

# Getting started with HAL OnDemand

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## Overview

Our HAL OnDemand HPC portal is an implementation of the Open OnDemand project, which is an NSF-funded open-source HPC portal based on OSC's original OnDemand portal. The goal of Open OnDemand is to provide an easy way for system administrators to provide web access to their HPC resources, including, but not limited to:

- Plugin-free web experience
- Easy file management
- Command-line shell access
- Job management and monitoring
- Graphical desktop environments and desktop applications

## First Thing First

Please log via SSH in to **hal** or **hal-login2** first to initialize your home folder on HAL system.

## Log in HAL OnDemand

Log in with your own user name and password via the following URL. Note that you need to submit your NetID and password to login to the system.

```
https://hal-ondemand.ncsa.illinois.edu/
```

- Input your Login Information

NCSA Web Login Service

https://idp.ncsa.illinois.edu/idp/profile/SAML2/Redirect/SSO?execution=e1s1

NATIONAL CENTER FOR  
SUPERCOMPUTING APPLICATIONS  
UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

CONTACT US

NCSA

NCSA Web Authentication


Log in to CILogon

NCSA Username

NCSA Kerberos Password

☐ Don't Remember Login

Login

 **CILogon**

CILogon facilitates secure access to CyberInfrastructure (CI).

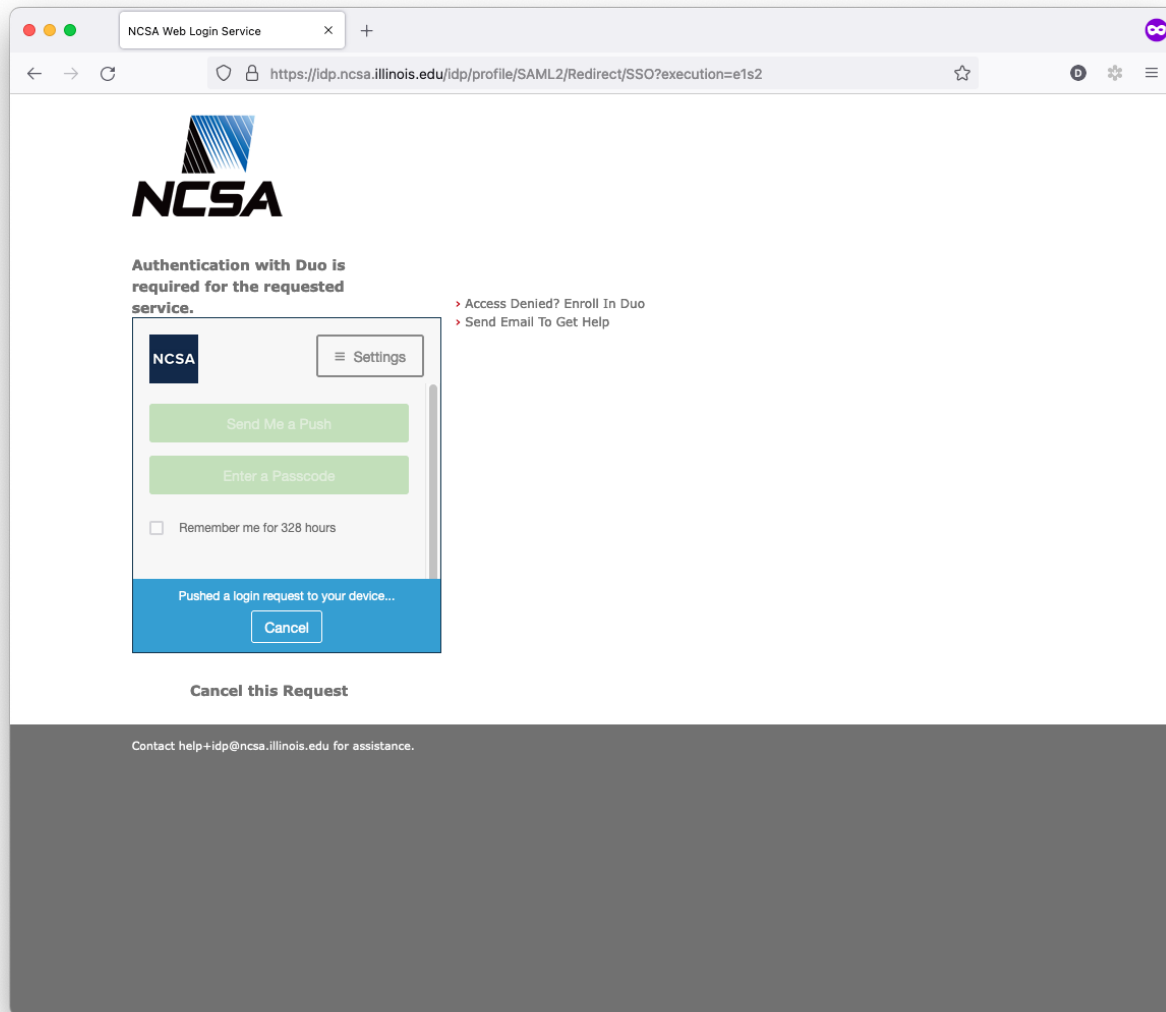
- Enroll In Duo
- Forgot Your Username?
- Forgot Your Password?
- Send Email To Get Help

