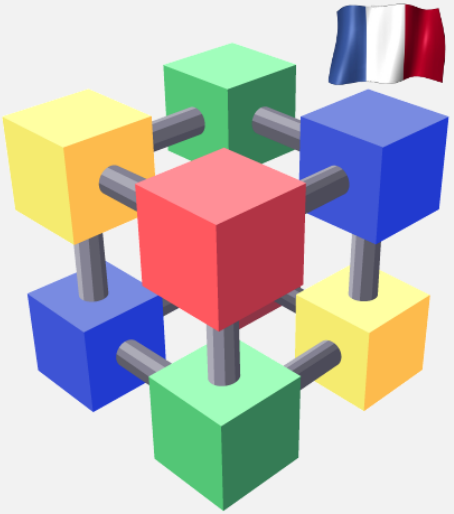
ALICE Operations in France

Frédérique Chollet (LAPP, Annecy)



LCG France

ALICE Tier-1 Tier-2 workshop, CC-IN2P3, Villeurbanne
May 6-7 2013

on behalf of LCG-France team

Sites representatives

CC-IN2P3, Lyon : Pierre-Etienne Macchi, Renaud Vernet
CPPM Marseille : François Touchard, Edith Knoops
GRIF Paris Region : Jean-Pierre Meyer, Michel Jouvin
IPHC Strasbourg : Daniel Bloch,Yannick Patois
IPNL Lyon : Stéphane Perries, Denis Pugnère
LAPP Annecy : Stéphane Jézéquel, Eric Fede
LPC Clermont : Dominique Pallin, Jean-Claude Chevaleyre
LPSC Grenoble : Sabine Crepe, Christine Gondrand
Subatech Nantes : Laurent Aphecetche, Jean-Michel Barbet

Experiment representatives

Alice : Laurent Aphecetche
ATLAS : Eric Lançon
CMS : Claude Charlot
LHCb : Andrei Tsaregorodtsev

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- LCG-France overview
- LCG-France Contribution to WLCG in 2012 and to ALICE computing
- Some highlights on operations & few remarks from sites
- LCG-France keys partners

LCG-France

http://lcg.in2p3.fr

- French initiative dedicated to LHC computing
  - Setup, develop and maintain a LCG Tier-1 and an Analysis Facility at CC-IN2P3
  - Promote the creation and coordinate the integration of Tier-2/Tier-3 French sites into the WLCG collaboration
- Targeting to cover ~ 10 % of total CPU needs of the four experiments (with the associated required storage)
- Project was launched in 2004 by CNRS /IN2P3 and CEA/Irfu acting as funding agencies
  - National funding for Tier-1 and AF (Tier-2 / Tier-3) in Lyon (**CC-IN2P3**)
  - Tier-2s and Tier-3s funded initialy by universities, local/regional governments, hosting laboratories, …**12 laboratories involved**
    - LCG-France support for hardware renewal from 2009 onward
    - 2012 : Agreement for the following four years to cover ~70 % of hardware renewal needs
  - Flat budget expected but decision is made on an annual basis

LCG-France

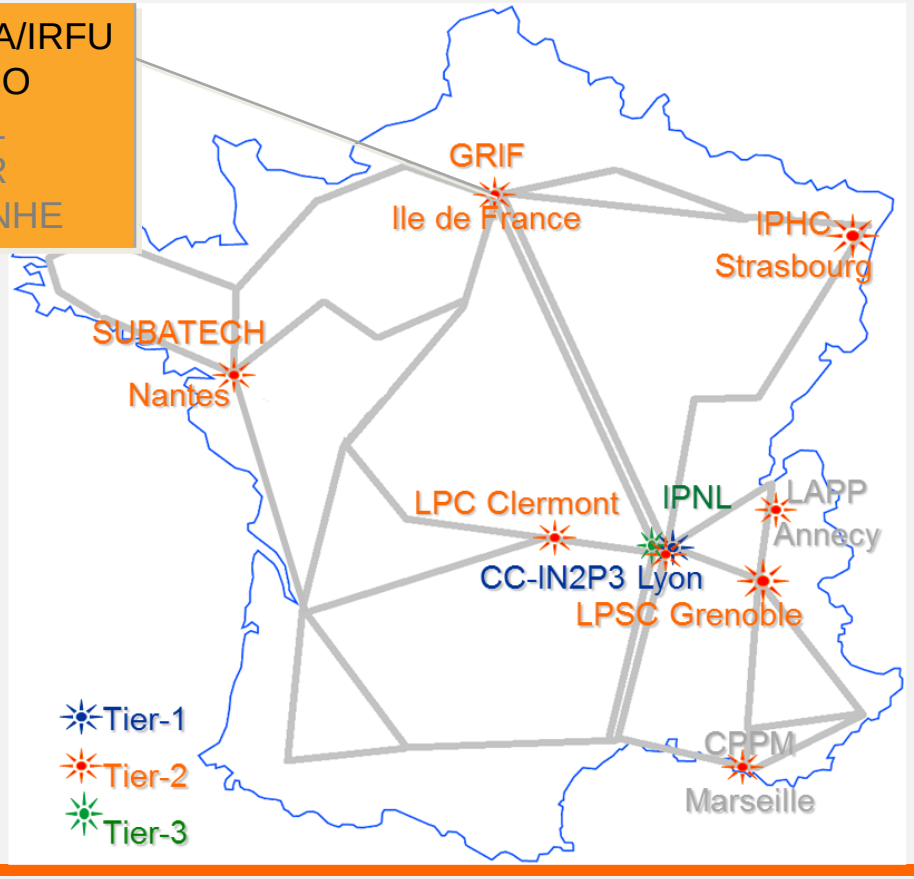
http://lcg.in2p3.fr

- Organization
  - Scientific Project Leader: Fairouz Malek (LPSC)
  - Technical Project Leader: F.C. (LAPP)
  - CC-IN2P3 Tier-1 and AF Tier-2 representative : Renaud Vernet (CC-IN2P3)
  - Alice support at Tier-1 : Renaud Vernet (CC-IN2P3)
  - Alice representative : Laurent Aphecetche (SUBATECH)
  - T2/T3 technical coordinator : Yannick Patois (IPHC)
- Project Management & meetings
  - Monthly Management Board with site and experiment representatives
  - Yearly Executive Board with IN2P3 deputy director, IN2P3 & CEA computing heads…
  - Tier-2 Tier-3 Technical Forum chaired by Yannick Patois
  - Tier-1 & AF meetings chaired by Renaud Vernet
  - Spring and Fall LCG-France project meeting
- A team of ~ 50 people (eq. ~ 30 FTEs)

