

Cloud High Performance Computing (HPC) Market – Global Industry Size, Share, Trends, Opportunity, and Forecast, 2018–2028 Segmented By Component (Hardware (Servers, Storage Devices, Systems, and Networking Devices), Software, and Services), By Deployment Type (On-premises, Cloud), By Industrial Application (Aerospace and Defense, Energy and Utilities, BFSI, Media and Entertainment, Manufacturing, Life Science, and Healthcare), By Region and Competition

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Abstracts

Global cloud high performance computing (HPC) market is expected to thrive during the forecast period, 2024-2028. The factors that are expected to drive the growth of the market are rising preference for hybrid high-performance computing (HPC) solutions, the continued divergence and growth of the IT industry, and the rising demand for high-efficiency computing. Adoption of HPC in the cloud will accelerate growth. Moving data for analysis adds another layer of complexity. The platform should integrate all existing data sources in the organization to identify hidden threats and make better risk-based choices, leaving the data alone. Ideally, it should include an integrated scanner that can scan all sources, including third-party sources, for threats. Last June 2022, Marvell introduced the OCTEON 10 DPU designed for security, networking and storage workloads related to 5G, cloud, carrier, and enterprise server applications. Marvell's OCTEON 10 DPU combines hardware acceleration, datapath bandwidth, and I/O offerings including PCIe 5.0 and DDR5.

The name 'high performance computing' (HPC) refers to the attempt to aggregate computing influence in such a way that it provides significantly more horsepower than that provided by conventional servers and computers.

Supercomputing, or high-performance computing, is like everyday computing, but more powerful than that.

The Growing Demand for High-Efficiency Computing to Encourage the Market Growth

The growing demand for high-efficiency computing (HEC) has developed a prominent trend in recent years, this is driven by numerous factors and with significant implications for technology, industries, and society. High-efficiency computing indicates for the ability to perform complex computational tasks with less energy consumption and maximizing computational power.

One of the fundamental drivers behind this demand is the exponential growth of data-intensive applications and the need to process vast amounts of information efficiently. From artificial intelligence (AI) and machine learning (ML) to big data analytics and scientific simulations, these functions require immense computational resources. High-efficiency computing enables organizations to meet these demands while reducing costs and environmental impact. Furthermore, energy efficiency has become a crucial consideration, since increasing awareness of environmental sustainability. By adopting high-efficiency computing systems, businesses and data centers can reduce their carbon footprint, contributing to a greener future. Owing to this, now a days companies are focusing towards high-efficiency computing (HEC) systems. In addition, governments and controlling bodies have also appreciated the importance of energy-efficient computing and are encouraging the development and adoption of energy-saving technologies. As a result, the global high-efficiency computing (HEC) is anticipated to grow, during the forecast period.

The pursuit of high-efficiency computing has resulted advancements in hardware, software, and system architecture. From power-efficient processors & accelerators to intelligent cooling systems and optimized algorithms, researchers and engineers are constantly modernizing to improve computational efficiency. In conclusion, the growing demand for high-efficiency computing stems is due to the need to process large volumes of data, reduce energy consumption, and address environmental concerns. This trend will continue to shape the technology landscape, driving innovation and enabling new possibilities in various fields, ranging from healthcare and finance to transportation and renewable energy.

Adoption of Cloud High Performance Computing (HPC) Technology

High-performance computing (HPC) is being used more and more in government sectors, which is driving innovation and improving governance. These changes and advancements have been transformative in different sectors. HPC is being used by governments all over the world to solve difficult problems and make well-informed choices in a variety of areas.

Growth would be fuelled by the adoption of HPC in the cloud. An additional layer of complexity is added when data is transferred for analysis. To detect hidden threats and make better risk-based decisions, the platform should integrate all an organization's data sources while leaving the data alone. An integrated search program that can check all sources, including those from third parties, for signs of danger is ideal. Marvell introduced the OCTEON 10 DPU in June of last year, which is intended for workloads in security, networking, and storage geared toward 5G, cloud, carrier, and enterprise data center applications. The OCTEON 10 DPU from Marvell combines hardware acceleration, data path bandwidth, and I/O options like DDR5 and PCIe 5.0.

