

# SciServer How To's

06/20/2018

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# 1. Account Management

## 1.1. “How do I register a new account?”

- Goto the following page <insert link>

### Welcome

[SciServer Data Storage and Non-Commercial Use Policy.](#)

User name

Password

Sign in

[Create a new account](#)

[Forgot your password?](#)

- Click the “Create a new account” link

### Registration

[By registering you agree to the SciServer Data Storage and Non-Commercial Use Policy.](#)

User name

Email

Password

Confirm password

Create account

- At the Registration page, enter the following:

- Username
  - Email
  - Password (twice)
- Then click “Create Account” which will send you an email and take you to a Validation page, where you enter your verification code:

Validation code was sent to your email. It will expire in 1.0 minutes. For additional assistance, please email [sciserver-helpdesk@jhu.edu](mailto:sciserver-helpdesk@jhu.edu).

## Registration

By registering you agree to the [SciServer Data Storage and Non-Commercial Use Policy](#).

Validation code

Complete account creation

- Click “Complete account creation”
- Then you can go back to the Login Page to access your new account!

### 1.2. “How do I Login?”

- Go to the following page and enter your username and password

## Welcome

[SciServer Data Storage and Non-Commercial Use Policy](#).

User name

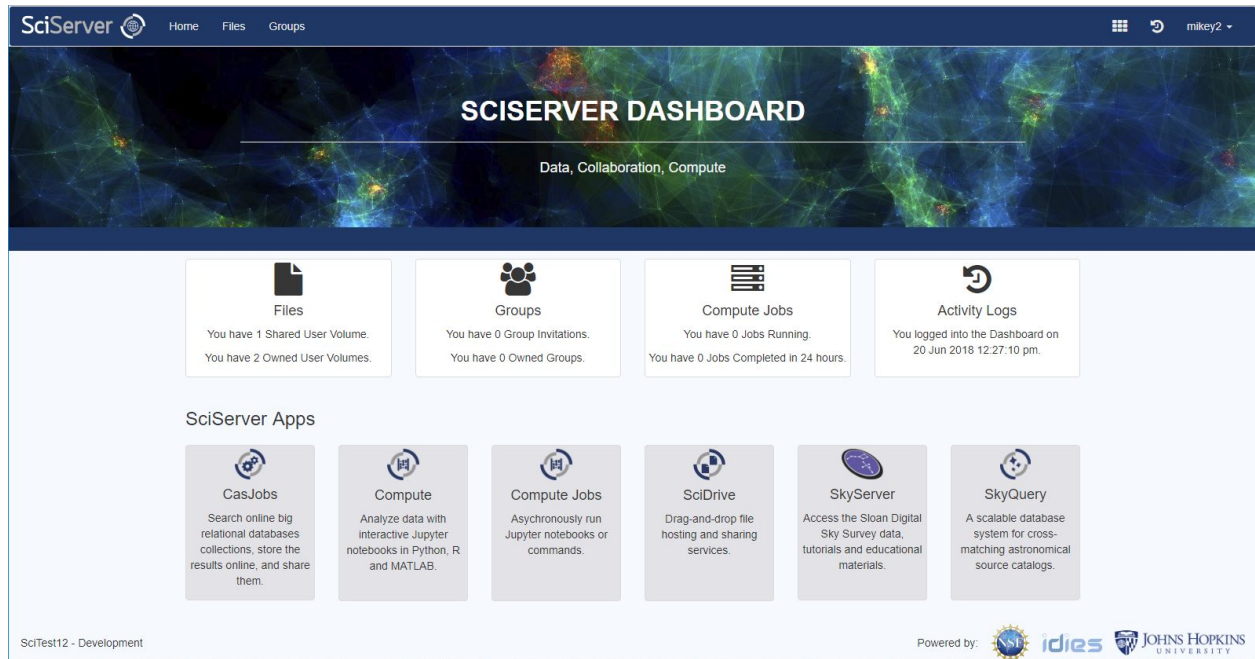
Password

Sign in

[Create a new account](#)

[Forgot your password?](#)

- Press the “sign in” button to Access your account!
- You will be taken to the SciServer Dashboard:



### 1.3. “I have forgotten my password, how do I reset it?”

- Go to the Login Page <link>

#### Welcome

[SciServer Data Storage and Non-Commercial Use Policy.](#)

User name

Password

[Sign in](#)

[Create a new account](#)

[Forgot your password?](#)

- Click the link “Forgot your password?”
- This will take you to the Reset Password page:

#### Reset password

User name

Or...

User email

[Submit](#)

- Enter either your Username or your Email, and press the Submit button.
- This will take you to a page to reset your password, which you type in twice:

Validation code was sent to your email. It will expire in 1.0 minutes. For additional assistance, please email [support@sciserver.org](#).

## Change password

**New password**

**Confirm password**

Please enter the same value again.

**Validation code**

**Submit**

- You will also be sent a verification code to the registered email address that you also need to enter.
- Press the “Submit” button and your password will be reset!

## 1.4. “How do I Change my Password”

- Got to the SciServer Dashboard:

SciServer Dashboard

Data, Collaboration, Compute

**Files**  
You have 1 Shared User Volume.  
You have 2 Owned User Volumes.

**Groups**  
You have 0 Group Invitations.  
You have 0 Owned Groups.

**Compute Jobs**  
You have 0 Jobs Running.  
You have 0 Jobs Completed in 24 hours.

**Activity Logs**  
You logged into the Dashboard on  
20 Jun 2018 12:27:10 pm.

**SciServer Apps**

**CasJobs**  
Search online big relational databases collections, store the results online, and share them.

**Compute**  
Analyze data with Interactive Jupyter notebooks in Python, R and MATLAB.

**Compute Jobs**  
Asynchronously run Jupyter notebooks or commands.

**SciDrive**  
Drag-and-drop file hosting and sharing services.

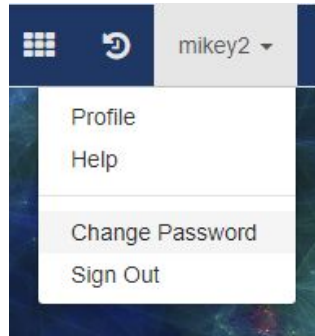
**SkyServer**  
Access the Sloan Digital Sky Survey data, tutorials and educational materials.

**SkyQuery**  
A scalable database system for cross-matching astronomical source catalogs.

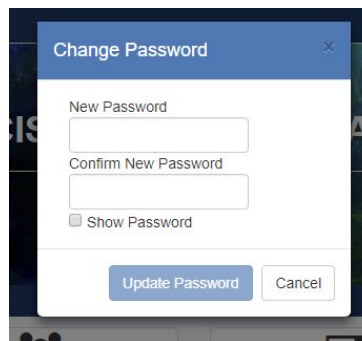
SciTest12 - Development

Powered by: NSF IDIES JOHNS HOPKINS UNIVERSITY

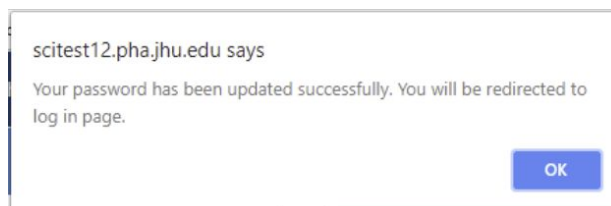
- Access the Menu in the top right hand side corner:



- Select “Change Password” which will display the “Change Password” dialog box:



- Enter your new password (twice) and press the “Update Password” button
- This will change your password, and then display a message that you will be redirected to the Login Page to re-login

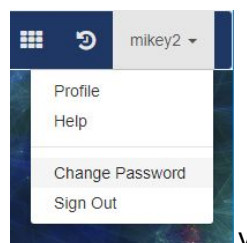


- You will then need to re-login to access your account again.

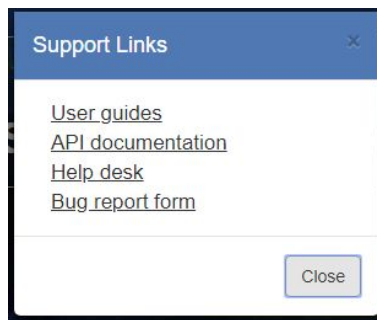
## 2. SciServer Help

### 2.1. “Where can I find Help Documentation?”

- Access the Menu in the top RHS corner:



- Select “Help” to display a small dialog with a number of links:

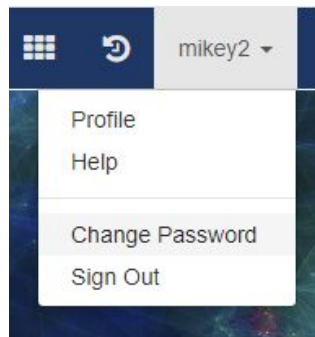


- Here you can find “User Guides”, “API Documentation” and “Help Desk”

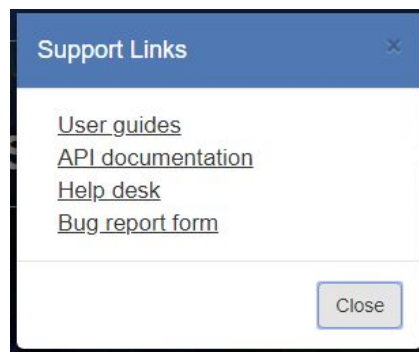
## 2.2. “How do I report a Bug or Issue?”

- Access the Menu in the top RHS corner:

-



- Select “Help” to display a small dialog with a number of links:



- Here you can find “Bug Report Form”
- Select this and it will open a new Web Page on the sciserver.org website:

## Feedback & Bug Report Form

We are always looking for feedback on our tools, documentation, and other resources. If you notice any bugs, have any suggestions, or have any questions for the team, please fill out the form below. We will get back to you by email with more information.

### Bug Report and Suggestion Form

Fields marked with an \* are required

Thank you for participating in the SciServer Early Adopters program!

Please fill out the form below to submit a bug report, feature request, or question to the SciServer team.

**Name \***

**Email \***

**Title \***

A short descriptive title

**Severity**

**Category**

**Page**

What webpage were you using when you experienced the issue? Paste the URL here.

