

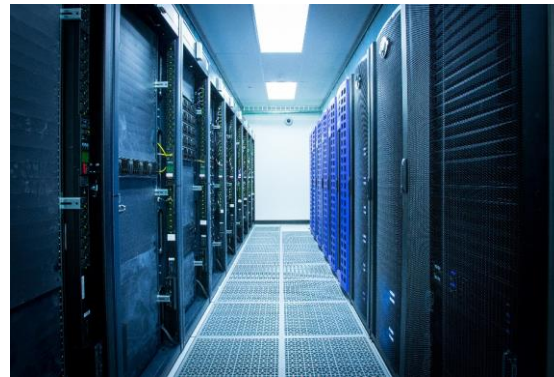
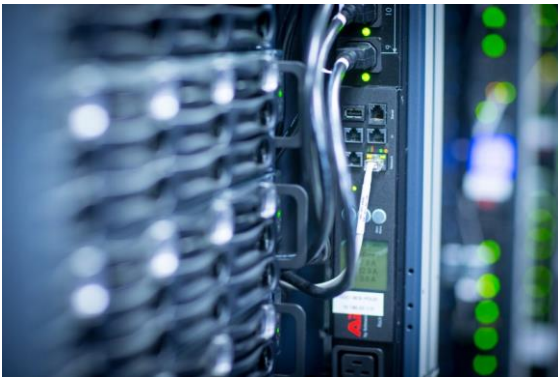


INTRODUCTION TO RIVANNA

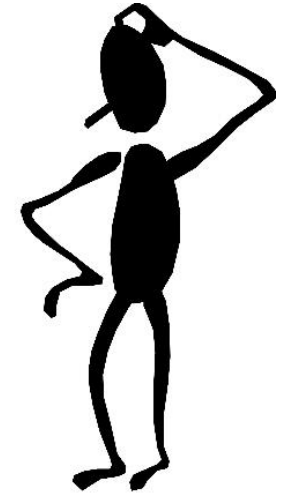
25 September 2020
UVA Research Computing

Rivanna

Rivanna is the university's primary resource for high-performance computation for non-sensitive data. It provides a platform for computationally-intensive research across disciplines.



Why would you need to use Rivanna?



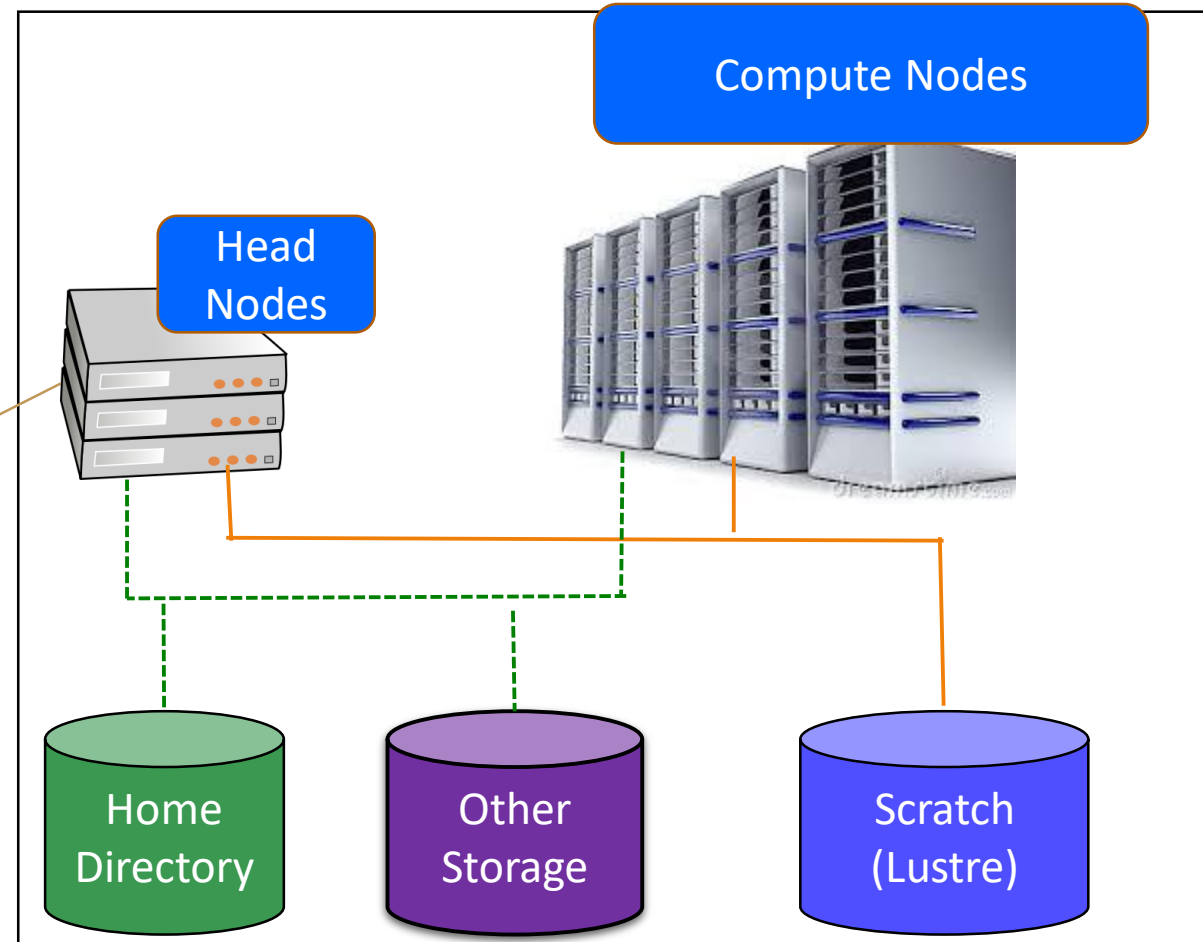
- More memory
 - Nodes on Rivanna have many more gigabytes of RAM than your laptop.
 - The larger your data set, the more memory you will need.
- More cores, including GPUs
 - Multiple cores allows parallel processing, which can speed up the computations
 - GPUs are necessary for TensorFlow, Deep Learning models.
- Move computations off of your laptop.
 - If you get to the point where your computations will take hours, you will not want to tie up your laptop for that long.
 - When you are ready, we can teach you how to submit jobs to run “in the background” on Rivanna allowing you to log off or do other work.

Rivanna in More Detail



Access
from your
computer

----- Ethernet
----- Infiniband



Terminology

Node – A basic building block of a cluster; Usually a specialized computer

Head Node – computer used for logging on and submitting jobs

Compute Node – computer that does most of the work

Core – an individual processor on a computer

Storage – a location for files, data, and folders



CONNECTING TO RIVANNA

Connecting through the Web Portal

Open onDemand Dashboard

Jupyter Lab

RStudio Server

Connecting through the Web Portal

- There are multiple ways to connect to Rivanna
- We are going to focus on connecting through our web portal

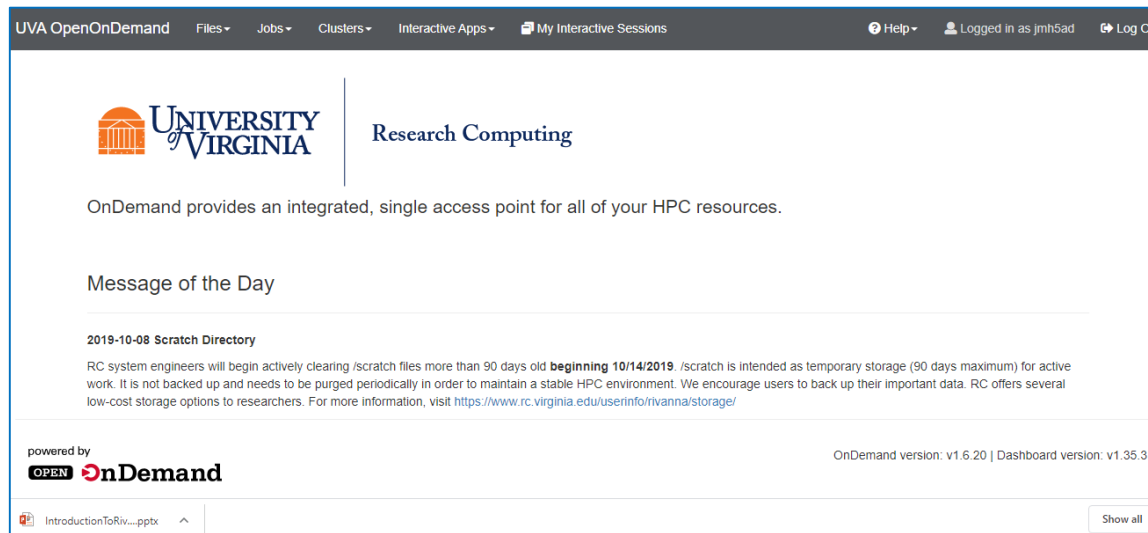
Open a web browser on your laptop and type in the URL:

<https://rivanna-portal.hpc.virginia.edu>

- You will be asked to type in your Netbadge credentials and to confirm through Duo.

