**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Draft\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***
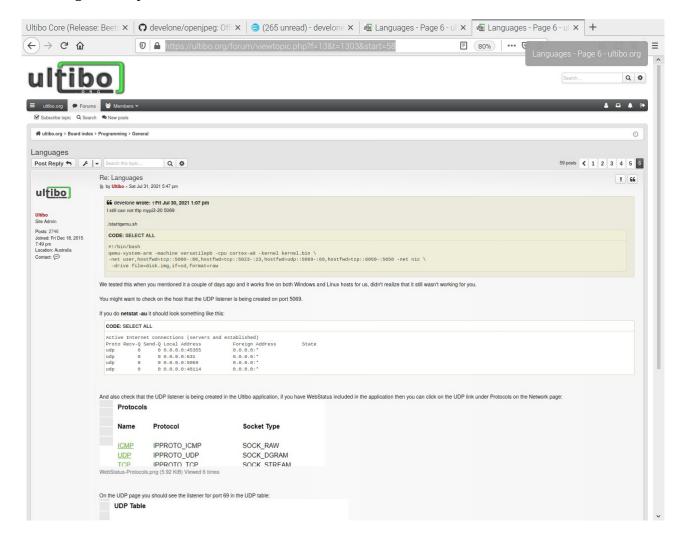
# QEMU Ultibo Bare Metal
# JPEG2000 Compression/Decompression
# Remote Shell & WebStatus
# with
# TFTP transfer between QEMU & PI400
# and
# Compiling OPENJPEG with cmake
# OPENJPEG Decompression
# 08/01/21

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Draft\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

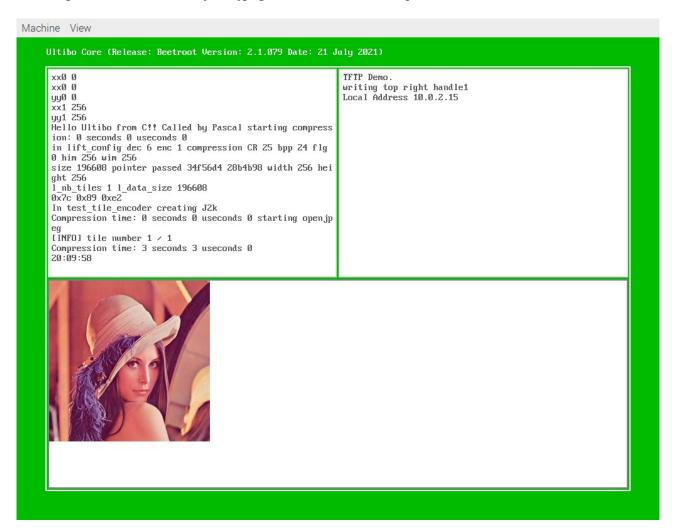TFTP was not working between QEMU & Pi400.
 Ultibo provided some areas to check.  This issue in now is resloved.
https://ultibo.org/forum/viewtopic.php?f=13&t=1303&start=58

The image below provides the areas to check

The document **~/Ultibo_Projects/jpeg2000/doc/QEMU-JPEG2000.odt** povides detailed steps to create **kernel.bin, libdwtlift.a, and libopenjp2.a**

devel@pi400-1:~/Ultibo_Projects/jpeg2000/QEMU $ ./startqemu.sh



**256com**
**00000000   19 00 00 00  01 00 00 00  00 00 00 00  00 00 00 00  ...............**
**00000010   00 01 00 00  00 01 00 00**
**This used to determine the compression ratio of 25 and Encode**

**256decom**
**00000000   19 00 00 00  00 00 00 00  00 00 00 00  00 00 00 00  ...............**
**00000010   00 01 00 00  00 01 00 00**
**This used in decompression of test.j2k to test_wr.bmp**

The following files 256com copied to testfile lena_rgb_256.bmp copied to MyBitmap.bmp are needed on a disk.img.   This will then create a 25:1 compressed test.j2k.


devel@pi400-1:~/t_ultibo/build $ bin/opj_decompress -i ~/Ultibo_Projects/jpeg2000/QEMU/xxx.j2k -o ~/Ultibo_Projects/jpeg2000/QEMU/openjpeg.bmp

[INFO] Start to read j2k main header (0).
[INFO] Main header has been correctly decoded.
[INFO] No decoded area parameters, set the decoded area to the whole image
[INFO] Header of tile 1 / 1 has been read.
[INFO] Generated Outfile /home/devel/Ultibo_Projects/jpeg2000/QEMU/openjpeg.bmp
decode time: 24 ms
devel@pi400-1:~/t_ultibo/build $ gpicview ~/Ultibo_Projects/jpeg2000/QEMU/openjpeg.bmp
^C
devel@pi400-1:~/t_ultibo/build $ bin/opj_dump ~/Ultibo_Projects/jpeg2000/QEMU/xxx.j2k
[ERROR] Required parameter is missing
Example: bin/opj_dump -i image.j2k
   Help: bin/opj_dump -h


devel@pi400-1:~/Ultibo_Projects/jpeg2000/QEMU $ tftp pi400-1 5069
tftp> binary
tftp> trace
Packet tracing on.
tftp> get test.j2k xxx.j2k
sent RRQ <file=test.j2k, mode=octet>
received DATA <block=1, 512 bytes>
sent ACK <block=1>
received DATA <block=2, 512 bytes>
sent ACK <block=2>
received DATA <block=3, 512 bytes>
sent ACK <block=3>
received DATA <block=4, 512 bytes>
sent ACK <block=4>
received DATA <block=5, 512 bytes>
sent ACK <block=5>
received DATA <block=6, 512 bytes>
sent ACK <block=6>
received DATA <block=7, 512 bytes>
sent ACK <block=7>
received DATA <block=8, 512 bytes>
sent ACK <block=8>
received DATA <block=9, 512 bytes>
sent ACK <block=9>
received DATA <block=10, 512 bytes>
sent ACK <block=10>
received DATA <block=11, 512 bytes>
sent ACK <block=11>
received DATA <block=12, 512 bytes>
sent ACK <block=12>
received DATA <block=13, 512 bytes>
sent ACK <block=13>
received DATA <block=14, 512 bytes>
sent ACK <block=14>
received DATA <block=15, 512 bytes>
sent ACK <block=15>
received DATA <block=16, 168 bytes>
Received 7848 bytes in 0.2 seconds

tftp> quit

Cloning repo openjpeg into folder t_ultibo.

