

# CDF @Tier1 and Grid.it



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## Outline

- CDF usage of Tier1
- CDF usage of Grid.it
- Requests for 2008

# CNAF Resources Access

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CDF access CNAF/Grid resources with 2 methods:

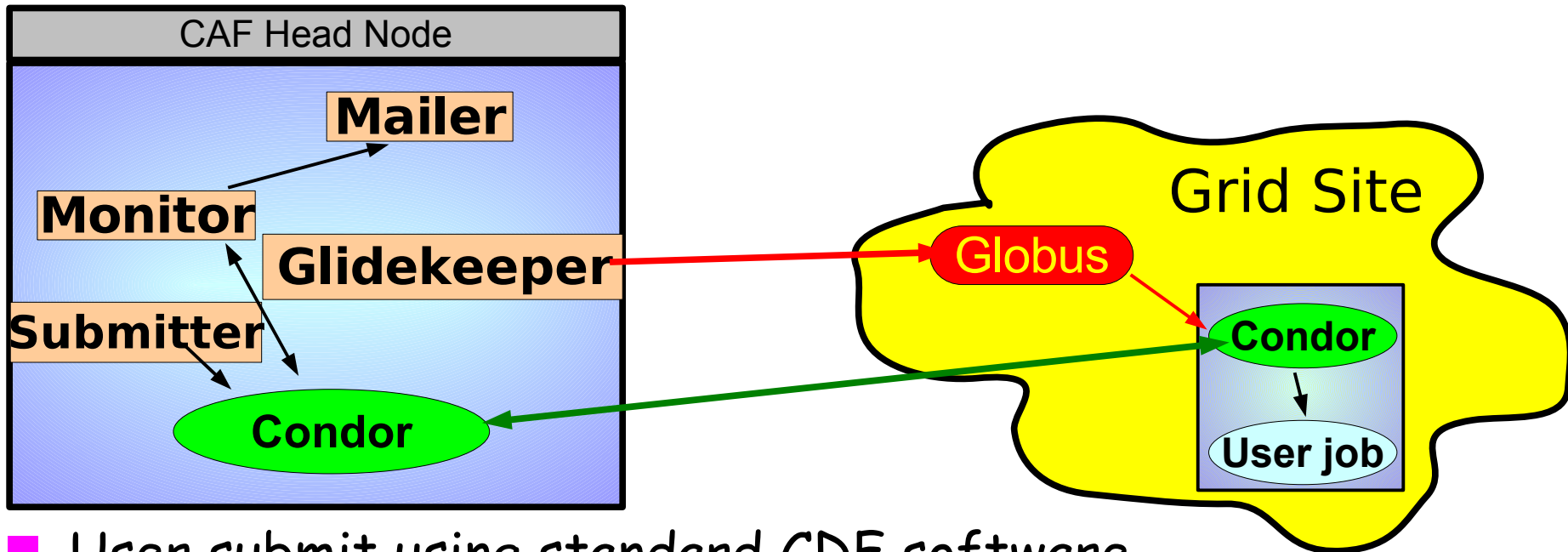
## ■ glideCAF

- use condor glide-in, which are regular, proper configured condor start daemons submitted as job to **Grid CE**.
- used to run on data and to produce MC
- CDF code sits on AFS
- Frontier DB cached locally using SQUID

## ■ LcgCAF

- use gLite **WMS**
- access CNAF and many other Grid sites in Italy and EU
- used only for MC production
- nothing is required on wn

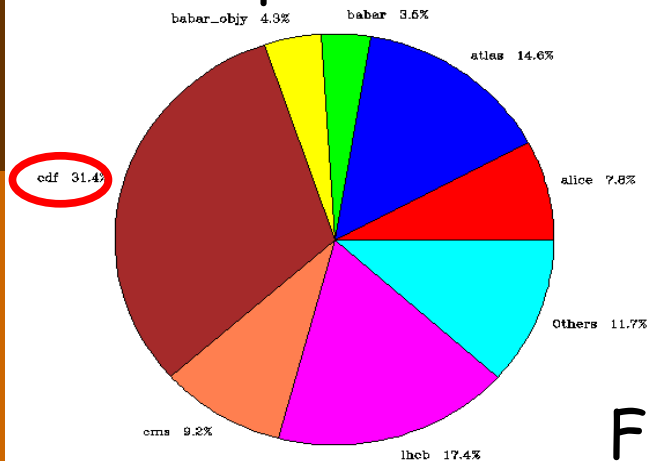
# GlideCAF Model



- User submit using standard CDF software
- condor glide-in, which are regular, proper configured condor start daemons, are submitted as job to Grid CE.
- Once a job starts on wn it notifies the collector and joins the pool as new VM
- CDF code via AFS and Frontier DB cached via SQUID

