

Lunch and Learn

2023-05-19

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Outline

Part 1: Getting an interactive RStudio session on MSI (~20 min)

Part 2: Data transformations and visualization with R (~100 min)

Part 1: Accessing Open OnDemand

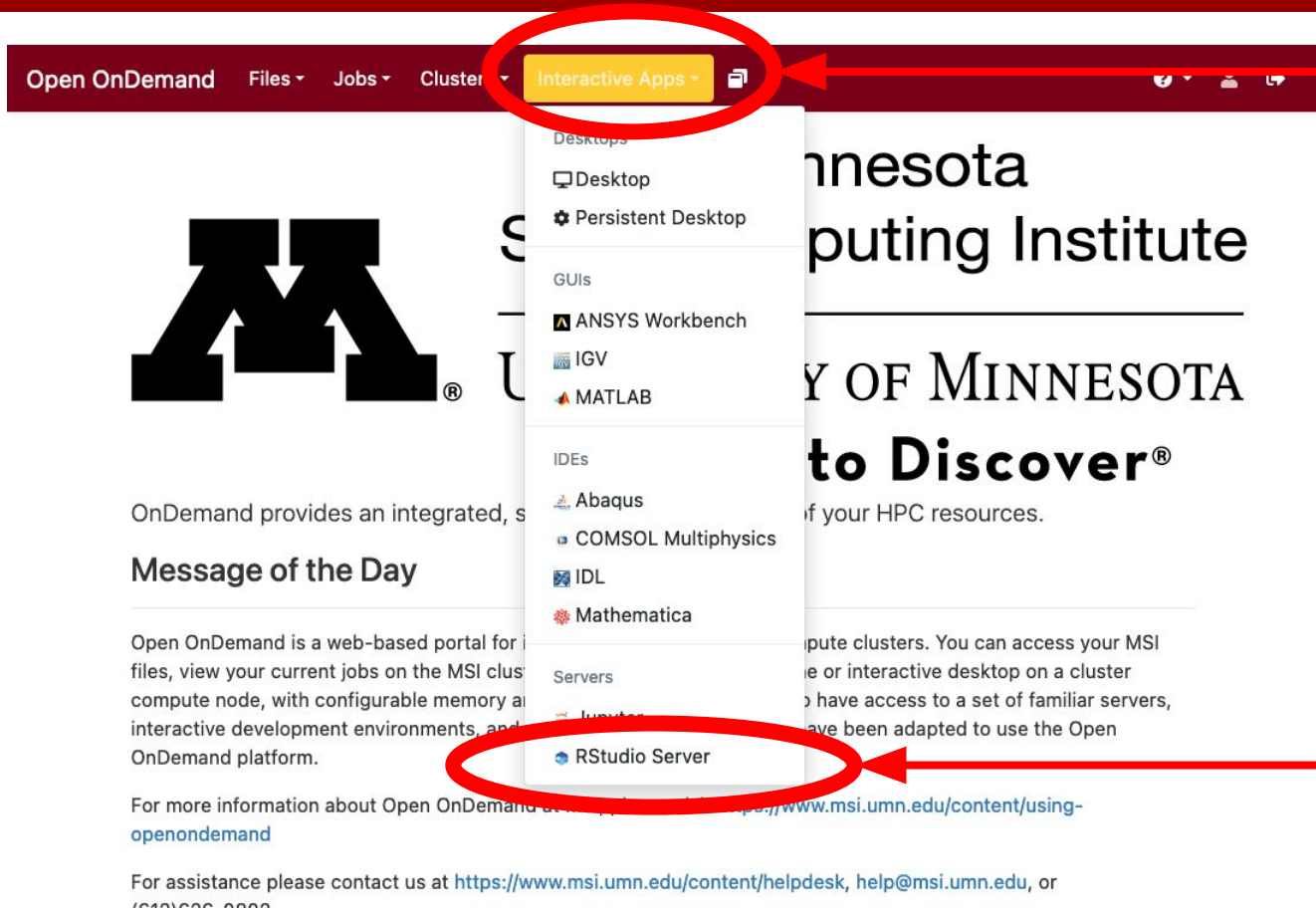
Open browser and navigate to <https://ood.msi.umn.edu/>

