

OPEN **nDemand**

Zach Byerly
HPC User Services
LSU HPC LONI
sys-help@loni.org

Louisiana State University
Baton Rouge
July 15, 2020

➤ **Things to be covered in the training**

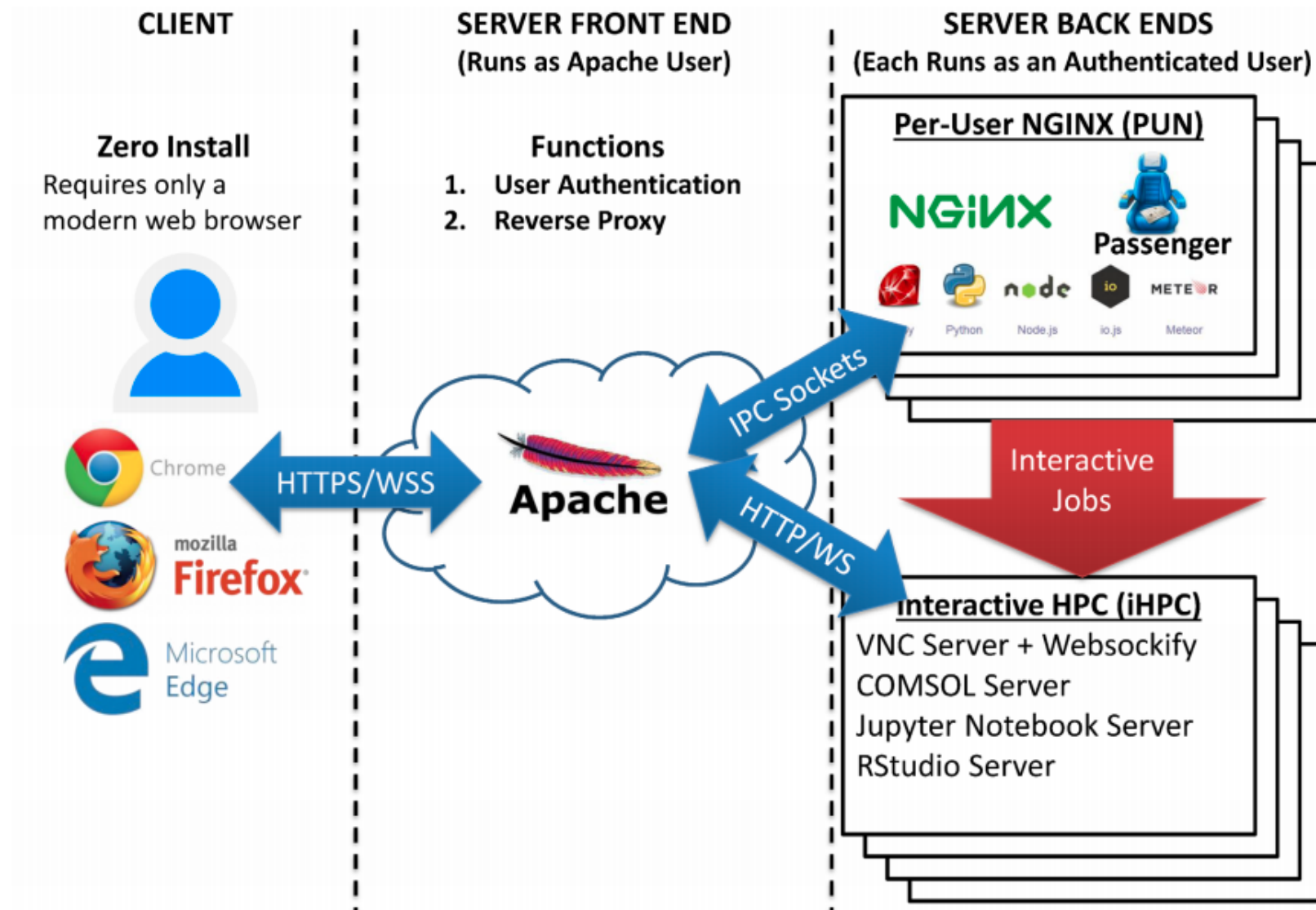
- What is Open OnDemand?
- Open OnDemand Architecture
- Open OnDemand at LSU
- Getting Started
 - New users: create LSU HPC account
 - Logging into Open OnDemand
- Walkthrough
 - File Explorer
 - Shell Access
 - Submit and Monitor Jobs
 - Apps: Jupyter and RStudio

➤ **Open, Interactive HPC via the Web**

- Easy to use, plugin-free, web-based access to supercomputers
- File Management
- Command-line shell access
- Job management and monitoring
- Applications (currently Jupyter and Rstudio)

➤ **NSF-funded project**

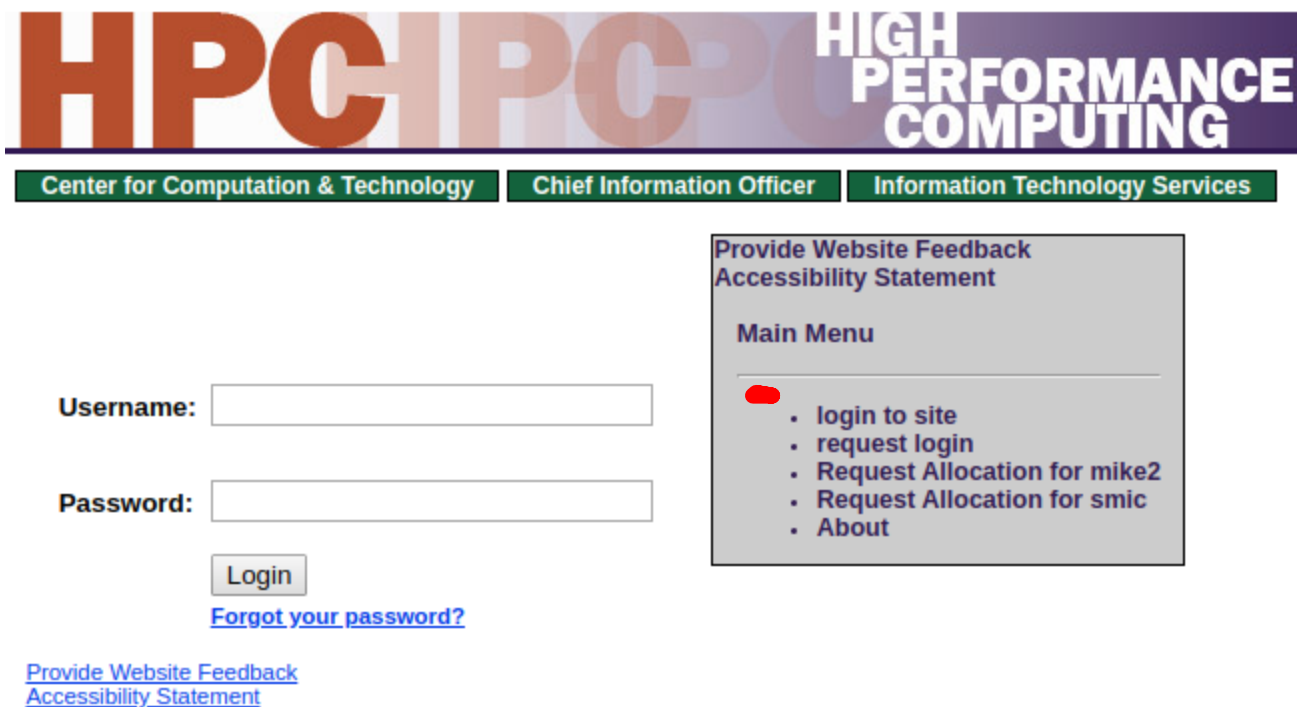
- SI2-SSE-1534949 and CSSI-Software-Frameworks-1835725
- Ohio Supercomputing Center
- Deployed at dozens of sites (universities, supercomputing centers)



