

# **Open OnDemand on Lawrencium**

**Sapana Soni**

# Outline

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4. [Customizing Jupyter Kernels: Python and Julia](#)
5. [Files: file management](#)
6. [Clusters: LRC shell access](#)
7. [Jobs: job management and submission](#)

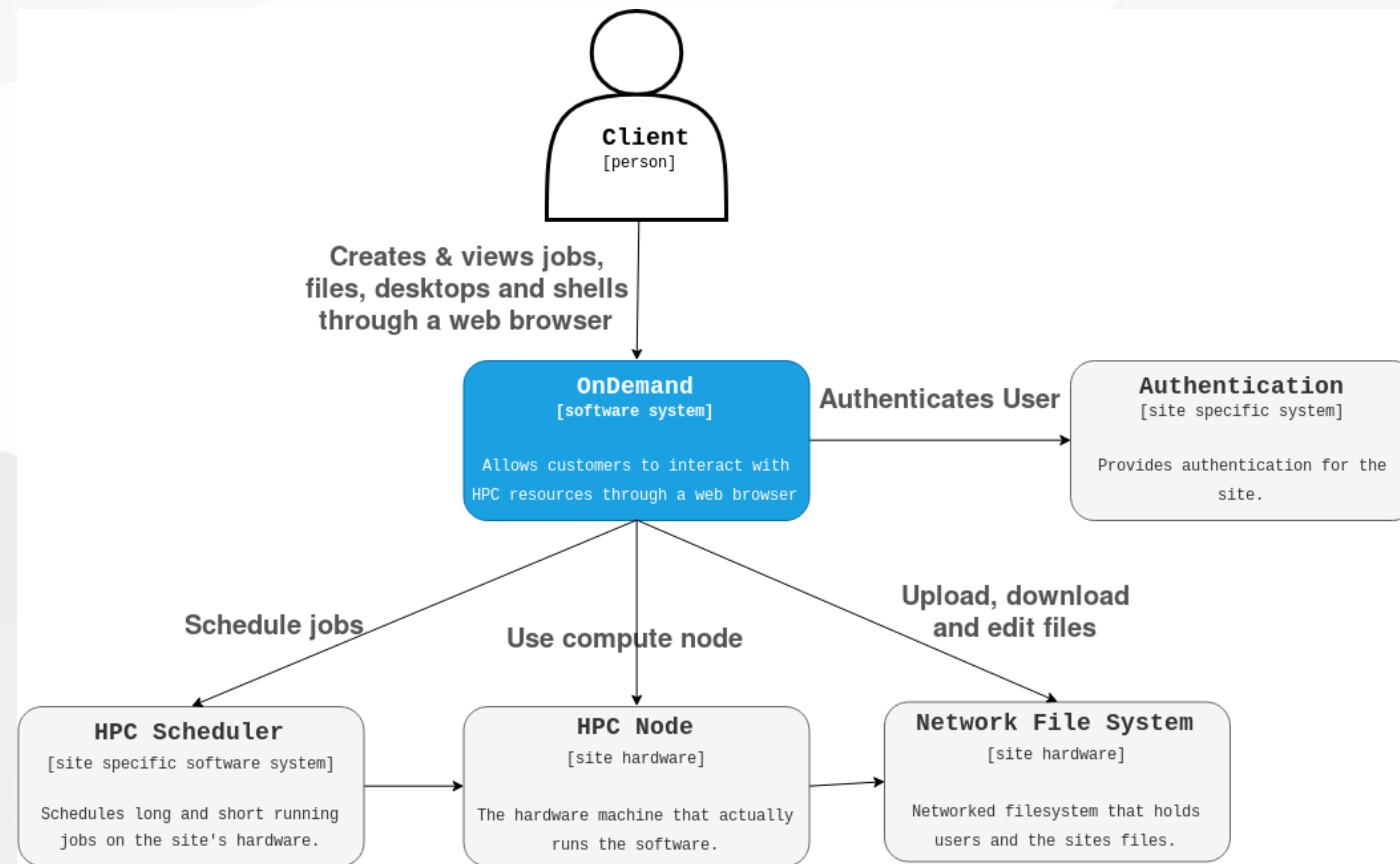
# **Training style : mostly demonstration**

- If you have account on Lawrencium then open OOD dashboard and try it yourself as we go.
- Don't have account on Lawrencium? Don't worry! You can watch for now and try it later using training material.
- Training material is available on GitHub([https://github.com/lbnl-science-it/OOD\\_training\\_july2022.git/](https://github.com/lbnl-science-it/OOD_training_july2022.git/)).
- Recording for the training will be available in the same GitHub repository.

# Introduction

- What is Open OnDemand?
  - OpenOnDemand is a web platform that provides an easy access to the cluster's HPC resources and services.
  - Designed and developed by Ohio Supercomputer Center.
- Why OOD?
  - **New users:** intuitive and easy access to computing resources, removes barrier in using HPC resources for their research.
  - **Advanced users:** alternate and convenient way to traditional command line access

- How OOD works at system level?

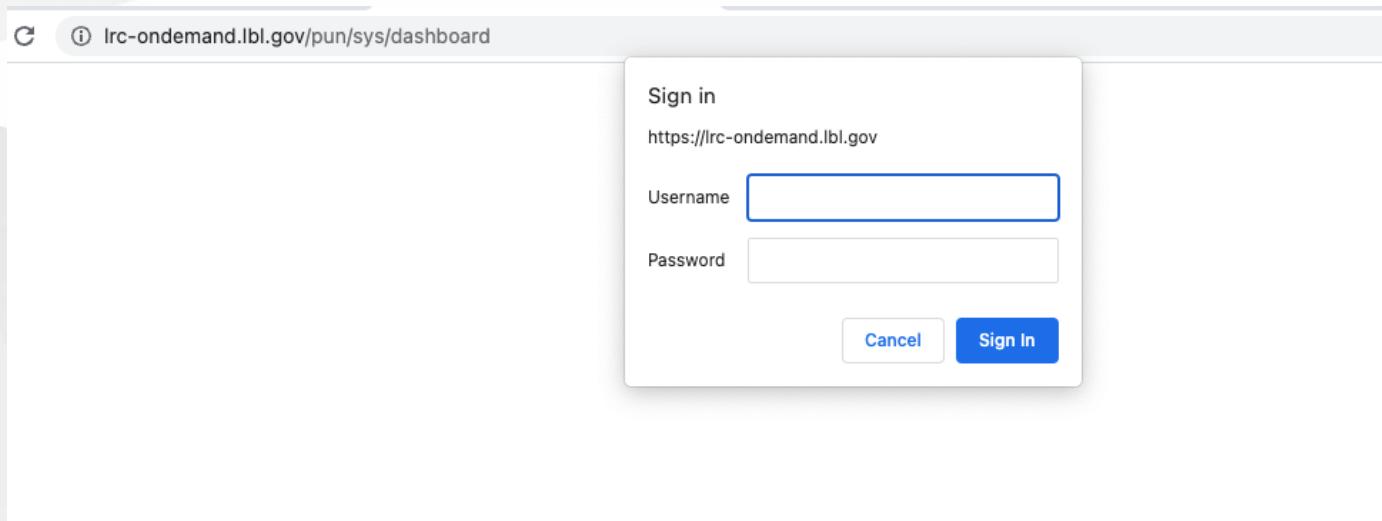


Users are able to use HPC services more efficiently through Open OnDemand.

