
Storage Overview of BioHPC

[email] biohpc-help@utsouthwestern.edu
[lamella] <https://lamella.biohpc.swmed.edu/>
[cloud] <https://cloud.biohpc.swmed.edu/>

05-11-2022

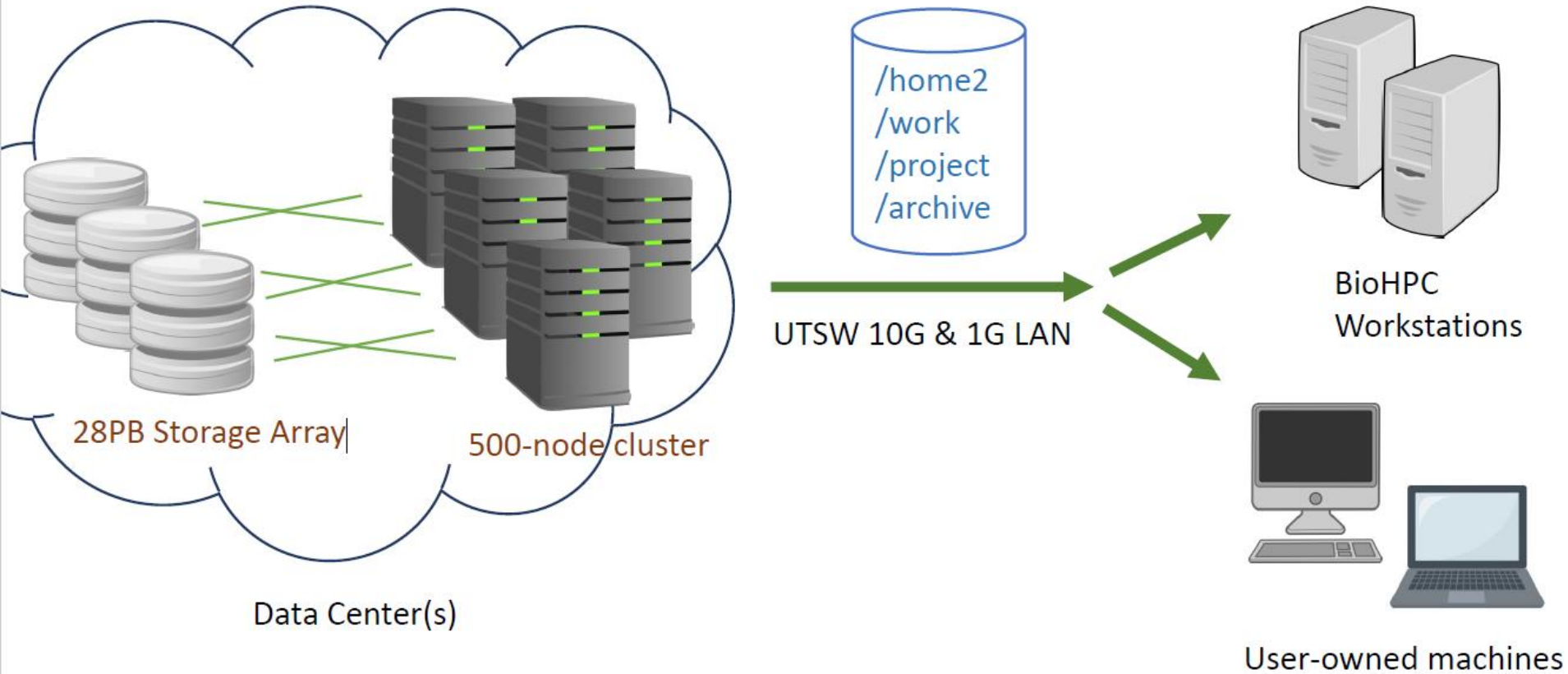
Storage Resources & Intended Use

Tools for Data Access

Data Sharing Methods

Backup Policies & Best Practices

Centralized, Network Storage



Data Directories

/home2

- 50 GB per user

User environment,
small documents &
light weight
scripting

/home2/you

/work

- 5 TB per user

Data processing

/work/dept./you

/project

- 5 TB per lab

Data processing
Large files, sharing

/project/dept./shared

/project/dept./lab/shared

/project/dept./lab/you

/archive

- 5 TB per lab

Long term storage,
offload location

/archive/dept./shared

/archive/dept./lab/shared

/archive/dept./lab/you

Note: Exceptions for some OBI (O'Donnell Brain Institute) users, replacing **dept.** with **OBI/dept.**

2) Quota changes need get approval from Department.

