

# Globus transfer and GridFTP for Large Data Transfers

Argonne team

# Team



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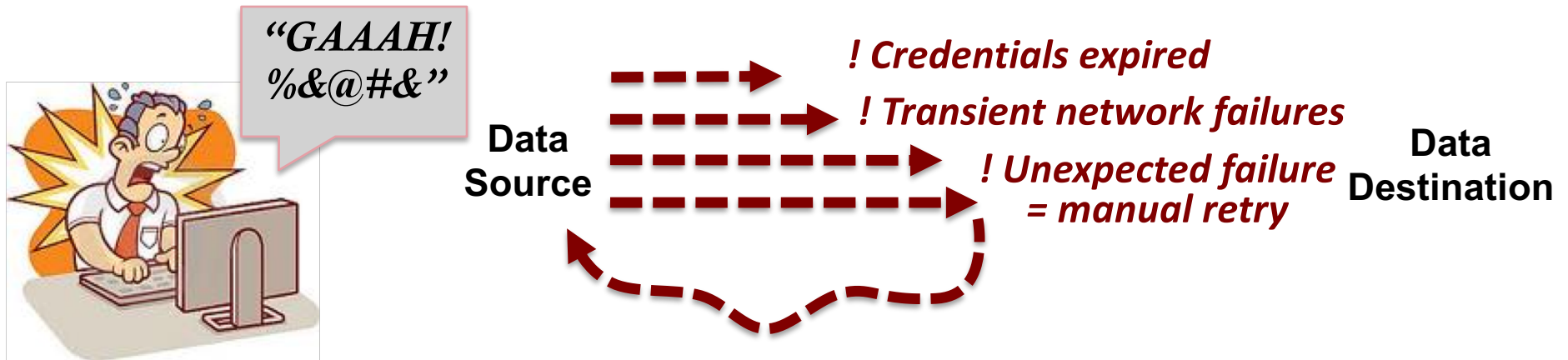
Ian Foster



