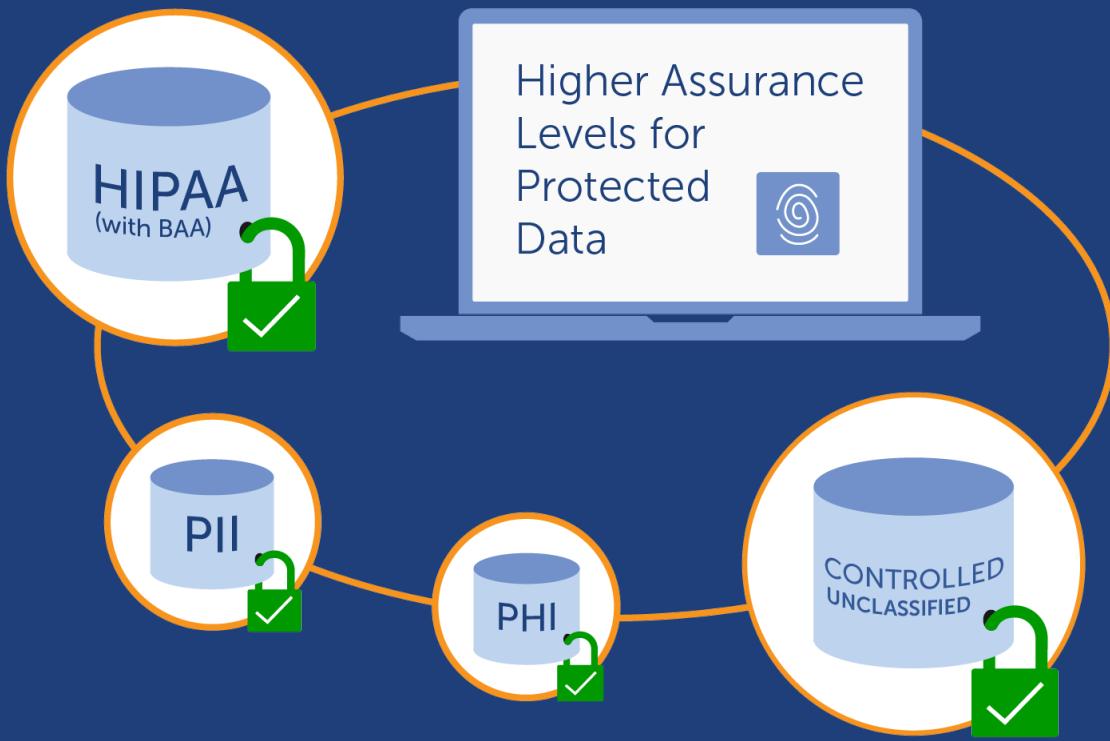


Managing and Sharing Protected Data



Greg Nawrocki
greg@globus.org

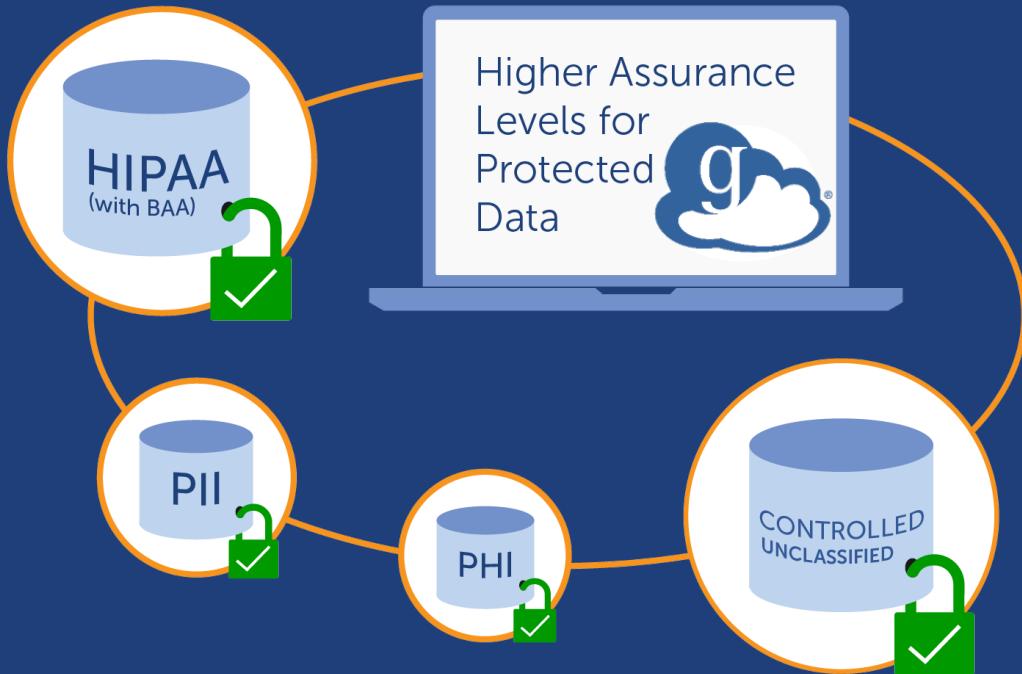
RMACC
May 22, 2019





Manage Protected Data

Higher assurance levels for HIPAA and other regulated data



- Support for protected data such as health related information
- Share data with collaborators while meeting compliance requirements
- Includes BAA option



Globus for high assurance data management

- **Restricted data handling**
 - PHI (Protected Health Information)
 - PII (Personally identifiable information)
 - Controlled Unclassified Information
- **University of Chicago security controls**
 - NIST 800-53 Low
 - Superset of 800-171 Low
- **Business Associate Agreements (BAA) will be between University of Chicago and our subscribers**
 - University of Chicago has a BAA with Amazon



Restricted data disclosure to Globus

- **Globus never sees file contents**
 - File contents can have restricted data
- **File paths/name can have restricted data (e.g. PHI)**
- **None of the other elements (endpoint definitions, labels, collection definitions) can contain restricted data**





Globus services in scope for first release

- **Globus Services: Auth, Transfer & Sharing, Groups**
- **Globus Connect Server v5.2 and above**
- **Globus Connect Personal v3.x**
- **Web app (app.globus.org)**
- **Globus Command Line Interface (CLI)**



Other features/services/products

- **Connectors: Google Drive, AWS S3, CEPH, Box**
 - Plan to support all connectors in future releases
- **Out of scope: Globus ID, old web app, GCS v4.x, GCSv5.0, 5.1, GCP2.x**

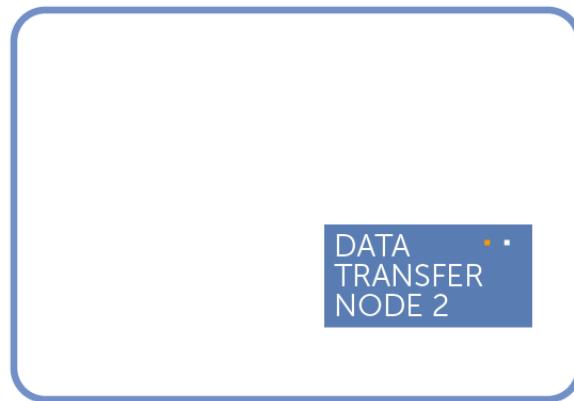
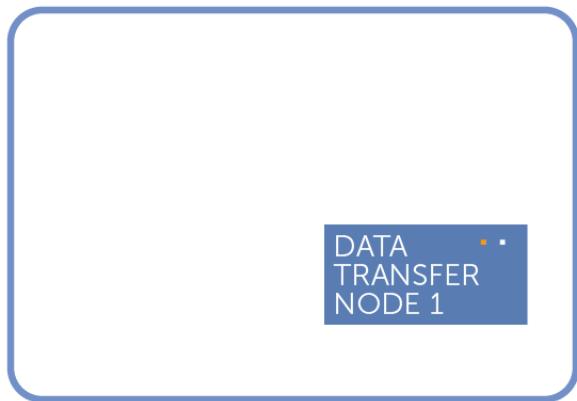


Globus Connect Server 5.3

- **Support high assurance data access and standard data access**
- **Multiple storage connectors per endpoint**
 - POSIX
 - Google Drive
 - AWS S3
 - Ceph
 - Box
- **New terminologies and ways of doing things**

See <https://docs.globus.org/globus-connect-server-v5-installation-guide/> for 4.x – 5.x terminology and architecture changes

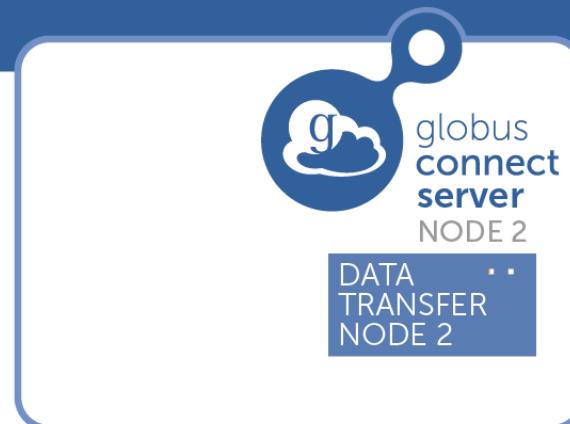
See <https://docs.globus.org/high-assurance/> for instructions on how to create a high assurance collection



