KM3NeT Acquisition Control

The multi-site nature of the KM3NeT collaboration has influenced the development and evolution of its Acquisition Control software. It is flexible and portable to the extent that the same programs are used in data-taking shore station of neutrino telescopes as well as in the test and qualification sites for performance and quality assessment of detector components at different stages of the integration. In shore stations of neutrino telescopes, the main goal of the Acquisition Control is to maximize the livetime of the controlled detector, whereas in testing sites common tasks are aimed at quickly and efficiently gaining information on the behavior of single photomultipliers, Digital Optical Modules and Detection Units. Flexibility is obtained through high modularity and tight integration with the central database system. On the other hand, the software architecture can be defined as \"maximally disconnected\" to ensure that no \"single point of failure\" exists and that each software service can continue to operate in the temporary absence of others. The most recent development is Dynamic Resource Provisioning and Failover (DRP-F), to automatically cope with the possible event of a hardware failure of one or more data taking servers or network elements just before or during a transient neutrino burst: if the number of damaged units is not too large (typically failures of one or two units), the system automatically switches, within a few seconds, to a downgraded but working configuration to ensure continuity of operation and minimal data loss. DRP-F is now entering the stage of preliminary tests. When deployment is complete, stress tests and failure simulation tests will be performed on a regular basis.

Primary author: Dr BOZZA, Cristiano (University of Salerno and INFN Gruppo Collegato di Salerno)

Presenter: Dr BOZZA, Cristiano (University of Salerno and INFN Gruppo Collegato di Salerno)