



## Xilinx Processor Central Newsletter, December 2007

The Processor Central quarterly newsletter keeps you informed about the embedded processing-related news from Xilinx and our partners. Visit [Processor Central](#) anytime for the latest information on Xilinx Embedded Processing Solutions.

### Enter the New Era of Configurable Embedded Processing

- Architect Your Embedded Vision with New MicroBlaze™ 32-bit Processor with Optional MMU
- Build, Program, Debug... Your Way

[Order Kit Today](#)

#### Top Story

Run commercial grade operating systems supporting virtual memory like the BlueCat Linux 2.6 from LinuxWorks with the latest Xilinx Embedded Solutions including the new Embedded Development Kit v9.2 (EDK) and MicroBlaze™ v7 with Memory Management Unit (MMU). Uniquely stitch together changing algorithms, protocols and interfaces, by creating your next embedded design on the world's most flexible system platform with the latest processing breakthroughs at your fingertips. Readily meet the demands of your automotive, industrial, medical, communications, defense application and more.

#### Architect Your Embedded Vision

- Choose MicroBlaze processor, the only 32-bit soft processor with a configurable MMU, or the industry-standard 32-bit PowerPC® processor architecture
- Select the exact mix of peripherals that meet your I/O needs, and stitch them together with the new 128-bit CoreConnect PLB bus

#### Build, Program, Debug...Your Way

- Port the OS of your choice including Linux 2.6 for PowerPC processor or MicroBlaze processor
- Reduce hardware/software debug time using Eclipse-based IDEs together with integrated Chipscope analyzer

#### Eliminate Risk and Reduce Cost

- No worry of processor obsolescence with Xilinx Embedded Processing technology and a range of programmable devices
- Reconfigure your design even after deployment, reducing support cost and increasing product life

[View more about MicroBlaze processors](#)

[View more about EDK v9.2](#)

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#### Xilinx Processing Solutions – Product Update

##### New MicroBlaze Soft Processor v7 Introduces

##### Memory Management Unit that makes application development easier

- Full MMU with Virtual Memory supported by Linux 2.6
- MPU mode for region protection for secure RTOS applications

### New direct Processor Local Bus Interface for increased system performance

- New PLBv46 bus interface enables higher system performance
- Support for Hard TEMAC (Trimode Ethernet MAC), PCIe® peripherals

### New Instructions deliver higher performance

- New instructions improve floating point performance
- New FSL instructions simplify access to coprocessors

### Optimized debug capabilities enable trace tools to accelerate time-to-market

- Partner Trace Tools enable quicker software debugging
  - Lauterbach T32
  - Computex F-Sight

- [View more about MicroBlaze Soft Processor](#)

### What's New in Embedded Development Kit v9.2 (EDK)

- Higher System Level Performance
- Ease of Use Embedded Software Development
- Ease of Use Enhancements in Platform Studio (XPS) tools
- [View the complete list of new features in EDK 9.2](#)
- [View the complete list of IP available for EDK 9.2](#)

### Xilinx Processing Kits and Boards



#### [The Updated MicroBlaze Embedded Development Kit – Spartan™-3E 1600E Edition Streamlines Your Embedded Development Cycle](#)

Jump-start your design using this new development kit including the new Embedded Development Kit (EDK v9.2), IP, ISE™ software tool suites and reference designs for the new MicroBlaze v7 soft processor. The comprehensive kit includes all of the required cable including JTAG probes. [Purchase](#) your complete kit today for **\$595**.



#### [Virtex-4 FX12 PowerPC and MicroBlaze Development Kit](#)

You can start your design using this high performance development kit including an ML403 evaluation platform, Platform Studio embedded tool suites, IP, ISE software tool suites, reference designs for both the PowerPC™ hard processor core and MicroBlaze soft processor core. This kit has everything you need including a Universal Power supply and JTAG cables. [Purchase](#) your complete kit today for **\$895**.

### Webcasts, Workshops and Training

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#### [New Embedded Webcast - Quick Start Your Embedded Development with Linux and MicroBlaze Soft Processor v7](#)

##### Webcast Overview

Solve your time to market pressures, changing application requirements and learn to build your embedded system on a flexible processing solution you can customize to meet your application requirements.

Xilinx and LynuxWorks have developed this free joint webcast to present the advantages of commercial grade Linux 2.6 when used with the enhanced MicroBlaze v7 soft processor and its new Memory Management Unit (MMU).

