



CDF Computing Status

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Outline

- CDF Computing Status
- Configuration and performances in Italy



Computing strategies at Fermilab

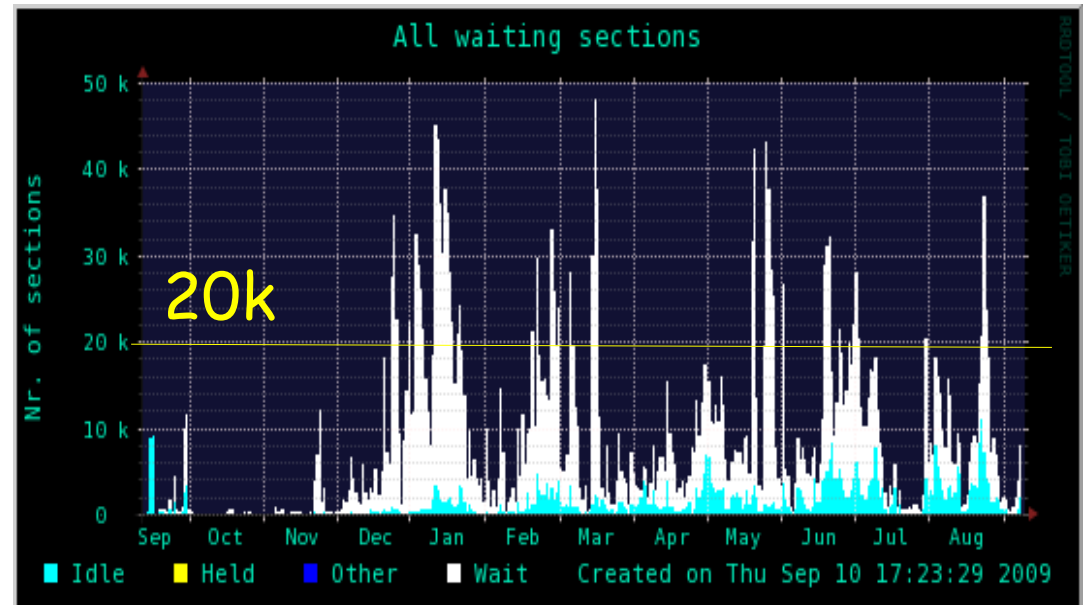
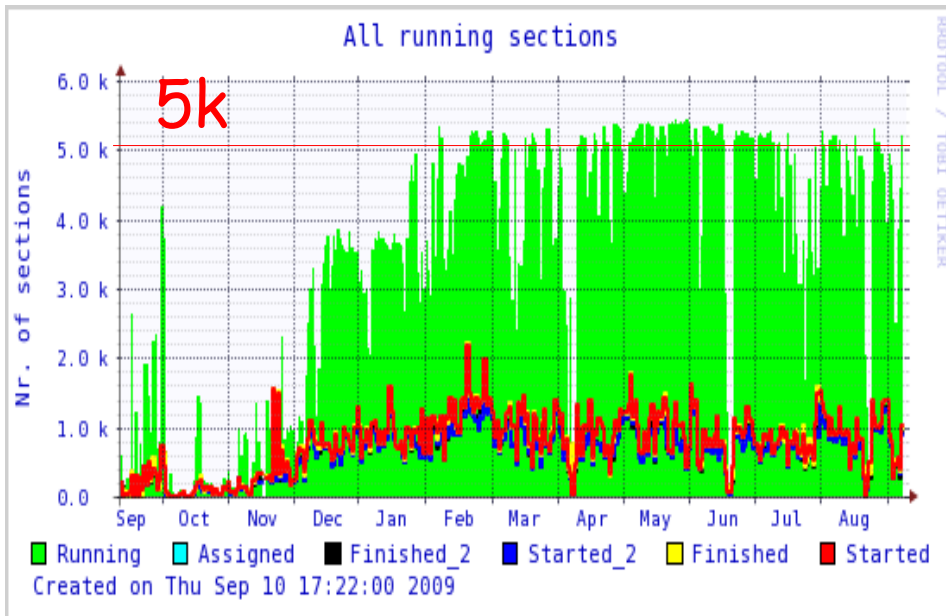
- System development reduced almost to zero
- General tools and applications support moved to CD
Running Experiments division: reduce the load on CDF but no Grid integration anymore
- CDF support data production, Monte Carlo production and few applications
- The transition to Grid almost done for cpu access but no progress for disk space



Computing status: Fermilab Portals

Goal: two portals CDFGrid and NamGrid

CDFGrid access Fermilab resources, used mainly for data processing and users analysis

