

ATLAS October Data Transfer Functional Test

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GDB meeting

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Data Transfer Functional Test

- The goal is to have ***system*** test
 - A coherent data transfer test between Tier-1 and Tier-2s for all *clouds*, using existing SW to generate and replicate data and to monitor data flow.
 - Data generated by ATLAS MC production SW
 - Organized in DQ2 datasets
 - Datasets : an aggregation of files plus associated metadata
 - Datasets is a unit of storage and replication
 - Performance evaluation is not yet the goal of the test
- We consider functional test as a part of ATLAS DDM operations activity and run the test regularly
- Two tests have been conducted in Sep and Oct 2006

October Data Transfer Functional Test

Test Scope :

- **Data transfer from CERN to Tiers** for datasets with average file size 400 MB. This step simulated the flow of ATLAS data from CERN to the sites
 - Step 1 : Data transfer from CERN to Tiers
 - a : Data transfer Tier-0 to Tier-1
 - b : Data transfer from Tier-1 to Tier-2s
 - Step 2 : Data transfer from Tier-2s to Tier-1. To simulate MC production data flow.
- **Large file transfer.**
Transfer files larger than 2GB from CERN to Tier-1s and then from Tier-1s to the selected Tier-2s
 - 1 reference dataset with 3.1 GB files
 - 9 datasets (one per cloud) with 4.5 GB files
- **Data transfer between regional centers**
 - Tier-1/Tier-1 data transfer
 - “foreign”Tier-2/Tier-1 data transfer

ATLAS Centers Participated in the Test

Tier-1	Test Coordinator	Tier-2, Tier-3 sites
ASGC	Jason Shih	IPAS, Uni Melbourne
BNL	Hironori Ito	AGLT2, BU, IU, OU, SLAC, UC, UTA
CNAF	Guido Negri	LNF,MILANO,NAPOLI, ROMA1
<i>FZK</i>	John Kennedy	CSCS, CYF,DEZY-ZN,DEZY-HH,FZU,WUP
LYON	Stephane Jezequel	BEIJING,CPPM,LAPP,LPC,LPHNE,SACLAY,TOKYO
PIC	Xavier Espinal	IFAE, IFIC, UAM
RAL	Frederic Brochu	CAM,GLASGOW,LANCS,MANC,QMUL
SARA	Jiri Chudoba	ITEP, SINP
<i>TRIUMF</i>	Rod Walker	SFU, TORONTO, Uni Montreal, VICTORIA, ALBERTA

Data Transfer From CERN to Tiers

Tier-1	Status	Comments
ASGC	done	Failed for AU-UNIMELB FTS channel configuration
BNL	done	
CNAF	done	
<i>FZK</i>	not completed	Problems after dCache upgrade at FZK
LYON	done	The FTS server in Lyon wasn't able to manage 6 FTS channels simultaneously
PIC	done	High failure rate for UAM. Probably network glitch and then DQ2 SW problem
RAL	done	FTS authorization problem at Edinburgh (fixed)
SARA	done	Failure rate within the cloud is slightly high than for other sites
<i>TRIUMF</i>	failed	50% failure rate between CERN and TRIUMF 100% data transfer failed to Alberta and SFU

Data Transfer Between Regional Centers

SRC	DEST	Status/Comments
ASGC	SARA	100% failed
BNL	LYON	Blocked by FTS server problem in Lyon
BNL	FZK	done
FZK	BNL	Not finished. Problems at FZK
QMUL	BNL	done. Data transfer from T2(RAL cloud) to BNL
RAL	CNAF	Not finished after 14h.
RAL	PIC	done
SARA	ASGC	done
SARA	TRIUMF	done

Large File Transfer

Sites (SRC-DEST)	Storage Elements	Status
CERN-ASGC	CASTOR-CASTOR	done
CERN-BNL-AGLT2	CASTOR-dCache-RAID5(local)	done
<i>CERN-BNL-BU</i>	CASTOR-dCache-DPM	<i>Failed from BNL to BU</i>
CERN-BNL-SLAC	CASTOR-dCache-NFS	done
CERN-CNAF	CASTOR-CASTOR	done
CERN-FZK	CASTOR-dCache	done
<i>CERN-LYON-LAPP</i>	CASTOR-dCache-DPM	<i>Failed from LYON to LAPP (*)</i>
<i>CERN-PIC-IFIC</i>	CASTOR-dCache-CASTOR	<i>Failed from PIC to IFIC</i>
CERN-PIC-IFAE	CASTOR-dCache-SRMDiskOnly	done (**)
CERN-RAL	CASTOR-dCache	done
CERN-SARA	CASTOR-dCache	done
CERN-TRIUMF	CASTOR-dCache	done

(*) transfer was blocked probably by FTS server in LYON

(**) SRMDiskOnly = SRM dCache + gridftp dCache + standard disk access

Problems and Uncertainties with transferring and storing files larger than 2 GB

- CASTOR :
 - Large files support requires CASTOR SRM-2.2.9-4 and CASTOR client 2.1.1 (O.Barring)
- dCache
 - PNFS can only represent a data file's size accurately up to (2G-1)B; beyond that, the file size is shown as 1. Enstore knows, stores and uses real file size;
 - 2+GB file copying from dCache to the local file system using *dccp* fails
 - 2+GB file copying from dCache to the local file system using *globus-url-copy* and *srmcp* works correctly
- DPM
 - Data transfer failed to two DPM SE (BU and LAPP). We cannot confirm that both cases are related to the SE flavor. The test need to be repeated

Test Summary and Conclusions

- The data transfer robustness is improved since the previous test in Sep 2006
- The problems on sites (FZK and TRIUMF) related to the site and ATLAS DDM software persisted for the whole test duration
- Not all FTS channels are set up correctly. The FTS server in Lyon wasn't able to manage 6 FTS channels simultaneously.
- ATLAS DDM system can cope successfully with large files transfer