Apart from explaining the robustness and ease of software development when an MMU is available, we will demonstrate the steps to rapidly build a Linux kernel image (BSP) for the design using automatic BSP generation tools.

- [Sign-up now to view the on-demand version of new Xilinx Embedded Webcast](#)



Plan to attend hands-on, lab-based FPGA design workshops from Avnet Electronics Marketing. Pick the location convenient to you and choose from either the introductory or the advanced topic focused on how to apply Xilinx embedded solutions in a real-world design environment. Speedway Workshops will feature Virtex™-5 and Spartan-3 series FPGAs, ISE logic design tools, System Generator for DSP and the Platform Studio embedded development tool suite. Take advantage of the step-by-step, detailed instructions on design practices, tool utilization, and code development. Gain the knowledge and experience you need with the Xilinx technologies and immediately apply them to your upcoming project.

- Additional details, including dates and locations, are available now on the [SpeedWay Workshop page](#). [Register now](#) and attend a workshop in your area.

## Publications

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Read the industry coverage from three leading industry technical publications about the recently released new Embedded MicroBlaze v7 Processing Solution from Xilinx. You will gain insight about the system performance enhancements, new easier to use software, and enhanced tool support that will enable you to achieve your embedded design targets.

### MicroProcessor Report

MPR, the leading technical publication for the microprocessor industry, published an independent report entitled “*MicroBlaze v7 Gets an MMU – Memory Manager Brings Full-Fledged Linux to Xilinx Processor Core*”, by Tom Halfhill, November 13, 2007.

*“Until now, MicroBlaze processors were limited to simpler embedded operating systems that don’t support virtual memory or memory protection. With its optional MMU or MPU MicroBlaze v7 is suitable for a wider range of embedded applications requiring greater security and reliability.” ... Tom Halfhill MPR.*

- To receive a reprint of the full report please contact [Larry Caputo](#), Xilinx Embedded and DSP Marketing

### [MicroBlazing Away - Xilinx Boosts Embedded Ecosystem](#)

Using their low-cost development kit, you can try out the new MicroBlaze processor platform yourself and reach your own conclusions about how grown-up it really is.

### [Xilinx Announces Latest and Greatest MicroBlaze 32-bit Soft Processor Core ...\(and lots more "stuff"\)](#)

New MicroBlaze v7 boasts mega-cool features like an MMU that enables commercial-grade OS support.

## Embedded Partner Solutions

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### Partner Updates

[LynuxWorks](#) is a pioneer and leader in Real-Time Operating Systems (RTOS).

[BlueCat-ME 5.4.2 \(Micro Edition\)](#) from [LynuxWorks](#) supports MicroBlaze v7, supporting both MMU-free and MMU version of the Linux 2.6.13 kernel using the Spartan 3E-1600 Development Kit.

[LynxOS 4.2](#) brings LynuxWorks’ 20 years of Real-Time Operating Systems (RTOS) experience to Xilinx Virtex-4 FPGA. LynxOS relies on open and de facto standards like Linux, POSIX and UNIX for the most stringent requirements of real-time mission-critical applications, while providing the investment-protection advantages of open standards-based development.

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

[Eridon](#) is leading a revolution in embedded system design, Eridon’s UnifiedLogic provides everything you need—RTOS and hardware, all automatically integrated. You get the FPGA-enabled UnifiedLogic RTOS along with

hardware reference designs, prototyping modules, IP, and the tools that automatically integrate it all together.

### [UnifiedLogic Development Platform Now Available for Spartan-3A Starter Kit – Free Trial Version](#)

Ready-to-go for the Spartan-3A Starter Kit with many examples of using its peripherals, Eridon's revolutionary UnifiedLogic Development Platform is now available as a free trial download. It includes the software-centric UnifiedLogic IDE, the UnifiedLogic RTOS and extensive documentation and demonstration code for the Spartan-3A Starter Kit Board.

Immediately after installing the UnifiedLogic Development Platform, an embedded software developer can configure peripherals and begin writing code for the Spartan-3A Starter Kit Board.

The UnifiedLogic Development Platform supports Eridon's own "snap-together" prototyping boards as well as third-party development boards, and is fully extensible.

[Learn more](#) about the UnifiedLogic Development Platform and try the [free download](#).

### **Real Time Operating Systems (RTOS) Partners**

[Express Logic](#) is a leader in royalty-free Real-Time Operating Systems (RTOS) and networking software for embedded applications supporting Xilinx MicroBlaze and PowerPC processors.

