

Globus for LC Users

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Agenda

- Goblin Hardware Overview
- Globus Overview
- Globus walk-through

LC Globus Hardware

- Hosting cluster is Goblin
- Sits in "Green" (unrestricted) Zone
 - Uses GDO user infrastructure with CZ RSA OTP
- 4x Data Transfer nodes (DTNs)
 - 40 Gb link to ESNet
- 2x Storage nodes
 - 2PB NFS-mounted ZFS file system
- Endpoint exists only in Green Zone
 - Users need to transfer data between GZ and CZ
 - 2x 40Gb link between GZ<->CZ
 - Future possibility of auto-sync pending discussion & approval from OISSO



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Accessing Goblin

- Users must request Goblin acct via ~~IDM~~ LC Hotline
 - For now; IDM being extended.
- File transfer internally via:
 - SCP/rsync
 - Hopper (pending)
 - Transfer must originate from CZ, not GZ
 - Globus Connect Personal (GCP) **not allowed**
 - There appear to be numerous instances running, but users should be advised it's not permitted
- Users can SSH to Globus nodes to manage data
 - Login nodes are also DTNs
 - Home directories are **not** the data shares. Must use /p/globfs/<user>/
- Most users will use Globus Web
 - <https://app.globus.org>

What is Globus

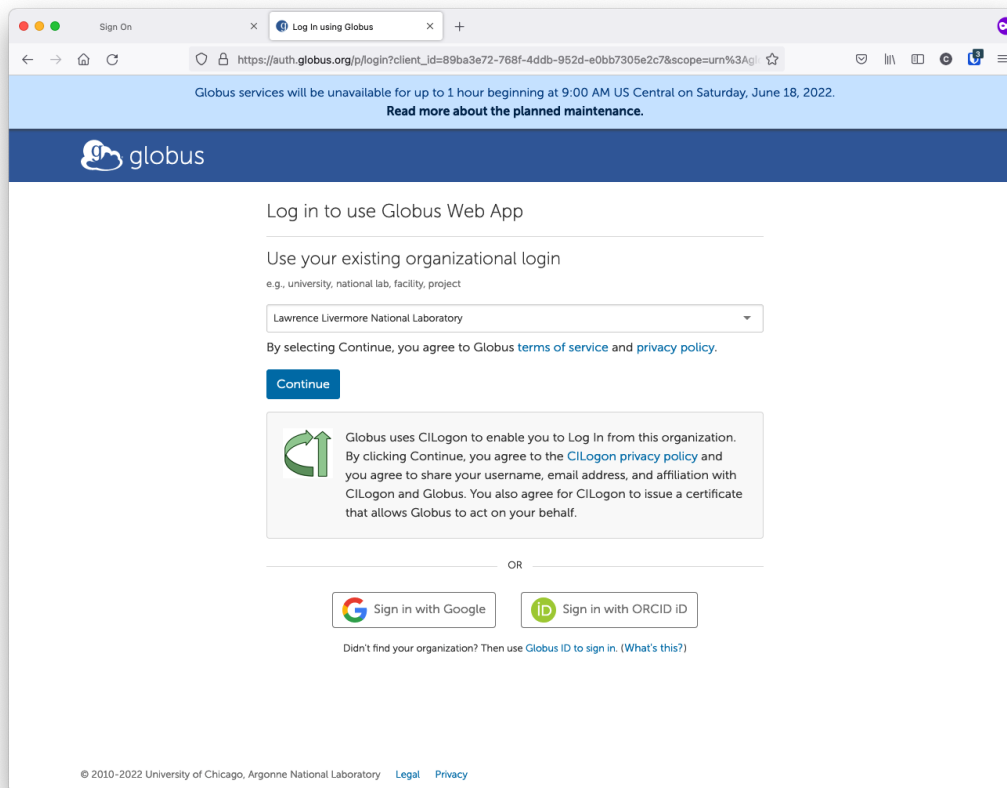
- Widely-used inter-organization file-transfer service
 - Heavily used in science/research community for large datasets
 - Long used at LLNL/LC for climate data transfer
- Benefits
 - Easy to use
 - Community standard
 - Parallel transfers, high-performance
 - Goblin reached > 2 GB/s transfer from ALCF
- History:
 - Developed by U Chicago & ANL to enable “Grid Computing”
 - Non-profit, but “Freemium” product
- Terminology
 - Endpoint: Location to use as source or destination in Globus transfer
 - Collection: Repository of data on a Globus version 5 server
 - Can be multiple collections per endpoint

Globus in LC

- Endpoint is **LC Public**
- Data should be considered unprotected in Globus
- Data restrictions
 - LLNL-generated data – must go through IM R&R for “public” release
 - May consult with OISSO for waiver availability
 - Outside-generated data:
 - LLNL must have no legal responsibility to protect
 - Follow agreements with data owner for protection
- Only LC users can browse endpoint
 - Users can “Share” their data with outside organizations
- This is a “High Assurance” endpoint, which mandates encryption on all transfers
 - Cannot transfer to/from endpoints not supporting encryption
- Documentation: <https://hpc.llnl.gov/services/globus>