## Support

[Overview](#)

[Release Notes](#)

[Known Issues](#)

[Help](#)

[Policies](#)

### Feedback & Bug Report Form

[API Documentation](#)

[Contact & Details](#)

### Connections

[Join Our Email List for News about Events, Updates, and more!](#)

[Question or Comments? Please Email Us!](#)

[Found a Bug? Need a Feature? Let us know!](#)

## 3. Dashboard

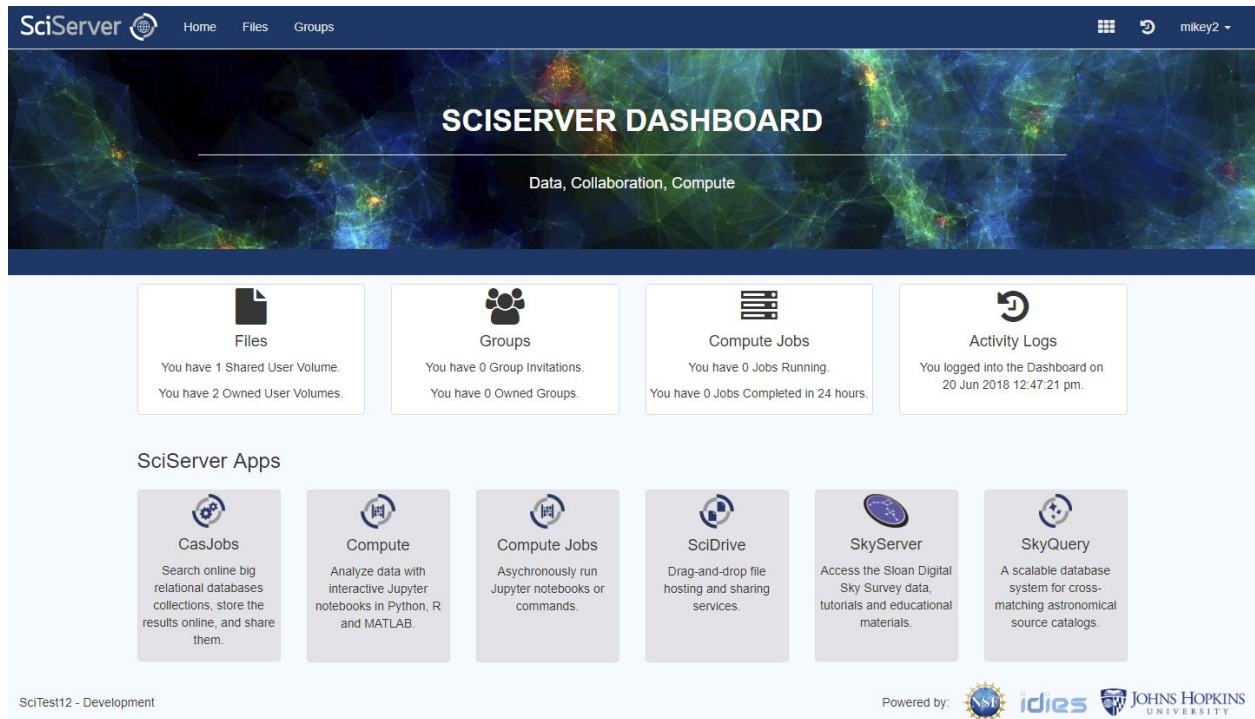
### 3.1. “What is the SciServer Dashboard?”

The SciServer Dashboard is the application that allows users to manage the work they are doing with SciServer and the other applications available. A user will be sent to the Dashboard Home Page after logging in from the Login Portal, and can navigate back to the Dashboard from most other SciServer Applications via shortcuts.

#### Home Page






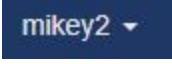
The Homepage for the Dashboard looks like this:





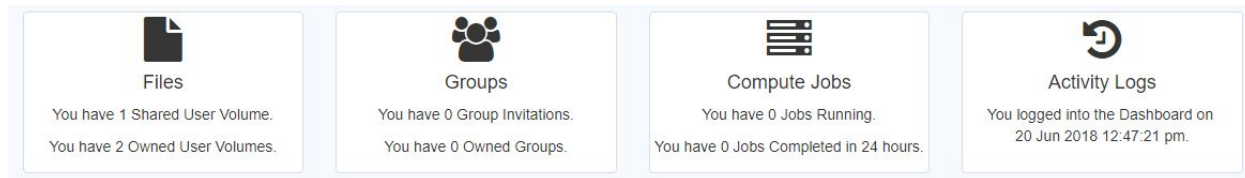
## Menu and Functions

The Dashboard has a main “Menu Bar” across the top which is always visible in all views of the Dashboard, providing access to the following core features:

-  **Home** Brings the user back to the Home Page
-  **Files** Navigates the User to a Tab to manage Files and Folders
-  **Groups** Navigates the User to a Tab to manage user defined Groups and sharing
-  Displays a pop-up menu allowing the User to launch any of the supporting SciServer Applications (Home, Compute, Compute Jobs, CasJobs, SciDrive, SkyServer, SkyQuery)
-  Navigates the User to a tab displaying a tabular summary of the history of their activity with SciServer functions and applications
-  **mikey2** A Menu dropdown that displays additional options for the user (access Profile, Access Help, Change Password, Sign Out)

## Function Shortcuts

A set of shortcuts are displayed to access the many functions in the Dashboard application itself:



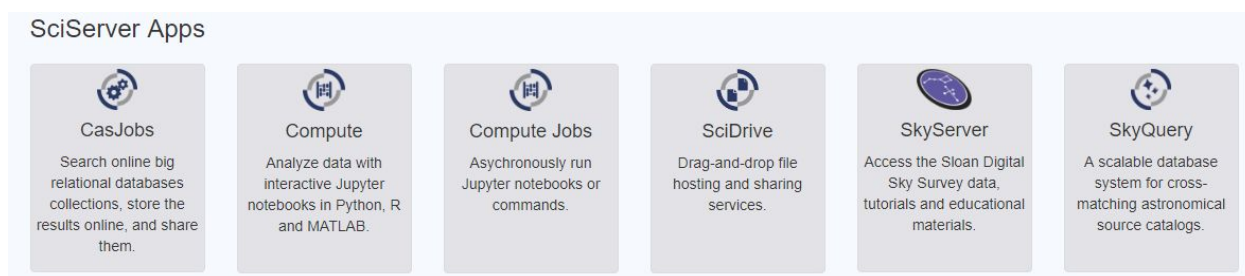
In particular the User can access:

- Files
- Groups
- Compute Jobs
- Activity Logs

Each of these shortcuts also displays information about recent activity on, or notifications about, each function.

### ***Application Shortcuts***

A second row of shortcuts allows the User to launch



Each of these shortcuts will launch a separate web app in a separate Browser tab.

Note that “Compute Jobs” is in both shortcut lists.

## **4. User Activities**

### **4.1. “How do I View My Recent Activities?”**

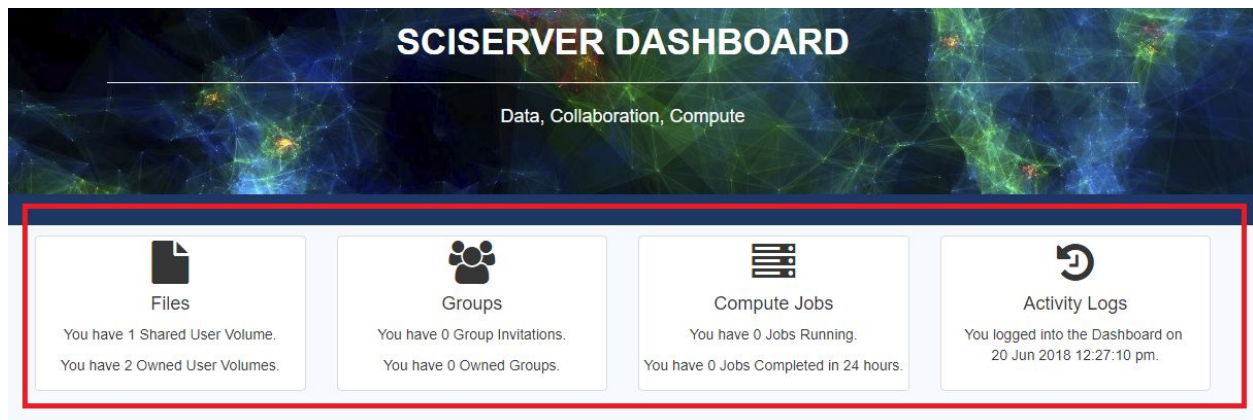
SciServer provides two ways to view your recent activities:

- The Dashboard displays the most recent activity related to File Management, Group Management, and Job Execution
- A separate “Activity View” accessible from the main Menu in the RHS corner provides a detailed table of all logged activities within SciServer, with filtering and sorting.


