Diamanti Lab Validation

An IDC Lab Validation, *Sponsored by Diamanti* | **June 2020**

PREVIEW SUMMARY

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Executive Summary

Containers are a modern computing architecture that is rapidly growing in popularity due to its lightweight, agile, and highly automatable nature that is ideal to support cloud native, microservices applications. The industry has standardized on Kubernetes as the container orchestration and management platform, which has robust capabilities for application deployment patterns, scalability, and integration with networking and storage. However, while Kubernetes is extremely powerful, it is also very complex and requires other elements to make it into a fully operable enterprise platform, such as a management interface, security and access controls, and integrated networking and storage subsystems. While early adopters of Kubernetes focused on stateless applications, enterprises are quickly seeing the benefits of containers and Kubernetes for the rapid development and portability of stateful applications such as databases. These can be run in containers, but present additional challenges in workload management and persistent storage, including considerations regarding data protection and disaster recovery.

Key findings

A comparison of operations per second between a MongoDB cluster provisioned in the public cloud and on a Diamanti cluster showed that the Diamanti cluster had 27.7x to 30.8x higher throughput with the small instances and 32.6x to 33.3x higher throughput with the large instances using the YCSB open source performance benchmark with varying mixtures of read and write operations. The Diamanti instances also showed more consistent throughput and latency compared with the Atlas cloud instance, as can be seen in comparing the variability of the performance graphs.

Validation process

IDC observed the use of the MongoDB Atlas service to provision MongoDB clusters to the public cloud and subsequently manage and monitor them. IDC also observed the use of the MongoDB Cloud Manager to manage and monitor MongoDB instances running locally on the Diamanti platform. In both cases, the UI shared the same design and offered the same management and monitoring functionality in a hosted management platform. In particular, IDC observed the real time monitoring of the performance of MongoDB clusters, with graphical visualizations.

Essential Guidance: Advice for Buyers

Containers are the computing foundation for the next generation and enterprises are beginning to adopt containers en masse. Kubernetes is a powerful and modern platform for containers, but it is complex and difficult to deploy. Kubernetes is also not a solution in and of itself; it requires many supporting elements to make it into a complete and operational container platform for the enterprise. Enterprises considering Kubernetes should look to remove as much complexity as possible through pre-built and commercially supported container platforms.

Kubernetes is not only for stateless workloads. Stateful databases, such as MongoDB, are also now supported in Kubernetes, but require persistent storage and high performance I/O systems. While containers and Kubernetes can abstract away much of the infrastructure, the underlying physical I/O systems are still important, particularly for I/O heavy workloads like MongoDB. Thus, the underlying infrastructure is still an important consideration when containerizing high performance workloads such as databases. Enterprises should also look to leverage Kubernetes operators, which will make provisioning and management of complex, stateful workloads easier.

IDC concludes that the Diamanti platform, an integrated solution designed for modern containerized applications, can offer an easy way for enterprises to deploy Kubernetes and host stateful workloads like MongoDB with high levels of performance because of its optimized storage and networking subsystem that feature I/O offload. Additionally, MongoDB Cloud Manager offers an easy to use and ready to go management platform that can offer insights into on-premises MongoDB clusters, which can also complement cloud instances with its sister counterpart, MongoDB Atlas. This provides the user with a hybrid cloud experience and allows the user to leverage both deployments types, which can be optimized for each workload's security, cost, and performance requirements.

IDC Lab Validation Methodology

This Lab Validation Report provides a summary of an extensive validation process performed by IDC in collaboration with the supplier's teams. IDC relied on the supplier's equipment, facilities and their configuration to perform this validation. All of the tests were conducted during the presence of one or more IDC Analysts.

This report is meant to provide a quick set of inferences and insights for IT professionals and business decision makers seeking to perform further due diligence on the capabilities of the product and/or services that have been validated in this Report. However, the goal of this Report is not to supply detailed hands-on test plans and validation jobs. It is not meant to replace the evaluation process that most businesses will conduct before making any decision to purchase the product and/or services.

It is for this reason that this Report is not designed to be an all-inclusive document on all the capabilities of the product, but rather as a concise document that highlights select features/functions of products, their relative performance, and the value these features bring to businesses.

Finally, even though this Report is a sponsored document, it is not meant to be an IDC endorsement of the product, service or the sponsoring supplier. IDC's opinions are its own and not influenced by the production of this document.

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