Motivation

- Support for > INT_MAX datatypes in API
- Optional for implementers
    - Customer/User Driven
    - No API explosion
- Backward compatible
    - Define as `int`

Overview

- MPI_Count: count of datatypes:
  - Count
  - Displacement
  - Position
- MPI_Size: count of bytes:
  - Size

MPI_Count as Count

```
int MPI_Send(
  void* buf,
  ~~int~~ MPI_Count count,
  MPI_Datatype datatype,
  int dest,
  int tag,
  MPI_Comm comm
  );
```

MPI_Count as Displacement

```
int MPI_Gatherv(
  void* sendbuf,
  intMPI_Count sendcount,
  MPI_Datatype sendtype,
  void* recvbuf,
  intMPI_Count *recvcounts,
  intMPI_Count *displs,
  MPI_Datatype recvtype,
  int root,
  MPI_Comm comm
  );
```

MPI_Count as Position

```
int MPI_Pack(
  void* inbuf,
  int MPI_Count incount,
  MPI_Datatype datatype,
  void* outbuf,
  int MPI_Size outsize,
  int MPI_Count *position,
  MPI_Comm comm
  );
```

Why Position?

```
int buf[100];
char packed[1000];

MPI_Count postition = 0;
MPI_Pack( buf, _countof(buf), MPI_INT,
          packed, _countof(packed), &position,
   MPI_COMM_WORLD );
MPI_Send( packed, position, MPI_PACKED, 0, 0, MPI_COMM_WORLD );
```

MPI_Count

MPI_Size as Size

```
int MPI_Buffer_attach(
  void* buffer,
  ~~int~~ MPI_Size size
);

int MPI_Type_size(
  MPI_Datatype datatype,
  ~~int~~ MPI_Size *size
);
```

Details

https://svn.mpi-forum.org/trac/mpi-forum-web/ticket/224