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Kubernetes and XrootD

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Bioscience, material sciences, physics, and other research fields require several tools to achieve new results, discoveries, and innovations. All these research fields require computation power. The Open Science Grid (OSG) provides ways to access the computation power from different sites for several research fields. Besides the processing power, it is essential to access the data for all simulations, calculations, and other kinds of processing. To provide data access to all jobs on the OSG, the Open Science Data Federation (OSDF) have ways to create the required data access. The primary way to provide data on OSDF is the XrootD on a Kubernetes infrastructure on the National Research Platform. This work aims to show if there is any overhead using XrootD in a Kubernetes environment. To test this, we set an XrootD origin on bare metal and an XrootD origin using Kubernetes on the same host and request files using files size 500MB, 1GB, and 10GB. The results show a 2% larger performance on the transfer rate using bare metal than Kubernetes XrootD origin. In conclusion, there is no statistical difference between XrootD running on Kubernetes or bare metal.

10 minutes presentation

Author: ANDRIJAUSKAS, Fabio (Univ. of California San Diego (US))

Presenter: ANDRIJAUSKAS, Fabio (Univ. of California San Diego (US))

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