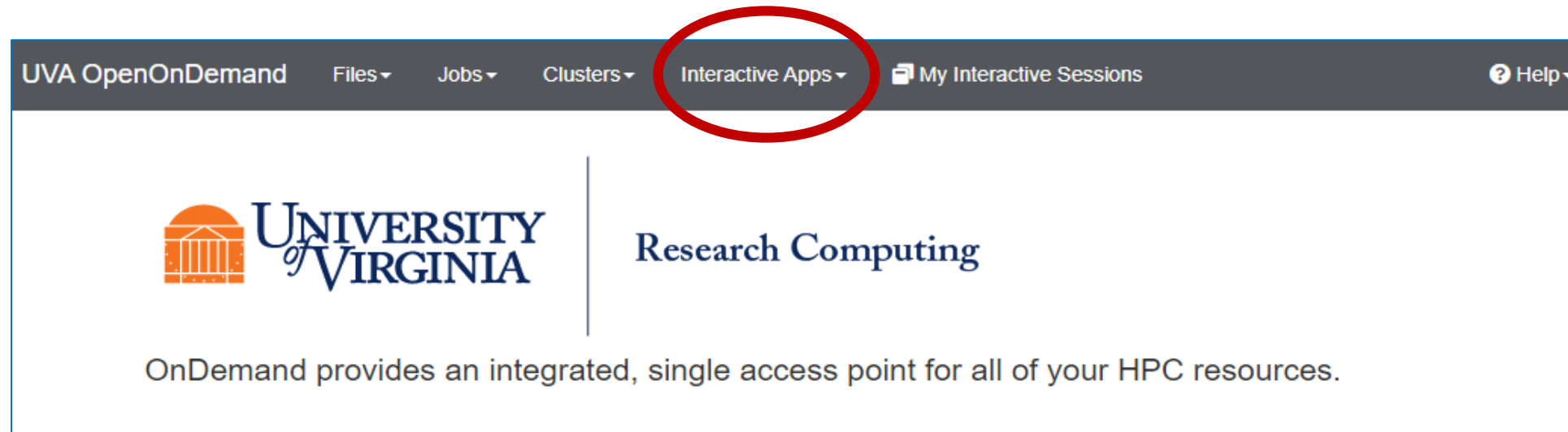
Open onDemand Dashboard

- Open onDemand is the software that we use to create our web portal to Rivanna.
- As soon as you see the Dashboard (shown below), you are connected to Rivanna.

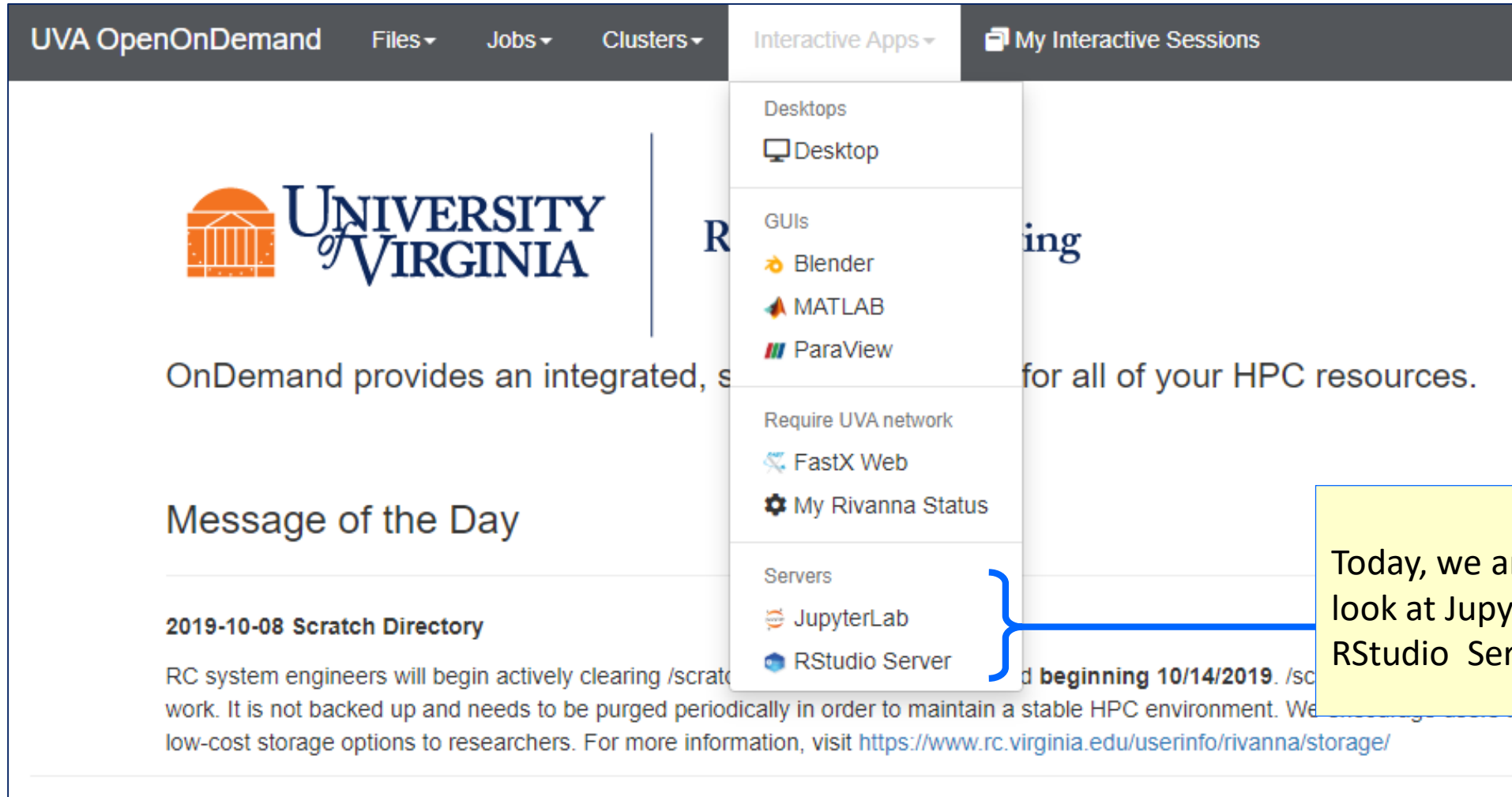


Open onDemand Dashboard

- The Dashboard gives you links to various applications.
- To see the links, click on “Interactive Apps” on the menu bar.



Links to Applications



The screenshot shows the UVA OpenOnDemand web interface. The top navigation bar includes links for 'Files', 'Jobs', 'Clusters', 'Interactive Apps', and 'My Interactive Sessions'. The 'Interactive Apps' dropdown menu is open, displaying categories: 'Desktops' (with a 'Desktop' link), 'GUIs' (with links for 'Blender', 'MATLAB', and 'ParaView'), 'Require UVA network' (with links for 'FastX Web' and 'My Rivanna Status'), and 'Servers' (with links for 'JupyterLab' and 'RStudio Server'). A blue bracket on the right side of the 'Servers' section groups 'JupyterLab' and 'RStudio Server'. A yellow callout box points to this bracketed section with the text: 'Today, we are going to look at JupyterLab and RStudio Server.' The background of the page shows the University of Virginia logo and a 'Message of the Day' dated 2019-10-08 regarding the 'Scratch Directory'.

UVA OpenOnDemand Files Jobs Clusters Interactive Apps My Interactive Sessions

Desktops
Desktop

GUIs
Blender
MATLAB
ParaView

Require UVA network
FastX Web
My Rivanna Status

Servers
JupyterLab
RStudio Server

Today, we are going to look at JupyterLab and RStudio Server.

2019-10-08 Scratch Directory

RC system engineers will begin actively clearing /scratch work. It is not backed up and needs to be purged periodically in order to maintain a stable HPC environment. We are exploring low-cost storage options to researchers. For more information, visit <https://www.rc.virginia.edu/userinfo/rivanna/storage/>

JupyterLab

The screenshot shows the UVA OpenOnDemand web interface. The top navigation bar includes links for 'UVA OpenOnDemand', 'Files', 'Jobs', 'Clusters', 'Interactive Apps', and 'My Interactive Sessions'. The 'Interactive Apps' dropdown menu is open, displaying categories: 'Desktops' (with a Desktop icon), 'GUIs' (with icons for Blender, MATLAB, and ParaView), 'Require UVA network' (with icons for FastX Web and My Rivanna Status), and 'Servers' (with icons for JupyterLab and RStudio Server). The 'JupyterLab' option is circled in red. The background of the page features the University of Virginia logo and text about OnDemand services and a 'Message of the Day' regarding the Scratch Directory.

UVA OpenOnDemand Files Jobs Clusters Interactive Apps My Interactive Sessions

Desktops
Desktop

GUIs
Blender
MATLAB
ParaView

Require UVA network
FastX Web
My Rivanna Status

Servers
JupyterLab
RStudio Server

UNIVERSITY of VIRGINIA

OnDemand provides an integrated, secure environment for all of your HPC resources.

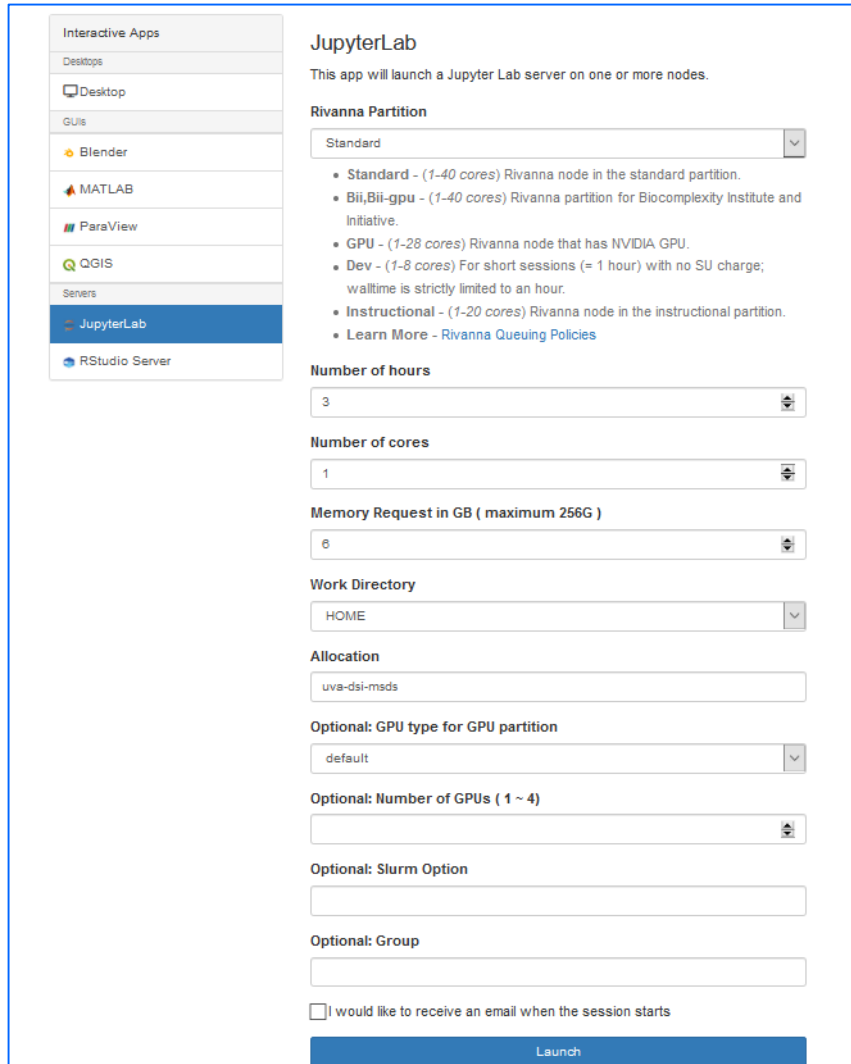
Message of the Day

2019-10-08 Scratch Directory

RC system engineers will begin actively clearing /scratch work. It is not backed up and needs to be purged periodically in order to maintain a stable HPC environment. We are exploring low-cost storage options to researchers. For more information, visit <https://www.rc.virginia.edu/userinfo/rivanna/storage/>

Click on JupyterLab.

