Using contaniers to manage dCache

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For over a decade, dCache.ORG has provided robust software that is used at more than 80 Universities and research institutes around the world, allowing these sites to provide reliable storage services for the WLCG experiments and many other scientific communities. The flexible architecture of dCache allows its component services to be deployed in a wide variety of configurations and platforms, from a single Raspberry Pi up to hundreds of nodes in multi-petabyte infrastructures.

Even on multi node setups, it's common to run groups of services on the single node. This is motivated by the desire to optimise the performance (e.g., to reducing communication overhead), or simply to minimise the cost of running dCache. However, hosting dCache services on the same node implies the services are locked to the same dCache version: they must run the same dCache version and all services are upgraded at the same time.

Operating-System (OS) virtualization, often called containers, allows multiple isolated instances of a user space environment to run, while sharing the same kernel and OS. Unlike hardware virtualization, an application running in a container incurs little or no overhead making such deployments suitable for IO intensive applications such as dCache. There are a wide variety of container solutions, with almost all platforms providing at least one solution.

This presentation will show how we run dCache inside Docker, a popular Linux-based container solution. In addition to all benefits of the container technology, docker provides docker-hub - a place to store and share docker recipes. We will introduce two dCache containers - a full dCache installation, useful for dCache testing and evaluation, and a per-service container, allowing to execute and manage each dCache component in an independent container.

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