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computecanada

Introduction to Compute Canada

(a faculty edition)

Preliminaries

- We strongly recommend to attend our regular weekly New User webinar (every Tuesday at 2pm Eastern time) before watching this presentation.
  - Register here: https://www.sharcnet.ca/my/news/calendar
- You can also watch a recorded version of it on http://youtube.sharcnet.ca

Outline

- What is Compute Canada
- What Compute Canada can do for you
- Getting help
- Computing resources
  - Clusters / clouds
  - Storage
  - Software
- Administering your research group
  - Adding / removing students and postdocs
  - File ownership
  - Resource Allocation Competitions
- Q and A's

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Single account...

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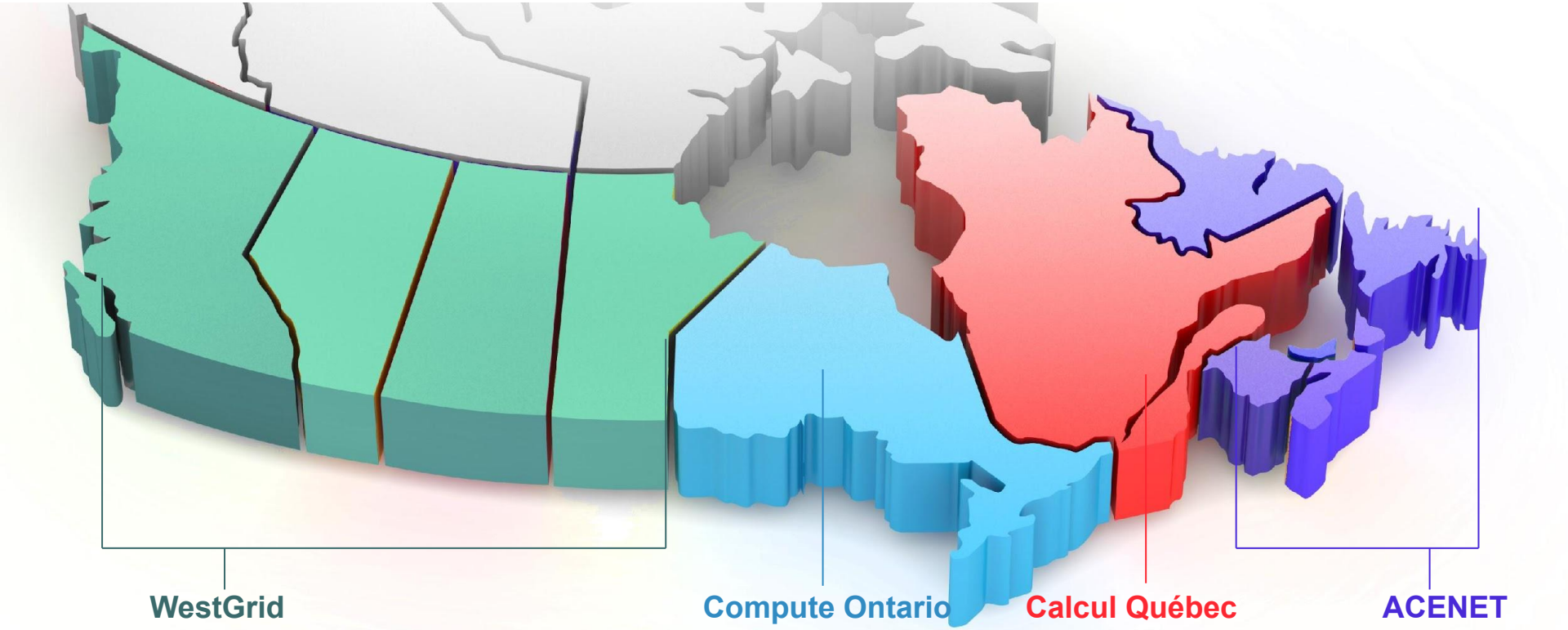
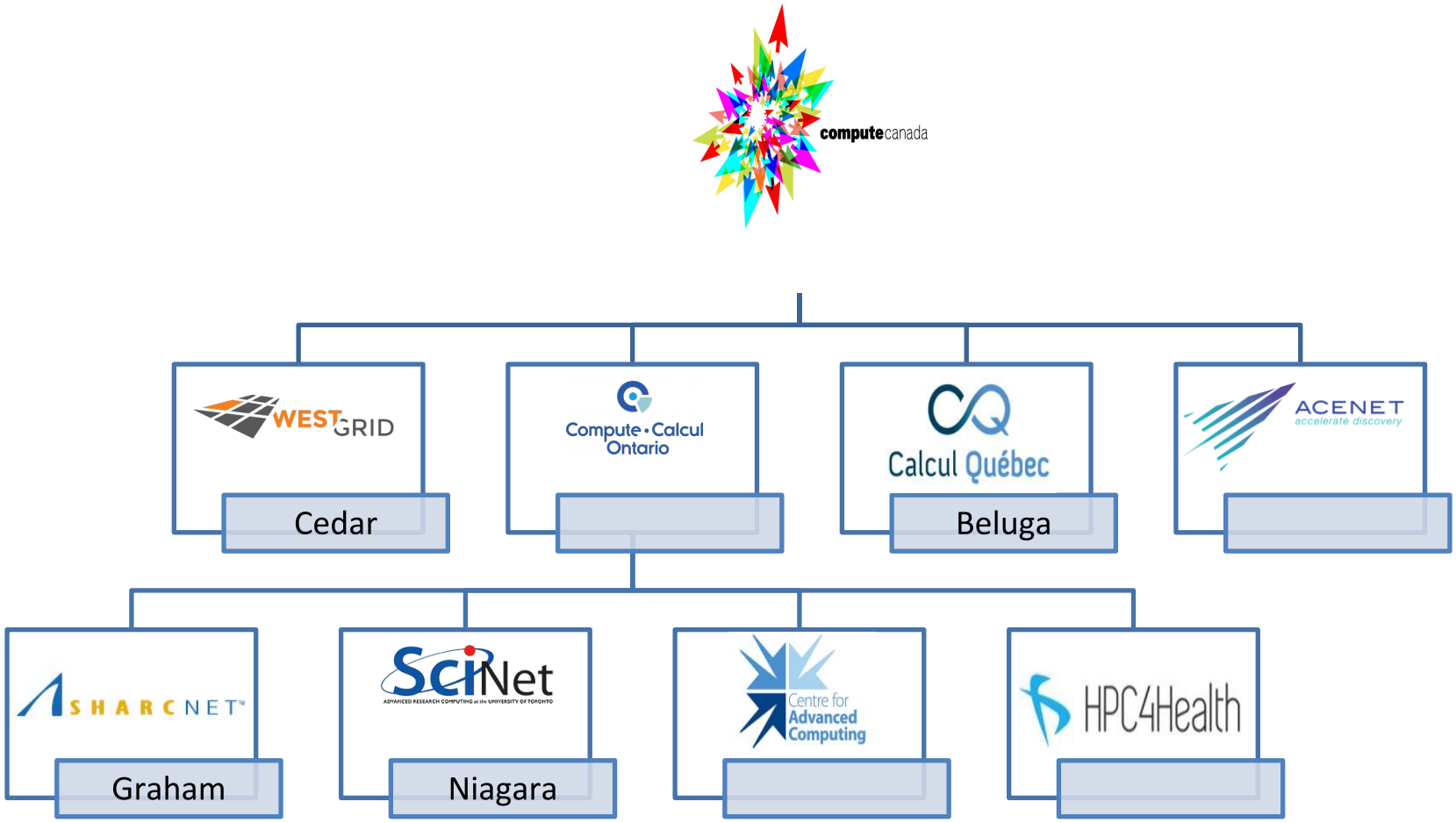


One can access all national supercomputers across the country funded by the federal and provincial governments, for free.

