To Build bit stream in HDL coder you will need to download ADI’s Reference design. Install ADI’s BSP that works with HDL Coder from <https://github.com/analogdevicesinc/MathWorks_tools/releases>

Using Ubuntu machine

Should have /Work/LinuxTraining on the ubuntu machine

:cd /Work/LinuxTraining

Clone buildroot from mathworks

:git clone <https://github.com/mathworks/buildroot.git>

:git tag - to see all the tags

select the tag you need

: git checkout mathworks\_zynq\_iiosdr\_R19.2.1

once in Buildroot

:cd board/mathworks/zynq/defconfig

: emacs common.defconfig

Modify the two lines:

+BR2\_LINUX\_KERNEL\_CUSTOM\_REPO\_URL="[https://github.com/analogdevicesinc/linux.git"](https://github.com/analogdevicesinc/linux.git%22)

+BR2\_LINUX\_KERNEL\_CUSTOM\_REPO\_VERSION="2018\_R2"

: emacs linux.defconfig

Replace the line as below:

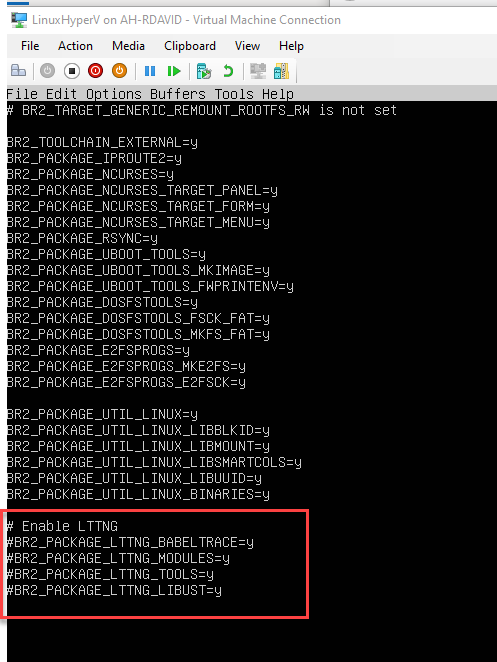
Machine generated alternative text:
LinuxHyperV on AH-RDAVID - Virtual Machine Connection 
File Action Media Clipboard View Help 
File Edit 0 t ions Buffers Tools Hel 
# Linux Options 
8R2_L 

also go to:

:cd board/mathworks/common/defconfimg

: emacs common.defconfig

in there comment out the last lines:



Next we will do the kernel configuration

go to /Work/LinuxTraining/buildroot

: cd /Work/LinuxTraining/buildroot

run the build command

: ./build.py -c ./board/mathworks/apps/zynqsdr/boards/zc706/catalog.xml

This will fail because of the device tree, but you will have the output folder in buildroot

So now we will need to fix that:

:git status

We will go into the kernel config and turn on AD9371 drivers

: cd output/zc706\_linux\_linaro/build/linux-2018\_R2

: make ARCH=arm menuconfig

The menuconfig will show up

Machine generated alternative text:
<Enter> selects submenus 
features. 
Press <Esc><Esc> to 
patch physical 
General setup 
(or empty 
exit, 
for 
submenus - 
HtghL 
Help, for Search. 
to virtual translations at runtime 
[*] Enable loadable module support 
[*] Enable the block layer 
* 
System Type 
Bus support 
Kernel Features 
Boot options 
CPU Power Management 
Floating point emulation 
Userspace binary formats 
Power management options 
Networkin su ort 
Device Drivers 
Firmware Drivers 
File systems 
Kernel hacking 
Security options 
Cryptographic API 
Library routines 
[ ] Virtualization 

To check if the driver modules are there:

:gedit .config

Search for 'AD9371'

Now we need to modify the device tree files and the xml to point to the right thing

First

:rm .stamp\_built

Go to the zynqsdr boards folder

: cd /Work/LinuxTraining/buildroot/board/mathworks/apps/zynqsdr/boards

: cd zc706

: emacs catalog.xml

It should look like this:

Machine generated alternative text:
LinuxHyperV on AH-RDAVID - Virtual Machine Connection 
File Action Media Clipboard View Help 
-ile Edit 0 t ions Buffers Tools XML Text 
dir: 
hit 
zgnqsdrl 
"adB371_axis 
"adrvB371.dtsI 
"sustem.bitl 
boa, d 

Place the system.bit bitfile built with vivado in the boot folder, e.g.:

:cp ~/sharedFiles/system.bit ./boot/

Next

:cd dts

:emacs adrv9371.dts

Machine generated alternative text:
: ile Edit 0 t ions Buffers Tools Hel 
• include "zgnQ-zc706-adv7S11-adrvB371.dtsI 

Next, go to the base buildroot folder and update build with the new catalog

:cd /Work/LinuxTraining/buildroot

:./build.py -c board/mathworks/apps/zynqsdr/boards/zc706/catalog.xml -u

It should error out like this:

Machine generated alternative text:
Cogging over lag ./board/mathl_uorks/zgnq/fs-overlag 
Execut in 
ost-build scri t. board/mathl_uorks/z n 'scri ts/ ostbuild_common.sh 
/Åork/LinuxTraining/buildroot /Åork/LinuxTraining/buildroot 
/Åork/l_inuxTrainin /buildroot 
if 
echo 
echo 
echo 
Generatin root files stem ima e rootfs.c io 
then /usr/bin/install 
/Åork/L inuxTra in ing/bu i 'output /zc706_l inux_l inaro/bu i Id/ _users_tab le . txt 
> .fs 
"set -ell .fs 
-m 0755 fs/cpio/init 
"chown -h -R 
.fs 
sshd -1 sshd -1 * - 
SSH drop priv 
I /Åork/L inuxTra in ing/buildroot/output /zc706_l inux_l inaro/host/b in : /Åork/L inuxTra in ing/buildroot/output /zc706_l inux_l inaro/host/sb in : /Åork/L inuxTra in ing/buildroot/output /zc706_l inux_l inaro/host /usr/b in : /Åork/L inuxTra 
/home/mathl_uorks/bin: /home/mathl_uorks/ . local/bin: /usr/ local/sbin: /usr/ local/bin: /usr/sbin: /usr/bin: /sbin: 'bin: /usr/games: /usr/ local/games: /snap/binll /Åork/l_inuxTraini 
ng/buildroot/support/scripts/mkusers /Åork/l_inuxTraining/buildroot/output/z 
.fs 
cat sustem/device_table.txt board/mathworks/zgnq/device_table.txt > 
/bin/busgbox 
-in /dev/console c 622 0 0 S 1 - 
echo -d 
.fs 
ro/target 
cd 88 find 
. fs 
chmod a+x .fs 
cpio --quiet -o -H neUJC > /Åork/l_inuxTraining 
PATH: inuxTra in ing/buildroot/output /zc706_l inux_l inaro/host/b in : /Åork/L inuxTra in ing/buildroot/output /zc706_l inux_l inaro/host/sb in : /Åork/L inuxTra in ing/buildroot/output /zc706_l inux_l inaro/host /usr/b in : /Åork/L inuxTra 
/home/mathl_uorks/bin: /home/mathl_uorks/ . local/bin: /usr/ local/sbin: /usr/ local/bin: /usr/sbin: /usr/bin: /sbin: 'bin: /usr/games: /usr/ local/games: /snap/binll /Åork/l_inuxTraini 
ng/buildroot/output/zc706_l inux_l inaro/host/usr/b in/f akeroot 
- .fs 
root dir=/Åork/L inuxTrain ing/buildroot/output/zc706_l inux_l inaro/target 
table: _dev ice_table . txt 
/usr/bin/install -m 0644 support/misc/target-dir-warning.txt 
PATH: inuxTra in ing/buildroot/output /zc706_l inux_l inaro/host/b in : /Åork/L inuxTra in ing/buildroot/output /zc706_l inux_l inaro/host/sb in : /Åork/L inuxTra in ing/buildroot/output /zc706_l inux_l inaro/host /usr/b in : /Åork/L inuxTra 
gzip -B -c /Åork/ 
-A arm -T ramdisk \ 
-C none -d 
Image Name: 
Created: 
Image Type: 
Data Size: 
Mon Mag 1B Il:ouos 2020 
ARM Linux RAMDisk Image (uncompressed) 
16458.75 Kia 
16853765 agtes - 
In file included from 
uncaught exception 
Traceback (most recent call last): 
I./build.pgl 
in <module> 
build_target (args, catalog) 
I./build.pgl 
line 8B, in build_target 
subproc(argStr, I]) 
File "/Åork/LinuxTraining/buildroot/board/mathworks/common/scripts/helper_func.pg 
_ cwd=cwd, shell-shell) 
File "/Åork/LinuxTraining/buildroot/board/mathworks/common/scripts/helper_func.pg 
line 432, in subproc 
line 77, in call 
raise subprocess.CalledProcessError(self .proc.returncode, self . strargs(args), None) 
CalledProcessError: Command 'make legal-info all' returned non-zero exit status 2 
: /Åork/L inuxTra in ing/bu i Idroot$ 