JupyterLab Web Form

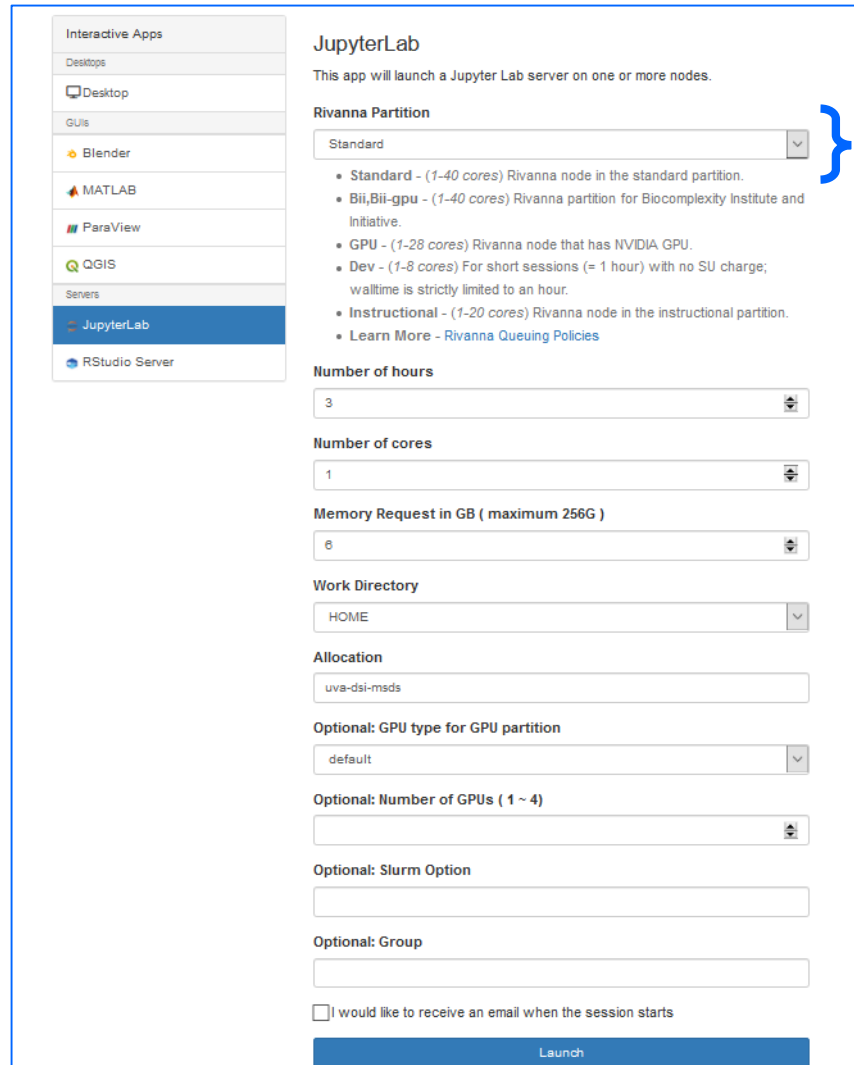


The screenshot shows the JupyterLab web form interface. On the left is a sidebar with categories: Interactive Apps, Desktops, GUIs, and Servers. Under Interactive Apps, JupyterLab is selected. The main area is titled 'JupyterLab' and contains the following fields:

- Rivanna Partition:** A dropdown menu set to 'Standard'. Below it, a list of options: Standard (1-40 cores), Bii,Bii-gpu (1-40 cores), GPU (1-28 cores), Dev (1-8 cores), and Instructional (1-20 cores).
- Number of hours:** A spinner box set to 3.
- Number of cores:** A spinner box set to 1.
- Memory Request in GB (maximum 256G):** A spinner box set to 8.
- Work Directory:** A dropdown menu set to HOME.
- Allocation:** A text box containing 'uva-dsi-mads'.
- Optional: GPU type for GPU partition:** A dropdown menu set to default.
- Optional: Number of GPUs (1 ~ 4):** A spinner box.
- Optional: Slurm Option:** A text box.
- Optional: Group:** A text box.
- ☐ I would like to receive an email when the session starts
- Launch** button

- The Jupyter Web Form gathers information about the computing resources that you need for your Jupyter Notebook.
- After you fill in the form, it will re-populate with the same settings the next time that you connect to it.
- Let's look at how you would fill it in!

Rivanna Partition



Interactive Apps

Desktops

Desktop

GUIs

Blender

MATLAB

ParaView

QGIS

Servers

JupyterLab

RStudio Server

JupyterLab

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

Rivanna Partition

Standard

- Standard - (1-40 cores) Rivanna node in the standard partition.
- Bii,Bii-gpu - (1-40 cores) Rivanna partition for Biocomplexity Institute and Initiative.
- GPU - (1-28 cores) Rivanna node that has NVIDIA GPU.
- Dev - (1-8 cores) For short sessions (= 1 hour) with no SU charge; walltime is strictly limited to an hour.
- Instructional - (1-20 cores) Rivanna node in the instructional partition.
- [Learn More - Rivanna Queuing Policies](#)

Number of hours

3

Number of cores

1

Memory Request in GB (maximum 256G)

8

Work Directory

HOME

Allocation

uva-dsi-mads

Optional: GPU type for GPU partition

default

Optional: Number of GPUs (1 ~ 4)

Optional: Slurm Option

Optional: Group

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

Launch

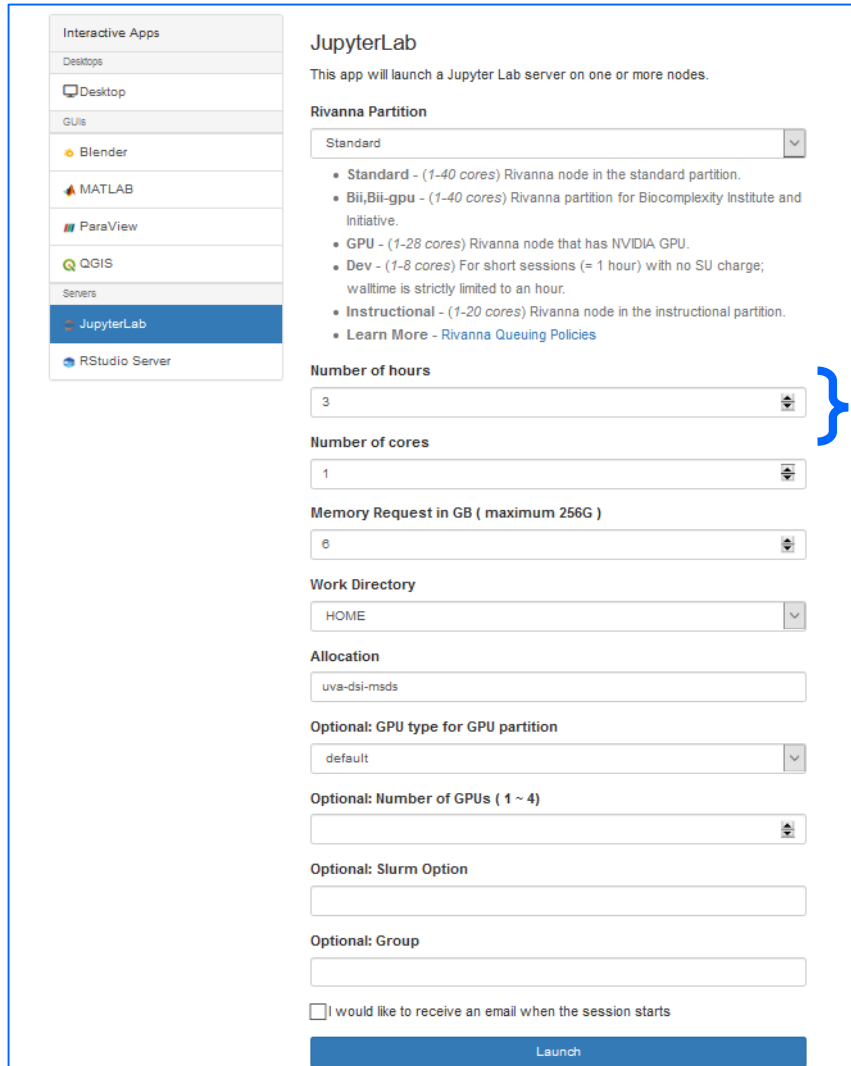
Rivanna Partition

Standard

- **Standard** - (1-40 cores) Rivanna node in the standard partition.
- **Bii,Bii-gpu** - (1-40 cores) Rivanna partition for Biocomplexity Institute and Initiative.
- **GPU** - (1-28 cores) Rivanna node that has NVIDIA GPU.
- **Dev** - (1-8 cores) For short sessions (= 1 hour) with no SU charge; walltime is strictly limited to an hour.
- **Instructional** - (1-20 cores) Rivanna node in the instructional partition.
- [Learn More - Rivanna Queuing Policies](#)

- Recall that Rivanna has lots of Compute Nodes.
- The nodes are partitioned (i.e., organized) by the type of processing that they can do.
- Most of the time, you will select the **Standard** partition.
- If you are running a deep learning model, you will want to choose a **GPU** Partition.

