HYPERION RESEARCH

Market Forecast

Worldwide HPC Broader Market Forecast Update, 2018–2023

Earl Joseph, Steve Conway, Bob Sorensen, and Alex Norton
June 2019

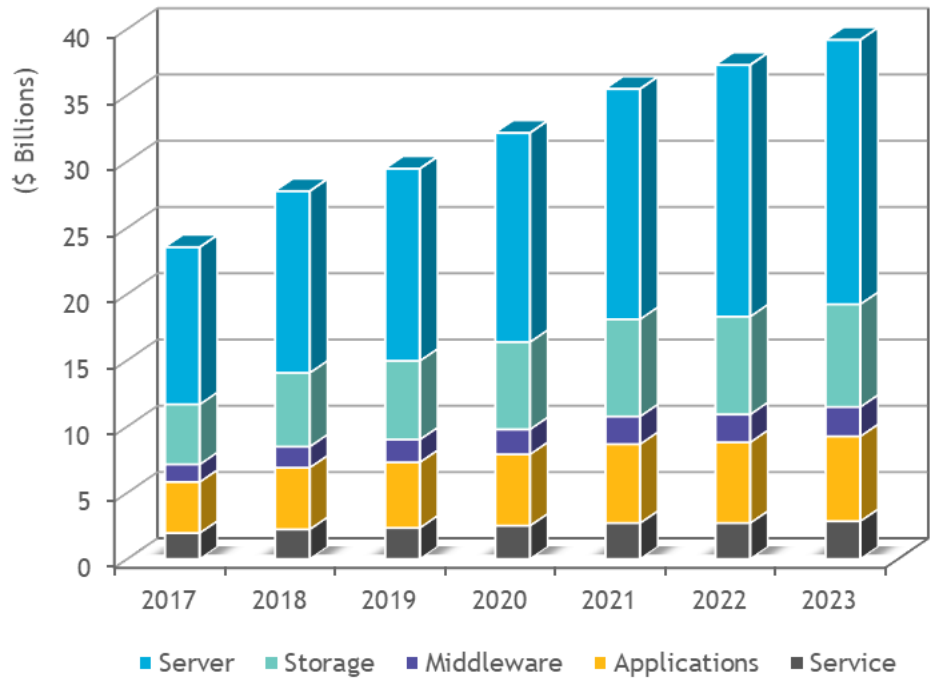
HYPERION RESEARCH OPINION

Worldwide HPC Broader Market Revenue Snapshot

Hyperion Research forecasts that the worldwide HPC broader market (servers, storage, software, and service) will expand at a 7.1% CAGR to more than $39.2 billion in 2023, up from $27.8 billion in 2018. See Figure 1.

FIGURE 1

Broader Market Revenue Trends



Source: Hyperion Research 2019

Note: This page is intentionally blank.

©2019 Hyperion Research

IN THIS REPORT

This Hyperion Research study presents our latest five-year forecast (2018-2023) for HPC server systems. Worldwide revenue for the HPC technical server market grew 15.6% from 2017 to 2018 to a record $13.7 billion. Hyperion Research predicts the HPC technical server market will grow at a 7.8% CAGR between 2018 and 2023 to reach $19.9 billion by 2023.

- The Supercomputer market segment for HPC systems priced at $500,000 and up is projected to show the highest growth rate (8.6% CAGR), albeit with significant spikes in the 2021-2023 time frame as several exascale systems around the world come on line.
- The Divisional and Departmental segments will exhibit healthy growth (7.4% and 7.2% five-year CAGRs, respectively), and the Workgroup segment will continue to rebound following several years of stagnation (7.1% CAGR).

