



Introduction to Gadi

Access to Gadi Resources

NCI Training

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Acknowledgement of Country

The Australian National University acknowledges, celebrates and pays our respects to the Ngunnawal and Ngambri people of the Canberra region and to all First Nations Australians on whose traditional lands we meet and work, and whose cultures are among the oldest continuing cultures in human history.

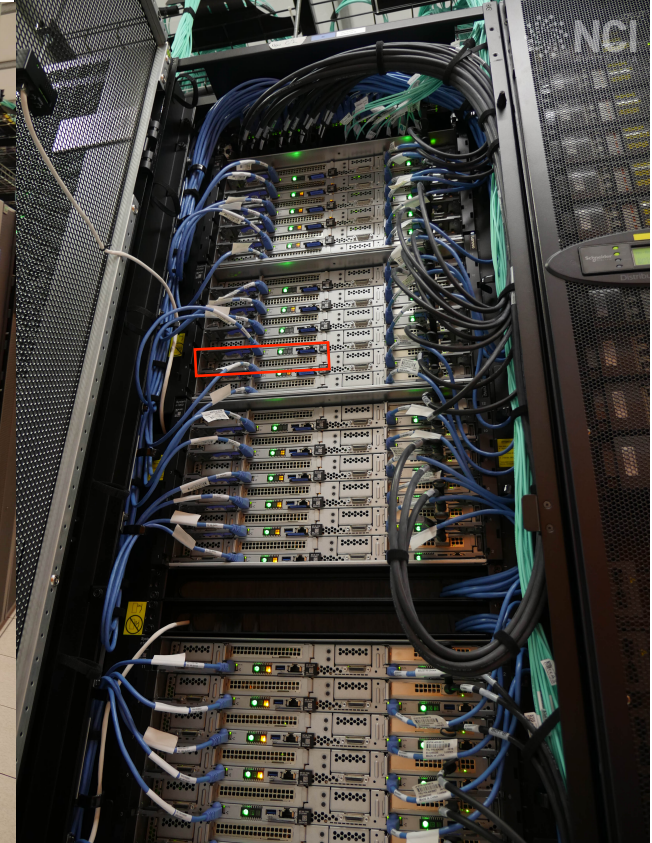
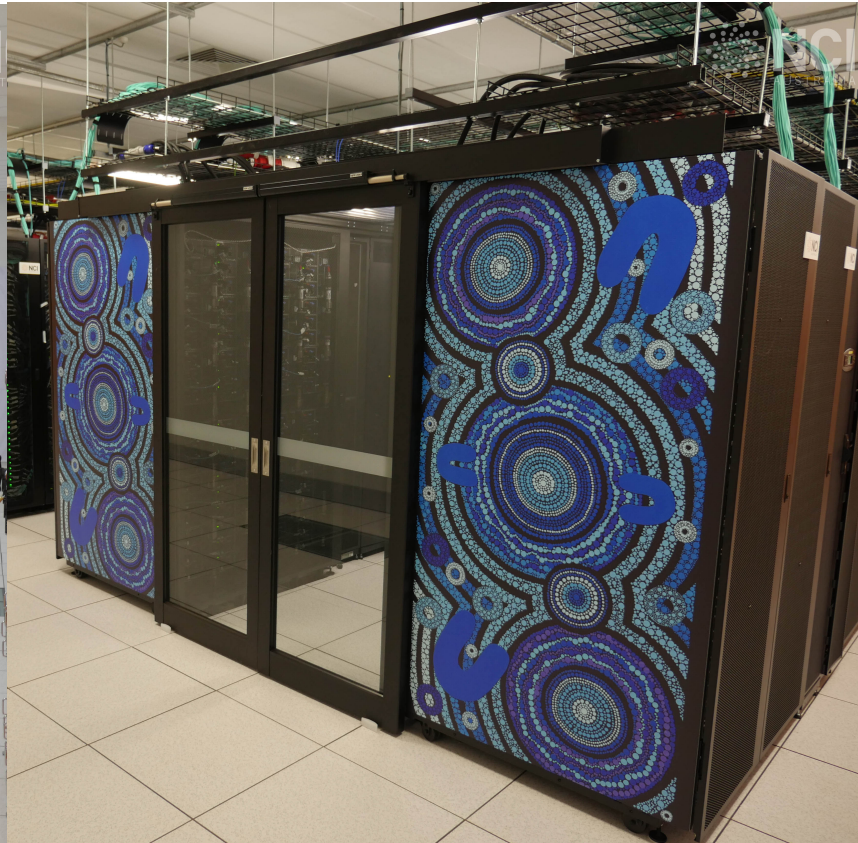
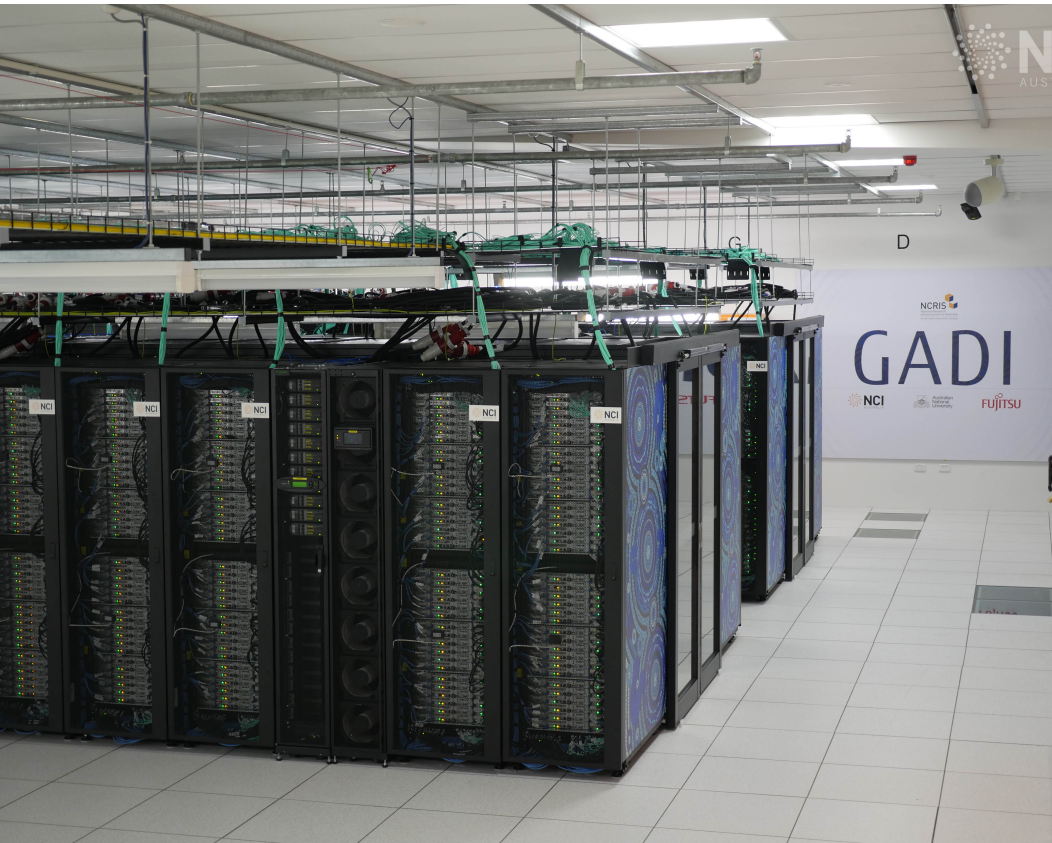
Outline

