

## MPI Wrapper

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<b>1 Namespace Index</b>	<b>1</b>
1.1 Namespace List . . . . .	1
<b>2 Class Index</b>	<b>3</b>
2.1 Class List . . . . .	3
<b>3 File Index</b>	<b>5</b>
3.1 File List . . . . .	5
<b>4 Namespace Documentation</b>	<b>7</b>
4.1 MPIw Namespace Reference . . . . .	7
4.1.1 Function Documentation . . . . .	8
4.1.1.1 Allgather() . . . . .	9
4.1.1.2 Allgatherv() . . . . .	9
4.1.1.3 AllReduce() . . . . .	9
4.1.1.4 Barrier() . . . . .	9
4.1.1.5 Bcast() . . . . .	9
4.1.1.6 Bcast_managed() . . . . .	10
4.1.1.7 Bcast_recv() . . . . .	10
4.1.1.8 Bcast_recv_managed() . . . . .	10
4.1.1.9 Bcast_send() . . . . .	10
4.1.1.10 Bcast_send_managed() . . . . .	10
4.1.1.11 Comm_rank() . . . . .	11
4.1.1.12 Comm_size() . . . . .	11
4.1.1.13 Gather() . . . . .	11
4.1.1.14 Gather_recv() . . . . .	11
4.1.1.15 Gather_send() . . . . .	11
4.1.1.16 Gatherv() . . . . .	11
4.1.1.17 Gatherv_recv() . . . . .	12
4.1.1.18 Gatherv_send() . . . . .	12
4.1.1.19 Get_count() [1/2] . . . . .	12
4.1.1.20 Get_count() [2/2] . . . . .	12
4.1.1.21 Get_processor_name() . . . . .	12
4.1.1.22 Group_rank() . . . . .	12
4.1.1.23 Group_size() . . . . .	13
4.1.1.24 Recv() . . . . .	13
4.1.1.25 Reduce() . . . . .	13
4.1.1.26 Reduce_recv() . . . . .	13
4.1.1.27 Reduce_send() . . . . .	13
4.1.1.28 Scatter() . . . . .	14
4.1.1.29 Scatter_recv() . . . . .	14
4.1.1.30 Scatter_recv_managed() . . . . .	14
4.1.1.31 Scatter_send() . . . . .	14

4.1.1.32 Scatter_send_managed()	14
4.1.1.33 Scatterv()	15
4.1.1.34 Scatterv_recv()	15
4.1.1.35 Scatterv_send()	15
4.1.1.36 Send()	15
4.2 MPIw::details Namespace Reference	15
4.2.1 Function Documentation	15
4.2.1.1 split_buffer()	16
4.3 MPIw::structs Namespace Reference	16
4.4 MPIw::types Namespace Reference	16
4.4.1 Function Documentation	16
4.4.1.1 get_mpi_type()	16
<b>5 Class Documentation</b>	<b>17</b>
5.1 MPIw::Comm_raii Class Reference	17
5.1.1 Constructor & Destructor Documentation	17
5.1.1.1 Comm_raii() [1/3]	17
5.1.1.2 Comm_raii() [2/3]	18
5.1.1.3 Comm_raii() [3/3]	18
5.1.1.4 ~Comm_raii()	18
5.1.2 Member Function Documentation	18
5.1.2.1 get()	18
5.1.2.2 operator MPI_Comm()	18
5.1.2.3 operator&()	18
5.1.2.4 operator=() [1/2]	18
5.1.2.5 operator=() [2/2]	19
5.1.3 Member Data Documentation	19
5.1.3.1 comm	19
5.2 MPIw::Group_raii Class Reference	19
5.2.1 Constructor & Destructor Documentation	19
5.2.1.1 Group_raii() [1/3]	19
5.2.1.2 Group_raii() [2/3]	20
5.2.1.3 Group_raii() [3/3]	20
5.2.1.4 ~Group_raii()	20
5.2.2 Member Function Documentation	20
5.2.2.1 get()	20
5.2.2.2 operator MPI_Group()	20
5.2.2.3 operator&()	20
5.2.2.4 operator=() [1/2]	20
5.2.2.5 operator=() [2/2]	21
5.2.3 Member Data Documentation	21
5.2.3.1 group	21

5.3 MPIw::Init_raii Class Reference . . . . .	21
5.3.1 Constructor & Destructor Documentation . . . . .	21
5.3.1.1 Init_raii() [1/3] . . . . .	21
5.3.1.2 Init_raii() [2/3] . . . . .	22
5.3.1.3 Init_raii() [3/3] . . . . .	22
5.3.1.4 ~Init_raii() . . . . .	22
5.3.2 Member Function Documentation . . . . .	22
5.3.2.1 operator=() [1/2] . . . . .	22
5.3.2.2 operator=() [2/2] . . . . .	22
5.4 MPIw::structs::Recv_st< T > Struct Template Reference . . . . .	22
5.4.1 Member Data Documentation . . . . .	23
5.4.1.1 data . . . . .	23
5.4.1.2 status . . . . .	23
<b>6 File Documentation . . . . .</b>	<b>25</b>
6.1 /home/somik/WSL_Workspace/cpp/mpi_wrapper/src/communication.hpp File Reference . . . . .	25
6.2 /home/somik/WSL_Workspace/cpp/mpi_wrapper/src/getters.hpp File Reference . . . . .	27
6.3 /home/somik/WSL_Workspace/cpp/mpi_wrapper/src/include.hpp File Reference . . . . .	29
6.4 /home/somik/WSL_Workspace/cpp/mpi_wrapper/src/raii.hpp File Reference . . . . .	29
6.5 /home/somik/WSL_Workspace/cpp/mpi_wrapper/src/structs.hpp File Reference . . . . .	30
6.6 /home/somik/WSL_Workspace/cpp/mpi_wrapper/src/types.hpp File Reference . . . . .	31
6.6.1 Macro Definition Documentation . . . . .	33
6.6.1.1 MPIw_register_type . . . . .	33
6.6.2 Function Documentation . . . . .	33
6.6.2.1 MPIw_register_type() [1/17] . . . . .	33
6.6.2.2 MPIw_register_type() [2/17] . . . . .	33
6.6.2.3 MPIw_register_type() [3/17] . . . . .	33
6.6.2.4 MPIw_register_type() [4/17] . . . . .	34
6.6.2.5 MPIw_register_type() [5/17] . . . . .	34
6.6.2.6 MPIw_register_type() [6/17] . . . . .	34
6.6.2.7 MPIw_register_type() [7/17] . . . . .	34
6.6.2.8 MPIw_register_type() [8/17] . . . . .	34
6.6.2.9 MPIw_register_type() [9/17] . . . . .	34
6.6.2.10 MPIw_register_type() [10/17] . . . . .	35
6.6.2.11 MPIw_register_type() [11/17] . . . . .	35
6.6.2.12 MPIw_register_type() [12/17] . . . . .	35
6.6.2.13 MPIw_register_type() [13/17] . . . . .	35
6.6.2.14 MPIw_register_type() [14/17] . . . . .	35
6.6.2.15 MPIw_register_type() [15/17] . . . . .	35
6.6.2.16 MPIw_register_type() [16/17] . . . . .	36
6.6.2.17 MPIw_register_type() [17/17] . . . . .	36
<b>Index . . . . .</b>	<b>37</b>



