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CDF Long Term Data Preservation at the INFN CNAF Tier-1 data center: the Oracle database and software framework replica.

The INFN CNAF Tier-1 Long Term Data Preservation (LTDP) project was established at the end of 2012 in close collaboration with Fermi National Accelerator Laboratory (FNAL) with the purpose of saving, distributing and maintaining over time the CDF Tevatron analysis framework and all the relevant scientific data produced by the experiment activity. During recent years, a complete copy of all CDF Run II raw data and user level ntuples (about 4 PB) was successfully copied from FNAL to the INFN CNAF Tier-1 tape storage. The data copy was also recovered from tape after the 2017 flood event when the storage array, containing the CDF filesystem disk area, was affected. Furthermore, there are indications that in the near future the FNAL Tevatron computing services currently running only and exclusively at FNAL (in particular the Oracle database, software methods to get calibration constants, software release availability service and specific job submission system) should be completely replicated in a second site. This operation could help ensuring the CDF physicists the possibility to complete the analyses in progress and could guarantee the future activity of the collaboration. For this reason, we decided to provide a complete copy of the Oracle database software used by CDF for the collection of not-statistical data, such as detector calibrations. This Oracle service is composed by two main DB instances, the offline one (containing info for the offline data processing and data book-keeping) and the online (data taking condition), consisting of roughly 1.9×10^{10} rows of information. Both the instances are essential, therefore we need to run the updated and replicated Oracle services at our site in order to provide information for the MC simulation, ongoing analyses and reprocessing activities. About the CDF software preservation, the releases are currently running on CERN Virtual Machine File System (CVMFS) with a server currently located at FNAL. Since the CVMFS repositories could be distributed over remote sites, we are going to install a CVMFS replica server at our site in order to make provision for the availability of the software to the community. Regarding the job submission system, the collaboration currently use the FNAL Jobsub tool and some specific CDF wrappers for emulating the specific experiment commands that were commonly exploited by CDF uses. A Jobsub head node server is being installed and tested at our site as a future job submission system that could be completely independent from FNAL services. All the software replicas running at our site, together with the Run II data already copied here, could give to the CDF collaboration community the future important possibility to continue activity in parallel with FNAL or independently at our site.

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