Tier1 Status

1st July, 2008
LHCC Referees Meeting

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STFC-RAL

Overview

- T1 Procurements
- Reliability
- Tape Efficiency
- 24x7 & VO Boxes
- CCRC08
- Readiness

Procurement

WLCG High Level Milestones - 2008
ID	Date	Milestone	ASGC	CC IN2P3	CERN	FZK GridKa	INFN CNAF	NDGF	PIC	RAL	SARA NIKHEF	TRIUMF	BNL	FNAL
Tier-1 Procurement												
WLCG-07-17	1 Apr 2008	**MoU 2008 Pledges Installed** To fulfill the agreement that all sites procure their MoU pledges by April of every year	Sept 2008	CPU OK May Disk Sep 08	Apr 2008	Apr 2008	CPU Jul 08 Disk Sept 08	CPU OK May Disk Sep 08	CPU OK May Disk Jul 08	Apr 2008	Nov 2008	Apr 2008	CPU Jun 08 Disk Jul 08	CPU 80% Disk OK May
WLCG-08-04	Sep 2008	**Status of the MoU 2009 Procurement** Report whether their procurement is on track to meet the MoU pledges by April. Or if not, by when the pledges will be fulfilled.												
WLCG-08-05	1 Apr 2009	**MoU 2009 Pledges Installed** To fulfill the agreement that all sites procure their MoU pledges by April of every year												

- All Tier0/Tier 1 had problems in 2008 procurements
    - Could become a problem in future years ...
    - Funding not always clear before procurements need to start
    - Added Milestone in Sept08 to report status and prognosis

2008 Procurements

- Had T1s installed their pledged hardware for 2008 by 1 April?
- Had T1s installed their pledged hardware for 2008 by 5 May? For CCRC08(May).
- Had T1s installed sufficient capacity to meet the experiments plans for CCRC08(May)

	April08?	May08?	CCRC Requirements met?
ASGC	No	No	Disk and Tape OK, 80% of CPU
BNL	No	No	
CNAF	No	No	Tape OK, 63% disk
FNAL	No	No	
FZK	Yes	Yes	Yes
IN2P3	No	No	CPU 110%, disk 80%, tape 25%
NDGF	No	No	Yes
NIKHEF	No	No	
PIC	No	No	Yes
RAL	No	Yes	Yes
Triumf	Yes	Yes	Yes

CPU OK

Tape 30%

CPU 30%, Disk 60%

CPU 30%, Disk 60%

Harry's Table

- A 4th T1 met pledges in June (FNAL)

- But a further 3 meet their CPU pledge
  - IN2P3, PIC, BNL

- and 2 of those, tape too.

- More sites fail to deliver disk

- Disk is the biggest shortfall

2Q2008	Tier 1 Capacity: Available vs. Required (Scheduled)								
WLCG Site	CPU KSi2K			Disk TB			Tape TB		
	2008/9 pledge	Installed	Required	2008/9 pledge	Installed	Required	2008/9 pledge	Installed	Required
ASGC	3400	2700	2467	1500	1200	1673	1300	800	1872
CC-IN2P3	4240	4240	4882	2375	1500	2747	2470	2470	2863
FZK/GridKa	5672	4522	7045	2933	2293	3579	3629	2449	4314
INFN/CNAF	3000	1700	3994	1300	550	2289	1500	650	2453
NDGF	2172	2650	2633	1079	870	1203	930	320	1407
PIC	1509	1509	1432	967	700	930	953	520	945
RAL	3139	3139	3714	1920	1920	2283	1900	2070	2140
SARA-NIKHEF	4382	2570	3334	2510	373	1858	1813	200	1577
TRIUMF	905	905	779	500	500	461	385	385	347
US-ATLAS-BNL	4844	4844	4167	3136	2100	2468	1715	1800	1856
US-CMS-FNAL	4300	4500	3840	2000	2000	2880	4700	4700	3920
US-ALICE		180	1111		45	440		35	638
TOTALS	37563	33459	39398	20220	14051	22811	21295	16399	24332

Site Procurement Comments

	All in Place
ASGC	Mid September
BNL	CPU by June 20th, disk (less 1PB) June 20th, remaining PB after October when new machine room open.
CNAF	CPU by July, disk by September, tape July
FNAL	In place before start of collisions
FZK	Always planned to meet part of pledge in October
IN2P3	Disk by September
NDGF	Disk by September
NIKHEF	Later dates
PIC	CPU start of June, disk by end of July
RAL	
Triumf	