- **Currently only available for SuperMike-II cluster**
- **Accessible on campus (wired and eduroam) and via LSU's VPN**
 - Installing GlobalProtect: `grok.lsu.edu` -> search "vpn"
 - Instructions for Mac, Windows, Linux
- **Launched late 2019**
- **Opened to all LSU HPC users February 2020**
- **Functionality currently available:**
 - File Browser, Allocation balances & Disk quotas
 - Submit and Monitor Jobs
 - Shell Access
 - Interactive Apps: Jupyter Notebooks & RStudio

➤ **What do I need?**

- **LSU HPC account (and active allocation)**
- **New users: accounts.hpc.lsu.edu → “request login”**



The screenshot shows the LSU HPC website. At the top is a banner with 'HPC' in large orange letters and 'HIGH PERFORMANCE COMPUTING' in white on a purple background. Below the banner are three green navigation buttons: 'Center for Computation & Technology', 'Chief Information Officer', and 'Information Technology Services'. The main content area has a login form on the left with fields for 'Username:' and 'Password:', a 'Login' button, and a link for 'Forgot your password?'. On the right is a grey box containing links for 'Provide Website Feedback' and 'Accessibility Statement', and a 'Main Menu' with a red bullet point followed by a list: 'login to site', 'request login', 'Request Allocation for mike2', 'Request Allocation for smic', and 'About'. At the bottom left are links for 'Provide Website Feedback' and 'Accessibility Statement'.

HPC HIGH PERFORMANCE COMPUTING

Center for Computation & Technology | Chief Information Officer | Information Technology Services

Username:

Password:

Login

[Forgot your password?](#)

[Provide Website Feedback](#)
[Accessibility Statement](#)

Provide Website Feedback
Accessibility Statement

Main Menu

- login to site
- request login
- Request Allocation for mike2
- Request Allocation for smic
- About

ondemand.mike.hpc.lsu.edu

➤ Logging in for the first time

- Sign in with your LSU HPC credentials
- If you have never logged into an LSU HPC cluster before, follow the instructions to create a home directory
- Follow the link to launch a shell, which will create your home directory
- Click the link to reload the web browser

Home directory not found

Don't panic, this is normal if you're using Open OnDemand for the first time. Your home directory appears to be missing. If this is the first time you have logged in with this account, you may need to access our systems using SSH in order to trigger the creation of your home directory.

1. Create Home Directory

- Click on this link: [Open Shell to create home directory](#) and a new tab should open. This tab contains the shell.
- In the shell, you will see a line that says: **Are you sure you want to continue connecting (yes/no)?** Type "yes" and press enter. (If you wait too long, you'll get an error like this: **Your connection to the remote server has been terminated.** Close the tab and click on the link above again.)
- Next the shell will ask you to enter your password (**mtiger@mike.hpc.lsu.edu's password:**). Enter the password that you made when creating your LSU HPC account. As you type the password, you won't see anything appear in the shell. This is normal. Press enter when you're done. If you're successful, you should see many lines come up. You can now close the tab, even if it warns you that "Changes may not be saved."

2. Restart the WebServer

- Next, click on this link: [Restart Web Server](#)
- If it brings you back to the same page, wait 10 seconds and try again.

ondemand.mike.hpc.lsu.edu

➤ Logging in for the first time

- Sign in with your LSU HPC credentials
- If you have never logged into an LSU HPC cluster before, follow the instructions to create a home directory
- Follow the link to launch a shell, which will create your home directory
- Click the link to reload the web browser

Home directory not found

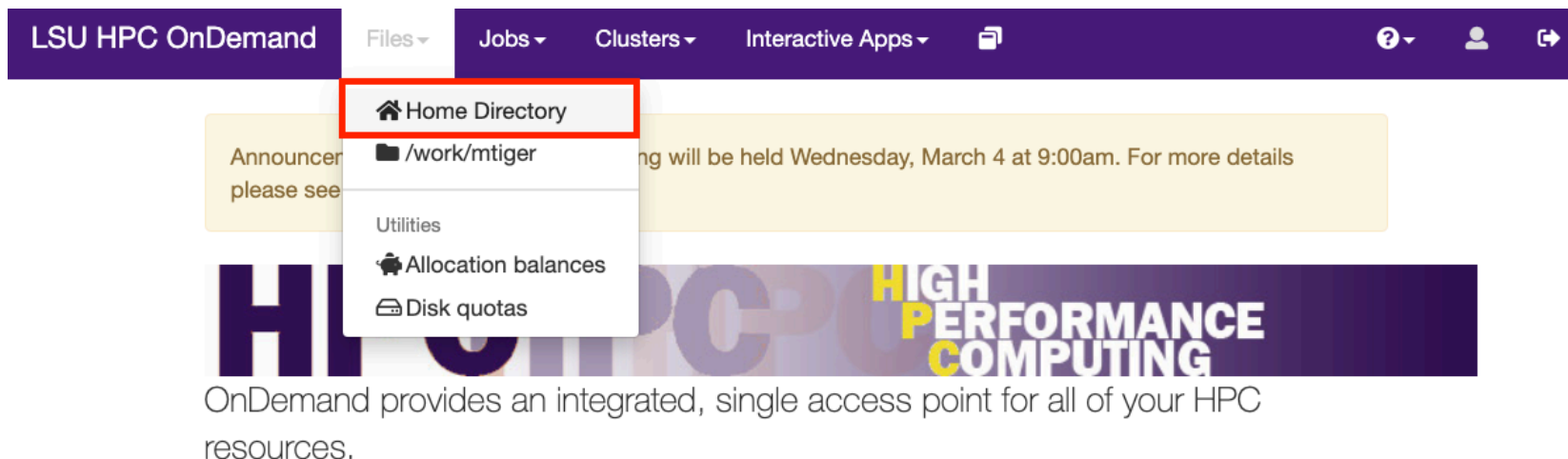
Don't panic, this is normal if you're using Open OnDemand for the first time. Your home directory appears to be missing. If this is the first time you have logged in with this account, you may need to access our systems using SSH in order to trigger the creation of your home directory.

1. Create Home Directory

- Click on this link: [Open Shell to create home directory](#) and a new tab should open. This tab contains the shell.
- In the shell, you will see a line that says: **Are you sure you want to continue connecting (yes/no)?** Type "yes" and press enter. (If you wait too long, you'll get an error like this: **Your connection to the remote server has been terminated.** Close the tab and click on the link above again.)
- Next the shell will ask you to enter your password (**mtiger@mike.hpc.lsu.edu's password:**). Enter the password that you made when creating your LSU HPC account. As you type the password, you won't see anything appear in the shell. This is normal. Press enter when you're done. If you're successful, you should see many lines come up. You can now close the tab, even if it warns you that "Changes may not be saved."

2. Restart the WebServer

- Next, click on this link: [Restart Web Server](#)
- If it brings you back to the same page, wait 10 seconds and try again.



LSU HPC OnDemand

Files ▾ Jobs ▾ Clusters ▾ Interactive Apps ▾

Home Directory

/work/mtiger

Utilities

Allocation balances

Disk quotas

Announcement: ... will be held Wednesday, March 4 at 9:00am. For more details

HIGH PERFORMANCE COMPUTING

OnDemand provides an integrated, single access point for all of your HPC resources.

Message of the Day

Welcome to the LSU HPC OnDemand portal!

With the OnDemand web portal, you can:

- - Manage, download and upload files to the HPC systems (click links in the "Files" on the top of this page)
- - [Check allocation balances](#)

Opening the File Explorer

Go To...

