Globus: Making It Easy to Move, Share and Publish Your Data

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...and Thank YOU!

5 major services	**190 PB** transferred	**30 Bn** files processed	**45,000** registered users
13 national labs use Globus	**10,000** active endpoints	**10,000** active users/year	**99.9%** uptime
60+ institutional subscribers	**1 PB** largest single transfer to date	**3 months** longest continuously managed transfer	**130** federated campus identities

Agenda

- **Overview for those new to Globus**
- **Survey of “recent” enhancements**
- **Brief demonstration**
- **Questions**

Globus delivers…

Big data transfer, sharing, publication, and discovery…

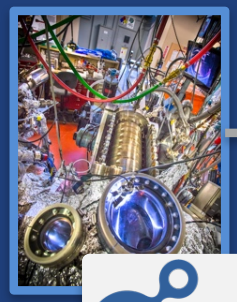
…directly from your own storage systems…

…via software-as-a-service

Data management today

- **Move?**
- **Share?**
- **Discover?**
- **Reproduce?**

Globus and the research data lifecycle



Instrument

Globus transfers files reliably, securely

2

Compute Facility

4 Globus controls access to shared files on existing storage; no need to move files to cloud storage!

7 Curator reviews and approves; data set published on campus or other system

Publication Repository

globus connect

Transfer

1

Researcher initiates transfer request; or requested automatically by script, science gateway

3

Share

Researcher selects files to share, selects user or group, and sets access permissions

6

Researcher assembles data set; describes it using metadata (Datacite & domain-specific)

Collaborator logs in to Globus and accesses shared files; no local account required; download via Globus

5

Publish

6

8

Personal Computer

Peers, collaborators search and discover datasets; transfer and share using Globus

Discover

- **Only a Web browser required**
- **Use storage system of your choice**
- **Access using your campus credentials**

Another perspective...

Campus Bridging

…within and beyond campus boundaries

Bridge to national cyberinfrastructure

Move datasets to supercomputer, national facility

Move results to campus (…)

Bridge to instruments

Analysis store

- Clear staging store
- Data cleansing
- Pre-processing
- ...

Raw Source Data

High durability, low cost store

Bridge to your collaborators

globus connect

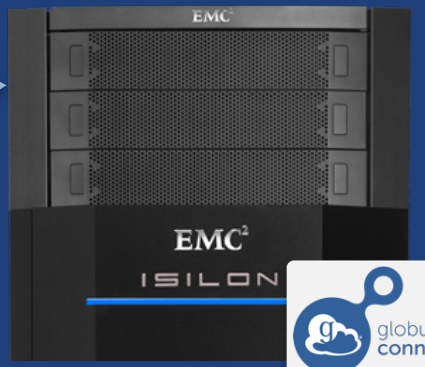
XSEDE
Extreme Science and Engineering Discovery Environment

EC2

Jetstream

NERSC

Local/Campus stores



globus connect

- Group management
- Share creation
- Permissions configuration

Cloud stores

ceph

openstack

Jetstream

Google Drive

amazon web services S3

globus connect

Bridge to community/public

(Re)format…

- PDF/A
- HDF
- …

Describe…

- Datacite metadata
- Domain metadata
- Provenance info
- ...

Replicated, public repositories

Persistent identifier

- DOI

Multi-step curation workflow

- Review → Update → Resubmit cycle

Why use Globus?

- **Ease of use: consistent UI across systems**
- **“Fire-and-forget” file transfer**
- **Maximized WAN throughput**
- **Secure access w/multi-tier security model**
- **No/low-overhead external collaboration**
- **Rapid deployment w/standard packages**
- **Highly automatable: CLI, RESTful API**

What's new?

