OpenCPI Reference Platform 2 (ORP2), COTS Component Specification

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Revision	Date	By	Notes
0.01	2009-11-16	ssiegel	Adopted from Original
0.02	2009-12-09	ssiegel	ISE 11.4
0.03	2009-12-13	ssiegel	Included BIOS Revision
0.04	2009-12-31	ssiegel	RedHat Linux version clarified
0.05	2010-01-24	ssiegel	Checked Prices on Newegg
0.06	2010-03-30	ssiegel	Processor and GPU Refresh
0.07	2010-08-17	ssiegel	Update and Refresh
0.08	2010-11-22	ssiegel	Update and Refresh

This document specifies the COTS components used for the OpenCPI FPGA Reference Platform 2 (ORP2). The parts and vendors specified herein have been selected for their ubiquity and low-cost. For most of the items listed, component substitutions may be made; however the burden of testing is then upon the user. Pricing is non-binding, quantity-one, guidance only.

ORP2 Development and Target Computer, Hardware Components

It is possible to use one computer as both a development machine and a target. Table 1 below lists components central to the performance of the system.

Table 1 – FPGA Reference Platform, Hardware Components

Line	#	Manufacturer	Part Number	Cost	Description
1	1	www.evga.com	132-BL-E758-A1	$300.	X58 Motherboard
2	1	www.intel.com	Corei7-980X	$1000.	Gulftown 3.33GHz 32nm Processor
3	1	www.corsair.com	DDR3 XMS3 12GB	$200.	6x2GB (12GB) DDR3 1600 Memory
4	1	www.evga.com	012-P3-1470-AR	$260.	GeForce GTX470 (Fermi) GPU
5	1	www.enermax.com	EMD625AWT	$160.	625W MODU82+ Power Supply
6	1	www.westerndigital.com	WD3000HLFS	$180.	300GB 10K SATA Disk Drive
7	1	www.antec.com	P183	$145.	ATX Mid Tower Computer Case
8	1	www.xilinx.com	EK-V6-ML605-G	$2000.	Xilinx ML605 Virtex-6 Dev Kit

Notes:
1. Cost estimated, quantity one, as observed online Q3-2010
2. The Xilinx ML605 includes a V6 LX240T device-locked copy of ISE Design Suite – Logic Edition

All components in the table above, except for the ML605, are available from computer component retailers including www.newegg.com. The rationale for the selection of line items 1-7 is to satisfy the requirement of identifying a high-performance and stable "x58-based Corei7 PC with 12GB RAM, strong GPU and reliable 625W power supply". Deviating from these specific selections should not significantly alter system behavior. For example, replacing the GTX470 GPU (efficient, yet "strong" in Q4-2010) with a different GPU should not change the behavior of OpenCPI applications not employing the GPU.

The ML605 development kit is available from www.avnet.com and www.nuhorizons.com .

Not included in the table above are components which may vary based on the user's specific requirements. These include, but may not be limited to, the CPU heat sink assembly, CD/DVD optical drive, keyboard, mouse, monitor and peripheral hardware needed to complete the system.

An open-frame computer case may be used as an alternative to the enclosed case specified in line item 7 when frequent access to board hardware is desired; or where there may be mechanical interference from other PCIe add-in cards with a taller profile. For example, PCIe cards with top-mounted FMC/VITA-57 connectors, such as the Xilinx ML605, will protrude in the vertical dimension such that the case side panel may not be fitted. One such open-frame case alternative offering is the "HSPC Top Deck Tech Station (standard size)" from www.highspeedpc.com for about $90.

Development and Target Computer, Software Components

OpenCPI requires a 64b Linux OS; we have specified **RHEL5 WS 64b Desktop Workstation**. Backend development to Xilinx FPGAs requires ISE-LOGIC 12.3 or greater. A device-locked version of ISE is included with an ML605. We expect to move ISE 12.3, when in becomes available, in H2-CY2010.

Table 2 – FPGA Reference Platform, Software Components

Line	Manufacturer	Part Number	Price	Notes	Description
1	www.redhat.com	RHEL5 WS 64b	$179.	2, 4	Red Hat Enterprise Linux 5 64-bit Workstation
2	www.xilinx.com	EF-ISE-LOG-NL	$2995.	1	Xilinx ISE Design Suite - Logic Edition

Notes:

[1] A V6-LX240T device-locked version of the Xilinx ISE Design Suite – Logic Edition is **included** with the purchase of the ML605.

[2] Observed RHEL Kernel: 2.6.18-194.26.1.el5 (on 2010-11-23). Do not install [XEN] virtualization. Recommend connecting OS to Red Hat Update, as OpenCPI development systems receive OS updates in this manner.

[3] EVGA x58 Motherboard BIOS Version `SZ2Z` (2009-11-30)

[4] RHEL5 WS 64b is an annual subscription…

Development and Target Computer, Optional Components

This table lists optional components that may be used with OpenCPI.

Table 2 – FPGA Reference Platform, Optional Components

Line	Manufacturer	Part Number	Price	Description
1	www.u-blox.com	EVK-6T-0	$349.	GPS Precision Timing Evaluation Kit
2	www.4dsp.com	FMC150-2-1-1-1	$1995.	FMC ADC/DAC Module

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