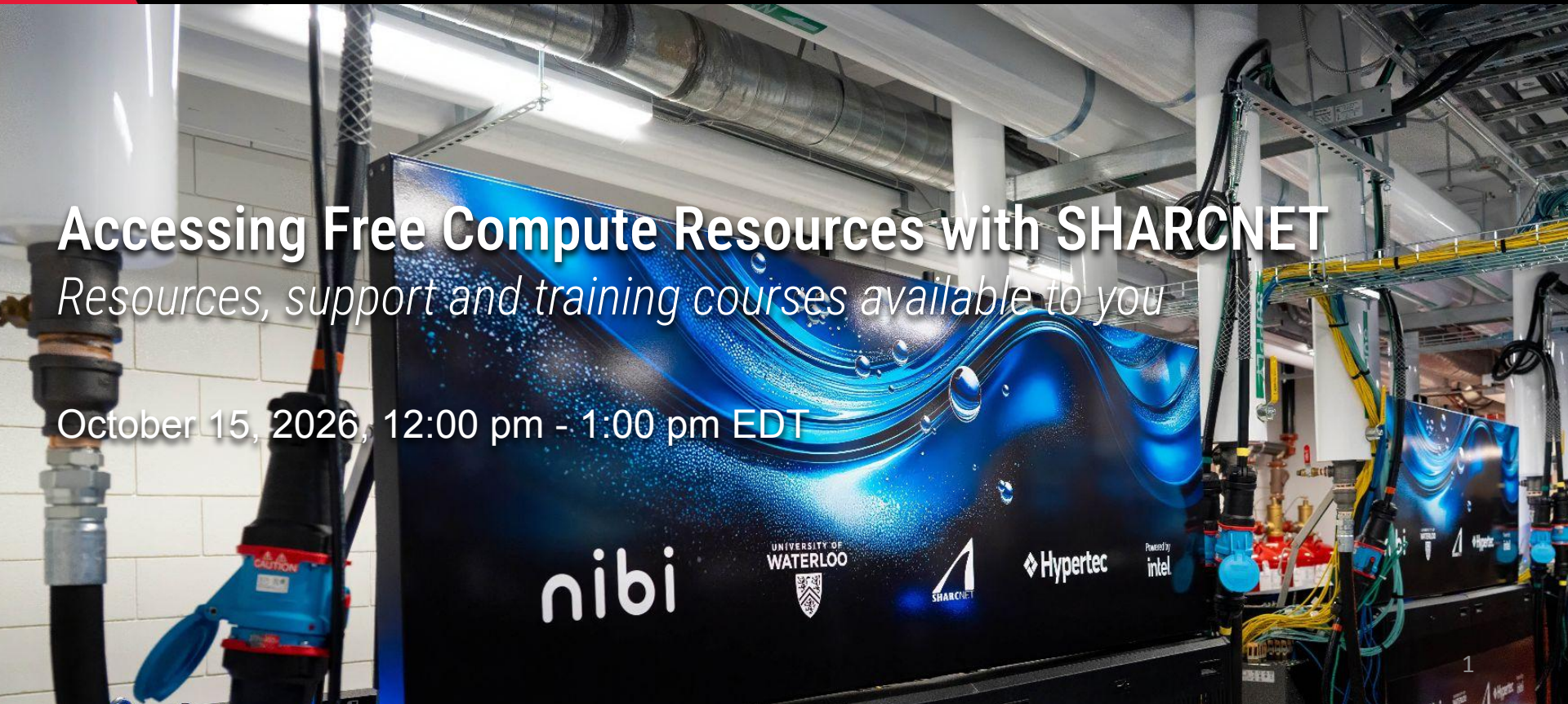
UNIVERSITY OF GUELPH

SHARCNET™

Digital Research Alliance of Canada



Accessing Free Compute Resources with SHARCNET

Resources, support and training courses available to you

October 15, 2026, 12:00 pm - 1:00 pm EDT

Accessing today's presentation

The slides for today's presentation, including links for getting an account, what resources are available and training materials can be found at:

https://staff.sharcnet.ca/c7wilson/files/2026_Fall_Updates_for_Guelph.pdf

SHARCNET

The Shared Hierarchical Academic Research Computing Network is a high performance computing consortium consisting of 19 academic partner institutions covering a geographical span of about 1,800 km from Windsor to Peterborough and from St. Catharines to Thunder Bay making it the largest HPC consortium in Canada by number of institutions. It operates the national supercomputer nibi ("water" in *Anishinaabemowin*) and provides services to academic researchers (See https://www.sharcnet.ca/).

Digital Research Alliance of Canada
Alliance de recherche numérique du Canada

The Digital Research Alliance of Canada (the Alliance) is a national not-for-profit membership-based organization playing a central role in helping to advance the establishment of a researcher focused, accountable, agile, strategic and sustainable digital research infrastructure (DRI) ecosystem for researchers in Canada (See https://www.alliancecan.ca/).

Academic/research computing across Canada

Getting an account

Anyone from a Canadian research institution may apply for an account free of charge. Faulty should apply at https://ccdb.alliancecan.ca/. Students, postdoctoral fellows, visiting scholars and other individuals may apply for an account sponsored by a faculty member.



Academic/research computing across Canada

What you can access

A user with an account from the Digital Research Alliance of Canada has access to all supercomputers, clouds and storage services operated by the Alliance and its members across the country free of charge. See the services (https://www.alliancecan.ca/en/services) for details.



Academic/research computing across Canada

Getting help

Send email to help@sharcnet.ca. Check online video recordings at https://youtube.sharcnet.ca/.