- What is Gadi
- First half of [Welcome to Gadi](#) documentation page
- Four sections
 - NCI account
 - Login
 - Storage and data transfer
 - Jobs

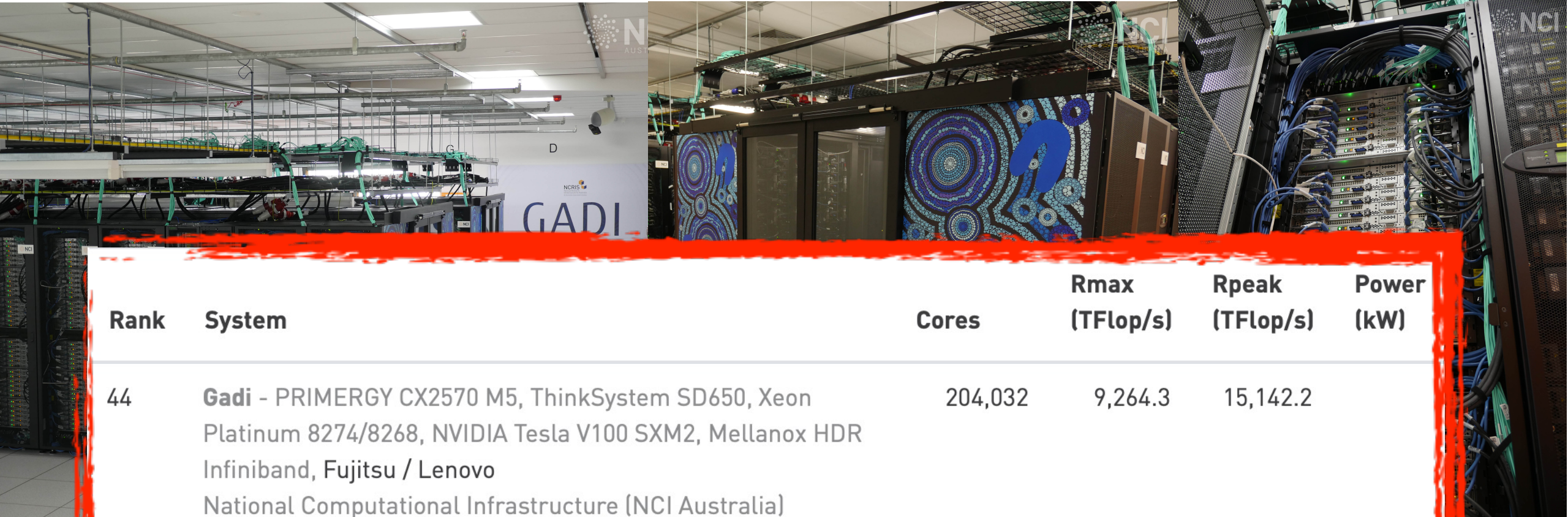
What is Gadi

- High Performance Computing System operated by NCI
- Supercomputer
 - 10 login nodes
 - 6 data mover nodes
 - 4000+ compute nodes, including 160 GPU ones
 - 22 PiB storage available on the Lustre parallel filesystems
 - Mellanox HDR (200Gb/s) InfiniBand interconnect network
 - Application software available through environment modules
 - PBSPro server handles 3-4M jobs per quarter