DATA TRANSFER NODES

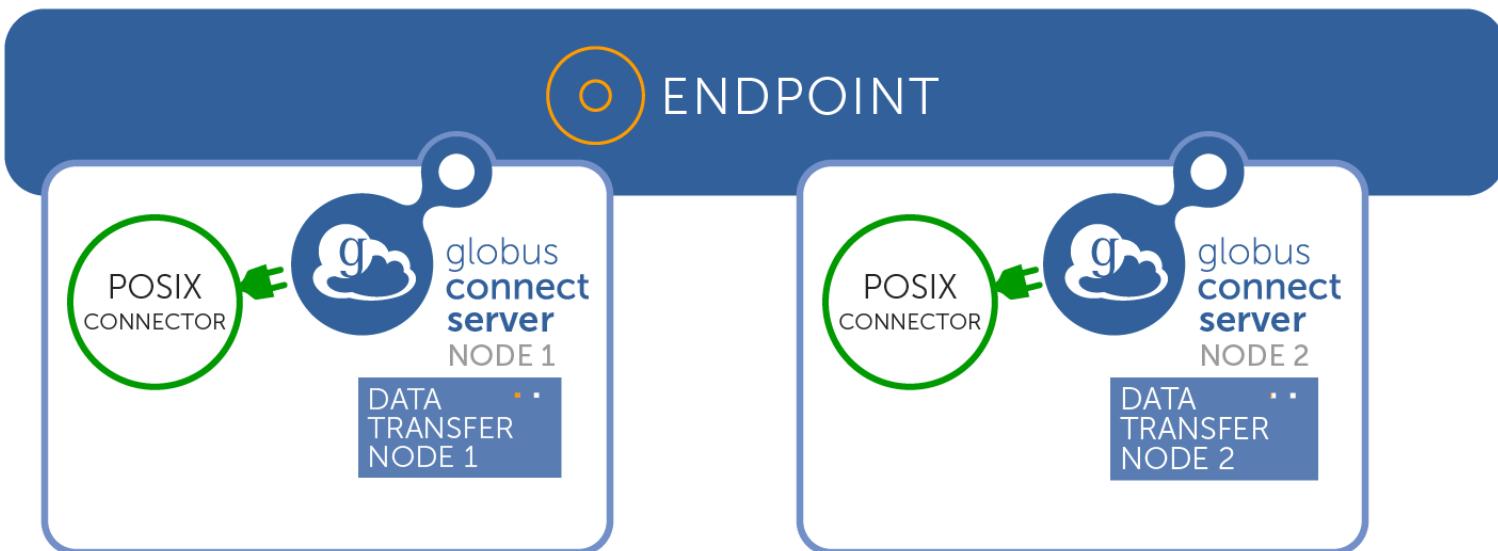
Network & storage
connected servers
in ScienceDMZ

ENDPOINT



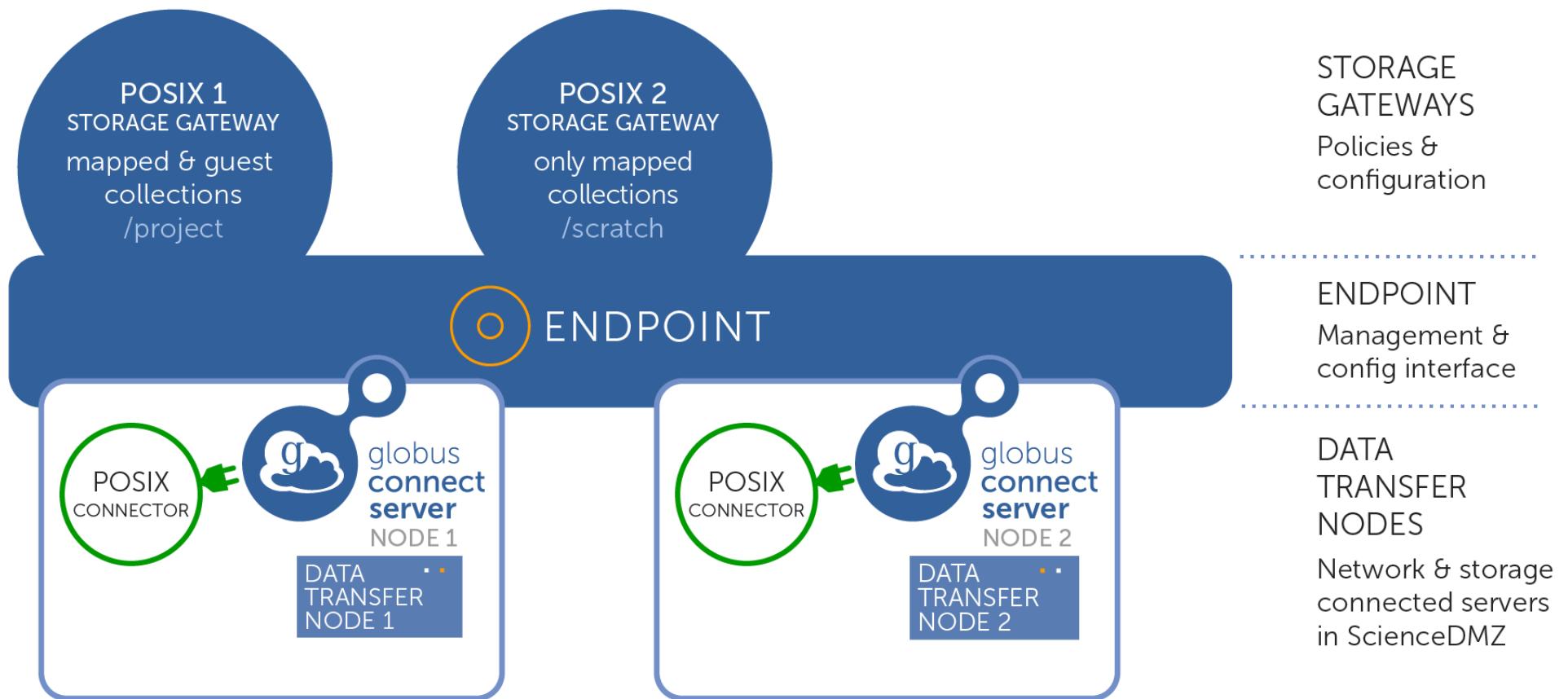
ENDPOINT
Management & config interface

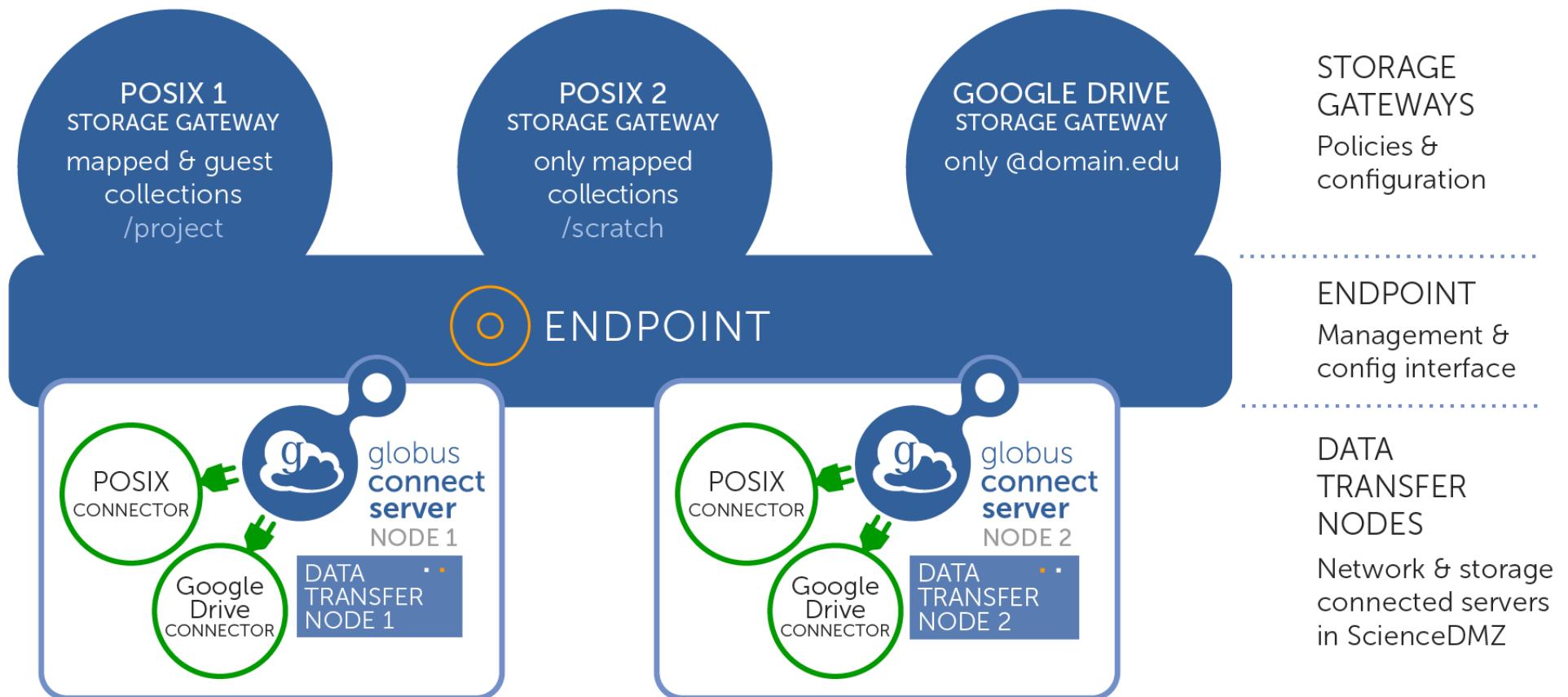
DATA TRANSFER NODES
Network & storage connected servers in ScienceDMZ

