O2 Portal – Simplifying the Interaction and Experience of Using an HPC Environment



What is O2?

- HMS Research Computing's newest High-Performance Compute cluster
- SLURM scheduler









How to get an O2 account?

- Available to both, on-quad and off-quad researchers
 - off-quad researchers from labs whose PIs do not have a primary or secondary faculty appointment in an HMS Blavatnik Institute Basic or Social Science Department
 - off-quad researchers are charged for O2 jobs and storage
- More information at <u>How to request or retain an O2 account</u>



Important Note about O2 Storage

 O2 can only be used to store data of <u>Harvard Security Level 3</u> and below.

 None of the standard filesystems are automatically encrypted, and cannot be used for HIPAA-protected or other secure data (Harvard's data security above level 3) unless those data have been deidentified.



HMS Storage Offerings

- Options https://it.hms.harvard.edu/our-services/research- computing/services/storage
- O2 Primary Storage
 - /home 100GiB
 - /n/data1, /n/data2, /n/groups
 - backups
- O2 Scratch
 - /n/scratch3
 - 10TiB; 30 day retention, no backups

Purpose/Used For	Transient files used during a single job on the HMS High-Performance Compute (HPC) Cluster. Temporary (days to weeks) high performance storage for data that can be easily regenerated.	Active research data that is frequently accessed, modified, or computed against. Run many analyses simultaneously on a High-Performance Compute (HPC) Cluster.	Active research data that is frequently accessed, modified, or computed against. Share documents and files with colleagues, both within and outside of your department.	Infrequently accessed data, directly available for reference, retrieval, or analysis. Can operate as an intermediary location, to organize and prepare research data for long-term retention, as required.
Filesystem Path(s)				
Write Speed	High	High	Medium	Medium
Read Speed	High	High	Medium	Medium



O2 Cluster Status

https://harvardmed.atlassian.net/l/cp/zLMdWTYs

O2 Cluster Status

Created by Bergman, Andrew L., last modified about an hour ago

This page shows all service outages for the O2 cluster, including planned maintenance and unplanned events.

We also post updates on the HMS RC Twitter page.

ONLINE

July 8: notes after the July OS/Slurm update

- Jupyter Notebooks users should start a new environment and remove any old runtime directories.
- "sbatch" no longer uses the "-x11" option in the new version of Slurm. Just remove it from your script and X forwarding should work by default.
 - "srun" commands still require "-x11" to enable X forwarding, though.
- If you have any custom built software, you may need to recompile or relink it on O2.



Data Management

- 1. Planning: Plan ahead
- 2. Active Research: Document
- 3. Dissemination: Share confidently

Note: be sure to ask your PI and your department about standard practices in your field!



Harvard Biomedical Data Management Website: https://datamanagement.hms.harvard.edu

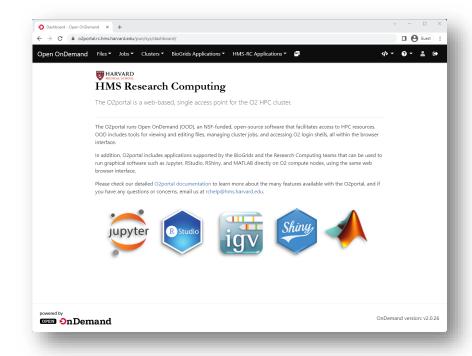
Resources: https://datamanagement.hms.harvard.edu/about/what-research-data-management/rdm-resources



O2 portal – O2 web-based access point

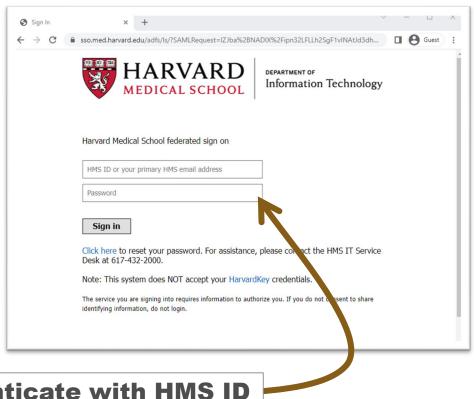
- Powered by Open OnDemand
- Developed by Ohio Supercomputer Center (OSC)
- NSF Funded





