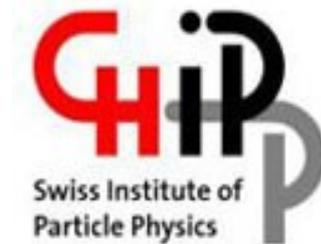


Report from the CHIPP Computing Board



Christoph Grab

Gersau, Aug 2010

Swiss Tier-2: Summary of Facts

- ◆ Cluster at CSCS: **Reached “originally foreseen size” !**
 - CPU: 2800 KSI2k and storage: ~750 TB
 - manpower of 2.5. FTE total (+1.5 expt’s FTE contrib)
- ◆ Requested investments (FORCE/SNF) for 2011 :
 - Request for 2011 for replacements + fulfill expt’s pledges:
 - hardware for 500 kCHF
 - ONE FTE person to support Tier-2 operation at CSCS
- ◆ Note: input for planning:
 - Replace hardware: experiments “appetite” grows
 - CSCS will move to USI campus in 2012 → additional costs ?
 - LHC shutdown in 2013 ?
 - contributions to EGI (work and money) for services necessary
- ◆ Planned investments (FORCE/SNF) for 2012 - 2014 :
 - Request for replacements and additions :
 - hardware for 500 - 700 kCHF / year
 - ONE FTE person to support Tier-2 operation at CSCS
 - additional costs for power and operation at CSCS → USI;
 - additional costs for EGI contributions.

Q1: How does CH compare with other countries?

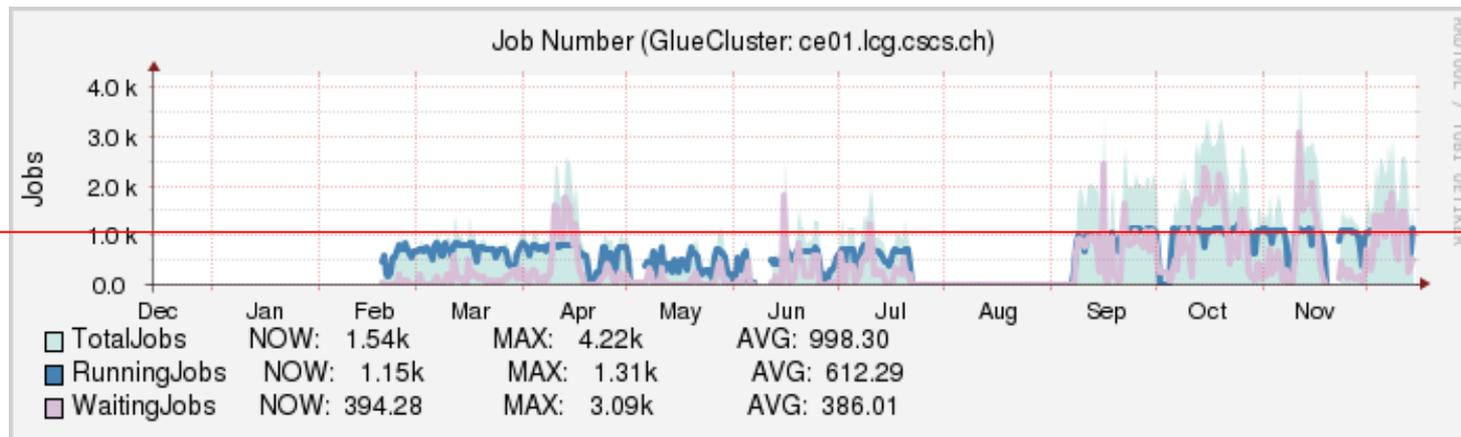
A1: Swiss commitment is very similar to other countries of same size. examples are given here (effective resources shown):

Country	CPU (HEP-SPEC06)	Storage (TB)
Switzerland Tier-2 (3 expt)	13550	741
Poland (4 exp)	13050	810
Rumania (3 expt)	19000	1704
Czech Rep (2 Expts)	8500	525
Belgium (1 expt)	9600	1190
Sweden (2 expt)	8770	920

Q2: How well are the Swiss resources exploited?