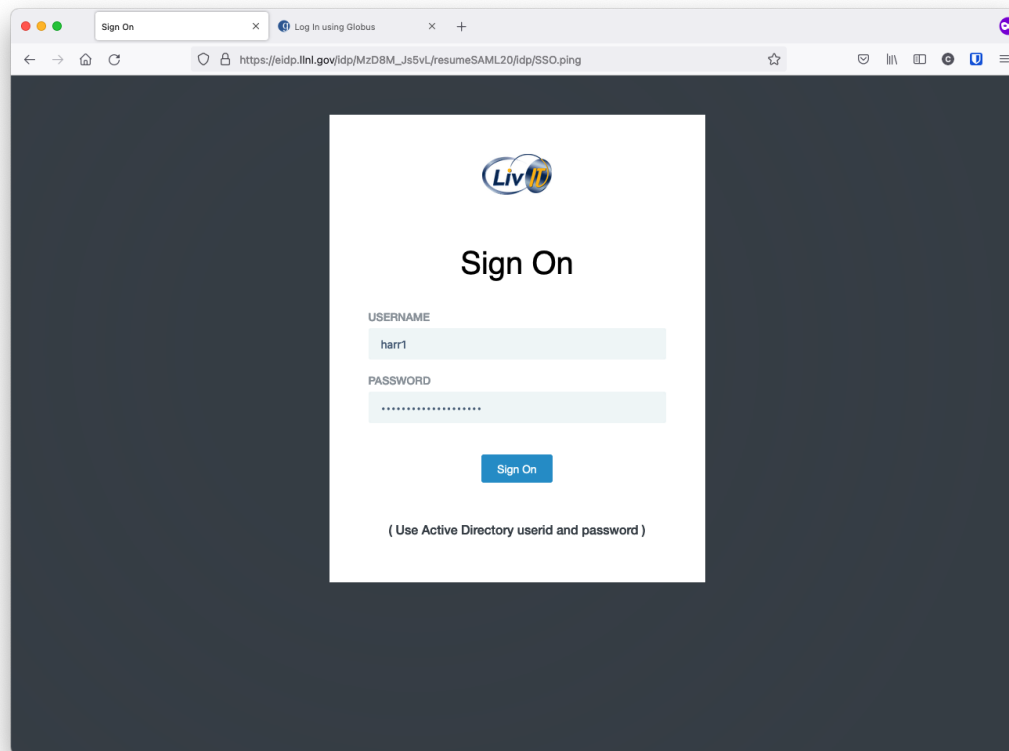
Logging in to Globus Web App (1)

- Point your browser to <https://app.globus.org>
- Select Lawrence Livermore National Lab (if prompted)



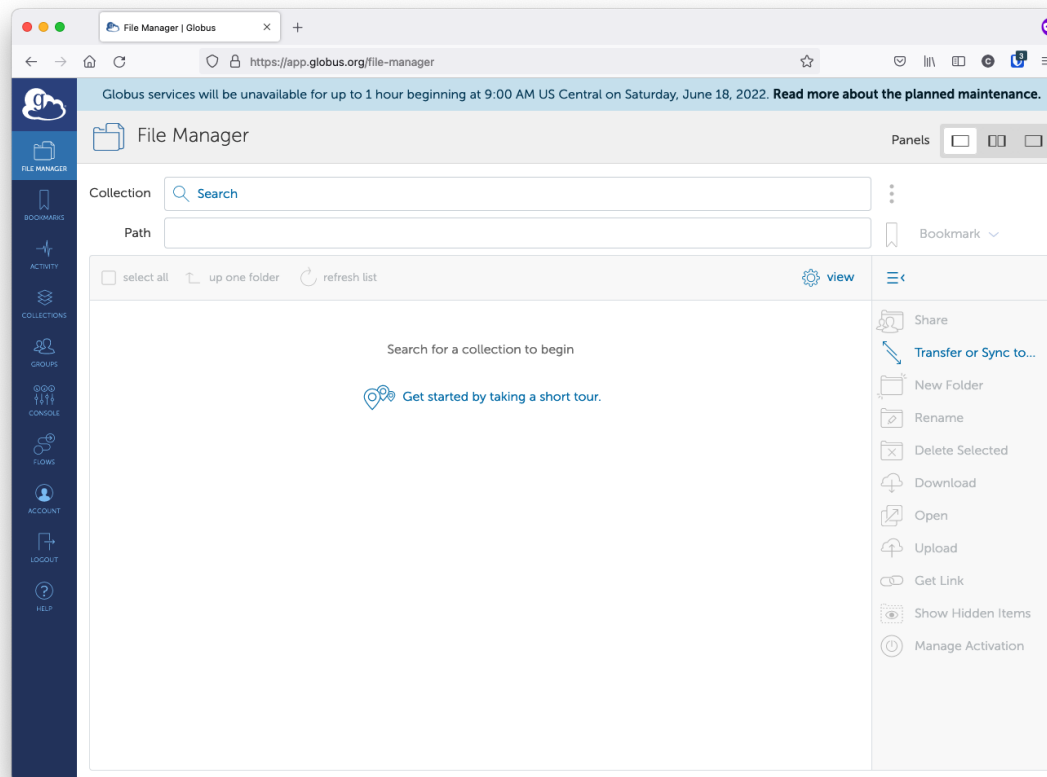
Logging in to Globus Web App (2)

- If prompted, log in to LivIT Identity Provider (IdP) with AD creds
- Select Lawrence Livermore National Lab (if prompted)



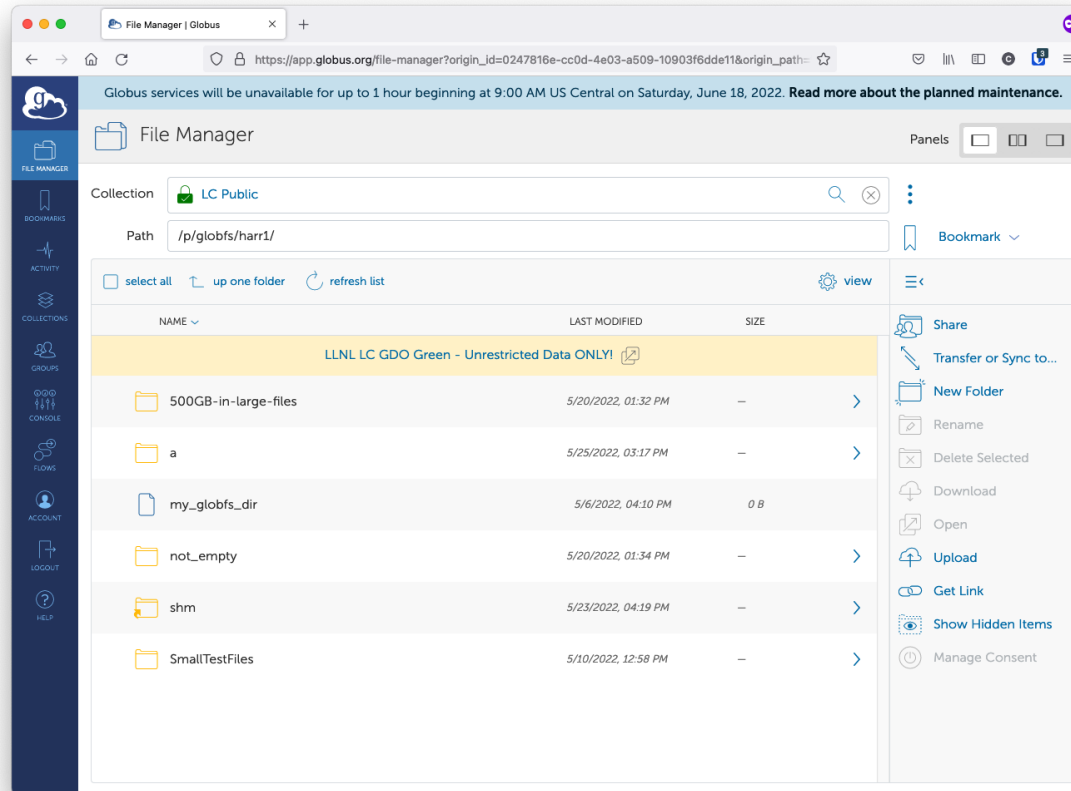
Globus File Manager (1)