Requirements to Access the O2 Portal

- O2 account
- Setup 2FA authentication



Authenticate with HMS ID



Transfer Files









Submit Jobs

Monitor Jobs



View/Edit Files



Applications







Transfer Files







Submit Jobs



View/Edit Files









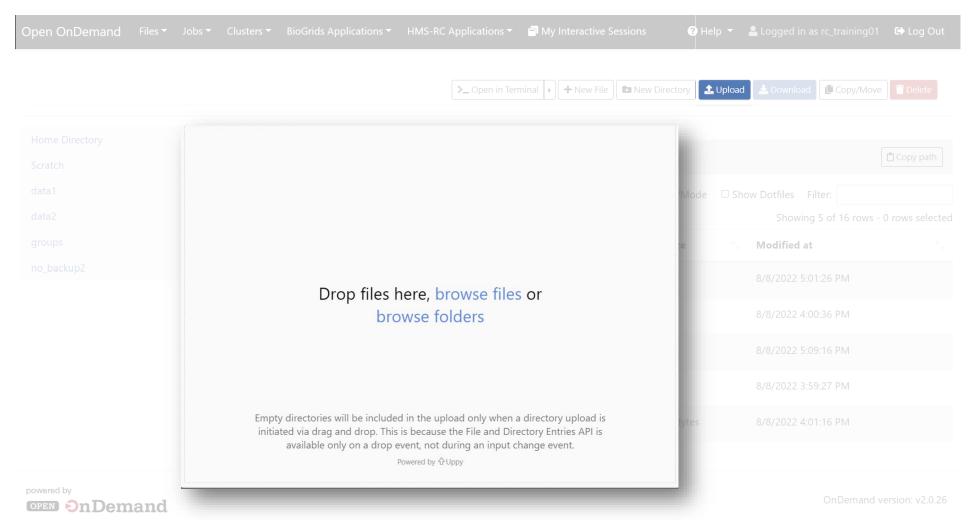
←⇒ Transfer Files



Select a filesystem



Upload







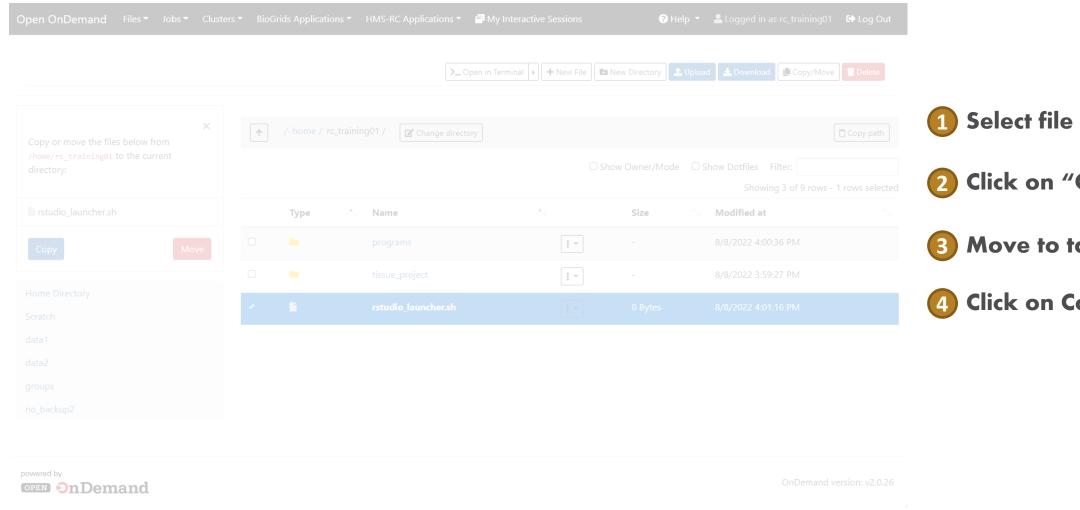
Download

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1		training01 / Change directory			Copy path
			☐ Show Owner/Mode	☐ Show Dotfiles Filter:	
				Showing 5 of 16 ro	ws - 1 rows selecte
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			•	8/8/2022 5:01:26 PM	
			◆ View✓ Edit	8/8/2022 4:00:36 PM	
			A Rename ♣ Download	8/8/2022 5:09:16 PM	
			■ Delete	8/8/2022 3:59:27 PM	
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HARVARD MEDICAL SCHOOL