Where are the resources



What Compute Canada can do for you

- With a Compute Canada account, you can
  - access all Compute Canada national supercomputer systems and cloud resources - **for free**.
  - access computing resources (CPUs, GPUs, RAM, storage) beyond those locally available (your desktop, your lab etc).
  - get expert support from Compute Canada staff (ticketing system, emails, documentation, training events).
- As a faculty in a Canadian academic institution, you can also
  - manage your group (add/remove students, postdocs; etc.).
  - apply for dedicated resource allocations (RAC) for your group.
  - apply for dedicated programming support*.

PI (faculty) needs to have an account first

Having an account is **FREE** for all faculty, students and researchers from Canadian academic institutions. Steps to apply for an account:

- Go to CCDB at Compute Canada https://ccdb.computecanada.ca/.
- Fill out the online application form and submit.
- Your account application will be processed within about 2 working days.

How my students and postdocs can get an account

They need to apply for an account themselves. Steps to get an account:

What you should do

- Get your Compute Canada Role ID (CCRI) by logging to the Compute Canada portal https://ccdb.computecanada.ca/; it looks like **abc-123-13**. Give it to the person applying for an account.

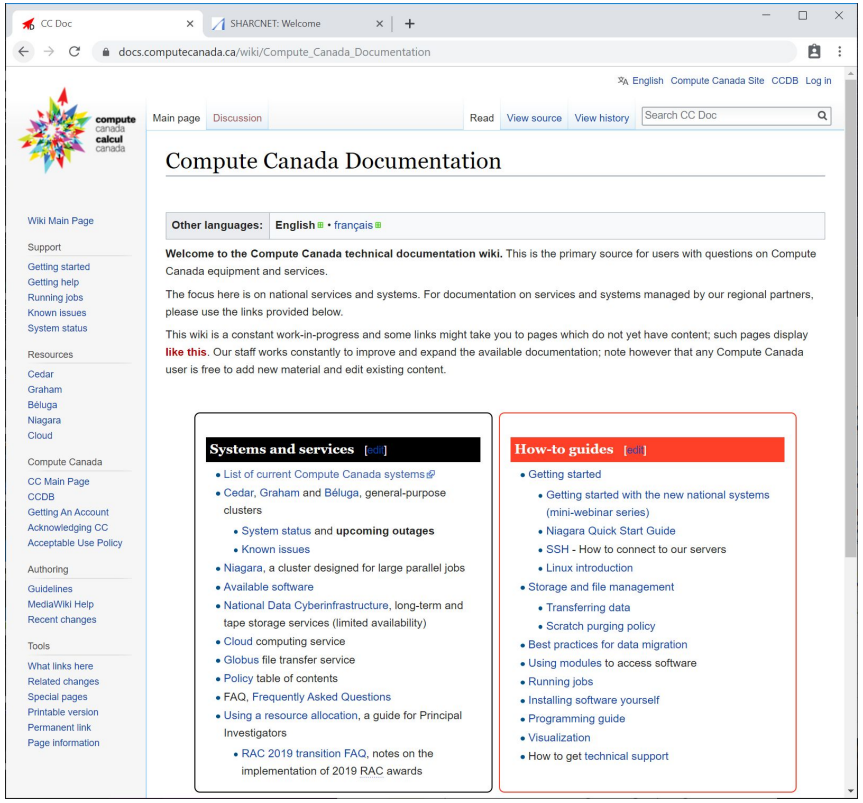
What they should do

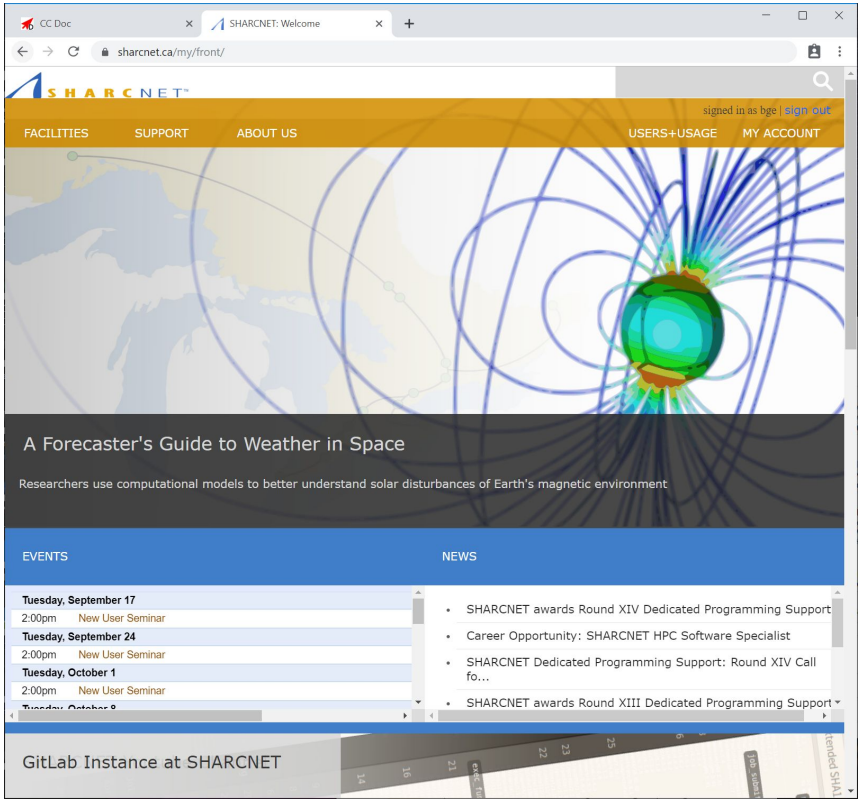
- Go to https://ccdb.computecanada.ca/.
- Fill out the online application form, identifying him/herself as a **sponsored** user, type in your CCRI, and submit.

You will receive an email notification re the account application, asking you to approve the application (**make sure to also check your SPAM box**). Once you approve the application, the student's account becomes active.