Gadi

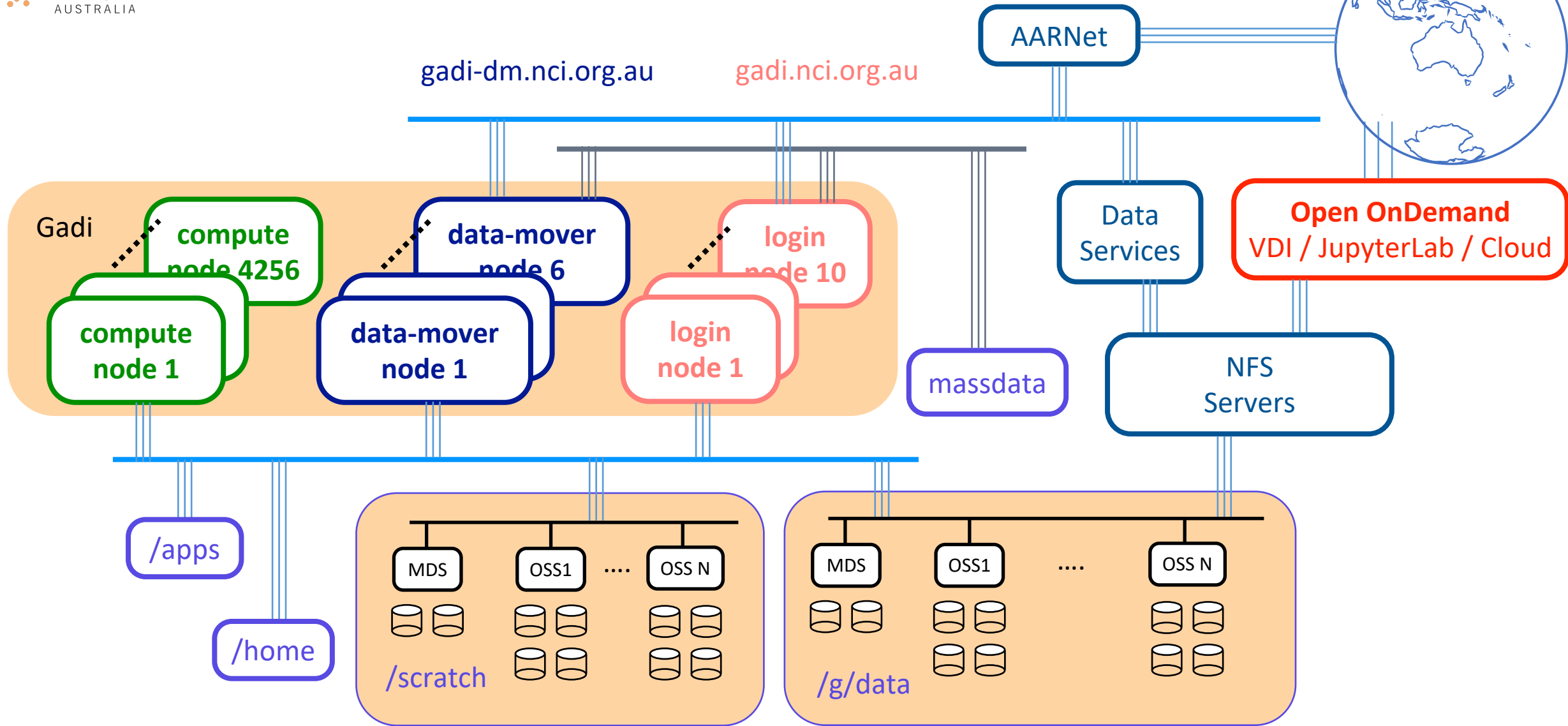


Gadi



Rank	System	Cores	Rmax (TFlop/s)	Rpeak (TFlop/s)	Power (kW)
44	Gadi - PRIMERGY CX2570 M5, ThinkSystem SD650, Xeon Platinum 8274/8268, NVIDIA Tesla V100 SXM2, Mellanox HDR Infiniband, Fujitsu / Lenovo National Computational Infrastructure (NCI Australia) Australia	204,032	9,264.3	15,142.2	

<https://www.top500.org/lists/top500/list/2021/06/>





Login and Login Environment

User, Shell and Project

NCI Account



User login

Username or email address:

Password:

Forgotten your password or username? [Reset it here.](#)
Need access? [Sign up here.](#)

[Log in](#)



Password reset

Forgotten your password?

Enter your contact details below, and we'll send you instructions for setting a new password.

Here's how it works

1. **Fill out the form below.** Note that you must enter the same phone number that you have registered with us for SMS messages.
2. **We will send you an email with a web-page link in it.** If you have provided the correct contact details, we will send you an email.
3. **Wait for the SMS message with your verification code.** Make sure your phone is on and has reception. Note that it may take up to an hour for the message to get through.
4. **Visit the link in the email.** That will take you to a page where you can enter the verification code and your new password.

Remember: use the phone number and email address you have registered with us

Username or email address:

If you know your username, enter that, otherwise, enter the email address that you have registered with us.

SMS phone number:

This must match the SMS phone number you have registered with us. International dialling prefix and country code is not required – we will get those from our records.