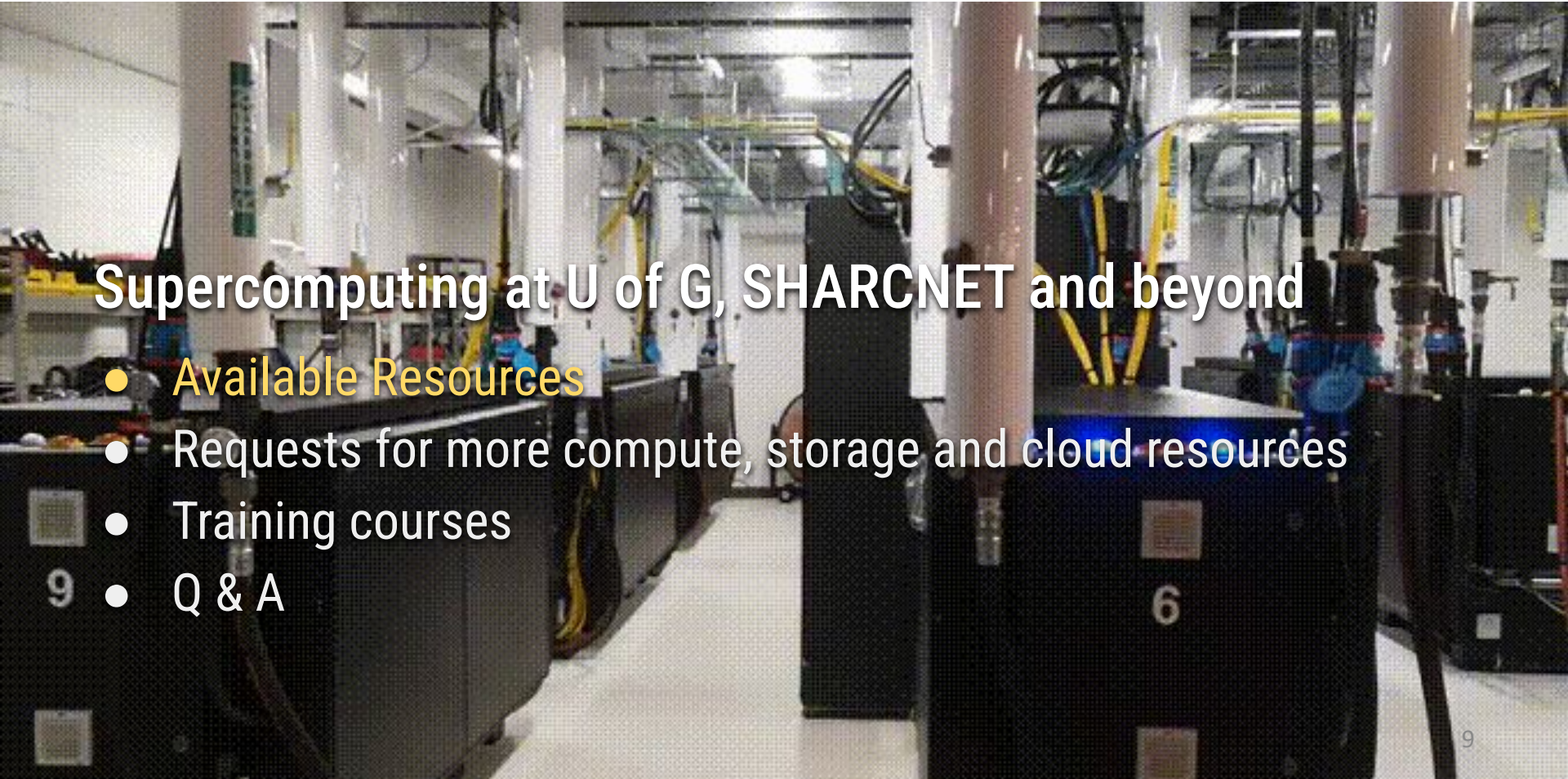
Academic/research computing across Canada

Training courses

SHARCNET offers a variety of training courses.
A glance of the courses throughout the year:

- Fundamentals and practice of advanced research computing (13 weeks)
- Using Alliance's resources
- Shell, git, Python, R…
- Programming shared and distributed memory systems
- Programming GPUs
- Machine learning and AI
- Visualization
- And more

Visit https://training.sharcnet.ca/



Supercomputing at U of G, SHARCNET and beyond

- Available Resources
- Requests for more compute, storage and cloud resources
- Training courses
- Q & A

Let's define some terms…

A **supercomputer (or cluster)** has a lot of computers, not a super fast computer

- Thousands of computers with CPU cores, GPUs, and disks
- Requires **concurrent processing** to get work done faster

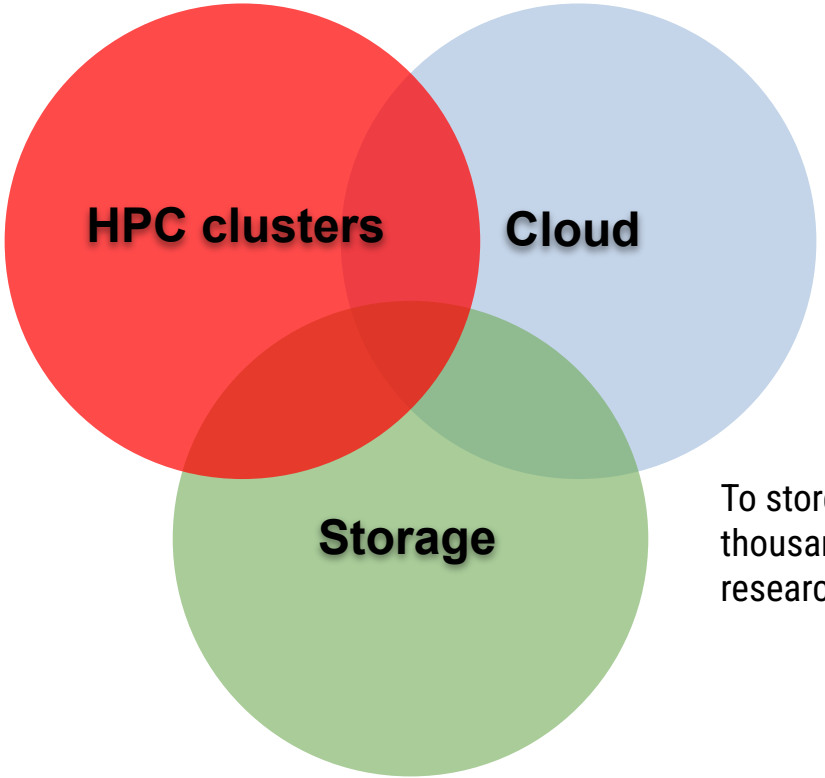
A **data centre** is the facility in which supercomputers are housed.