# Globus transfer

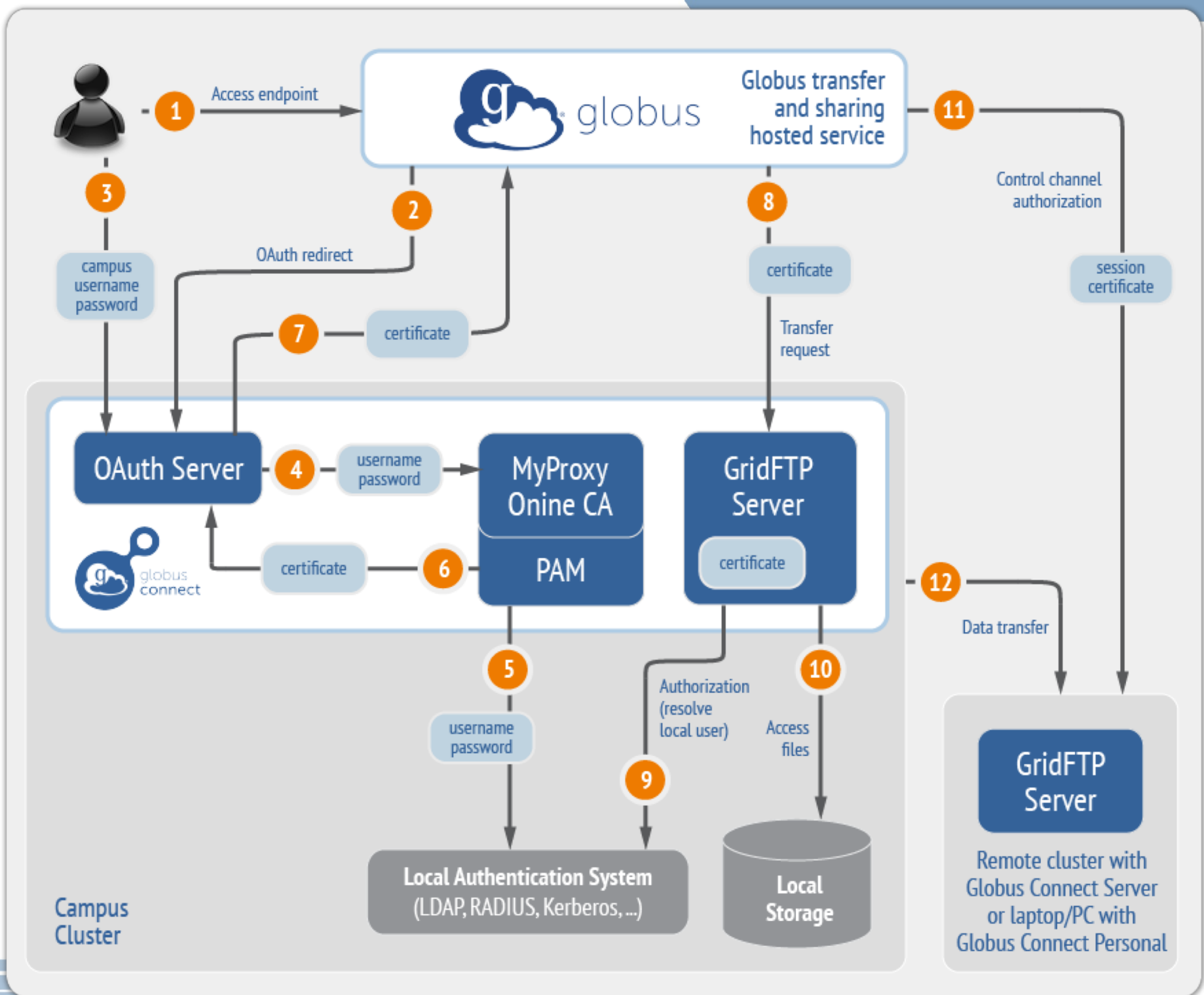


# Fault-tolerant, secure, high-performance file transfer



- “Fire-and-forget” transfers
- Automatic fault recovery
- Seamless security integration
- Powerful GUI and APIs