**devel@pi400-1:~ $ git clone https://github.com/develone/openjpeg.git t_ultibo**

**devel@pi400-1:~ $ cd t_ultibo/**

**devel@pi400-1:~/t_ultibo $ mkdir build**

**devel@pi400-1:~/t_ultibo $ cd build/**

**devel@pi400-1:~/t_ultibo/build $ cmake ../**
-- The C compiler identification is GNU 8.3.0
-- The CXX compiler identification is GNU 8.3.0
-- Check for working C compiler: /usr/bin/cc
-- Check for working C compiler: /usr/bin/cc -- works
-- Detecting C compiler ABI info
-- Detecting C compiler ABI info - done
-- Detecting C compile features
-- Detecting C compile features - done
-- Check for working CXX compiler: /usr/bin/c++
-- Check for working CXX compiler: /usr/bin/c++ -- works
-- Detecting CXX compiler ABI info
-- Detecting CXX compiler ABI info - done
-- Detecting CXX compile features
-- Detecting CXX compile features - done
-- Check if the system is big endian
-- Searching 16 bit integer
-- Looking for sys/types.h
-- Looking for sys/types.h - found
-- Looking for stdint.h
-- Looking for stdint.h - found
-- Looking for stddef.h
-- Looking for stddef.h - found
-- Check size of unsigned short
-- Check size of unsigned short - done
-- Using unsigned short
-- Check if the system is big endian - little endian
-- Looking for string.h
-- Looking for string.h - found
-- Looking for memory.h
-- Looking for memory.h - found
-- Looking for stdlib.h
-- Looking for stdlib.h - found
-- Looking for stdio.h
-- Looking for stdio.h - found
-- Looking for math.h
-- Looking for math.h - found
-- Looking for float.h
-- Looking for float.h - found

-- Looking for time.h
-- Looking for time.h - found
-- Looking for stdarg.h
-- Looking for stdarg.h - found
-- Looking for ctype.h
-- Looking for ctype.h - found
-- Looking for assert.h
-- Looking for assert.h - found
-- Looking for stdint.h
-- Looking for stdint.h - found
-- Looking for inttypes.h
-- Looking for inttypes.h - found
-- Looking for strings.h
-- Looking for strings.h - found
-- Looking for sys/stat.h
-- Looking for sys/stat.h - found
-- Looking for unistd.h
-- Looking for unistd.h - found
-- Checking for 64-bit off_t
-- Checking for 64-bit off_t - present with _FILE_OFFSET_BITS=64
-- Checking for fseeko/ftello
-- Checking for fseeko/ftello - present
-- Large File support - found
-- Looking for include file malloc.h
-- Looking for include file malloc.h - found
-- Looking for _aligned_malloc
-- Looking for _aligned_malloc - not found
-- Looking for posix_memalign
-- Looking for posix_memalign - found
-- Looking for memalign
-- Looking for memalign - found
-- Found ZLIB: /usr/lib/arm-linux-gnueabihf/libz.so (found version "1.2.11")
-- Your system seems to have a Z lib available, we will use it to generate PNG lib
-- Found PNG: /usr/lib/arm-linux-gnueabihf/libpng.so (found version "1.6.36")
-- Your system seems to have a PNG lib available, we will use it
-- Found TIFF: /usr/lib/arm-linux-gnueabihf/libtiff.so (found version "4.1.0")
-- Your system seems to have a TIFF lib available, we will use it
-- Could NOT find LCMS2 (missing: LCMS2_LIBRARY LCMS2_INCLUDE_DIR)
-- Could NOT find LCMS (missing: LCMS_LIBRARY LCMS_INCLUDE_DIR)
-- LCMS2 or LCMS lib not found, activate BUILD_THIRDPARTY if you want build it
-- Configuring done
-- Generating done
-- Build files have been written to: /home/devel/t_ultibo/build

devel@pi400-1:~/t_ultibo/build $ make
Scanning dependencies of target openjp2
[  1%] Building C object src/lib/openjp2/CMakeFiles/openjp2.dir/thread.c.o
[  2%] Building C object src/lib/openjp2/CMakeFiles/openjp2.dir/bio.c.o
[  4%] Building C object src/lib/openjp2/CMakeFiles/openjp2.dir/cio.c.o
[  5%] Building C object src/lib/openjp2/CMakeFiles/openjp2.dir/dwt.c.o
[  7%] Building C object src/lib/openjp2/CMakeFiles/openjp2.dir/event.c.o
[  8%] Building C object src/lib/openjp2/CMakeFiles/openjp2.dir/image.c.o

