

Report LHCb

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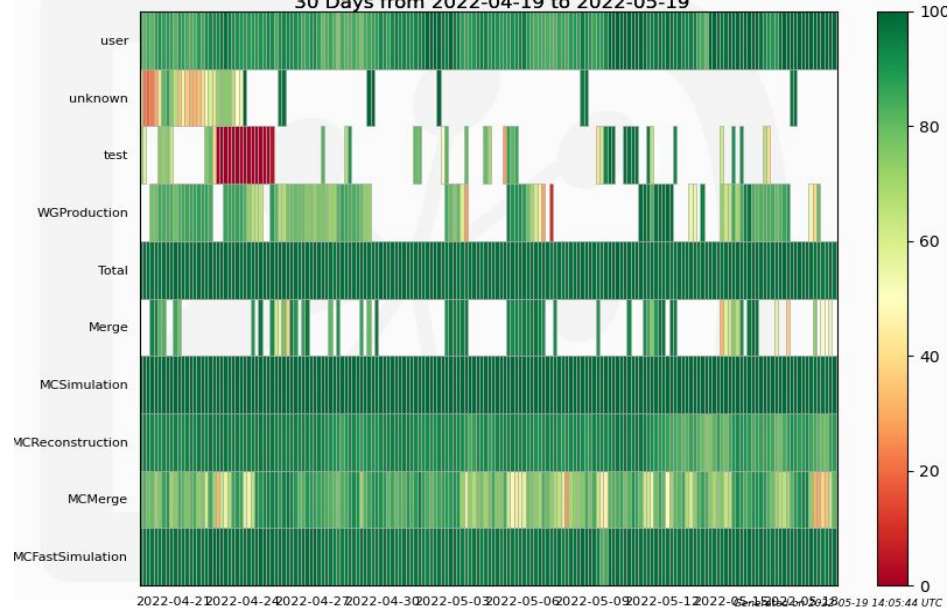
CdG CNAF
2022-05-20