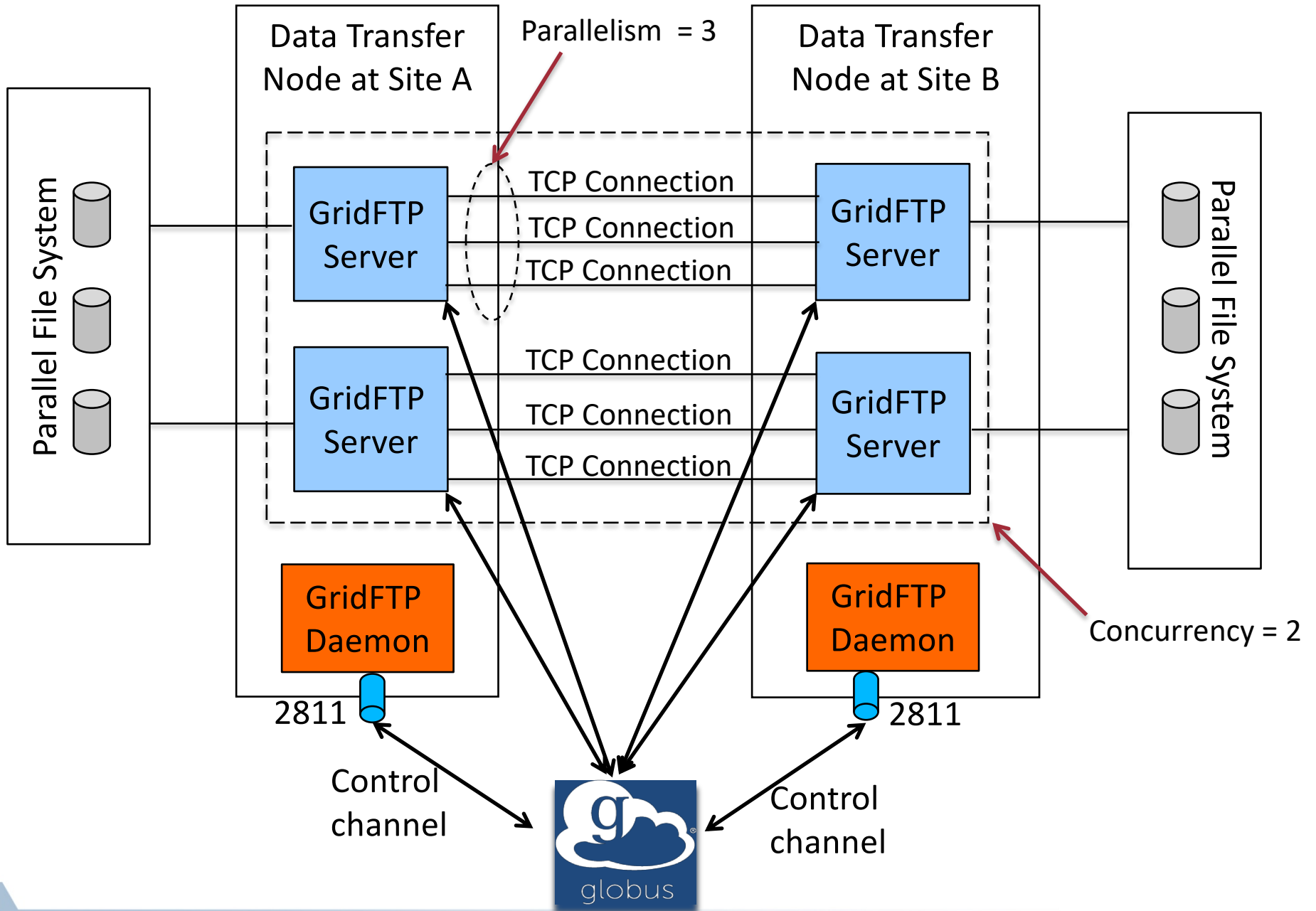


# GridFTP

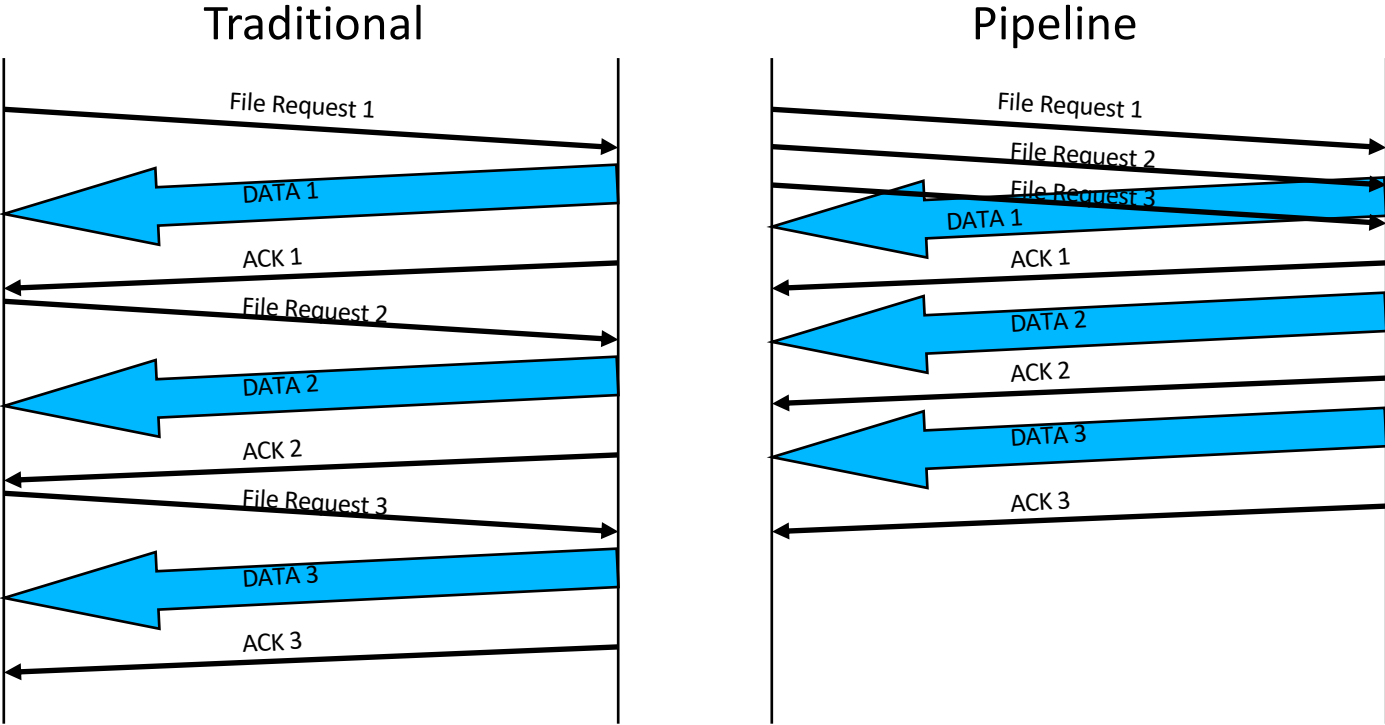
- High-performance, secure data transfer protocol optimized for high-bandwidth wide-area networks
- Based on FTP protocol - defines extensions for high-performance operation and security
- Parallel TCP streams
- PKI security for authentication, integrity and encryption
- Checkpointing for transfer restarts



