

AI Infrastructure Market to Reach USD 309.4 Billion by 2031, Driven by Rising Cloud and Data Demand

Growing AI adoption and rising data center investments are fueling rapid expansion in the global AI infrastructure market.

WILMINGTON, DE, UNITED STATES, November 10, 2025 /EINPresswire.com/ -- According to a new report published by Allied Market Research [AI Infrastructure Market](#) Size, Share, Competitive Landscape and Trend Analysis Report, by Component (Hardware, Software, Services), by Deployment Mode (On-Premise, Cloud, Hybrid), by Technology (Machine Learning, Deep Learning), by End-Users (Enterprises, Governments, Cloud Service Providers (CSPs)), by Application (AI Training, Inferencing, Others): Global Opportunity Analysis and Industry Forecast, 2021 - 2031, The global AI infrastructure market was valued at USD 23.5 billion in 2021, and is projected to reach USD 309.4 billion by 2031, growing at a CAGR of 29.8% from 2022 to 2031.

The AI infrastructure market encompasses the hardware, software, and services required to support artificial intelligence workloads such as machine learning, deep learning, and data analytics. This infrastructure includes high-performance computing (HPC) systems, GPUs, storage, and networking technologies that enable organizations to process vast datasets efficiently.

With enterprises increasingly adopting AI-driven applications, the demand for scalable and energy-efficient computing infrastructure has surged. AI infrastructure serves as the backbone for innovations across industries including healthcare, finance, automotive, and manufacturing, enabling faster insights, automation, and smarter decision-making processes.

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Source: Allied Market Research

One of the primary drivers of the AI infrastructure market is the exponential growth in data volume generated by IoT devices, sensors, and digital platforms. Organizations are investing heavily in AI-enabled systems to analyze and extract insights from this data, increasing the need for powerful computational resources. The rising adoption of cloud-based AI infrastructure by enterprises seeking flexibility and scalability is also propelling market growth. Cloud providers are offering AI-optimized instances and infrastructure-as-a-service (IaaS) solutions to meet diverse business demands.

Challenges: However, the high cost of deploying and maintaining AI hardware—particularly GPUs and AI accelerators—poses a significant challenge for small and medium-sized enterprises. Additionally, concerns regarding data privacy and energy consumption of large-scale data centers may hinder market growth.

Opportunities: The emergence of edge AI and the integration of AI into 5G networks present lucrative opportunities for vendors. Deploying AI processing at the edge reduces latency, improves security, and enhances real-time analytics capabilities.

Key Trends: Continuous innovations in AI chips and processors, including neuromorphic and quantum computing architectures, are transforming infrastructure performance. Vendors are focusing on energy-efficient designs and optimized algorithms to manage complex workloads while reducing operational costs.

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Market Segmentation

The AI infrastructure market is segmented by component, deployment, technology, and end user. Components include hardware, software, and services, with hardware—particularly GPUs—dominating due to their computational capabilities. Cloud deployment holds a major share as organizations shift toward scalable, pay-as-you-go infrastructure models, while sectors like BFSI, healthcare, and automotive lead in adoption due to AI-driven automation and analytics needs.

Based on deployment mode, the on-premise segment accounted for the largest share of the AI infrastructure market in 2021 and is anticipated to maintain its dominance throughout the forecast period. This is primarily due to the high level of data security and control it offers. Many industries prefer the on-premise model to ensure data protection and minimize the risk of breaches compared to cloud-based alternatives, further driving its adoption across sectors.

However, the cloud segment is projected to witness the fastest growth during the forecast period. The increasing adoption of cloud-based AI infrastructure is fueled by its cost-effectiveness, ease of maintenance, and enhanced scalability. Moreover, cloud deployment provides flexibility and supports dynamic business operations, making it a preferred choice for enterprises aiming to optimize performance and streamline processes.

Regional Analysis

Region-wise, North America held the dominant share of the AI infrastructure market in 2021. The steady adoption of AI technologies to enhance business operations, optimize processes, and improve customer experiences continues to create lucrative opportunities in the region. Strong investments from tech giants and the rapid expansion of data centers further support market growth across North America.

Conversely, the Asia-Pacific region is projected to record the highest growth during the forecast period. This growth is driven by the rising penetration of advanced technologies, increasing adoption of cloud-based solutions and services, and the expanding implementation of AI across various industries. Countries such as China, Japan, and India are emerging as key contributors to regional market expansion.

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The key players that operate in the AI infrastructure market analysis Alphabet Inc., Amazon.com, Inc., IBM Corporation, Intel Corporation, Micron Technology, Inc., Microsoft Corporation, NVIDIA Corporation, Oracle Corporation, Samsung and Toshiba Corporation. These players have adopted various strategies to increase their market penetration and strengthen their position in the [AI infrastructure industry](#).

Key findings of the report:

- By component, the hardware segment accounted for the largest AI infrastructure market share in 2021.
- By deployment mode, the on-premise segment accounted for the largest AI infrastructure market share in 2021.
- By technology, the machine learning segment accounted for the largest AI infrastructure market share in 2021.
- On the basis of end-users, the enterprise segment accounted for the largest AI infrastructure market share in 2021.
- Based on application, the AI training segment accounted for the largest AI infrastructure market share in 2021.
- Region wise, North America generated highest revenue in 2021.

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