

Using OSC OpenOnDemand portal

UM Spring HPC Workshop

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**University
of Manitoba**

Goals of OSC OnDemand Portal

- **Making HPC easier for new users**

Command line interface is powerful but hard to learn

SSH may be not accessible, so a Web UI is useful

- **Interactive, Graphical access and Viz.**

Remote desktops for interactive work

Remote Servers like JupyterHub



Photo of Grex by Jin Michael Uy, ECE , 2022

- <https://opendemand.org/> is an HPC Web portal, or a browser GUI for HPC systems
 - File management
 - Command-line shell access
 - Job management and monitoring across different batch servers and resource managers
 - Graphical desktop environments and desktop applications
- On Grex:
 - <https://aurochs.hpc.umanitoba.ca>
 - Aurochs CCDB user IDs, not UMNNetID !
 - Available from within Campus network, or when on UM VPN

<https://umanitoba.ca/computing/ist/connect/virtualpn.html>

GreX OOD Portal Files ▾ Jobs ▾ Clusters ▾ Interactive Apps ▾ My Interactive Sessions



OnDemand provides an integrated, single access point for all of your HPC resources.

Message of the Day

```

=====
                               Welcome to GREX, University of Manitoba
                               HPC Cluster

                               https://um-grex.github.io/grex-docs/

                               Contact: support@computecanada.ca

                               *** IMPORTANT ***
                               Please make sure all your jobs do their
                               large IO in /global/scratch/USERNAME
                               and NOT /home/USERNAME
=====
  
```

Working with Files and Directories

- File browser in Web browser
- Upload, download and edit files
- Navigate various filesystems (Home, Project, Scratch)

The screenshot displays the Grex OOD Portal interface. At the top, a navigation bar includes 'Grex OOD Portal', 'Files', 'Jobs', 'Clusters', 'Interactive Apps', and 'My Interactive Sessions'. On the right, it shows 'Develop', 'Help', and 'Logged in as gshamov' with a 'Log Out' button. Below the navigation bar, a toolbar contains buttons for 'Open in Terminal', 'New File', 'New Directory', 'Upload', 'Download', 'Copy/Move', and 'Delete'. The main content area shows the 'Home Directory' for '/global/scratch/gshamov'. The current directory path is '/ home / gshamov /' with a 'Change directory' button. There are checkboxes for 'Show Owner/Mode' and 'Show Dotfiles', and a 'Filter:' input field. Below this, a table lists files and directories. The table has columns for 'Type', 'Name', 'Size', and 'Modified at'. The visible entries are:

Type	Name	Size	Modified at
Folder	4admin	-	3/14/2022 9:02:05 AM
Folder	acco-14-missing	-	6/14/2016 5:44:49 PM
Folder	acco-aug31	-	8/31/2016 1:20:58 PM
Folder	acco-jasper	-	3/6/2014 9:25:13 AM
Folder	accounting	-	5/28/2012 12:16:21 PM

Browsing Queue status, submitting jobs

<https://aurochs.hpc.umanitoba.ca> is an HPC Web portal, or a browser GUI for Grex

- Browser for the jobs in queue
- Allows for submitting SLURM job scripts from Web browser.
 - OOD Dashboard Apps are better for specific cases
- (local add-on on Grex) Summaries of local Queue and Partition status

The screenshot shows the Grex OOD Portal interface. At the top, there is a navigation bar with links for 'Files', 'Jobs', 'Clusters', 'Interactive Apps', and 'My Interactive Sessions'. On the right side of the navigation bar, there are links for 'Develop', 'Help', 'Logged in as gshamov', and 'Log Out'. Below the navigation bar, there are two buttons: 'Your Jobs' and 'All Clusters'. The main heading is 'Active Jobs'. Below the heading, there is a 'Show 50 entries' dropdown and a 'Filter:' input field. The main content is a table with columns: ID, Name, User, Account, Time Used, Queue, Status, Cluster, and Actions. The table contains one entry with ID 4945702, Name 'sys/dashboard/sys/jupyter_gcc', User 'gshamov', Account 'def-gshamov', Time Used '00:10:19', Queue 'skylake', Status 'Running', and Cluster 'Grex Cluster'. The Actions column contains a trash icon. At the bottom left, it says 'Showing 1 to 1 of 1 entries'. At the bottom right, there are 'Previous', '1', and 'Next' buttons.

