

# MPI-3 Survey Data

## Question 1

Did you attend the MPI Forum BOF at SC09?

<b>No</b>	1028
<b>Yes</b>	32

## Question 2

Which of the following best describes you?

<b>User of MPI applications</b>	159	<input type="button" value="Show/Hide Open Answers"/>
<b>MPI application developer</b>	303	
<b>Library / middleware developer (that uses MPI)</b>	104	
<b>MPI implementer</b>	54	
<b>Academic educator researcher</b>	295	
<b>Student</b>	103	
<b>Project / program / general management</b>	31	
<b>Other</b>	25	

## Question 3

Rate your expertise with the MPI standard.

<b>I am not familiar at all with the MPI standard</b>	42
<b>I am knowledgeable about basic MPI functionality</b>	347
<b>I have a good understanding of some parts of the MPI standard</b>	492
<b>I deeply understand most of the MPI standard</b>	174
<b>I am an expert on the entire MPI standard</b>	17

## Question 4

Think of an MPI application that you run frequently. What is the typical number of MPI processes per job that you run? (Select all that apply)

<b>1-16 MPI processes</b>	472
<b>17-64 MPI processes</b>	495
<b>65-512 MPI processes</b>	466
<b>513-2048 MPI processes</b>	224
<b>2049 MPI processes or more</b>	174
<b>I don't know</b>	38

## Question 5

Using the same MPI application from the previous question, what is the typical number of MPI processes that you run per node?(Select all that apply)

<b>1 MPI process</b>	358
<b>2-3 MPI processes</b>	323
<b>4-57 MPI processes</b>	476
<b>8-15 MPI processes</b>	322
<b>16 MPI processes or more</b>	133
<b>I don't know</b>	55

## Question 6

Using the same MPI application from the previous question, what is the typical number of MPI processes that you run per node?(Select all that apply)

<b>32 bit</b>	361
<b>64 bit</b>	886
<b>I don't know</b>	41
<b>Other</b>	10

Show/Hide Open Answers

### Question 7

I expect to be able to upgrade to an MPI-3 implementation and still be able to run my legacy MPI applications \*without recompiling\*.

<b>Strongly Disagree</b>	257
<b>Disagree</b>	372
<b>Undecided</b>	198
<b>Agree</b>	114
<b>Strongly Agree</b>	59

Show/Hide Open Answers

### Question 8

I expect to be able to upgrade to an MPI-3 implementation and only need to recompile my legacy MPI applications \*with no source code changes\*.

<b>Strongly Disagree</b>	31
<b>Disagree</b>	76
<b>Undecided</b>	154
<b>Agree</b>	394
<b>Strongly Agree</b>	341

Show/Hide Open Answers

### Question 9

What ONE THING would you like to see added or improved in the MPI standard?

Show/Hide Open Answers

### Question 10

How much are each of the following sets of MPI functionality used in your MPI applications?

			Used moderately	Used	Comprises
--	--	--	-----------------	------	-----------

	Not used at all	Trivially used in some places	in conjunction with other MPI functionality	heavily in conjunction with other MPI functionality	the backbone of my application
<b>Point-to-point communications</b>	27	57	159	339	214
<b>Collective communications</b>	19	50	190	388	151
<b>Derived / complex datatypes</b>	228	169	219	99	41
<b>Communicators other than MPI_COMM_WORLD</b>	210	160	221	127	55
<b>Graph or Cartesian process topologies</b>	363	139	146	62	42
<b>Error handlers other than the default MPI_ERRORS_ARE_FATAL</b>	466	168	80	27	11
<b>Dynamic MPI processes (spawn, connect/accept, join)</b>	530	107	73	30	16
<b>One-sided communication</b>	376	154	158	39	19
<b>Generalized requests</b>	474	106	83	23	7
<b>Parallel I/O</b>	314	107	180	129	36
<b>"PMPI" profiling interface</b>	440	82	118	53	31
<b>MPI_THREAD_MULTIPLE (multiple threads simultaneously using MPI)</b>	474	77	92	65	36
<b>Multiple threads, but only one in MPI at a time</b>	384	100	140	81	37

Show/Hide Open Answers

### Question 11

Which of the following do any of your MPI applications use?(Select all that apply)

<b>Threads</b>	336
<b>OpenMP</b>	451
<b>Shmem</b>	117
<b>Global Arrays</b>	107

Show/Hide Open Answers

<b>Co-processors / accelerators</b>	132
<b>PGAS languages</b>	45
<b>I don't know</b>	82
<b>Other</b>	18

## Question 12

When answering the following question, please remember that that C++ MPI applications can use the C++ and/or C MPI bindings. Do you have any MPI applications that are both written in C++ and use the MPI C++ bindings?

