

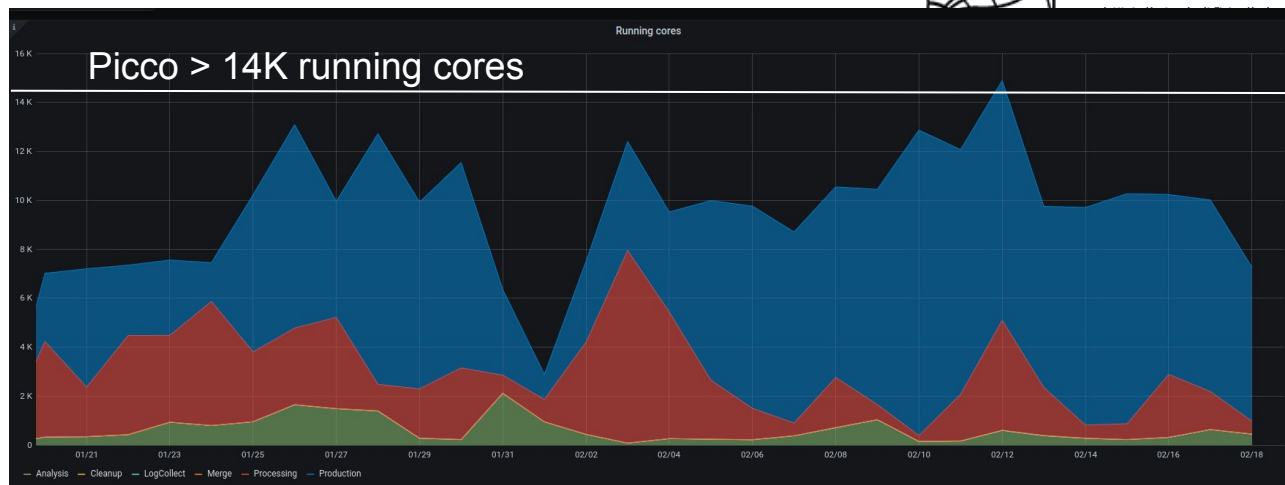
# CMS - CdG T1

Daniele Spiga

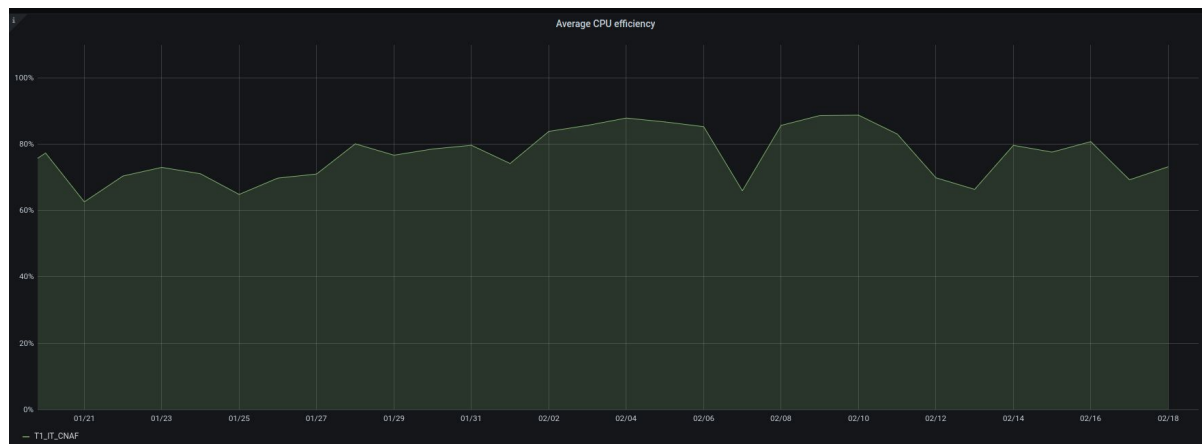
19.02.2021

# Utilizzo Tier1 ultimo mese

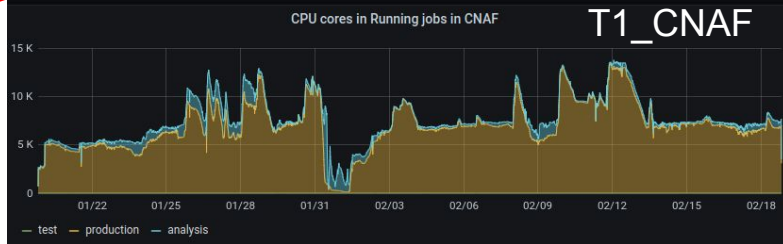
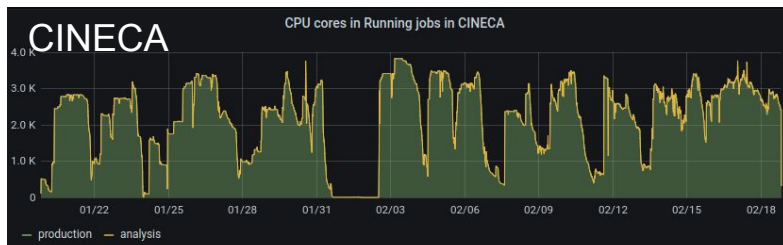
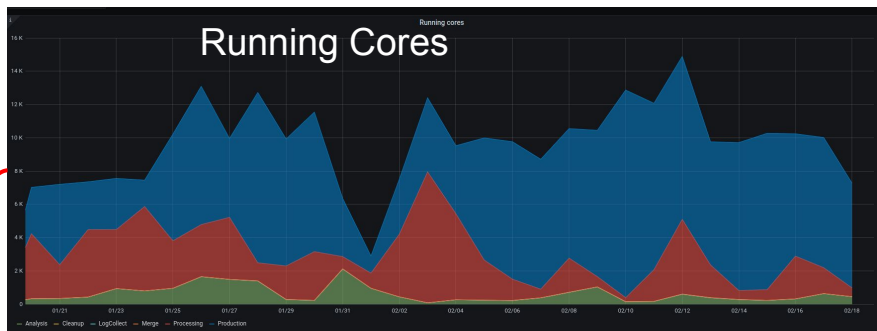
Running cores @  
CNAF



CPU efficiency



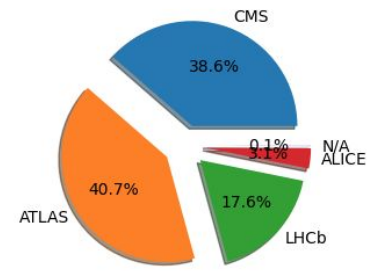
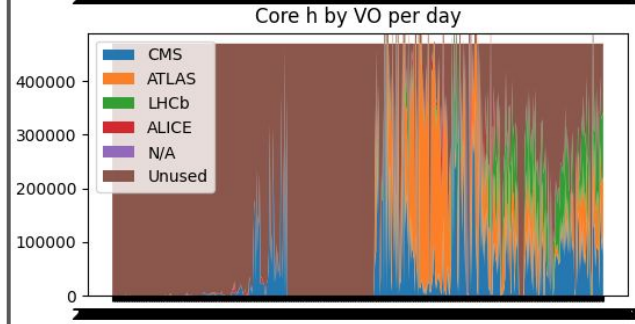
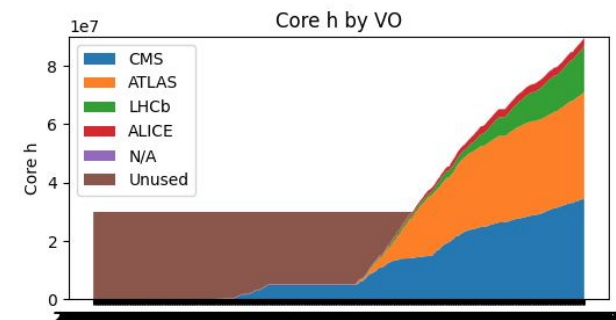
# CMS@CINECA



**Fine dell'allocation e Marconi A2... fine mese !?!**

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## Allocazione utilizzata





# WebDAV Transfer Protocol Deployment : CMS Proposal

Il piano proposto da CMS è di **avere tutti i siti pronti con WebDAV per inizi di Maggio** per avviare la campagna di test TPC per fine Maggio 2021

Facilities & Services coordinerà il deployment / planning e documentazione, in particolare:

- Preparare infrastruttura di test
- Monitoring
- Debugging
- E successivamente SAM Tests



