

Run High-Performance, Resilient Databases on Kubernetes® with Diamanti and MariaDB

Containers and microservices drive tremendous performance and agility benefits for enterprises whose businesses rely heavily on databases. In contrast, running legacy databases like Oracle and Sybase mean overprovisioning, slow deployments, costly licensing, and difficult scaling.

Databases built to run on Kubernetes present significant challenges to IT operations teams in terms of persistence, data protection, and high availability. Persistent storage is a fundamental requirement for many containerized applications, but it is much more complex to configure in Kubernetes than CPU and memory, which follows a simple declarative model. Furthermore, storage adds layers of abstraction, as well as latency. Without an effective solution for persistent storage and data protection, many organizations turn to running certain database services outside of the cluster, which can hamper performance and degrade management efficiency.



High Performance Throughout the Entire Cloud-Native Database Stack

Enterprises seeking substantial performance gains over their legacy enterprise database solutions and foundational infrastructure will benefit tremendously from running MariaDB on the Diamanti Enterprise Kubernetes Platform.

MariaDB is a full-featured database solution with a lightweight, portable runtime that's well suited for containers. The performance it achieves is a function of MariaDB's innovative Kubernetes implementation that enables load balancing of database reads and writes. For example, if the database is configured to support an IO-sensitive application, read operations can be farmed out to a set of slave databases, while the master database handles write operations. MariaDB also features a smart layer that monitors the underlying databases and enables scaling of the deployment accordingly.

MariaDB's fast database performance is further enhanced when MariaDB is run on the Diamanti Enterprise Kubernetes Platform. Each Diamanti three-node cluster delivers close to 3 million IOPS, driven by blazing-fast NVMe block storage with latency below 100 microseconds. Diamanti easily scales performance in lock-step with MariaDB databases, and offers per-container quality-of-service to ensure that database SLAs can always be met without the risk of resource-starvation by noisy neighbor workloads. No other container infrastructure solution offers this degree of control and consistency over storage and network performance.

Diamanti Speeds Up Deployment of Resilient MariaDB Databases With Streamlined Workflows and Enterprise-Grade Data Protection

The Diamanti platform's intuitive workflows dramatically simplify the deployment of MariaDB databases on Kubernetes. For database administrators, it is easy to define storage requirements of database containers by creating new storage claims in just a few clicks. This self-service aspect of the Diamanti platform gives developers and application owners more control over resources, without having to burden IT Operations. Furthermore, the Diamanti platform's integrated NVMe storage obviates the need for external legacy storage solutions which don't work well in cloud-scale or microservice-based environments. This also saves IT operations teams from substantial configuration headaches.

Diamanti at a Glance

SIMPLICITY

- 15-minute bare-metal deployment
- Kubernetes certified
- No vendor lock-in
- Integrates with cloud-native ecosystem
- Easy to manage and scale

PERFORMANCE

- 1,000,000 IOPS per 1U
- Consistent sub-100µs latency
- Industry-leading application-level transactions per second
- Up to 32 TB of fast NVMe flash storage per node

EFFICIENCY

- 70% lower TCO
- 100% host utilization
- 95% usable storage capacity
- No hypervisor needed
- Guaranteed QoS with no overprovisioning

ENTERPRISE-CLASS

- Full-stack support
- Production-grade SLAs
- Secure multi-tenant isolation
- Advanced DR/DP
- On-premises availability zones and hybrid cloud support

MariaDB at a Glance

- Full-featured, lightweight database runtime
- Ideal for containers
- Innovative read/write load-balancing enhances performance

