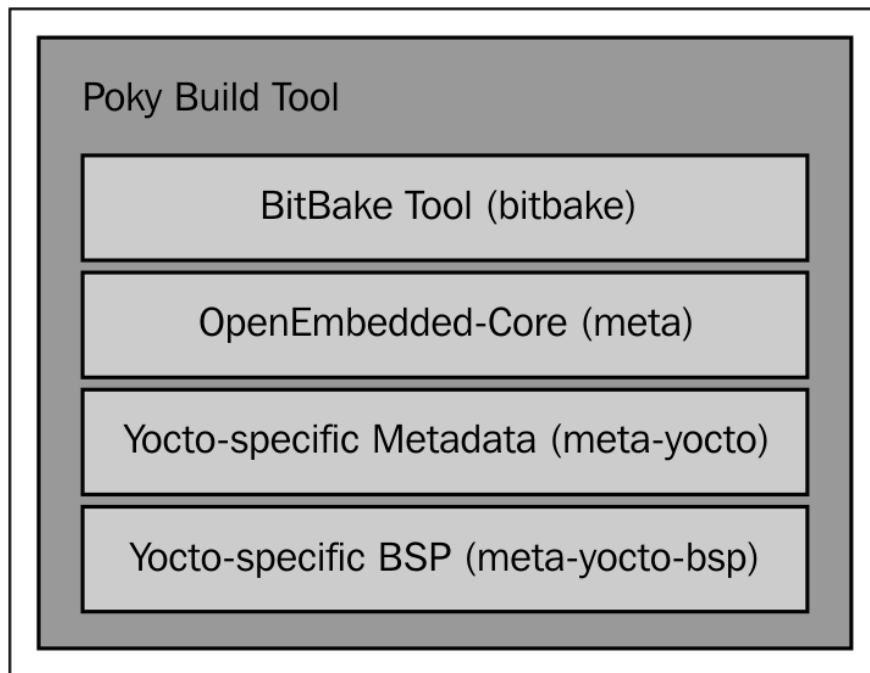


1

Meeting the Yocto Project

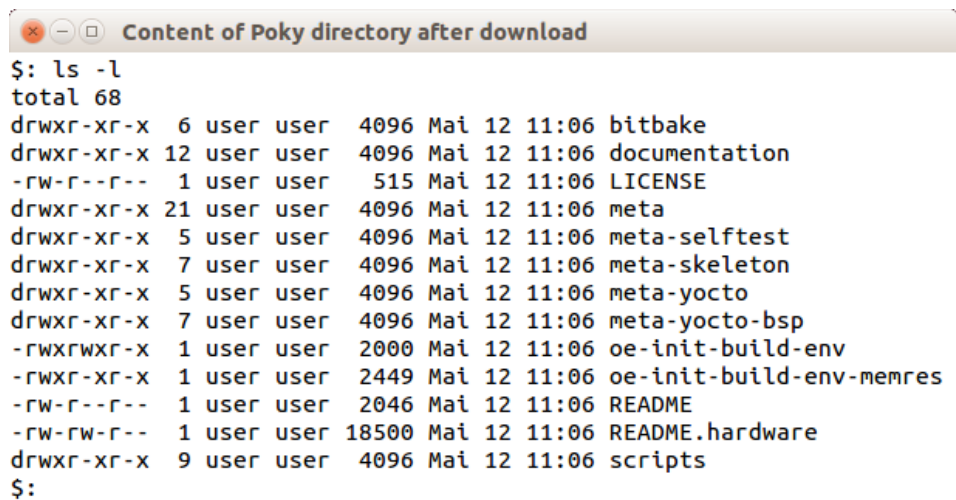
Understanding Poky



2

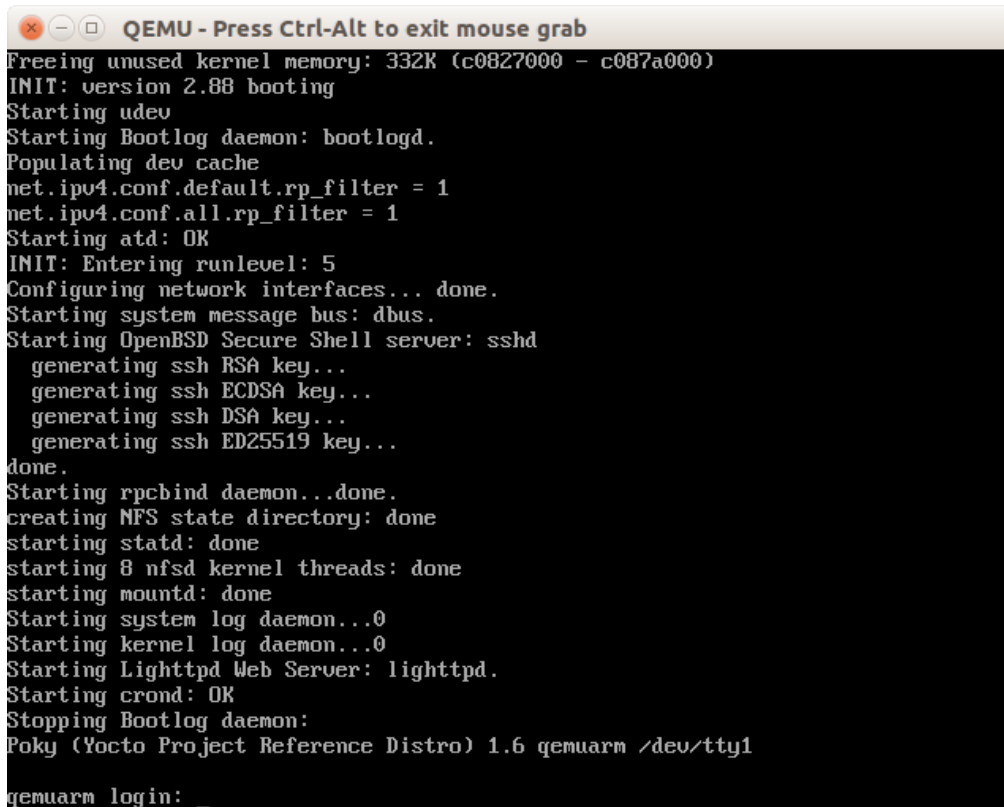
Baking Our Poky-based System

Downloading the Poky source code



```
Content of Poky directory after download
$: ls -l
total 68
drwxr-xr-x  6 user user  4096 Mai 12 11:06 bitbake
drwxr-xr-x 12 user user  4096 Mai 12 11:06 documentation
-rw-r--r--  1 user user   515 Mai 12 11:06 LICENSE
drwxr-xr-x 21 user user  4096 Mai 12 11:06 meta
drwxr-xr-x  5 user user  4096 Mai 12 11:06 meta-selftest
drwxr-xr-x  7 user user  4096 Mai 12 11:06 meta-skeleton
drwxr-xr-x  5 user user  4096 Mai 12 11:06 meta-yocto
drwxr-xr-x  7 user user  4096 Mai 12 11:06 meta-yocto-bsp
-rwxrwxr-x  1 user user  2000 Mai 12 11:06 oe-init-build-env
-rwxr-xr-x  1 user user  2449 Mai 12 11:06 oe-init-build-env-memres
-rw-r--r--  1 user user  2046 Mai 12 11:06 README
-rw-rw-r--  1 user user 18500 Mai 12 11:06 README.hardware
drwxr-xr-x  9 user user  4096 Mai 12 11:06 scripts
$:
```