# Risorse 2022 ( preview )

Dall'RRB Ottobre 2020

CMS		2020		2021			2022	
		C-RSG recomm.	Pledged	Request	2021 req. /2020 C-RSG	C-RSG recomm.	Preliminary Request	2022 req. /2021 C-RSG
CPU	Tier-0	423	423	500	118%	500	520	104%
	Tier-1	650	693	670	103%	670	720	107%
	Tier-2	1000	985	1070	107%	1070	1190	111%
	HLT	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	<b>Total</b>	<b>2073</b>	<b>2101</b>	<b>2240</b>	<b>108%</b>	<b>2240</b>	<b>2430</b>	<b>108%</b>
<i>Others</i>								
Disk	Tier-0	26.1	26.1	30.0	115%	30.0	35.0	117%
	Tier-1	68.0	67.5	77.0	113%	77.0	83.0	108%
	Tier-2	78.0	76.8	92.0	118%	92.0	98.0	107%
	<b>Total</b>	<b>172.1</b>	<b>170.4</b>	<b>199.0</b>	<b>116%</b>	<b>199.0</b>	<b>216.0</b>	<b>109%</b>
Tape	Tier-0	99.0	99.0	120.0	121%	120.0	149.0	124%
	Tier-1	220.0	193.7	230.0	105%	230.0	250.0	109%
	<b>Total</b>	<b>319.0</b>	<b>292.7</b>	<b>350.0</b>	<b>110%</b>	<b>350.0</b>	<b>399.0</b>	<b>114%</b>

Sostanzialmente riconfermati al C-RSG Spring 2021


**Figure 3** CMS resource requests and C-RSG recommendations for 2020 and 2021, and estimates of computing resources for 2022.

# ESCAPE: Press Release

Il lavoro fatto per il test di processing di jobs su HPC leggendo dati dal proto-lake di Escape ( endpoint CNAF ) fatto con successo!

- Risultati presentati prossima settimana a WP2
- Questa sarà nella prossima press release

Credits: Lucia, Vladimir, DiegoC. Tom..



The image shows a central graphic for the ESCAPE Datalake. At the top, it features logos for CINECA, INFN CNAF, and CMS. The main text reads 'ESCAPE European Science Cluster of Distributed Particle physics ESFRI research Infrastructure'. Below this, there are several circular arrows in blue, green, and orange, indicating data flow. The background consists of a grid of server racks and several line graphs showing data trends over time. At the bottom, there is a 3D cutaway diagram of the CMS detector structure.

**First integration experience of open science on HPC resources using the ESCAPE Datalake**

ESCAPE aims to address the challenges of open science in the realms of particle, astroparticle and nuclear physics. One use case relevant for data intensive science is the capability to connect large repositories, as those hosted in the ESCAPE Datalake, with the powerful computing resources from the European Supercomputer (HPC) centers.

A proof of concept was carried out using data from the CMS experiment at CERN, hosted on the ESCAPE Datalake prototype prepared by the Work Package 2 (e-DIOS).

Analysis workflows have been submitted on the CMS distributed computing infrastructure, and have reached nodes on the Marconi A2 HPC system, made available via an existing collaboration between INFN and CINECA (the italian PRACE Tier-0 near Bologna, Italy).

The processing has been executed using the input dataset from the ESCAPE Datalake pilot system, specifically via its INFN instance at CNAF (Bologna, Italy), proving the capabilities of the ESCAPE model and tools to enable large scale data intensive computing tasks.

# CMS HPC Paper

Abbiamo sottomesso oggi un paper CMS su HPC. Una sezione dedicata al lavoro di integrazione al CINECA

**“Extending the distributed computing infrastructure of the CMS experiment with HPC resources”**

## 3.2 CINECA

CINECA [9], a PRACE [10] Tier-0 facility in Bologna (Italy) currently hosts a system, Marconi [11], which was ranked no. 21 in the top500.org Nov 2019 list [12]. The Marconi A2 partition, of interest in the present study, deploys 3600 nodes equipped with 1 Xeon Phi 7250 (KNL) at 1.4 GHz, with 96 GB of on board RAM. Resources at CINECA are partially provided within PRACE, via a call system which grants CPU-hours after a review process. The Italian LHC Community successfully applied to the “18th PRACE Project Access Call for Proposals”, and was assigned a grant<sup>10</sup> of 30 Million CPU hours on the Marconi A2 partition (to be shared among the 4 LHC collaborations).

The Marconi A2 nodes, as provided to standard users by CINECA, are not immediately usable by CMS workflows due to their configuration. CMS and

<sup>10</sup> Proposal # 2018194658 for 30 MCoreH on Marconi A2, PI Dr. T. Boccali, INFN.

## Acknowledgements

The authors and the CMS collaboration as a whole would like to thank the cited HPC centers for their collaboration, support, and interest in the computing activities of CMS.

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This work used the Extreme Science and Engineering Discovery Environment (XSEDE), which is supported by National Science Foundation grant number ACI-1548562.

This research is part of the Frontera computing project at the Texas Advanced Computing Center. Funding is provided by the National Science Foundation.

Congratulazioni Shahram!



# Infine un cenno su T2 Roma

Tutto il pledge 2020 è stato messo in linea!!



Ultimi  
WorkerNodes  
installati e resi  
operativi

Fine-tuning per sistemare  
l'efficienza!