LCG-France sites

- All sites, except SUBATECH Tier-2, are open to other non-LHC VOs
- co-located Tier-2 and Tier-3 resources in all sites

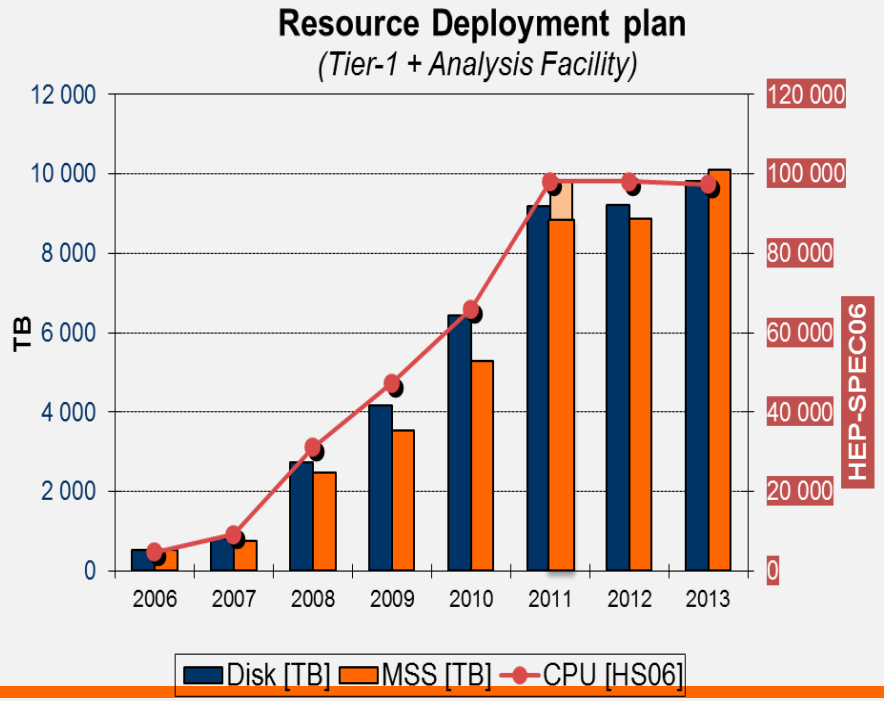
•CEA/IRFU
•IPNO
•LAL
•LLR
•LPNHE

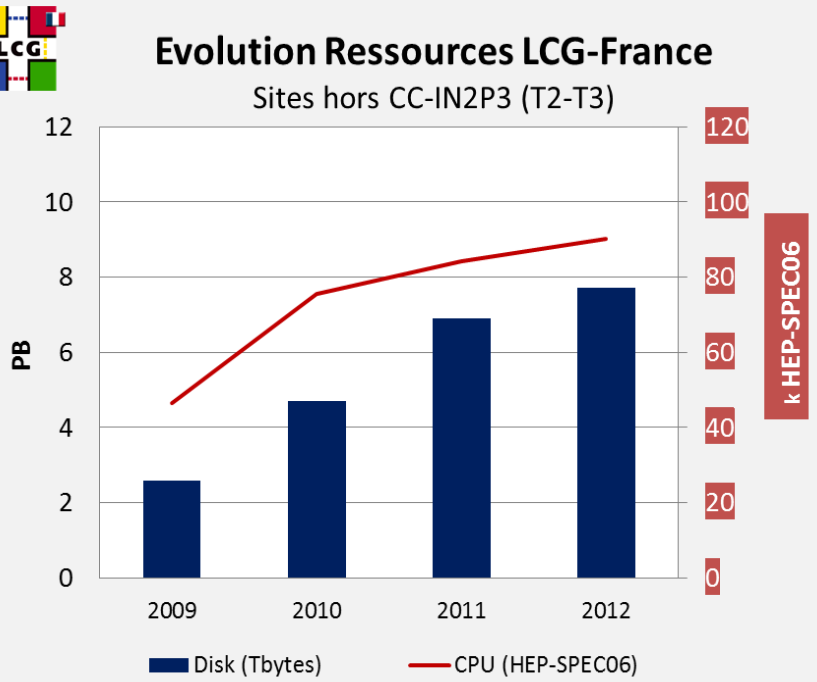


Role	Site	ALICE	ATLAS	CMS	LHCb
Tier-1	IN2P3-CC	✓	✓	✓	✓
Tier-2	IN2P3-CC-T2 (AF)	✓	✓	✓	✓
	IN2P3-CPPM		✓		✓
	GRIF	✓	✓	✓	✓
	IN2P3-LPC	✓	✓		✓
	IN2P3-IPHC	✓		✓	
	IN2P3-LAPP		✓		✓
	IN2P3-LPSC	✓	✓		
	IN2P3-SUBATECH	✓			
Tier-3	IN2P3-IPNL	✓		✓	

LCG-France Resource evolution

- Total T1/T2/T3 capacity reached at the end of 2012 for LHC VOs
  - CPU : ~190 kHS06 , Disk : ~17 PB Tape : ~10 PB
- 2012 : start of massive hardware renewal in all French sites after 4 years of operation

