

The Xilinx Processor Central Quarterly eNewsletter is intended to keep you informed of the embedded processing-related news from Xilinx and our partners. In addition to the information below, you can visit Xilinx Processor Central www.xilinx.com/processor for the latest information on Xilinx Embedded Processing Solutions.

Featured NewsFlashes!

[EETimes ACE 2006 Award](#)

Xilinx recently won one of EETimes ACE Awards for 2006, in the "Ultimate Product Winners" category for Programmable Logic.

[Xilinx Embedded Magazine Issue #3 Available Now!](#)

This issue includes a story by industry luminary Jim Turley, Editor in Chief of Embedded Systems Design, CMP Media LLC, as well as numerous other exposes on devices, processing cores, development tools, applications and industry partner solutions.

[EDK Service Pack Update, Version 8.1i SP2](#)

The award winning Platform Studio Embedded Tool Suite (XPS) has been updated to version 8.1 with Service Pack 2 (SP2).

In This Issue

[In The Press](#)
[Embedded Events & Training](#)
[Xilinx Processing Solutions](#)
[Embedded Development Tools](#)
[Embedded Partner Solutions](#)
[ESL Partner Solutions](#)
[Services & Support](#)
[Publications & Application Notes](#)

In The Press

ESC-TV Series – Executive Video Interview

Xilinx had a very successful program at the Embedded Systems Conference Silicon Valley hosted at the San Jose (CA) Convention Center, including live booth demonstrations & big screen presentations, as well as numerous technical papers and hands-on workshops.

Check out Xilinx VP of Embedded Processing Mark Aaldering being interviewed by Brian Fuller as part of the EETimes live video ESC-TV series.

Visit [here](#) and arrow down through the video clips to the session on "Embedded FPGAs Ramp Up"

EETimes ACE 2006 Awards

Following in the tradition of Xilinx winning awards for the Platform Studio embedded tool suite and the MicroBlaze™ soft processing core, Xilinx recently won one of EETimes ACE Awards for 2006, in the "Ultimate Product Winners" category for Programmable Logic. The Xilinx Virtex™-FX20 and FX60 Platform FPGA devices were specifically acknowledged by this award, showcasing their capability to implement high-performance embedded systems with hard PowerPC™ and/or soft MicroBlaze processing cores. The FX60 devices uniquely support dual immersed PowerPC cores and a wide variety of peripherals from our processing IP catalog. These system devices also implement Multi-Gigabit serial transceivers and lots of on-board memory in addition to many other programmable SOC features.

[View ACE Awards Winners List](#)

[View Serial Transceivers Article](#)

Xilinx Embeds Processors, William Wong — Electronic Design Magazine, June 06, 2006

Bill Wong, Embedded Editor of ED Online, recently evaluated the Xilinx V4-FX12 Embedded Development Kit. His review article on the PowerPC and MicroBlaze Development Kit is now online. Bill was rather successful in getting this kit up and running quickly. In his own words: "This demo is relatively simple and steps through a set of BMP files stored on the flash card. Running the rest of the demos is as easy and impressive as the first. They show off the network and serial support along with the PowerPC and MicroBlaze processors. The 64 Mbytes of DDR RAM on the board provides plenty of room for running VxWorks and Linux. None of the demos push the limits of the system and you can use their projects as starting points for experimentation. If you have a need to learn about the Virtex-4, and systems based on either the PowerPC or MicroBlaze processors, then the PowerPC and MicroBlaze Development Kit is for you. The kit provides an excellent way to become proficient in using the development tools and the hardware is excellent as a prototyping platform. If you have already chosen Xilinx as your FPGA and you think you may need a processor in the mix, then this kit is what you need to get started." [[Complete Article](#)]

Xilinx Embedded Magazine Issue #3 Available Now! 



The Xilinx Embedded Magazine is published with a wide variety of embedded related articles authored by Xilinx embedded partners, end-user customers and industry luminaries. Issue #3 was published in hardcopy and is also available online. Archived issues are also available. This particular issue includes a story by industry luminary Jim Turley, Editor in Chief of *Embedded Systems Design*, CMP Media LLC, as well as numerous other stories on devices, processing cores, development tools, applications and industry partner solutions.

[View the Xilinx Embedded Magazine Issue #3 Online](#) 

[View the Xilinx Embedded Magazine Issue #2 Online](#) 

[View the Xilinx Embedded Magazine Issue #1 Online](#) 

Embedded Events & Training



Avnet Speedway Workshops at a Location Near You

Avnet has developed these workshops based on the design experience of Avnet application engineers and on the latest break-through technologies from Xilinx, including Virtex and Spartan™ series FPGAs, ISE™ logic design tools, and the Platform Studio embedded development tool suite. Designers will get step-by-step, detailed instructions on design practices, tool utilization, and code development. Participants will dramatically accelerate their skill set for Xilinx technologies, gaining knowledge and experience that can be immediately applied to an upcoming project.

