



Tier1 Status

1st July, 2008

LHCC Referees Meeting

John Gordon
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	Yes
BNL	No	No	Yes
CNAF	No	No	Yes
FNAL	No	No	Yes
FZK	Yes		Yes
IN2P3	No	No	Yes
NDGF	No	No	Yes
NIKHEF	No	No	Yes
PIC	No	No	Yes
RAL	No	Yes	Yes
Triumf	Yes	Yes	Yes

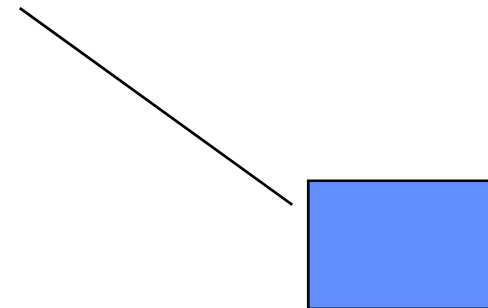
Tape OK,
63% disk



Detailed Comments

- Will add as popups on previous slide.

	April comments	May comments
ASGC		
BNL		
CNAF		
FNAL		disk and tape OK, 80% of cpu
FZK		
IN2P3	Tape OK, 63% disk	CPU OK
NDGF	CPU 110%, disk 80%, tape 25%	Tape 30%
NIKHE F		
PIC	cpu 30%, disk 60%	cpu 80%
RAL		
Triumf		





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
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

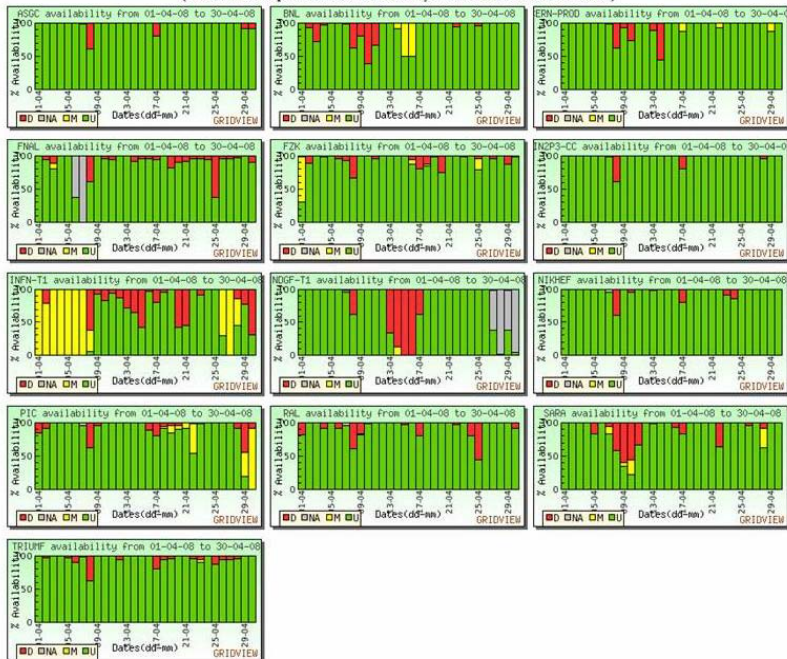
Tier-1/0 Site Availability VO:OPS (Daily Report)

(Click on the Graph below to see Availability of Individual Services at the Site)



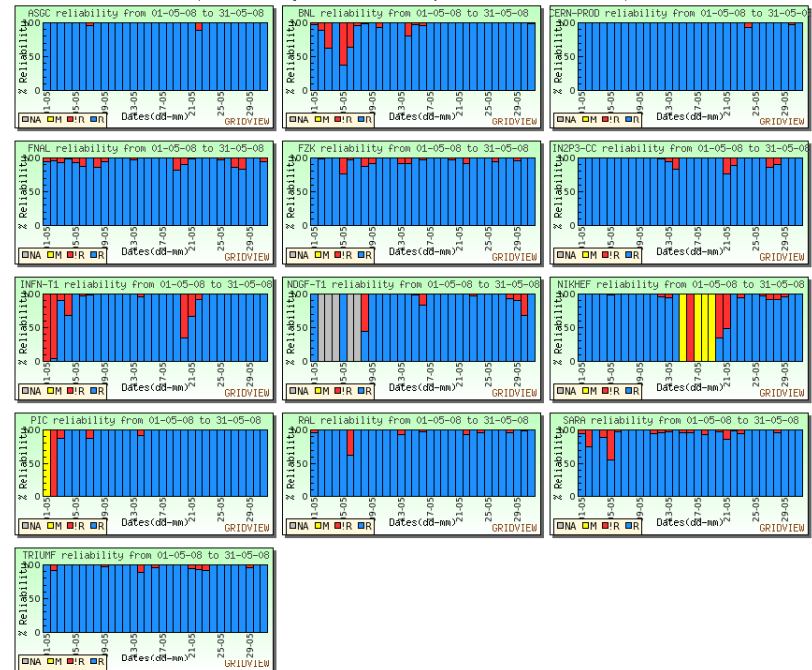
Tier-1/0 Site Availability VO:OPS (Daily Report)