Attività di LHCb al CNAF

- Attività LHCb
 - Produzione MC Simulation dominanti e pochi job utente

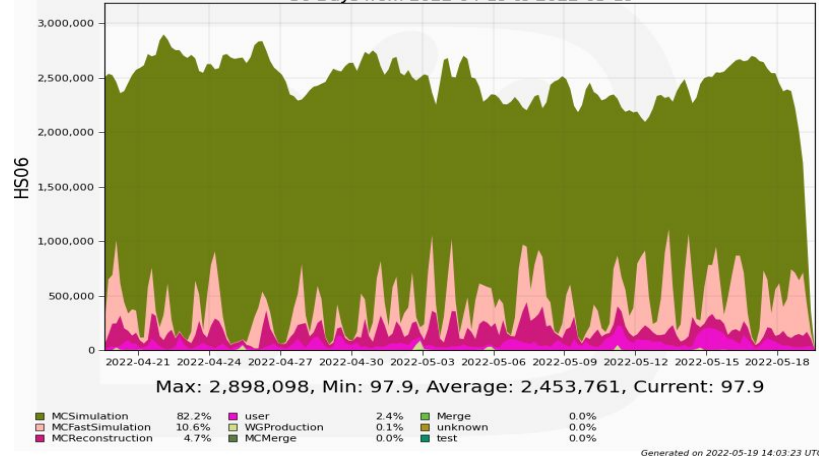
Job CPU efficiency by JobType

30 Days from 2022-04-19 to 2022-05-19



Normalized CPU usage by JobType

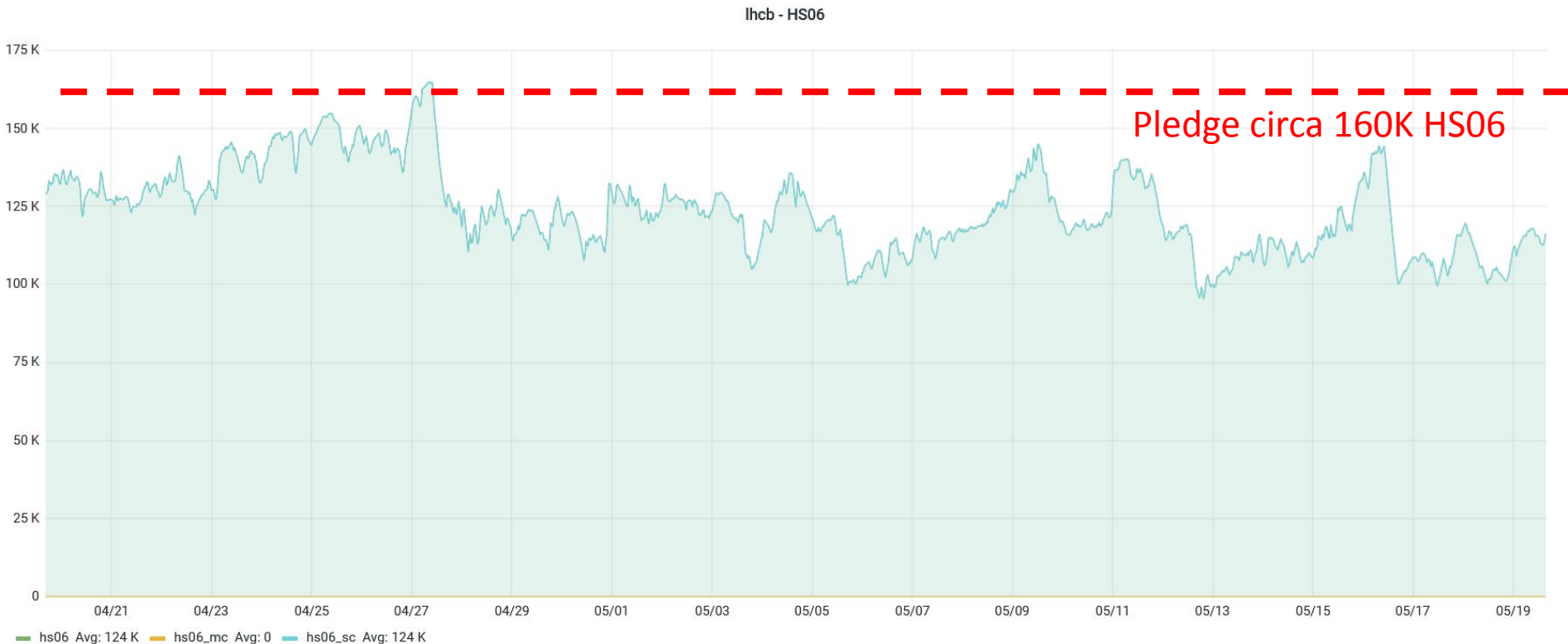
30 Days from 2022-04-19 to 2022-05-19



• Efficienza

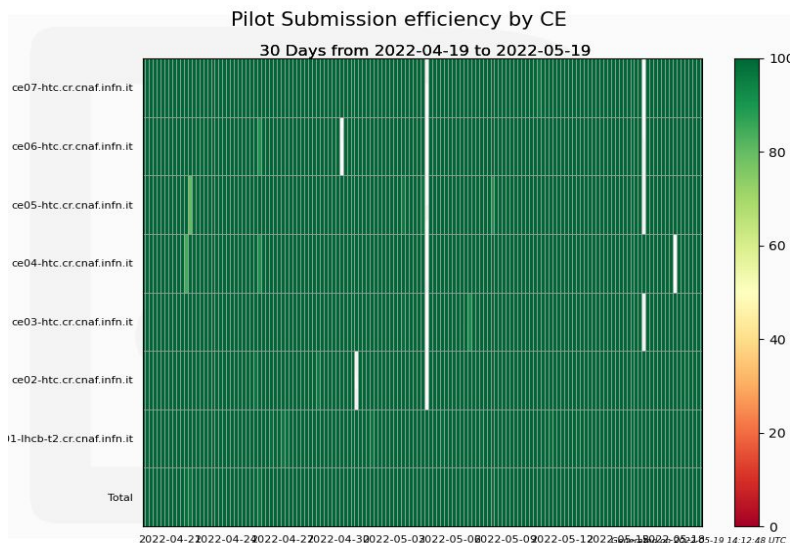
- Complessivamente molto alta,
- Job di merge (in percentuale, trascurabili) un po' più a rischio per intensa attività sul disco,

