

Summary of COVID Activities at DESY

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NAF User Committee, 11th June 2020

Caveat:

This is just a rough collection of information I gathered in the last 24h, there are clearly some holes. But it's a start of.. well, something. I can share this with anyone to add missing information, plots etc.

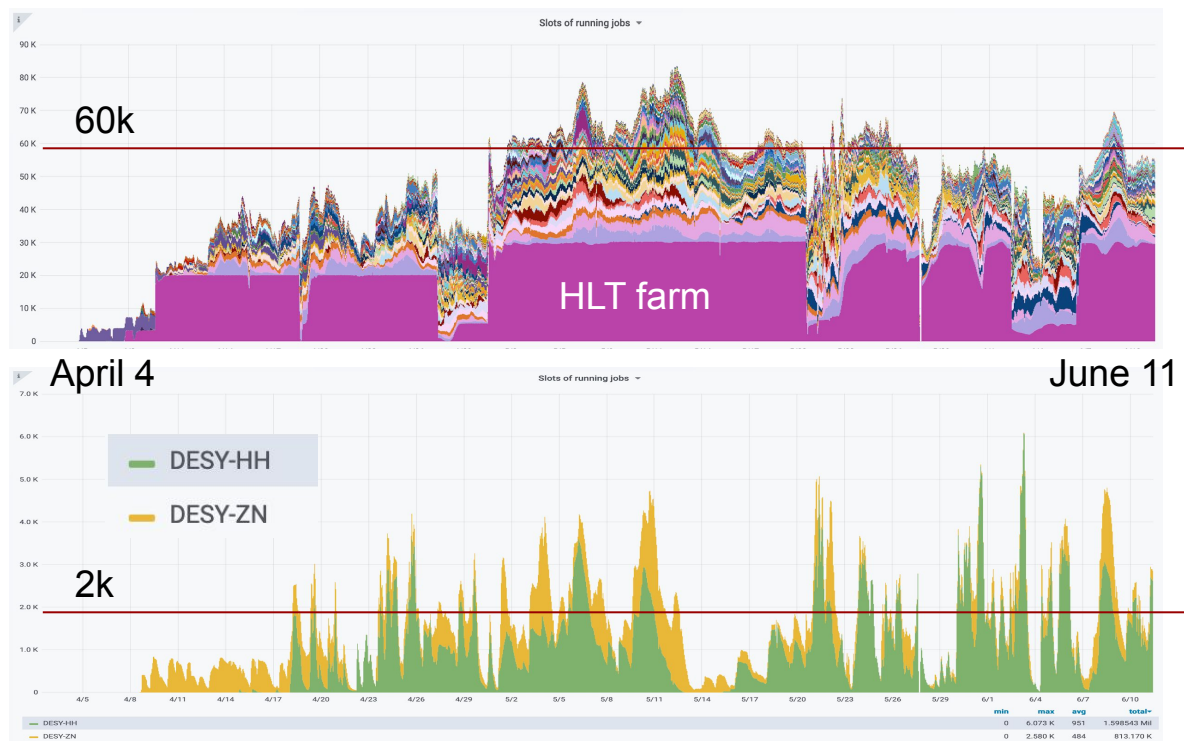
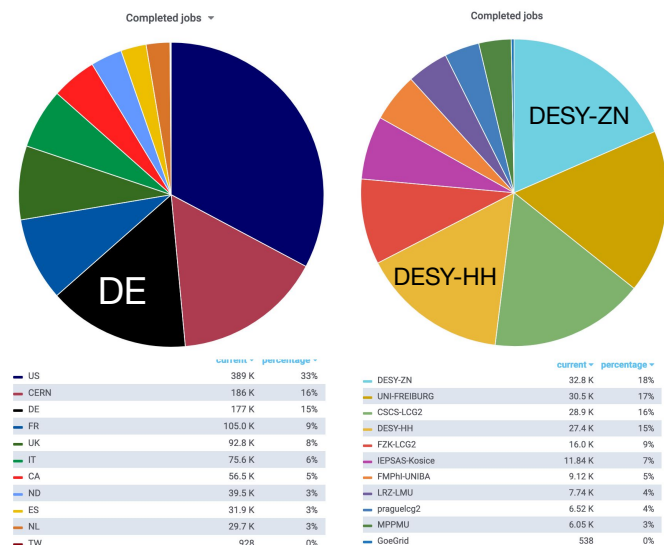