Number of Hours



The screenshot shows the JupyterLab configuration interface. On the left, a sidebar lists various interactive apps and servers, with 'JupyterLab' selected. The main panel displays configuration options for JupyterLab. A blue bracket highlights the 'Number of hours' field, which is set to 3. A callout box points to this field, showing a close-up of the input field with the value 3.

Interactive Apps

- Desktops
- Desktop
- GUIs
- Blender
- MATLAB
- ParaView
- QGIS
- Servers
- JupyterLab**
- RStudio Server

JupyterLab

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

Rivanna Partition

Standard

- Standard - (1-40 cores) Rivanna node in the standard partition.
- Bii,Bii-gpu - (1-40 cores) Rivanna partition for Biocomplexity Institute and Initiative.
- GPU - (1-28 cores) Rivanna node that has NVIDIA GPU.
- Dev - (1-8 cores) For short sessions (= 1 hour) with no SU charge; walltime is strictly limited to an hour.
- Instructional - (1-20 cores) Rivanna node in the instructional partition.
- Learn More - Rivanna Queuing Policies

Number of hours

3

Number of cores

1

Memory Request in GB (maximum 256G)

8

Work Directory

HOME

Allocation

uva-dsi-mads

Optional: GPU type for GPU partition

default

Optional: Number of GPUs (1 ~ 4)

Optional: Slurm Option

Optional: Group

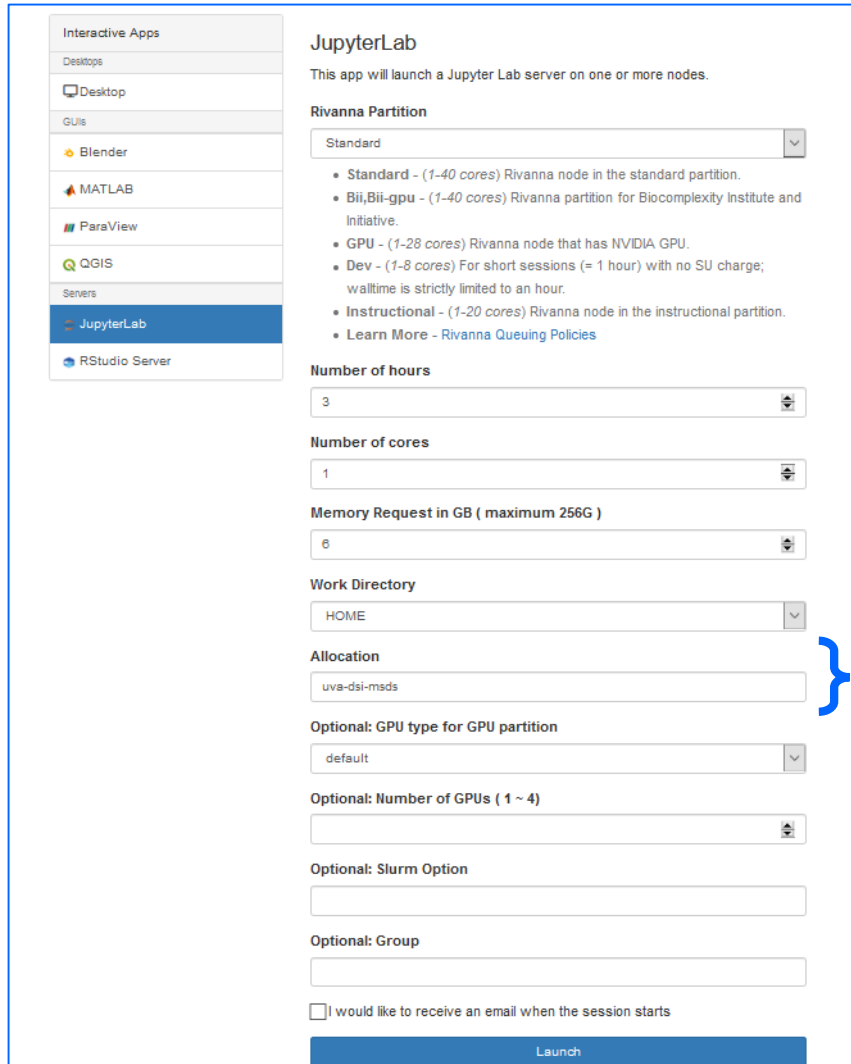
☐ I would like to receive an email when the session starts

Launch

- The “Number of hours” is the amount of time that your session will be active.

- Beware! When time runs out the session will end without warning!

Allocation



The screenshot shows the JupyterLab allocation interface. On the left is a sidebar with categories: Interactive Apps, Desktops, GUIs, and Servers. Under Interactive Apps, JupyterLab is selected. The main form is titled 'JupyterLab' and includes a description: 'This app will launch a Jupyter Lab server on one or more nodes.' Below this is the 'Rivanna Partition' section with a dropdown menu set to 'Standard'. A list of partition options is shown: Standard (1-40 cores), Bii,Bii-gpu (1-40 cores), GPU (1-28 cores), Dev (1-8 cores), and Instructional (1-20 cores). The form also has input fields for 'Number of hours' (3), 'Number of cores' (1), and 'Memory Request in GB' (6). Other fields include 'Work Directory' (HOME), 'Allocation' (uva-dsi-msds), 'Optional: GPU type for GPU partition' (default), 'Optional: Number of GPUs' (1-4), 'Optional: Slurm Option', and 'Optional: Group'. At the bottom, there is a checkbox for email notifications and a 'Launch' button.

Interactive Apps

Desktops

Desktop

GUIs

Blender

MATLAB

ParaView

QGIS

Servers

JupyterLab

RStudio Server

JupyterLab

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

Rivanna Partition

Standard

- Standard - (1-40 cores) Rivanna node in the standard partition.
- Bii,Bii-gpu - (1-40 cores) Rivanna partition for Biocomplexity Institute and Initiative.
- GPU - (1-28 cores) Rivanna node that has NVIDIA GPU.
- Dev - (1-8 cores) For short sessions (= 1 hour) with no SU charge; walltime is strictly limited to an hour.
- Instructional - (1-20 cores) Rivanna node in the instructional partition.
- Learn More - [Rivanna Queuing Policies](#)

Number of hours

3

Number of cores

1

Memory Request in GB (maximum 256G)

6

Work Directory

HOME

Allocation

uva-dsi-msds

Optional: GPU type for GPU partition

default

Optional: Number of GPUs (1 ~ 4)

Optional: Slurm Option

Optional: Group

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

Launch

- The allocation is a special MyGroups group that allows you to have access to Rivanna.
- You must be a member of a Rivanna-enabled MyGroup to have an active account.
- In general, your professor or research advisor will add you as a member to an allocation.

Allocation

uva-dsi-msds

- You can have membership in more than one allocation.

Launch

Interactive Apps

- Desktops
- Desktop
- GUIs
- Blender
- MATLAB
- ParaView
- QGIS
- Servers
- JupyterLab**
- RStudio Server

JupyterLab

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

Rivanna Partition

Standard

- Standard - (1-40 cores) Rivanna node in the standard partition.
- Bii,Bii-gpu - (1-40 cores) Rivanna partition for Biocomplexity Institute and Initiative.
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- Dev - (1-8 cores) For short sessions (= 1 hour) with no SU charge; walltime is strictly limited to an hour.
- Instructional - (1-20 cores) Rivanna node in the instructional partition.
- [Learn More - Rivanna Queuing Policies](#)

Number of hours

3

Number of cores

1

Memory Request in GB (maximum 256G)

6

Work Directory

HOME

Allocation

uva-dsi-mads

Optional: GPU type for GPU partition

default

Optional: Number of GPUs (1 ~ 4)

Optional: Slurm Option

Optional: Group

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

Launch

- Clicking on the “Launch” button will submit a request for the resources that you want.
- There will be a slight delay before the resources are available.

Launch

Waiting for the Session to Start

JupyterLab (12492035) Queued

Created at: 2020-05-29 00:18:04 EDT

Time Requested: 3 hours

Session ID: 5763459f-60b3-4af3-a4f4-379d56a61354

Please be patient as your job currently sits in queue. The wait time depends on the number of cores as well as time requested.

Delete

JupyterLab (12492035) 1 node | 1 core | Running

Host: >_udc-ba25-23

Created at: 2020-05-29 00:18:04 EDT

Time Remaining: 2 hours and 59 minutes

Session ID: 5763459f-60b3-4af3-a4f4-379d56a61354

Connect to Jupyter

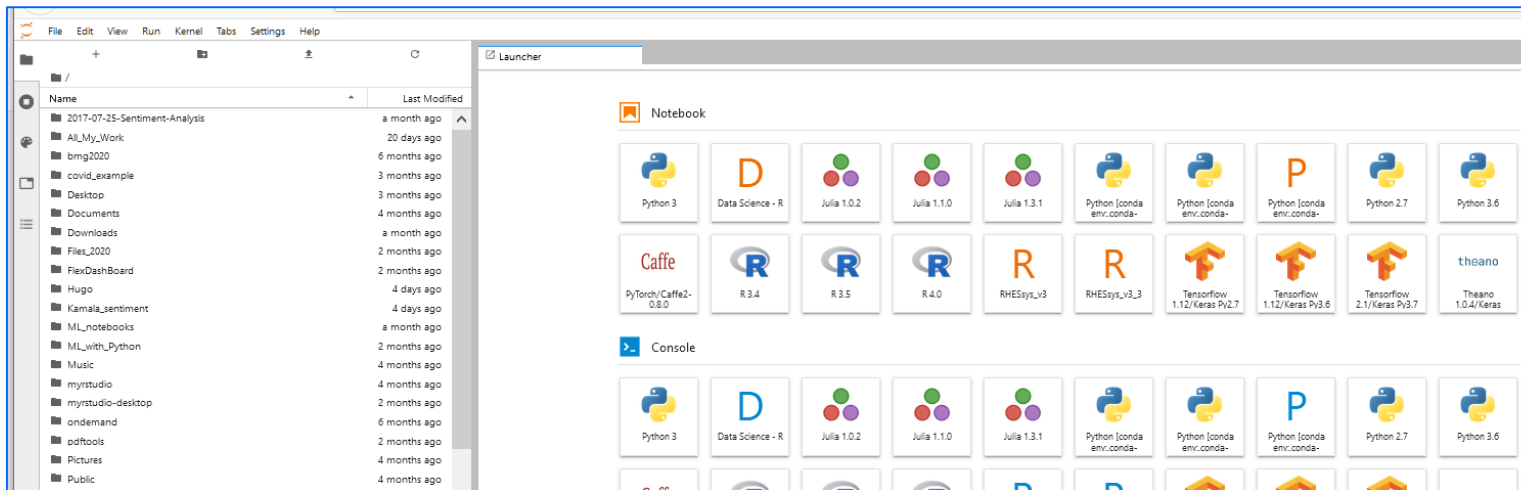
Delete

The screen will transition from a “Please be patient” statement to a “Connect to Jupyter” button.

