

ITMO UNIVERSITY, SAINT PETERSBURG
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Globus Toolkit & Globus Cloud Service

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COURSE: CLUSTER, GRIDS & CLOUDS

COURSE MODERATOR: ANDREY SHEVEL



Grid

Definition

the **set of computing resources** from different organizations in general from **different physical locations**, where all the resources are dedicated to reach **common goals**.

Globus[®] Toolkit

Definition

Is an open source **software toolkit used for building grids**. It lets people **share** computing power, databases, and other **tools securely online across** physical and institutional **boundaries**.

Includes software for

- security
- information infrastructure
- resource management
- data management
- communication
- fault detection
- portability

Globus[®] Toolkit Timeline

1998

GT 1.0.0 Released

1999 – 2001

GT 1.1.1 – 1.1.4

2002 - 2010

GT 2.0 ... GT 4.x

2010 - 2013

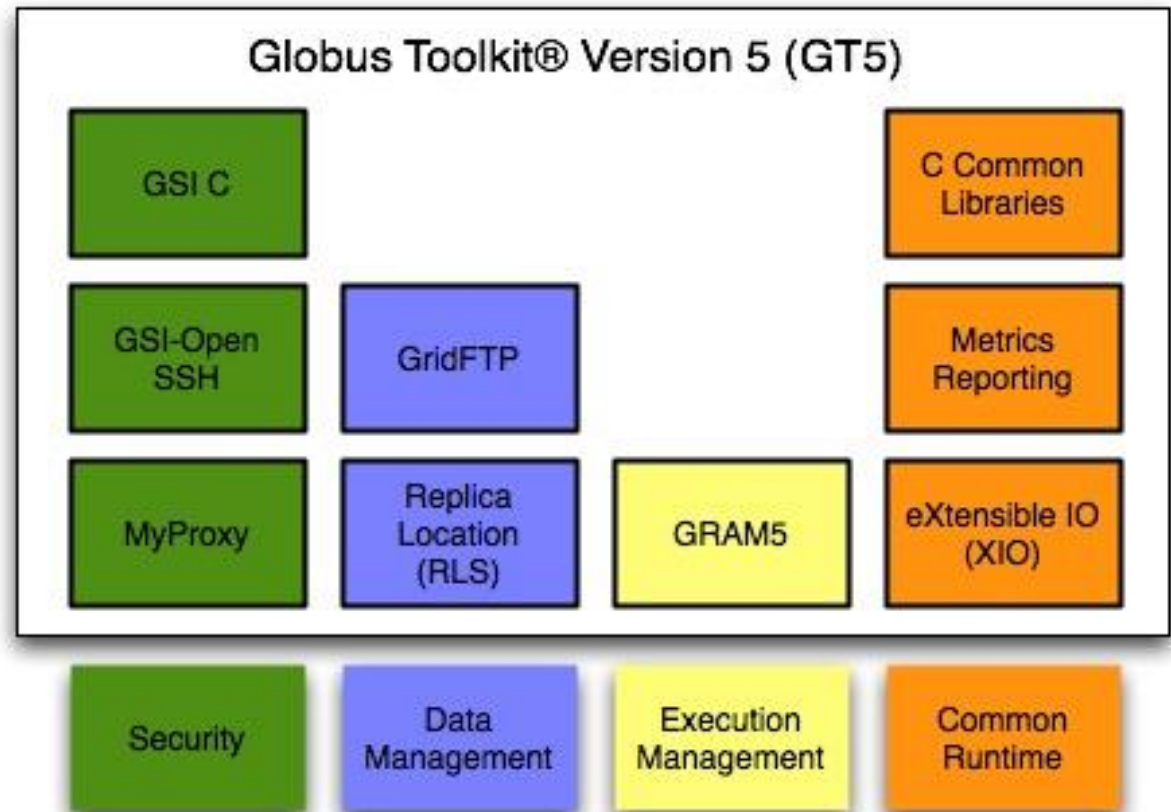
GT 5.0.0 – 5.2.4

2014

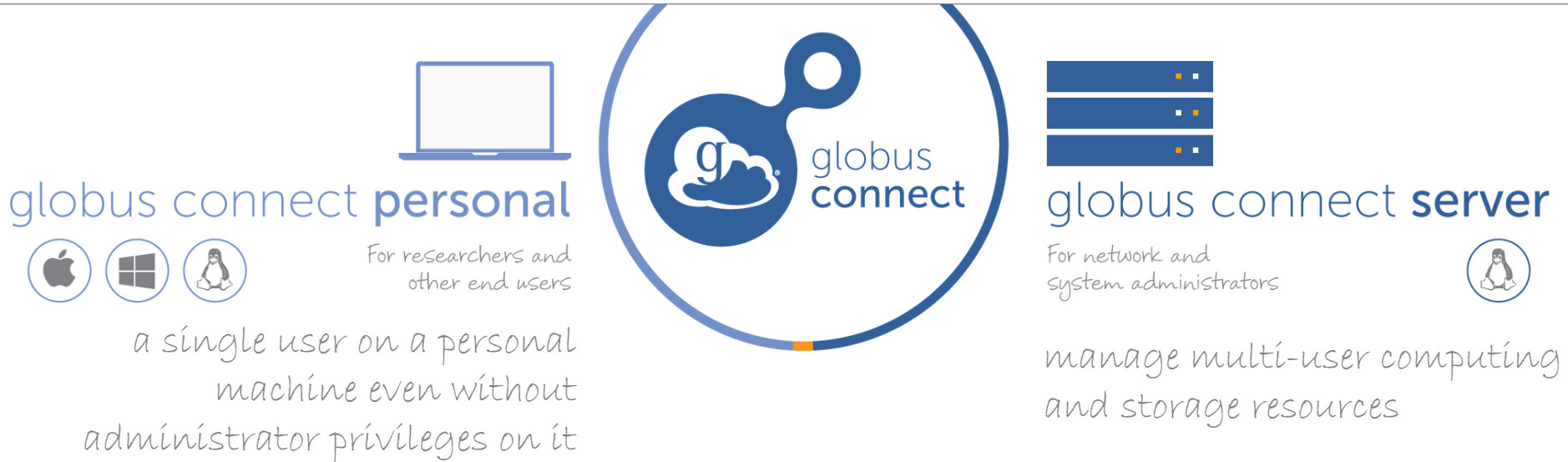
GT 6.0

January 2018

Support ended



Globus Cloud Service



1. Transfer data
2. Share data
3. Publish data
4. Develop applications and gateways

Globus Cloud Service – Transfer Data*

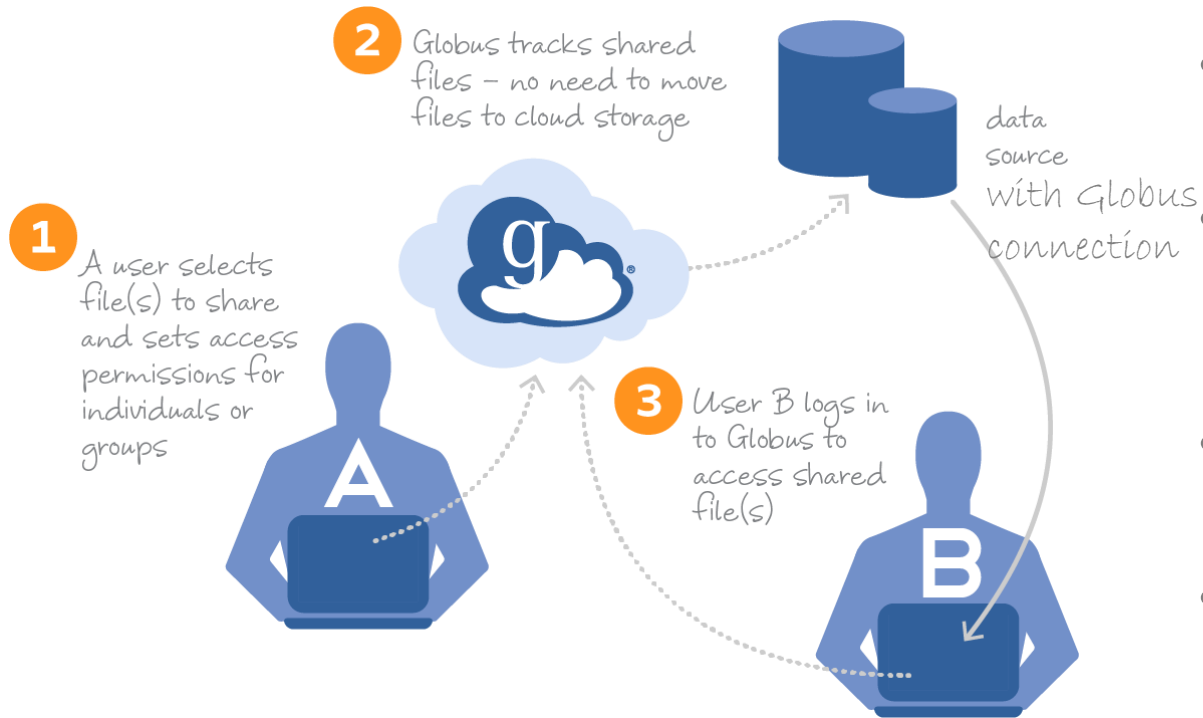
supports transfer of data stored on laptops, supercomputers, tape archives, cloud storage, HPC clusters, scientific instruments cloud storage like Google Drive and Amazon S3



