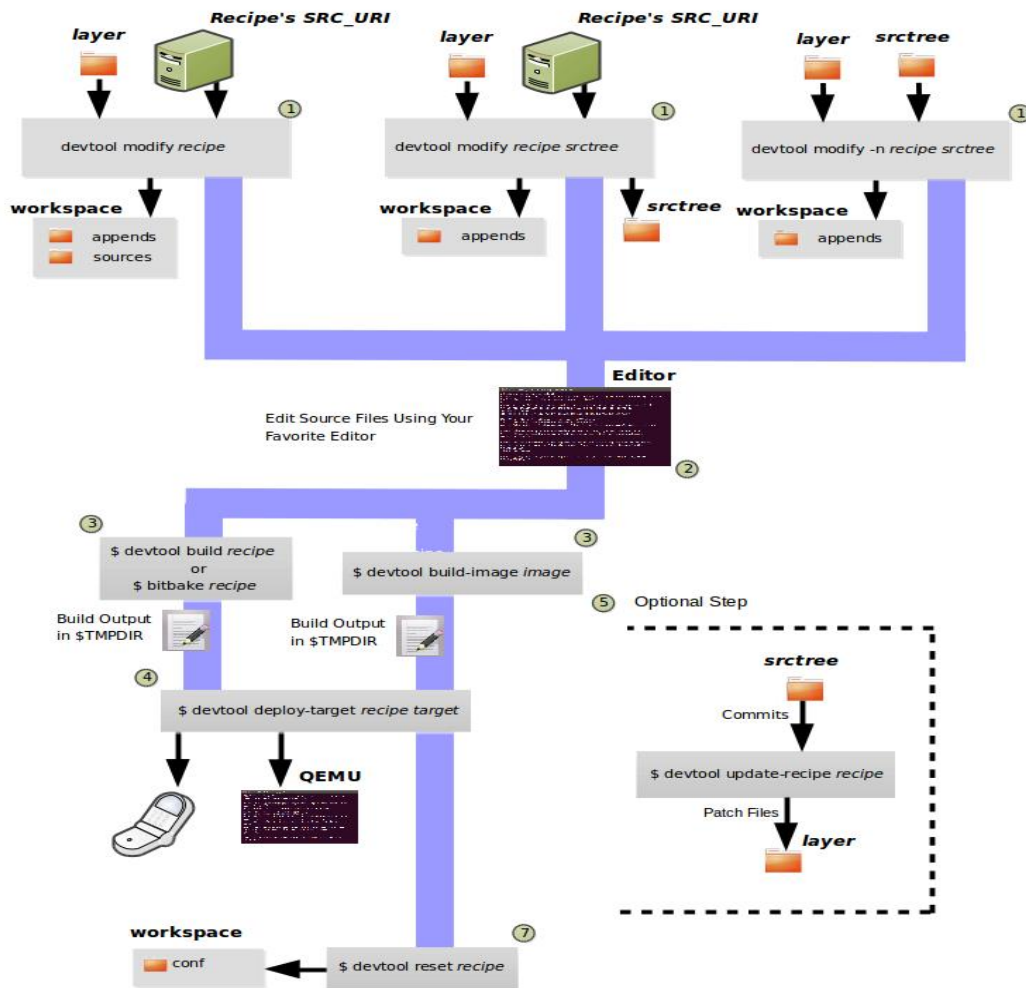
- Write a recipe from scratch
- Pre-build dependencies, license requirements, and checksums configured
- `recipetool create -o OUTFILE source`
- `recipetool create -o OUTFILE -x EXTERNALSRC source`
- Once generated the recipe resides in the existing source code layer

- Build software from source code that is external to the OpenEmbedded build system
- The fetch, unpack, and patch process is not used
- Inherit the externalsrc class:
 - EXTERNALSRC instead of S
 - EXTERNALSRC_BUILD instead of B
- INHERIT += "externalsrc"
- EXTERNALSRC_pn-myrecipe = "path-to-your-source-tree"
- EXTERNALSRC_BUILD_pn-myrecipe = "path-to-your-source-tree"

