[ticket18,57.]

```
Type                          Length    Optional Type         Length
------------------            ------    ------------------    ------
MPI_PACKED                       1      MPI_INTEGER1             1
MPI_BYTE                         1      MPI_INTEGER2             2
MPI_CHAR                         1      MPI_INTEGER4             4
MPI_UNSIGNED_CHAR                1      MPI_INTEGER8             8
MPI_SIGNED_CHAR                  1      MPI_INTEGER16           16
MPI_WCHAR                        2
MPI_SHORT                        2      MPI_REAL2               2
MPI_UNSIGNED_SHORT               2      MPI_REAL4               4
MPI_INT                          4      MPI_REAL8               8
MPI_UNSIGNED                     4      MPI_REAL16             16
MPI_LONG                         4
MPI_UNSIGNED_LONG                4      MPI_COMPLEX4           2*2
MPI_LONG_LONG_INT                8      MPI_COMPLEX8           2*4
MPI_UNSIGNED_LONG_LONG           8      MPI_COMPLEX16          2*8
MPI_FLOAT                        4      MPI_COMPLEX32          2*16
MPI_DOUBLE                       8
MPI_LONG_DOUBLE                 16

MPI_C_BOOL                       4
MPI_INT8_T                       1
MPI_INT16_T                      2
MPI_INT32_T                      4
MPI_INT64_T                      8
MPI_UINT8_T                      1
MPI_UINT16_T                     2
MPI_UINT32_T                     4
MPI_UINT64_T                     8
MPI_AINT                         8
MPI_OFFSET                       8
MPI_C_COMPLEX                  2*4
MPI_C_FLOAT_COMPLEX            2*4
MPI_C_DOUBLE_COMPLEX          2*8
MPI_C_LONG_DOUBLE_COMPLEX     2*16

MPI_CHARACTER                    1
MPI_LOGICAL                      4
MPI_INTEGER                      4
MPI_REAL                         4
MPI_DOUBLE_PRECISION             8
MPI_COMPLEX                    2*4
MPI_DOUBLE_COMPLEX            2*8
```

Table 13.2: "external32" sizes of predefined datatypes

MPI datatype	Description
MPI::FLOAT_INT	C/C++ reduction type
MPI::DOUBLE_INT	C/C++ reduction type
MPI::LONG_INT	C/C++ reduction type
MPI::TWOINT	C/C++ reduction type
MPI::SHORT_INT	C/C++ reduction type
MPI::LONG_DOUBLE_INT	C/C++ reduction type
MPI::TWOREAL	Fortran reduction type
MPI::TWODOUBLE_PRECISION	Fortran reduction type
MPI::TWOINTEGER	Fortran reduction type
MPI::F_DOUBLE_COMPLEX	Optional Fortran type
MPI::INTEGER1	Explicit size type
MPI::INTEGER2	Explicit size type
MPI::INTEGER4	Explicit size type
MPI::INTEGER8	Explicit size type
[ticket57.]MPI::INTEGER16	[ticket57.]Explicit size type
[ticket57.]MPI::REAL2	[ticket57.]Explicit size type
MPI::REAL4	Explicit size type
MPI::REAL8	Explicit size type
MPI::REAL16	Explicit size type
[ticket57.]MPI::F_COMPLEX4	[ticket57.]Explicit size type
[ticket57.]MPI::F_COMPLEX8	[ticket57.]Explicit size type
[ticket57.]MPI::F_COMPLEX16	[ticket57.]Explicit size type
[ticket57.]MPI::F_COMPLEX32	[ticket57.]Explicit size type

Table 16.3: C++ names for other MPI datatypes. Implementations may also define other optional types (e.g., MPI::INTEGER8).

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48

C and C++ (no Fortran) Named Predefined Datatypes		Fortran types
MPI-2.1 Review 33.d'		
MPI_Fint	MPI::Fint	INTEGER
MPI-2.1 Review 33.d'		

]

Named Predefined Datatypes		Fortran types
[ticket107.]C type: MPI_Datatype	C++ type: MPI::Datatype	
[ticket107.]Fortran type: INTEGER		
MPI_INTEGER	MPI::INTEGER	INTEGER
MPI_REAL	MPI::REAL	REAL
MPI_DOUBLE_PRECISION	MPI::DOUBLE_PRECISION	DOUBLE PRECISION
MPI_COMPLEX	MPI::F_COMPLEX	COMPLEX
MPI_LOGICAL	MPI::LOGICAL	LOGICAL
MPI_CHARACTER	MPI::CHARACTER	CHARACTER(1)
[ticket18.]MPI_AINT	[ticket18.](use C datatype handle)	[ticket18.]INTEGER (KIND=MPI_ADDRE
[ticket18.]MPI_OFFSET	[ticket18.](use C datatype handle)	[ticket18.]INTEGER (KIND=MPI_OFFSE
MPI_BYTE	MPI::BYTE	(any Fortran type)
MPI_PACKED	MPI::PACKED	(any Fortran type)

C++-Only Named Predefined Datatypes	C++ types
C++ type: MPI::Datatype	
MPI::BOOL	bool
MPI::COMPLEX	Complex<float>
MPI::DOUBLE_COMPLEX	Complex<double>
MPI::LONG_DOUBLE_COMPLEX	Complex<long double>

Optional datatypes (Fortran)		Fortran types
[ticket107.]C type: MPI_Datatype	C++ type: MPI::Datatype	
[ticket107.]Fortran type: INTEGER		
MPI_DOUBLE_COMPLEX	[ticket40.]MPI::F_DOUBLE_COMPLEX	DOUBLE COMPLEX
MPI_INTEGER1	MPI::INTEGER1	INTEGER*1
MPI_INTEGER2	MPI::INTEGER2	INTEGER*8
MPI_INTEGER4	MPI::INTEGER4	INTEGER*4
MPI_INTEGER8	MPI::INTEGER8	INTEGER*8
[ticket57.]MPI_INTEGER16		[ticket57.]INTEGER*16
MPI_REAL2	MPI::REAL2	REAL*2
MPI_REAL4	MPI::REAL4	REAL*4
MPI_REAL8	MPI::REAL8	REAL*8
[ticket57.]MPI_REAL16		[ticket57.]REAL*16
[ticket57.]MPI_COMPLEX4		[ticket57.]COMPLEX*4
[ticket57.]MPI_COMPLEX8		[ticket57.]COMPLEX*8
[ticket57.]MPI_COMPLEX16		[ticket57.]COMPLEX*16
[ticket57.]MPI_COMPLEX32		[ticket57.]COMPLEX*32