Reliability

- Definite improvements in reliability
- 11/12 sites > 93% in May
- 10/12 sites > 93% in June
- 8/12 sites > 95% (new target) in June
- Average of ALL sites > 95% in May and June

ID	Date	Milestone		ASGC	CC IN2P3	CERN	FZK GridKa	INFN CNAF	NDGF	PIC	RAL	SARA NIKHEF	TRIUMF	BNL	FNAL
		Tier-1 Sites Reliability - June 2008													
WLCG-08-06	Jun 2008	**Tier-1 Sites Reliability above 95%** Considering each Tier-0 and Tier-1 site+A59	**Jan 93%**	🟩	🟩	🟩	🟩	🟥	🟧	🟩	🟥	🟥	🟩	🟧	🟩
			Feb 93%	🟩	🟩	🟩	🟩	🟥	🟧	🟩	🟩	🟧	🟩	🟥	🟧
			Mar 93%	🟩	🟩	🟩	🟩	🟧	🟩	🟧	🟩	🟧	🟩	🟥	🟥
			Apr 93%	🟩	🟩	🟩	🟩	🟥	🟩	🟩	🟩	🟧	🟩	🟩	🟥
			May 93%	🟩	🟩	🟩	🟩	🟧	🟩	🟩	🟩	🟩	🟩	🟩	🟩
			June 95%	100	91	93	98	78	96	97	99	96	99	94	**99**
WLCG-08-07	Jun 2008	**Average of Best 8 Sites above 97%** Average of eight sites should reach a reliability above 97%		— Averages of the 8 Best sites Jan-Jun 2008 Jan 96 - Feb 96 - Mar 96 - Apr 96 - May 98 - Jun 98											

- Milestones completed:
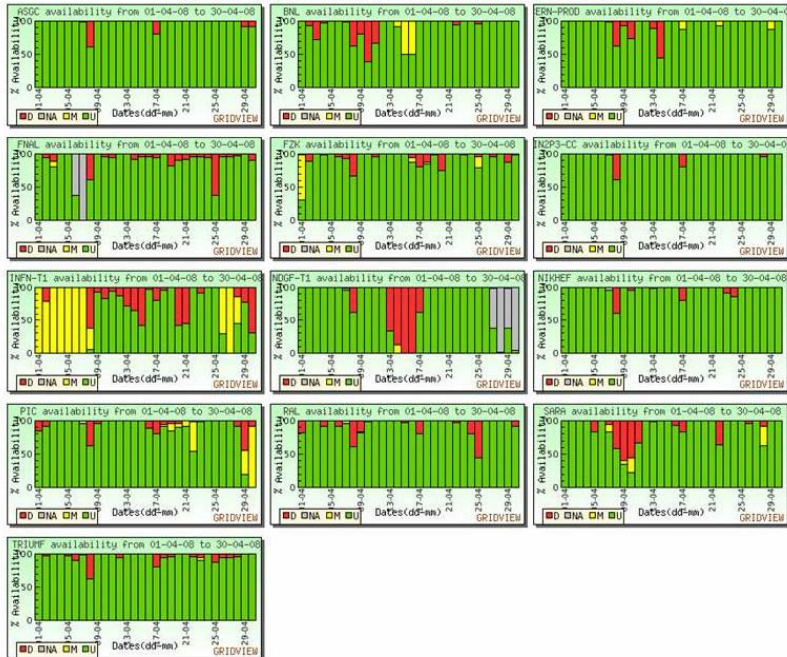 - Average of 8 best sites above June target in May

