

ORACLE DATABASE ON AWS WITH VOLUMEZ



A Volumez instance is a purpose-built data infrastructure tailored to each workload's specific requirements—no guesswork, no black-box tuning, no cloud waste.

Storage performance is a critical factor influencing Oracle database's ability to handle demanding workloads efficiently.

Oracle is a powerful and popular relational database, but organizations face several IT and business challenges when deploying it at scale or in complex environments. These challenges often become more pronounced as businesses grow, requiring careful planning, expertise, and investment in the right data infrastructure. Here are the main ways storage performance affects PostgreSQL:

- **Response Time & Throughput:** Faster storage lowers latency, speeding up queries and transactions by reducing I/O wait times.
- **IOPS & Bandwidth:** High IOPS and bandwidth let Oracle handle more concurrent operations, supporting both transactional and analytical workloads under heavy loads.
- **Dynamic Scaling:** In cloud environments, storage performance can be adjusted on demand, allowing tuning for changing workload needs without downtime.
- **Workload Impact:** Good storage performance enables more parallel operations (like backups or batch jobs)

without slowing down the database; poor performance creates bottlenecks.

- **Write Optimization:** Write-heavy workloads need fast storage; slow write performance increases latency and reduces throughput.
- **Placement & Configuration:** Optimal data placement and correct storage configuration (e.g., RAID, ASM) further boost performance and lower latency.

In summary, optimal storage performance is essential for Oracle Database efficiency, affecting response times, throughput, scalability, and the ability to handle mixed or intensive workloads. Poor storage performance leads to increased wait times, slower queries, and reduced business productivity, while high-performance storage enables the database to fully utilize CPU and memory resources, delivering faster and more reliable service to users and applications.

Introducing the Volumez Instance

A Volumez instance redefines cloud block storage by creating a logical volume from native AWS resources, typically using storage-optimized EC2 compute instances like the is4gen family.

It runs a full data path on AWS-supported Linux, ensuring consistent, supportable infrastructure from storage media to application nodes. The Volumez instance delivers a predictable, high-performance infrastructure tailored for the most demanding workloads like real-time transaction processing running on top of the Oracle Database.

Volumez DaaS (Data Infrastructure as a Service) programmatically composes and manages these instances in real time, optimizing performance and cost through infrastructure-as-code. This approach offers deterministic IaaS utilization with flexibility and control, eliminating manual tuning and vendor lock-in while integrating seamlessly into existing environments without application changes.

How Volumez DaaS works

Volumez DaaS is a cloud orchestration platform that transforms public cloud instances into a distributed storage data layer, dedicated to delivering storage capacity and performance for applications. Unlike hyperconverged (HCI) models that mix storage and compute, Volumez separates

KEY BENEFITS

- **Faster transactions.** Achieve consistent sub-200 microseconds latency and high IOPS, delivering up to 8X higher performance than standard cloud storage and eliminating latency spikes for improved customer experiences and increased revenues.
- **Optimized cloud costs.** Get precisely the IOPS, throughput, and latency your workload requires—no waste, no overprovisioning. Volumez instances enable you to reduce your Oracle licensing fees by over 50%, eliminating Oracle standby nodes and Data Guard licenses, which improves cloud ROI and minimizes cloud waste.
- **Enterprise-grade data services.** Despite leveraging ephemeral storage, the Volumez instance delivers advanced data services such as snapshots, encryption, thin provisioning, and multi-zone mirroring without impacting latency, all built on standard Linux components and providing robust data protection and resiliency.

these resources, allowing administrators to set application-specific performance metrics—such as IOPS, throughput, capacity, and resiliency— independent of volume size and based on dynamic policies.

Storage is presented to application VMs or containers as local NVMe devices via NVMe-oF, and Kubernetes integration is supported through a CSI plugin. Volumez leverages ephemeral instance storage to create a resilient, persistent storage layer with ultra-low latency, orchestrated via a SaaS portal where users define performance policies per volume. The platform handles data resiliency, RAID, and data layout for optimal performance, and abstracts away cloud storage implementation details, enabling predictable, high-performance storage tailored to workload needs.



Typical use cases running on Oracle DB with a Volumez instance

- High-volume, real-time transaction processing, such as order management and financial trades (OLTP)
- Large-scale data warehousing
- Real-time analytics and decisioning
- Financial transaction processing
- ERP / CRM
- Supply chain optimization / IoT
- Healthcare data management and analytics
- Big Data analytics

Key features and capabilities

Self-managed high-performance block storage

- Delivers 2M IOPS or 8X higher performance and sub-200 microseconds latency or one-fourth the latency than other cloud-native storage services.
- Ensures guaranteed performance – 15 GB/s throughput for monster workloads or for consolidated workloads.

Enterprise-grade data resiliency

- Offers built-in high availability, disaster recovery, and data protection, eliminating the need for Oracle standby nodes and Data Guard licenses.
- Delivers zero data loss with various RAID strategies, unlimited instant snapshots and 2-second restores, cross-zone mirroring without impacting latency, 13 9's data durability, plus encryption through 3rd party integrations.

- Profiles media resources and places copies on separate failure domains for greater data availability and resiliency protection against hardware, network, data center, and site failures.

Infrastructure-as-Code and real-time monitoring

- Uses a declarative policy engine where builders define the workload needs (IOPS, throughput, capacity, and resiliency), and it intelligently creates the data layer to match purpose-built for the workload.
- Provides full observability, including extensive performance metrics and logging, making life easier for cloud engineering teams.
- Continuously monitors every component of the infrastructure, allowing for deep inspection of historical performance, either using Volumez' web interface or via APIs.

