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A Distributed Storage System with dCache

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The LCG collaboration is encompassed by a number of Tier 1 centers. The nordic LCG Tier 1 is in contrast to other Tier 1 centers distributed over most of Scandinavia. A distributed setup was chosen for both political and technical reasons, but also provides a number of unique challenges. dCache is well known and respected as a powerful distributed storage resource manager, and was chosen for implementing the storage aspects of the nordic Tier 1. In contrast to classic dCache deployments, we deploy dCache over a WAN with limited bandwidth, high latency, frequent network failures, and spanning many administrative domains. These properties provide unique challenges, covering topics such as security, administration, maintenance, upgradability, reliability, and performance. Our initial focus has been on implementing the GridFTP 2 OGF recommendation in dCache and the Globus Toolkit. Compared to GridFTP 1, GridFTP 2 allows for more intelligent data flow between clients and storage pools, thus enabling more efficient use of our limited bandwidth. Future efforts will address other issues, such as reliability in case of network separation.

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