>_ Open in Terminal

New File

New Dir

Upload

Show Dotfiles

Show Owner/Mode

Home Directory

- R
- old-stuff
- ondemand

/home/mtiger/

View

Edit

A-z Rename/Move

Download

Copy

Paste

*(Un)Select All

Delete

name	size	modified date
..	<dir>	
R	<dir>	02/04/2020
old-stuff	<dir>	03/03/2020
ondemand	<dir>	02/27/2020

Default view in the File Explorer (opens in new tab)

Go To... >_ Open in Terminal New File New Dir Upload ☒ Show Dotfiles ☐ Show Owner/Mode

Home Directory

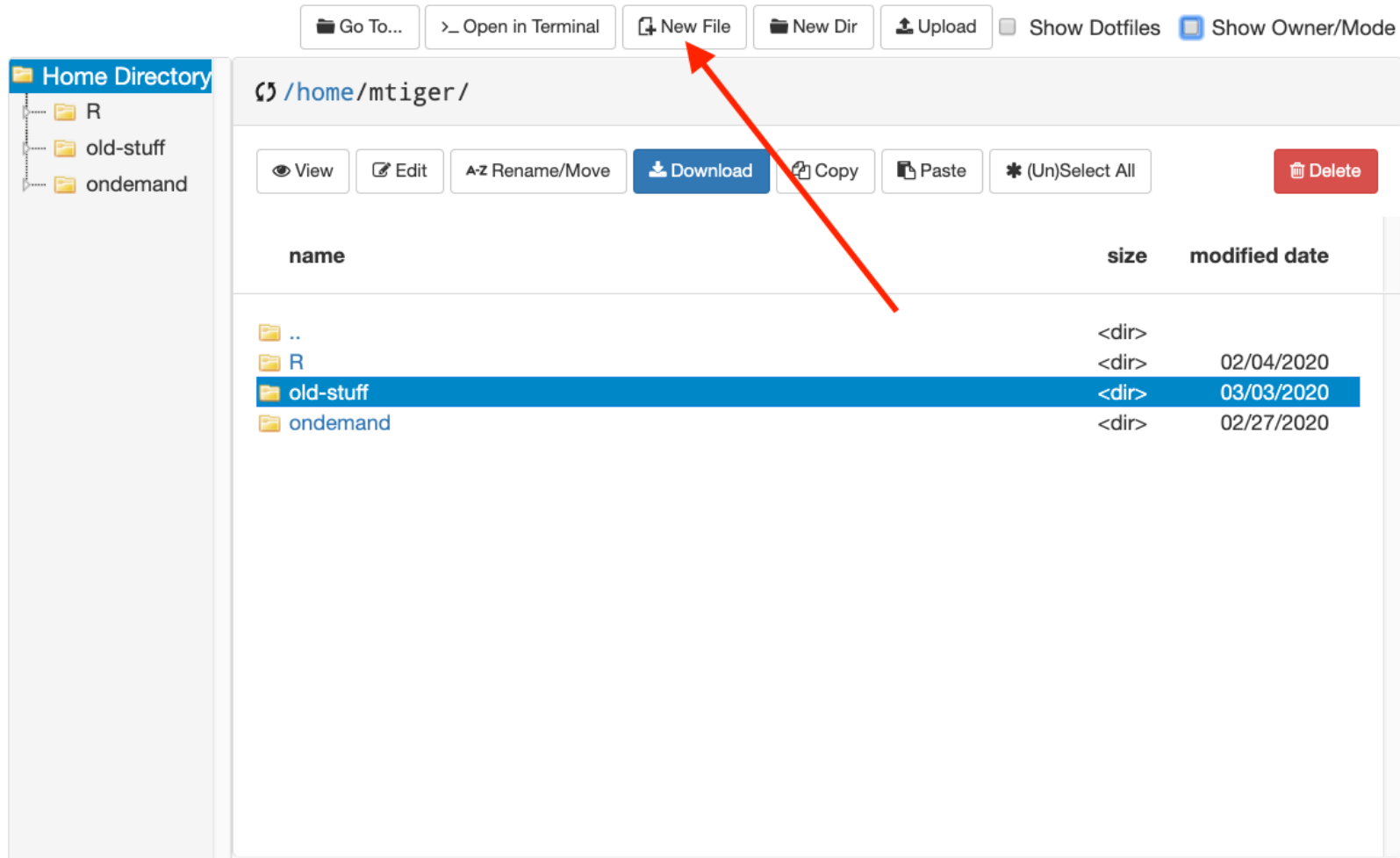
- R
- old-stuff
- ondemand

/home/mtiger/

View Edit A-Z Rename/Move Download Copy Paste * (Un)Select All Delete

name	size	modified date
..	<dir>	
.gnome2	<dir>	02/04/2020
.ipython	<dir>	02/27/2020
.jupyter	<dir>	02/27/2020
.local	<dir>	02/27/2020
.mozilla	<dir>	02/04/2020
.pki	<dir>	02/04/2020
.rstudio	<dir>	02/04/2020
.ssh	<dir>	02/27/2020
.subversion	<dir>	02/04/2020
R	<dir>	02/04/2020
old-stuff	<dir>	03/03/2020
ondemand	<dir>	02/27/2020
.bash_history	2.07kb	02/27/2020
.bash_history3	2.36kb	02/27/2020
.bash_logout	18b	02/04/2020
.bash_profile	176b	02/04/2020
.bashrc	374b	02/27/2020

Showing hidden files “Dotfiles” in the File Explorer



The screenshot shows the File Explorer interface for the directory `/home/mtiger/`. The left sidebar displays the 'Home Directory' with subdirectories: `R`, `old-stuff`, and `ondemand`. The main panel shows a table of files and directories. A red arrow points to the 'New File' button in the top toolbar.

name	size	modified date
..	<dir>	
R	<dir>	02/04/2020
old-stuff	<dir>	03/03/2020
ondemand	<dir>	02/27/2020

Creating a new file

Go To... >_ Open in Terminal New File New Dir Upload Show Dotfiles Show Owner/Mode

Home Directory

- R
- old-stuff
- ondemand

/home/mtiger/

View Edit A-Z Rename/Move Download Copy Paste * (Un)Select All Delete

name	size	modified date
..	<dir>	
R	<dir>	02/04/2020
old-stuff	<dir>	03/03/2020
ondemand	<dir>	02/27/2020

File Explorer

New file

testfile.txt

OK Cancel

Naming new file

Go To... >_ Open in Terminal New File New Dir Upload Show Dotfiles Show Owner/Mode

