Synopsys' CustomSim Delivers 2X Circuit Simulation Speed-up

New Partitioning Technology Enables Consistent Multi-core Scalability

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Highlights:

- CustomSim 2015.06 delivers 2X speed-up on four cores enabled with breakthrough partitioning technologies
- 2X single-core speed-up for designs using BCD process technology such as power management ICs
- New mixed-signal verification support for SystemVerilog Real Number Modeling and UPF

Synopsys, Inc. (Nasdaq: SNPS) today announced breakthrough FastSPICE simulation advancements in its CustomSim™ circuit simulator 2015.06 release that deliver 2X multi-core speed-up on four cores. In addition, new optimizations in CustomSim deliver 2X single-core speed-up for designs using BCD (Bipolar-CMOS-DMOS) process technology, such as power management integrated circuits (ICs). The CustomSim mixed-signal solution in VCS® AMS has been extended to support SystemVerilog Real Number Models (RNM) for AMS regression methodology and UPF for low-power verification. The new performance improvements and mixed-signal enhancements in CustomSim enable design teams to keep pace with the increasing complexity of verifying advanced-node and complex mixed-signal designs.

"CustomSim is the reference FastSPICE simulator for BCD technology in the mixed-signal verification flow at STMicroelectronics," said Pier Luigi Rolandi, Design Enablement Director in Technology R&D for Sense, Power and Automotive at STMicroelectronics. "With the new BCD option in CustomSim, we're seeing an average of 2X improved performance in single-core and up to an additional 2X performance on four cores. This performance gain allows us to accelerate the verification of our ICs in smart power technologies for automotive and industrial applications."

The CustomSim FastSPICE solution has consistently delivered higher performance to the design community each year. As design complexity increases due to advanced nodes and the prevalence of mixed-signal IP, significantly more performance and capacity is needed to quickly and accurately verify these designs. While multi-core simulation has been available for some time, traditional FastSPICE simulators have been unable to consistently deliver scalable multi-core performance beyond a small subset of design types. As a result, design teams are either forced to either sacrifice accuracy for performance and risk missing costly bugs in their designs, or lengthen project schedules to meet verification goals.

To address these challenges, CustomSim 2015.06 delivers advances in its multi-core technologies that enable 2X performance on four cores across a wide range of design types without sacrificing accuracy.

"As the leading provider of FastSPICE circuit simulation solutions, we have a solid track record of delivering innovative, best-in-class technologies to designers over the last 15-plus years," said Antun Domic, executive vice president and general manager of the Design Group at Synopsys. "Our early CustomSim users have seen 2X throughput improvement using the CustomSim 2015.06 release. These results enable designers to produce more competitive products quickly."

New Technologies in CustomSim

Post-layout simulation complexity and element counts for advanced-node designs have increased significantly. For example, the coupling effects between parasitic capacitance can no longer be ignored. This makes traditional FastSPICE partitioning algorithms ineffective, as they can no longer maintain the required accuracy. CustomSim 2015.06 debuts new multi-level partitioning technology that efficiently solves this problem by maximizing multi-rate simulation to deliver 2X performance on four cores while maintaining accuracy. CustomSim 2015.06 uses an intelligent multi-core simulation scheduler that explores parallel activities among all circuit partitions to maximize multi-core scalability across a broad range of circuit types, including SRAM, analog and mixed-signal designs. Additionally, CustomSim 2015.06 enhances the VCS AMS solution for mixed-signal verification with support for UPF for low-power designs and Real Number Modeling with SystemVerilog nettype.

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 a leader in software quality and security testing with its Coverity® solutions. Whether you're a system-on-chip (SoC) designer creating advanced semiconductors, or a software developer writing applications that require the highest quality and security, Synopsys has the solutions needed to deliver innovative, high-quality, secure products. Learn more at www.synopsys.com.

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