3) Quota usage report: <https://portal.biohpc.swmed.edu/content/>, ssh nucleus005

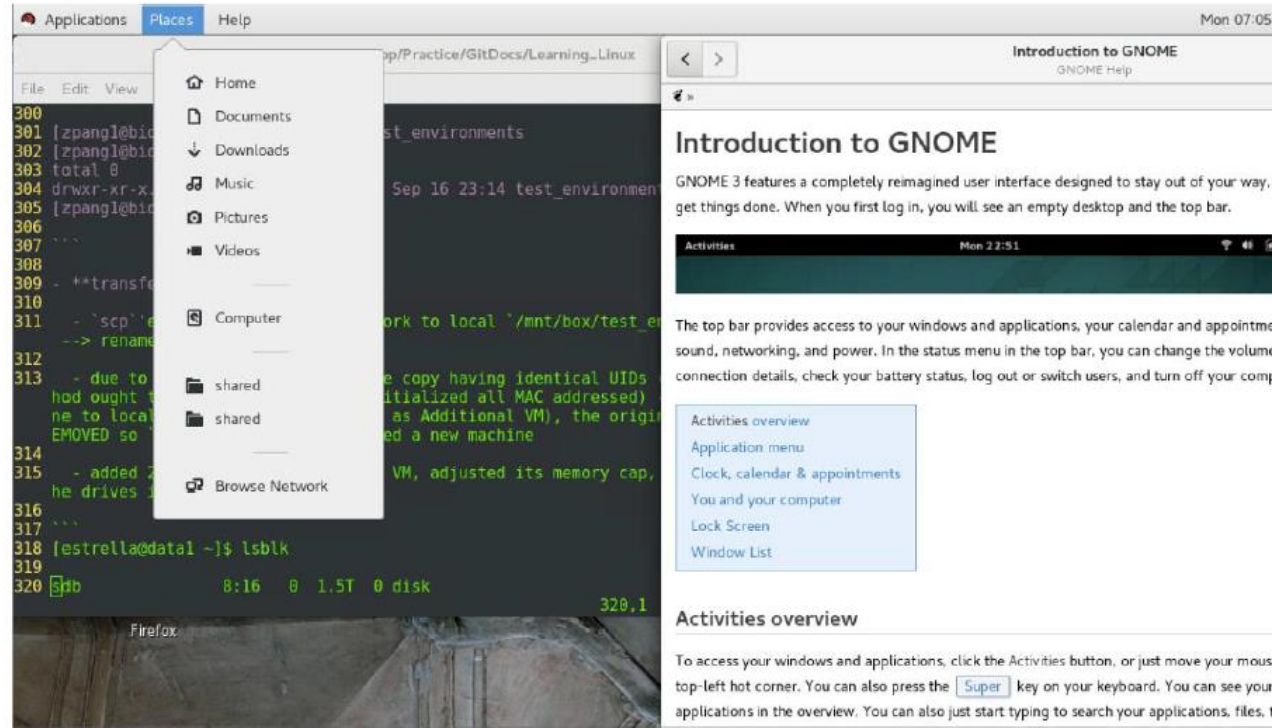
Access Methods

- ❖ **Direct browsing & editing:** Workstations/Thin Clients, Remote Desktop, Network mounting on local machines
- ❖ **Web browsing:** Lamella web interface; convenient for upload, download, & sharing internally
- ❖ **Specialized:** FTP servers for larger file transfers; Command Line Interface via SSH sessions
- ❖ **Sharing:** Lamella & Thunder FTP (internal), External FileshareServer <cloud.biohpc> & Flash FTP (external)