Home Directory

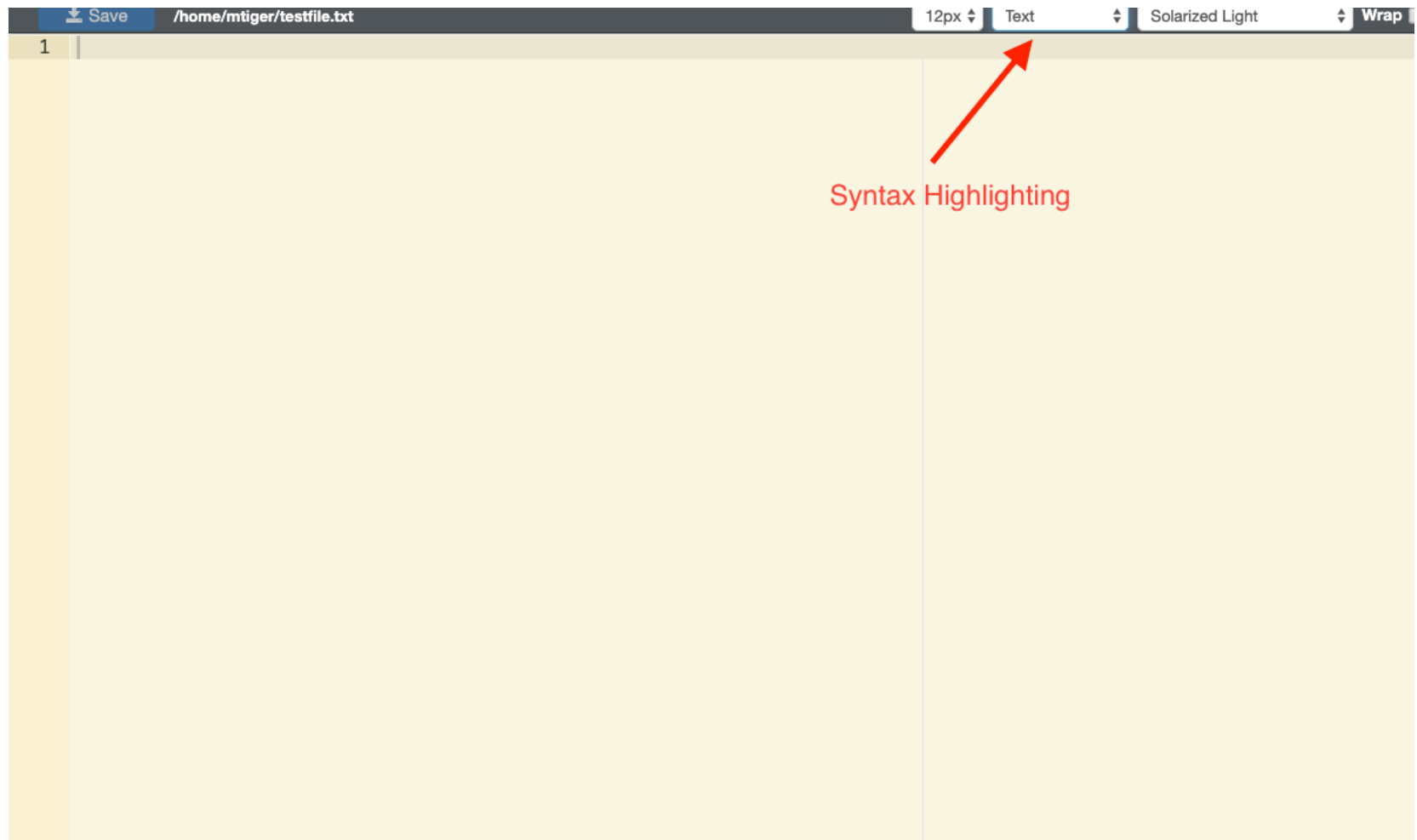
- R
- old-stuff
- ondemand

/home/mtiger/

View Edit A-Z Rename/Move Download Copy Paste * (Un)Select All Delete

name	size	modified date
..	<dir>	
R	<dir>	02/04/2020
old-stuff	<dir>	03/03/2020
ondemand	<dir>	02/27/2020
testfile.txt	0b	03/03/2020

Opening the Text Editor



Text Editor (opens in new tab): Syntax Highlighting

```

Save /home/mtiger/testfile.txt 12px Python Solarized Light Wrap
1 # Python program to find the factorial of a number provided by the user.
2
3 # change the value for a different result
4 num = 7
5
6 # To take input from the user
7 #num = int(input("Enter a number: "))
8
9 factorial = 1
10
11 # check if the number is negative, positive or zero
12 if num < 0:
13     print("Sorry, factorial does not exist for negative numbers")
14 elif num == 0:
15     print("The factorial of 0 is 1")
16 else:
17     for i in range(1,num + 1):
18         factorial = factorial*i
19     print("The factorial of",num,"is",factorial)
20

```

Text Editor: example Python code

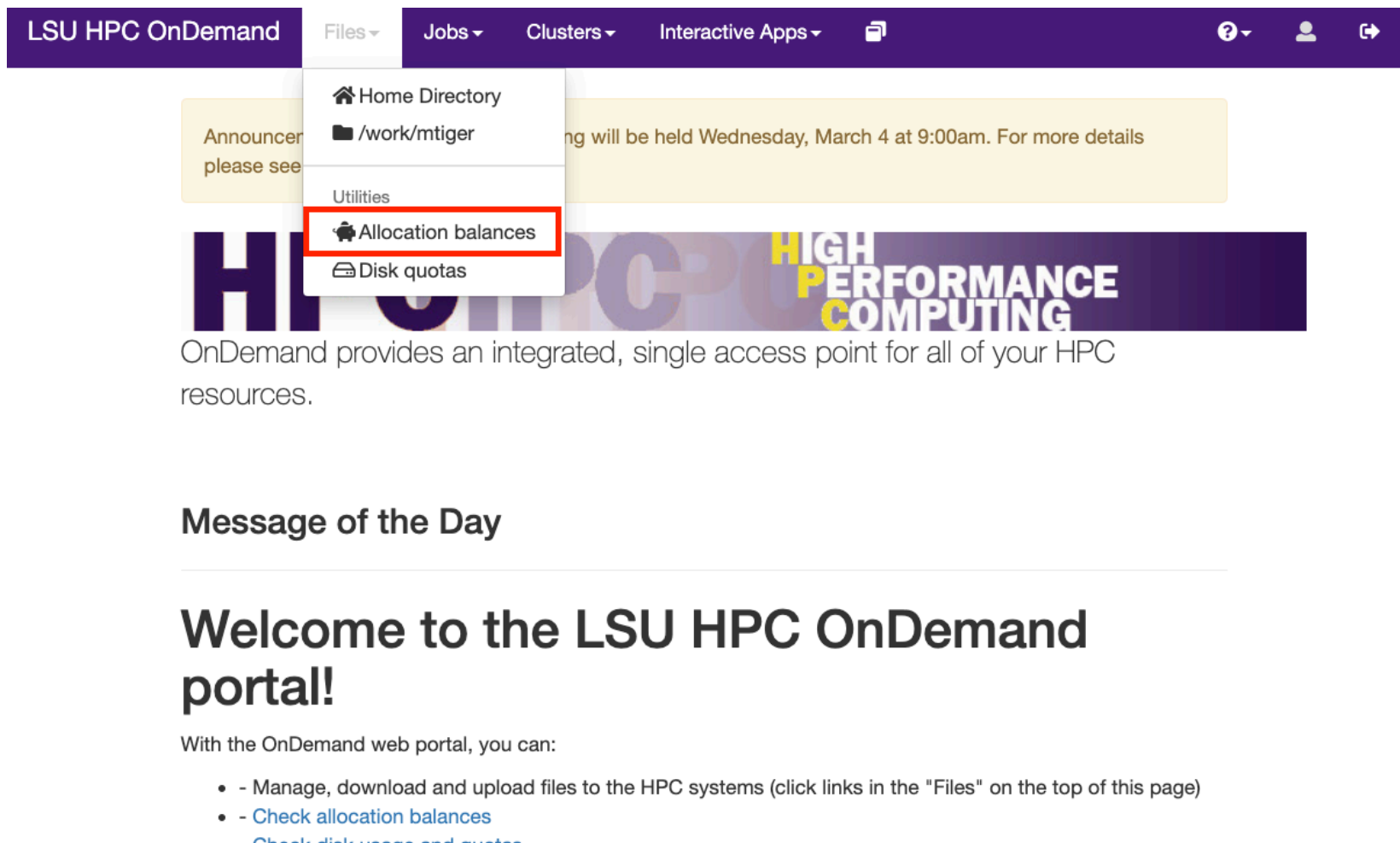


```

1  # Python program to find the factorial of a number provided by the user.
2
3  # change the value for a different result
4  num = 7
5
6  # To take input from the user
7  #num = int(input("Enter a number: "))
8
9  factorial = 1
10
11 # check if the number is negative, positive or zero
12 if num < 0:
13     print("Sorry, factorial does not exist for negative numbers")
14 elif num == 0:
15     print("The factorial of 0 is 1")
16 else:
17     for i in range(1,num + 1):
18         factorial = factorial*i
19     print("The factorial of",num,"is",factorial)
20

```

Click Save, then close tab to close File Editor.



