

Using ZFS to manage Grid storage and improve middleware resilience

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ZFS is a powerful storage management technology combining filesystem, volume management and software raid technology into a single solution. The WLCG Tier2 computing at Edinburgh was an early adopter of ZFS on Linux, with this technology being used to manage all of our storage systems including servers with aging components. Our experiences of ZFS deployment have been shared with the Grid storage community which has led to additional sites adopting this technology.

ZFS is highly configurable therefore allowing systems to be tuned to give best performance under diverse workloads. This paper highlights our experiences in tuning our systems for best performance when combining ZFS with DPM storage management. This has resulted in reduced system load and better data throughput. This configuration also provides the high redundancy required for managing older storage servers. We also demonstrate how ZFS can be combined with Distributed Replicated Block Device (DRBD) technology to provide a performant and resilient hypervisor solution to host multiple production Grid services.

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