

## 2017 Budget Map

### Welcome

Thank you for taking a few minutes to complete our survey. The objective of this survey is to better understand how High Performance Computing budgets are distributed between the various products types and expense items within your HPC environment. This data will be used to help create total market models and forecasts. Intersect360 Research will aggregate the data and will not identify individual sites with their responses.

In this study we will first ask for top-level budget distributions, and then ask for distributions within second-level categories. Percentages, not actual amounts, are requested. Please respond at the level of accuracy you feel most comfortable with, and feel free to skip questions you consider sensitive information.

At the end of the survey, we ask for some demographic information. This is an important component of our research, allowing us to examine different views of the aggregated data.

Please contact Chris Willard at [Chris@Intersect360.com](mailto:Chris@Intersect360.com) if you have any questions or comments.

Thank you again for your help.

## 2017 Budget Map

### Country

**\* Please choose the country in which your organization resides. (not headquarters, your facility)**

- |  |                                    |                                      |
|--|------------------------------------|--------------------------------------|
| <input type="radio"/> Australia              | <input type="radio"/> India        | <input type="radio"/> Saudi Arabia   |
| <input type="radio"/> Austria                | <input type="radio"/> Ireland      | <input type="radio"/> Singapore      |
| <input type="radio"/> Belgium                | <input type="radio"/> Israel       | <input type="radio"/> South Africa   |
| <input type="radio"/> Brazil                 | <input type="radio"/> Italy        | <input type="radio"/> Spain          |
| <input type="radio"/> Canada                 | <input type="radio"/> Japan        | <input type="radio"/> Sweden         |
| <input type="radio"/> China                  | <input type="radio"/> Korea, South | <input type="radio"/> Switzerland    |
| <input type="radio"/> Czech Republic         | <input type="radio"/> Netherlands  | <input type="radio"/> Taiwan         |
| <input type="radio"/> Denmark                | <input type="radio"/> New Zealand  | <input type="radio"/> Thailand       |
| <input type="radio"/> Finland                | <input type="radio"/> Norway       | <input type="radio"/> Ukraine        |
| <input type="radio"/> France                 | <input type="radio"/> Poland       | <input type="radio"/> United Kingdom |
| <input type="radio"/> Germany                | <input type="radio"/> Russia       | <input type="radio"/> United States  |
| <input type="radio"/> Other (please specify) |                                    |                                      |

## 2017 Budget Map

Qualifier  
#1

**\* Does your organization run any type of HPC applications? (Note if you run HPC type application on any size machine including entry level or midrange systems you ARE qualified for this study)**

For the purposes of this study we define HPC as:

*High Performance Computing (HPC) is the use of servers, clusters, and supercomputers – plus associated software, tools, components, storage, and services – for scientific, engineering, or analytical tasks that are particularly intensive in computation, memory usage, or data management. HPC is used by scientists and engineers both in research and in production across industry, government, and academia. Within industry, HPC can frequently be distinguished from general business computing in that companies generally will use HPC applications to gain advantage in their core endeavors – e.g., finding oil, designing automobile parts, or protecting clients' investments – as opposed to non-core endeavors such as payroll management or resource planning.*

Yes

No

## 2017 Budget Map

Qualifier  
#2

**\* What is the primary use or application category running on your HPC system? e.g., digital content creation, quantum chromodynamics research, designing airplanes.**

## 2017 Budget Map

Qualifier  
#3

**\* Are you responsible for or have in-depth knowledge of your HPC IT budget and how it is distributed across various expense items (hardware, software, facilities, staffing, etc.)?**

Yes

No

Qualifier  
#4

**\* Do you work for a computer hardware or software vendor that sells to HPC users?**

*If you are managing the HPC facility on contract, please provide the demographics of the HPC facility and note the connection in the contact section at the end of the survey.*

Yes

No

## 2017 Budget Map

### Introduction

\* What is the name of your company/institution/organization that you are responding for?

\* What is your job title?

\* For the purpose of this survey, please choose the budget level for which you are responding.

- Centralized HPC facility:** HPC resources for a broad spectrum of users within your overall organization (e.g. corporate-wide facility, national facility, university-wide facility, etc.)
- Divisional facility:** Provides access to HPC resources to a major sub-division of the organization (e.g. product engineering, national bio-sciences resource, engineering school)
- Workgroup or lab servers:** Resources that are maintained by an operational unit as tools to help them address their primary research, development, or analysis activities.
- Individual servers or workstations:** Resources assigned to specific individuals, small groups, or labs to help them address their primary research, development, or analysis activities.
- Other, please specify**

## 2017 Budget Map

### Total Budget Distribution

**\* What share of your total annual HPC budget would you assign to each of the following major categories? (Please total to 100%.)**

**Note: If an item is not in your budget, but rather paid for by someone else, mark it as NIB. If an item is theoretically in your budget but you are not currently paying anything, mark it as 0%.**

**Hardware:** purchases and upgrades, including servers, storage, networks, clients, and other.

**Software:** purchases and upgrades, including O/S and systems software, middleware, applications, tools/libraries/compilers, in-house developed and other

**Facilities:** spending, including building/floor space, power consumption, cooling, and other.

**Staffing:** including system managers, maintenance personnel, systems programmers, applications programmers, user services consultants, and others.

