

IRIS digital asset RUCIO: Monitoring

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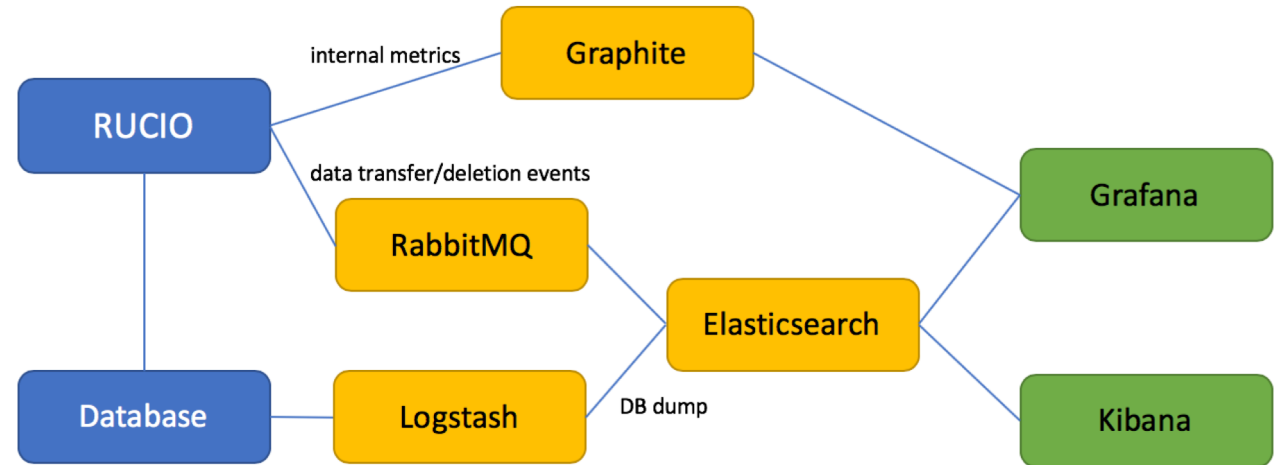
17-12-2019

Motivation and Deliverables

- Creation of basic tool for data management based on RUCIO
 - Monitoring of system health
 - Summary of SEs, data location, accounting etc.
 - Trace data movement and deletions
 - Analytics of data access patterns
- Deliverables
 - Building Rucio dashboard displaying usage, transfer and deletion statistics per experiment
 - Build a multiple-VO usable metrics collector based on container
 - Providing documentation
 - Improve capability of analytics