#### ***Dashboard Activity Summary***

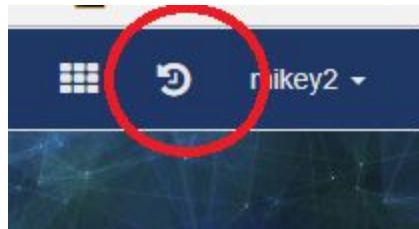
- On the main dashboard, a summary of Jobs, Groups and Files is provided as shown below

- In particular, Invites to New Group are shown, that the User can select to take them to the Groups tab in SciServer




## Activities Table

- Access the top RHS menu bar and click the  icon:



- This will display the Activities table:

Home Files Groups																													
<div> <div>Filter</div> <div> <div>Start date</div> <div>End date</div> <div>Activities</div> <div>100</div> <div>SciServer Applications</div> <div> <div>skyserver</div> <div>casjobs</div> <div>jobs</div> <div>fileservice</div> </div> <div>Filter Clear All</div> </div> </div>																													
<div>Activity Log </div> <div> <div>Rows 10 per page</div> <div>Search:</div> </div> <table> <thead> <tr> <th>Applications</th><th>Activities</th><th>Time</th></tr> </thead> <tbody> <tr> <td>LoginPortal</td><td>logged into the Login Portal</td><td>24 May 2018 12:00:49 pm</td></tr> <tr> <td>LoginPortal</td><td>changed SciServer account password</td><td>24 May 2018 11:59:32 am</td></tr> <tr> <td>LoginPortal</td><td>logged into the Login Portal</td><td>24 May 2018 11:52:39 am</td></tr> <tr> <td>LoginPortal</td><td>changed SciServer account password</td><td>24 May 2018 11:51:09 am</td></tr> <tr> <td>LoginPortal</td><td>requested resetting SciServer account password</td><td>24 May 2018 11:50:12 am</td></tr> <tr> <td>LoginPortal</td><td>logged out from the Login Portal</td><td>24 May 2018 11:49:08 am</td></tr> <tr> <td>LoginPortal</td><td>logged into the Login Portal</td><td>24 May 2018 11:44:37 am</td></tr> <tr> <td>LoginPortal</td><td>registered a SciServer account</td><td>24 May 2018 11:44:37 am</td></tr> </tbody> </table> <div> <div>Showing 21 to 28 of 28 entries</div> <div> <div>Previous</div> <div>1</div> <div>2</div> <div>3</div> <div>Next</div> </div> </div>			Applications	Activities	Time	LoginPortal	logged into the Login Portal	24 May 2018 12:00:49 pm	LoginPortal	changed SciServer account password	24 May 2018 11:59:32 am	LoginPortal	logged into the Login Portal	24 May 2018 11:52:39 am	LoginPortal	changed SciServer account password	24 May 2018 11:51:09 am	LoginPortal	requested resetting SciServer account password	24 May 2018 11:50:12 am	LoginPortal	logged out from the Login Portal	24 May 2018 11:49:08 am	LoginPortal	logged into the Login Portal	24 May 2018 11:44:37 am	LoginPortal	registered a SciServer account	24 May 2018 11:44:37 am
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## 5. Group Management

### 5.1. “What can I do with the ‘Groups’ feature in SciServer?”

SciServer provides a feature called ‘Groups’ for users to share their resources with their collaborators privately. The resources that users can share are file folders, databases, volume containers, and Docker images. Also SciServer provides a Group view which lists all the shared resources among group members.

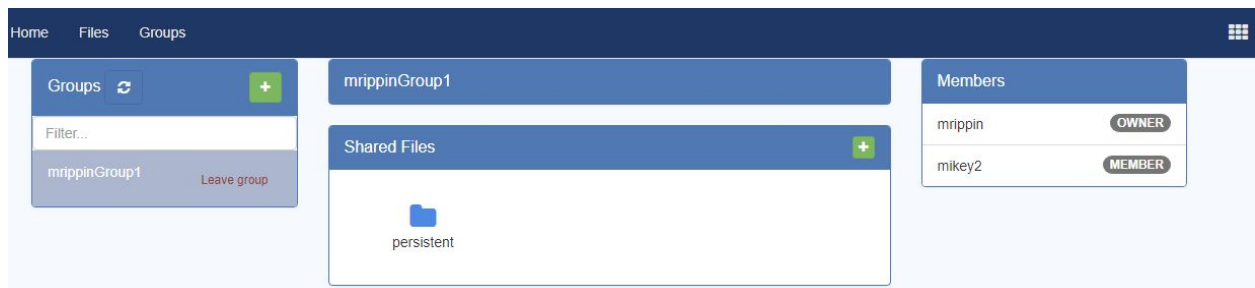
SciServer Groups allow you to create lists of Users and to share resources, such as file Folders, to all of them at once. You can manage a team of people in a project by creating a group with the relevant users in, and allowing everyone to work from the same shared folder. Importantly, you can also make sure that no one who is not in the group can access the shared folder, so you can keep things private.

### 5.2. “How do I create a new Group?”

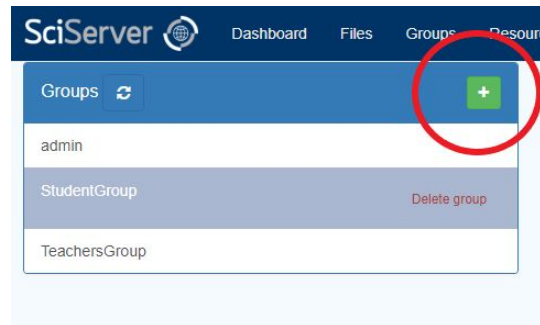
- Select the Groups tab in SciServer:



- This will show the Groups View:

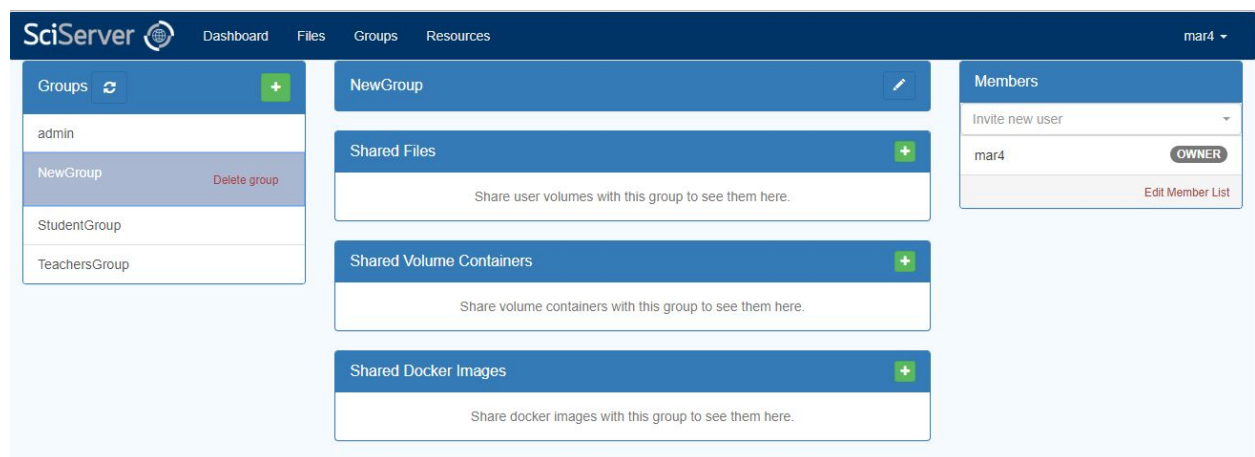


- The left hand box will show you all the groups that you are a member of. As you select each one, the middle set of boxes will show you which resources have been shared with that group, and the right hand box will show you all the members in the group.
- To Create a New Group, click the “+” button on the LHS “Groups” box:



- This will open the “New Group” dialog box:

- Enter a name for the Group and an optional Description, then press the “Create” button. This will show your new Group in the “Groups” box, and will show you as the only member in the RHS box:

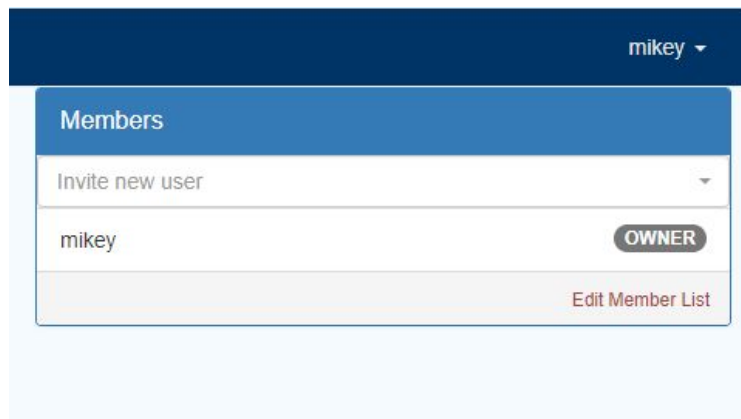


- This is your new group!

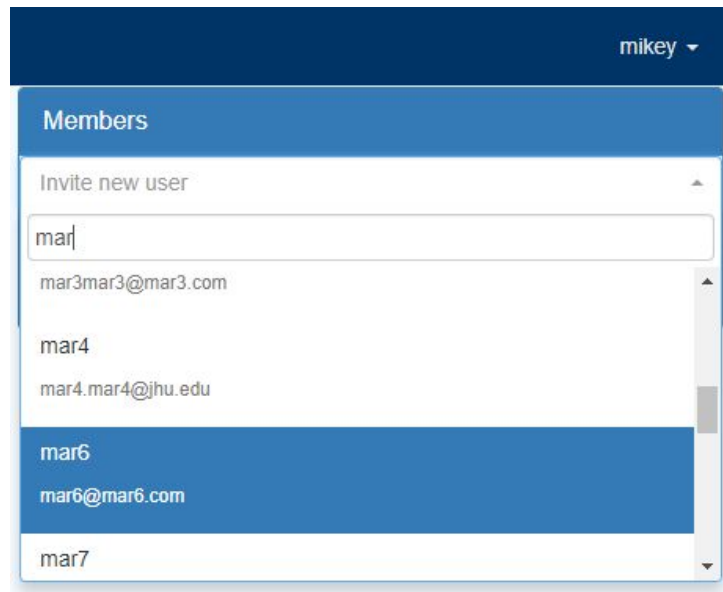
### 5.3. “How Do I Invite Users to a Group?”

- You can only **invite** users to a group that you own, or that someone else has given you the “grant” privilege on.

- In the groups view, go to the “members” box on the right hand side:



- In the box “Invite New User”, start to type in the names of users to invite. This will create a drop down filtered by what you enter, so pick the name that is correct.