Where to look for information and get help

Online documentation





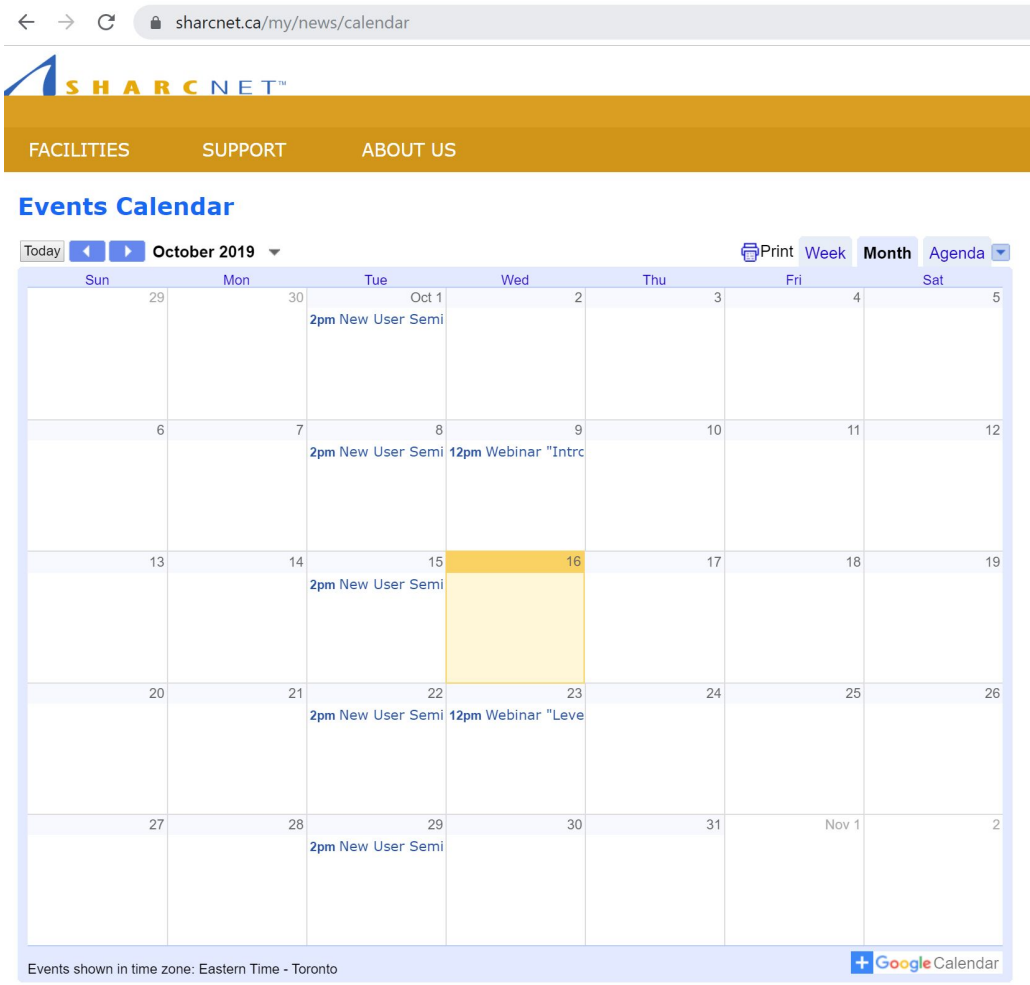
https://docs.computecanada.ca/

https://www.sharcnet.ca/

Where to look for information and get help

Online events

- New User webinar every Tuesday at 2pm.
- Bi-weekly General Interest webinars at noon on Wednesday.
- Prior webinars recordings can be found on youtube.sharcnet.ca .



Where to look for information and get help

Interactive help

- **Ticketing system**: send an email to support@computecanada.ca
- Direct email to staff - check staff contact info on https://www.sharcnet.ca/