Tier-1/0 Site Availability VO:OPS (Daily Report)
(Click on the Graph below to see Availability of Individual Services at the Site)
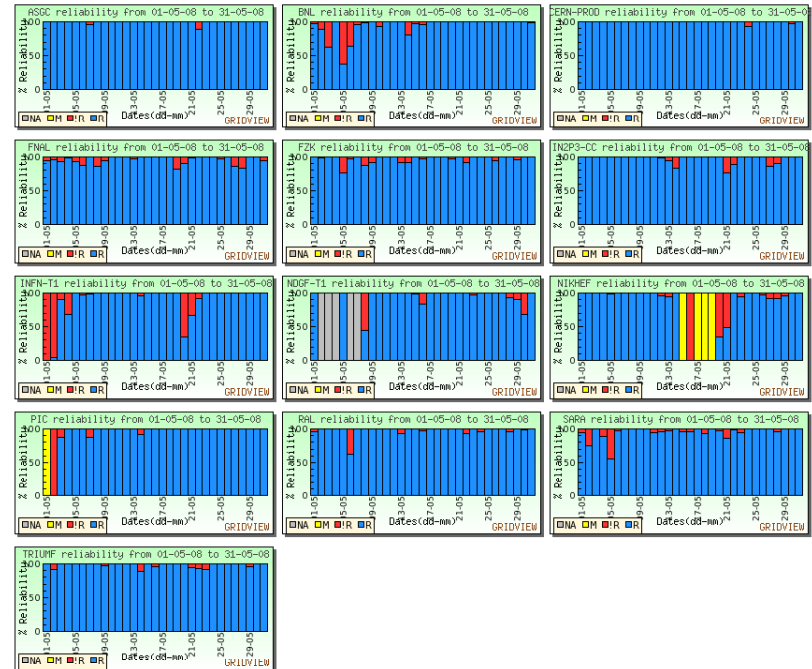
Tier-1/0 Site Reliability VO:OPS (Daily Report)
(Click on the Graph below to see Reliability of Individual Services at the Site)

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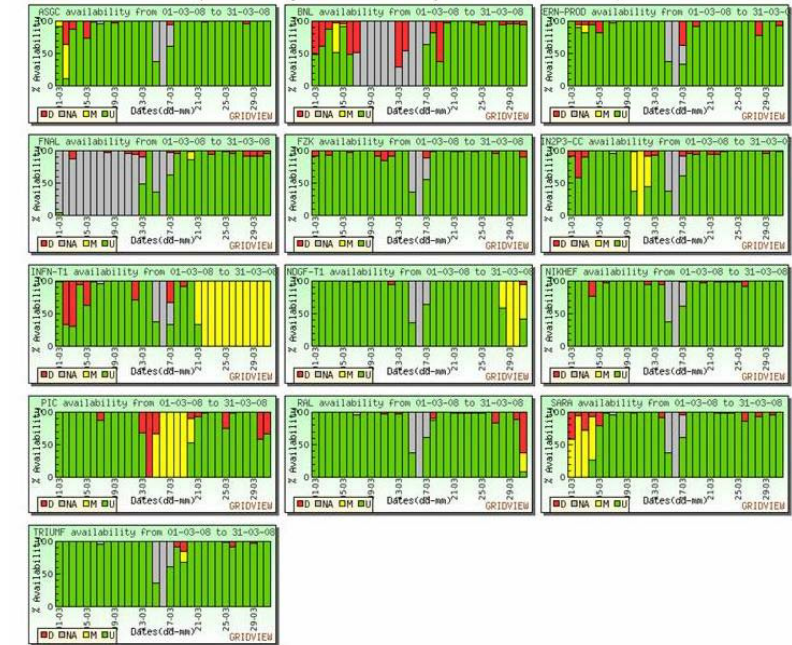
Tier-1/0 Site Availability VO:OPS (Daily Report)
(Click on the Graph below to see Availability of Individual Services at the Site)

j.c.g

Reliability – 2

ID	Date	Milestone		ASGC	CC IN2P3	CERN	FZK GridKa	INFN CNAF	NDGF	PIC	RAL	SARA NIKHEF	TRIUMF	BNL	FNAL
Tier-1 Sites Reliability - Dec 2008															
WLCG-08-11	Dec 2008	Tier-1 Sites Reliability above 97% Considering each Tier-0 and Tier-1 site	Jul 86%												
			Aug 86%												
			Sept 86%												
			Oct 86%												
			Nov 86%												
			Dec 97%												
WLCG-08-12	Dec 2008	Average of ALL Tier-1 Sites above 97% The average across ALL Tier-1 sites should reach a reliability above 97%													

- New Tier 1 reliability milestones:
  - June – improved overall values
  - December – All sites to be above target

Tape Metrics – MSS Efficiency

- 9/11 T1 Publishing Efficiency Metrics
- Conclusions? Issues?

| Tier-0 Site		Last Update
CERN	CERN	20080609
Tier-1 Sites		**Data Available**
CA-TRIUMF	CA-TRIUMF	20080623
DE-KIT	DE-KIT	20080615
ES-PIC	ES-PIC	20080614
FR-CCIN2P3	FR-CCIN2P3	-
IT-INFN-CNAF	IT-INFN-CNAF	20080617
NDGF	NDGF	20080609
NL-T1	NL-T1	20080623
TW-ASGC	TW-ASGC	-
UK-T1-RAL	UK-T1-RAL	20080621
US-FNAL-CMS	US-FNAL-CMS	20080614
US-T1-BNL	US-T1-BNL	20080622

