



HYPERION RESEARCH

Tech Spotlight: Trends in HPC Processors and Coprocessors

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*Earl Joseph, Steve Conway,
Bob Sorensen and Alex Norton*

Processors Summary

The x86-64 processor base has solidified its overwhelming lead as the processor of choice for the HPC sites surveyed.

- Within the last two years, the number of RISC processors identified at respondent sites has declined by over 40%, while the reported use of vector processors has essentially disappeared.
- It is worth noting the appearance of a new albeit small presence of custom processors in the survey, reflecting some of the new custom chips being used in experimental HPCs around the world, such as those in leading-edge Chinese-built systems.

HPC Base Processor Historic Installations

CPU Type	2014	2015	2016
RISC	139,028	89,431	86,131
Vector	7,220	7,680	
x86-64	3,025,692	3,219,689	3,371,227
Custom			40,960
Total Sum of WW Processor Package Volume	3,171,940	3,316,800	3,498,318

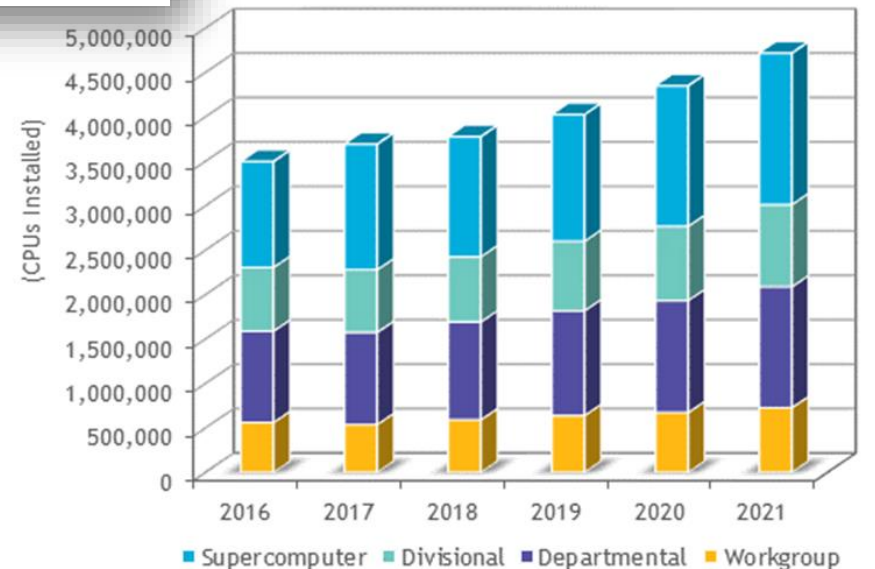
Source: Hyperion Research, 2017

HPC Base Processors by Competitive Segment

HPC Historic Installations: Number of Base Processors by Competitive Segment

	2014	2015	2016
Supercomputer	852,397	945,607	1,190,586
Divisional	488,992	611,064	717,358
Departmental	1,357,651	1,245,607	1,028,889
Workgroup	472,900	514,522	561,484
Total Nodes Installed	3,171,940	3,316,800	3,498,318

Source: Hyperion Research, 2017



Processor Preferences for Next System Purchase

	Number of Responses	Percentage of Sample
Intel (x86)	76	73.8%
AMD (x86)	8	7.8%
Power & Open Power	9	8.7%
SPARC (all SPARC-based processors)	6	5.8%
Other	4	3.9%
N=103		

Source: Hyperion Research, 2017

Based on the fifth edition of the HPC end-user Special Study Hyperion Research conducted with one or more representatives of 111 HPC sites around the world.

- These sites had a total of 972 technical server systems installed, and the average in the present study was 8.8 systems per site.

Vendor Market Shares, by Processors Installed in 2016

	Base Processors Installed	2016 Market Share
HPE/HP	1,328,294	38.0%
Dell	749,643	21.4%
Lenovo	370,830	10.6%
Cray	141,748	4.1%
Sugon (Dawning)	119,249	3.4%
IBM	71,006	2.0%
Fujitsu	43,995	1.3%
Wuxi	40,960	1.2%
SGI	38,091	1.1%
Bull Atos	27,742	0.8%
NEC	23,040	0.7%
Other	543,720	15.5%
Total	3,498,318	100.0%

Source: Hyperion Research, 2017

Mix of Number of Processors, of All Types at the Sites Surveyed

	Number of Responses	Percentage of Sample
≤ 16	7	6.8%
17 to 32	5	4.9%
33 to 64	7	6.8%
65 to 128	9	8.7%
129 to 512	21	20.4%
513 to 999	10	9.7%
1,000 to 4,999	17	16.5%
5,000 to 9,999	13	12.6%
10,000 to 24,999	6	5.8%
25,000 to 100,000	4	3.9%
> 100,000	4	3.9%
N=103		

Source: Hyperion Research, 2017

Data from previously cited study

Use of GPUs or Coprocessors on HPC Applications in 2017

Percentage of HPC Applications that Use GPUs or Coprocessors

Usage Level	Percentage
0	30.9%
≤ 5%	23.6%
6-10%	11.8%
11-25%	19.1%
26-50%	8.2%
> 50%	6.4%
N=110	

Source: Hyperion Research, 2017

Data from previously cited study

GPU/Accelerator/Coprocessor Preference for their Next Technical Server

	Responses	Percentage of Sites
None	24	23.3%
NVIDIA GPU	38	36.9%
Intel Phi	19	18.4%
ATI (ATI/AMD Fusion Processors)	5	4.9%
FPGA	10	9.7%
TI/DSP	3	2.9%
Other	4	3.9%
N=103		

Source: Hyperion Research, 2017

Data from previously cited study



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Questions?



ejoseph@hyperionres.com

sconway@hyperionres.com

bsorensen@hyperionres.com

anorton@hyperionres.com

jeansorensen@hyperionres.com

mthorp@hyperionres.com

kgantrish@hyperionres.com