<b>No</b>	551
<b>Yes</b>	165
<b>I don't know</b>	107

## Question 13

The following question refers to the ability to use extremely large count values with MPI operations such as sending/receiving, file actions, and one-sided operations. It makes the assumption that the largest value that a signed C "int" and a default Fortran INTEGER can represent is 2 billion. My MPI application would benefit from being able to reference more than 2 billion items of data in a single MPI function invocation.

<b>Strongly Disagree</b>	53
<b>Disagree</b>	210
<b>Undecided</b>	375
<b>Agree</b>	102
<b>Strongly Agree</b>	62

Show/Hide Open Answers

## Question 14

One-sided remote memory access (RMA) is an advanced MPI concept. The following question assumes familiarity with the complex issues involved and deliberately makes you choose between two options that may or may not be mutually exclusive. The goal is to find out which is more important to you, regardless of whether they are mutually exclusive

or not. If you are unsure how to answer and/or are unfamiliar with MPI RMA concepts, feel free to leave this question unanswered. MPI one-sided communication performance (e.g., message rate and latency) is more important to me than supporting a rich remote memory access (RMA) feature set (e.g., communicators, datatypes).

<b>Strongly Disagree</b>	13
<b>Disagree</b>	59
<b>Undecided</b>	245
<b>Agree</b>	160
<b>Strongly Agree</b>	71

[Show/Hide Open Answers](#)

### Question 15

The MPI standard provides certain semantic guarantees that may not be required by a particular application. It also provides functions that many applications never use. The MPI Forum is considering an "assertions" interface that would let an application identify specific functionality it does not depend on, such that an MPI library could improve performance or reduce memory usage by disabling that specific functionality. The described "assertions" interface would be valuable to my MPI applications.

<b>Strongly Disagree</b>	7
<b>Disagree</b>	23
<b>Undecided</b>	244
<b>Agree</b>	375
<b>Strongly Agree</b>	110

### Question 16

The following is a broad list of topics that the MPI Forum is considering for MPI-3. Note that it is probably safe to assume that using any of the new functionality will involve at least some degree of change to your existing MPI application (e.g., it is unlikely that MPI-3 applications will automatically become fault tolerant; it is much more likely that you will need to add additional fault tolerant logic using new MPI-3 API functions). If you are unfamiliar with a given topic, feel free to leave its rating blank. Rank the following in order of importance to your MPI applications (1=most important, 6=least important):

	0	1 (most important)	2	3	4	5	6 (least important)
<b>Non-blocking collective communications</b>	181	243	135	120	86	45	28
<b>Revamped one-sided communications (compared to MPI-2.2)</b>	267	50	76	115	90	145	95
<b>MPI application control of fault tolerance</b>	223	74	129	125	144	95	48
<b>New Fortran bindings (type safety, etc.)</b>	210	68	72	78	64	99	247
<b>"Hybrid" programming (MPI in conjunction with threads, OpenMP, ..)</b>	160	217	175	105	89	59	33
<b>Standardized third-party MPI tool support</b>	223	32	84	103	132	140	124

### Question 17

Rate the following in order of importance to your MPI applications (1=most important, 5=least important):

	0	1 (most important)	2	3	4	5 (least important)
<b>Run-time performance (e.g., latency, bandwidth, resource consumption, etc.)</b>	105	397	206	89	27	14
<b>Feature-rich API</b>	162	14	38	70	283	271
<b>Run-time reliability</b>	125	149	201	271	62	30
<b>Scalability to large</b>						

<b>numbers of MPI processes</b>	114	158	254	225	70	17
<b>Integration with other middleware, communication protocols, etc.</b>	170	17	31	55	234	331

**Question 18**

Use the space below to provide any other information, suggestions, or comments to the MPI Forum.

Show/Hide Open Answers