Status report OpenCL setup, board test

CONTENTS

Platform 2

System 2

Quartus stack 2

Prequisites 3

Compilation (board test) 4

Board preparation 5

Deployment 6

Execution 7

Conclusion 8

PLATFORM

SYSTEM

- Core i7 6500u, 8GB RAM
- Windows 10 Pro x64
- Windows Subsystem for Linux
- PuTTY

QUARTUS STACK

- Quartus 2 14.1.0.186
- AOCL 14.1.0.186
- SoC EDS 14.1.0.186

PREQUISITES

1) Setup Altera Quartus stack
2) Setup USER[1] environment variables
    a. Altera OpenCL License (Create LM_LICENSE_FILE)
    b. Altera OpenCL binaries (Add to PATH)
    c. Altera Board package path (AOCL_BOARD_PACKAGE_ROOT)

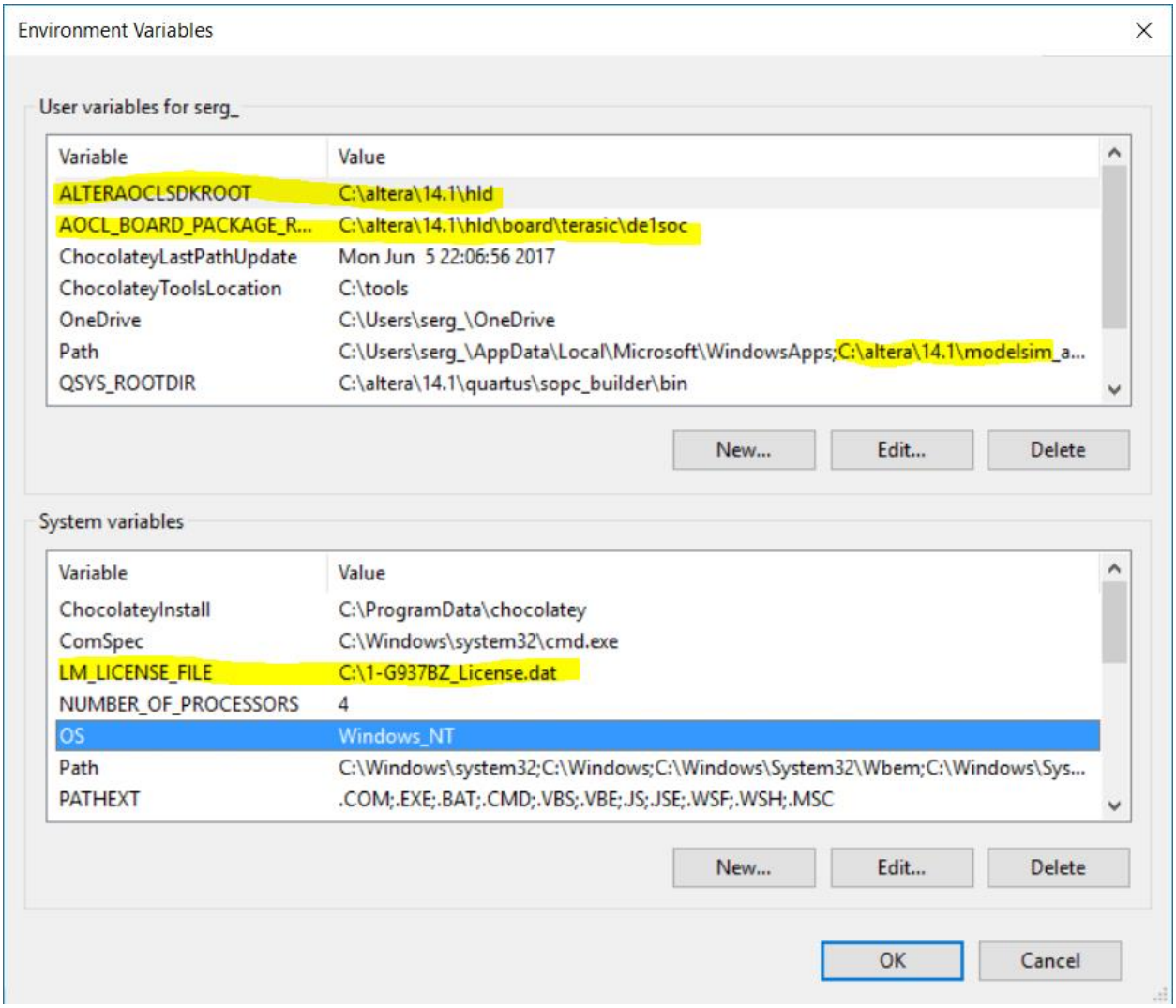

Figure 1 Environment variables required for Altera OpenCL

[1] Systemwide variables won't work without adapting Altera's own environment variables

