Xilinx Ethernet POWERLINK Solution:

Synchronizing High-Performance Control Systems

The Challenges to Industrial Network Design

- Provide high performance, cost-effective Ethernet-based communication technology for control applications
- Integrate design changes to meet future specifications
- Bridge between multiple interface protocols and support various protocol technologies with a common hardware design

The Xilinx Ethernet POWERLINK Solution

- Provide hardware necessary to achieve best Real Time behavior, short delays and fast response times
- Implement multiple design variants in the FPGA
- Hardware-centric POWERLINK solution results in better performance than competing software solutions

Ethernet POWERLINK is an open, software-based Real Time Communication protocol compatible with standard Ethernet hardware. Both the Controlled Nodes (slaves) and the Managing Nodes (masters) can be built on standard Ethernet components for 100 Mbits/s Ethernet.

Designed For Ultimate Flexibility

POWERLINK's flexibility results is standardization, ease of service and maintenance and reduced implementation and operating costs. POWERLINK is ideal for synchronization of high performance motion control systems. The POWERLINK IP developed by *port* GmbH adheres to Ethernet POWERLINK protocol. Its four variants are designed for ultimate flexibility on Xilinx FPGAs.

Integrates with All Standard Ethernet Protocols

POWERLINK can be implemented using any standard Ethernet hardware. While supporting all topologies, it offers complete operational conformance between systems that adhere to Ethernet communication systems.

Performance Now and in the Long-Term

POWERLINK meets the highest requirements of hard Real Time performance and determinism. POWERLINK is poised to support transmission rates 10x higher (1000 Mbits/s) than today with Gigabit Ethernet ported to FPGAs.

POWERLINKsafety and Security

POWERLINKsafety is an open real time safety protocol developed by Ethernet POWERLINK Standardization Group (EPSG). It is ideal for communication cycles at the microsecond level. This bus-based safety system can be used in systems requiring SIL 3 protection.

XILINX®

Separate Domains for Data Transfer

POWERLINK has separate Real Time and Non-Real Time domains for data transfer. This increases data transfer bandwidth while insuring data security and guaranteed timing on the RT domain.

Implementing SoC with the Xilinx FPGA Platform

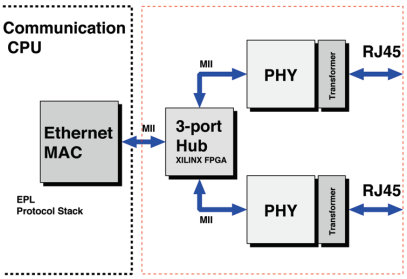
Xilinx FPGAs offer the most cost-effective, flexible, scalable platforms for implementing full SoC with POWERLINK. Xilinx FPGAs allow system designers to integrate processors, hubs, EMAC and other discrete functions while improving system timing and reliability.

Greater Performance and Easier Implementation

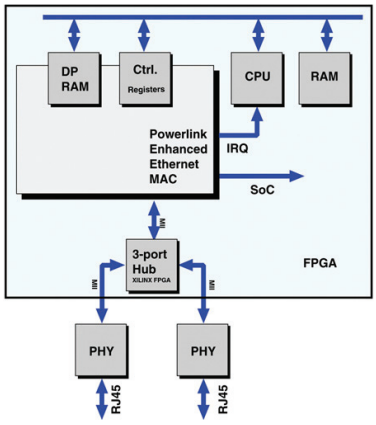
An on-board customizable 32-bit MicroBlaze™ soft processor allows implementation of process control and Real Time Ethernet as a SoC. The POWERLINK Ethernet MAC, hardware-optimized for Xilinx FPGAs, is also easily implemented.

Scalability, Upgradeability and Reliability

Easily implement POWERLINK variants that best suit your system needs with IP from *port* GmbH, the field bus experts. Effortlessly incorporate additional features, latest versions and new options. The Xilinx POWERLINK Solution integrates discrete devices into the FPGA, thus increasing reliability while lowering Bill of Material (BoM) costs.



POWERLINK Ethernet Hub



POWERLINK Ethernet MAC

Optimized for the Xilinx FPGA

POWERLINK MAC, the Ethernet MAC developed by *port* GmbH is a MAC controller optimized for POWERLINK, specially designed for Xilinx FPGAs. Where other implementations are software based, this is largely built in hardware resulting in faster response times needed for higher performance.

TAKE THE NEXT STEP

ETHERNET POWERLINK real-time technology

port

To learn more about *port's* Xilinx POWERLINK solutions: *port* GmbH

http://www.epl-tools.com/ (*port* Gmbh's POWERLINK page)

http://www.port.de/

Xilinx Resources

Xilinx ISM Resources

http://www.xilinx.com/esp/ism.htm

Spartan-3 Generation FPGAs

http://www.xilinx.com/products/silicon solutions/fpgas/spartan_series/index.htm

Corporate Headquarters

Xilinx, Inc.
2100 Logic Drive
San Jose, CA 95124
Tel: 408-559-7778
Fax: 408-559-7114
Web: www.xilinx.com

Europe Headquarters

Xilinx Ireland
One Logic Drive
Citywest Business Campus
Saggart, County Dublin
Ireland
Tel: +353-1-464-0311
Fax: +353-1-464-0324
Web: www.xilinx.com

Japan

Xilinx K.K
Art Village Osaki Central Tower 4F
1-2-2 Osaki, Shinagawa-Ku
Tokyo 141-0032 Japan
Phone: +81-36744-7777
Fax: +81-3-5436-0532
Web: japan.xilinx.com

Asia Pacific Pte. Ltd.

Xilinx, Asia Pacific
5 Changi Business Park
Singapore 486040
Tel: (65) 6407-3000
Fax: (65) 6789-8886
Web: www.xilinx.com

XILINX®

www.xilinx.com

Printed in U.S.A. PN 2046