Introduction, aims

- There are quite a few COVID related computing activities going on at DESY
 - I thought yesterday about giving Yves a slide about COVID for this meeting, describing the COVID running on the NAF GPUs (which ATLAS is submitting centrally)
 - But then thought we should compile all information in one place: this “talk” is start of that
- As far as I know, this is a complete list of Covid-19 research running on DESY resource (not including individual users, running e.g Folding@Home on a personal GPU)
 - *Folding@Home*
 - ATLAS CPUs: WLCG resources, around 10% of pledge, centrally submitted by ATLAS
 - CMS CPUs: WLCG resources, around 5% of pledge, centrally submitted by CMS
 - DESY-HH_GPU: Up to 10 NAF GPUs, opportunistically, submitted by ATLAS (1 of 8 GPU donors)
 - DESY-ZN_GPU: 104 GPU, Gridengine Farm in Zeuthen, opportunistically
 - DLAB_DESYZ: Mixture of CPUs and GPUs in Zeuthen DLAB
 - *Rosetta@Home*
 - DESY-HH CPUs: 500 out of warranty worker nodes
 - DESY-ZN CPUs: Zeuthen HPC farm
 - Maxwell: Hamburg HPC farm

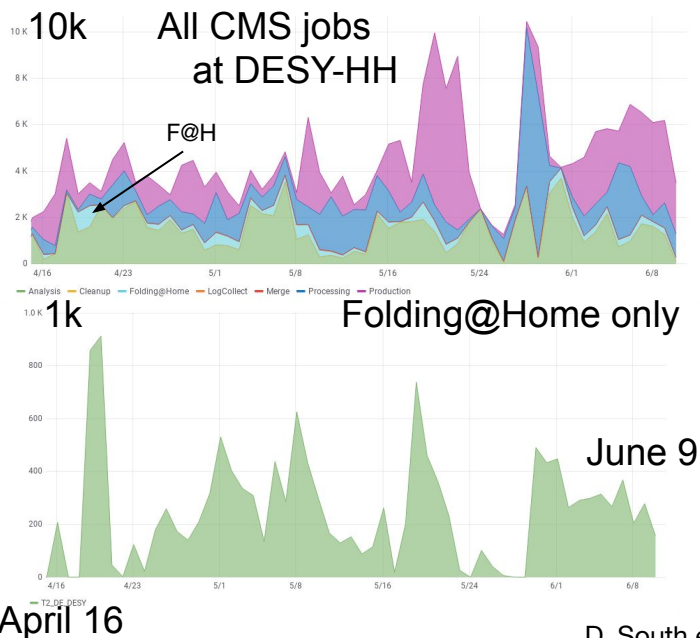
ATLAS F@H

- ATLAS runs about 30k slots from the HLT farm and another 30k slots from WLCG resources
- Equivalent to about 10% of pledge, shared among about 55 sites
 - Tasks shared among sites, so sites not at a constant level

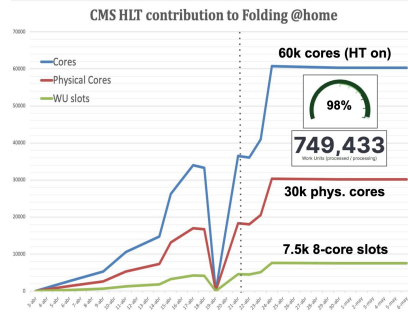


- Details of ATLAS F@H are documented on [this codi](#)

- CMS different strategy, mainly running on HLT (60k cores)
 - See [presentation](#) by A. Perez-Calero [session](#) in May GDB
- Grid sites contributing an additional 5k, incl. DESY-HH