Running images in QEMU

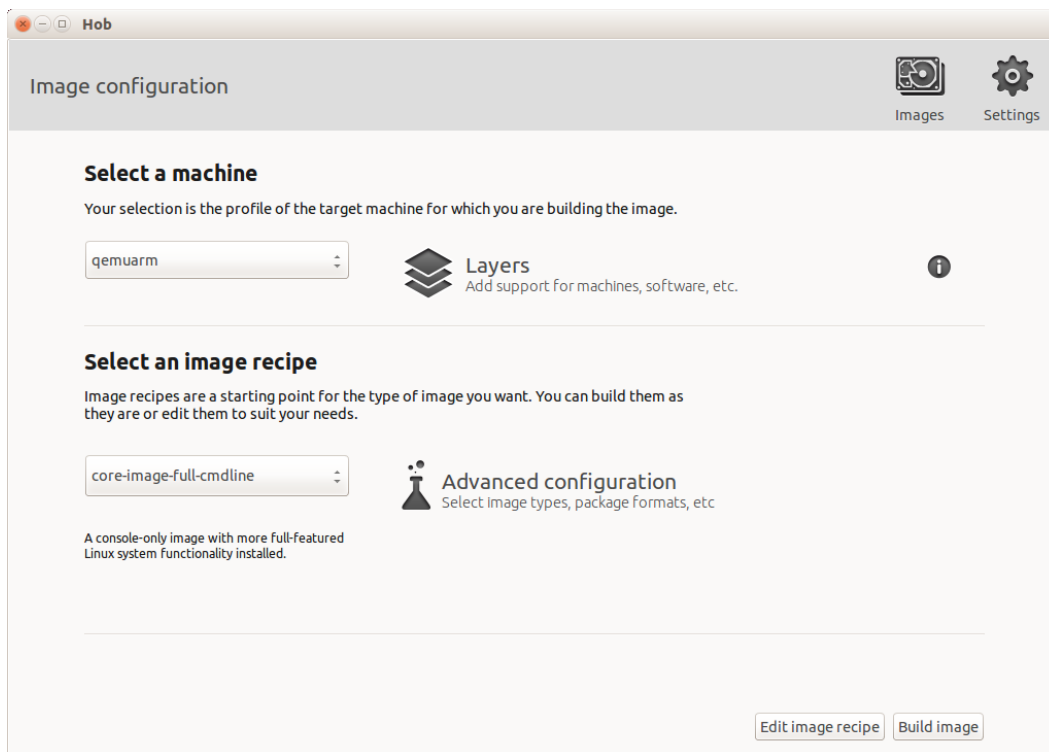


```
QEMU - Press Ctrl-Alt to exit mouse grab
Freeing unused kernel memory: 332K (c0827000 - c087a000)
INIT: version 2.88 booting
Starting udev
Starting Bootlog daemon: bootlogd.
Populating dev cache
net.ipv4.conf.default.rp_filter = 1
net.ipv4.conf.all.rp_filter = 1
Starting atd: OK
INIT: Entering runlevel: 5
Configuring network interfaces... done.
Starting system message bus: dbus.
Starting OpenBSD Secure Shell server: sshd
  generating ssh RSA key...
  generating ssh ECDSA key...
  generating ssh DSA key...
  generating ssh ED25519 key...
done.
Starting rpcbind daemon...done.
creating NFS state directory: done
starting statd: done
starting 8 nfsd kernel threads: done
starting mountd: done
Starting system log daemon...0
Starting kernel log daemon...0
Starting Lighttpd Web Server: lighttpd.
Starting crond: OK
Stopping Bootlog daemon:
Poky (Yocto Project Reference Distro) 1.6 qemuarm /dev/tty1
qemuarm login: _
```

3

Using Hob to Bake an Image

Building an image using Hob



Customizing an image with Hob

Hob

Step 1 of 2: Edit recipes

Included recipes **137** All recipes Package Groups

Recipe name	Group	Brought in by (+others)	Included
acl	libs	packagegroup-core-basic (+1)	<input checked="" type="checkbox"/>
at	base	packagegroup-core-basic	<input checked="" type="checkbox"/>
attr	libs	libcap (+3)	<input checked="" type="checkbox"/>
base-files	base	packagegroup-core-boot	<input checked="" type="checkbox"/>
base-passwd	base	sysvinit (+6)	<input checked="" type="checkbox"/>
bash	base/shell	packagegroup-core-basic	<input checked="" type="checkbox"/>
bc	base	packagegroup-core-basic	<input checked="" type="checkbox"/>
binutils-cross	devel	gcc-cross (+3)	<input checked="" type="checkbox"/>
bison	devel	libpam	<input checked="" type="checkbox"/>
busybox	base	packagegroup-core-basic (+1)	<input checked="" type="checkbox"/>
byacc	devel	packagegroup-core-basic	<input checked="" type="checkbox"/>
bzip2	console/utils	libpcre (+3)	<input checked="" type="checkbox"/>
coreutils	base	libpam (+2)	<input checked="" type="checkbox"/>
cpio	base	packagegroup-core-basic	<input checked="" type="checkbox"/>
cracklib	base	libpam (+1)	<input checked="" type="checkbox"/>
cronie	utils	packagegroup-core-basic	<input checked="" type="checkbox"/>
db	libs	python (+1)	<input checked="" type="checkbox"/>
dbus	base	packagegroup-core-basic (+2)	<input checked="" type="checkbox"/>
dbus-glib	base	packagegroup-core-basic (+1)	<input checked="" type="checkbox"/>
depmodwrapper-cross	base	core-image-basic (+1)	<input checked="" type="checkbox"/>