Total Data Rate for ATLAS
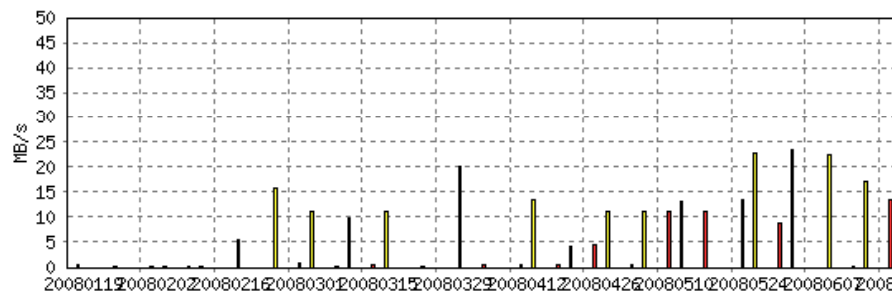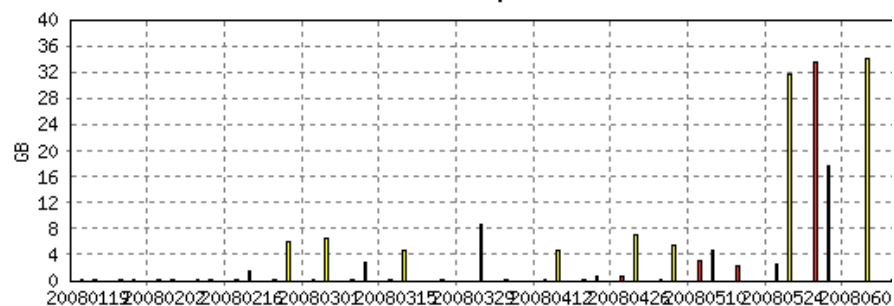
Total Data Rate for CMS
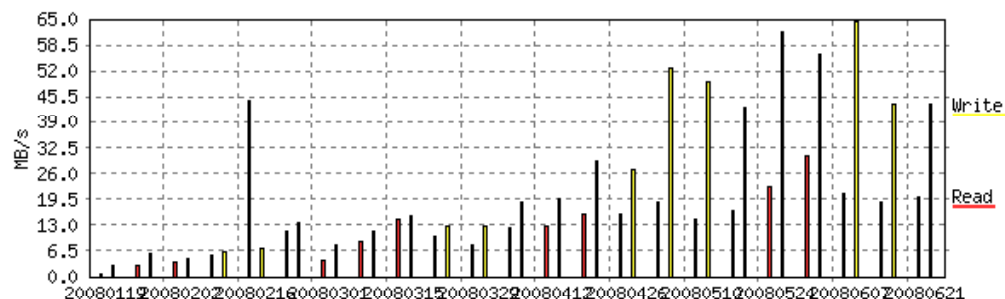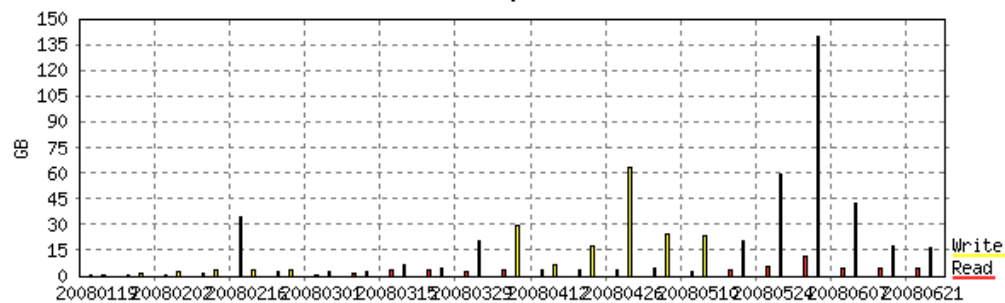
Average File Size for ATLAS
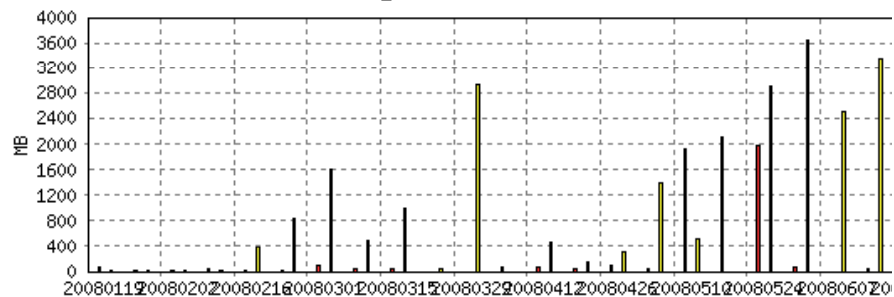
Average File Size for CMS
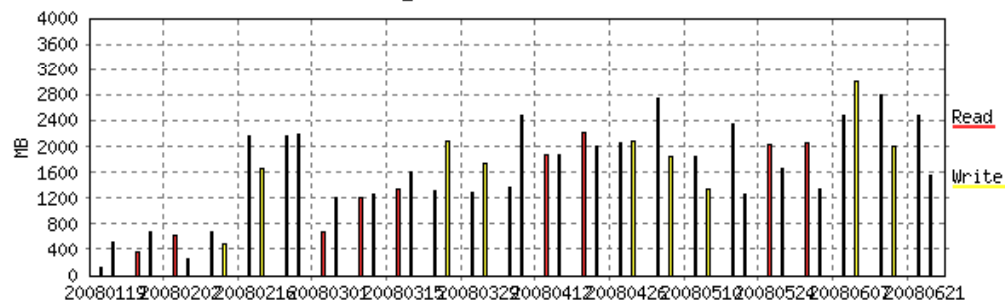
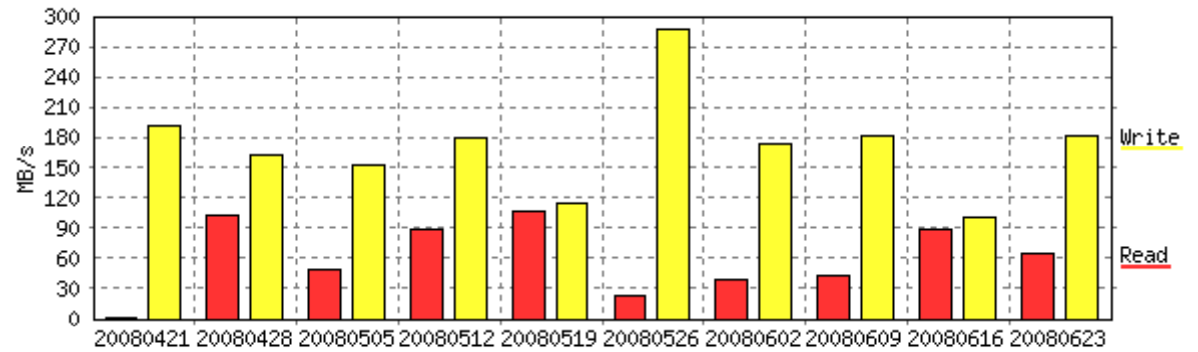Data Transferred per Mount for ATLAS
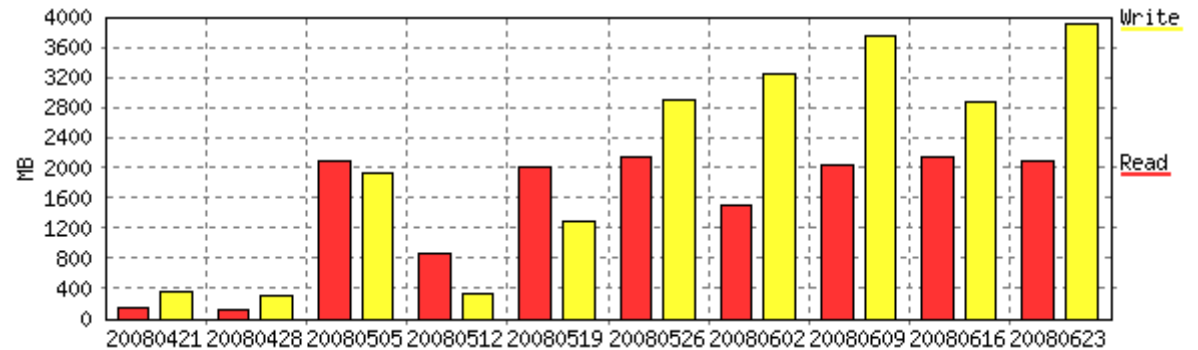
Data Transferred per Mount for CMS

