

## Tau Performance System training course

### Using the VirtualBox Ubuntu Virtual Machine

Practical sheets 1, 2 and 3 all use a pre-configured Virtual Machine (VM) that is set up to run Ubuntu 16.10 Linux. To use the VM, first Download and install VirtualBox from <https://www.virtualbox.org/wiki/Downloads>. Versions for Windows, macOS and Linux are available.

If you haven't already, please download the Virtual Machine image file from <http://doi.org/10.5281/zenodo.2705395>.

From the VirtualBox Manager there should be an option to 'Import Appliance'. Use this menu to import the Tau\_x86\_64.ova file downloaded from Zenodo, which should bring up a VM on the menu called 'Tau\_x86\_64'.

Once the VM is imported, inspect the 'Settings' up by Right-clicking on the VM. Figure 1 shows that, on the system used to set up this VM, 1.5 GB of memory has been assigned to this VM from the 8GB available.

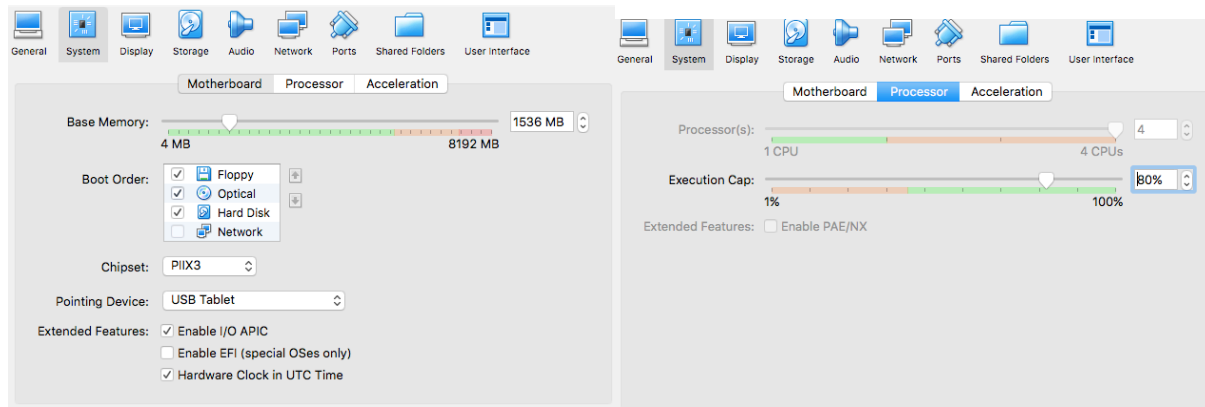


Figure 1: Memory and processor allocation for VM from set up system

The amount of memory available depends on the host system, so Figure 1 will look different depending on the host system. Similarly, the number of CPUs available will depend on the host system; for the set-up system, only 2 CPUs are available, but Processor(s) is set to 4 CPUs to allow 4 MPI processes to be run, even if they use 'virtual' CPUs created using hyperthreading. These settings can be adjusted to better suit a host's system, but for the purpose of the Practical sheets, it is best to maintain Memory and Processor(s) as set in the downloaded VM.

To run the Ubuntu Linux VM, double click the Ubuntu\_x86\_64\_Tau VM and it should bring up the Ubuntu login screen. If you are asked, the password for the machine is 'Tau'. Once logged in, right click on the desktop and select 'Open Terminal'. All further commands will be run from this Terminal.

## Ubuntu Linux Virtual Machine set-up

This VM has been configured with the software packages required to build the Tau Performance System. These include:

- GNU Compiler suite v 5.4.0. This gives access to C, C++ and Fortran compilers using the command `gcc`, `g++` and `gfortran`, respectively
- OpenMPI v 1.10. This allows MPI programmes to be compiled using the MPI compiler wrappers, `mpicc`, `mpicxx` and `mpif90` for C/C++/Fortran, and for MPI programmes to be run using the `mpirun` command
- Oracle Java 8. This is needed to run Tau's results viewer, Paraprof.

These software packages are available upon starting the VM, so that work on the Practical Sheets can begin as soon as the VM is initiated.