- You will be given the option to Grant this user the ability to edit the group and invite other people:

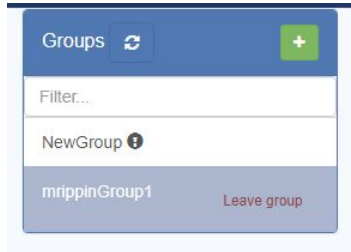
- Do this for all users you want to add.
- NOTE: This will **invite** the users. They will need to accept the invitation before being a member of the group:

#### 5.4. “How do I Accept a Group Invite?”

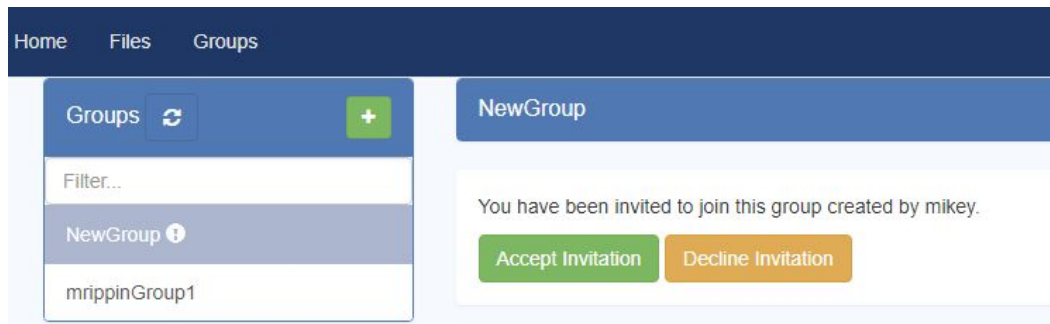
- On the Dashboard tab, you will see an Invite:

- Select the Groups tab, and you will the Group listed with an icon next to it:






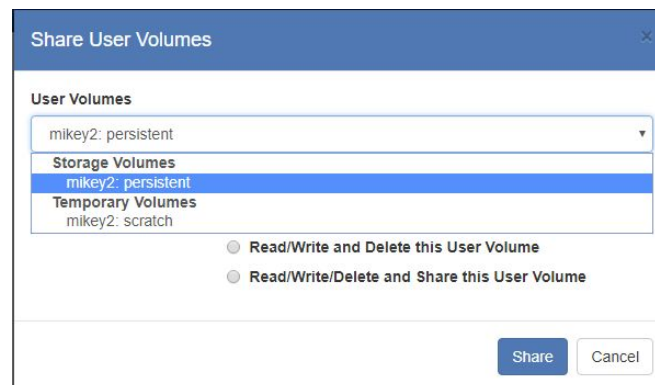
- Select the group and you will see an option to accept the invitation:



- Select “Accept Invitation”, and you will join the group and be able to access it.

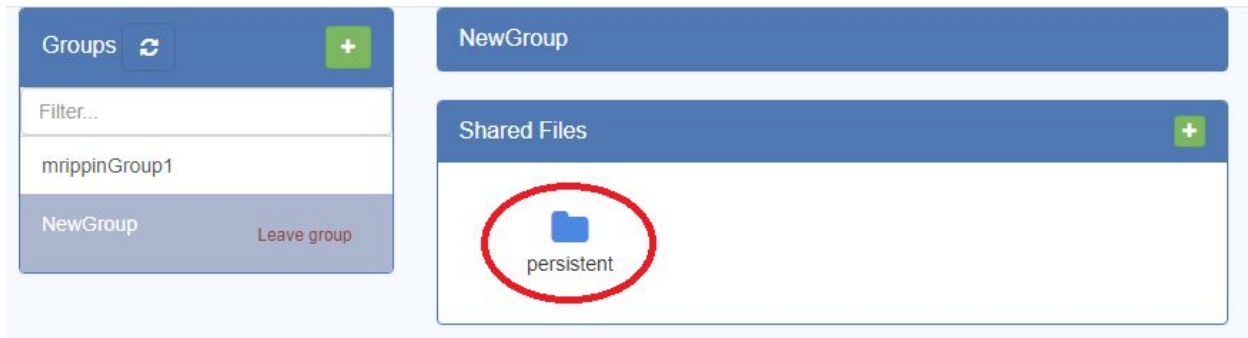
## 5.5. “How do I Share Resources with a Group?”

- In the Groups Tab, selecting any of the groups on the left hand panel will show the resources already shared with that group. Resources that can be shared are: (1) File Folders (2) Compute Docker Images (3) Compute Volume Containers (4) Databases 9in some circumstances). It will only show each box if there are any resources that you are able to share.
- Each of these resources is shared in a separate box, and each has a  button.
- Pressing this will display a dialog box where you can select resources that you have access to:



- Select the resource and permission level, then press “Share” and the resource will appear in the group:





## 6. File Management

### 6.1. “What File Management Capabilities does SciServer provide?”

SciServer provides a number of features for managing files and compute notebooks, all of which will be made available in both the Sciserver dashboard application and in SciServer Compute containers from within Jupyter Notebooks. All the common capabilities of File management are provided, such as renaming, moving, copying etc, but also sharing of “User Volumes” for collaborative work. NOTE: the File Management features provided in the SciServer UI are different to the services provided by SciDrive, which is an older storage system that is still supported for legacy applications.

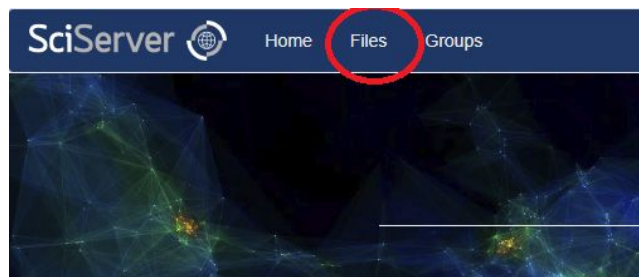
#### ***Permanent or Temporary Storage?***

Users can create a number of top level “User Volumes” under which new folders and files may be added. User Volumes can be created in one of two different storage pools: a permanent pool called “Storage” and a short-lived pool called “Temporary”. Folders and files in User Volumes under “Storage” will be backed up and permanent, but there is a quota limit of 10GB. Folders and files in User Volumes under “Temporary” are not backed up, and will be deleted after a particular time period, but there is no imposed limit or quota on how much data can be stored (because it will be deleted).

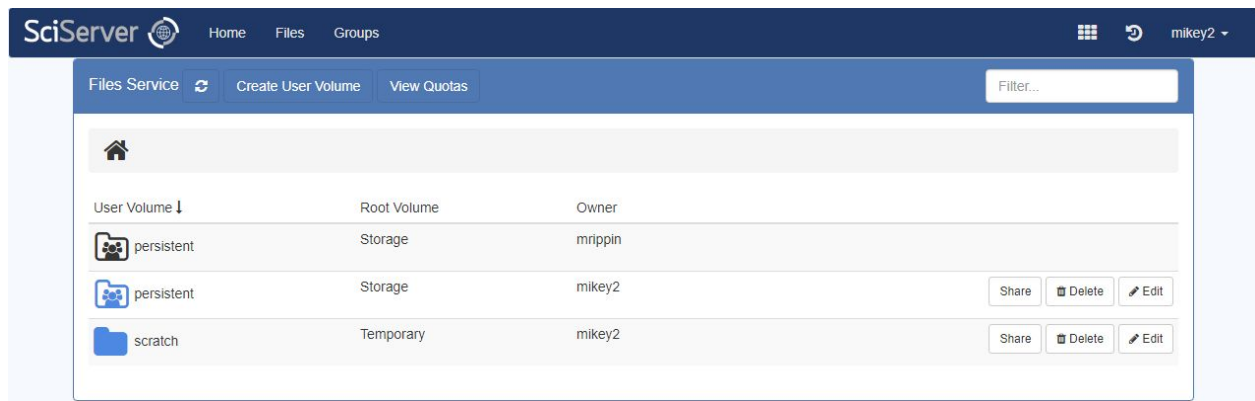
Most users should store their data and files in a “Storage” User Volume. The “Temporary” User Volumes are meant to be used as intermediate storage for SciServer Compute calculations.

#### ***SciServer Dashboard View***


- Login to the SciServer dashboard and select the “Files” tab:




- This will show the Files View at the top level of “User Volumes”:




- There are a number of User Volume operations available in this view
  - **Share**: If the user has the appropriate permissions, they can share a User Volume with other users, or groups of users. A User Volume created by the user is always shareable by them,
  - **Delete**: If the user has the appropriate permissions, they can delete a User Volume. A user can always delete a volume they create.
  - **Edit**: The User Volume name can be changed, and a description provided for it.
- Different icons refer to different levels of sharing:
  - This User Volume is owned by the user, and has not been shared
  - This User Volume is owned by the user, but **has** been shared with another user or group.
  - This User Volume is not owned by the user, but has been shared with the user by another user or group.
- Selecting a Folder in the LHS column will open that folder up, one level at a time. *It does not provide a tree view.*





SciServer  Home Files Groups mikey2 ▾

---

Files Service  View Quotas Filter...

---


 / Storage / mikey2 / persistent Upload New Folder

Folder ↓	Last Modified	Size	
 NSF_Diversity and Inclusion StrategicPlan.pdf	2018-06-20 12:53:12	753.4 KB	Download Copy Rename Move Delete
 Numerical Laboratories.pdf	2018-06-20 12:53:36	718.9 KB	Download Copy Rename Move Delete
 Other	2018-06-20 12:52:58		Copy Rename Move Delete
 SubFolder	2018-06-20 12:52:47		Copy Rename Move Delete

- There are a number of file and folder operations available in this view:
  - Copy
  - Rename
  - Move
  - Delete
  - Download: A file can be downloaded (but a Folder cannot)

### Jupyter Notebook View



- When running SciServer Compute, the same filesystem is presented by the Jupyter application, but is presented in a more traditional hierarchical manner with a full path access that supports working with files in a Linux Console:

 jupyter

---

Files Running Clusters

Select items to perform actions on them. Upload New ▾ 

	
	Storage
	Temporary

Files
Running
Clusters

Select items to perform actions on them.

Upload
New
Refresh

/ Storage / mikey / persistent

..	
FirstPerssitentFolder	
Jobs	
Beginner.ipynb	
ClassManager.ipynb	Running
Examples_SciScript-Python.ipynb	
GroupFunctions-v1-mikey.ipynb	
GroupFunctions-v1.ipynb	Running
tHooft.pdf	

- The operations on files and folders available in this view are provided by Jupyter.

