

Server AI Chips



Overview

Cerebras launches new server chip and system designed to speed AI. Cerebras Systems announced on Tuesday a new version of its server hardware that includ.

Key Takeaways

AI server chips are specialized processors, including GPUs, AI ASICs, and AI-optimized CPUs, designed to accelerate machine learning and deep learning workloads in data centers and cloud infrastructure. Key Types of AI Server Chips



Graphics Processing Units (GPUs): GPUs remain the dominant hardware for AI workloads, particularly for training large language models and generative AI. Leading examples include NVIDIA's Hopper (H100/H200) and Blackwell (B200/B300) chips, which feature high-bandwidth memory exceeding 250GB and advanced packaging technologies like CoWoS-L and multi-die chiplets for exascale performance . AMD also competes with its MI300 series and upcoming MI400 series accelerators, optimized for inference-heavy AI workloads and large-scale data center deployments .

AI Application-Specific Integrated Circuits (ASICs): Custom AI ASICs are developed by hyperscalers and cloud providers to optimize performance for specific AI tasks. These chips are designed for efficiency, lower latency, and domain-specific computation, often outperforming general-purpose GPUs in targeted workloads .

AI-Capable CPUs: Modern server CPUs, such as AMD's Zen 5-based EPYC processors, are increasingly optimized for AI workloads. They can operate standalone for general-purpose tasks or in tandem with AI accelerators to handle large models and complex computations .

Field Programmable Gate Arrays (FPGAs): FPGAs are used for parallel processing of large datasets, offering flexibility for AI workloads that require custom data paths or low-latency inference .

Server Architecture and Connectivity

AI servers integrate multiple accelerators and require high-speed interconnects like PCI Express (PCIe) 6.0 or the upcoming PCIe 7.0, which can deliver up to 512GB/s bandwidth over 16 lanes. These interconnects ensure efficient communication between CPUs, GPUs, memory, and storage, which is critical for large-scale AI training and inference . Power management and server management chips, such as PMICs and Baseboard Management Controllers, are increasingly prioritized for AI servers due to their higher power consumption and performance requirements .

Market Trends and Developments

The AI server chip market is rapidly expanding, with data center AI chip revenue projected to grow significantly through 2035. AMD's MI400 series alone is expected to generate \$7.2 billion in 2026, contributing to a broader surge in GPU and server revenue . Companies like NVIDIA, AMD, Intel, Microsoft, Google, and Cerebras are innovating with custom chips, wafer-scale engines, and AI-optimized CPUs to meet the growing demand for generative AI, predictive analytics, and large-scale machine learning .

Emerging Innovations

- **High-bandwidth memory (HBM):** Supports larger AI models and faster training.
- **Advanced semiconductor packaging:** Multi-die GPUs and chiplets improve scalability and performance.
- **Custom infrastructure chips:** DPUs and integrated HSMs enhance AI operations, security, and cloud storage efficiency .

- Energy efficiency: Low-power modes and optimized power delivery are critical as AI servers consume substantially more energy than general-purpose systems .

Conclusion

AI server chips are central to modern AI infrastructure, combining GPUs, AI ASICs, AI-capable CPUs, and FPGAs to accelerate machine learning and deep learning workloads. Innovations in memory, packaging, interconnects, and custom designs are driving higher performance, scalability, and efficiency, while market growth is fueled by hyperscalers, cloud providers, and AI-focused startups investing heavily in next-generation AI hardware .

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The custom AI ASIC state of play (May 2026)

Nvidia still holds approximately 70% of the AI chip market share, but that share is projected to erode as Google,

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Top 30+ AI Chip Makers: NVIDIA & Its Competitors

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Building the AI Server

AI/ML demands are reshaping servers. Explore how CPUs, GPUs, FPGAs and AI accelerators drive performance for

AI Server Market Update: Vendors Shift from Silicon to Services

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Focus on 5 AI Behemoths Carving a Niche in the Server CPU Chip

With its leading-edge features, the chips are ideal for edge AI deployment in smart cities, robotics, healthcare and

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AI servers are strategically architected from AI hardware components to support AI workloads from edge to cloud. Critical elements

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