Log in with UMN username and password (and DUO MFA)

Good to know:

- You will need to be connected to the VPN if off campus
- Open OnDemand lets you manage files and access a command line shell on MSI systems
- Pre-built graphical apps like virtual desktop, IGV, MATLAB
- Jupyter notebooks and **RStudio Server** analysis environments

Part 1: RStudio in Open OnDemand



The screenshot shows the Open OnDemand web interface. The top navigation bar is dark red with white text. The 'Interactive Apps' button is highlighted with a red circle and a red arrow pointing to it from the right. Below this button, a dropdown menu is open, listing various applications. The 'RStudio Server' option at the bottom of the menu is also highlighted with a red circle and a red arrow pointing to it from the right. The background of the page features the University of Minnesota logo and text.

Open OnDemand Files Cluster **Interactive Apps**

Desktops

- Desktop
- Persistent Desktop

GUIs

- ANSYS Workbench
- IGV
- MATLAB

IDEs

- Abaqus
- COMSOL Multiphysics
- IDL
- Mathematica

Servers

- RStudio Server

1: Click "Interactive Apps"

2: Click "RStudio Server"

Message of the Day

Open OnDemand provides an integrated, secure web-based portal for accessing high-performance computing resources. You can access your MSI compute clusters. You can access your MSI compute node, with configurable memory and interactive development environments, and the Open OnDemand platform.

For more information about Open OnDemand, visit <https://www.msi.umn.edu/content/using-openondemand>

For assistance please contact us at <https://www.msi.umn.edu/content/helpdesk>, help@msi.umn.edu, or 612-625-8888

Part 1: RStudio in Open OnDemand

Configure resources for RStudio session:

- Cluster: [agate](#)
- Account: [[your primary group](#)]
- Resources: [Interactive](#)
 - You can customize this for future work!
- Time Limit: [4 Hours](#)
- R Version: [4.2.2-openblas](#)

Click “Launch”

RStudio Server

This app will launch [RStudio Server](#) an IDE for R clusters.

Cluster

agate

Account

riss

Resources

Interactive - 2 cores, 32 GB, 64 GB local scratch

Time Limit

4 Hours

Shorter times will probably start faster

R Version

4.2.2-openblas

☐ Customize Environment

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

Launch

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

Part 1: RStudio in Open OnDemand

RStudio Server (73105336)

Queued

Created at: 2023-05-10 09:14:36 CDT

 Delete

Time Requested: 4 hours

Session ID: 19a36acd-1b43-4d9e-9e51-558a83588b15

Please be patient as your job currently has a long wait time. You can increase the number of cores as well as time requested.

RStudio Server (73105336)

1 node | 2 cores | Running

Host: >_acn25.agate.msi.umn.edu

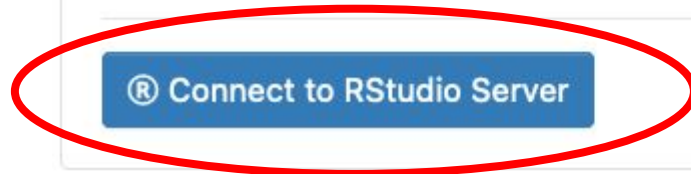
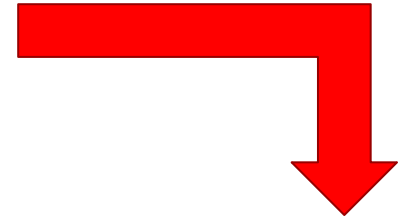
 Delete