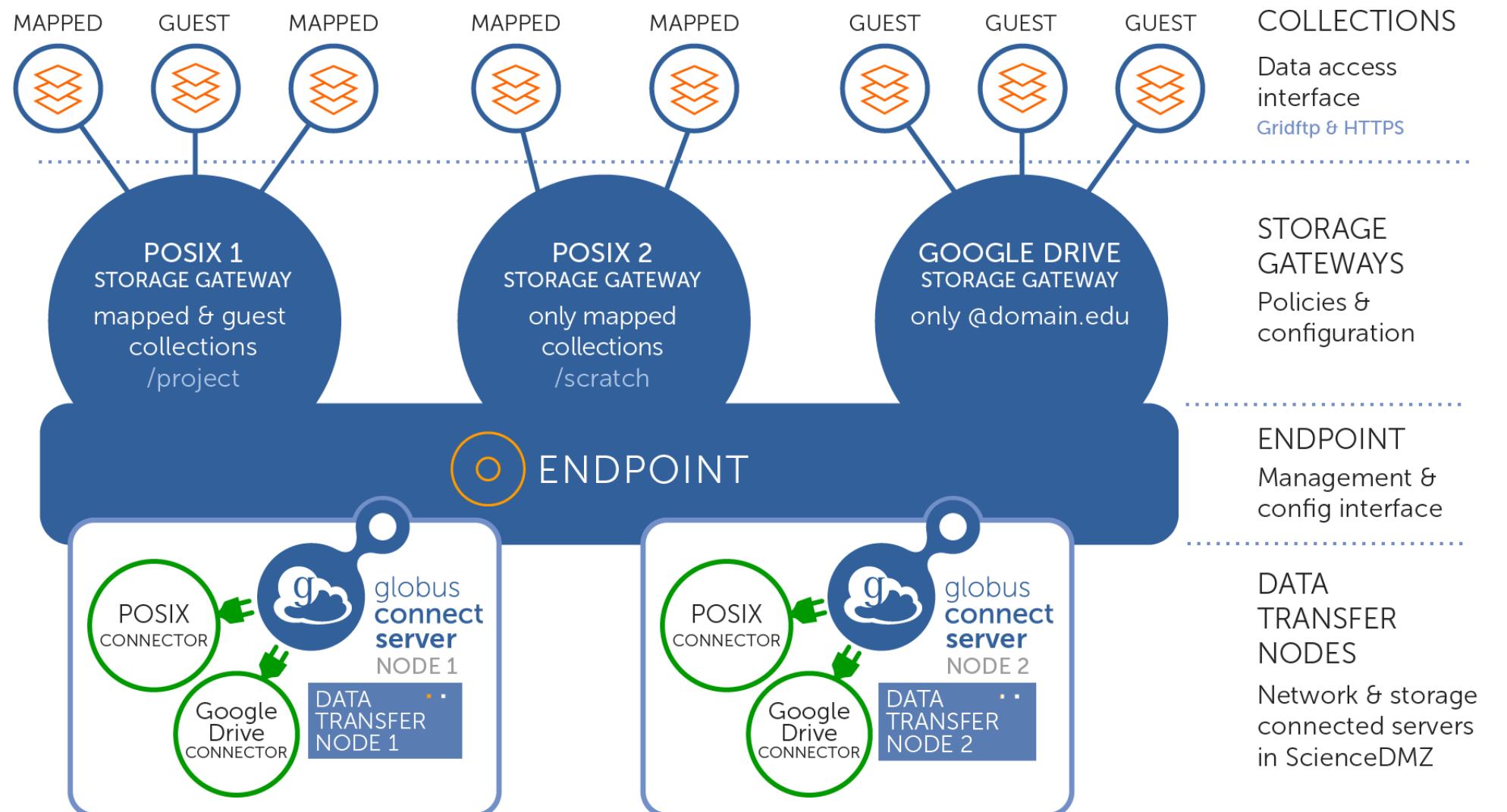


ENDPOINT
Management & config interface

DATA TRANSFER NODES
Network & storage connected servers in ScienceDMZ





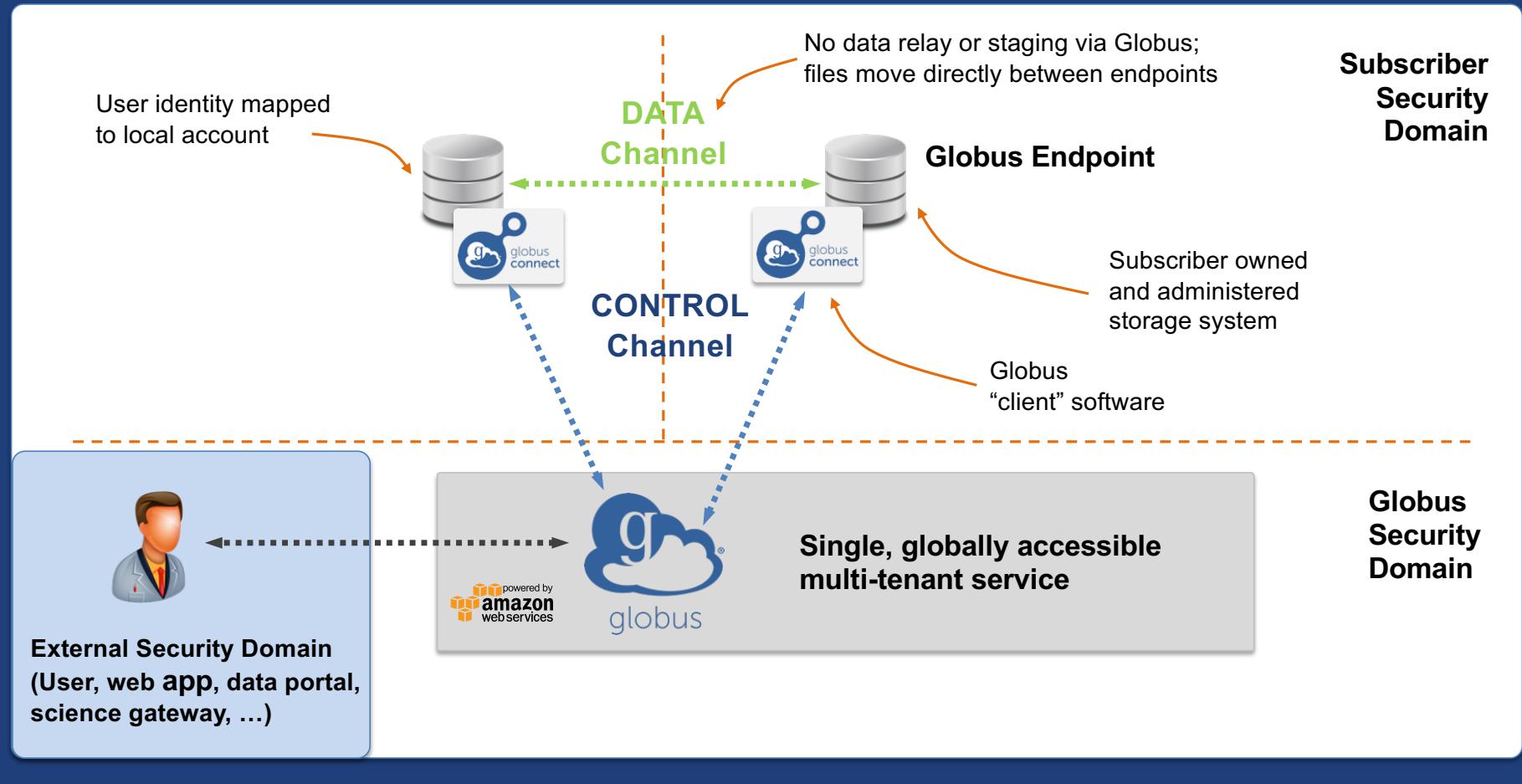




Out with the old, in with the new

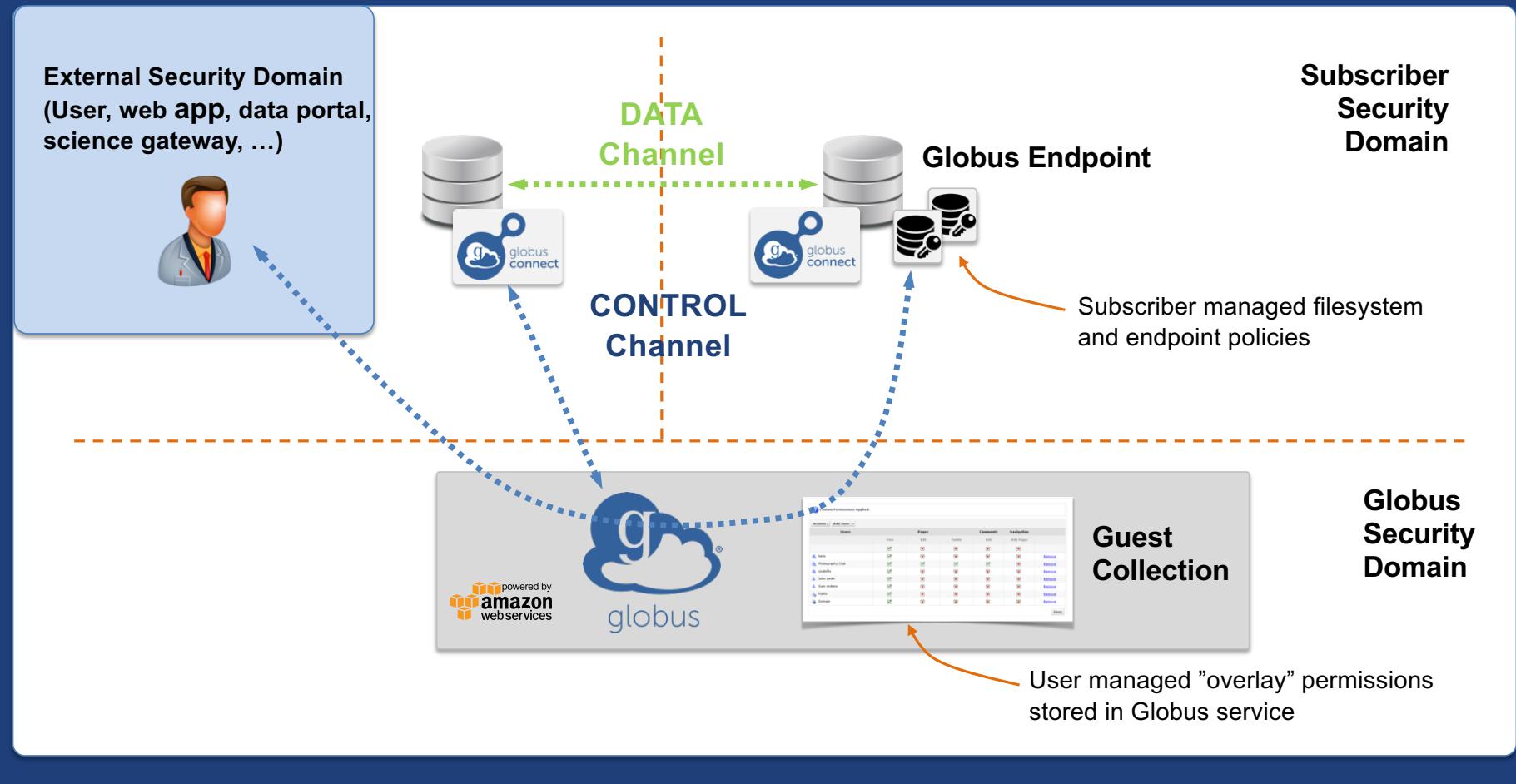
- **Host endpoints → Mapped collections**
 - Need local account to access data
- **Shared endpoints → Guest collections**
 - No local account needed for data access, permissions set in Globus
- **Use host endpoint to create shared endpoint → Use storage gateway to create (guest) collections**
- **Access via GridFTP → Access via GridFTP or HTTPS**
- **Initially available via Globus Connect Server v5.2**