High performance computing (HPC) refers to the computing we do on the clusters

- Requires aggregating resources using parallel computing, GPU programming etc.
- Code from your personal computer will not run faster just because you give it more cores or a GPU - HPC requires code updates

Resources: *HPC clusters, cloud and storage*

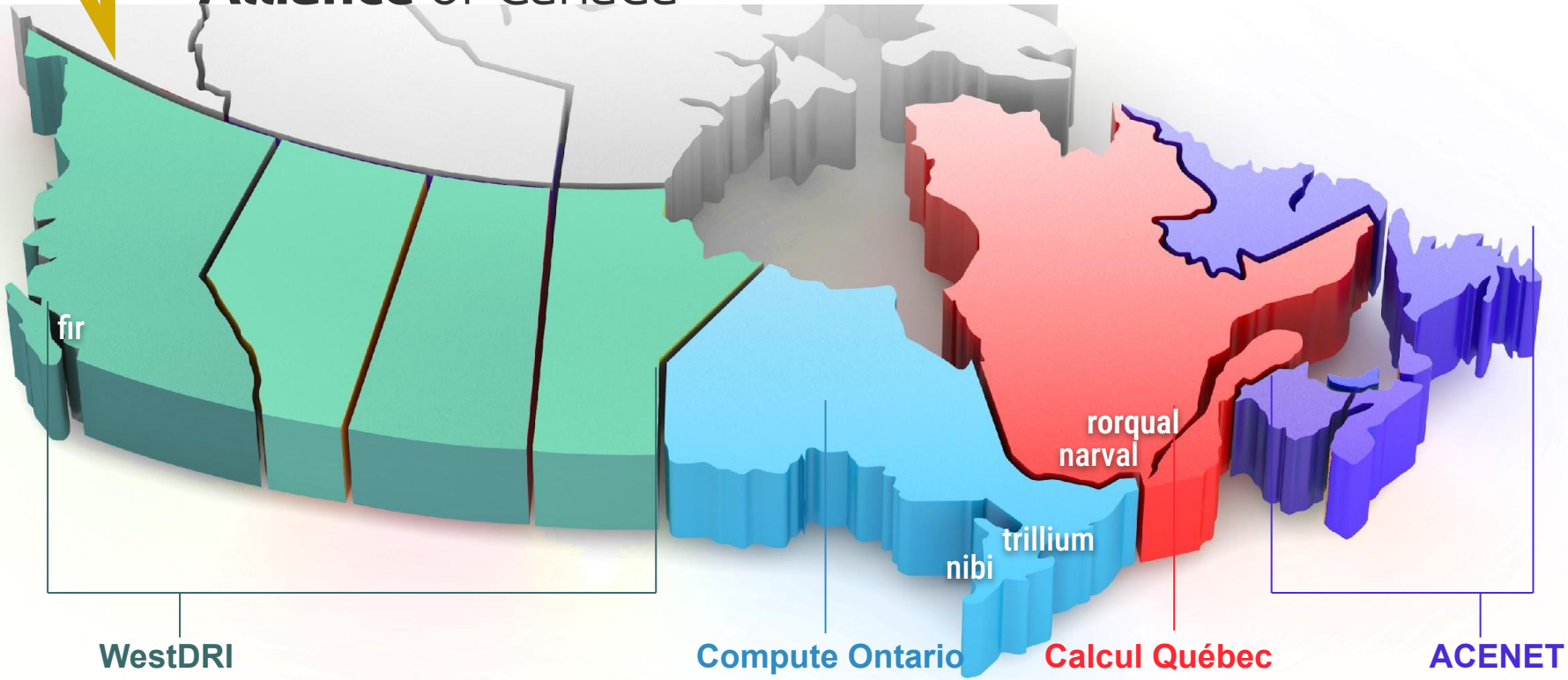
To run large simulations that need dedicated access to hundreds of thousands CPU and GPU cores and low latency, fast interconnect fabric; or to run hundreds of thousands of simulations simultaneously



To run web services, databases or use virtual machines (VMs) with full control. The CPU and GPU resources are typically over committed, that is, a CPU core or GPU device might be shared by the running VMs.

To store hundreds of thousands of TB of research data

Digital Research Alliance of Canada



One can access all national supercomputers across the country, free of charge.

Resources: *HPC clusters and storage*

Major national systems at a glance

Resource	Fir	Narval	Nibi	Trillium	Rorqual	Total
CPU cores	166,656	49,664	136,320	235,008	131,712	**719,360**
GPU cores	7,680 H100s	5,068 H100s	6,912 H100s AMD MI300A	5,760 H100s B200s	5,184 H100s	**30,604**
Storage[1]	49PB	19PB	25PB	29PB	68PB	-
Source: https://docs.alliancecan.ca/wiki/National_systems						

1. These numbers represent the major storage.

Resources: *AI specific systems*

Pan-Canadian AI Compute Environment (PAICE)

- **TamIA** at Mila -Québec Artificial Intelligence Institute.
- **Killarney** at Vector Institute.
- **Vulcan** at Alberta Machine Intelligence Institute (Amii).

Source: https://docs.alliancecan.ca/wiki/National_systems

Resources: *Why using national resources*

If you

- do not have many cores or much memory;
- do not have the GPUs of the type needed;
- need a huge amount of disk space, e.g. hundreds of TB;
- need to run large amount of simulations concurrently;
- need to run a web services;
- need to run a SQL database;
- need to run programs on a cloud;
- need to run AI models at no cost;
- need the compute and storage at no cost.

Resources: *Getting an account FREE of charge*

Sign up for an account for FREE at https://ccdb.alliancecan.ca/

Learn and assess if you need lots of compute and/or storage resources for your research.	If you are not a faculty, talk to your supervisor to get his/her CCDB id (a code like abc-123-02). If your supervisor does not have an account, convince him/her to sign up for an account first.	Go to the website to sign up for an account. Choose an appropriate role that fits you.	Access and explore the resources - clusters, cloud and storage - across Canada, all can be through just a few clicks.