Cancel Build packages

Hob

Step 2 of 2: Edit packages

Packages included: 212
 Selected packages size: 70.3 MB
 Estimated image size: 91.4 MB

Included packages 212 All packages

Search packages by name


Package name	Size	Recipe	Brought in by (+others)
acl	72.0 KB	acl-2.2.51-r3	packagegroup-core-basic-utils
at	120.0 KB	at-3.1.13-r5	packagegroup-core-sys-services
attr	48.0 KB	attr-2.4.46-r4	packagegroup-core-basic-utils
base-files	188.0 KB	base-files-3.0.14-r73	packagegroup-core-boot
base-passwd	0 B	base-passwd-3.5.26-r2	shadow (+5)
bash	792.0 KB	bash-4.2-r6	packagegroup-core-basic-utils
bc	104.0 KB	bc-1.06-r2	packagegroup-core-basic-utils
busybox	624.0 KB	busybox-1.21.1-r0	packagegroup-core-initscripts (+1)
busybox-hwclock	16.0 KB	busybox-1.21.1-r0	packagegroup-core-boot
busybox-syslog	24.0 KB	busybox-1.21.1-r0	busybox
busybox-udhcp	32.0 KB	busybox-1.21.1-r0	busybox
byacc	88.0 KB	byacc-20130304-r0	packagegroup-core-dev-utils
bzip2	68.0 KB	bzip2-1.0.6-r5	packagegroup-core-sys-services
coreutils	4.7 MB	coreutils-8.21-r0	packagegroup-core-basic-utils
cpio	136.0 KB	cpio-2.11-r4	packagegroup-core-basic-utils
cracklib	804.0 KB	cracklib-2.9.0-r0	packagegroup-core-multiuser
cronie	148.0 KB	cronie-1.4.11-r0	packagegroup-core-sys-services
dbus	632.0 KB	dbus-1.6.10-r6.0	packagegroup-core-sys-services
dbus-glib	132.0 KB	dbus-glib-0.100.2-r0	python-dbus (+1)
dbus-lib	200.0 KB	dbus-1.6.10-r6.0	dbus (+2)

Cancel Open log Build image

Hob

Image details

Images Settings

 Your image is ready

Name: core-image-basic-qemuarm-20130921210224
Files created: ext3, tar.bz2
Directory: /home/daiane/fsl-community-bsp/poky/poky/build/tmp/deploy/images/qemuarm

Machine: qemuarm
Image recipe: core-image-basic

Layers:

- /home/daiane/fsl-community-bsp/poky/poky/meta
- /home/daiane/fsl-community-bsp/poky/poky/meta-yocto
- /home/daiane/fsl-community-bsp/poky/poky/meta-yocto-bsp
- /home/daiane/fsl-community-bsp/poky/poky/meta-hob

Packages included: 212
Total image size: 89.4 MB

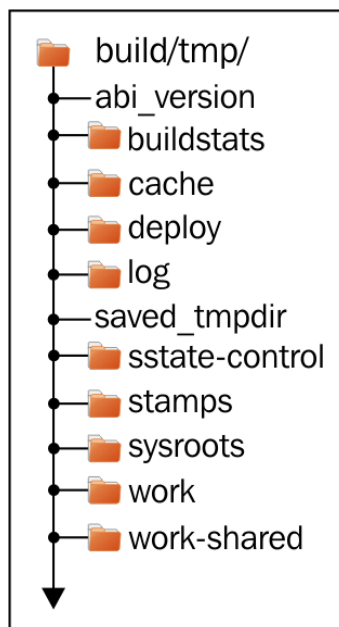
View files
Open log
Edit configuration
Edit packages
Build new image
Run image



