

# Exploring the Efficiencies of Operating dCache in a Virtual Environment On a Mass Storage System

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Large dCache installations generally employ a server running both dCache and a file system attached to an external storage device which is connected through a bus allowing SCSI transfers. For redundant storage the external device is often a RAID controller with a block level interface and a common connection is Infiniband. In that case the server uses a Host Channel Adaptor on a PCIe bus and the transfers are SRP (SCSI Remote DMA Protocol). This solution is highly scalable but each data transfer is burdened with the protocol latency associated with an external bus.

An architecture will be discussed which runs both dCache and the related file system in a virtual environment on the RAID controller rather than on an external server. The result is that the normal external bus protocol latencies are eliminated and the memory space of the file system and the RAID are co-located. A SCSI transfer is reduced to a simple data pointer operation. Iterative data transfers are accomplished with far greater efficiency and fewer memory copies. Data transfer rates from a production system will be presented along with the reduced space and power requirements for this implementation.

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