NCSA

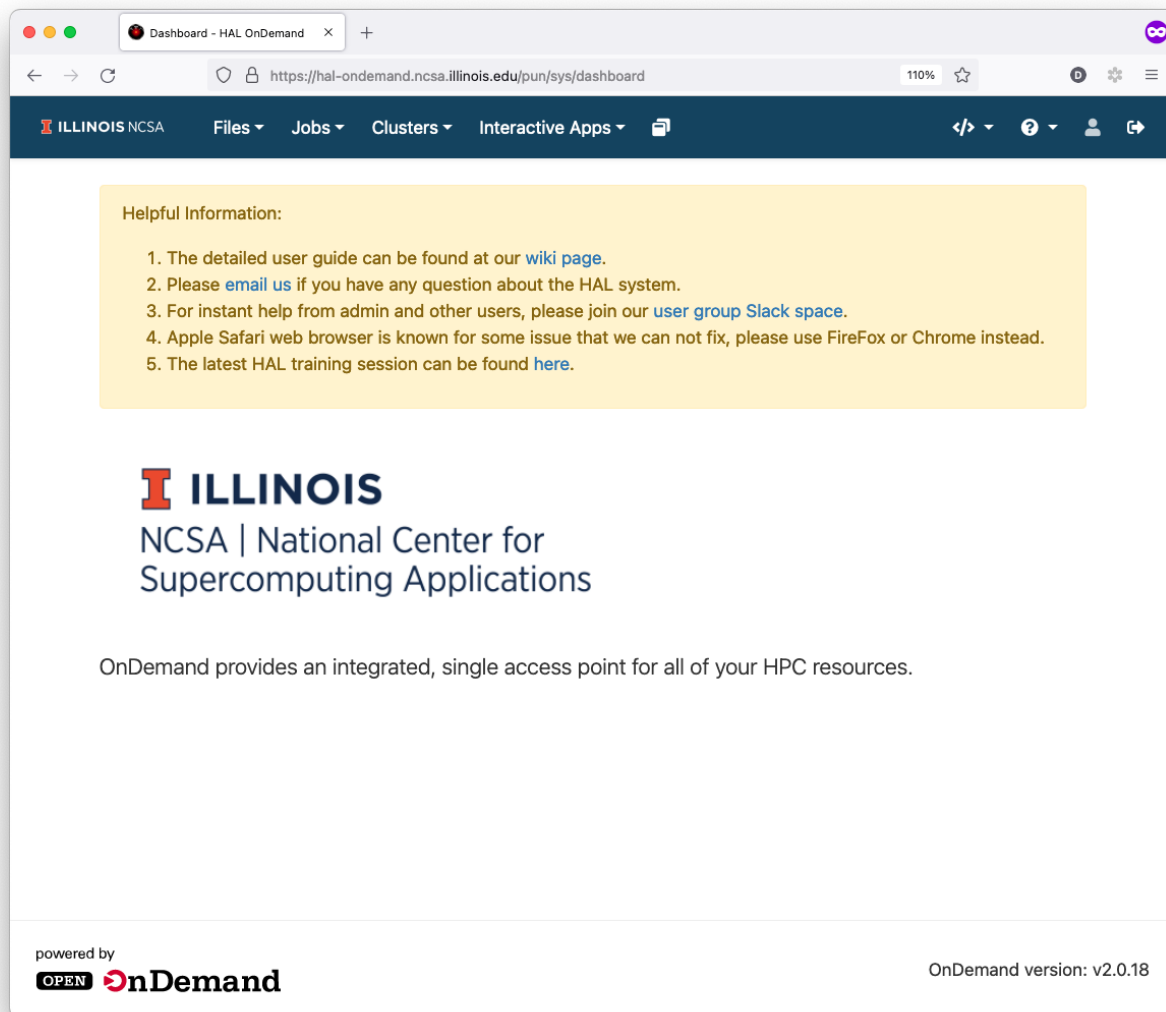
NCSA HOME | SITEMAP | CONTACT NCSA | NCSA INTRANET

Contact help+idp@ncsa.illinois.edu with questions regarding this page.  
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- Send a Push to your DUO app



- Confirm the Push and Login HAL-OnDemand

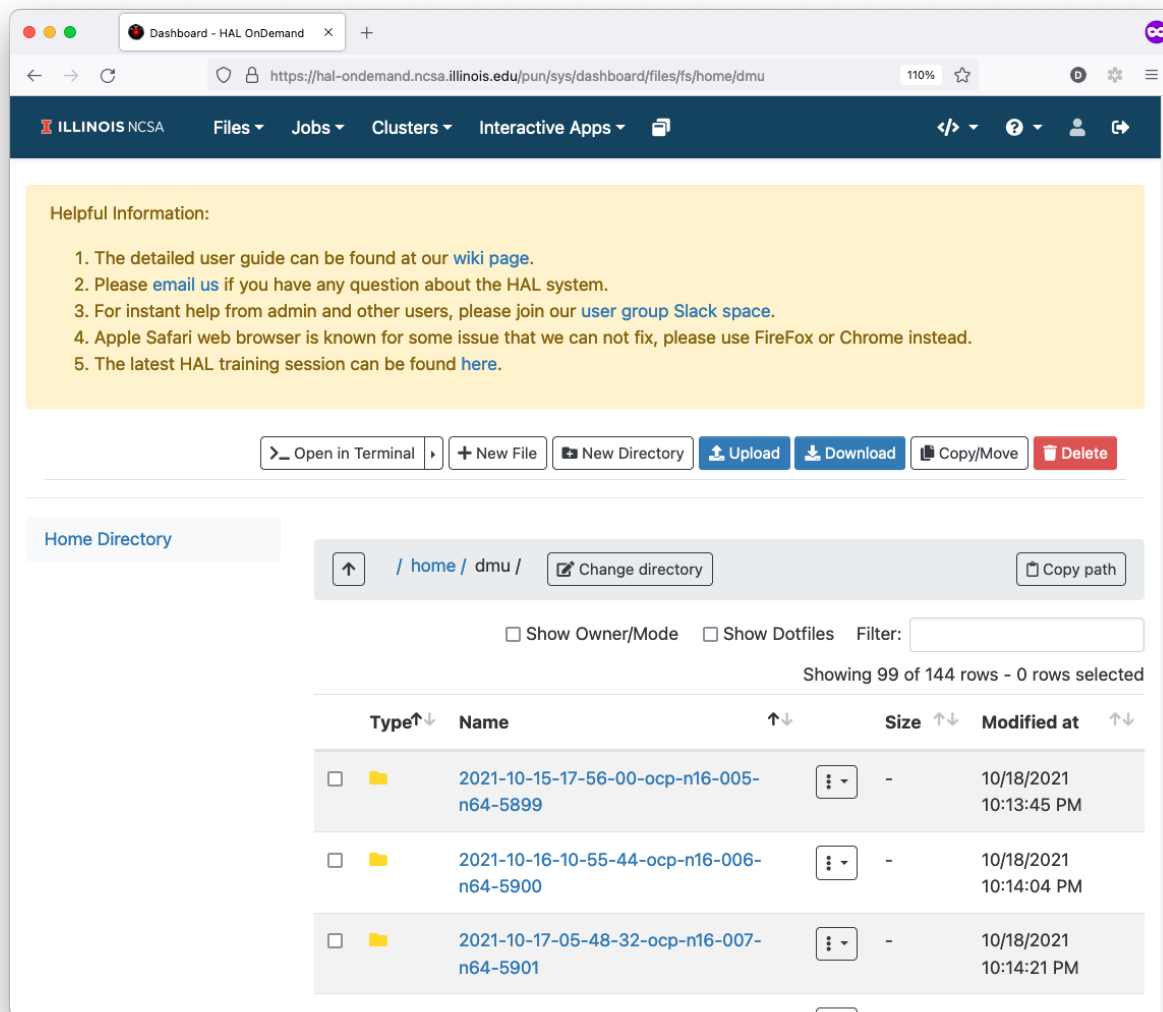


## Files Apps

This Open OnDemand application provides a web-based file explorer that allows the user to remotely interact with the files on the HPC center's local file system. This application uses Node.js as the code base and is based on the CloudCommander file explorer app.

The Files app provides access to create files and folders, view files, manipulate file locations, upload files, and download files. It also provides integrated support for launching the Shell App in the currently browsed directory as well as launching the File Editor App for the currently selected file.

## Home Directory



## Jobs Apps

### Active Jobs App

This Open OnDemand application provides a web-based view of the current status of all the available jobs on the batch servers hosted by the HPC center. This application is built with the Ruby on Rails web application framework.

The Active Jobs App displays all the available jobs in a dynamically searchable and sortable table. The user can search on job id, job name, job owner, charged account, status of job, as well as the cluster the job was submitted to. Progressive disclosure is used to show further details on individual jobs by clicking in the "right arrow" to the left of a table row.