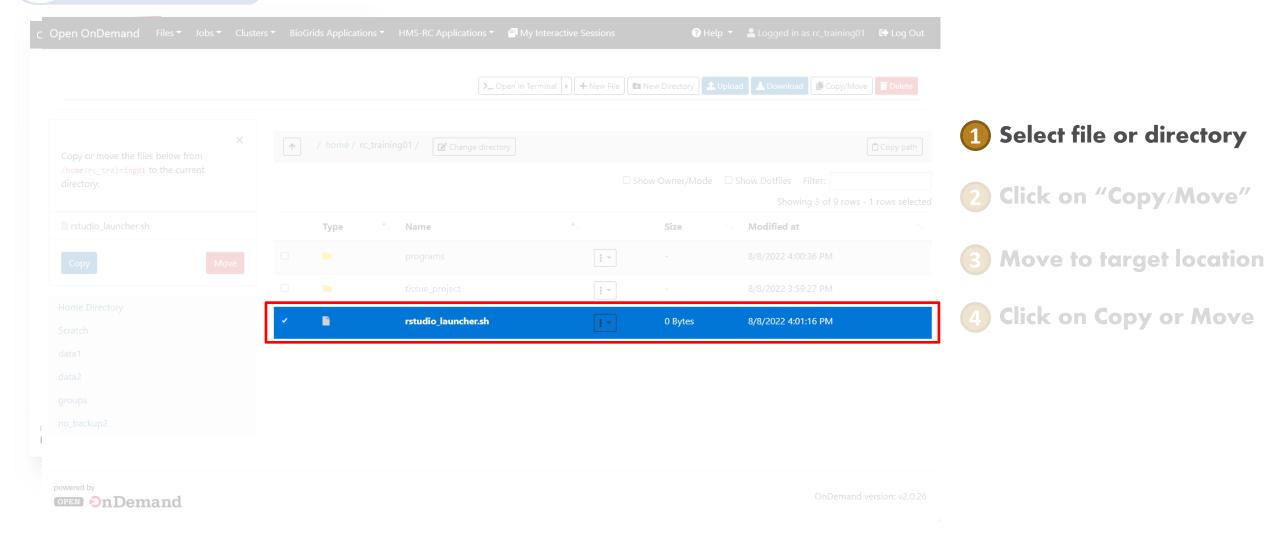
Within 02



- 1 Select file or directory
- Click on "Copy/Move"
- Move to target location
- 4 Click on Copy or Move