[  9%] Building C object src/lib/openjp2/CMakeFiles/openjp2.dir/invert.c.o
[ 11%] Building C object src/lib/openjp2/CMakeFiles/openjp2.dir/j2k.c.o
[ 12%] Building C object src/lib/openjp2/CMakeFiles/openjp2.dir/jp2.c.o
[ 14%] Building C object src/lib/openjp2/CMakeFiles/openjp2.dir/mct.c.o
[ 15%] Building C object src/lib/openjp2/CMakeFiles/openjp2.dir/mqc.c.o
[ 16%] Building C object src/lib/openjp2/CMakeFiles/openjp2.dir/openjpeg.c.o
/home/devel/t_ultibo/src/lib/openjp2/openjpeg.c: In function 'opj_stream_create_file_stream':
/home/devel/t_ultibo/src/lib/openjp2/openjpeg.c:1041:30: warning: cast between incompatible
function types from 'int (*)(FILE *)' {aka 'int (*)(struct _IO_FILE *)'} to 'void (*)(void *)' [-
Wcast-function-type]
                 (opj_stream_free_user_data_fn) fclose);
                 ^
[ 18%] Building C object src/lib/openjp2/CMakeFiles/openjp2.dir/opj_clock.c.o
[ 19%] Building C object src/lib/openjp2/CMakeFiles/openjp2.dir/pi.c.o
/home/devel/t_ultibo/src/lib/openjp2/pi.c: In function 'opj_pi_next_rpcl':
/home/devel/t_ultibo/src/lib/openjp2/pi.c:373:23: warning: conversion to 'OPJ_INT32' {aka 'int'}
from 'OPJ_UINT32' {aka 'unsigned int'} may change the sign of the result [-Wsign-conversion]
      pi->poc.ty0 = pi->ty0;
               ^~
/home/devel/t_ultibo/src/lib/openjp2/pi.c:374:23: warning: conversion to 'OPJ_INT32' {aka 'int'}
from 'OPJ_UINT32' {aka 'unsigned int'} may change the sign of the result [-Wsign-conversion]
      pi->poc.tx0 = pi->tx0;
               ^~
/home/devel/t_ultibo/src/lib/openjp2/pi.c:375:23: warning: conversion to 'OPJ_INT32' {aka 'int'}
from 'OPJ_UINT32' {aka 'unsigned int'} may change the sign of the result [-Wsign-conversion]
      pi->poc.ty1 = pi->ty1;
               ^~
/home/devel/t_ultibo/src/lib/openjp2/pi.c:376:23: warning: conversion to 'OPJ_INT32' {aka 'int'}
from 'OPJ_UINT32' {aka 'unsigned int'} may change the sign of the result [-Wsign-conversion]
      pi->poc.tx1 = pi->tx1;
               ^~
/home/devel/t_ultibo/src/lib/openjp2/pi.c:407:46: warning: conversion to 'OPJ_INT32' {aka 'int'}
from 'OPJ_UINT32' {aka 'unsigned int'} may change the sign of the result [-Wsign-conversion]
            trx0 = opj_int_ceildiv(pi->tx0, (OPJ_INT32)(comp->dx << levelno));
                    ~~^~~~~~
/home/devel/t_ultibo/src/lib/openjp2/pi.c:408:46: warning: conversion to 'OPJ_INT32' {aka 'int'}
from 'OPJ_UINT32' {aka 'unsigned int'} may change the sign of the result [-Wsign-conversion]
            try0 = opj_int_ceildiv(pi->ty0, (OPJ_INT32)(comp->dy << levelno));
                    ~~^~~~~~
/home/devel/t_ultibo/src/lib/openjp2/pi.c:409:46: warning: conversion to 'OPJ_INT32' {aka 'int'}
from 'OPJ_UINT32' {aka 'unsigned int'} may change the sign of the result [-Wsign-conversion]
            trx1 = opj_int_ceildiv(pi->tx1, (OPJ_INT32)(comp->dx << levelno));
                    ~~^~~~~~
/home/devel/t_ultibo/src/lib/openjp2/pi.c:410:46: warning: conversion to 'OPJ_INT32' {aka 'int'}
from 'OPJ_UINT32' {aka 'unsigned int'} may change the sign of the result [-Wsign-conversion]
            try1 = opj_int_ceildiv(pi->ty1, (OPJ_INT32)(comp->dy << levelno));
                    ~~^~~~~~
/home/devel/t_ultibo/src/lib/openjp2/pi.c:424:34: warning: conversion to 'OPJ_UINT32' {aka
'unsigned int'} from 'int' may change the sign of the result [-Wsign-conversion]
            if (!((pi->y % (OPJ_INT32)(comp->dy << rpy) == 0) || ((pi->y == pi->ty0) &&
                 ^