- Globus File Manager is default view
- Browse for Source and Destination Endpoints



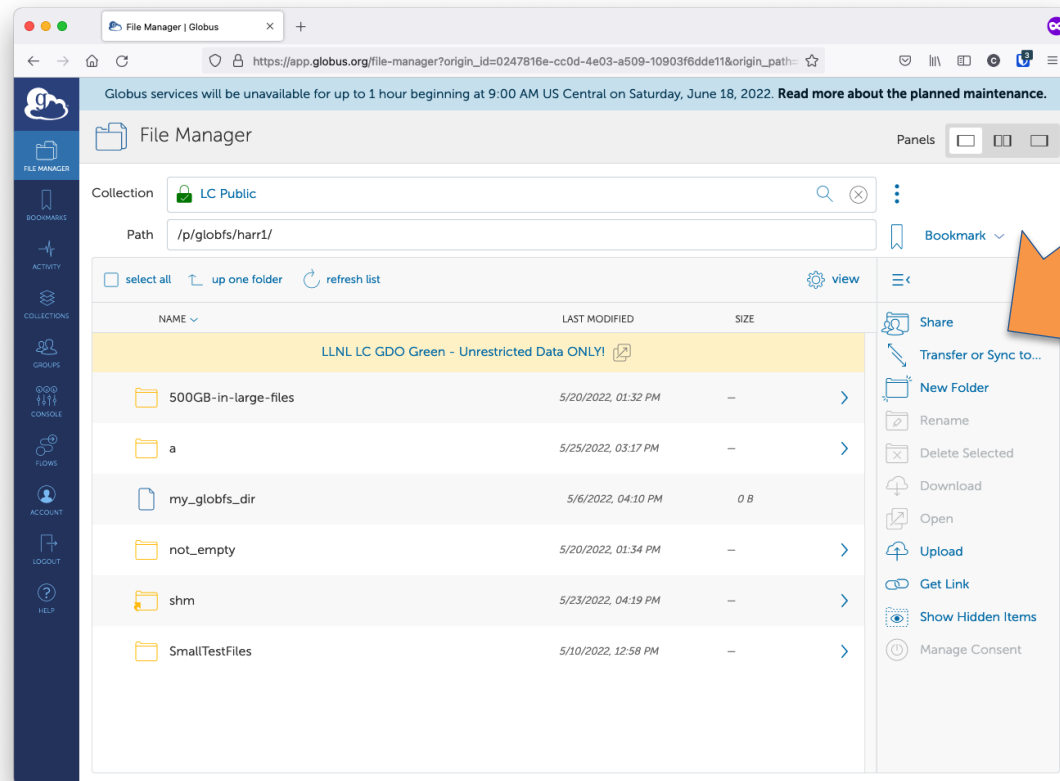
Globus File Manager (2)

- LC Endpoint is **LC Public**
- Users should be placed in their data share: `/p/globfs/<user>`



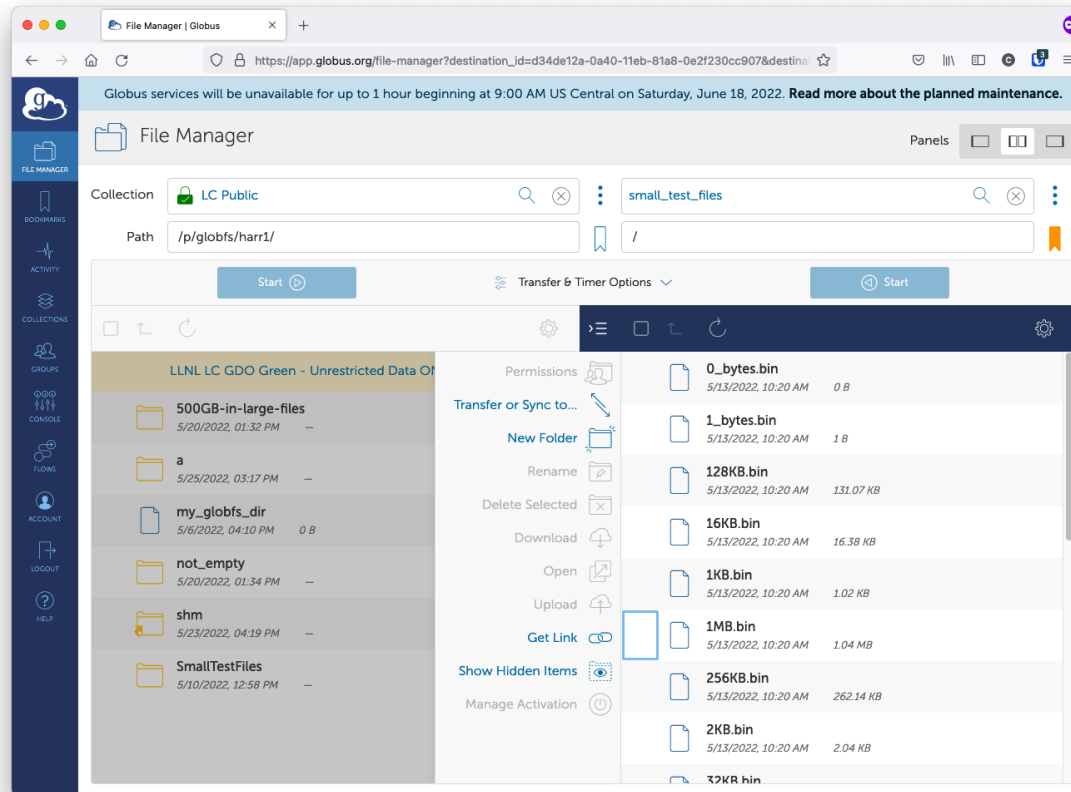
Globus File Manager (3)

