

Monitoring of large-scale federated data storage XRootD and beyond

Alexandre Beche

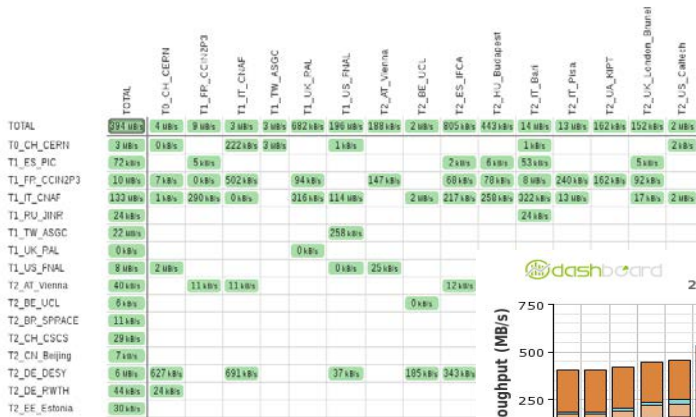
Volume
Throughput
Active
Finished

0% 100%

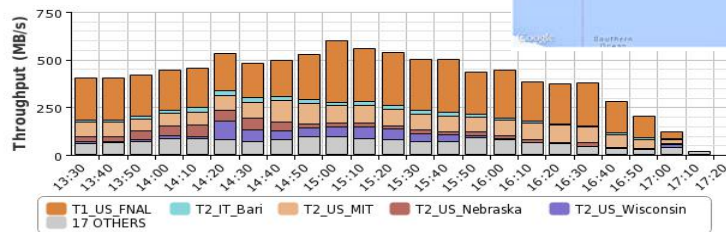
SOURCES



DESTINATIONS



dashboard
Throughput
2013-08-29 13:30 to 2013-08-29 17:30

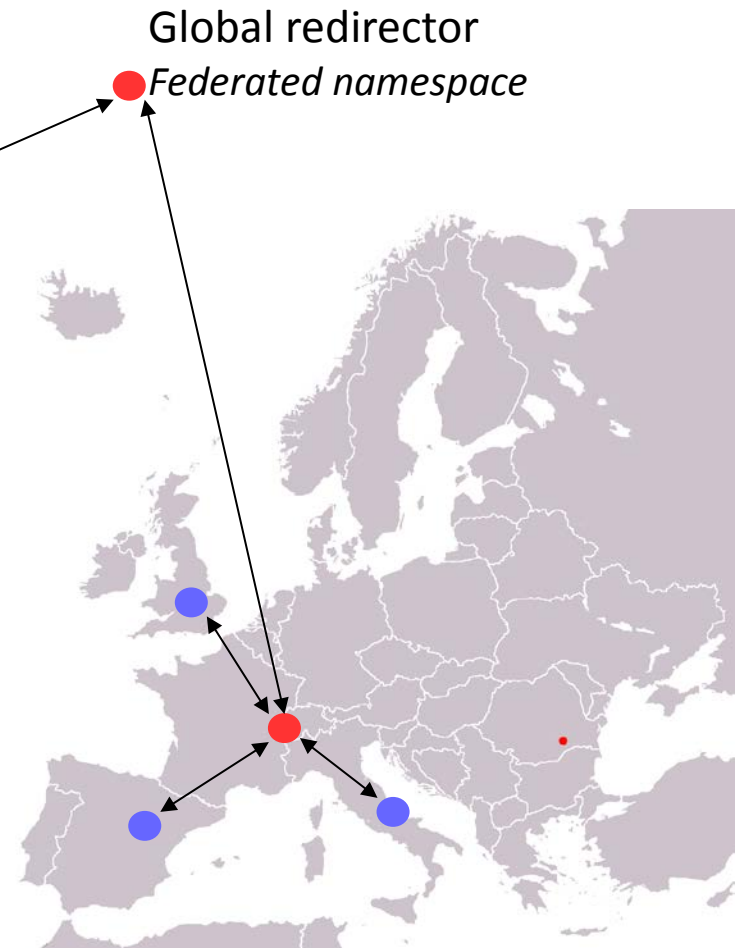
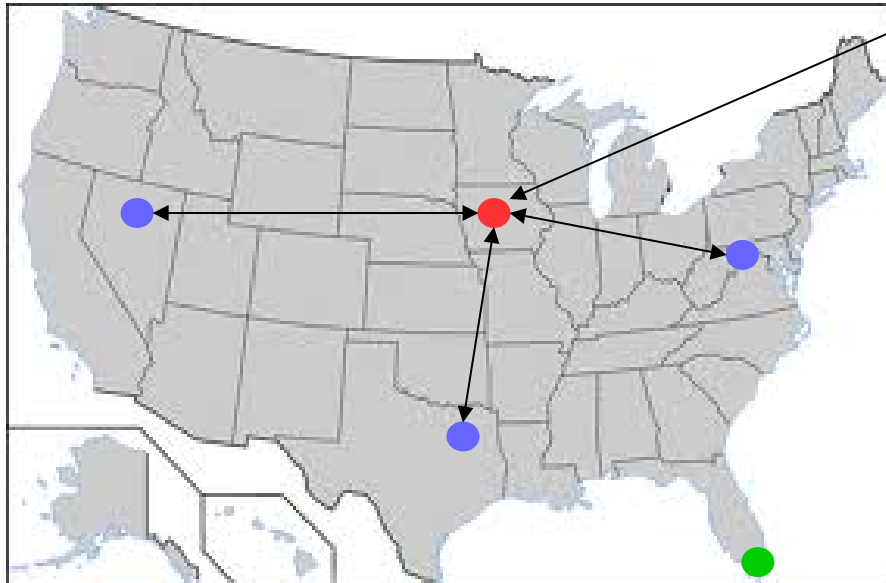