- web browser or command line interface transfer
- synchronization requests
- optional encryption
- notification upon data transfer/request expiry

*Requires free subscription

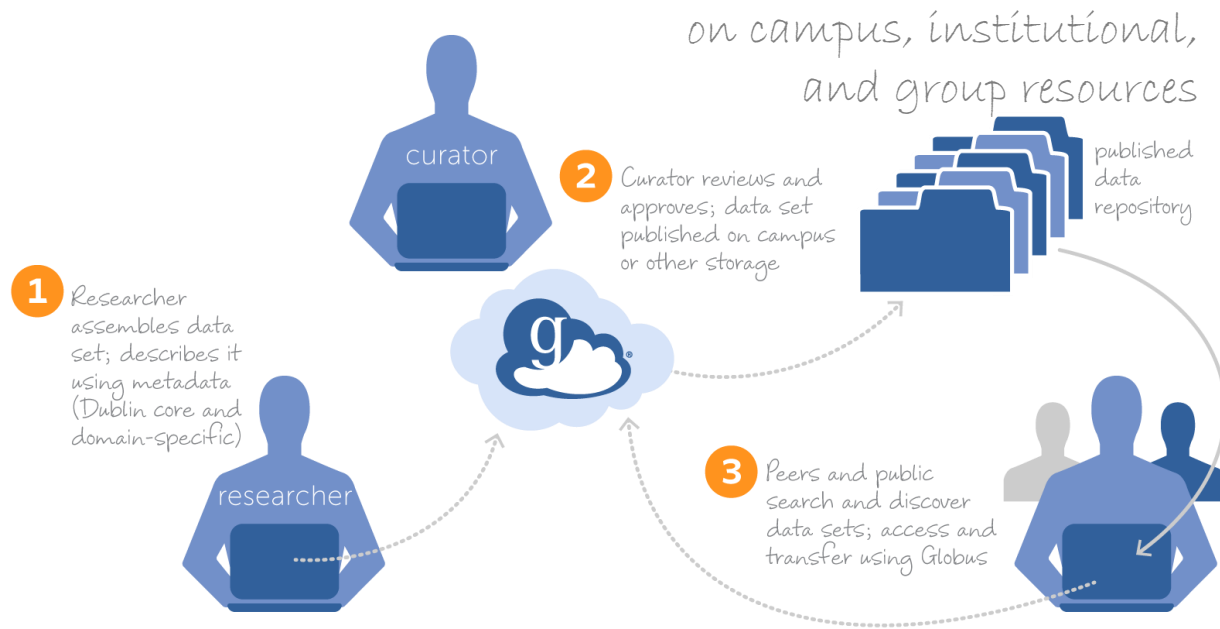
Globus Cloud Service – Share Data*



- no data transfer to an external storage system
- no temporary accounts for one's collaborators on the system where the data resides
- OAuth2 framework and OpenID Connect authentication layer
- GridFTP and HTTPS protocols