LSU HPC OnDemand

Files ▾ Jobs ▾ Clusters ▾ Interactive Apps ▾

Home Directory
/work/mtiger
Utilities
Allocation balances
Disk quotas

Announcement
please see

ing will be held Wednesday, March 4 at 9:00am. For more details

**HIGH PERFORMANCE
COMPUTING**

OnDemand provides an integrated, single access point for all of your HPC resources.

Message of the Day

Welcome to the LSU HPC OnDemand portal!

With the OnDemand web portal, you can:

- Manage, download and upload files to the HPC systems (click links in the "Files" on the top of this page)
- [Check allocation balances](#)
- [Check disk usage and quotas](#)

Allocation balances

Open OnDemand / Allocation Balances

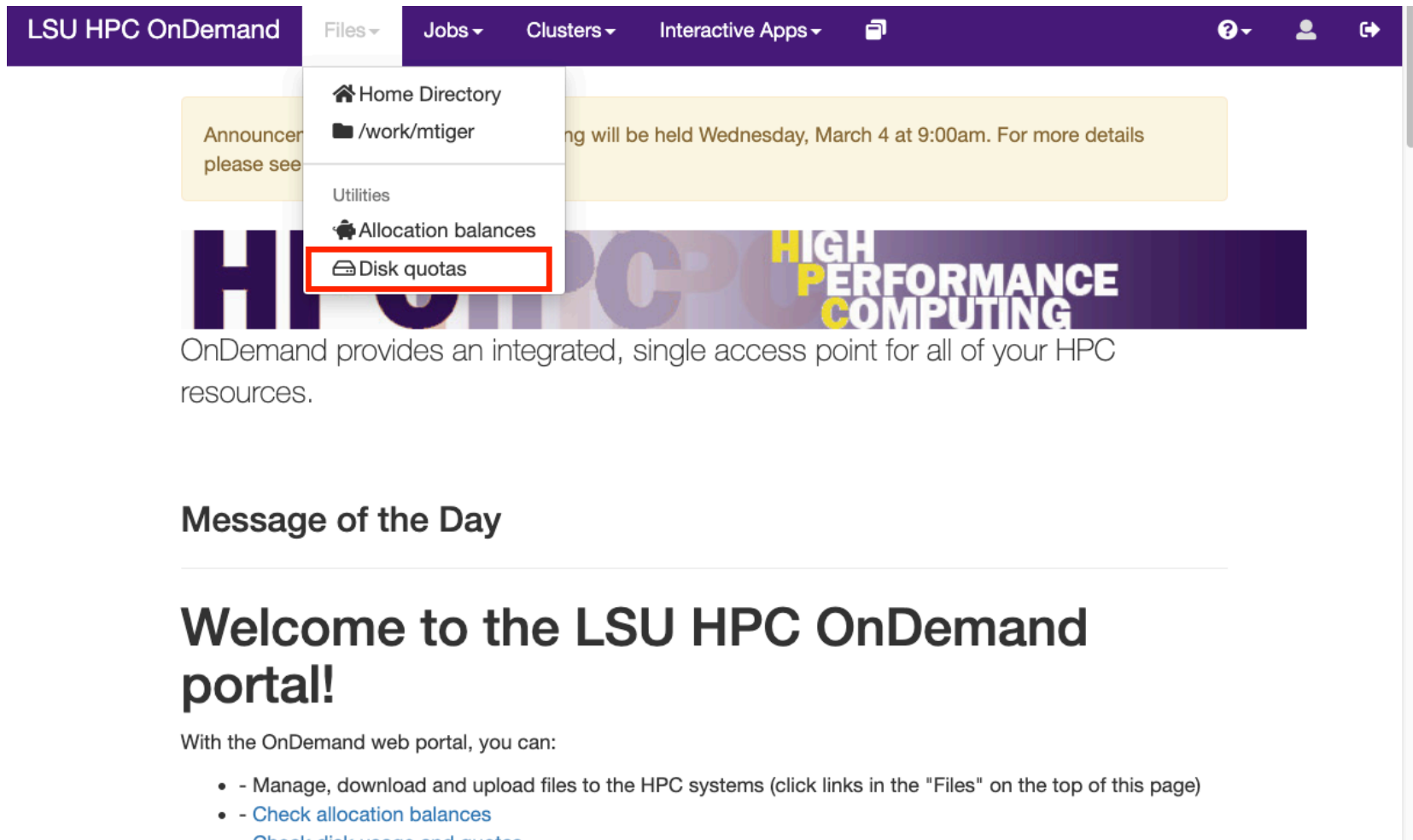
Allocation Balances

Output generated: 2020-03-03 13:09:10 -0600

```
$ /usr/local/bin/balance
```

Allocation name	Remaining balance (CPU-hours)	Deposited (CPU-hours)	Used (%)	Expiration date	Days left
hpc_startup_mtiger	1993.84	2000.00	0.31	2021-01-01	303

Allocation Balances (close tab when done)



LSU HPC OnDemand

Files ▾ Jobs ▾ Clusters ▾ Interactive Apps ▾

Home Directory
/work/mtiger
Utilities
Allocation balances
Disk quotas

Announcement
please see

ing will be held Wednesday, March 4 at 9:00am. For more details

HIGH PERFORMANCE COMPUTING

OnDemand provides an integrated, single access point for all of your HPC resources.

Message of the Day

Welcome to the LSU HPC OnDemand portal!

With the OnDemand web portal, you can:

- Manage, download and upload files to the HPC systems (click links in the "Files" on the top of this page)
- [Check allocation balances](#)
- [Check disk usage and quotas](#)

Disk quotas

Open OnDemand / Showquota

Showquota

Output generated: 2020-03-03 13:11:38 -0600

```
$ /usr/local/bin/showquota
```

Filesystem	Mbytes used	Mbytes quota	Files	Files quota
/home	2	5000	416	Unlimited
/work	0	Unlimited	1	4000000

Showquota (close tab when finished)

LSU HPC OnDemand
Files
Jobs
Clusters
Interactive Apps

Active Jobs
Job Composer

Announcement: Open... held Wednesday, March 4 at 9:00am. For more details please see [HPC@LSU training](#)

HPCHPC HIGH PERFORMANCE COMPUTING

OnDemand provides an integrated, single access point for all of your HPC resources.

Message of the Day

Welcome to the LSU HPC OnDemand portal!

With the OnDemand web portal, you can:

- Manage, download and upload files to the HPC systems (click links in the "Files" on the top of this page)
- [Check allocation balances](#)
- [Check disk usage and quotas](#)

Active Jobs

Your Jobs ▾

All Clusters ▾

Active Jobs

Show entries

Filter:

	ID	Name	User	Account	Time Used	Queue	Status	Cluster
>	111771...	sys/dashboard/sys/jupyter	mtiger	hpc_hp...	00:01:08	single	Running	Super...