Navigate to the output/zc706\_linux\_linaro/images

:cd output/zc706\_linux\_linaro/images

:mv rootfs.cpio.uboot uramdisk.image.gz

Also need the magic devicetree.dtb file.

:cp ~/sharedFiles/devicetree.dtb .

Making MW buildroot work in ubuntu 18.04

See this post:

<https://github.com/enclustra-bsp/bsp-xilinx/issues/6>

And this is how to patch it:

Create another .patch file in the buildroot/package/e2fsprogs folder

<https://github.com/tytso/e2fsprogs/commit/01551bdba16ab16512a01affe02ade32c41ede8a>

The patch content is the diff of the two files:

This patch prevents a conflict with glibc

--- a/misc/create\_inode.c  
+++ b/misc/create\_inode.c          
@@ -392,7 +392,7 @@ static ssize\_t my\_pread(int fd, void \*buf, size\_t count, off\_t offset)  
 }  
 #endif /\* !defined HAVE\_PREAD64 && !defined HAVE\_PREAD \*/  
   
-static errcode\_t copy\_file\_range(ext2\_filsys fs, int fd, ext2\_file\_t e2\_file,  
+static errcode\_t copy\_file\_chunk(ext2\_filsys fs, int fd, ext2\_file\_t e2\_file,  
                                  off\_t start, off\_t end, char \*buf,  
                                  char \*zerobuf)  
 {  
@@ -466,7 +466,7 @@ static errcode\_t try\_lseek\_copy(ext2\_filsys fs, int fd, struct stat \*statbuf,  
   
                 data\_blk = data & ~(fs->blocksize - 1);  
                 hole\_blk = (hole + (fs->blocksize - 1)) & ~(fs->blocksize - 1);  
-                err = copy\_file\_range(fs, fd, e2\_file, data\_blk, hole\_blk, buf,  
+                err = copy\_file\_chunk(fs, fd, e2\_file, data\_blk, hole\_blk, buf,  
                                  zerobuf);  
                 if (err)  
                         return err;  
@@ -516,7 +516,7 @@ static errcode\_t try\_fiemap\_copy(ext2\_filsys fs, int fd, ext2\_file\_t e2\_file,  
                 }  
                 for (i = 0, ext = ext\_buf; i < fiemap\_buf->fm\_mapped\_extents;  
                  i++, ext++) {  
-                        err = copy\_file\_range(fs, fd, e2\_file, ext->fe\_logical,  
+                        err = copy\_file\_chunk(fs, fd, e2\_file, ext->fe\_logical,  
                                          ext->fe\_logical + ext->fe\_length,  
                                          buf, zerobuf);  
                         if (err)  
@@ -569,7 +569,7 @@ static errcode\_t copy\_file(ext2\_filsys fs, int fd, struct stat \*statbuf,  
                 goto out;  
 #endif  
   
-        err = copy\_file\_range(fs, fd, e2\_file, 0, statbuf->st\_size, buf,  
+        err = copy\_file\_chunk(fs, fd, e2\_file, 0, statbuf->st\_size, buf,  
                          zerobuf);  
 out:  
         ext2fs\_free\_mem(&zerobuf);

From <[*https://github.com/enclustra-bsp/bsp-xilinx/issues/6*](https://github.com/enclustra-bsp/bsp-xilinx/issues/6)>