Embedded courses that may be offered in your area include:

- Xilinx MicroBlaze Development
- Xilinx PowerPC Development
- Xilinx Embedded Software Development
- Embedded Networking with Xilinx FPGAs

[View complete course listings, schedules and Register Now!](#)

Webcasts

Xilinx & Agilent Joint Webcast — New Debug Techniques for FPGA and Embedded Processing Based Design

Explore techniques in this joint Xilinx / Agilent Webcast on how to debug and validate FPGA designs, including those that implement PowerPC hard processor and / or Xilinx MicroBlaze soft processors.

[Register & Watch the On-Demand Version of this Webcast](#)

Introduction to the Spartan-3E Starter Kit

The Spartan-3E FPGA Starter Kit is a complete development board solution giving designers instant access to the capabilities of the Spartan-3E family. This Webcast will demonstrate the key features, capabilities, and applications that will get you up and running quickly with the Spartan-3E FPGA Starter Kit.

[Learn More & Register Now!](#)

Using Xilinx Virtex and MicroBlaze to Build Gigabit Packet Processing Data Plane Applications

Xilinx co-participated in a TechOnLine with ESL partner Teja about a new technology with which multi-core processor pipelines can be easily built for implementing packet processing data plane applications. Xilinx discusses their MicroBlaze soft processor and associated Xilinx Platform Studio tool suite, especially as implemented on Virtex 4. Teja discusses a new offering that makes use of the MicroBlaze processor as well as other features of the Virtex 4 family of FPGAs for building extremely flexible packet processing data plane engines that can operate in the 2-3 Gbps range.

[Learn More & Register Now!](#)

Xilinx Embedded Systems Development Courses

The Xilinx embedded development courses and lab materials have been updated for the latest 8.1 version of the Embedded Development Kit and the Platform Studio tool suite.

Embedded Systems Development – 2 Days

Advanced Features and Techniques of Embedded Systems Development – 2 days

[Learn More & Register Now!](#)

Xilinx Processing Solutions

Xilinx Delivers an Innovative and Flexible Range of Processing Solutions for Your Unique Embedded Applications.

Our processing solutions include these key elements:

- High performance PowerPC 32-bit hard processors
- Flexible MicroBlaze 32-bit soft processors
- Small footprint PicoBlaze™ 8-bit soft processors
- Award winning Platform Studio Embedded Design Tool Suite

Broad range of Intellectual Property (IP) and processing peripherals

HW/SW embedded development kits with reference examples

Robust 3rd party ecosystem support

Our processing capabilities provide performance and customization across a wide range of end markets including: aerospace and defense, wired and wireless communications, automotive, audio/video broadcast, industrial control, test and measurement, and consumer. [Learn about all Xilinx Embedded Processing Solutions here.](#)

MicroBlaze Soft Processing Core — Avoid End-of-Life Issues

All silicon manufacturers will, at some point in the future, must end-of-life products – the difference with Xilinx is that we have made the decision to maintain a consistent ISA for MicroBlaze across releases. What does this mean? – Well as a Xilinx customer you can be confident that as you migrate across FPGA generations, to take advantage of cost, density, and power consumption trends, the many years of software development you've spent were safely invested in an embedded target that can continue to run the same software code you built on day one, even through its new hardware.

Not only does this give you a secure foundation but our commitment to further develop the MicroBlaze platform. This means you can expect increased processor performance, without having to rebase everything, every time you develop another platform or commit to a lifetime of manufacturing. Since the MicroBlaze solution is a soft processor IP core your design is never made obsolete by a processor chip End-of-Life, and subsequent versions have maintained 100% binary backward compatibility.

[Learn more about the MicroBlaze soft processing core here.](#)

Forum — Xilinx Launches Updated Embedded Processing Forum

Xilinx has updated and segmented the Embedded Processing Forum into several categories to better facilitate users interacting and contributing to each others solutions. Designers now have multiple choices for submitting application specific questions and comments to other engineers with similar interests in topics like development tools, partner solutions, PowerPC, MicroBlaze or PicoBlaze processing cores. [Learn More Here!](#)

The Forum landing page also includes a quick link at the top to submit questions right to the WebCase system of Customer support. We encourage you to use this link if you have questions not answered in the public forum.

Embedded Development Tools

EDK Service Pack Update — Current Version EDK 8.1i SP2

The award winning Platform Studio Embedded Tool Suite (XPS) has been updated to version 8.1 with Service Pack 2 (SP2).

EDK 8.1 SP2 is a significant release for new and improved processor IP. The focus in this release has been on improved memory controllers, improved Ethernet performance, and a new PCI core. Ethernet performance as high as 875Mbps/second for the PLB TEMAC with the PowerPC 405 has been achieved. The OPB Ethernet has achieved as high as 99 Mbps/second with the PowerPC 405 and 77 Mbps/second with MicroBlaze.