Accessing compute, storage and cloud resources

Default access	Rapid Access Service (RAS)	Resource Allocation Competition (RAC)
Compute: No limit in CPU and GPU cores, but low priority, hence longer wait time. **Storage:** Limited storage space • 50GB home • 1TB project - work space • 20TB scratch (60 days when over 1TB) - temp space • 10TB nearline (tape) **Cloud:** Limited cloud resources • 80 VCPU years • persistent 25 VCPU years • 10TB volume and snapshot storage **Request:** Needed	**Compute:** May ask for increase in priority *temporarily*, to improve the throughput of jobs. **Storage:** Storage • project - up to 40TB across the country • nearline - up to 100TB • Not available at some sites. **Cloud:** Moderate increase. **Request:** Any time Email: support@tech.alliancecan.ca	**Compute:** Best assurance of priority access to allocated number of CPU cores (200+) and GPUs (25 RGUs) throughout a year. Shorter wait time **Storage:** Guaranteed access to allocated storage spaces: • project (40+ TB) • nearline (100+ TB) **Cloud:** Guaranteed access to allocated cloud resources beyond the default access limits **Request:** Annual application

Resources: *How do I access clusters, clouds and storage*

Clusters across the country

- fir.alliancecan.ca
- nibi.alliancecan.ca
- trillium.alliancecan.ca
- rorqual.alliancecan.ca
- narval.alliancecan.ca

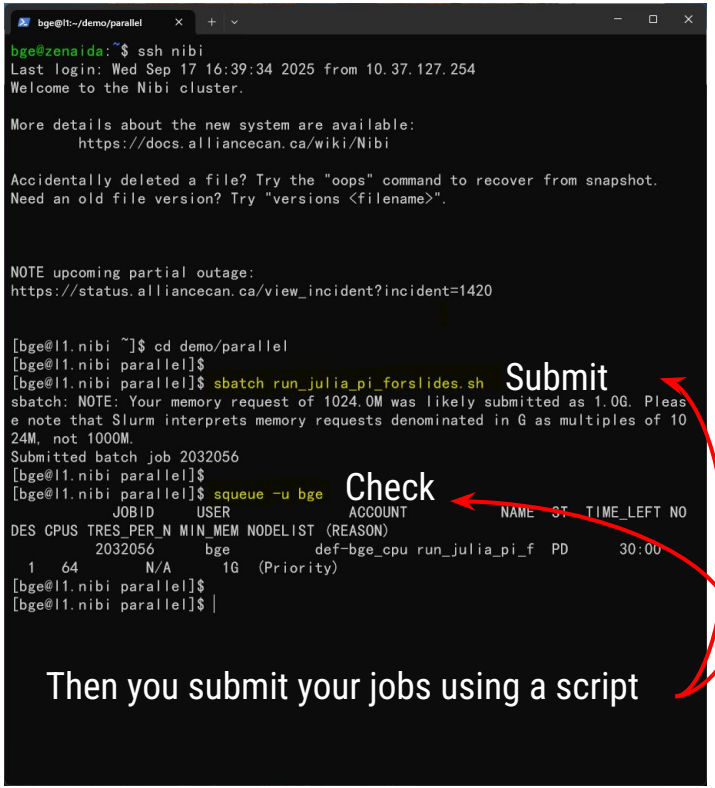
Access: via SSH (from text terminal) or web browser

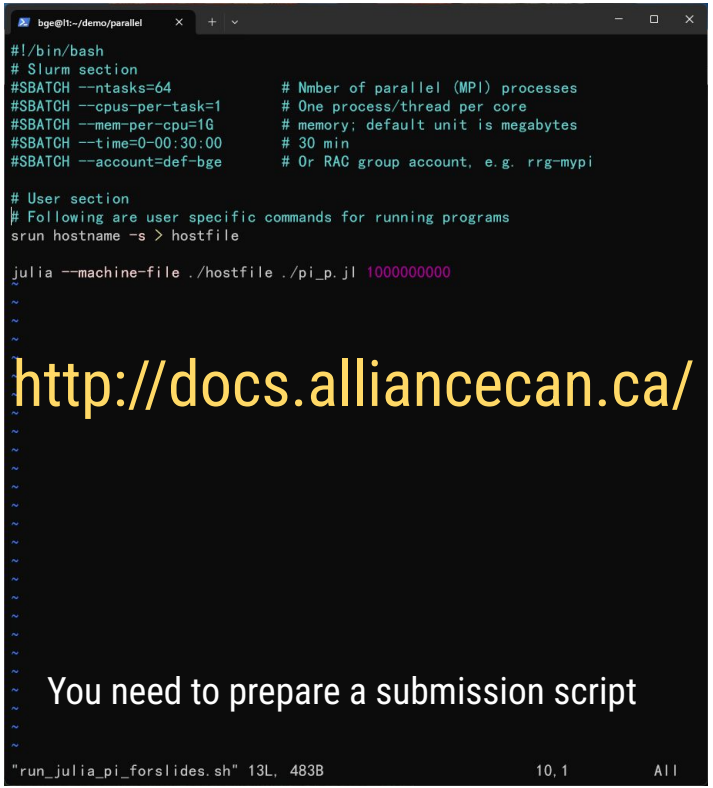
Cloud services

- arbutus.cloud.alliancecan.ca
- cedar.cloud.alliancecan.ca
- nibi.cloud.alliancecan.ca
- beluga.cloud.alliancecan.ca