TABLE 1

Worldwide Total Technical Computer Market Revenue Forecast by Competitive Segment

	2017	2018	2019	2020	2021	2022	2023	CAGR 18-23
Supercomputer	4.4	5.4	5.7	6.3	7.1	8.1	8.1	8.6%
Divisional	2.2	2.4	2.6	2.8	3.0	3.2	3.5	7.4%
Departmental	3.5	3.9	4.1	4.4	4.8	5.1	5.5	7.2%
Workgroup	1.8	2.0	2.1	2.3	2.5	2.6	2.8	7.1%
Total	11.9	13.7	14.5	15.8	17.4	19.0	19.9	7.8%

Source: Hyperion Research, 2019

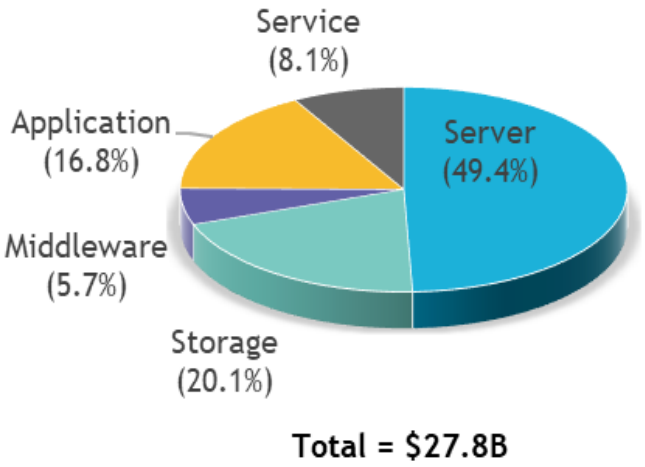
THE BORADER MARKET FORECAST

Hyperion Research forecasts that the worldwide HPC broader market (servers, storage, software, and service) will expand at a 7.1% CAGR to more than $39.2 billion in 2023, up from $27.8 billion in 2018.

- Within the HPC market, servers are the fastest growing segment. Hyperion Research estimates 2018 HPC-related storage revenue at $13.7 billion, growing to $19.9 billion in 2023, a 7.8% CAGR (See Table 2).

FIGURE 2

2018 Revenues by the Broader HPC Market Areas



Source: Hyperion Research 2019

TABLE 2

Revenues by the Broader HPC Market Areas ($Billions)

	2017	2018	2019	2020	2021	2022	2023	CAGR 18-23
Server	11.9	13.7	14.5	15.8	17.4	19.0	19.9	7.8%
Storage	4.5	5.6	5.9	6.6	7.3	7.4	7.8	6.9%
Middleware	1.3	1.6	1.7	1.9	2.1	2.1	2.2	6.8%
Applications	3.9	4.7	4.9	5.4	6.0	6.1	6.4	6.6%
Service	2.0	2.2	2.4	2.5	2.7	2.7	2.9	4.9%
Total Revenue	23.5	27.8	29.5	32.2	35.5	37.3	39.2	7.1%

Source: Hyperion Research 2019

MARKET CONTEXT: MARKET GROWTH DRIVERS

Hyperion Research predicts the HPC technical server market will grow at a 7.8% CAGR between 2018 and 2023 to reach $19.9 billion in 2023. Several factors are driving strong growth rates across all segments of the HPC sector and that growth will continue to outpace the growth rate projected for the general-purpose enterprise IT server sector:

- The worldwide exascale race will likely result in multiple, $300 million plus exascale-class supercomputers and several large, $100 million plus supercomputers being installed during the forecast period.
- New and rapidly growing opportunities are emerging to support the continued migration and expansion of enterprise HPC workloads to HPC on premise, private cloud and other cloud-based ecosystems. A key development going forward is the emergence of so-called containers that orchestrate computing, networking, and storage infrastructure on behalf of user workloads between on-prem and cloud HPC platforms.
- The seemingly endless roll-out of new algorithms, applications and use cases in machine and deep learning will continue to drive interest in HPCs that can provide fast, capable performance for even the most aggressive training, inferencing and decision support tasks.
- The continued expansion of HPCs in the traditional modeling and simulation environment as more commercial and government users turn to advanced computing to meet their toughest computational requirements for larger problem sizes, higher modeling fidelity, and more aggressive iteration methods, all operating under the requirement for faster turnaround time.
- The growing proliferation of IoT devices that will drive some HPC computing to the edge and at the same time place new demands on HPC centers to process the vast amounts of collected IoT data will also add to HPC workloads everywhere. This IoT infrastructure will grow in tight synchronization with the global proliferation of 5G high-speed telecommunications networks.
- Despite the extreme nascent state of quantum computing development today, activity in the highly visible quantum computing sector will create additional markets for HPCs to be used as quantum simulators to help development of quantum computing algorithms. In addition, quantum algorithm development will increasingly require HPC capability to validate and verify new or emergent quantum algorithms.

MARKET SEGMENT DEFINITIONS

This Hyperion Research study presents an overview of Hyperion Research's forecast for the HPC server market for the 2018–2023 period. The data in this study is based on Hyperion Research's segmentation of the technical market, which is as follows:

- **Supercomputers:** Systems purchased to support technical applications and sold for $500,000+
- **Technical divisional servers:** Systems purchased to support technical applications and sold for $250,000–$499,999
- **Technical departmental servers:** Systems purchased to support technical applications and sold for $100,000–$249,999
- **Technical workgroup servers:** Systems purchased to support technical applications and sold for under $100,000

Definition of Technical Computing (HPC)

Hyperion Research uses the terms *technical computing* and *high-performance computing (HPC)* to encompass the entire market for computer servers used by scientists, engineers, analysts, and other groups using computationally and/or data-intensive modeling and simulation applications.

Technical servers range from small servers costing less than $5,000 to the large-capability machines valued in hundreds of millions of dollars. In addition to scientific and engineering applications, technical computing includes related markets/applications areas such as economic analysis, financial analysis, animation, server-based gaming, digital content creation and management, business intelligence modeling, and homeland security database applications. These areas are included in the technical computing market based on a combination of historical development, application type, computational intensity, and associations with traditional technical markets.

METHODOLOGY

The forecasts in this study are based on a number of Hyperion Research information sources, including our technical computing systems quarterly census database, vendor results for the historical years, discussions with vendors and users on future business directions and expectations, end-user studies, and in-depth interviews with users.

The forecasts were developed based on Hyperion Research's technical computing systems forecast model, which targets compute servers. This model initially considers competitive segments (supercomputers, technical divisional servers, technical departmental servers, and technical workgroup servers), forecasting system unit shipments, revenue, and average sales price by industry/application segment. The forecasts include estimates for second-tier and new-entrant vendors selling into the HPC server market space.

The forecasts provided in this study include only server systems used in technical computing applications. Systems sold into commercial (nontechnical) applications and desktop technical computers are not included in this study.

Note: All numbers in this document may not be exact due to rounding.

About Hyperion Research, LLC

Hyperion Research provides data-driven research, analysis and recommendations for technologies, applications, and markets in high performance computing and emerging technology areas to help organizations worldwide make effective decisions and seize growth opportunities. Research includes market sizing and forecasting, share tracking, segmentation, technology and related trend analysis, and both user and vendor analysis for multi-user technical server technology used for HPC and HPDA (high performance data analysis). We provide thought leadership and practical guidance for users, vendors and other members of the HPC community by focusing on key market and technology trends across government, industry, commerce, and academia.

Headquarters

365 Summit Avenue
St. Paul, MN 55102
USA
612.812.5798
www.hpcuserforum.com and www.HyperionResearch.com

Copyright Notice

Copyright 2019 Hyperion Research LLC. Reproduction is forbidden unless authorized. All rights reserved. Visit www.hpcuserforum.com or www.HyperionResearch.com to learn more. Please contact 612.812.5798 and/or email info@hyperionres.com for information on reprints, additional copies, web rights, or quoting permission.