AI Server Market by Processor Type (GPU, FPGA, ASIC), Function (Training, Inference), Form Factor (Rack-Mounted Server, Blade Server, Tower Server), Cooling Technology (Air Cooling, Liquid Cooling, Hybrid Cooling) - Global Forecast to 2030

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Report description:

The AI server market is expected to be worth USD 142.88 billion in 2024 and is estimated to reach USD 837.83 billion by 2030, growing at a CAGR of 34.3% between 2024 and 2030. The increasing adoption of machine learning (ML) and deep learning algorithms is a key driver for the AI server market, as businesses and industries rely more heavily on AI technologies for data analysis, automation, and decision-making. The rising adoption of cloud-based AI solutions is a another driver for the AI server market, as more industries leverage the scalability, flexibility, and cost-efficiency of cloud platforms to implement AI technologies. With cloud-based AI services, organizations no longer need to invest in expensive on-premise infrastructure, making AI accessible to businesses of all sizes. Cloud AI platforms like AWS, Microsoft Azure, and Google Cloud, enable businesses to deploy sophisticated AI models without the need for specialized in-house hardware, driving demand for cloud-based AI servers that can handle large-scale AI computations.

"Liquid cooling segment to hold the largest share in 2030."
Liquid cooling holds largest market share in the AI server market. The rapidly increasing demand of cooling for HPC and AI workloads are reshaping the server cooling landscape by adopting liquid cooling technology. Air cooling can't cope up with high heat loads generated by powerful GPUs and CPUs, while liquid cooling, especially direct-to-chip liquid cooling, provides superior thermal management. Liquid cooling is the most important solution in managing higher compute densities while maintaining energy efficiency. As AI adoption continues to grow, liquid cooling is expected to become standard in data centers with new deployment strategies and innovations in the whole supply chain. Servers Original Design Manufacturers (ODMs) are increasingly investing in liquid cooling where they now even accept the leakage risk, as they position themselves as leaders in this evolving

ecosystem. Chilldyne, Inc. (US) launched their Liquid Cooling Starter Kit in July 2024 to enable data centers to transition rapidly to liquid cooling-supporting the shift toward next-generation AI and HPC workloads. These cooling technologies ensured stable and sustainable cooling for the cutting-edge AI systems, therefore supporting the trend to shift from air-cooling towards much more efficient liquid cooling solutions.

"Rack mounted servers by form factor is projected to grow at a high CAGR of AI server market during the forecasted timeline"
Rack-mounted AI servers are poised to grow rapidly in the AI server market. Applications for artificial intelligence have increasingly high complexity and data intensity, including handling large quantities of data and real-time decision-making. That is precisely where rackmounted servers are used to provide the required performance to handle the massive volumes of data in an efficient process. In addition, rapid advancements in cooling technologies and energy efficiency enable easy deployment of rack-mounted servers for even high-performance AI workloads. Rack mounted servers also simplify maintenance/upgrades procedure with stream-lined cabling and management tools, which reduce operation overheads. As the rising need for AI-driven solutions sweeps through industries in such a broad scale, from healthcare and finance to manufacturing and retail, rack mounted AI servers seem to be on an upward growth trend that is especially fueled by the adaptability, performance, and space-efficient utilization of data centers.

"Cloud segment is expected to have the highest share during the forecast period."
Cloud-based deployment dominates the AI server market through flexibility, cost efficiency, access to advanced capabilities of AI, and is critical for businesses adopting AI at scale. Companies can scale their AI operations very quickly without highly investing in physical servers via a cloud infrastructure. For example, AWS provides Elastic Compute Cloud (EC2) instances that are specifically optimized for machine learning that allow businesses to ramp up and down based on the demand. Microsoft Azure contains AI tools such as Azure Machine Learning and Cognitive Services that have been widely designed to support complex model training and deployment with minimum time. CSPs also provide pre-built models and tools that reduce the development time for businesses and reduce technical barriers in various enterprises. In retail, for example, there is demand forecasting and personalized marketing. Healthcare organizations use cloud AI services for predictive analytics and diagnostics. These advantages make cloud-based AI deployments highly attractive and enable companies from all industries to utilize powerful, scalable, and flexible AI resources, making it the largest market share in the AI server market.

