Status of Computing at CC and at FNAL

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Meeting D0-France
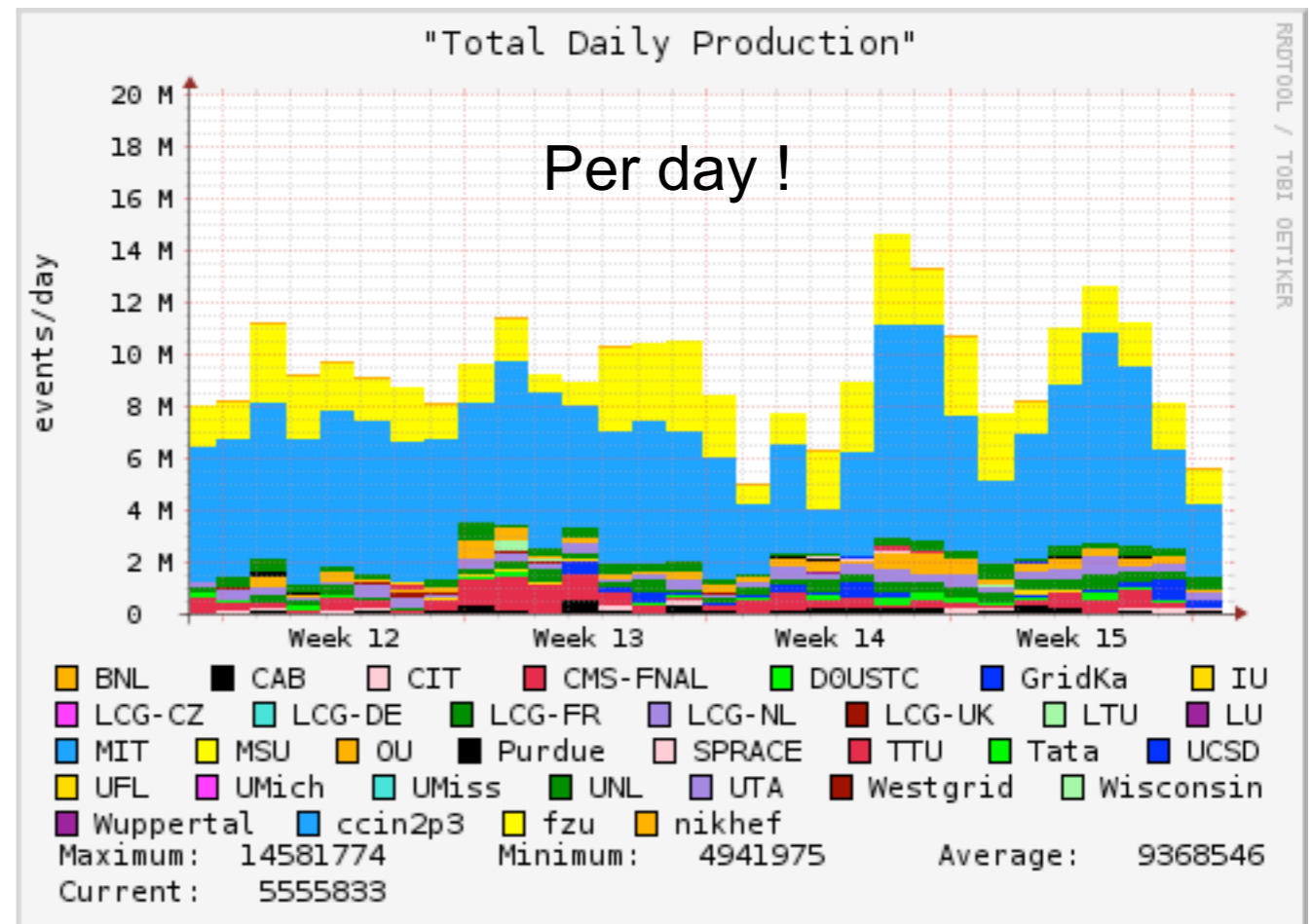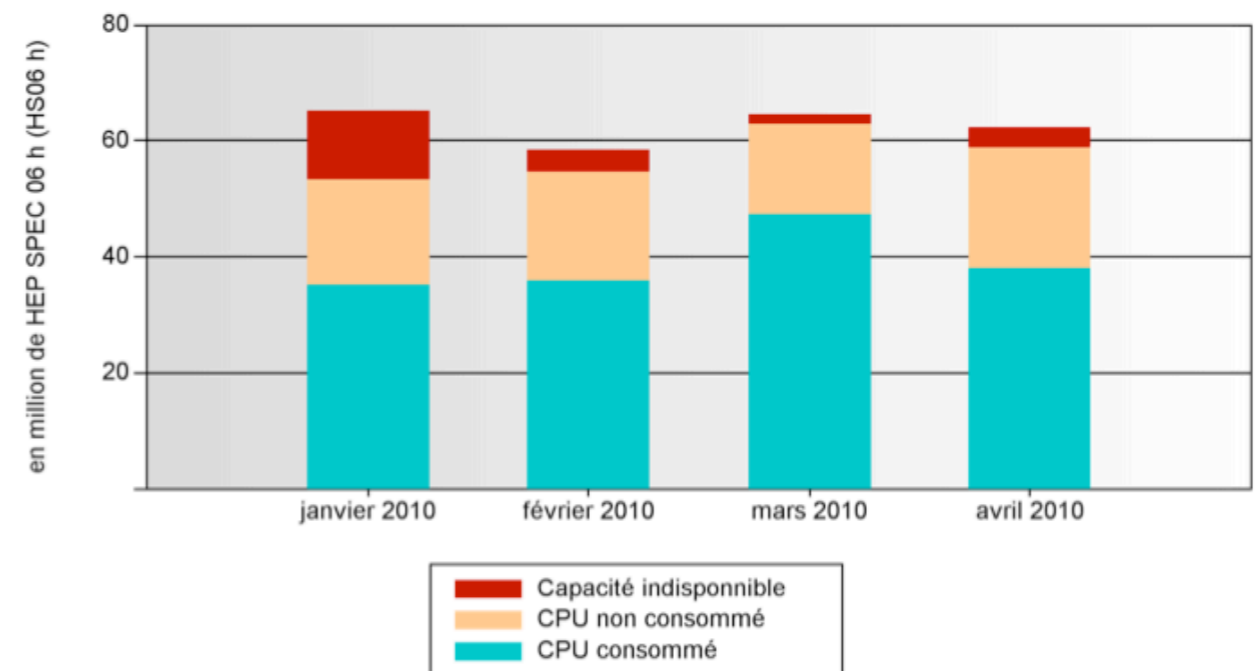IPN Lyon
May 04, 2010