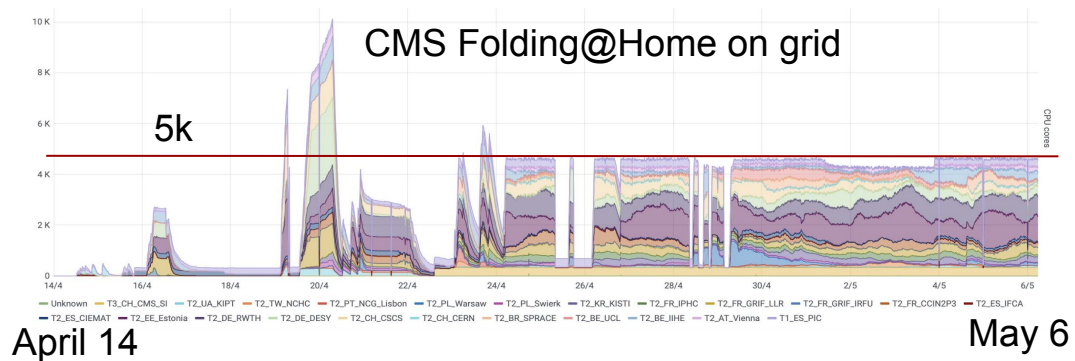


HLT dedication to F@H



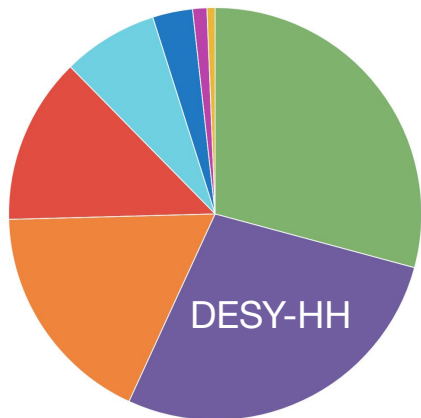
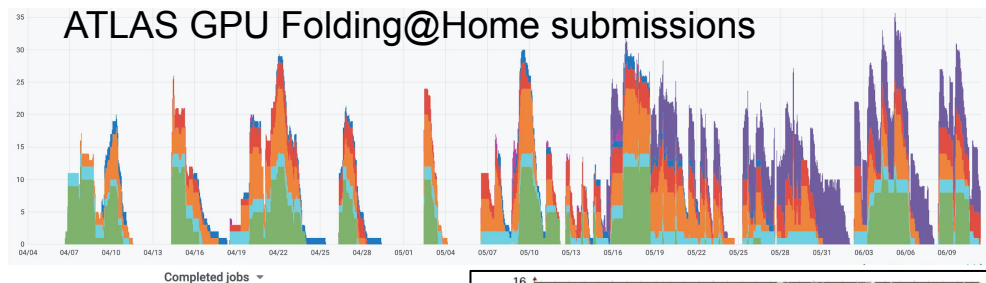
Timeline:

- April 3rd: started tests with 1 host (48 cores). Worked on client startup script, monitoring, logs
- April 8th: CPU eff watchdog implemented (kill and restart F@H client)
- April 9th to 15th: addition of more racks (while most of the HLT is still dedicated to CMS offline computing)
- April 18th: **Power cut in P5**
- April 21st: Power restored, decision to **donate full HLT capacity to F@H with HT enabled**

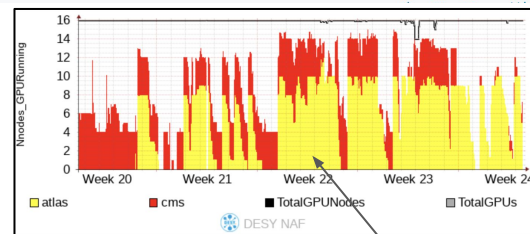


NAF GPUs at Hamburg

- ATLAS is submitting centrally to eight different sites with GPUs for Folding@Home
 - Includes BNL, Manchester, MWT2, INFN and QMUL
- Requested to use NAF GPUs as well, to make DESY more visible
 - Effort by several people to prepare this, both from ATLAS ADC and DESY-IT
- Employs all GPUs (up to 10), submitted by ATLAS but is an “All DESY” contribution
 - Running well since about a month now, similar level to BNL, about 1/3 of all jobs (although not all GPUs are equal..)



	current	percentage
ANALY_BNL_GPU_ARC	550	29%
DESY-HH_GPU	521	28%
ANALY_MANC_GPU_TEST	334	18%
ANALY_MWT2_GPU	246	13%
ANALY_INFNT1_GPU	141	7%
ANALY_QMUL_GPU_TEST	59	3%
ANALY_SLAC_GPU	21	1%
ANALY_CSCHPC_GPU	12	1%