"North America is expected to hold high CAGR in during the forecast period."
North America will occupy high CAGR during the forecast period due to the presence of various AI server manufacturers, such NVIDIA Corporation (US), Dell Inc. (US), Hewlett Packard Enterprise Development LP (US), IBM (US), and Cisco Systems, Inc. (US), which contributes to the market's growth in this region. These firms are researching and developing AI servers and solutions, leading the region into the innovation front in technology. The growing trend of cloud computing has radically increased the economic impact of data center investments made by leading service providers such as Amazon Web Services, Inc. (AWS) (US), Meta (US), Google (US), and Microsoft (US). The competition for data center projects has increased in North America. The growth of emerging startups in the region further contribute to the developments in AI servers in the region. With a focus on harnessing the potential of artificial intelligence to drive economic growth, improve customer experiences, and address complex challenges, North America continues to be a hub for artificial intelligence innovation and entrepreneurship.
Extensive primary interviews were conducted with key industry experts in the AI server market space to determine and verify the market size for various segments and subsegments gathered through secondary research. The break-up of primary participants for the report has been shown below: The study contains insights from various industry experts, from component suppliers to Tier 1 companies and OEMs. The break-up of the primaries is as follows:
-□By Company Type: Tier 1 - 50%, Tier 2 - 20%, and Tier 3 - 30%
-□By Designation: C-level Executives - 20%, Directors - 30%, and Others - 50%
-□By Region: North America - 40%, Europe - 20%, Asia Pacific - 30%, and RoW - 10%
The report profiles key players in the AI server market with their respective market ranking analysis. Prominent players profiled in this report are Dell Inc. (US), Hewlett Packard Enterprise Development LP (US), Lenovo (Hong Kong), Huawei Technologies Co.,

Ltd. (China), IBM (US), H3C Technologies Co., Ltd. (China), Cisco Systems, Inc. (US), Super Micro Computer, Inc. (US), Fujitsu (Japan), INSPUR Co., Ltd. (China) among others.
Apart from this, ADLINK Technology Inc. (Taiwan), Advanced Micro Devices, Inc. (US), Quanta Computer Inc. (Taiwan), WISTRON CORPORATION (Taiwan), GIGABIT Technologies Pvt. Ltd. (Taiwan), ASUSTeK Computer Inc. (Taiwan), Aivres (US), AIME (Germany), Wiwynn Corporation (Taiwan), MiTAC Computing Technology Corporation (Taiwan), NEC Corporation India Private Limited (India), XENON Systems Pty Ltd (Australia), Graphcore (UK), and 2CRSi Group (France) are among a few emerging companies in the AI server market.
Research Coverage: This research report categorizes the AI server market based on processor type, function, cooling technology, form factor, deployment, application, end user, and region. The report describes the major drivers, restraints, challenges, and opportunities pertaining to the AI server market and forecasts the same till 2030. Apart from these, the report also consists of leadership mapping and analysis of all the companies included in the AI server ecosystem.
Key Benefits of Buying the Report The report will help the market leaders/new entrants in this market with information on the closest approximations of the revenue numbers for the overall AI server market and the subsegments. This report will help stakeholders understand the competitive landscape and gain more insights to position their businesses better and plan suitable go-to-market strategies. The report also helps stakeholders understand the pulse of the market and provides them with information on key market drivers, restraints, challenges, and opportunities.
The report provides insights on the following pointers:
-□Analysis of key drivers (Increase in data traffic and need for high computing power; Increasing adoption of machine learning and deep learning algorithms, and Rising adoption of cloud-based AI solutions across industries) influencing the growth of the AI server market.
-□Product Development/Innovation: Detailed insights on upcoming technologies, research & development activities, and new product & service launches in the AI server market.

-□Market Development: Comprehensive information about lucrative markets - the report analysis the AI server market across varied regions
-□Market Diversification: Exhaustive information about new products & services, untapped geographies, recent developments, and investments in the AI server market

-□Competitive Assessment: In-depth assessment of market shares, growth strategies, and service offerings of leading players like Dell Inc. (US), Hewlett Packard Enterprise Development LP (US), Lenovo (Hong Kong), Huawei Technologies Co., Ltd. (China), IBM (US) among others in the AI server market.

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