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New adventures in storage: cloud storage and CDMI

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Traditionally storage systems have had well understood responsibilities and behaviour, codified by the POSIX standards. More sophisticated systems (such as dCache) support additional functionality, such as storing data on media with different latencies (SSDs, HDDs, tapes). From a user's perspective, this forms a relatively simple adjunct to POSIX: providing optional quality-of-service values when writing data and optionally requesting data be staged from tape ahead of use.

The CDMI protocol provides a standard mechanism for clients to discover and use many advanced features. Such features include storing and querying metadata, searching for files matching metadata predicates, controlling a file's quality-of-service and retention policies, providing an object store and alternative protocol discovery.

A CDMI enabled storage has the potential for greatly simplifying a more general service as some high-level functionality can be delegated to the storage system. This reduces and may remove the need to run additional services, which makes it easier for sites to support their users.

By implementing the CDMI standard, dCache can expose new features in a standards compliant fashion. Here, various scenarios are presented where CDMI provides an advantage and the road-map for CDMI support in dCache is explored.

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