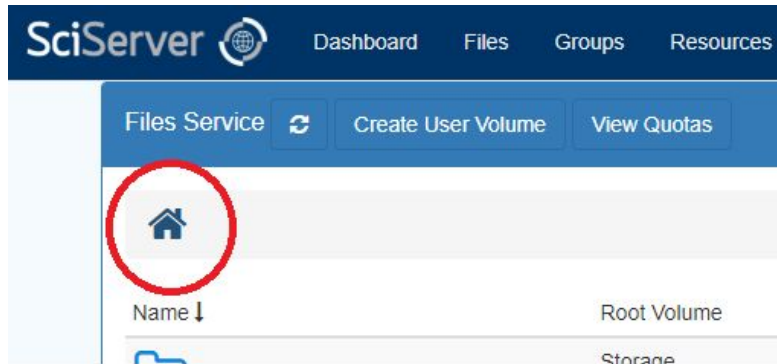
## 6.2. “What is a User Volume? How is that different to a Folder?”

**A User Volume is a top level folder** that is created and owned by a SciServer User. It is different to a ‘normal’ Folder in a few ways:

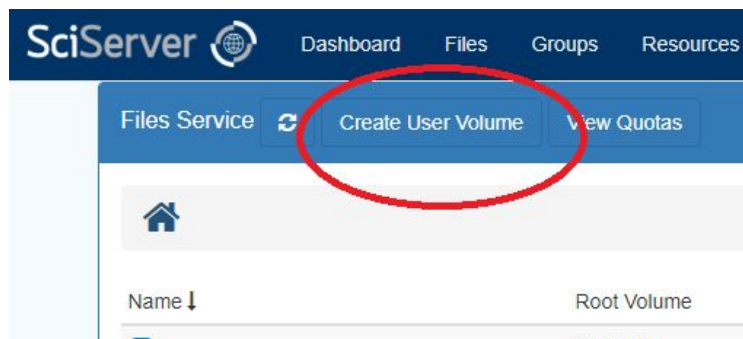
- There is only the one top level of User Volumes, all subsequent lower levels are normal Folders
- A User Volume can be shared with others users and groups, but a normal folder cannot. This is very important.
- A User Volume can be selectively “mounted” in a Compute Container, and made accessible to a Jupyter Notebook. Folders at lower levels under a Volume Container cannot be.
- A User Volume cannot be moved or copied.

## 6.3. “How do I create a new User Volume?”

- On the SciServer “Files” tab, click the “Home” button to get back to the User Volume view:



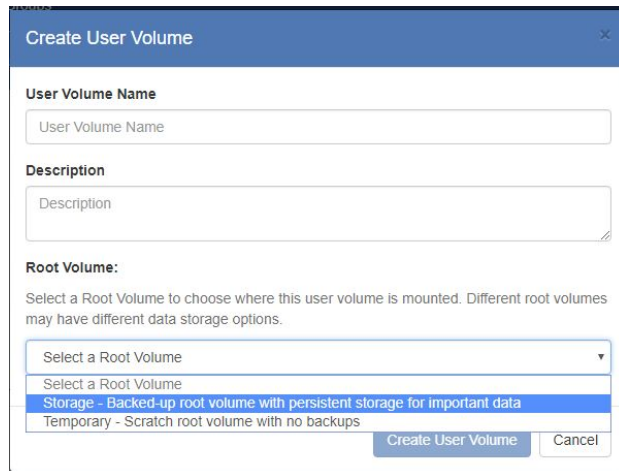
- Press the “Create User Volume” button:



- In the dialog that pops up, enter a name and optional description:

A screenshot of a 'Create User Volume' dialog box. It has a blue header with the title and a close button. The form contains three main sections: 'User Volume Name' with a text input field, 'Description' with a larger text area, and 'Root Volume:' with a dropdown menu. Below the dropdown is a small explanatory text: 'Select a Root Volume to choose where this user volume is mounted. Different root volumes may have different data storage options.' At the bottom right, there are two buttons: 'Create User Volume' and 'Cancel'.

- Select a “Root Volume”, which means decide whether to create the new User Volume in a permanent and backed-up storage pool, or to create it in a temporary storage pool, knowing that it will be deleted after a certain period of time (defined by the SciServer Data Storage Policy Rules).



**Create User Volume**

**User Volume Name**

**Description**

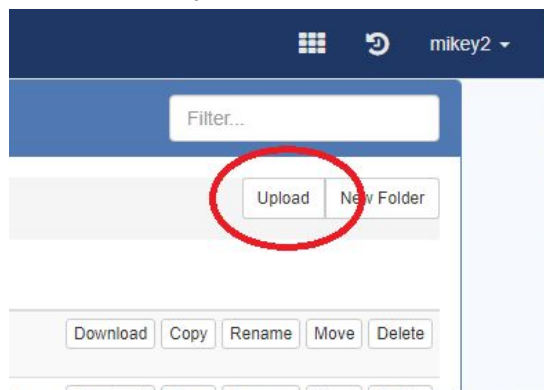
**Root Volume:**  
 Select a Root Volume to choose where this user volume is mounted. Different root volumes may have different data storage options.

Storage - Backed-up root volume with persistent storage for important data  
 Temporary - Scratch root volume with no backups

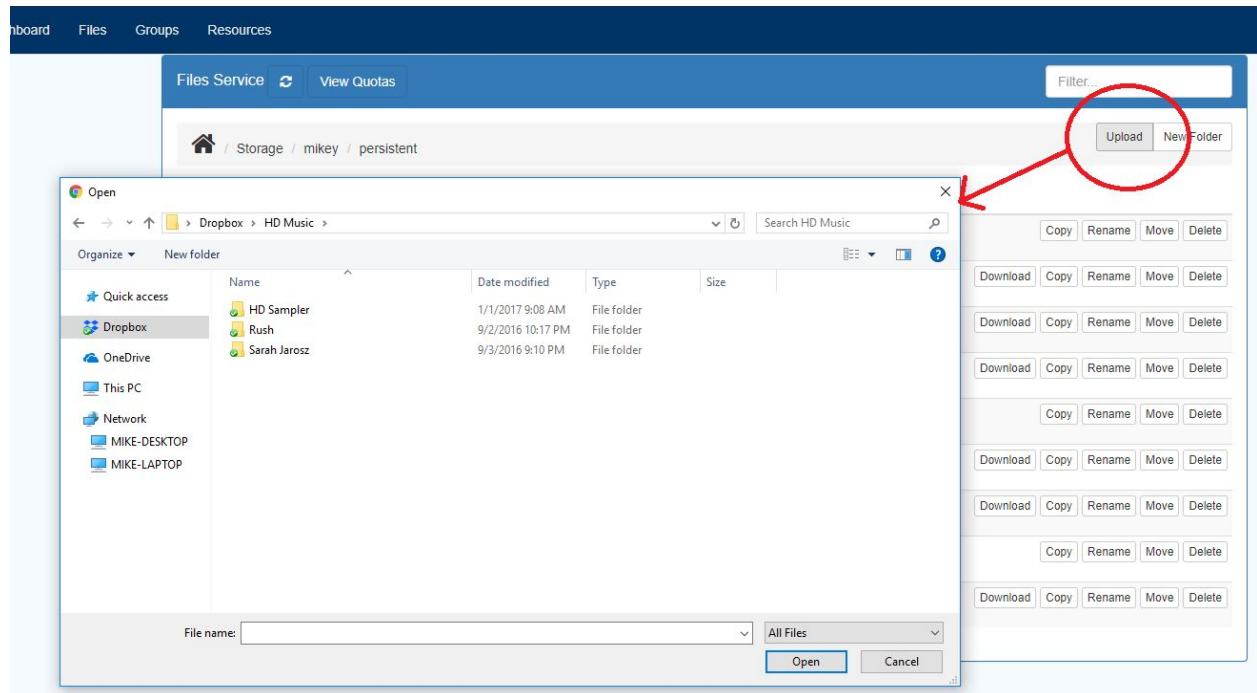
- Press the “Create User Volume” button and the new volume will be created.

#### 6.4. “How do I Upload Files?”

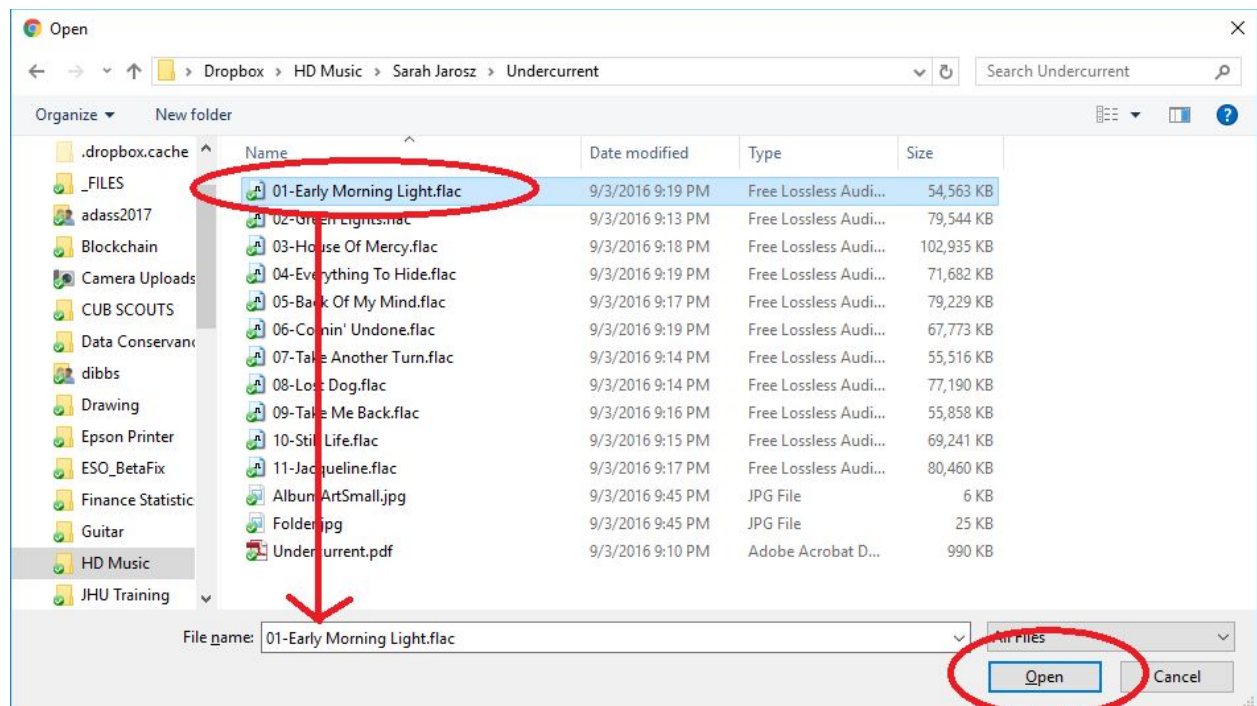
- Files cannot be uploaded directly to the top level User Volume level.
- Files can be uploaded to any Folder under a User Volume, including directly under the User Volume
- Navigate into a User Volume and you will see an “Upload” button:



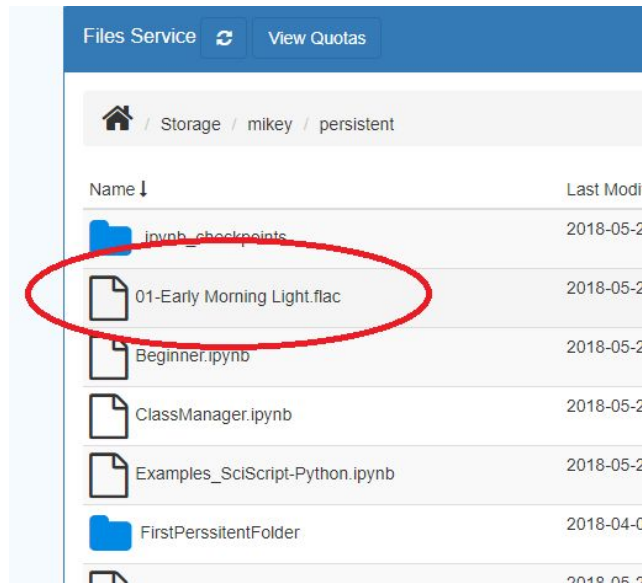
- Press this to display a dialog box:



- You must navigate to a *File*, select it then press the “Open” button”

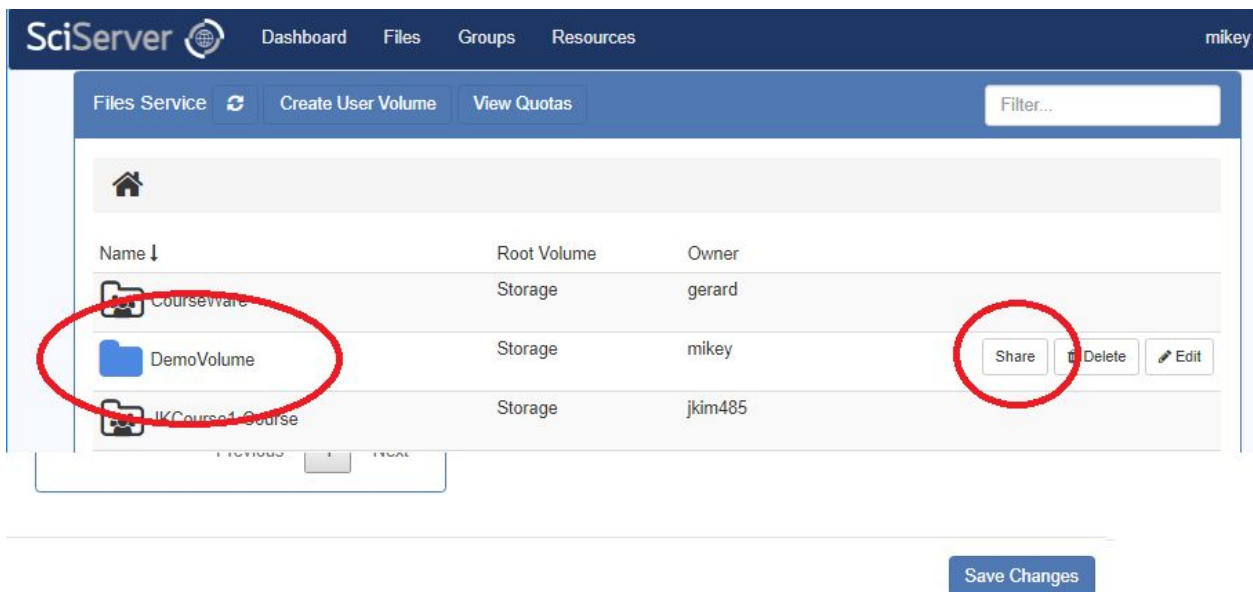


- This will then show the file you just uploaded:



## 6.5. “How do I share a folder?”

- You can share any User Volume that you own, and you can share others User Volumes if they assigned you that permission when they shared it with you
- At the Files tab, click the “home” button  to get to the top level User Volume view, and you will see the list of User Volumes. All User Volumes that you are allowed to share will have a “Share” button next to them:





- Click the “Share” button and it will display a pop up dialog box:

Share User Volume ×

Available SciServer Groups And Users

Show 10 ▾ entries

Search:

Name ▲	ID ⇅	Type ⇅
a new test group	49	GROUP
a very very very very very long named group	62	GROUP
admin	48	USER
admin	3	GROUP
adsfdgsdfgdfgsdfgsdfg	89	GROUP
Astroinformatics2018-Students	10172	GROUP
Astroinformatics2018-Teachers	10171	GROUP
bac29	9	USER
biome	45	USER
biome1	46	USER

Showing 1 to 10 of 131 entries

Previous

1

2

3

4

5

...

14

Next

Add

Access Groups And Users

Show 10 ▾ entries

Search:

Name ▲	ID ⇅	Type ⇅	Permissions ⇅
No Members To Display			

Showing 0 to 0 of 0 entries

Previous

Next

Save Changes

- The left hand panel is where you choose, one at a time, the users, or groups of users, that you wish to share with. To find users more easily, type something in the “Search:” box and the list will be filtered:

Share User Volume

Available SciServer Groups And Users

Show 10 ▾ entries

Search:

Name ▲	ID ⇅	Type ⇅
mar1	19	USER
mar1_Group1	29	GROUP
mar1_SharedGroup1	26	GROUP

Showing 1 to 3 of 3 entries (filtered from 131 total entries)

Previous

1

Next

- Click on the name you want to add to the group to highlight it, then press the “Add” button:

Share User Volume

Available SciServer Groups And Users

Show 10 entries

Search: mar1

Name	ID	Type
mar1	19	USER
mar1_Group1	20	GROUP
mar1_SharedGroup1	26	GROUP

Showing 1 to 3 of 3 entries (filtered from 131 total entries) 1 row selected

Previous 1 Next

Add

Access Groups And Users

Show 10 entries

Search:

Name	ID	Type	Permissions
No Members To Display			

Showing 0 to 0 of 0 entries

Previous Next

Save Changes

- This will add that name to the right hand panel, where you choose the Permissions that you want the user/group to have on your User Volume. These permissions are as follows:
  - *Read*: The user is able to view and read the User Volume and its contents, but not change anything
  - *Write*: The user is able to write new files and folders to the User Volume
  - *Delete*: The user is able to delete the User Volume (not recommended!)
  - *Grant*: The user has the ability to also further Share this User Volume with other users.

Share User Volume

Available SciServer Groups And Users

Show 10 entries

Search: mar1

Name	ID	Type
mar1	19	USER
mar1_Group1	29	GROUP
mar1_SharedGroup1	26	GROUP

Showing 1 to 3 of 3 entries (filtered from 131 total entries) 1 row selected

Previous 1 Next

Add

Access Groups And Users

Show 10 entries

Search:

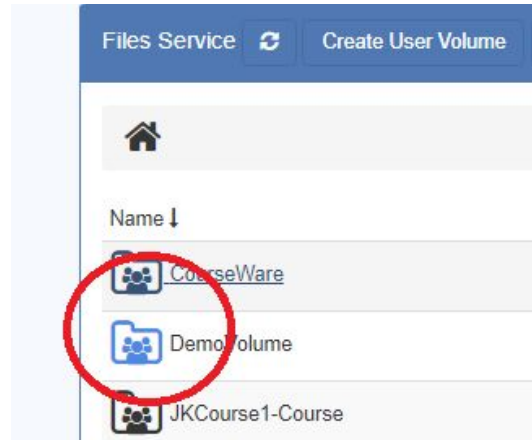
Name	ID	Type	Permissions
mar1	19	USER	<input checked="" type="checkbox"/> Read <input type="checkbox"/> Write <input type="checkbox"/> Grant <input type="checkbox"/> Delete

Showing 1 to 1 of 1 entries

Previous 1 Next

Save Changes

- Select the Permissions you want to assign by checking the checkboxes.
- You can keep adding more people/groups.
- Press “Save Changes” when you are done.
- The Volume you have just shared will have its Icon changed to indicate that it has been changed:



## 6.6. “What do the different Folder Icons mean?”



- Regular Folder
- User Volume that has NOT been shared



- User Volume that has been shared BY the User



- User Volume that has been shared WITH the User

## 6.7. “How do I UNSHARE a User Volume?”

- Display the Sharing Dialog box for a folder that you want to unshare:

Available SciServer Groups And Users

Show 10 entries

Search:

Name	ID	Type
a new test group	49	GROUP
a very very very very very long named group	62	GROUP
admin	48	USER
admin	3	GROUP
adsfdgsdfdfgsdfgsdfgsdfgdg	89	GROUP
Astroinformatics2018-Students	10172	GROUP
Astroinformatics2018-Teachers	10171	GROUP
bac29	9	USER
biome	45	USER
biome1	46	USER

Showing 1 to 10 of 131 entries

Previous 1 2 3 4 5 ... 14 Next

Add

Access Groups And Users

Show 10 entries


Search:

Name	ID	Type	Permissions
mar4	30	USER	<input checked="" type="checkbox"/> Read <input type="checkbox"/> Write <input type="checkbox"/> Grant <input type="checkbox"/> Delete

Showing 1 to 1 of 1 entries

Previous 1 Next

Save Changes

- For each User or Group that you want to unshare, UNCHECK ALL THE CHECKBOXES in the right hand panel.
- Press Save Changes, and the User Volume will be displayed with the regular blue Icon (  )indicating that it is no longer shared.