Click on the “Connect to Jupyter” button.

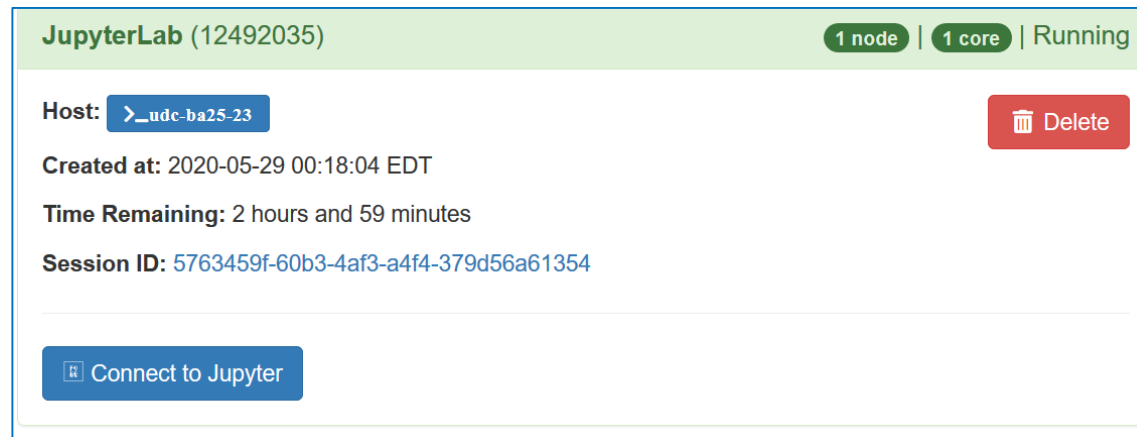
Hands-on Activity

- Connect to Open onDemand and start a JupyterLab session.
 - When it comes up, you will see a list of files (if any) in your home directory and a set of tiles for underlying applications (e.g., Python, R, Tensorflow).
 - You may see a slightly different set of tiles in your account – there are some customized tiles in this account.

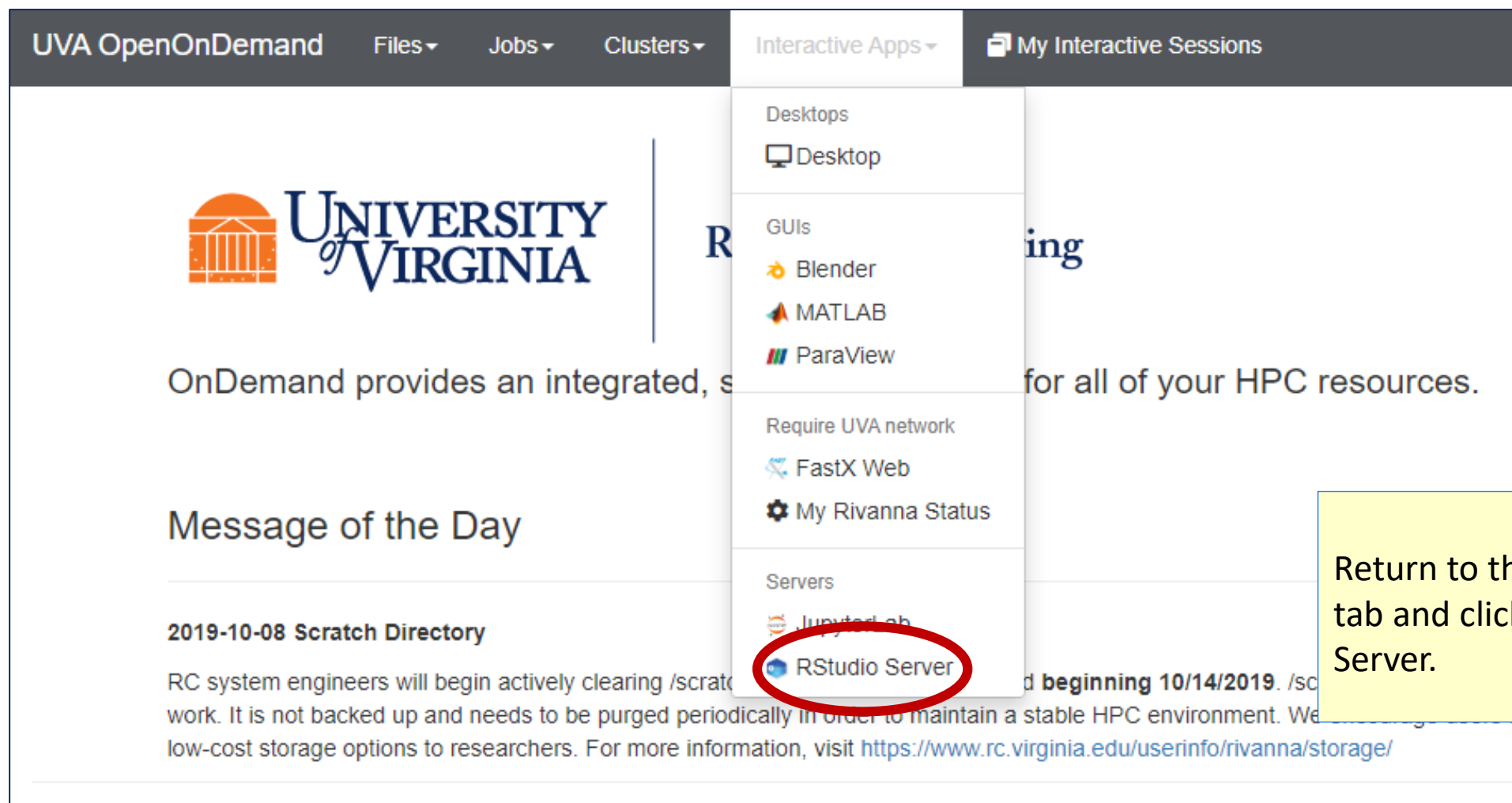


Deleting Your Session

- When you are done with your Jupyter Notebook, it is very important to delete the session.
- Go back to the browser tab labeled “Interactive Sessions” and click on the red “Delete” button.



RStudio Server



The screenshot shows the UVA OpenOnDemand dashboard. The top navigation bar includes 'UVA OpenOnDemand', 'Files', 'Jobs', 'Clusters', 'Interactive Apps', and 'My Interactive Sessions'. The 'Interactive Apps' menu is open, showing options like 'Desktops', 'GUIs' (Blender, MATLAB, ParaView), 'Require UVA network' (FastX Web, My Rivanna Status), and 'Servers' (JupyterLab, RStudio Server). The 'RStudio Server' option is circled in red. The background of the dashboard features the University of Virginia logo and text about HPC resources and a message about the Scratch Directory.

UVA OpenOnDemand Files Jobs Clusters Interactive Apps My Interactive Sessions

UNIVERSITY of VIRGINIA

OnDemand provides an integrated, secure environment for all of your HPC resources.

Message of the Day

2019-10-08 Scratch Directory

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Desktops

Desktop

GUIs

Blender

MATLAB

ParaView

Require UVA network

FastX Web

My Rivanna Status

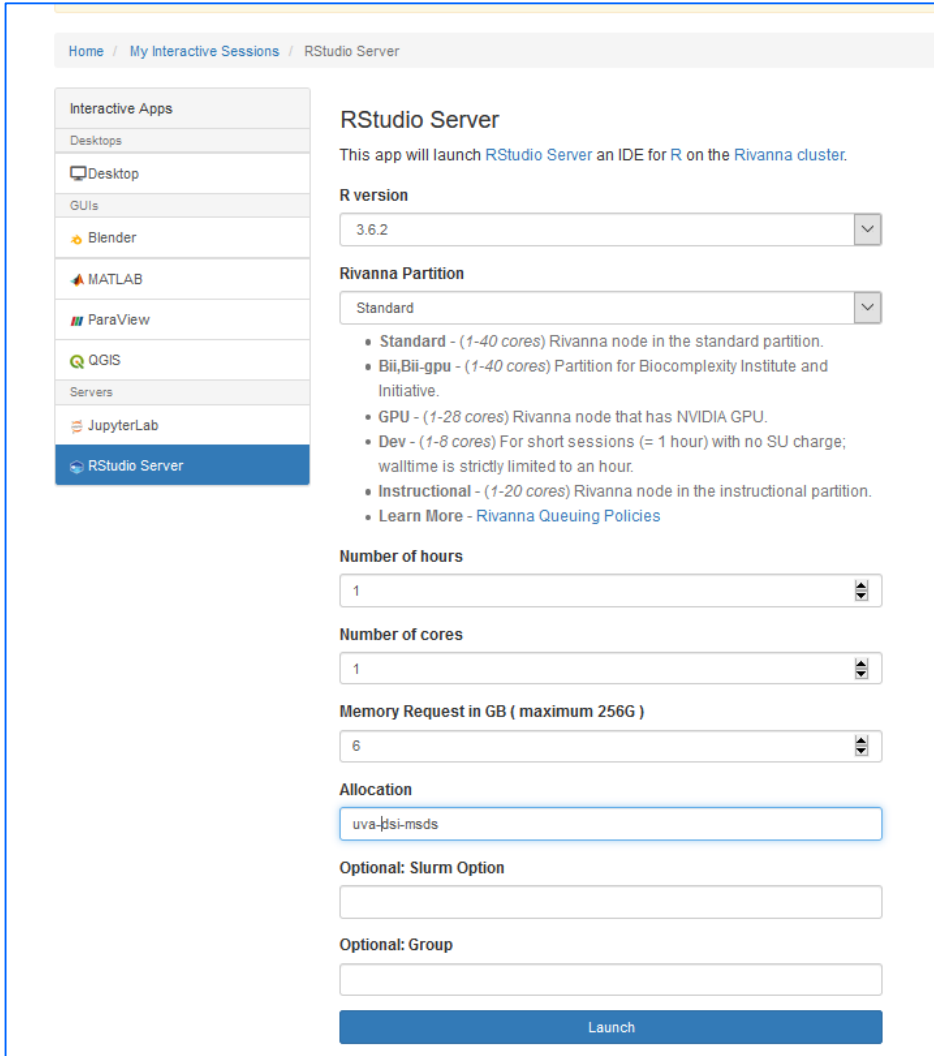
Servers

JupyterLab

RStudio Server

Return to the Dashboard tab and click on RStudio Server.