Dashboard - HAL OnDemand

https://hal-ondemand.ncsa.illinois.edu/pun/sys/dashboard/activejobs?jobcluster=all&jobfilter=all
110%

ILLINOIS NCSA
Files
Jobs
Clusters
Interactive Apps

Helpful Information:

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2. Please [email us](#) if you have any question about the HAL system.  
3. For instant help from admin and other users, please join our [user group Slack space](#).  
4. Apple Safari web browser is known for some issue that we can not fix, please use FireFox or Chrome instead.  
5. The latest HAL training session can be found [here](#).

All Jobs
All Clusters

Active Jobs

Show 50 entries
Filter:

ID	Name	User	Account	Time Used	Queue	Status	Cluster	Actions
> 47495	bash	lienliang	uiuc	00:00:00	cpu	Queued	hal	
> 58308	dna1	qianj3	uiuc	00:00:00	gpu	Queued	hal	
> 58331	dna1	qianj3	uiuc	00:00:00	gpu	Queued	hal	
> 58339	bash	peiyic2	uiuc	00:00:00	cpu	Queued	hal	
> 58340	bash	peiyic2	uiuc	00:00:00	cpu	Queued	hal	
> 58341	bash	peiyic2	uiuc	00:00:00	cpu	Queued	hal	

## Job Composer App

This Open OnDemand application provides a web-based utility for creating and managing batch jobs from template directories. This application is built with the Ruby on Rails web application framework.

The Job Composer App attempts to model a simple but common workflow that typical users of an HPC center use. When users create new batch jobs they will follow the given workflow:

- Copy a directory of a previous job, either one of their previous jobs or a job from a group member
- Make minor modifications to the input files
- Submit this new job

The screenshot shows the Job Composer web interface. The top navigation bar includes the ILLINOIS NCSA logo, 'Job Composer', 'Jobs', 'Templates', and a 'Help' link. The main heading is 'Jobs'. Below it, there's a '+ New Job' button and a star icon. A toolbar contains 'Edit Files', 'Job Options', 'Open Terminal', and icons for play, stop, and delete. A search bar and a 'Show 25 entries' dropdown are present. The main table lists jobs with columns: Created, Name, ID, Cluster, and Status. The right sidebar shows 'Job Details' for the selected job 'tensorflow mnist', including 'Submit to: hal', 'Account: Not specified', 'Script location: /home/dmu/ondemand/data/sys/myjobs/projects/de...', 'Script name: submit.sb', and 'Folder Contents: submit.sb, tensorflow\_mnist.py'.

Created	Name	ID	Cluster	Status
October 28, 2021 10:12am	tensorflow mnist		hal	Not Submitted
September 9, 2021 11:22am	tensorflow mnist	1323	hal-rh8	Completed
September 8, 2021 4:55pm	tensorflow mnist	1279	hal-rh8	Completed
September 8, 2021 4:55pm	tensorflow mnist		hal	Not Submitted
September 8, 2021 4:05pm	tensorflow mnist		hal-rh8	Not Submitted
September 6, 2021 1:17pm	tensorflow mnist	57934	hal	Completed

Showing 1 to 6 of 6 entries

Previous 1 Next

**Job Details**

Job Name: **tensorflow mnist**

Submit to:

Account: Not specified

Script location:

Script name:

Folder Contents: [submit.sb](#), [tensorflow\\_mnist.py](#)

## Clusters Apps

### Shell App

This Open OnDemand application provides a web-based terminal that connects the user through an SSH session to either the local machine or any other machine allowed within the internal network. Typically this will connect the user to a login node. This application uses Node.js for its exceptional support of WebSockets providing a responsive user-experience as well as its event-driven framework allowing for multiple sessions simultaneously.

The terminal client is an xterm-compatible terminal emulator written entirely in JavaScript. The Shell App uses the Google client hterm for this. It performs reasonably well across most modern browsers on various operating systems. It is currently used by the developers of Open OnDemand quite a bit.

A screenshot of a web browser window displaying a terminal session. The browser's address bar shows the URL `https://hal-ondemand.ncsa.illinois.edu/pun/sys/shell/ssh/hal-login2.hal.ncsa.illinois.edu`. The terminal window has a title bar that reads "Dashboard - HAL OnDemand" and "dmu@hal-login2:~". The terminal content includes a stylized ASCII art logo at the top, followed by an "INTRODUCTION:" section. This section explains the Slurm Wrapper Suite, its version "swsuite-v0.4", and lists its components: "swrun", "swbatch", and "swqueue". It also provides instructions on using the "-h" option for help. An "IMPORTANT NOTE:" section follows, stating that the HAL system partitions have been updated and that the Slurm Wrapper Suite and original Slurm use different partitions under "swsuite-v0.4". It then lists available partitions for Slurm Wrapper Suite users (CPU and GPU jobs) and for HAL-OnDemand users (CPU, GPU, and debug jobs). A link to the fairshare policy is provided. The terminal concludes with a "HAL SYSTEM 2021 PM SCHEDULE:" section indicating the date as "Dec 8th". The prompt at the bottom is `[dmu@hal-login2 ~]$`.

```
Host: hal-login2.hal.ncsa.illinois.edu
Themes: Default

=====

INTRODUCTION:

The Slurm Wrapper Suite was designed to help users to use the HAL system efficiently.
The current version is "swsuite-v0.4", which includes "swrun", "swbatch" and "swqueue".

Please use "-h" option for usage details.

If you are already familiar with the Slurm scheduling system, native Slurm commands
are also available. Please read below for the difference in available partitions.

IMPORTANT NOTE:

We have updated the partitions of HAL system. The Slurm Wrapper Suite and original
Slurm are using different partitions under swsuite-v0.4.

For Slurm Wrapper Suite users, the available partitions are:
cpun1, cpun2, cpun4, cpun8, cpun12, cpun16      : (CPU Jobs)
gpux1, gpux2, gpux3, gpux4, gpux8, gpux12, gpux16 : (GPU Jobs)

For HAL-OnDemand users and users using native Slurm commands, the available partitions
are:
cpu : (CPU Jobs)
gpu : (GPU Jobs)
debug : (Short jobs - higher priority)

Visit https://go.illinois.edu/halfairshare to view our fairshare policy and your
current usage. Requests for reservations from users with high recent usage may be
denied at the discretion of the admin team.

=====

HAL SYSTEM 2021 PM SCHEDULE:
- Dec 8th

=====

[dmu@hal-login2 ~]$
```