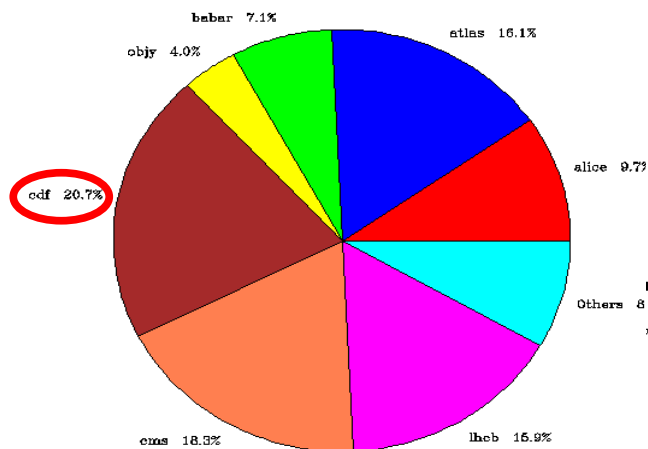
# CNAF usage

Since April 2005

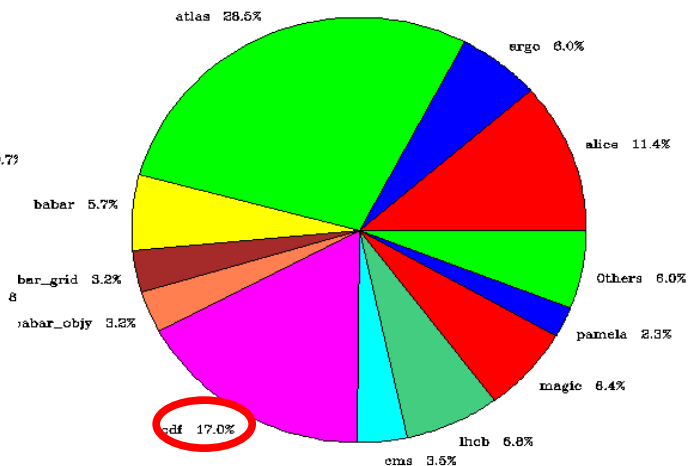


CDF uses ~20% of the CNAF resources

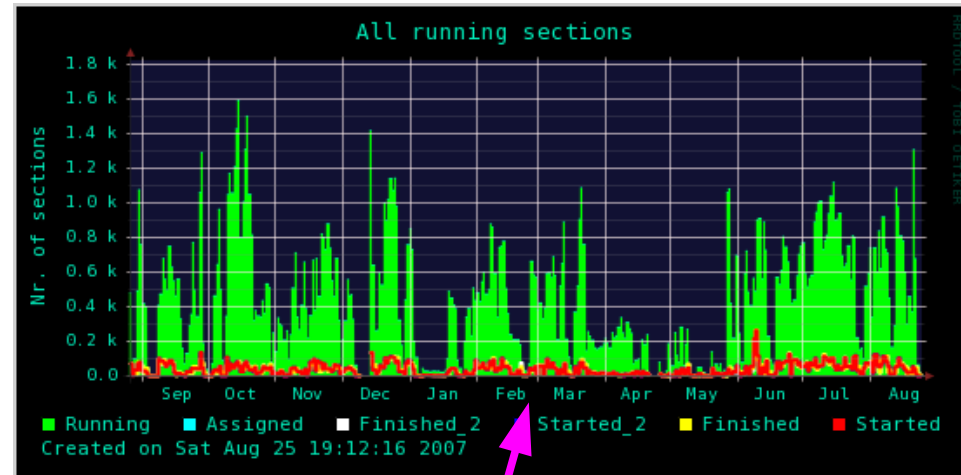
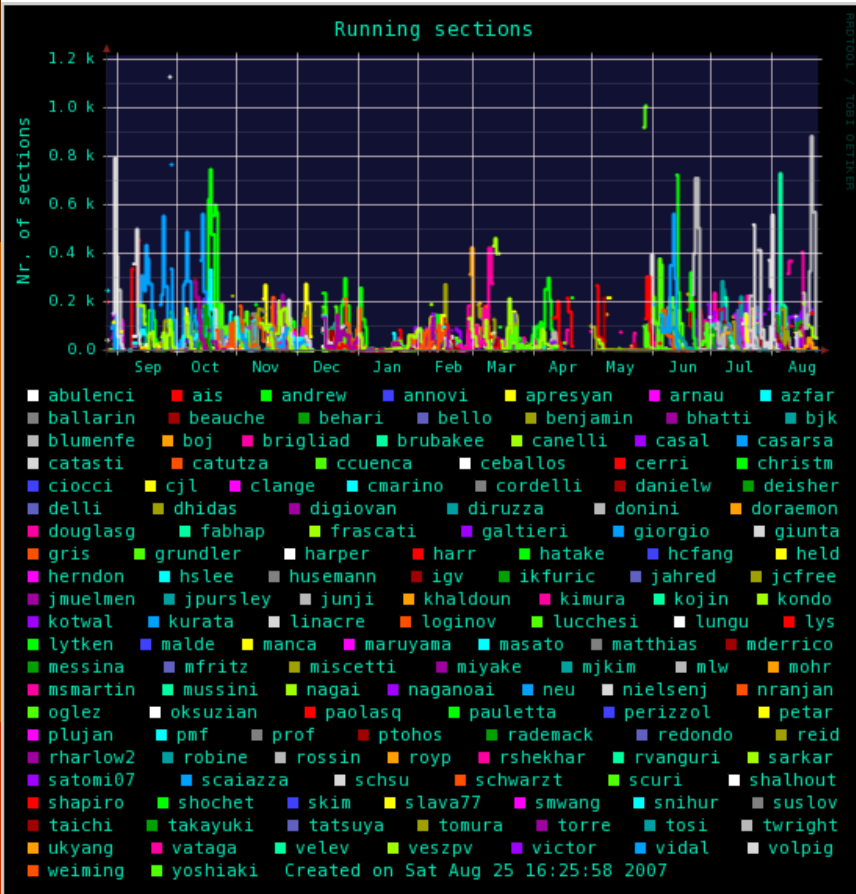
First trim. 2007