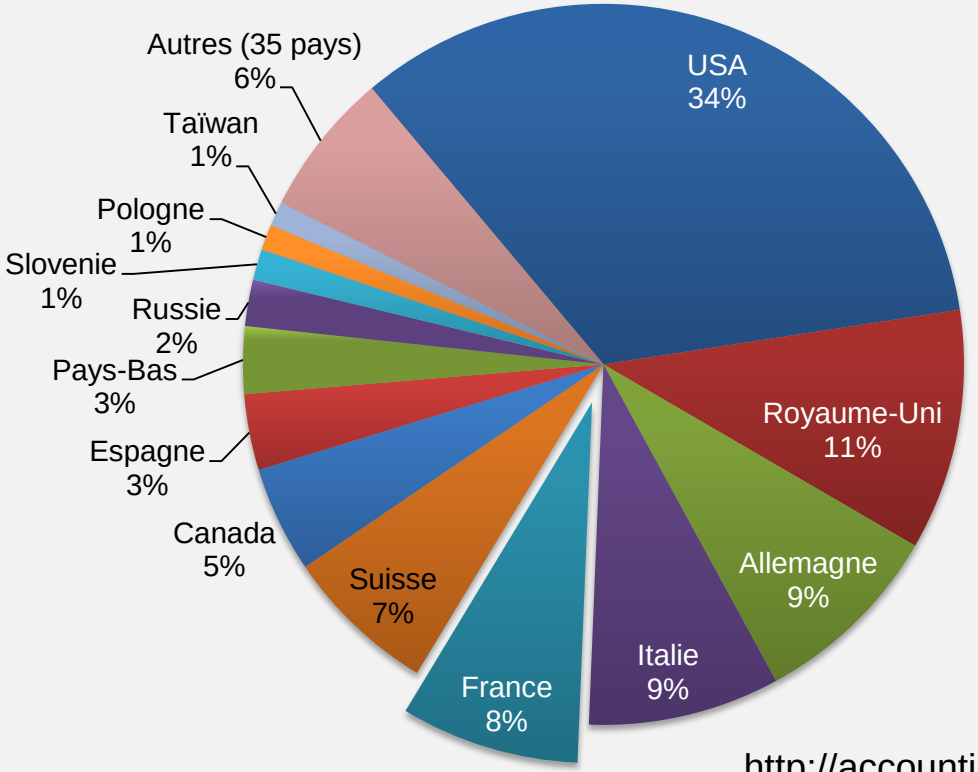




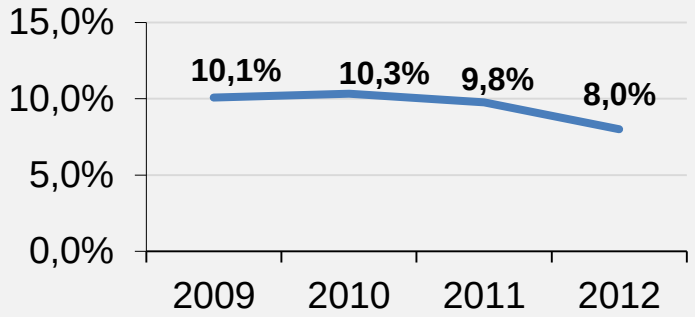
Contribution to WLCG

CPU share per country

Normalised CPU Time (HEP-SPEC06)
LHC VOs – Jan..-Dec 2012



2009-2012



http://accounting.egi.eu/country.php

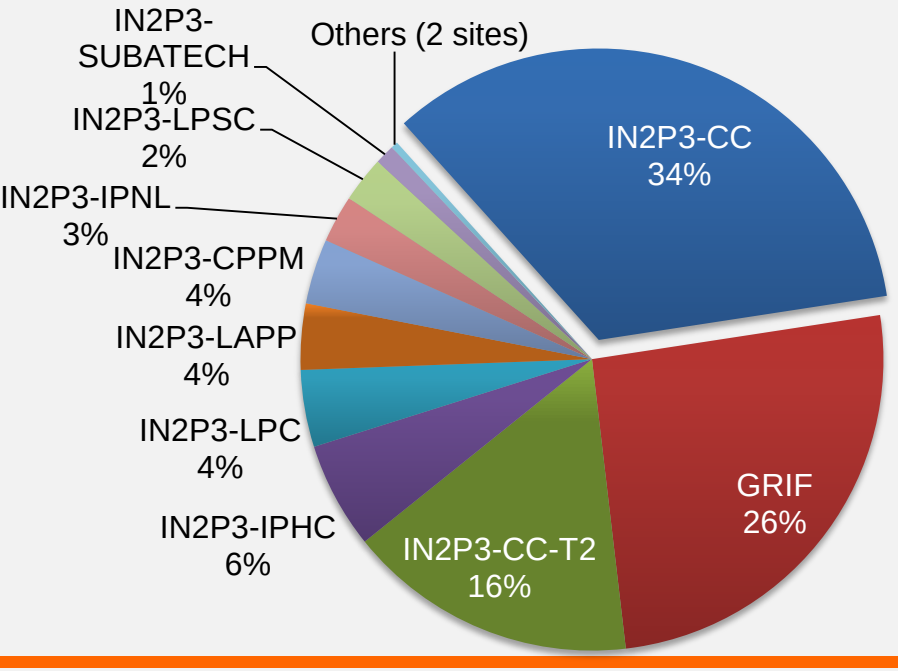
Contribution to WLCG

~ 190 kHEP-SPEC06 available
50 % @ CC-IN2P3 (T1+AF)
50 % outside CC

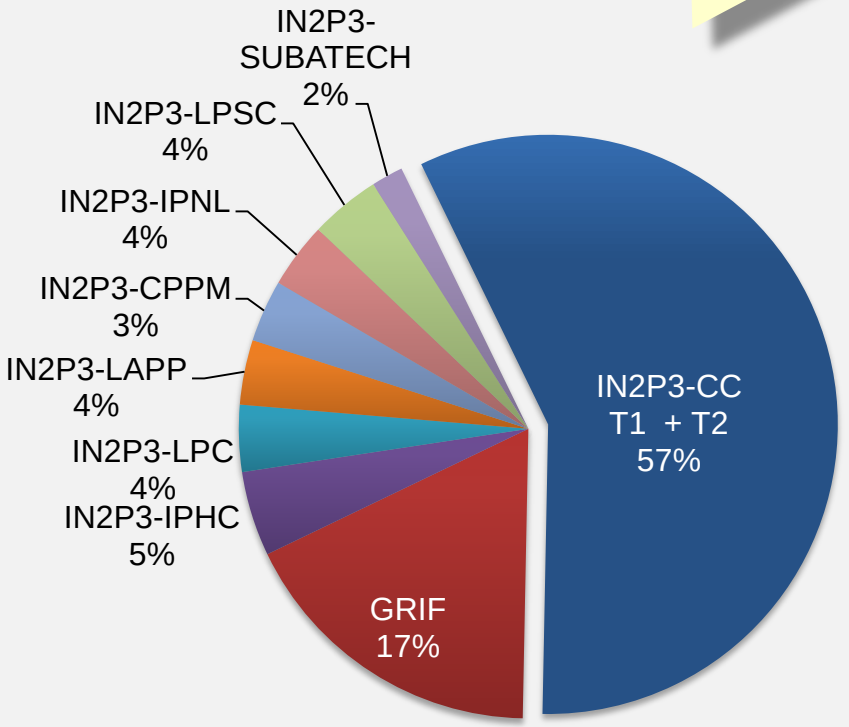
Disk available at the end 2012: 17 PB
~ 14 PB used
~ 80 %