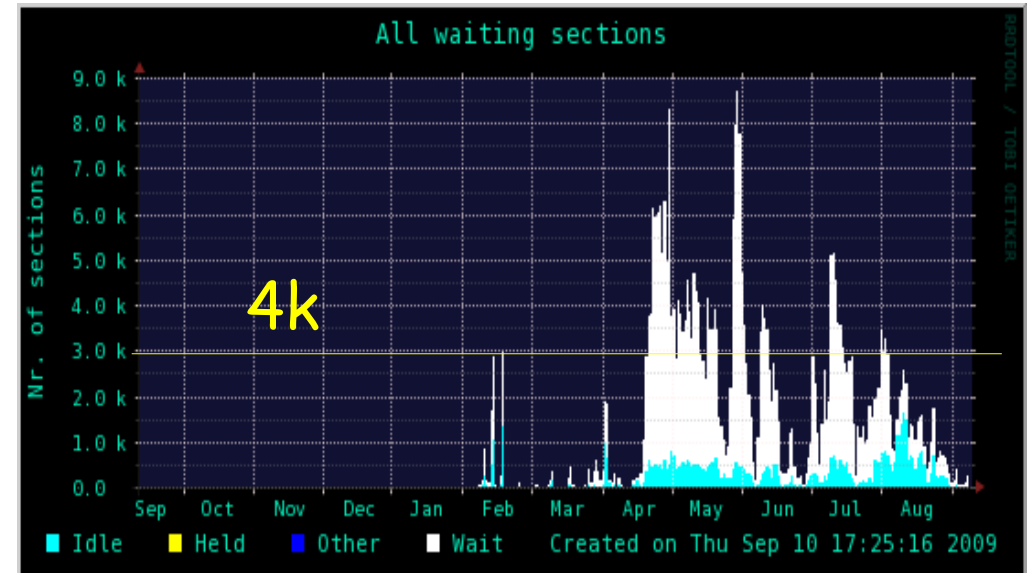
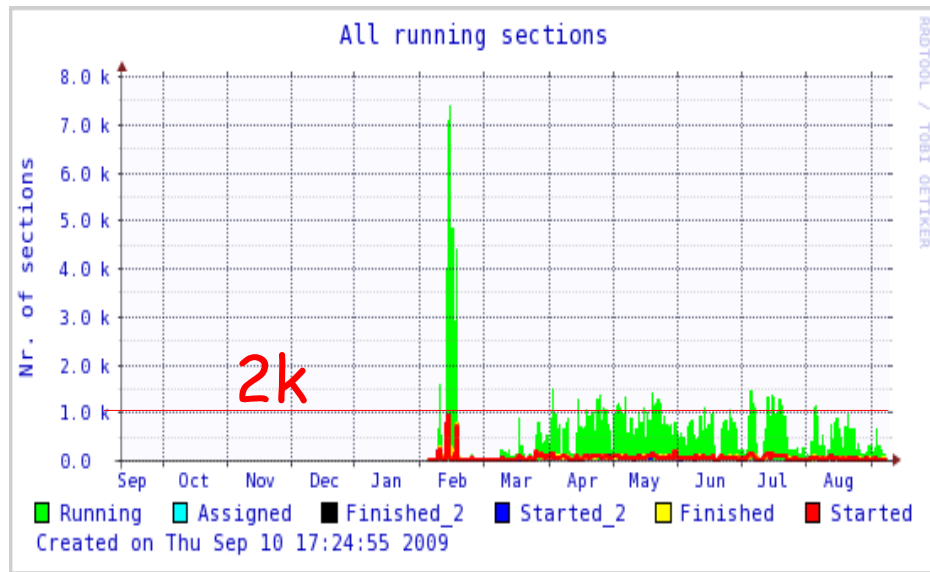


Need more resources



Computing status: Fermilab Portals

NamGrid access the NordAMerican Grid only opportunistic resources



Issues:

- lack of expertise to support the new Grid middleware
- sites do pre-emption, CDF jobs halted. CDF not negotiated cpu usage with USA T2
- CDF code not "ported" to SL5 (in progress)



Disk space management at Fermilab

- 1) **scratch and spool space** provide temporary storage, account based
- 2) **dcache** is a distributed, simple (least recent used - first out) file cache used for tape-resident data in enstore;
- 3) **diskpool** is a dcache based but static, user-managed pool for large non-tape resident data;
- 4) **fcdpdata* servers** provide general-purpose disk space to the physics groups and operations;
- 5) **project space** few hundred GBytes, NFS-based and easy to use;
- 6) **data assembly** servers with large filesystems optimized for data spooling to prepare datasets for tape storage;



Disk space management at Fermilab

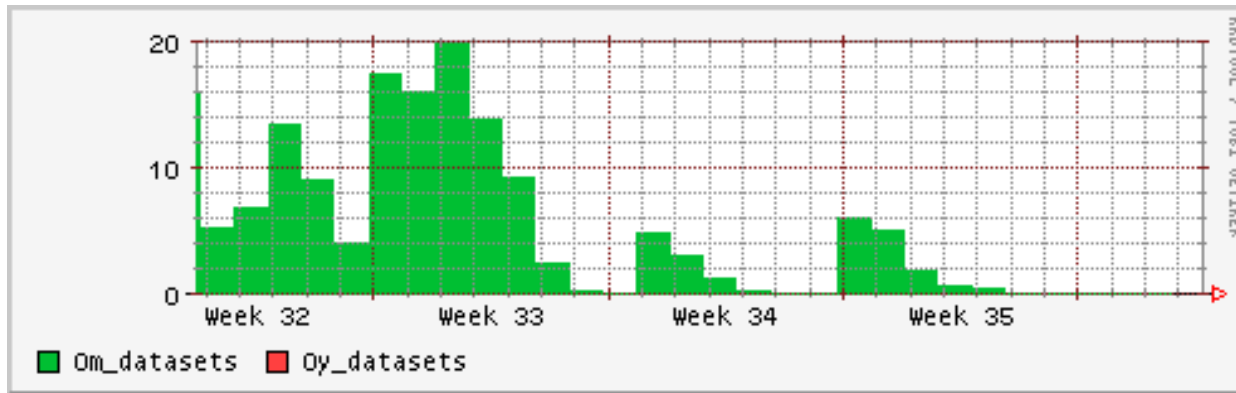
- 1) **scratch and spool space** provide temporary storage, account based
- 2) **dcache** is a distributed, simple (least recently first out) file cache used for tape-resident data in production
- 3) **diskpool** is a dcache based but managed pool for large non-tape resident data;
- 4) **fcdpdata* servers** provide purpose disk space to the physics groups and researchers
- 5) **project space** is a 100-1000 GBytes, NFS-based and easy to use;
- 6) **data archive** is with large filesystems optimized for data spooling to tape; datasets for tape storage;

