Synopsys and Mellanox Demonstrate Complete PCI Express 4.0 Host and Device System Interoperability

Demonstration Proves Successful System Bring-Up and 16 GT/s Data Transfer of the DesignWare IP for PCI Express 4.0 Specification Targeting High-Performance Cloud Computing Designs

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Highlights:

- The host, including the DesignWare Root Complex IP for PCI Express 4.0 specification, executes full initialization across the PCI Express link at 16 GT/s with the Mellanox ConnectX-5 Ethernet and InfiniBand network adapter
- Lane margining exercised to provide visibility into the link quality, enabling more robust, high-performance systems
- Demonstration utilizes the DesignWare IP Prototyping Kit for PCI Express 4.0 Root Complex, enabling fast prototyping, SoC integration and software development
- Demonstration will be presented at PCI-SIG Developers Conference in Santa Clara, CA, June 7-8, 2017, in Synopsys Booth #2

Synopsys, Inc. (Nasdaq: SNPS) today announced it has collaborated with Mellanox Technologies to successfully demonstrate full system interoperability between their two independently developed PCI Express® 4.0 solutions. The demonstration includes a host, which contains the DesignWare® Root Port Controller IP for PCI Express 4.0 specification in a DesignWare IP Prototyping Kit, connected to the Mellanox ConnectX-5 network adapter as a device. The demonstration shows full initialization of the PCI Express 4.0 interface including link up, configuration and enumeration at 16 GT/s. In addition, the two companies used the lane margining functionality between the host and device to assess the link quality for a more robust design. The demonstration will be presented at the PCI-SIG® Developers Conference 2017 in Synopsys' Booth #2.

Synopsys and Mellanox have a long history of collaboration to drive development of the PCI Express 4.0 specification for the benefit of the industry. Both companies contributed the PHY characterization data to validate the electrical requirements of the PCI Express 4.0 specification at 16 GT/s. The companies began demonstrating PCI Express 4.0 PHY electrical interoperability in 2015 and are now demonstrating full system interoperability for the PCI Express 4.0 specification at 16 GT/s.

"We achieved another milestone in our collaboration with Synopsys as both companies continue to demonstrate PCI Express technology leadership," said Gilad Shainer, vice president of marketing at Mellanox Technologies. "The successful interoperability displays the robustness of both solutions, and our mutual support of the PCI Express 4.0 specification to meet the connectivity requirements of hyperscale, cloud, high-performance computing, machine learning, storage, media and more applications."

"As the leading provider of PCI Express IP, Synopsys invests heavily in interoperability testing to ensure that our IP is robust and performs as expected in real-world environments, said John Koeter, vice president of marketing for IP at Synopsys. "Our collaboration with Mellanox demonstrates how both companies are helping designers accelerate the integration of the PCI Express 4.0 interface into their high-performance cloud computing designs."

Availability & Additional Resources
Synopsys' complete DesignWare IP solution for PCI Express 4.0 specification consisting of controllers, PHYs, IP Prototyping Kits, IP subsystems and verification IP are available now. In addition, software drivers for DesignWare IP for PCI Express Root Complex are available in the Linux kernel.

Visit Synopsys at the PCI-SIG Developers Conference (Booth #2) to see the demonstration.

About DesignWare IP
Synopsys is a leading provider of high-quality, silicon-proven IP solutions for SoC designs. The broad DesignWare IP portfolio includes logic libraries, embedded memories, embedded test, analog IP, wired and wireless interface IP, security IP, embedded processors and subsystems. To accelerate prototyping, software development and integration of IP into SoCs, Synopsys' IP Accelerated initiative offers IP prototyping kits, IP software development kits and IP subsystems. Synopsys' extensive investment in IP quality, comprehensive technical support and robust IP development methodology enable designers to reduce integration risk and accelerate time-to-market. For more information on DesignWare IP, visit https://www.synopsys.com/designware.

About Synopsys
Synopsys, Inc. (Nasdaq: SNPS) is the Silicon to Software™ partner for innovative companies developing the electronic products and software applications we rely on every day. As the world's 15th largest software company, Synopsys has a long

history of being a global leader in electronic design automation (EDA) and semiconductor IP and is also growing its leadership in software security and quality solutions. Whether you're a system-on-chip (SoC) designer creating advanced semiconductors, or a software developer writing applications that require the highest security and quality, Synopsys has the solutions needed to deliver innovative, high-quality, secure products. Learn more at www.synopsys.com.

Editorial Contacts:
Monica Marmie
Synopsys, Inc.
650-584-2890
monical@synopsys.com

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