What chips does an AI server contain

Overview

While traditional servers rely mostly on CPUs, AI servers lean heavily on graphics processing units (GPUs) and similar AI accelerators that are purpose-built to handle modern AI models. Modern AI models are data-hungry, computation-heavy beasts that need specialized hardware just to function, let alone perform at their best. That's the job of an AI server—a custom-built system that keeps AI applications fast, scalable, and efficient. An AI server's architecture is all about. AMD continues to challenge Nvidia with its MI400 series chips, powering the upcoming Helios AI servers. These offer high-performance AI computing with open standards for interoperability, reflecting a shift from proprietary technologies toward collaboration. It involves using computer programs to simulate human intelligence, achieving or imitating human thought processes, behavioral patterns. 2 Hyperscalers are spending $380B+ on AI capex in 2025 while simultaneously building custom chips (TPU, Trainium, Maia, MTIA) that offer 40-65% TCO advantages over GPUs. 3 Broadcom and Marvell control ~95% of the custom ASIC co-design market — Google alone spends ~$8B/year with Broadcom on TPU. The AI chips are sort of general-purpose CPUs that provide higher speed and efficiency through the

use of smaller, faster transistors. A smaller transistor is quicker and uses less energy. But unlike the CPUs, AI Chips also offer AI-optimized design features. Microsoft, Meta, Baidu, and ByteDance increased orders in 2023 as they launched services based on generative AI, and AI server shipments were expected to grow by 15.

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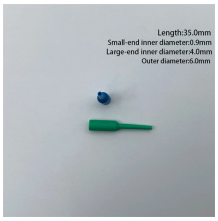
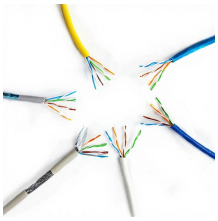


Learn how AI workloads are reshaping server architecture with accelerators, CXL memory pooling, high-speed interconnects, and advanced cooling.

AI servers are high-performance systems specifically designed to process complex AI workloads, including model training and real-time inference.



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As AI servers become increasingly prevalent, internal chip processors play a pivotal role, igniting what can be described as a new chip war. Intel primarily focuses on CPUs, and AMD excels ...

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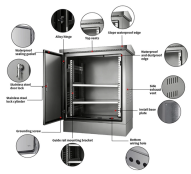
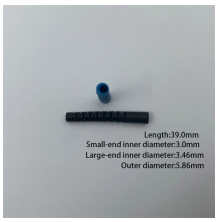


In AI servers, a Retimer chip is typically required between CPU and GPU to ensure signal integrity. Many AI servers deploy multiple Retimers; for example, Astera Labs configures four ...



A broad category of chips built specifically for AI workloads rather than general computing. Because AI tasks like training and inference have unique demands, purpose-built accelerators can ...

Nvidia leads the GPU space with its Blackwell series, AMD challenges with MI400 chips in open-standard servers, Intel delivers AI-accelerated CPUs and GPUs, and cloud providers like AWS ...

Many enterprises are discovering a hidden bottleneck crippling their AI initiatives: the high cost and energy consumption when moving trained models into live data center environments. Your ...

AI data center value chain: chips to cloud. Semiconductor, GPU design, servers, networking, power, and cloud layers mapped by company. Interactive.

This guide covers AI hardware requirements in detail, including CPUs, CPU, TPUs and FPGAs, memory, and storage, and some additional demands.

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