2015 ALCF User Survey Results

Introduction

This document provides the results of the ALCF 2015 User Survey. Every year the ALCF seeks feedback from its users. This year, 38.1% of our users responded to the survey.[1] The primary data contained in this document are the frequencies, percentages--or averages, as appropriate--of the responses for each question.

Survey Design

This survey was designed to move ALCF users quickly through the most salient questions about the facility. Survey questions were grouped behind filtering yes/no questions. In one case, users chose from a list and if they selected a specific choice, the related questions were filtered.

ALCF hired survey experts from Cvent, a web survey hosting and consulting company, to manage the 2015 survey. The team drew upon Cvent's vast experience and incorporated lessons learned from previous surveys as well as internal feedback from various ALCF teams, ALCF leadership, the ALCF User Advisory Council, and ASCR. The result was a streamlined survey, improved questions, and a representative user response to the survey.

Demographics

ALCF users are located around the world and are representative across different types of allocations. The pie chart below shows the distribution of users across the different allocation programs. Users were categorized by their most substantial allocation program. The table shows the top five countries in which our users reside. Countries in the top 20 included: USA, United Kingdom, Switzerland, Germany, China, France, India, Italy, Brazil, Spain, Japan, Sweden, Taiwan, Canada, Korea, Portugal, Russia, Austria, Belgium, and Poland.
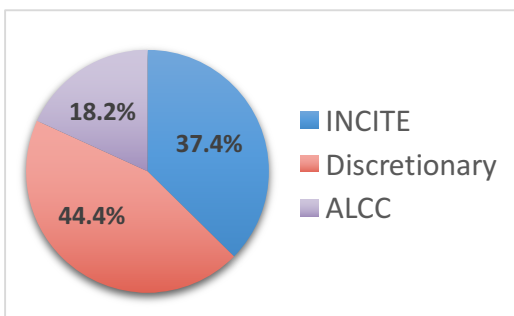
Country	Pct. Total
United States	83.1%
United Kingdom	2.4%
Switzerland	2.0%
Germany	1.9%
China	1.8%

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[1] Users as defined by DOE include project PIs and users from each of our core-hour allocation programs: INCITE, ALCC, and Director's Discretionary who have logged into facility resources. Partially completed surveys were considered responses.

Overall Satisfaction

Users were very satisfied overall with the Argonne Leadership Computing Facility in 2015 as reflected in the following survey results.

Overall, how would you rate your experience with the Argonne Leadership Computing Facility in 2015?

Question Subject	Excellent	Above Average	Average	Below Average	Poor
Overall Satisfaction	257	111	39	6	5

2015 ALCF User Survey Results

Science at ALCF

The core mission of the ALCF is to enable breakthrough science on one of the most powerful supercomputers in the world. The survey targets this mission by asking the users about the progress of their science goals and whether ALCF had an impact on these goals.

Was the progress you made toward the major science goal(s) of your project during your 2015 allocation satisfactory? Yes completely = 58.6%; Yes partially = 35.2%; No, not really = 6.2%.

Response	Frequency
yes, completely	266
yes, partially	160
no, not really	28

How important was ALCF support in affecting the level of progress toward your science goal(s) in 2015? Very important = 59.5%; Somewhat important = 31.7%; Not important = 8.8%

Response	Frequency
very important	270
somewhat important	144
not important	40

ALCF users were given an opportunity to provide comments on the science section. Users classified these comments by choosing one or more of the following selections: praise, suggestion for improvement, problem, or complaint.

Response	Frequency
Praise	203
Suggestions for Improvement	49
Problem Experienced	24
Complaint	9

2015 ALCF User Survey Results

User Support

Users were asked, "Please select the means by which you used these support resources in 2015." If a user selected, "Did Not Use Staff Support," they were not asked detailed questions related to user support. Note that in cases where respondents are asked to select "all that apply," response percentages can total more than 100%.