Metrics Collection and Dashboard

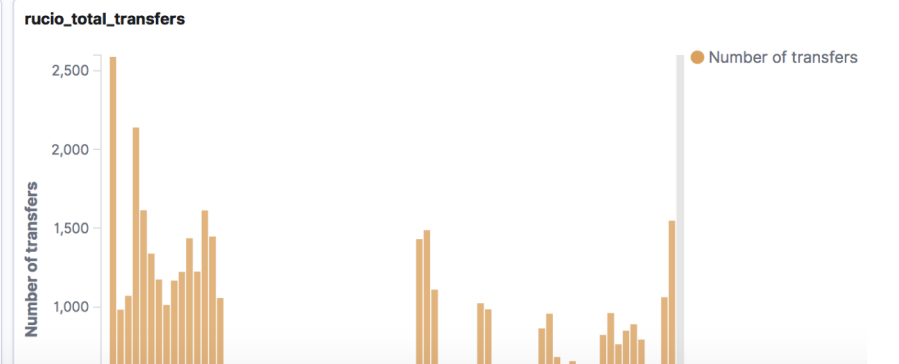
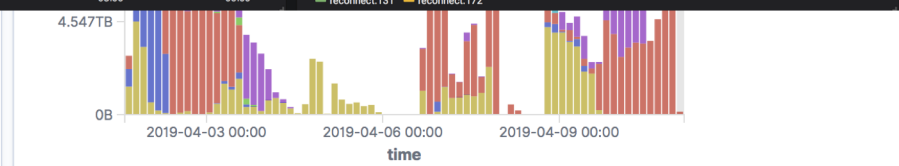
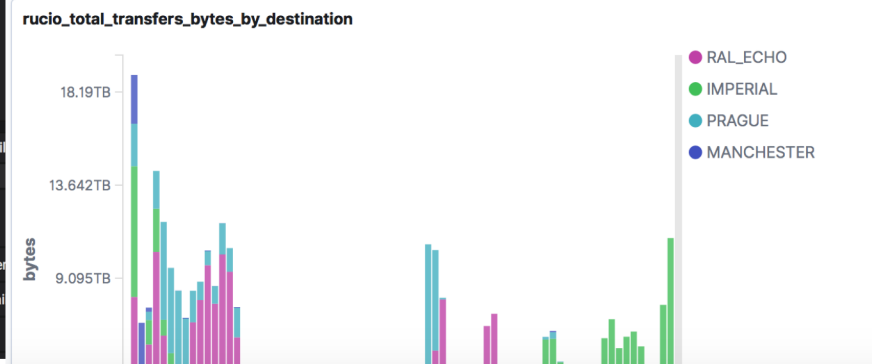
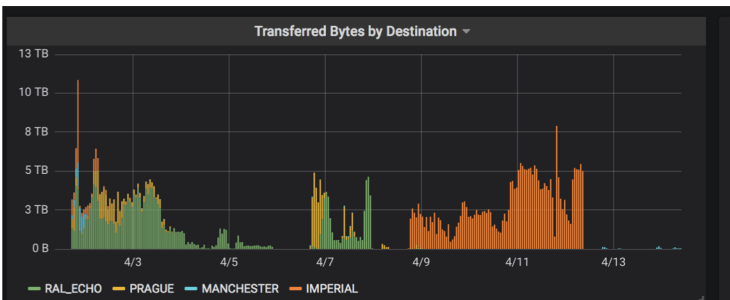
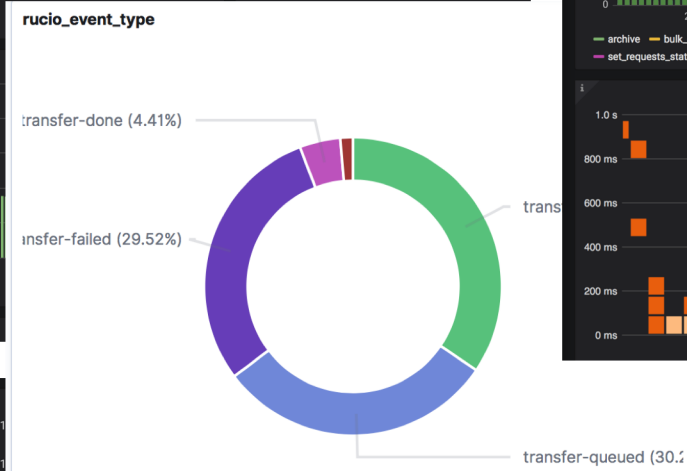
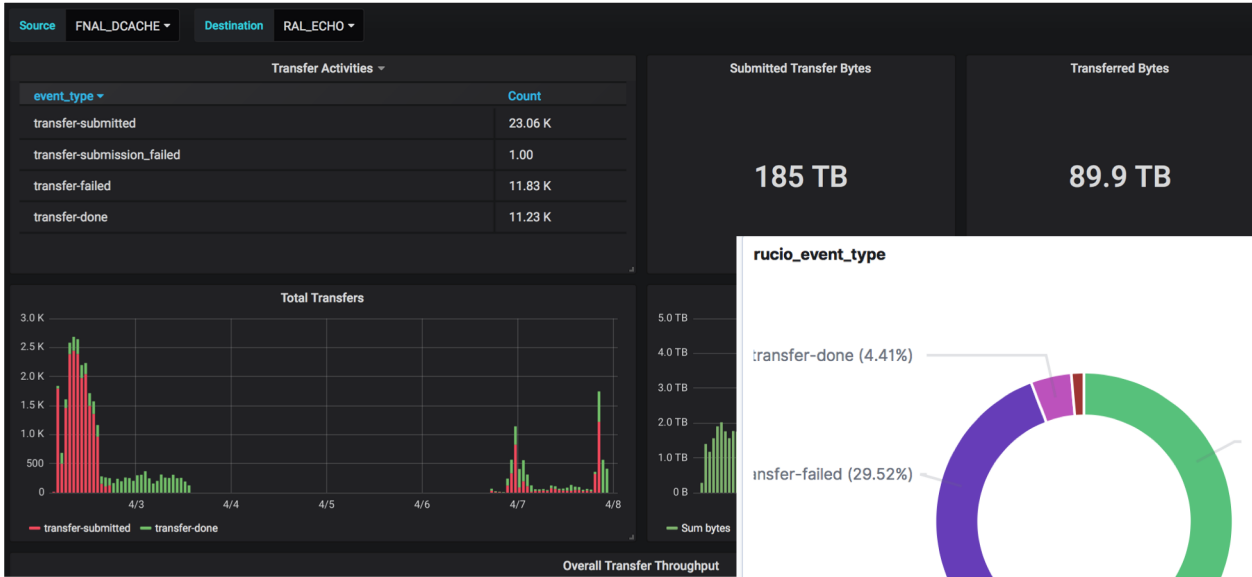
- Three categories of metrics
 - Internal metrics
 - Graphite/StatsD
 - Data transferring / deletion events
 - Java message queue
 - Replica/ accounting / client trace
 - Periodic dumping of the RUCIO database
- Collectors developed based on docker container
 - Reusable by different VOs
- Dashboards set up in both Grafana and Kibana



