University of Melbourne
Infrastructure Services - Research Platform Services

University of Melbourne Research Cloud

Service Description and Service Levels

Service Description

What is the Research Cloud (RC)?

The University of Melbourne (UoM) Research Cloud provides infrastructure-as-a-service (IaaS) cloud computing to researchers. It thus gives researchers access to a robust set of on demand virtualized computing resources (such as servers and storage).

To use the servers researchers need to launch operating-system images and install their applications onto them. Researchers are responsible for patching and maintaining their deployed operating systems and applications.

Some forms of the available storage types can be used independently of the servers. Hence researchers can support their research with a sophisticated computing capability.

Researchers can access the RC via a browser hosted dashboard, command line tools, or through a RESTful API.

The infrastructure provided to researchers by this service is hosted, managed and operated at the University of Melbourne by Research Platform Services, and leverages the national network of resources established by the Commonwealth Government's NeCTAR Program.

Using the Research Cloud

The RC is available at no charge to researchers at the University of Melbourne[1].

Applications to use the service should be submitted via http://cloud.nectar.org.au/start-now/. Access is immediate for an initial three month trial project. If this is not sufficient researchers can apply for more via a merit allocation process.

Technical description

Virtual Machines

There are a range of standard Virtual Machine (VM) sizes available. These are described on the NeCTAR support website. Note that the larger sizes may require more resources than have been allocated or available in your project.

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[1] *Research Platform Services operates under the prevailing University model for internal charging. The University may change this model from time to time.*

Local ephemeral disk storage is included, in the form of a root disk and an additional secondary disk. The capacity of these disks is dependent on the size of the selected VM. The RC attempts to minimise the root disk size as this improves overall performance.

If these standard sizes do not suit your project, please get in touch with us at support@nectar.org.au and we can talk you through your options

Storage
In addition to the ephemeral drives, more storage is available in the form of Volume and Object storage. Once attached to a VM, Volume storage is accessed via the file system, much like an external hard drive. Object storage is accessed either via an API or a web interface. The differences between these types of storage are described in more detail on the NeCTAR support website.

If you need extra data storage for your project, please get in touch with us at support@nectar.org.au and we can talk you through your options.

Operating systems
A number of popular open source operating systems are available by default. The full list can be found on the NeCTAR support website. The RC staff try to keep these copies up to date, however, once you launch a VM that uses one of these default operating systems, you become responsible for updating and maintaining the security of the operating system on your VM.

If you prefer to use other operating systems you are free to do so. Remember that some vendors require complex licensing agreements be concluded before you use their software on the cloud. If you are wanting to use such an operating system, please get in touch with us at support@nectar.org.au and we can talk you through your options.

Managing your Infrastructure
The RC is an *unmanaged* infrastructure service. In other words, we provide you with the underlying services you need to create and manage your computing infrastructure within the scope of a project, and then within that project you provide the necessary skills and effort to manage the supplied virtual infrastructure.

As project owner you will have administrative privileges over your infrastructure, and are given access to a 24/7 web interface that allows you to create and manage it.

In summary:

Your obligations
You are responsible for:
- Adding and removing project users
- VM and volume creation and destruction
- Operating system and application management
- Patching and security
- Backup, snapshotting and restoration of both data and systems
- Disaster recovery

● Monitoring and detailed reporting
● Adhering to any relevant university policy.
● Ensuring that you have the required skills. To help you with this, online documentation, courses and face to face training are available

Research Platform Services's obligations

We are responsible for:
● Hosting and operation of all required hardware and software infrastructure
● Management of storage
● Monitoring performance and availability on all systems to ensure reliability of the service.
● Informing you of any planned maintenance or outages with 4 weeks notice.

Monitoring

Basic operational monitoring is carried out by the RC team. The team's system administrators are notified immediately if there is any downtime impacting the hosting service. However, the monitoring of anything that you deploy into the RC cloud is your responsibility.

Security

The RC follows a shared security model. This means that the RC team look after the security of the cloud infrastructure, and you look after the security of anything that you deploy into that cloud. In order to ensure the security of other cloud users, the RC team will quarantine your resources if the RC team believe that they have been compromised by an attacker.

