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AUDITOR - the accounting ecosystem for HL-LHC and other accounting challenges

In the field of High Throughput Computing (HTC), the management and processing of large volumes of accounting data across different environments and use cases is a significant challenge. AUDITOR addresses this issue by providing a flexible framework for building accounting pipelines that can be adapted to a wide range of needs.

At its core, AUDITOR serves as a centralised storage solution for accounting records, facilitating data exchange through a REST interface. This enables seamless interaction with the other parts of the AUDITOR ecosystem: the collectors, which gather accounting data from various sources and push it to AUDITOR, and the plugins, which pull data from AUDITOR for subsequent processing. The modular nature of AUDITOR allows for the customisation of collectors and plugins to suit specific use cases and environments, ensuring a tailored approach to accounting data management. Future use cases that could be realised with AUDITOR include the accounting of GPU resources or the accounting of variable core power values of compute nodes due to dynamic adjustments of the CPU clock frequency and the evaluation of the created CO_2 footprint.

This presentation will outline the structure of the AUDITOR accounting ecosystem, demonstrate existing accounting pipelines, and show how AUDITOR could be extended to account for environmentally sustainable computing resources.

Significance

The AUDITOR accounting ecosystem was presented for the first time at the CHEP Conference 2023. Since then, the system has been continuously developed and has been successfully in production for more than a year at various locations, such as the German Tier-1 of the World Wide LHC Computing Grid (WLCG). Adaptations for scalability for use at CERN have led to significant performance improvements, so that AUDITOR has evolved into a reliable, highly scalable component for flexible use in the determination of accounting data. Thanks to the modular structure, future accounting challenges, such as the accounting of GPU resources or resources with adapting compute performance to the electricity mix, can also be realised. AUDITOR thus offers a solid accounting system for the High Luminosity Era of WLCG experiments and other accounting tasks of the coming decades.

References

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Experiment context, if any

Strong focus on experiments participating in the WLCG, can be adapted to any experiment that needs to account for batch job resources.

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