Showing 1 to 1 of 1 entries

Previous

1

Next

Active Jobs (close tab when finished)

LSU HPC OnDemand / Job Composer
Jobs
Templates
Help

Jobs

+ New Job

From Default Template
From Template
From Specified Path
From Selected Job

☆ Create Template

Open Terminal
Submit
Stop
Delete

Search:

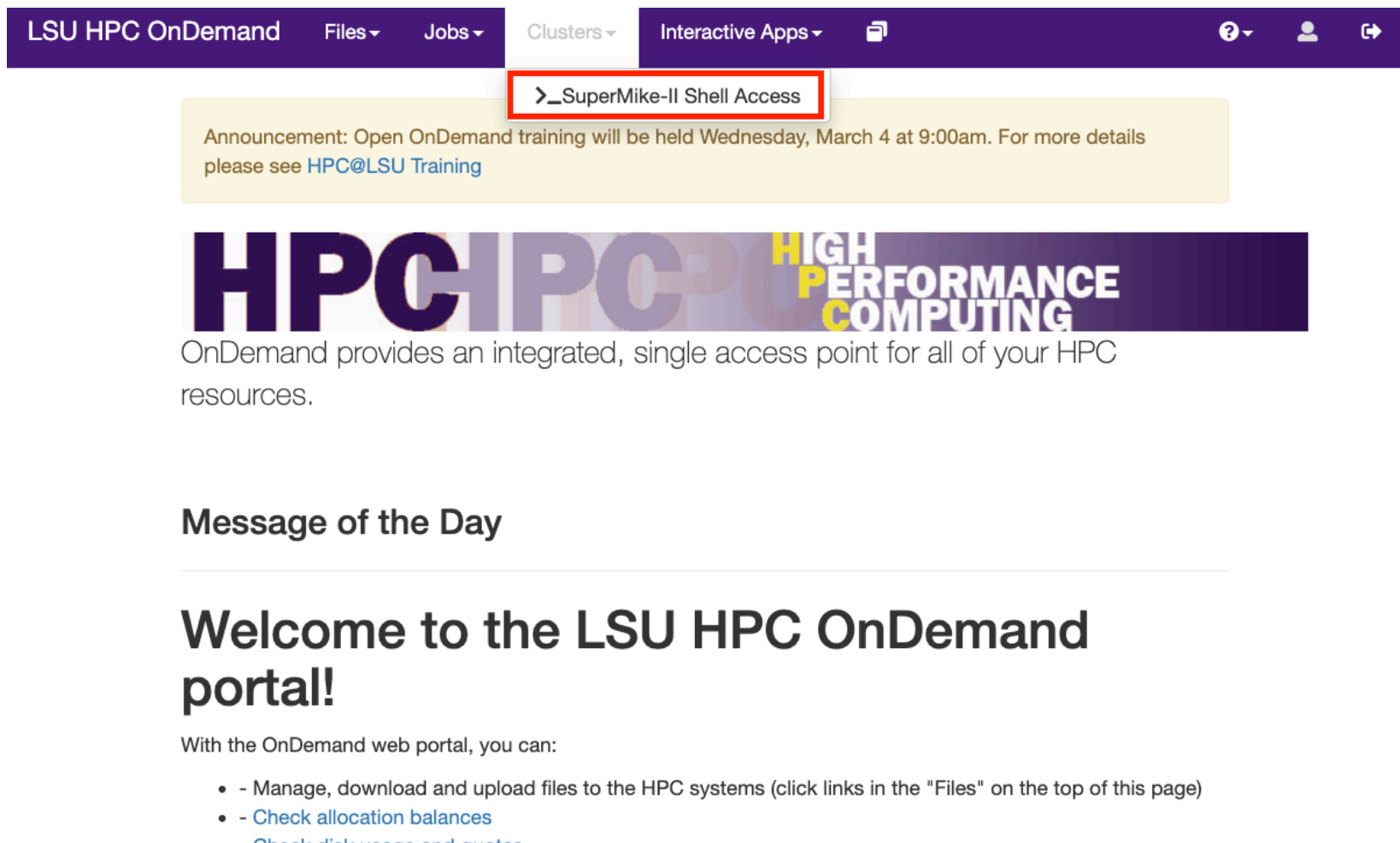
Created
Name
ID
Cluster
Status

No data available in table

Showing 0 to 0 of 0 entries

Previous
Next

Job Composer (for experienced HPC users)



The screenshot shows the LSU HPC OnDemand portal. The top navigation bar is purple with white text for 'LSU HPC OnDemand', 'Files', 'Jobs', 'Clusters', and 'Interactive Apps'. A red box highlights the '>_SuperMike-II Shell Access' link under the 'Clusters' menu. Below the navigation bar is a yellow announcement box stating: 'Announcement: Open OnDemand training will be held Wednesday, March 4 at 9:00am. For more details please see [HPC@LSU Training](#)'. The main content area features a large banner with the text 'HPC HIGH PERFORMANCE COMPUTING' and a description: 'OnDemand provides an integrated, single access point for all of your HPC resources.' Below this is a section titled 'Message of the Day' with the heading 'Welcome to the LSU HPC OnDemand portal!'. A sub-header reads 'With the OnDemand web portal, you can:', followed by a bulleted list: '- Manage, download and upload files to the HPC systems (click links in the "Files" on the top of this page)', '- [Check allocation balances](#)', and '- [Check disk usage and quotas](#)'.

Opening a Shell (will open in new tab)

```

Last login: Thu Feb 27 10:50:39 2020 from miked
#####
Send questions and comments to the email ticket system at sys-help@loni.org.
#####

SuperMike-II at LSU (Open for general use)

1-Dec-2012

SuperMike-II is a 146 TFlops Peak Performance, 440 node, 16 processor Red Hat
Enterprise Linux 6 cluster from Dell with 2.6 GHz Intel Xeon 64-bit processors
and 32 GB RAM per node. GPUs and additional memory are available on some nodes.
This cluster is for authorized users only. Access is restricted
to those who meet the criteria as specified in the policy document.

1-Feb-2013

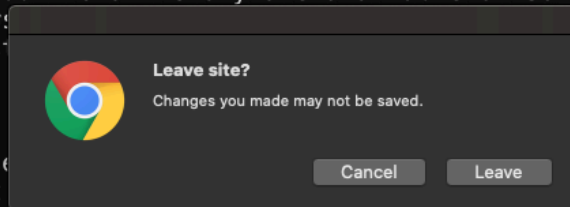
SuperMike-II is open for general use. For more information, contact the email ticket
system at sys-help@loni.org so that you can get the most out of the system.

Quotas for the /home volume are enabled at 5 GB. Please do
not use the /home volume for batch job I/O, use the /work volume
instead. Please limit the number of files per directory to 10,000.
No disk GB quotas are in effect for the /work volume, but files are purged that
are older than 60 days. There are quotas on file counts. Manage your files,
but it is against our policy to blatantly circumvent the purge procedure.
Misconfigured jobs that are wasting CPU resources are subject to deletion.

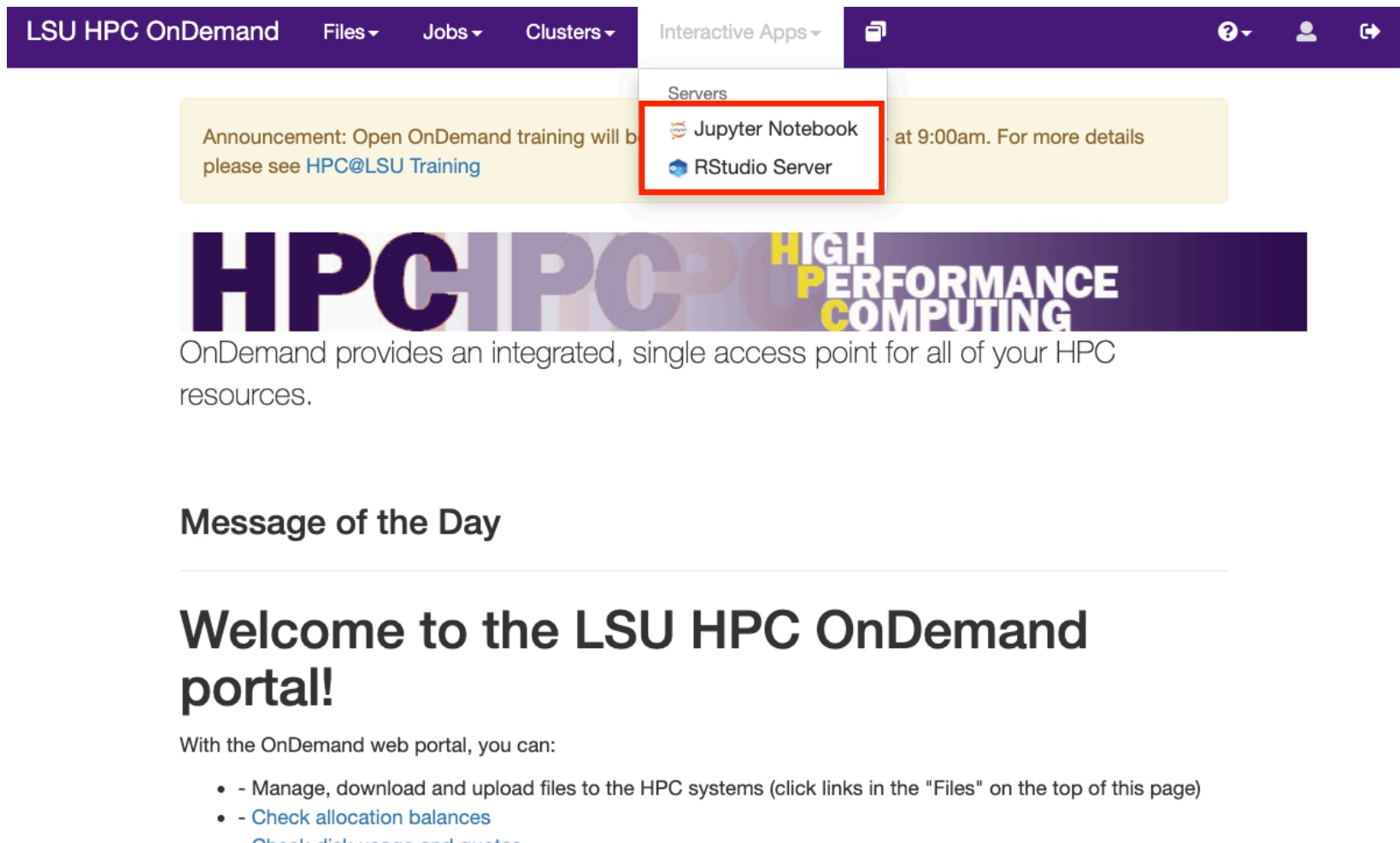
*****
Allocations are required. Using the -A qsub option to specify your allocation.
*****

-sh-4.1$ █