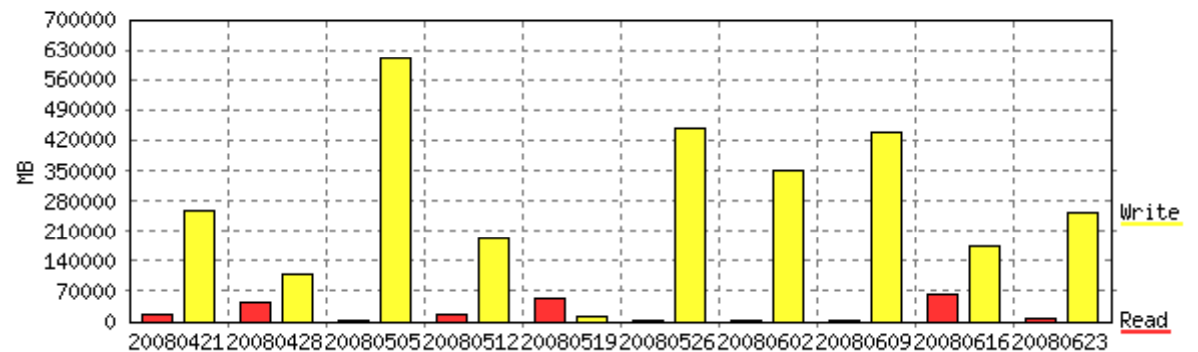- TRIUMF has better rates than most sites.
- Writing almost full tapes