Created at: 2023-05-10 09:14:36 CDT

Time Remaining: 3 hours and 59 minutes

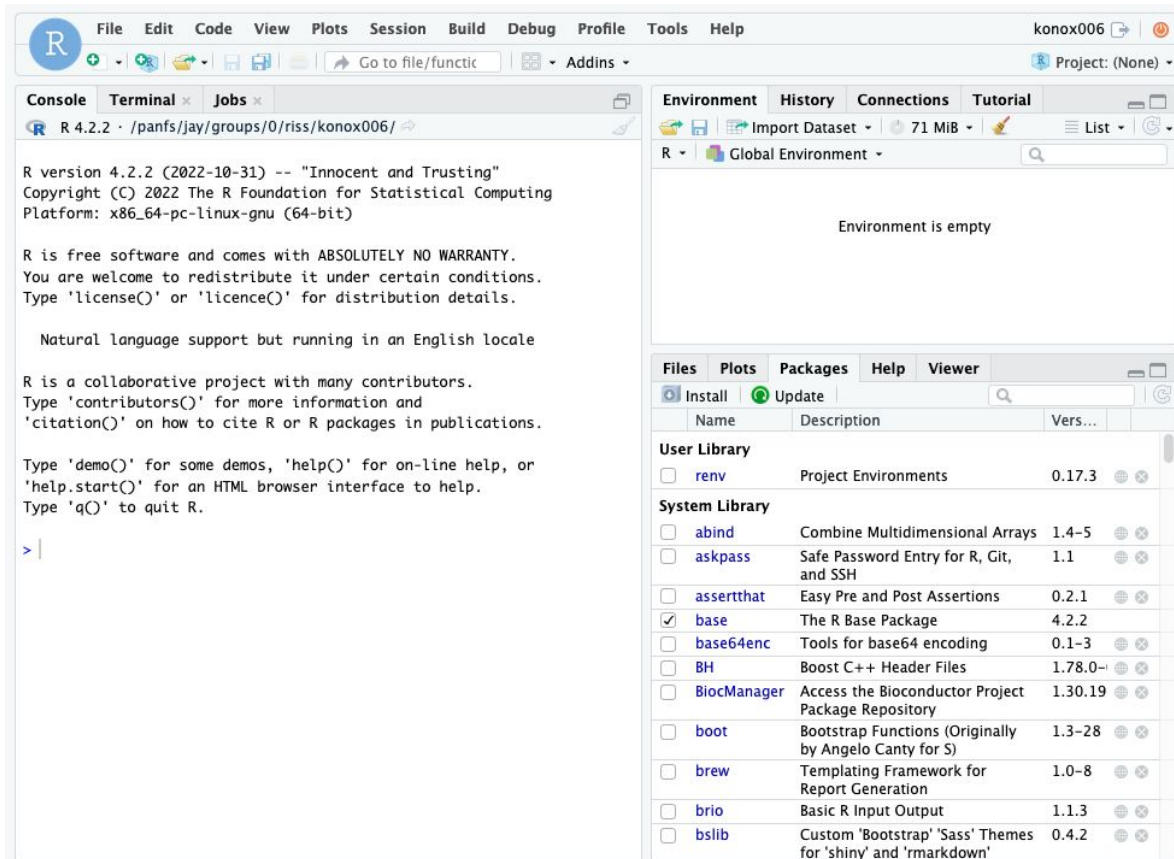
Session ID: 19a36acd-1b43-4d9e-9e51-558a83588b15

 Connect to RStudio Server



Part 1: RStudio in Open OnDemand

From here, you can use R
as you normally would!



Part 1: Install Required Packages

Enter the following command into the R console to install the `renv` package:

```
install.packages("renv")
```

If R asks for confirmation about installing packages into a user library, type “`Yes`” then press [`Enter`].

A bunch of red text may appear, but unless you see the word “`Error`” then it installed without issue.

Part 1: Activate Workshop Environment

Part 2 of the workshop will involve data transformation and visualization with various specialized packages, so we prepared an environment with these packages ready to use.

To activate it, type this into the R console:

```
renv::activate("/home/riss/public/Lunch_and_Learn/R_Environment")
```

More red text will appear, and you will even get an error message from this command! This is OK - we made the environment **read-only** and R is complaining about that.

Part 1: What is “renv” anyway?

