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Integration of network-restricted resources at the Barcelona Supercomputer Center into CMS computing

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Given the growing computing needs of the LHC experiments facing the start of the Run 3 and the High-Luminosity era, it is crucial to gain access to and ensure the efficient exploitation of new resources. The CMS computing ecosystem presents a number of standardized methods for authentication and authorization, access to remotely stored data and software deployment, enabling access to WLCG resources seamlessly. However, incorporating Cloud and HPC resources presents a number of challenges, which generally need to be solved on a case by case basis. The Barcelona Supercomputing Center (BSC), the main Spanish HPC site, represents a particularly difficult case, as severe network restrictions impact the feasibility of many of the aforementioned standardized solutions. This contribution describes a number of actions and novel solutions introduced by the Spanish CMS community in order to facilitate the inclusion of BSC resources into the CMS computing infrastructure for their use by the collaboration. This includes adapting the resource allocation and workload management tools, access to CMS data processing and simulation software, and to remote experimental conditions databases, as well as setting up a transfer service for output data to storage at a nearby WLCG facility. This work summarizes the current status of the integration efforts and also reports on the first experiences with the implemented solutions.

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