Xilinx Processor IP is designed for use with the Xilinx PowerPC 405 and MicroBlaze processors. Some specific examples of these cores are:

- Improved Ethernet Performance
 - Enhanced Ethernet includes Check Sum Offload(CSO) and Data Realignment Engine (DRE) in the OPB Ethernet and PLB TEMAC, including VxWorks 6.x and Linux 2.4 support for these features
- New MCH OPB multi-ported memory controllers including DDR2, EMC - External Memory Controller (Flash, SRAM, etc.) increases performance
- Improved PLB DDR2 controller
- New OPB EPC (Embedded Peripheral Controller) with a reference design for the Cypress USB EZHost external chip USB solution
- New PLB PCI bridge core (See [Answer Record 23320](#) for availability)

Registered EDK 8.1i owners may download the SP2 Service Pack at the [Xilinx Download Center](#). (users must also use ISE 8.1 SP3):

Xilinx Processing IP

Xilinx provides a broad processing IP catalog along with the Embedded Development Kit for PowerPC and MicroBlaze based design. Example IP cores include peripherals, infrastructure, interface modules, memory interfaces and more. High end IP cores can be evaluated and purchased separately.

[Learn More about IP included in the EDK here.](#)

Embedded Partner Solutions

LynuxWorks

LynuxWorks has a unique range of open standards operating systems and tools to allow developers to build, migrate and re-use their software across soft and hard real-time systems. These powerful solutions are now available on processor based Xilinx platforms.

[Learn more about these solutions](#)

The BlueCat Linux product offers an embedded Linux solution for Xilinx PowerPC VIRTEX-4 hardware. LynuxWorks provides a version of the Linux kernel, designed for embedded targets, with its Eclipse-based Luminosity tools suite, and an embedded support organization to ensure that embedded Linux designs get completed on time.

[View the "Blue Cat for Xilinx" datasheet](#)

For designs requiring hard real-time performance, the LynxOS real-time operating system supports the PowerPC based VIRTEX-4 platform. Its open standards POSIX API allows for designing of portable applications, and even Linux applications can be run by using its unique Linux application binary interface (ABI). The same Eclipse-based Luminosity tools are available for both Linux and LynxOS.

[View the "LynxOS for Xilinx" datasheet](#)

Get more information on LynuxWorks at: www.lynuxworks.com

Lauterbach

Lauterbach has enhanced their TRACE32-ICD and PowerDebug products to support debug and trace of Xilinx MicroBlaze soft and PowerPC hard processing cores. These products are connected to the host computer via USB or Ethernet and allow access the target's debug resources via the JTAG interface. The MicroBlaze debugger supports all standard debug features like HLL and assembly levels, unlimited software breakpoints, OnChip breakpoints and watchpoints.

You can visit Lauterbach and learn more about their embedded solutions under products at: www.lauterbach.com

Electronic System Level Design (ESL) Partner Solutions

Poseidon Systems: Accelerate PowerPC Applications on Virtex

Poseidon Triton Tuner pinpoints system-level bottlenecks such as excessive cache misses and pipeline stalls so you can quickly create a cost-effective high-performance embedded design. Poseidon Triton Builder creates complete plug-and-play accelerator solutions for C loops and functions to augment the PowerPC processor for the Virtex FPGAs. Using the original ANSI C as the specification, Builder automatically creates the most efficient and high-performance accelerator for the C; and then at the push of a button Builder generates the complete set of drivers, RTL, memories, and bus interfaces to integrated it to the original application on the PowerPC through either the PLB bus or APU interface.

[Learn More!](#)

Celoxica: Low Cost ESL Starter Kit

Start your next FPGA design in C with a \$750 low cost starter kit from Celoxica. The kit provides an easy out-of-the-box experience for designers who want to get their hands on C-based design. The kit includes a custom copy of Celoxica's DK Design Suite, a Spartan 3 board, complete board support libraries, ISE tools, demonstrations and design examples. All the board level integration is provided through libraries and APIs. The DK Design Suite supplied with the kit lets you simulate and synthesize C-based software and algorithms, directly to Xilinx EDIF. The same source for simulation and synthesis, all inside your familiar Xilinx design flow.

[Order Your Starter Kit Now!](#)

Teja: Tool Enables Multi-Core Hardware/Software Implementation and Optimization of Packet Processing Protocols

Teja FP allows customized multi-core implementations of packet processing designs using MicroBlaze and PowerPC processors. Teja provides the underlying infrastructure for assembling a multi-core computing fabric tuned for the needs of the software as well as a compiler that compiles the software design expressed from ANSI C. As an ESL methodology, the specification of the computing structure and the creation of hardware offloads for acceleration can be done simply by software engineers, with no knowledge of hardware design, using minimal ANSI C.