A2: CPU – very good (plot) – is up to nearly 99%

Storage: started slower, improved now.



Q3: What is the key for pledges and resources?

A3: comes from experiment's needs; requests distributed among all countries commensurate with LHC participation.

Q4: What is the controlling structure?

A4: Computing Resource Review Board (C-RRB) and the Resources Scrutiny Group at CERN which reports to the C-RRB

Summary: Swiss Tier Efforts (Q1/11)

Site (#users)	Nr cores	CPU (kSI2k)	Storage (TB)	Comments 1 kSI2k ~ 200 SpecInt06
Swiss Tier-2 ✓	768	~2800 (11550 HS06)	754	1152 with HT
ATLAS BE (10) ✓ GE (~55) ✓	975 268	~2000 462	100 180	BE: +160 cores /180 TB in preparation; GE: part of Swiss-Atlas grid.
CMS ETHZ ✓ PSI, UZH (21)	224	~1200	270	GRID SE + UI :direct GRID access. → triple size upgrade in Q4/09
LHCb EPFL (15) ✓ UZH (4) ✓	464 48	~720 375	92 25	EPFL is DIRAC site; UZH:MC production; shared → large upgrade in Q4/09
Total Tier-3		~4500	~675	cf: Tier-2: 2800 kSI2k, 752TB

- Tier-3 capacities : larger size in CPU as Tier-2 ; and ~ 90% disk

Thanks - CCB + T2/3 Personnel



C.Grab (ETHZ) [chair CCB]
D.Feichtinger (PSI)
L.Sala (ETHZ)



M.Goulette, S.Gadomski, (UNI Ge)
S.Haug, G.F Sciacca (UNI Bern)



R.Bernet (UNIZH)
Y.Amhis (EPFL)



P.Fernandez, P.Oettl [CSCS]

and help from others ...

Q2: How well are the Swiss resources exploited?

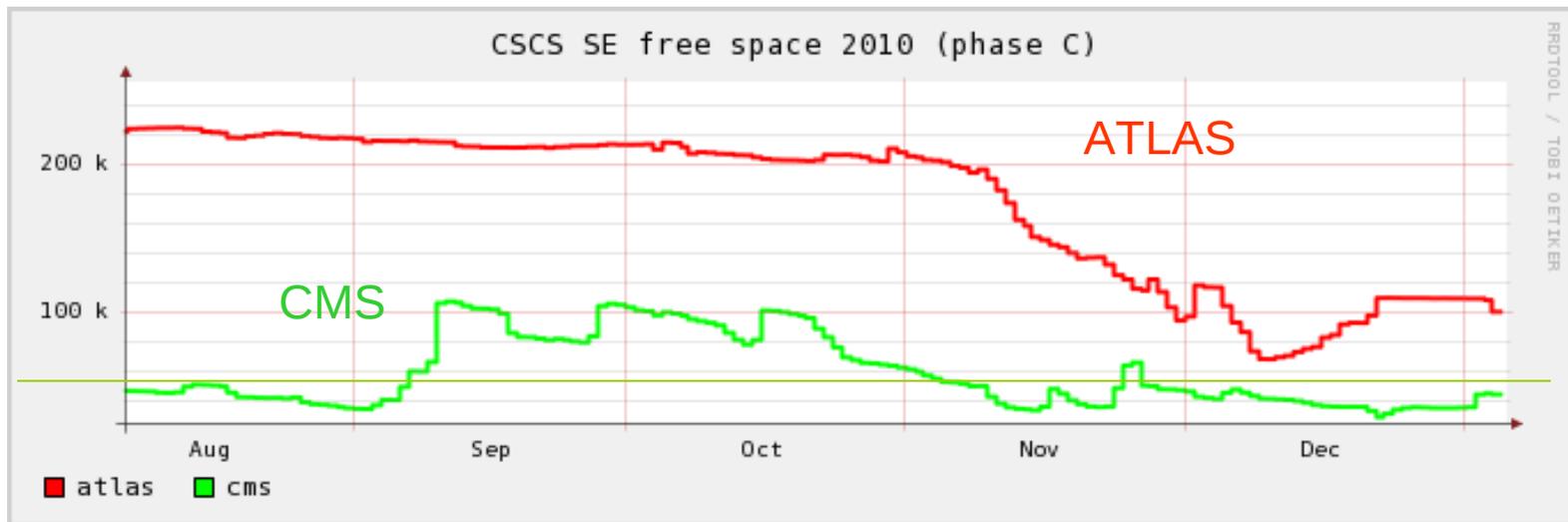
A2: CPU – very good (plot) – is up to nearly 99%