NONE IT WORKS BUT ... NONE USES A GRID TECHNOLOGY

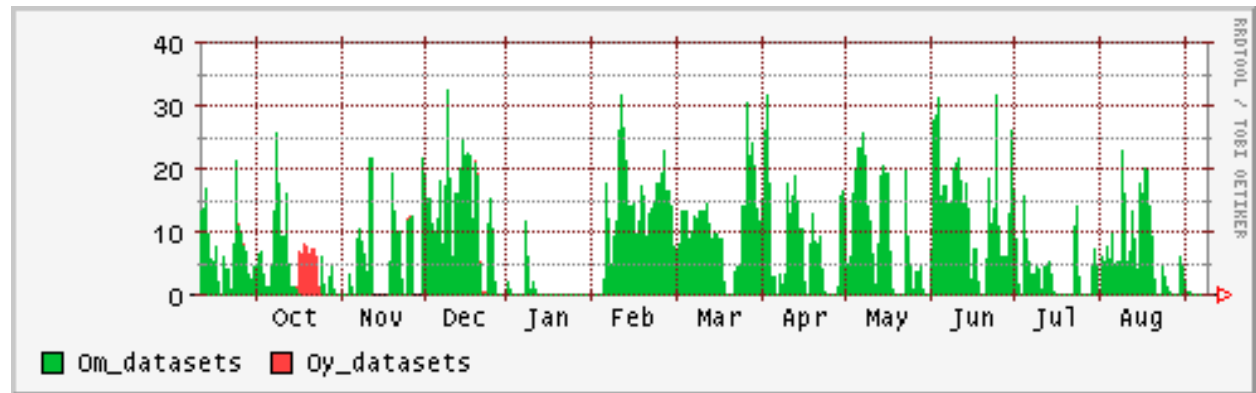


Data Processing

Data processing has the highest priority, it has one FTE dedicated it goes almost smoothly



Year rate in ML of events





Computing Summary

- Able to keep up with data but it is an effort
- the "technology" starts to be behind Grid... in particular for disk space management and data movement
- CDF cpu are used and a lot of job in the waiting queue
- CDF analysis use Monte Carlo data produced more than 2 years ago
- Need to improve the system to survive



Computing Status: Europe/Italy

Group:

- Gabriele Compostella (AR-CNAF) in charge of CNAFCAF and LcgCAF
- Simone Pagan Griso (PhD) important contribution to operations and development
- Manoj Khumar (borsa INFN fino a luglio 2009) data movement
- DL operations and development

Plan:

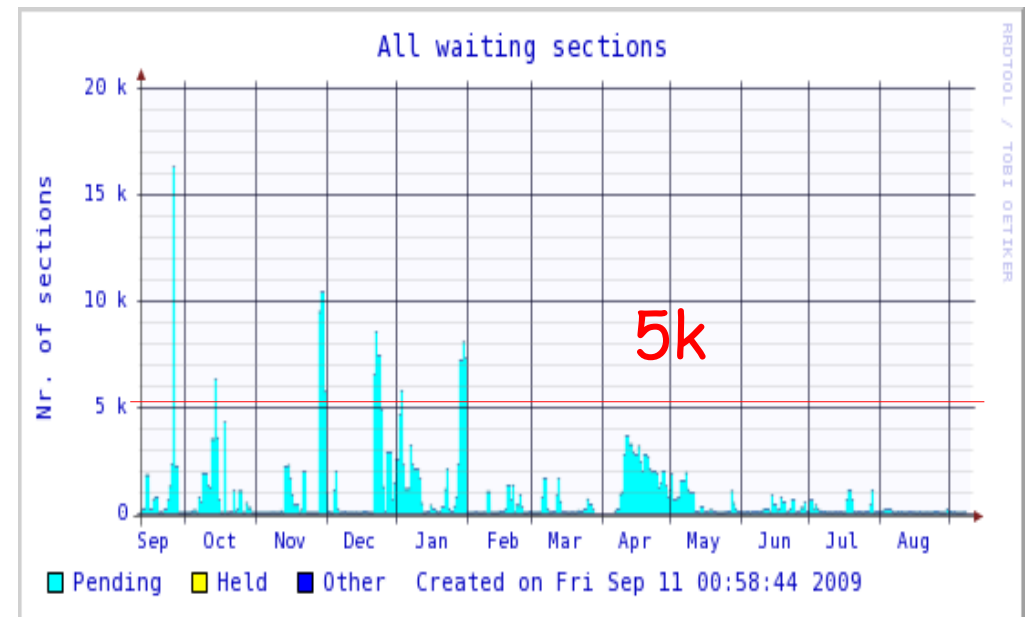
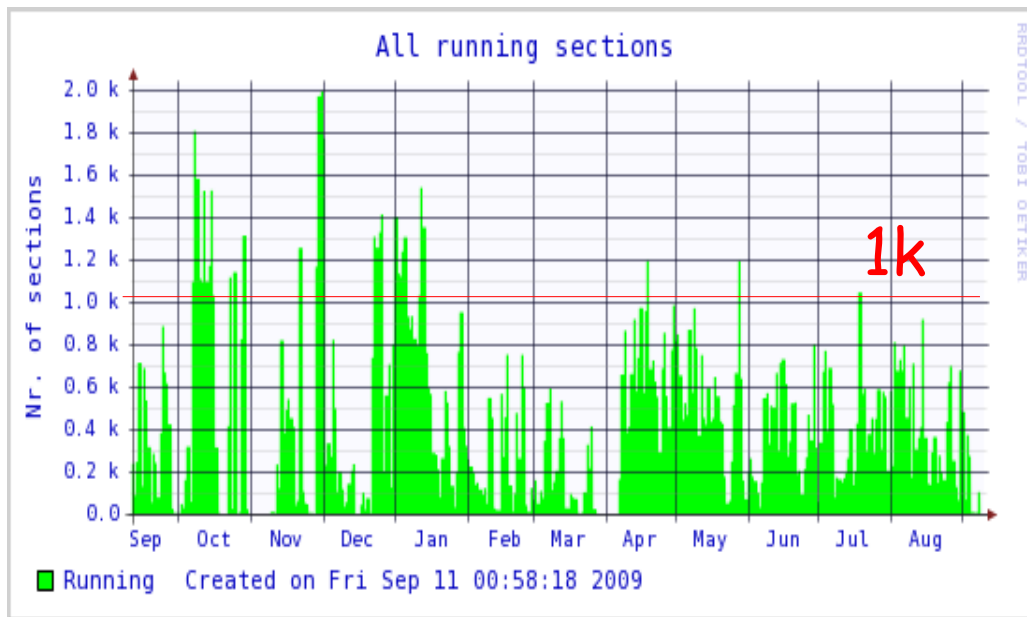
- one portal, LcgCAF to access European and Italian resources
- data movement via SRM



Computing Status: Europe/Italy

Currently two farms: CNAFCAF and LcgCAF working in porting data access into LcgCAF

CNAFCAF access CNAF resources only, used also for data analysis



Available resource saturated



Computing Status: Europe/Italy

LcgCAF access Italian resources and European resources

Site	Country
CNAF-T1	Italy
INFN-Padova	Italy
INFN-Bari	Italy
INFN-Legnaro	Italy
INFN-Roma1	Italy
INFN-Roma2	Italy
INFN-Catania	Italy
INFN-Pisa	Italy
FZK-LCG2	Germany
IN2P3-CC	France
IEPSAS	Slovakia
IFAE	Spain
PIC	Spain

Resource dedicated to CDF:

Germany, France, Spain and Italy

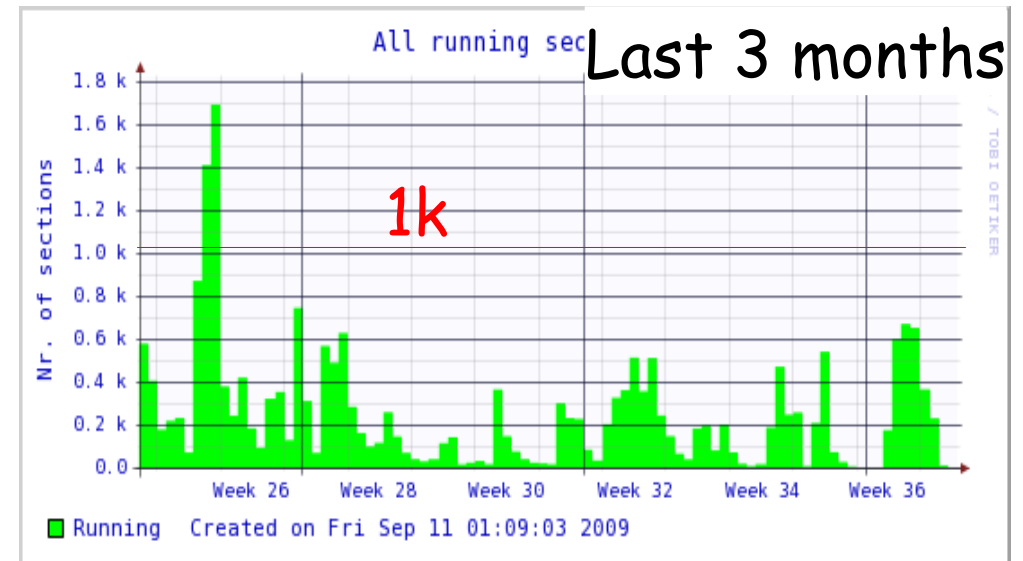
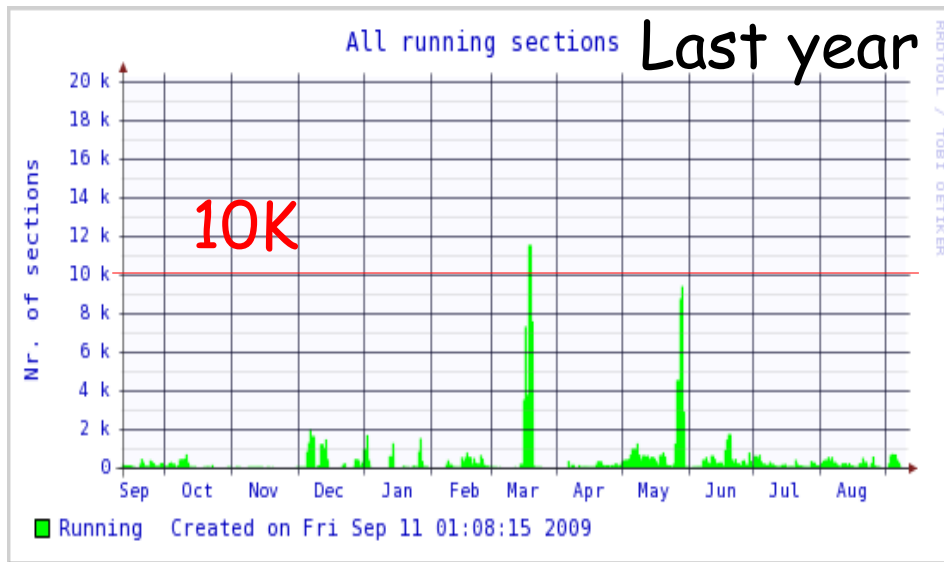
Grid middleware improved a lot, we are collaborating with Grid development team for fine tuning