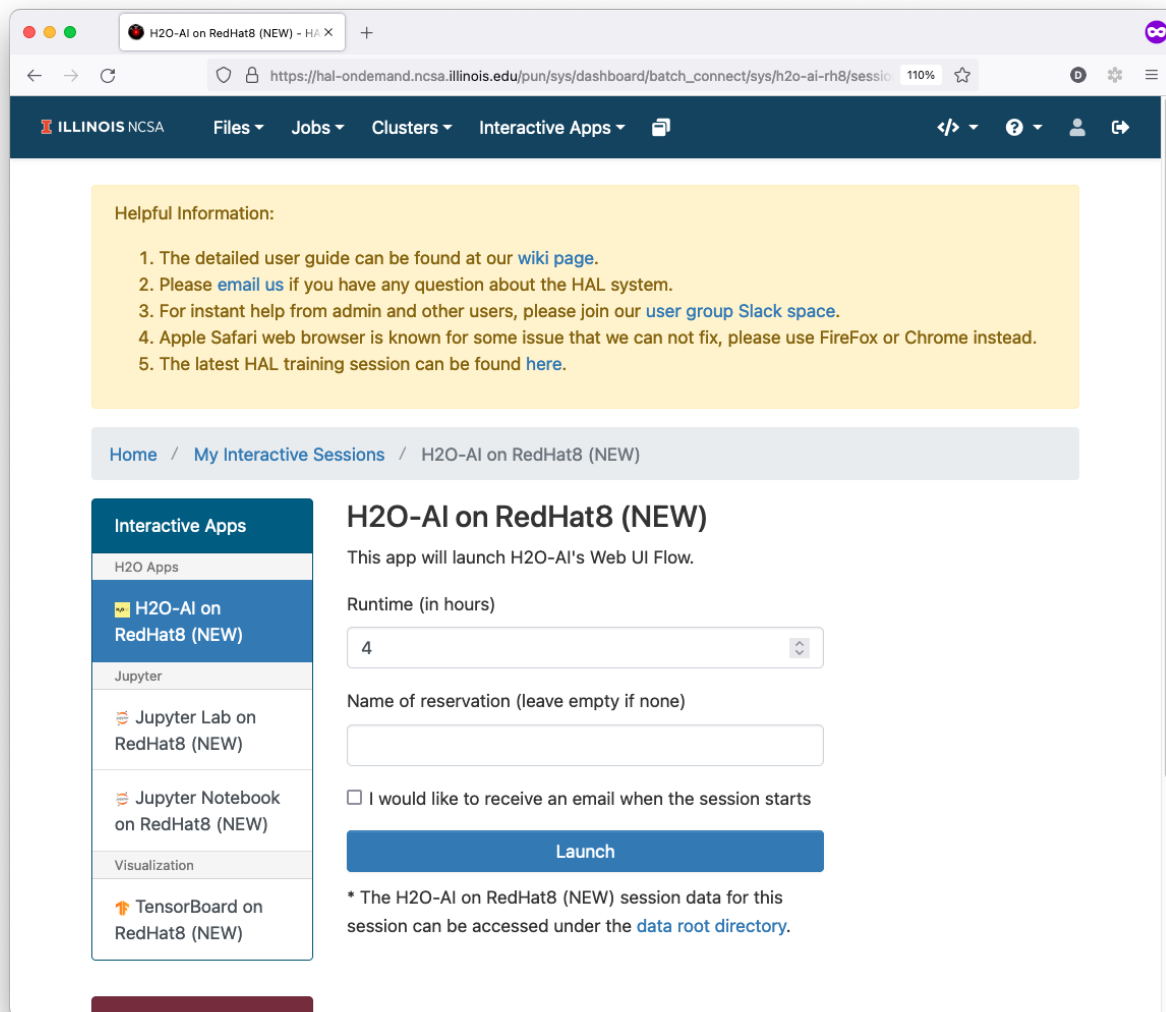
## Interactive Apps

### H2O-AI

The interactive H2O-AI app that your users will use to launch an H2O-AI flow Server within a batch job on a compute node. The user will then be able to connect to the running server through their browser and take advantage of the resources provided within the batch job.

- Input Requested Hours and Reservation Name





- Wait for 1-2 Minutes then click **Connect to H2O-AI** button

My Interactive Sessions - HAL C X

https://hal-ondemand.ncsa.illinois.edu/pun/sys/dashboard/batch\_connect/sessions

ILLINOIS NCSA Files Jobs Clusters Interactive Apps

Helpful Information:

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4. Apple Safari web browser is known for some issue that we can not fix, please use FireFox or Chrome instead.
5. The latest HAL training session can be found [here](#).

Home / My Interactive Sessions

Interactive Apps

H2O Apps

- H2O-AI on RedHat8 (NEW)

Jupyter

- Jupyter Lab on RedHat8 (NEW)
- Jupyter Notebook on RedHat8 (NEW)

Visualization

- TensorBoard on RedHat8 (NEW)

