



Contribution ID: 647 Contribution code: **contribution ID 647**

Type: **Poster**

Publishing to CernVM-FS on Kubernetes

The CernVM File System (CernVM-FS) is a global read-only POSIX file system that provides scalable and reliable software distribution to numerous scientific collaborations. It gives access to more than a billion binary files of experiment application software stacks and operating system containers to end user devices, grids, clouds, and supercomputers. CernVM-FS is asymmetric by construction. Writing into the repository is a centralized operation called publishing, while reading is allowed for many clients from many locations. The classic publishing process needs a dedicated “release manager machine” that provides the editable repository copy. This classic approach was improved thanks to the introduction of the CernVM-FS Gateway that provides concurrent access to the repository backend storage through a REST API. In this contribution, we present further improvements to the CernVM-FS publishing process. Our main contribution is the construction of ephemeral containers that are created on demand and used to provide a temporary, editable repository copy for a single publish operation. The container construction makes careful use of Linux namespaces and a user-space implementation of overlayfs. We further show that both the Gateway and the containers used for publishing can be instantiated as pods in a kubernetes cluster. Thus we demonstrate a kubernetes-native CernVM-FS publishing workflow.

Speaker time zone

Compatible with Europe

Significance

We present new CernVM-FS capabilities for publishing and demonstrate a kubernetes-native CernVM-FS publishing workflow.

References

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Session Classification: Posters: Orange

Track Classification: Track 1: Computing Technology for Physics Research