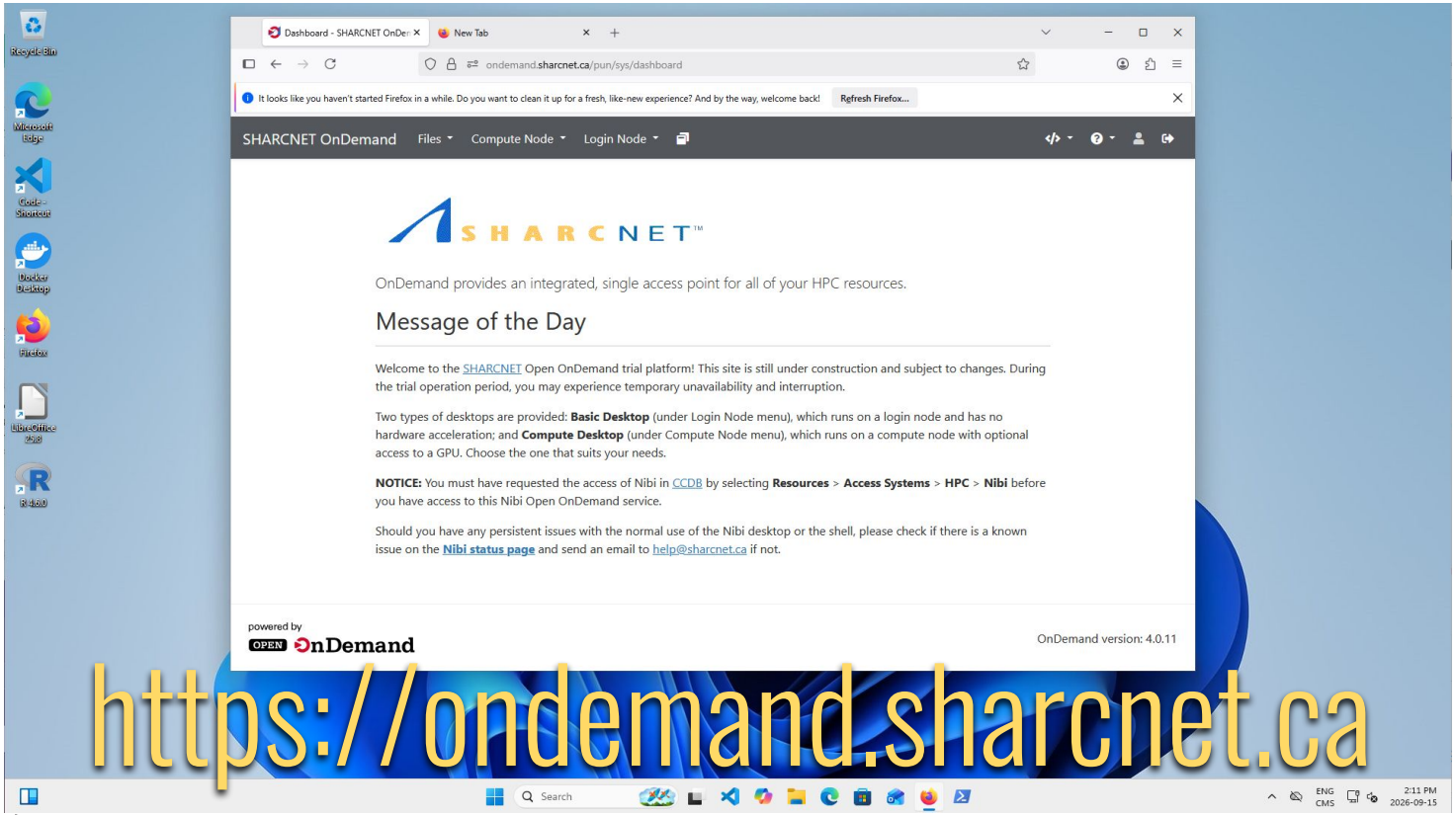
Access: via web browser

Resources: *Accessing a cluster*

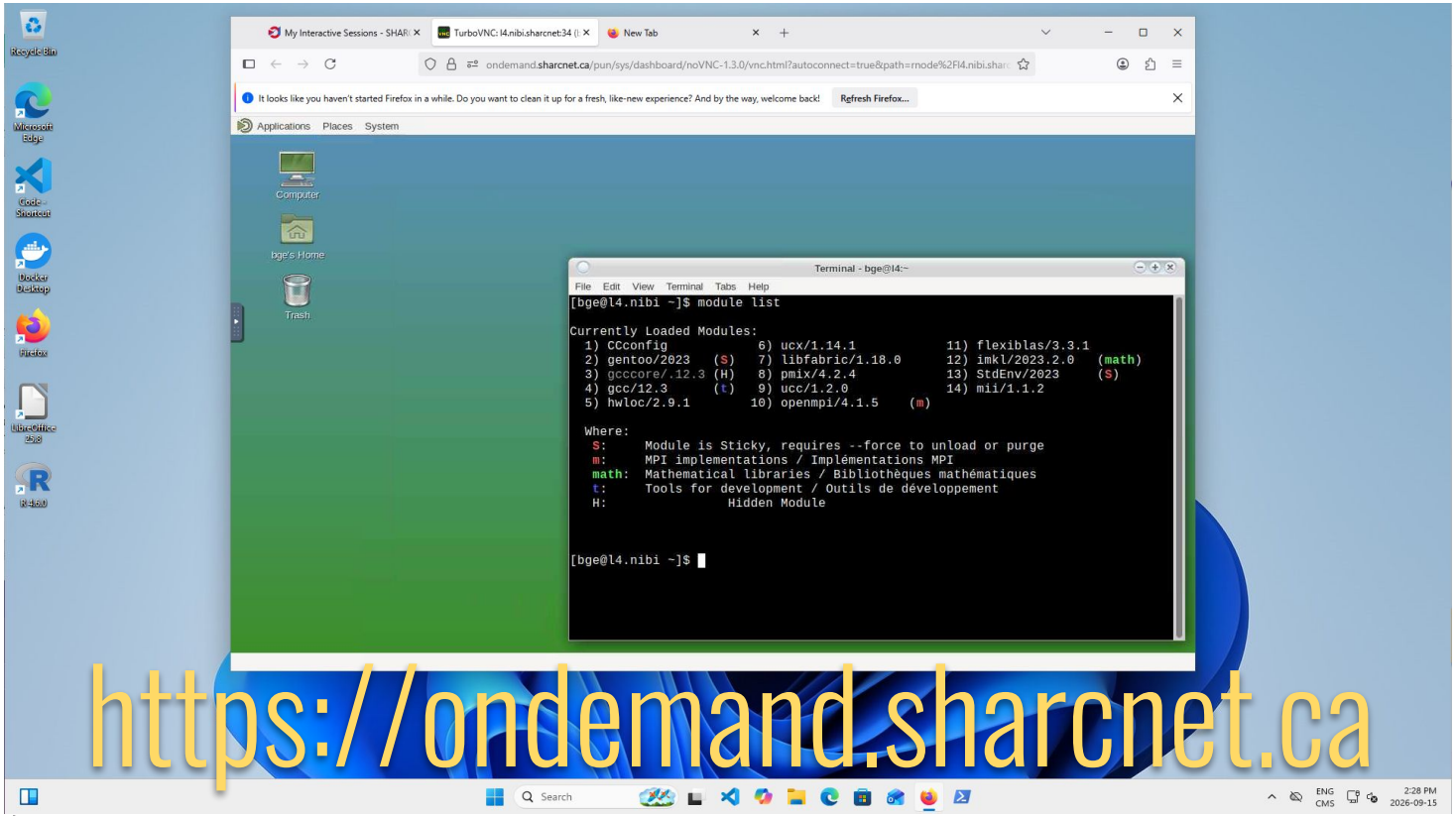




Resources: *Accessing a cluster*



Resources: *Accessing a cluster*



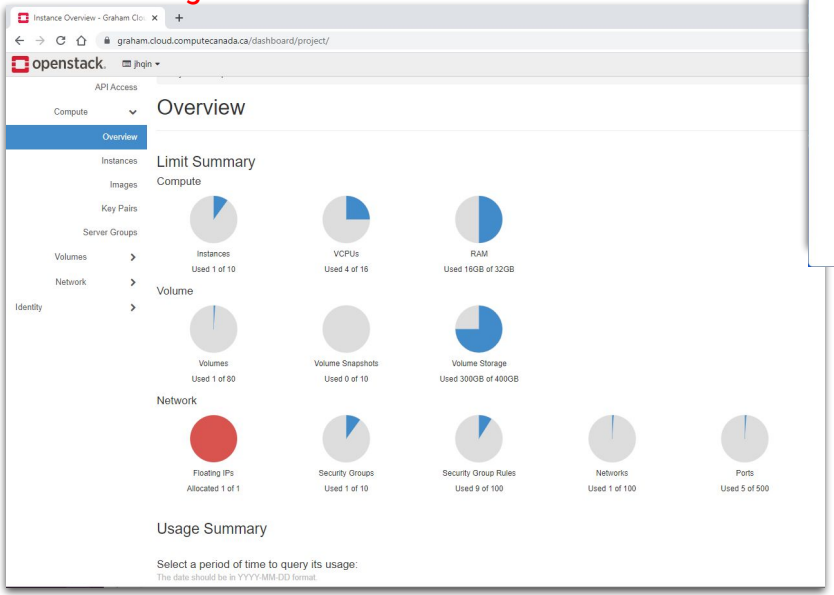
Resources: *Accessing cloud services*

A few notes

- The Alliance provides clouds as an infrastructure as a service (IaaS). Not necessarily seen as a turn-key solution. Users are responsible for running VMs and tasks inside VMs themselves.
- Typical uses of cloud at Alliance: web services, databases, compute intensive applications (small scale), etc.
