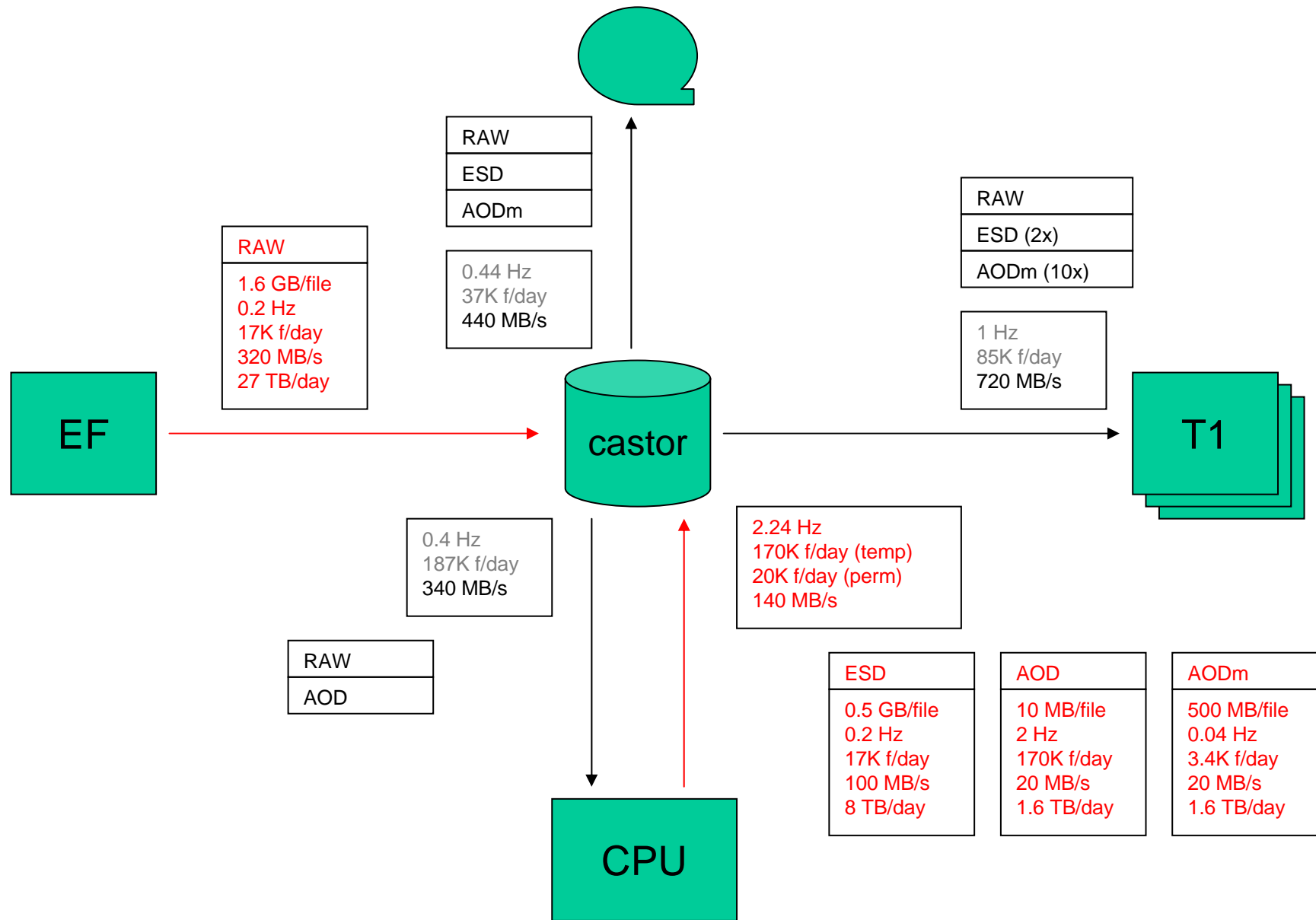# ATLAS C2 experience

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(for the ATLAS collaboration)

C2 review

- **use cases 1 : the clear ones**
  - Tier0 operations
    - Castor stores all T0 data
      - RAW, ESD, AODTMP, AOD, TAG, ...
    - supports all data paths
      - P1 -> T0, T0 -> T1s, archival to tape, IO to from reco farm, ...
    - rfcp based
      - stage-in and stage-out to from local disk

RAW

ESD

AODm

0.44 Hz
37K f/day
440 MB/s

RAW

ESD (2x)

AODm (10x)

1 Hz
85K f/day
720 MB/s

RAW

1.6 GB/file
0.2 Hz
17K f/day
320 MB/s
27 TB/day

EF

castor

T1

0.4 Hz
187K f/day
340 MB/s

2.24 Hz
170K f/day (temp)
20K f/day (perm)
140 MB/s

RAW

AOD

ESD	AOD	AODm
0.5 GB/file	10 MB/file	500 MB/file
0.2 Hz	2 Hz	0.04 Hz
17K f/day	170K f/day	3.4K f/day
100 MB/s	20 MB/s	20 MB/s
8 TB/day	1.6 TB/day	1.6 TB/day

CPU

- **use cases 2 : the not so clear ones**
  - everything else
    - (CAF) user files
      - O(100) users
      - rfio? xrootd?
    - disk only area, xp managed
      - pre-staged productions

