High Performance Computing - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts 2019 - 2029

Market Report | 2024-02-17 | 120 pages | Mordor Intelligence

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Report description:

The High Performance Computing Market is valued at USD 54.32 billion in the base year and is expected to grow at a CAGR of 11.18% during the forecast period to become USD 96.79 billion by the next five years. Increasing adoption of High Performance Computing (HPC) in the cloud and the emerging need to process large amounts of data efficiently and quickly drive market growth.

Key Highlights
-Factors such as the increasing investments in the Industrial Internet of Things (IIoT), Artificial Intelligence (AI), and engineering, which demand Electronic Design Automation (EDA), are likely to drive the market over the forecast period. The market has been augmented by the continued investment from hardware providers to develop solutions that support these capabilities. In addition, countries like the United States, Germany, the United Kingdom, Japan, and China, among others, have acknowledged the significance of such technologies as an essential driver for economic growth. These countries are potential markets for HPC solutions, which support these initiatives while preserving cost and performance efficiencies.
-Moreover, without the appropriate tools and technology, it becomes practically difficult to handle the growing need for short product development cycles (PLCs) and the requirement to maintain quality in real time. High-performance Computing (HPC) systems with Computer-aided Engineering (CAE) software for high-fidelity modeling simulation are becoming more widely used in various sectors, including discrete manufacturing, robotics in healthcare, and the automotive industry, fueling the market growth.
-Physical simulation, optimization, and Machine Learning (ML) in varied industrial applications, including financial modeling and life science simulation, are some examples where HPC plays a critical role in solving complex problems within time. In the automotive industry, EVs, autonomous vehicles, and connected vehicles are continuously taking development challenges to enter the market and require edge computing capabilities to be incorporated into these solutions driving the HPC software market.
-However, the HPC solutions need essential enterprise data for their functioning, which exposes the market to data breaching risk

for the end users, creating obstacles for the adoption of the solutions across many end users due to their high-security protocols, such as Defence, BFSIs, and Healthcare sectors.
-The demand for HPC saw significant growth, especially in bioscience, as HPC was used to develop a vaccine and tackle the effects of the COVID-19 pandemic. Data consumption and cloud demand have increased since the pandemic, owing to enterprises moving toward remote working and shifting their workloads onto the cloud. This has supported the market growth after the Covid-19 pandemic.

High Performance Computing Market Trends

On Premise Deployment Model is Expected to Witness Significant Growth

- With its ability to take advantage of all the overall HPC system's capabilities and not be hindered by connection problems, an on premise model has a significant market share. Aditionally, the companies that have already established storage and legacy systems are generally large-scale enterprises which prefer the on-premise deployment of HPC solutions, fueling the market during the forecast period.
- There is an increasing use of onpremise systems in large research, analytical and modelling applications as well as a key need for access to timely data. In addition, this trend is reinforced by the increasing complexity of operations and the increasing capabilities of these systems, which increase the output and input capacity of high performance computing systems.
- Another main driver for this model is the security of private data. This way of preventing database attacks is used by businesses and government agencies, particularly in the defence sector. The physical presence requirement has a strong impact on the security and integrity of the system, application and data.
- Moreover, due to the increasing cyber threat and the emergence of more advanced technologies such as facial recognition and global security databases, it is anticipated that these systems will be introduced into the defence sector. Due to the increasing need of privacy, and security in the defence sector, the on premise deployment of HPC is gaining traction in the defence application worldwide.
- Although cloud-based solutions are becoming one of the most depedable options for various applications as they provide the storage and computation needs for users at a relatively very low cost, the area still needs to include appropriate security measures to protect the data and applications for cloud users.

North America is Expected to Hold Major Share

- The North American region is recognized for its early adoption of advanced technologies because of the Technical advancement in the United States and Canada. The development of new technologies and the need for security are encouraging the use of high performance computing systems. The expansion will affect both types of large data. North America will remain the world's market leader in high performance computing during this projection period. One key factor underpinning this demand is the increased government expenditure on research and development activities.
- Aditionally, the US government has introduced the High-Performance Computing for Manufacturing program to increase the country's capabilities in high computing processing to address the manufacturing challenges and support the country's initiatives for a clean energy future for all Americans.
- For instance, in January 2023, the Department of Energy of the USA announced an investment amount of USD 1.8 million for six teams who would work with the U.S. National Laboratories' high-performance computing (HPC) department to help manufacturers streamline their processes, increase productivity, and lower their carbon footprint in the country, would support the market growth in the North American region.

- The industry has significant companies, including, HPE, IBM, Microsoft, NVIDIA and AMD, and as a result, the need for high-performance computing in the area is anticipated to develop significantly. Additionally, North American countries have been adopting High-performance computing, enabling companies in various sectors to apply simulation, advanced modeling, and data analysis to manufacturing processes through a virtualized environment, creating a demand for the market in North America.
- The market's vendors have forged new alliances with other businesses to increase their geographic reach and coverage. Graphcore's partner programme has been expanded, for example, to reach more potential customers and help them accelerate their use of its Intelligence Processing UnitIPU solutions. To broaden its regional reach, the company added several partners in the North American region to its global partner program, including Applied Data Systems and Images et Technologie, among others, supports the market growth in North America.

High Performance Computing Industry Overview

High Performance Computing (HPC) Market is highly fragmented. The presence of major players, such as Hewlett Packard Enterprise, Advanced Micro Devices Inc., Sugon Information Industry Co. Ltd, NEC Corporation, and Fujitsu Ltd, has considerable influence on the overall market. High-performance computing vendors increasingly focus on delivering enhanced solutions through product innovations, collaborations, and investment in R&D to increase their market share during the forecast period.

- November 2022 - India and the EU signed an Intent for Cooperation agreement in high-performance computing and quantum technologies, including collaboration on HPC applications using Indian and European Supercomputers in Bio molecular medicines, which would create an oppertunity for the market vendors during the forecast period.
- May 2022 - Hewlett Packard Enterprise has announced An expansion to accelerate customer delivery and strengthen the region's supply ecosystem by building its first European production facility for high performance computing and artificial intelligence systems. In order to support the need for high performance computing, a market growth in HPC solutions throughout the world is shown by building and shipping Apollo HPE systems and Cray EX supercomputers.

Additional Benefits:

- The market estimate (ME) sheet in Excel format
- 3 months of analyst support

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