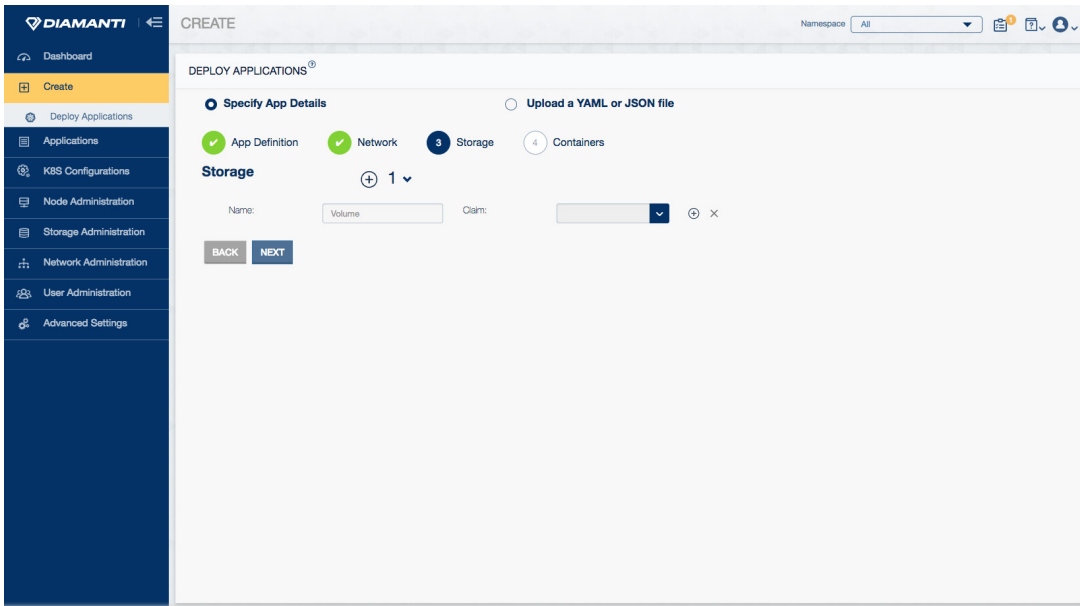


FIGURE 1: Persistent Storage Configuration Workflow in the Diamanti Platform User Interface

Snapshot-based Data Protection

Protecting enterprise databases is both critical and challenging, considering the ephemeral nature of containers. Diamanti offers robust data protection based on allocate-on-write snapshots. The Diamanti snapshot controller seamlessly integrates with Kubernetes to create volume snapshots that can be managed directly through the Diamanti platform interface. Backups of MariaDB volumes are performed using snapshots and are completely schedulable and configurable per application. Furthermore, this point-in-time backup approach works without the need to interrupt running database services.

Diamanti Multi-Zone Clustering Enhances MariaDB High Availability

High availability (HA) is a must when it comes to running mission-critical databases. For such purposes, Diamanti enables users to set up a Kubernetes environment and deploy MariaDB databases across multiple availability zones (failure domains) in order to achieve zone-level resilience and fault isolation. As a result, MariaDB workloads will not experience any service disruption in the event of a zone failure.

A Complete Cloud-Native Database Stack That's Fast, Resilient, and Easy to Manage

Enterprise organizations seeking to modernize the databases that support business-critical applications will realize substantial performance gains by running container-friendly MariaDB databases on Diamanti's high-performance NVMe-equipped Enterprise Kubernetes Platform. Diamanti dramatically simplifies persistent storage configuration and data protection for MariaDB workloads, and enhances application and infrastructure availability through its multi-zone clustering feature.

ABOUT DIAMANTI

Diamanti delivers the industry's only purpose-built, fully integrated Kubernetes platform, spanning on-premises and public cloud environments. We give infrastructure architects, IT operations, and application owners the performance, simplicity, security, and enterprise features they need to get cloud-native applications to market fast. Diamanti provides the lowest total cost of ownership to enterprise customers for their most demanding applications. Based in San Jose, California, Diamanti is backed by venture investors CRV, DFJ, Goldman Sachs, GSR Ventures, Northgate Capital, and Translink Capital. For more information visit www.diamanti.com or follow @DiamantiCom.

ABOUT MARIADB

MariaDB frees companies from the costs, constraints and complexity of proprietary databases. Pluggable, purpose-built storage engines support transactional, analytical or hybrid use cases. Enterprises can now depend on a single complete database for all their needs, whether on commodity hardware or their cloud of choice. Real business relies on MariaDB.

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