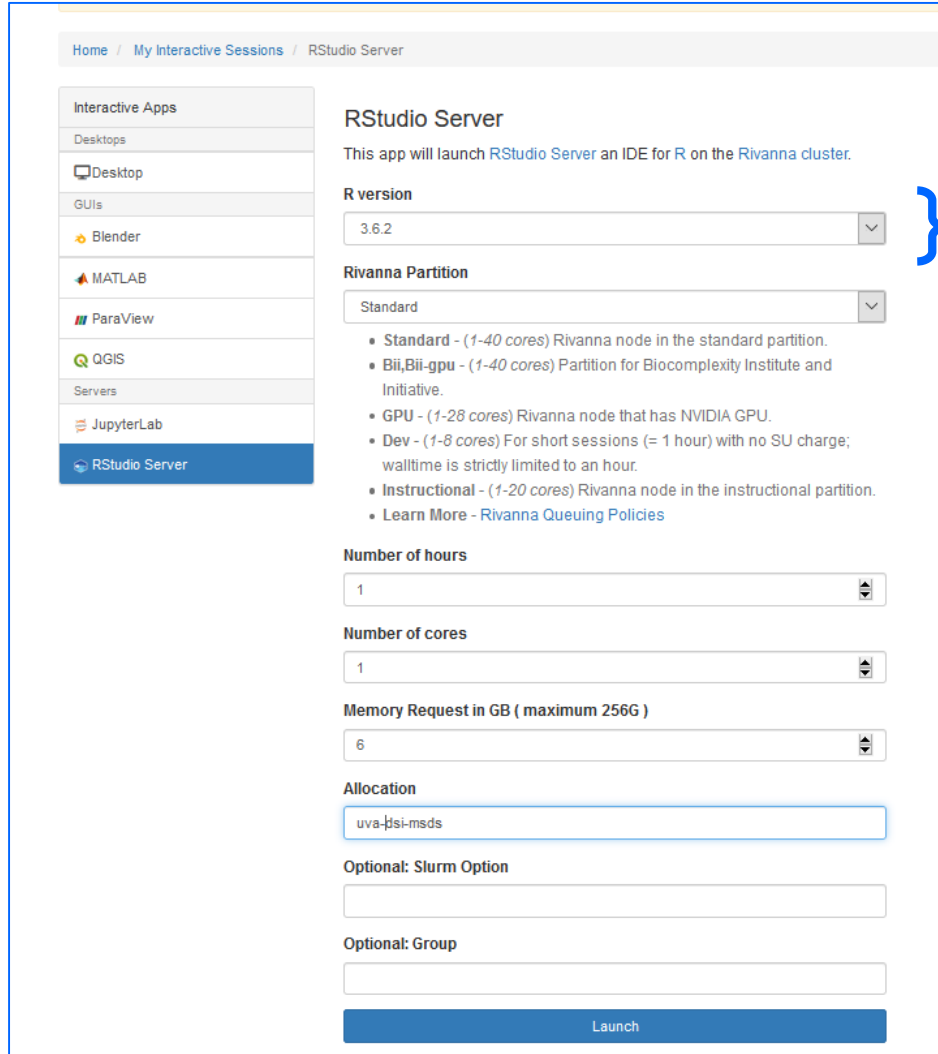
RStudio Web Form



The screenshot shows the RStudio Web Form interface. On the left is a sidebar with a navigation menu containing 'Interactive Apps', 'Desktops', 'GUIs', and 'Servers'. Under 'Interactive Apps', 'RStudio Server' is selected and highlighted in blue. The main content area is titled 'RStudio Server' and includes a description: 'This app will launch RStudio Server an IDE for R on the Rivanna cluster.' Below this are several configuration fields: 'R version' (a dropdown menu set to '3.6.2'), 'Rivanna Partition' (a dropdown menu set to 'Standard'), 'Number of hours' (a spinner box set to '1'), 'Number of cores' (a spinner box set to '1'), 'Memory Request in GB (maximum 256G)' (a spinner box set to '6'), and 'Allocation' (a text input field containing 'uva-psi-msds'). There are also two optional text input fields labeled 'Optional: Slurm Option' and 'Optional: Group'. At the bottom right of the form is a blue 'Launch' button.

- The RStudio Web Form is similar to what you saw with the Jupyter Web Form.
- Let's take a quick look at some of the fields.

R Version



Home / My Interactive Sessions / RStudio Server

Interactive Apps

- Desktops
- Desktop
- GUIs
- Blender
- MATLAB
- ParaView
- QGIS
- Servers
- JupyterLab
- RStudio Server**

RStudio Server

This app will launch [RStudio Server](#) an IDE for [R](#) on the [Rivanna](#) cluster.

R version

3.6.2

Rivanna Partition

Standard

- Standard - (1-40 cores) Rivanna node in the standard partition.
- Bii,Bii-gpu - (1-40 cores) Partition for Biocomplexity Institute and Initiative.
- GPU - (1-28 cores) Rivanna node that has NVIDIA GPU.
- Dev - (1-8 cores) For short sessions (= 1 hour) with no SU charge; walltime is strictly limited to an hour.
- Instructional - (1-20 cores) Rivanna node in the instructional partition.
- [Learn More - Rivanna Queuing Policies](#)

Number of hours

1

Number of cores

1

Memory Request in GB (maximum 256G)

6

Allocation

uva-hsi-msds

Optional: Slurm Option

Optional: Group

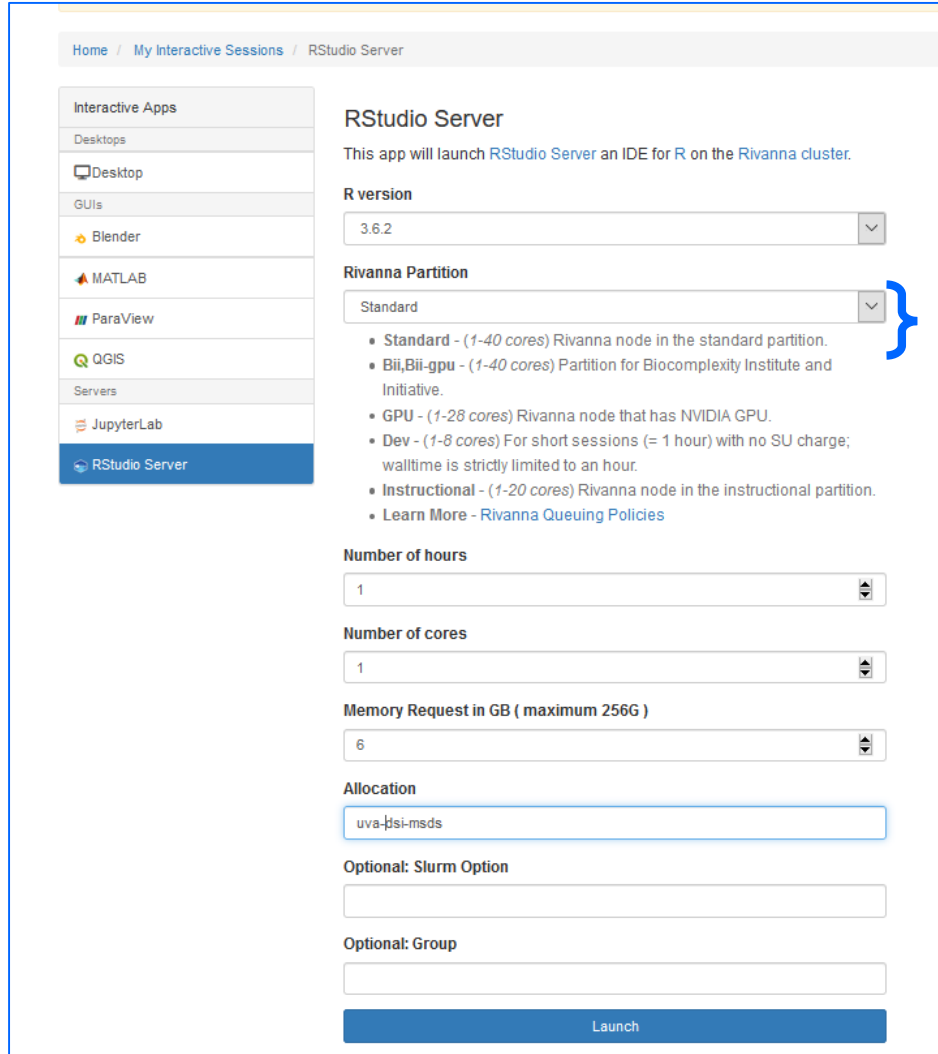
Launch

R version

3.6.2

- We have three versions of R available.
- R/3.6.2 is the most stable at this time.