Please select the means by which you used these support resources in 2015. (Select all that apply)	Frequency	Percent
Email	342	76%
Phone	140	33%
Web site (e.g., 'Contact Us' web form)	127	28%
In-Person	113	25%
Other Support Resources	7	2%
Did Not Use Staff Support	52	12%

ALCF asked users to rate quality of documentation, quality of on-line support, and availability of support.

Question Subject	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	NA
On-line Support	143	180	48	10	1	10
Professional/Courteous	280	100	7	1	1	3
Support Availability	228	145	12	3	1	3

Users were then asked about perception of account activation time, ease of finding documentation, and whether key documentation types were available. The following questions were added to the survey to get user perceptions of ease of application and wait time for Cryptocard delivery.

Question Subject	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	NA
Login Soon After Application	213	103	17	14	3	42
Easy to Find Documentation	147	165	46	20	1	13
Documentation Types available	143	157	58	16	1	17
Easy to Apply for User Account	197	112	32	11	1	39
Wait Time for Crypto Card Reasonable	184	114	28	16	6	44

2015 ALCF User Survey Results

The following table was presented as reference for the document types.

Here are documentation types often found in web documentation:
- **Technical Reference**: Detailed documentation typically used by experts.
- **Flowchart /Process Descriptions**: Diagrams to show a process.
- **"HOW TO"**: Difference between HOW TO/tutorial lays in specificity/depth.
- **Tutorials**: Information that walks a user through a detailed set of steps to accomplish a task or action.
- **Getting Started**: A step-by-step guide to assist new users as they ramp up.
- **Glossary**: A list of terms and their definitions.
- **FAQ**: Unique things that are not amenable to treatment in a topic reference.

Users were then asked to rate each type of documentation available on the ALCF website.

Question Subject	Excellent	Above Average	Average	Below Average	Poor	Did Not Use
Getting Started	158	119	56	3	2	48
Technical Reference	119	141	68	13	1	44
Tutorials	93	102	59	18	1	113
Flowchart /Process Descriptions	71	74	67	15	1	158
FAQ	96	113	74	12	2	89
HOW TO'	88	97	74	12	0	115

ALCF users were asked which ALCF communication do they use.

Response	Frequency	%
ALCF weekly updates e-mail	257	65%
Newsbytes monthly e-mail newsletter	85	22%
ALCF website	2	66%
ALCF Facebook	5	1%
Communications from Catalysts	106	27%
Other	16	4%

ALCF users were given an opportunity to provide comments in the user support section. Users classified these comments by choosing one or more of the following selections: praise, suggestion for improvement, problem, or complaint.

Type of Comment	Frequency
Praise	143
Suggestion for Improvement	32
Problem Experienced	7
Complaint	3

2015 ALCF User Survey Results

Infrastructure and Software

The first part of this section of questions focuses on the computing environment: the scheduler, hardware, operating system, basic libraries, storage/tape, and visualization hardware. Since all respondents used the infrastructure and software, there was no "filter question" for this section.

Question Subject	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	NA
Disk/Tape Sufficient	166	168	36	6	2	51
Capability Reasonable	158	114	38	5	4	110
Scheduling Turnaround	126	144	68	29	11	51
Availability of Tools	122	136	49	6	3	113
Availability of Libraries	154	158	45	18	3	51

Two specific questions were asked about visualization resources. First, do users take advantage of Tukey or Cooley for visualization and analysis.

Question Subject	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	NA
Use Visualization and Analysis	76	55	32	4	2	260

Second, do these resources have all the visualization and analysis software packages users need.

Response	Frequency	%
Yes	130	30%
No	12	3%
N/A	287	67%

A set of questions also asked about the operating environment.

Question Subject	Extremely Satisfied	Somewhat Satisfied	Neither	Somewhat Dissatisfied	Extremely Dissatisfied	NA
Systems Reliability	269	114	11	5	0	30
Storage Capacity	259	102	18	7	2	41
Build Environment	182	146	24	28	3	46
Communicating Updates	255	117	17	3	1	36

2015 ALCF User Survey Results

ALCF added a new question this year regarding retention periods of files on disk before they are moved to tape.