GreX OOD Portal Files ▾ Jobs ▾ Clusters ▾ Interactive Apps ▾ My Interactive Sessions </> Develop ▾ ? Help ▾ Logged in as gshamov ↶ Log Out

Your Jobs ▾ All Clusters ▾

Active Jobs

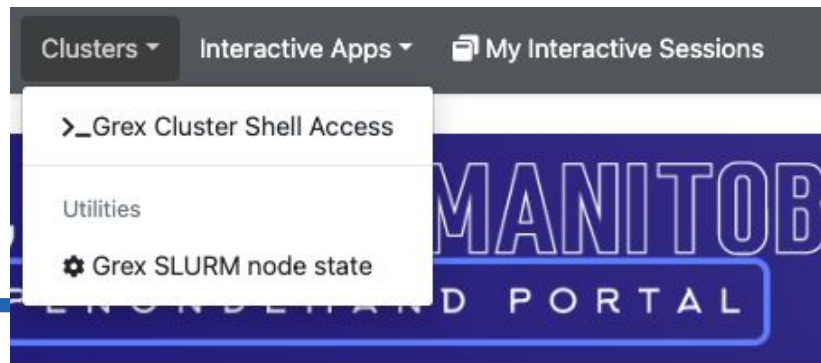
Show entries Filter:

ID	Name	User	Account	Time Used	Queue	Status	Cluster	Actions
> 4945702	sys/dashboard/sys/jupyter_gcc	gshamov	def-gshamov	00:10:19	skylake	Running	Grex Cluster	

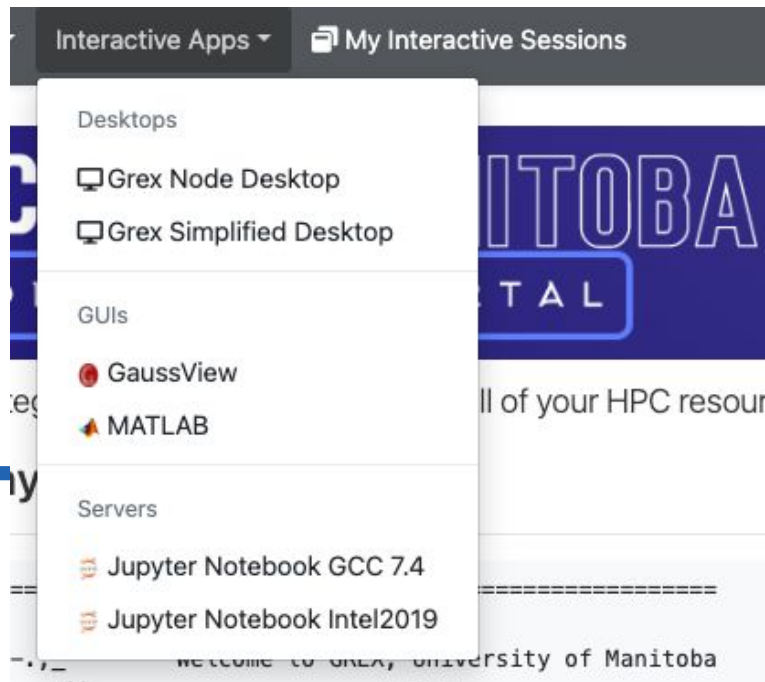
Showing 1 to 1 of 1 entries Previous **1** Next

Desktops, Shells and Apps

- Simple SSH shell in-browser, on a login node
- Desktops
 - On compute nodes (Lightweight GUIs, OpenBOX, IceWM)
 - On special test node (adds Xfce 4 Desktop)
 - On user-contrib nodes for contributors
- Apps: GV, Matlab, Jupyter Notebooks