H2O-AI on RedHat8 (NEW) (9831) 1 node | 16 cores | Running

Host: >\_hal09 Delete

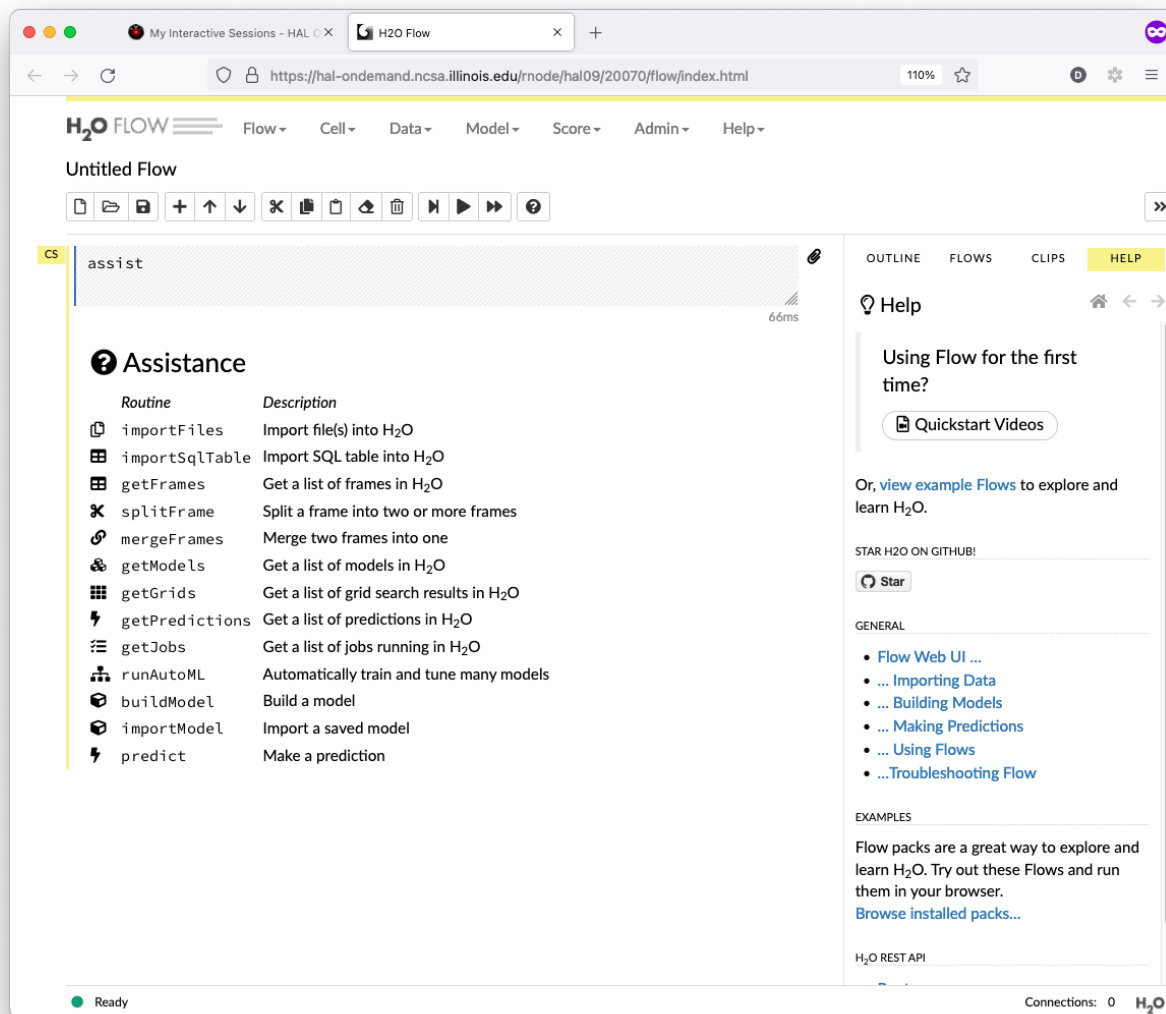
Created at: 2021-11-12 10:52:04 CST

Time Remaining: 3 hours and 59 minutes

Session ID: 12d889fc-83ff-4840-8558-b4ac94cd6401

Connect to H2O-AI

- Start Working on the **H2O FLOW** web page



## Jupyter-Notebook

The interactive Jupyter app that your users will use to launch a Jupyter Notebook Server within a batch job on a compute node. The user will then be able to connect to the running server through their browser and take advantage of the resources provided within the batch job.

- Input Partition Name, Requested Hours, Reservation Name, Number of CPUs, Number of GPUs

The screenshot shows a web browser window with the URL `https://hal-ondemand.ncsa.illinois.edu/pun/sys/dashboard/batch_connect/sys/jupyter-notebook-`. The page title is "Jupyter Notebook on RedHat8 (NEW)".

**Interactive Apps**

- H2O Apps
  - H2O-AI on RedHat8 (NEW)
- Jupyter
  - Jupyter Lab on RedHat8 (NEW)
  - Jupyter Notebook on RedHat8 (NEW)**
- Visualization
  - TensorBoard on RedHat8 (NEW)

**Interactive Apps [Sandbox]**

- Servers
  - Code Server

**Jupyter Notebook on RedHat8 (NEW) version: v1.0.1-3-g94d29b4**

This app will launch a Jupyter Notebook server on one or more nodes.

Partition:

Number of hours:

Name of reservation (leave empty if none):

Number of CPUs:

Number of GPUs:

☐ I would like to receive an email when the session starts

**Launch**

\* The Jupyter Notebook on RedHat8 (NEW) session data for this session can be accessed under the [data root directory](#).

- Wait for 1-2 Minutes then click **Connect to Jupyter** button

My Interactive Sessions - HAL C X

https://hal-ondemand.ncsa.illinois.edu/pun/sys/dashboard/batch\_connect/sessions

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Session was successfully created.

Home / My Interactive Sessions

Interactive Apps

H2O Apps

- H2O-AI on RedHat8 (NEW)

Jupyter

- Jupyter Lab on RedHat8 (NEW)
- Jupyter Notebook on RedHat8 (NEW)

Visualization

- TensorBoard on RedHat8 (NEW)

Jupyter Notebook on RedHat8 (NEW) (9835)