Response	Frequency	%
1 month	53	12%
3 month	119	28%
6 month	200	46%
Other	57	13%

ALCF users were given an opportunity to provide comments in the infrastructure and software section. Users classified these comments by choosing one or more of the following selections: praise, suggestion for improvement, problem, or complaint.

Type of Comment	Frequency
Praise	108
Suggestion for Improvement	32
Problem Experienced	13
Complaint	4

2015 ALCF User Survey Results

Science and Technical Support

This section of the survey addresses the effectiveness of ALCF support at problem resolution, including emails sent to support@alcf.anl.gov, phone calls, and in person meetings with individuals at the ALCF.

This survey section started with the initial filter question: "Did you use ALCF support to resolve a problem during your 2015 allocation?" 186 users responded "Yes," while 239 users responded "No," or "Not that I remember," in which case they were not asked the subsequent questions.

Question Subject	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	NA
Satisfactory Resolution	120	46	9	5	4	1
Prompt Assistance	129	41	9	3	1	2
Complete/Accurate Assistance	128	45	5	4	2	1

Users also provided input about why they used ALCF science and technical support.

Primary reasons for using ALCF science and technical support	Frequency
Gaining access to the leadership computing systems.	77
Improving code performance.	74
Communicating with subject matter experts.	50
Needing help finishing project.	43
Preparing an INCITE proposal.	24
Providing quarterly reports to ALCF.	16
Preparing an ALCC proposal.	15
Other Reasons	30

ALCF users were given an opportunity to provide comments in the science and technical support section, and again were able to classify these comments as praise, suggestion for improvement, problem, or complaint.

Response	Frequency
Praise	71
Suggestion for Improvement	9
Problem	7
Complaint	3

2015 ALCF User Survey Results

Developing Code

This section of the survey asked questions related to developing codes on ALCF Blue Gene systems, namely Intrepid and Mira.

This survey section started with the initial filter question: "Did you log into the ALCF systems and compile code that ran on Intrepid or Mira?" 304 users responded "Yes," while 120 users responded "No." If a user responded "No," they were not asked the subsequent questions.

"Which of the following performance tools do you use on your laptop, cluster-based system, or ALCF system?"

Performance Tool	Frequency
gprof	117
HPCToolkit	71
TAU	63
PAPI	55
mpiP	39
Vampir	22
Scalasca	22
HPCTW	12
OpenSpeedShop	6
Other (please specify)	103

"Did you use the performance tools specified above to attempt to improve the performance of your code:"

Question Subject	Yes	No
On your laptop (or desktop) prior to running on ALCF systems?	134	167
On cluster-based systems prior to running on ALCF systems?	149	152
On ALCF systems?	139	162

"Were the performance tools you used on these systems helpful to running on ALCF?"

Response	Frequency
Yes	206
No	95

2015 ALCF User Survey Results

Users chose from the following list of debugging tools that they use on laptop, clusters, or ALCF systems.

Response	Frequency
gdb	174
DDT	79
TotalView	66
bgq stack	67
coreprocessor	27
STAT	10
Other	6

Users specified which of the following, if any, they experienced when using the debuggers.

Response	Frequency	%
Tool I prefer is not available on the system	24	8%
Need more training (in-person or via videos)	113	37%
Tool crashes or otherwise can't handle my code	35	12%
Need more documentation	89	30%
Other	92	31%

Users specified which of the following frameworks they used for threading.

Threading Framework	Frequency
OpenMP	203
No Threading	66
Pthreads	65
CUDA	41
OpenACC	17
Intel TBB	12
OpenCL	10
Other	9

2015 ALCF User Survey Results

Users chose common roadblocks that make threading challenging.

Roadblocks encountered when threading code	Frequency
Code is not thread safe.	67
Only makes sense in a few places in my code.	67
Threads are complicated to implement.	63
Performance is poor compared to MPI-only implementation.	62
Code cannot be threaded due to insufficient fine-grain parallelism.	31
Only implemented in libraries I use (BLAS/LAPACK i.e. ESSL).	21
Other roadblocks:	89

Users chose the following I/O mechanisms/library selections.