Configuration Management

The RC use automated configuration management to both control and track changes in the cloud infrastructure. This means that changes to the infrastructure can be monitored and are tested. Changes can also be rolled back if need be. You are responsible for the configuration and management of anything that you deploy into the RC cloud.

Capacity Management

The RC team proactively works to identify and flag any capacity related issues that are likely to arise for the RC as a whole. In turn you are given access to tools that allow you to measure and manage the usage and capacity of your own projects on the RC.

Reporting

Because reporting needs between projects can be so different the RC provides only a couple of basic reports. There are summaries of your projects limits and usage on the project's home page. There is also information on the RC as a whole at http://status.rc.nectar.org.au.

Support

The RC 's support site can be found at: https://support.nectar.org.au. The help desk operates Monday to Fridays, 8am-8pm AEST, excluding public or official University of Melbourne holidays. Its target response time is 2 hours.

Service Levels

Service Availability and Performance

The RC provides on-demand computing resources 24/7 across Australia.
The RC operates across a complex shared infrastructure environment managed by a range of organisations and includes:

- NeCTAR Core Services (NCS) - provides the centralised cloud services i.e. dashboard and help desk
- 8 Infrastructure Nodes distributed across Australia - providing compute and storage resources
- AARNet network - provides all the external WAN connectivity

NCS is hosted at UoM and aims to provide an availability uptime of 99.9%. You can view the [uptime history here](#).

Research Platform Services provides one of the Infrastructure Nodes and also aims to provide an availability uptime services of 99.9%.

Both these uptime service targets exclude:
- Scheduled maintenance downtime
- Any outages over the AARNet network
- Any outages caused by the user operating system and installed applications

Other Nodes will offer different availability uptime targets and if you are using random selection for the placement of your VM's, you will need to check their availability.

Scheduled Downtime Maintenance

There are two downtime maintenance notification periods used as follows:
Minor Impact Maintenance
The outage is expected to cause less than 4 hours of downtime
The outage only affects minor service provisions
Operation of established VM's will not be affected
A 1 week prior notification period will be given
Major Impact Maintenance
The outage is expected to cause greater than 4 hours of downtime and/or
The outage will affect major service provisions
 Operation of established VM's may be affected
A 4 week prior notification period will be given

Note that there are services on which the RC relies that are not under the control of NeCTAR Core Services or Research Platform Services (such as Data Centre power, cooling etc. and networking outages). They will also have maintenance windows which may affect the RC service. We will notify users whenever maintenance to these services affects them, insofar as we have been notified.

Service support

Service support is provided by the NeCTAR Federated service desk operated on the FreshDesk service platform

Standard user support hours: Monday to Friday 8am-8pm AEST, excluding public or official University of Melbourne holidays.
Email: support@nectar.org.au

During standard support hours, response times and target resolution times are explained in the matrix below. Outside standard support hours we will provide a best-efforts response only.

Severity criticality	Description	Target response time	Target resolution time[2]
Critical	An outage that results in a cessation to user routine services across the Federated Cloud	1 hour	4 hours
High	An outage that results in significant degradation/partial cessation to user routine services across the Federated Cloud	2 hours	8 hours
Moderate	An outage that has an impact to a local Node or a service that is regionalised	4 hours	5 business days
Low (default)	The function unable to be performed is not critical to overall Research Cloud operations	8 hours	10 business days

Other help

- Technical guides are available at https://support.nectar.org.au/support/solutions.
- Online self paced training is available at http://training.nectar.org.au.

[2] *Note: actual resolution times depend on the precise nature of the problem and may be affected by such things as availability of parts and service personnel.*

● Instructor lead training is also available. More information on this option can be found at http://melbourne.resbaz.edu.au/catalogue.

More information

The Research Cloud infrastructure provided by the University of Melbourne is located in the Carlton Data Centre (UOM DC). More information about the UOM DC can be found here.

The Research Cloud is based on OpenStack software. More information about OpenStack can be found here.