21st International Conference on Computing in High Energy and Nuclear Physics **CHEP2015** Okinawa Japan: April 13 - 17, 2015

Contribution ID: **491** Type: **oral presentation**

Getting prepared for the LHC Run2: the PIC Tier-1 case

Tuesday 14 April 2015 14:15 (15 minutes)

The LHC experiments will collect unprecedented data volumes in the next Physics run, with high pile-up collisions resulting in events which require a more complex processing. The collaborations have been asked to update their Computing Models to optimize the use of the available resources in order to cope with the Run2 conditions, in the midst of widespread funding restrictions. The changes in computing for Run2 represent significant efforts for the collaboration, as well as significant repercussions on how the WLCG sites are built and operated.

This contribution focuses on how these changes have been implemented and integrated in the Spanish WLCG Tier-1 center at Port d'Informació Científica (PIC), which serves ATLAS, CMS and LHCb experiments. The approach to adapt a multi-VO site to the new requirements while maintaining top reliability levels for all the experiments, is described. The main activities covered in this contribution include setting up dCache disk-only pools together with access via HTTP/XrootD protocols to expose the most demanded data; enabling end user analysis at the center; efficient integration of multi-core job handling in the site batch system and scheduler by means of the dynamic allocation of computing nodes; implementation of dynamic high memory queues; simplification, automation and virtualization of services deployment; and setting up a dCache test environment to assess the storage management readiness against experiment workflows. In addition, innovative free-cooling techniques along with a modulation of computing power versus electricity costs have been implemented, achieving a significant reduction of the electricity costs of our infrastructure.

The work has been done to reduce the operational and maintenance costs of the Spanish Tier-1 center, in agreement with the expectations from WLCG. With the state of the optimizations currently being implemented and the work foreseen during the coming years to further improve the effectiveness of the use of the provided resources, it is expected that the resources deployed in WLCG will approximately double by the end of Run2. All of the implementations done in PIC are flexible enough to rapidly evolve following changing technologies.

Author: FLIX MOLINA, Jose (Centro de Investigaciones Energ. Medioambientales y Tecn. - (ES)

Co-authors: SEDOV, Alexey (Universitat Autònoma de Barcelona (ES)); PACHECO PAGES, Andreu (Institut de Física d'Altes Energies - Barcelona (ES)); Dr PEREZ-CALERO YZQUIERDO, Antonio (Centro de Investigaciones Energ. Medioambientales y Tecn. - (ES); Mr RODRIGUEZ, Bruno (UAB/PIC); ACOSTA SILVA, Carlos (Universitat Autònoma de Barcelona (ES)); PLANAS, Elena (PIC); ACCION GARCIA, Esther (Universitat Autònoma de Barcelona (ES)); LOPEZ MUNOZ, Fernando (Universitat Autònoma de Barcelona (ES)); CASALS HERNANDEZ, Jordi (U); Prof. DELFINO REZNICEK, Manuel (Universitat Autònoma de Barcelona (ES)); CAUBET SERRABOU, Marc (Universitat Autònoma de Barcelona (ES)); PORTO FERNANDEZ, Maria Del Carmen (Unknown); Mr CRUZ, Ricard (UAB/PIC); ACIN PORTELLA, Vanessa (Universitat Autònoma de Barcelona (ES))

Presenter: FLIX MOLINA, Jose (Centro de Investigaciones Energ. Medioambientales y Tecn. - (ES)

Session Classification: Track 6 Session

Track Classification: Track6: Facilities, Infrastructure, Network