

Data Challenge Resource Planning for 2004 at CERN

preliminary

Available Budget

1200 KCHF for LHC Experiments → CPU, Disk and Tape costs

500 KCHF for non-LHC experiments → CPU and Disk costs

Known Costs :

- 100 KCHF for the replacement of old equipment (LHC and non-LHC)
- 150 KCHF for Tape costs in 2004 (LHC experiments)
- 150 KCHF for Tape costs in 2004 (LHC experiments) in case of no contribution from EP

2004 Experiment requests

(rounded , aggregate numbers)

	non-LHC	LHC
new CPU capacity	50 KSI2000	450 KSI2000
new disk capacity	40 TB	100 TB
new AFS capacity	2.3 TB	2.3 TB

remark : AFS is not part of the 500 + 1200 KCHF budget
4.6 TB is a 60 % increase of the current AFS space (7.6 TB)
AFS costs (new acquisition, maintenance, backup tapes, replacement)
will be about 700 KCHF in 2004, personnel not included

Time schedule 2004

WAN coupling of mass storage systems (CMS-IT, Tier 1)

IT Computing DC
extensive disk server tests (storage model)
10 Gbit network equipment tests

empty right part of the CC (Mail, windows, openlab, prototype, AFS, etc.)

ATLAS Physics DC

ATLAS Physics DC

ALICE Physics DC

CMS Physics DC

LHCb Physics DC

CMS Physics DC

LHC experiments analysis

LCG-2 service starts
(200 nodes + 10TB)

new CASTOR stager

Market survey starts
(CPU and disks)

ALICE Computing DC

ATLAS Computing DC

ALICE Computing DC

Jan

Feb

Mar

Apr

May

Jun

Jul

Aug

Sept

09.December 2003

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CERN/IT/LCG

2004⁴

Computing Data Challenges

- ❑ WAN coupling of Tiers → data import/export, HSM coupling, protocols, etc.
- ❑ Reliability and performance of storage hardware and software
- ❑ 10 Gbit network equipment, performance and reliability
- ❑ Mass Storage, CDR → ALICE – IT DC
- ❑ Online tests → DAQ and event building (ALICE, ATLAS)
- ❑ LCG testbeds
- ❑ EGEE / ARDA testbeds
- ❑ Database tests (ORACLE, POOL, ROOT)

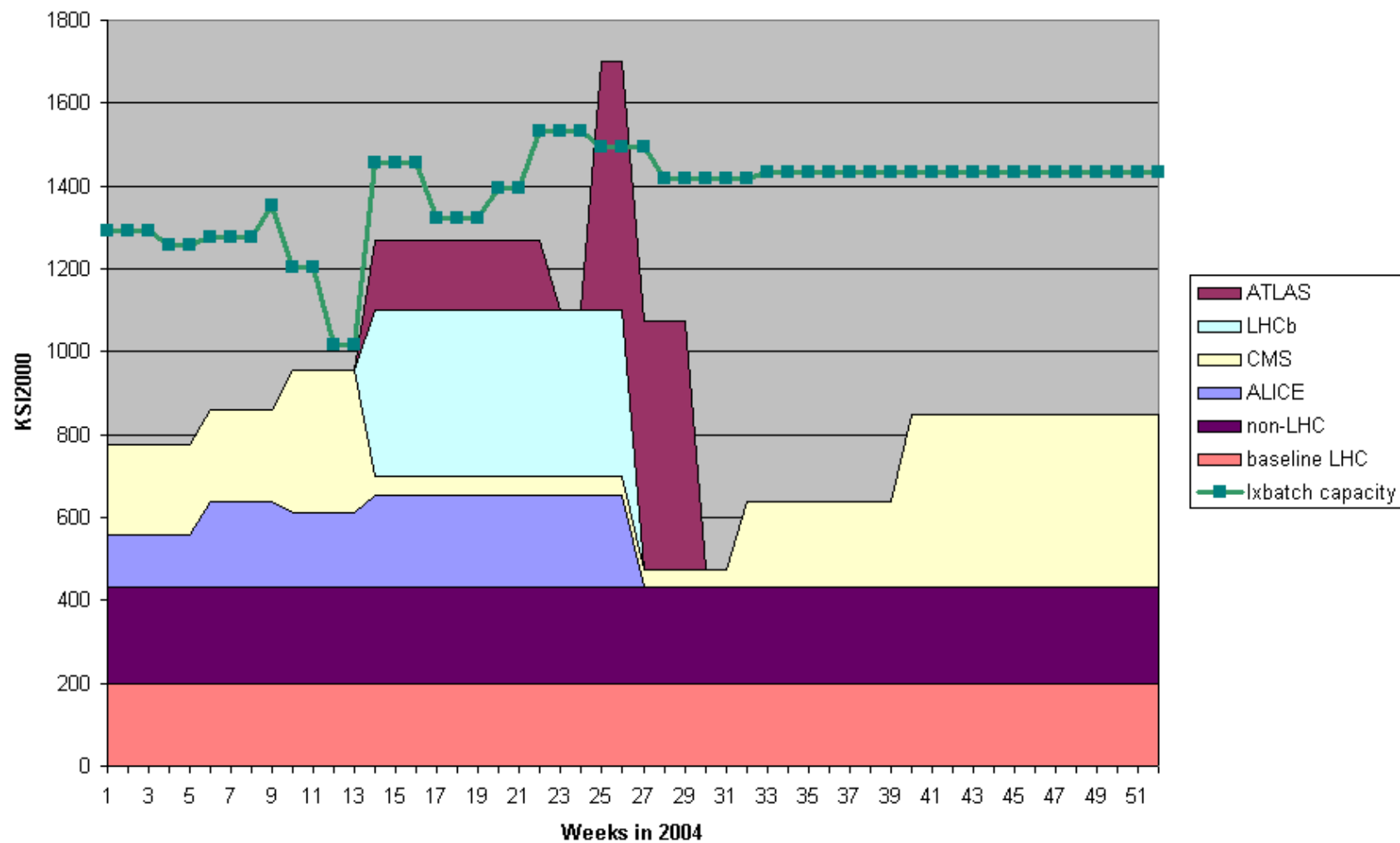
Boundary Conditions

- ❑ The planning and implementation of the CC upgrade
 - move all equipment from the left side of the CC to the right side during February to June
 - services effected : Mail, Web, Windows, AFS, prototype, openlab, testbeds

