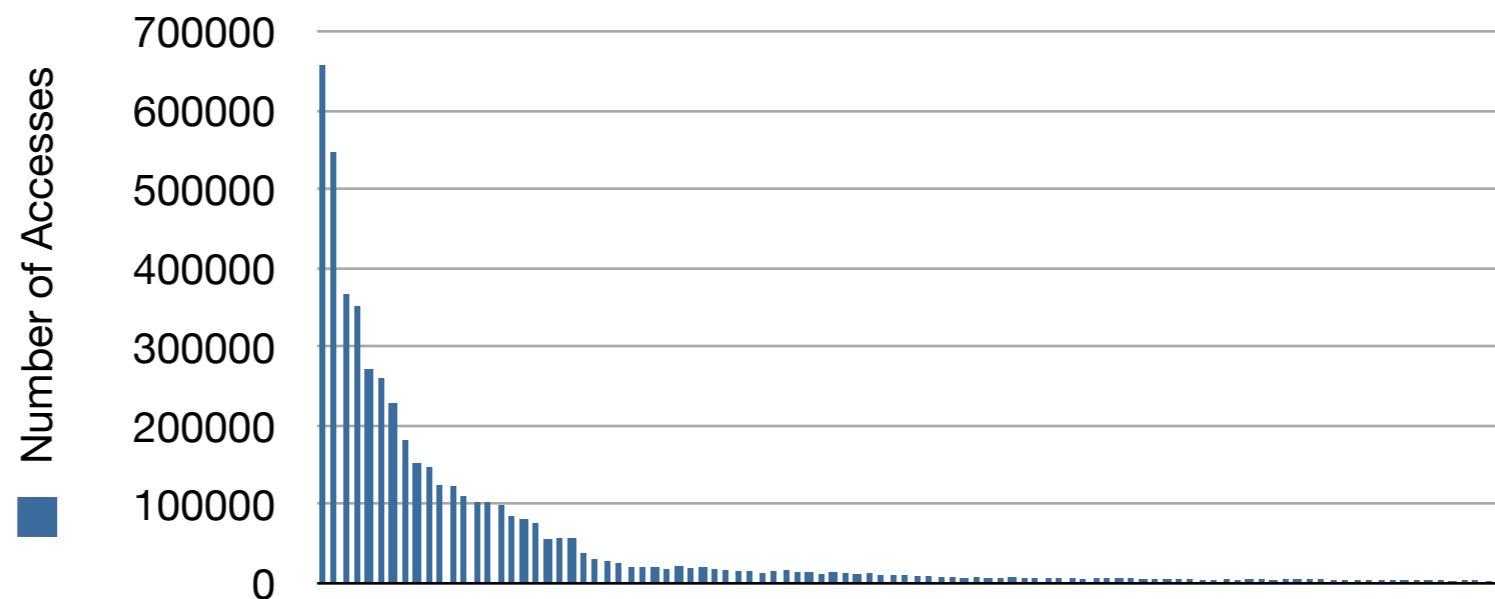


Update

ATLAS Demonstrator: PanDA Dynamic Data Placement



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PD2P Model

- At the moment jobs go to pre-placed data
 - This has been successful for early LHC data
- But not problem free:
 - Lots of data which is not used
 - To get the interesting data a lot of uninteresting data is also subscribed
 - Clogs network links and sites' disk
 - Management and cleanup labour intensive
- So we need a more responsive system:
 - Don't pre-place data
 - Trigger on demand replication to Tier-2s
 - But queue jobs where the data is **now**
 - Clean up when T2 storage gets full (LRU - DDM popularity service)
- Do this with the tools we have in the toolbox today



