Contribution ID: **172**   Type: **Poster**

Deploying a cache content delivery network for CMS experiment in Spain

Wednesday 26 October 2022 11:00 (30 minutes)

The Xrootd protocol is used by CMS experiment of LHC to access, transfer, and store data within Worldwide LHC Computing Grid (WLCG) sites running different kinds of jobs on their compute nodes. Its redirector system allows some execution tasks to run by accessing input data that is stored on any WLCG site. In 2029 the Large Hadron Collider (LHC) will start the High-Luminosity LHC (HL-LHC) program, when the luminosity will increase in a factor 10 as compared to the current values. This scenario will also imply an unprecedented increase of simulation and collision data to transfer, process and store in disk and tape systems. The Spanish WLCG sites that support CMS, the PIC Tier-1 and the CIEMAT Tier-2 have explored content delivery network type solutions in the Spanish region. One of the possible solutions under development has been the deployment of caches between the two sites that store the data requested by the jobs remotely, so that they get closer to the nodes to improve their job efficiency and input data transfer latency. In this contribution, we analyze the impact of deploying physical caches in production in the CMS region between PIC and CIEMAT, as well as the impact they have on job efficiency, latency and bandwidth gains, and potential storage savings.

Significance

The relevance of this contribution is to discuss the results of the new data management system in the Spanish CMS region in convergence with the WLCG-DOMA data challenges.

References

[1] J. Albrecht, et al, "A Roadmap for HEP Software and Computing RD for the 2020s", Computing and Software for Big Science volume 3, Article number: 7 (2019) https://doi.org/10.1007/s41781-018-0018-8.

[2] CMS data access and usage studies at PIC Tier-1 and CIEMAT Tier-2,
Antonio Delgado Peris, José Flix Molina, José M. Hernández, Antonio Pérez-Calero Yzquierdo, Carlos Pérez Dengra, Elena Planas, Francisco Javier Rodríguez Calonge, Anna Sikora, EPJ Web Conf. 245 04028 (2020).

[3] Pérez Dengra, C., 2022 "Simulating a network delivery content solution for the CMS experiment in the Spanish"WLCG Tiers, International Symposium on Grids & Clouds (ISGC) 2022 Virtual Conference, 21-25 March 2022, last access on 25th of May of 2022: https://indico4.twgrid.org/event/20/contributions/1116/

Experiment context, if any

CMS Collaboration

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