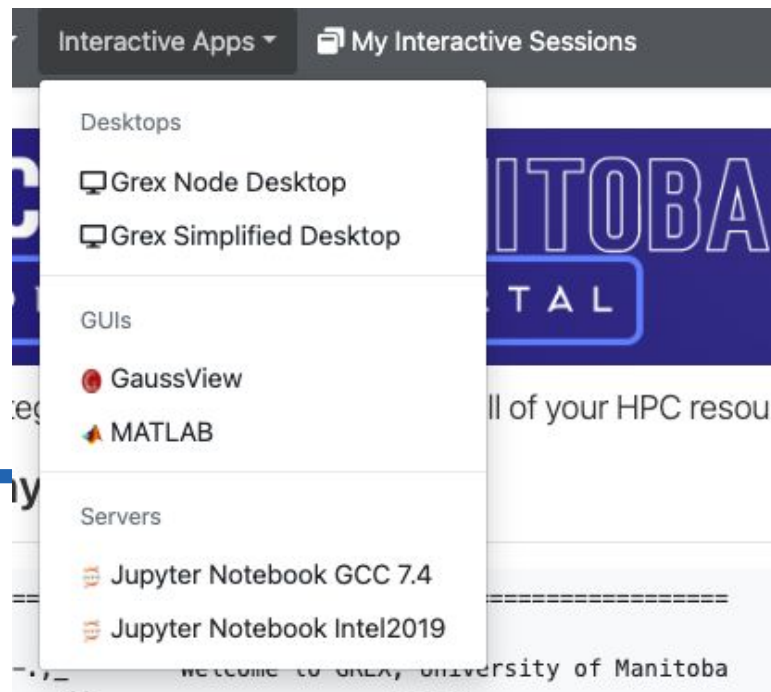


Provides an integrated, single access point for all of your HPC resources



Desktops, Shells and Apps

- <https://aurochs.hpc.umanitoba.ca> is an HPC Web portal, or a browser GUI for Grex
- Desktops for contributed partitions
 - For Research groups that contribute hardware
 - Only visible for the group members
 - Presently, work as Simplified GPU desktop App



Interactive Sessions, Desktops, Apps

- Apps and Desktops are running as SLURM jobs
 - Start the jobs with the “Interactive Apps” tab
- These jobs create Interactive Sessions when start.
 - Monitor and manage the running Sessions in “My Interactive Sessions” tab
- Desktop Sessions (like, Matlab or GaussView) talk to OOD Portal via NoVNC protocol. You can re-connect to Sessions, terminate them etc.



Interactive Sessions example, JupyterLab

- Apps and Desktops are running as SLURM jobs
- JuPyteR is an example of a server application
- JuPyteR Web notebook/sessions are forwarded via OOD's proxy mechanism
- Some "Kernels" (R, Julia, etc.) need to be user-installed first!
- https://docs.alliancecan.ca/wiki/JupyterNotebook#Adding_kernels

The screenshot displays the JupyterLab interface. At the top, a green notification bar states "Session was successfully created." Below this, a breadcrumb trail shows "Home / My Interactive Sessions". On the left, a sidebar menu titled "Interactive Apps" lists various options: Desktops (GreX Node Desktop, GreX Simplified Desktop), GUIs (GaussView, MATLAB), and Servers (Jupyter Notebook GCC 7.4, Jupyter Notebook Intel2019). The main content area shows a detailed view of a "Jupyter Notebook GCC 7.4 (4945702)" session. This session is running on 1 node with 4 cores. It was created on 2022-05-02 at 13:53:22 CDT and has 59 minutes remaining. The session ID is e09060bc-4e15-48aa-b99b-a81ae849dac6. A "Delete" button is visible next to the session details, and a "Connect to Jupyter" button is at the bottom.

FAQ, Issues etc.

- <https://aurochs.hpc.umanitoba.ca/> gives a Bad Request message to the left:
 - Old Dex session it kept in browser cache; clean cache, restart browser
 - Re-type aurochs.hpc.umanitoba.ca w/o the session key parameter
- Timeout messages when loading Desktop Apps or starting jobs
 - Keep hitting Reload
 - Use “test” partition for simple Desktop
- No /home and /global/scratch for new Grex users
 - Connect first time via command line SSH; a script creates them on first SSH login
 - Scratch migrated to /project, check new links in Files menu!
- Inconvenient time limits for Desktop app
 - Contact us, we are now trying to optimize these things
- An Application X would be useful to have on Grex
 - Contact us, we are working on expanding the list of Apps.





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