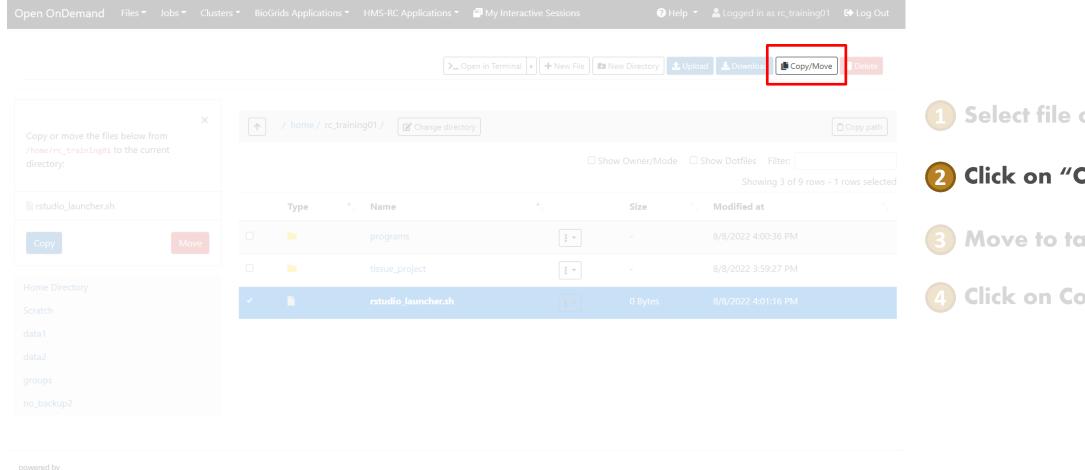
Within O2





OPEN On Demand

Within 02

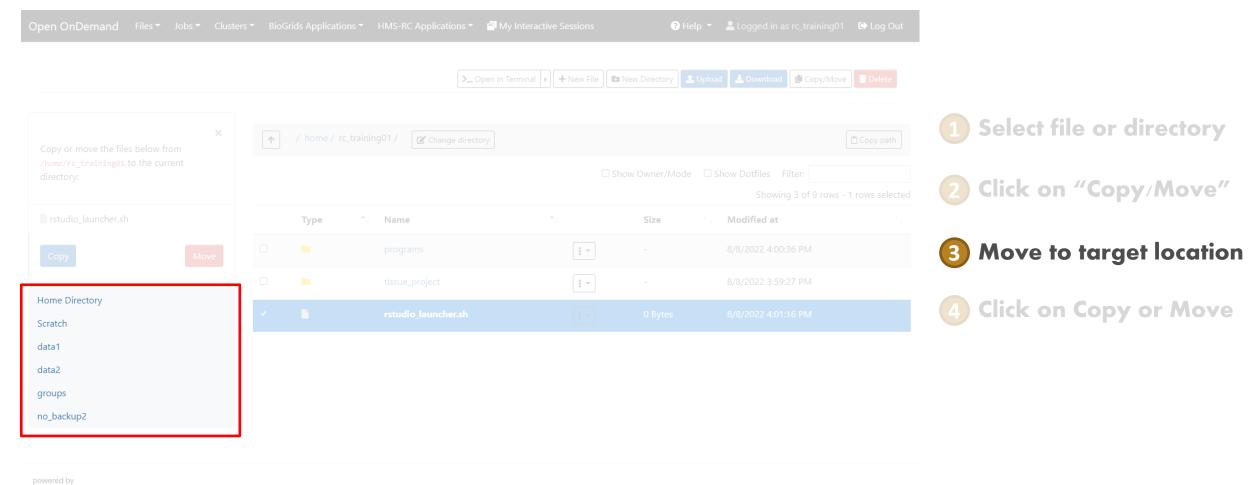


- 1 Select file or directory
- 2 Click on "Copy/Move"
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OPEN On Demand

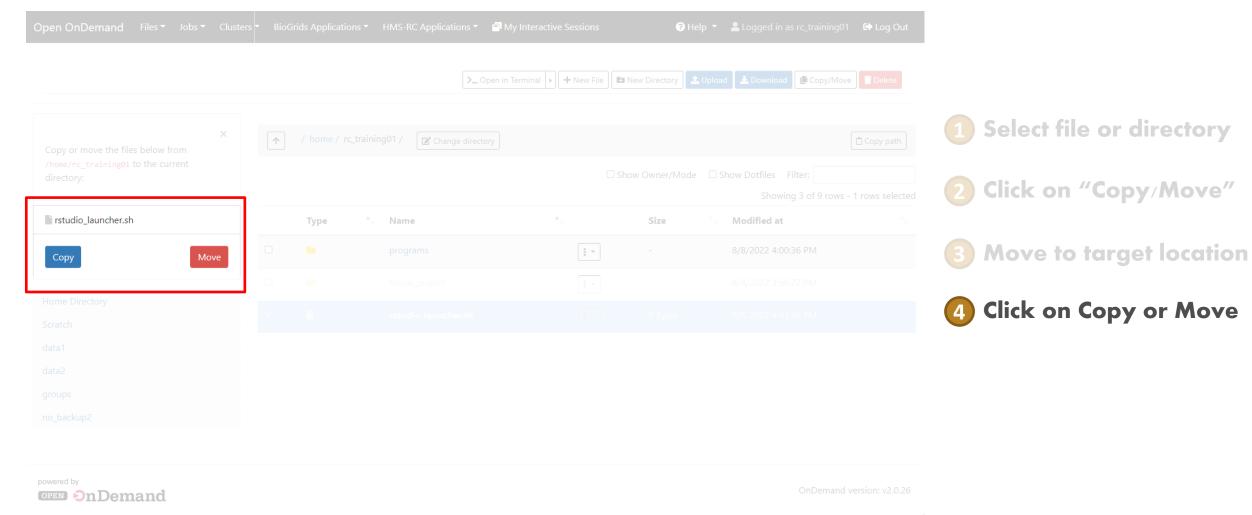
Within O2







Within 02







Transfer Files







Submit Jobs



View/Edit Files











A job is a **resource** request sent to O2 via the O2 Portal containing one or more **tasks**.