## 7. Interactive Compute

### 7.1. “What is SciServer Compute?”

SciServer Compute is an application that allows users to easily create and run Jupyter Notebooks containing code and instructions to analyse and process SciServer hosted data sets. SciServer provides a rich API to access all aspects of SciServers resources, including databases, Filesystems, user and group management, and even Compute Jobs.

There are a couple of steps involved, which SciServer makes easy:

- Create a new “Container” to run the Jupyter Notebook in. A container defines the “environment” for the user, and is configurable
- Open the container, which will start Jupyter, and create, save and execute Notebooks.

- The full capabilities of Jupyter (which is a third party application) are available to the user and will not be covered here.

An important step in setting up a Container environment is specifying what external file systems will be accessible to the Jupyter environment.

## 7.2. “What is a ‘Container’?”

A ‘Container’ in SciServer Compute is a defined environment within which Jupyter Notebooks can be run. Its is technically a “Docker Container” (Docker is the technology used), and provides a way to isolate the user and their code from the rest of the SciServer system, and other users.

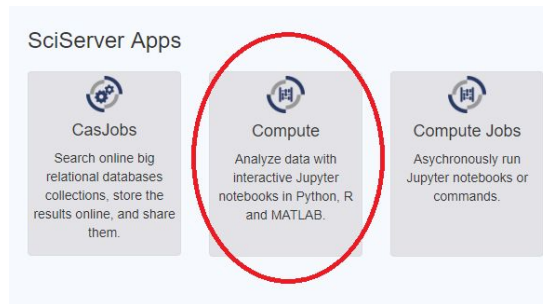
A Container in SciServer Compute is a “long-lived” resource, and as such there are some resource management issues you need to know about

- Each User can create up to 3 containers at any given time. If you need another one, you need to delete one first.
- Containers have a lifecycle, and can be “running” or “stopped”. SciServer keeps Containers running for a certain period of time, even if the User is not actively working with it, to ensure that when a user comes back to it, it starts up nice and fast without delays.
- Running Containers consume system resources like memory etc, so after 24hrs (TBC) the Container will be stopped. This has two effects:
  - If code was running, it will be terminated
  - It will take a bit longer to start up the Container next time it is accessed
- SciServer could, and sometimes does, delete containers that have not been used for a long time. This frees up storage resources.
- Whereas data (files, folders) can be stored “in” the container, ***you should never do this for any data that you need to keep. Always store data files in the “Storage” or “Temporary” storage pools, which are external to the container.*** Data in these storage pools are accessible when all containers are closed or deleted, and the same data is accessible across any containers that includes those Volume Containers in their environment.

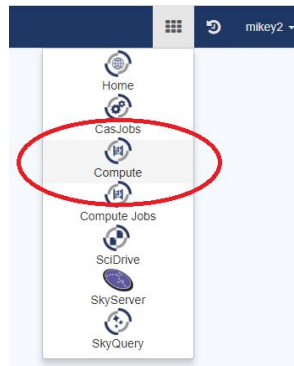
## 7.3. “How do I create a new Container to run my Jupyter Notebooks”?

Creating a new Compute Container is easy! However there are a few parameters required to define the compute environment that you need.

- Access the Compute Application by clicking on the “Compute” icon on the SciServer Dashboard:



- OR from the “Apps Menu” :



- This will take you to the “Compute dashboard”

SciServer
Compute
Interactive Notebooks
Jobs
Help
Sign out

Containers

Created At	Name	Domain	Image	Status	
2018-06-12 19:50:41.0	sesf	Interactive	Python + R	stopped	▶ ⓘ ✖
2018-06-05 10:27:12.0	Mike Matlab	Interactive	MATLAB R2016a	stopped	▶ ⓘ ✖

Create container

Important Information about Compute Container File Storage

**File System** Most of the folders in a Container's file system should not be used to store your files. Your initial container view is of `/home/ldies/workspace`, which may contain volumes under the `Storage` and `Temporary` folders. Any user volumes you choose to add to the container at creation will be present within these folders. Do not store your files in `workspace`, or in any other folder except as described here. If a Compute node fails, your incorrectly stored files will be *lost permanently*.

**Storage** Use `Storage` volumes for long term storage of your scripts and small data files. The volumes in the `Storage` folder are backed up. These volumes are mounted according to the username of the user who created them under the path `/home/ldies/workspace/Storage/username/user volume name/`. Files saved to this folder persist between your containers, even in the event that a container fails. Other files and folders cannot be placed in any intermediate paths, i.e., under the `Storage/username` or `Storage/` folders. Your `Storage` volumes are subject to size limitations described in the [SciServer Compute Data Storage Policy](#).

**persistent** By default, all users start with a `Storage` volume named `persistent`. The files in this volume correspond to the same `persistent` folder in the version of SciServer Compute that is not a component of this alpha release.

**Temporary** Use `Temporary` volumes for temporary large file storage. The `Temporary` volumes persist between containers and are not affected by Compute node failure, but is not backed up. These volumes are mounted according to the username of the user who created them under the path `/home/ldies/workspace/Temporary/username/user volume name/`. Other files and folders cannot be placed in any intermediate paths, i.e., under the `Temporary/username` or `Temporary/` folders. Your `Temporary` volumes are subject to time limit and size limitations described in the [SciServer Compute Data Storage Policy](#).

**scratch** By default, all users start with a `Temporary` volume named `scratch`. The files in this volume correspond to the same `scratch` folder in the version of SciServer Compute that is not a component of this alpha release.

Do not save your scripts or data files anywhere in your Compute container's file system except in "Storage" or "Temporary".

- You will see a large text box explaining how to use the Storage capabilities to ensure that you do not lose data if you accidentally store it in the Container itself
- Press the “Create Container” button, and this will pop a dialog box:

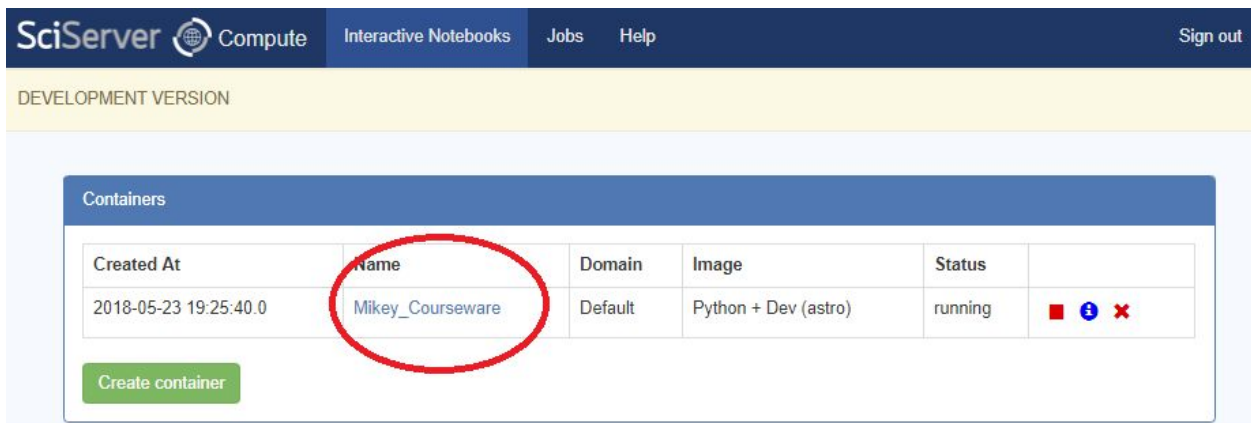
- The following needs to be entered:
  - *Container Name*: you choose this
  - *Domain*: This is a drop down from which you should most always leave at the default value “Interactive Docker Compute Domain”
  - *Image*: This define a “software environment” for the Jupyter notebooks that you want to run. The images contain libraries tailored to different needs. For the most part you will choose an image that supports the language you are interested in (python, R, Matlab etc), but there are “specialty” science domain specific images that you may have access to if the creator of those images has shared it with you.
  - *User Volumes*: This is a list of all User Volumes that you have access to, either which you own, or which have been shared with you. When you select some of these, on container creation these folders will be “mounted” and will be accessible as if they were local files. This makes file access and management much simpler. NOTE: they will be mounted with the same access controls as you would have in the SciServer File UI i.e. “readonly” or “readwrite”.
  - *Public Volumes*: These are a series of special data Volumes that are either shared publicly with all users, or for which you have been given special access privileges to see. Again, selecting these Volumes will mount them, and make them appear “local” in the Container. These will always be mounted “readonly”



- Once created, it is not possible to add additional User Volumes or Public Volumes, so you should be sure to get this right.
- Pressing the “Create” button will create a new Container and show it in the table with the name you provided.
- Clicking on the link in the column titled “name” will launch Jupyter

## 7.4. “How do I create a new Jupyter Notebook?”

- Start one of your Compute Containers to Launch Jupyter:



The screenshot shows the SciServer Compute interface. At the top, there's a navigation bar with 'SciServer Compute', 'Interactive Notebooks', 'Jobs', and 'Help'. A 'Sign out' link is on the right. Below the navigation bar, a yellow banner indicates 'DEVELOPMENT VERSION'. The main content area is titled 'Containers' and features a table with the following data:

Created At	Name	Domain	Image	Status	
2018-05-23 19:25:40.0	<a href="#">Mikey_Courseware</a>	Default	Python + Dev (astro)	running	■ ⓘ ✕

Below the table is a green button labeled 'Create container'.

## 8. Compute Jobs

### 8.1. “What is Compute Jobs?”

Compute Jobs allows a user to run a Jupyter Notebook or a standard script in offline batch mode. The same exact capabilities are provided as for Interactive Compute:

- Compute Images and software environment
- Mounting external volume folders

Executing Job will put it in a queue, and it will be run when there are resources available on the server cluster.