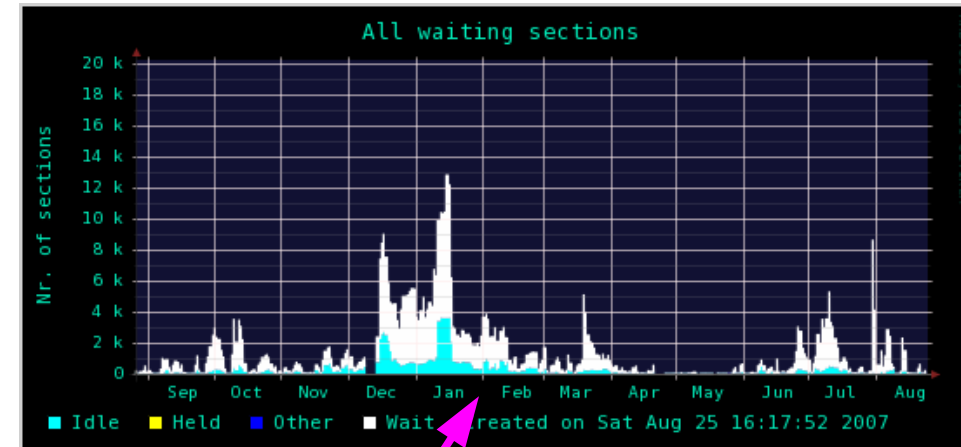
Second trim. 2007



# GlideCAF @CNAF



A lot of running jobs



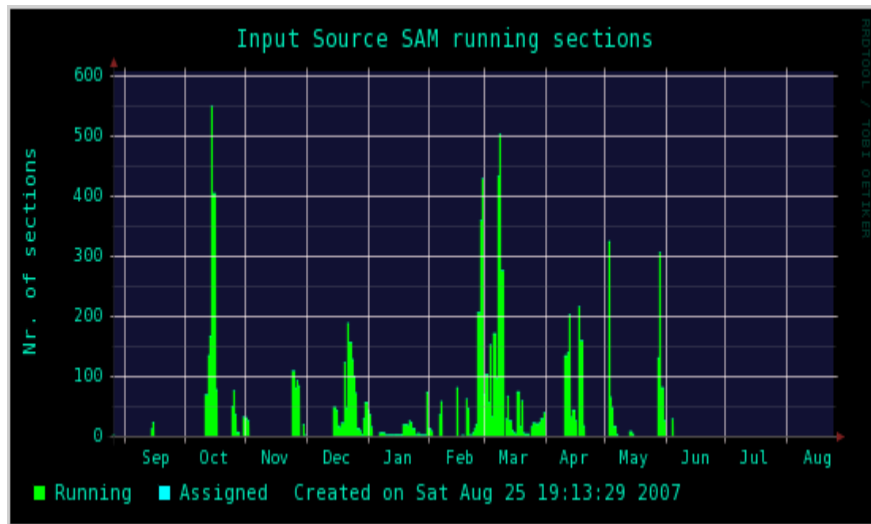
Always waiting jobs

More than 150 active users  
in the last year.

Aug. 28, 2007

# GlideCAF @CNAF

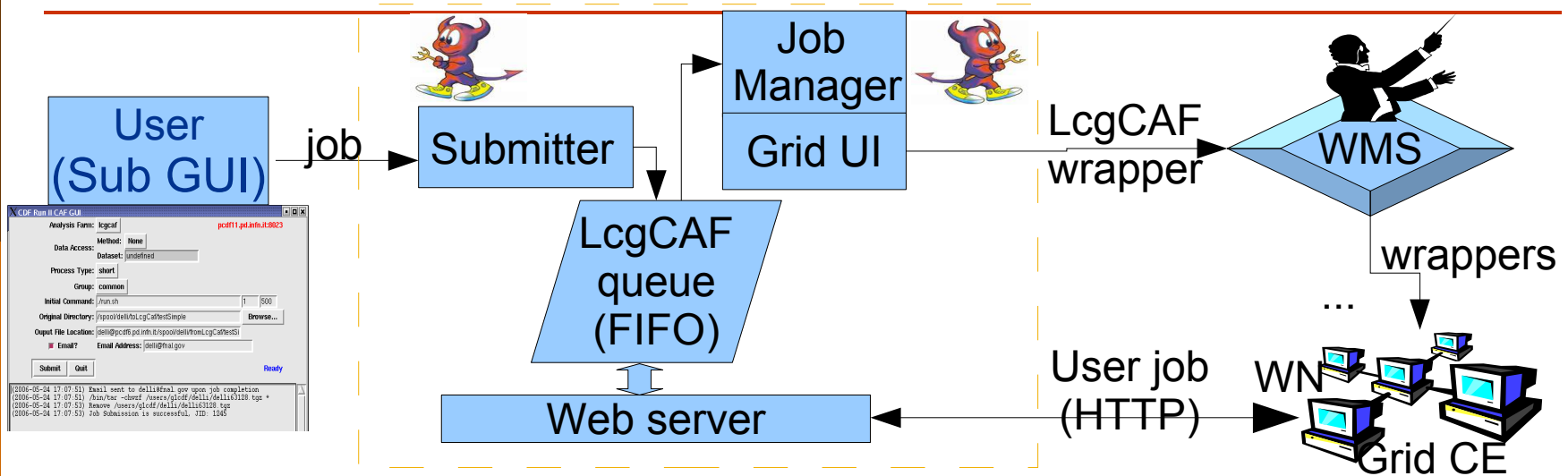
Used also for data



Datasets available:

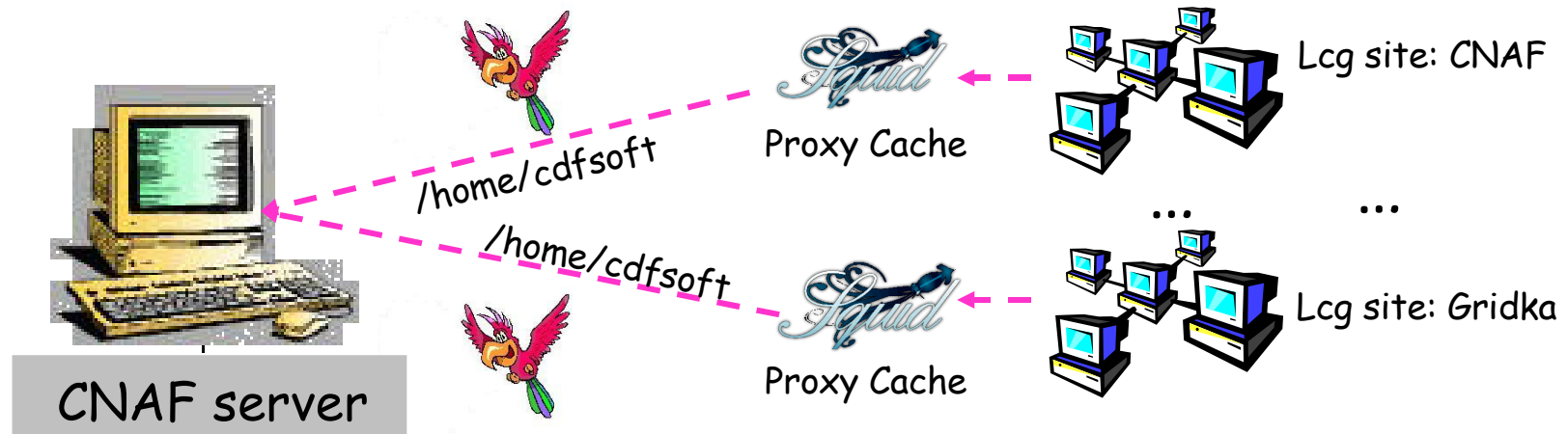
- B physics skimmed data
  - Top and higgs ntuples being imported
  - Official Monte Carlo ntuples
- ✗ Data distribution via SAM, CDF catalog.
  - ✗ Data hosted on GPFS ~ 50 TB used, ~20 TB free, new data are coming
  - ✗ Working area ~ 5 TB mainly for italians.

# LcgCAF Model: Submission and Execution



- User submit using standard CDF software
- Each segment is treated as single job for the Grid
- LcgCAF send a wrapper to the WMS that manage it
- On the Worker Node (WN):
  - Retrieve user job via HTTP (easy cache possible!) and run it
  - Forks monitoring process,
  - When the job finishes, save the output.

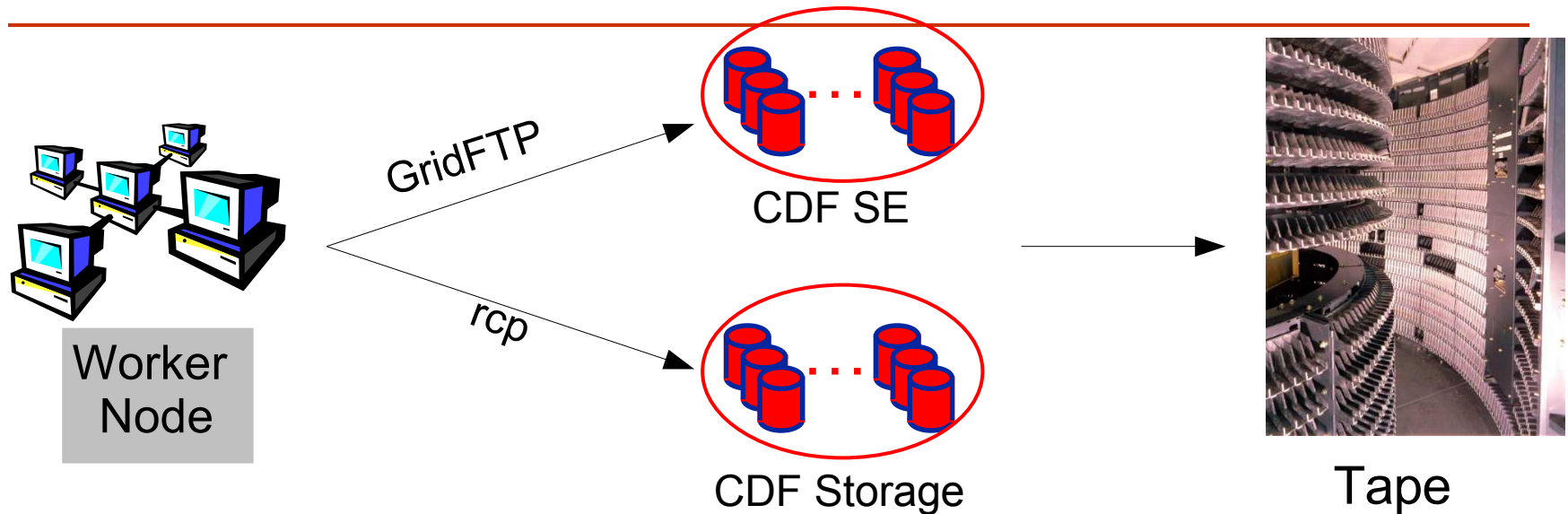
# LcgCAF: CDF code distribution



- To distribute CDF software:
  - **Parrot** is used as virtual file system to get it
    - Hook system calls and retrieve needed files via HTTP
- To access FNAL Database (run conditions stored)
  - Use **Frontier** to translate DB queries into HTTP queries
- Use SQUID proxies as cache near bigger sites improve performances!