Conceptual architecture: Mapped collections



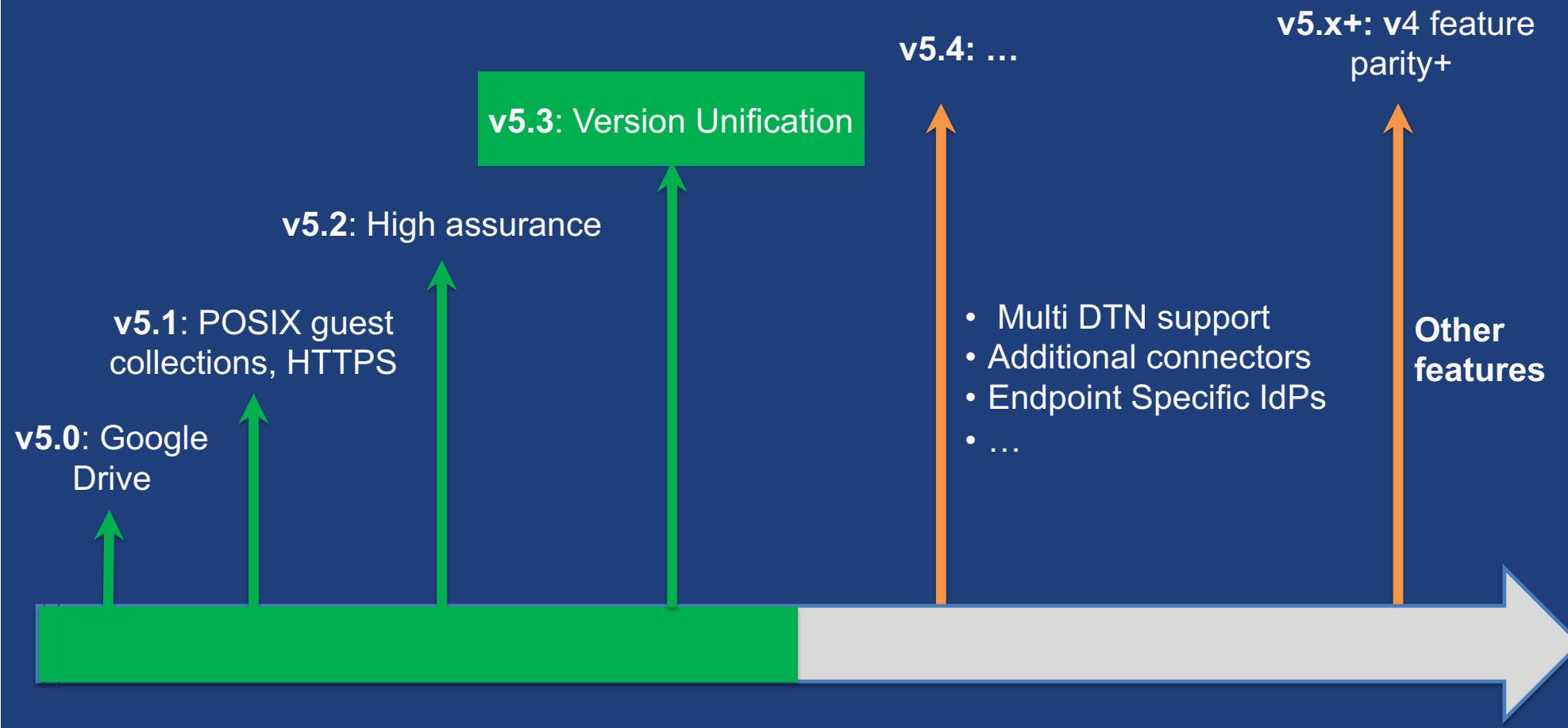


Conceptual architecture: Guest Collections





Globus Connect Server v5 Milestones





High Assurance features

- **Additional authentication assurance**
 - Per storage gateway policy on frequency of authentication with specific identity for access to data (timeout)
 - Ensure that user authenticates with the specific identity that gives them access within session (decoupling linked identities)
- **Session/device isolation**
 - Authentication context is per application, per session (~browser session)
- **Enforces encryption of all user data in transit**
- **Audit logging**



Additional authentication assurance

The screenshot shows the Globus File Manager interface. On the left, a sidebar lists recently used endpoints, including UChicago RCC Midway, petrel#testbed, GCSv5.2 Globus Demo HA Mapped Collection, 5.1 Home Shares - Vas, 5.1 Sandbox - Vas, Amazon S3 Gateway - Vas, ESnet Read-Only Test DTN at Sunnyvale, Vas Laptop, POSIX Sandbox - Vas, Globus Tutorial Endpoint 1, NCAR RDA Dataset Archive, and Globus Tutorial Endpoint 2. The main area displays a file list for the 'NCAR RDA Dataset Archive' collection, specifically the '/ds314.2/2000_2009/' path. A context menu is open over a file named 'clmforc.WFDEI.c2017.0.5x0...'. The menu options include: select all, up one folder, refresh list, columns, Permissions, Transfer, New Endpoints, Rename, Delete, Preview, Download (https), Open (https), Get Link, Show Hidden Items, and Deactivate.

The screenshot shows a JAGGAER login page. At the top right is the 'THE UNIVERSITY OF CHICAGO' logo. The page features a red header with the JAGGAER logo. Below it is a white box with a 'Welcome!' message. It asks users to log in with their 'CNetID / UCHADID' and 'Password'. There are links for 'Forgot your password?' and 'LOG IN'. At the bottom, there is a note about password changes for University of Chicago faculty, students, and staff members.



Additional authentication assurance



The screenshot shows the globus File Manager interface. On the left, there's a sidebar with 'RECENTLY USED ENDPOINTS' listing various cloud storage providers like globuspublish#trial_data, UChicago RCC Midway, petrel#testbed, GCSv2.Globus Demo, and others. The main area is titled 'File Manager' and shows a 'Collection' of 'NCAR RDA Dataset Archive'. The path is set to '/ds314.2/2000...2009/'. A search bar is present above the file list. The file list itself contains 12 entries, all named 'clmforc.WFDEI.c2017.0.5x0...' with a size of 259.21 MB and a modified date of 2/19/2018 1:45. Each entry has a context menu icon (three dots) and a row of icons for 'Permissions', 'Transfer or Sync to...', 'New Folder', 'Rename', 'Delete Selected', 'Preview (limited)', 'Download (https)', 'Open (https)', 'Get Link', 'Show Hidden Items', and 'Deactivate'.

select all	⬆ up one folder	⟳ refresh list	⠇ columns	☰	
	clmforc.WFDEI.c2017.0.5x0...	2/19/2018 1:4...	259.21 MB	file	Permissions
	clmforc.WFDEI.c2017.0.5x0...	2/19/2018 1:4...	234.33 MB	file	Transfer or Sync to...
	clmforc.WFDEI.c2017.0.5x0...	2/19/2018 1:4...	259.21 MB	file	New Folder
	clmforc.WFDEI.c2017.0.5x0...	2/19/2018 1:4...	259.92 MB	file	Rename
	clmforc.WFDEI.c2017.0.5x0...	2/19/2018 1:4...	259.21 MB	file	Delete Selected
	clmforc.WFDEI.c2017.0.5x0...	2/19/2018 1:4...	259.92 MB	file	Preview (limited)
	clmforc.WFDEI.c2017.0.5x0...	2/19/2018 1:4...	259.21 MB	file	Download (https)
	clmforc.WFDEI.c2017.0.5x0...	2/19/2018 1:5...	259.21 MB	file	Open (https)
	clmforc.WFDEI.c2017.0.5x0...	2/19/2018 1:5...	259.92 MB	file	Get Link
	clmforc.WFDEI.c2017.0.5x0...	2/19/2018 1:5...	259.21 MB	file	Show Hidden Items
	clmforc.WFDEI.c2017.0.5x0...	2/19/2018 1:5...	259.92 MB	file	Deactivate
	clmforc.WFDEI.c2017.0.5x0...	2/19/2018 1:5...	259.21 MB	file	



The screenshot shows the Globus File Manager interface. On the left, there's a sidebar with a 'File Manager' tab selected. The main area displays a 'Collection' named 'GCSv5.2 Globus Demo HA Mapped Collection' containing several sub-folders: 'bester', 'dpowers', 'mlink', 'ranantha', 'read_only', 'sjmartin', 'tuecke', and 'vas'. Each folder entry includes a timestamp (e.g., 9/1/2018 5:44pm), size (e.g., 6 B), and a 'folde' button. To the right of each folder is a vertical column of icons: 'Permissions', 'Transfer or Sync to...', 'New Folder', 'Rename', 'Delete Selected', 'Preview (limited)', 'Download (https)', 'Open (https)', 'Get Link', and 'Show Hidden Items'. A 'Beta - Have feedback?' link is at the top left, and a 'Bookmark Manager' link is at the top right.



