The Campaign Storage at LANL needs to be robust and high performing. Ceph is an open source object store and filesystem, which is a viable solution for Campaign Storage. In order to test the performance and reliability of a Ceph filesystem, a small Ceph cluster was built using ten HP DL380p Gen 8 nodes. Three different Ceph profiles were tested using the built in benchmarking tools in Ceph. These profiles included one replicated profile and two erasure coded profiles. The replicated profile was tested with a replication size of two, and the erasure coded profiles were tested with three different k + m values. All profiles were benchmarked using varying object sizes to read and write. During configuration, the cluster had to be reinstalled and reconfigured three times. Benchmark testing resulted in write speeds being significantly faster for objects of less than or equal to 8 MB in size, which wrote to disks at around 350 MB/sec. Writing larger objects resulted in write speeds around 60 MB/sec. K + m values did not affect read and write speeds in a significant way and in all benchmarks, the replicated profile was faster than the erasure coded profiles due to the overhead associated with erasure coding. Although Ceph is difficult to set up and the stability of the Ceph software still needs to be improved, the performance of Ceph is promising and shows that it could be a viable solution for object storage in the near future.