Running F@H jobs
in NAF monitoring



- A considerable number of GPUs are running Folding@Home jobs in Zeuthen on the GridEngine farm with a low share
- Total of 37 nodes of several generations with 2 to 8 GPUs, in total: 104 GPUs
- Huge impact compared to others for an individual donor



DLAB in Zeuthen

- DLAB in Zeuthen is running F@H on a mixture of CPUs and GPUs

- Some details:

- 2 x Xeon E5-2643 0 @ 3.3 GHz (just CPU)
 - 2 x 8 threads
- 1 x Xeon X5650 @ 2.67 GHz
 - 11 threads on 6 CPU cores
 - 1x NVidia Quadro K2200
- 1 x Xeon X5650 @ 2.67 GHz
 - 23 threads on 12 CPU cores
 - 1x NVidia Quadro K2200
- 1 x i5-8600T @ 2.3 GHz
 - 6 threads, just CPU



Folding@Home Summary

- ATLAS and CMS are the two main contributors to the Folding@Home “CERN & LHC Computing” team
 - ATLAS CPU queues under one name “ATLAS_CPU”
 - Similarly, CMS CPUs are under the donor “CMS-Experiment”
 -
- DESY-ZN_GPU has now overtaken CERN and is in 5th place, after the LHCb and ALICE trigger farms
- DESY-HH_GPU (NAF GPUs) is now in the top 20!
- DLAB_DESYZ is up to 40th place today
- The “CERN & LHC Computing” team is 23rd overall, and is in the top 5 this week:

Rank Overall	Team Name	Users Active	Users Total	Change 24hr	Change 7days	Points 24hr Avg	Points Update	Points Today	Points Week	Points Total	WUs Total
1	Default (Team 0)	1,251	2,000			12,506,095,882	1,447,907,695	2,781,083,206	52,553,861,284	1,023,875,128,120	226,533,294
2	LinusTechTips_Team	19,174	106,843			3,532,153,739	431,220,536	825,363,472	14,808,102,739	465,583,617,172	20,245,380
3	Curecoin	3,112	24,264			1,090,724,220	142,766,361	271,128,014	4,597,935,253	1,189,893,233,968	27,468,033
4	CERN & LHC Computing	126	232	+2	▲	807,792,586	104,226,190	209,749,894	3,588,954,779	38,634,805,971	9,512,178
5	NVIDIA Corp	54	105	+1	▲	967,215,453	104,548,569	166,181,070	3,548,012,199	46,134,761,583	741,884

Team: CERN & LHC Computing

Date of last work unit 2020-06-11 10:57:02
Active CPUs within 50 days 1,314,380
Team Id 38188
Grand Score 38,740,769,301
Work Unit Count 9,529,022
Team Ranking 23 of 253927
Homepage <http://public.web.cern.ch/public/>
Fast Teampage URL <https://apps.foldingathome.org/teamstats/team38188.html>