Federated data storages

- **Aggregation of storage systems of any kind into a global namespace** via a single access protocol (XRootD)
- XRootD provides **read-only access to world-wide replicated data** via virtual entry points (regional redirectors)
- Technologies: **XRootD** (today) and **HTTP/WebDAV** (future)

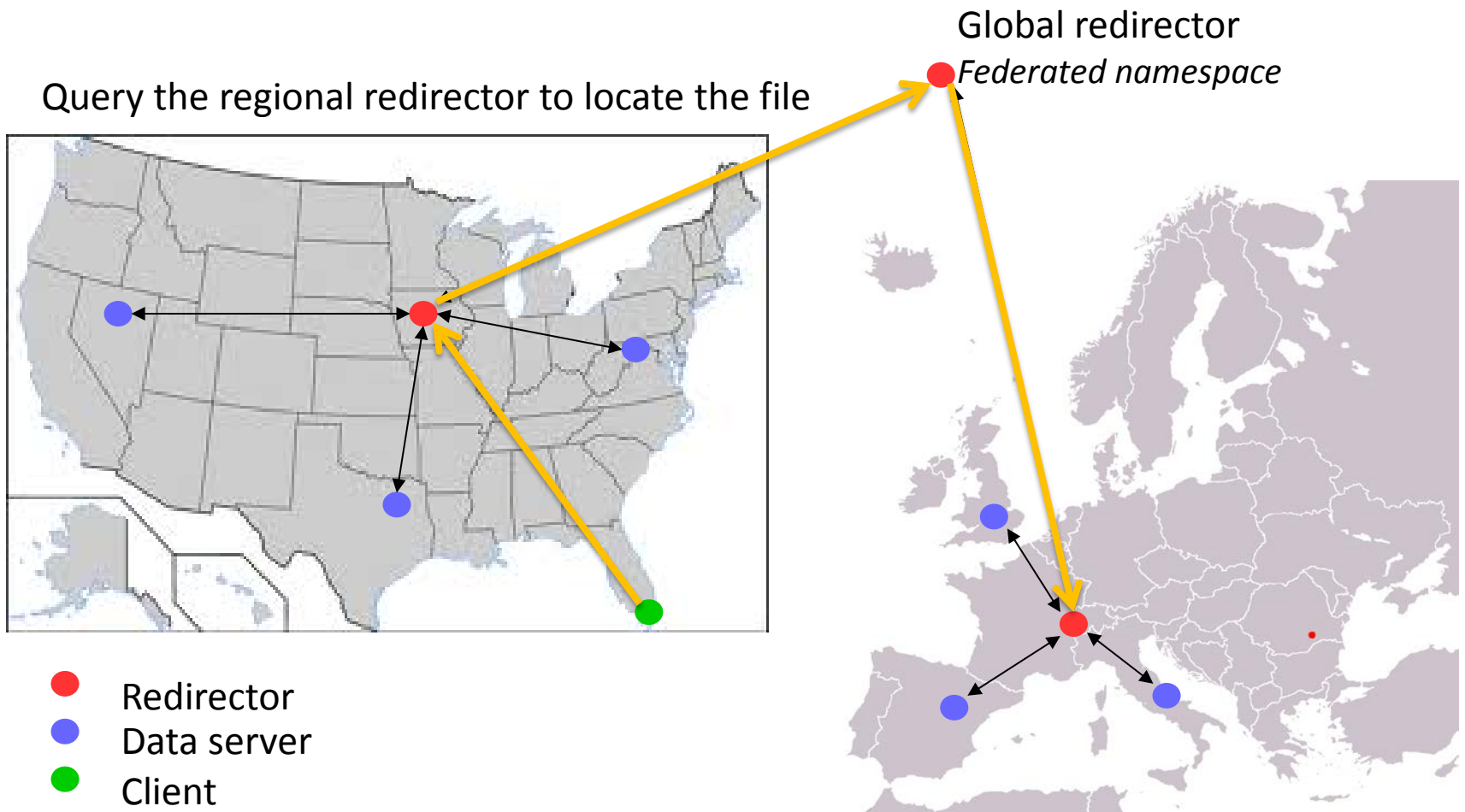
Federated data storages

A client wants to read a file

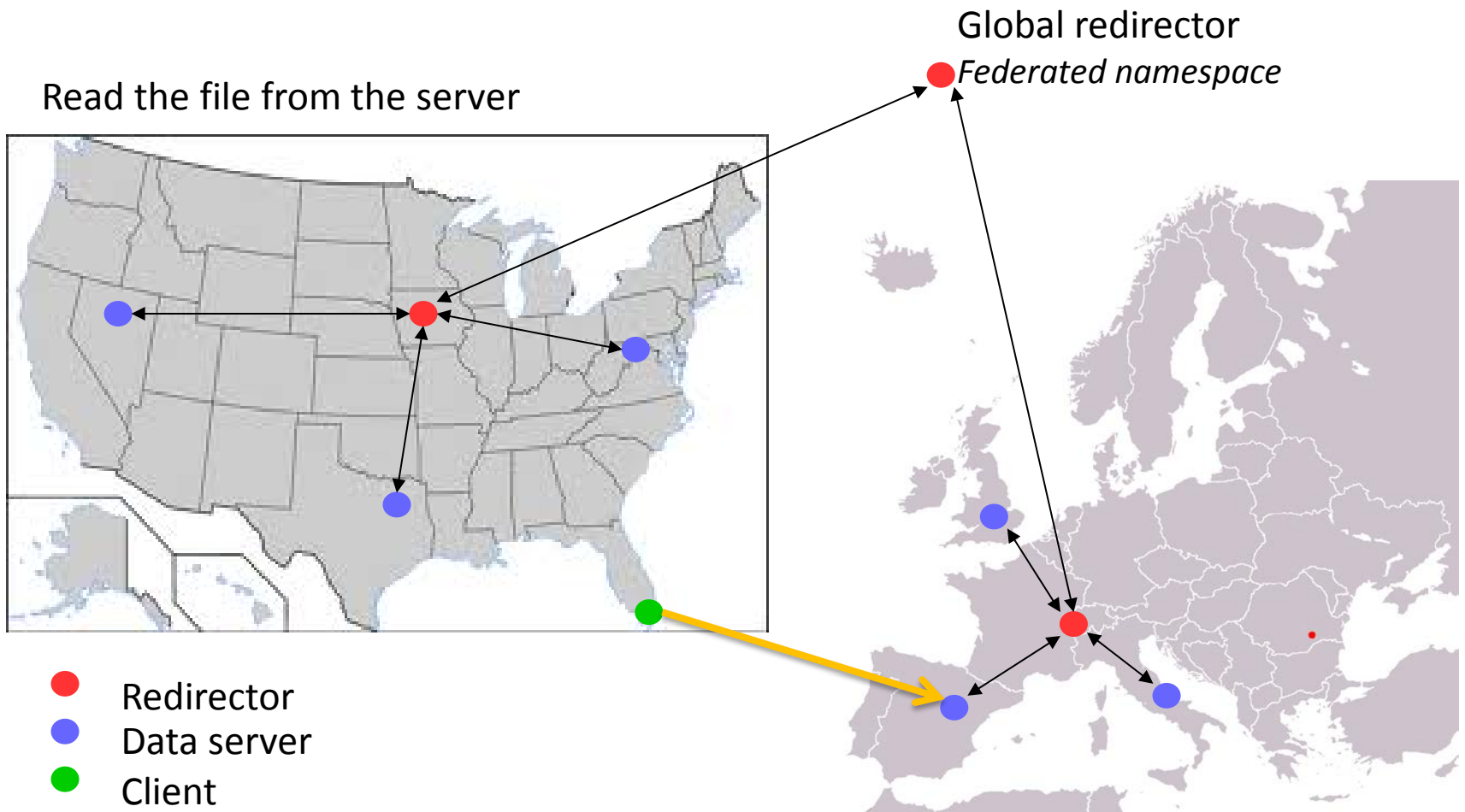


- Redirector
- Data server
- Client

Federated data storages



Federated data storages



Large-scale

	Users	Data servers	Files