# Chapter 1

## Namespace Index

### 1.1 Namespace List

Here is a list of all namespaces with brief descriptions:

<a href="#">MPIw</a>	7
<a href="#">MPIw::details</a>	15
<a href="#">MPIw::structs</a>	16
<a href="#">MPIw::types</a>	16





## Chapter 2

# Class Index

### 2.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

<a href="#">MPIw::Comm_raii</a>	<a href="#">17</a>
<a href="#">MPIw::Group_raii</a>	<a href="#">19</a>
<a href="#">MPIw::Init_raii</a>	<a href="#">21</a>
<a href="#">MPIw::structs::Recv_st&lt; T &gt;</a>	<a href="#">22</a>



## Chapter 3

# File Index

### 3.1 File List

Here is a list of all files with brief descriptions:

/home/somik/WSL_Workspace/cpp/mpi_wrapper/src/ <a href="#">communication.hpp</a> . . . . .	25
/home/somik/WSL_Workspace/cpp/mpi_wrapper/src/ <a href="#">getters.hpp</a> . . . . .	27
/home/somik/WSL_Workspace/cpp/mpi_wrapper/src/ <a href="#">include.hpp</a> . . . . .	29
/home/somik/WSL_Workspace/cpp/mpi_wrapper/src/ <a href="#">raii.hpp</a> . . . . .	29
/home/somik/WSL_Workspace/cpp/mpi_wrapper/src/ <a href="#">structs.hpp</a> . . . . .	30
/home/somik/WSL_Workspace/cpp/mpi_wrapper/src/ <a href="#">types.hpp</a> . . . . .	31



## Chapter 4

# Namespace Documentation

### 4.1 MPIw Namespace Reference

#### Namespaces

- [details](#)
- [structs](#)
- [types](#)

#### Classes

- class [Init\\_raii](#)
- class [Comm\\_raii](#)
- class [Group\\_raii](#)

#### Functions

- `template<typename T >`  
`structs::Recv_st< T > Recv` (MPI\_Comm comm, int source=MPI\_ANY\_SOURCE, int tag=MPI\_ANY\_TAG)
- `template<typename T >`  
`void Send` (MPI\_Comm comm, const std::vector< T > &data, int dest, int tag)
- `template<typename T >`  
`std::vector< T > Bcast` (MPI\_Comm comm, const std::vector< T > &data, int count, int root)
- `template<typename T >`  
`std::vector< T > Bcast_managed` (MPI\_Comm comm, const std::vector< T > &data, int count, int root)
- `template<typename T >`  
`void Bcast_send` (MPI\_Comm comm, const std::vector< T > &data)
- `template<typename T >`  
`std::vector< T > Bcast_recv` (MPI\_Comm comm, int count, int root)
- `template<typename T >`  
`void Bcast_send_managed` (MPI\_Comm comm, const std::vector< T > &data)
- `template<typename T >`  
`std::vector< T > Bcast_recv_managed` (MPI\_Comm comm, int root)
- `template<typename T >`  
`std::vector< T > Gather` (MPI\_Comm comm, const std::vector< T > &data, int root)
- `template<typename T >`  
`void Gather_send` (MPI\_Comm comm, const std::vector< T > &data, int root)

- `template<typename T>`  
`std::vector< T > Gather_rcv (MPI_Comm comm, const std::vector< T > &data)`
- `template<typename T>`  
`std::vector< T > Allgather (MPI_Comm comm, const std::vector< T > data)`
- `template<typename T>`  
`std::vector< std::vector< T > > Gatherv (MPI_Comm comm, const std::vector< T > &data, int root)`
- `template<typename T>`  
`void Gatherv_send (MPI_Comm comm, const std::vector< T > &data, int root)`
- `template<typename T>`  
`std::vector< std::vector< T > > Gatherv_rcv (MPI_Comm comm, const std::vector< T > &data)`
- `template<typename T>`  
`std::vector< std::vector< T > > Allgatherv (MPI_Comm comm, const std::vector< T > &data)`
- `template<typename T>`  
`std::vector< T > Scatter (MPI_Comm comm, const std::vector< T > &data, int count, int root)`
- `template<typename T>`  
`std::vector< T > Scatter_send (MPI_Comm comm, const std::vector< T > &data)`
- `template<typename T>`  
`std::vector< T > Scatter_rcv (MPI_Comm comm, int count, int root)`
- `template<typename T>`  
`std::vector< T > Scatter_send_managed (MPI_Comm comm, const std::vector< T > &data)`
- `template<typename T>`  
`std::vector< T > Scatter_rcv_managed (MPI_Comm comm, int root)`
- `template<typename T>`  
`std::vector< T > Scatterv (MPI_Comm comm, const std::vector< std::vector< T > > &data, int root)`
- `template<typename T>`  
`std::vector< T > Scatterv_send (MPI_Comm comm, const std::vector< std::vector< T > > &data)`
- `template<typename T>`  
`std::vector< T > Scatterv_rcv (MPI_Comm comm, int root)`
- `template<typename T>`  
`std::vector< T > Reduce (MPI_Comm comm, const std::vector< T > &data, MPI_Op op, int root)`
- `template<typename T>`  
`void Reduce_send (MPI_Comm comm, const std::vector< T > &data, MPI_Op op, int root)`
- `template<typename T>`  
`std::vector< T > Reduce_rcv (MPI_Comm comm, const std::vector< T > &data, MPI_Op op)`
- `template<typename T>`  
`std::vector< T > AllReduce (MPI_Comm comm, std::vector< T > &data, MPI_Op op)`
- `void Barrier (MPI_Comm comm)`
- `int Get_count (const MPI_Status &status, MPI_Datatype type)`
- `template<typename T>`  
`int Get_count (const MPI_Status &status)`
- `int Comm_rank (MPI_Comm comm)`
- `int Comm_size (MPI_Comm comm)`
- `int Group_rank (MPI_Group group)`
- `int Group_size (MPI_Group group)`
- `std::string Get_processor_name ()`

#### 4.1.1 Function Documentation

#### 4.1.1.1 Allgather()

```
template<typename T >
std::vector<T> MPIw::Allgather (
    MPI_Comm comm,
    const std::vector< T > data )
```

#### 4.1.1.2 Allgatherv()

```
template<typename T >
std::vector<std::vector<T> > MPIw::Allgatherv (
    MPI_Comm comm,
    const std::vector< T > & data )
```

