



HPC Budget Allocation Map: Industry Averages

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EXECUTIVE SUMMARY

Intersect360 Research surveyed the High Performance Computing user community to complete its sixth Site Budget Allocation Map, a look at how HPC sites divide and spend their budgets. We surveyed users on their spending in seven top-level categories: hardware, software, facilities, staffing, services, cloud/utility computing, and other. Each category was further divided into constituent subcategories, resulting in 25 unique items included in the analysis.

This report provides the average budget distribution for the responding sites within each category and presents a view of the entire HPC budget distribution and IT product spending (excluding facilities and staffing).

Important highlights from this study include:

- The overall share spent on hardware declined slightly in 2013 after a robust increase in 2012. We see this as a rebalancing of expenditures after many sites refreshed their server installations, rather than a slowdown. When asked for future budget trends, 55% (30 out of 54) of the sites who provided qualitative input on budget trends expected an increase in hardware spending. Servers continue to lead spending within the hardware segment, followed by storage and networks.
- Staffing continued as the second-largest overall expense. For the last four surveys, average spending on staffing has decreased. Some staff, particularly maintenance and repair, may be being replaced with services as the share spent on services has increased. System management and operations and application programmers account for about half of the staffing budget.
- Software as a share of the overall HPC budget has remained extremely stable at about 14%, with the least amount of fluctuation over the survey years. The requirement of software, both in good times and bad, is most likely contributing to this stability. System software and software tools represent the largest share of expenditures within software, accounting for a combined share of 45% of the HPC software budget.
- Cloud/Utility/Outsourcing computing is still a very small percentage of overall HPC expenditures with less than 4% share. We did see an increase in spending in 2013, particularly in the financial services industry where the vast majority of these sites were referring to private cloud.
- Almost half (47%) of all respondents expect their budgets to increase more than 5% over the next two years, and 45% expect little or no change in budgets. The government sector has the lowest growth expectations.

TECHNOLOGIES COVERED IN THIS REPORT

- HPC system elements
 - Systems, clusters
 - HPC Clusters
 - Supercomputers
 - Server technologies
- Processor elements
 - System processors
- Storage elements
 - Storage systems
 - Network-attached storage (NAS)
 - Storage area networks (SAN)
 - Direct-attached storage (DAS)
 - Cloud storage
 - Storage components
 - Storage software
- Software elements
 - Operating systems
 - Linux-based
 - Middleware
 - Cluster management
 - Job scheduling
 - Load balancing
 - Cloud management
 - Virtualization
 - Other middleware
 - Developer tools
 - Programming models (e.g. MPI, OpenMP)
 - Compilers and languages
 - Developer environments (IDEs)
 - Libraries
 - Accelerator-specific optimization tools (e.g. CUDA, OpenCL)
 - Debuggers
 - Parallel programming tools
 - Other development and optimization libraries and tools
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 - Application software
 - Independent software vendor (ISV) or third-party (purchased/licensed) applications
 - In-house developed applications
- Facilities-level technologies

- Services
 - Programming services
 - Maintenance services
- Cloud computing, grid computing, utility computing
 - Public cloud technologies
 - Private cloud technologies
 - XaaS models, such as SaaS, IaaS, PaaS, and HPC as a Service (“HPCaaS”)
 - Cloud bursting