(Click on the Graph below to see Availability of Individual Services at the Site)



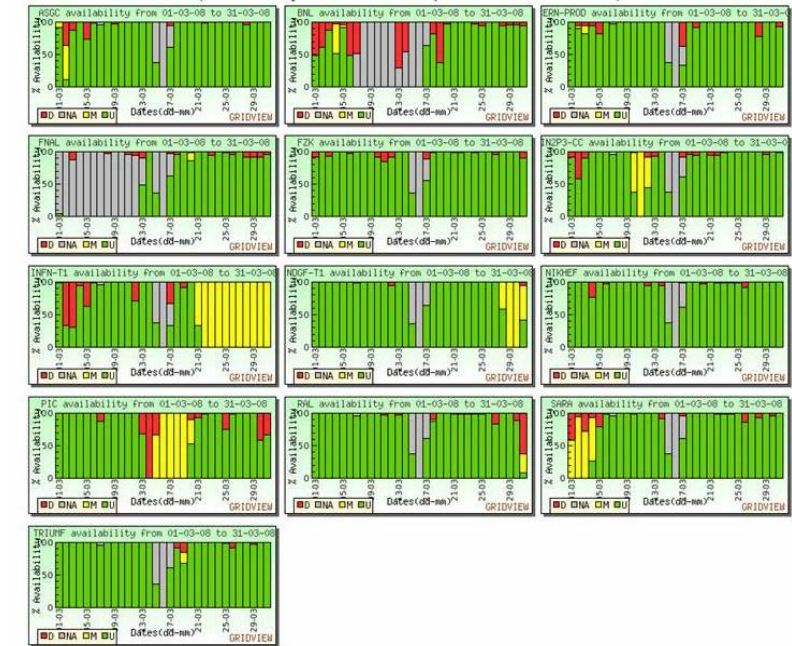
Tier-1/0 Site Reliability VO:OPS (Daily Report)

(Click on the Graph below to see Reliability of Individual Services at the Site)



Tier-1/0 Site Availability VO:OPS (Daily Report)

(Click on the Graph below to see Availability of Individual Services at the Site)





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 87%												
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

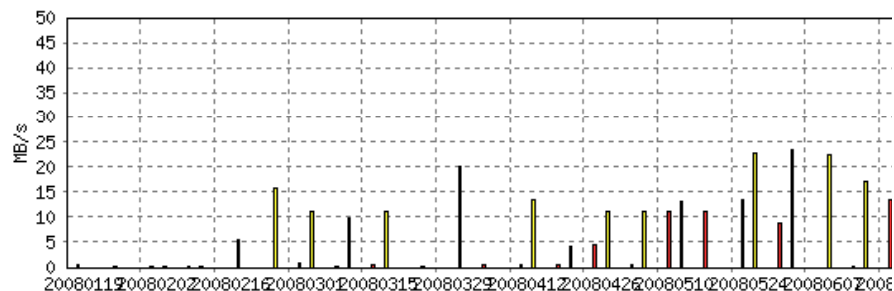


Tape Metrics - MSS Efficiency

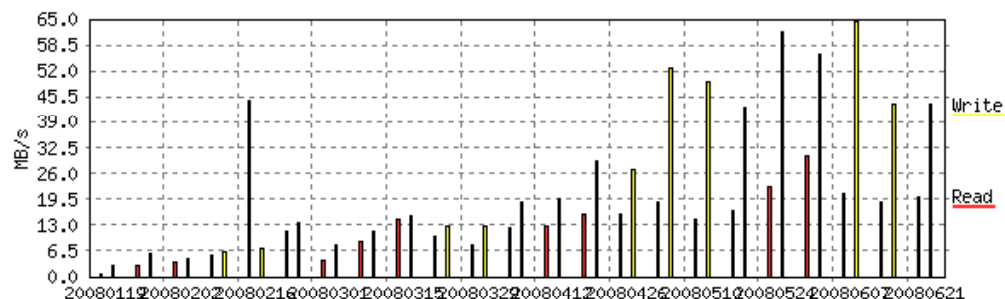
- 9/11 T1 Publishing Efficiency Metrics
- Conclusions? Issues?

