

embedded sdr



working with sdks

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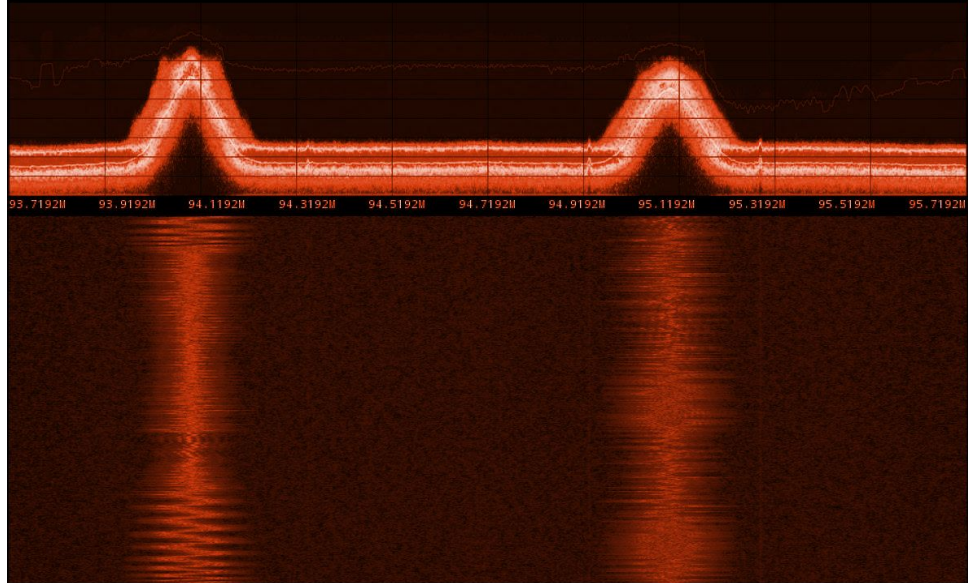


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embedded sdr



**who here
has
worked
with sdks?**



**if you develop
for embedded
devices, you
should**

**why would you
care?**

comfort
work in your
environment



speed
workstation
vs. target



clean
(almost) no
leftovers on
target



exceptions ...

**if your ghetto hack
consists of one .c file
and compiles in
under a second ...**

... or you are getting
ready to **release** your
product ...

**the last one was
kinda important ... !!!**

**DO NOT SHIP STUFF
YOU COMPILED
WITH AN SDK
really DON'T**

**contents of an sdk:
compilers, headers,
libs, native tools & env
scripts**

setting up your environment

```
$ cd $SDK_PATH
```

```
$ source environment-setup-{archspective}
```

in our case:

```
$ source environment-setup-armv7ahf-neon-oe-linux gnueabi
```

easy to check using **\$CC** env variable

```
$ $CC --version  
arm-oe-linux-gnueabi-gcc (GCC) 4.9.2  
[...]
```


**cross
compiling
hello_fosdem.c**

\$ cat hello_fosdem.c

```
#include <stdio.h>  
int main(int argc, char *argv[])  
{  
    printf("hello_fosdem!\n");  
    return 0;  
}
```

\$ make hello_fosdem

**wasn't all
that bad,
right?**



cross compiling with autotools

```
$ ./configure \  
--host arm-oe-linux \  
--prefix=/usr
```

```
$ make
```

**ok ...
admittedly
that was a
best case
scenario ...**



cross compiling with cmake

```
$ cmake -  
DCMAKE_TOOLCHAIN_FILE=<toolchain file*> \  
-  
DCMAKE_INSTALL_PREFIX=/usr\  
<yoursource>
```

```
$ make
```

```
*for uhd/gnuradio:  
cmake/Toolchains/oe-sdk_cross.  
cmake
```

**alright ... we kind
know how to build
stuff... how do we run
it?**

**well, you could scp it
to the target ... or ...**

sshfs for development

```
$ mkdir mnt  
$ sshfs -o allow_root user@host:  
 /<fullpath> mnt
```

```
$ export  
LD_LIBRARY_PATH=mnt/<app  
dependent>
```

```
$ export  
PATH=mnt/<app_dependent>:$PAT  
H
```


**suggestion: for
simplicity drop it in a
script**

**pain point
dependencies**



**prominent example:
uhd vs. gnuradio vs.
gr-ettus**

**one (easy) 'solution':
install into sdk ...**

**... however ...
this taints
your sdk ...**



**... and
makes
kitties sad ...**



hack:

**use `staging` install dir,
point dependencies
there**

`$make install DESTDIR=<yourstaging>`

install to staging dir with cmake

```
$ make
```

```
$ make DESTDIR= \  
~/my_staging install
```

again, sshfs & env mods necessary

**downside:
tedious, make
sometimes needs to be
clubbed to happiness**

**yocto's extensible sdks
do somewhat address
this ... see paul
eggleson's talk at
elc2015**

**but: developer needs
to learn about yocto
tools ...**

**... but doing this he
saves time when he
later packages stuff
for release ...**

... because if he doesn't it's just kittehaz will be even sadder ...

keypoints

no releases from sdk,

getting started is

easy,

death to building on

the device

**\$ diff
who will
now try
sdks?**



**now go and hack
some
#cyberspectrum...**

... or ask questions