Rivanna Partition



The screenshot shows the RStudio Server web interface. On the left is a sidebar with 'Interactive Apps' including Desktops, GUIs (Blender, MATLAB, ParaView, QGIS), and Servers (JupyterLab, RStudio Server). The main area is titled 'RStudio Server' and contains a description, an R version dropdown (3.6.2), and a 'Rivanna Partition' dropdown menu. A blue bracket highlights the 'Rivanna Partition' dropdown, pointing to a callout box. Below the partition dropdown are fields for 'Number of hours' (1), 'Number of cores' (1), 'Memory Request in GB (maximum 256G)' (6), 'Allocation' (uva-hsi-msds), and optional fields for 'Slurm Option' and 'Group'. A 'Launch' button is at the bottom.

Home / My Interactive Sessions / RStudio Server

Interactive Apps

Desktops

Desktop

GUIs

Blender

MATLAB

ParaView

QGIS

Servers

JupyterLab

RStudio Server

RStudio Server

This app will launch RStudio Server an IDE for R on the Rivanna cluster.

R version

3.6.2

Rivanna Partition

Standard

- Standard - (1-40 cores) Rivanna node in the standard partition.
- Bii,Bii-gpu - (1-40 cores) Partition for Biocomplexity Institute and Initiative.
- GPU - (1-28 cores) Rivanna node that has NVIDIA GPU.
- Dev - (1-8 cores) For short sessions (= 1 hour) with no SU charge; walltime is strictly limited to an hour.
- Instructional - (1-20 cores) Rivanna node in the instructional partition.
- Learn More - Rivanna Queuing Policies

Number of hours

1

Number of cores

1

Memory Request in GB (maximum 256G)

6

Allocation

uva-hsi-msds

Optional: Slurm Option

Optional: Group

Launch

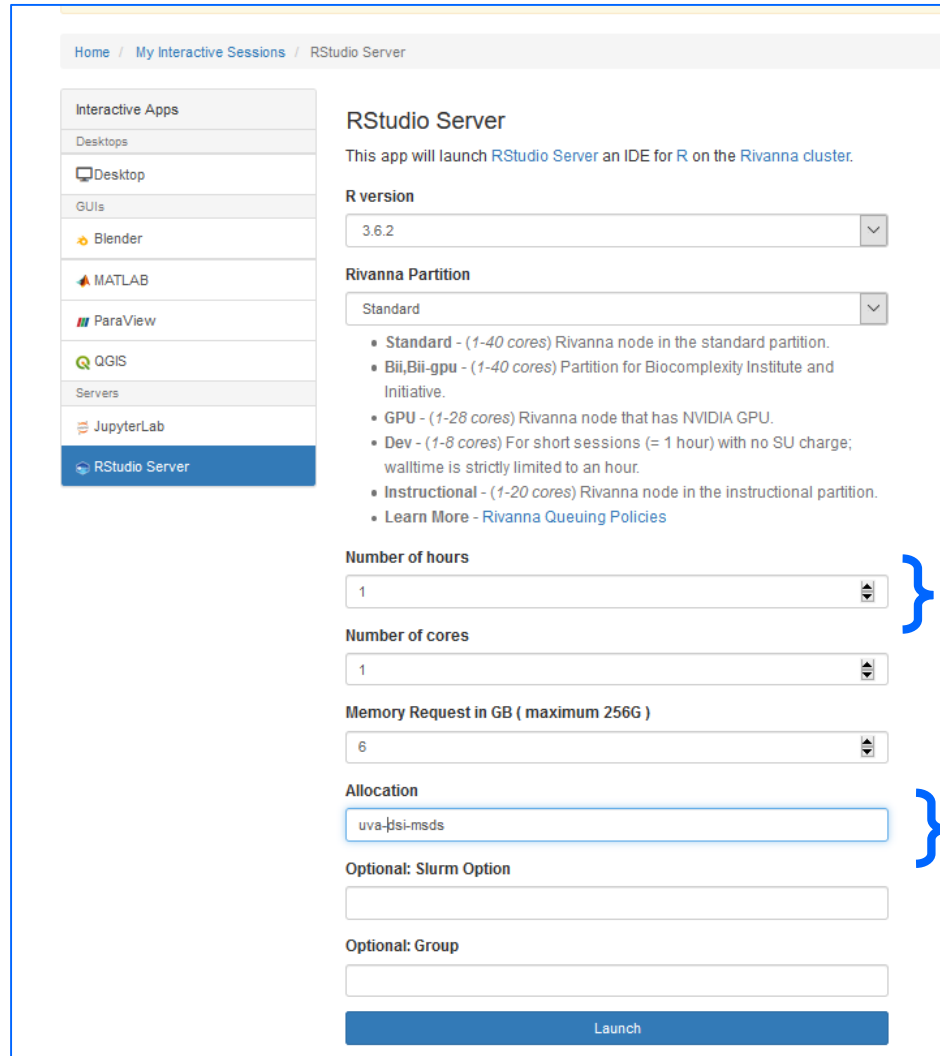
Rivanna Partition

Standard

- Standard - (1-40 cores) Rivanna node in the standard partition.
- Bii,Bii-gpu - (1-40 cores) Partition for Biocomplexity Institute and Initiative.
- GPU - (1-28 cores) Rivanna node that has NVIDIA GPU.
- Dev - (1-8 cores) For short sessions (= 1 hour) with no SU charge; walltime is strictly limited to an hour.
- Instructional - (1-20 cores) Rivanna node in the instructional partition.
- Learn More - Rivanna Queuing Policies

- The partitions are the same as in the JupyterLab Web Form, but we recommend mostly **Standard**, **Dev**, or **Instructional** for RStudio Server.

Number of hours & Allocation



The screenshot shows the RStudio Server configuration page. On the left is a sidebar with categories: Interactive Apps, Desktops, GUIs, and Servers. Under Interactive Apps, RStudio Server is selected. The main content area is titled 'RStudio Server' and includes a description, R version (3.6.2), and Rivanna Partition (Standard). Below these are input fields for 'Number of hours' (1), 'Number of cores' (1), and 'Memory Request in GB' (6). The 'Allocation' field contains 'uva-psi-msds'. There are also optional fields for 'Slurm Option' and 'Group'. A blue 'Launch' button is at the bottom. Blue brackets and arrows highlight the 'Number of hours' and 'Allocation' fields, pointing to callout boxes on the right.

Home / My Interactive Sessions / RStudio Server

Interactive Apps

Desktops

Desktop

GUIs

Blender

MATLAB

ParaView

QGIS

Servers

JupyterLab

RStudio Server

RStudio Server

This app will launch RStudio Server an IDE for R on the Rivanna cluster.

R version

3.6.2

Rivanna Partition

Standard

- Standard - (1-40 cores) Rivanna node in the standard partition.
- Bii,Bii-gpu - (1-40 cores) Partition for Biocomplexity Institute and Initiative.
- GPU - (1-28 cores) Rivanna node that has NVIDIA GPU.
- Dev - (1-8 cores) For short sessions (= 1 hour) with no SU charge; walltime is strictly limited to an hour.
- Instructional - (1-20 cores) Rivanna node in the instructional partition.
- Learn More - Rivanna Queuing Policies

Number of hours

1

Number of cores

1

Memory Request in GB (maximum 256G)

6

Allocation

uva-psi-msds

Optional: Slurm Option

Optional: Group

Launch

- The Number of hours and the Allocation are the same as in the JupyterLab Web Form.

Number of hours

1

Allocation

uva-psi-msds

Launch

Home / My Interactive Sessions / RStudio Server

Interactive Apps

- Desktops
- Desktop
- GUIs
- Blender
- MATLAB
- ParaView
- QGIS
- Servers
- JupyterLab
- RStudio Server**

RStudio Server

This app will launch [RStudio Server](#) an IDE for [R](#) on the [Rivanna cluster](#).

R version

3.6.2

Rivanna Partition

Standard

- Standard - (1-40 cores) Rivanna node in the standard partition.
- Bii,Bii-gpu - (1-40 cores) Partition for Biocomplexity Institute and Initiative.
- GPU - (1-28 cores) Rivanna node that has NVIDIA GPU.
- Dev - (1-8 cores) For short sessions (= 1 hour) with no SU charge; walltime is strictly limited to an hour.
- Instructional - (1-20 cores) Rivanna node in the instructional partition.
- [Learn More - Rivanna Queuing Policies](#)

Number of hours

1

Number of cores

1

Memory Request in GB (maximum 256G)

6

Allocation

uva-hsi-msds

Optional: Slurm Option

Optional: Group

Launch

- Clicking on the “Launch” button will submit a request for the resources that you want.
- Again, there will be a slight delay before the resources are available.

Launch

Waiting for the Session to Start

RStudio Server (15654717) Queued

Created at: 2020-09-22 23:44:55 EDT

Time Requested: 1 hour

Session ID: [b5be6480-4df8-4045-92d4-5adf97d6cbae](#)

Please be patient as your job currently sits in queue. The wait time depends on the number of cores as well as time requested.

