

## **Can it scale? : Metadata Performance Testing of Lustre Dynamic Namespace**

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Lustre is a parallel file system used in high performance computing for its massive scalable storage. Metadata Servers (MDS) are used to store metadata in the dynamic name space (DNE). Utilizing DNE, multiple MDSs can be used to scale performance which allows for greater computational ability. The previous version, DNE v1, requires the users manual instruction on distributing the namespace across Metadata Targets (MDT). This is difficult for users not well versed in systems and requires human intervention. The new version, DNE v2, automates this distribution task. In previous versions of Lustre DNE v2 performed significantly slower than DNE v1. The purpose of this research is to benchmark the performance differences between DNE v1 and v2 in the latest version of Lustre, and based on our findings, suggest which technology should be adopted for HPC operations.

Our test environment consisted of 5 MDSs, 2 OSSs and 6 client nodes. Mdttest was used to evaluate the scaling of metadata performance. The tests show that DNE v2 does not scale linearly when more MDTs are used, unlike v1 where performance speed increases when using more MDTs. It is suggested that LANL continues to use DNE v1 due to its strength in positive scaling that will aid in efficient high performance computing in divisions across the lab.