New Xilinx MicroBlaze Soft Processor Increases Clock Frequency By 25 Percent

Xilinx, Inc. today announced immediate availability of the performance-optimized 4.00 version of its MicroBlaze soft processor. The 32-bit RISC core now operates at frequencies up to 200 MHz in Virtex-4 FPGAs delivering an impressive 25 percent increase in core performance compared to previous versions. In addition, a new floating point unit (FPU) option enables embedded developers to accelerate system performance by as much as 120 times over software emulation.

The Xilinx MicroBlaze 4.00 solution is a scalable processor system that enables designers to tune performance to match the compute requirements of target applications and choose greater mathematical accuracy when needed without a significant cost penalty. The enhanced feature set also raises the bar for flexibility and ease of use with user-configurable hardware options, improved debug capabilities, and complete backward compatibility with earlier releases. Xilinx will showcase the MicroBlaze 4.00 processor for the first time this week during the Spring Processor Forum held May 16th through 19th in San Jose, Calif.

"As the cost of designing and manufacturing custom chips continues to soar, processor cores optimized for FPGAs have the potential to lure designers away from ASICs and SoCs," said Tom R. Halfhill, senior analyst of In-Stat's Microprocessor Report. "The newest version of the Xilinx MicroBlaze processor core offers more reasons to use an FPGA, such as higher clock speeds and an optional, tightly-coupled FPU. In embedded applications such as motor control, industrial machine control, multimedia, and office automation, an FPU can make a big difference."

MicroBlaze FPU

The 32-bit single precision, IEEE-754 compatible MicroBlaze FPU provides designers with a processor tailored to execute both integer and floating-point operations. Integration with the MicroBlaze processor means CPU resources like the pipeline, processor register set and other processor resources become tightly coupled and shared with the FPU for optimum data bandwidth. All FPU operations are enabled through the standard programming model with full compiler, design tool and instruction-set simulator support.

"Finding a processor to meet performance, feature, and cost targets is very challenging. The MicroBlaze processor provides a scalable solution that is fully customizable, area-efficient and can be optimized for our most cost-sensitive designs," said Said Zahrai, project manager at ABB. "The MicroBlaze 4.00 solution with the new FPU delivers even more performance, flexibility and ease of use, so our embedded developers can extend the life cycle of our existing products and bring new products to market even faster."

The MicroBlaze 4.00 processor also offers a host of ready-to-use, pre-built configuration options. These include new pattern-compare instructions for faster location of string, byte or word matches, which are particularly useful with data-intensive multimedia applications. User selectable features such as the configurable hardware multipliers, divider unit, and cache links can now be disabled when not needed to save critical logic resources.

Additionally, new debug instructions can be inserted into the processor pipeline to make data more accessible and 15 times faster to download for hardware debug, while also reducing overall debug logic by 50 percent. To assist the increasing number of Agilent customers using the MicroBlaze processor, Agilent has added logic analysis support to enable design teams to capture real-time trace for debug and characterization.

"FPGAs play an increasingly important role in our customers' product development, and logic analyzer measurements are critical in the debug of these FPGAs and surrounding systems," said Joel Woodward, senior product manager of Agilent's Design Validation Division. "The combination of Agilent logic analyzers and Agilent's new MicroBlaze inverse assembler will shorten debug and validation time, and help digital designers bring new products to market faster."

The MicroBlaze soft processor core is available as part of the Xilinx Embedded Development Kit (EDK) U.S. list priced at $495. In addition to the MicroBlaze core, the EDK includes a comprehensive set of system tools to design an embedded application in a Xilinx FPGA. The VHDL source code for the MicroBlaze core is also available for purchase. Development boards with the MicroBlaze 4.00 processor are also available from Xilinx and its distributors including Avnet, Memec and Nu Horizons.