The LHC Logging Service: Handling Terabytes of On-line Data


Abstract

Based on previous experience with LEP, a long-term data logging service for the LHC was developed and put in place in 2003, several years before beam operation. The scope of the logging service covers the evolution over time of data acquisitions on accelerator equipment and beam related parameters. The intention is to keep all this time-series data on-line for the lifetime of LHC, allowing easy data comparisons with previous years. The LHC hardware commissioning has used this service extensively prior to the first beams in 2008 and even more so in 2009. Current data writing rates exceed 15TB/year and continue to increase. The high data volumes and throughput rates, in writing as well as in reading, require special arrangements on data organization and data access methods.

Conclusion

The LHC Logging Service has proved its usefulness since several years. The demanding requirements for a centralized, long-term multi-terabyte system have imposed thoroughness in technical choices and compromises. Continuous performance monitoring is a necessity to ensure quality of service. Nevertheless, the challenge to keep up with the increasing expectations remains. A wide client community is looking forward to capturing, analyzing and exploiting LHC beam data.

References