Access via Linux Environment/Desktop

Linux GUI

- ▶ Remote Desktop
- ▶ Workstation / Thin Client



Access via Network Drives

Mapping BioHPC Storage Directories to your local environment:

- ▶ Via our load-balanced Samba filesharing server

- ▶ **PC:**

Computer -> Map Network Drive

Folder is:	<code>\\lamella.biohpc.swmed.edu\username</code>	<i>home2</i>
	<code>\\lamella.biohpc.swmed.edu\project\department\group</code>	<i>project</i>
	<code>\\lamella.biohpc.swmed.edu\work\department\group</code>	<i>work</i>

- ▶ **MAC:**

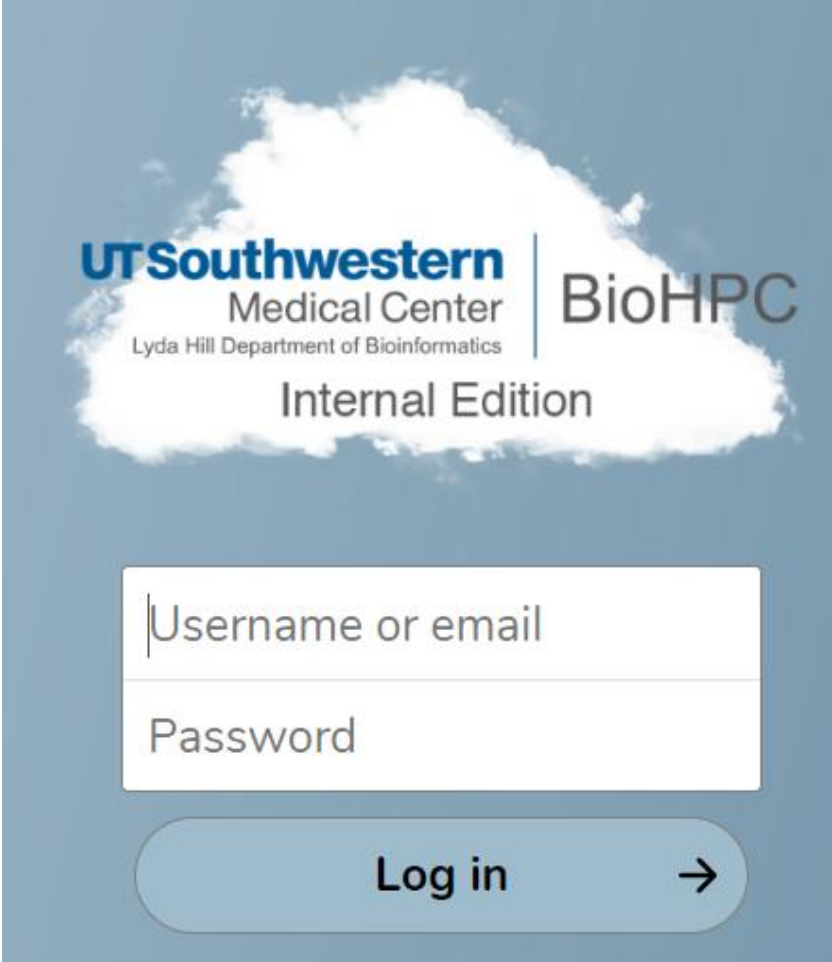
Finder -> Go -> Connect to Server

Folder is:	<code>smb://lamella.biohpc.swmed.edu/username</code>	<i>home2</i>
	<code>smb://lamella.biohpc.swmed.edu/project/department/group</code>	<i>project</i>
	<code>smb://lamella.biohpc.swmed.edu/work/department/group</code>	<i>work</i>

