Zynq-7000 Extensible Processing Platform
Frequently Asked Questions – March 1, 2011

Xilinx Launches Zynq-7000 Family, Industry's First Extensible Processing Platform

What is the Xilinx® Zynq™-7000 Extensible Processing Platform?

- The Zynq-7000 Extensible Processing Platform is a family of four silicon devices that combine a complete ARM® Cortex™-A9 MPCore processor-based system-on-chip (SoC) with integrated 28-nanometer programmable logic. Each device is a processor-based system, capable of booting an OS from reset with the programmable logic accessible. It enables system architects and embedded software developers to apply a combination of serial (using the ARM processor) and parallel (using programmable logic) processing to applications that require high levels of performance, while at the same time benefiting from higher integration as a way to reduce cost, power and size.

What applications does the Zynq-7000 Extensible Processing Platform target?

- The family is architected for embedded systems that require high-levels of processing performance. Target markets include automotive driver assistance, intelligent video surveillance, industrial automation, aerospace and defense, broadcast and next-generation wireless. To learn more about these applications, please visit www.xilinx.com/zynq and download the Extensible Processing Platform white paper.

Why isn't the Zynq-7000 family an FPGA?

- The Zynq-7000 Extensible Processing Platform is a new family that leverages the same 28-nm programmable logic being used for Xilinx's next-generation FPGAs, Artix™-7 and Kintex™-7 FPGAs. The programmable logic can be configured by the user and connected together through "interconnect" blocks to provide arbitrary, user-defined logic functions that can extend the performance and capabilities of the processing system. However, unlike an FPGA with an embedded processor, Zynq-7000 devices' processing system boots on power up and configures the programmable logic on an as needed basis. With this approach, the software programming model is exactly the same as standard,

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fully featured ARM-based processing SoCs. Please refer to the product table for specific device details.

What development tools are available?
- Software developers can leverage the Eclipse environment, Xilinx Platform Studio Software Development Kit (SDK), ARM Development Studio 5 (DS-5™) and ARM RealView Development Suite (RVDS™), or compilers, debuggers, and applications from leading vendors within the ARM Connected Community® and Xilinx Alliance Program ecosystems. The Zynq-7000 family's programmable logic can be tailored to maximize system level performance and application specific requirements, leveraging Xilinx's award winning ISE® Design Suite that provides a comprehensive hardware development environment.

How will hardware and software designers interact to create a design?
- The Extensible Processing Platform processing system boots at reset and will then offer access to the programmable logic fabric. Because of this, software developers can start to port and run application code on the processing system from day one, including applications that require an operating system.
- Software developers will be able to access high-performance accelerators or additional peripherals not part of the hardwired processing system after those have been implemented by the hardware designers. These accelerators and peripherals will exist in programmable logic and will be accessed as addressable memory space available in the system. Hardware designers will be able to automatically generate header files with the memory map of the new peripherals that the software developer will be able to use directly in their environment.
- Hardware developers can use the Xilinx Platform Studio (XPS) and the Embedded Development Kit, which ships with the ISE Design Suite Embedded Edition, to access a catalog of available Embedded IP (from Xilinx and third-parties) to build accelerators and peripherals. Alternatively, hardware designers can take advantage of the extensive Core Generator IP library to download non-embedded accelerators and/or use Xilinx design tools to build their own custom accelerators and peripherals.
- Xilinx provides a processing system configuration wizard that allows either the software or hardware designer to enable the various hardened IP blocks within the processing system.

Why did Xilinx adopt ARM processor technology?
- Top considerations included ARM's processor roadmap and extensive ecosystem, along with ARM's industry leadership position and broad customer base:

- o As a proven supplier, ARM has more than 200 silicon partners, more than 500 licensees and designs accounting for upwards of 17 billion units shipped worldwide.
- o ARM has clearly captured a world-class position in processor architectures, with market-proven offerings in embedded, mainstream and high-performance applications.

What Does "Extensible" Mean?*

- 'In software engineering, **extensibility** (sometimes confused with forward compatibility) is a system design principle where the implementation takes into consideration future growth. It is a systemic measure of the ability to extend a system and the level of effort required to implement the extension. Extensions can be through the addition of new functionality or through modification of existing functionality. The central theme is to provide for change while minimizing impact to existing system functions.'

- 'In systems architecture, extensibility means the system is designed to include hooks and mechanisms for expanding/enhancing the system with new capabilities without having to make major changes to the system infrastructure. A good architecture provides the design principles to ensure this—a roadmap for that portion of the road yet to be built. Note that this usually means that capabilities and mechanisms must be built into the final delivery which will not be used in that delivery and, indeed, may never be used. These excess capabilities are *not frills,* but are necessary for maintainability and for avoiding early obsolescence.'

- *From Wikipedia, the free encyclopedia

How does this announcement relate to Xilinx Targeted Design Platforms?

- The Zynq-7000 Extensible Processing Platform is a vital component of Xilinx's Targeted Design Platform strategy to enable software and hardware designers alike to leverage open standards, common design methodologies, development tools and run-time platforms for FPGA-based design. IP standardization and ecosystem support are cornerstones to successful SoC implementation with programmable logic devices. The ARM alliance reflects the commitment and investment Xilinx is making in these two areas.

Does today's announcement affect Xilinx's support for the PowerPC® architecture?

- No. Xilinx provides a wide range of embedded processing capabilities, including integrated hard cores in the high-performance Virtex FPGA families. Although Xilinx is

laying the foundation to meet future requirements for next-generation embedded processing technologies, the company will continue to support the PowerPC architecture for customers using Virtex-II Pro FPGAs, Virtex-4 FX FPGAs and Virtex-5 FXT FPGAs.

Will Xilinx continue to support the MicroBlaze™ soft-core processor?

- Yes, the MicroBlaze processor will continue to be an important component of the Xilinx embedded portfolio. The MicroBlaze processor is highly optimized for Xilinx FPGA structures and will continue to be ported to and enhanced on the broad range of FPGA devices. The MicroBlaze processing already has an AMBA®-AXI interface, starting with Xilinx ISE Design Suite version 12.3.

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