1 node | 16 cores | Running

Host: `>_hal09`

Created at: 2021-11-12 11:07:05 CST

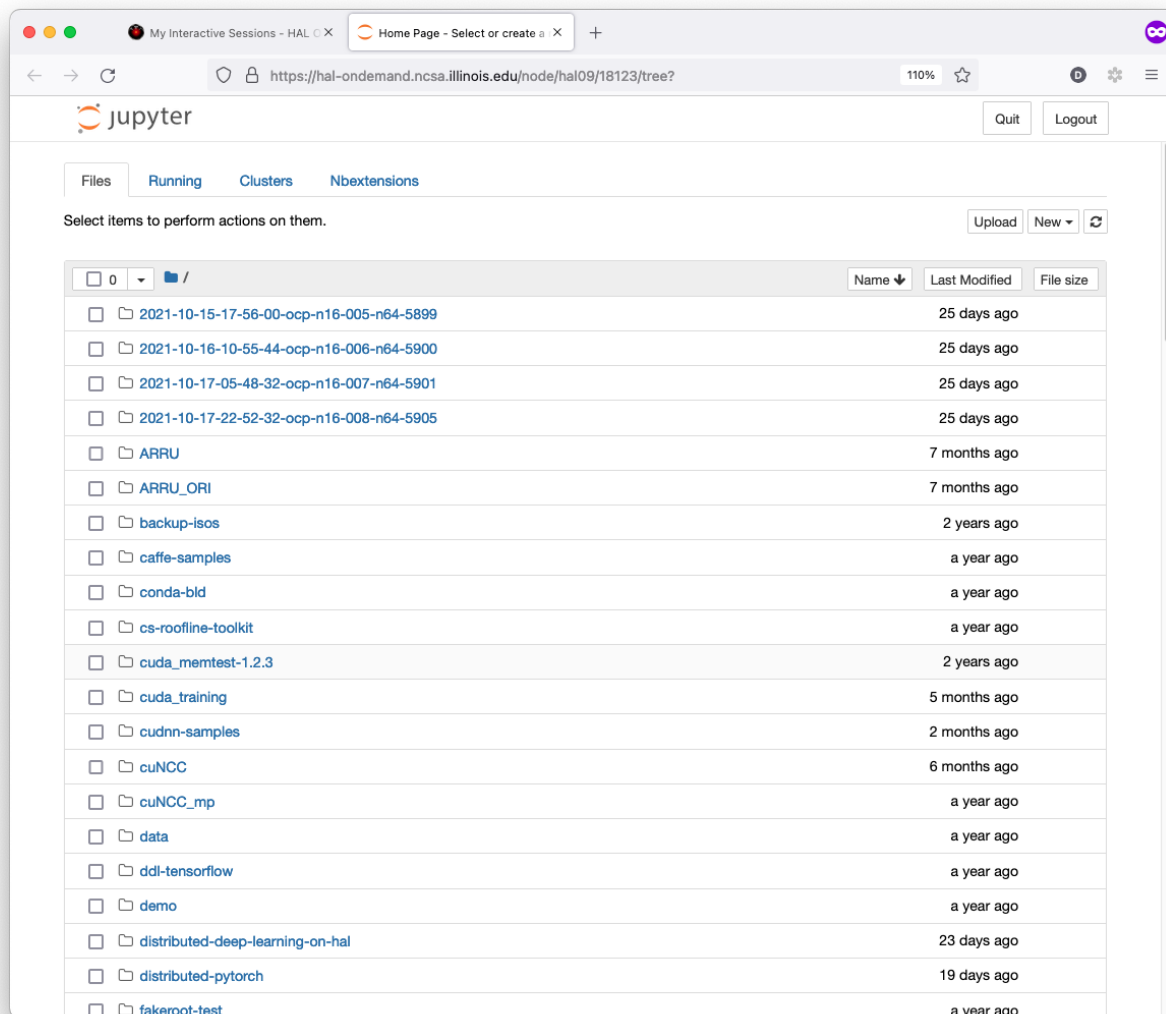
Time Remaining: 1 hour

Session ID: `f527740a-e14d-443b-8c0d-ead884625583`

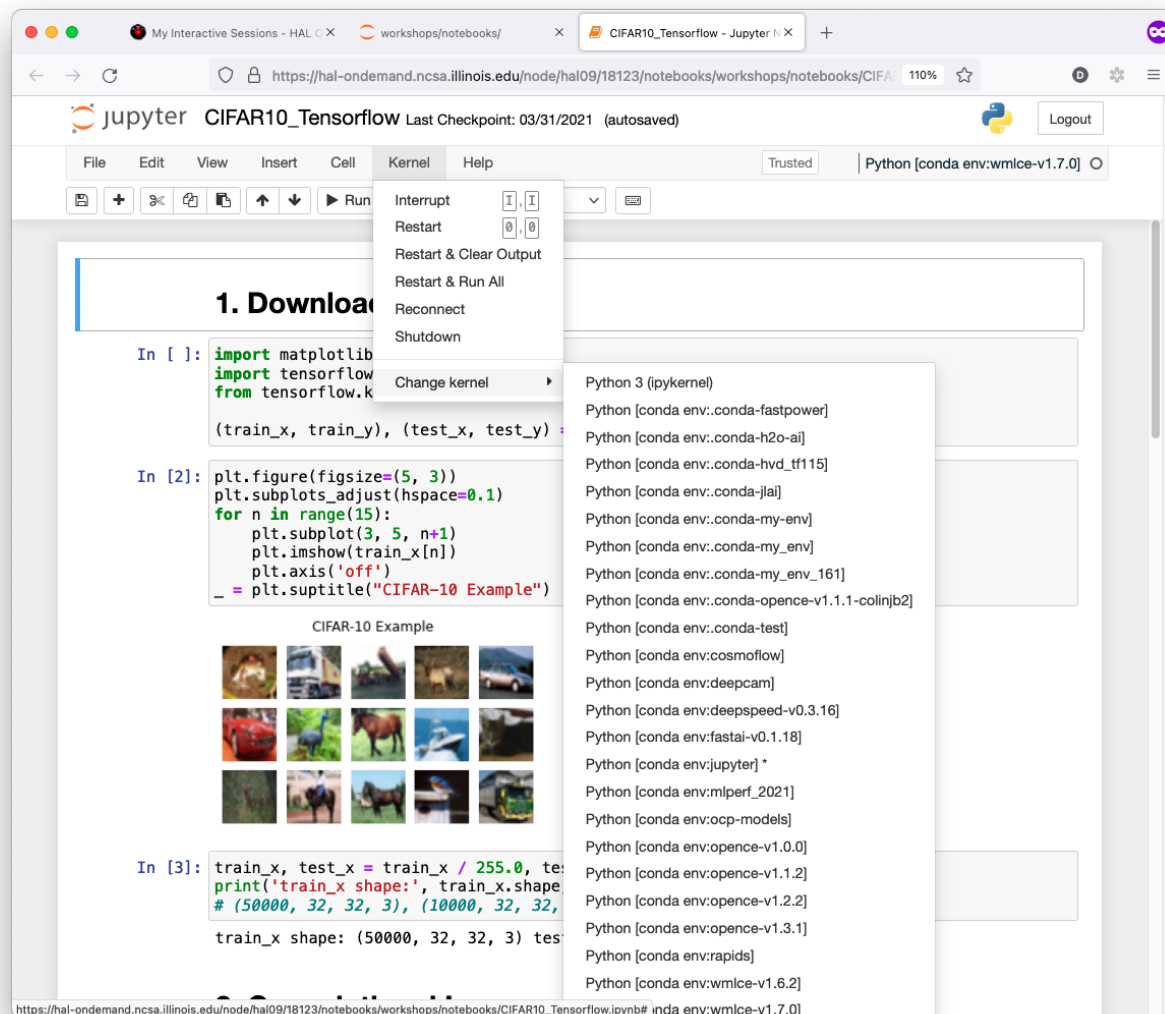
Connect to Jupyter

Delete

- Start Working on the **Jupyter Notebook** web page



- Choose Correct Kernel in **KernelChange Kernel** Menu



## Jupyter-Lab

The interactive Jupyter app is a web-based interactive development environment for Jupyter notebooks, code, and data. JupyterLab is flexible: configure and arrange the user interface to support a wide range of workflows in data science, scientific computing, and machine learning.

- Input Partition Name, Requested Hours, Reservation Name, Number of CPUs, Number of GPUs

Jupyter Lab on RedHat8 (NEW) x +

← → ↻ https://hal-ondemand.ncsa.illinois.edu/pun/sys/dashboard/batch\_connect/sys/jupyter-lab-rh8/se 110% ☆

Home / My Interactive Sessions / Jupyter Lab on RedHat8 (NEW)

Interactive Apps

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Jupyter

Jupyter Lab on RedHat8 (NEW)

Jupyter Notebook on RedHat8 (NEW)

Visualization

TensorBoard on RedHat8 (NEW)

Interactive Apps [Sandbox]

Servers

Code Server

## Jupyter Lab on RedHat8 (NEW)

version: v1.0.1-3-g94d29b4

This app will launch a Jupyter Lab server on one or more nodes.

Partition

cpu

Number of hours

4

Name of reservation (leave empty if none)

Number of CPUs

16

Number of GPUs

0

☐ I would like to receive an email when the session starts

Launch

\* The Jupyter Lab on RedHat8 (NEW) session data for this session can be accessed under the [data root directory](#).

- Wait for 1-2 Minutes then click **Connect to Jupyter** button



My Interactive Sessions - HAL C X

https://hal-ondemand.ncsa.illinois.edu/pun/sys/dashboard/batch\_connect/sessions

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Home / My Interactive Sessions

Interactive Apps

H2O Apps

- H2O-AI on RedHat8 (NEW)

Jupyter

- Jupyter Lab on RedHat8 (NEW)
- Jupyter Notebook on RedHat8 (NEW)

Visualization

- TensorBoard on RedHat8 (NEW)