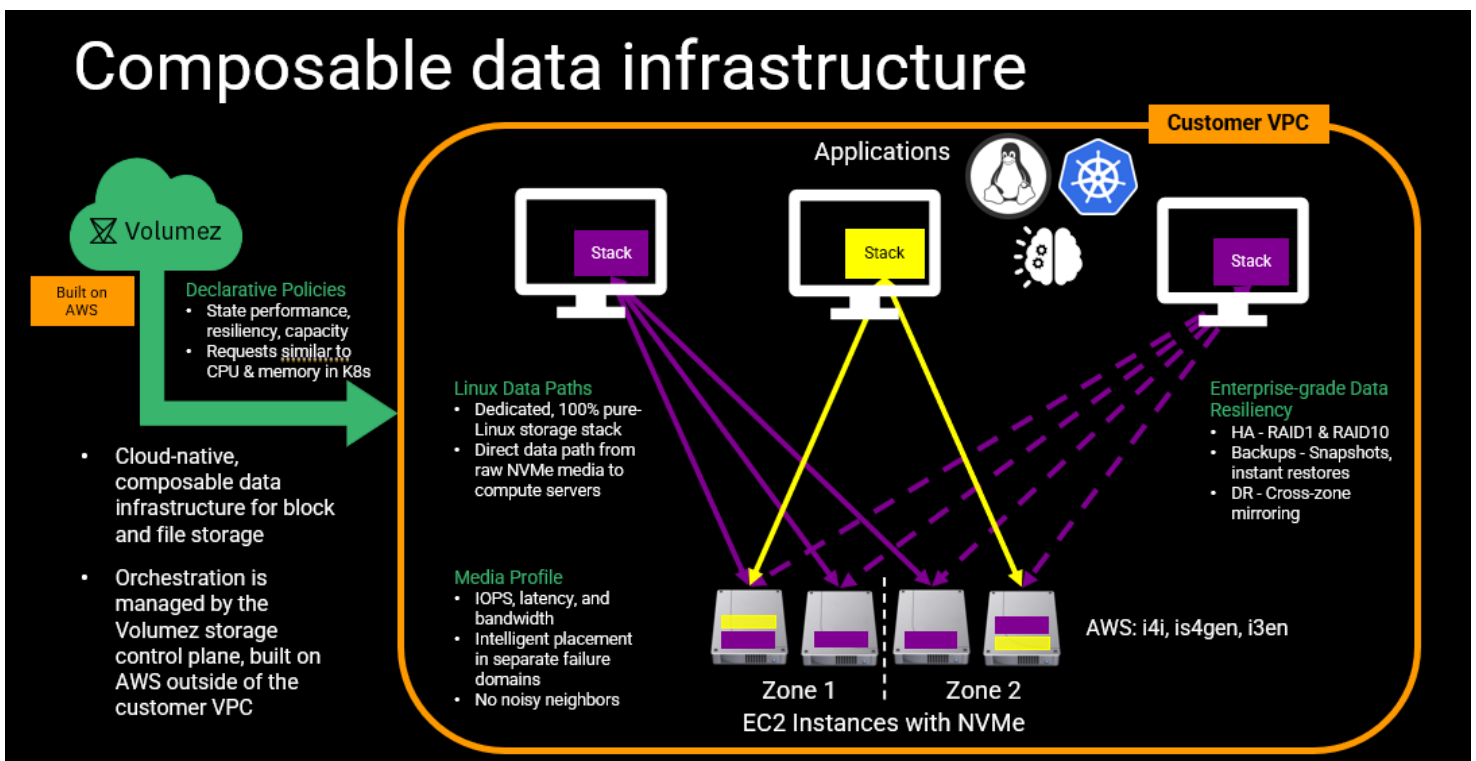


Figure 1: High-level architecture.

Get started today

Volumez instances redefine cloud block storage by creating logical volumes from native AWS resources like `is4gen` instances, delivering predictable high-performance infrastructure for demanding workloads such as Oracle-based transaction processing. The Volumez DaaS programmatically composes and manages these instances via infrastructure-as-code, optimizing cost and performance while eliminating manual tuning and vendor lock-in without requiring application changes.

Visit the [AWS Marketplace](#) and deploy a Volumez instance for free.

"We needed to provide IRIS database as a service offerings in multiple clouds with high performance and low latency at a low cost. Volumez on AWS enabled us to deliver service with up to 50% total cost savings, achieving benchmarks of 1M IOPS and 300 microseconds of latency with IRIS DBaaS. Volumez provides enterprise-grade data services like thin provisioning, snapshots, mirroring, zero disruptions, and linear scalability which form the industry standard for our cloud database as a service offering in the AWS Cloud."

Scott Gnau, Vice President, Data Platforms, InterSystems

Unlocking Cloud Data Infrastructure Performance

2M

IOPS

144 μ s

Latency

15GB/s

Bandwidth

Per volume, guaranteed

- No cache, with mirroring on AWS with full data services.
- 1.5M IOPS with mixed 4K random 70%/30% R/W. 2M IOPS for read-only 4K random workloads.

Figure 2: Performance benchmark.



Contact Us



About Volumez

Volumez innovates next generation cloud-native storage as the premier data infrastructure as a service company that helps organizations realize the true potential of their data. With its patented controller-less architecture, Volumez tackles latency and scalability challenges by establishing direct Linux data paths, ensuring exceptional performance and resiliency with transformative economics. Through innovative technology and a customer-centric approach, Volumez offers comprehensive solutions that streamline data workflows, enhance data quality, and drive informed decision-making. Discover more at [Volumez.com](#).

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