Executive summary

Performance of persistent apps on Container-Native Storage for Red Hat OpenShift Container Platform

Organizations are seeking to transform their businesses by offering new applications and microservices. To take advantage of this new development model, IT operations must be agile and dynamic. In addition, new ventures often require faster development and operation models, which can put a business in a bind if its technology can't keep up with demands. Embracing container technology could give these businesses the agility they need for success.

The Red Hat OpenShift Container Platform brings containers and Kubernetes® to large enterprises. But stateful applications need reliable, persistent data to maintain their integrity. For businesses that wish to use OpenShift to develop stateful applications, Container-Native Storage (CNS) for Red Hat OpenShift Container Platform not only offers a fast, dynamic approach to delivering persistent storage, but it can also deliver strong performance for these applications.

At Principled Technologies, we tested database performance in a variety of use cases using CNS to deliver storage to stateful applications. We executed our tests with two different types of HGST storage media and analyzed performance and cost to help businesses determine which type of physical storage is best suited to their applications.

Our tests

We used CNS in six different hardware and software configurations, and measured performance on both I/O- and CPU-intensive customer-facing database workloads. The CNS solution not only offered agile, replicated volumes configured within OpenShift, but it also provided scalable performance for I/O-intensive workloads, delivering over 500,000 workload-level orders per minute across 128 app instances in our tests. The CNS solution also performed well for CPU-intensive stateful applications, delivering more than 71,000 orders per minute across 96 app instances.

We tested the CNS solution with two customer-facing database storage offerings: the Ultrastar® SS200 solid-state drive (SSD) for one set of tests, and the Ultrastar He[10] hard disk drive (HDD) for the other. We used these drives to provide persistent storage to the applications in each test case.

Application performance

I/O-intensive workloads stress a server's storage. SSDs are typically faster than spinning disk drives, so it's no surprise that the SSD-equipped cluster had a five times greater maximum performance than the HDD-configured cluster in our tests.

CPU-intensive workloads stress a server's processors more than its physical storage media. As such, the SSD- and HDD-equipped clusters had similar performance in our tests.

What type of storage should your business use with CNS?
Your choice of storage depends on the workloads your company needs to run.

For I/O-intensive workloads, SSDs can deliver much greater performance at a proportionally fractional cost. The cluster that used SSDs delivered five times the max performance of the cluster that used HDDs for just a 1.24 percent greater investment.

For CPU-intensive workloads, application performance was similar for both hardware options. Businesses could save 1.24 percent of the price with a HDD configuration.

Read the full report at http://facts.pt/P8VsQz ▶

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