```



Shell (close tab to exit, ignore the warning message)



LSU HPC OnDemand Files Jobs Clusters Interactive Apps

Servers

Jupyter Notebook

RStudio Server

Announcement: Open OnDemand training will be held on Monday, June 1st, at 9:00am. For more details please see [HPC@LSU Training](#)

HPC

HIGH PERFORMANCE COMPUTING

OnDemand provides an integrated, single access point for all of your HPC resources.

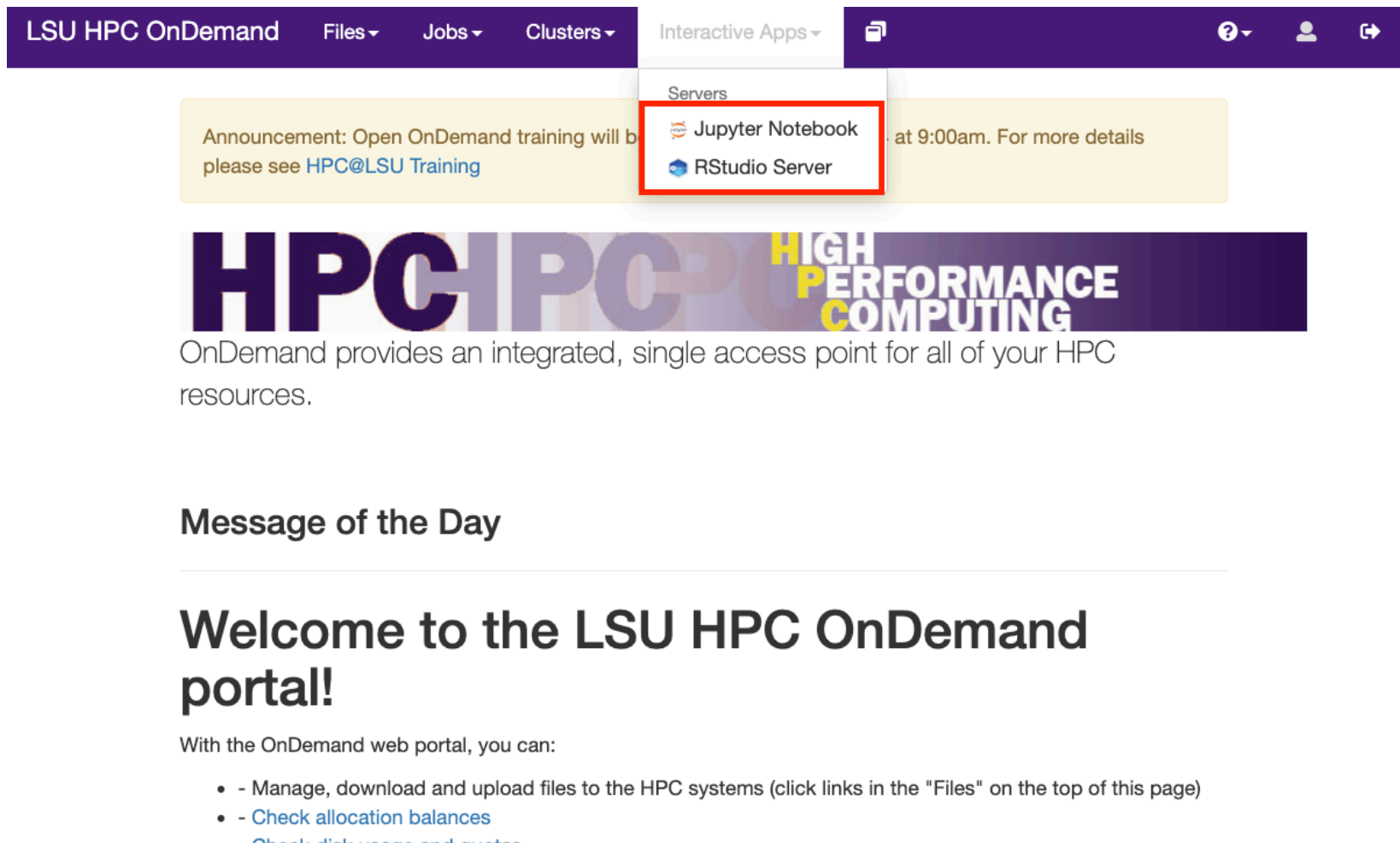
Message of the Day

Welcome to the LSU HPC OnDemand portal!

With the OnDemand web portal, you can:

- Manage, download and upload files to the HPC systems (click links in the "Files" on the top of this page)
- [Check allocation balances](#)
- [Check disk usage and quotas](#)

Choose either Jupyter Notebook or RStudio Server



LSU HPC OnDemand Files Jobs Clusters Interactive Apps

Servers

Jupyter Notebook

RStudio Server

Announcement: Open OnDemand training will be held on [Monday, June 1st](#) at 9:00am. For more details please see [HPC@LSU Training](#)

HPC HIGH PERFORMANCE COMPUTING

OnDemand provides an integrated, single access point for all of your HPC resources.

Message of the Day

Welcome to the LSU HPC OnDemand portal!