Still missing (our fault):

- Data access, need an interface with CDF catalog
- Grid compliant resource monitor



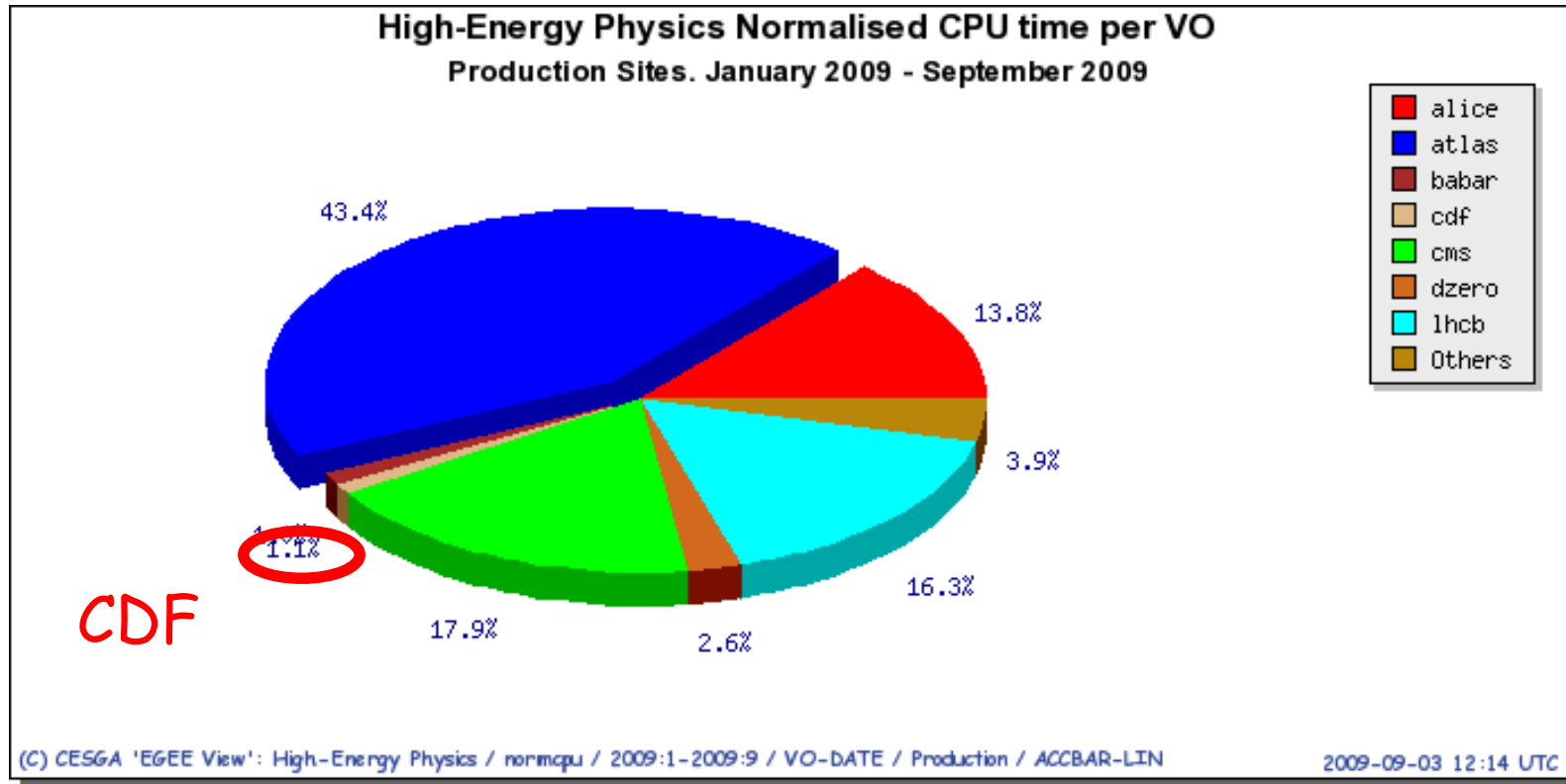
Computing Status: LcgCAF Portal



Time by time LcgCAF has spikes of usage ~ 10K jobs the average usage around few hundreds