[Send email and SMS](#)

Please contact help@nci.org.au if you need help.

Login to Gadi

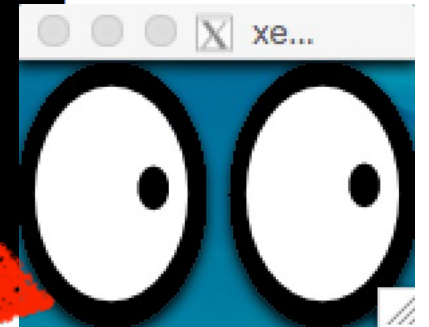
- Open a terminal and login to one of the ten login nodes

```
ssh <jjj777>@gadi.nci.org.au
```

Your username goes here

- X forwarding enabled login and test with xeyes

```
Sue@local:~ $ ssh -Y jjj777@gadi.nci.org.au
jjj777@gadi.nci.org.au's password:
[jjj777@gadi-login-05 ~]$ xeyes
[jjj777@gadi-login-05 ~]$ exit
Sue@local:~ $
```



Login Environment

- Round-robin login : whoami, hostname
- Message of the day (motd)
- Environment check : default shell, gadi project, home dir
- Basic Linux Commands: pwd, ls, cd, mkdir, cp, mv, cat, less, vim, etc ... [linux commands quick reference](#).
- Setting default linux shell and gadi project in ~/.config/gadi-login.conf
 - ~/.bashrc for SHELL=/bin/bash or ~/.cshrc for SHELL=/bin/csh etc.
 - **Caution:** Incorrect editing may lock you out

Q&A

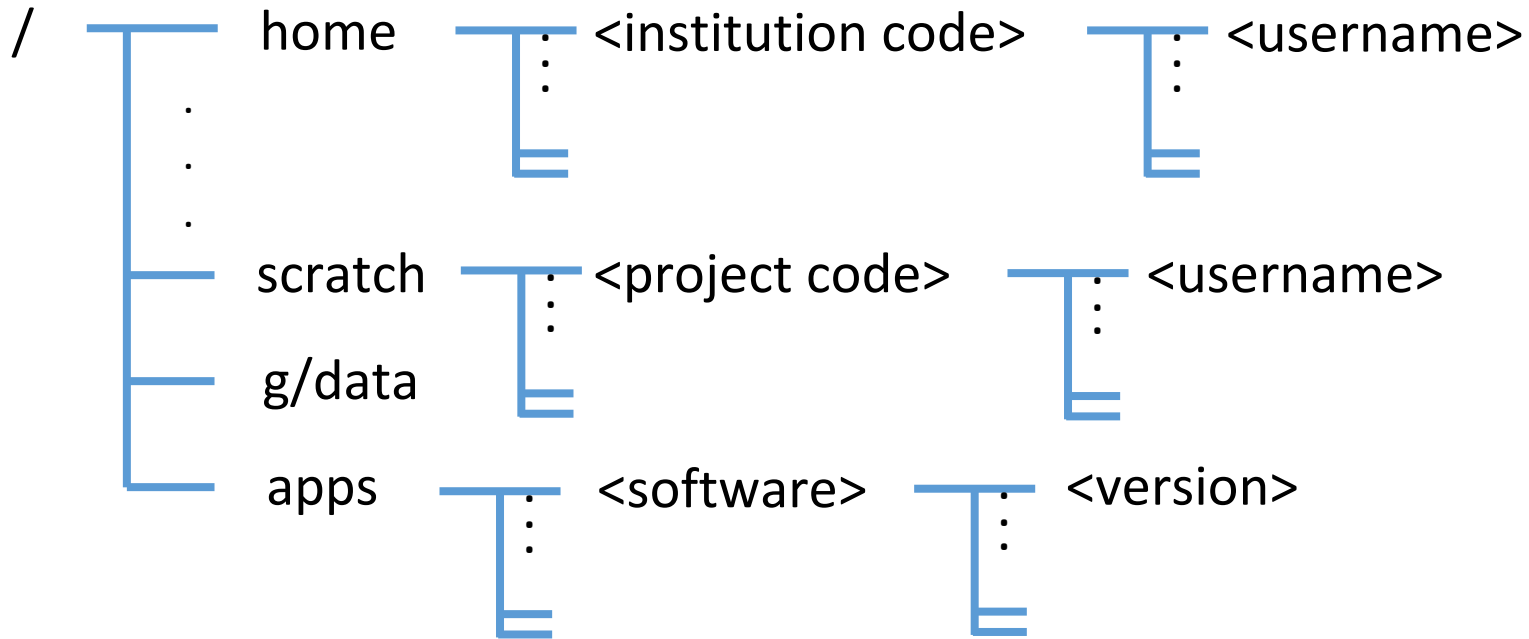
- Who can login to gadi?
- Can I run jobs on gadi login nodes?
 - Processes exceeding 30-minute CPU cumulative time limit and/or 4GB memory usage limit on login nodes are automatically terminated.