Access via Web Interface

❖ Web Access

- Lamella.biohpc.swmed.edu
 - Storage Gateway/Filesharing
 - **/home2** mounted by default (“Home”)
 - **/project, /work, /archive** require additional configurations



UT Southwestern
Medical Center
Lyda Hill Department of Bioinformatics

BioHPC

Internal Edition

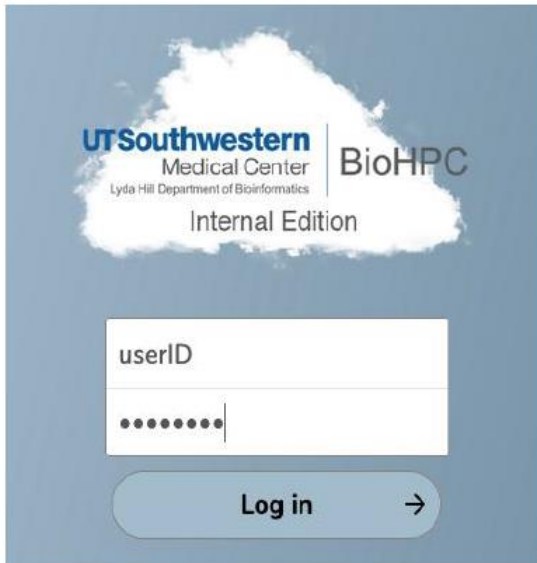
Username or email

Password

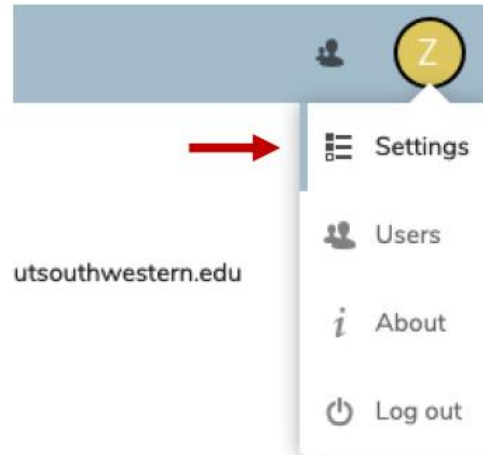
Log in →

Access via Web Interface

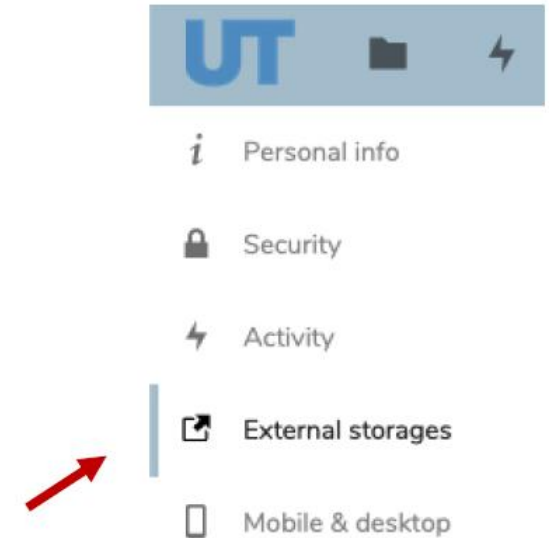
▶ External Storage Mount:



1.



2.



3.

Access via Web Interface

▶ External Storage Mount:

External storages

External storage enables you to mount external storage service external storage services.

Folder name	External storage
home	BioHPC/Lysosome
Cloud	Cloud
<any name>	<div style="border: 1px solid gray; padding: 2px;"><div style="border: 1px solid gray; padding: 2px; display: flex; justify-content: space-between;">Add storage▼</div><div style="border: 1px solid gray; padding: 2px; margin-top: 2px;">BioHPC/Lysosome</div><div style="border: 1px solid gray; padding: 2px; margin-top: 2px;">Cloud</div></div>

4.

Username and password ▼

project

dept / lab / uid

uid

.....

...

✓

5.

6.

Username and password ▼

...