#### 4.1.1.3 AllReduce()

```
template<typename T >
std::vector<T> MPIw::AllReduce (
    MPI_Comm comm,
    std::vector< T > & data,
    MPI_Op op )
```

#### 4.1.1.4 Barrier()

```
void MPIw::Barrier (
    MPI_Comm comm ) [inline]
```

#### 4.1.1.5 Bcast()

```
template<typename T >
std::vector<T> MPIw::Bcast (
    MPI_Comm comm,
    const std::vector< T > & data,
    int count,
    int root )
```

#### 4.1.1.6 Bcast\_managed()

```
template<typename T >
std::vector<T> MPIw::Bcast_managed (
    MPI_Comm comm,
    const std::vector< T > & data,
    int count,
    int root )
```

#### 4.1.1.7 Bcast\_recv()

```
template<typename T >
std::vector<T> MPIw::Bcast_recv (
    MPI_Comm comm,
    int count,
    int root )
```

#### 4.1.1.8 Bcast\_recv\_managed()

```
template<typename T >
std::vector<T> MPIw::Bcast_recv_managed (
    MPI_Comm comm,
    int root )
```

#### 4.1.1.9 Bcast\_send()

```
template<typename T >
void MPIw::Bcast_send (
    MPI_Comm comm,
    const std::vector< T > & data )
```

#### 4.1.1.10 Bcast\_send\_managed()

```
template<typename T >
void MPIw::Bcast_send_managed (
    MPI_Comm comm,
    const std::vector< T > & data )
```



#### 4.1.1.11 Comm\_rank()

```
int MPIw::Comm_rank (
    MPI_Comm comm ) [inline]
```

#### 4.1.1.12 Comm\_size()

```
int MPIw::Comm_size (
    MPI_Comm comm ) [inline]
```

#### 4.1.1.13 Gather()

```
template<typename T >
std::vector<T> MPIw::Gather (
    MPI_Comm comm,
    const std::vector< T > & data,
    int root )
```

#### 4.1.1.14 Gather\_recv()

```
template<typename T >
std::vector<T> MPIw::Gather_recv (
    MPI_Comm comm,
    const std::vector< T > & data )
```

#### 4.1.1.15 Gather\_send()

```
template<typename T >
void MPIw::Gather_send (
    MPI_Comm comm,
    const std::vector< T > & data,
    int root )
```

#### 4.1.1.16 Gatherv()

```
template<typename T >
std::vector<std::vector<T> > MPIw::Gatherv (
    MPI_Comm comm,
    const std::vector< T > & data,
    int root )
```

#### 4.1.1.17 Gatherv\_recv()

```
template<typename T >
std::vector<std::vector<T> > MPIw::Gatherv_recv (
    MPI_Comm comm,
    const std::vector< T > & data )
```

#### 4.1.1.18 Gatherv\_send()

```
template<typename T >
void MPIw::Gatherv_send (
    MPI_Comm comm,
    const std::vector< T > & data,
    int root )
```

#### 4.1.1.19 Get\_count() [1/2]

```
template<typename T >
int MPIw::Get_count (
    const MPI_Status & status )
```

#### 4.1.1.20 Get\_count() [2/2]

```
int MPIw::Get_count (
    const MPI_Status & status,
    MPI_Datatype type ) [inline]
```

#### 4.1.1.21 Get\_processor\_name()

```
std::string MPIw::Get_processor_name ( ) [inline]
```

#### 4.1.1.22 Group\_rank()

```
int MPIw::Group_rank (
    MPI_Group group ) [inline]
```

#### 4.1.1.23 Group\_size()

```
int MPIw::Group_size (
    MPI_Group group ) [inline]
```

#### 4.1.1.24 Recv()

```
template<typename T >
structs::Recv_st<T> MPIw::Recv (
    MPI_Comm comm,
    int source = MPI_ANY_SOURCE,
    int tag = MPI_ANY_TAG )
```

#### 4.1.1.25 Reduce()

```
template<typename T >
std::vector<T> MPIw::Reduce (
    MPI_Comm comm,
    const std::vector< T > & data,
    MPI_Op op,
    int root )
```

#### 4.1.1.26 Reduce\_recv()

```
template<typename T >
std::vector<T> MPIw::Reduce_recv (
    MPI_Comm comm,
    const std::vector< T > & data,
    MPI_Op op )
```

#### 4.1.1.27 Reduce\_send()

```
template<typename T >
void MPIw::Reduce_send (
    MPI_Comm comm,
    const std::vector< T > & data,
    MPI_Op op,
    int root )
```

#### 4.1.1.28 Scatter()

```
template<typename T >
std::vector<T> MPIw::Scatter (
    MPI_Comm comm,
    const std::vector< T > & data,
    int count,
    int root )
```

#### 4.1.1.29 Scatter\_recv()

```
template<typename T >
std::vector<T> MPIw::Scatter_recv (
    MPI_Comm comm,
    int count,
    int root )
```

#### 4.1.1.30 Scatter\_recv\_managed()

```
template<typename T >
std::vector<T> MPIw::Scatter_recv_managed (
    MPI_Comm comm,
    int root )
```

#### 4.1.1.31 Scatter\_send()

```
template<typename T >
std::vector<T> MPIw::Scatter_send (
    MPI_Comm comm,
    const std::vector< T > & data )
```

#### 4.1.1.32 Scatter\_send\_managed()

```
template<typename T >
std::vector<T> MPIw::Scatter_send_managed (
    MPI_Comm comm,
    const std::vector< T > & data )
```

#### 4.1.1.33 Scatterv()

```
template<typename T >
std::vector<T> MPIw::Scatterv (
    MPI_Comm comm,
    const std::vector< std::vector< T >> & data,
    int root )
```

#### 4.1.1.34 Scatterv\_recv()

```
template<typename T >
std::vector<T> MPIw::Scatterv_recv (
    MPI_Comm comm,
    int root )
```

#### 4.1.1.35 Scatterv\_send()

```
template<typename T >
std::vector<T> MPIw::Scatterv_send (
    MPI_Comm comm,
    const std::vector< std::vector< T >> & data )
```

#### 4.1.1.36 Send()

```
template<typename T >
void MPIw::Send (
    MPI_Comm comm,
    const std::vector< T > & data,
    int dest,
    int tag )
```

## 4.2 MPIw::details Namespace Reference

### Functions

- template<typename T >  
std::vector< std::vector< T >> [split\\_buffer](#) (const std::vector< T > &buffer, const std::vector< T > &offsets)

#### 4.2.1 Function Documentation

#### 4.2.1.1 split\_buffer()

```
template<typename T >
std::vector<std::vector<T> > MPIw::details::split_buffer (
    const std::vector< T > & buffer,
    const std::vector< T > & offsets )
```

## 4.3 MPIw::structs Namespace Reference

### Classes

- struct [Recv\\_st](#)

