



## Xilinx Processor Central Newsletter, August 2007

The Processor Central quarterly newsletter is meant to keep you informed of the embedded processing-related news from Xilinx and our partners. In addition to the information below, you can visit Processor Central for the latest information on Xilinx Embedded Processing Solutions

Visit Processor Central: [www.xilinx.com/processor](http://www.xilinx.com/processor)

### Featured News Flashes!

#### New Linux 2.6 for MicroBlaze Now Available

- Xilinx has partnered with LynuxWorks in developing Linux 2.6 for MicroBlaze™ embedded processing solutions. Commercial BlueCat ME Linux distribution with value-added development tools and commercial grade technical support from LynuxWorks, and GPL based Linux patch files for open source Linux developers are available now.
- [Learn more](#)

#### Updated Embedded Development Kit (EDK) Currently Available

- **PowerPC™ and MicroBlaze Development Kit Virtex™-4 FX12 Edition**  
The ML403 PowerPC & MicroBlaze Development Kit Virtex-4 FX12 edition development board and kit has been updated and is now available in an ROHS Pb-Free version.
- [Learn more](#)

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### Top Story

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#### [New EDK/XPS 9.1i Service Pack #2 Released](#)

EDK/XPS 9.1 SP#2 builds upon 9.1 and SP#1 with enhancements and new IP core introductions. EDK 9.1 offers full MicroBlaze v6.00a processing support for Virtex-5 LX, LXT and SXT and Spartan-3A/3AN devices. Service Pack #2 introduces new and improved IP cores such as:

- USB 2.0
- DDR
- HWICAP (read/write FPGA configuration memory)
- PLB PCI Cores

[Service Packs SP#1 and SP#2 are available now and existing registered users can download the updates](#)

[Learn more specific details of "What's New in EDK 9.1i"](#)

[Access service packs for EDK and ISE](#)

### Xilinx Processing Solutions – Product Update

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#### [Xilinx Introduces New OPB USB \(On-chip Peripheral Bus\) 2.0 Core](#)

Now designers can enable USB connectivity in their designs with the Xilinx OPB USB 2.0 device.

This interface is suitable for USB-centric, high-performance designs, bridges and legacy port replacement applications:

- A USB Flash Drive is a typical application of the Xilinx USB device configured as a mass storage device.
- Other common applications include plug-and-play I/O interfaces to the PC, port expansion, peripheral connectivity, and PC to telephone connectivity.
- This Xilinx OPB USB 2.0 core works with PowerPC Cores in Virtex-5, Virtex-4, Virtex-II Pro, and MicroBlaze in Spartan-3 supporting a ULPI interface for external PHY devices and up to eight endpoints.

[Download the data sheet](#)

[Order and register now](#)

## **Xilinx Processing Kits and Boards**

### **ML403 PowerPC & MicroBlaze Development Kit Virtex-4 FX12 edition**

This development kit supplies an ML403 evaluation platform, ISE design software and EDK Platform Studio embedded tool suites, IP and validated reference designs for both the PowerPC hard PowerPC and MicroBlaze soft processor cores. This is a "Universal Kit" which means that it comes complete with a "Green" board and, a universal power supply and plug adapters.

Now that the ML403 development board and kit has been updated and available in an ROHS Pb-Free version, the new part number is DO-ML403-EDK-ISE-USB-UNI-G. This is the only part number that can be used to order the kit.

- [Learn about the Xilinx ISE Design Software](#)
- [Buy the Ideal Platform for Embedded System Development Now](#)
- [Download the latest reference designs](#)

### **The MicroBlaze Embedded Development Kit – Spartan-3E 1600E Edition**

Create and customize flexible embedded processing solutions with this comprehensive development kit complete with hardware, design tools, IP and pre-verified reference designs. This kit is designed to quickly and easily accelerate your embedded design process. The Spartan-3E 1600E edition MicroBlaze Development Kit comes complete with the Spartan-3E 1600E development board, Platform Studio embedded tool suite and ISE design software, to support MicroBlaze software processor design.