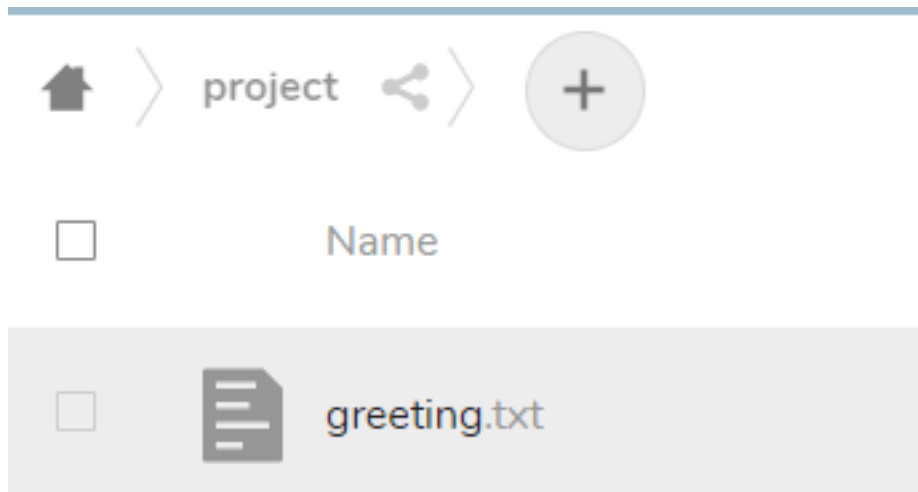
Enable previews

Enable sharing

7. (optional: select enable sharing is required to share files with others)

Access via Web Interface

```
[s179389@Nucleus006 s179389]$ cat /project/biohpcadmin/s179389/greeting.txt  
Hello World and Good Morning!
```



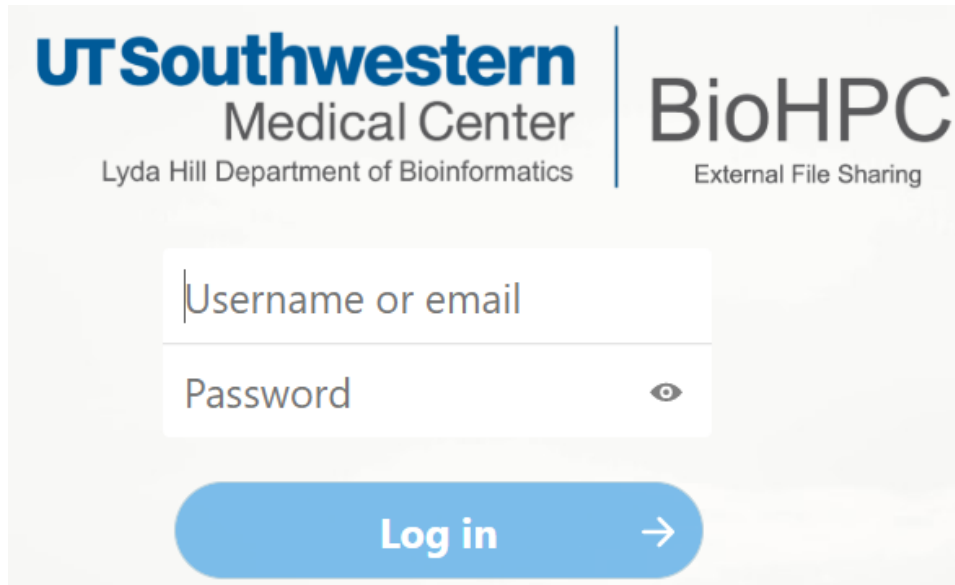
<https://lamella.biohpc.swmed.edu/index.php/>



greeting.txt

```
1 | Hello World and Good Morning!  
2
```

Access via Web Interface



The screenshot shows the login page for the BioHPC web interface. At the top left, it features the logo for UT Southwestern Medical Center, Lyda Hill Department of Bioinformatics. To the right, the BioHPC logo is displayed with the text 'External File Sharing' underneath. Below the logos, there are two input fields: the first is labeled 'Username or email' and the second is labeled 'Password' with an eye icon to its right. At the bottom, there is a blue rounded rectangular button with the text 'Log in' and a right-pointing arrow.