[Learn More!](#)

Impulse: Tool Enhances Support for Xilinx Floating Point Libraries

Impulse includes single and double precision floating point support as a standard feature of its advanced C to FPGA toolset. Using Impulse C, application developers have access to FPGA-based floating point features without any need for HDL expertise. And with the latest release of software from Impulse, floating point support in Impulse C has been extended to allow users to create custom floating point functions using either C or external HDL blocks.

[Learn More!](#)

Impulse: New C to FPGA Development Kits from \$1,500 to \$15,000

Impulse has teamed with programmable platform vendors Avnet, Digilent, Nallatech, NuHorizons, PicoComputing, and others to offer a series of development kits. These kits include the Impulse C to FPGA optimizing design tools, Prentice Hall's Practical FPGA Programming in C, and a choice of industry leading programmable platform based development boards. Kits range from single chip starter kits to multi FPGA high-performance reconfigurable computing development platforms to get your C applications quickly and easily implemented in Xilinx FPGAs.

[Learn More!](#)

Binachip: Accelerate PowerPC Binaries in FPGAs

BINACHIP-FPGA tool speeds up your PowerPC based application on a Virtex platform FPGA. It allows embedded application developers to leverage all of the features of the Virtex FPGA platform, without intrinsic knowledge of hardware design or the need to learn a new source language. BINACHIP-FPGA works with the binary executables, identifying and accelerating system bottlenecks by automatically generating hardware for these functions. All hardware/software communication interfaces are also generated by the tool. The tool then outputs a new executable that runs seamlessly on the target FPGA platform.

[Learn More & Download Free Eval Software](#) ([Log-in Required](#))

Embedded Services

Xilinx Design Services (XDS)

Learn how XDS's embedded design expertise and staffing can help you meet your complex design requirements and aggressive development schedule. Visit [Xilinx Design Services Site](#) Today!

Xilinx Embedded Processing QuickStart!


With the purchase of Embedded Processing Quickstart!, you get the unique opportunity to staff a Quickstart! engineer at your site for one week. During that period, the Xilinx expert will train and empower your team to complete your project on time and make the best use of the Xilinx device that you've selected.


[Learn More about QuickStart!](#)

Publications & Application Notes

Publications

Xilinx regularly publishes public papers on a variety of embedded topics. Some recent papers include:

[Virtex-4 FX Platform FPGA Extends PowerPC Instructions](#), published by Dan Isaacs, Xilinx Advanced Products Division 

[Switching Fabrics at Layers 1 and 2](#), published by Hamish Fallside, Sr. Mgr, Xilinx Networking Systems Solutions 

Application Notes


Xilinx maintains and updates a large database of Application Notes on numerous topics that may assist you in your next design. The main Application Notes search page is found [here](#) and has different sections on specific market applications.










Selecting the "Microprocessor, Microcontroller and Peripheral" heading yields a large catalog of 'embedded' specific application notes with an additional search criteria on the right side for the specific Platform FPGA Device you are targeting. Hundreds of examples appear on this webpage. [Click here](#) to visit the "Microprocessor, Microcontroller and Peripheral" Application Notes site now.

Searching this section on Virtex-4, Virtex-II Pro or Spartan-3E, for example, will yield a listing of embedded specific app notes for each of these device types. The search field allows you to enter the name or publication number of the Application Note (e.g. XAPP807 below).

A selection at the top of the page allows you to set an automatic notification each time a new application note is submitted on the system. Many of the "updated" App Notes have been reissued after validation on the latest EDK/XPS V8.1 software release. Some examples of new or updated Application Notes and Reference Systems in the last quarter are:

[XAPP807](#): Minimal Footprint Tri-Mode Ethernet MAC Processing Engine 

[XAPP433](#): Embedded System Example: Web Server Design Using MicroBlaze Soft Processor 

- [XAPP434](#): Web Server Reference Design Using a PowerPC-Based Embedded System 
- [XAPP923](#): Reference System: MCH OPB EMC with OPB Central DMA 
- [XAPP912](#): MCH OPB EMC Memory Controller 
- [XAPP900](#): MCH OPB SDRAM Memory Controller 
- [XAPP809](#): PLB GEMAC Ethernet 
- [XAPP902](#): PLB TEMAC Ethernet 
- [XAPP925](#): OPB EPC with Cypress USB External Peripheral 
- [XAPP913](#): OPB CAN Low Speed Communication 
- [XAPP911](#): OPB PCI 

We will have additional Application Notes and Reference Systems available soon after you receive this eNewsletter. Check back for the following additions in the next month:

- XAPP935: PLB DDR2 Memory Controller
- XAPP941: PLB TEMAC Ethernet
- XAPP942: OPB Ethernet
- XAPP924: OPB EPC with SMSC LAN External Peripheral

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