Jupyter Lab on RedHat8 (NEW) (9832) 1 node | 16 cores | Running

Host: >\_hal09 Delete

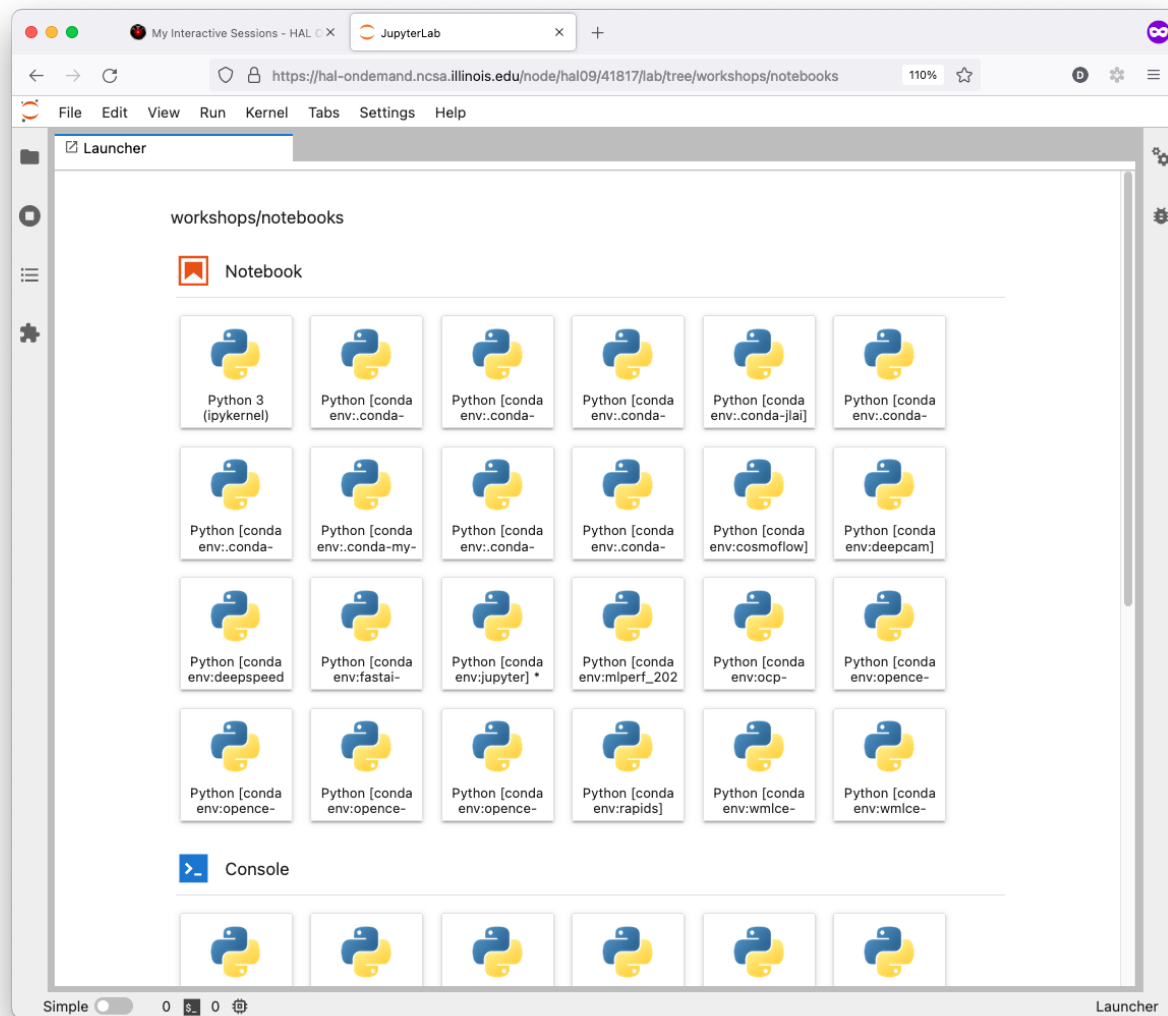
Created at: 2021-11-12 11:01:14 CST

Time Remaining: 3 hours and 59 minutes

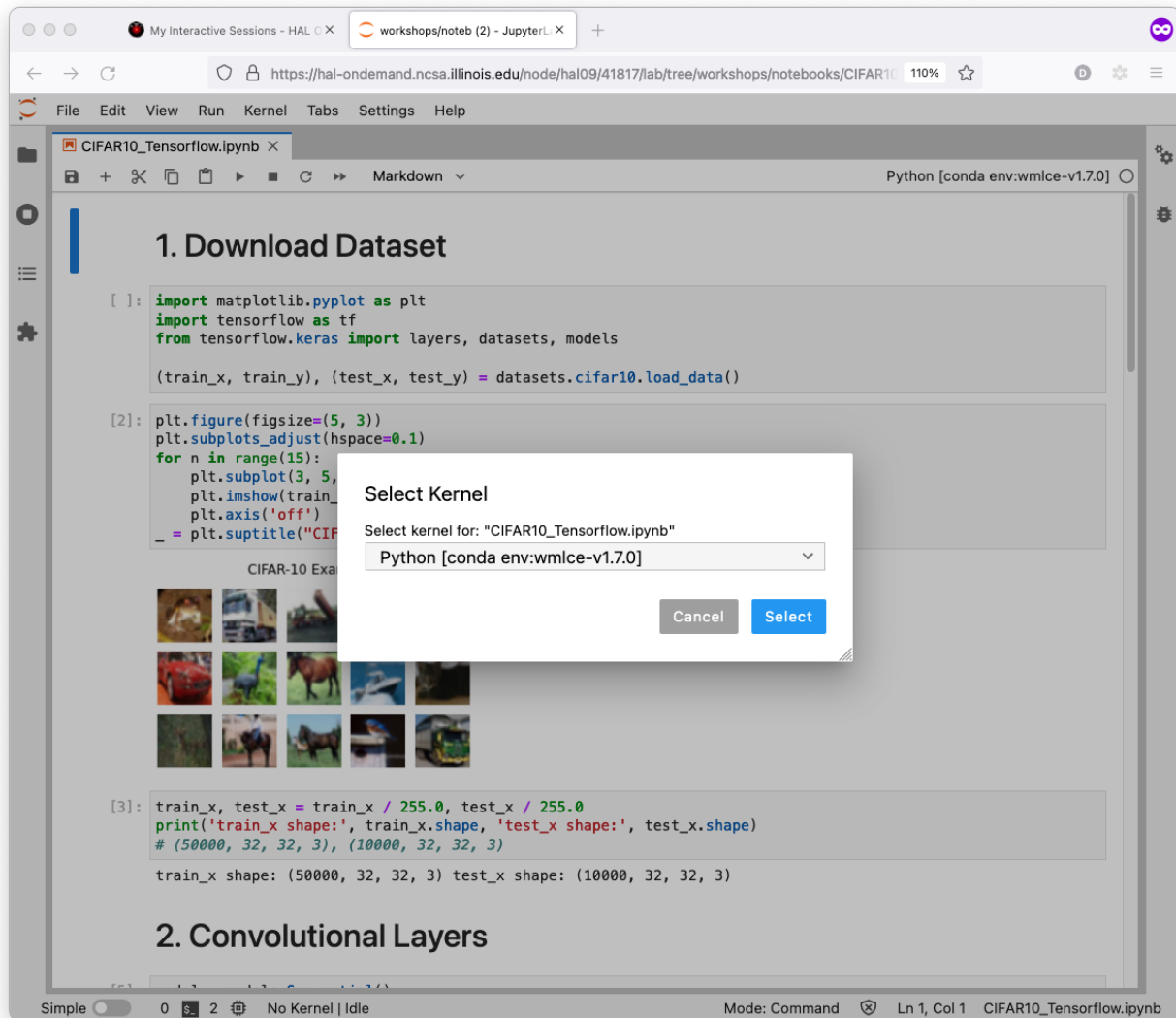
Session ID: d1214d6e-809f-46cb-a721-071213ef0e33

Connect to Jupyter

- Start Working on the **Jupyter Lab** web page



- Choose Correct Kernel in **KernelChange Kernel** Menu



## TensorBoard

The interactive TensorBoard app that your users will use to launch a TensorBoard Server within a batch job on a compute node. The user will then be able to connect to the running server through their browser and take advantage of the resources provided within the batch job.

