IN2P3
Computing Center

HTASC

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Outline :

- CC-in2p3 in a nutshell
- Computing,
- storage
- Network,
- other services
- Grids and Openings

http://www.cnrs.fr

CENTRE NATIONAL
DE LA RECHERCHE
SCIENTIFIQUE

http://www.in2p3.fr

IN2P3

INSTITUT NATIONAL DE PHYSIQUE NUCLÉAIRE
ET DE PHYSIQUE DES PARTICULES

Le Centre de Calcul in a nutshell

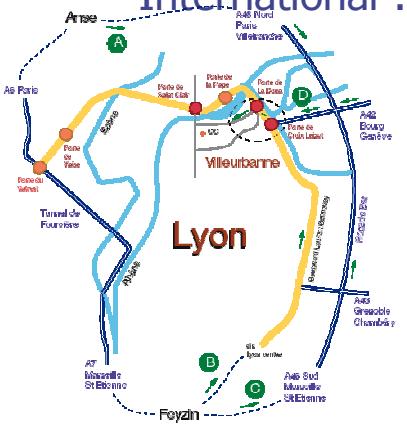
One resource centre
common to
IN2P3-CNRS & DSM-CEA

National : 18 HEP labs,
40 experiments,
2500 users

National : opening to biology and IT

Grids : know-how, culture dissemination

International :Tier-1 / Tier-A
status



Budget:

~ 6-7 M€ /an

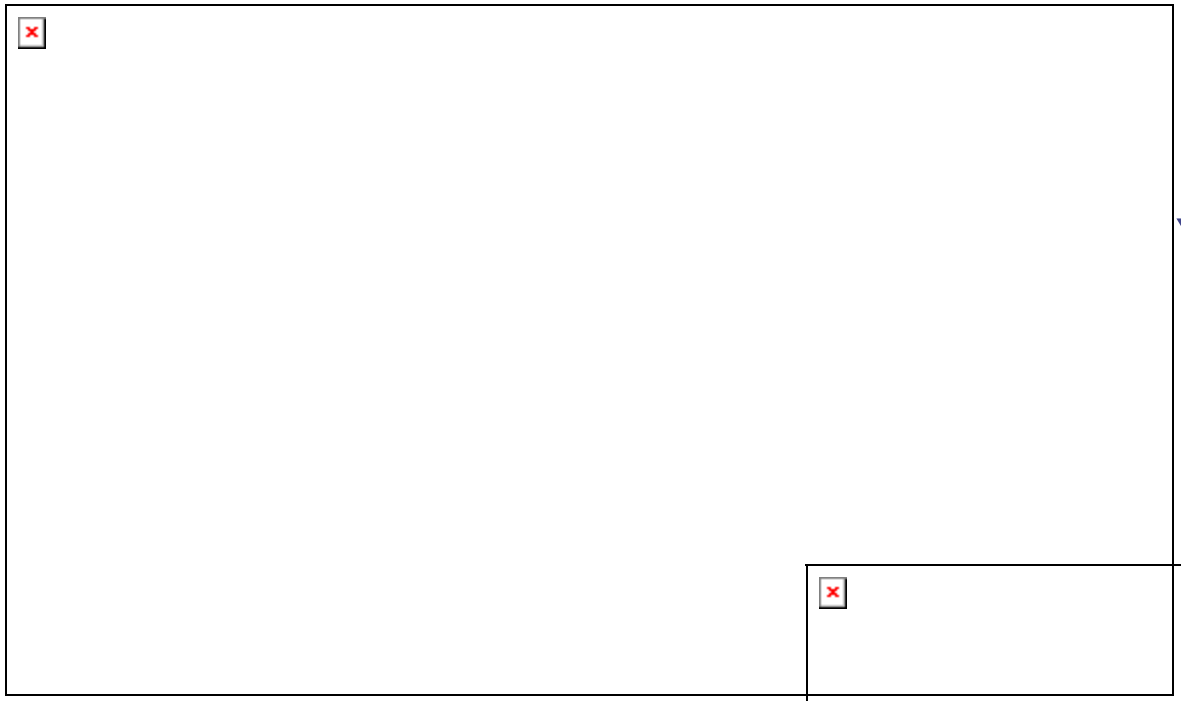
Plus ~ 2 M€ salaries

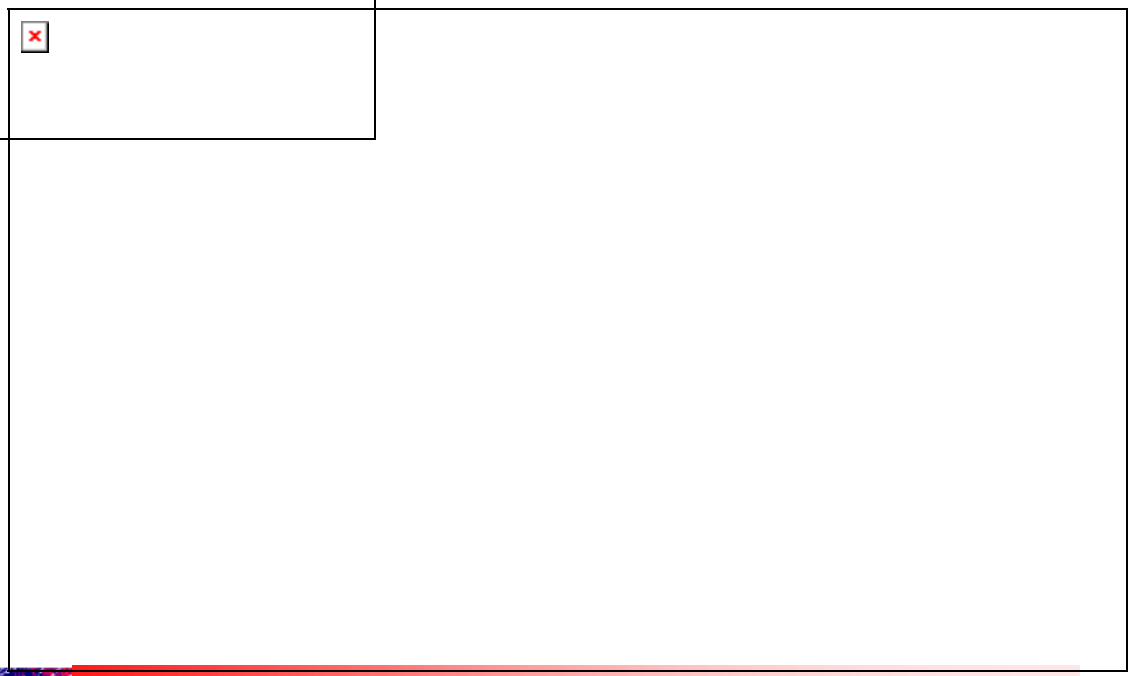
~50 people
(40 IT engineers)

0,5 PBytes
Data Bases,
Hierarchical storage

~ 1000 cpu's
(500k SI2K or 1.5 THz)
~ 60 TB disk

Network & QoS.
Custom services "à la carte"





Shared resources : you use 80% of peak power 100% of the time.

You buy average resources, not peak.

