

Why use JCU HPC?

JCU HPC provides entry-level research computing resources. Other organisations (QCIF, NCI, Pawsey, etc.) provide much larger, high-capability resources.

Storage

- You want/need to be doing responsible research.
- Your research data is too large to store on a personal computing device.
- Data protection - disk failures are unlikely to result in data loss.
- Protection against silent data corruption.
- Proximity to HPC cluster (compute).

Compute

- You want/need to be doing responsible research.
- Insufficient memory in desktop/laptop computer.
- Certainty that memory errors won't invalidate your results.
- Running research workflows on your computer means it is unusably slow for other tasks.
- Power outages (e.g., RCD testing) are killing jobs running on your desktop/laptop computer.
- Increasing your computational research productivity
 - Running many jobs at the same time.
 - Scaling of parallel processing enabled (e.g., MPI) software.
 - Increasing your computational research productivity through use of GPUs (from June-2018).

Platforms (web services, Rstudio, Jupyter, etc.)

- Investigate options that are provided by others rather than re-inventing the wheel on JCU's research infrastructure.
- JCU HPC have a very limited resource for provisioning of virtual machines for platforms that aren't available elsewhere.
- As a service owner, you are responsible for ensuring that the services built are compliant with all JCU security/risk requirements.
- Virtual machines can be provisioned to provide an alternative to using personal computing devices for your research (including high-end graphical work).
- Many of the storage/compute benefits mentioned above are applicable for virtual machines.

Example Scenarios

The aim of this section is to highlight problems some researchers have encountered with using personal computing devices for research.

Scenario 1

You have years of research work stored on your personal/work computing device. You arrive at work one morning, power on your computing device - nothing happens. After engaging with IT Services & Support staff, you are informed that your disk has failed and that there is almost no chance of recovering your files. This has happened to quite a few JCU staff and students - it could happen to you.

Scenario 2

You have amassed or inherited a vast collection of research data in your time. One day it dawns on you how scattered your data is - work and personal computing devices, USB disks, cloud storage providers (e.g., DropBox), etc. Not only is finding files time consuming, but you discover that a fault on a disk have corrupted a critical file that a publication is reliant on.

Scenario 3

You've recently scaled up your research and your computing jobs are taking days (or longer) to finish. You are frustrated by power faults (black-outs, brown-outs, or surges) killing your jobs, meaning you have to start over.

Scenario 5

You are looking to share and collaborate in modern ways. You have seen products that suit your needs. Technology solutions staff often provide guidance /assistance with requirements gathering and may even be able to build platforms that fulfil the requirements, subject to availability of resources and costs.