- **New authentication service**
- **Endpoint search and bookmarks**
- **Management console**
- **Data publication and discovery**
- **Storage connectors**
- **Globus Platform-as-a-Service**

Demonstration

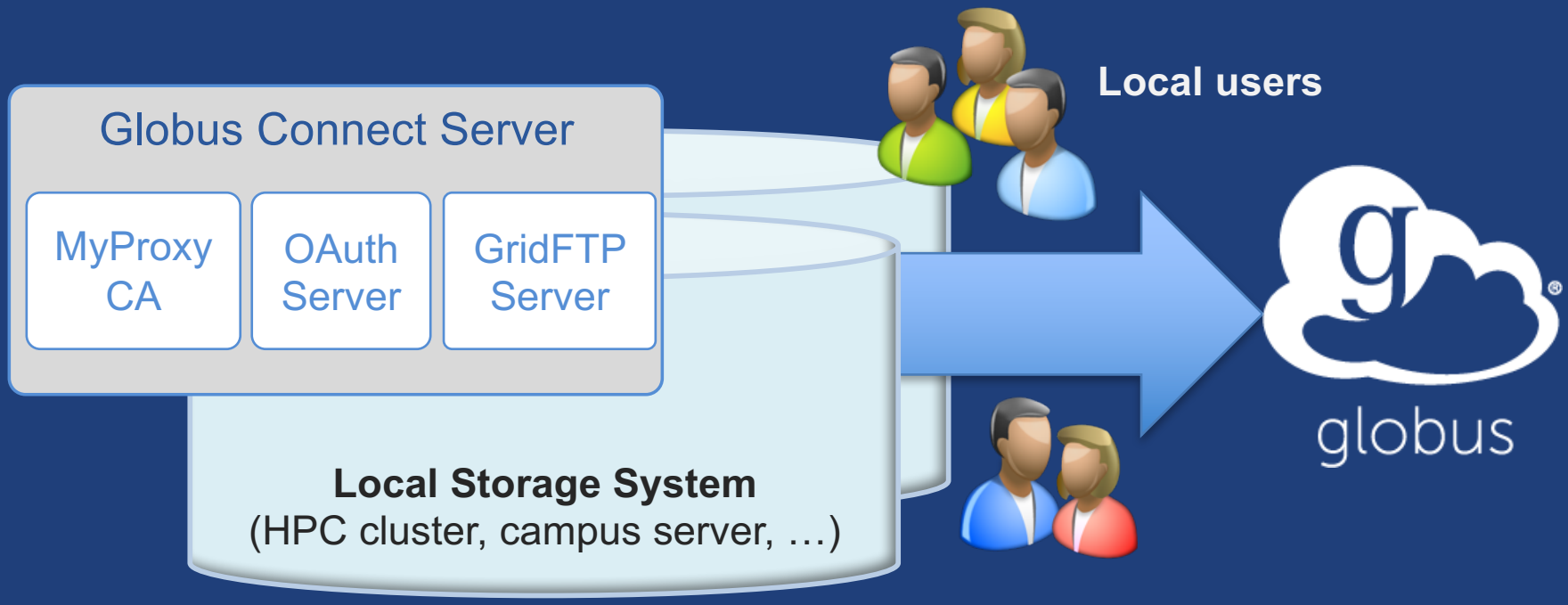
Globus Connect…

Makes your storage system a Globus endpoint

Globus Connect Personal

- **Installers do not require admin access**
- **Zero configuration; auto updating**
- **Handles NATs**