❖ Web Access

- [Cloud.biohpc.swmed.edu](https://cloud.biohpc.swmed.edu)
 - External Filesharing
 - Interface similar to Lamella
 - separate cloud storage space
 - Can not share /home2, /project, /work, /archive directly

Access via Command Line

```
ssh <BioHPC_uid>@nucleus.biohpc.swmed.edu
```

- Activate BioHPC account
- SSH client/Terminal Emulator
- BioHPC web terminal
- BioHPC workstation
- nucleus.biohpc.swmed.edu
- BioHPC webGUI/webGPU session
- BioHPC remote desktop

```
[s179389@Nucleus006 s179389]$ pwd
/project/biohpcadmin/s179389
[s179389@Nucleus006 s179389]$ cat greeting.txt
Hello World and Good Morning!
[s179389@Nucleus006 s179389]$ ls -ll greeting.txt
-rwxr--r-- 1 s179389 biohpc_admin 31 May  9 16:12 greeting.txt
[s179389@Nucleus006 s179389]$ ls /project
AIRC          backup_home2  biohpcadmin   CRI           flash_ftp_backup
apps          backup_services  bioinformatics  cryoem        GCRB
apps_database backup_work     biophysics     DAPM          greencenter
apps_new      BICF           CAND           DPDS          hackathon
backup_archive biochemistry  cellbiology    flash_ftp     HCTOR
[s179389@Nucleus006 s179389]$
```

Filesharing

Among BioHPC Users

- ▶ `../shared/..`` directories

Non-BioHPC Collaborators

- ▶ Cannot access cluster components (Thunder, Lamella)

External Collaborators

- ▶ Blocked from UTSW internal network (Flash, Cloud)



Filesharing

Sharing Among BioHPC Users

- ▶ Sharing with other departments (**made upon request**)
 - ▶ ``/archive/shared`` & ``/project/shared``
- ▶ Sharing within your department:
 - ▶ ``/archive/<dept>/shared`` & ``/project/<dept>/shared``
- ▶ Sharing within your lab:
 - ▶ ``/archive/<dept>/<lab>/shared`` & ``/project/<dept>/<lab>/shared``




Filesharing

File Sharing Size	Internal Shares	External Shares
< 50-100GB	Lamella	External File Exchange (cloud.biohpc.swmed.edu)
> 100GBs – TBs	Thunder FTP	Flash FTP

Filesharing











Sharing with Non-BioHPC Collaborators: < 100GB

lamella.biohpc.swmed.edu

- ▶ `home` (/home2/<you>) -> shareable!
- ▶ Mapped `/project` & `/work` -> manually enable sharing
- ▶ Look for the  icon
- ▶ Instruct collaborator to access via web URL


Filesharing

Sharing with Non-BioHPC Collaborators: < 100GB

		Size	Modified
		Pending	a month ago
		1.4 MB	2 months ago
		Pending	6 months ago
		Pending	22 days ago
		Pending	2 months ago

1.






My_Scripts


★ < 1 KB, 22 days ago


Tags

Activity Comments Sharing

Name... →

 Share link

 Add to a project
Connect items to a project to make them easier

 New share link

2.



Filesharing

Sharing with Non-BioHPC Collaborators: < 100GB

- ▶ Grant appropriate permissions!
 - ▶ Stick to principle of least privilege
- ▶ Password protect!
- ▶ Set Expiration date!