An *environment* manager for R:

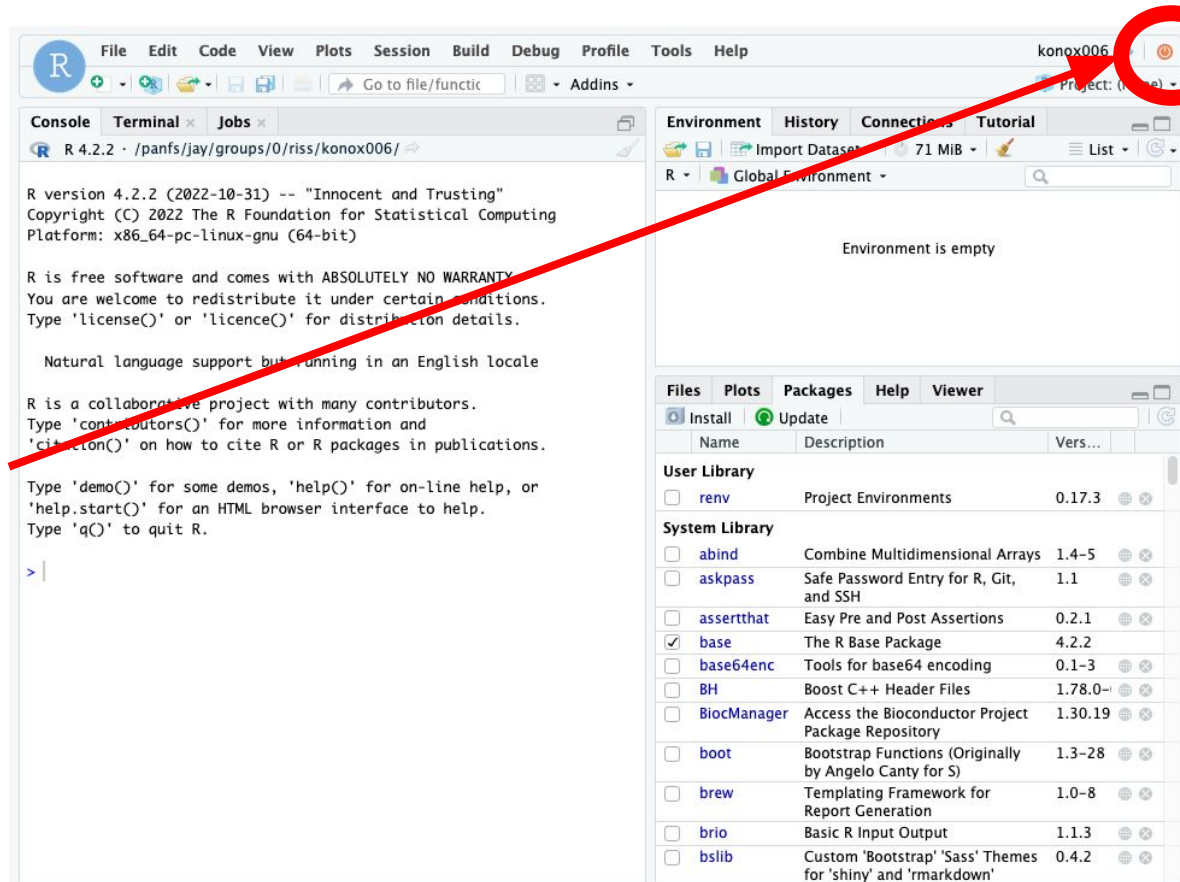
- Records package names and versions
- Allows you to track changes to environments (via a JSON “lockfile”) and restore them
- Allows you to share environments!*

*: We are using it in a *non-sanctioned* way here. You should **not** share a R library directory for normal use! You should instead share the lockfile and your collaborator can rebuild the same environment.

The R versions must match, too! We are using **4.2.2** for this demo.