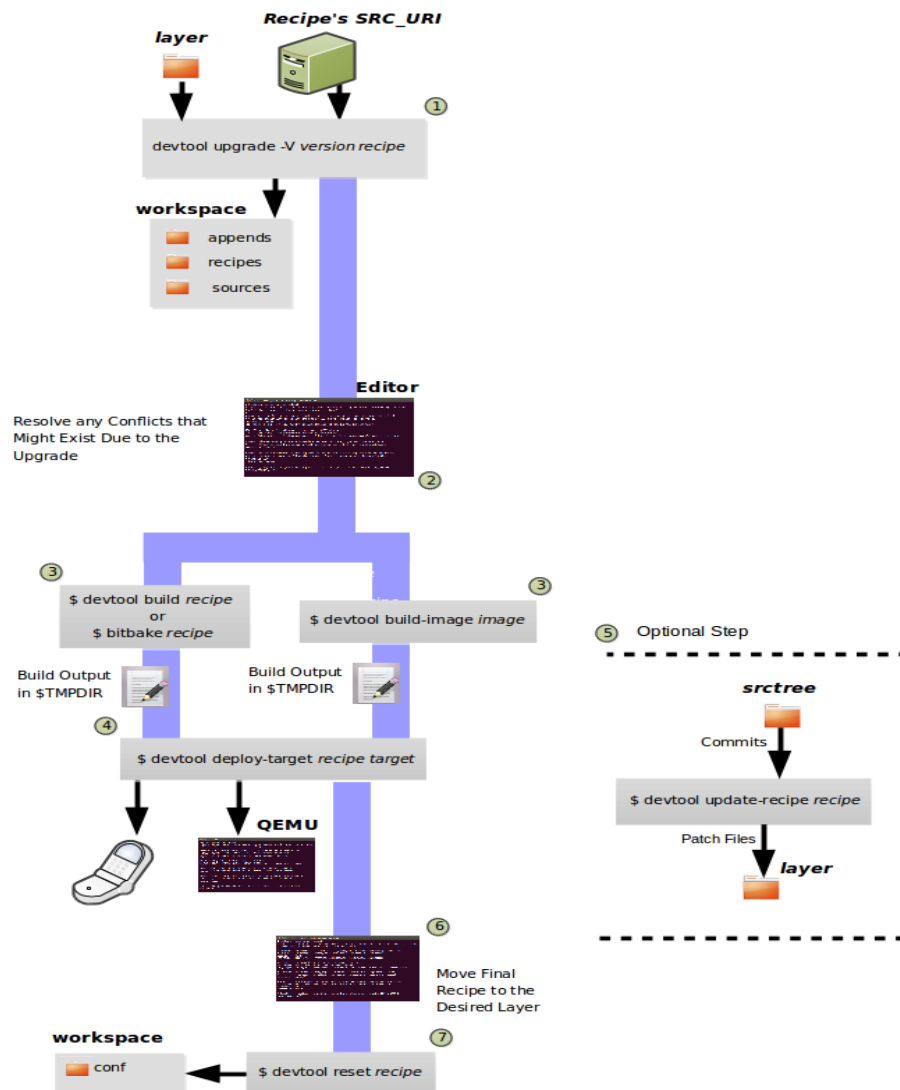


- creates a recipe and an append file in the workspace
- Left: source code not locally, extracts the upstream source files into a local Git
 - `devtool add recipe fetchuri`
- Middle: source code not locally, extracted to srctree local Git
 - `devtool add recipe srctree fetchuri`
- Right: source code locally
 - `devtool add recipe srctree`

- devtool edit-recipe recipe
- devtool build recipe
- devtool build-image image
- devtool deploy-target recipe target
- devtool update-recipe recipe
- devtool reset recipe



- creates an append file in the workspace
- Left: source code not locally, source extracted into a local workspace
 - devtool modify recipe
- Middle: source code not locally, extracted to srctree local Git
 - devtool modify recipe srctree
- Right: source code locally, the "-n" option to indicate source does not need to be extracted
 - Devtool modify -n recipe srctree



- Creates a version of the recipe that supports a newer version of the software
- Recipe exists in a layer external to devtool workspace
- The source files exist adjacent to the SRC_URI location
- `devtool upgrade -V version recipe`, extracts the code in the same location
- `devtool upgrade -V version recipe srctree`, extracts the source code to any other location

- Documentation sent over email
- Documentation naming
 - <Nume>-<Prenume>-<Master>_<Nume_Proiect>.doc
- Documentation can be submitted after this lecture also, but a decrease in documentation score will be applied
- Anything else related to documentation?
- Did the work on project implementation started?

?

