

## Market Forecast

### Worldwide Regional HPC Server Market Forecast, 2018-2023

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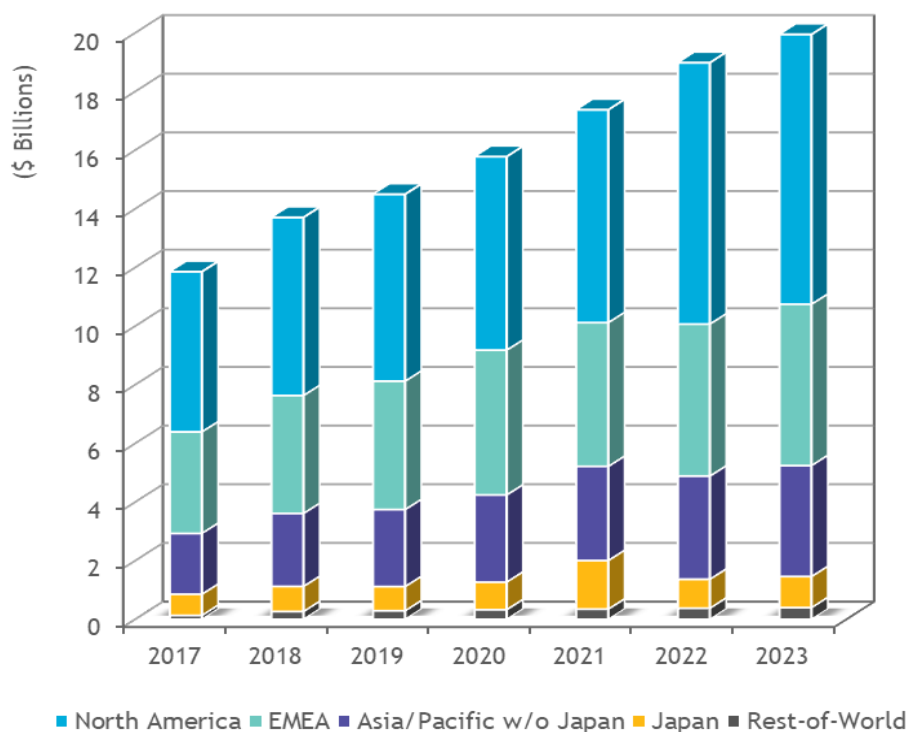
#### HYPERION RESEARCH OPINION

#### Worldwide Regional HPC Market Forecast

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 (see Figure 1). In 2023, the North American HPC server market will be, as it is today, the largest single market with 46% of global share. The Asia/Pacific region and the North American region are projected to be the two fastest growing regions with 8.7% CAGRs each during 2018-2023.

FIGURE 1

HPC Server Market Revenue by Region (\$B)



Source: Hyperion 2019

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## IN THIS REPORT

This Hyperion Research report presents our latest five-year forecast for the regional HPC server market covering the 2018-2023 period and the 2018 HPC server market sales figures for each of the 21 countries and five regions that we track in detail.

### The HPC Server System Market

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 (\$ Billions)

	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 HPC Regional Market Forecast

In 2023, the North American HPC server market will be, as it is today, the largest single market with 46% of global share. The Asia/Pacific region and the North American region are projected to be the two fastest growing regions with an 8.7% CAGR during 2018-2023.

- China will be a major driver of the overall Asia/Pacific regional growth, driven in large part by their supercomputer sector, projected to grow by over 12% CAGR between 2018 and 2023.
- Japan will have the slowest growth of the regions covered at 4.4% CAGR between 2018-2023.

- Table 2 shows EMEA (primarily Europe) trailing the North American growth rate with a 6.5% CAGR. However, increased interest by the EU in building up their base of near-exascale and exascale systems could affect growth rates in the next few years.

**TABLE 2**

**HPC Server Market Revenue by Region (\$ Billions)**

	2017	2018	2019	2020	2021	2022	2023	CAGR 18-23
North America	5.46	6.07	6.37	6.60	7.25	8.91	9.20	8.7%
EMEA	3.46	4.02	4.38	4.94	4.91	5.18	5.50	6.5%
Asia/Pacific w/o Japan	2.08	2.49	2.62	2.97	3.21	3.52	3.78	8.7%
Japan	0.72	0.86	0.83	0.94	1.66	0.99	1.06	4.4%
Rest-of-World	0.14	0.27	0.29	0.33	0.35	0.38	0.40	8.3%
<b>Total</b>	<b>11.85</b>	<b>13.71</b>	<b>14.49</b>	<b>15.78</b>	<b>17.38</b>	<b>18.98</b>	<b>19.95</b>	<b>7.8%</b>

Source: Hyperion Research 2019

**The 2018 HPC Country Market Revenues**

Table 3 shows the 2018 annual HPC server market sales figure for each of the 26 countries/regions that we track in detail in our country-level HPC database product. The US HPC server market was worth \$5.8 billion in 2018, and it is the largest country/region tracked at almost five times larger than the next largest country, China, at \$1.2 billion.

- The three next biggest markets are Germany (\$1,005 million), Japan (\$856 million) and France (\$708 million).
- Of the 26 countries/regions that Hyperion Research tracks, 14 have annual HPC server sales of less than \$200 million.

**TABLE 3****2018 HPC Server Market Revenue by Country (\$ Millions)**

No.	Country	2018
1	USA	5,817
2	China	1,181
3	Germany	1,005
4	Japan	856
5	France	708
6	UK	508
7	Australia	428
8	Korea	427
9	Italy	369
10	Canada	252
11	Middle East & Africa	220
12	Central Eastern Europe	205
13	India	198
14	Rest of Europe	183
15	Spain	173
16	Rest of Latin America	170
17	Russia	169
18	Sweden	152
19	Singapore	141
20	Rest of A/P	109
21	Switzerland	102
22	Brazil	98
23	Norway	84

**TABLE 3****2018 HPC Server Market Revenue by Country (\$ Millions)**

No.	Country	2018
24	Netherlands	70
25	Denmark	42
26	Finland	35
Total WW HPC		13,702

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

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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

## METHODOLOGY

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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.

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