

Installing and Running Open MPI

Windows

- Install a virtual machine package such as Oracle VirtualBox from <https://www.virtualbox.org/>.
- Install Ubuntu on a virtual machine. You can get Ubuntu from <http://www.ubuntu.com/>

Ubuntu

- Make sure your package repository is up to date. Run `sudo apt-get update`.
- Be sure you've installed GCC! `sudo apt-get install gcc g++` will install the compilers if you don't have them already.
- Then, run `sudo apt-get install openmpi-bin openmpi-doc libopenmpi-dev`. This will install OpenMPI, all necessary libraries, and the documentation for the MPI calls.

Compiling and running programs with Open MPI

- To compile programs, use `mpicc` and `mpiCC`. These are wrappers for `gcc` and `g++`, respectively, so you can provide exactly the same options you would supply to GCC.
- Once you've compiled your program, you're ready to run it. The command `mpirun` will spawn the correct number of processes and connect them all together. The only argument you really care about is `-np`, which specifies the number of processes you want to run. Here's an example of the compilation and running process:

```
$ mpicc -o hello hello.c
$ mpirun -np 4 ./hello
I am process 0 of 4
I am process 1 of 4
I am process 2 of 4
I am process 3 of 4
$
```