**Services:** purchases, including maintenance and repair, external training, programming, and other.

**Public Cloud/Utility/Outsource:** purchases of computational capacity/capability through an utility-based service, including raw compute cycles, storage, software as a service, environment hosting, and other. *Please include expenditures for public only.*

**Other:** Anything not covered above, please specify below

**If you had budget expenses included in OTHER, please specify type of expenditures.**



## 2017 Budget Map

### Hardware Budget Distribution

**What share of your hardware budget would you assign to each of the following major categories?  
(Please total to 100%; skip if no expenditures in this category)**

**Note: If an item is not in your budget, but rather paid for by someone else, mark it as NIB. If an item is theoretically in your budget but you are not currently paying anything, mark it as 0%.**

**Server purchases and upgrades:** all sizes and types of multi-user or special-purpose systems, including expenditures on GPUs, accelerators, FPGAs, and many core upgrades, that are purchased through your budget.

**Storage hardware purchases and upgrades,** including direct attached storage, NAS, SAN, etc., but not including storage software such as file systems.

**Network purchases and upgrades.**

**Client computer purchases and upgrades,** including: workstations, personnel computers, handheld devices, and other specialized equipment or interfaces.

**Other hardware,** please specify below

**Please specify the type of OTHER HARDWARE expenditures.**

**Approximately what percent of your hardware budget is spent on leasing systems?**

Leased (%)

## 2017 Budget Map

### Software Budget Distribution

What share of your software budget would you assign to each of the following major categories?  
(Please total to 100%; skip if no expenditures in this category)

**Note:** *If an item is not in your budget, but rather paid for by someone else, mark it as NIB. If an item is theoretically in your budget but you are not currently paying anything, mark it as 0%.*

**System software** purchases, licenses, and upgrades, including operating systems, drivers, bundled hardware management tools, etc.

**Middleware** purchases, licenses, and upgrades, including workload managers, load balancing, grid management tools, system monitoring and accounting packages, etc.

**Software tool** purchases, licenses, and upgrades, including: compilers, libraries, profilers, debuggers, parallel computer environments (e.g., MPI), etc.

**Storage management** software purchases, licenses, and upgrades, including file system licenses, volume managers, etc.

**Third-party (ISV) applications** software purchases, licenses, and upgrades.

**Transfer costs for software developed in house**, including software developed by dedicated staff, consultants, etc. **Note:** This item should cover any transfer costs that "pay" for the software internally. We will capture in-house software developer's salaries in a later question on Staffing.

**Other software**, please specify below

**Please specify the type of OTHER SOFTWARE expenditures.**

## 2017 Budget Map

### Facilities Budget Distribution

What share of your facilities budget would you assign to each of the following major categories?  
(Please total to 100%; skip if no expenditures in this category.)

**Note:** *If an item is not in your budget, but rather paid for by someone else, mark it as NIB. If an item is theoretically in your budget but you are not currently paying anything, mark it as 0%.*

**Building/floor space**, including purchase, rental, overhead charges, and regular maintenance of the compute facility's building or floor space.

**Power consumption** for the computer systems and associated equipment, including storage systems, networks, etc.

**Cooling** for computer rooms and equipment.

**Other facilities costs**, please specify below:

Please specify type of **OTHER FACILITIES** expenditures.

## 2017 Budget Map

### Staffing Budget Distribution

**What share of your staffing budget would you assign to each of the following major categories?  
(Please total to 100%; skip if no expenditures in this category.)**

**Note: If an item is not in your budget, but rather paid for by someone else, mark it as NIB. If an item is theoretically in your budget but you are not currently paying anything, mark it as 0%.**

**Systems management and operations.** Staff responsible for day-to-day operations, troubleshooting, system balancing and optimization, etc.

**Maintenance personnel**, including maintenance of computer servers and clients and associated storage and networking equipment. **Note:** If maintenance is purchased through a services contract with an outside organization, please include that expense under services.

**System programmers**, including those primarily responsible for developing and maintaining software to enhance the OS and/or middleware capabilities.

**Applications programmers**, including those primarily responsible for developing and maintaining to support end user efforts and applications.

**User support and services personnel** primarily responsible for such activities as: helpline, internal training, documentation, applications porting, optimization and debugging support, etc.