- Call us*
- Office visit*

Use of systems
Installation of software
Access to commercial software and site licence
Debugging and optimizing code
Programming
Consultation on various research problems
Grant application for compute hardware
...

The computing resources

Clusters across the country

- cedar.computecanada.ca
- graham.computecanada.ca
- niagara.computecanada.ca
- beluga.computecanada.ca

Cloud services

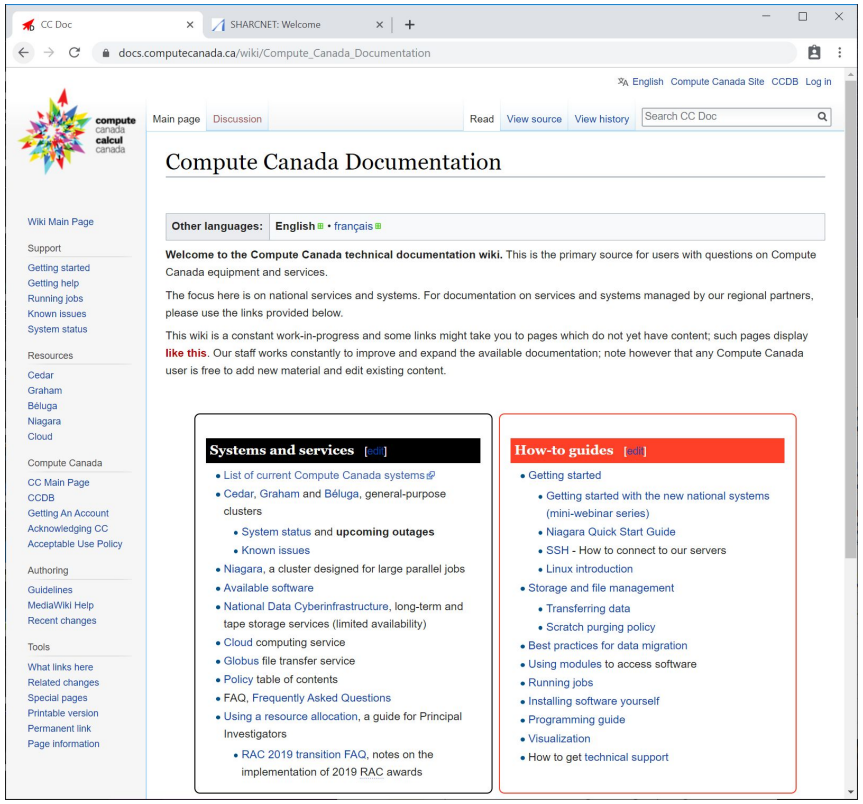
- arbutus.cloud.computecanada.ca
- cedar.cloud.computecanada.ca
- graham.cloud.computecanada.ca
- east.cloud.computecanada.ca