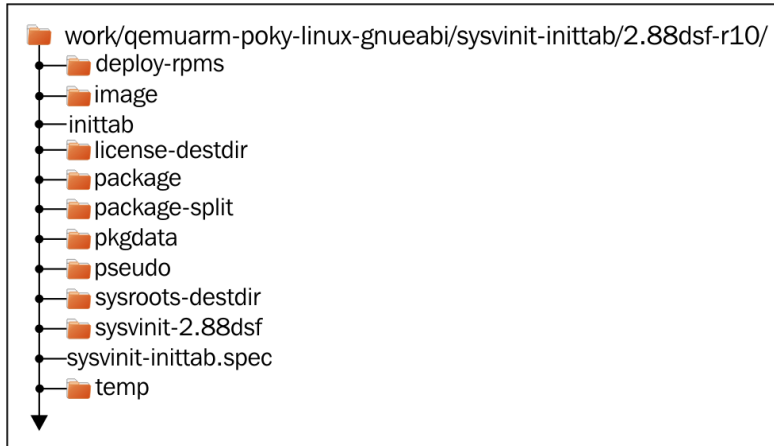
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Detailing the Temporary Build Directory

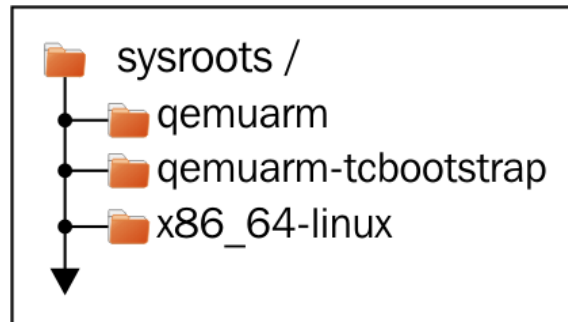
Exploring the temporary build directory



Understanding the work directory



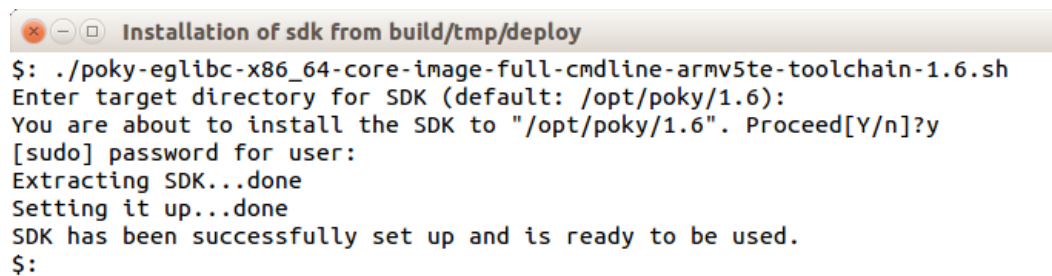
Understanding the sysroot directories



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Developing with the Yocto Project

Using an image-based SDK

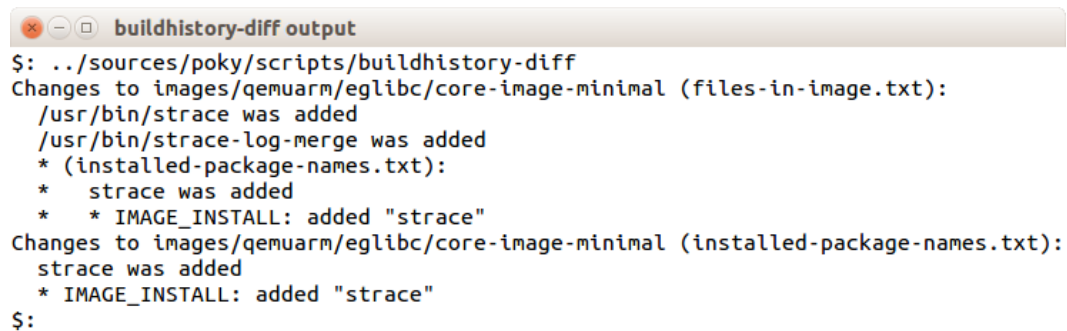


```
Installation of sdk from build/tmp/deploy
$: ./poky-eglibc-x86_64-core-image-full-commandline-armv5te-toolchain-1.6.sh
Enter target directory for SDK (default: /opt/poky/1.6):
You are about to install the SDK to "/opt/poky/1.6". Proceed[Y/n]?y
[sudo] password for user:
Extracting SDK...done
Setting it up...done
SDK has been successfully set up and is ready to be used.
$:
```

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Debugging with the Yocto Project

