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Optimization of HEP Analysis activities using a Tier2 Infrastructure

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While the model for a Tier2 is well understood and implemented within the HEP Community, a refined design for Analysis specific sites has not been agreed upon as clearly. We aim to describe the solutions adopted at the INFN Pisa, the biggest Tier2 in the Italian HEP Community. A Standard Tier2 infrastructure is optimized for GRID CPU and Storage access, while a more interactive oriented use of the resources is beneficial to the final data analysis step. In this step, POSIX file storage access is easier for the average physicist, and has to be provided in a real or emulated way. Modern analysis techniques use advanced statistical tools (like RooFit and RooStat), which can make use of multi core systems. The infrastructure has to provide or create on demand computing nodes with many cores available, above the existing and less elastic Tier2 flat CPU infrastructure. At last, the users do not want to have to deal with data placement policies at the various sites, and hence a transparent WAN file access, again with a POSIX layer, must be provided, making use of the just-installed 10 GBit/s regional lines.
Even if standalone systems with such features are possible and exist, the implementation of an Analysis site as a virtual layer over an existing Tier2 requires novel solutions; the ones used in Pisa are described here.

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