## 4.4 MPIw::types Namespace Reference

### Functions

- template<typename T >  
MPI\_Datatype [get\\_mpi\\_type](#) (T=T{})

#### 4.4.1 Function Documentation

##### 4.4.1.1 get\_mpi\_type()

```
template<typename T >
MPI_Datatype MPIw::types::get_mpi_type (
    T    = T{} )
```

## Chapter 5

# Class Documentation

### 5.1 MPIw::Comm\_raii Class Reference

```
#include <raii.hpp>
```

#### Public Member Functions

- [Comm\\_raii](#) ()=default
- [Comm\\_raii](#) (const [Comm\\_raii](#) &)=delete
- [Comm\\_raii](#) & [operator=](#) (const [Comm\\_raii](#) &)=delete
- [Comm\\_raii](#) ([Comm\\_raii](#) &&)=delete
- [Comm\\_raii](#) && [operator=](#) ([Comm\\_raii](#) &&)=delete
- [~Comm\\_raii](#) ()
- MPI\_Comm & [get](#) ()
- [operator MPI\\_Comm](#) ()
- MPI\_Comm \* [operator&](#) ()

#### Public Attributes

- MPI\_Comm [comm](#) = MPI\_COMM\_NULL

#### 5.1.1 Constructor & Destructor Documentation

##### 5.1.1.1 Comm\_raii() [1/3]

```
MPIw::Comm_raii::Comm_raii ( ) [default]
```

#### 5.1.1.2 Comm\_raii() [2/3]

```
MPIw::Comm_raii::Comm_raii (
    const Comm_raii & ) [delete]
```

#### 5.1.1.3 Comm\_raii() [3/3]

```
MPIw::Comm_raii::Comm_raii (
    Comm_raii && ) [delete]
```

#### 5.1.1.4 ~Comm\_raii()

```
MPIw::Comm_raii::~~Comm_raii ( ) [inline]
```

### 5.1.2 Member Function Documentation

#### 5.1.2.1 get()

```
MPI_Comm& MPIw::Comm_raii::get ( ) [inline]
```

#### 5.1.2.2 operator MPI\_Comm()

```
MPIw::Comm_raii::operator MPI_Comm ( ) [inline]
```

#### 5.1.2.3 operator&()

```
MPI_Comm* MPIw::Comm_raii::operator& ( ) [inline]
```

#### 5.1.2.4 operator=() [1/2]

```
Comm_raii& MPIw::Comm_raii::operator= (
    Comm_raii && ) [delete]
```



### 5.1.2.5 operator=() [2/2]

```
Comm_raii& MPIw::Comm_raii::operator= (
    const Comm_raii & ) [delete]
```

## 5.1.3 Member Data Documentation

### 5.1.3.1 comm

```
MPI_Comm MPIw::Comm_raii::comm = MPI_COMM_NULL
```

The documentation for this class was generated from the following file:

- [/home/somik/WSL\\_Workspace/cpp/mpi\\_wrapper/src/raii.hpp](/home/somik/WSL_Workspace/cpp/mpi_wrapper/src/raii.hpp)

## 5.2 MPIw::Group\_raii Class Reference

```
#include <raii.hpp>
```

### Public Member Functions

- [Group\\_raii](#) ()=default
- [Group\\_raii](#) (const [Group\\_raii](#) &)=delete
- [Group\\_raii](#) & [operator=](#) (const [Group\\_raii](#) &)=delete
- [Group\\_raii](#) ([Group\\_raii](#) &&)=delete
- [Group\\_raii](#) && [operator=](#) ([Group\\_raii](#) &&)=delete
- [~Group\\_raii](#) ()
- MPI\_Group & [get](#) ()
- [operator MPI\\_Group](#) ()
- MPI\_Group \* [operator&](#) ()

### Public Attributes

- MPI\_Group [group](#) = MPI\_GROUP\_NULL

## 5.2.1 Constructor & Destructor Documentation

### 5.2.1.1 Group\_raii() [1/3]

```
MPIw::Group_raii::Group_raii ( ) [default]
```

#### 5.2.1.2 Group\_raii() [2/3]

```
MPIw::Group_raii::Group_raii (
    const Group_raii & ) [delete]
```

#### 5.2.1.3 Group\_raii() [3/3]

```
MPIw::Group_raii::Group_raii (
    Group_raii && ) [delete]
```

#### 5.2.1.4 ~Group\_raii()

```
MPIw::Group_raii::~~Group_raii ( ) [inline]
```

### 5.2.2 Member Function Documentation

#### 5.2.2.1 get()

```
MPI_Group& MPIw::Group_raii::get ( ) [inline]
```

#### 5.2.2.2 operator MPI\_Group()

```
MPIw::Group_raii::operator MPI_Group ( ) [inline]
```

#### 5.2.2.3 operator&()

```
MPI_Group* MPIw::Group_raii::operator& ( ) [inline]
```

#### 5.2.2.4 operator=() [1/2]

```
Group_raii& MPIw::Group_raii::operator= (
    const Group_raii & ) [delete]
```

### 5.2.2.5 operator=() [2/2]

```
Group_raii&& MPIw::Group_raii::operator= (
    Group_raii && ) [delete]
```

## 5.2.3 Member Data Documentation

### 5.2.3.1 group

```
MPI_Group MPIw::Group_raii::group = MPI_GROUP_NULL
```

The documentation for this class was generated from the following file:

- [/home/somik/WSL\\_Workspace/cpp/mpi\\_wrapper/src/raii.hpp](/home/somik/WSL_Workspace/cpp/mpi_wrapper/src/raii.hpp)

## 5.3 MPIw::Init\_raii Class Reference

```
#include <raii.hpp>
```

### Public Member Functions

- [Init\\_raii](#) (int \*argc, char \*\*\*argv)
- [Init\\_raii](#) (const [Init\\_raii](#) &)=delete
- [Init\\_raii](#) & [operator=](#) (const [Init\\_raii](#) &)=delete
- [Init\\_raii](#) ([Init\\_raii](#) &&)=delete
- [Init\\_raii](#) && [operator=](#) ([Init\\_raii](#) &&)=delete
- [~Init\\_raii](#) ()

### 5.3.1 Constructor & Destructor Documentation

#### 5.3.1.1 Init\_raii() [1/3]

```
MPIw::Init_raii::Init_raii (
    int * argc,
    char *** argv ) [inline]
```

#### 5.3.1.2 Init\_raii() [2/3]

```
MPIw::Init_raii::Init_raii (
    const Init_raii & ) [delete]
```

#### 5.3.1.3 Init\_raii() [3/3]

```
MPIw::Init_raii::Init_raii (
    Init_raii && ) [delete]
```

#### 5.3.1.4 ~Init\_raii()

```
MPIw::Init_raii::~~Init_raii ( ) [inline]
```

### 5.3.2 Member Function Documentation

#### 5.3.2.1 operator=() [1/2]

```
Init_raii& MPIw::Init_raii::operator= (
    const Init_raii & ) [delete]
```

#### 5.3.2.2 operator=() [2/2]

```
Init_raii&& MPIw::Init_raii::operator= (
    Init_raii && ) [delete]
```

The documentation for this class was generated from the following file:

- [/home/somik/WSL\\_Workspace/cpp/mpi\\_wrapper/src/raii.hpp](#)

## 5.4 MPIw::structs::Recv\_st< T > Struct Template Reference

```
#include <structs.hpp>
```

## Public Attributes

- std::vector< T > [data](#)
- MPI\_Status [status](#)

### 5.4.1 Member Data Documentation

#### 5.4.1.1 data

```
template<typename T >  
std::vector<T> MPIw::structs::Recv_st< T >::data
```

#### 5.4.1.2 status

```
template<typename T >  
MPI_Status MPIw::structs::Recv_st< T >::status
```

The documentation for this struct was generated from the following file:

- [/home/somik/WSL\\_Workspace/cpp/mpi\\_wrapper/src/structs.hpp](#)



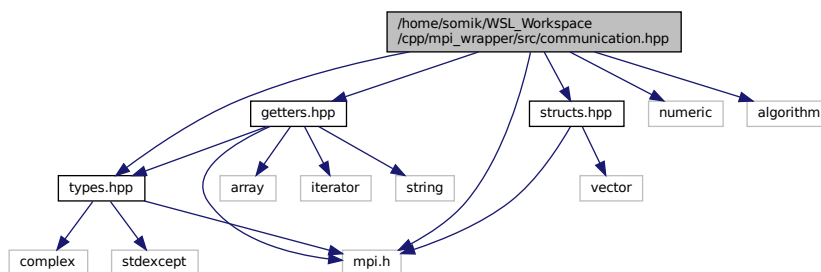
## Chapter 6

# File Documentation

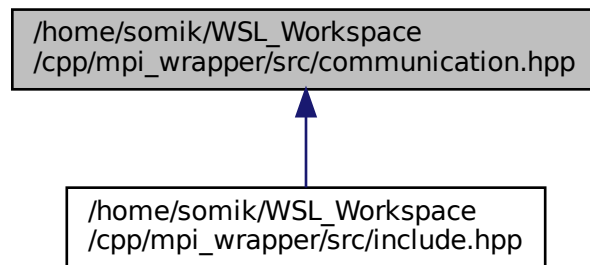
### 6.1 /home/somik/WSL\_Workspace/cpp/mpi\_↵ wrapper/src/communication.hpp File Reference

```
#include "getters.hpp"  
#include "structs.hpp"  
#include "types.hpp"  
#include <mpi.h>  
#include <numeric>  
#include <algorithm>
```

Include dependency graph for communication.hpp:



This graph shows which files directly or indirectly include this file:



## Namespaces

- [MPIw](#)
- [MPIw::details](#)

## Functions

- `template<typename T >`  
`std::vector< std::vector< T > > MPIw::details::split\_buffer (const std::vector< T > &buffer, const std::vector< T > &offsets)`
- `template<typename T >`  
`structs::Recv_st< T > MPIw::Recv (MPI_Comm comm, int source=MPI_ANY_SOURCE, int tag=MPI_ANY_TAG)`
- `template<typename T >`  
`void MPIw::Send (MPI_Comm comm, const std::vector< T > &data, int dest, int tag)`
- `template<typename T >`  
`std::vector< T > MPIw::Bcast (MPI_Comm comm, const std::vector< T > &data, int count, int root)`
- `template<typename T >`  
`std::vector< T > MPIw::Bcast\_managed (MPI_Comm comm, const std::vector< T > &data, int count, int root)`
- `template<typename T >`  
`void MPIw::Bcast\_send (MPI_Comm comm, const std::vector< T > &data)`
- `template<typename T >`  
`std::vector< T > MPIw::Bcast\_recv (MPI_Comm comm, int count, int root)`
- `template<typename T >`  
`void MPIw::Bcast\_send\_managed (MPI_Comm comm, const std::vector< T > &data)`
- `template<typename T >`  
`std::vector< T > MPIw::Bcast\_recv\_managed (MPI_Comm comm, int root)`
- `template<typename T >`  
`std::vector< T > MPIw::Gather (MPI_Comm comm, const std::vector< T > &data, int root)`
- `template<typename T >`  
`void MPIw::Gather\_send (MPI_Comm comm, const std::vector< T > &data, int root)`
- `template<typename T >`  
`std::vector< T > MPIw::Gather\_recv (MPI_Comm comm, const std::vector< T > &data)`
- `template<typename T >`  
`std::vector< T > MPIw::Allgather (MPI_Comm comm, const std::vector< T > &data)`

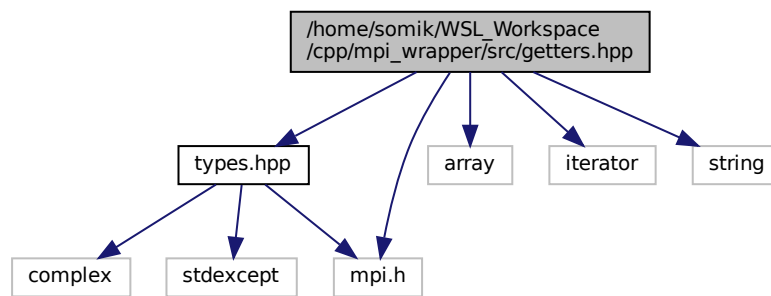


- `template<typename T>`  
`std::vector< std::vector< T > > MPIw::Gatherv` (MPI\_Comm comm, const std::vector< T > &data, int root)
- `template<typename T>`  
`void MPIw::Gatherv_send` (MPI\_Comm comm, const std::vector< T > &data, int root)
- `template<typename T>`  
`std::vector< std::vector< T > > MPIw::Gatherv_recv` (MPI\_Comm comm, const std::vector< T > &data)
- `template<typename T>`  
`std::vector< std::vector< T > > MPIw::Allgatherv` (MPI\_Comm comm, const std::vector< T > &data)
- `template<typename T>`  
`std::vector< T > MPIw::Scatter` (MPI\_Comm comm, const std::vector< T > &data, int count, int root)
- `template<typename T>`  
`std::vector< T > MPIw::Scatter_send` (MPI\_Comm comm, const std::vector< T > &data)
- `template<typename T>`  
`std::vector< T > MPIw::Scatter_recv` (MPI\_Comm comm, int count, int root)
- `template<typename T>`  
`std::vector< T > MPIw::Scatter_send_managed` (MPI\_Comm comm, const std::vector< T > &data)
- `template<typename T>`  
`std::vector< T > MPIw::Scatter_recv_managed` (MPI\_Comm comm, int root)
- `template<typename T>`  
`std::vector< T > MPIw::Scatterv` (MPI\_Comm comm, const std::vector< std::vector< T > > &data, int root)
- `template<typename T>`  
`std::vector< T > MPIw::Scatterv_send` (MPI\_Comm comm, const std::vector< std::vector< T > > &data)
- `template<typename T>`  
`std::vector< T > MPIw::Scatterv_recv` (MPI\_Comm comm, int root)
- `template<typename T>`  
`std::vector< T > MPIw::Reduce` (MPI\_Comm comm, const std::vector< T > &data, MPI\_Op op, int root)
- `template<typename T>`  
`void MPIw::Reduce_send` (MPI\_Comm comm, const std::vector< T > &data, MPI\_Op op, int root)
- `template<typename T>`  
`std::vector< T > MPIw::Reduce_recv` (MPI\_Comm comm, const std::vector< T > &data, MPI\_Op op)
- `template<typename T>`  
`std::vector< T > MPIw::AllReduce` (MPI\_Comm comm, std::vector< T > &data, MPI\_Op op)
- `void MPIw::Barrier` (MPI\_Comm comm)