CPU used by LHC VOs

(HEP-SPEC06) - Jan. - Dec. 2012



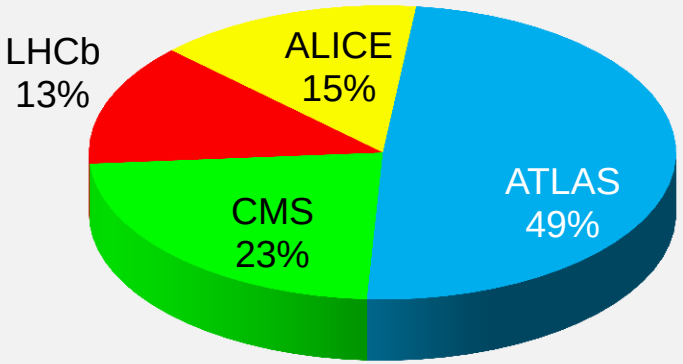
Disk capacity provided by sites



Contribution to WLCG

Share of CPU consumption per experiment

Jan-Dec. 2012



Share of CPU used worldwide over the same period :

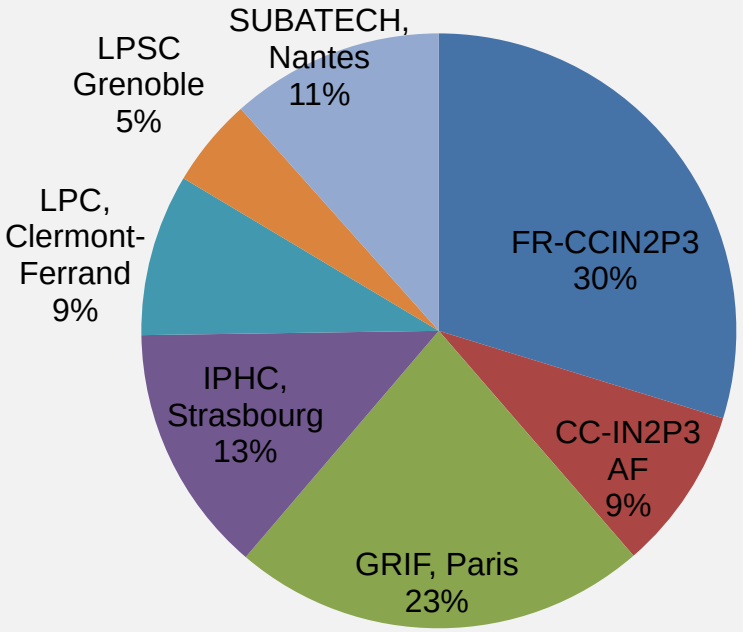
ALICE	9%
ATLAS	55%
CMS	29%
LHCb	6%

2013 Pledged Resources for ALICE

TAPE Pledges : 1.05 PB 100% Used

CPU Pledges : 26 kHS06