For data challenges, you sqeeze the other users for a while

Le Centre de Calcul

Computing Share, per type of experiments

YEAR		TOTAL (Σ)	LEP	LHC	ΣCERN	ASTRO/ non acc.	BABAR	SIREN/ PACE	BIO	OTHERS
In local unit hours per year (1 unit ~ 50 SI2K)										
1997		954 000	348 000	106 000	627 000	151 500	35 000	0		140 500
1998		1 659 957	364 868	261 524	926 257	343 480	60 248	176 873		153 099
1999		2 460 165	607 403	158 845	1 185 817	396 617	64 336	589 674		223 721
2000		9 124 035	1 146 037	245 399	2 159 646	928 031	569 811	4 711 650		754 898
2001		17 938 298	2 486 747	2 367 121	5 619 532	5 178 540	1 121 233	4 291 424		1 727 569
2002		21 608 683	684 170	3 377 328	4 601 807	5 040 818	4 584 527	4 105 848	215 307	3 060 376
2003	(5 months)	16 945 797	42 273	3 245 645	3 712 191	2 899 383	3 550 126	5 140 415	243 874	1 399 809
	extrap. 12 months	40 669 913	101 455	7 789 549	8 909 257	6 958 520	8 520 301	12 336 997	585 297	3 359 541
In % of total										
1997			36%	11%	66%	16%	4%	0%		15%
1998			22%	16%	56%	21%	4%	11%		9%
1999			25%	6%	48%	16%	3%	24%		9%
2000			13%	3%	24%	10%	6%	52%		8%
2001			14%	13%	31%	29%	6%	24%		10%
2002			3%	16%	21%	23%	21%	19%	1,0%	14%
2003	(5 months)		0,2%	19%	22%	17%	21%	30%	1,4%	8%

Storage services

200->500 TB in HPSS this year, 250 in march, now 300.

HPSS between cache disk, 20GB tapes and 200GB tapes

- purchased for Babar but now used by most experiments
- Babar Objectivity: 130 TB and 25 TB cache disk, others: 120 TB and 4.4TB
- STK 9840 (20GB tapes, fast mount) and STK 9940 (200GB tapes, slower mount, higher I/O, 12->25 drives)
- Accessed by RFIO Installed capacity on tape: 700 TB
- Up to 8.8 TB/day
- Originally, mainly rfcp. Supports files larger than 2GB
- Direct HPSS access from network through BBFTP

Semi-permanent storage

Back-up, Archive : TSM (Tivoli storage manager)

Le Centre de Calcul

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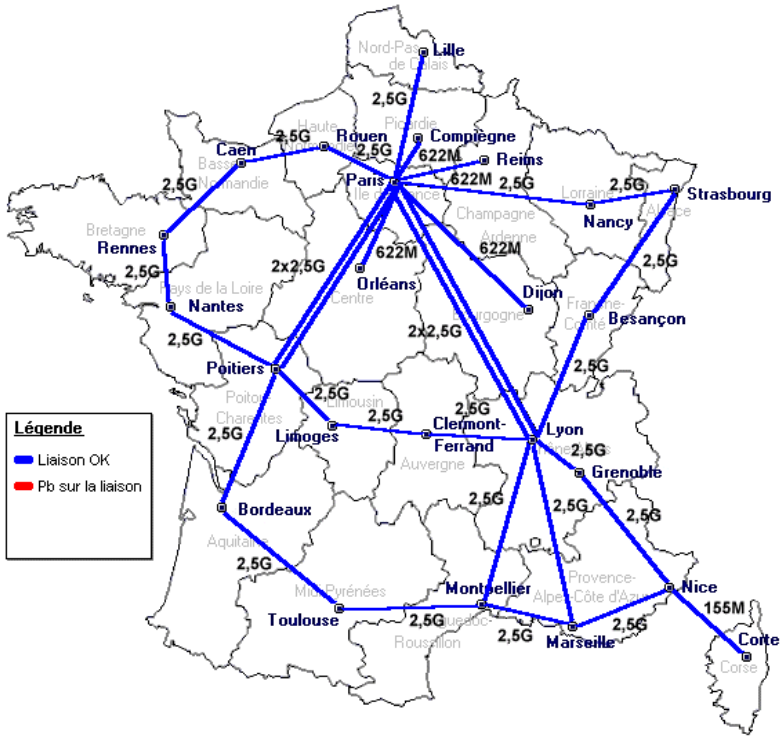
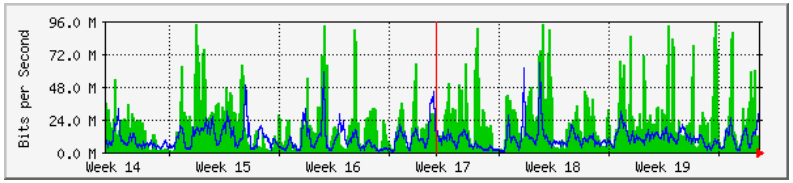
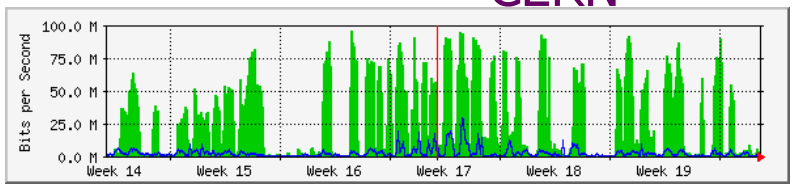