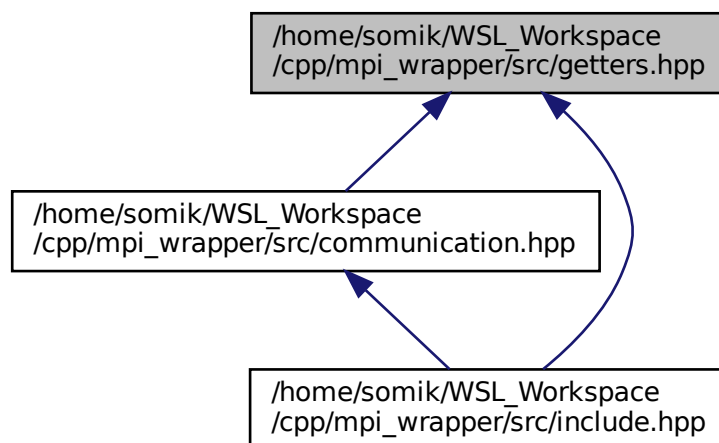
## 6.2 /home/somik/WSL\_Workspace/cpp/mpi\_wrapper/src/getters.hpp File Reference

```
#include "types.hpp"
#include <array>
#include <iterator>
#include <mpi.h>
#include <string>
```

Include dependency graph for getters.hpp:



This graph shows which files directly or indirectly include this file:



## Namespaces

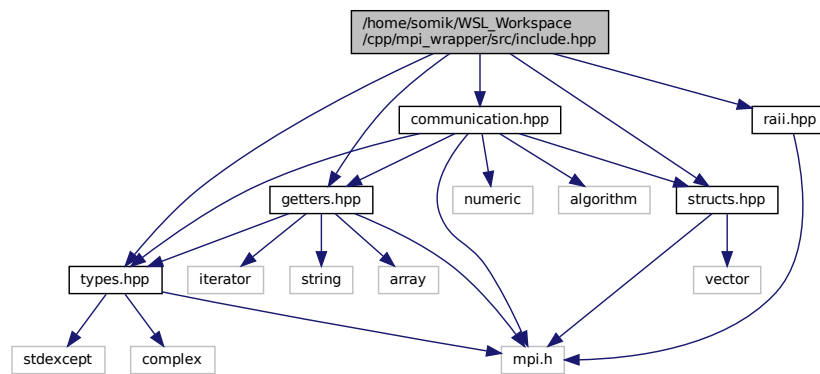
- [MPIw](#)

## Functions

- `int MPIw::Get\_count (const MPI_Status &status, MPI_Datatype type)`
- `template<typename T >  
int MPIw::Get\_count (const MPI_Status &status)`
- `int MPIw::Comm\_rank (MPI_Comm comm)`
- `int MPIw::Comm\_size (MPI_Comm comm)`
- `int MPIw::Group\_rank (MPI_Group group)`
- `int MPIw::Group\_size (MPI_Group group)`
- `std::string MPIw::Get\_processor\_name ()`

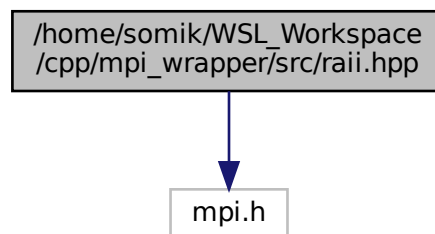
## 6.3 /home/somik/WSL\_Workspace/cpp/mpi\_wrapper/src/include.hpp File Reference

```
#include "communication.hpp"
#include "getters.hpp"
#include "raii.hpp"
#include "structs.hpp"
#include "types.hpp"
Include dependency graph for include.hpp:
```

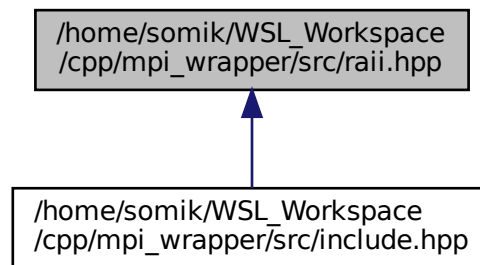


## 6.4 /home/somik/WSL\_Workspace/cpp/mpi\_wrapper/src/raii.hpp File Reference

```
#include <mpi.h>
Include dependency graph for raii.hpp:
```



This graph shows which files directly or indirectly include this file:



## Classes

- class [MPIw::Init\\_raii](#)
- class [MPIw::Comm\\_raii](#)
- class [MPIw::Group\\_raii](#)

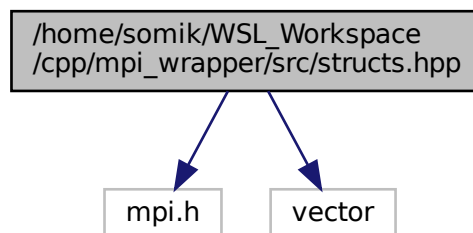
## Namespaces

- [MPIw](#)

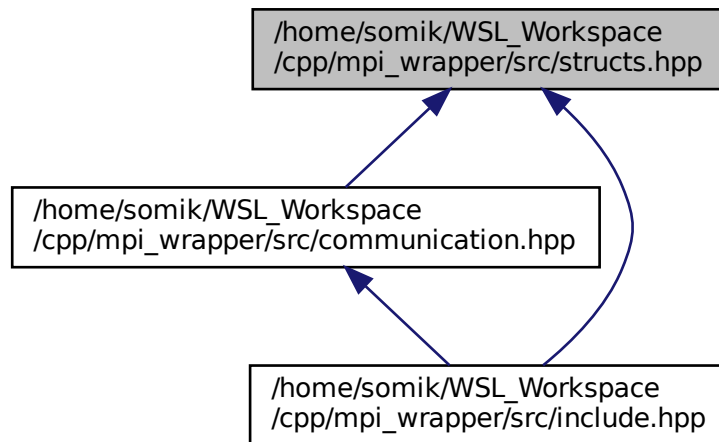
## 6.5 /home/somik/WSL\_Workspace/cpp/mpi\_wrapper/src/structs.hpp File Reference

```
#include <mpi.h>
#include <vector>
```