MC production: Number of Events

- This is the number of events produced by farms these last 4 weeks
  - Blue band is for in2p3 :
    - Full chain MC Produced in same time of MC production starting from simulated files (d0gtar).
      - Max = 8.3 M of events per day
      - Average : 6 M / day

- We can produce about 3M of events per day full chain only

- New: To improve performance of large production starting from d0gstar files, these files are staged into the HPSS cache

- Only Lyon stores D0gstar files

- Lyon is alone to able to make very special MC production

"Total Daily Production"

Per day !

BNL · CAB · CIT · CMS-FNAL · DOUSTC · GridKa · IU
LCG-CZ · LCG-DE · LCG-FR · LCG-NL · LCG-UK · LTU · LU
MIT · MSU · OU · Purdue · SPRACE · TTU · Tata · UCSD
UFL · UMich · UMiss · UNL · UTA · Westgrid · Wisconsin
Wuppertal · ccin2p3 · fzu · nikhef
Maximum: 14581774   Minimum: 4941975   Average: 9368546
Current: 5555833

CPU in 2010

- Again D0 at CC is the second user in term of CPU used after Atlas.

- Mainly used for MC production
  - Specificities :
    - Non grid
    - D0gstar files stored in HPSS

- Low CPU consumption for Analysis

Consommation totale des fermes de calcul

	Capacité indisponible
■	Capacité indisponible
■	CPU non consommé
■	CPU consommé

Répartition de la consommation par laboratoire Pour le groupe d0 - avr. 2010

Année	Mois	Capacité installée	Capacité indisponible		Capacité disponible		CPU consommé	
		en HS06 h	en HS06 h	% Cap. installée	en HS06 h	% Cap. installée	en HS06 h	% Cap. dispo.
2010	janvier 2010	65 189 816	11 829 531	18	53 360 284	82	35 177 047	66
	février 2010	58 443 517	3 605 461	6	54 838 056	94	35 836 334	65
	mars 2010	64 637 136	1 777 215	3	62 859 922	97	47 421 846	75
	avril 2010	62 497 498	3 763 485	6	58 734 012	94	38 252 839	65
Total		250 767 967	20 975 692	8	229 792 275	92	156 688 065	68

1 heure UI = 50 heures SI2K = 1/5 heures HEP-SPEC06

2010		Consommation des laboratoires avril 2010		Consommation des laboratoires de janvier à avril 2010	
		CPU Consommé en h HS06	%	CPU Consommé en h HS06	%
2010	Grid HEP	0,00	0 %	0,00	0 %
	IPN LYON	7 006 870,87	100 %	30 288 247,14	100 %
	LAL ORSAY	0,11	0 %	0,11	0 %
	LPSC GRENOBLE	23 365,34	0 %	23 365,34	0 %
Total		7 030 236,32	100 %	30 311 612,59	100 %

D0=19.3 % of CPU consumed

D0 Resources Requests Status for 2010

Description:

These page allows to show D0 experiment resources requests about Computing Center needs for 2010.

Storage units are GB.

Table for the mapping between the different units used to describe the CPU comsumption (1 SI2K = 1/250 HS06 for example):

	UI	SI2K	HS06
1 UI =	1	50	1/5
1 SI2K =	1/50	1	1/250
1 HS06 =	5	250	1

HS06 : Hep-Spec06

Summary for 2010:

+31% of CPU requested compared to 2009

CPU units	AFS throng dir	HPSS mass storage	Semiper (SPS)	Databases	Storage comments
80000000	8	400000	15000	4	Demandes en capacités supplémentaires

Details per quarter for 2010:

	CPU units	AFS throng dir	HPSS mass storage	Semiper (SPS)	Databases
1st quarter	20000000	8	100000		1
2nd quarter	20000000		100000	15000	1
3rd quarter	20000000		100000		1
4th quarter	20000000		100000		1

Oracle DB

- MC production at Lyon is based on Oracle Database
  - DB performance and availability are crucial
  - many issues observed this year. Perhaps due to the use of Oracle DB by other experiments more and more intensively.

- Migration from Oracle Database 10g to 11g on new servers performed on April 19th.
  - 6 GB of data
    - 12 GB with indexes
  - Again performance is largely better.

DATA at CC

- **HPSS is massively used**

  - ❑ ~ 742 TB comes from MC production
    - ▪ generated, D0gstar, Merged thumbnails
    - ▪ This a specificity of Lyon
  - ❑ ~ 22 TB from ZB overlays

  - ❑ ~ 447 TB other files coming from FNAL
    - ▪ ~ 359 TB of root files (.root extension)

  - ❑ ~93 TB other files ?
    - ▪ users
    - ▪ ?

  - ❑ Main task for future :
    - ▪ remove unused files from HPSS !