# Accessing OOD on Lawrencium

1. Web link to connect : <https://lrc-on-demand.lbl.gov/>

**Note:** Use Chrome or Firefox to brows this page. Safari has known [authentication issues](#).



2. Use your LRC username and PIN+one-time password (OTP)
  - same credentials you use to login Lawrencium cluster

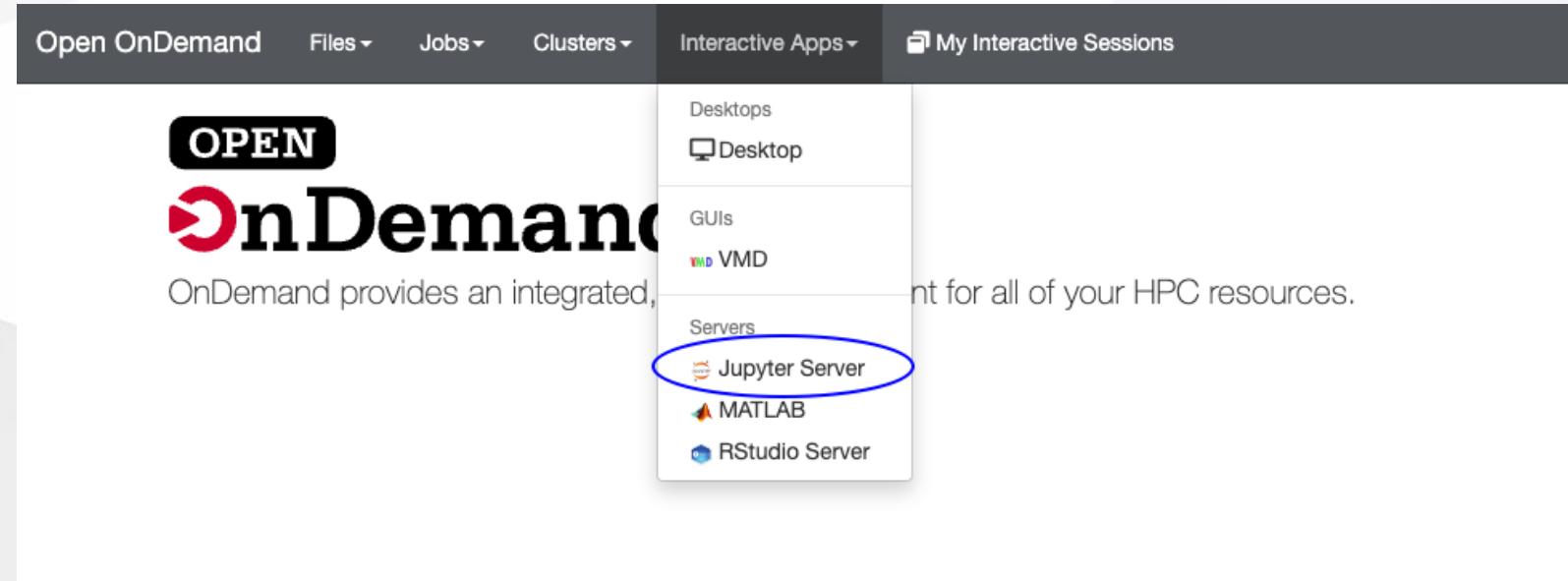
# OOD Dashboard on Lawrencium

On successful authentication you will see a OOD dashboard.

The screenshot shows the OnDemand interface on a web browser. At the top, there is a dark navigation bar with white text containing links for "Open OnDemand", "Files", "Jobs", "Clusters", "Interactive Apps", "My Interactive Sessions", "Help", and "Log Out". Below the navigation bar, the main content area features a large "OPEN" button with a red arrow icon. To its right is the "OnDemand" logo, which includes a red arrow icon followed by the word "OnDemand" in a bold, black, sans-serif font. A subtext line below the logo reads "OnDemand provides an integrated, single access point for all of your HPC resources." The rest of the page is a plain white space.

# Interactive Apps: Jupyter server

Click on **Interactive apps --> Jupyter Server** to open Jupyter notebook



# Interactive mode

Home / My Interactive Sessions / Jupyter Server

**Interactive Apps**

- Desktops
- Desktop
- GUIs
- VMD
- Servers
- Jupyter Server**
- MATLAB
- RStudio Server

**Jupyter Server** version: d96c37b

This app will launch a [Jupyter](#) server using [Python](#) on the [LBNL](#) Science-IT Laboratory Research Computing([LRC](#)) Infrastructure clusters.

**Type of use**

interactive\_mode, for exploration

Choose the mode of running your Jupyter Server

**Wall Clock Time**

1

How many hours do you want to run this Jupyter Server for ?

**Number of CPU cores per Node**

1

Please specify the number of CPU cores you want per node for this Jupyter Server

**Email address (optional)**

Enter your email address if you would like to receive an email when the session starts. Leave blank for no email.

**Launch**

\* The Jupyter Server session data for this session can be accessed under the [data root](#) directory.

# Compute mode

Interactive Apps

- Desktops
- Desktop
- GUIs
- VMs
- Servers
  - Jupyter Server
  - MATLAB
  - RStudio Server

**Jupyter Server** version: d96c37b

This app will launch a [Jupyter](#) server using [Python](#) on the [LBNL Science-IT](#) Laboratory Research Computing([LRC](#)) Infrastructure clusters.

Type of use

compute\_mode

Choose the mode of running your Jupyter Server

Wall Clock Time

1

How many hours do you want to run this Jupyter Server for ?

Name of the job

test

SLURM Partition

cf1

Choose the name of the SLURM Partition in which you want to launch this Jupyter Server

SLURM Project/Account Name

scs

For non Lawrencium partitions you can leave this blank.

SLURM QoS Name

cf\_debug

Most users can leave it black for default assignment, Lawrencium Condo users want to specify their condo QoS name

Number of Nodes

1

Please specify the number of nodes you want for this Jupyter Server

Email address (optional)

Enter your email address if you would like to receive an email when the session starts. Leave blank for no email.

Launch

\* The Jupyter Server session data for this session can be accessed under the [data root directory](#).

```
(base) [spsoni@n0003 ~]$ sacctmgr show association -p user=spsoni
Cluster|Account|User|Partition|Share|Priority|GrpJobs|GrpTRES|GrpSubmit|GrpWall|Grp
xTRES|MaxTRESPerNode|MaxSubmit|MaxWall|MaxTRESMins|QOS|Def QOS|GrpTRESRunMins|
perceus-00|dirac1|spsoni|ood_inter|1|||||||lr_interactive|||
perceus-00|dirac1|spsoni|dirac1|1|||||||normal|||
perceus-00|scs|spsoni|etna_shared|1|||||||normal|||
perceus-00|scs|spsoni|etna|1|||||||normal|||
perceus-00|scs|spsoni|etna_gpu|1|||||||normal|||
perceus-00|scs|spsoni|ood_inter|1|||||||lr_interactive|||
perceus-00|scs|spsoni|es1|1|||||||es_debug,es_lowprio,es_normal|||
perceus-00|scs|spsoni|cf1|1|||||||cf_debug,cf_lowprio,cf_normal|||
perceus-00|scs|spsoni|cm1|1|||||||cm1_debug,cm1_normal|||
perceus-00|scs|spsoni|lr_bigmem|1|||||||lr_debug,lr_normal|||
perceus-00|scs|spsoni|lr6|1|||||||lr6_lowprio,lr_debug,lr_normal|||
perceus-00|scs|spsoni|lr5|1|||||||lr_debug,lr_lowprio,lr_normal|||
perceus-00|scs|spsoni|lr4|1|||||||lr_debug,lr_lowprio,lr_normal|||
perceus-00|scs|spsoni|lr3|1|||||||lr_debug,lr_lowprio,lr_normal|||
```

Session was successfully created.