Current status

- Production dashboards created for DUNE at Fermi Lab
 - Monitoring RUCIO internal status and DUNE data transfer/deletion activities
- Trial dashboards created for SKA at RAL
 - Monitoring SKA data transfer/deletion activities
- Dashboards also set up at Edinburgh as a dev space
 - Receiving data from DUNE
- Documentation created
 - How Rucio monitoring works
 - List of useful Rucio metrics
 - How to setup monitoring systems from scratch
 - Exported dashboards (json files)

DUNE



Transfer Fail

reason

TRANSFER [70] TRANSFER globus_ftp_client: the server responded with an error 530 Login denied

TRANSFER [70] TRANSFER globus_xio: Unable to connect to gfe02.grid.hep.ph.ic.ac.uk:2811 globus_xio: System error in recv: Connection reset by peer globus_xio: A system call failed

TRANSFER [70] TRANSFER globus_xio: System error in recv: Connection reset by peer globus_xio: A system call failed

TRANSFER [70] an end-of-file was reached globus_xio: An end of file occurred

SKA

KQL

[rucio] Total transferred bytes

11.5GB


Transferred Bytes

[rucio] Total transfers

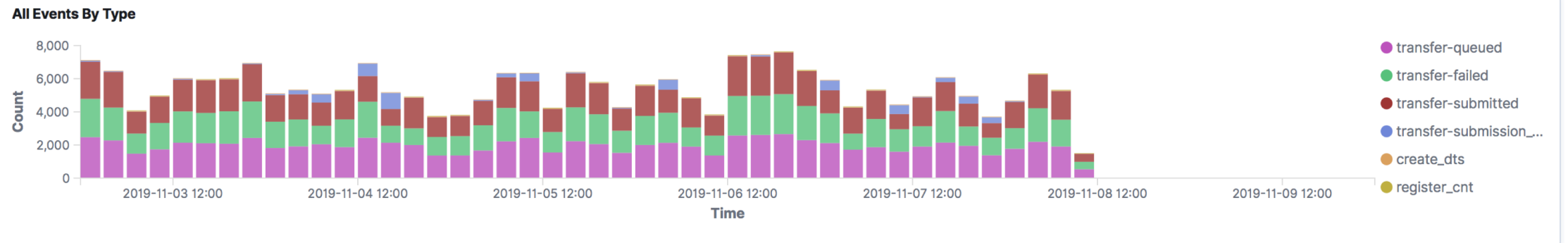
1,173

Total Transfers

[rucio] Transfer efficiency



- transfer-failed
- transfer-submission...
- transfer-done



Transfer Success Ratio Average

IDIA	0	0.918
CAMBRIDGE	0	0
MANCHESTER	1	0

Count Matrix - transfer events

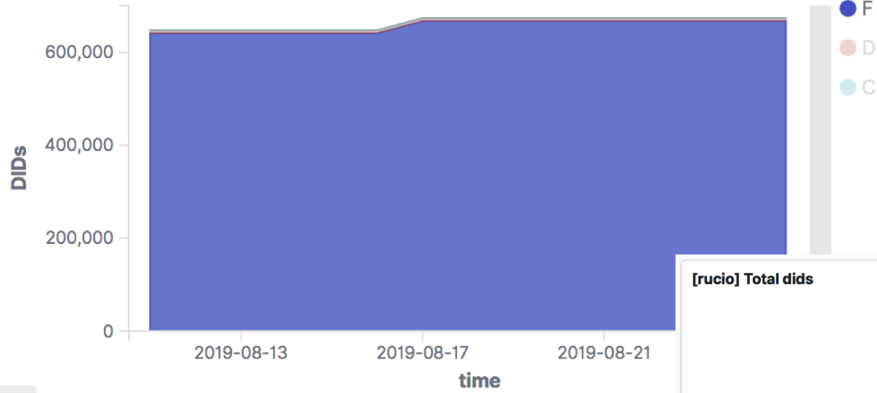
IDIA	45	427
CAMBRIDGE	38,269	39,049
MANCHESTER	781	
AARNET_MEL		186

