

GDB 07 Nov 2007 WLCG Planning

Collecting Tier1 capacity planning for 2008. Full replies so far from PIC, FZK, TRIUMF and BNL. Partial replies from IN2P3 and ASGC. Information linked in to individual site pages under <https://twiki.cern.ch/twiki/bin/view/LCG/SC4ExperimentPlans>

Used this information plus the experiment 2008 TDR addenda and the 2008 Tier1 resource pledges to create 1Q2008 and 2Q2008 spreadsheets showing the usual per site and per experiment resource requirements. Linked to the above page and the LCG home page as usual. Site shares are taken from the MoU pledges normalised up to 100% for each experiment (slight variation for ATLAS).

Prepared first draft of 'extra' resources required for runs of CCRC'08 including full 2008-running cpu for 2nd pass reconstruction at Tier-1 but not yet estimating the storage for this (except for LHCb who provided the information). Initially assuming 14 days running at 100% LHC efficiency for February and 28 days in May (machine efficiency is a simple multiplicative constant in the spreadsheets).

Raised many assumptions for decision, some global, some per experiment which were discussed and partially answered at yesterdays CCRC'08 face to face meeting.

Next slides show baseline spreadsheets for 1Q2008 and 2Q2008 then the extra resources needed for CCRC08.

1Q2008 Baseline Planning – no CCRC'08

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1	Period	Version 31.10.2007: 1Q2008 WLCG Service Coordination Planning for LCG Tier 1 Capacity: Planned pledges, Available and Required by Experiments for Scheduled and Service Challenge Activities																								
2	1Q2008	Tier 1 Capacity: Available vs. Required (Scheduled)									Scheduled Capacity Required by LHC Experiments and Site Sep. Disk Allocations															
3	WLCG	CPU KSi2K			Disk TB			Tape TB			ALICE				ATLAS				CMS				LHCb			
4	Site	2007/8 pledge	Installed	Required	2007/8 pledge	Installed	Required	2007/8 pledge	Installed	Required	CPU	Disk	Alloc.	Tape	CPU	Disk	Alloc.	Tape	CPU	Disk	Alloc.	Tape	CPU	Disk	Alloc.	Tape
5	ASGC	1770	1770	942.4	900	1350	340.4	800	800	453					198	136	67	93	744	204	218	360				
6	CC-IN2P3	1286	2568	1500.7	729	1394	753.6	745	1469	705	428	220	275	181	416	286	601	195	620	170	346	300	36.7	77.6	173	29
7	FZK/GridKa	1860	1864	2093.1	880	878	824.6	1010	1007	971.1	1003	323	200	441	320	220	280	150	744	204	330	360	26.1	77.6	68	20.1
8	INFN/CNAF	1300	1300	1987.1	500	500	874.6	650	650	862.4	650	305	22	213	320	220	74	150	992	272	110	480	25.1	77.6	51	19.4
9	HDGF	688	688	766	385	240	370	273	112	634.5	622	271		567	144	99		67.5								
10	PIC	501	1000	535	218	560	224.9	243	600	265.1					144	99	78	67.5	372	102	132	180	19	23.9	36	17.6
11	RAL	1300	820	936.1	640	330	492.6	1080	390	454.4	30	15	21	13	384	264	114	180	496	136	120	240	26.1	77.6	64	21.4
12	SARA-NIKHEF	1677	774	629.9	1059	253	452.6	719	52	296.9	195	100	3	84	400	275	41	188					34.9	77.6	39	25.4
13	TRIUMF	160	305	137.6	110	24	94.6	80	12	64.5					138	94.6	23	64.5								
14	US-ATLAS BNL	2560	4900	736	1100	2000	506	603	1000	345					736	506	520	345								
15	US-CMS FNAL	1792	2250	2232	700	720	612	300	500	1080									2232	612	700	1080				
16	US-ALICE		180	338		45	104		35	0	338	104		0												
17																										
18	TOTALS	14894	18419	12834	7221	8294	5649.9	6503	6627	6131.9	3266	1338	521	1499	3200	2200	1798	1500	6200	1700	1956	3000	168	412	431	133
19	CERN Tier-0	4480			330			1620			53	14		66	1900	80		400	1900	100		800	140	110		250
20	CERN CAF	3090			960			790			26	3		0	800	200		60	1900	400		400	0	30		0
21	CERN Tier-1										900	340		330												
	CERN Total	7570	11000	7619	1290	2500	1277	2410	5000	2306	979	357	286	396	2700	280	390	460	3800	500	331	1200	140	140	179	250