I/O Approach	Frequency
MPI-IO	134
HDF5	110
POSIX	64
NetCDF/PNetCDF	47
Custom or Others (please describe)	61

ALCF users were given an opportunity to provide comments in the developing code section, and again were able to classify these comments as praise, suggestion for improvement, problem, or complaint.

Response	Frequency
Praise	89
Suggestion for Improvement	11
Problem	4
Complaint	2

ALCF Catalysts

Since many ALCF users did not have a Catalyst and so would not be able to answer the questions in this section, the section contained the initial filter question: "Did you interact with a Catalyst as part of your use of ALCF services?" 146 users responded "Yes," 196 users responded "No," and 76 users responded' "I don't know." Only users who answered "Yes" were asked questions about their Catalysts.

Of the 146 users who answered "Yes," ALCF presented questions relating to the Catalysts and their role in the project.

Question Subject	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	NA
Project Benefited by Catalyst	103	32	6	1	1	3
Prompt/Professional	113	25	4	1	0	3
Helped with Performance Issue	90	30	8	0	1	17
Understood Constraints	102	30	6	2	1	5
Assisted on Problems	104	31	5	0	2	4

ALCF users were given an opportunity to provide comments in the Catalyst section, and again were able to classify these comments as praise, suggestion for improvement, problem, or complaint.

Response	Frequency
Praise	48
Suggestion	5
Problem	2
Complaint	2

2015 ALCF User Survey Results

Workshops

Since not all users attended ALCF workshops, this section of the survey had the initial filter question: "Did you attend an ALCF sponsored workshop during your 2015 allocation?" 89 users responded "Yes," and 329 users responded "No." The results in the table below are for those users who responded that they had attended an ALCF designed and managed workshop.

ALCF Staff Measure	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	NA
Got to know staff/services	55	27	2	0	0	5
Got project running	30	24	6	2	0	27
Relevant/helpful training	53	29	3	0	0	4
Sufficient access to experts	56	21	5	2	0	5
Performance help	34	32	6	0	0	17
Using new tools/libraries	44	23	7	1	1	13
Understood science	29	29	12	1	1	17
Understood bottlenecks	28	27	10	0	1	23

ALCF users were presented with choices on possible subjects of future workshops.

Topic	Frequency
Performance Tools	256
MPI/OpenMP	209
Debugging	197
Programming Models	169
Visualization	158
Other (please specify)	48

ALCF users were again given the opportunity to provide comments as part of the workshop section, and could classify those comments as praise, suggestion for improvement, problem, or complaint.

Response	Frequency
Praise	94
Suggestions for Improvement	11
Problem	1
Complaint	1

2015 ALCF User Survey Results

This year, we asked our users what their hardware concerns for science applications they expect to run in the next 10 years.

Concern	1st	2nd	3rd	4th	5th	6th	7th	8th
FLOPS - compute cost of the simulations	113	65	34	38	49	30	33	51
Numerical reproducibility	55	42	48	62	55	60	46	46
Memory hierarchy	50	56	67	52	45	50	52	39
I/O – movement of data off of a node	50	69	68	72	50	41	39	24
Memory - total footprint	49	75	73	55	48	42	48	23
Workflows	43	33	35	40	61	66	58	77
Resilience	28	44	42	52	49	71	72	55
Storage – long term archival storage	25	30	46	41	54	54	66	97

Users also ranked in order of importance their primary software concerns for science applications they expect to run in the next 10 years.

Concern	1st	2nd	3rd	4th	5th	6th
Library Scalability	121	69	60	61	54	48
Portability across diverse architectures	105	77	62	39	99	31
Compilers	66	70	106	94	48	29
Power Use/Management	58	24	36	39	38	218
Library Availability	37	111	85	85	63	32
Languages	26	62	64	95	111	55