Summary

Xylon's logiDISP software driver enables software developers to quickly utilize logicBRICKS Graphics Processing Units (GPU) within Microsoft® Windows® Embedded Compact 7 operating system (OS) running on the Xilinx® Zynq™-7000 All Programmable SoC.

The logiDISP controls up to four logicBRICKS IP cores:

- logiCVC-ML Compact Multilayer Video Controller

    http://www.logicbricks.com/Products/logiCVC-ML.aspx

- logiBITBLT Bit Block Transfer 2D Graphics Accelerator

    http://www.logicbricks.com/Products/logiBITBLT.aspx

- logiBMP Bitmap 2.5D Graphics Accelerator

    http://www.logicbricks.com/Products/logiBMP.aspx

- logi3DScalable 3D Graphics Accelerator

    http://www.logicbricks.com/Products/logi3D.aspx

To learn more about Xylon's GPUs for the Xilinx Zynq-7000 AP SoC and different IP configuration options, please visit: http://www.logicbricks.com/Solutions.aspx.

logicBRICKS GPUs for use with the Windows Embedded Compact 7 OS can be configured to use all or just some of the listed logicBRICKS IP cores. If the particular graphics accelerator IP core is not used, the logiDISP software driver provides software fallbacks for non-accelerated graphics features.

The logiDISP driver comes with the registry files that enable an immediate start with the following development hardware and Xylon's reference designs for the Zynq SoC:

- logiREF-ZGPU ref design for the Xilinx Zynq-7000 SoC ZC702 development board, which uses the HDMI video output to an external PC monitor, and

    http://www.logicbricks.com/logicBRICKS/Reference-logicBRICKS-Design/Graphics-for-Xilinx-Zynq-7000.aspx

- logiREF-ZHMI-FMC ref design for the ZC702 development board with connected FMC-HMI from Digilent, which uses the high-resolution touch LCD display mounted on the FMC-HMI board

    http://www.logicbricks.com/logicBRICKS/Reference-logicBRICKS-Design/HMI-for-Xilinx-Zynq-7000.aspx

The driver must be properly configured and pre-compiled to support logicBRICKS GPU running on other development boards or custom made hardware.

Please visit Xylon's website to learn how to quickly evaluate the logicBRICKS graphics engine on the Xilinx Zynq-7000 ZC702 development board:

http://www.logicbricks.com/Reference-logicBRICKS-Design/OS-IP-Core-Support/Zynq-SoC-Graphics-WCE7-OS.aspx

Driver Features

- Support for logiCVC, logiBITBLT, logiBMP and logi3D

- Support for 8/16/32-bit primary layer

- Support for an optional 32-bit pixel alpha mode cursor layer

- Support for an optional layer alpha mode overlay layer of the same depth as the primary layer

- Support for any number of user defined displays/resolutions

- Support for double and triple layer buffering

- Support for alpha blending

- Support for color keying

logiCVC-ML Layer Requirements

- Cursor layer must be layer 0.

- Overlay layer must be between cursor layer and primary layer (e.g. cursor=0, overlay=1, primary=2).

- Primary layer (used for e.g. desktop) must be below both, cursor layer and overlay layer, and at the offset 0 from the beginning of video memory.

Driver Registry Settings

- logiCVC, logiBITBLT, logiBMP and logi3D core parameters, as well as the display parameters, are obtained from the registry. All parameters are described in the registry files.

Known Issues

- The ERC7 Test Kit (TK) (Apr 2012) might report „Driver verification mismatch detected" for the StretchBlt tests. The warning can be ignored as the differences between the logiBMP stretched bitmaps and software stretched bitmaps are visually insignificant.

- Failures of the following TK (Apr 2012) tests are related to the missing ddi.dll.cfg files and can be ignored: DDraw Blt tests 1304, 1314, 1324, 1334, 2300, 2304, 2310, 2312, 2314, 2320, 2322, 2324, 2330, 2332, 2334; DirectDraw Functionality Tests 304, 404, 510, 610.

- The TK (Apr 2012) might report „Failed to load the xml file \Release\SupportedFourCCCodes.xml" for DirectDraw Interface Test 523. This can be ignored as it is a TK issue where it expects the xml file to be in a wrong directory. If the file is manually copied, the test passes.

- The logiDisp driver sets/changes display resolution by writing to the ADV7511, which is connected to the I2C bus. Therefore, simultaneously accessing an I2C peripheral device can cause an I2C communication failure. *<- valid for the Xilinx ZC702 development board*

Repository Driver Source Tag

- t_120725_wce_osdesign_logidisp_v1_03

Driver Build Process

- Add the sp013 source folder to your \WINCE700\OSDesigns\SolutionName\ProjectName\ folder.

- Add the sp013.pbpxml subproject file to your project.

- Set project properties (All Configurations), Configuration Properties, Environment:

  BSP_DISPLAY_LOGIDISP to 1

  BSP_DISPLAY_LOGIDISP_NO_LOGIBITBLT to 1 to exclude logiBITBLT support

  BSP_DISPLAY_LOGIDISP_NO_LOGIBMP to 1 to exclude logiBMP support

  BSP_DISPLAY_LOGIDISP_NO_LOGI3D to 1 to exclude logi3D support

  BSP_DISPLAY_LOGIDISP_TYPE_CPU to 1 to handle HW connected directly to CPU

  BSP_DISPLAY_LOGIDISP_TYPE_PCI to 1 to handle HW connected to PCI

  Set either BSP_DISPLAY_LOGIDISP_TYPE_CPU or BSP_DISPLAY_LOGIDISP_TYPE_PCI.

- Rebuild the solution.

- The driver executable (ddi_LogiDisp_cpu.dll) and registry file (logiDisp_cpu.reg) can be found in your _FLATRELEASEDIR folder, e.g.

- \WINCE700\OSDesigns\SolutionName\ProjectName\RelDir\Platform_CPU_Release.

Release Files

- XSWELA Xylon Software Evaluation License v1206.pdf

  o SW License

- ddi_LogiDisp_cpu.dll

  o logiDisp driver to be added to your BSP.

- logiDisp_cpu_hdmi.reg

  o logiDisp driver registry file for the HDMI output. Default resolution 1024x768. Rename to logiDisp_cpu.reg when adding to your BSP. *<- valid for the Xilinx ZC702 development board*

- logiDisp_cpu_fmc.reg

  o logiDisp driver registry file for the FMC board. Resolution 800x480 (TM050RBH01). Rename to logiDisp_cpu.reg when adding to your BSP. *<- valid for the ZC702+FMC-HMI boards*

- NK_hdmi.bin / NK_fmc.bin

  o WEC7 demo images with the logiDisp driver for the HDMI output and FMC board respectively. *<- valid for the Xilinx development boards*

Revision History

Version	Date	Note
1.00	25.07.2012.	Initial public release

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