Include dependency graph for structs.hpp:



This graph shows which files directly or indirectly include this file:



## Classes

- struct `MPIw::structs::Recv_st< T >`

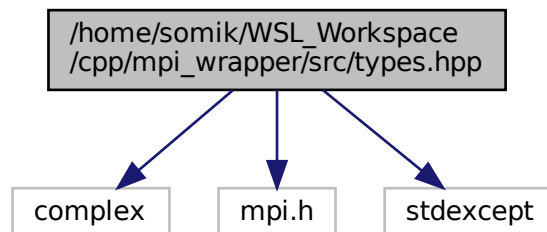
## Namespaces

- `MPIw`
- `MPIw::structs`

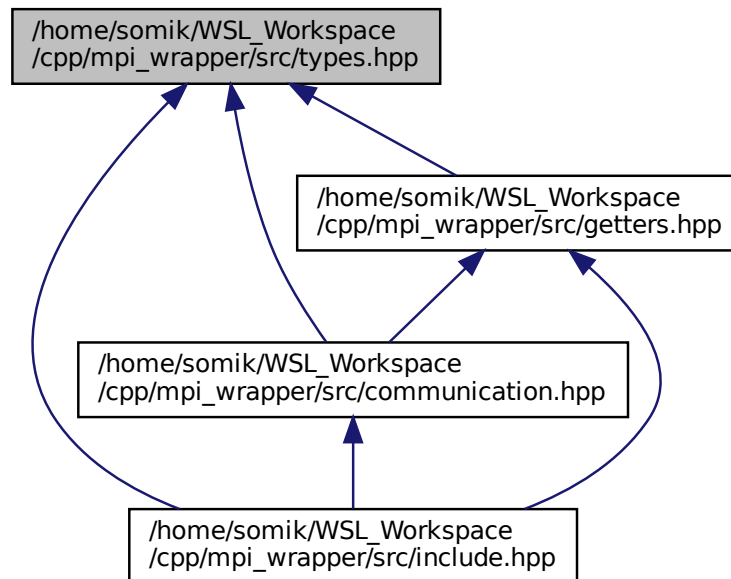
## 6.6 /home/somik/WSL\_Workspace/cpp/mpi\_wrapper/src/types.hpp File Reference

```
#include <complex>
#include <mpi.h>
#include <stdexcept>
```

Include dependency graph for types.hpp:



This graph shows which files directly or indirectly include this file:



## Namespaces

- [MPIw](#)
- [MPIw::types](#)

## Macros

- `#define MPIw\_register\_type(cpp_type, mpi_type)`

## Functions

- `template<typename T >`  
`MPI_Datatype MPIw::types::get\_mpi\_type (T=T{})`
- `MPIw\_register\_type (char, MPI_CHAR)`
- `MPIw\_register\_type (wchar_t, MPI_WCHAR)`
- `MPIw\_register\_type (short, MPI_SHORT)`
- `MPIw\_register\_type (int, MPI_INT)`
- `MPIw\_register\_type (long, MPI_LONG)`
- `MPIw\_register\_type (signed char, MPI_SIGNED_CHAR)`
- `MPIw\_register\_type (unsigned char, MPI_UNSIGNED_CHAR)`
- `MPIw\_register\_type (unsigned short, MPI_UNSIGNED_SHORT)`
- `MPIw\_register\_type (unsigned, MPI_UNSIGNED)`
- `MPIw\_register\_type (unsigned long, MPI_UNSIGNED_LONG)`
- `MPIw\_register\_type (float, MPI_FLOAT)`
- `MPIw\_register\_type (double, MPI_DOUBLE)`
- `MPIw\_register\_type (long double, MPI_LONG_DOUBLE)`
- `MPIw\_register\_type (bool, MPI_CXX_BOOL)`
- `MPIw\_register\_type (std::complex< float >, MPI_CXX_COMPLEX)`
- `MPIw\_register\_type (std::complex< double >, MPI_CXX_DOUBLE_COMPLEX)`
- `MPIw\_register\_type (std::complex< long double >, MPI_CXX_LONG_DOUBLE_COMPLEX)`

## 6.6.1 Macro Definition Documentation

### 6.6.1.1 MPIw\_register\_type

```
#define MPIw_register_type(  
    cpp_type,  
    mpi_type )
```

#### Value:

```
namespace MPIw::types {  
    template <>  
    MPI_Datatype get_mpi_type<cpp_type>(cpp_type) {  
        return mpi_type;  
    }  
}
```

```
\\  
\\  
\\  
\\
```

## 6.6.2 Function Documentation

### 6.6.2.1 MPIw\_register\_type() [1/17]

```
MPIw_register_type (  
    bool ,  
    MPI_CXX_BOOL )
```

### 6.6.2.2 MPIw\_register\_type() [2/17]

```
MPIw_register_type (  
    char ,  
    MPI_CHAR )
```

### 6.6.2.3 MPIw\_register\_type() [3/17]

```
MPIw_register_type (  
    double ,  
    MPI_DOUBLE )
```

#### 6.6.2.4 MPIw\_register\_type() [4/17]

```
MPIw_register_type (
    float ,
    MPI_FLOAT )
```

#### 6.6.2.5 MPIw\_register\_type() [5/17]

```
MPIw_register_type (
    int ,
    MPI_INT )
```

#### 6.6.2.6 MPIw\_register\_type() [6/17]

```
MPIw_register_type (
    long double ,
    MPI_LONG_DOUBLE )
```

#### 6.6.2.7 MPIw\_register\_type() [7/17]

```
MPIw_register_type (
    long ,
    MPI_LONG )
```

#### 6.6.2.8 MPIw\_register\_type() [8/17]

```
MPIw_register_type (
    short ,
    MPI_SHORT )
```

#### 6.6.2.9 MPIw\_register\_type() [9/17]

```
MPIw_register_type (
    signed char ,
    MPI_SIGNED_CHAR )
```



**6.6.2.10 MPIw\_register\_type() [10/17]**

```
MPIw_register_type (
    std::complex< double > ,
    MPI_CXX_DOUBLE_COMPLEX )
```

**6.6.2.11 MPIw\_register\_type() [11/17]**

```
MPIw_register_type (
    std::complex< float > ,
    MPI_CXX_COMPLEX )
```

**6.6.2.12 MPIw\_register\_type() [12/17]**

```
MPIw_register_type (
    std::complex< long double > ,
    MPI_CXX_LONG_DOUBLE_COMPLEX )
```