Count Matrix - completed transfers

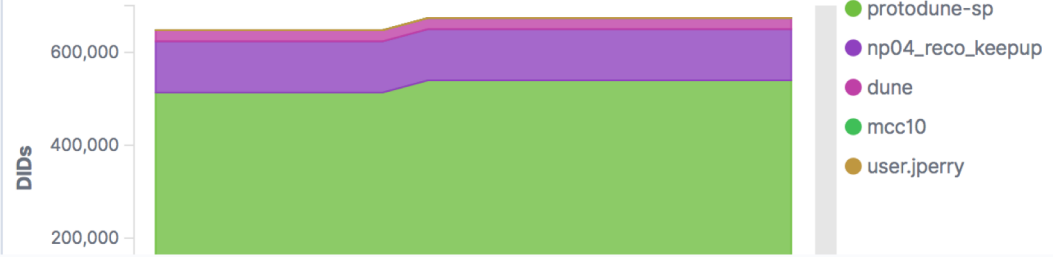
MANCHESTER	781
IDIA	392

Dev

[rucio] DIDs data hist per did type



[rucio] DIDs data hist per scope



[rucio] Total dids

673,285
DIDs

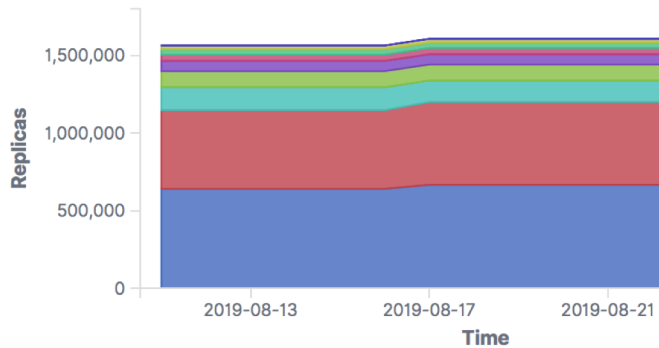
3.845PB
Total bytes

[rucio] total replicas

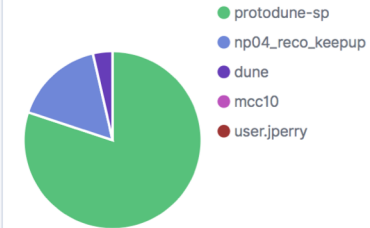
1,607,195
Total replicas

9.207PB
Total bytes

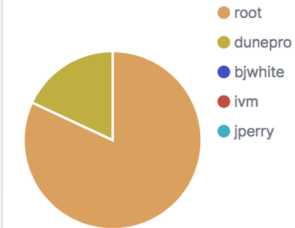
[rucio] Replicas per rse data hist



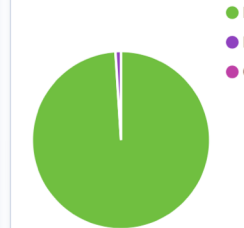
[rucio] DIDs per scope



[rucio] DIDs per account



[rucio] DIDs per did type



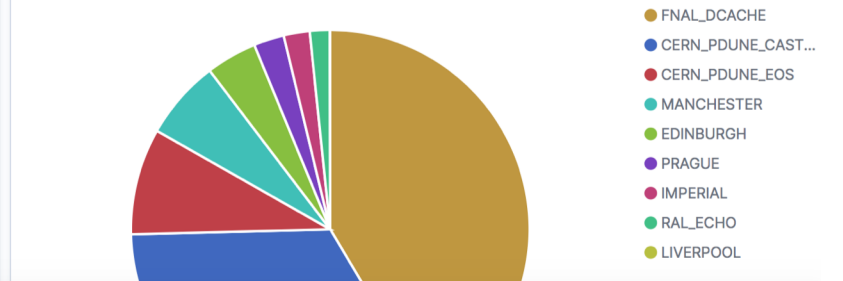
[rucio] DIDs per availability



[rucio] Replicas per site

RSE	Replicas	Total bytes
FNAL_DCACHE	666,226	3.841PB
CERN_PDUNE_CASTOR	532,723	2.793PB
CERN_PDUNE_EOS	138,571	679.32TB
MANCHESTER	103,473	772.68TB
EDINBURGH	66,249	494.402TB
PRAGUE	39,558	272.695TB
IMPERIAL	33,894	243TB

[rucio] Replicas pie



Thanks