**Other staffing**, please specify below

**Please specify type of OTHER STAFFING expenditures.**

## 2017 Budget Map

### Services Budget Distribution

What share of your services budget would you assign to each of the following major categories?  
(Please total to 100%; skip if no expenditures in this category.)

**Note:** *If an item is not in your budget, but rather paid for by someone else, mark it as NIB. If an item is theoretically in your budget but you are not currently paying anything, mark it as 0%.*

**Maintenance and repair**, including equipment repair and preventative maintenance contract services.

**Systems engineering** support for development of site requirements and specifications, RFPs, proposal evaluations, systems acceptance testing and evaluation, site planning, etc.

**Systems integration** support for physically integrating clusters, networks, storage systems, grids, etc., as specified by the site.

**Training**, training classes, seminars, etc. provided by external organizations.

**Programming:** Programming services provided by external organizations.

**Other service costs**, please specify below:

**Please specify type of OTHER SERVICE expenditures.**

## 2017 Budget Map

### Public Cloud/Utility/Outsource Budget Distribution

What share of your public cloud/utility/outsourcing budget would you assign to each of the following major categories? (Please total to 100%; skip if no expenditures in this category.)

**Note:** *If an item is not in your budget, but rather paid for by someone else, mark it as NIB. If an item is theoretically in your budget but you are not currently paying anything, mark it as 0%.*

**Raw Compute Cycles:** Purchase of computing cycles for which your organization supplies the application software.

**Storage:** Purchase of disk space located at a cloud provider's facility.

**Software as a Service:** Purchase of computing cycles AND ISV software within the cloud.

**Environment Hosting:** Use of a service to support virtually all computational tasks, with servers, storage, and software all being maintained by a 3rd party.

**Other public cloud/utility/outsourcing costs, please specify below:**

**Please specify type of OTHER PUBLIC CLOUD/UTILITY/OUTSOURCING expenditures.**

## 2017 Budget Map

### Budget Dynamics

#### What is your annual budget for HPC, including servers, software, storage, and services?

- Less than \$50,000
- \$50,000 to \$99,999
- \$100,000 to \$499,999
- \$500,000 to \$999,999
- \$1,000,000 to \$1,999,999
- \$2,000,000 to \$4,999,999
- \$5,000,000 to \$9,999,999
- \$10,000,000 and higher
- Not available

#### Compared to the prior year, how much has your HPC budget changed?

- Up by more than 20%
- Up by 10% to 20%
- Up by 5% to 10%
- Up by 1% to 5%
- No change(0%)
- Down by 1% to 5%
- Down by 5% to 10%
- Down by 10% to 20%
- Down by more than 20%

**Going forward (over the next 2 years), what change do you anticipate for your HPC budget:**

- Up by more than 20%
- Up by 10% to 20%
- Up by 5% to 10%
- Up by 1% to 5%
- No change(0%)
- Down by 1% to 5%
- Down by 5% to 10%
- Down by 10% to 20%
- Down by more than 20%

**Please list any areas in which you expect significant changes to your budget (increase or decrease) over the next two years?**



## 2017 Budget Map

### Machine Learning/Deep Learning

The following questions are focused on the current trends in deep neural networks, also referred to as deep learning, machine learning, and more generally, as artificial intelligence. For our purpose in this study, we will refer to all as machine learning.

**\* Is your organization currently running, implementing, or investigating any initiatives related to machine learning?**

- Yes, running machine learning programs now.
- Not running machine learning programs now, but working to implement them within the next year.
- Currently investigating whether to implement machine learning programs in the future.
- Not running or investigating machine learning.

## 2017 Budget Map

Machine Learning/Deep Learning  
cont.

**Considering both machine learning and HPC together, what has been the effect of the introduction of machine learning on the total budget for high-performance workloads?**

- Decline
- Relatively stable (within +/- 5%)
- Moderate increase (+5% to 20%)
- Sharp increase (+20% to 100%)
- Dramatic increase (spending more than doubled since introduction of machine learning)

**Is machine learning considered to be part of the same budget as HPC, or a separate budget?**

- Same budget
- Mixed - budgets are overlapping
- Different budget

**What hardware are the machine learning applications run on?**

- Same hardware as HPC
- HPC server with specialized nodes configured for machine learning
- Independent machine learning systems

**Is machine learning managed by the same personnel as HPC?**

- Same personnel
- Mixed (e.g. specialization within common teams)
- Different personnel

## 2017 Budget Map

### Demographic S

**How many employees does your organization have?**

- 1 to 49 employees
- 50 to 99 employees
- 100 to 249 employees
- 250 to 999 employees
- 1,000 to 4,999 employees
- 5000 or more employees

**\* Which of the following sectors best describes your organization?**

***If you contract to another organization and provided budget distributions for that organization, please provide sector data for that organization and not your own.***