1Q2008 Resources required for CCRC08

14 days at 100% LHC efficiency, full 2008 cpu needed for reconstruction

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1	Period	Version 5.11.2007: 1Q2008 WLCG Service Coordination Planning for LCG Tier 1 Capacity: Planned pledges, Available and Required by Experiments for February CCRC'08																								
2	1Q2008	Tier 1 Capacity: Available vs. Required (Scheduled)									CCRC08 Feb Capacity Required by LHC Experiments and Site Sep. Disk Allocations															
3	WLCG	CPU KSI2K			Disk TB			Tape TB			ALICE				ATLAS				CMS				LHCb			
4	Site	2007/8 pledge	Installed	Required	2007/8 pledge	Installed	Required	2007/8 pledge	Installed	Required	CPU	Disk	Alloc.	Tape	CPU	Disk	Alloc.	Tape	CPU	Disk	Alloc.	Tape	CPU	Disk	Alloc.	Tape
5	ASGC	1770	1770	2467	900	1350	54	800	800	125					1123	54	67	24	1344	0	218	101				
6	CC-IN2P3	1286	2568	5074	729	1394	94	745	1469	145	1414	1	275	9	2356	87	601	50	1056	0	346	80	248	6	173	6
7	FZK/GridKa	1860	1864	7045	880	878	78	1010	1007	155	3939	2	200	26	1812	73	280	39	1152	0	330	87	142	3	68	3
8	INFN/CNAF	1300	1300	3994	500	500	78	650	650	110	1111	1	22	7	1812	73	74	39	912	0	110	60	159	4	51	4
9	NDGF	688	688	2633	385	240	47	273	112	29	1818	1		12	815	46		17								
10	PIC	501	1000	1432	218	560	58	243	600	59					815	46	78	17	528	0	132	40	89	12	36	2
11	RAL	1300	820	3714	640	330	84	1080	390	119	152	0	21	1	2174	82	114	46	768	0	120	58	620	2	64	14
12	SARA-NIKHEF	1677	774	3334	1059	253	100	719	52	64	556	1	3	4	2265	85	41	48					513	14	39	12
13	TRIUMF	160	905	779	110	500	45	80	385	17					779	45	23	17								
14	US-ATLAS BNL	2560	4900	4167	1100	2000	266	603	1000	89					4167	266	520	89								
15	US-CMS FNAL	1792	2250	3840	700	720	0	300	500	290									3840	0	700	290				
16	US-ALICE		180	1111		45	1		35	7	1111	1		7												
17																										
18	TOTALS	14894	19019	39590	7221	8770	905	6503	7000	1209	10101	7	521	66	18118	857	1798	386	9600	0	1956	716	1771	41	431	41
19	CERN Tier-0	4480			330			1620			1800	6		73	3705	266		653	5300	0		726	360	16		61
20	CERN CAF	3090			960			790			500	100		0	800	200		60	1900	400		400	0	30		0
21	CERN Tier-1										0	0		0												
22	CERN Total	7570	11000	14365	1290	2500	1018	2410	5000	1973	2300	106	286	73	4505	466	390	713	7200	400	331	1126	360	46	179	61

2Q2008 Baseline Planning – no CCRC'08

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1	Period	Version 01.11.2007: 2Q2008 WLCG Service Coordination Planning for LCG Tier 1 Capacity: Planned pledges, Available and Required by Experiments for Scheduled and Service Challenge Activities																								
2	2Q2008	Tier 1 Capacity: Available vs. Required (Scheduled)									Scheduled Capacity Required by LHC Experiments and Site Sep. Disk Allocations															
3	WLCG	CPU KSI2K			Disk TB			Tape TB			ALICE				ATLAS				CMS				LHCb			
4	Site	2008/9 pledge	Installed	Required	2008/9 pledge	Installed	Required	2008/9 pledge	Installed	Required	CPU	Disk	Alloc.	Tape	CPU	Disk	Alloc.	Tape	CPU	Disk	Alloc.	Tape	CPU	Disk	Alloc.	Tape
5	ASGC	3400	1770	2467	1500	1350	1673	1300	800	1872					1123	665	67	500	1344	1008	218	1372				
6	CC-IN2P3	4490	2568	5074	2391	1394	2891	2556	1469	3059	1414	560	275	812	2356	1395	601	1049	1056	792	346	1078	248	144	173	120
7	FZK/GridKa	5672	4522	7045	2933	2293	3579	3629	2829	4314	3939	1560	200	2262	1812	1073	280	807	1152	864	330	1176	142	82	68	69
8	INFN/CNAF	3000	1300	3994	1300	500	2289	1500	650	2453	1111	440	22	638	1812	1073	74	807	912	684	110	931	159	92	51	77
9	NDGF	2172	688	2633	1079	240	1203	930	112	1407	1818	720		1044	815	483		363								
10	PIC	1509	1509	1432	967	560	930	953	600	945					815	483	78	363	528	396	132	539	89	51	36	43
11	RAL	5220	820	3714	2790	330	2283	2070	390	2140	152	60	21	87	2174	1288	114	968	768	576	120	784	620	359	64	301
12	SARA-NIKHEF	4382	774	3334	2510	253	1858	1813	52	1577	556	220	3	319	2265	1341	41	1009					513	297	39	249
13	TRIUMF	905	905	779	500	500	461	385	385	347					779	461	23	347								
14	US-ATLAS BNL	4844	4900	4167	3136	2000	2468	1715	1800	1856					4167	2468	520	1856								
15	US-CMS FNAL	4300	2250	3840	2000	720	2880	4700	500	3920									3840	2880	700	3920				
16	US-ALICE		180	1111		45	440		35	638	1111	440		638												
17																										
18	TOTALS	39894	22186	39590	21106	10185	22955	21551	9622	24528	10101	4000	521	5800	18118	10730	1798	8069	9600	7200	1956	9800	1771	1025	431	859
19	CERN Tier-0	11170		11165	2423		2422	10780		10779	1800	1600		3300	3705	152		2449	5300	400		4400	360	270		630
20	CERN CAF	4680		4681	3126		3126	1270		1270	500	100		0	2081	1146		370	2100	1800		900	0	80		0
21	CERN Tier-1										0	0		0												
	CERN Total	15850	15850	15846	5549	5549	5548	12050	12050	12049	2300	1700	286	3300	5786	1298	390	2819	7400	2200	331	5300	360	350	179	630