# Parallelism and concurrency in Globus

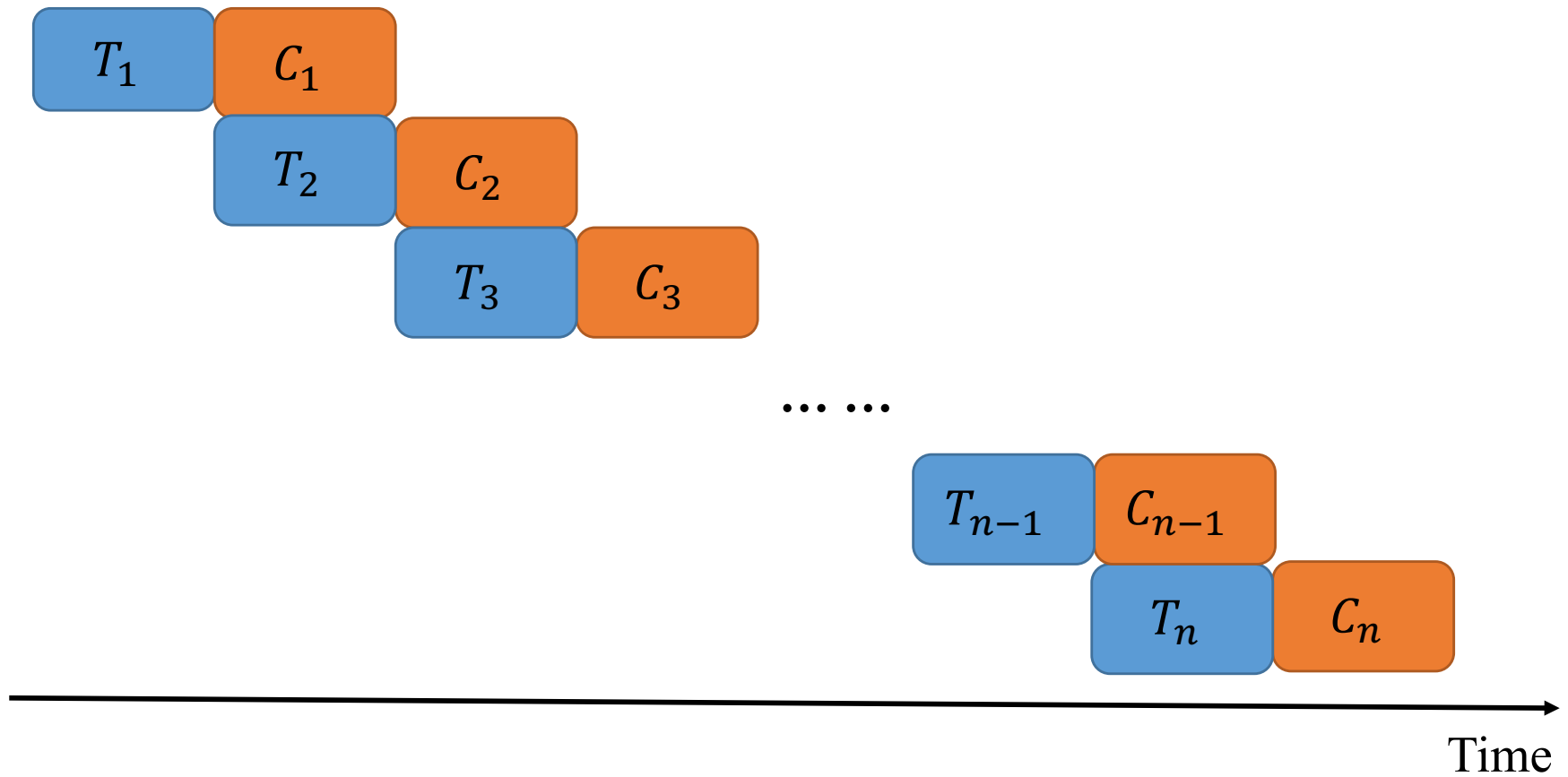


# Pipelining

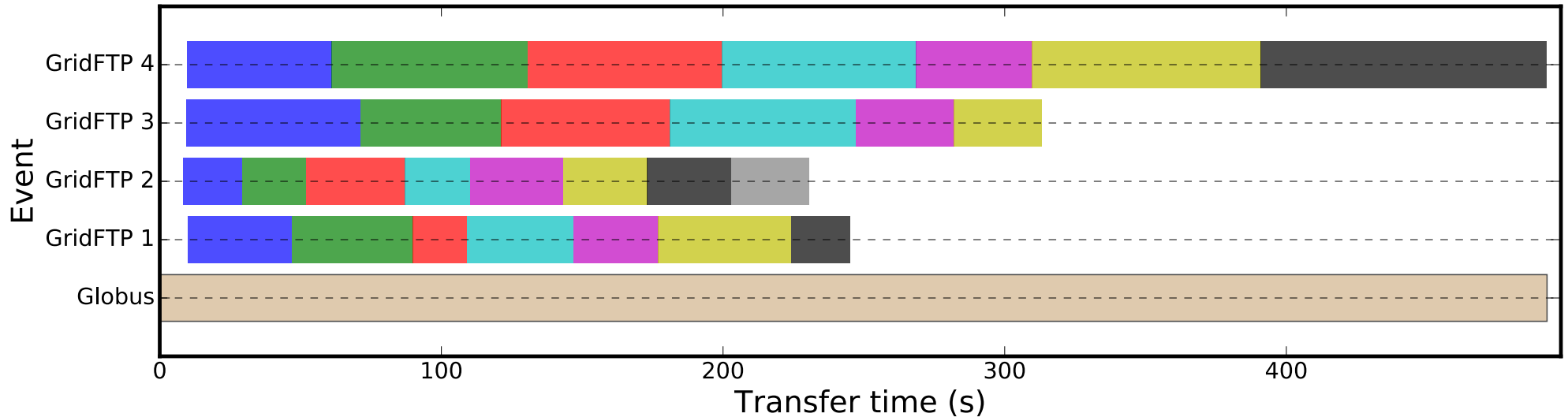




# Overlap Transfer and Checksum



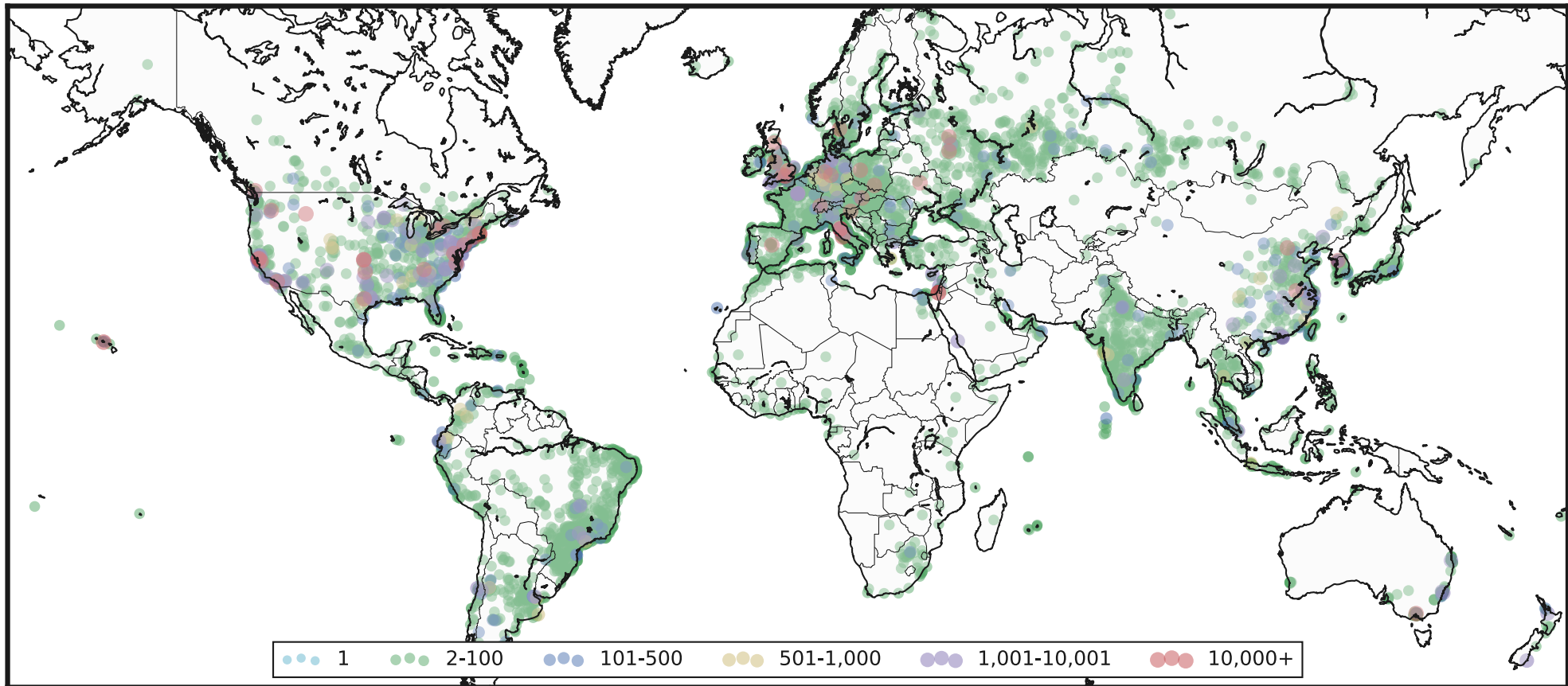
# Improved load balancing



- Improve load balancing and reduce long tails
- Sort the files in descending order of their size
- For the last  $10 \times C$  files force a pipeline depth of 1
  - $C$  is the concurrency or number of GridFTP server processes



# Geographical distribution of Globus endpoints



## Subscriptions for Non-Profit Research and Education

If you wish to use Globus in a commercial setting, you must have a [commercial subscription](#).