Tracking image, package, and SDK contents

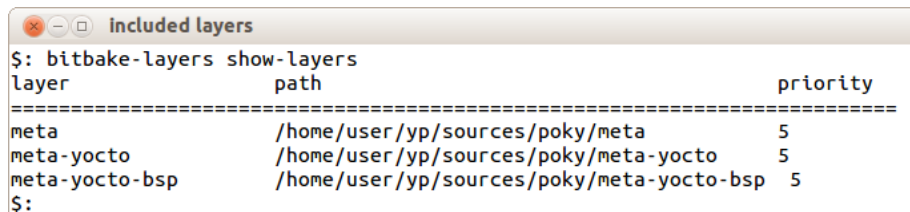


```
buildhistory-diff output
$: ../sources/poky/scripts/buildhistory-diff
Changes to images/qemuarm/eglbc/core-image-minimal (files-in-image.txt):
  /usr/bin/strace was added
  /usr/bin/strace-log-merge was added
* (installed-package-names.txt):
*   strace was added
*   * IMAGE_INSTALL: added "strace"
Changes to images/qemuarm/eglbc/core-image-minimal (installed-package-names.txt):
strace was added
* IMAGE_INSTALL: added "strace"
$:
```

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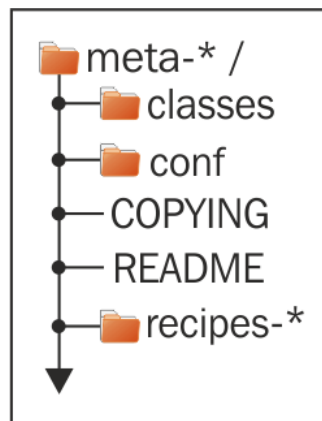
Exploring External Layers

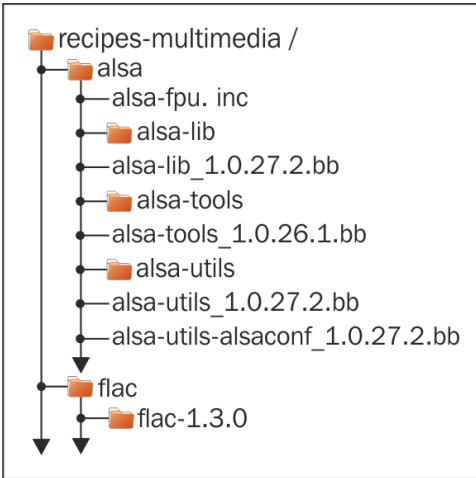
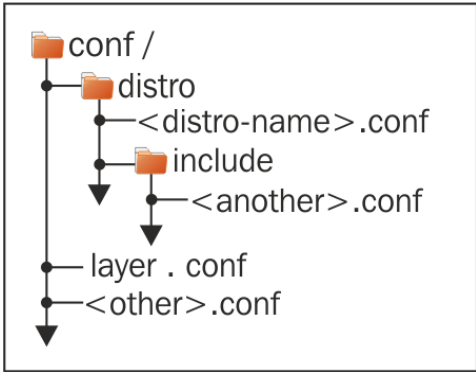
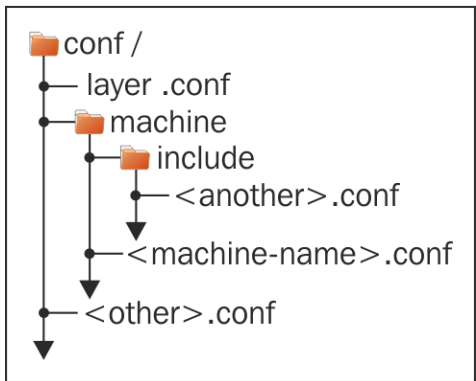
Powering flexibility with layers