/home/devel/t_ultibo/src/lib/openjp2/pi.c:428:34: warning: conversion to 'OPJ_UINT32' {aka 'unsigned int'} from 'int' may change the sign of the result [-Wsign-conversion]
        if (!((pi->x % (OPJ_INT32)(comp->dx << rpx) == 0) || ((pi->x == pi->tx0) &&
            ^
/home/devel/t_ultibo/src/lib/openjp2/pi.c:441:67: warning: conversion to 'OPJ_INT32' {aka 'int'} from 'OPJ_UINT32' {aka 'unsigned int'} may change the sign of the result [-Wsign-conversion]
        prci = opj_int_floordivpow2(opj_int_ceildiv(pi->x,
                                    ~~^~~
/home/devel/t_ultibo/src/lib/openjp2/pi.c:444:67: warning: conversion to 'OPJ_INT32' {aka 'int'} from 'OPJ_UINT32' {aka 'unsigned int'} may change the sign of the result [-Wsign-conversion]
        prcj = opj_int_floordivpow2(opj_int_ceildiv(pi->y,
                                    ~~^~~
/home/devel/t_ultibo/src/lib/openjp2/pi.c: In function 'opj_pi_next_pcrl':
/home/devel/t_ultibo/src/lib/openjp2/pi.c:506:23: warning: conversion to 'OPJ_INT32' {aka 'int'} from 'OPJ_UINT32' {aka 'unsigned int'} may change the sign of the result [-Wsign-conversion]
        pi->poc.ty0 = pi->ty0;
                      ^~
/home/devel/t_ultibo/src/lib/openjp2/pi.c:507:23: warning: conversion to 'OPJ_INT32' {aka 'int'} from 'OPJ_UINT32' {aka 'unsigned int'} may change the sign of the result [-Wsign-conversion]
        pi->poc.tx0 = pi->tx0;
                      ^~
/home/devel/t_ultibo/src/lib/openjp2/pi.c:508:23: warning: conversion to 'OPJ_INT32' {aka 'int'} from 'OPJ_UINT32' {aka 'unsigned int'} may change the sign of the result [-Wsign-conversion]
        pi->poc.ty1 = pi->ty1;
                      ^~
/home/devel/t_ultibo/src/lib/openjp2/pi.c:509:23: warning: conversion to 'OPJ_INT32' {aka 'int'} from 'OPJ_UINT32' {aka 'unsigned int'} may change the sign of the result [-Wsign-conversion]
        pi->poc.tx1 = pi->tx1;
                      ^~
/home/devel/t_ultibo/src/lib/openjp2/pi.c:538:46: warning: conversion to 'OPJ_INT32' {aka 'int'} from 'OPJ_UINT32' {aka 'unsigned int'} may change the sign of the result [-Wsign-conversion]
            trx0 = opj_int_ceildiv(pi->tx0, (OPJ_INT32)(comp->dx << levelno));
                                   ~~^~~~~~
/home/devel/t_ultibo/src/lib/openjp2/pi.c:539:46: warning: conversion to 'OPJ_INT32' {aka 'int'} from 'OPJ_UINT32' {aka 'unsigned int'} may change the sign of the result [-Wsign-conversion]
            try0 = opj_int_ceildiv(pi->ty0, (OPJ_INT32)(comp->dy << levelno));
                                   ~~^~~~~~
/home/devel/t_ultibo/src/lib/openjp2/pi.c:540:46: warning: conversion to 'OPJ_INT32' {aka 'int'} from 'OPJ_UINT32' {aka 'unsigned int'} may change the sign of the result [-Wsign-conversion]
            trx1 = opj_int_ceildiv(pi->tx1, (OPJ_INT32)(comp->dx << levelno));
                                   ~~^~~~~~
/home/devel/t_ultibo/src/lib/openjp2/pi.c:541:46: warning: conversion to 'OPJ_INT32' {aka 'int'} from 'OPJ_UINT32' {aka 'unsigned int'} may change the sign of the result [-Wsign-conversion]
            try1 = opj_int_ceildiv(pi->ty1, (OPJ_INT32)(comp->dy << levelno));
                                   ~~^~~~~~
/home/devel/t_ultibo/src/lib/openjp2/pi.c:555:34: warning: conversion to 'OPJ_UINT32' {aka 'unsigned int'} from 'int' may change the sign of the result [-Wsign-conversion]
            if (!((pi->y % (OPJ_INT32)(comp->dy << rpy) == 0) || ((pi->y == pi->ty0) &&
                ^
/home/devel/t_ultibo/src/lib/openjp2/pi.c:559:34: warning: conversion to 'OPJ_UINT32' {aka 'unsigned int'} from 'int' may change the sign of the result [-Wsign-conversion]
            if (!((pi->x % (OPJ_INT32)(comp->dx << rpx) == 0) || ((pi->x == pi->tx0) &&