COMPILATION (BOARD TEST)

1) Go to “C:\altera\14.1\hld\board\terasic\de1soc\examples\boardtest”
2) Prompt> aoc device/boardtest.cl --sw-dimm-partition -o bin/boardtest.aocx
3) Open “C:\altera\14.1\embedded\Embedded_Command_Shell.bat” embedded shell
    a. A Cygwin [2]shell opens
    b. Go to /cygdrive/c/altera/14.1/hld/board/terasic/de1soc/examples/boardtest[3]
    c. Build the board test project (See image x)

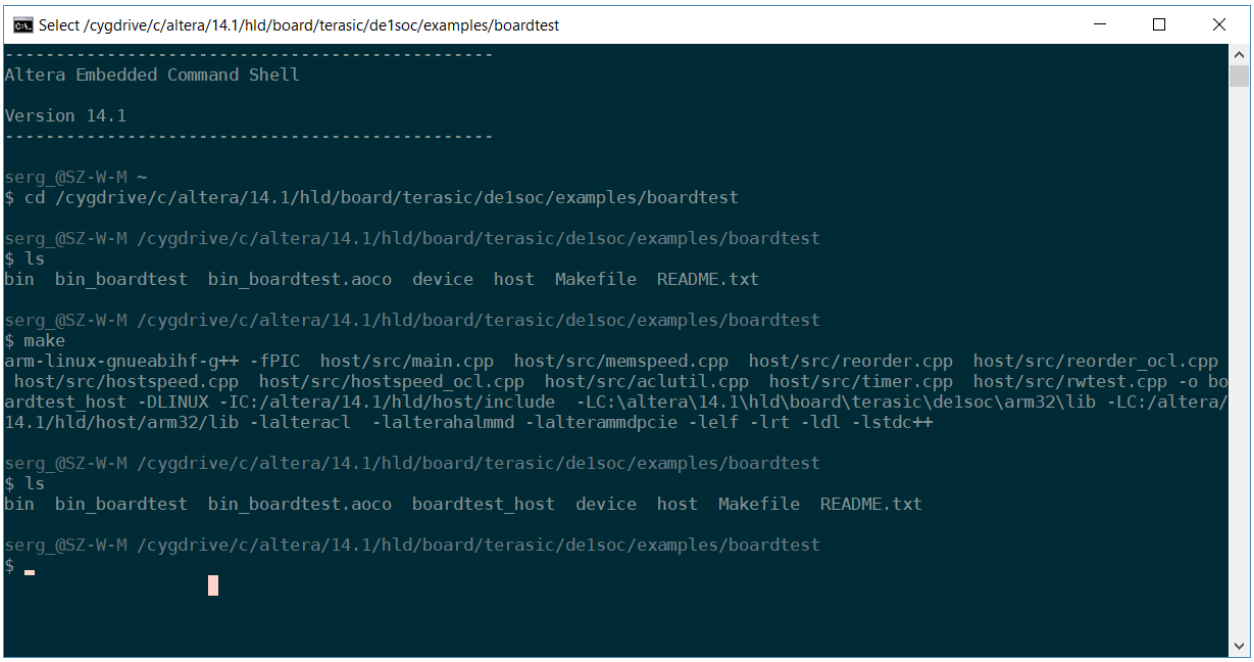

Figure 2 Altera Embedded Command Shell

[2] POSIX emulation layer + tools for windows, https://www.cygwin.com/

[3] To access a host path via Cygwin shell /cygdrive “prefix” is required (mountpoint)

BOARD PREPARATION

Prior to deployment the DE1-SoC has to be up and running.