F@H Top 20

Almost 10M work units processed

Team is 23rd in the all time F@H ranking

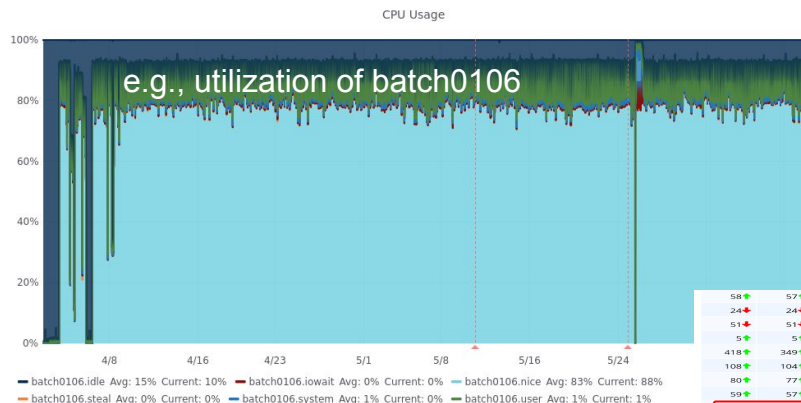
Team members

ATLAS and CMS have processed almost 6M work units

Rank	Name	Credit	WUs
23	CMS-Experiment	15,206,987,835	2,906,435
36	ATLAS_CPU	11,968,065,407	2,713,693
229	LHCbHLT	2,932,951,063	413,620
280	ALICE-FLP	2,469,863,351	215,556
338	DESY-ZN_GPU	2,045,863,097	15,033
381	CERN_Cloud	1,844,455,629	798,640
2,245	UC_ATLAS-ML	348,135,792	241,221
2,939	CMSDCS	259,581,487	28,231
3,263	BNL_HPC_CPU	231,304,222	11,141
3,902	ALICE-CS	192,785,881	27,569
7,739	ANALY_MANC_GPU	92,839,127	4,360
8,554	Cloverfield	84,168,028	664
11,369	evangifford	46,144,388	597
15,776	Pic	45,000,447	13,214
18,554	ANALY_MWT2_GPU	39,691,780	10,312
11,725	Alpinwolf	36,801,589	577
20,221	CERN_openlab	36,190,679	33,286
20,597	ANALY_LRZ_GPU	35,441,059	2,583
21,430	ryukisai	33,763,000	208
22,264	DESY-HH_GPU	32,810,890	924

Rosetta@Home contributions

- At DESY-HH:
 - Running protein folding simulations via BOINC
 - Build Singularity container on CVMFS for easier deployment
 - Dedicated out-of-warranty nodes with ~500 cores to [Rosetta@home](#)
 - DESY significant [contributor](#), provided ~35000 CPUh since April



Members of HEPGridVolunteerDE

Name	Total credit	Recent average credit
1) DESY-HH [Founder]	25,994,361	297,015.06
2) gw666	5,429,953	224,313.72
3) maxwell	12,571,484	163,766.44

58	57	57	66	Chinese Dream	754,459,934	722,225	5,084,498	26,134,986	799,367	-				
24	24	24	67	Microsoft	11,467,569,294	1,140,987	7,437,259	25,540,972	947,588	-				
51	51	51	68	Raccoon Lovers	154,630,233,131	215,173	1,766,534	25,081,285	487,435	365+				
5	5	5	69	BPU/AP6 User Group	2,375,593,756	668,715	5,093,925	22,637,808	722,628	365+				
418	349	335	70	WALTER KLAES	78,239,584	569,638	5,762,800	20,715,334	753,046	-				
108	104	103	71	Team Bios!	337,704,149	645,167	4,856,058	17,777,156	650,196	365+				
80	77	77	72	MacRumors.com	478,118,751	523,950	4,134,116	16,851,733	562,781	365+				
59	57	57	73	Cisco Systems	659,144,847	1,215,627	7,754,853	16,671,244	807,345	-				
787	600	562	74	HEPGridVolunteerDE	42,680,791	668,422	5,415,168	16,472,948	647,768	-				
3	3	3	75	PC Format	2,856,739,309	523,371	3,856,717	16,367,484	553,679	365+				
93	93	92	76	Team-GooBee.org	371,124,010	533,330	2,962,128	16,183,675	470,273	-				
42	42	42	77	BOINC World	16,513,166,813	721,814	3,700,514	16,134,380	538,563	-				

- At DESY-ZN: HPC farm contributing under donor name “gw666”
- Maxwell cluster: Rosetta@Home jobs also running there

“HEPGridVolunteerDE” team 74th in May

How best to present all of this

- At least from the Folding@Home point of view, it's still true the maximum visibility is achieved as part of the “CERN and LHC Computing” team
 - Starting a “DESY” team now would be a bit futile
 - Any points accrued so far cannot be transferred
- Rosetta@Home is different, three contributions all from DESY to the “HEPGridVolunteerDE” team
 - Still not really visible as DESY to the outsider, and is also at a lower level
- Idea to combine all these efforts (there are eight in total - any more?) into one sum
 - This is tricky due to the GPU component, to find some universal metric for CPUs and GPUs
 - Assuming we can solve that, produce a counter visible on the DESY webpage, something like this:
- The numbers (also including cumulative total now) are calculated by a central IT script from information Published every 24h by the different contributions, for example:
 - AtlasFaH:2020-06-06:101952:CPUCoreHour:2055137

DESY contributed **NNN** hours to Covid-19 compute yesterday.
This is approximately equivalent to **MMM** laptops.
and represents **X%** of the DESY total compute power.