∧
/home/devel/t_ultibo/src/lib/openjp2/pi.c:572:67: warning: conversion to 'OPJ_INT32' {aka 'int'}
from 'OPJ_UINT32' {aka 'unsigned int'} may change the sign of the result [-Wsign-conversion]
            prci = opj_int_floordivpow2(opj_int_ceildiv(pi->x,
                                         ~~∧~~
/home/devel/t_ultibo/src/lib/openjp2/pi.c:575:67: warning: conversion to 'OPJ_INT32' {aka 'int'}
from 'OPJ_UINT32' {aka 'unsigned int'} may change the sign of the result [-Wsign-conversion]
            prcj = opj_int_floordivpow2(opj_int_ceildiv(pi->y,
                                         ~~∧~~
/home/devel/t_ultibo/src/lib/openjp2/pi.c: In function 'opj_pi_next_cprl':
/home/devel/t_ultibo/src/lib/openjp2/pi.c:637:27: warning: conversion to 'OPJ_INT32' {aka 'int'}
from 'OPJ_UINT32' {aka 'unsigned int'} may change the sign of the result [-Wsign-conversion]
         pi->poc.ty0 = pi->ty0;
                       ∧~
/home/devel/t_ultibo/src/lib/openjp2/pi.c:638:27: warning: conversion to 'OPJ_INT32' {aka 'int'}
from 'OPJ_UINT32' {aka 'unsigned int'} may change the sign of the result [-Wsign-conversion]
         pi->poc.tx0 = pi->tx0;
                       ∧~
/home/devel/t_ultibo/src/lib/openjp2/pi.c:639:27: warning: conversion to 'OPJ_INT32' {aka 'int'}
from 'OPJ_UINT32' {aka 'unsigned int'} may change the sign of the result [-Wsign-conversion]
         pi->poc.ty1 = pi->ty1;
                       ∧~
/home/devel/t_ultibo/src/lib/openjp2/pi.c:640:27: warning: conversion to 'OPJ_INT32' {aka 'int'}
from 'OPJ_UINT32' {aka 'unsigned int'} may change the sign of the result [-Wsign-conversion]
         pi->poc.tx1 = pi->tx1;
                       ∧~
/home/devel/t_ultibo/src/lib/openjp2/pi.c:666:46: warning: conversion to 'OPJ_INT32' {aka 'int'}
from 'OPJ_UINT32' {aka 'unsigned int'} may change the sign of the result [-Wsign-conversion]
            trx0 = opj_int_ceildiv(pi->tx0, (OPJ_INT32)(comp->dx << levelno));
                                   ~~∧~~~~
/home/devel/t_ultibo/src/lib/openjp2/pi.c:667:46: warning: conversion to 'OPJ_INT32' {aka 'int'}
from 'OPJ_UINT32' {aka 'unsigned int'} may change the sign of the result [-Wsign-conversion]
            try0 = opj_int_ceildiv(pi->ty0, (OPJ_INT32)(comp->dy << levelno));
                                   ~~∧~~~~
/home/devel/t_ultibo/src/lib/openjp2/pi.c:668:46: warning: conversion to 'OPJ_INT32' {aka 'int'}
from 'OPJ_UINT32' {aka 'unsigned int'} may change the sign of the result [-Wsign-conversion]
            trx1 = opj_int_ceildiv(pi->tx1, (OPJ_INT32)(comp->dx << levelno));
                                   ~~∧~~~~
/home/devel/t_ultibo/src/lib/openjp2/pi.c:669:46: warning: conversion to 'OPJ_INT32' {aka 'int'}
from 'OPJ_UINT32' {aka 'unsigned int'} may change the sign of the result [-Wsign-conversion]
            try1 = opj_int_ceildiv(pi->ty1, (OPJ_INT32)(comp->dy << levelno));
                                   ~~∧~~~~
/home/devel/t_ultibo/src/lib/openjp2/pi.c:683:34: warning: conversion to 'OPJ_UINT32' {aka
'unsigned int'} from 'int' may change the sign of the result [-Wsign-conversion]
            if (!((pi->y % (OPJ_INT32)(comp->dy << rpy) == 0) || ((pi->y == pi->ty0) &&
                                ∧
/home/devel/t_ultibo/src/lib/openjp2/pi.c:687:34: warning: conversion to 'OPJ_UINT32' {aka
'unsigned int'} from 'int' may change the sign of the result [-Wsign-conversion]
            if (!((pi->x % (OPJ_INT32)(comp->dx << rpx) == 0) || ((pi->x == pi->tx0) &&
                                ∧
/home/devel/t_ultibo/src/lib/openjp2/pi.c:700:67: warning: conversion to 'OPJ_INT32' {aka 'int'}
from 'OPJ_UINT32' {aka 'unsigned int'} may change the sign of the result [-Wsign-conversion]

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            prci = opj_int_floordivpow2(opj_int_ceildiv(pi->x,
                                   ~~^~~
/home/devel/t_ultibo/src/lib/openjp2/pi.c:703:67: warning: conversion to 'OPJ_INT32' {aka 'int'}
from 'OPJ_UINT32' {aka 'unsigned int'} may change the sign of the result [-Wsign-conversion]
            prcj = opj_int_floordivpow2(opj_int_ceildiv(pi->y,
                                   ~~^~~
/home/devel/t_ultibo/src/lib/openjp2/pi.c: In function 'opj_pi_create_decode':
/home/devel/t_ultibo/src/lib/openjp2/pi.c:1459:25: warning: conversion to 'OPJ_UINT32' {aka
'unsigned int'} from 'OPJ_INT32' {aka 'int'} may change the sign of the result [-Wsign-
conversion]
    l_current_pi->tx0 = l_tx0;
                  ^~~~~
/home/devel/t_ultibo/src/lib/openjp2/pi.c:1460:25: warning: conversion to 'OPJ_UINT32' {aka
'unsigned int'} from 'OPJ_INT32' {aka 'int'} may change the sign of the result [-Wsign-
conversion]
    l_current_pi->ty0 = l_ty0;
                  ^~~~~
/home/devel/t_ultibo/src/lib/openjp2/pi.c:1461:25: warning: conversion to 'OPJ_UINT32' {aka
'unsigned int'} from 'OPJ_INT32' {aka 'int'} may change the sign of the result [-Wsign-
conversion]
    l_current_pi->tx1 = l_tx1;
                  ^~~~~
/home/devel/t_ultibo/src/lib/openjp2/pi.c:1462:25: warning: conversion to 'OPJ_UINT32' {aka
'unsigned int'} from 'OPJ_INT32' {aka 'int'} may change the sign of the result [-Wsign-
conversion]
    l_current_pi->ty1 = l_ty1;
                  ^~~~~
/home/devel/t_ultibo/src/lib/openjp2/pi.c:1500:29: warning: conversion to 'OPJ_UINT32' {aka
'unsigned int'} from 'OPJ_INT32' {aka 'int'} may change the sign of the result [-Wsign-
conversion]
       l_current_pi->tx0 = l_tx0;
                     ^~~~~
/home/devel/t_ultibo/src/lib/openjp2/pi.c:1501:29: warning: conversion to 'OPJ_UINT32' {aka
'unsigned int'} from 'OPJ_INT32' {aka 'int'} may change the sign of the result [-Wsign-
conversion]
       l_current_pi->ty0 = l_ty0;
                     ^~~~~
/home/devel/t_ultibo/src/lib/openjp2/pi.c:1502:29: warning: conversion to 'OPJ_UINT32' {aka
'unsigned int'} from 'OPJ_INT32' {aka 'int'} may change the sign of the result [-Wsign-
conversion]
       l_current_pi->tx1 = l_tx1;
                     ^~~~~
/home/devel/t_ultibo/src/lib/openjp2/pi.c:1503:29: warning: conversion to 'OPJ_UINT32' {aka
'unsigned int'} from 'OPJ_INT32' {aka 'int'} may change the sign of the result [-Wsign-
conversion]
       l_current_pi->ty1 = l_ty1;
                     ^~~~~
/home/devel/t_ultibo/src/lib/openjp2/pi.c: In function 'opj_pi_initialise_encode':
/home/devel/t_ultibo/src/lib/openjp2/pi.c:1652:25: warning: conversion to 'OPJ_UINT32' {aka
'unsigned int'} from 'OPJ_INT32' {aka 'int'} may change the sign of the result [-Wsign-
conversion]
    l_current_pi->tx0 = l_tx0;
```