Home / My Interactive Sessions

Interactive Apps

- Desktops
- Desktop
- GUIs
- VMD
- Servers
- Jupyter Server
- MATLAB
- RStudio Server

**Jupyter Server (51665742)**

1 node | 64 cores | Starting

Created at: 2022-07-21 13:56:39 PDT

Time Remaining: 59 minutes

Session ID: 032d6e1a-efbc-406b-8ceb-4eab3c54dc95

Your session is currently starting... Please be patient as this process can take a few minutes.

Delete

Session was successfully created.

Home / My Interactive Sessions

Interactive Apps

- Desktops
- Desktop
- GUIs
- VMD
- Servers
- Jupyter Server
- MATLAB
- RStudio Server

**Jupyter Server (51665742)**

1 node | 64 cores | Running

Host: >\_n0014.ct1

Created at: 2022-07-21 13:56:39 PDT

Time Remaining: 58 minutes

Session ID: 032d6e1a-efbc-406b-8ceb-4eab3c54dc95

Connect to Jupyter



The screenshot shows a Jupyter Notebook cell. The cell ID is In [3]. The code in the cell is: 

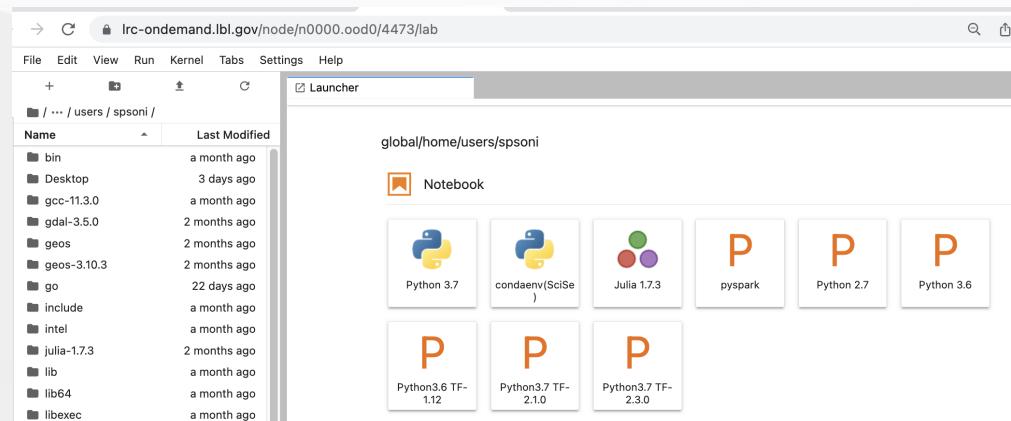
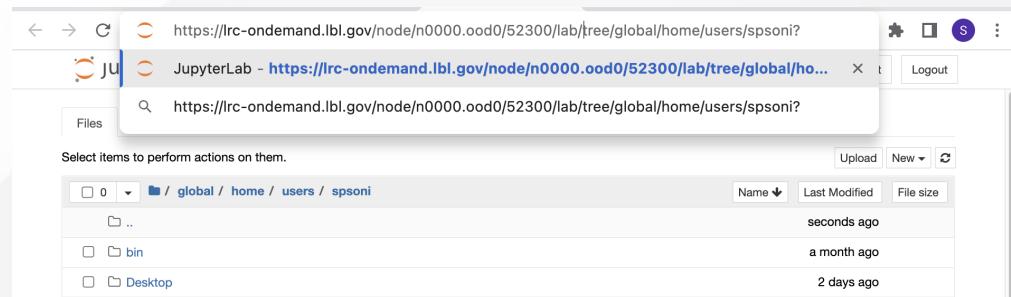
```
print("Hello World!")
```

. The output of the cell is: 

```
Hello World!
```

.

To load Jupyter lab simply add  
**lab/** before **tree/** in jupyter  
server url.



# **Customizing Jupyter Kernels : Python and Julia**

If you'd like to use a different language or version of python or different conda environment not indicated in the drop-down menu of jupyter notebook you'll need to create your own kernel.

## **Python:**

There are two ways to add python kernel to jupyter notebook.

1. Using conda environment
2. Manually creating a new kernel

[Click here for details.](#)

## Customizing python kernel using conda environment

```
# Creating a pykernel for 3.9.12 version of python and installing packages
module load python/3.9.12
# Create the environment in your home directory:
conda create --name=py39 python=3.9 ipykernel
source activate py39
python -m ipykernel install --user --name py39 --display-name="py39(Sci)"
conda install -c conda-forge scipy
```

Creating environment in scratch space: \$USER is your own username.

```
conda create -p /global/scratch/users/$USER/py39_scr python=3.9 ipykernel
source activate /global/scratch/users/$USER/py39_scr
python -m ipykernel install --name=py39_scr --prefix=/global/scratch/users/$USER/py39_scr --display-name="py39_scratch"
#create symlink to kernel in custom path
ln -s /global/scratch/users/$USER/py39 /global/home/users/$USER/.local/share/jupyter/kernels/py39
```

You need to create a symlink in /global/home/users/\$USER/.local/share/jupyter/kernels/ directory so that kernel appears in the jupyter notebook.

## Julia:

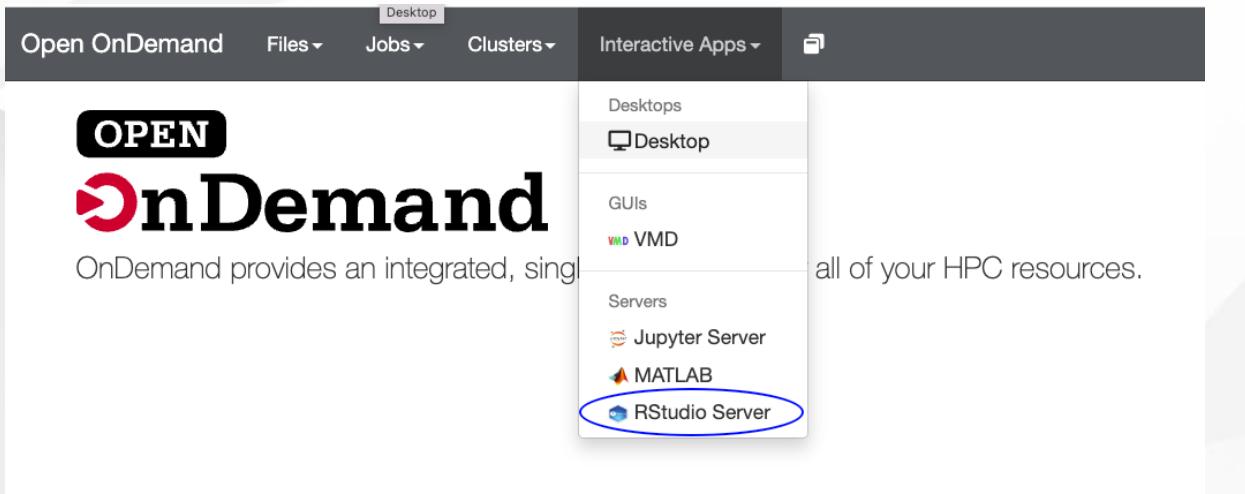
Julia kernel can be added in Jupyter for writing a Julia code in Jupyter notebook. To add a Julia kernel to Jupyter we only need to add the IJulia package.

```
module load julia/1.0.3
julia --version
julia
using Pkg
Pkg.add("IJulia")
Pkg.build("IJulia")
```