2Q2008 Resources required for CCRC08

28 days at 100% LHC efficiency, full 2008 cpu needed for reconstruction

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	
1	Period	Version 06.11.2007: 2Q2008 WLCG Service Coordination Planning for LCG Tier 1 Capacity: Planned pledges, Available and Required by Experiments for May CCRC08																									
2	2Q2008	Tier 1 Capacity: Available vs. Required (Scheduled)									Scheduled Capacity Required by LHC Experiments and Site Sep. Disk Allocations																
3	WLCG	CPU KSi2K			Disk TB			Tape TB			ALICE				ATLAS				CMS				LHCb				
4	Site	2008/9 pledge	Installed	Required	2008/9 pledge	Installed	Required	2008/9 pledge	Installed	Required	CPU	Disk	Alloc.	Tape	CPU	Disk	Alloc.	Tape	CPU	Disk	Alloc.	Tape	CPU	Disk	Alloc.	Tape	
5	ASGC	3400	1770	2467	1500	1350	108	1300	800	250					1123	108	67	48	1344	0	218	202					
6	CC-IN2P3	4490	2568	5074	2391	1394	188	2556	1469	290	1414	2	275	18	2356	174	601	100	1056	0	346	160	248	12	173	12	
7	FZK/GridKa	5672	4522	7045	2933	2293	156	3629	2829	310	3939	4	200	52	1812	146	280	78	1152	0	330	174	142	6	68	6	
8	INFN/CNAF	3000	1300	3994	1300	500	156	1500	650	220	1111	2	22	14	1812	146	74	78	912	0	110	120	159	8	51	8	
9	NDGF	2172	688	2633	1079	240	94	930	112	58	1818	2		24	815	92		34									
10	PIC	1509	1509	1432	967	560	116	953	600	118					815	92	78	34	528	0	132	80	89	24	36	4	
11	RAL	5220	820	3714	2790	330	169	2070	390	238	152	1	21	2	2174	164	114	92	768	0	120	116	620	4	64	28	
12	SARA-HIKHEF	4382	774	3334	2510	253	200	1813	52	128	556	2	3	8	2265	170	41	96					513	28	39	24	
13	TRUMF	905	905	779	500	500	90	385	385	34					779	90	23	34									
14	US-ATLAS BNL	4844	4900	4167	3136	2000	532	1715	1800	178					4167	532	520	178									
15	US-CMS FNAL	4300	2250	3840	2000	720	0	4700	500	580									3840	0	700	580					
16	US-ALICE		180	1111		45	2		35	14	1111	2	14														
17																											
18	TOTALS	39894	22186	39590	21106	10185	1811	21551	9622	2418	10101	15	521	132	18118	1714	1798	772	9600	0	1956	1432	1771	82	431	82	
19	CERN Tier-0	11170		11165	2423		976	10780		3026	1800	12		146	3705	532		1306	5300	400		1452	360	32		122	
20	CERN CAF	4680			3126			1270			500				2081				2100								
21																											
22	CERN Total	15850	15850	15846	5549	5549	976	12050	12050	3026	2300	12	286	146	5786	532	390	1306	7400	400	331	1452	360	32	179	122	

CCRC'08 Resource Planning

Including Tier1 ESD production cpu but not storage (usually T1D1 at the production site and T0D1 at the copied Tier1 sites) extra requirements from 2 weeks full nominal 2008 p-p running at 100% LHC efficiency in February require:

- About 2-3 times the currently planned cpu at Tier0 and most Tier1 (BNL OK)
- From 5 to 15% of the currently installed disk capacity but higher at NL-T1 (reported as 253 TB disk installed ?), and at CERN if the full CAF requirements are needed.
- From 10-20% of the currently installed tape capacity but 100% at NL-T1 (reported as 52 TB tape installed ?).
- Will sites have the temporary extra storage ? T1 ESD production will be cpu limited.

Including Tier1 ESD production cpu but not storage (usually T1D1 at the production site and T0D1 at the copied Tier1 sites) extra requirements from 4 weeks full nominal 2008 p-p running at 100% LHC efficiency in May require:

- Full 2Q2008 cpu capacity to be installed – current hard planning is for 55% to be available.
- Will take 9% of pledged disk capacity – current hard planning is for 50% to be available.
- Will take 11% of pledged tape capacity – current hard planning is for 45% to be available.
- Should be achievable by temporarily 'borrowing' empty 2008 resources.