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High Performance Computing Market Size, Share & Trends Analysis Report By Component (Servers, Storage, Networking Devices), By Deployment (On-premise, Cloud), By End-use, By Region, And Segment Forecasts, 2023 - 2030

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Abstracts

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High-Performance Computing Market Growth & Trends

The global high-performance computing market size is expected to reach USD 87.31 billion by 2030 and is expected to expand at 7.5% CAGR from 2023 to 2030, according to a new study conducted by Grand View Research, Inc. High-performance computing (HPC) can be categorized into high-performance technical computing (HPTC) and high-performance business computing (HPBC).

HPTC is highly used in the fields of science and engineering. It is particularly used by government agencies, defense agencies, educational and research institutions, and incumbents of the manufacturing industry, among others. On the other hand, HPBC is suitable for applications, such as gaming and fraud detection. Logistics companies and providers of financial services, among others, also opt for HPBC. The rising popularity of HPC systems among manufacturing companies, government departments, and defense agencies is primarily driving the growth of the high-performance computing industry.

High-performance computing systems envisage a cluster of computers that can run long algorithms and solve complex problems and equations at high speeds, with higher accuracy than those offered by conventional computing systems. Previously, HPC

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systems were used only by the navigation and aerospace industries. However, the diversification of the IT industry, growing adoption of cloud computing, continuous developments in artificial intelligence, and the rising need for business analytics are prompting various end-use industries to adopt HPC systems.

Data centers particularly require an architecture capable of processing large volumes of data. High-performance computing systems can ensure adequate computing power for such data centers. Various other organizations also adopt HPC systems to process their data at higher speed, with higher accuracy and simplify their complex business procedures. research and academic institutions have also started adopting HPC systems to maximize the computational efficiency required during the initial stages of research.

The high computational capabilities offered by HPC systems have paved the way to execute high-end research projects that were previously deemed impossible. As such, HPC systems can be helpful in several fields, including computational biology, genetics, medicine, structural analysis, geophysics statistics, electromagnetism, nuclear physics, astrophysics, and mathematical modeling, among others. Similarly, the high efficiency offered by HPC systems can help researchers in undertaking research activities in various fields, such as deep neural networks, human genome mapping and modeling, and artificial intelligence, among others.

The vendors of high-performance computing systems are increasingly focusing on delivering enhanced solutions that can cater to diverse requirements. These solutions may include basic configurations and management tools that are easy to deploy and capable of adapting to changing workloads. However, although the application portfolio of HPC systems continues to grow, the lack of awareness about HPC systems, budget constraints at small and medium-sized enterprises, and concerns such as data security remain hindrances to the growth of the high-performance computing industry.

High-Performance Computing Market Report Highlights

The on-premise segment held the largest market share in 2022. This segment is expected to grow at the highest CAGR of over 8.5% during the forecast period due to the several benefits, such as cost-effectiveness, scalability, ease of deployment, and stronger security associated with cloud deployment

The government & defense segment held the largest market share in 2022 and is also expected to grow at the highest CAGR of over 9.0%. The growth can be attributed to the growing adoption of HPC systems in surveillance, aircraft simulation, encryption, and decryption of confidential information

The North America market is anticipated to witness significant growth during the forecast period. New supercomputing facilities are coming up in the region in line with the advancements in technology, which bodes well for the growth of the regional market. The U.S. is already home to the top-5 supercomputers. The country also held the largest market share of over 75% in 2022 and is expected to lead the regional growth during the forecast period

Market players are striking partnerships and collaborating as part of their efforts to strengthen their position in the market. For instance, in September 2017, Cray Research Inc. entered a strategic partnership with Seagate. The partnership will result in Cray Research Inc. procuring drives, containers, controllers, and other components related to the high-performance computing technology from Seagate

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