Synopsys Unleashes PrimeSim Continuum Solution to Accelerate the Design of Hyper-Convergent ICs for Memory, AI, Automotive and 5G Applications

10X Faster Simulation with Next-Generation Architecture and Heterogeneous Compute Acceleration on GPU/CPU

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Highlights in this Announcement:

- PrimeSim Continuum provides a unified workflow of best-in-class SPICE and FastSPICE technologies, speeding the creation of analog, RF, mixed-signal, custom digital and memory designs
- Innovative SPICE and FastSPICE architectures and data models deliver 10X faster simulation while maintaining signoff accuracy
- PrimeWave, a newly architected design environment, provides comprehensive analysis, improved productivity and ease of use

Synopsys, Inc. (Nasdaq: SNPS) today announced at its SNUG® World international user conference the PrimeSim™ Continuum solution, a unified workflow for circuit simulation technologies to accelerate the creation and signoff of hyper-convergent designs. PrimeSim Continuum, a foundation of the Synopsys Custom Design Platform, is built on next-generation SPICE and FastSPICE architectures and is the industry's only proven GPU acceleration technology providing design teams 10X runtime improvements with golden signoff accuracy. PrimeSim Continuum introduces an all-in-one solution consisting of leading simulation engines including PrimeSim™ SPICE, PrimeSim™ Pro, PrimeSim™ HSPICE® and PrimeSim™ XA. PrimeWave™ design environment delivers a seamless simulation experience around all PrimeSim engines with comprehensive analysis, improved productivity and ease of use.

"Synopsys is committed to enabling the future of technology innovation by continuously pushing the performance boundaries of analog, mixed-signal, memory and digital design automation. PrimeSim Continuum represents a revolutionary breakthrough in circuit simulation innovation with heterogeneous compute acceleration on GPU/CPU, setting a new bar for EDA solutions," said Sassine Ghazi, Chief Operating Officer at Synopsys. "Our customers across every design segment can now benefit from years of R&D investment, innovation and customer collaboration with PrimeSim Continuum next-generation technologies that complement our modern Custom Design Platform and Verification Continuum®."

Today's hyper-convergent SoCs consist of larger and faster embedded memories, analog front-end devices and complex I/O circuits that communicate at 100Gb+ data rates with the DRAM stack connected on the same piece of silicon in a system-in-package design. These challenges associated with verifying these complex designs scale as advanced technology process nodes present increased parasitics, process variability and reduced margins. This results in more simulations with longer runtimes at higher accuracy impacting the overall time-to-results, quality-of-results and cost-of-results. PrimeSim Continuum addresses the systemic complexity of such hyper-convergent designs with a unified workflow of sign-off quality simulation engines tuned for analog, mixed-signal, RF, custom digital memory designs. PrimeSim Continuum uses next-generation SPICE and FastSPICE architectures and heterogenous computing to optimize the use of CPU and GPU resources and improve time-to-results and cost of results.

"Kioxia memory designs integrate complex systems consisting of memory, analog, mixed-signal and custom digital blocks that require different design and signoff technologies. A converged workflow around a common circuit simulation solution is needed to meet our time-to-results and cost of results targets," said Shigeo (Jeff) Ohshima, Technology Executive, SSD Application Engineering at Kioxia Corporation. "Synopsys' PrimeSim Continuums is an all-in-one solution that integrates the best SPICE and FastSPICE technologies delivering accuracy, speed and capacity for our complex designs. The PrimeWave design environment provides a common workflow across all simulation disciplines enabling the signoff of Kioxia's memory designs. Effective collaboration and access to next-generation technologies are fundamental to our partnership with Synopsys."

Introducing Next-Generation FastSPICE Architecture for Performance Acceleration

Synopsys PrimeSim Pro simulator, an essential part of PrimeSim Continuum, represents a next-generation FastSPICE architecture for fast and high-capacity analysis of modern DRAM and Flash memory designs.

"Relentless technology scaling and innovations around DRAM architecture have resulted in larger and more complex memory designs requiring higher simulation performance and capacity," states Jung Yun Choi, corporate vice president of Memory Design Technology Team at Samsung Electronics. "Synopsys PrimeSim Pro, the next generation of our plan of record

FastSPICE simulator, can deliver up to 5X performance acceleration on our full-chip power delivery network designs. PrimeSim Pro next-gen architecture can keep pace with the capacity needs of our advanced memory designs and allow us to meet our aggressive time-to-results targets."

Heterogeneous Compute Acceleration on CPU/GPU

Synopsys PrimeSim SPICE simulator's next-generation architecture with unique GPU technology delivers significant performance improvements needed to perform comprehensive analysis for analog and RF design while meeting signoff accuracy requirements.

"As modern compute workloads evolve, the size and complexity of analog designs have moved beyond the capacity of traditional circuit simulators," said Edward Lee, vice president of Mixed Signal Design at NVIDIA. "Using NVIDIA GPUs enables PrimeSim SPICE to accelerate circuit simulation, notably minimizing signoff time of analog blocks from days to hours."

"As design complexity increases with advanced process nodes, we are committed to supporting our mutual customers with innovative simulation technologies to reduce verification and analysis cycles," said Jaehong Park, executive vice president and head of Foundry Design Platform Development at Samsung Electronics. "Synopsys PrimeSim Continuum with its unified workflow of advanced simulation engines delivered 10X speed up with golden SPICE accuracy using heterogeneous compute acceleration on our recent 56Gbit Ethernet design, reducing verification efforts from days to hours."

Unified Workflow for Analysis and Signoff of Hyper-Convergent Designs

The PrimeSim Continuum solution integrates PrimeSim SPICE and PrimeSim Pro with the PrimeSim HSPICE simulator, the gold-standard signoff reference for foundation IP and signal integrity and the PrimeSim XA simulator, the leading FastSPICE technology for SRAM and mixed-signal verification. PrimeWave delivers a seamless experience by providing a consistent and flexible environment across all PrimeSim Continuum engines optimizing design set-up, analysis and post-processing.

Availability

The Synopsys PrimeSim Continuum solution is now available. More information is available by visiting https://www.synopsys.com/implementation-and-signoff/ams-simulation.html.

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 an S&P 500 company, Synopsys has a long history of being a global leader in electronic design automation (EDA) and semiconductor IP and offers the industry's broadest portfolio of application security testing tools and services. Whether you're a system-on-chip (SoC) designer creating advanced semiconductors, or a software developer writing more secure, high-quality code, Synopsys has the solutions needed to deliver innovative products. Learn more at www.synopsys.com.

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