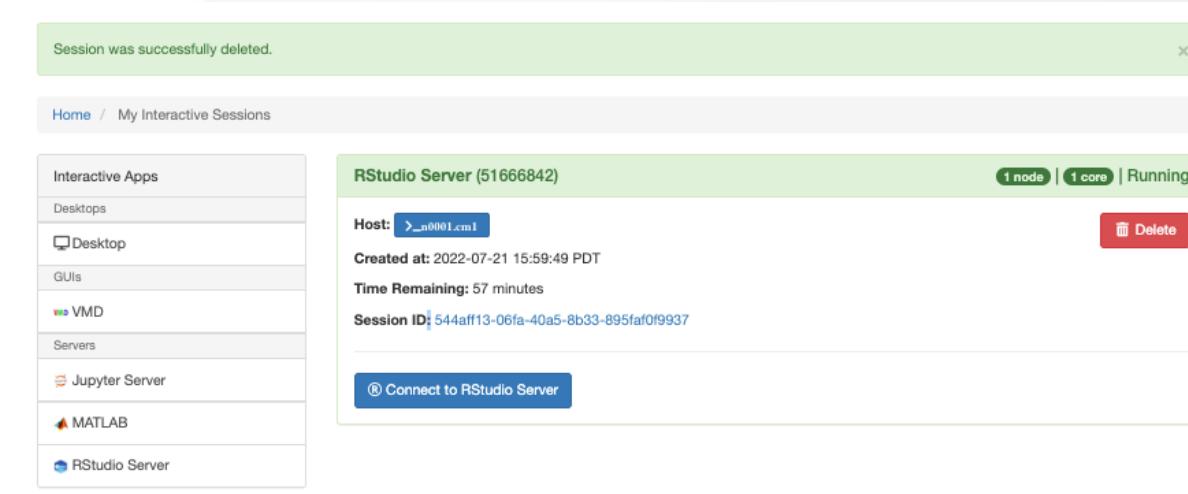
To remove unwanted jupyter kernel use following commands.

```
module load python/3.9.12
jupyter kernelspec list
jupyter kernelspec uninstall julia-1.0
jupyter kernelspec uninstall py39
```

# Interactive Apps: RStudio



The screenshot shows the OnDemand interface. At the top, there's a navigation bar with 'Open OnDemand', 'Files', 'Jobs', 'Clusters', 'Interactive Apps' (which is currently selected), and a search icon. Below the navigation bar, the main area has a large 'OPEN OnDemand' logo. To the right of the logo, the text 'OnDemand provides an integrated, sing...' is visible. A sidebar on the left lists 'Desktops', 'GUIs' (with 'VMD' listed), 'Servers' (with 'Jupyter Server' and 'MATLAB' listed), and 'RStudio Server'. The 'RStudio Server' option is highlighted with a blue oval. The central content area contains the text 'all of your HPC resources.'



The screenshot shows the 'My Interactive Sessions' page. At the top, a green banner displays the message 'Session was successfully deleted.' Below the banner, the page title is 'Home / My Interactive Sessions'. On the left, there's a sidebar with 'Interactive Apps' (selected), 'Desktops', 'GUIs' (with 'VMD'), 'Servers' (with 'Jupyter Server' and 'MATLAB'), and 'RStudio Server'. The main content area shows a single session entry for 'RStudio Server (51666842)'. The session details include 'Host: >\_n0001.cml', 'Created at: 2022-07-21 15:59:49 PDT', 'Time Remaining: 57 minutes', 'Session ID: 544aff13-06fa-40a5-8b33-895faf0f9937', and a 'Connect to RStudio Server' button. There are also '1 node | 1 core | Running' status indicators and a 'Delete' button.

# Compute and interactive mode

Home / My Interactive Sessions / RStudio Server

Interactive Apps
Desktops
<i>Desktop</i>
GUls
<i>VMD</i>
Servers
<i>Jupyter Server</i>
<i>MATLAB</i>
RStudio Server

## RStudio Server version: d96c37b

This app will launch a RStudio Server an IDE for R on the LBNL Science-IT Laboratory Research Computing(LRC) Infrastructure clusters.

### Type of use

interactive\_mode, for exploration

Choose the mode of running your Rstudio Server

### Wall Clock Time

1

How many hours do you want to run this Rstudio Server for ?

### Number of CPU cores per Node

1

Please specify the number of CPU cores you want per node for this Rstudio Server

### Email address (optional)

Enter your email address if you would like to receive an email when the session starts. Leave blank for no email.

Launch

\* The RStudio Server session data for this session can be accessed under the data root directory.

Home / My Interactive Sessions / RStudio Server

Interactive Apps
Desktops
<i>Desktop</i>
GUls
<i>VMD</i>
Servers
<i>Jupyter Server</i>
<i>MATLAB</i>
RStudio Server

## RStudio Server version: d96c37b

This app will launch a RStudio Server an IDE for R on the LBNL Science-IT Laboratory Research Computing(LRC) Infrastructure clusters.

### Type of use

compute\_mode

Choose the mode of running your Rstudio Server

### Wall Clock Time

1

How many hours do you want to run this Rstudio Server for ?

### Name of the job

test

### SLURM Partition

cf1

Choose the name of the SLURM Partition in which you want to launch this Rstudio Server

### SLURM Project/Account Name

scs

For non Lawrencium partitions you can leave this blank.

### SLURM QoS Name

cf\_normal

Most users can leave it black for default assignment, Lawrencium Condo users want to specify their condo QoS name

### Number of Nodes

1

Please specify the number of nodes you want for this Rstudio Server

### Email address (optional)

Enter your email address if you would like to receive an email when the session starts. Leave blank for no email.

Launch

\* The RStudio Server session data for this session can be accessed under the data root

# Interactive Apps: MATLAB

The screenshot shows the Open OnDemand web interface. At the top, there's a navigation bar with links for Desktop, Open OnDemand, Files, Jobs, Clusters, Interactive Apps, and a search icon. The 'Interactive Apps' dropdown is open, showing options: Desktops (selected), GUIs, VMD, Servers, Jupyter Server, MATLAB (circled in blue), and RStudio Server. Below this, a large banner features the 'OPEN OnDemand' logo and the text 'OnDemand provides an integrated, singl...' followed by 'all of your HPC resources.'