- Select operation on right panel:
 - Transfer: transfer files between two endpoints
 - Share: Make a group of your files available to non-LC users



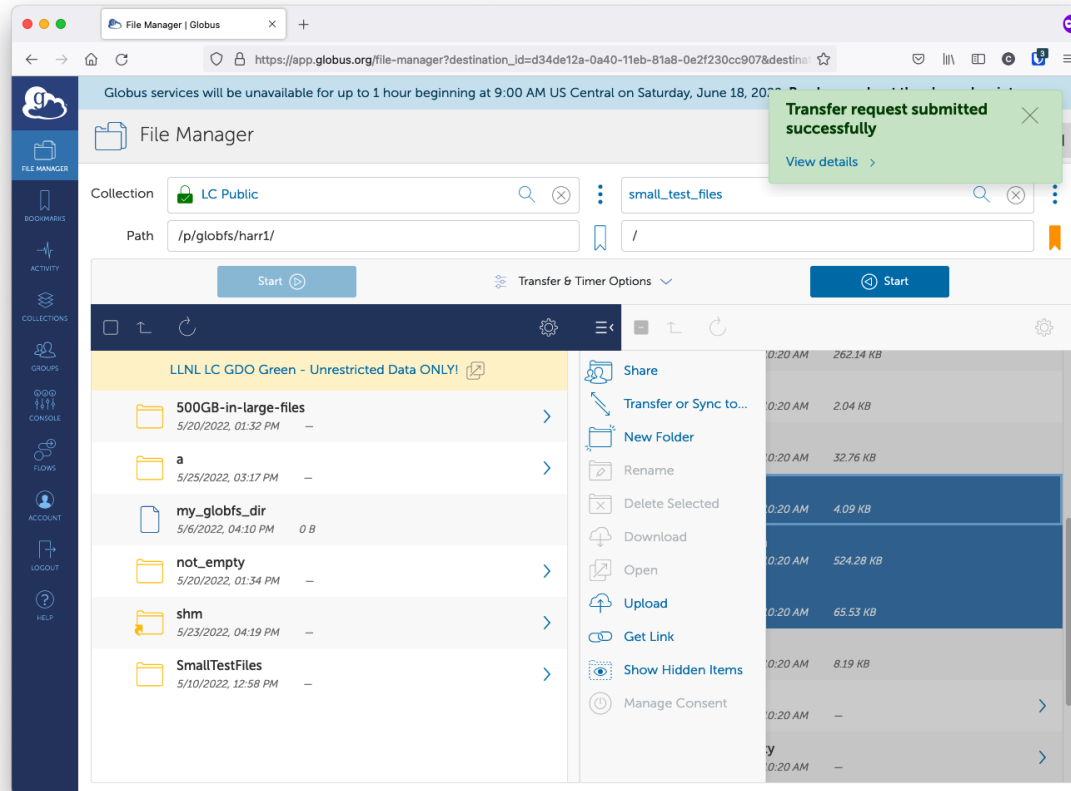
Transferring Files (1)

- Browse to two endpoints after clicking “Transfer or Sync to...”
- Choose “small_test_files” collection