A prepared flash card with a linux base system is required.

1) Connect the power, USB/UART and Ethernet connectors.
2) Start PuTTY, select the proper COM port and set the baudrate to *115200*
3) Log in as “root”. A password is not required.
4) Set up a (static) ip address, e.g *192.168.0.123*

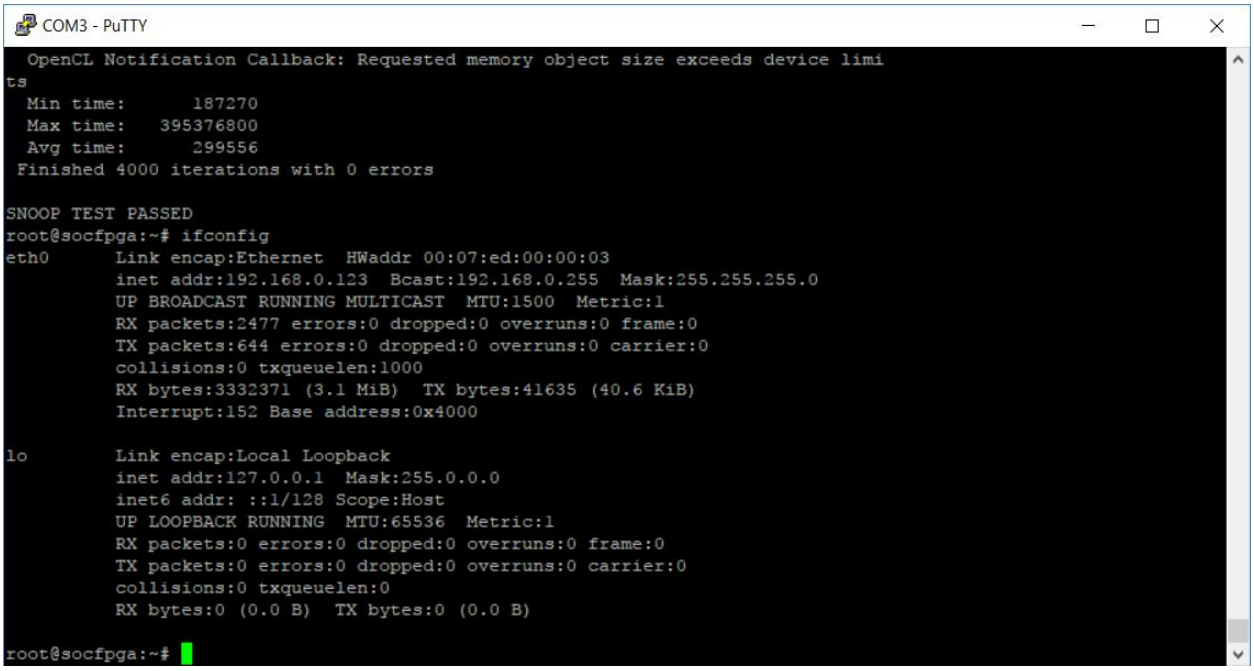

Figure 3 Board's IP configuration

DEPLOYMENT

From a terminal:

- Copy ACL device configuration: *scp bin/boardtest.aocx root@192.168.0.123:/home/root*
- Copy OpenCL host application: *scp boardtest_host root@192.168.0.123:/home/root*

These commandos copy files to the target board via SSH[4].

