DELL FLUID CACHE FOR SAN TEST PRELIMINARY SUMMARY

This is a preliminary report summary. The full report will be available in August 2014.

Overview

In this project, we tested two configurations, both running an OLTP workload against Oracle RAC. The first configuration involved two HP ProLiant DL380 Gen8 servers running in a two-node Oracle RAC cluster, targeting a Compellent SC8000 array backed by rotational drives. The second configuration involved the same two HP ProLiant DL380 Gen8 servers running Oracle RAC, along with three Dell PowerEdge R720 servers with no Oracle software running but rather serving as caching servers. In this scenario, we added Dell Fluid Cache for SAN software to all five servers, and PCIe SSD devices to the three Dell servers.

We found that the second configuration, using Dell Fluid Cache for SAN, delivered 2.97X the Oracle Transactions Per Minute (TPM) using the Dell Fluid Cache for SAN configuration.

Configuration details

We configured three Dell PowerEdge R720 servers and two HP ProLiant DL380 Gen8 servers with Red Hat Linux 6.4. We then configured a two-node Oracle Database 12c RAC cluster on the DL380 servers with a 460GB database leveraging Oracle Automatic Storage Management. For the cluster management and ASM traffic, we attached the first port of a dual-port 10Gb card in each DL380 server to a Dell Force10 S4810 switch. For the client traffic, we attached each server's onboard 1Gb NICs to a Dell PowerConnect 6248.

For our storage, we configured two Dell Compellent SC8000 controllers connected to two Compellent SC220 disk enclosures, filled with standard rotational HDDs (48 x 146GB 15K drives). We configured a separate controller server to run the Dell Compellent Enterprise Manager Suite. For our storage LUNs, we configured the following: three two 500GB LUNs for backups, one 21GB LUN for the cluster registry volume, four 200GB LUNs for ASM Data, and four 30GB LUNs for ASM logs. Each server was connected to the Compellent via fibre channel to a Cisco DS-C9148-16p-K9 Multilayer Fabric Switch. We then mapped each volume to the two DL380 servers.

For our Fluid Cache runs, we used the second 10Gb port on the DL380 servers for the Fluid Cache network. We installed dual port 40Gb cards in each R720 and attached one port each to the Dell Force10 S4810 to complete the Fluid Cache network connections. We then installed the Fluid Cache software and configured the management and Fluid Cache networking on all five servers. We then configured a Fluid Cache cluster via the Dell Compellent Enterprise Manager. For our cache devices, we

installed one 350GB PCIe SSD in each R720 server. The HP servers were configured without a cache device and were added to the Fluid Cache cluster to utilize the R720s as a Fluid Cache pool between the HP servers and the storage. To enable Fluid Cache, we unmapped the volumes from the HP servers, and remapped them, enabling Fluid Cache with default settings and configured the respective Oracle data volumes to use Fluid Cache.

For our workload, we ran HammerDB v2.16 with a TPC-C like workload. We ran each test with 101 users for a 30- minute rampup time and a 60- minute test duration. We ran three tests with no Fluid Cache and three tests with Fluid Cache enabled on the ASM Data LUNs. The 2.97X advantage is reported from the median run of each set of three.

ABOUT PRINCIPLED TECHNOLOGIES

Principled Technologies, Inc.
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