Re-authentication timeout



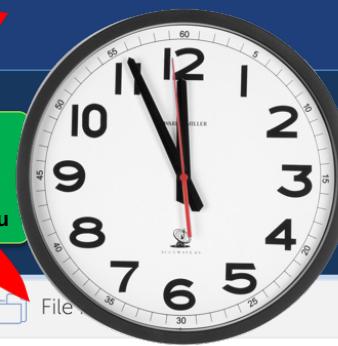
userX@anl.gov

Globus File Manager interface showing a list of files in the NCAR RDA Dataset Archive collection. The path is /ds314.2/2000_2009/. A red 'X' is overlaid on the top right of the interface.

File Name	Last Modified	Size	Type
clmforc.WFDEI.c2017.0.5x0...	2/19/2018 1:4...	259.21 MB	file
clmforc.WFDEI.c2017.0.5x0...	2/19/2018 1:4...	234.33 MB	file
clmforc.WFDEI.c2017.0.5x0...	2/19/2018 1:4...	259.21 MB	file
clmforc.WFDEI.c2017.0.5x0...	2/19/2018 1:4...	250.92 MB	file
clmforc.WFDEI.c2017.0.5x0...	2/19/2018 1:4...	259.21 MB	file
clmforc.WFDEI.c2017.0.5x0...	2/19/2018 1:4...	250.92 MB	file
clmforc.WFDEI.c2017.0.5x0...	2/19/2018 1:4...	259.21 MB	file
clmforc.WFDEI.c2017.0.5x0...	2/19/2018 1:5...	259.21 MB	file
clmforc.WFDEI.c2017.0.5x0...	2/19/2018 1:5...	250.92 MB	file
clmforc.WFDEI.c2017.0.5x0...	2/19/2018 1:5...	259.21 MB	file
clmforc.WFDEI.c2017.0.5x0...	2/19/2018 1:5...	250.92 MB	file
clmforc.WFDEI.c2017.0.5x0...	2/19/2018 1:5...	259.21 MB	file
clmforc.WFDEI.c2017.0.5x0...	2/19/2018 1:5...	250.92 MB	file

Globus File Manager interface showing a list of files in the GCSv5.2 Globus Demo HA Mapped Collection collection. The path is /. A large red 'X' is overlaid on the top left of the interface.

File Name	Last Modified	Size	Type
bester	9/1/2018 5:44pm	6 B	file
dpowers	9/2/2018 3:24pm	30 B	file
mlink	9/1/2018 5:44pm	6 B	file
ranantha	9/1/2018 5:44pm	6 B	file
read_only	9/1/2018 6:17pm	30 B	file
sjmartin	9/1/2018 5:44pm	6 B	file
tuecke	9/3/2018 10:40a...	22 B	file
vas	9/24/2018 1:16pm	6 B	file





Application Instance Isolation

Authenticated in browser session (app instance 1)

The screenshot shows the Globus File Manager interface. On the left, there's a sidebar with 'RECENTLY USED ENDPOINTS' listing various cloud storage and gateway endpoints. The main area is titled 'File Manager' and shows a collection named 'GCSv5.2 Globus Demo HA Mapped Collection'. The path is set to '/'. A context menu is open over a folder named 'bester', listing options like 'Permissions', 'Transfer or Sync to...', 'New Folder', 'Rename', 'Delete Selected', 'Preview (limited)', 'Download (https)', 'Open (https)', 'Get Link', and 'Show Hidden Items'. At the top of the interface, there's a green key icon with the text 'userX@uchicago.edu'.



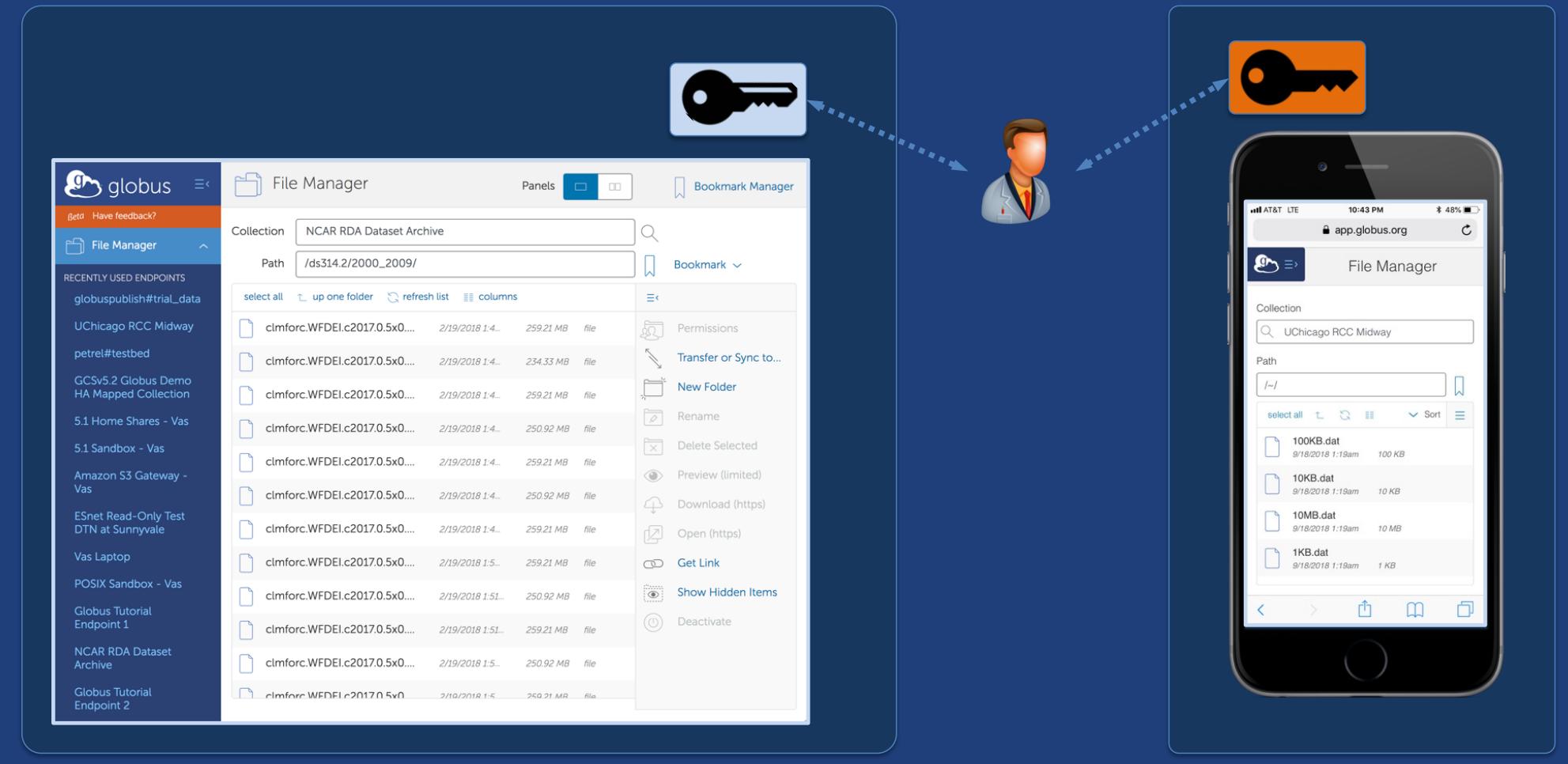
Re-authentication required in CLI session (app instance 2)

The screenshot shows a terminal window with the command 'globus --help' run. The output is as follows:

```
(globus-cli) - $ globus
Usage: globus [OPTIONS] COMMAND [ARGS]...
Options:
  -v, --verbose           Control level of output
  -h, --help              Show this message and exit.
  -F, --format [unix|json|text] Output format for std::out. Defaults to text
  --jmespath, --jq TEXT   A JMESPath expression to apply to json
                         output. Takes precedence over any specified '--format' and forces the format to be json
  --map-http-status TEXT  Map HTTP statuses to any of these exit codes:
                         0,1,50-99. e.g. "404=50,403=51"
Commands:
  bookmark               Manage endpoint bookmarks
  config                 Manage your Globus config file. (Advanced Users)
  delete                Submit a delete task (asynchronous)
  endpoint               Manage Globus endpoint definitions
  get-identities         Look up Globus Auth Identities
  list-commands          List all CLI Commands
  login                 Log into Globus to get credentials for the Globus CLI
  logout                Logout of the Globus CLI
  ls                    List endpoint directory contents
  mkdir                Make a directory on an endpoint
  rename               Rename a file or directory on an endpoint
  rm                    Delete a single path; wait for it to complete
  session               Manage your CLI auth session
  task                  Manage asynchronous tasks
  transfer              Submit a transfer task (asynchronous)
  update               Update the Globus CLI to its latest version
  version              Show the version and exit
  whoami               Show the currently logged-in primary...
```

