Running MPI on Ubuntu

# Introduction

This is a quick and simple guide to running an MPI[[1]](#footnote-0) application on Ubuntu using the available packages. The code will come from the MPI Tutorial site[[2]](#footnote-1), starting with the “MPI Hello World” tutorial[[3]](#footnote-2). The guide to running MPI across the LAN is very relevant to our future work[[4]](#footnote-3)

## Notes

Everything below is mostly command line input and output. Lines that begin with $ are commands entered as a user, and lines starting with # are commands done as root. You could also enter these commands using sudo.

# Installation

Fortunately, all the libraries we need are available via apt-get.

$ sudo su -

# apt-get install git openmpi-bin libopenmpi-dev

# Testing

The steps will go through are:

1. Clone the mpitutorial repository from GitHub
2. Go to the directory with the source code for the example
3. Build the example application
4. Run the example using 4 processors

$ git clone https://github.com/wesleykendall/mpitutorial.git

$ cd mpitutorial/tutorials/mpi-hello-world/code

$ ls

makefile mpi\_hello\_world.c

$ make

mpicc -o mpi\_hello\_world mpi\_hello\_world.c

$ ls

makefile mpi\_hello\_world mpi\_hello\_world.c

$ mpirun -np 4 ./mpi\_hello\_world

Hello world from processor rpwagner-VirtualBox, rank 3 out of 4 processors

Hello world from processor rpwagner-VirtualBox, rank 1 out of 4 processors

Hello world from processor rpwagner-VirtualBox, rank 2 out of 4 processors

Hello world from processor rpwagner-VirtualBox, rank 0 out of 4 processors

# Examples

You can try out some examples from the beta-workshop branch of the cluster guide repo.

<https://github.com/sdsc/sandbox-cluster-guide>

<https://github.com/sdsc/sandbox-cluster-guide/tree/beta-workshop/examples>

To get all the packages required to run the examples, run the following command:

$ sudo apt-get install emacs openmpi-bin libopenmpi-dev python-mpi4py vim -y

1. <https://en.wikipedia.org/wiki/Message_Passing_Interface> [↑](#footnote-ref-0)
2. <http://mpitutorial.com/> [↑](#footnote-ref-1)
3. <http://mpitutorial.com/tutorials/mpi-hello-world/> [↑](#footnote-ref-2)
4. <http://mpitutorial.com/tutorials/running-an-mpi-cluster-within-a-lan/> [↑](#footnote-ref-3)