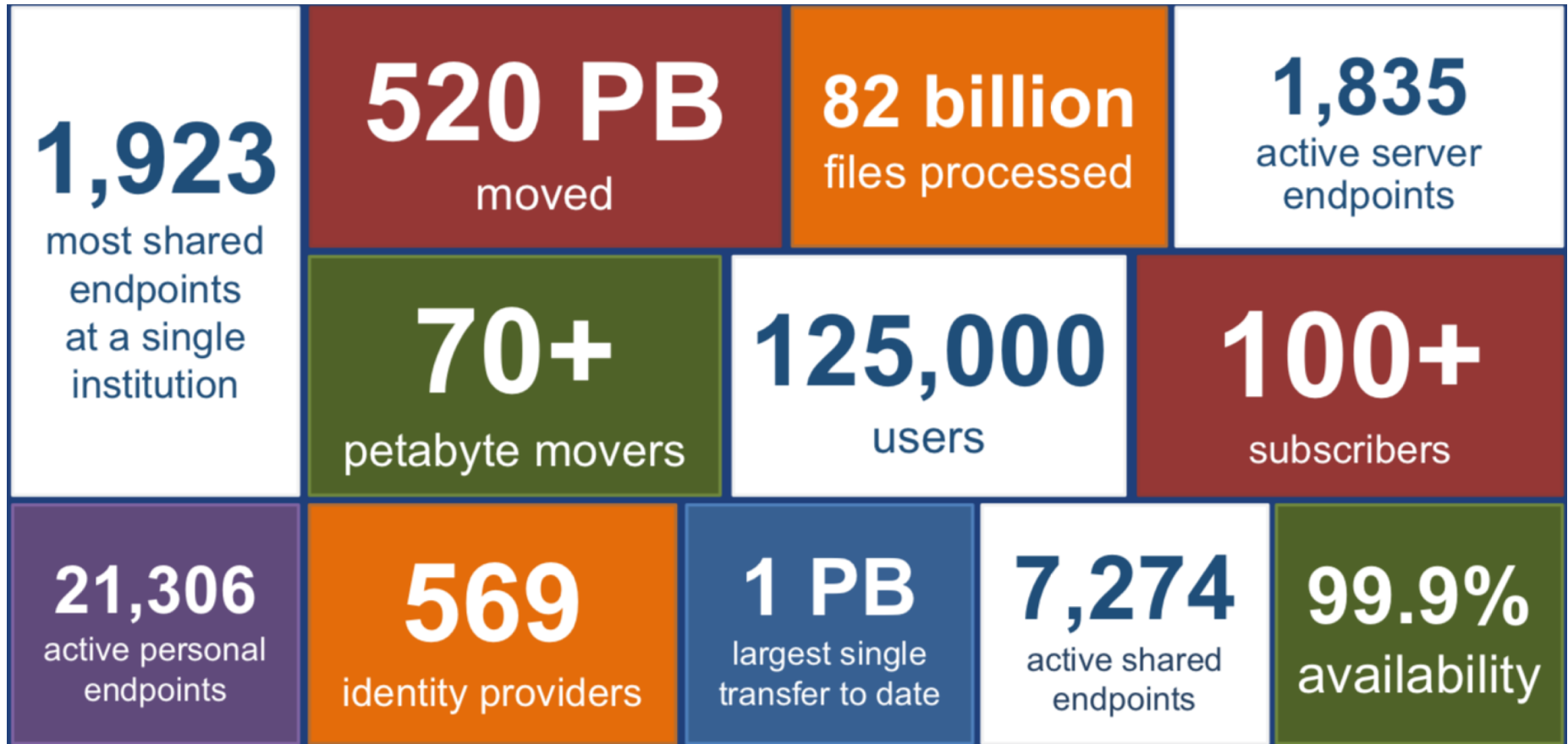
Features (click <a href="#">i</a> for description)	Basic	Starter	Standard	High Assurance <a href="#">i</a>	HIPAA BAA <a href="#">i</a>
File transfer <a href="#">i</a>	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited
Managed endpoints <a href="#">i</a>	None	1	Unlimited	Unlimited	Unlimited
Management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

# Globus - A brief history of time

- Oct. 1998 – Globus Toolkit v1.0.0
- May 2005 – Globus native GridFTP release
- Nov. 2010 – Globus Online initial release
- Nov. 2013 – Sustainability model launched
- Dec. 2016 – 50,000 registered users, 200PB+ moved
- Dec. 2018 – 500PB+ moved
- Jan. 2019 – Subscriptions pay for all of operations but all enhancements



# Globus by the numbers





# Questions