- [Learn more and order your MicroBlaze Embedded Development Kit – Spartan-3E 1600E Edition](#)



**Avnet Electronics Rolls Out New Mini-Modules Featuring Embedded Processing Flexibility as a Development Kit or Stand-alone Module**

Designed as a complete system on a module, the Mini-Modules package all the necessary functions needed for an embedded processor system, onto a tiny footprint slightly bigger than a stick of chewing gum. System Architects, FPGA designers, and board designers will find the flexibility of both the PowerPC and MicroBlaze Development Kit Virtex-4 FX12 edition and MicroBlaze Embedded Development Kit Spartan-3E 1600E edition Mini-Modules ideal for high performance, embedded controller applications.

- The on-board PowerPC core in the Virtex-4 FX12 module provides processing horsepower, the 10/100/1000 Ethernet port adds networking capabilities for Internet appliance solutions, while the configurable I/O settings offer versatile interface options.
- The on-board Ethernet port in the Spartan-3 module adds networking capabilities for internet appliance solutions, while the configurable I/O settings offer versatile interface options
- [The MicroBlaze Embedded Development Kit – Spartan-3E 1600E Edition Mini Module - Supports MicroBlaze and Real-time Operating Systems](#)
- [The ML403 PowerPC and MicroBlaze Development Kit Virtex-4 FX12 Edition Mini Module - Supports PowerPC and Real-time Operating Systems](#)

## **Publications and Xilinx Embedded Magazine**

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### **Agilent Measurement Journal Article Features Xilinx MicroBlaze and EDK**

**Using MicroBlaze Trace Core to Accelerate Debug** in Xilinx Embedded Designs is a featured article by Brad Friedman. The article documents the utilization of Xilinx MicroBlaze embedded processors to facilitate the Agilent Trace Core (ATC2) to enhance designer's ability to trace microprocessor activity inside field programmable gate arrays (FPGAs).

- [Read Complete Article](#)
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## [Cover Story on Embedded Systems Design Magazine](#)



Xilinx is featured in the lead article in the May issue of Embedded Systems Design titled, "Put a Configurable 32-bit Processor in Your FPGA". The article's prominent placement confirms industry recognition of the Xilinx embedded vision for flexible processing in FPGAs as a ramping trend. This article documents how a configurable processor within an FPGA provides multiple customization options that may not be available with a fixed processor solution. This can be particularly valuable when the design requirements need to adapt to a variety of application requirements. In addition, the risk of obsolescence can be reduced with a soft processing core and a reduction in the total bill-of-materials cost can be achieved by integrating system features inside the FPGA.

- [View online now](#) or read complete article in the May 2007 hardcopy issue.



## **The Xilinx Embedded Magazine**

Published with a wide variety of embedded related articles authored by Xilinx, embedded partners, end-user customers and industry luminaries.

- [View the entire Xilinx Embedded Magazine Issue #4](#)

## **Chip Design Magazine Features FPGA Acceleration**

See the recent "Chip Design" article on FPGA acceleration of real world applications, titled "*FPGA Super Computing Demonstrates in Dresden*". This article discusses the leveraging of powerful and energy-efficient FPGAs from Xilinx, the ultra-fast memory subsystem in SGI Altix servers and the Mitrion Virtual Process...

- [Read Complete Article](#)

## **Webcasts, Workshops & Training**

### **Xilinx Adds $\mu$ Clinux MicroBlaze and Embedded PowerPC Workshops to Our Mobile Workshop Portfolio**

**Want to learn a lot about Xilinx embedded solutions in a short amount of time?** Let us bring our experts and evaluation equipment to you! Xilinx has developed a program called the Mobile Workshop. These workshops which are approximately two hours in length were created for you to experience our solutions without the need for you to travel and incur unnecessary expenses. They are intended to bring you a hands-on interactive opportunity to test drive our tools and learn from our embedded experts at your own facility or at a central location convenient to you. We have recently introduced the two workshops listed below for your continued learning experience. Both of these workshops uses our PowerPC & MicroBlaze Embedded Development Kit-Virtex-4 FX12 Edition as the platform. Below you will find a description of both courses:

- **Build a Custom MicroBlaze Processing System and  $\mu$ Clinux Kernel in Minutes**

