ATLAS Distributed Computing Monitoring tools after full 2 years of LHC data taking

## ATLAS Experiment

http://www.atlas.ch
- Particle experiment at the Large Hadron Collider at CERN exploring secrets of the Universe
- Extensive use of grid computing resources: over 100k jobs run simultaneously
- Distributing over 15 PB of data/year all over the world, throughput over 10 GB/s

ATLAS Distributed Computing Monitoring

- Monitor ATLAS Distributed Computing infrastructure: ● Over 100k job slots available at more than 120 computing centres world-wide ● Over 95 PB of storage space distributed world-wide
- Variety of purposes: ● Operations tools to spot an issue ● Tools to analyse long-term trends ● Accounting information ● Pledged resources
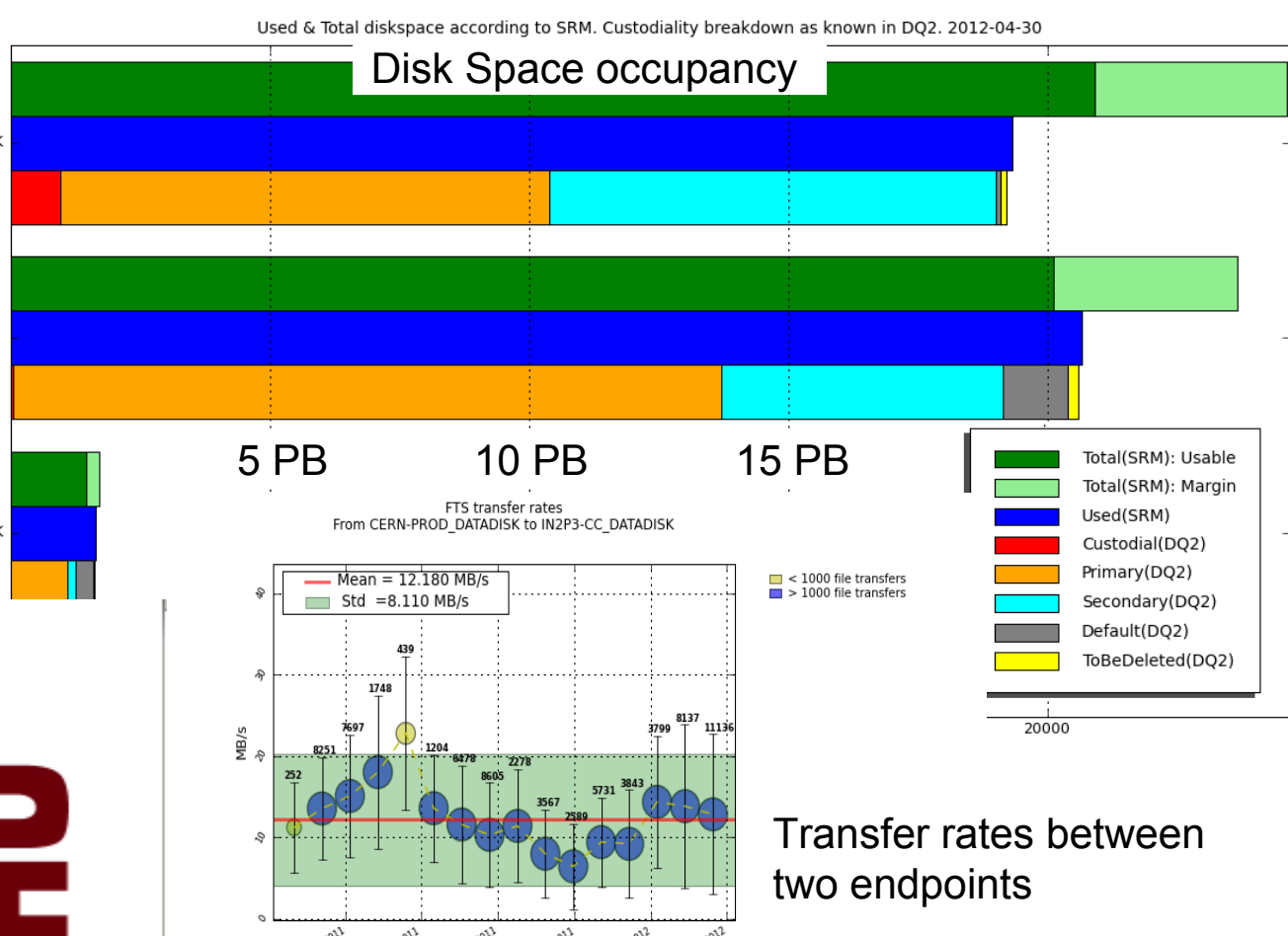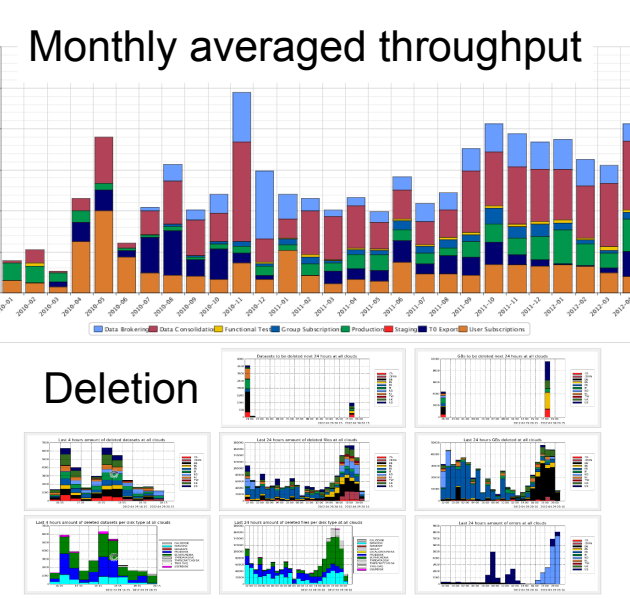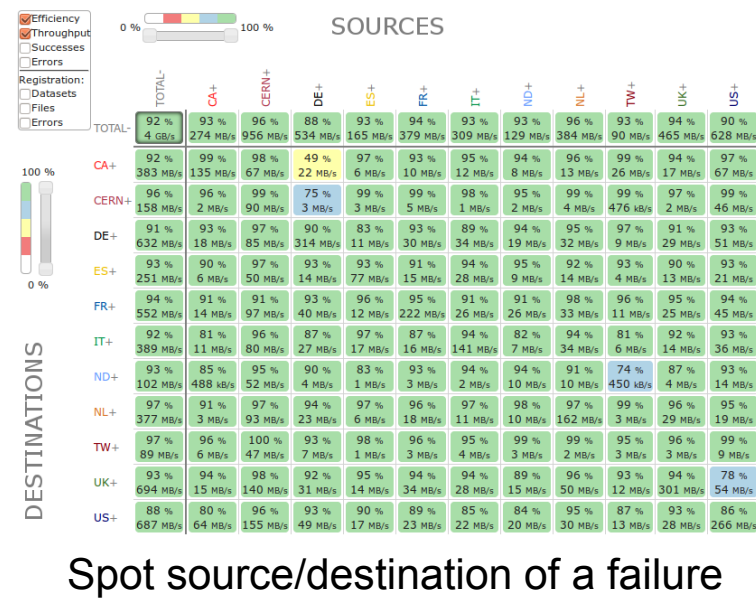
Data Processing at Tier-0

