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dCache, evolution by tackling new challenges.

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With the great success of the dCache Storage Technology in the framework of the World Wide LHC Computing Grid, an increasing number of non HEP communities were attracted to use dCache for their data management infrastructure. As a natural consequence, the dCache team was presented with new use-cases that stimulated the development of interesting dCache features.

Perhaps the most important group of new features is the enhanced media awareness. One aspect is the optimized migration of data between random access devices and tertiary storage, e.g. tape systems. Transparently for the user, dCache combines small files into containers before being copied to tape. Another aspect of this media awareness work is dCache's activity in making more efficient use of SSDs to boost high speed writing and chaotic reading: depending on access profile or protocol, data is placed on the most appropriate media types.

A second hot topic, often requested by scientific communities, is Cloud Storage. By marrying the OwnCloud software with dCache, a unique hybrid system becomes available that provides both the simplicity of a sync-n-share service and dCache's many unique data management features. Beyond simple sync-n-share, users also demand control over the quality of service dCache offers. To support this, dCache is implementing the CDMI standard. With CDMI, dCache can present new functionality in a standard fashion; e.g. storing and querying metadata, triggering media migration or treating dCache as an object store.

As the X509 certificate infrastructure proved unpopular outside of HEP sciences, dCache will support alternative methods of authenticating, like SAML and OpenID Connect. Such support allows sites running dCache to join identity federations as part of international collaborations.

The dCache team will describe its ongoing activities and present its future development road map.

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