Storage and Data Transfer

Accessible Directories and their Limits

Navigating through directories on login nodes



e.g. `/home/777/jjj777`

e.g. `/scratch/c25/jjj777`

e.g. `/g/data/c25/jjj777`

e.g. `/apps/python3/3.8.5`

- massdata and \$PBS_JOBFS

Storage Allocations and Usage by User/Project

- home – *quota -s*
- scratch and gdata – *lquota*
- gdata (with scheme name) – *nci_account*
- Files created by user/project across lustre filesystems – *nci-files-report*

Remote Transfer through Data-mover Node

Upload data to Gadi from local PC

```
Sue@local:~ $ scp test.hdf5 jjj777@gadi-dm.nci.org.au:/scratch/c25/jjj777/input.hdf5
```

from/source

to/destination

Download data from Gadi to local PC

```
Sue@local:~ $ scp jjj777@gadi-dm.nci.org.au:/scratch/public/IntroToGadi.pdf ./
```

from/source

to/destination

- You can also transfer data through gadi-dm.nci.org.au using
 - commands such as sftp, rsync,...
 - applications such as FileZilla, WinSCP,....
- No interactive sessions on any of the data-mover nodes, try interactive copyq jobs

Q&A

- Shared filesystem vs compute node local disk \$PBS_JOBFS
 - Shared access at all time vs 'exclusive' access during the running job
 - Size: 22 PiB vs ~400GB
- Home vs project directories vs massdata
 - Access frequency and inodes limit
 - Ownership
- Data located inside the project directory vs data owned by the project
- Apply for more storage space
 - on /scratch from NCI
 - on /g/data and massdata from scheme managers

Jobs

Submission and Monitoring

Submit Jobs

Data transfer example...

Monitor Jobs

- After submission, query the job status by running
 - `qstat -u $USER`
 - `qstat -sw <jobID>`
 - `qstat -f <jobID>`
- Delete submitted jobs
 - `qdel <jobID1> <jobID2> ...`
- After the job finishes, look up the jobs by running
 - `qstat -fx <jobID>` with-in the first 24 hours
 - `cat data_transfer.sh.o<jobID>`
 - `cat data_transfer.sh.e<jobID>`

Q&A

- Job costs
 - Queue —> charge rate
 - CPU and memory request, walltime usage —> resource hour
 - Reserved SU
- qsub, qstat, qdel all launch requests to PBS server
 - If querying in a loop, keep the interval at-least 60secs
- <https://opus.nci.org.au/display/Help/4.+PBS+Jobs>



Contact NCI
help@nci.org.au

Help us help you...

When-ever writing to NCI helpdesk (help@nci.org.au) please include as much information as possible, including but not limited to:

- Username
- Project
- In case of PBS job related queries, absolute paths to job script, job output and error files, launch dir i.e. where the job was submitted from etc.
- In other cases, steps to reproduce the problem; exact error message or screenshots to describe the problem



Thank you

<https://opus.nci.org.au/display/Help/NCI+Training+and+Educational+Events>