1330 TB !
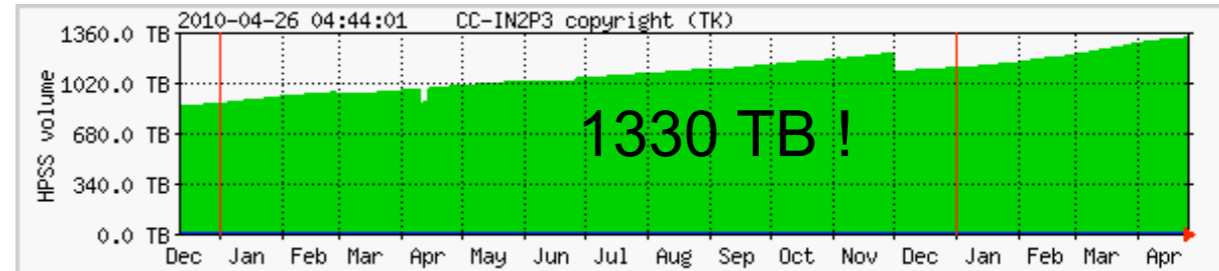
From Smain

Status au 20/04/2010

Les données D0 RunII au CCin2p3 :

"SKIM" == 2EMhighpt, EMinclusive, NP

Les données du Run2a :

CSG_CAF_ "SKIM"_PASS3_p18.14.00

Les données du Run2b-1 :

CSG_CAF_"SKIM"_PASS2_p21.10.00

Many versions of Skims

Débit de transfert moyen : 1000 files / jour , ~1 Gb/file
Total stockage HPSS ~100 Tb
Tous les winter 2010 caf trees sont transférés.
Tous les summer 2010 caf trees sont transférés.

Les données du Run2b-2 :

CSG_CAF_"SKIM"_PASS4_p21.10.00_p20.12.00
CSG_CAF_"SKIM"_PASS4_p21.10.00_p20.12.01
CSG_CAF_"SKIM"_PASS4_p21.10.00_p20.12.02
CSG_CAF_"SKIM"_PASS4_p21.10.00_p20.12.04
CSG_CAF_"SKIM"_PASS4_p21.12.00_p20.12.05_allfix

Les données du Run2b-3 :

CSG_CAF_"SKIM"_PASS5_p21.17.00_p20.16.05
CSG_CAF_"SKIM"_PASS5_p21.18.00_p20.16.06
CSG_CAF_"SKIM"_PASS5_p21.18.00_p20.16.07 (growing)
CSG_CAF_"SKIM"_PASS5_p21.18.00_p20.16.07_fix
CSG_CAF_"SKIM"_PASS5_p21.18.00_p20.16.07_summer2010

Monté Carlo CAF trees produits avec p21.11.00 :

CSG_CAF_MCv4-XXXXX_p21.11.00
ou XXXX est le req-id.

http://marwww.in2p3.fr/~kermiche/D0_Data_CCin2p3/D0_Data_At_CCin2p3.pdf

# SPS – Semi Permanent Storage

- Mainly used by users

- Also used for MC production
  - Workers load ZB overlays from SPS to avoid to stress too much HPSS
  - Resource u_sps_d0 limited to 500 jobs max.
    - This is the main and important limitation to produce MC from d0gstar files.
    - We share servers with other experiments (no LHC exp.)