CPU usage

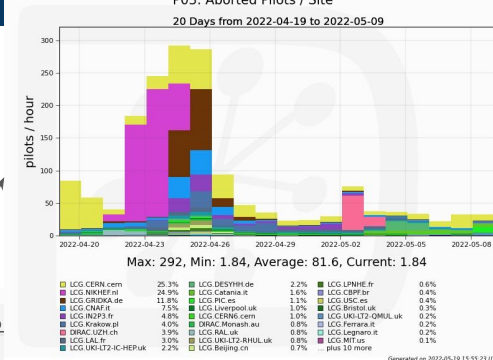
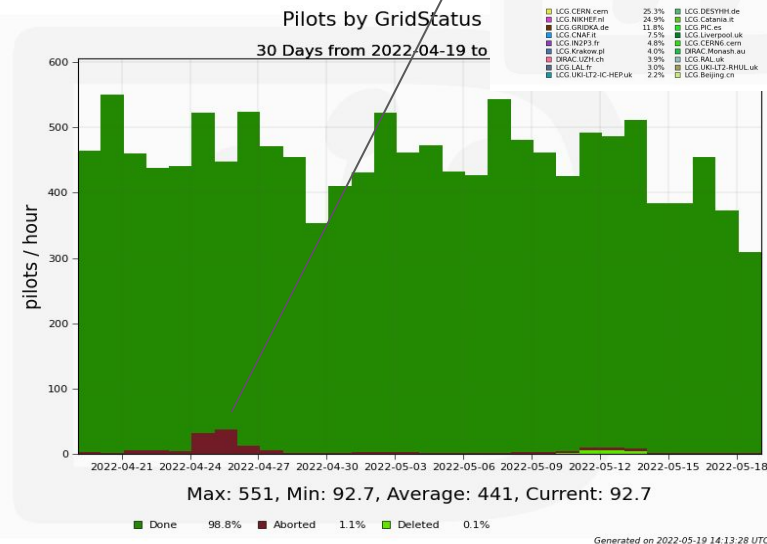