Part 1: Finishing Your RStudio Session

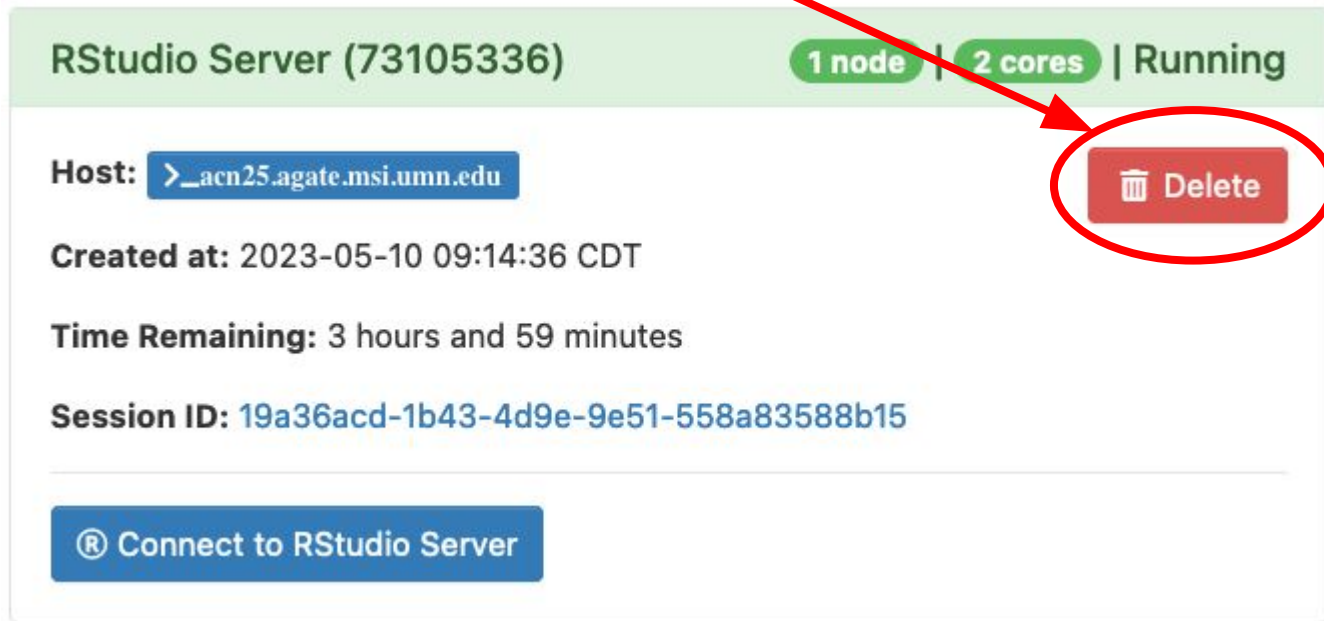
Be sure to click the “logout” button to end your R session when you are done with your analysis! You can leave it running with the tab closed as long as you need, though.



Part 1: Deleting Completed Sessions

Be sure to click the “Delete” button on your active sessions page when you are done!

If you leave it running, it will block other interactive jobs until it is finished or deleted!



The screenshot shows a card for an RStudio Server session. At the top, it says "RStudio Server (73105336)" in green. To the right, in green rounded rectangles, it says "1 node", "2 cores", and "Running". Below this, the "Host:" is followed by a blue button containing the text ">_acn25.agate.msi.umn.edu". The "Created at:" is "2023-05-10 09:14:36 CDT". The "Time Remaining:" is "3 hours and 59 minutes". The "Session ID:" is "19a36acd-1b43-4d9e-9e51-558a83588b15". At the bottom is a blue button that says "® Connect to RStudio Server". A red arrow points from the top right of the card to a red button with a trash icon and the text "Delete", which is circled in red.

RStudio Server (73105336) 1 node | 2 cores | Running


Host: >_acn25.agate.msi.umn.edu

Created at: 2023-05-10 09:14:36 CDT

Time Remaining: 3 hours and 59 minutes

Session ID: 19a36acd-1b43-4d9e-9e51-558a83588b15

® Connect to RStudio Server

 Delete