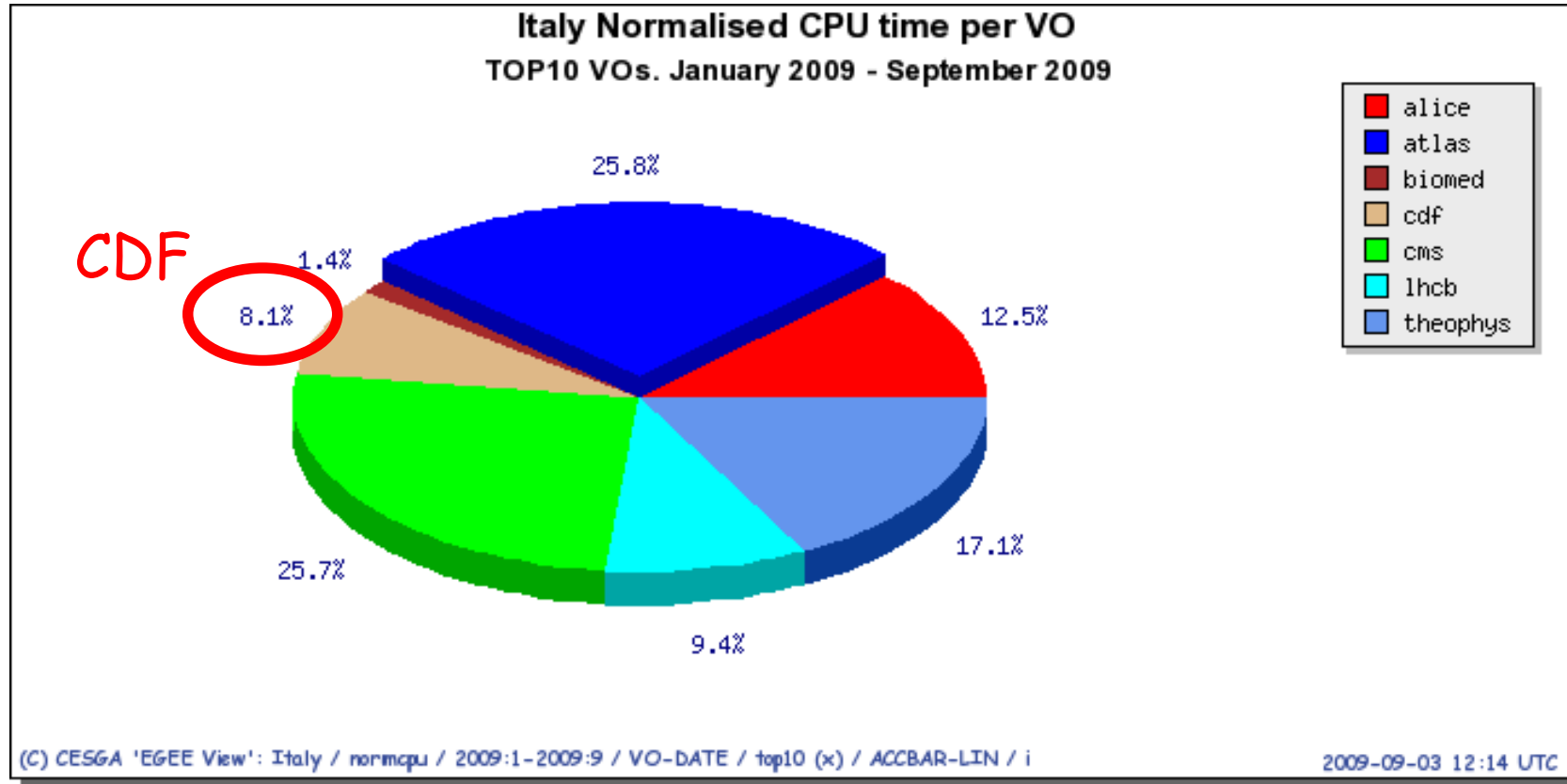


Resources Usage: Europe





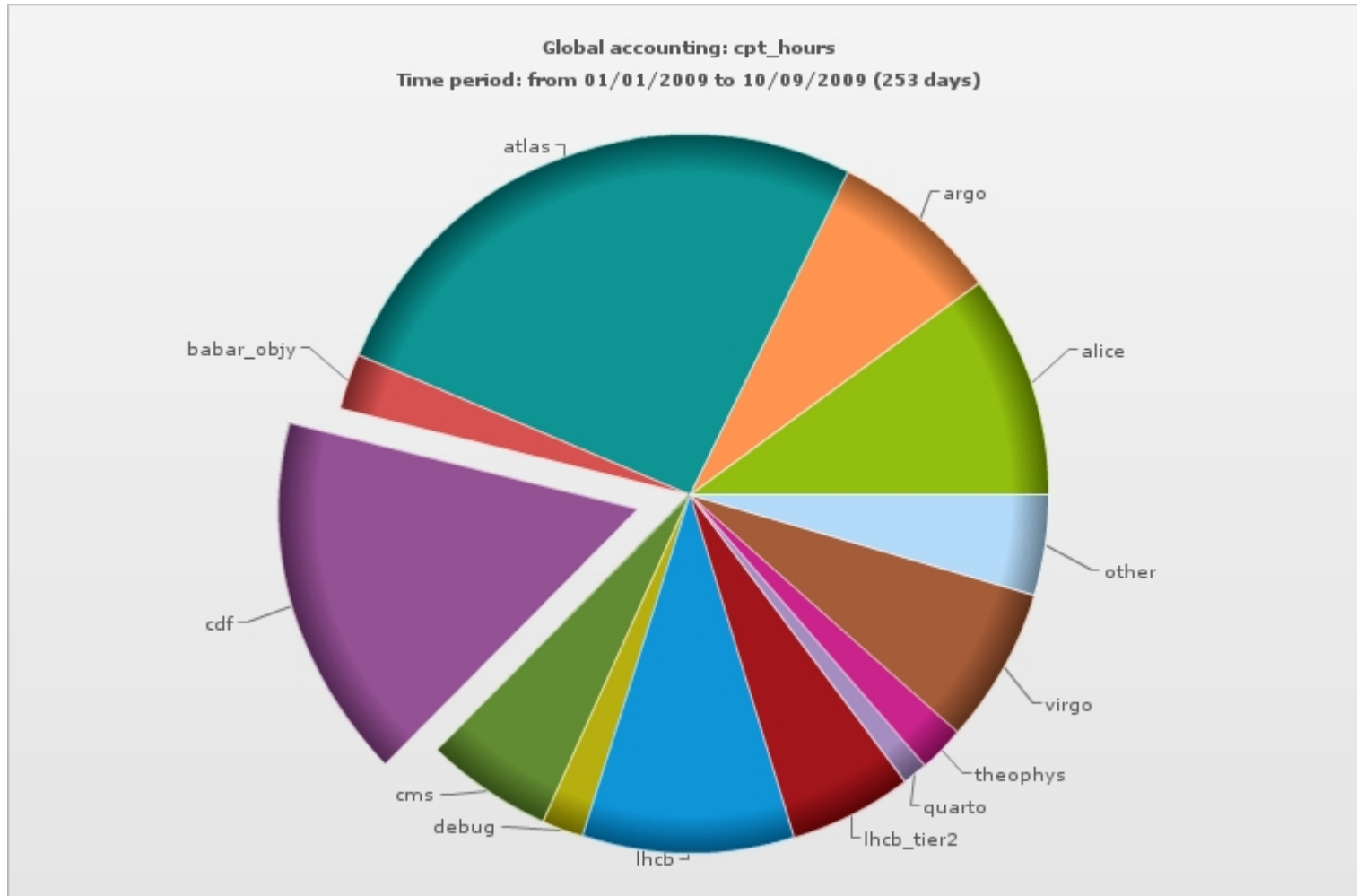
Resources Usage: Italy



CDF is one of the Top-10 VO



Resources Usage: Tier1



CDF is the second VO

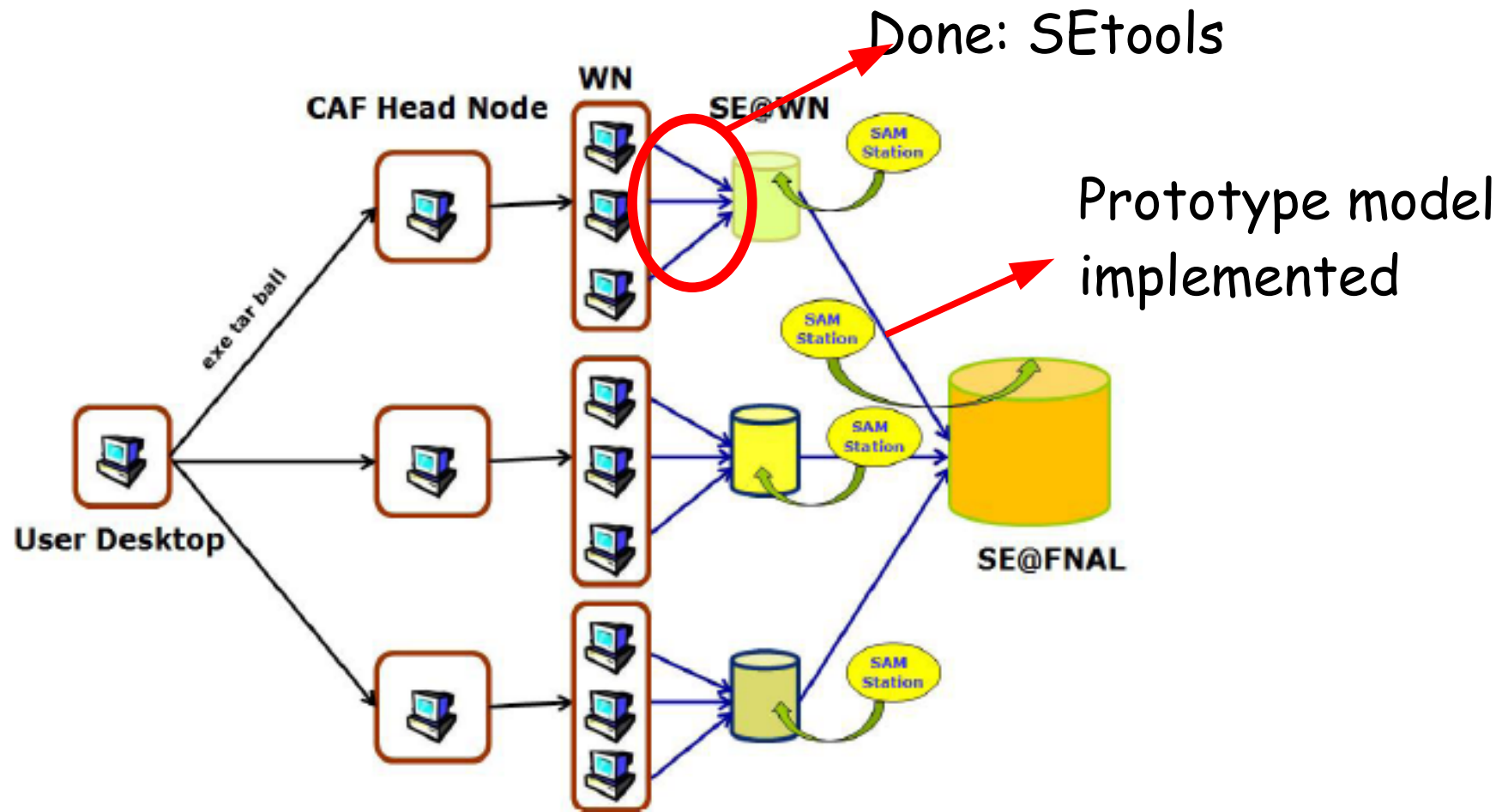


Disk Space Management

- Storage Element (STORM) at CNAF: buffer for Monte Carlo production and analysis space for Italian users
- Temporary storage for CDF data (SAM cache)
- Storage Element at FNAL: set up in progress



Data Movement





Results

Presentations at CHEP09:

1) *CDF software distribution on Grid using Parrot*

G. Compostella, S. Pagan Griso, D. Lucchesi

2) *CDF way to Grid*

D. Lucchesi

3) *A new CDF model for data movement based on SRM*

M. Kumar Jha, S. Pagan Griso, G. Compostella, D. Lucchesi,