Performance

- Attività LHCb
 - Pochi problemi di pilot aborted



Problema nel software
di ottimizzazione job di LHCb
non specifico del CNAF



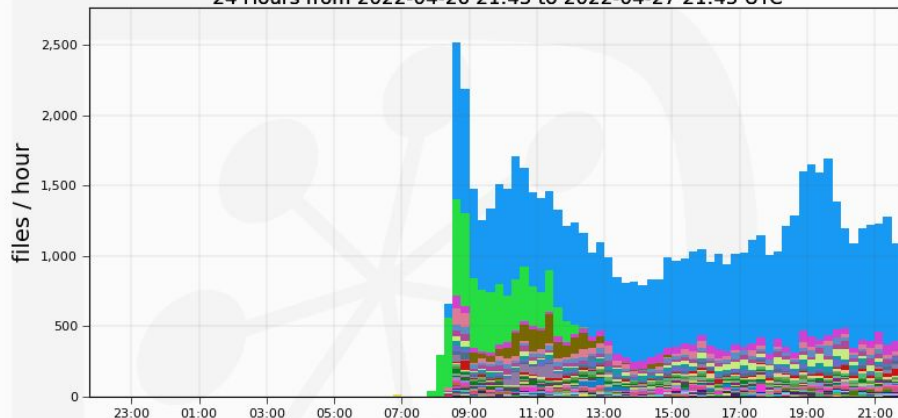
Alcuni commenti

- Problema su ce05 e ce06 che ha causato dei pilots aborted il 22/04.. risolto

LHCb commissioning the upgraded experiment

DM failed uploads to CNAF

24 Hours from 2022-04-26 21:45 to 2022-04-27 21:45 UTC



Max: 2,511, Average: 674, Current: 4.00

LCG.CNAF.it	58.3%	LCG.Lancaster.uk	1.3%	LCG.RAL-HEP.uk	0.6%
DIRAC.HLTfarm.lhcb	9.5%	LCG.LAL.fr	1.1%	LCG.USC.es	0.6%
LCG.NIKHEF.nl	3.5%	LCG.NCBI.pl	1.1%	LCG.Bristol.uk	0.6%
LCG.Manchester.uk	2.5%	LCG.Oxford.uk	1.0%	LCG.CBPF.br	0.6%
LCG.CSCS.ch	2.2%	LCG.JINR.ru	0.9%	LCG.RRCKI.ru	0.6%
LCG.UKI-LT2-QMUL.uk	2.1%	LCG.DESYHH.de	0.8%	DIRAC.UZH.ch	0.5%
LCG.MIT.us	2.0%	LCG.NIPNE-07.ro	0.7%	LCG.Durham.uk	0.5%
LCG.Beijing.cn	1.9%	LCG.Liverpool.uk	0.7%	LCG.LPC.fr	0.5%
LCG.UKI-LT2-IC-HEP.uk	1.5%	LCG.CPPM.fr	0.7%	... plus 36 more	

Generated on 2022-04-27 21:51:27 UTC

- Problema trasferimenti falliti 27/04 – risolto con riavvio dei server https. aggiornamento del certificato
"ALERT - IGTF 1.116 has a change for the CERN Grid CA"
- SRM misconfigured: credential failure (GGUS **157208**) risolto
 - Proposta da parte di Chris di modificare mount points per accedere POSIX ai file su disco in modo più simmetrico rispetto ad altri centri.
Strategia di test da definire.

LHCb commissioning the upgraded experiment

During LS2, LHCb has installed an almost completely new detector, operated with a completely new trigger strategy providing a much higher throughput than Run1+2.

These days we are commissioning the detector, the trigger and the testing whether the new computing model is sustainable.

The priority for June/July will be the commissioning and some special run (*e.g. fixed target*), and even in fall the collected data will be mainly devoted to commissioning.

The stress on the computing facilities for 2022 is expected to be rather limited.

Getting ready: *tape challenge*

LHCb will stream the acquired-and-reconstructed data to CNAF for:

- storing the whole acquired data to tape;
- splitting the datasets in more usable datasets to be kept on disk.

This will require

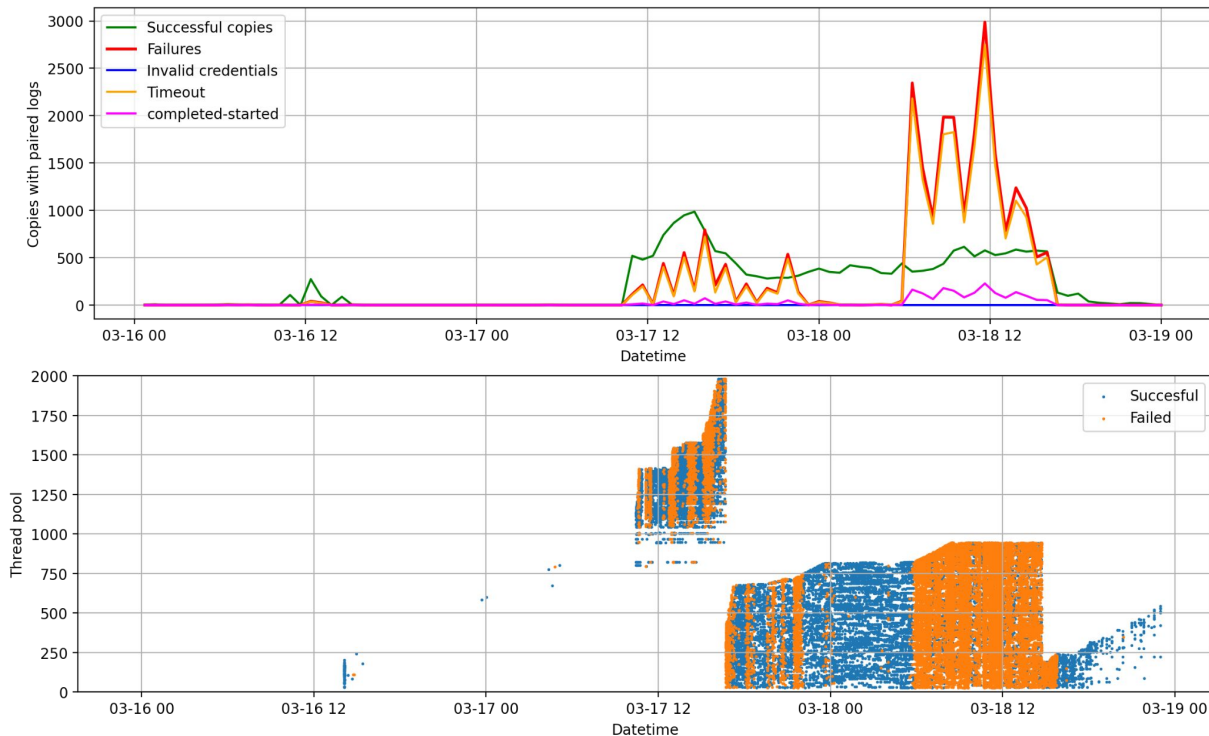
EOS → CNAF DISK → CNAF TAPE copies with writing bandwidth: **1.72 GB/s**

