



Astronomy Supercomputer Time Allocation Committee

CALL FOR PROPOSALS: ASTAC 2021-A

Allocation of time on Australian Supercomputing Resources

**** The current call for proposals closes at 8pm (AEDT) Monday 23rd November 2020. ****

ASTAC has issued a call for proposals for the use of the following resources from 1st January 2021 to 30th June 2021 (i.e. Quarters 1-2, 2021). This document describes the resources available under the National Computational Infrastructure (NCI) Astronomy Program, the Swinburne OzSTAR supercomputing program and the Astronomy OpenStack Virtual Machine program.

Note that the following description of resources uses the concept of a service unit (SU). The conversion between SU and CPU-core hour is different for each facility, and may also depend on which queue is used for a computation. Please read carefully below for instructions on how to compute the SU cost of your computations on each facility.

1. NCI Astronomy Program: up to 4,000 kSUs

This program is targeted at highly scalable astrophysics codes that can take advantage of at least 240 cores for highly parallel computation on a well-balanced, high-performance computing system. Allocations in 2021 will run on the Gadi system at the NCI National Facility. More information on Gadi can be found on the NCI National Facility website: <https://opus.nci.org.au>. Applicants may request either purely CPU-based or mixed CPU-GPU calculations. Details on the SU charge for various queues on Gadi, including pure-CPU queues and GPU-accelerated queues, may be found at <https://opus.nci.org.au/display/Help/Gadi+Queue+Limits>.

2. OzSTAR: up to 2,000 kSUs (1,200 kSUs prioritised for GPU-based projects)

OzSTAR is the Swinburne HPC facility launched in March 2018. It is the successor to gSTAR. The facility comprises 115 nodes each with 36 Intel SkyLake X6140 CPU cores and 2 NVIDIA P100 12 GB graphics programming units (GPUs). More information about the hardware can be found on the Swinburne HPC website: <http://supercomputing.swin.edu.au/>.

It should be noted that while 1,200 kSU is prioritised for GPU-based proposals, the 1200/800 GPU/CPU split is not rigid and will depend on the volume (and quality) of GPU-based versus CPU-based proposals.

In calculating SUs requested on OzSTAR for GPU-based code, researchers should note that the time available is measured in core hours of the CPUs associated with each GPU node. The proposal should describe the intended CPU/GPU usage of the simulation approach and specify the intended CPU/GPU ratio. This ratio should then be used to give the requested time in units of CPU-core hours (or SUs). If the proposal only requests an amount of GPU hours and no CPU/GPU ratio is specified then a ratio of 16 will be assumed, i.e. 1 GPU hour = 16 SUs. If the proposal is targeting the KNL nodes this should be clearly specified.

Notes on Data Storage requests for OzSTAR:

OzSTAR is networked to a 6 Petabyte data store. Reasonable requests for storage are 100 Terabyte or less per project and the data will remain available for three months after the project ends.

3. OpenStack Virtual Machines: up to 500 virtual CPUs

Virtual machine (VM) resources on the Swinburne cell within the NeCTAR Cloud network are available for dedicated astronomy access. It is envisaged that this opportunity will be of interest to use cases that do not require the full-blown infrastructure of a HPC facility and/or will benefit from the flexibility of working outside of a HPC environment.

Up to 500 virtual CPUs are available across the six month period covered by this call (which equates to about 2,000 kSUs if we think of a SU in this instance representing one hour of time on a virtual CPU). These CPUs will be utilised via OpenStack VMs which can be provisioned in a variety of different 'flavours' to accommodate a broad spectrum of workflows. Single VMs will typically comprise up to 8 or 16 virtual CPUs and 16 or 32 GB RAM (although larger sizes are possible), as well as attachable storage, a DNS zone and a floating IP address. Applications requesting multiple VMs up to a total of 500 virtual CPUs are welcomed.

Proposal Form

Proposals can be created, managed and submitted online through the Astronomy Data and Computing Services (ADACS) Proposal System at:

<https://tac.adacs.org.au>

noting that the format is similar to the paper form used prior to 2019. Authors will need to login to the system using existing AAF credentials (if they have them) or by simply creating a login for the system.

Quick start hints for the online proposal system: upon logging in you will enter at your dashboard, click on the green "Open Call for Proposals" rectangle, select "View Proposals" from the ASTAC 2021-A entry, then click-on the "Add Proposal" button. Alternatively, you can go directly to the main page for the current call at <https://tac.adacs.org.au/calls/26/> then from the "Manage" menu in the top-right corner select "Add Proposal". Next enter a proposal name and then select either "Supercomputing Time" (for NCI and OzSTAR) or "OpenStack" (for the VMs) as the proposal type. You can also access the manual via the "Help" link in the header at any point. Draft applications can be saved online or to PDF at any stage.

Please complete and submit your proposal by the due date of 8pm (AEDT) Monday 23rd November 2020. We will not be able to consider late applications. Applicants will be advised of the proposal outcomes by 18th December 2020 at the latest.

We ask those who are applying for time to continue an existing project to take note of the requirements to report on past usage and to make sure to highlight how the new request will build upon that usage.

User assistance

For assistance with the proposal process or for more information on the resources available please contact Eman Ali (eali@swin.edu.au).

Notes:

- Please note that additional access to HPC facilities for astronomy and astrophysics at NCI is available through the National Computational Merit Allocation Scheme <http://ncmas.nci.org.au>, and through dedicated shares for the organisational partners of both NCI and Pawsey.
- Also note that Australian astronomers can apply for an account on the Swinburne OzSTAR facility at any time. A generous amount of CPU and GPU cycles is available through the general access job queue. In particular, if you have not used the facility before it is recommended that you first exercise this option in order to become familiar with the facility and to test/develop your code. More information can be found at: <http://supercomputing.swin.edu.au/>
- Information on ASTAC, including the current membership of the committee, can be found at: <http://www.astronomyaustralia.org.au/astac.html>