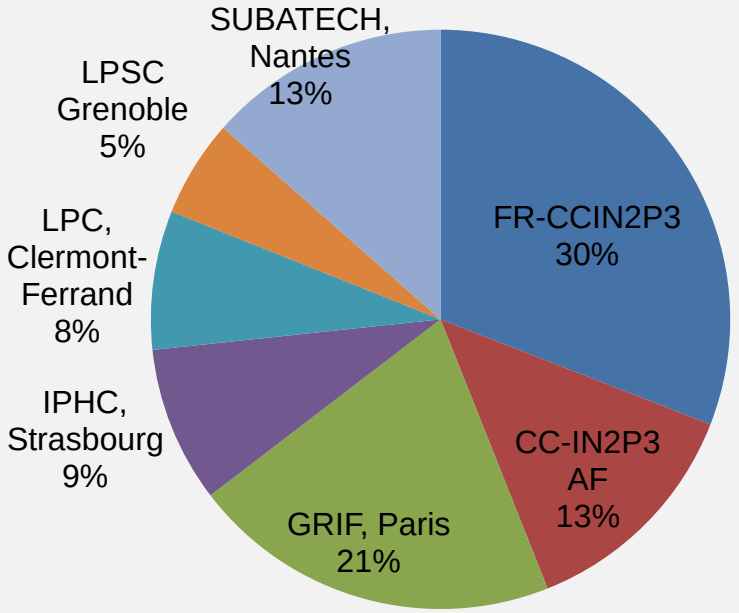
T1 : 30 % - T2 : 70 %



% of 2013 requirements
CC-IN2P3 Tier-1 : ~ 8 %
FR-Tier-2 sites : ~ 10 %

DISK Pledges : 2.3 PB

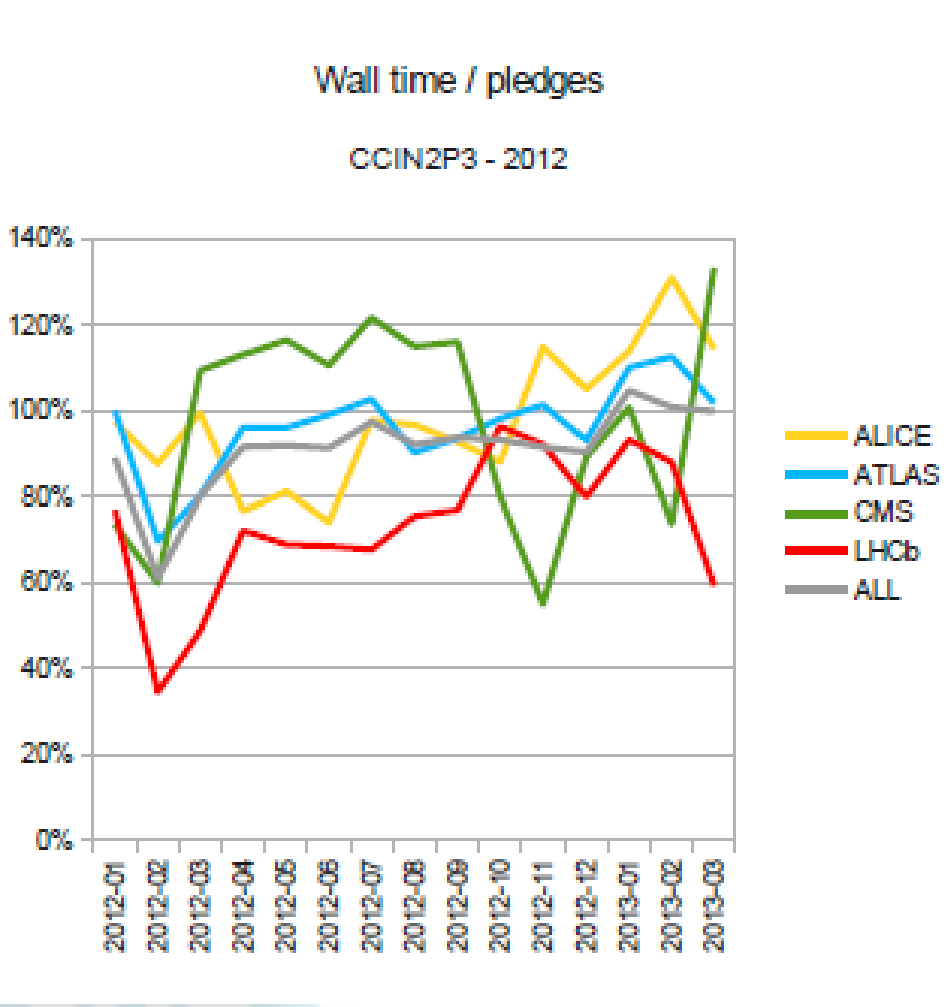
T1 : 30 % - T2 : 70 %

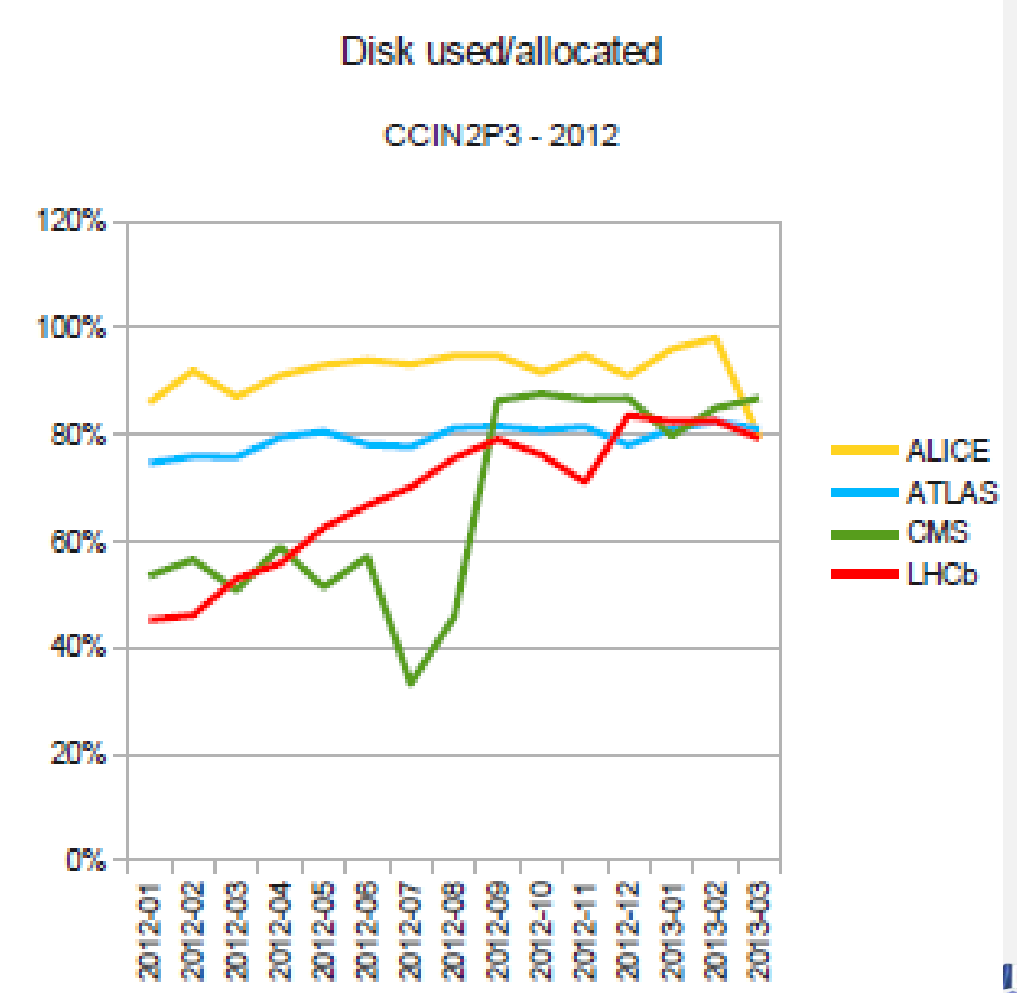


% of 2013 requirements
CC-IN2P3 Tier-1 : ~ 7 %
FR-Tier-2 sites : ~ 12.3 %

Resource usage @ CC-IN2P3

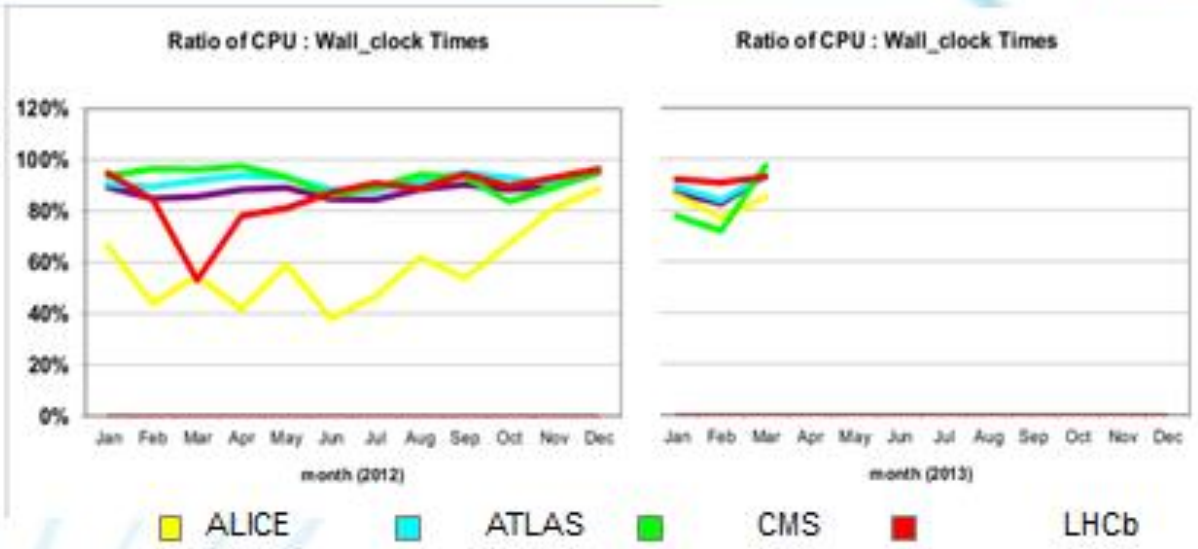
ALICE : CPU 10 k HEP-SPEC06 / DISK 1.1 PB