- **tests 1 : the past ones**
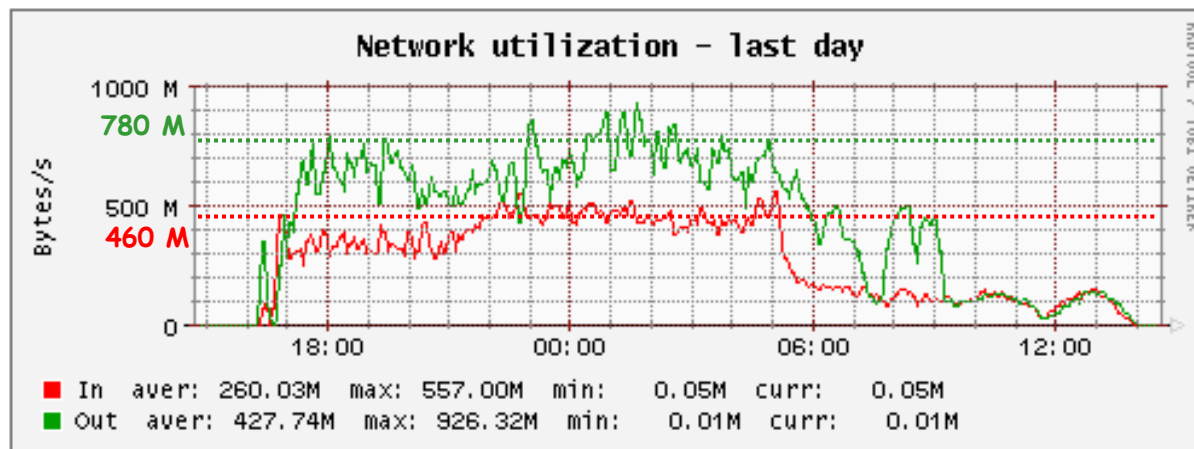 - SC3 test (Oct 05 - Jan 06)
    - reached nominal rates on all T0 data paths except T1 export !
    - usually only on Friday afternoon though ;-)

READING (nom. rate: 780 MB/s)
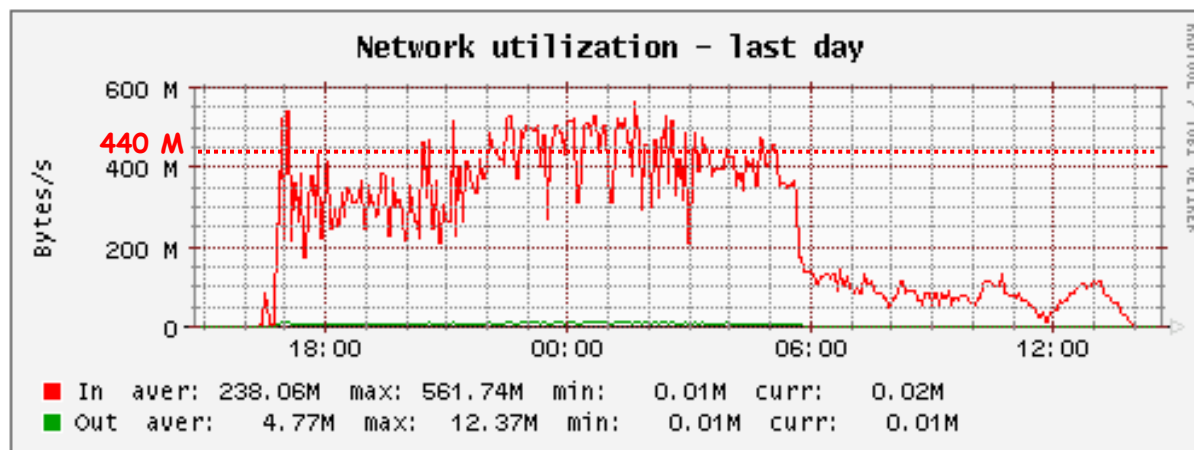- Disk → WN
- Disk → Tape

WRITING (nom. rate: 460 MB/s)
- SFO → Disk
- WN → Disk

WRITING (nom. rate: 440 MB/s)
- Disk → Tape

Network utilization - last day

In	aver: 260.03M	max: 557.00M	min: 0.05M	curr: 0.05M
Out	aver: 427.74M	max: 926.32M	min: 0.01M	curr: 0.01M

Network utilization - last day

In	aver: 238.06M	max: 561.74M	min: 0.01M	curr: 0.02M
Out	aver: 4.77M	max: 12.37M	min: 0.01M	curr: 0.01M

- **tests 2 : the future ones**
  - SC4 tests (June 06 - Dec 06)
    - T0 2006-1
      - 3 weeks end of June
      - same as before, but with T1 export (~800 Mb/s)
      - focus on stability
    - T0 2006-2
      - Sep
      - same again
    - also distributed production tests and distributed analysis tests
      - plans not finalized yet

- **C1->C2 migration**
  - ATLAS migrated last ~ 2 months ago
    - limited experience
  - initially things seemed a bit unstable but since last power cut few weeks ago there have been no more problems
  - now have > 700K files staged
    - nr of files was most important limitation of C1 felt by ATLAS

- **castor support**
  - during SC3 T0 test C2 folks seemed overloaded
    - response time was O(day)
  - admittedly we only had 'second order' problems
    - it worked but we thought it could work better
  - it seemed C2 folks had very limited and primitive monitoring
    - Lemon, direct SQL, ...
    - probably a bit too primitive for a system as complex as C2
    - anomalies were usually spotted by ATLAS
      - despite having access to close to zero monitoring data

- **conclusions**
  - basic functionality seems to be in place and working
    - some non-basic tools were/are missing like e.g. file distributions
  - performance is promising
    - scaling worked well within the limits tested
  - timing of this review is a bit awkward
    - too late for design ?
    - too early for user feedback