The screenshot shows a MATLAB session details page. At the top, it says 'Home / My Interactive Sessions'. A sidebar on the left lists Interactive Apps, Desktops, GUIs, VMD, Servers, Jupyter Server, MATLAB (selected and highlighted in green), and RStudio Server. The main area shows a session for 'MATLAB (51666979)'. It includes information like Host: >\_n0000.ood0, Created at: 2022-07-21 16:24:34 PDT, Time Remaining: 59 minutes, Session ID: 58dfcbce-9c5e-432d-b02d-87043985df5c, and two sliders for Compression (0 to 9) and Image Quality (0 to 9). There are 'Launch MATLAB' and 'View Only (Share-able Link)' buttons at the bottom.

# Interactive Apps: Desktop

The screenshot shows the OnDemand interface. At the top, there is a navigation bar with links for Open OnDemand, Files, Jobs, Clusters, Interactive Apps, and My Interactive Sessions. The 'Interactive Apps' menu is open, displaying options: Desktops (selected), GUIs (VMD), Servers (Jupyter Server, MATLAB, RStudio Server). A blue oval highlights the 'Desktops' option. Below the menu, a message reads: "OnDemand provides an integrated access point for all of your HPC resources."

Home / My Interactive Sessions / Desktop

**Interactive Apps**

Desktops

**Desktop**

GUIs

VMD

Servers

Jupyter Server

MATLAB

RStudio Server

**Desktop** version: 31a024e

This app will launch an interactive desktop on the [LBNL Science-IT](#) Laboratory Research Computing([LRC](#)) Infrastructure clusters. You will be able to launch GUI applications directly on the desktop.

**Name of the Job**

OOD\_desktop\_test

**SLURM Partition**

cf1

The SLURM Partition in which you want to launch this Desktop session.

**SLURM Account/Project Name**

scs

The SLURM account (i.e., the value of the -A or --account flag used when submitting a SLURM job).

**SLURM QoS Name**

cf\_debug

The QoS you want run under.

**Number of Compute Nodes**

1

The number of nodes you want for your Desktop session.

**Wall Clock Time**

1

The maximum number of hours your Jupyter session will run for. To save PCA credits or free up resources for your condo group members, you should delete your session when you are done.

**Email Address (Optional)**

Enter your email address if you would like to receive an email when the session starts. Leave blank for no email.

**Launch**

\* The Desktop session data for this session can be accessed under the [data root](#) directory.

Session was successfully deleted.

Home / My Interactive Sessions

**Interactive Apps**

Desktops

**Desktop**

GUIs

VMD

Servers

Jupyter Server

MATLAB

RStudio Server

**Desktop (51668171)**

Host: [2001:4d8:1001:1::1](#)

Created at: 2022-07-21 18:17:33 PDT

Time Remaining: 59 minutes

Session ID: 645aabba-caa9-4f1b-a5c0-973421f951fb

Compression

0 (low) to 9 (high)

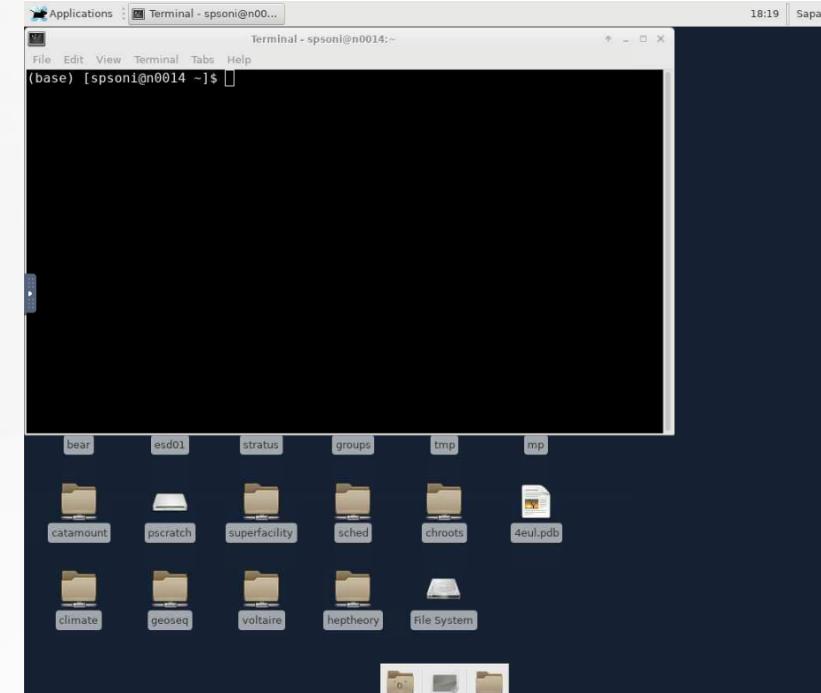
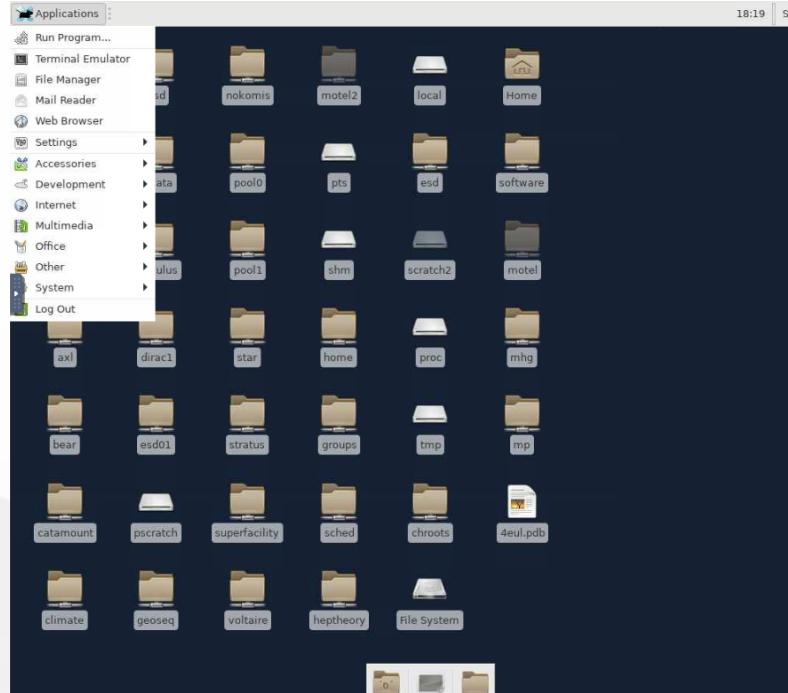
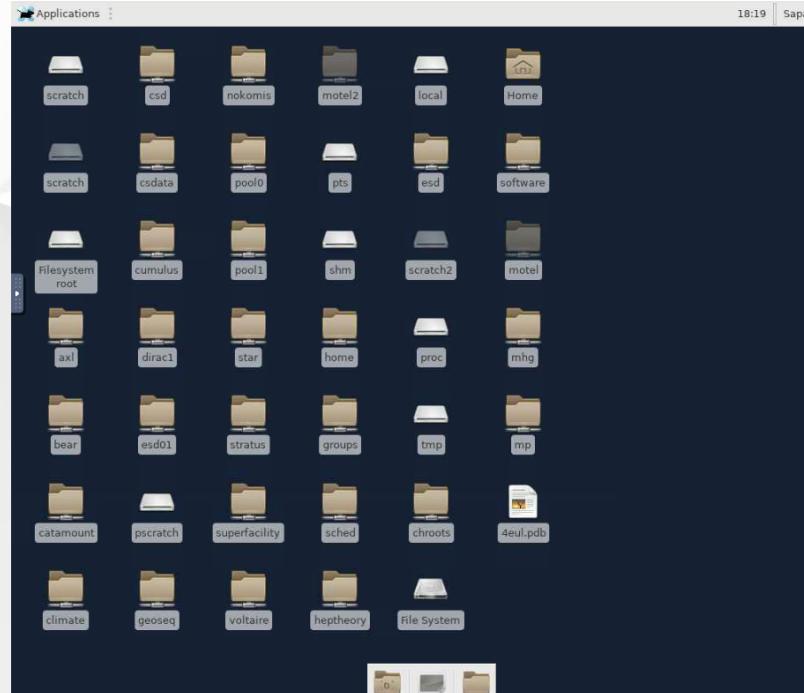
Image Quality