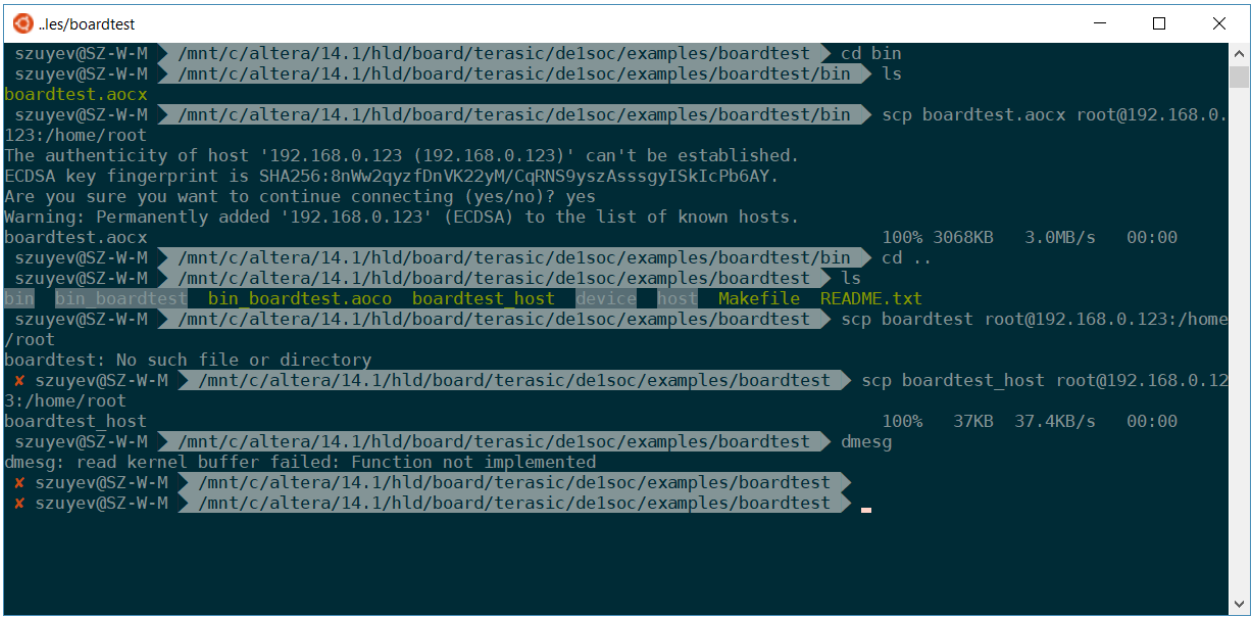

Figure 4 Copy necessary files to the board

[4] Secure Shell

EXECUTION

- Make boardtest_host executable: *chmod +x ./boardtest_host*
- Prepare the OpenCL environment*: source ./init_opencl.sh*
- Program the device: *aocl program /dev/acl0 boardtest.aocx*
- Execute the OpenCL host application: *./boardtest_host*