PD2P in Action

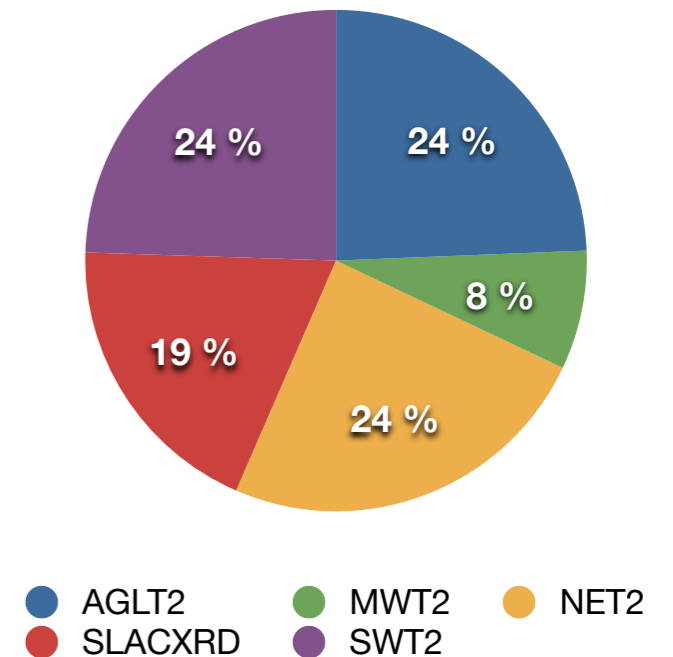
- Continue with planned data placement to T1s
- Subscribe extra copies of accessed data to T2s which have a special 'cache' flag
 - Blacklist certain data types: RAW, RDO, HITS
 - Enabled for the US T2s in mid-June
 - Can only subscribe data in the US for now
- Automatic replication of ESD and DESD was stopped shortly afterwards
 - AOD is still pre-placed

Early Results

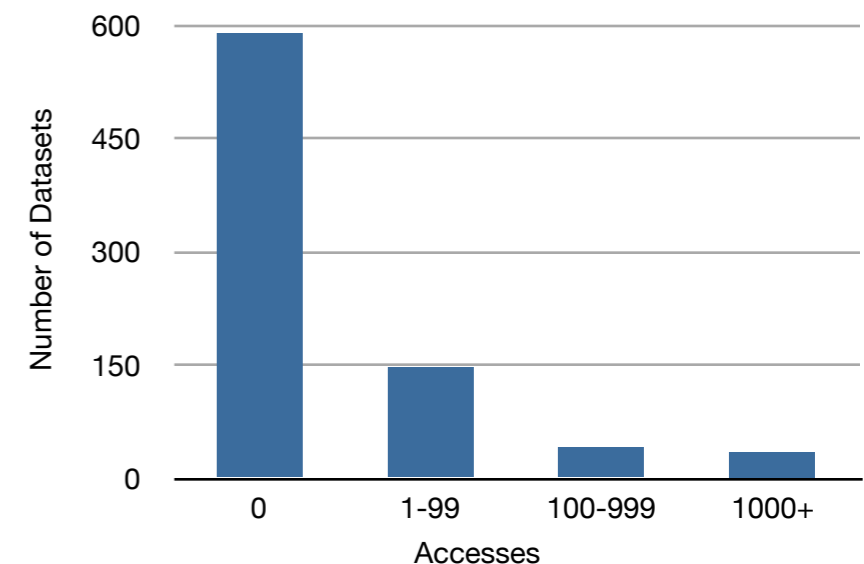


- 821 dataset subscriptions made
- Subscriptions going to least busy sites
- Reduced pressure on networking and disk space
- Usage of cached copies is very uneven
 - most popular gained 36 000 (file) accesses
 - but many were not used after replication at all
 - however, this is already a significant improvement on the previous situation

PD2P Subscriptions by site



PD2P Replicas Binned by Accesses





What's Next

- Extending to other sites outside the US
- Need to efficiently deal with data transfers in the current system ($T1 \rightarrow T1' \rightarrow T2$)
- Enable automatic rebrokering to gain best advantage of new replicas
- Breaking datasets into fragments to improve replication time and job throughput
- Solidify metrics
- Study usage of well used and underused replicas to see if replication algorithm can be improved
- Link up with other projects?