Total Data Rate for ATLAS

Average File Size for ATLAS

Data Transferred per Mount for ATLAS

Outstanding Milestones

WLCG High Level Milestones - 2007

	Done (green)		Late < 1 month (orange)		Late > 1 month (red)	

ID	Date	Milestone		ASGC	CC IN2P3	CERN	DE-KIT	INFN CNAF	NDGF	PIC	RAL	SARA NIKHEF	TRIUMF	BNL	FNAL
		24x7 Support													
WLCG-07-01	Feb 2007	**24x7 Support Definition** Definition of the levels of support and rules to follow, depending on the issue/alarm													
WLCG-07-02	Apr 2007	**24x7 Support Tested** Support and operation scenarios tested via realistic alarms and situations					Apr 2008	June 2008							
WLCG-07-03	Jun 2007	**24x7 Support in Operations** The sites provides 24x7 support to users as standard operations					Apr 2008	June 2008		Apr 2008		Apr 2008			
		VOBoxes Support													
WLCG-07-04	Apr 2007	**VOBoxes SLA Defined** Sites propose and agree with the VO the level of support (upgrade, backup, restore, etc) of VOBoxes		Mar 2008	Jul 2008					Mar 2008					
WLCG-07-05	May 2007	**VOBoxes SLA Implemented** VOBoxes service implemented at the site according to the SLA		Apr 2008	Jul 2008				Mar 2008	Mar 2008		Apr 2008			
WLCG-07-05b	Jul 2007	**VOBoxes Support Accepted by the Experiments** VOBoxes support level agreed by the experiments	ALICE	n/a						n/a			n/a	n/a	n/a
			ATLAS						n/a	n/a					n/a
			CMS						n/a			n/a	n/a	n/a	
			LHCb	n/a					n/a				n/a	n/a	n/a

All 12(10) sites have tested their 24 X 7 support, and 10(7) have put the support into operation

7(6) sites have implemented a VO BOX SLA No change in acceptance by experiments

Happiness with CCRC08

- Tier1s declared themselves generally happy with their performance in CCRC08

- Issues included:
  - Information, Information, Information.
    - unsure what was expected of them at any given time
    - need a site-centric view of the world
    - Need tools to monitor storage
    - Storage tokens defined late, data rates not at all
  - Storage – robustness and quality issues
    - Both dCache and Castor
  - Job Mix
    - Floods of jobs
    - High i/o
    - User analysis tape mounts

General Issues of Readiness

- **All Tier1s considered themselves ready for data**
    - Within the limitations of the middleware.
        - Remaining doubts but Tier1s cannot solve alone.
    - Need good storage monitoring
    - Observe that reconstruction and bulk tape recall have not been tested to the required level
    - Human intervention level may still be high
    - *I think many ignored their lack of installed capacity*
    - **Bring it on!**

- **Tier2s?**
    - Mixed responses from T1s about 'their' T2s.
    - Some happy
    - Some mention communication issues
    - Still ramping up hardware
    - Most have now passed functional tests but few have been stressed.