Globus Connect Server

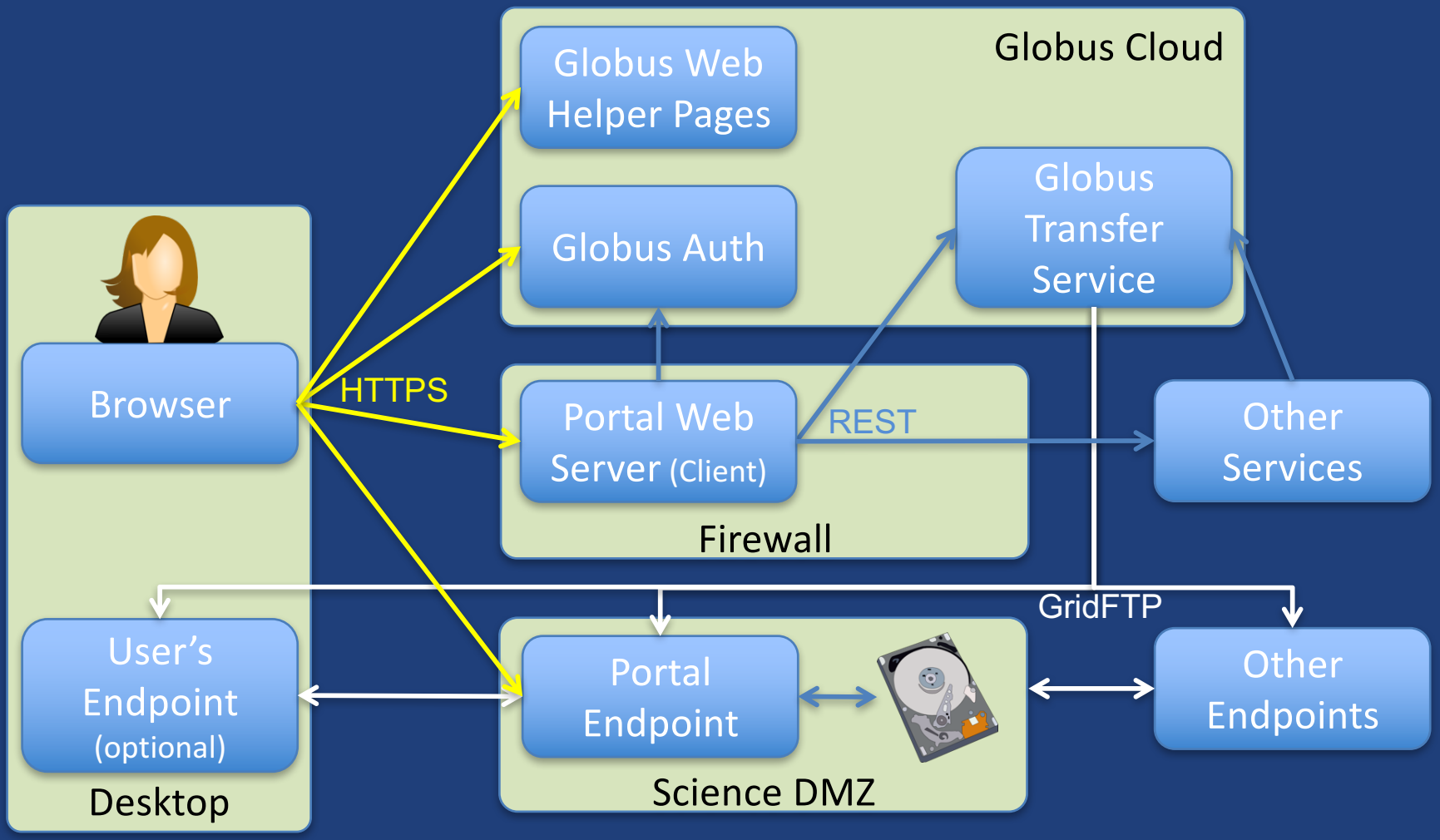


- **Enable access for all users with local accounts**
- **Create endpoint on practically any filesystem**
- **Native packages: RPMs and DEBs**