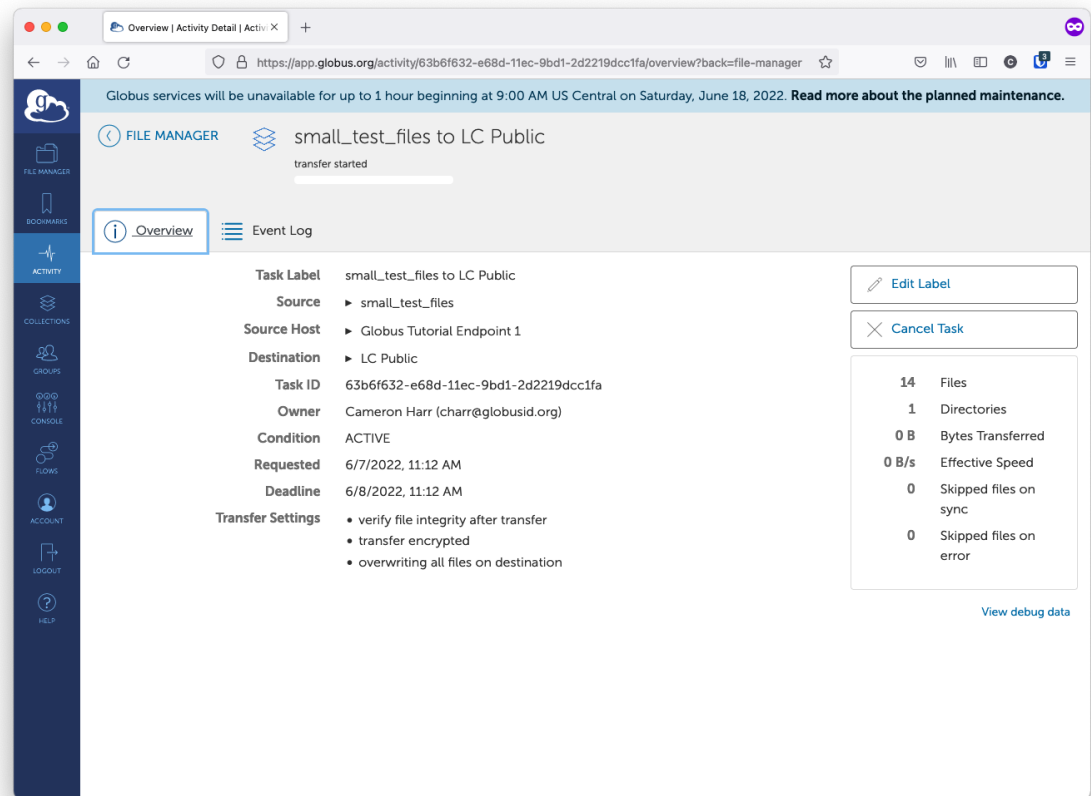
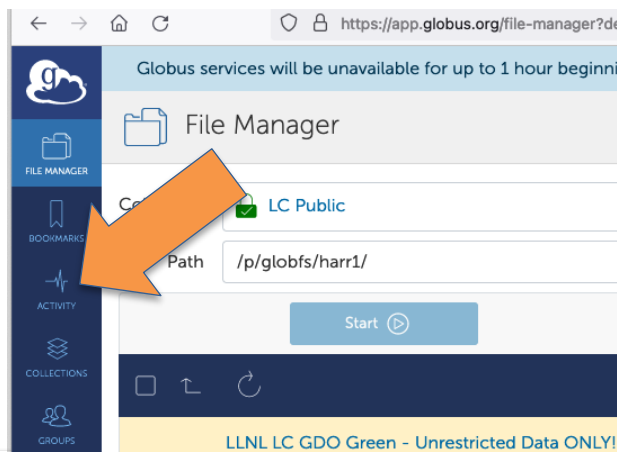
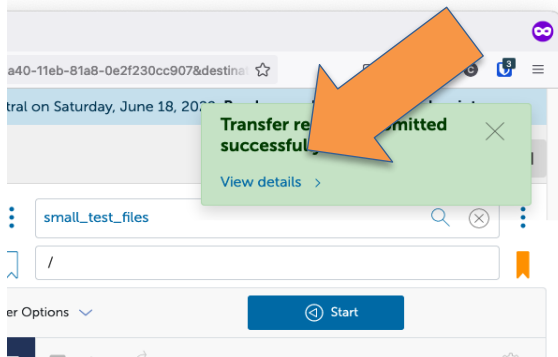
Transferring Files (2)

- Select 1 or more files (Shift-click for multiple)
- Click “Start” or just drag and drop to your directory



Transferring Files (3)

- Monitor transfer by clicking on “View Details” or “Activity”



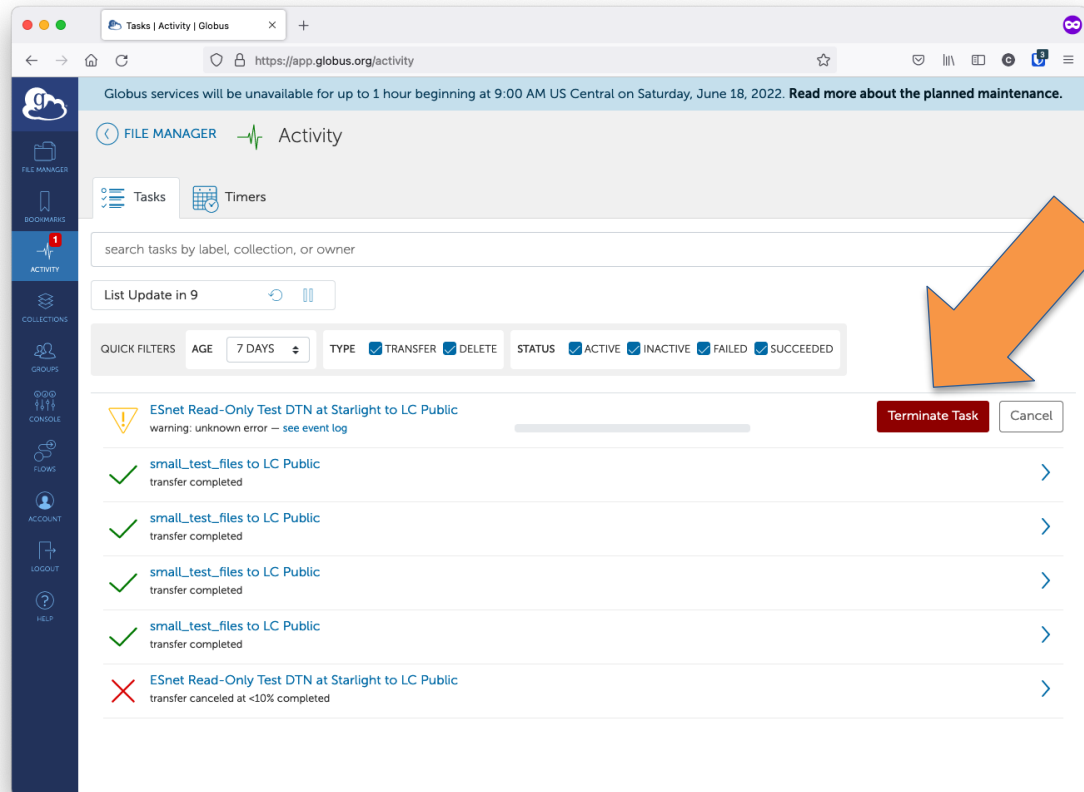
Transferring Files – Failure (1)

- Check Event Log for failure messages

The screenshot shows a web browser window displaying the Globus Activity Detail page. The address bar shows the URL: <https://app.globus.org/activity/c54bb9b8-e68e-11ec-9912-3b4cfd38030/events?back=file-manager>. A blue banner at the top states: "Globus services will be unavailable for up to 1 hour beginning at 9:00 AM US Central on Saturday, June 18, 2022. Read more about the planned maintenance." The main header shows "FILE MANAGER" and a warning icon with the text "ESnet Read-Only Test DTN at Starlight to LC Public" and "warning: unknown error — see event log". The left sidebar contains navigation links: FILE MANAGER, BOOKMARKS, ACTIVITY (highlighted with a red notification badge), COLLECTIONS, GROUPS, CONSOLE, FLOWS, ACCOUNT, LOGOUT, and HELP. The main content area has tabs for "Overview" and "Event Log". Under "Event Log", there are two tabs: "All Events" and "Fault Events". The "Fault Events" tab is active, showing a list of events. The first event is dated "6/7/2022, 11:22 AM" and is an "Uncategorized Error". It includes a "View details" link. The error message text is: "Error (session setup)", "Endpoint: ESnet Read-Only Test DTN at Starlight (57218f41-3200-11e8-b907-0ac6873fc732)", "Server: star-dtn.es.net:2811", "Message: Encryption not supported", and "Details: Encryption only works for gsiftp:// servers". The second event is dated "6/7/2022, 11:22 AM" and is labeled "started", also with a "View details" link.