**6.6.2.13 MPIw\_register\_type() [13/17]**

```
MPIw_register_type (
    unsigned char ,
    MPI_UNSIGNED_CHAR )
```

**6.6.2.14 MPIw\_register\_type() [14/17]**

```
MPIw_register_type (
    unsigned long ,
    MPI_UNSIGNED_LONG )
```

**6.6.2.15 MPIw\_register\_type() [15/17]**

```
MPIw_register_type (
    unsigned short ,
    MPI_UNSIGNED_SHORT )
```

**6.6.2.16 MPIw\_register\_type() [16/17]**

```
MPIw_register_type (
    unsigned ,
    MPI_UNSIGNED )
```

**6.6.2.17 MPIw\_register\_type() [17/17]**

```
MPIw_register_type (
    wchar_t ,
    MPI_WCHAR )
```

# Index

[/home/somik/WSL\\_Workspace/cpp/mpi\\_wrapper/src/communicator.cpp](#), [25](#)  
[/home/somik/WSL\\_Workspace/cpp/mpi\\_wrapper/src/getters.cpp](#), [27](#)  
[/home/somik/WSL\\_Workspace/cpp/mpi\\_wrapper/src/include/mpiwrapper.h](#), [29](#)  
[/home/somik/WSL\\_Workspace/cpp/mpi\\_wrapper/src/rai.h](#), [29](#)  
[/home/somik/WSL\\_Workspace/cpp/mpi\\_wrapper/src/structs.cpp](#), [30](#)  
[/home/somik/WSL\\_Workspace/cpp/mpi\\_wrapper/src/types.cpp](#), [31](#)  
~Comm\_rai  
    MPIw::Comm\_rai, [18](#)  
~Group\_rai  
    MPIw::Group\_rai, [20](#)  
~Init\_rai  
    MPIw::Init\_rai, [22](#)  
  
Allgather  
    MPIw, [8](#)  
Allgatherv  
    MPIw, [9](#)  
AllReduce  
    MPIw, [9](#)  
  
Barrier  
    MPIw, [9](#)  
Bcast  
    MPIw, [9](#)  
Bcast\_managed  
    MPIw, [9](#)  
Bcast\_recv  
    MPIw, [10](#)  
Bcast\_recv\_managed  
    MPIw, [10](#)  
Bcast\_send  
    MPIw, [10](#)  
Bcast\_send\_managed  
    MPIw, [10](#)  
  
comm  
    MPIw::Comm\_rai, [19](#)  
Comm\_rai  
    MPIw::Comm\_rai, [17](#), [18](#)  
Comm\_rank  
    MPIw, [10](#)  
Comm\_size  
    MPIw, [11](#)  
  
data  
    MPIw::Recv\_st< T >, [23](#)  
    MPIw, [11](#)  
    MPIw, [11](#)  
    MPIw, [11](#)  
    MPIw, [11](#)  
    MPIw, [11](#)  
    MPIw, [11](#)  
    MPIw, [11](#)  
    MPIw, [12](#)  
    MPIw, [12](#)  
    MPIw::Comm\_rai, [18](#)  
    MPIw::Group\_rai, [20](#)  
    MPIw, [12](#)  
    MPIw::types, [16](#)  
    MPIw, [12](#)  
    MPIw::Group\_rai, [21](#)  
    MPIw::Group\_rai, [19](#), [20](#)  
    MPIw, [12](#)  
    MPIw, [12](#)  
  
Init\_rai  
    MPIw::Init\_rai, [21](#), [22](#)  
  
MPIw, [7](#)  
    Allgather, [8](#)  
    Allgatherv, [9](#)  
    AllReduce, [9](#)  
    Barrier, [9](#)  
    Bcast, [9](#)  
    Bcast\_managed, [9](#)  
    Bcast\_recv, [10](#)  
    Bcast\_recv\_managed, [10](#)  
    Bcast\_send, [10](#)  
    Bcast\_send\_managed, [10](#)  
    Comm\_rank, [10](#)  
    Comm\_size, [11](#)  
    Gather, [11](#)  
    Gather\_recv, [11](#)

- Gather\_send, 11
- Gatherv, 11
- Gatherv\_recv, 11
- Gatherv\_send, 12
- Get\_count, 12
- Get\_processor\_name, 12
- Group\_rank, 12
- Group\_size, 12
- Recv, 13
- Reduce, 13
- Reduce\_recv, 13
- Reduce\_send, 13
- Scatter, 13
- Scatter\_recv, 14
- Scatter\_recv\_managed, 14
- Scatter\_send, 14
- Scatter\_send\_managed, 14
- Scatterv, 14
- Scatterv\_recv, 15
- Scatterv\_send, 15
- Send, 15
- MPIw::Comm\_raii, 17
  - ~Comm\_raii, 18
  - comm, 19
  - Comm\_raii, 17, 18
  - get, 18
  - operator MPI\_Comm, 18
  - operator=, 18
  - operator&, 18
- MPIw::details, 15
  - split\_buffer, 15
- MPIw::Group\_raii, 19
  - ~Group\_raii, 20
  - get, 20
  - group, 21
  - Group\_raii, 19, 20
  - operator MPI\_Group, 20
  - operator=, 20
  - operator&, 20
- MPIw::Init\_raii, 21
  - ~Init\_raii, 22
  - Init\_raii, 21, 22
  - operator=, 22
- MPIw::structs, 16
- MPIw::structs::Recv\_st< T >, 22
  - data, 23
  - status, 23
- MPIw::types, 16
  - get\_mpi\_type, 16
- MPIw\_register\_type
  - types.hpp, 33–36
- operator MPI\_Comm
  - MPIw::Comm\_raii, 18
- operator MPI\_Group
  - MPIw::Group\_raii, 20
- operator=
  - MPIw::Comm\_raii, 18
  - MPIw::Group\_raii, 20
  - MPIw::Init\_raii, 22
- operator&
  - MPIw::Comm\_raii, 18
  - MPIw::Group\_raii, 20
- Recv
  - MPIw, 13
- Reduce
  - MPIw, 13
- Reduce\_recv
  - MPIw, 13
- Reduce\_send
  - MPIw, 13
- Scatter
  - MPIw, 13
- Scatter\_recv
  - MPIw, 14
- Scatter\_recv\_managed
  - MPIw, 14
- Scatter\_send
  - MPIw, 14
- Scatter\_send\_managed
  - MPIw, 14
- Scatterv
  - MPIw, 14
- Scatterv\_recv
  - MPIw, 15
- Scatterv\_send
  - MPIw, 15
- Send
  - MPIw, 15
- split\_buffer
  - MPIw::details, 15
- status
  - MPIw::structs::Recv\_st< T >, 23
- types.hpp
  - MPIw\_register\_type, 33–36