Theoretical	1000's	1000's	~ 100M
AAA Federation	658	867	2.7M
FAX Federation	129	384	1.9M

* EOS data excluded

Large-scale

	Users	Data servers	Files
Theoretical	1000's	1000's	~ 100M
AAA Federation	658	867	2.7M
FAX Federation	129	384	1.9M

* EOS data excluded

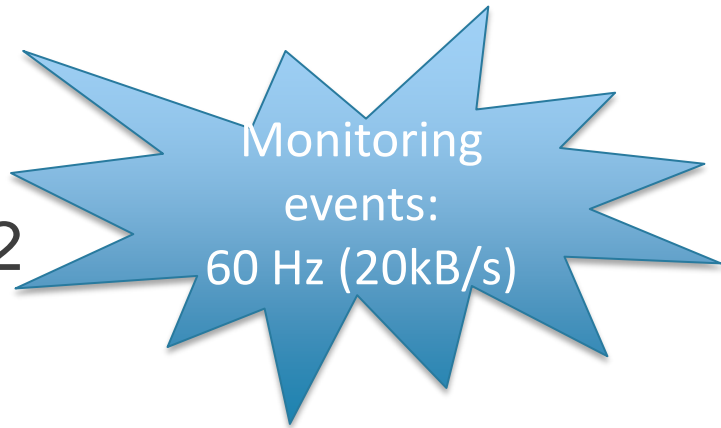
- Ongoing deployment (72%):
 - AAA: 1/1 T0, 3/7 T1, 39/51 T2
 - FAX: 1/1 T0, 6/12 T1, 34/44 T2
- Constantly growing

Large-scale

	Users	Data servers	Files
Theoretical	1000's	1000's	~ 100M
AAA Federation	658	867	2.7M
FAX Federation	129	384	1.9M

* EOS data excluded

- Ongoing deployment (72%):
 - AAA: 1/1 T0, 3/7 T1, 39/51 T2
 - FAX: 1/1 T0, 6/12 T1, 34/44 T2
- Constantly growing



Why monitoring ?

- Identify access patterns and propose data placement strategies
- Understand data flows to estimate data traffic
- Understand server usage
- And much more !!!

Conclusion

- Federation simplifies access to distributed data
 - Huge amount of monitoring information
 - Optimization can be proposed out of it
- Specific monitoring tool ...
 - ...Yet shared and extensible
 - ready to meet the scaling challenge

Thanks for your attention