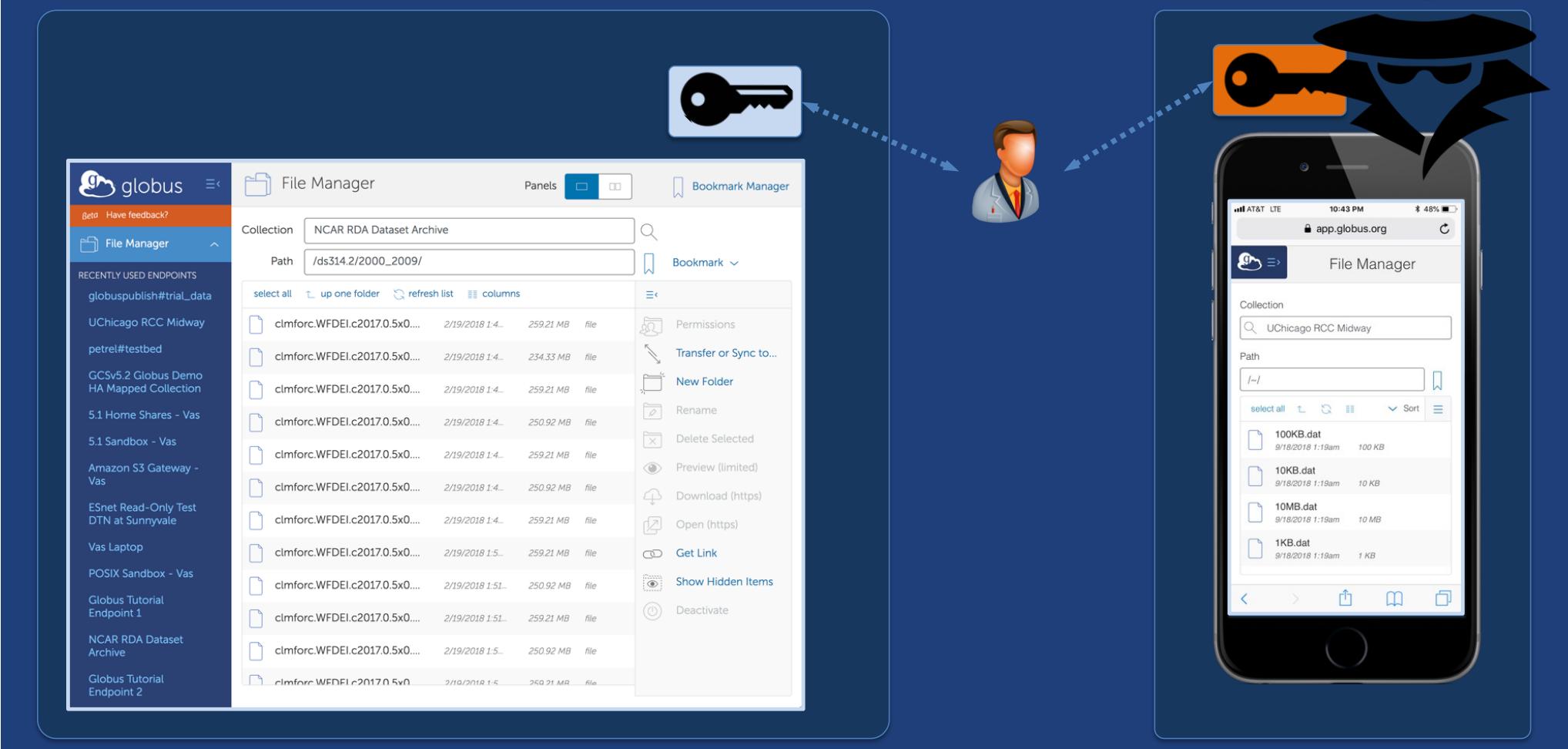


Application Instance Isolation





Application Instance Isolation

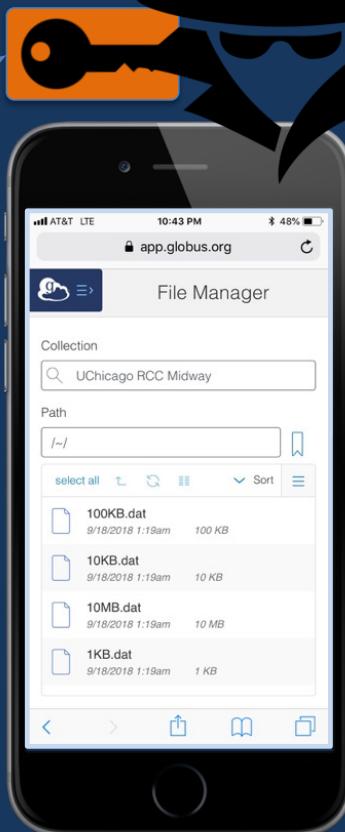




Application Instance Isolation



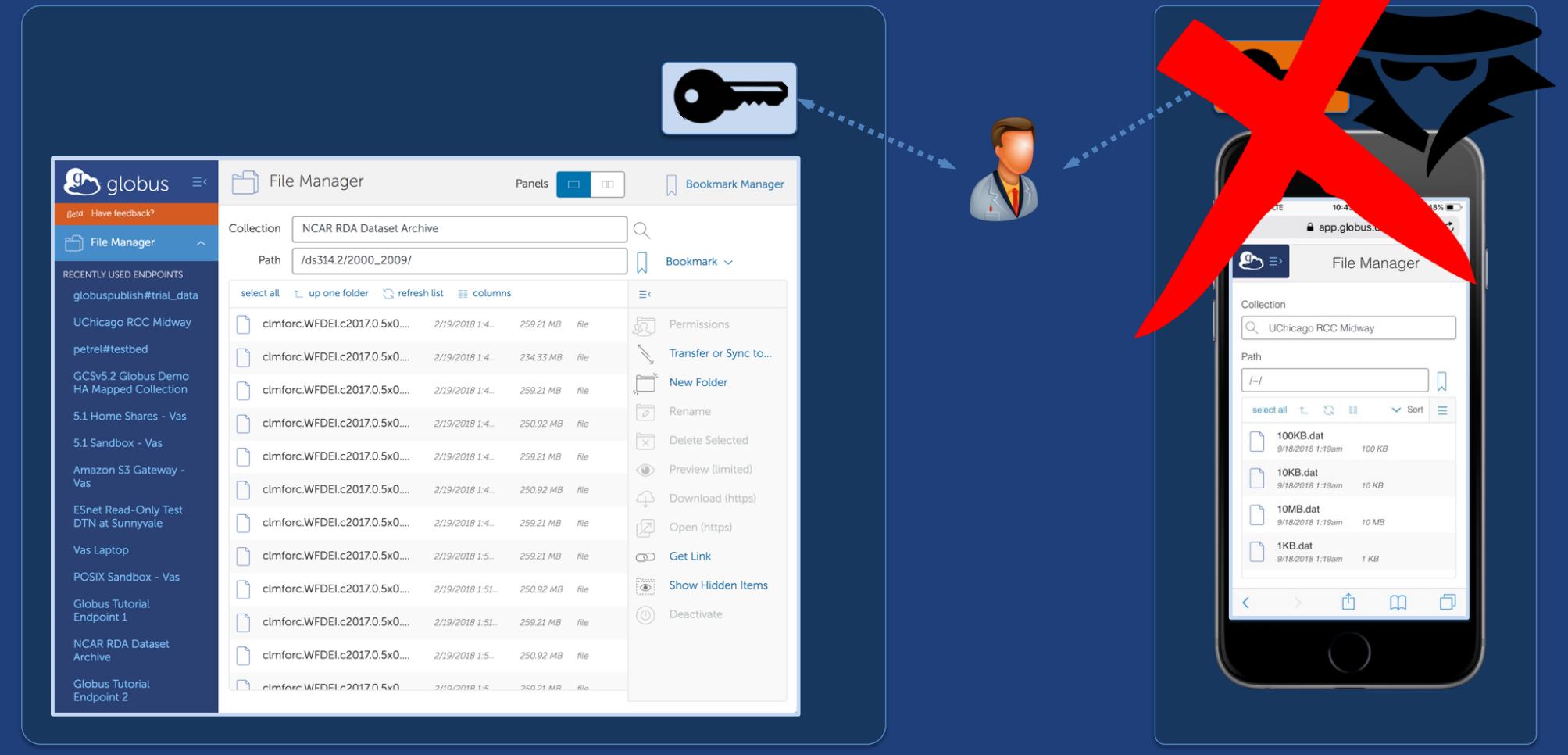
A screenshot of the Globus File Manager interface. On the left, a sidebar lists 'RECENTLY USED ENDPOINTS' including 'globuspublish#trial_data', 'UChicago RCC Midway', 'petrel#testbed', 'GCSv5.2 Globus Demo HA Mapped Collection', '5.1 Home Shares - Vas', '5.1 Sandbox - Vas', 'Amazon S3 Gateway - Vas', 'ESnet Read-Only Test DTN at Sunnyvale', 'Vas Laptop', 'POSIX Sandbox - Vas', 'Globus Tutorial Endpoint 1', 'NCAR RDA Dataset Archive', and 'Globus Tutorial Endpoint 2'. The main area shows a 'File Manager' window with a collection path of '/ds314.2/2000_2009/'. A context menu is open over a file, showing options like 'Permissions', 'Transfer or Sync to...', 'New Folder', 'Rename', 'Delete Selected', 'Preview (limited)', 'Download (https)', 'Open (https)', 'Get Link', 'Show Hidden Items', and 'Deactivate'. A large red circular overlay with the text 'ACCESS DENIED' covers the central part of the file list.



A screenshot of a smartphone displaying the Globus File Manager app. The screen shows a collection path of '/-' and a list of files: '100KB.dat' (9/18/2018 1:19am, 100 KB), '10KB.dat' (9/18/2018 1:19am, 10 KB), '10MB.dat' (9/18/2018 1:19am, 10 MB), and '1KB.dat' (9/18/2018 1:19am, 1 KB). A large orange key icon is overlaid on the top right of the phone's screen.