- 11 TB / 19 TB
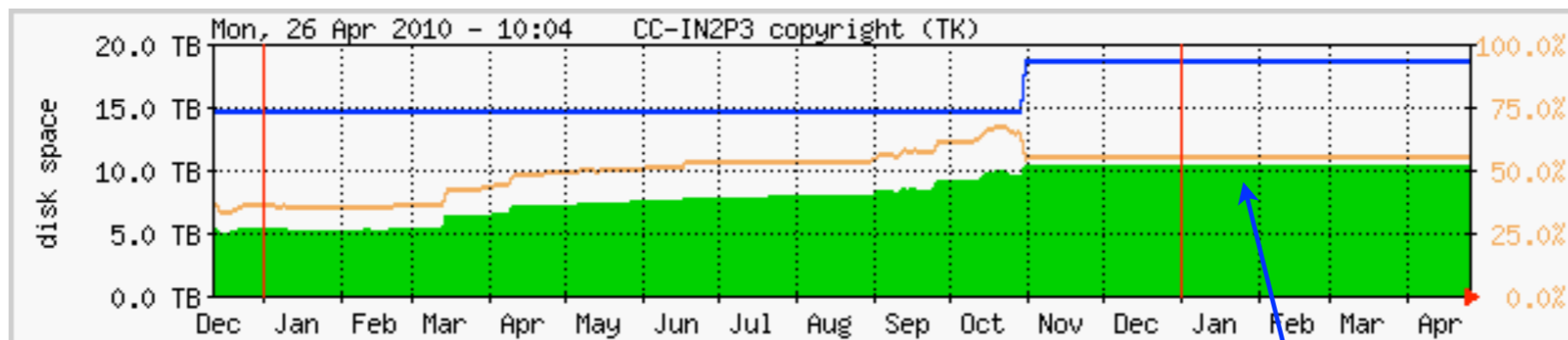
Does it mean there is a very Low Analysis Activities since last November ?