Storage connectors

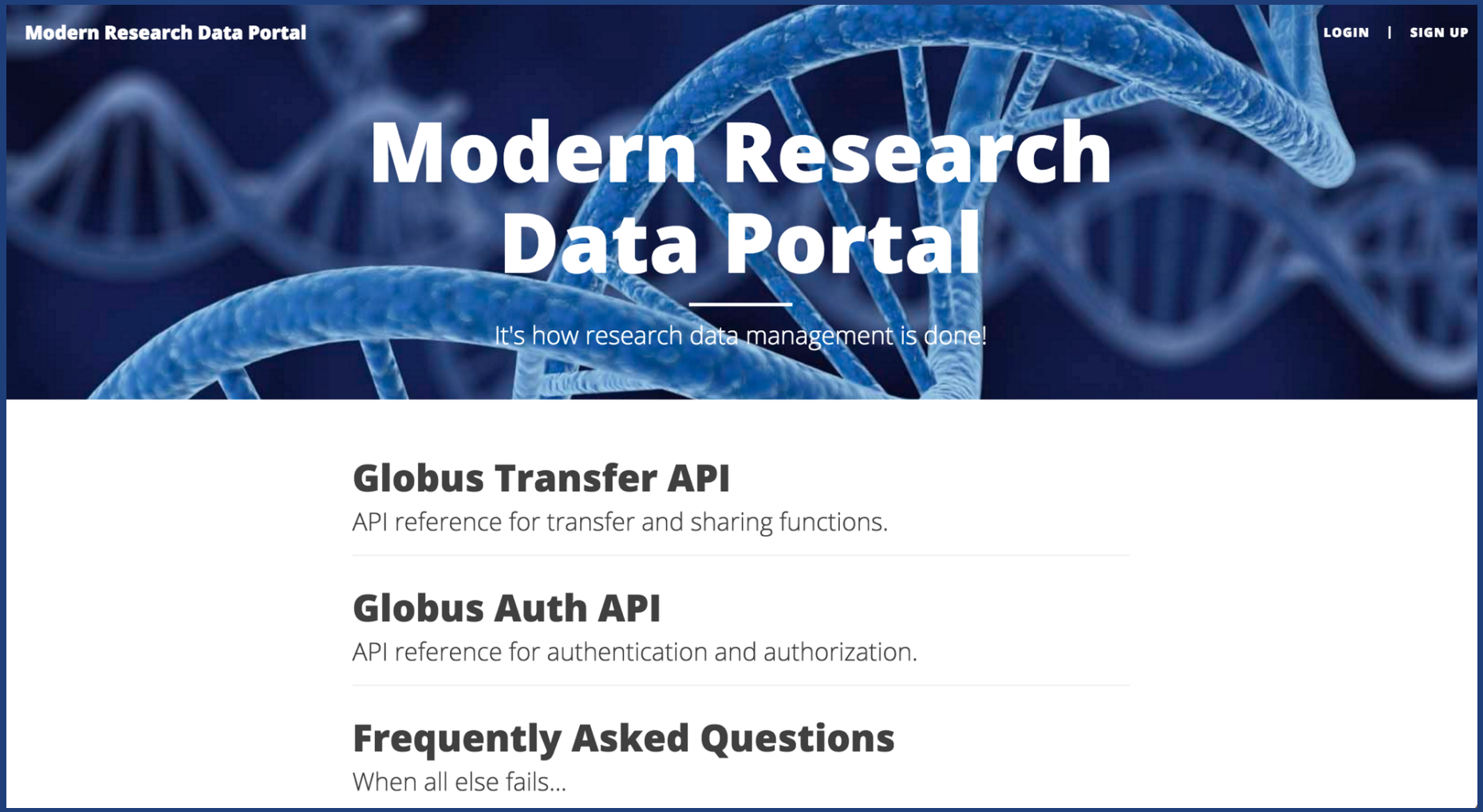
- **Standard storage connectors (Posix)**
  - Linux, Windows, MacOS
  - Lustre, GPFS, OrangeFS, etc.
- **Premium storage connectors**
  - HPSS
  - HDFS
  - S3
  - Ceph RadosGW (S3 API)
  - Spectra Logic BlackPearl
  - Google Drive (coming soon)

Globus Platform-as-a-Service



- **Move portal storage into Science DMZ, with Globus endpoint**
- **Leave Portal Web server behind firewall**
- **Globus handles the security and data heavy lifting**