Highlight of the computing power

- Total number of CPU cores: ~270,000.
- Total number of research-grade GPUs: ~2600.
- Total RAM: ~1.2 PB.
- Total storage: ~70 PB.

What software packages are available?

Check for software on the web site



Check for software while on a cluster

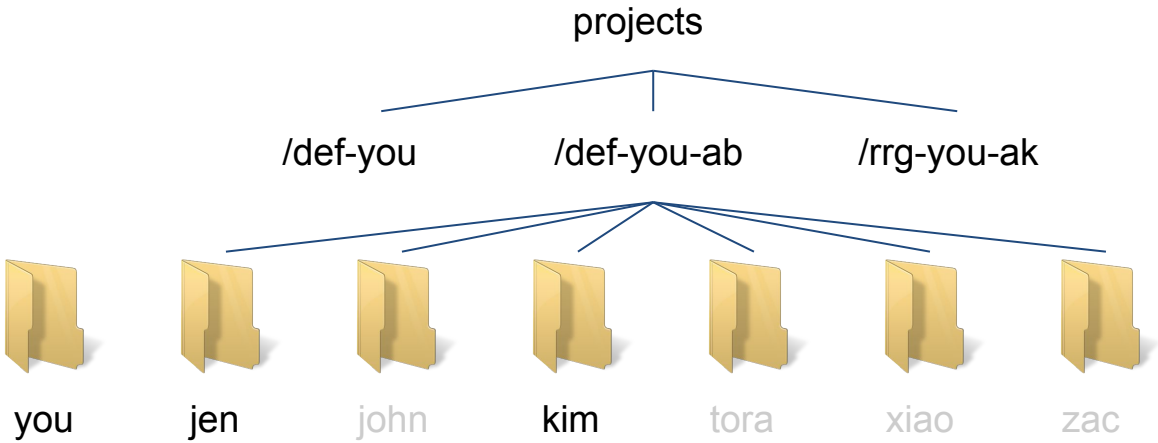
$ **module avail**

$ **module spider** *keyword*

The storage you have

home: 50GB

project: 1T, up to 10TB per group; >10TB needs RAC



*The project space is meant to be shared among group members. However, the ownership can be set by individuals. Accessing files owned by others requires a consent of the **owner**.*

scratch: 20TB per user, 60 days

nearline (tapes): 2T per group*

Who owns files

- In legal terms
  - In principle, individuals own the files they created, accessing files owned by someone needs a consent.
  - Check your home institution policies regarding the ownership of research data (files etc).
- In Operational System terms
  - For all newly created files, by default only the owner has the write permissions (PI and the group have the read permissions).
  - The default behaviour can be changed (using umask command).
  - The permissions of any file (old or newly created) can be modified (made more or less permissive), using Linux commands (chmod and setfacl).

Our jobs waited in queue for X days, can you do something?

What we can do

- We will look at the resources requested by the jobs.
- We may possibly find out the reasons why the jobs are waiting.
- We may help users to better reshape the jobs so they would have a better chance to start in the future.

What we can't do

- We can't manually let your group jobs start.

What you can do

- To educate group members to balance the workload and usage.
- To advise group members to review the information on how the fairshare/scheduler works and the best practice.

What does RAC mean and should I apply for it?