A job is a **resource** request sent to O2 via the O2 Portal containing one or more tasks.

Resources











A job is a **resource** request sent to O2 via the O2 Portal containing one or more tasks.

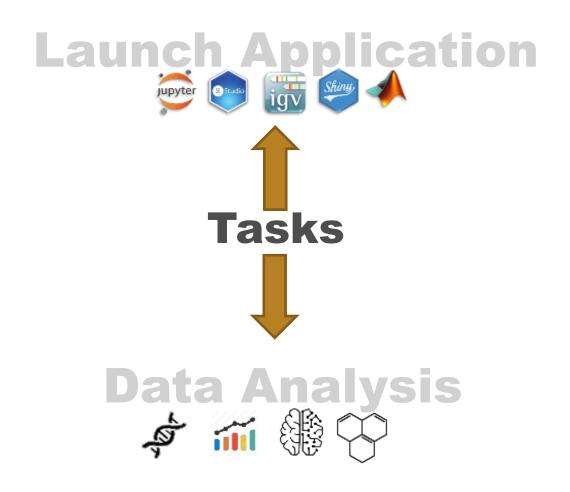














Transfer Files







Submit Jobs



View/Edit Files

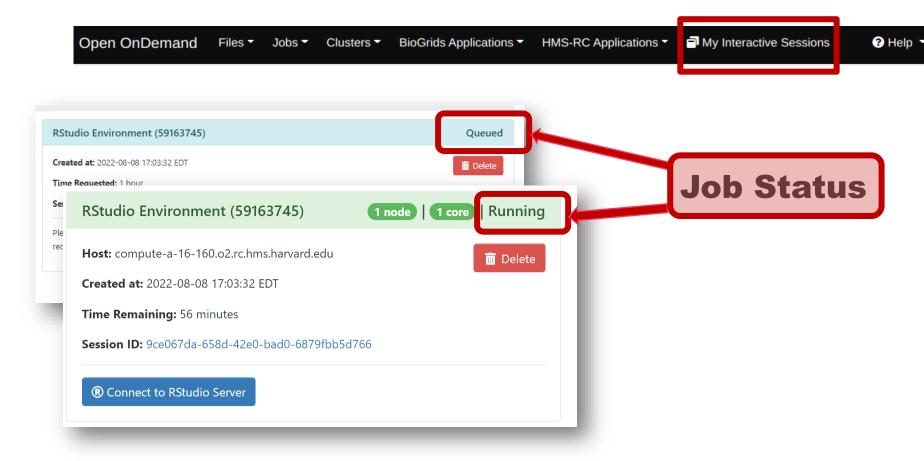






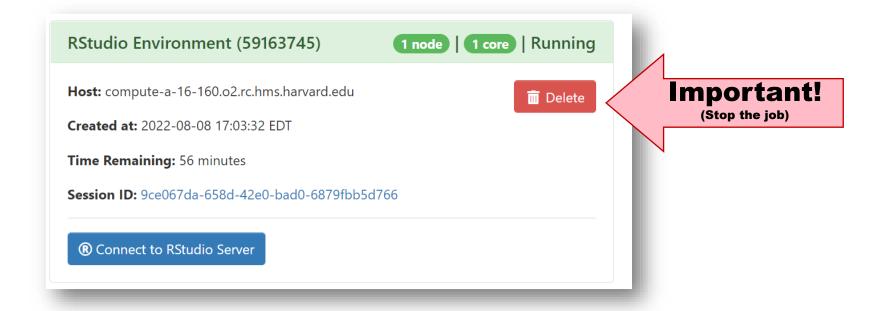




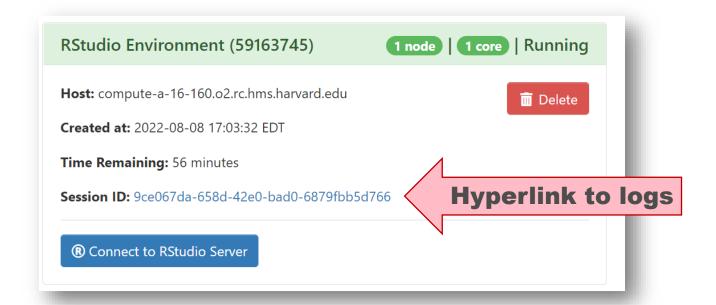








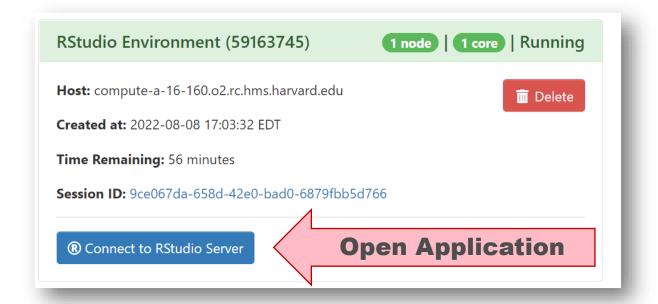