- RAW data processing:
- ● Progress ● Resources utilization
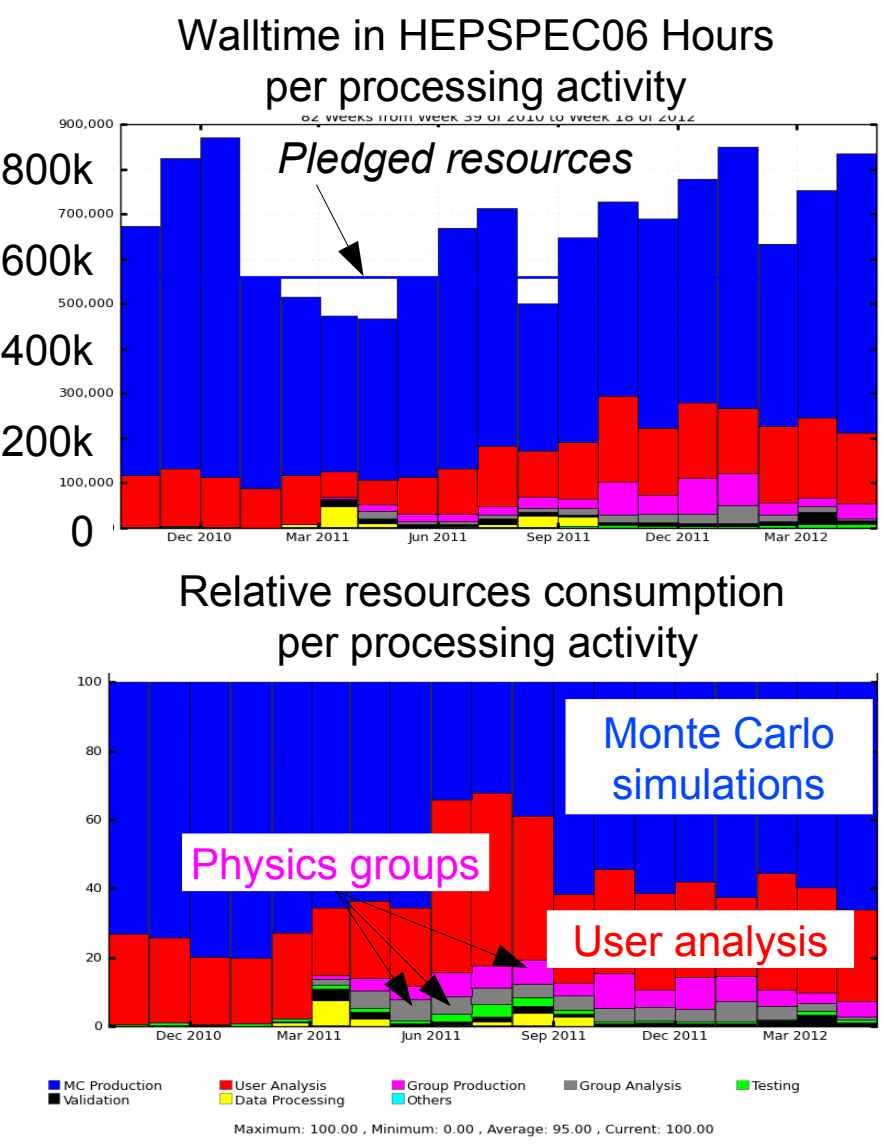- Data registration ● Data export
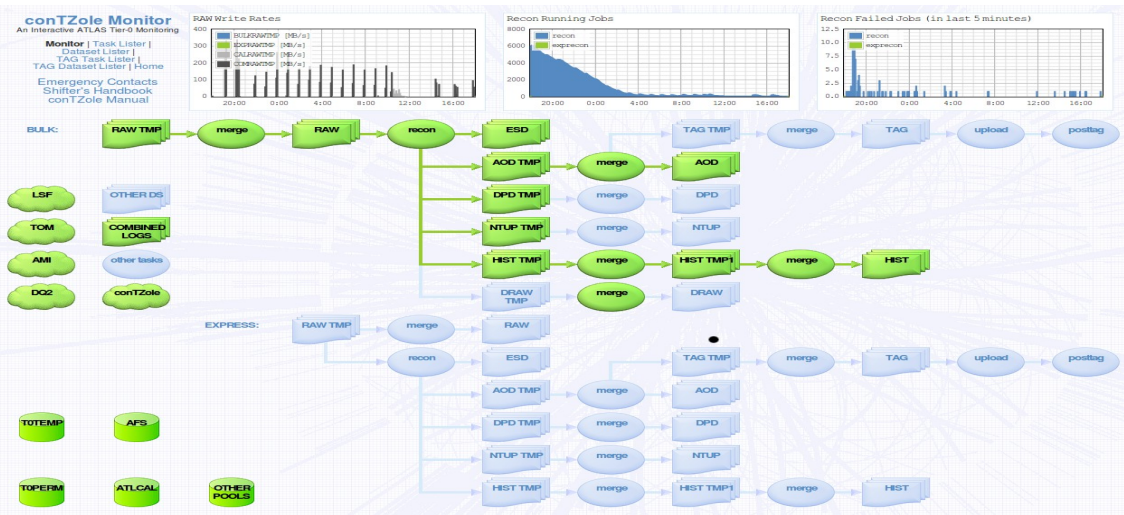
Distributed Data Management