Read the Express Logic article "[RTOS Interrupt Architectures – Two Approaches – Unified and Segmented](#)"

[GreenHills](#) is a leading expert in embedded software development provides a comprehensive portfolio for developing and deploying real-time software applications based on the Xilinx Virtex family of FPGA platforms, powered by the proven Power Architecture core.

- Virtex End-to-End Software Development with Green Hills – Green Hills offers software developers and their business leaders an attractive solution that help decrease the time and cost to produce high-quality software while unlocking Virtex-specific optimizations.
- Development Tools For Today's Embedded Software World – Industry studies show that debugging software consumes a lion's share of bringing an electronic product to market. Aimed squarely at this growing trend is the [MULTI development environment](#) and [TimeMachine 4-D Debugger](#).
- [Royalty-Free RTOS Family for High Security and Reliability](#) – Green Hills Software a family of real-time operating systems is comprised of [INTEGRITY](#), [velOSity](#) and [μ-velOSity](#).

### **[Mentor Graphics](#)**

[Mentor's Nucleus OS – Secure Kernel](#) provides you with a low risk flow for developers who are producing safety critical software for aerospace and includes updated support for the Xilinx Embedded Development Kit (EDK)

- Nucleus OS – Secure Kernel has been enhanced to fully satisfy the needs of aerospace and DO-178B Level A – D developers.
- The Nucleus OS – Secure Kernel uses a partitioning scheme that isolates and protects kernel and application space.
- Supporting artifacts for DO-178B Level A certification will be available later this year with complete source code, requirements, traceability, and the full suite of unit and kernel-level integration tests.
- Nucleus OS – Secure Kernel allowing designers to develop on the IP they desire and the supporting artifacts remain unchanged.
- The Nucleus OS software installation enables Nucleus PLUS RTOS, NET stack, WebServ, FILE system, and SHELL environment to be auto-configurable from Xilinx EDK.
- [View more information on these solutions](#).

### **NEW Software Trace Partners**

As an embedded software developer you need more powerful debug capabilities when developing large algorithms and functions. Traditional Start/Step/Stop debuggers are important tools, but when analyzing your large blocks of application code, you often need to run "Trace" tools to capture your longer execution histories. These two embedded partners Computex and Lauterbach have implemented software Trace tools, which support the new

MicroBlaze Trace core, reading software execution history out of the FPGA and displaying it on their respective graphical user interfaces.

**Computex** This embedded partner provides the [F-Sight product line](#) for a broad array of software trace and debugging features, supporting PPC and the new MicroBlaze v7.

**Lauterbach** The [Trace32 product](#) now supports real-time Trace for the new MicroBlaze v7 soft processing core. This tool provides up to 512MB of external high-speed trace memory that needs no system memory and is not affected by system hangs or crashes. Features include program flow and data trace as well as full statistical analysis metrics.

[View the complete list of Embedded partners.](#)

### **Electronic System Level Design (ESL) Partners**

The Xilinx ecosystem includes a number of companies that specialize in ESL design software and tools. A wide array of FPGA optimized ESL solutions are available for you from these Xilinx ecosystem members and provide you design verification methodologies and tools to empower you with software programming skills that enable you to easily implement your designs in programmable hardware. This eliminates the need for you to learn traditional hardware design techniques.

**Impulse C** is a leader in design tools that allows C-language algorithms and applications to be compiled and optimized for use with Xilinx FPGAs.

- **Create high-performance FPGA-accelerated embedded systems easier and faster, using Impulse C**
  - Reduce development times and eliminate the need for low level, HDL-based methods
  - bridge between your software and hardware development tools and methods
  - generates HDL outputs fully compatible with Xilinx ISE software and Platform Studio
  - Create highly-parallel, multiple-process applications using [streams-based, C-language](#)
  - Fully compatible with Xilinx MicroBlaze and PowerPC processors
- See an example of acceleration through parallelizing in the Xcell Journal article titled ["Accelerating Bilateral Filtering in Xilinx FPGAs"](#).
- Visit [www.ImpulseC.com/xilinx](http://www.ImpulseC.com/xilinx) to learn more.
- View our [Xilinx MicroBlaze Platform Support Package Quick Start](#) featuring EDK 9.2 and the Xilinx MicroBlaze Development Kit, Spartan-3E 1600E FPGA Edition.

[View the complete list of Xilinx ESL partners.](#)

### **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 - (North America Pricing)**

##### **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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