What you will learn:

- How to build a customized embedded system with MicroBlaze and  $\mu$ Clinux
- How to customize various MicroBlaze soft processor features
- How to select the right set of configurable I/O peripherals using Platform Studio tool suite
- How to create a  $\mu$ Clinux BSP (Board Support Package) for this custom hardware system and boot up  $\mu$ Clinux on the board

- **High-Performance Design with the Embedded PowerPC and Co-Processor Code**

What you will learn:

- How to build a high-performance embedded PowerPC system
- How computationally intensive tasks can be rapidly converted through design automation tools into hardware co-processors
- How these co-processors can be efficiently interfaced to the offloaded PowerPC yielding significant performance increase

[Contact your local sales representative for more information now](#)

## **Xilinx Supplies "On-Demand" Webcast Seminars as Well as "Video Demonstrations" on Embedded and Other Topics.**

These web seminars and video demonstrations clearly show step-by-step examples of how to develop complete embedded systems accelerating your understanding of FPGA processing design methods.

- [Archived "On-Demand Webcasts"](#)
- [Video Demonstrations](#)

## Embedded Partner Solutions

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### Partner Updates

**LynuxWorks:** A pioneer in the embedded software market, providing operating systems, software development products and consulting services for the embedded industry.

#### **New BlueCat Linux for Xilinx Embedded Development Kits**

BlueCat Linux from LynuxWorks is now available integrated in Xilinx EDKs (Embedded Development Kits) for PowerPC and MicroBlaze processors. BlueCat Linux for Xilinx is based on the 2.6 Linux kernel and is fully supported by the embedded OS specialists at LynuxWorks.

#### **BlueCat Linux 5.4 Uses the Linux 2.6.13 Kernel and Supports the PowerPC Processor on the ML403 Virtex-4 Platforms.**

The Xilinx EDKs provide a rich feature set for developing BlueCat Linux applications and configuring custom BSPs using Xilinx hardware designs. The EDKs also provide an easy path to system expansion with additional PowerPC and MicroBlaze hardware based on the Virtex-4 FPGA or the Spartan-3E FPGA.

- [Get more information on BlueCat Linux for Xilinx Embedded Development Kits](#)
- [Contact LynuxWorks](#)

**Wind River Systems:** An industry leader in development tools and Real Time Operating Systems (RTOS) for embedded systems providing many high quality solutions for developers using the IBM PowerPC architecture.

#### **Attention Xilinx Virtex-4 FX Developers: Wind River Linux Board Support Package Support is Standard in Xilinx EDK (Embedded Development Kit)**

An exciting recent development is the addition of Wind River Linux as an out of the box solution for Virtex-4 FX customers. Wind River Linux Board Support Package support is now part of the standard Xilinx EDK. This allows developers to easily leverage the full spectrum of our device software products and services to meet their needs whether their end product requires the hard real-time determinism of VxWorks, or a commercial-grade implementation of Linux.

- [Access the Wind River Linux Center for complete information and value proposition.](#)

To meet the needs of device developers in a variety of industries like automotive, aerospace & defense, consumer electronics, mobile handheld, networking, and industrial, Wind River a commercial Linux provider for the device software industry, delivers optimized platforms, advanced networking, guaranteed real-time capabilities, and comprehensive development tools.

### Embedded Systems Fast through Advanced Modularity

With its tools and design services, Eridon gets its customers up and running fast.

Through its award winning UnifiedLogic development framework, Eridon provides an innovative method of rapidly creating the hardware and operating system support for an embedded system application. Initially, a prototype is simply snapped together using off-the-shelf modules such as USB, CAN, Video, MPEG4, and others, including modules that can be custom designed on request by Eridon. These modules, along with an FPGA/CPU/memory subsystem like Xilinx MicroBlaze or PowerPC, self-integrate the hardware with the needed software drivers and application interfaces, quickly providing working hardware and an integrated software development platform.

Based on this hardware/software platform, application programming can begin almost immediately, using Eridon's powerful development tools. When the system has been tested, essentially the same circuitry used on the modular prototype can be laid out as a single PCB and put into production by the customer. The flexibility and productivity of this development platform is further enhanced by supporting a customer's own circuitry and gate-level logic, if any.