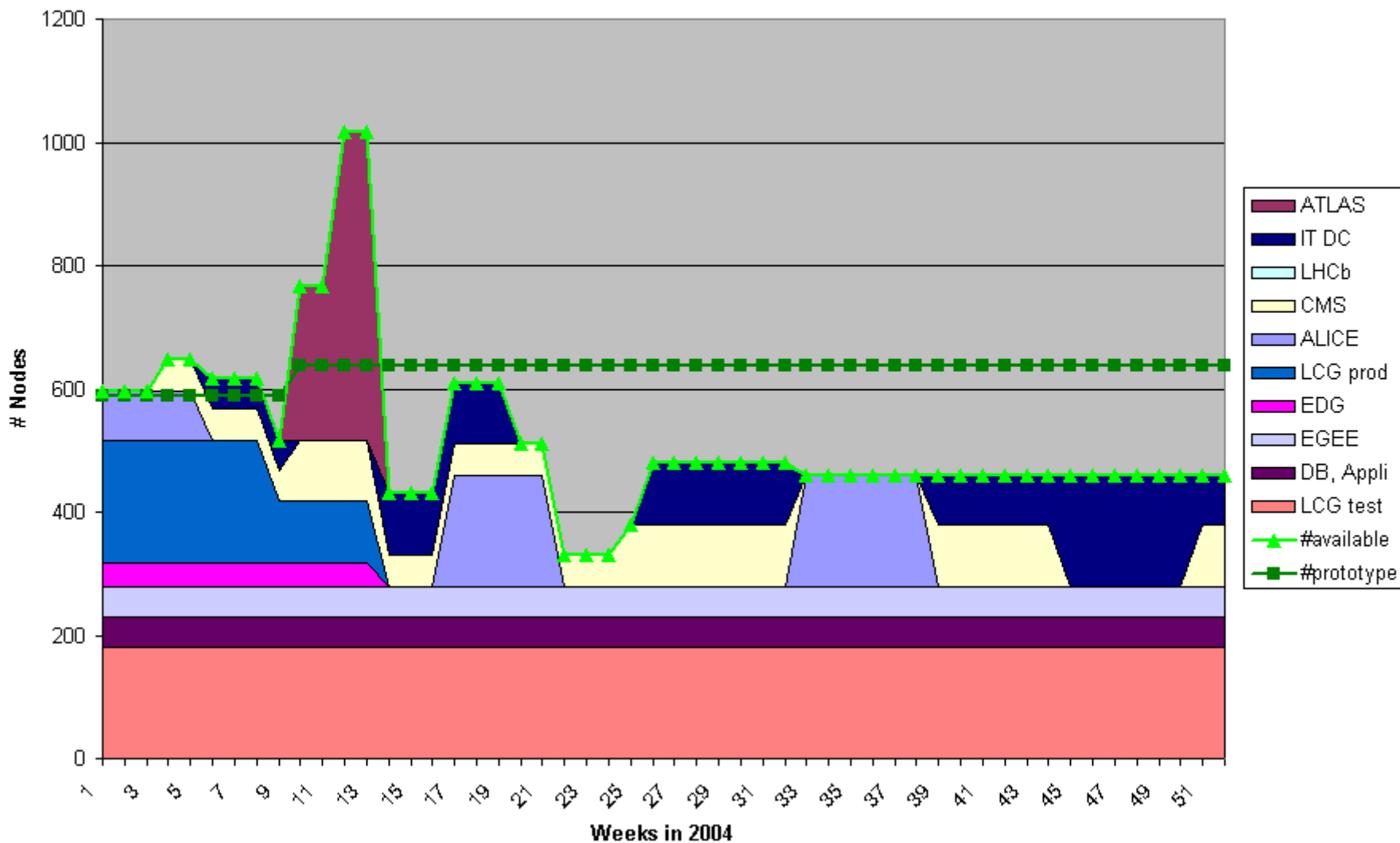
- ❑ Efficiencies
 - two jobs or three jobs per node
 - memory size, Exp. A : “I don’t won’t to mix with Exp. B, C or D “
 - I/O wait time compensation (mass storage, database, calibration, bookkeeping)
 - dedication of nodes versus dedication of resources in the DC’s
 - overall failure rate system versus application

- ❑ Transparent sharing of resources between the prototype and Lxbatch

Physics Data Challenges 2004



Computing Data Challenges 2004



Disk Resources

The requests are for 101 TB of disk space for the 4 Experiments

ALICE	30 TB
ATLAS	25 TB
CMS	38 TB
LHCb	8 TB

From the 2004 budget we bought so far ~ 50 TB (will arrive end of the year)

→ split the request into base request and specific for DC's

ALICE	8 TB	+ 22 TB
ATLAS	16 TB	+ 9 TB
CMS	16 TB	+ 22 TB
LHCb	8 TB	+ 0 TB

→ add some 15 TB from the prototype

→ check possibility to buy another 10 TB from remaining budget

→ add 10 TB from the existing (2003) disk space into the DC's

Disk Resources for 2004