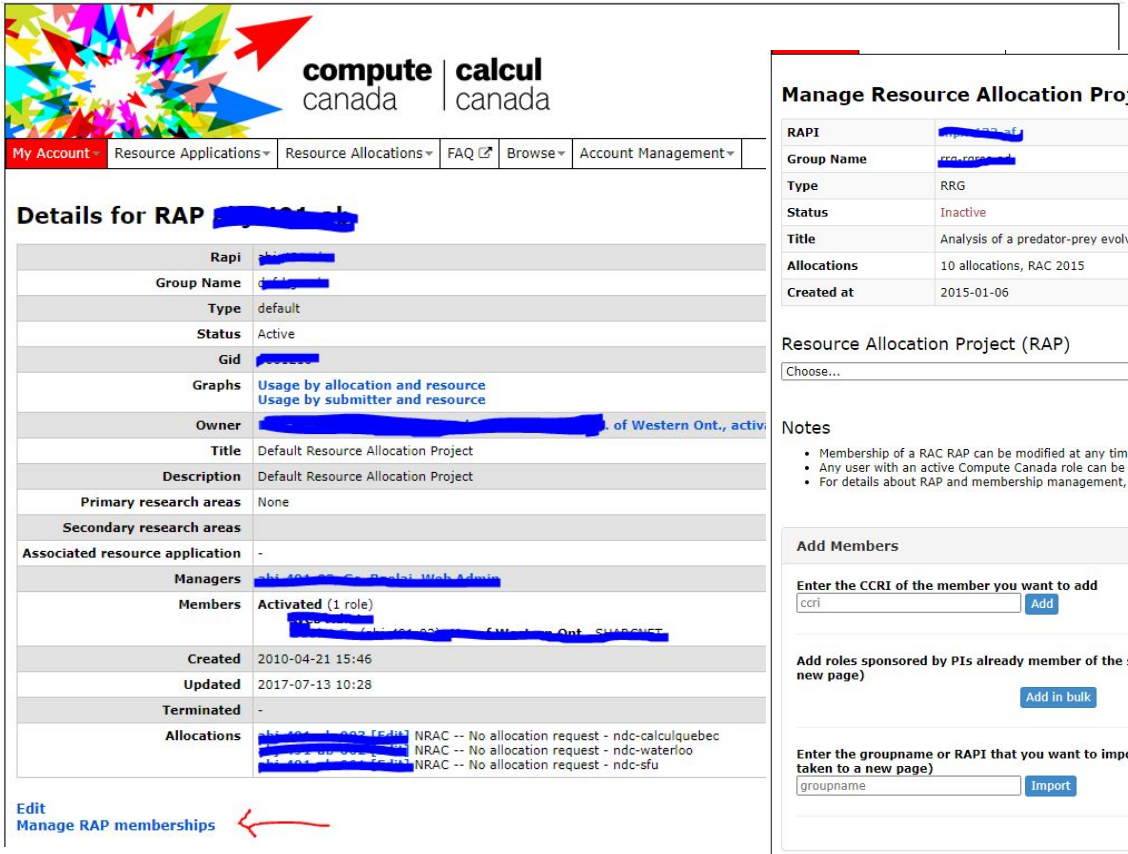
- You need to apply for Resource Allocation Competition (RAC) if you expect your group to need more than the default amount of resources (50 core years, 10 GPU years, 10 TB storage) for the next year.
- RAC competitions are run once a year, in the fall.
- Only the PI (faculty) can apply for RAC, for the whole research group.
- What RAC is for
  - **Compute** - guaranteed priority access to CPUs and GPUs for a prescribed amount.
  - **Storage** - access to the storage exceeding the default amount (10 TB).
  - **Portal** - guaranteed access to cloud and the storage via cloud.
- What RAC is NOT for
  - to have the resources set aside for you all the time.
  - your jobs not to wait in the queue.

