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CMS Strategy for HPC resource exploitation

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High Energy Physics (HEP) experiments will enter a new era with the start of the HL-LHC program, where computing needs required will surpass by large factors the current capacities. Looking forward to this scenario, funding agencies from participating countries are encouraging the HEP collaborations to consider the rapidly developing High Performance Computing (HPC) international infrastructures as a mean to satisfy at least a fraction of the foreseen HEP processing demands. Moreover, considering that HEP needs have been usually covered by facilities cost-optimized rather than performance-optimized, employing HPC centers would also allow access to more advanced resources. HPC systems are highly non-standard facilities, custom-built for use cases largely different from CMS demands, namely the processing of real and simulated particle collisions which can be analyzed individually without any correlation. The utilization of these systems by HEP experiments would not trivial, as each HPC center is different, increasing the level of complexity from the CMS integration and operations perspectives. Additionally, while CMS data is residing on a distributed highly-interconnected storage infrastructure, HPC systems are in general not meant for accessing large data volumes residing outside the facility. Finally, the allocation policies to these resources is quite different from the current usage of pledged resources deployed at CMS supporting Grid sites. This contribution will report on the CMS strategy developed to make effective use of HPC resources, involving a closer collaboration between CMS and HPC centers in order to further understand and subsequently overcome the present obstacles. Progress in the necessary technical and operational adaptations being made in CMS computing will be described.

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