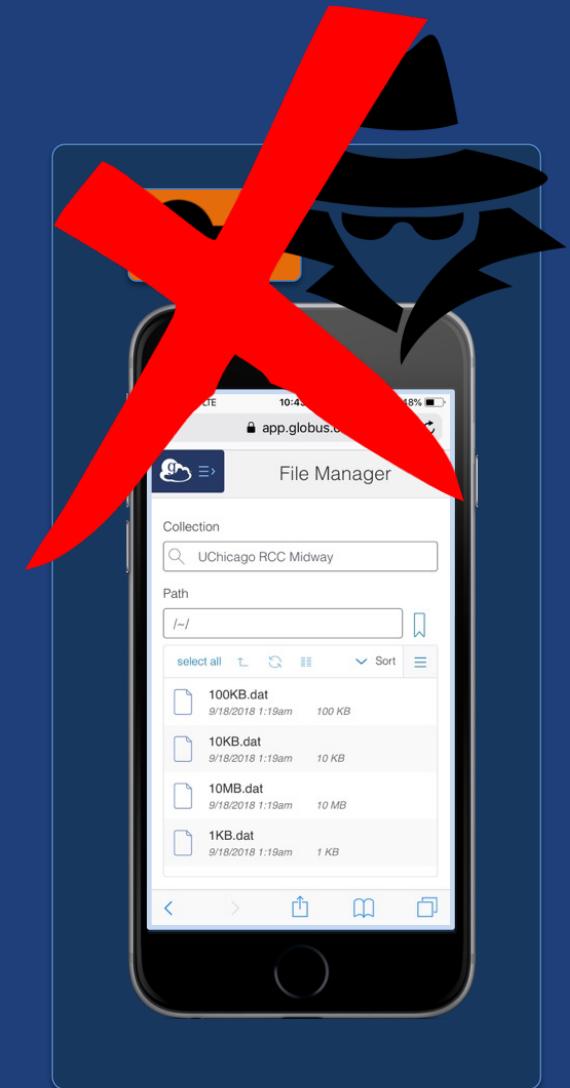
Application Instance Isolation





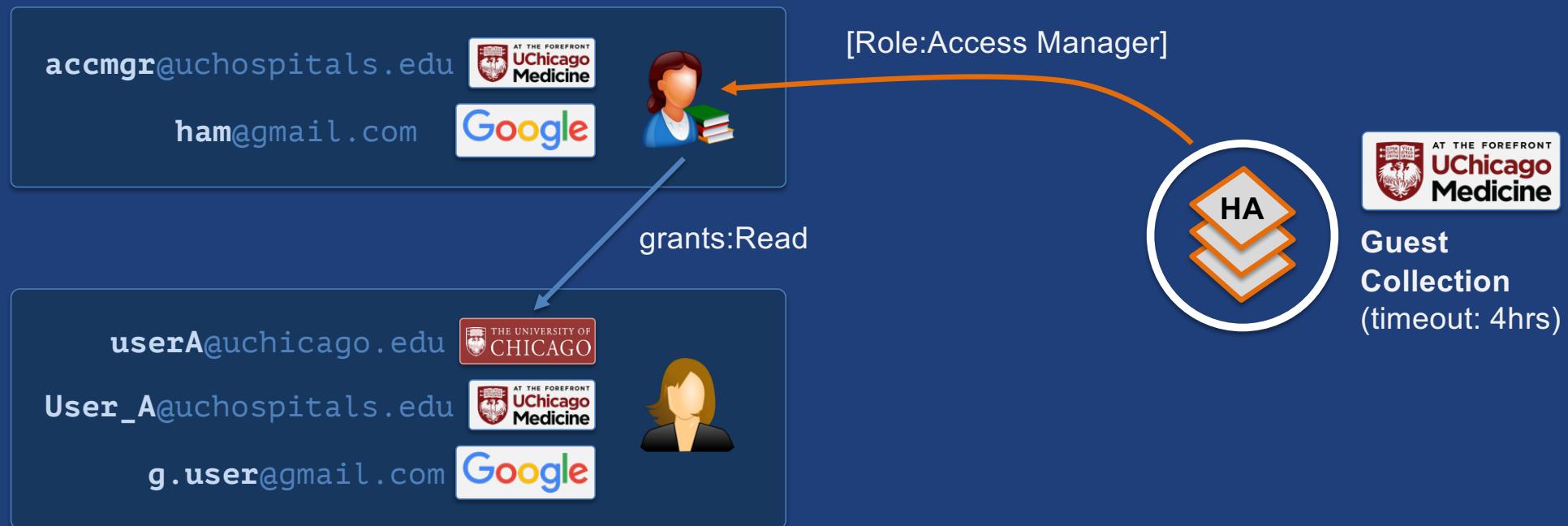
Application Instance Isolation

A screenshot of the Globus File Manager interface. On the left is a sidebar with a 'RECENTLY USED ENDPOINTS' list. The main area shows a file list for the 'NCAR RDA Dataset Archive' collection. A large green checkmark is overlaid on the 'Permissions' context menu, which is open over a specific file entry. The menu includes options like 'Transfer or Sync to...', 'New Folder', 'Rename', 'Delete Selected', 'Preview (limited)', 'Download (https)', 'Open (https)', 'Get Link', 'Show Hidden Items', and 'Deactivate'.





Example user flow: Guest collection





Example user flow: Guest collection

acctmgr@uchospitals.edu  

ham@gmail.com 

userA@uchicago.edu  

User_A@uchospitals.edu  

g.user@gmail.com 

Gmail Search mail 1-2 of 2 Oct 10 Oct 10

Compose

Inbox Starred

	Subject	From	Date
<input type="checkbox"/>	★ Globus Notification	Vas Vasiliadis (vas@globusid.or...	Oct 10
<input type="checkbox"/>	★ Globus Notification	Vas Vasiliadis (vas@globusid.or...	Oct 10



Guest Collection
(timeout: 4hrs)



Example user flow: Guest collection

acctmgr@uchospitals.edu  

ham@gmail.com 

userA@uchicago.edu  

User_A@uchospitals.edu 

g.user@gmail.com 

Google Sign in with your Google Account

Email or phone
g.user@gmail.com

Forgot email?

Not your computer? Use Guest mode to sign in privately.
[Learn more](#)

Create account





Example user flow: Guest collection

accmgr@uchospitals.edu  

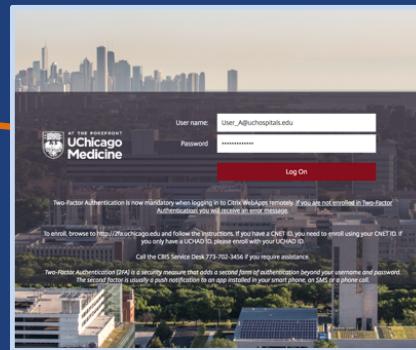
ham@gmail.com 

userA@uchicago.edu  

User_A@uchospitals.edu  

g.user@gmail.com 

redirect → UC Medicine




Guest
Collection
(timeout: 4hrs)



Example user flow: Guest collection

acctmgr@uchospitals.edu  

ham@gmail.com 

userA@uchicago.edu 

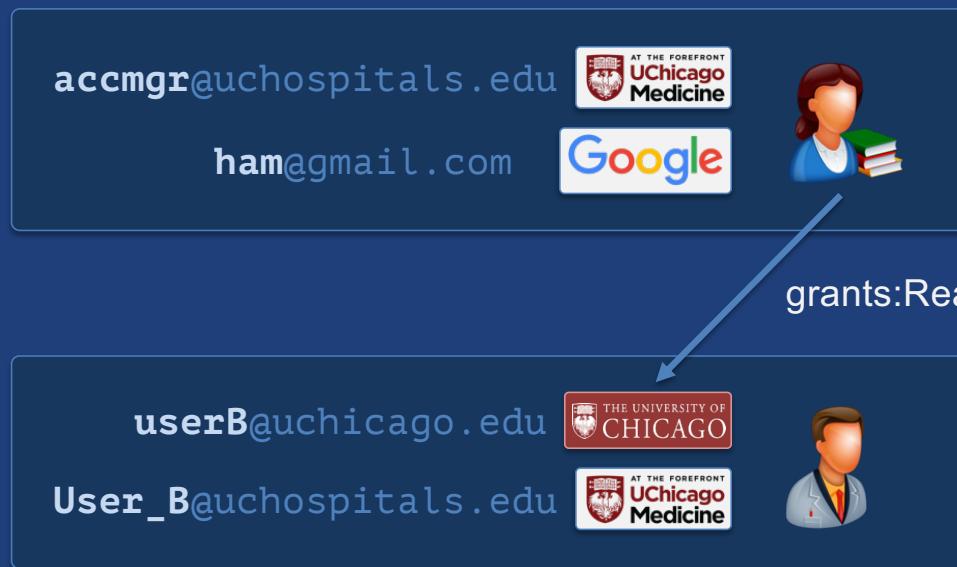
User_A@uchospitals.edu 

g.user@gmail.com 



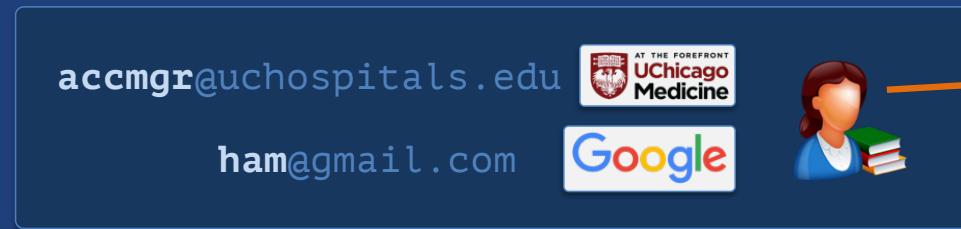


Example user flow: Manage Permissions

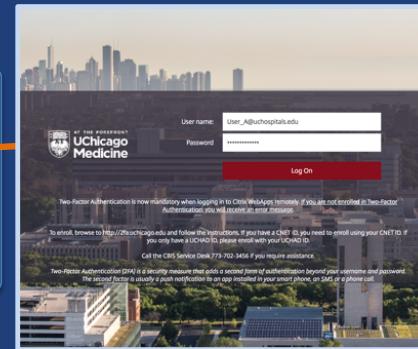




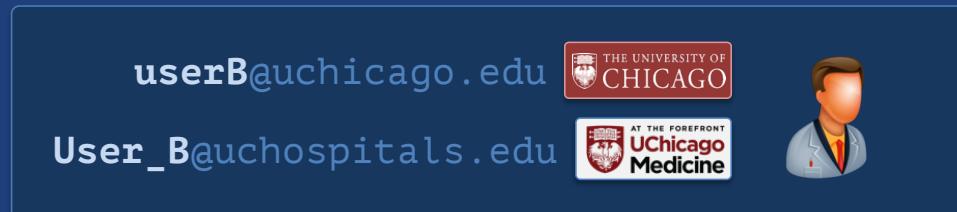
Example user flow: Guest collection



redirect → UC Medicine



Guest
Collection
(timeout: 4hrs)