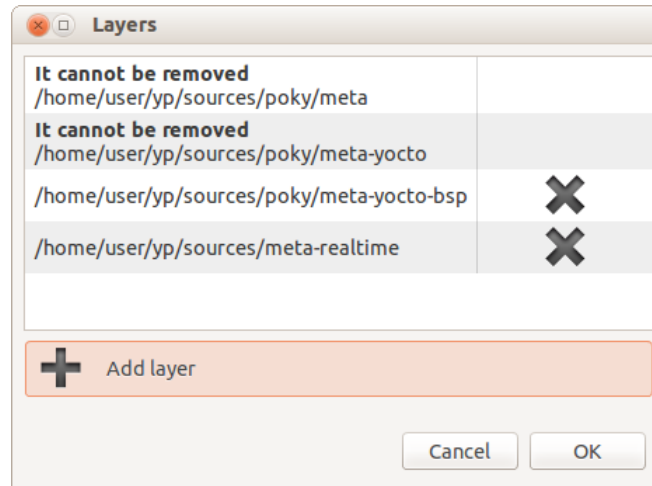
```
Included layers
$: bitbake-layers show-layers
layer                path                                priority
-----
meta                 /home/user/yp/sources/poky/meta      5
meta-yocto           /home/user/yp/sources/poky/meta-yocto 5
meta-yocto-bsp       /home/user/yp/sources/poky/meta-yocto-bsp 5
$: _
```

Detailing the layer's source code





Adding meta layers



```
conf/bblayer.conf's content
# LAYER_CONF_VERSION is increased each time build/conf/bblayers.conf
# changes incompatibly
LCONF_VERSION = "6"

BBPATH = "${TOPDIR}"
BBFILES ?= ""

#BBLAYERS ?= " \
# /home/user/yp/sources/poky/meta \
# /home/user/yp/sources/poky/meta-yocto \
# /home/user/yp/sources/poky/meta-yocto-bsp \
# "
BBLAYERS_NON_REMOVABLE ?= " \
/home/user/yp/sources/poky/meta \
/home/user/yp/sources/poky/meta-yocto \
"

BBLAYERS += " \
/home/user/yp/sources/meta-realtime \
"
$: _
```

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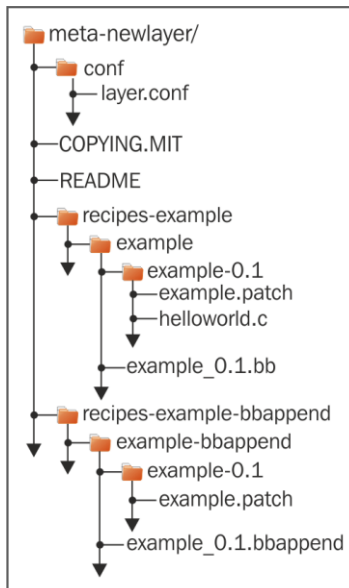
Creating Custom Layers

Making a new layer

```
creating a new layer meta-newlayer
$: cd sources/
$: ./poky/scripts/yocto-layer create newlayer
Please enter the layer priority you'd like to use for the layer: [default: 6]
Would you like to have an example recipe created? (y/n) [default: n] y
Please enter the name you'd like to use for your example recipe: [default: example]
Would you like to have an example bbappend file created? (y/n) [default: n] y
Please enter the name you'd like to use for your bbappend file: [default: example]
Please enter the version number you'd like to use for your bbappend file (this should
match the recipe you're appending to): [default: 0.1]

New layer created in meta-newlayer.

Don't forget to add it to your BBLAYERS (for details see meta-newlayer\README).
$: _
```



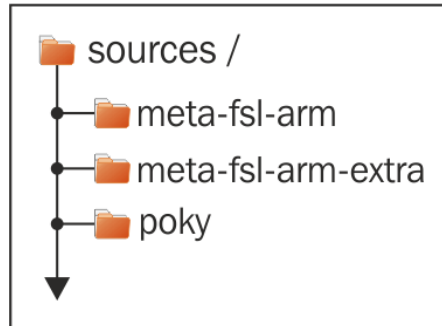
14

Booting Our Custom Embedded Linux

Exploring Wandboard



Using Wandboard with the Yocto Project



```
conf/bblayers.conf for wandboard
# LAYER_CONF_VERSION is increased each time build/conf/bblayers.conf
# changes incompatibly
LCONF_VERSION = "6"

BBPATH = "${TOPDIR}"
BBFILES ?= ""

#BBLAYERS ?= " \
# /home/user/yp/sources/poky/meta \
# /home/user/yp/sources/poky/meta-yocto \
# /home/user/yp/sources/poky/meta-yocto-bsp \
# "
BBLAYERS_NON_REMOVABLE ?= " \
/home/user/yp/sources/poky/meta \
/home/user/yp/sources/poky/meta-yocto \
"
BBLAYERS += " \
/home/user/yp/sources/meta-fsl-arm \
/home/user/yp/sources/meta-fsl-arm-extra \
"
$: _
```