Transferring Files – Failure (2)

- Globus will keep retrying transfer
- If transfer will never succeed, “Terminate” the task via “Activity tab

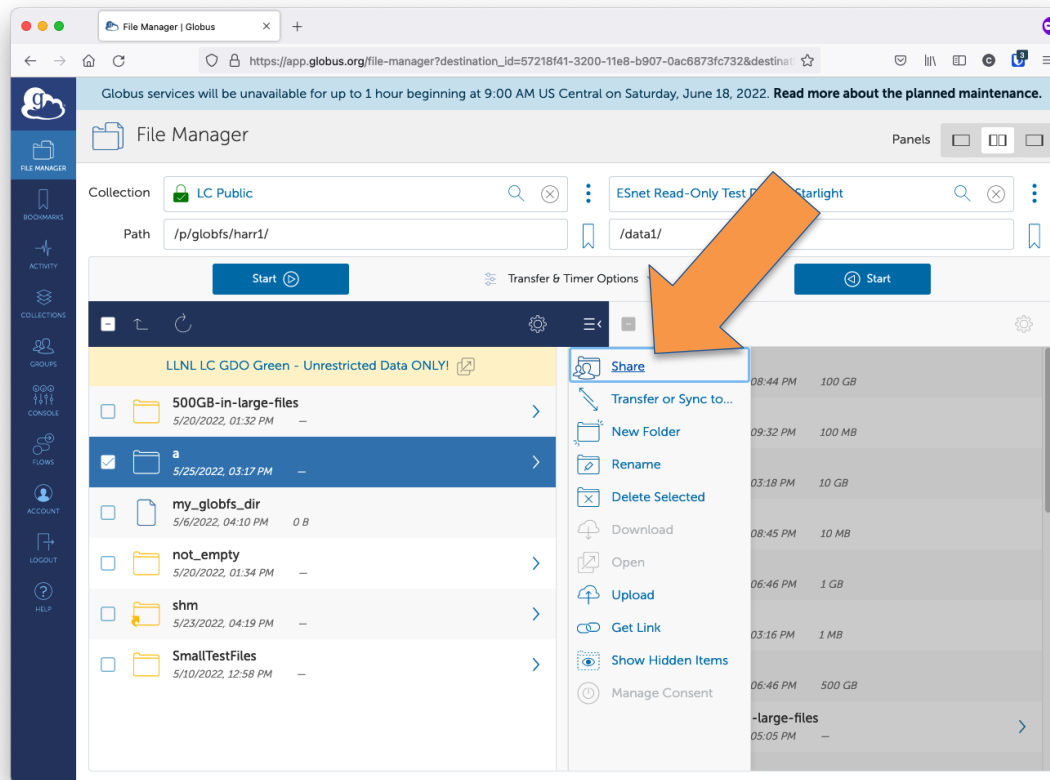


Transferring Files - Troubleshooting

- Errors generally caused by sharing/permissions problems or server problems.
- Users should get email on all transfers signifying Success or Failure.
- 1st step at debugging failure is to look at Event Log
 - Verify they are using an endpoint that supports encryption
 - Note other error messages
- If stumped, or it looks like a server problem, contact LC Hotline

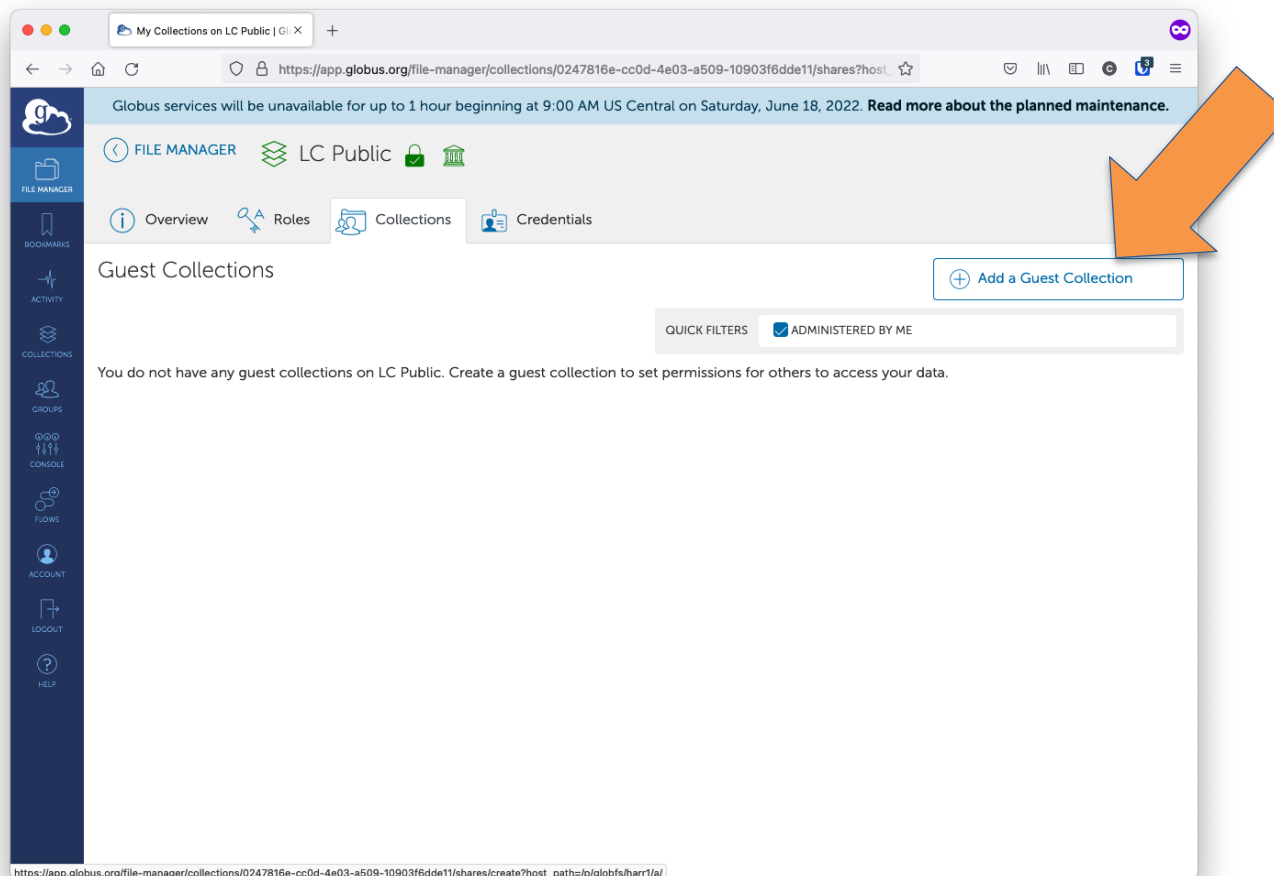
Sharing Files (1)