# LcgCAF: Output storage

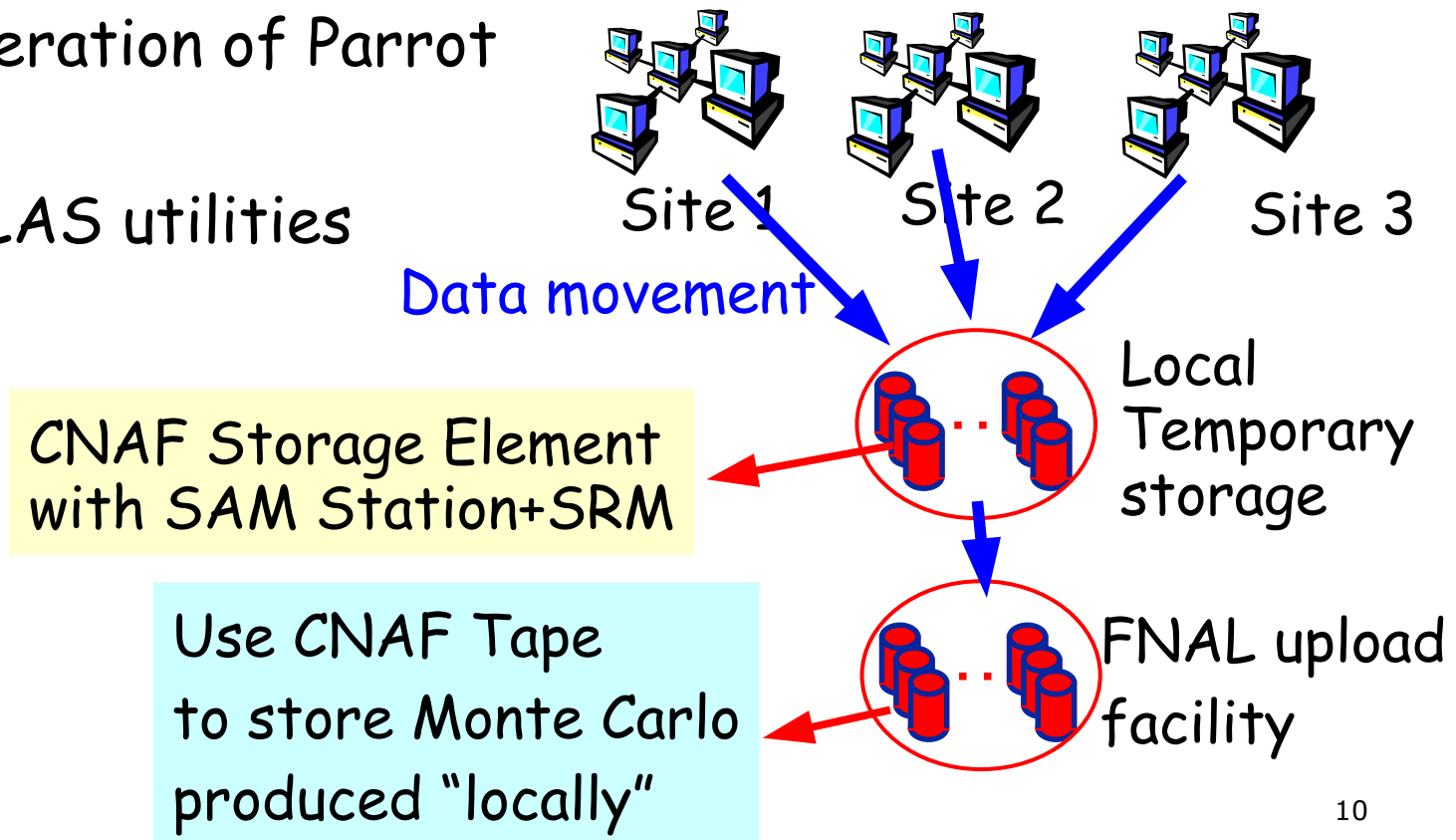


- User output copied to CDF Storage Elements using
  - Grid specific tools (GSI authentication using Grid proxy)or to CDF storage locations with
  - Rcp-like tools (Kerberos V authentication)
- Files are then transferred (after validation) to tape

# Data movement and storage

Project just started. Laureando + CDF Computing group.  
Several possibilities under evaluation:

- SAM+SRM interface
- Next generation of Parrot
- Stork
- CMS/ATLAS utilities

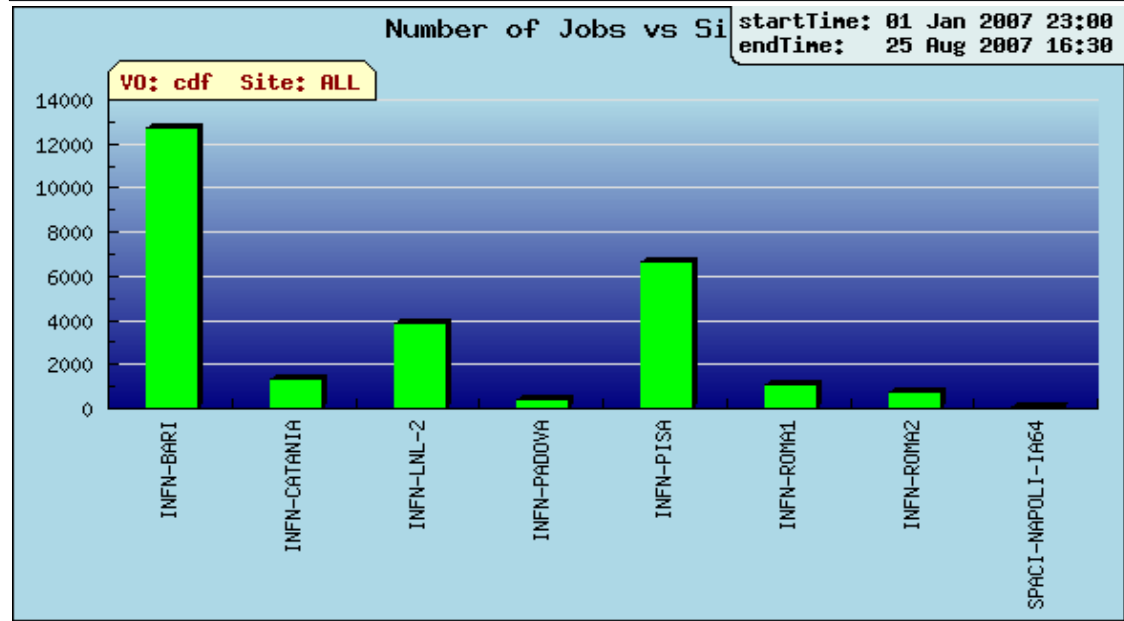


# LcgCAF sites

## List of sites accessed

INFN-T1	Italy
INFN-Padova	Italy
INFN-Catania	Italy
INFN-Bari	Italy
INFN-Legnaro	Italy
INFN-Roma1	Italy
INFN-Roma2	Italy
INFN-Pisa	Italy
FZK-LCG2	Germany
IEPSAS	Slovakia
IFAE	Spain
PIC	Spain
IN2P3-CC	France
UKI-LT2-UCL-HE	UK
Liverpool	UK