D. Benjamin



Richieste 2010

50 TBn di disco x 0.85 kE 43.00 kE
 CPU per 260KSI2K 31.00 kE

Tabella
Bozzi

Experiment	%	2008			2009			inizio 2010			meta' 2010 (opzione)		
		CPU KSI2K	DISK TB-N	TAPE TB	CPU KSI2K	DISK TB-N	TAPE TB	CPU KSI2K	DISK TB-N	TAPE TB	CPU KSI2K	DISK TB-N	TAPE TB
ALICE	22%	748	330	428	748	330	428	1698	1008	884	3474	1673	2096
ATLAS	32%	1088	480	623	1088	480	623	2470	1466	1286	5053	2433	3048
CMS	35%	1190	525	681	1190	525	681	2702	1603	1406	5527	2661	3334
LHCb	11%	374	165	214	374	165	214	849	504	442	1737	836	1048
Total LHC TIER1		3400	1500	1946	3400	1500	1946	7719	4580	4018	15791	7604	9525
BaBar		1215	350	0	1215	350	0	1215	350	0	1215	350	0
CDF		1161	170	15	1161	220	15	1290	220	15	1420	270	15
LHCb TIER2		600	0	0	600	0	0	900	0	0	1300	0	0
TOTALE GRUPPO I		2976	520	15	2976	570	15	3405	570	15	3935	620	15
AMS2		25	5	20	25	9	20	32	9	30	180	73	40
ARGO		150	100	240	150	120	240	150	120	380	200	144	726
GLAST		5	15	0	5	60	0	150	60	40	150	60	40
MAGIC		20	7	8	20	20	8	80	20	30	125	30	40
PAMELA		20	12	32	20	48	32	70	48	48	70	48	64
Virgo		250	150	200	250	300	200	1000	300	300	1250	450	450
TOTALE GRUPPO II		470	289	500	470	557	500	1482	557	828	1975	805	1360
All experiments		6846	2309	2461	6846	2627	2461	12606	5707	4861	21701	9029	10900
All w/ overlap factor		5705	2099	2461	5705	2388	2461	10505	5188	4861	18084	8208	10900
CNAF TOTAL (PLAN)		5705	2099	2461	5705	2388	2461	10505	5188	4861	18084	8208	10900
CNAF to be procured					0	289	0	4800	2800	2400	7579	3020	6039