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

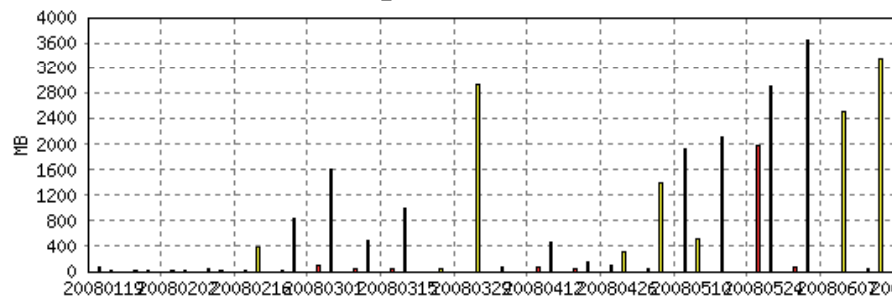
Total Data Rate for ATLAS



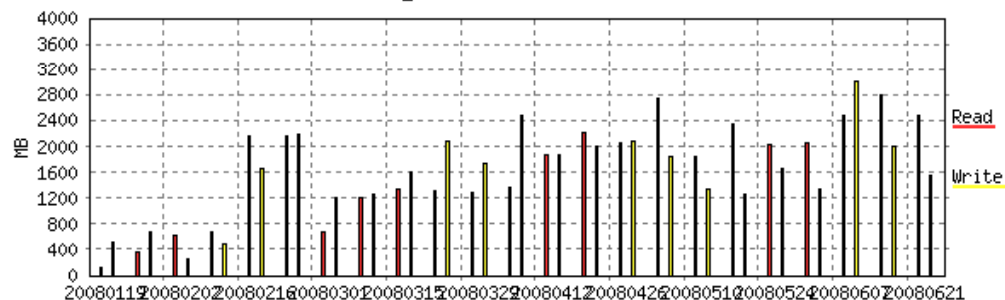
Total Data Rate for CMS



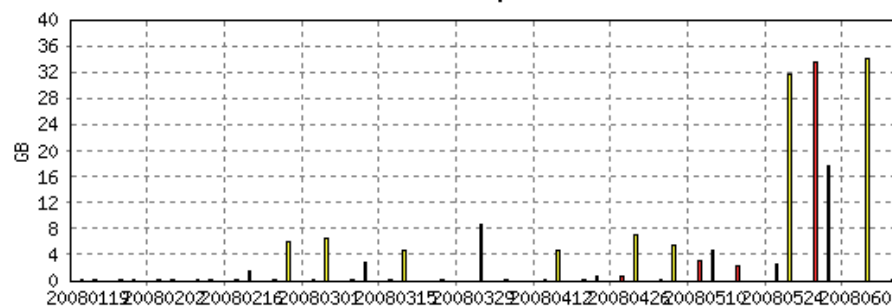
Average File Size for ATLAS



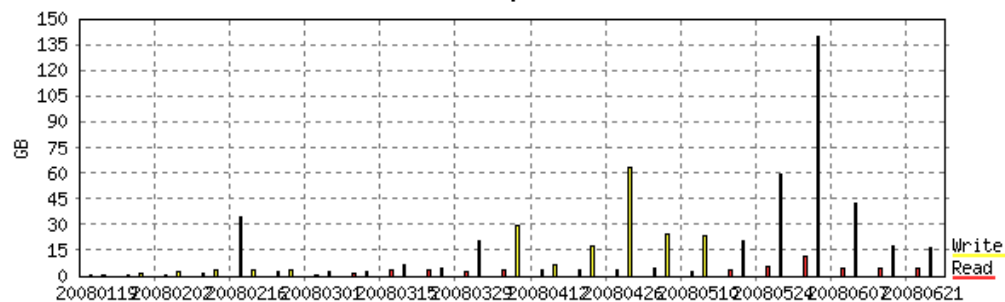
Average File Size for CMS



Data Transferred per Mount for ATLAS



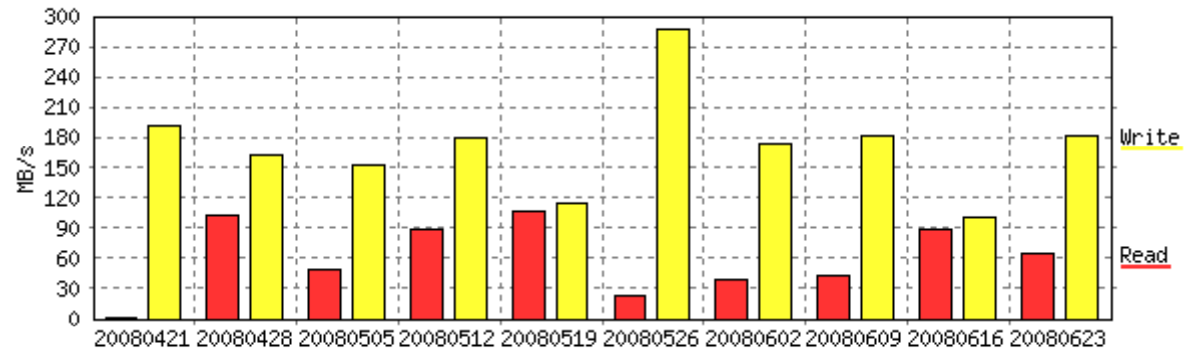
Data Transferred per Mount for CMS