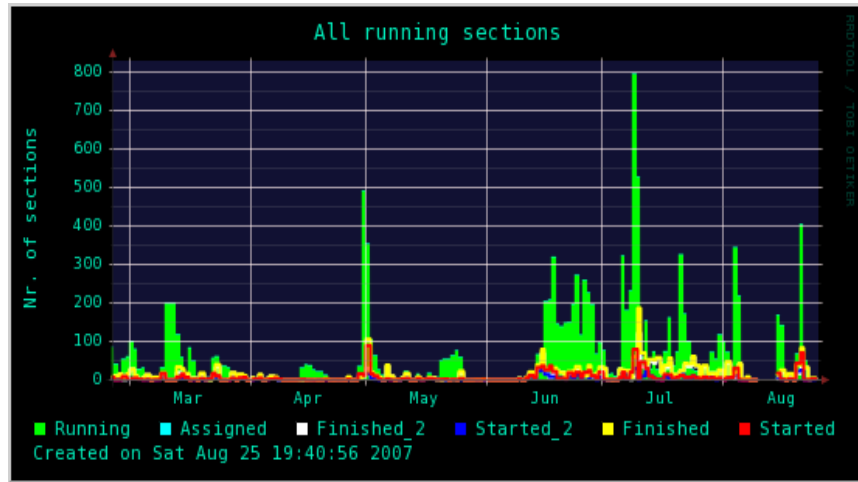
## Job distribution among Italian sites



Tier 1 is not included because of monitor/site misconfiguration

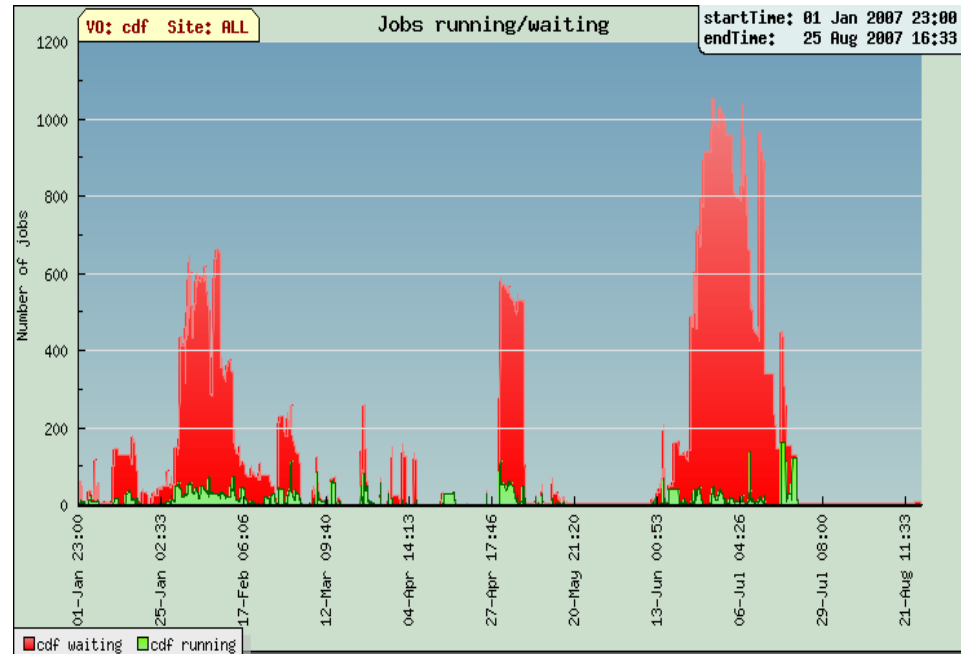
# LcgCAF jobs distributions

Running jobs as seen by LcgCAF monitor



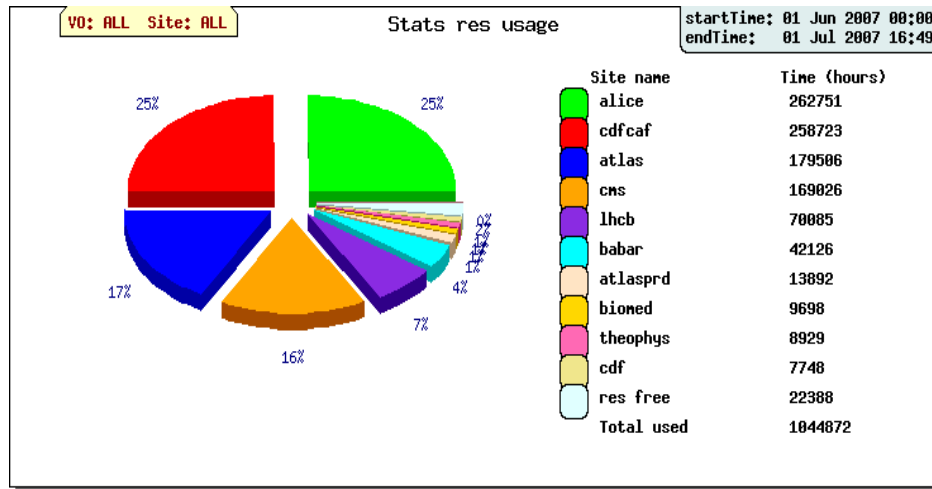
Recently LcgCAF being used more regularly

Running/waiting jobs as seen by GridIce

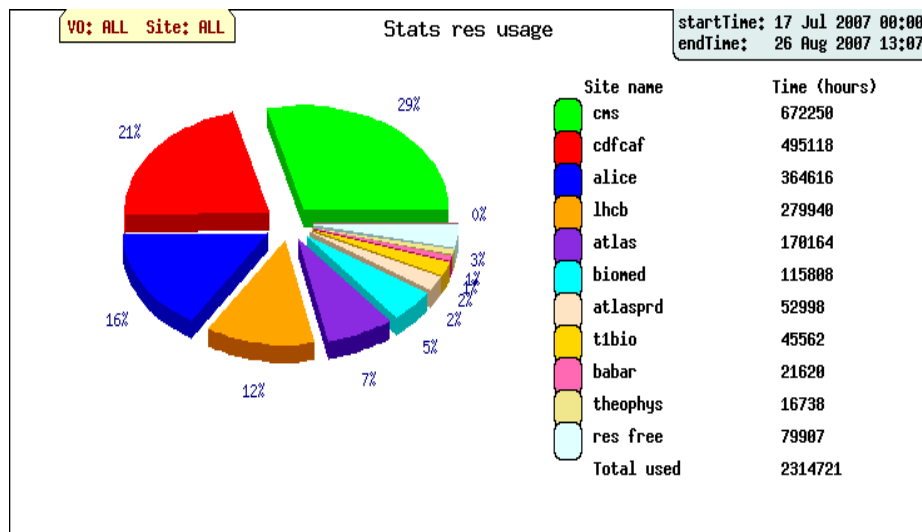


CDF jobs remain for long time on queues due to a not so efficient resources matching

# CDF Grid resources usage



CDF uses more than 20% of the available resources on Grid



# CDF Requests for 2008

Use F. Forti @CNS1 April 2nd

	2007-Q4			2008-Q4			2009-Q4			2010-Q4		
	CPU (kSi2k)	Disco (TB-N)	Nastro (TB)	CPU (kSi2k)	Disco (TB-N)	Nastro (TB)	CPU (kSi2k)	Disco (TB-N)	Nastro (TB)	CPU (kSi2k)	Disco (TB-N)	Nastro (TB)
BaBar	680	200	0	1215	350	0	1215	350	0	1215	350	0
<b>CDF</b>	<b>820</b>	<b>100</b>	<b>15</b>	<b>1161</b>	<b>170</b>	<b>15</b>	<b>1290</b>	<b>220</b>	<b>15</b>	<b>1420</b>	<b>270</b>	<b>15</b>
Totale	1500	300	15	2376	520	15	2505	570	15	2635	620	15
<b>Acquistando in due anni</b>	<b>TOT €</b>			<b>540</b>			<b>80</b>			<b>62</b>		<b>682</b>
Costo CPU				188			18			14		221
Costo Disco					352			62			48	462
Costo Nastro						0		0			0	0
<b>Acquistando nell'anno in corso</b>					<b>448</b>			<b>69</b>			<b>54</b>	<b>572</b>
Costo CPU				140			15			13		169
Costo Disco					308			54			41	403
Costo Nastro						0		0			0	0
	2007-Q4			2008-Q4			2009-Q4			2010-Q4		
	CPU (kSi2k)	Disco (TB-N)	Nastro (TB)	CPU (kSi2k)	Disco (TB-N)	Nastro (TB)	CPU (kSi2k)	Disco (TB-N)	Nastro (TB)	CPU (kSi2k)	Disco (TB-N)	Nastro (TB)
LHCB TIER2	0	0	0	600	0	0	1200	350	0	1700	350	0
<b>Acquistando in due anni</b>				<b>129</b>			<b>84</b>			<b>55</b>		<b>268</b>
<b>Acquistando nell'anno in corso</b>				<b>96</b>			<b>72</b>			<b>50</b>		<b>218</b>