- Input Log Folder, Requested Hours, Reservation Name

The screenshot shows a web browser window with the URL `https://hal-ondemand.ncsa.illinois.edu/pun/sys/dashboard/batch_connect/sys/tensorboard-rh8/`. The page title is "TensorBoard on RedHat8 (NEW)".

**Left Sidebar:**

- Interactive Apps**
  - H2O Apps
    - H2O-AI on RedHat8 (NEW)
  - Jupyter
    - Jupyter Lab on RedHat8 (NEW)
    - Jupyter Notebook on RedHat8 (NEW)
  - Visualization
    - TensorBoard on RedHat8 (NEW)**
- Interactive Apps [Sandbox]**
  - Servers
    - Code Server

**Main Content Area:**

### TensorBoard on RedHat8 (NEW)

This app will launch [TensorBoard](#), TensorFlow's Visualization Toolkit.

Tensorboard logdir

`/home/dmu/ondemand/data/sys/myjobs/projects/default`

The directory that contains data to visualize.

Additional TensorBoard arguments (optional)

Runtime (in hours)

Name of reservation (leave empty if none)

☐ I would like to receive an email when the session starts

**Launch**

\* The TensorBoard on RedHat8 (NEW) session data for this session can be accessed under the [data root directory](#).

powered by **OPEN OnDemand** OnDemand version: v2.0.18

- Wait for 1-2 Minutes then click **Connect to TensorBoard** button

My Interactive Sessions - HAL X

My Interactive Sessions - HAL X

https://hal-ondemand.ncsa.illinois.edu/pun/sys/dashboard/batch\_connect/sessions

ILLINOIS NCSA Files Jobs Clusters Interactive Apps

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Interactive Apps

H2O Apps

- H2O-AI on RedHat8 (NEW)

Jupyter

- Jupyter Lab on RedHat8 (NEW)
- Jupyter Notebook on RedHat8 (NEW)

Visualization

- TensorBoard on RedHat8 (NEW)

TensorBoard on RedHat8 (NEW) (9838) 1 node | 8 cores | Running

Host: >\_hal09 Delete

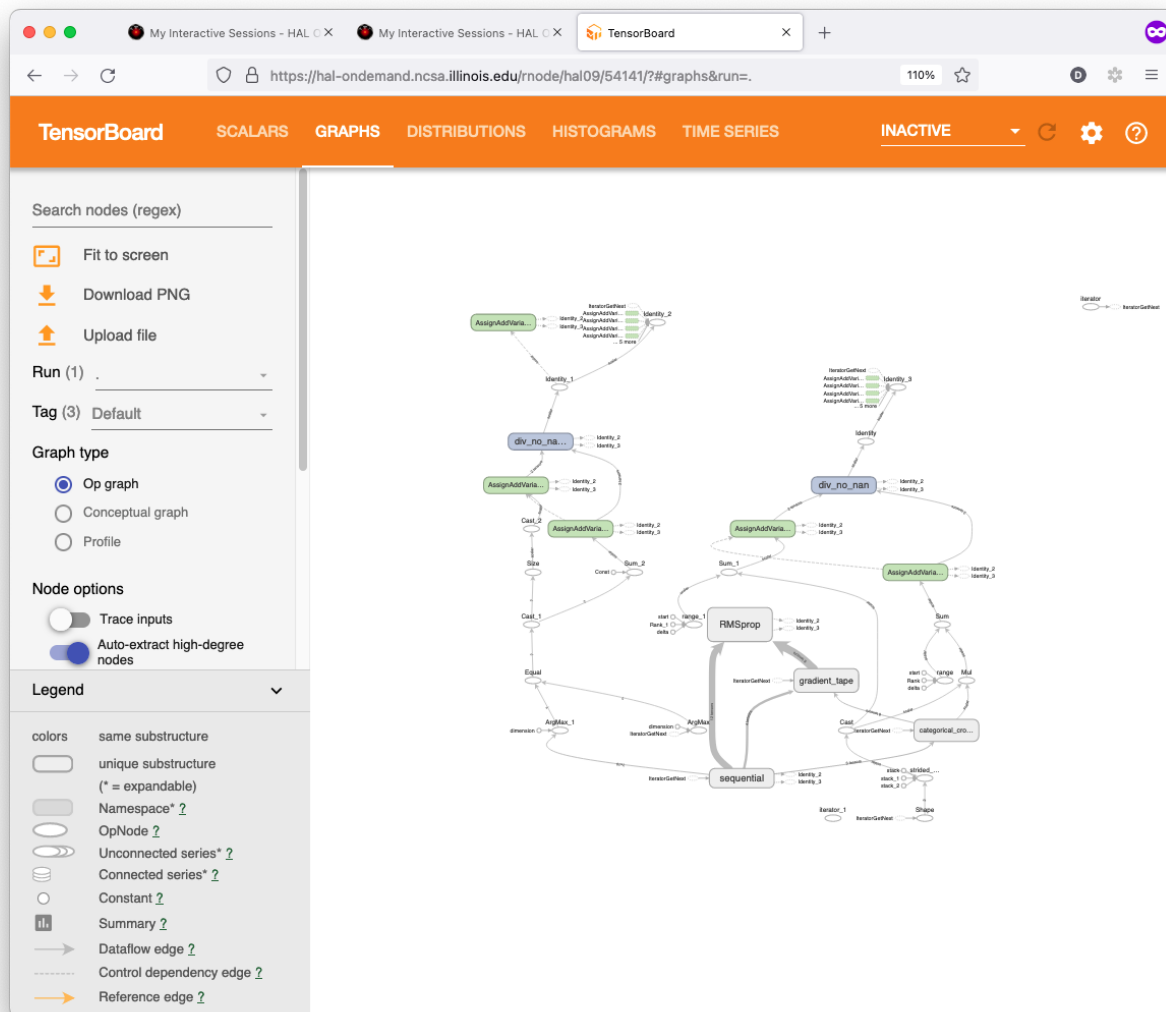
Created at: 2021-11-12 11:31:09 CST

Time Remaining: 59 minutes

Session ID: 66f53c2a-1d87-4258-bac4-6d5da0b6091c

Connect to Tensorboard

- Start Working on the **TensorBoard** web page



## My Interactive Sessions

My Interactive Sessions can check and retrieve your current interactive jobs.

My Interactive Sessions - HAL

My Interactive Sessions - HAL

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Home / My Interactive Sessions


Interactive Apps

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 H2O-AI on RedHat8 (NEW)

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 TensorBoard on RedHat8 (NEW)

Interactive Apps [Sandbox]

Servers

 Code Server

TensorBoard on RedHat8 (NEW) (9838) 1 node | 8 cores | Running

Host: >\_hal09  Delete


Created at: 2021-11-12 11:31:09 CST

Time Remaining: 59 minutes

Session ID: 66f53c2a-1d87-4258-bac4-6d5da0b6091c

Connect to Tensorboard

Jupyter Notebook on RedHat8 (NEW) (9835) 1 node | 16 cores | Running


Host: >\_hal09  Delete

Created at: 2021-11-12 11:07:05 CST

Time Remaining: 35 minutes

Session ID: f527740a-e14d-443b-8c0d-ead884625583

Connect to Jupyter

powered by  OnDemand

OnDemand version: v2.0.18