HYPERION RESEARCH

Market Forecast

Worldwide HPC External Storage Market Forecast Update, 2016–2021, by Region and by Verticals

Earl Joseph, Steve Conway, Bob Sorensen, and Kevin Monroe
July 2017

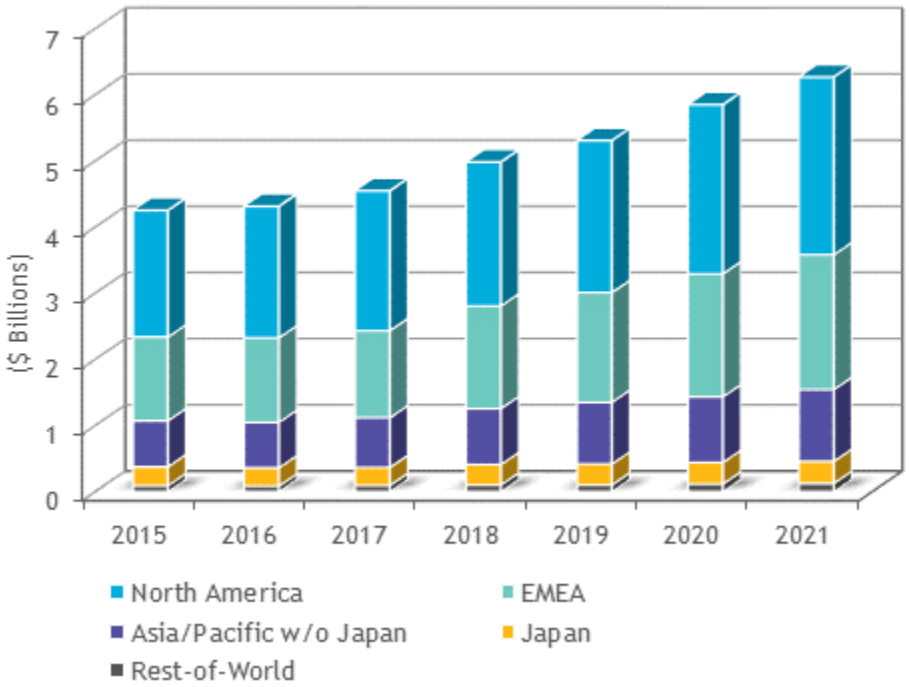
HYPERION RESEARCH OPINION

Worldwide HPC External Storage Market Revenue Snapshot

Hyperion Research forecasts that the worldwide HPC broader market (servers, storage, software, and service) will expand at a 6.2% CAGR to more than $30 billion in 2021, up from $22 billion in 2016. Figure 1 shows the worldwide revenue forecast for external storage by geographic region. External HPC storage refers to storage located outside of the server cabinets and can include solid-state, disk, and tape media.

FIGURE 1

HPC External Storage Revenue Trends by Region



Source: Hyperion Research 2017

Note: this page is intentionally blank.

IN THIS REPORT

This Hyperion Research study presents our latest five-year forecast for the HPC external storage market covering the 2016–2021 period.

The HPC Server System Market

Worldwide revenue for the HPC technical server market grew 4.7% from 2015 to 2016 to a record $11.2 billion. Hyperion Research predicts CAGR growth of 5.8% to $14.8 billion in 2021 (Table 1).

- The Supercomputer market segment for HPC systems priced at $500,000 and up will show the highest growth rate (6.9% CAGR), driven substantially by the global exascale race.
- The Divisional and Departmental segments will continue to exhibit healthy growth, and the Workgroup segment will rebound to robust growth following several years of decline.

TABLE 1

Worldwide Total Technical Computer Market Revenue Forecast by Competitive Segment

	2015	2016	2017	2018	2019	2020	2021	CAGR 16-21
Supercomputer	$3.3	$4.1	$4.4	$4.3	$4.6	$5.2	$5.7	6.9%
Divisional	$2.2	$2.3	$2.4	$2.5	$2.7	$2.7	$2.8	4.6%
Departmental	$4.0	$3.1	$3.4	$3.5	$3.7	$3.9	$4.1	5.2%
Workgroup	$1.9	$1.7	$1.9	$1.9	$2.0	$2.1	$2.2	5.5%
Total	$10.7	$11.2	$12.0	$12.3	$13.0	$14.0	$14.8	5.8%

Source: Hyperion Research, 2017

The HPC Broader Market

Additional HPC-related technologies including storage, middleware, applications, and service doubled the total revenue for the HPC sector to $22.4 billion in 2016, with a projected CAGR of 6.2% between 2016 and 2021 resulting in a total HPC revenue base of over $30 billion in 2021.

Within the HPC market, storage is the fastest growing segment. Hyperion Research estimates 2016 HPC-related storage revenue at $4.3 billion, growing to $6.3 billion in 2021, a 7.8% CAGR (See Table 2).