```
                    ^~~~~
/home/devel/t_ultibo/src/lib/openjp2/pi.c:1653:25: warning: conversion to 'OPJ_UINT32' {aka
'unsigned int'} from 'OPJ_INT32' {aka 'int'} may change the sign of the result [-Wsign-
conversion]
     l_current_pi->ty0 = l_ty0;
                     ^~~~~
/home/devel/t_ultibo/src/lib/openjp2/pi.c:1654:25: warning: conversion to 'OPJ_UINT32' {aka
'unsigned int'} from 'OPJ_INT32' {aka 'int'} may change the sign of the result [-Wsign-
conversion]
     l_current_pi->tx1 = l_tx1;
                     ^~~~~
/home/devel/t_ultibo/src/lib/openjp2/pi.c:1655:25: warning: conversion to 'OPJ_UINT32' {aka
'unsigned int'} from 'OPJ_INT32' {aka 'int'} may change the sign of the result [-Wsign-
conversion]
     l_current_pi->ty1 = l_ty1;
                     ^~~~~
/home/devel/t_ultibo/src/lib/openjp2/pi.c:1691:29: warning: conversion to 'OPJ_UINT32' {aka
'unsigned int'} from 'OPJ_INT32' {aka 'int'} may change the sign of the result [-Wsign-
conversion]
        l_current_pi->tx0 = l_tx0;
                        ^~~~~
/home/devel/t_ultibo/src/lib/openjp2/pi.c:1692:29: warning: conversion to 'OPJ_UINT32' {aka
'unsigned int'} from 'OPJ_INT32' {aka 'int'} may change the sign of the result [-Wsign-
conversion]
        l_current_pi->ty0 = l_ty0;
                        ^~~~~
/home/devel/t_ultibo/src/lib/openjp2/pi.c:1693:29: warning: conversion to 'OPJ_UINT32' {aka
'unsigned int'} from 'OPJ_INT32' {aka 'int'} may change the sign of the result [-Wsign-
conversion]
        l_current_pi->tx1 = l_tx1;
                        ^~~~~
/home/devel/t_ultibo/src/lib/openjp2/pi.c:1694:29: warning: conversion to 'OPJ_UINT32' {aka
'unsigned int'} from 'OPJ_INT32' {aka 'int'} may change the sign of the result [-Wsign-
conversion]
        l_current_pi->ty1 = l_ty1;
                        ^~~~~
[ 21%] Building C object src/lib/openjp2/CMakeFiles/openjp2.dir/t1.c.o
[ 22%] Building C object src/lib/openjp2/CMakeFiles/openjp2.dir/t2.c.o
[ 23%] Building C object src/lib/openjp2/CMakeFiles/openjp2.dir/tcd.c.o
[ 25%] Building C object src/lib/openjp2/CMakeFiles/openjp2.dir/tgt.c.o
[ 26%] Building C object src/lib/openjp2/CMakeFiles/openjp2.dir/function_list.c.o
[ 28%] Building C object src/lib/openjp2/CMakeFiles/openjp2.dir/opj_malloc.c.o
[ 29%] Building C object src/lib/openjp2/CMakeFiles/openjp2.dir/sparse_array.c.o
[ 30%] Linking C shared library ../../../bin/libopenjp2.so
[ 30%] Built target openjp2
Scanning dependencies of target openjp2_static
[ 32%] Building C object src/lib/openjp2/CMakeFiles/openjp2_static.dir/thread.c.o
[ 33%] Building C object src/lib/openjp2/CMakeFiles/openjp2_static.dir/bio.c.o
[ 35%] Building C object src/lib/openjp2/CMakeFiles/openjp2_static.dir/cio.c.o
[ 36%] Building C object src/lib/openjp2/CMakeFiles/openjp2_static.dir/dwt.c.o
[ 38%] Building C object src/lib/openjp2/CMakeFiles/openjp2_static.dir/event.c.o
[ 39%] Building C object src/lib/openjp2/CMakeFiles/openjp2_static.dir/image.c.o
```

[ 40%] Building C object src/lib/openjp2/CMakeFiles/openjp2_static.dir/invert.c.o
[ 42%] Building C object src/lib/openjp2/CMakeFiles/openjp2_static.dir/j2k.c.o
[ 43%] Building C object src/lib/openjp2/CMakeFiles/openjp2_static.dir/jp2.c.o
[ 45%] Building C object src/lib/openjp2/CMakeFiles/openjp2_static.dir/mct.c.o
[ 46%] Building C object src/lib/openjp2/CMakeFiles/openjp2_static.dir/mqc.c.o
[ 47%] Building C object src/lib/openjp2/CMakeFiles/openjp2_static.dir/openjpeg.c.o
[ 49%] Building C object src/lib/openjp2/CMakeFiles/openjp2_static.dir/opj_clock.c.o
[ 50%] Building C object src/lib/openjp2/CMakeFiles/openjp2_static.dir/pi.c.o
[ 52%] Building C object src/lib/openjp2/CMakeFiles/openjp2_static.dir/t1.c.o
[ 53%] Building C object src/lib/openjp2/CMakeFiles/openjp2_static.dir/t2.c.o
[ 54%] Building C object src/lib/openjp2/CMakeFiles/openjp2_static.dir/tcd.c.o
[ 56%] Building C object src/lib/openjp2/CMakeFiles/openjp2_static.dir/tgt.c.o
[ 57%] Building C object src/lib/openjp2/CMakeFiles/openjp2_static.dir/function_list.c.o
[ 59%] Building C object src/lib/openjp2/CMakeFiles/openjp2_static.dir/opj_malloc.c.o
[ 60%] Building C object src/lib/openjp2/CMakeFiles/openjp2_static.dir/sparse_array.c.o
[ 61%] Linking C static library ../../../bin/libopenjp2.a
[ 61%] Built target openjp2_static
Scanning dependencies of target opj_compress
[ 63%] Building C object src/bin/jp2/CMakeFiles/opj_compress.dir/opj_compress.c.o
/home/devel/t_ultibo/src/bin/jp2/opj_compress.c: In function 'get_next_file':
/home/devel/t_ultibo/src/bin/jp2/opj_compress.c:550:31: warning: 'sprintf' may write a terminating
nul past the end of the destination [-Wformat-overflow=]
    sprintf(infilename, "%s/%s", img_fol->imgdirpath, image_filename);
                      ^
/home/devel/t_ultibo/src/bin/jp2/opj_compress.c:550:5: note: 'sprintf' output 2 or more bytes
(assuming 4097) into a destination of size 4096
    sprintf(infilename, "%s/%s", img_fol->imgdirpath, image_filename);
    ^~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
/home/devel/t_ultibo/src/bin/jp2/opj_compress.c:563:36: warning: '.' directive writing 1 byte into a
region of size between 0 and 4095 [-Wformat-overflow=]
     sprintf(outfilename, "%s/%s.%s", img_fol->imgdirpath, temp_ofname,
                       ^
/home/devel/t_ultibo/src/bin/jp2/opj_compress.c:563:9: note: 'sprintf' output 3 or more bytes
(assuming 4098) into a destination of size 4096
     sprintf(outfilename, "%s/%s.%s", img_fol->imgdirpath, temp_ofname,
     ^~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
          img_fol->out_format);
          ~~~~~~~~~~~~~~~~~~~~
[ 64%] Building C object src/bin/jp2/CMakeFiles/opj_compress.dir/convert.c.o
[ 66%] Building C object src/bin/jp2/CMakeFiles/opj_compress.dir/convertbmp.c.o
[ 67%] Building C object src/bin/jp2/CMakeFiles/opj_compress.dir/index.c.o
[ 69%] Building C object src/bin/jp2/CMakeFiles/opj_compress.dir/__/common/color.c.o
[ 70%] Building C object src/bin/jp2/CMakeFiles/opj_compress.dir/__/common/opj_getopt.c.o
[ 71%] Building C object src/bin/jp2/CMakeFiles/opj_compress.dir/converttif.c.o
[ 73%] Building C object src/bin/jp2/CMakeFiles/opj_compress.dir/convertpng.c.o
[ 74%] Linking C executable ../../../bin/opj_compress
[ 74%] Built target opj_compress
Scanning dependencies of target opj_decompress
[ 76%] Building C object src/bin/jp2/CMakeFiles/opj_decompress.dir/opj_decompress.c.o
/home/devel/t_ultibo/src/bin/jp2/opj_decompress.c: In function 'get_next_file':
/home/devel/t_ultibo/src/bin/jp2/opj_decompress.c:482:36: warning: '.' directive writing 1 byte into
a region of size between 0 and 4095 [-Wformat-overflow=]