Resource usage @ CC-IN2P3

CPU Efficiency

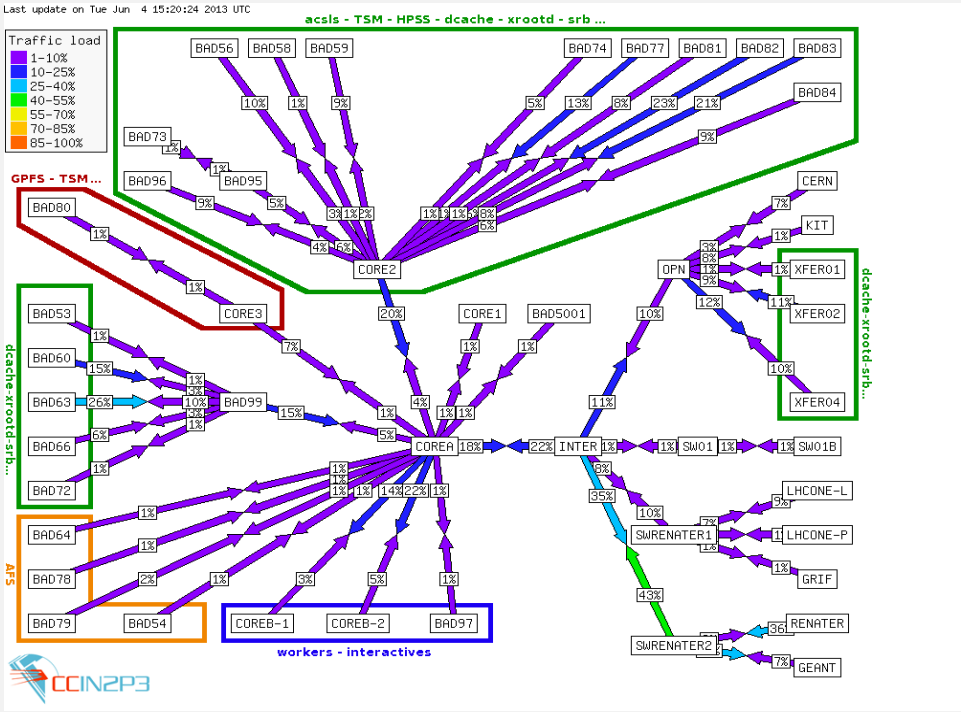


ALICE has overcome the 2012 situation
All LHC VOs at the same level ~90 %

Renaud Vernet

Recent news from CC-IN2P3 Tier-1

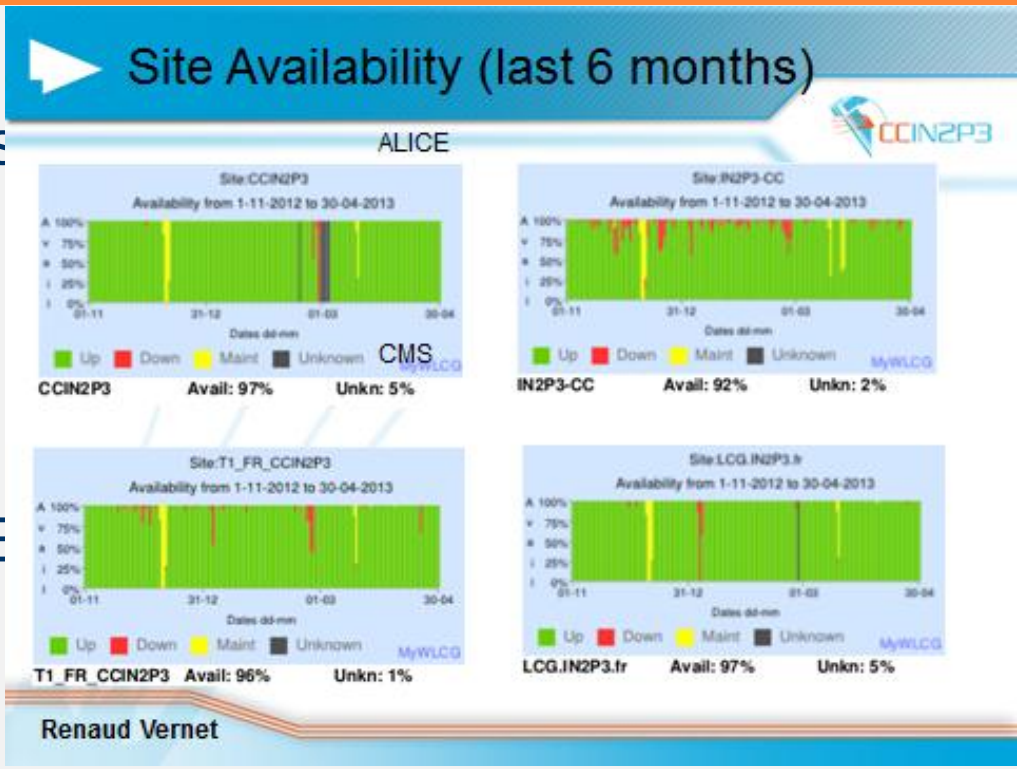
- LAN : configuration improved (core switches)
- Batch : GE reached pretty good stability regime
  - Migration from Oracle to Univa today
- Rolling transition to SL6 has started
  - 15 % of the farm migrated for now



Site availability

- New preliminary WLCG SAM reports : Moving from ops metrics
  - Feedback to SAM support team befor next GDB
  - Follow-up by sites : Poor availability for some sites : timeout on ALICE test jobs
- Enhancing the accuracy of ALICE specific tests… is this possible ?