- Before you proceed, visit the Alliance wiki page on cloud.
- One needs to have a project to use cloud.
- Only a PI can create a cloud project per cloud.
- Once a cloud project is created, user can access individual clouds to *manage their VMs and services*.

Resources: *Accessing cloud services*

- arbutus.cloud.alliancecan.ca
- cedar.cloud.alliancecan.ca
- nibi.cloud.alliancecan.ca
- beluga.cloud.alliancecan.ca





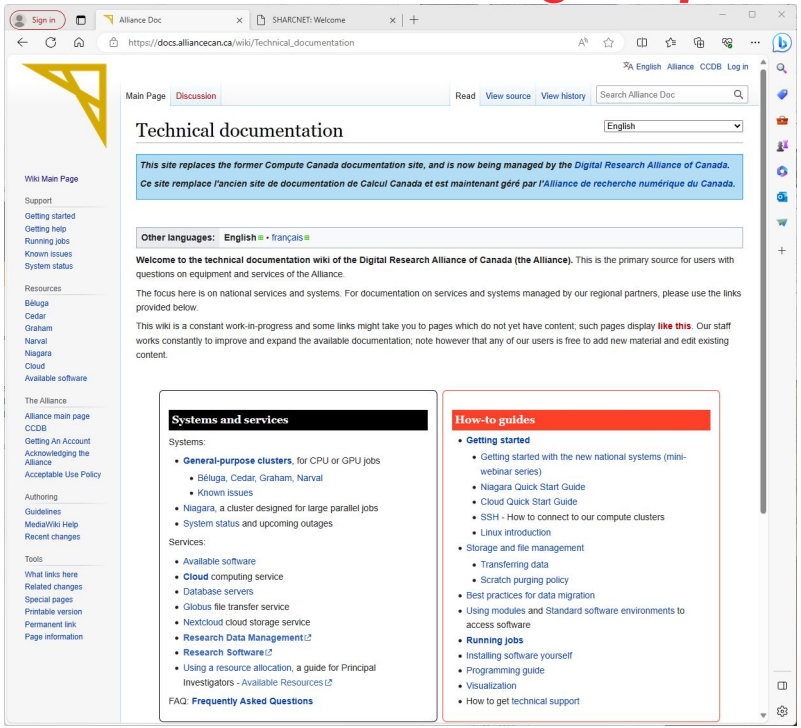
- One needs a project
- No Windows images, all VMs are Linux.
- Up to 80 virtual CPU cores.
- May have virtual GPUs.
- Up to 10 TB storage.
- Up to 25 persistent CPU cores.