RENATER

CERN



NETWORK

Renater3=2.4Gbps, Lyon-US thru Geant and USLIC. Lyon-Cern now at 1 Gbps

Other services of an IT division

Other services at CC-IN2P3 :

- DB (Objectivity, Oracle, xSQL, …)
- Softwares and OS (purchase, support, maintenance), RH 7.x, Solaris, AIX
- web sites (> 70) , web services (webcast, phototheque, mail,..),
- customized services (storage, specialized computing resources and more)
- Developments & software tests (esp. for grids)
- Visioconferencing, MCU ("multipoint conference unit")
- document DB (in-house Democrite), bank of thesis and of scientific publications - http://ccsd.cnrs.fr - or of technical documents (Cern EDMS),
- Directories
- CAD
- Security, we will host the CNRS system for CA's
- Host to external services (nodes of networks, IXP, DB)
- Teaching, IT schools
-

➔ Not last, nor least :

- Hot-line, **user-support**, a unique system for all services.

Openings and changes

- **GRIDS :**

- Developments, tests, production, dissemination.

-a new way of working that emerges

- hosting EDG resource broker and associated services, CVS repository, CNRS-IN2P3 in charge of WP6, WP7 and WP10 coordination

- involved in 8 grid projects, IBM coop. agreement on grid technology.

- **Being a « Tier1 » :**

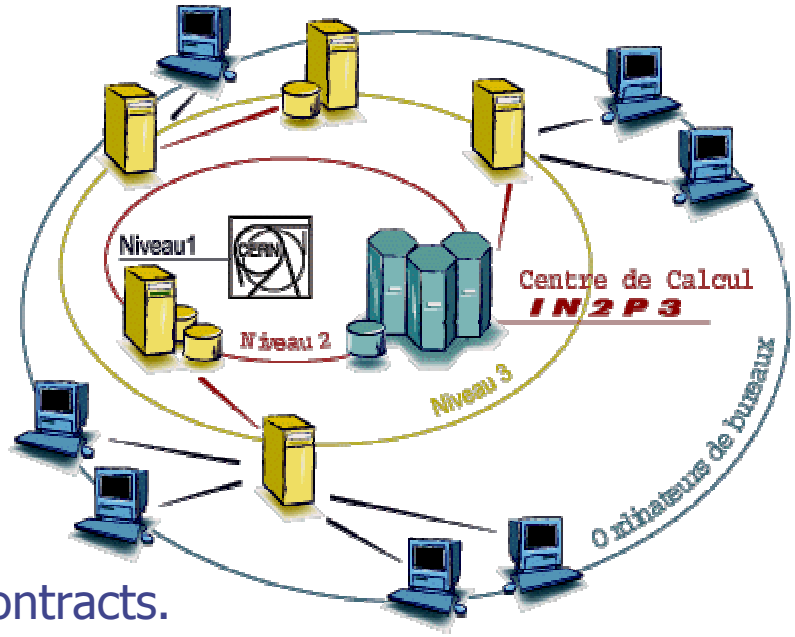
= Internationalization,

= provide a significative part of IT services

requested by any large HEP experiment

(Babar, D0, Auger, Virgo-Ego, 4 LHC

and more in the future)



- **Opening to other fields**, beyond astroparticle :

- Biology : grid develoments, users, partnerships, contracts.

- IT : grid develoments, partnerships.