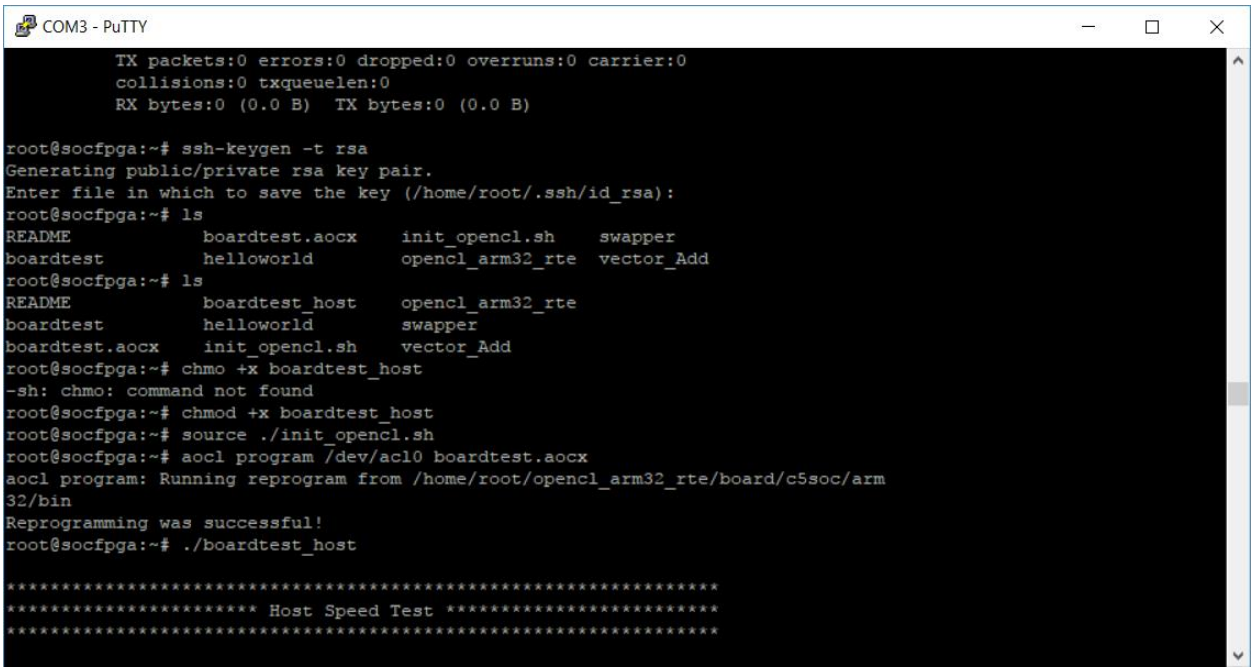

Figure 5 Steps prior to execute the OpenCL program on the board

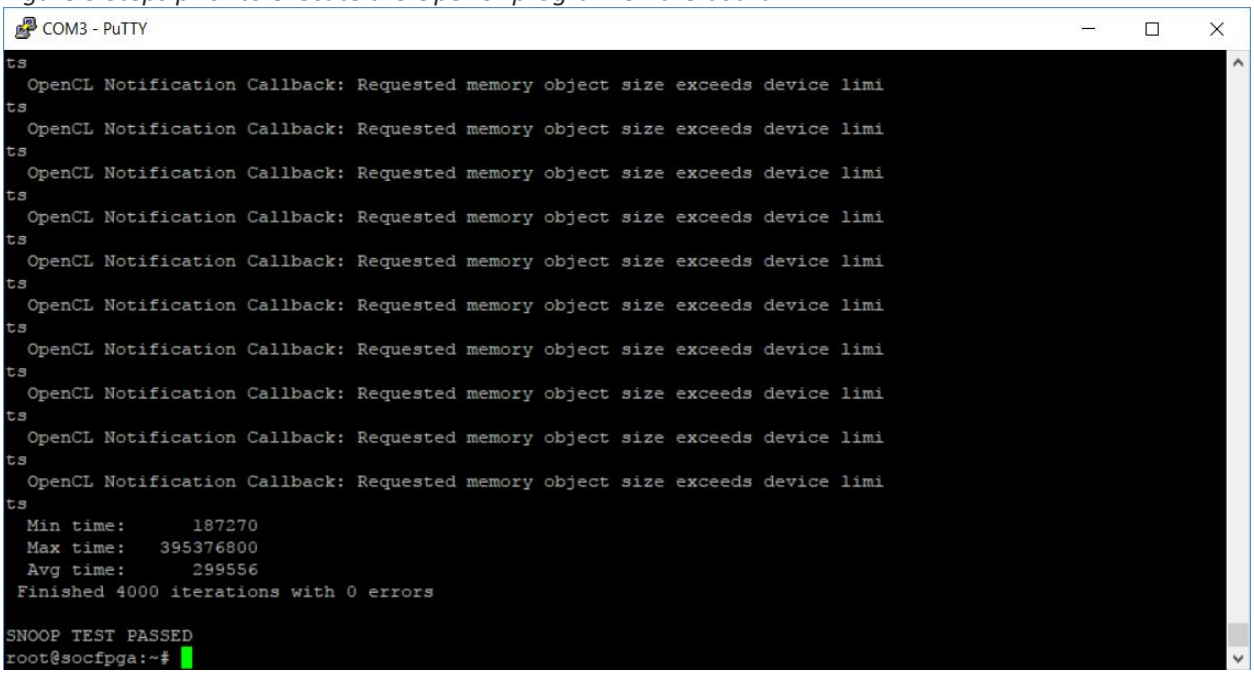

Figure 6 OpenCL board test passed

CONCLUSION

- At least one system (Sergej Zuyev's) is properly configured.
- We can deploy and run OpenCL programs on the provided DE1-SoC
- We can use this knowledge for our own LBP-Operator implementation