- Monitor data transfers, spot failures ● Data replication ● Data deletion ● Data popularity ● Network throughput ● Storage status ● Storage accounting ● FTS job status ● Functional tests

Spot source/destination of a failure

Monthly averaged throughput

Deletion

Disk Space occupancy

5 PB   10 PB   15 PB

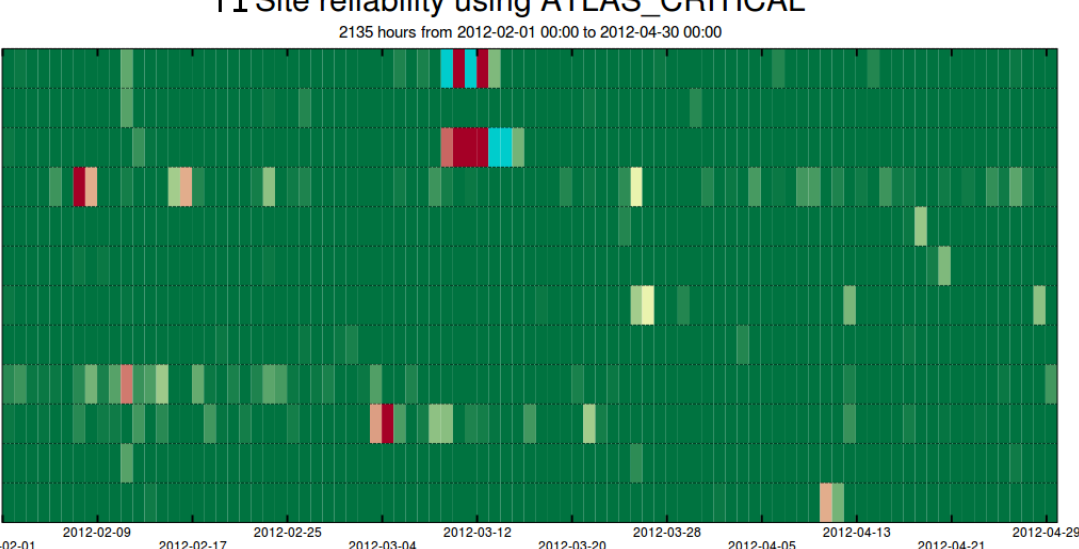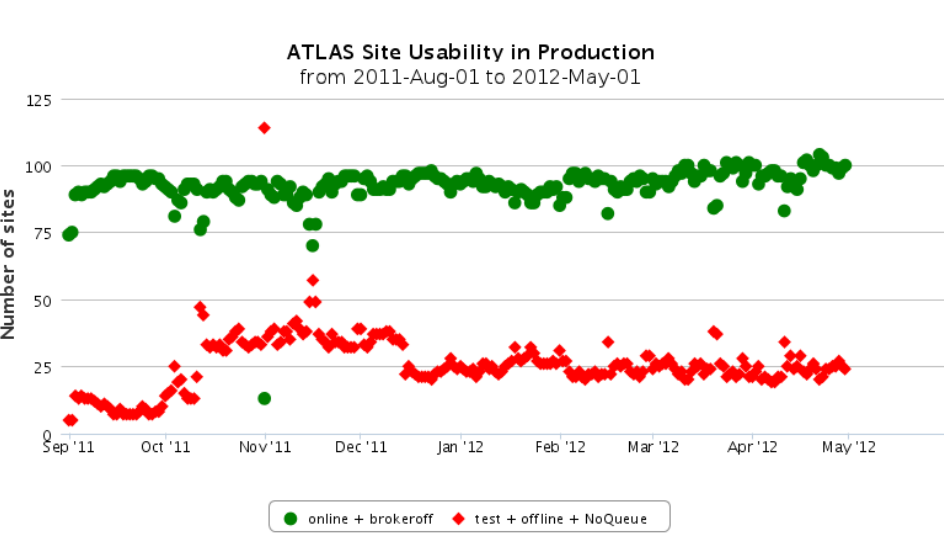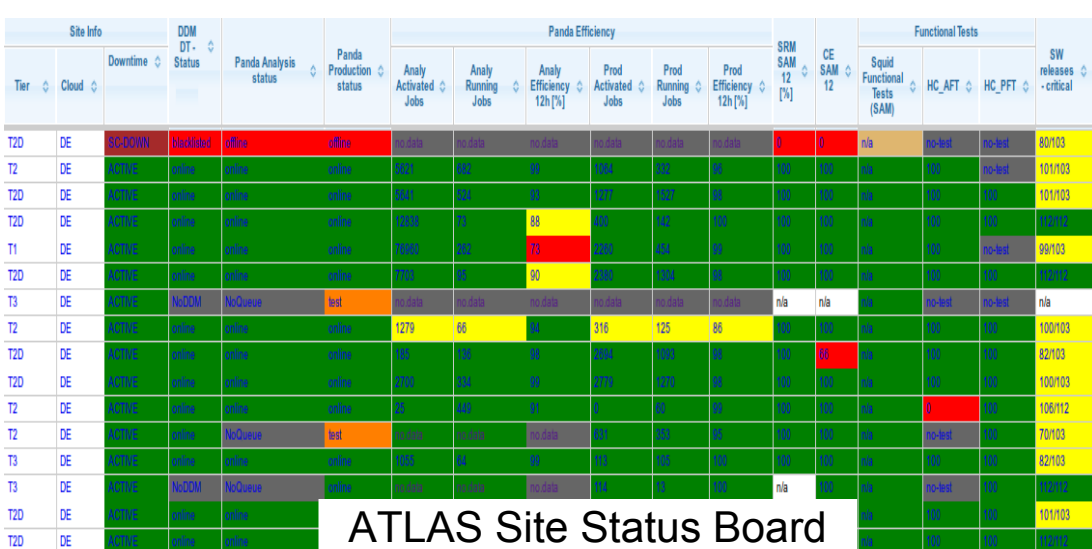Transfer rates between two endpoints

Data Processing on Grid

- Site-centric job monitoring ● Task monitoring ● User task monitoring
- Job Accounting ● Analysis and production functional tests

Walltime in HEPSPEC06 Hours per processing activity

Pledged resources

Relative resources consumption per processing activity

Monte Carlo simulations

Physics groups

User analysis

Databases

- Health of ATLAS Distributed Computing central DBs ● Health of Frontiers/Squid caches

Sites and Services

- Site status ● Services at site ● Site Reliability ● Job submission ● Functional tests

ATLAS Site Status Board

ATLAS Site Usability in Production from 2011-Aug-01 to 2012-May-01

T1 Site reliability using ATLAS_CRITICAL

Standards

- Separate application logic and visualisation layers
- Using common frameworks and common visualisation libraries
- Standards for visual identity

Challenges

- Long-term monitoring data preservation
- New data storage technologies
- Data mining
- Scalability

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