Lightmatter and Cadence Collaborate to Accelerate Optical Interconnect for AI Infrastructure

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Technical collaboration leverages Cadence AI/HPC IP in next-generation optical engines for hyperscale AI data centers

MOUNTAIN VIEW, Calif.–(BUSINESS WIRE)–Lightmatter, the leader in photonic (super)computing, today announced a technical collaboration with Cadence to develop co-packaged optics (CPO) solutions that integrate Cadence's silicon-proven, high-speed SerDes IP with Lightmatter's Passage™ optical engine. By focusing on integration with advanced-node CMOS technology and industry-standard packaging workflows, the collaboration aims to pave the way for high-performance, manufacturing-ready CPO in next-generation AI and high-performance computing (HPC) environments.

The transition to CPO represents a major inflection point for AI infrastructure, moving beyond traditional pluggables and near-packaged optics to fully integrated, 2D and 3D-stacked photonic interconnects. The combination of Cadence's optics-optimized high-speed SerDes, Universal Chiplet Interconnect Express™ (UCIe™) IP for disaggregation, and EDA expertise with Lightmatter's silicon photonics and laser leadership establishes a roadmap of silicon-proven technologies for the development of hyperscalers' custom AI infrastructure chips.

"The next big leap in AI performance requires a fundamental change in how we move data," said Ritesh Jain, SVP of Engineering & Operations at Lightmatter. "Cadence's connectivity IP is an ideal complement to our Passage platform. Together, we are paving the way for CPO deployment by solving the most complex optics-electronics integration challenges, ensuring that the next generation of AI clusters can achieve the energy efficiency and bandwidth density required for the next wave of frontier models."

"As AI capacity continues to expand dramatically to accommodate unprecedented demand and workloads, scale-up and scale-out are transforming AI infrastructure," said Boyd Phelps, SVP and GM of the Silicon Solutions Group at Cadence. "Cadence is dedicated to providing next-generation optical interconnect solutions to optimize data center performance and efficiency, and our collaboration with Lightmatter demonstrates our commitment to the evolution of advanced interconnects. By integrating our high-speed SerDes and UCIe IP into this new CPO platform, we're helping our customers build more scalable, power-efficient AI systems."

"While the industry has long debated the timing of CPO, the move toward integrated 3D-stacked photonic designs is now inevitable," said Roy Chua, founder and principal at AvidThink. "This collaboration between Cadence and Lightmatter is crucial because it addresses the architectural foundation of electrical-optical connectivity integration. By optimizing advanced CMOS IP with a future-ready CPO design, they are giving the ecosystem the tools needed to escape the limitations of shoreline-bound interconnects."

About Lightmatter

Lightmatter is leading the revolution in AI data center infrastructure, enabling the next giant leaps in human progress. The company's groundbreaking Passage™ platform—the world's first 3D-stacked silicon photonics engine—and Guide®—the industry's first VLSP light engine—connect thousands to millions of XPUs. Designed to eliminate critical data bottlenecks, Lightmatter's technology delivers unprecedented bandwidth density and energy efficiency for the most advanced AI and high-performance computing workloads, fundamentally redefining the architecture of next-generation AI infrastructure.

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