  Focus on storage availability….
- Needs for alarming capabilities



Common choices within LCG-France

- Common choices, community effort bring clear added value
  - such as Quattor, DPM...
- Needs for support model (*« somehow compatible with production »)*
- Ability to create and maintain an active community is a key point
    - at national level or/and at international level
- Community-based organizations
  - Quattor community still active
    - Some of the sites are already evaluating puppet
  - DPM collaboration has just started to take over the coordination of the DPM project following the end of EMIo
    - France has commited ~ 1FTE to maintaining, developping and supporting DPM
  - Also true to make decision about new choices : cloud soluton, new storage….
- At the and, WLCG and experiments remain the driving forces

Little feedback from sites

- related to storage mainly
- Native xrootd support
  - Now all french sites except GRIF-IRFU-DPM
  - Storage provided under DPM remains unused @ LPSC , move to native xrootd
  - Any remaining roblem or limitation regarding DPM + new xrootd plug-in ?
- Storage infrastructure : hardware renewal
  - Decommissioning of old servers, Data migration
  - Facing this for the first time…
  - Procedure ? Documentation ? share of expertise ?

LCG-France partners

Collaboration with Renater (NREN) and France Grilles (NGI)

NGI LHC Computing NREN

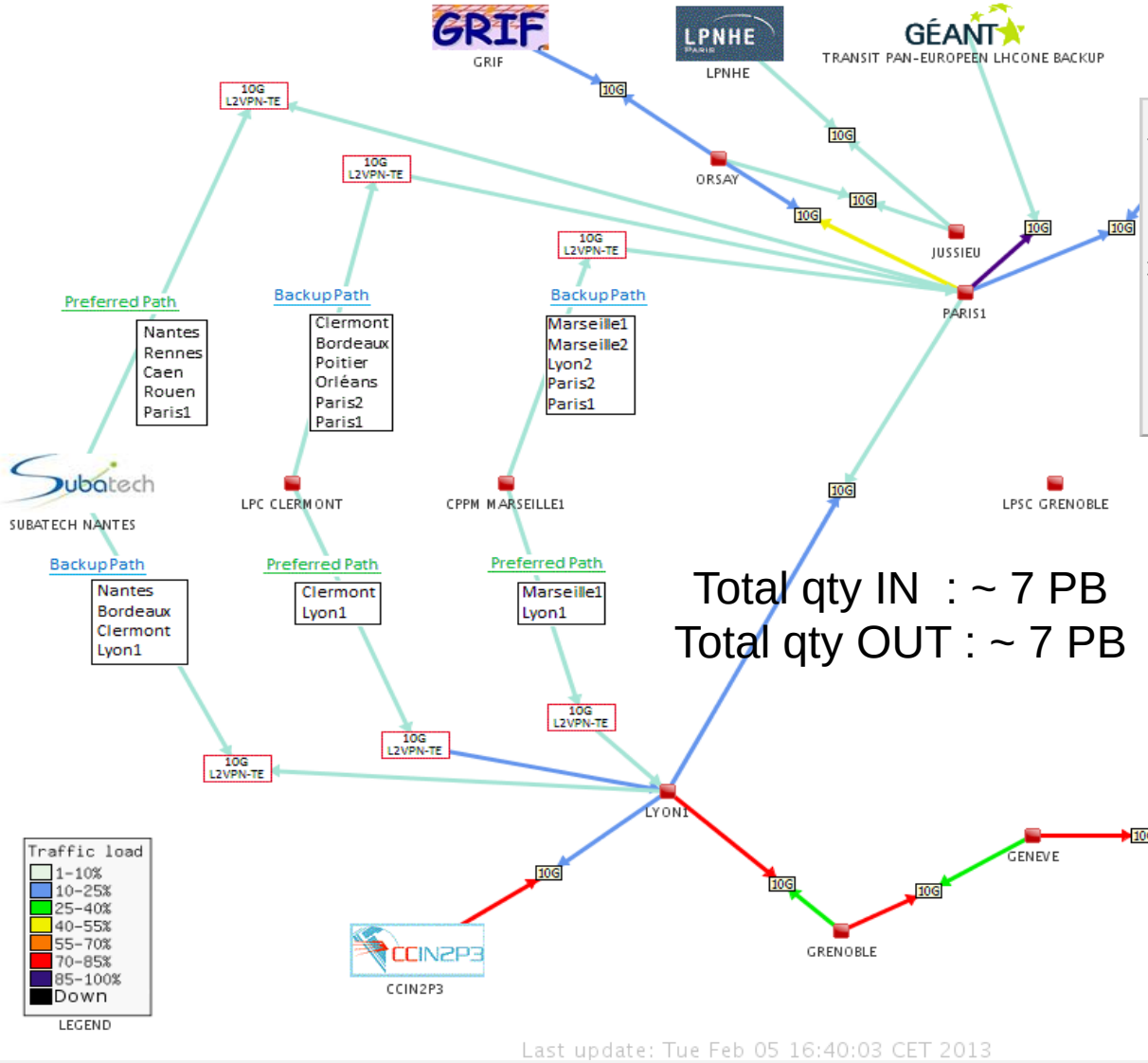
Highlights on LHCONE(-FR)

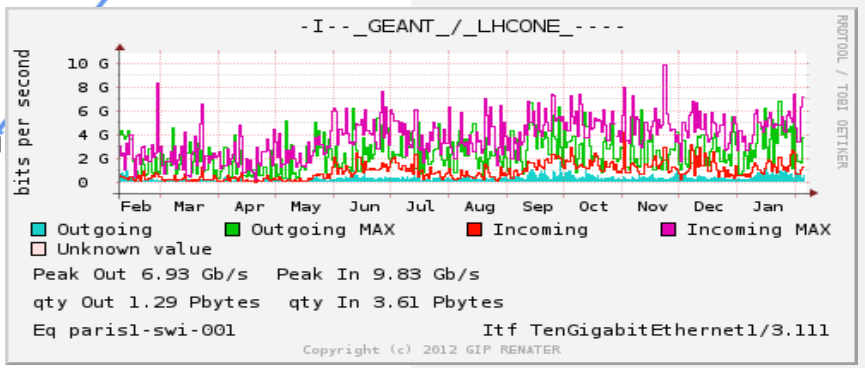
- Strong collaboration with CC-Telecom team and Renater (French NREN) through regular meetings
  - Follow-up on various topics : Sites connectivity, LHCOPN / LHCONE infrastructures : usage & progress, Network monitoring with perfSONAR, IPv6
- Site connectivity :
  - Expected connectivity for all FR sites : 10 Gbps link + LHCone connection (separation of LHC traffic from general IP)
    - CC-IN2P3 : 4 x 10 Gbps, GRIF : 2 x 10 Gbps + 1 x 10 Gbps (CEA Irfu)
- LHCONE : Focus of effort in 2012 in France
  - sites connection to LHCONE L3 VPN service
  - Dedicated L3VPN connection to GEANT via PARIS (10 Gbps)
  - improved by an additional 10 Gbps link via Geneva
- In France, LHCONE and LHCOPN have reached the same level