0 (low) to 9 (high)

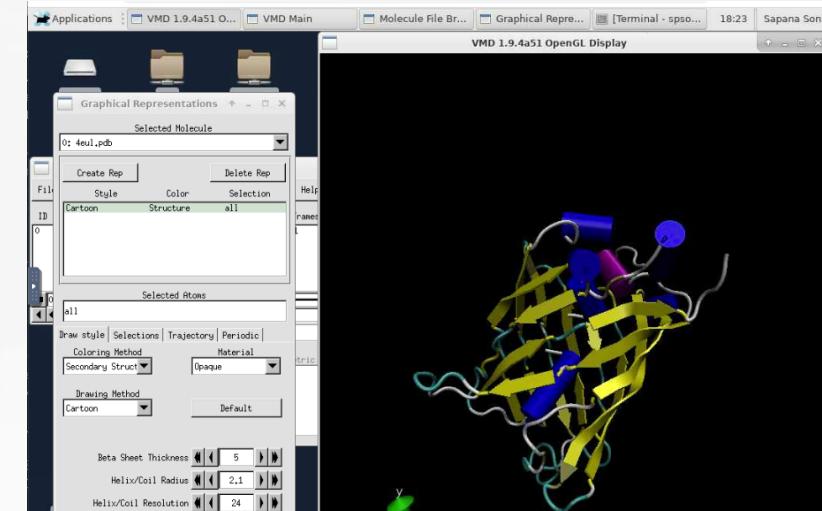
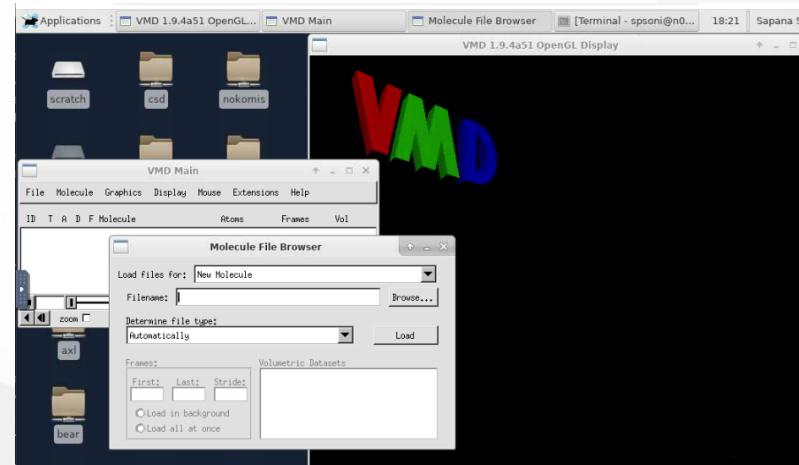
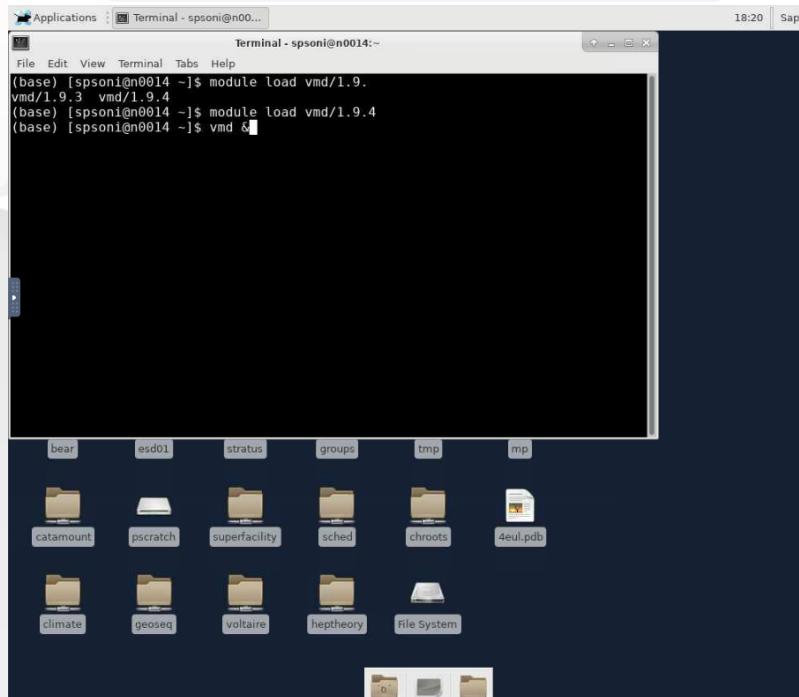
**Launch Desktop**