Eridon moves a customer from their product vision to a working product faster, with less risk, while freeing them to focus on what truly makes them unique

- [Visit Eridon web site](#)

**Impulse Accelerated** — "Everything Software Engineers Wanted to Know...but were afraid to ask"

Software engineers executing their first Xilinx FPGA hardware accelerated projects are repeatedly encountering misunderstandings for which some fairly intuitive solutions may be offered.

The article by Impulse C titled, [“Everything Software Engineers Wanted to Know About Writing C for Xilinx FPGAs\\* \\*but were afraid to ask”](#) offers the top tips that software engineers may want to consider as they start their first Virtex or Spartan accelerated algorithm. First, to baseline... C for FPGA is mostly comparable to C for a CPU, of course, there are a few terminology differences and a couple of significant things to be aware of, a summary of which are listed in this [table](#).

### Real Time Operating Systems (RTOS) Partners

**Express Logic:** A leader in real-time operating systems (RTOS) and networking software for embedded applications.

**GreenHills:** A leader in high performance compilers, software development tools and real-time operating systems (RTOS) for developers of embedded systems.

**MontaVista:** An innovator in the promotion of open-source software that promotes a faster, lower cost development cycle.

**Petalogix:** A premier service provider for Linux on Reconfigurable Logic devices.

### Compilers and Debuggers Partners

**Computex:** A leader in the convenient concurrent debugging of FPGA and CPU software and hardware.

**Green Hills Software:** A technology leader in high performance compilers, software development tools and real-time operating systems (RTOS) for developers of embedded systems.

**Lauderbach:** The leading European manufacturer of complete, modular microprocessor development tools ranging from In Circuit Emulators and Logic Analyzers for system integration to debuggers and simulators for software applications.

### Electronic System Level Design (ESL) Partners

**Celoxica:** A provider of the world's most successful and widely adopted ESL design and synthesis tools for FPGAs providing a complete system design environment for programming FPGA devices directly from C-based algorithm descriptions.

### Education Services

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#### Xilinx Education Services: The Source for Xilinx Embedded Design Education

Xilinx Embedded Design curriculum path provides a recommended course sequence to follow; with successful completion establishing the core knowledge and skills needed to learn FPGA based embedded processing design. The following courses are included:

- Fundamentals of FPGA Design (including 3 Recorded E-Learning Modules)
- Embedded Systems Development
- Advanced Features and Techniques of Embedded System Development

[View the Embedded Curriculum path](#)

[Register Now for training your area](#)

#### Xilinx Services and Limited-Time Offers

##### Embedded Design Xilinx Productivity Advantage (XPA) Bundle - 35% off

- **Embedded Design XPA:** This limited time offer includes ISE Foundation™, Xilinx Embedded Development Kit and 2 days of training. — **List price \$3,990, Limited time offer, \$2,550.**
  - [Learn more about the XPA program](#)
  - [Contact your local Xilinx sales representative](#)
  - Send an email to [xpa@xilinx.com](mailto:xpa@xilinx.com).

#### Embedded Systems Courses:

- **Embedded Systems Development:** Introduces experienced FPGA designers to the process for developing embedded systems using Xilinx FPGAs with hard and soft processor cores and soft peripheral cores.
- **Advanced Features and Techniques of Embedded Systems Development:** Builds on the skills gained in the Embedded Systems Development course, and provides the necessary skills to develop complex embedded systems.

[View a complete course catalog and schedule of classes available in your area](#)

#### Dedicated Applications Engineer for Your Embedded Design

- **Embedded Processing QuickStart!:** Combines two days of on-site training with three days of expert consulting from a Xilinx application engineer with industry experience in Embedded Systems design and Programmable Logic.
  - [Get more information](#)

## Dedicated Applications Engineer

- **Titanium Dedicated Engineering:** Expert assistance to help you partition your system for maximum performance, integrate custom IP with embedded PPC and/or MicroBlaze processors, and techniques enabling faster and more effective debug and verification.
  - [Get more information](#)

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