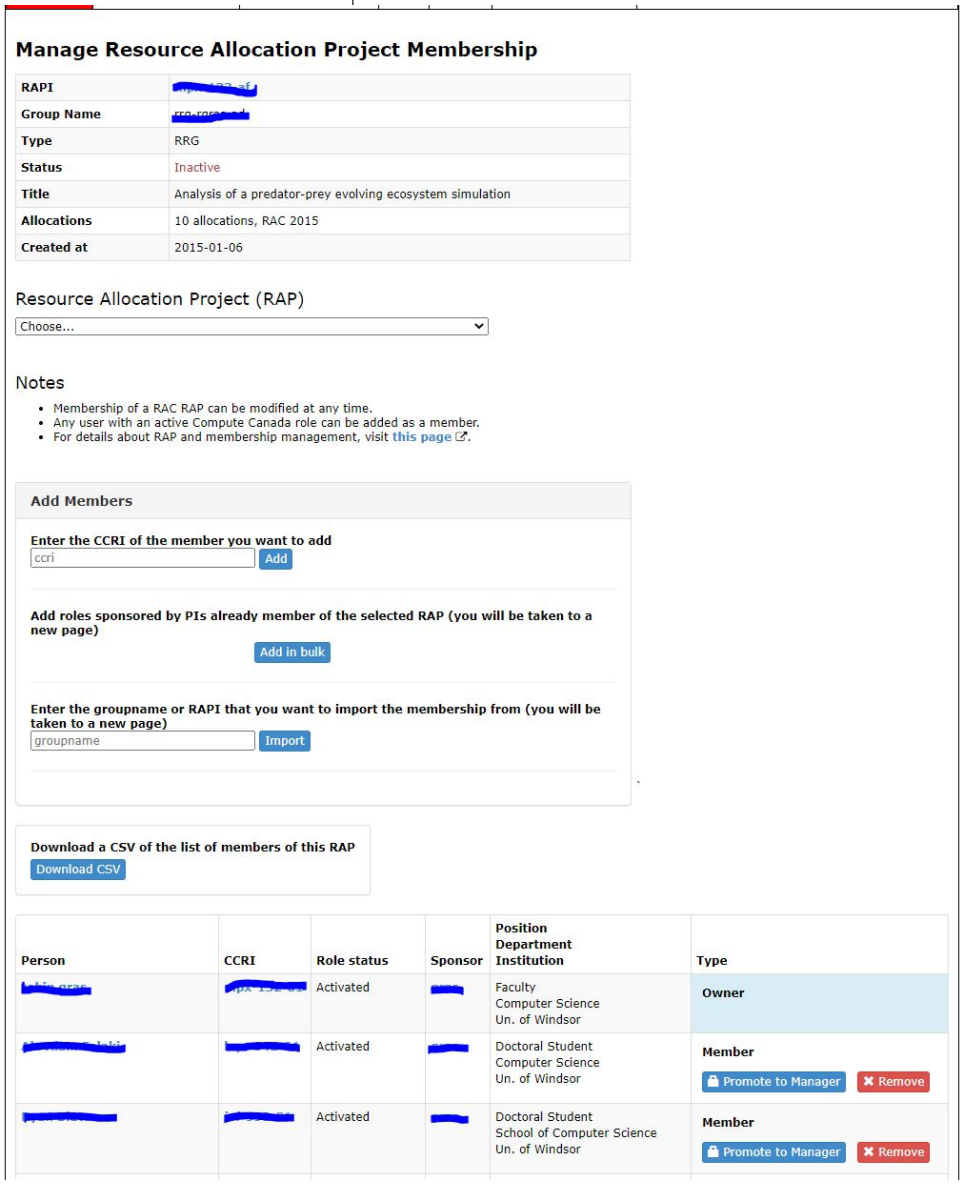
How do I add/remove a member from a RAC project

PI has the ability to control whom in a group should have access to the RAC allocations. This is done in CCDB. To proceed

- Login to Compute Canada portal https://ccdb.computecanada.ca/, you will see a list of your roles, with the current one listed at the top.
- Click your current role to navigate to the page of RAC projects (**RAP**) listed under that role.
- Click **Manage RAP memberships**.
- By default all your group members having a CC account belong to the RAC project. They have the equal priority for running jobs. You may remove a person from the RAC project so to limit the priority access.
- You may also promote a person to be the “manager” so he/she will be delegated may control the membership as well.

How do I add/remove a member from a RAC project





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Q&A