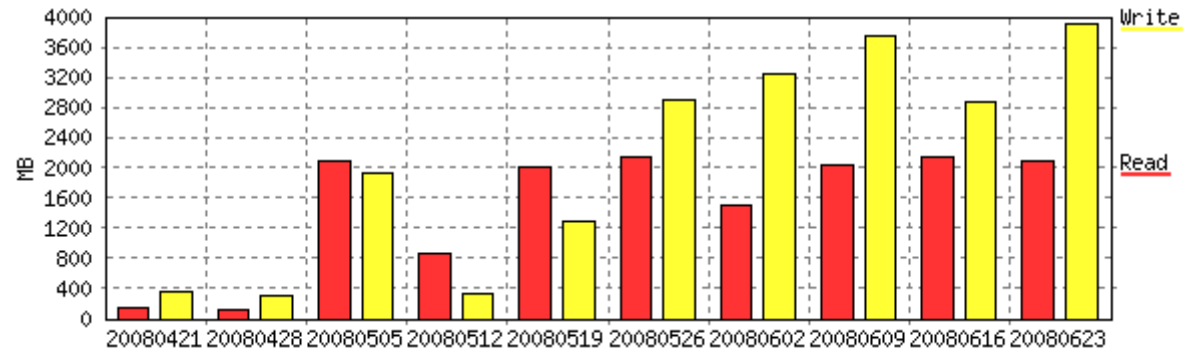


- TRIUMF has better rates than most sites.
- Writing almost full tapes

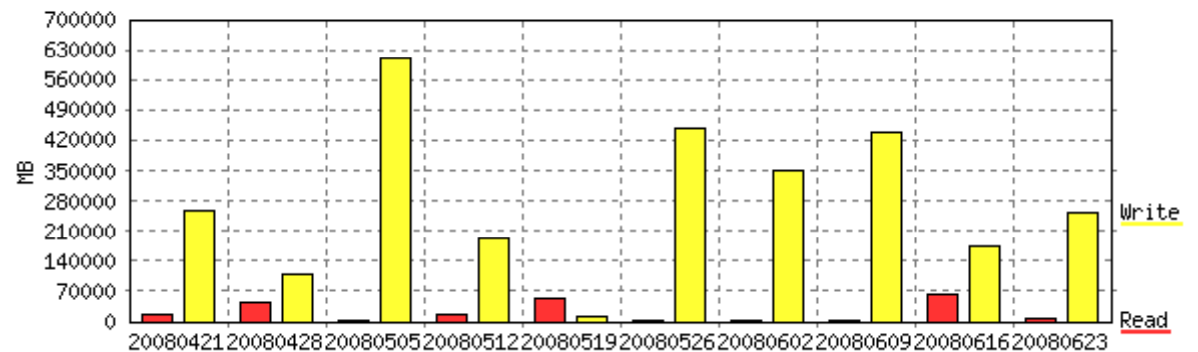
Total Data Rate for ATLAS



Average File Size for ATLAS



Data Transferred per Mount for ATLAS





Outstanding Milestones

26-Jun-08		WLCG High Level Milestones - 2007													
ID	Date	Milestone	Done (green)				Late < 1 month (orange)				Late > 1 month (red)				
			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.