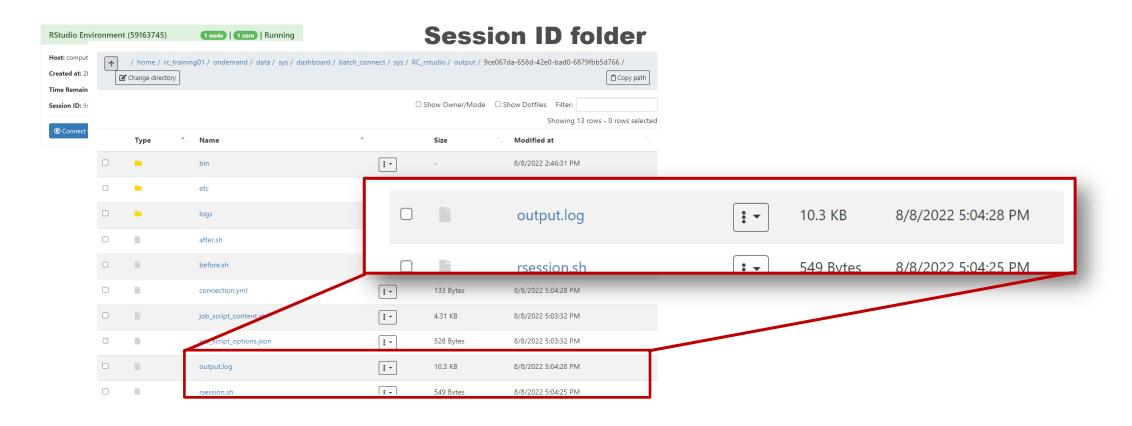




My Interactive Sessions Open OnDemand Clusters ▼ BioGrids Applications ▼ HMS-RC Applications ▼











Transfer Files







Submit Jobs



View/Edit Files



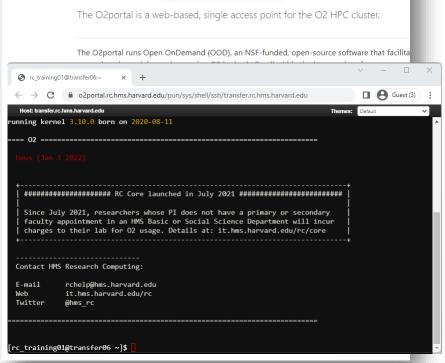


Applications



Terminal

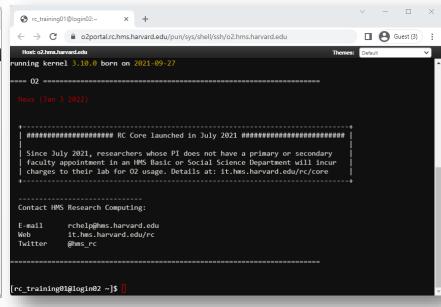
HARVARD MEDICAL SCHOOL

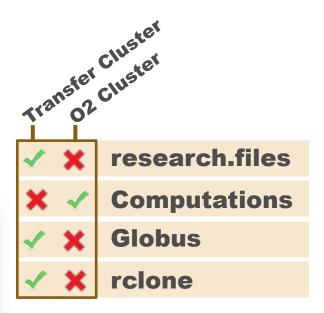


Open OnDemand Files Jobs Clusters BioGrids Applications HMS-RC Applications >_O2 Cluster Terminal