- Select files to share and click “Share”
- <https://docs.globus.org/how-to/share-files/>



Sharing Files (2)

- Create a Guest Collection or add to existing one



`https://app.globus.org/file-manager/collections/0247816e-cc0d-4e03-a509-10903f6dde11/shares/create?host_path=/p/globfs/harr1/a/`

Sharing Files (3)

- Fill out relevant fields and click “Create Collection”

The screenshot shows a web browser window with the URL <https://app.globus.org/file-manager/collections/0247816e-cc0d-4e03-a509-10903f6dde11/shares/create>. A blue banner at the top states: "Globus services will be unavailable for up to 1 hour beginning at 9:00 AM US Central on Saturday, June 18, 2022. Read more about the planned maintenance." The page title is "Create New Guest Collection". On the left is a dark blue sidebar with icons for FILE MANAGER, BOOKMARKS, ACTIVITY, COLLECTIONS, GROUPS, GOOD TIPS, CONSOLE, FLOWS, ACCOUNT, LOGOUT, and HELP. The main content area shows a form for creating a guest collection. The text "You are creating a guest collection on LC Public to share data" is at the top. The form fields are: Directory (with a "Browse" button and a question mark icon), Display Name (filled with "A is for Alice's Awesome Apples"), Description (filled with "A is the first letter of the alphabet. Hopefully you know that by now."), Keywords (filled with "genomics, Higgs boson, climate change"), Information Link (filled with "https://www.example.org/faq" and a question mark icon), Contact Email (filled with "jdoe@example.org" and a question mark icon), Organization (filled with "ABC University"), Department (filled with "XYZ University Lab"), and Other Contact Info (a text area). At the bottom, there is a checked checkbox labeled "Force encryption" and two buttons: "Create Collection" and "Cancel". A large orange arrow points from the bottom right towards the "Create Collection" button.

Sharing Files (4)

- Add users and set permissions

Permissions on A is for Alice's Awesome Apples

FILE MANAGER

Overview Permissions Roles

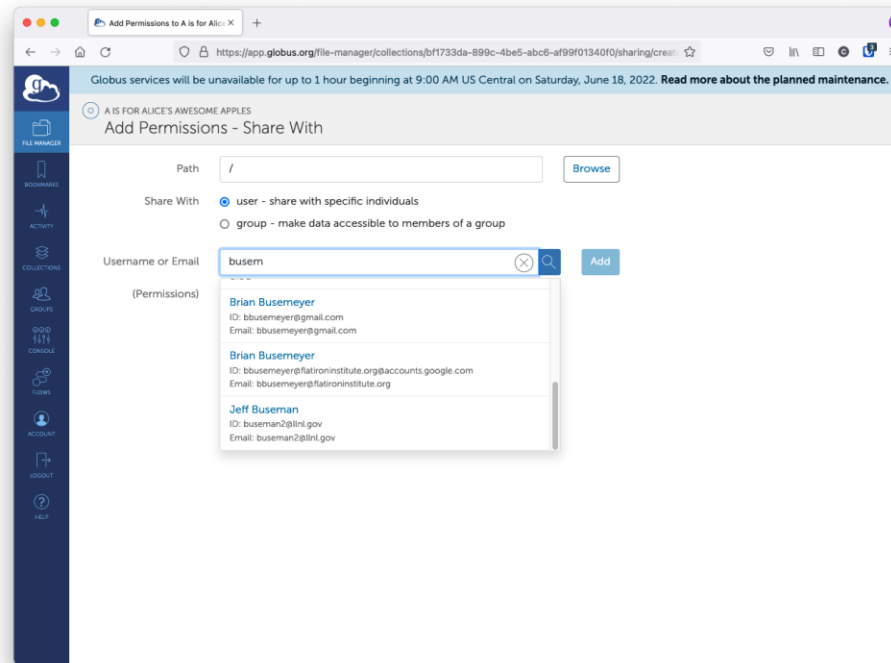
Shared With

USER OR GROUP	CREATED	READ	WRITE	
Path: /				Show link for sharing
LLNL LC Public (51245285-9ea1-4e56-a0c4-4de744f7c39f@clients.auth.globus.org)	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Cameron Harr (harr1@llnl.gov)	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