```
          sprintf(outfilename, "%s/%s.%s", img_fol->imgdirpath, temp_ofname,
                        ^
/home/devel/t_ultibo/src/bin/jp2/opj_decompress.c:482:9: note: 'sprintf' output 3 or more bytes
(assuming 4098) into a destination of size 4096
          sprintf(outfilename, "%s/%s.%s", img_fol->imgdirpath, temp_ofname,
          ^~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
              img_fol->out_format);
              ~~~~~~~~~~~~~~~~~~~~
[ 77%] Building C object src/bin/jp2/CMakeFiles/opj_decompress.dir/convert.c.o
[ 78%] Building C object src/bin/jp2/CMakeFiles/opj_decompress.dir/convertbmp.c.o
[ 80%] Building C object src/bin/jp2/CMakeFiles/opj_decompress.dir/index.c.o
[ 81%] Building C object src/bin/jp2/CMakeFiles/opj_decompress.dir/__/common/color.c.o
[ 83%] Building C object src/bin/jp2/CMakeFiles/opj_decompress.dir/__/common/opj_getopt.c.o
[ 84%] Building C object src/bin/jp2/CMakeFiles/opj_decompress.dir/converttif.c.o
[ 85%] Building C object src/bin/jp2/CMakeFiles/opj_decompress.dir/convertpng.c.o
[ 87%] Linking C executable ../../../bin/opj_decompress
[ 87%] Built target opj_decompress
Scanning dependencies of target opj_dump
[ 88%] Building C object src/bin/jp2/CMakeFiles/opj_dump.dir/opj_dump.c.o
/home/devel/t_ultibo/src/bin/jp2/opj_dump.c: In function 'get_next_file':
/home/devel/t_ultibo/src/bin/jp2/opj_dump.c:214:31: warning: 'sprintf' may write a terminating nul
past the end of the destination [-Wformat-overflow=]
      sprintf(infilename, "%s/%s", img_fol->imgdirpath, image_filename);
                        ^
/home/devel/t_ultibo/src/bin/jp2/opj_dump.c:214:5: note: 'sprintf' output 2 or more bytes
(assuming 4097) into a destination of size 4096
      sprintf(infilename, "%s/%s", img_fol->imgdirpath, image_filename);
      ^~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
/home/devel/t_ultibo/src/bin/jp2/opj_dump.c:227:36: warning: '.' directive writing 1 byte into a
region of size between 0 and 4095 [-Wformat-overflow=]
          sprintf(outfilename, "%s/%s.%s", img_fol->imgdirpath, temp_ofname,
                        ^
/home/devel/t_ultibo/src/bin/jp2/opj_dump.c:227:9: note: 'sprintf' output 3 or more bytes
(assuming 4098) into a destination of size 4096
          sprintf(outfilename, "%s/%s.%s", img_fol->imgdirpath, temp_ofname,
          ^~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
              img_fol->out_format);
              ~~~~~~~~~~~~~~~~~~~~
[ 90%] Building C object src/bin/jp2/CMakeFiles/opj_dump.dir/convert.c.o
[ 91%] Building C object src/bin/jp2/CMakeFiles/opj_dump.dir/convertbmp.c.o
[ 92%] Building C object src/bin/jp2/CMakeFiles/opj_dump.dir/index.c.o
[ 94%] Building C object src/bin/jp2/CMakeFiles/opj_dump.dir/__/common/color.c.o
[ 95%] Building C object src/bin/jp2/CMakeFiles/opj_dump.dir/__/common/opj_getopt.c.o
[ 97%] Building C object src/bin/jp2/CMakeFiles/opj_dump.dir/converttif.c.o
[ 98%] Building C object src/bin/jp2/CMakeFiles/opj_dump.dir/convertpng.c.o
[100%] Linking C executable ../../../bin/opj_dump
[100%] Built target opj_dump