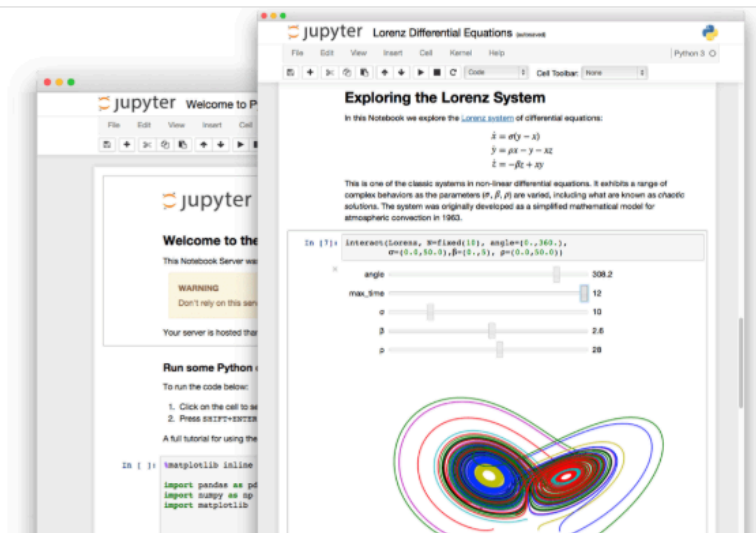
With the OnDemand web portal, you can:

- Manage, download and upload files to the HPC systems (click links in the "Files" on the top of this page)
- [Check allocation balances](#)
- [Check disk usage and quotas](#)

Choose either Jupyter Notebook or RStudio Server



[Install](#)
[About Us](#)
[Community](#)
[Documentation](#)
[NBViewer](#)
[JupyterHub](#)
[Widgets](#)
[Blog](#)



The Jupyter Notebook

The Jupyter Notebook is an open-source web application that allows you to create and share documents that contain live code, equations, visualizations and narrative text. Uses include: data cleaning and transformation, numerical simulation, statistical modeling, data visualization, machine learning, and much more.

[Try it in your browser](#)

[Install the Notebook](#)



Language of choice

Jupyter supports over 40 programming languages, including Python, R, Julia, and Scala.



Share notebooks

Notebooks can be shared with others using email, Dropbox, GitHub and the [Jupyter Notebook Viewer](#).



Interactive output

Your code can produce rich, interactive output: HTML, images, videos, LaTeX, and custom MIME types.



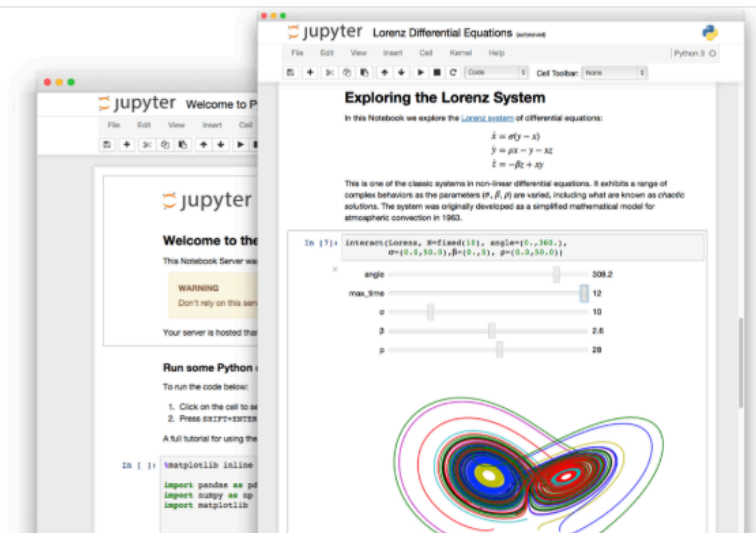
Big data integration

Leverage big data tools, such as Apache Spark, from Python, R and Scala. Explore that same data with pandas, scikit-learn, ggplot2, Tableau.

jupyter.org



[Install](#)
[About Us](#)
[Community](#)
[Documentation](#)
[NBViewer](#)
[JupyterHub](#)
[Widgets](#)
[Blog](#)



The Jupyter Notebook

The Jupyter Notebook is an open-source web application that allows you to create and share documents that contain live code, equations, visualizations and narrative text. Uses include: data cleaning and transformation, numerical simulation, statistical modeling, data visualization, machine learning, and much more.

[Try it in your browser](#)

[Install the Notebook](#)



Language of choice

Jupyter supports over 40 programming languages, including Python, R, Julia, and Scala.



Share notebooks

Notebooks can be shared with others using email, Dropbox, GitHub and the [Jupyter Notebook Viewer](#).



Interactive output

Your code can produce rich, interactive output: HTML, images, videos, LaTeX, and custom MIME types.



Big data integration

Leverage big data tools, such as Apache Spark, from Python, R and Scala. Explore that same data with pandas, scikit-learn, ggplot2, Tableau.

jupyter.org



DOWNLOAD SUPPORT COMMUNITY 

Products ▾ Resources ▾ Pricing About ▾ Blogs ▾

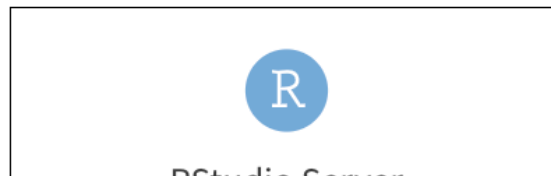
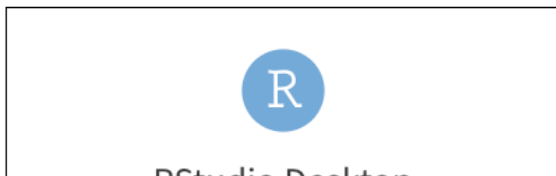
RStudio

Take control of your R code

RStudio is an integrated development environment (IDE) for R. It includes a console, syntax-highlighting editor that supports direct code execution, as well as tools for plotting, history, debugging and workspace management. [Click here to see more RStudio features.](#)

RStudio is available in **open source** and **commercial** editions and runs on the desktop (Windows, Mac, and Linux) or in a browser connected to RStudio Server or RStudio Server Pro (Debian/Ubuntu, Red Hat/CentOS, and SUSE Linux).

There are two versions of RStudio:



RStudio



DOWNLOAD SUPPORT COMMUNITY 

Products ▾ Resources ▾ Pricing About ▾ Blogs ▾

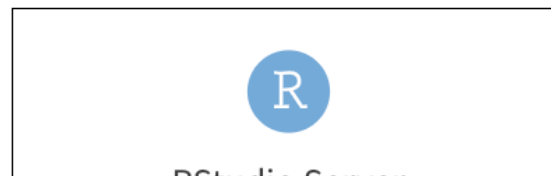
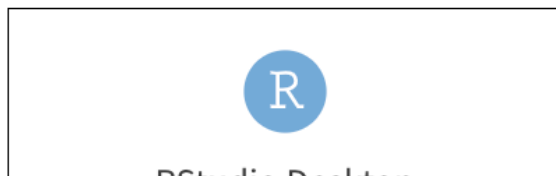
RStudio

Take control of your R code

RStudio is an integrated development environment (IDE) for R. It includes a console, syntax-highlighting editor that supports direct code execution, as well as tools for plotting, history, debugging and workspace management. [Click here to see more RStudio features.](#)

RStudio is available in **open source** and **commercial** editions and runs on the desktop (Windows, Mac, and Linux) or in a browser connected to RStudio Server or RStudio Server Pro (Debian/Ubuntu, Red Hat/CentOS, and SUSE Linux).

There are two versions of RStudio:



RStudio

Thanks!

For more information, email
sys-help@loni.org