Add Permissions - Share With

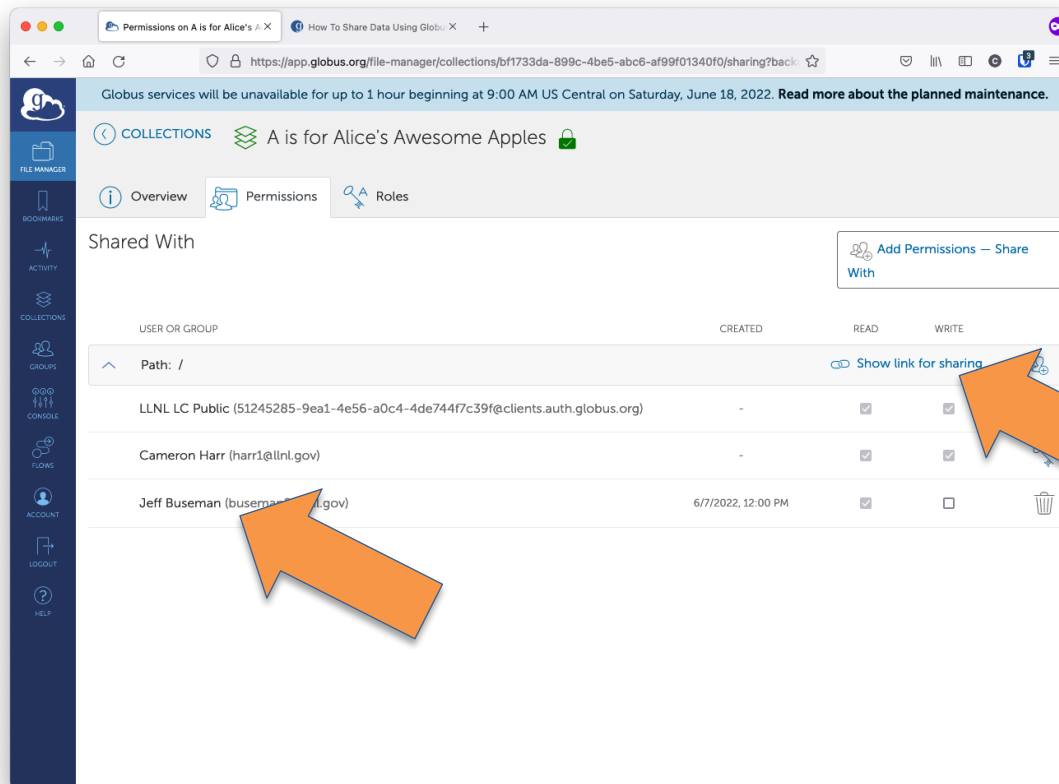
Sharing Files (5)

- Path is relative to the collection you're sharing
 - So "/" == `/p/globfs/harr1/a`
- Username/email auto-matches valid users as you type
- Select Read/Write permissions (default is read-only)



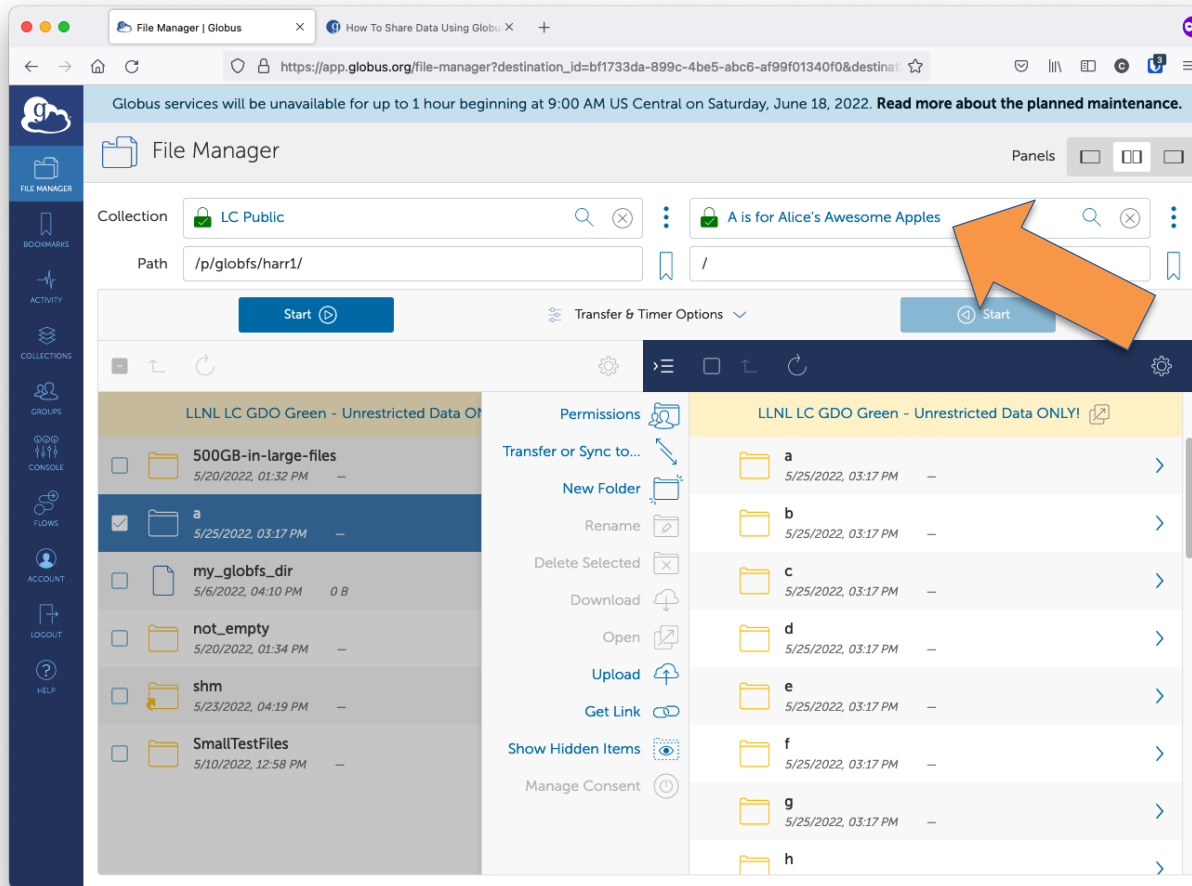
Sharing Files (6)

- Verify user(s) show as having access to collection
- Can also provide link to those who already have access



Sharing Files (7)

- Those with access should be able to browse to collection



Q&A





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