CNAF TAPE → CNAF DISK staging with bandwidth: **1.35 GB/s**

These targets were achieved at the TAPE Challenge, but with a very high failure rate in CNAF DISK → CNAF TAPE copies.

Thanks to the tremendous effort from the CNAF storage people, we know now a lot more on these failures.

- WebDAV servers spawn much more threads than the concurrent copies requested
- Legitimate FTS job get timeouts from the WebDAV servers, whose thread pool is full.



We have now reached the limit of what can be understood for historical logs and need a new try
 → **setting up a new test session soon**

Tape usage forecast

Following Daniele's suggestion we tried to predict tape usage for the rest of 2022.

Due to Covid-related delays, we will not use the whole pledge (23 PB).

Agreed with cRSG to remodulate the requests for 2023 to take into account a large fraction of the requests for 2022 will not be used by the end of the year.

	Run3 data [PB]	Rate [GB/s]
June 2022	0.1	0.0
July	0.3	0.1
August	0.3	0.1
September	1.0	0.4
October	1.6	0.7
November	2.2	0.9
TOTAL	5.4	

Run1 & 2 data: **6.4 PB**

Tape pledges for 2023

LHCb considers tape resources as to be split among funding agencies providing Tier-1 resources

→ 26.9% (2022) or 26.4% (2023)

INFN considers as fair share pledging at CNAF a fraction of the requested tape equal to the fraction of INFN Ph.D. equivalent

→ 16.6% (2022) or 16.0% (2023).

The fair-share pledge (INFN-computed) will be **26.6 PB**, but without additional fundings, this will result into a shortage of tape resources for 2023 of more than **15 PB** with respect to the requests agreed with cRSG.

2023	PhD eq. total/ funding auth.	
		%
AUSTRALIA	3	0.5
BRAZIL	19	3.3
COLOMBIA	2	0.3
FRANCE	41	7.1
BMBF GERMANY	29	5.0
MPG, GERMANY	2	0.3
IRELAND	1	0.2
INFN ITALY	93	16.0
HUNGARY	1	0.2
NETHERLANDS	22	3.8
P. R. CHINA	45	7.8
POLAND	22	3.8
HHNIPNE ROMANIA	5	0.9
RUSSIA INST.	40	6.9
RUSSIA UNL.	15	2.6
SPAIN	24	4.1
SWEDEN	1	0.2
SWITZERLAND	26	4.5
UKRAINE	1	0.2
UK	88	15.2
USA	32	5.5
CERN	68	11.7
TOTAL	580	100.0

Conclusion

Ottima performance del CNAF per le attività in corso (analisi e simulazione Run1 + Run2)

Alcuni problemi osservati nei trasferimenti da disco a tape con il sistema molto carico sono stati studiati a fondo (grazie!) e vista la schedula di LHCb, abbiamo il tempo per capirli e risolverli.