devel@pi400-1:~/t_ultibo/build $ ls bin
libopenjp2.a   libopenjp2.so.2.3.1  opj_compress   opj_dump
libopenjp2.so  libopenjp2.so.7      opj_decompress
```

devel@pi400-1:~/t_ultibo/build $ bin/opj_decompress -i
~/Ultibo_Projects/jpeg2000/QEMU/xxx.j2k -o ~/Ultibo_Projects/jpeg2000/QEMU/openjpeg.bmp

[INFO] Start to read j2k main header (0).
[INFO] Main header has been correctly decoded.
[INFO] No decoded area parameters, set the decoded area to the whole image
[INFO] Header of tile 1 / 1 has been read.
[INFO] Generated Outfile /home/devel/Ultibo_Projects/jpeg2000/QEMU/openjpeg.bmp
decode time: 24 ms

Below Is a 25:1 compression of a 256x256 RGB that was done on QEMU Ultibo and transferred to
pi400-1 using tftp.





**This demonstrates how a file -rw-r--r-- 1 devel devel 196730 Jul 28 11:54
lena_rgb_256.bmp
can be sent using a file -rw-r--r-- 1 devel devel 7848 Aug  1 06:13
/home/devel/Ultibo_Projects/jpeg2000/QEMU/xxx.j2k with compression at 25:1
and still get a good represntation of image.**

**devel@pi400-1:~/t_ultibo/build $ bin/opj_dump -i
~/Ultibo_Projects/jpeg2000/QEMU/xxx.j2k**

[INFO] Start to read j2k main header (0).
[INFO] Main header has been correctly decoded.

```
Image info {
        x0=0, y0=0
        x1=256, y1=256
        numcomps=3
                component 0 {
                dx=1, dy=1
                prec=8
                sgnd=0
        }
                component 1 {
                dx=1, dy=1
                prec=8
                sgnd=0
        }
                component 2 {
                dx=1, dy=1
                prec=8
                sgnd=0
        }
}
Codestream info from main header: {
        tx0=0, ty0=0
        tdx=256, tdy=256
        tw=1, th=1
        default tile {
                csty=0
                prg=0
                numlayers=1
                mct=0
                comp 0 {
                        csty=0
                        numresolutions=6
                        cblkw=2^6
                        cblkh=2^6
                        cblksty=0
                        qmfbid=1
                        preccintsize (w,h)=(15,15) (15,15) (15,15) (15,15) (15,15) (15,15)
                        qntsty=0
                        numgbits=2
                        stepsizes (m,e)=(0,8) (0,9) (0,9) (0,10) (0,9) (0,9) (0,10) (0,9) (0,9) (0,10)
(0,9) (0,9) (0,10) (0,9) (0,9) (0,10)
                        roishift=0
                }
                comp 1 {
                        csty=0
                        numresolutions=6
                        cblkw=2^6
                        cblkh=2^6
                        cblksty=0
                        qmfbid=1
                        preccintsize (w,h)=(15,15) (15,15) (15,15) (15,15) (15,15) (15,15)
                        qntsty=0
```

numgbits=2
                    stepsizes (m,e)=(0,8) (0,9) (0,9) (0,10) (0,9) (0,9) (0,10) (0,9) (0,9) (0,10)
(0,9) (0,9) (0,10) (0,9) (0,9) (0,10)
                    roishift=0
            }
            comp 2 {
                    csty=0
                    numresolutions=6
                    cblkw=2^6
                    cblkh=2^6
                    cblksty=0
                    qmfbid=1
                    preccintsize (w,h)=(15,15) (15,15) (15,15) (15,15) (15,15) (15,15)
                    qntsty=0
                    numgbits=2
                    stepsizes (m,e)=(0,8) (0,9) (0,9) (0,10) (0,9) (0,9) (0,10) (0,9) (0,9) (0,10)
(0,9) (0,9) (0,10) (0,9) (0,9) (0,10)
                    roishift=0
            }
        }
}
Codestream index from main header: {
        Main header start position=0
        Main header end position=125
        Marker list: {
                type=0xff4f, pos=0, len=2
                type=0xff51, pos=2, len=49
                type=0xff52, pos=51, len=14
                type=0xff5c, pos=65, len=21
                type=0xff64, pos=86, len=39
        }
}