Storage:

CMS: in average well used;

ATLAS: started slower, improved with time.

Fig: free storage of a total of 300 TB per experiment:



- ◆ **Network traffic:** → **Still: present bandwidths are sufficient ...**
 - ▶ **routing via SWITCH : two redundant lines >10Gbps to CERN and Europe**
 - ▶ transfer rates reached up to 10 TB /day from FZK (and CERN and others)
 - ▶ If needed, we can upgrade within months ...!

Swiss Tier-3 Efforts

- **Large progress** seen over last year for all 3 experiments. upgrades in progress nearly everywhere !

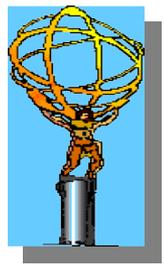


- **Close national collaboration between Tiers:**

- Tier-3 contacts are ALSO experiment's site contacts for CH Tier-2.
- close contacts to **Tier-1 at FZK** .



- ➔ **ATLAS** : operates the **Swiss ATLAS Grid** → federation of clusters at
 - **Bern** uses local HEP + shares university resources
 - **Geneva** operates local cluster



- ➔ **CMS** : **ETHZ + PSI+ UZH** run a **combined Tier-3**
 - located at and operated by PSI IT



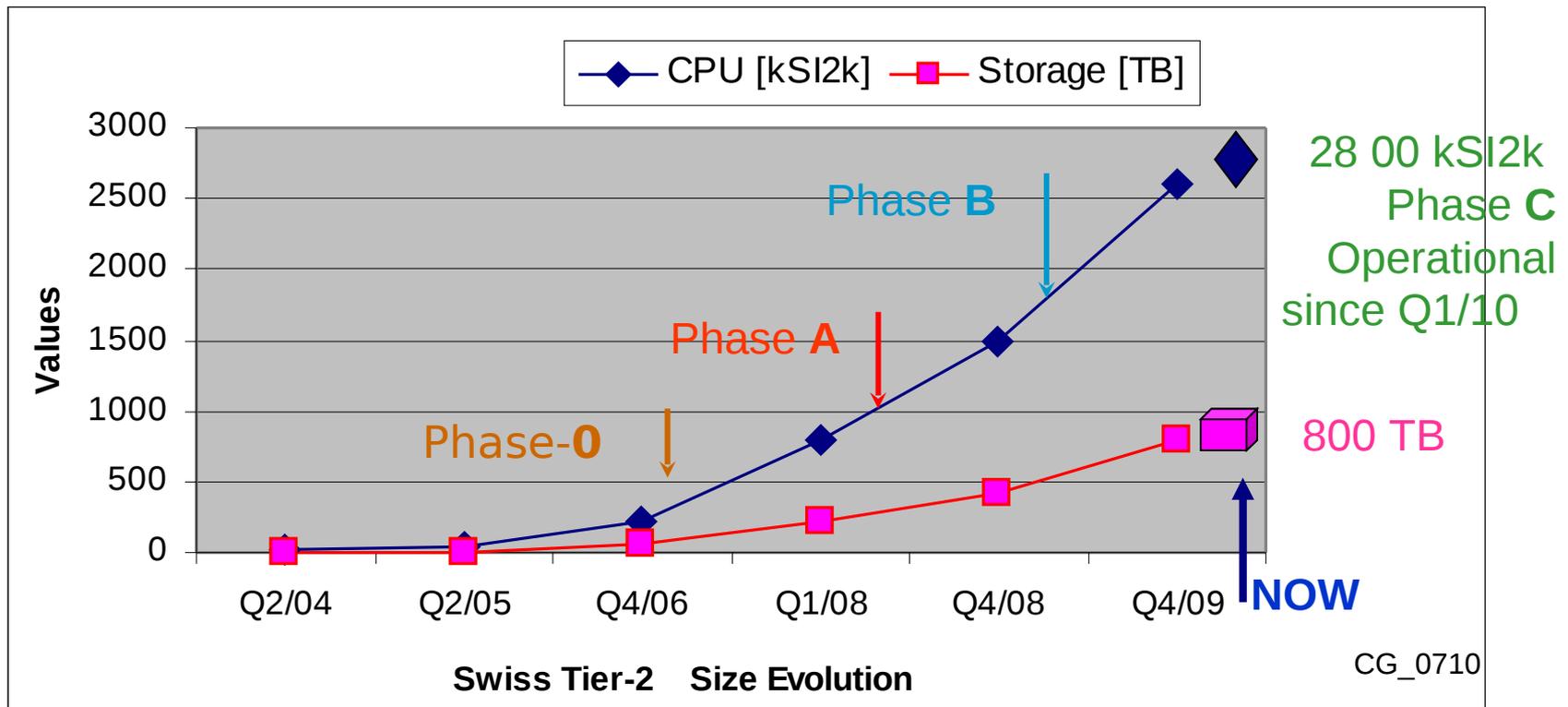
- ➔ **LHCb** :
 - **EPFL** : operates large local cluster → DIRAC pilot site
 - **UZH** uses local HEP + shares university resources (upcoming)