TABLE 2

Revenues by the Broader HPC Market Areas

	2015	2016	2017	2018	2019	2020	2021	CAGR 16-21
Server	$10.7	$11.2	$12.0	$12.3	$13.0	$14.0	$14.8	5.8%
Storage	$4.3	$4.3	$4.5	$5.0	$5.3	$5.8	$6.3	7.8%
Middleware	$1.3	$1.3	$1.3	$1.4	$1.5	$1.7	$1.8	6.9%
Applications	$3.7	$3.7	$3.9	$4.2	$4.4	$4.8	$5.1	6.3%
Service	$1.9	$1.9	$2.0	$2.0	$2.1	$2.2	$2.3	3.9%
Total Revenue	$21.9	$22.4	$23.7	$24.9	$26.3	$28.5	$30.3	6.2%

Source: Hyperion Research 2017

THE HPC EXTERNAL STORAGE MARKET BY REGION

As Table 3 shows, Hyperion Research forecasts that HPC external storage revenue will expand fastest during the period 2016-2021 in EMEA (9.8% CAGR) and Asia-Pacific without Japan (9.6% CAGR). External HPC storage growth in North America will remain robust (6.2% CAGR) but not as strong as in these two regions.

TABLE 3

HPC External Storage Market Revenue By Region ($B)

	2015	2016	2017	2018	2019	2020	2021	CAGR 16-21
North America	$1.91	$1.99	$2.11	$2.18	$2.30	$2.56	$2.69	6.2%
EMEA	$1.27	$1.28	$1.32	$1.55	$1.66	$1.86	$2.04	9.8%
Asia/Pacific w/o Japan	$0.70	$0.69	$0.75	$0.85	$0.93	$0.99	$1.08	9.6%
Japan	$0.29	$0.28	$0.27	$0.31	$0.32	$0.33	$0.33	3.9%
Rest-of-World	$0.09	$0.09	$0.10	$0.10	$0.10	$0.12	$0.13	7.9%
Total	$4.25	$4.32	$4.55	$4.98	$5.31	$5.85	$6.27	7.8%

Source: Hyperion Research 2017

THE 2016 HPC EXTERNAL STORAGE MARKET BY VERTICALS/APPLICATION AREAS

Table 4 displays 2016 worldwide revenues for HPC external storage by vertical segments/application areas. The three largest markets for HPC external storage in 2016 were defense, government labs, and the university/academic segment. These three were also the largest segments for HPC server revenue in 2016.

TABLE 4

2016 HPC External Storage Market Revenue By Vertical/Application Area ($M)

Vertical/Application Area	2016 ($ Millions)	Percentage of External Storage
Bio-Sciences	$371	8.6%
CAE	$452	10.5%
Chemical Engineering	$65	1.5%
DCC & Distribution	$268	6.2%
Economics/Financial	$213	4.9%
EDA	$279	6.5%
Geosciences	$286	6.6%
Mechanical Design	$16	0.4%
Defense	$785	18.2%
Government Lab	$739	17.1%
University/Academic	$656	15.2%
Weather	$165	3.8%
Other	$21	0.5%
Total	$4,316	100.0%

Source: Hyperion Research 2017

Growth Drivers

Hyperion Research is expecting a number of factors to drive healthy growth rates across all segments of the HPC sector going forward and that growth will likely outstrip the growth rate expected for the general-purpose enterprise IT server sector.

These drivers include:

- Requirements for new HPC systems with a broad range of architectures to support development and operational capabilities in the artificial intelligence sector - especially in the area of deep learning.
- New and rapidly growing opportunities to support the continued migration and expansion of enterprise HPC workloads to cloud-based ecosystems. Hyperion expects that in many cases, HPC in the cloud operations will be used not as a replacement scheme but instead to augment critical on-premise HPCs capabilities. Additional growth will come as these HPC in the cloud offerings support a wider range of virtual environments targeted for key application sectors, lowering the barriers to entry for a host of new HPC users.
- The expanding role and diversity of new big data analytics running in non-traditional HPC environments, especially in the finance, personalized medicine, and cyber security sectors. Of particular import will be the ability of HPC systems to empower big data analysis on a near-real time basis, an increasingly necessary requirement for many application spaces.
- The continued expansion of HPCs into the traditional modeling and simulation environment as more and 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.

METHODOLOGY

The forecasts in this study are based on a number of information sources, including Hyperion Research's 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, consisting of the former IDC high performance computing (HPC) analyst team, provides HPC information, analysis, and recommendations based on technology and market trends. Research includes market sizing and forecasting, share tracking, segmentation, technology and related trend analysis, and both user & 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.HPCatHyperion.com