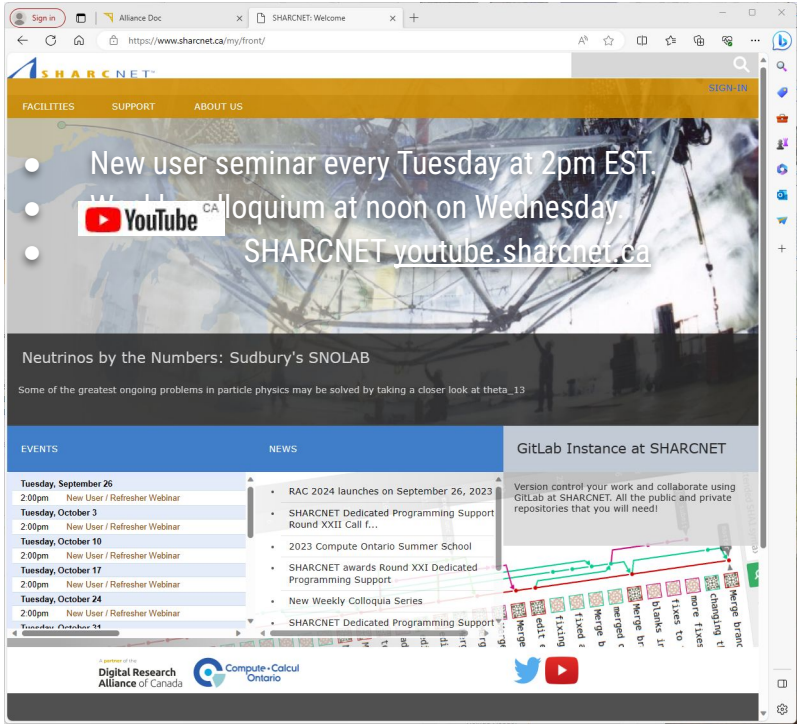
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Resources: *Getting help online*

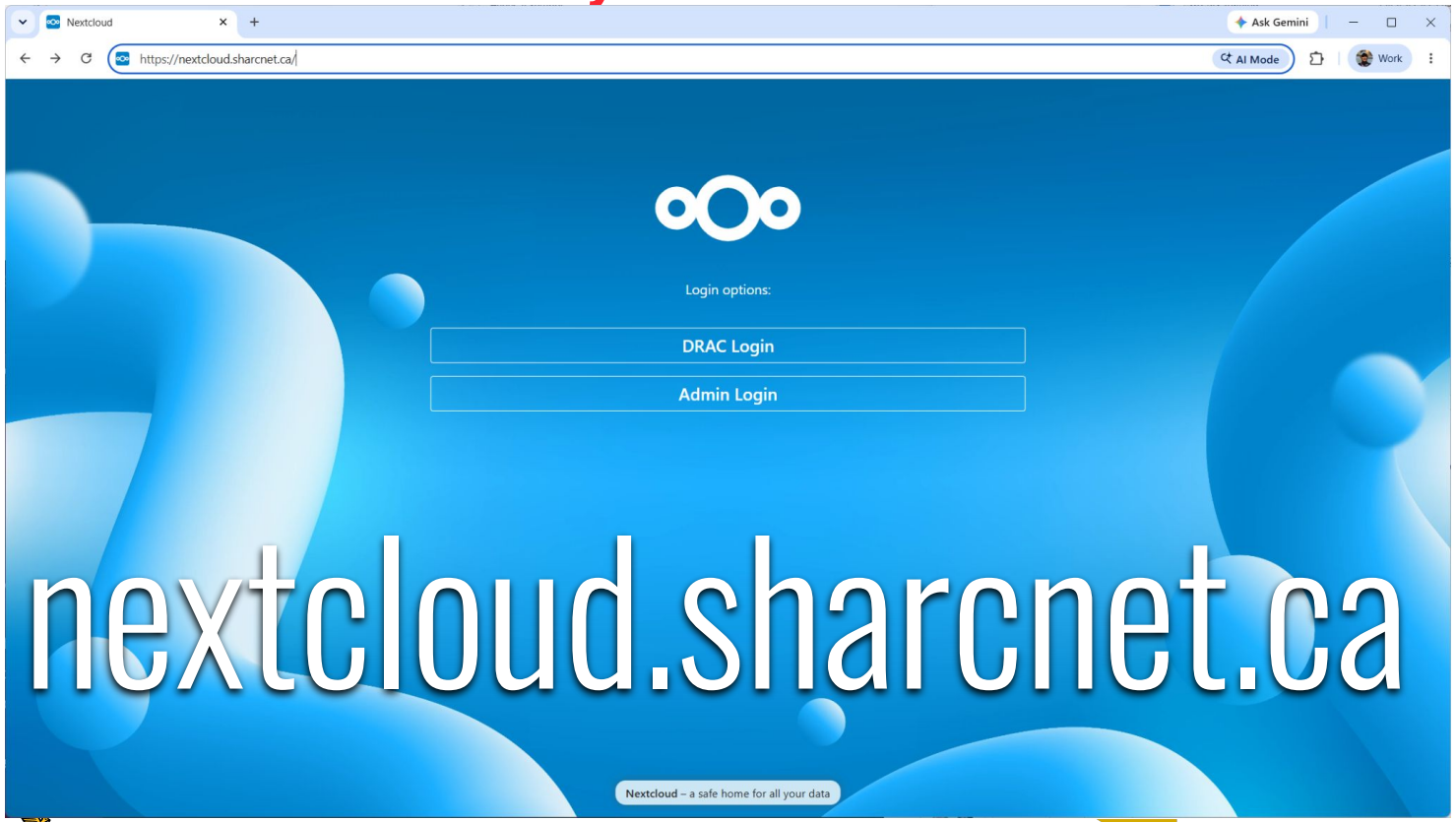




https://docs.alliancecan.ca/

https://www.sharcnet.ca/

Resources: *Nextcloud - your free OneDrive*



Resources: *AI as a service (AIaaS)*

Brine (https://brine.sharcnet.ca/), an always-on, OpenAI-compatible API (on NVIDIA H200s) for hosted models that support chat, tool calling, and audio transcription, etc. Models include **DeepSeek-V4-Flash-0731**, **Qwen3.8-27B**, **gpt-oss-120b**, **North-Mini-Code-1.0**, etc. Typical work cases:

- agents or workflow automation
- document-processing pipelines
- code assistance
- audio transcription
- workloads that currently use a commercial API or a locally hosted model

Note: Your data stay in SHARCNET, Canada, don't go elsewhere.