Swiss Tier-2 : Cluster Evolution

Growth corresponds to Swiss commitment in terms of compute resources supplied to the expt's according to the signed MoU with WLCG.

Reached the phase C ("LHC Startup Size") – operational since Q1/2010
 → total of ~2800 kSI2k (768 cores) ; total 741 TB storage



Swiss Tier-2: Facts and Figures (1)

- **The Swiss Tier-2** is operated by a collaboration of **CHIPP** and **CSCS**
(Swiss Centre of Scientific Computing of ETHZ), located in Manno (TI).
- **Properties :**
 - Standard LINUX compute cluster “PHOENIX”
 - One centre for all three expts. CMS, ATLAS + LHCb; provides:
 - **Simulation** for experiment’s community (*supply CH WLCG pledges*)
 - **End-user analysis** for Swiss community
 - **support** (operation and data supply) for Swiss **Tier-3 centres**
- **Hardware setup increased** in phases to reach “**LHC start size**”:
 - Total aim: storage ~ 800 TB (raw) ; CPU : > 2500 kSI2k ; No tapes;
 - Technology choice so far: SUN blade centres + multicore CPUs
 - Planned size has been reached by ~ Q1/2010
 - ➔ Swiss tier-2 is in routine operation 😊

Summary: Swiss Tier Efforts (Q3/09)

Site (#users)	Nr cores	CPU (kSI2k)	Storage (TB)	Comments 1 kSI2k ~ 180 SpecInt06
Swiss Tier-2	1152	~2800 (11550 HS06)	741	CPU: 768 physical + HT;
ATLAS BE (10) GE (~55)	30+300sh 268	~600 462	33 180	BE: standing Atlas production; GE: identical SW-environment to CERN; direct line to CERN.
CMS ETHZ, PSI, UZH (21)	72	~250	105	GRID SE + UI :direct GRID access. → triple size upgrade in Q4/09
LHCb EPFL (15) UZH (4)	464 shared	~800 125	36 15	EPFL is DIRAC site; UZH:MC production; shared → large upgrade in Q4/09
Total Tier-3		~2250	366	cf: Tier-2: 1600 kSI2k, 520 TB

- Tier-3 capacities : similar size in CPU as Tier-2 ; and ~ 50% disk