**View Only (Shareable Link)**

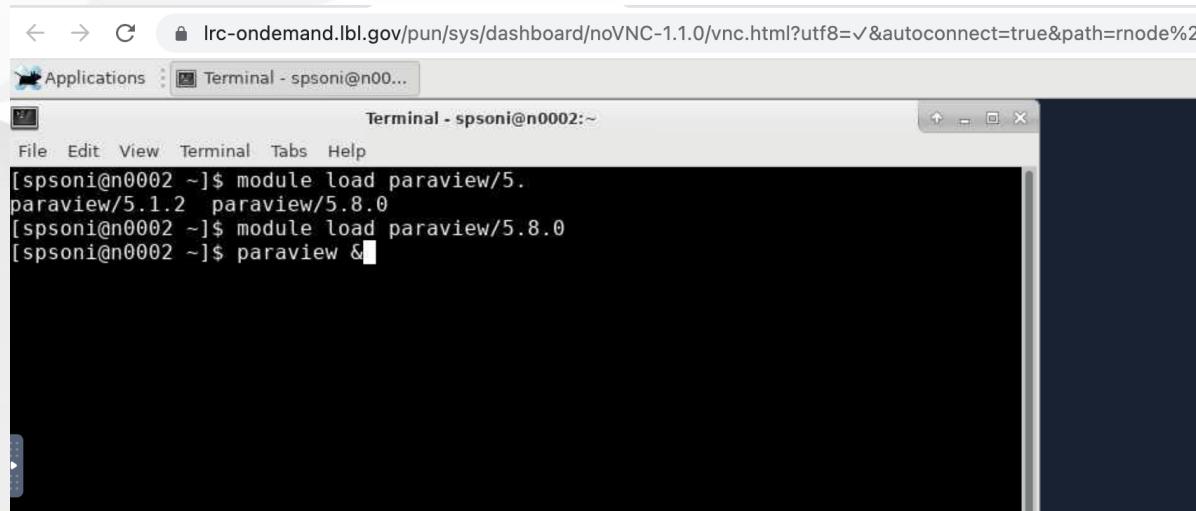
# Desktop



# Using Desktop to launch VMD

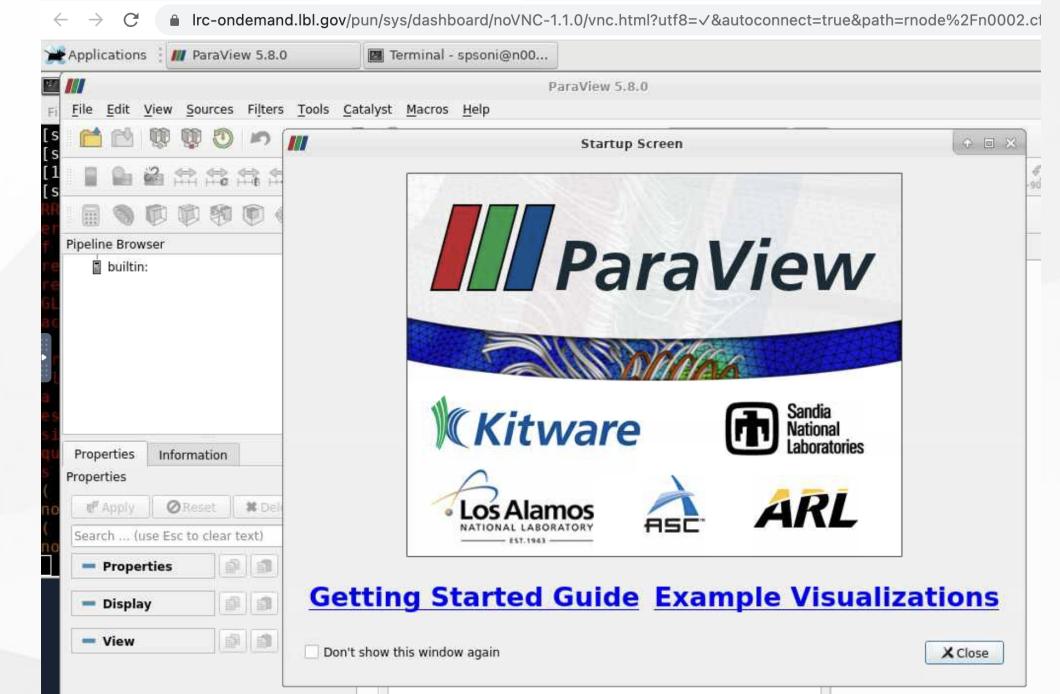


# Using Desktop to launch ParaView



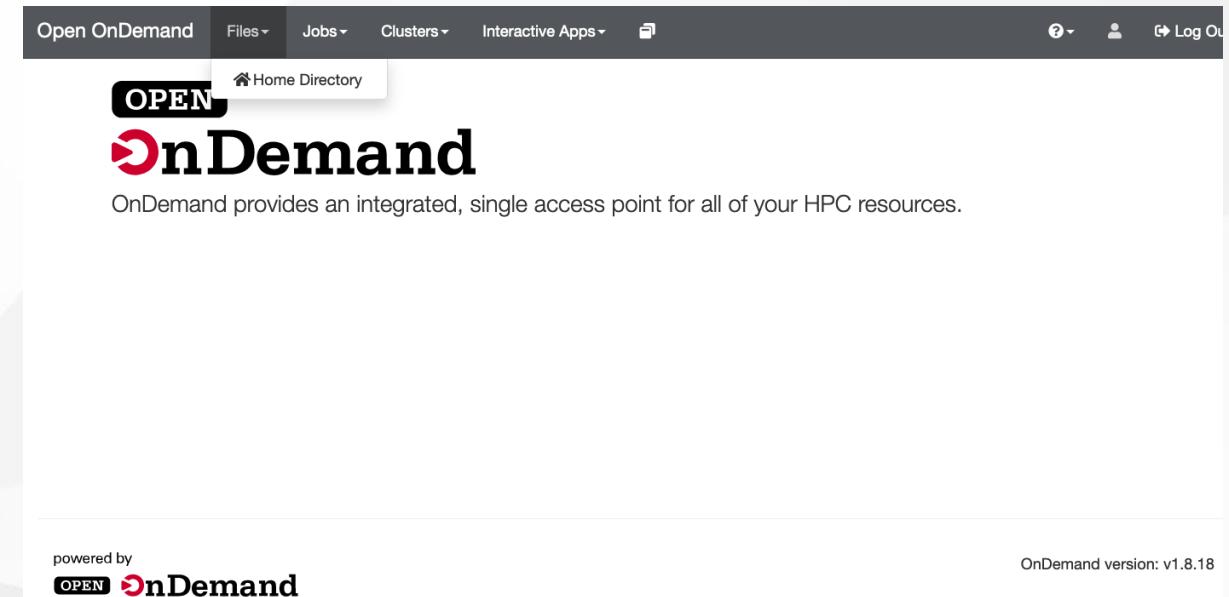
A screenshot of a terminal window titled "Terminal - spsoni@n002:~". The window shows the following command history:

```
[spsoni@n002 ~]$ module load paraview/5.  
paraview/5.1.2 paraview/5.8.0  
[spsoni@n002 ~]$ module load paraview/5.8.0  
[spsoni@n002 ~]$ paraview &
```



# Files: file management

- **Conventional approach: command line**
  - Linux file editors for editing files: vi, vim, nano, emacs
  - File transfer: scp, rsync
- **Globus for file transfer**
- **Open OnDemand: Files feature**
  - view and edit text files
  - create or rename or delete files
  - create or rename or delete directories
  - file/directory upload and download



# Files : Home directory

The screenshot shows a file manager interface with the following details:

- Toolbar:** Go To..., Open in Terminal, New File, New Dir, Upload, Show Dotfiles, Show Owner/Mode.
- Path:** /global/home/users/spsoni/
- Buttons:** View, Edit, A-Z Rename/Move, Download, Copy, Paste, (Un)Select All, Delete.
- Table Headers:** name, size, modified date.
- Table Data:** The table lists 22 entries, all of which are directories (dir). The modified dates range from 05/17/2022 to 07/24/2022.

name	size	modified date
..	dir	07/24/2022
Desktop	dir	07/08/2022
OCEAN	dir	06/09/2022
R	dir	06/13/2022
bin	dir	06/14/2022
gcc-11.3.0	dir	06/09/2022
gdal-3.5.0	dir	06/09/2022
geos	dir	06/09/2022
geos-3.10.3	dir	06/09/2022
go	dir	07/05/2022
include	dir	06/29/2022
intel	dir	06/16/2022
julia-1.7.3	dir	05/17/2022
lib	dir	06/13/2022
lib64	dir	06/29/2022
libexec	dir	06/13/2022
libssh	dir	06/13/2022
libssh2	dir	06/13/2022
libssh2-0.9	dir	06/13/2022
myproject	dir	06/13/2022
ondemand	dir	06/13/2022

# Clusters: LRC shell access

The screenshot shows the OnDemand web interface. At the top, there is a navigation bar with links for Open OnDemand, Files, Jobs, Clusters (which is the active tab), Interactive Apps, and a search icon. Below the navigation bar, there is a banner with the text "OPEN OnDemand". The main content area displays the message: "OnDemand provides an integrated, single access point for all of your HPC resources." At the bottom left, it says "powered by OPEN OnDemand", and at the bottom right, it indicates "OnDemand version: v1.8.18".