Even though cloud-based solutions are becoming one of the most viable options for a variety of applications because they provide users with storage and computation requirements at a relatively low cost, appropriate security measures must still be included to safeguard cloud users' data and applications. Also, in February 2022, IBM bought telecommunications consulting services and solutions provider Sentaca to build scalable, cloud and edge-enabled process automation and safety solutions for communications service providers and expand its hybrid cloud consulting business. Due to the above-mentioned development the market will grow soon.

The High Cost of High-Performance Computing Maintenance will hinder the Market Growth in forecast period

High-performance computing (HPC) systems have revolutionized several industries by assisting complex simulations, data analysis, and scientific research at unprecedented speeds. However, along with their exceptional capabilities comes a significant cost associated with their maintenance. The high cost of HPC maintenance can be attributed to several factors. The initial investment in acquiring HPC infrastructure is substantial. These systems require specialized hardware components, such as powerful processors, large amounts of memory, and high-speed interconnects. Additionally, they often necessitate dedicated facilities with robust cooling and power supply capabilities.

Therefore, the power consumption of HPC systems is another significant expenditure. These systems expend substantial amounts of electricity in their high-performance nature and continuous operation. The cost of electricity, coupled with the cooling requirements to prevent overheating, contributes significantly to the overall maintenance expenses. Lastly, HPC systems have a limited lifespan. As technology advances, newer and more efficient components become available, rendering older systems less cost-effective to maintain and upgrading or replacing HPC infrastructure can be a significant financial burden.

Additionally, HPC systems demand regular maintenance to ensure optimal performance and reliability. Regular software updates, security patches, and system tuning are essential to keep the HPC infrastructure running smoothly, but they require ongoing investments in human resources and licensing fees.

Due to the high cost of HPC maintenance, ongoing maintenance conditions, power consumption, and the demand for periodic upgrades, the market might face some downfall. Despite these expenses, the immense computational power and profits derived from HPC makes it a valuable investment for organizations that rely on difficult data analysis and simulations.

Market Segmentation

Global cloud high performance computing (HPC) market is segmented based on component, deployment type, industrial application, and region. Based on component, the market is divided into hardware (servers, storage devices, systems, and networking devices), software, and services. Based on deployment type, the market is divided into on-premises, cloud. Based on industrial application, the market is divided into aerospace and defense, energy and utilities, BFSI, media and entertainment, manufacturing, life science, and healthcare. Based on region, the market is further bifurcated into North America, Asia-Pacific, Europe, South America, and Middle East & Africa.

Market player

Major market players in the global cloud high performance computing (HPC) market Advanced Micro Devices Inc., Hewlett Packard Enterprise, Sugon Information Industry Co. Ltd, Fujitsu Ltd, Intel Corporation, International Business Machines Corporation, Microsoft Corporation, Dell Technologies Inc., Dassault Systems SE, and Lenovo Group Limited.

Report Scope:

In this report, the global cloud high performance computing (HPC) market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

Cloud High Performance Computing (HPC) Market, By Component:

Hardware

Servers

Storage Devices

Systems

Networking Devices

Software

Services

Cloud High Performance Computing (HPC) Market, By Deployment Type:

On-premises

Cloud

Cloud High Performance Computing (HPC) Market, By Industrial application:

Aerospace and Defense

Energy and Utilities

BFSI

Media and Entertainment

Manufacturing

Life Science

Healthcare

Cloud High Performance Computing (HPC) Market, By Region:

North America

United States

Canada

Mexico

Asia-Pacific

China

India

Japan

South Korea

Australia

Europe

Germany

United Kingdom

France

Spain

Italy

South America

Brazil

Argentina

Colombia

Middle East & Africa

Saudi Arabia

South Africa

UAE

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the global cloud high performance computing (HPC) market.

Available Customizations:

With the given market data, Tech Sci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

Company Information

Detailed analysis and profiling of additional market players (up to five).

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