The screenshot shows a file sharing interface for a folder named "My_Scripts". At the top, it indicates the folder size as "< 1 KB, 22 days ago" and includes icons for "Activity", "Comments", and "Sharing". A red text annotation "*Copy link to clipboard" is positioned above a "Share link" button, which is circled in red. Below this, a dropdown menu is open, displaying various sharing options. Three red arrows point from the text on the left to specific options in the menu: the first arrow points to "Read only", the second to "Password protect", and the third to "Set expiration date". The menu options include: "Read only", "Allow upload and editing", "File drop (upload only)", "Hide download", "Password protect" (checked), "Set expiration date" (checked) with a date field set to "22-10-2019", "Note to recipient", "Delete share link", and "Add another link".

Filesharing

Sharing with Non-BioHPC Collaborators: > 100GB

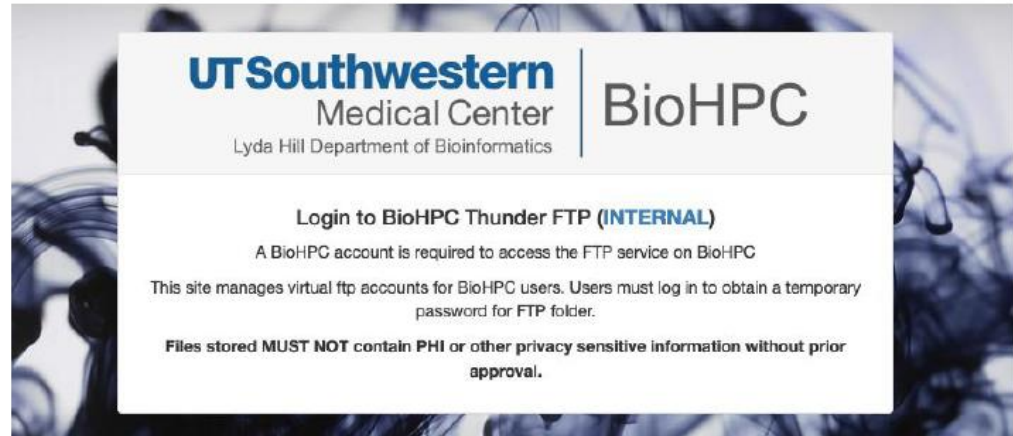
thunder.biohpc.swmed.edu

▶ ``/project/thunder_ftp/<uid>``
-> share folder

▶ Upload limit = `/project quota*`

▶ If size exceeds quota -> Contact us!

▶ Access via **web** –or– **FileZilla** (if collaborator wishes to upload)



Filesharing

Sharing with Non-BioHPC Collaborators: > 100GB

Guests: Create and manage guest FTP accounts

Share with UTSW collaborator: +

Add new Guest

You currently have not allowed any guest accounts to access your ftp folder form.

Guests: Create and manage guest FTP accounts

Share with UTSW collaborator: +

Email address *

Note

Directory Name*

Email Content

Cancel Submit

guest created successfully ✕

Guestname	Expiration	Email	Note	directory	Actions
guest94202Szhi	Oct. 19, 2019, 7:53 a.m.	zengxing.pang@utsouthwestern.edu		/project/thunder_ftp /zpang1 /another_test	Extend Delete Resend

Filesharing

Sharing with Non-BioHPC Collaborators: > 100GB

BioHPC user:

zpang1 has shared his BioHPC ftp folder with you with a message:

UTSW employee: zpang1 has shared his ftp folder with you, please click on below link to view your ftp credentials

please click the link below to view your temporary message:

https://thunder.biohpc.swmed.edu/manage/view_guest_account/?q=9297aa00f02f82c464c47b2d5e16673b86146c691b4f442facf666e0aeeb8c4a153db883fd05b9a6f1ad04c716c946c5

Guest Account Session:

Thanks for using BioHPC, your temporary account and password are as follows, please save them, this account automatically expires in three days:

USERNAME: **guest94202SzhI**

PASSWORD: **zf5Eh7b3HtFV**

URL: **ftp://guest94202SzhI:zf5Eh7b3HtFV@thunder.biohpc.swmed.edu**

Filesharing

Sharing with Non-BioHPC Collaborators: > 100GB

Host: thunder.biohpc.swmr Username: guest94202Szt Password: Port: Quickconnect

Status: Connection established, waiting for welcome message...
Status: Insecure server, it does not support FTP over TLS.
Status: Logged in
Status: Retrieving directory listing...
Status: Calculating timezone offset of server...
Status: Timezone offset of server is 0 seconds.
Status: Directory listing of "/" successful