- Commercial/Industrial
- Academic or Not-for-Profit Institution
- Government
- Other

## 2017 Budget Map

Demographics --  
Commercial/Industrial

### Which of the following best describes your Commercial/Industrial organization?

- Bio-sciences (pharmaceutical, genomics, medical device mftg. etc.)
- Chemical manufacturing and engineering (e.g., polymers, plastics)
- Consumer product manufacturing
- Large product manufacturing (aerospace, automotive, etc.)
- Electronics (semiconductors, electronic components, etc.)
- Energy (oil/gas exploration, alternative energy)
- Professional Services (engineering consulting, cloud service provider, etc.)
- Utilities (e.g., power generation distribution, telecommunications, pipeline management)
- Financial services or insurance
- Media/Entertainment
- Online Gaming
- Retail
- Transportation
- Ultrascale computing
- Other Commercial/Industrial -- Please specify below

## 2017 Budget Map

Demographics --  
Academic

**Which of the following best describes your ACADEMIC organization?**

- Public college/university
- Private college/university
- Multi-university consortium
- Not-for-profit research institution
- Other (please specify)

**Which of the following best describes your organization?**

- National research lab
- National military, defense, or homeland security organization
- National agency
- State or local government
- Other (please specify)

**2017 Budget Map**

Demographics --  
Other

**For other type of organization, please specify:**

## 2017 Budget Map

### Bio-sciences Subcategories

**Please choose the Bioscience subcategory that best applies for your company.**

- General Pharmaceutical
- Genomics
- Proteomics
- Medical device manufacturing
- Other (please specify)



## 2017 Budget Map

### Large Product Manufacturing Subcategories

**Please choose the Large Product Manufacturing subcategory that best applies for your organization.**

- Automotive
- Aerospace
- IT Systems and Software
- Government Contractor
- Other (please specify)

## 2017 Budget Map

### Electronics Subcategories

**Please choose the Electronics subcategory that best applies to your organization.**

- Semiconductor
- Circuit boards
- Electronic components
- Other (please specify)

## 2017 Budget Map

### Energy Subcategories

**Please choose the Energy subcategory that best applies your organization.**

- Oil/gas Exploration
- Alternative Energy - Solar
- Alternative Energy - Wind
- Other (please specify)

## 2017 Budget Map

### Professional Services Services

**Please choose the Professional Services subcategory that best applies to your organization?**

- Engineering Consulting
- Cloud Service Provider
- System Integration
- System Management
- Software Development
- Other (please specify)

**2017 Budget Map**

Utilities  
Subcategories

**Please choose the Utilities subcategory that best applies to your organization.**

- Power generation distribution
- Telecommunications
- Pipeline management

Other (please specify)

**2017 Budget Map**

Financial Services  
Subcategories

**Please specify the Financial Services provided by your organization. (Check all that apply)**

- Retail Banks
- Capital Markets
- Insurance
- Other (please specify)

## 2017 Budget Map

### Media/Entertainment Subcategories

**Please choose the Media/Entertainment industry subcategory that best applies to your organization?**

- Develop and distribute entertainment products
- Digital Content Creation
- Other (please specify)

Thank you for your time. Unfortunately, you do not meet our criteria to take the survey at this time.

Please exit by clicking the "Exit this survey" in the upper right hand corner or closing your browser.

Have a great day.



Thank you for your time. Unfortunately, you do not meet our criteria to take the survey at this time.

Please exit browser by clicking the "Exit this survey" in the upper right hand corner or closing your browser.

Have a great day.

## 2017 Budget Map

### Thank You for Completing Our Survey

As an additional thank you for completing our survey, we offer you a choice of a \$25 Amazon gift card or PayPal cash transfer. In order to send you the gift card, we need you to:

- Provide your contact information -- All personal information will be kept confidential.
- Chose your preferred gift card type.

If you have any questions or comments about the survey, please contact Chris Willard at [Chris@Intersect360.com](mailto:Chris@Intersect360.com).

Thank you again.

**Work email address is required to receive a gift card or PayPal cash transfer. We will be glad to send the card to another email address if preferred.**

Name:

Company/Organization:

Work Email Address:

Email Address for gift card or PayPal (if different):

Phone Number:

**Please choose which thank you gift, if any, you would like to receive.**

We reserve the right to limit the number of gift cards sent out to respondents from a single organization, economic sector, industry group, or region.

- Amazon gift card (25 USD, valid only on Amazon.com)
- PayPal cash transfer (25 USD). Please provide your PayPal email address above.
- No thank you.

PLEASE ADD OUR DOMAIN (@INTERSECT360.COM) TO YOUR SAFE SENDER LIST: We will email your electronic gift card to you. In the past, we have had a few emails end up in spam folders.