HMS Research computing

>_Transfer Cluster Terminal







Transfer Files







Submit Jobs



View/Edit Files

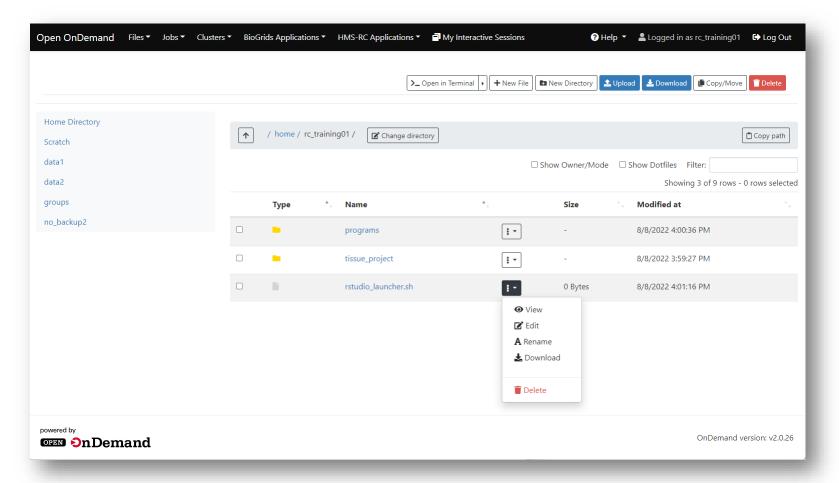




Applications









Transfer Files







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Monitor Jobs



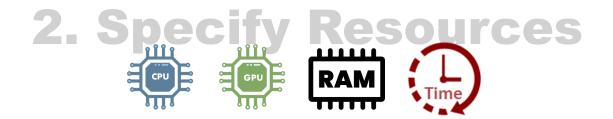






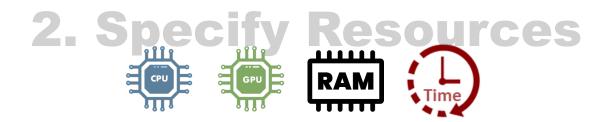












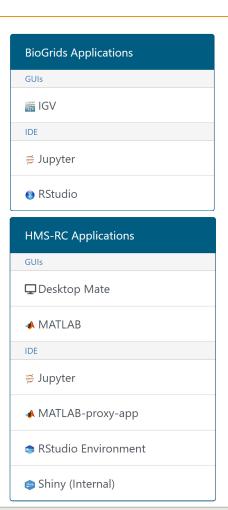
3. Launch Application

Launch



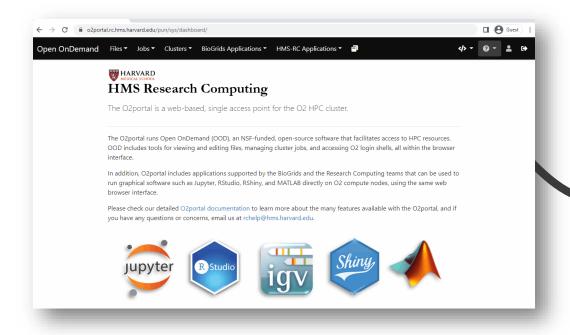


 Two sets of scientific software applications provided by BioGrids and HMS Research Computing

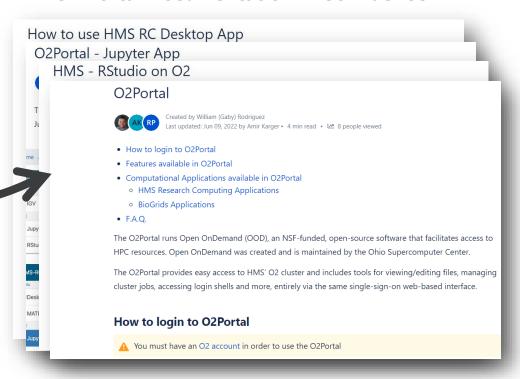




Documentation



O2 Portal Documentation in Confluence



https://harvardmed.atlassian.net/l/cp/vZ58cLoQ



Demo

https://o2portal.rc.hms.harvard.edu/