Example management flows

- **Managing High Assurance endpoints requires authentication with authorized identity, within session**
 - Endpoint configuration
 - Globus Groups used to provide access to high assurance data
 - Management Console access (e.g. to review logs)



Groups accessing HA guest collections

- **Policy options**
 - High assurance – (not) strict
 - Authentication assurance timeout
- **Additional restrictions**
 - Invitations can only be issued by administrator or manager
 - Changes to group policies require specific identity within session/ authentication assurance timeout
 - Subgroups inherit HA policy

The screenshot shows the Globus web interface with a sidebar on the left containing links: File Manager, Activity, Endpoints, Publish, Groups (which is highlighted in blue), Console, Account, Help, and Globus Home. The main content area is titled "UCHICAGO MEDICINE ENCLAVE Policies". It contains several sections with policy options:

- Membership requests are approved:** Options include "automatically if all policies are met" (radio button checked), "automatically if all policies are met and the invitation was sent by a manager or administrator (all other requests must be approved by managers & administrators)" (radio button checked), and "by managers & administrators" (radio button unselected).
- Subgroups for this group may be created by:** Options include "group members" (radio button unselected), "managers & administrators" (radio button unselected), and "administrators only" (radio button checked).
- Member names are visible to:** Options include "all Globus users" (radio button unselected), "members of this group" (radio button unselected), "this group's managers & administrators" (radio button checked).
- Group is visible to:** Options include "all Globus users" (radio button unselected), "group members only" (radio button checked).
- Invitations to this group can be sent by:** Options include "members of this group" (radio button unselected), "this group's managers & administrators" (radio button unselected).
- Users may request membership if they are:** Options include "a logged-in Globus user" (radio button unselected) and "invited to join this group" (radio button checked).
- Session enforcement for this group is:** Options include "not strict — users may perform actions on the group as long as one of the identities in their linked identity set allows it, regardless of how recently they authenticated with that identity" (radio button unselected) and "strict — this is a high-assurance group and users must have authenticated recently with a specific identity to perform most actions" (radio button checked). A note below states: "When strictly enforcing sessions for user actions, users must have authenticated to the granting identity within".

At the bottom right are "Submit" and "Cancel" buttons.



Globus Connect Server v5 installation flow

- **Install GCSv5.3+ binaries**
- **Register the endpoint at developers.globus.org**
- **Add connectors**
- **Add storage gateways**
 - Set as high assurance, configure authentication assurance timeout
 - Set policy on type of collections supported
- **Add mapped collection**
 - User must login with identity from configured domain
 - Local account determined by removing the TLD:
username@example1.org → username is local account

<https://docs.globus.org/globus-connect-server-v5-installation-guide/> for installation instructions



Globus security features – endpoint

- **Data remain at institution, not hosted by Globus**
- **Integrity checks of transferred data**
- **Encryption**
 - All communications and data in transit are encrypted (data in flight)
 - Encryption algorithm determined by institutional deployment
- **Access Control**
 - Identities provided and managed by institution
 - Institution controls all access policies



Audit log on DTN via GCSv5.3

```
#INTERACTIVE BROWSING, ATTEMPT TO ACCESS A NON-EXISTENT FILE
t=S ts=2018-02-05T15:47:26Z ref=dd66bfc2-0a8b-11e8-9441-065bf8bb5752 c_ip=cli.globusonline.org:36988 auth=GSIFTP+SHARING
p_usr=gcsweb s_usr=mlink@globus.org r=/ g_tid=none g_eid=b1419262-0a88-11e8-a749-0a448319c2f8 g_uid=mlink g_oid=b83ef3aa-
d274-11e5-a441-1717a57f7cc7
t=O ts=2018-02-05T15:47:29Z ref=dd66bfc2-0a8b-11e8-9441-065bf8bb5752 op=STAT c_path=/My%20Drive/b.txt s_path=c_path
t=E ts=2018-02-05T15:47:30Z ref=dd66bfc2-0a8b-11e8-9441-065bf8bb5752 op=STAT c_path=/My%20Drive/b.txt s_path=c_path
d_ip=0.0.0.0 len=0 res=GlobusError:%20v=1%20c=PATH_NOT_FOUND%0AGridFTP-Path:%20"/My%20Drive/b.txt"%0A

#FORCED TRANSFER FAILURE, FOLLOWED BY RETRY. NOTE INCOMPLETE LEN VALUE.
t=S ts=2018-02-05T16:27:44Z ref=7e845df6-0a91-11e8-91e1-065bf8bb5752 c_ip=ec2-54-237-254-199.compute-
1.amazonaws.com:60884 auth=GSIFTP+SHARING p_usr=gcsweb s_usr=mlink@globus.org r=/ g_tid=79cf7700-0a91-11e8-a74a-
0a448319c2f8 g_eid=b1419262-0a88-11e8-a749-0a448319c2f8 g_uid=mlink g_oid=b83ef3aa-d274-11e5-a441-1717a57f7cc7
t=O ts=2018-02-05T16:27:44Z ref=7e845df6-0a91-11e8-91e1-065bf8bb5752 op=STAT c_path=/My%20Drive/test7 s_path=c_path
t=O ts=2018-02-05T16:27:46Z ref=7e845df6-0a91-11e8-91e1-065bf8bb5752 op=RETR c_path=/My%20Drive/test7 s_path=c_path
t=E ts=2018-02-05T16:27:48Z ref=7e845df6-0a91-11e8-91e1-065bf8bb5752 op=RETR c_path=/My%20Drive/test7 s_path=c_path
d_ip=76.16.213.112 len=3145728 res=globus_ftp_control_data_write%20failed.%0AHandle%20not%20in%20the%20proper%20state%0A
t=O ts=2018-02-05T16:27:48Z ref=7e845df6-0a91-11e8-91e1-065bf8bb5752 op=CKSM c_path=/My%20Drive/test7 s_path=c_path
#RETRY
t=S ts=2018-02-05T16:28:25Z ref=96eee906-0a91-11e8-a41c-065bf8bb5752 c_ip=ec2-54-237-254-199.compute-
1.amazonaws.com:34996 auth=GSIFTP+SHARING p_usr=gcsweb s_usr=mlink@globus.org r=/ g_tid=79cf7700-0a91-11e8-a74a-
0a448319c2f8 g_eid=b1419262-0a88-11e8-a749-0a448319c2f8 g_uid=mlink g_oid=b83ef3aa-d274-11e5-a441-1717a57f7cc7
t=O ts=2018-02-05T16:28:25Z ref=96eee906-0a91-11e8-a41c-065bf8bb5752 op=STAT c_path=/My%20Drive/test7 s_path=c_path
t=O ts=2018-02-05T16:28:28Z ref=96eee906-0a91-11e8-a41c-065bf8bb5752 op=RETR c_path=/My%20Drive/test7 s_path=c_path
t=E ts=2018-02-05T16:28:32Z ref=96eee906-0a91-11e8-a41c-065bf8bb5752 op=RETR c_path=/My%20Drive/test7 s_path=c_path
d_ip=76.16.213.112 len=10223616 res=ok
t=O ts=2018-02-05T16:28:32Z ref=96eee906-0a91-11e8-a41c-065bf8bb5752 op=CKSM c_path=/My%20Drive/test7 s_path=c_path
```



Globus Connect Personal (GCP)

- **New version for high assurance data handling**
- **Allow user to choose an identity for use with the endpoint**
 - Using GCP for data access requires that identity be in session
 - Guest collections will work as they do with GCS
- **Additional logging**



Globus security features - service

- **Secure operations**
 - Intrusion detection and prevention
 - Performance and health monitoring
 - Logging
 - Secure remote access, access control
 - Uniform configuration management and change control
 - Backups and disaster recovery
 - All data stored by Globus is encrypted at rest
- **Use AWS best practices for securing environment**
 - Virtual Private Clouds – host security
 - AWS security groups – network security
 - AWS IAM (identity and access management) best practices – individual security



New subscription levels

- **High Assurance**
 - 33% uplift on Standard subscription and on premium connectors used for high assurance data
- **BAA**
 - All High Assurance features + BAA with University of Chicago
 - 50% uplift on Standard subscription and on premium connectors used under a BAA
- **Separate subscription ID issued**

The screenshot shows the Globus website's pricing page with a comparison table for different subscription levels: Basic, Starter, Standard, High Assurance, and HIPAA BAA.

Features (click ⓘ for description)	Basic	Starter	Standard	High Assurance ⓘ	HIPAA BAA ⓘ
File transfer ⓘ	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited
Managed endpoints ⓘ	None	1	Unlimited	Unlimited	Unlimited
Management console ⓘ	—	✓	✓	✓	✓
Usage reports ⓘ	—	✓	✓	✓	✓
Support for Globus Connect, Web, CLI ⓘ	—	✓	✓	✓	✓
File sharing ⓘ	—	✓	✓	✓	✓
Globus Plus users ⓘ	—	—	✓	✓	✓
Data publication ⓘ	—	—	✓	✓	✓
Application integration support ⓘ	—	—	✓	✓	✓
HTTPS support ⓘ	—	—	✓	✓	✓
Session/Device Isolation ⓘ	—	—	—	✓	✓
Additional authentication assurance ⓘ	—	—	—	✓	✓
Comprehensive audit logging ⓘ	—	—	—	✓	✓
Business Associate Agreement ⓘ	—	—	—	—	✓
Support service level ⓘ	—	Monday-Friday, 9am-5pm Central; 1-business day response			
Named support contacts ⓘ	—	1	—	5	—
Pricing	Free	Contact us for subscription pricing or request details on pricing for Globus with protected data support			



Resources

- New terminologies and ways of doing things:
<https://docs.globus.org/globus-connect-server-v5-installation-guide/> for 4.x – 5.x terminology and architecture changes
- See <https://docs.globus.org/high-assurance/> for instructions on how to create a high assurance collection
- GCSv5.3 installation instructions: <https://docs.globus.org/globus-connect-server-v5-installation-guide/> for installation instructions
- Webinar: <https://www.globus.org/events/webinar-managing-protected-data>



Questions?