Delete

RStudio Server (15654717) 1 node | 1 core | Running

Host: [_ndc-ba25-34c0](#)

Created at: 2020-09-22 23:44:55 EDT

Time Remaining: 59 minutes

Session ID: [b5be6480-4df8-4045-92d4-5adf97d6cbae](#)

Ⓜ Connect to RStudio Server

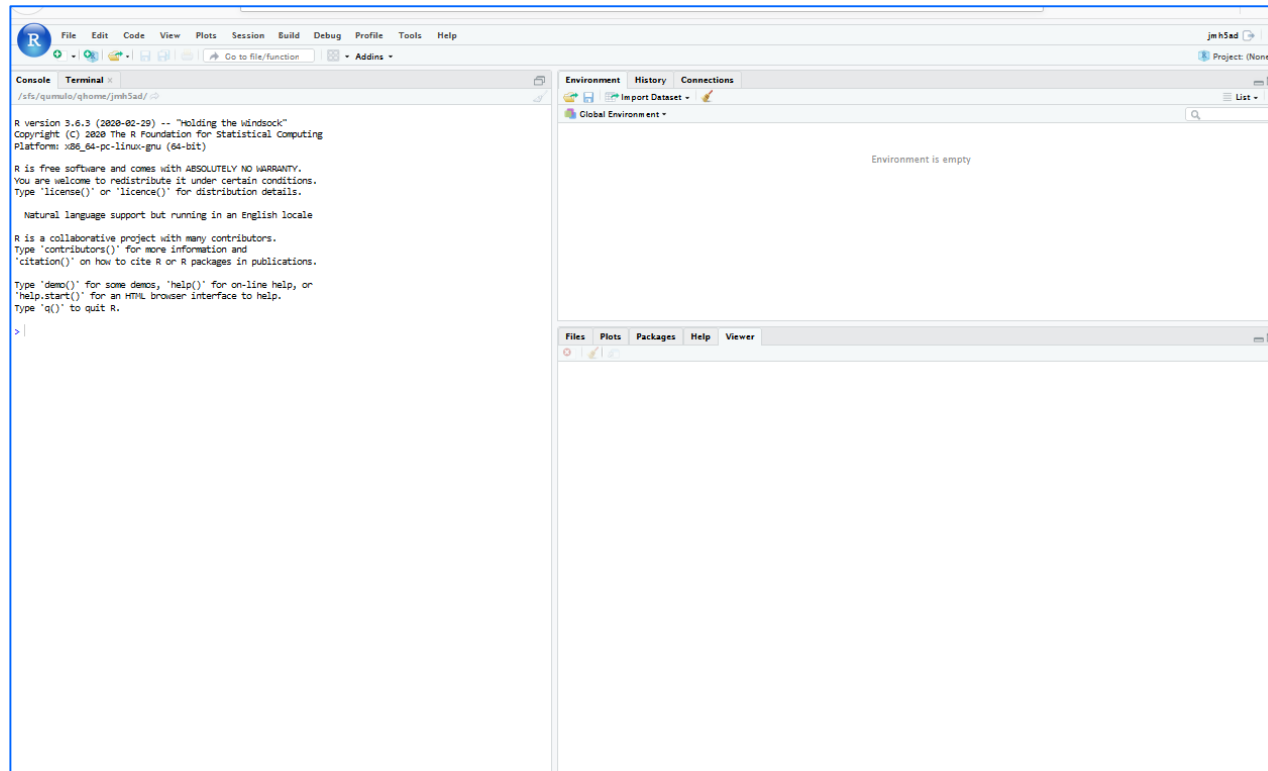
Delete

The screen will transition from a “Please be patient” statement to a “Connect to RStudio Server” button.

Click on the “Connect to RStudio Server” button.

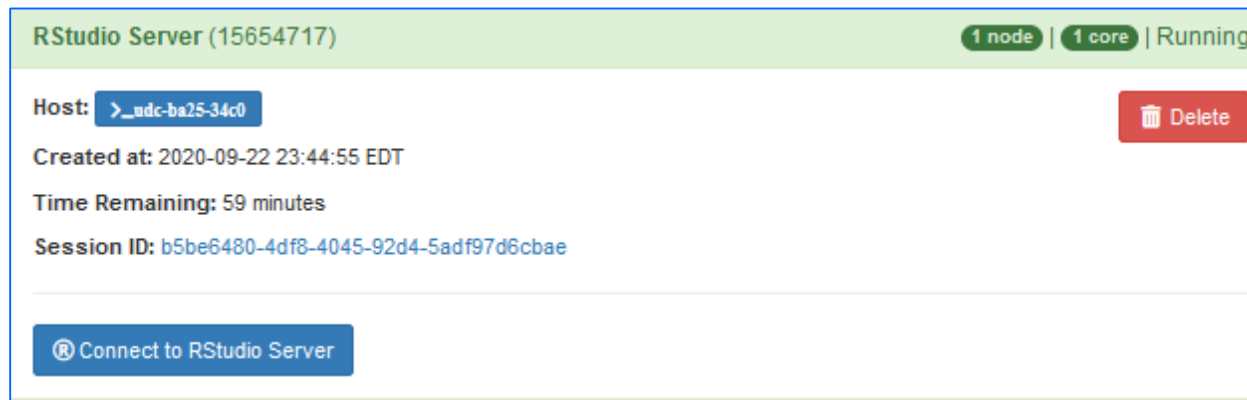
Hands-on Activity

- Connect to Open onDemand and start an RStudio Server session.
 - When it comes up, you will see an RStudio interface – just like you would see on your laptop.



Deleting Your Session

- Again, when you are done with RStudio Server, it is very important to delete the session.
- Go back to the browser tab labeled “Interactive Sessions” and click on the red “Delete” button.



What about the other fields?

Field	Description
Number of cores	Used in parallel processing. Your code must be modified to take advantage of using multiple cores.
Memory Request in GB	When dealing with Big Data, you will need to increase the amount of memory. My rule-of-thumb: request 2 to 3 times the size of data that you are reading in or generating.
Work Directory	Allows you to change the working directory of a Jupyter Notebook to your /scratch folder.
Optional: Slurm Option	Allows you to provide advanced features, like requesting specific nodes or providing a reservation
Optional Group	Only needed in you are in more than 16 allocations. You may need to force Rivanna to see your allocation.
Optional: GPU type for GPU partition & Optional: Number of GPUs	Only needed in you are running on a GPU node. The “default” for GPU type will put you on the first available GPU node. For now, the number of GPUS should be 1.

- You may have noticed fields on the Web Forms that we left blank or stayed with the default values.
- The most important one will be the Memory Request



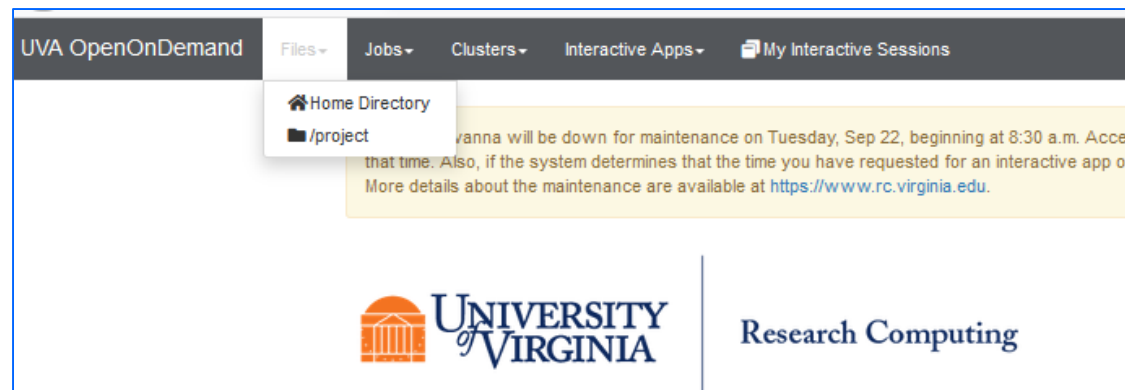
MOVING DATA (OR FILES) ONTO RIVANNA

Open onDemand File Explorer

Globus File Transfer

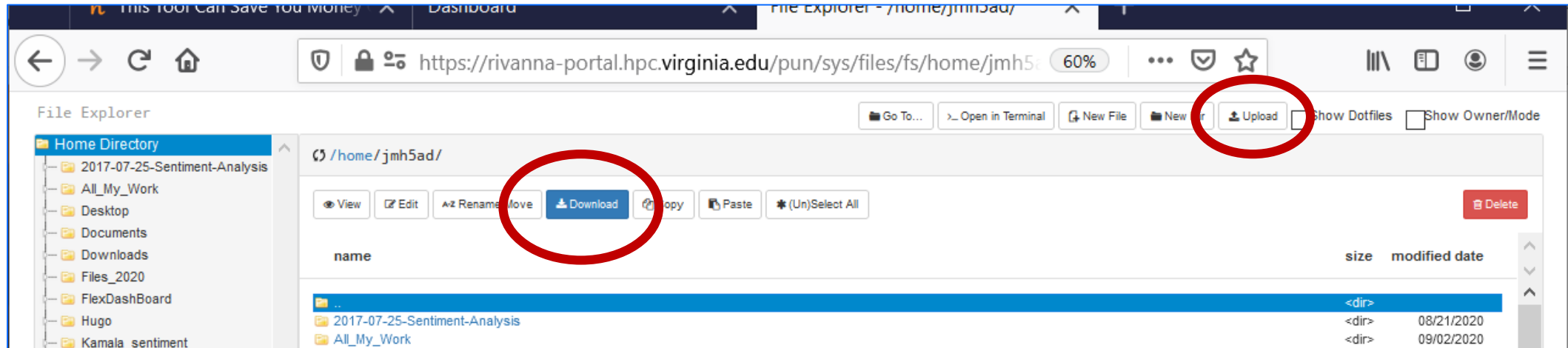
Moving Relatively Small Files: Open onDemand

- If your files are less than 10 GB, you can use the Open onDemand File Explorer.
 - Go to the Open onDemand Dashboard (<https://rivanna-portal.hpc.virginia.edu>)
 - Click on Files
 - Select Home Directory (or /project if your advisor has purchased additional storage)



Open onDemand File Explorer

- In the File Explorer, you can choose the button to Upload or Download Files.
- In each case a browser prompt will appear to select the files to upload or download.



Moving Large Files: Globus File Transfer

- If your files are 10 GB or more, we recommend that you use the Globus File Transfer service.
 - You will need to set up an endpoint (or collection) on your laptop.
 - Then, you can use the Globus web interface to transfer files.
- Details for these steps (and more) are available at <https://www.rc.Virginia.edu/userinfo/globus/>

Wrap Up

- These slides provide just an introduction on how to connect to Rivanna.
- There are many more details that we should cover.
- To learn more about Rivanna, we recommend:
<https://workshops.rc.virginia.edu/lesson/introduction-to-rivanna/>
<https://workshops.rc.virginia.edu/lesson/rivanna-in-command-line/>

Questions about Rivanna?

You can

- check out our frequently-asked questions at <https://www.rc.virginia.edu/userinfo/faq/rivanna-faq/>
- go to <https://www.rc.virginia.edu/support/> and click on “Open a Support Ticket” to ask a specific question
- email us directly at hpc-support@virginia.edu
- visit us during our Zoom Office Hours
(see <https://www.rc.virginia.edu/support/#office-hours> for days/times and links)