### 8.2. “Why would I create a Job?”

You should create a Job for the following reasons:

- Executing your notebook may take a long time and you want to set it running and do something else without worrying about browser sessions timing out etc



- You may develop your code interactively to make sure the algorithm works, using a small amount of data to test it out. But you really want to run your code against a full dataset which will require massive resources for memory and CPU, as well as execution time.
- You are provided with far more resources (CPU and memory) to execute a Job than you are in an Interactive Session.

### 8.3. “What are the two types of Jobs I can create?”

SciServer allows you to define two “types” of job:

- Specify a script to execute, or a command line command
- Specify an existing Jupyter Notebook that you have previously developed

The second of these is the most useful in that you can develop your Jupyter Notebook interactively then “submit” the exact same notebook as a Job.

### 8.4. “How do I create and run a Job?”

Creating a new Job is easy! We explain how to create a notebook based job, but creating a script based job is very similar.

- Go to the Compute Jobs Page:

SciServer Compute Interactive Notebooks Jobs Help Sign out

Compute Jobs Run Command Run Existing Notebook

Show 10 entries Search Name/Command/Notebook

Submission Time	Job	Status
Wed, Jun 6, 2018 1:09 PM	pwd	Completed after a few seconds
Fri, Mar 2, 2018 10:44 AM	wewwe ls -l	Ended Unsuccessfully

Showing 1 to 2 of 2 entries

- Click “Run Existing Notebook”
- On the ‘Compute Domain’ Tab:

The screenshot shows the 'New Job' dialog box with the 'Compute Domain' tab selected. The 'Job Alias' section has an 'Optional Name' input field. The 'Compute Domain' section has a description: 'Select a Compute Domain to choose where this job is run. Different domains may have different computational or data resources available.' Below this is a radio button selection for 'Small Jobs Batch Domain'. At the bottom right are navigation arrows and a 'Create Job' button.

- Choose the Compute Domain, for which in most cases currently there will only be one option
- Optionally enter a “Job Alias” to easily identify your Job later
- On the ‘Software Environment’ Tab:

The screenshot shows the 'New Job' dialog box with the 'Software Environment' tab selected. The 'Software Environment' section has a description: 'Select a Docker image providing the libraries and applications needed for this job.' Below this are three radio button options: 'MATLAB R2016a', 'Python + R (Jupyter)' (which is selected), and 'Python + R (JupyterLab)'. Each option has a brief description of the environment. At the bottom right are navigation arrows and a 'Create Job' button.

- Pick the ‘Image’ you need to use. Each image contains different tools and programming language support.
- On the ‘Files’ tab:

New Job

Compute Domain

Software Environment

Files

Notebook

Data Sets:

Select any data sets needed for this job.

☐ SDSS\_DAS
 

Volume container giving access to the SDSS DAS images and spectra

☐ write-test
 

write-test

Personal and Shared Folders:

Select any user volumes to make available to this job.

☒ persistent
 

Storage Volume, created by mikey

Default user volume

Will be accessible to this job as

/home/idies/workspace/Storage/mikey/persistent

Read/Write

☒ persistent
 

Storage Volume, created by mikey2

Default user volume

Will be accessible to this job as

/home/idies/workspace/Storage/mikey2/persistent

Read-only

☒ scratch
 

Temporary Volume, created by mikey

Default user volume

Read/Write

<

>

Create Job

- Check all the Folder systems that you would like to be made accessible to your Compute notebook
- For Folders that you own, or that have been shared with you and you were given the appropriate permissions, you can select whether a given folder is read only or writable. Folders that you do not own will be readonly by default.
- On the 'Notebook' tab:

New Job

Compute Domain
Software Environment
Files
Notebook

Select a Jupyter Notebook:

- Storage/gerard/CourseWare
- Storage/gerard/Testing\_Job\_Queue
  - .ipynb\_checkpoints
  - Data
  - Jobs
  - SciScript
  - Analyze Queues.ipynb
  - Job1.ipynb
  - submit some jobs-mikey.ipynb
  - submit some jobs.ipynb
- Storage/mikey/persistent
- Storage/mikey2/persistent
- Temporary/mikey/jobs
- Temporary/mikey/scratch

Storage/gerard/Testing\_Job\_Queue/Analyze Queues.ipynb

Parameters:

Optional Parameters

Parameters are placed in a `parameters.txt` file in the same directory as the notebook.

scratch

Temporary Volume, created by mikey

Default user volume

persistent

Storage Volume, created by mikey

Default user volume

Press enter to select

Select a user volume (required)

Path within user volume

<

>

Create Job

- Navigate to the Notebook you wish to use as the basis for your Job, and select it
- Enter any additional parameters that the Notebook can read in to affect how the code is executed
- Choose a directory where the output results will go.
  - By default these will go to **<INSERT DESCRIPTION HERE>**
  - Alternatively you can choose a specific directory to output results. The directory you choose will be a 'root' within which subdirectories will be created and your results written to.

- When everything has been entered you can press 'Create Job', and the Job will be submitted, and displayed in a Jobs Table view:

Compute Jobs			Run Command	Run Existing Notebook
Show 10 entries		Search Name/Command/Notebook		
Submission Time	Job	Status		
Wed, Jun 20, 2018 3:10 PM	Demo Alias Storage/gerard/Testing_Job_Queue/Analyze_Queues.ipynb	Preparing to submit job	✕	
Mon, Jun 18, 2018 2:48 PM	My New Job pwd	Completed after a few seconds		
Mon, Jun 18, 2018 12:19 PM	pwd	Completed after a few seconds		
Thu, May 24, 2018 11:01 AM	Storage/mikey/persistent/Beginner.ipynb	Completed after a few seconds		

- The Table will be refreshed every several seconds, telling you the status of the Job.
- While the Job is still running there will be a red "X" button, and pressing this will Cancel the job.
- Pressing the down triangle on the RHS will expand the view and show more information about the Job. This is what you see for a completed Job:

Compute Jobs			Run Command	Run Existing Notebook
Show 10 entries		Search Name/Command/Notebook		
Submission Time	Job	Status		
Wed, Jun 20, 2018 3:10 PM	Demo Alias	Completed after a few seconds		
<p>Notebook Path: /home/ides/workspace/Storage/gerard/Testing_Job_Queue/Analyze_Queues.ipynb</p> <p>Job ID: 20820      Software Environment: Python (astro)      Compute Domain: Small Jobs Batch Domain</p> <p>Started Wed, Jun 20, 2018 3:10 PM      Finished Wed, Jun 20, 2018 3:11 PM</p> <p>Results were stored in /home/ides/workspace/Storage/mikey/persistent/20180620/20180620151041-20820</p> <p><a href="#">Browse Working Directory</a>      <a href="#">Download Standard Output</a>      <a href="#">Download Standard Error</a></p>				
Mon, Jun 18, 2018 2:48 PM	My New Job pwd	Completed after a few seconds		

- This give status information about the Job, the path to the location of the results, and links to the results output

## 8.5. "How do I Cancel a Job?"

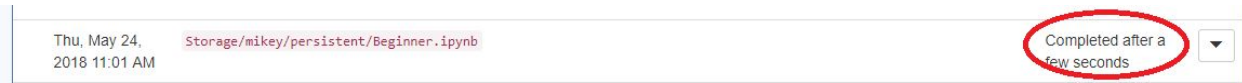
- After submitting a Job, and before it has completed execution, it can be cancelled.
- Display the Jobs table, and your running Jobs will be identified by having a red "X" next to them:

Time	Job	Status
Wed, Jun 20, 2018 3:10 PM	Demo Alias Storage/gerard/Testing_Job_Queue/Analyze_Queues.ipynb	Preparing to submit job

- Press the “X” button to cancel the job.

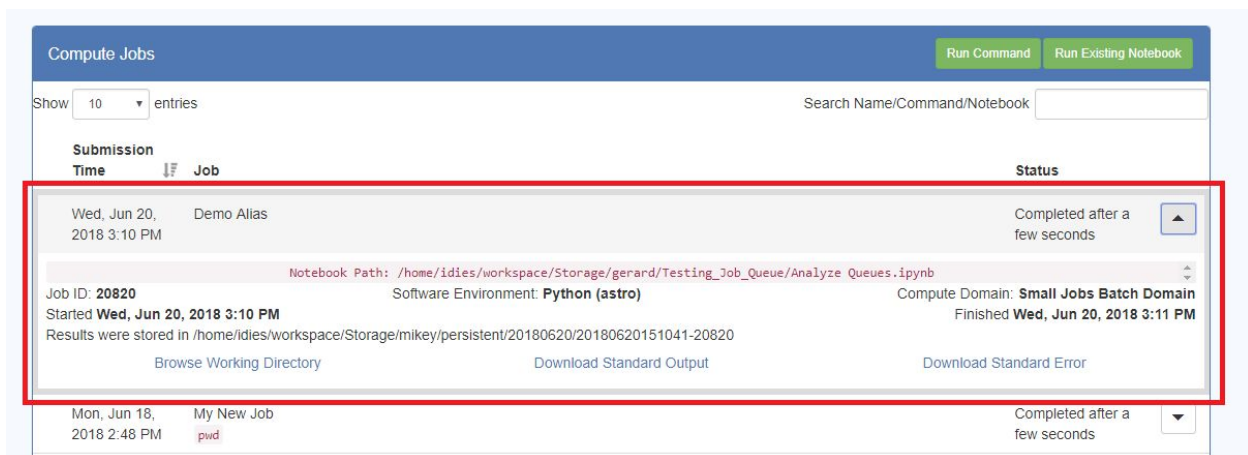
## 8.6. “How do I know when my Job is complete?”

- When your job is complete the Jobs Table will display the status:



## 8.7. “How do I access the output from my Jobs?”

- The results output will go to the location specified in the Job Definition.
- In the Jobs Table expand the job of interest:



- This give status information about the Job, the path to the location of the results, and three hyperlinks:
  - **‘Browse Working Directory’** will take you to the Dashboard Files tab and show you the output files as well as the original Python Notebooks.
  - **‘Download Standard Output’** and **‘Download Standard Error’** will allow you to download these two text files as appropriate. They will be downloaded according to your Browser settings.