*Requires subscription

Globus Cloud Service – Publish Data*



- capabilities delivered through a hosted service
- possibility to create and manage communities and collections
- datasets undergo curation based on a workflow defined by the community
- metadata, submission & distribution licenses control

*Requires subscription

Globus Cloud Service - Develop Applications*

Is a PaaS

*No custom login pages
required*



*...Users can log into your
app, via Globus, using
existing credentials*

- leverages login/logout, access control, identity and profile management
- let researchers focus on main features
- consistent UI through storage systems
- use open RESTful APIs
- secure, scalable search using custom metadata

*Requires subscription

Conclusion. Grid Questions

1.Q. How do we make Grids secure?

1.A. Without a security infrastructure (including higher-level tools) users will not take advantage of the Grid.

2.Q. How can deployment be made easier?

2.A. If the deployment and set up of software isn't seamless, getting users to adapt their systems to be Grid compatible will not happen.

3.Q. Where are the benefits to encourage sharing on the Grid?

3.A. Benefits to middle-level resource owners (and therefore buy-in from all levels of the management hierarchy) must be made clear in order for Grids to be deployed.

Demo

[HTTPS://WWW.GLOBUS.ORG/](https://www.globus.org/)

A solid green horizontal bar at the bottom of the page.

Transfer Files

RECENT ACTIVITY ○ 0 ▽ 0 ⬡ 0

☆

Go

☆

Go

select all ↑ up one folder ↻ refresh list share ☰

📁 ChemicalKineticsNew	Folder
📁 Fax	Folder
📁 GitHub	Folder
📁 LibrariesEclipse	Folder
📁 NetBeansProjects	Folder
📁 Projects_R	Folder
📁 Python Scripts	Folder
📁 R	Folder
📁 R-TT	Folder
📁 Scanned Documents	Folder
📁 ⚡ ìè àèàáíçàèèè	Folder
📁 ⚡ ìÿ íççúèà	Folder
📁 ⚡ ìáñòðèèàááíúá øááéíú Office	Folder
📁 ⚡ ìè ðèñóíèè	Folder
📄 debug.log	291 B
📄 desktop.ini	402 B

select all ↑ up one folder ↻ refresh list share ☰

📁 Desktop	Folder
📁 Documents	Folder
📁 Downloads	Folder
📁 Music	Folder
📁 Pictures	Folder
📁 Public	Folder
📁 Templates	Folder
📁 Videos	Folder
📄 examples.desktop	8.98 KB
📄 git.zip	0 B

This will be displayed in your transfer activity.

Transfer Settings

- sync - only transfer new or changed files ?
- delete files on destination that do not exist on source ?
- preserve source file modification times ?

Transfer Files

RECENT ACTIVITY ○ 0 ▾ 0 ○ 0

A plus subscription is required in order to transfer between two Globus Connect Personal endpoints

Endpoint ☆

Path Go

select none	up one folder	refresh list	share	≡
Energy_Efficiency_Analysis.ipynb			8.54 KB	
Transformer load profiles.xlsx			542.24 KB	

Endpoint ☆

Path Go

select all	up one folder	refresh list	share	≡
Desktop			Folder	
Documents			Folder	
Downloads			Folder	
Music			Folder	
Pictures			Folder	
Public			Folder	
Templates			Folder	
Videos			Folder	
examples.desktop			8.98 KB	
git.zip			0 B	

Label This Transfer

This will be displayed in your transfer activity.

Transfer Settings sync - only transfer new or changed files ?

References

<https://www.globus.org>

<http://toolkit.globus.org/toolkit/>

<http://sdn.ifmo.ru/education/perccom/cluster-grid-clouds/2018/presentedlectures/ITMO-Lecture-5-2018.pdf/view>

<http://toolkit.globus.org/alliance/publications/papers/topten.final.pdf>