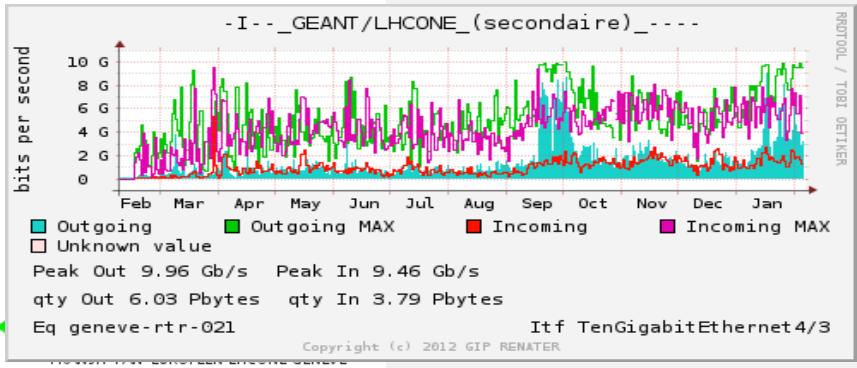
Volume transfered over the year : ~10 PB over LHCOPN ~ 7 PB over LHCONE

Connectivity via LHCONE

by the end of data taking





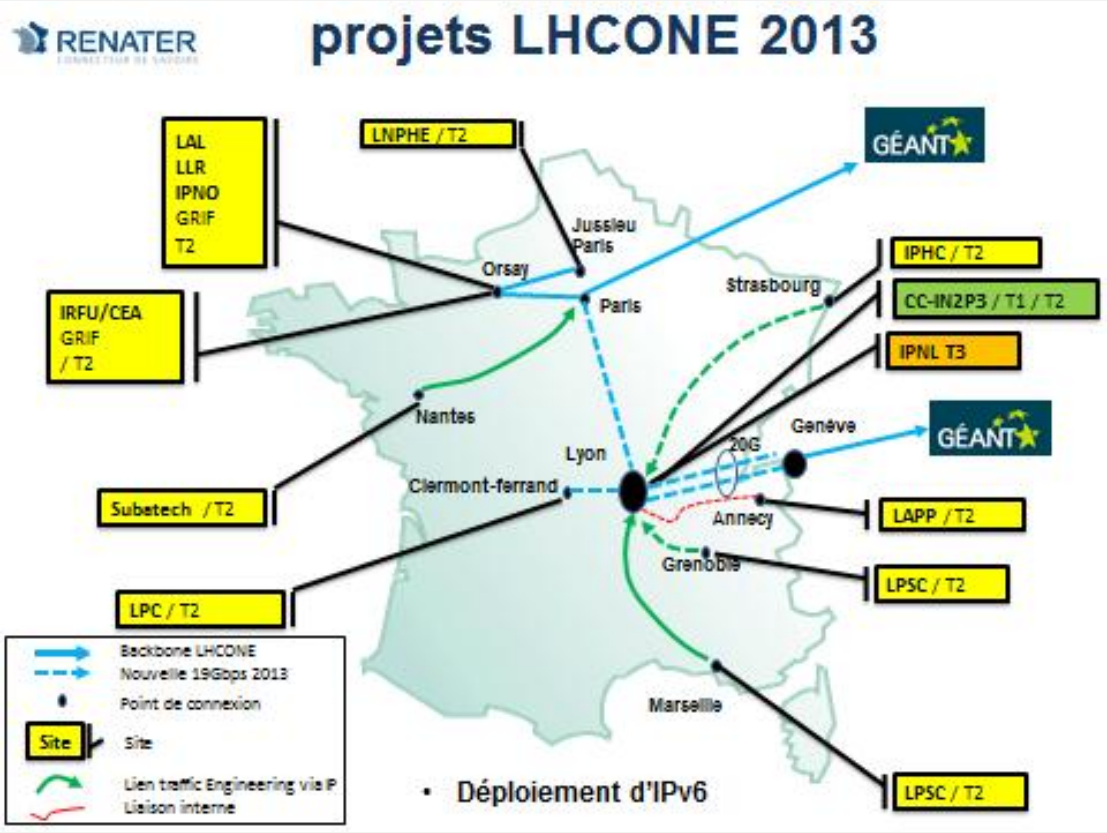


Total qty IN : ~ 7 PB
Total qty OUT : ~ 7 PB

Source : http://pasillo.renater.fr/weathermap/weathermap_lhcone_france.html

Connectivity via LHCONE

- Ability to meet increased traffic
  - Affordable additional bandwith by adding wavelengths over existing fiber
- French LHCONE investment foreseen in 2013
  - Dedicated connection to international LHCONE :
    - South link via Geneva increased additional 2 X 10 Gb lambda
  - LHCONE french backbone :
    - Additional 10 Gbps between Clermont and Lyon
    - Additional 10 Gbps between Lyon and Paris



Collaboration with France Grilles NGI

- Review of operational needs for LHC community support
- NGI operates the underlaying national e-infrastructure
  - Cores services at production level (Cas, accounting, monitoring…) and expertise required (security)
  - Long term sustainability
- LCG-France focuses on LCG specific services
- Identify domains of common interest such as networking, cloud…
- Avoid duplication of working groups and agree on common plans

Summary

- We assume capacity provided to ALICE will be maintained at the current level for the 4 coming years
  - pledges ressources under warranty (strong impact on budget)
  - Additional capacities within flat budget (?)
- ALICE operation goes smoothly
- No marjor problems or difficulties observed by sites and (hopefully by ALICE)
- We will be looking after site availabilities and try to improve
- Facing the future : cloud, storage, parallelism…