Issues – Sometimes life is hard –

- Sometime the life at CC is not so easy

Staging of d0gstar files   Oracle DB

BQS

HPSS

AFS
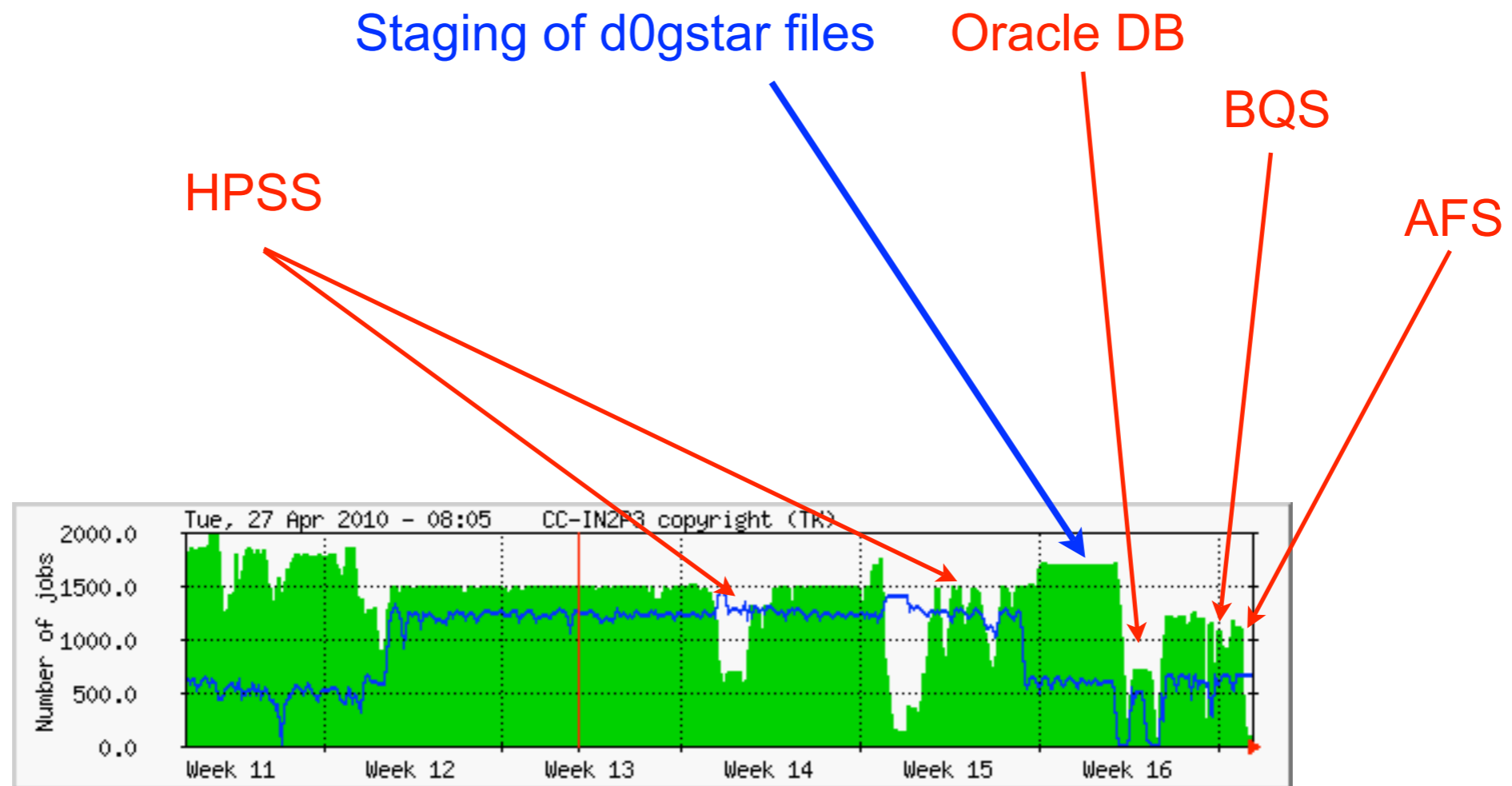
Releases at CC

- Maintained by Michel and Smain
  - Email from Michel on April 15, 2010

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Releases actuellement au CC :

    p17.09.06 ( en sursis )
    p17.09.08 ( extraite d'un tarball pour la prod MC )
    p17.11.00 ( idem )

    p20.08.02
    p20.09.03 ( mais p20.09.05 est conseillée )
    p20.09.05
    p20.09.06 ( extraite d'un tarball pour la prod MC )
    p20.09.07 ( idem )
    p20.09.08 ( idem )
    p20.15.04 ( idem )

Pour les releases d'analyse p18, et comme annoncé en février, j'ai aussi enlevé p18.09.00 et p18.11.00.
    Il reste à la demande de Jan p18.10.00
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D0 at CC after 2010

- Do not require more CPU for 2011 and beyond
  - Try to keep the same level of CPU power
  - Main limitation comes from the Input/Output

- Start to remove unused files from HPSS

- CAF-Trees : What do we need really ?
  - If you do not need some SKIMS any more, please inform SMAIN.

- Increase the MC production on LCG
  - see Tibor's talk

Status on clued0 (In2p3) – Yuji's slides –

- **Clued0 nodes**
  - About 20 nodes are on-line in good shape.
  - Two nodes have delivered last week.
    - $1100- / node (quad core, 8GB memory, 500GB disk)
    - Purchased through Fermi lab.

- **Storage area**
  - About 20 TB from pommard-clued0 and tango-clued0. Usage is about 90%.
  - Plan: Use RAID disk efficiently.
  - Buy 4 TB disk (2 x 2TB disk) to move old stuff from pommard and tango.
    - 2TB disk costs only $150-. You can add more.
      - Note: pommard and tango have Gbit network
        - ➜ make jobs (cab for SAM job, etc..) run fast and reliable.

Future plan

- Fedora core node removal.
  - Fedora Core node will be retired, or need to be upgraded.
  - Affect on us: Volnay-clued0 → old disk machine
    - /rooms/in2p3II
    - /rooms/npII
    - /rooms/topII
    - /rooms/higgsII
    - /rooms/calgo

    How often do you use?
    Do you want to keep contents?
    What's happen if this node is retired?

    - ➔ Let Yuji know your wishes.

- Local support: Yuji move to France this summer.
- Local support will be overtaken by Duncan Brown.

Note on project disk.

- Usage of project disk will be changed.
  - You will not be able to run executable file in the /prj_root/xxxx/.
  - If you use project disk as your working area, you need to move somewhere in clued0 area (/work/xxxx, /rooms/xxxxx).
  - Other usage will not change.