Local site: /Users/zeng/Desktop/Work/ Remote site: /

Local site directory listing:

- .ssh
- .vim
- .vnc
- .vscode
- Applications
- Desktop
 - Oct_16_19
 - Temps
 - Work

Remote site directory listing:

Filename	Filesize	Filetype	Last modified
..			
limit_rate.png	35,833	png-file	10/15/2019 1...
snow capped mountains.jpg	14,089,0...	jpg-file	10/15/2019 1...
test_statement.md	6	Visual Stu..	09/26/2019 1...
test_statement_back.md	6	Visual Stu..	10/15/2019 1...

Local site file listing:

Filename	Filesize	Filetype	Last modified
..			
Artifacts		Directory	10/01/2019
Meetings		Directory	02/27/2019
Pre_Docs		Directory	10/01/2019
RedTape		Directory	03/02/2019
.DS_Store	10,244	File	10/08/2019

Filesharing

Sharing with External Collaborators:

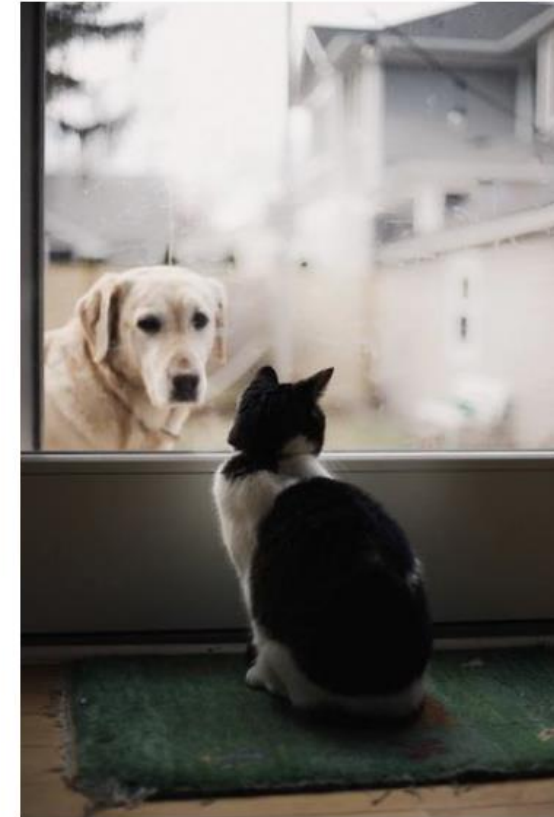
< 50GB -> BioHPC External File Exchange

cloud.biohpc.swmed.edu

> 50GB -> Flash FTP Service

flash.biohpc.swmed.edu

- ▶ External Equivalents of Lamella & Thunder (internal)
 - ▶ Identical operations



Mirror – Not backup!

- No incremental backups by default, only present states are synced
- Used for system restore points
- **/home2 & /work** mirrored weekly
- **/project & /archive** OPTIONAL for incremental backup, upon PI's request



Data Hall Migration

- Most of BioHPC nodes, storage will be moved to new location as school planed.
- All BioHPC storage backup weekly before data hall migration finished 4th quarter 2022.
- New Storage ~20 PB in plan.

Thank you!

Please acknowledge our contribution:

This research was supported in part by the computational resources provided by the BioHPC supercomputing facility located in the Lyda Hill Department of Bioinformatics, UT Southwestern Medical Center.

If your PI wants to include info in a grant proposal on BioHPC as a resource, or request grant funds to contribute to their Department's HPC costs, please contact our Department Administrator, **Rebekah Craig** (**Rebekah.Craig@utsouthwestern.edu**) for advice on grant language.