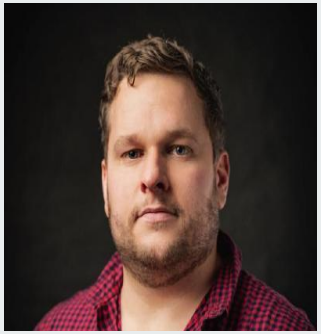
Resources: *HPC at U of G*



John Morton, *Chief Technology Officer*



Ed Armstrong, *HPCTC*, CS, Meta-heuristics



Collin Wilson, *HPCTC*, Deep learning, Biophysics



Kaizaad Bilimorya, *System Administrator*

Email us at help@sharcnet.ca

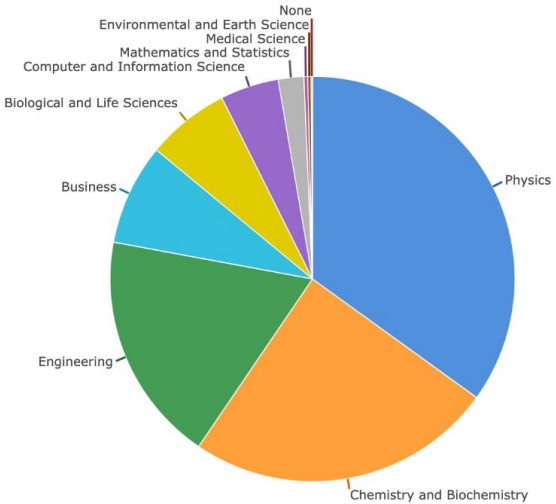
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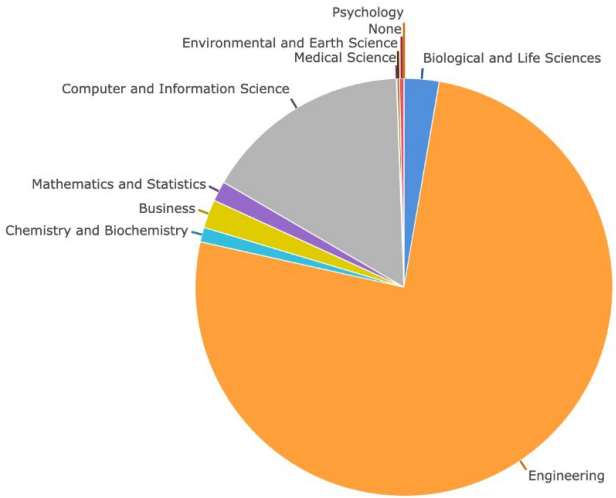
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Resources: *HPC at U of G*

Usage by U of G groups in 2026:



CPU



GPU

Resources: *Getting help*

- Ticketing system (most recommended): support@tech.alliancecan.ca
- Weekly online office hour, Tuesdays at 2PM:



Supercomputing at U of G, SHARCNET and beyond

- Supercomputing at U of G, SHARCNET and beyond
- Requests for more compute, storage and cloud resources
- Training courses
- Q & A

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Requests for compute, storage and cloud resources

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Requests for compute, storage and cloud resources

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Requests for compute, storage and cloud resources

2027 Resource Allocation Competition (RAC) - peer reviewed process

- Application information session dates:
  - September 22 in English
  - September 24 en Français
- Deadline **November 3, 2026, 23:59 EDT**
- Online info: https://docs.alliancecan.ca/wiki/Resource_Allocation_Competition
- Show your project needs, the rationale and the execution plan in detail.
- Consult with local staff before you proceed if new.

Special services by SHARCNET

- DBaaS - PIs to request at help@sharcnet.ca
- AIaaS (https://brine.sharcnet.ca/) - Users to request at help@sharcnet.ca
- Nextcloud https://nextcloud.sharcnet.ca/ - SSO to access, like OneDrive, but free

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Training courses

Format and schedule

- Live lectures, workshops fall and winter semesters.
- Self-driven, grading offline courses with course materials, recorded videos, quizzes and assignments.
- Summer schools.
- Forums on different topics are open for attendees.

How to enroll

- Sign up for the courses at https://training.sharcnet.ca/

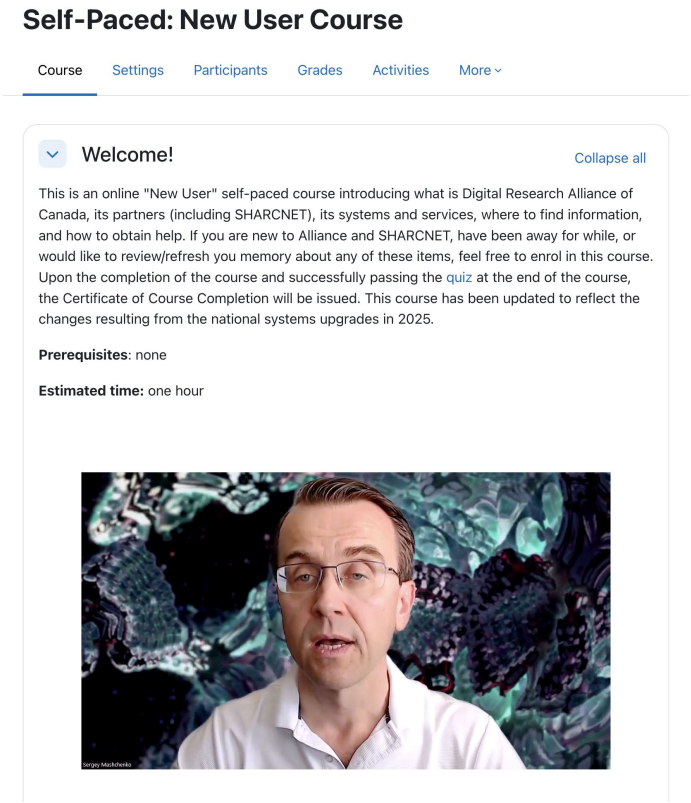
Outcome

- Certificates of completion.

Training courses

If you are new to our systems, I highly recommend our self-paced new user course:

https://training.sharcnet.ca/courses/enrol/index.php?id=22



Q & A

Don’t be afraid to reach out via the course page or send me an email at:

collin.wilson@sharcnet.ca

You can also reach out to SHARCNET support at:

support@tech.alliancecan.ca

or

help@sharcnet.ca