Aug. 28, 2007

# CDF Requests for 2008

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Requests made to CNS1:

$$\text{cpu: } \frac{(1161-820)}{(1161-820)+(1265-680)} * 188\text{K } \epsilon = 73\text{K } \epsilon$$

$$\text{Disk: } \frac{(170-100)}{(170-100)+(350-200)} * 352\text{K } \epsilon = 112\text{K } \epsilon$$

# CDF Requests for 2008

CNAF Plan March 2007

Experiment	%	2006			2007			2008			2009			2010		
		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	CPU KSI2K	DISK TB-N	TAPE TB
ALICE	22%	154	16	77	286	110	143	1210	550	836	1870	880	1320	3520	1760	1870
ATLAS	32%	224	40	112	416	160	208	1760	800	1216	2720	1280	1920	5120	2560	2720
CMS	35%	245	86	123	455	175	228	1925	875	1330	2975	1400	2100	5600	2800	2975
LHCB	11%	77	26	39	143	55	72	605	275	418	935	440	660	1760	880	935
<b>Total LHC TIER1</b>		<b>700</b>	<b>168</b>	<b>350</b>	<b>1300</b>	<b>500</b>	<b>650</b>	<b>5500</b>	<b>2500</b>	<b>3800</b>	<b>8500</b>	<b>4000</b>	<b>6000</b>	<b>16000</b>	<b>8000</b>	<b>8500</b>
BaBar		585	149	0	680	200	0	1215	350	0	1215	350	0	1215	350	0
<b>CDF</b>		<b>900</b>	<b>66</b>	<b>0</b>	<b>820</b>	<b>100</b>	<b>15</b>	<b>1161</b>	<b>170</b>	<b>15</b>	<b>1290</b>	<b>220</b>	<b>15</b>	<b>1420</b>	<b>270</b>	<b>15</b>
LHCB TIER2		0	0	0	150	0	0	600	0	0	1200	350	0	1700	350	0
<b>TOTALE GRUPPO I</b>		<b>1485</b>	<b>214</b>	<b>0</b>	<b>1650</b>	<b>300</b>	<b>15</b>	<b>2976</b>	<b>520</b>	<b>15</b>	<b>3705</b>	<b>920</b>	<b>15</b>	<b>4335</b>	<b>970</b>	<b>15</b>
AMS2		32	2	16	25	5	16	32	5	24	180	16	128	180	16	128
ARGO		22	12	28	150	70	186	188	112	366	188	129	546	188	129	546
GLAST					5	10	0	5	10	10	5	10	20	5	10	20
MAGIC			1		20	5	4	20	4	8	20	4	12	20	4	12
PAMELA			4		20	10	16	25	10	32	25	10	48	25	10	48
Virgo		10	25	75	180	90	130	250	150	200	500	220	250	500	220	250
<b>TOTALE GRUPPO II</b>		<b>64</b>	<b>43</b>	<b>119</b>	<b>400</b>	<b>190</b>	<b>352</b>	<b>520</b>	<b>291</b>	<b>640</b>	<b>918</b>	<b>389</b>	<b>1004</b>	<b>918</b>	<b>389</b>	<b>1004</b>
All experiments		2249	426	469	3350	990	1017	8996	3311	4455	13123	5309	7019	21253	9359	9519
All w/ overlap factor		1874	387	469	2792	900	1017	7497	3010	4455	10936	4827	7019	17711	8509	9519
<b>CNAF TOTAL (PLAN)</b>		<b>1874</b>	<b>387</b>	<b>469</b>	<b>3000</b>	<b>1000</b>	<b>1000</b>	<b>7497</b>	<b>3010</b>	<b>4455</b>	<b>10936</b>	<b>4827</b>	<b>7019</b>	<b>17711</b>	<b>8509</b>	<b>9519</b>
<b>CNAF ACTUAL</b>		<b>1570</b>	<b>400</b>	<b>510</b>												
Relative Contingency							0%									50%
Absolute contingency					0						2808			8855	4254	4760
Zoccolo duro (TOTAL-CONTINGENCY)					3000		1000				4211			8855	4254	4760
INFN T1 P2P 2005		1800	850	850	2400	1200					4100			11500	5800	6000
INFN T1 P2P 2007		-	-	-	1300	500					3300			10000	5000	5000

CDF requests:  
 KSI2K: 15% x Tier1  
 DISK : 6% x Tier1



# CDF Requests for 2008

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- In the first 6 months of 2007 CDF at CNAF has used **444 KSP2K** if we project to the end of 2007 we expect to use **~900 KSP2K** that correspond to our request, but we have been reduced to **820**.
- **In 2008 CDF can not go below 1100 KSP2K.**
- CDF survives thanks to the usage of Grid.it, part of Monte Carlo production has been moved there.
- **Even with that CDF has always a lot of jobs in queues.**