The screenshot shows a terminal window with the following text:

Lawrence Berkeley National Laboratory operates this computer system under a contract with the U.S. Department of Energy. It is the property of the United States Government and is for authorized use only. The use of this system may be monitored for computer security purposes. Any unauthorized access to this system is prohibited and is subject to criminal and civil penalties under Federal Laws including but not limited to Public Laws 83-703 and 99-474. Each time you use this system (from here, from home, or on your personal laptop connected to an LBNL system), you consent to such interception, auditing, and related activity by authorizing personnel; further, LBNL may detain, access, and copy files from a non LBNL computer when there is reason to believe misuse has occurred.

\* LBNL Computer Protection Emergency phone number: 486-7770  
\* LBNL Security Webpage: <http://www.lbl.gov/security/>  
\* LBNL Backup Services: <https://commons.lbl.gov/display/itdivision/Backups>

\*\*\*\*\*  
We have WEEKLY office hours on Wednesdays starting 7/24/2019!  
Request a virtual consultation at <https://sites.google.com/a/lbl.gov/hpc/getting-help>  
Time: 10:30am-noon on Wednesdays

\*\*\*\*\*  
-----  
[spsoni@n000 ~]\$

# Job submission and management

The screenshot shows the OnDemand homepage. At the top, there is a dark header bar with links for "Open OnDemand", "Files", "Jobs", "Clusters", "Interactive Apps", and a user icon. Below the header is a search bar with placeholder text "Search". Underneath the search bar, the OnDemand logo is displayed with the word "OnDemand" in a large, bold, sans-serif font. Below the logo, a sub-headline reads "OnDemand provides an integrated, single access point for all of your HPC resources." At the bottom of the page, there is a footer section with the text "powered by" followed by the OnDemand logo, and "OnDemand version: v1.8.18" to the right.

The screenshot shows the "Active Jobs" page. The title "Active Jobs" is at the top, along with a dropdown menu "Show 50 entries" and a "Filter" input field. Below is a table with columns: ID, Name, User, Account, Time Used, Queue, Status, Cluster, and Actions. One job is listed: ID 51694850, Name OOD\_desktop\_test, User spsoni, Account scs, Time Used 00:00:09, Queue cf1, Status Running, Cluster LRC. Navigation buttons "Previous" and "Next" are at the bottom.

ID	Name	User	Account	Time Used	Queue	Status	Cluster	Actions
> 51694850	OOD_desktop_test	spsoni	scs	00:00:09	cf1	Running	LRC	

# Job composer and template

Open OnDemand / Job Composer Jobs Templates ⚡ Help

## Jobs

+ New Job ▾

Edit Files Job Options Open Terminal Submit Stop Delete

Show 25 entries Search:

Created	Name	ID	Cluster	Status
July 24, 2022 5:24pm	GPU Slurm Job	51694976	LRC	Not Submitted
July 24, 2022 5:16pm	MPI Slurm Job	51694976	LRC	Completed
July 24, 2022 5:12pm	GPU Slurm Job	51694958	LRC	Completed

Showing 1 to 3 of 3 entries Previous 1 Next

Job Details

Job Name: GPU Slurm Job

Submit to: LRC

Account: Not specified

Script location: /global/home/users/spsoni/ondemand/data/sys/myjobs/projects/d

Open OnDemand / Job Composer Jobs Templates ⚡ Help

## Templates

To create a new job, select a template to copy, fill out the form to the right, and click "Create New Job".

+ New Template Copy Template

View Files Open Terminal Delete

Show 10 entries Search:

Name	Cluster	Source
GPU Slurm Job	Lrc	System Templates
MPI Slurm Job	Lrc	System Templates
Simple Sequential Slurm Job	Lrc	System Templates

Showing 1 to 3 of 3 entries Previous 1 Next

Create New "GPU Slurm Job"

A basic template for GPU job on a Slurm system

Job Name: GPU Slurm Job

Cluster: LRC

Script Name: gpu\_job.sh

Create New Job Reset

# Submission script

★ Create Template

ch:

Delete

Status: Not Submitted

Completed

Completed

Previous 1 Next

### Job Details

Job Name: **GPU Slurm Job**

Submit to: LRC

Account: Not specified

Script location: /global/home/users/spsoni/ondemand/data/sys/myjobs/projects/default/4

Script name: gpu\_job.sh

Folder Contents:

Folder Contents:

gpu\_job.sh

### Submit Script

**gpu\_job.sh**

Script contents:

```
#!/bin/bash

#SBATCH --job-name=test
#SBATCH --nodes=1
#SBATCH --time=00:30:00
#SBATCH --qos=es_normal
#SBATCH --account=scs
#SBATCH --partition=es1
#SBATCH --gres=gpu:1
#SBATCH --ntasks=2
#SBATCH --output=%j.output
#SBATCH --error=%j.err
#SBATCH --job-name=test

cd $SLURM_SUBMIT_DIR
echo "How to submit GPU jobs" > output_file
nvidia-smi -L >> output_file
```

Open Editor

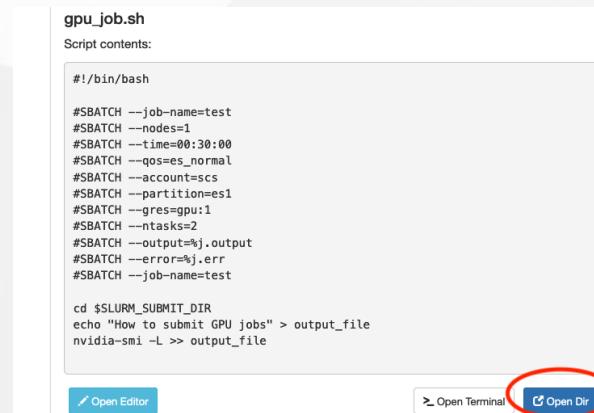
Open Terminal

Open Dir

# Jobs: submission directory

Job composer creates a working directory by default on the path  
/global/home/users/spsoni/ondemand/data/sys/myjobs/projects/default

- **Use default path:** Copy/upload all the files required for the jobs on this path before hitting Submit button.
  - click 'Open Dir' button at the bottom of the job script content.
  - using a file explorer upload or transfer files



**OR**

- **Set different working directory:** If you want to use files saved on different location and would like to run job in that directory, for example: scratch.
  - add following command line in your job script

```
cd /global/scratch/users/spsoni/my_working_dir
```

**Note:** Use path you aim to set for your working directory.

# Log out and clean up

- Log out of the portal
- Clean up
  - The portal stores temporary files for interactive apps on the path \$HOME//ondemand/data/sys/dashboard/batch\_connect/sys
  - It is a good practice to clean up this directory periodically.

```
rm -rf $HOME/ondemand/data/sys/dashboard/batch_connect/sys/*
```

# Getting help

- Virtual office hours:
  - Time: 10.30 am to noon every Wednesday
  - Online [request](#)
- Send us tickets at [hpcshelp@lbl.gov](mailto:hpcshelp@lbl.gov)
- More information about LBNL Supercluster and scientific computing services can be found [here](#).

Your feedback is important to us for improving HPC services and training.

Please fill out [training survey](#)