Sample python data portal



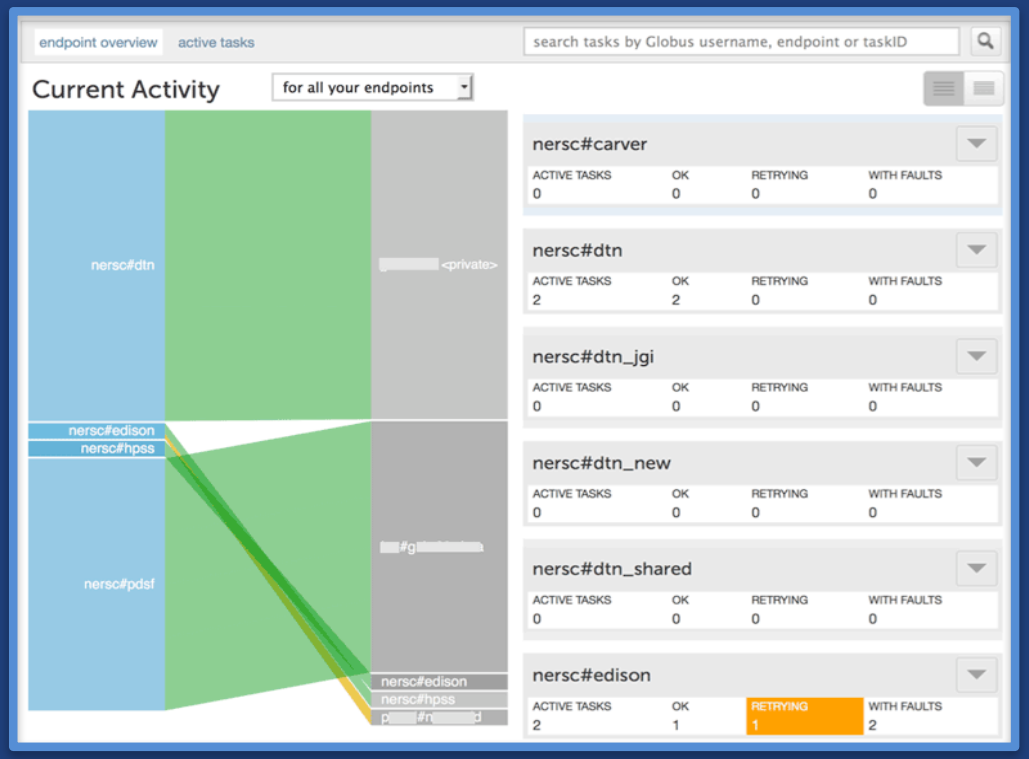
https://github.com/globus/globus-sample-data-portal

Coming Soon

- **HTTPS support**
  - Synchronous alternative GridFTP
  - Implements same fine-grained access control model
  - Greatly simplifies sharing/transfer for “small” datasets
  - Supports standard browser behaviors such as viewing known file types in the browser
  - Allows integration with clients and web apps to further leverage existing research storage systems
- **New command line interface**
  - Locally installed Python client
  - Similar to AWS command line tools

Globus Subscriptions

- **Standard Subscription**
  - Shared endpoints
  - Data publication
  - HTTPS support*
  - Management console
  - Usage reporting
  - Priority support
  - Application integration
- **Branded Web Site**
- **Premium Storage Connectors**
  - Amazon S3, Ceph, HPSS, Spectra, Google Drive*, …
- **Alternate Identity Provider (InCommon is standard)**



*Available in early 2017

New pricing model

Globus Subscriptions

Globus file transfer is free to use for non-profit research and educational purposes. Subscriptions offer researchers access to enhanced features such as file sharing and data publication, and provide system administrators with a comprehensive view into how storage systems are being utilized. Your subscription helps us make Globus self-sustaining so we can continue to offer high-quality data management infrastructure to all researchers.

Click here to start your 90-day free trial of Globus premium features

Subscriptions for Non-Profit Research and Education

If you wish to use Globus in a commercial setting, you must have a commercial subscription.

Features (click ⓘ for description)	**Basic - Free**	**Starter Subscription**	**Standard Subscription**
Transfer level ⓘ	Unlimited	Unlimited	Unlimited
User level ⓘ	Unlimited	Unlimited	Unlimited
Managed endpoints ⓘ	None	1	Unlimited
Management console ⓘ	–	✓	✓
Usage reports ⓘ	–	✓	✓
Support for Globus Connect, Web, CLI ⓘ	–	✓	✓
Shared endpoints ⓘ	–	✓	✓
Globus Plus users ⓘ	–	–	✓

https://www.globus.org/subscriptions

Representative subscribers

Learn more on the GlobusWorld Tour

- **www.globusworld.org/tour/**
- **Webinar: October 6th, 1pm CDT**
- **SC16: Full-day developer tutorial (Booth #436)**

Join the Globus community

- Access the service: **globus.org/login**
- Create a personal endpoint: **globus.org/app/endpoints/create-gcp**
- Create a server endpoint: **docs.globus.org/resource-provider-guide**
- Need help? **support@globus.org**
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