DATACORE™ | Puls8

Container-Native Storage for Kubernetes Environments

Fast, Resilient, Persistent Storage Powering Stateful Applications

Key Benefits

- **Accelerate Kubernetes applications** with ultra-fast NVMe-backed performance

- **Eliminate external storage bottlenecks** by keeping data close to workloads

- **Ensure continuous availability for stateful workloads** even during node failures

- **Maintain predictable performance** as clusters scale and workloads shift

- **Speed up delivery cycles** with declarative, GitOps-ready storage workflows

- **Reduce operational overhead** with a single Kubernetes-native storage model

- **Achieve consistent results** across data center, cloud, and edge deployments

Product Overview

DataCore Puls8 is a container-native storage platform engineered for Kubernetes environments. It runs entirely inside the cluster and delivers persistent volumes through standard Kubernetes constructs (PVCs, StorageClasses, StatefulSets), enabling stateful workloads such as databases, CI/CD pipelines, analytics, and AI/ML stacks to maintain durable state even as pods restart, nodes fail, or workloads are rescheduled. This ensures data is not lost or corrupted during common Kubernetes lifecycle events and avoids the operational complexity of working around ephemeral container storage.

Puls8 transforms each node's local NVMe and SSD storage into a seamless Kubernetes persistence layer, allowing applications to consume block volumes without relying on external storage infrastructure. With NVMe-based configurations, Puls8 delivers ultra-low-latency, high-throughput storage ideal for demanding workloads. Volumes can be provisioned as high-performance local storage or as synchronously replicated storage across nodes for resilience and high availability.

The platform includes a comprehensive suite of enterprise data services: thin provisioning, snapshots, encryption at rest, and integration with Kubernetes-native backup and recovery tools such as Velero and Veeam Kasten. Observability is delivered through integrations with Prometheus, Grafana, and Alertmanager, providing metrics, dashboards, and alerting for storage performance, usage, and health.

What Users Can Expect

High Performance with NVMe

High Availability

Enterprise Data Services

Data Protection & Backup

Observability & Analytics

Designed for declarative, infrastructure-agnostic operation, Puls8 fits naturally into GitOps workflows and allows platform, SRE, and DevOps teams to manage storage the same way they manage applications. No external arrays, SAN systems, or specialized storage hardware are required—resulting in simplified operations, consistent behavior across environments, and storage that scales seamlessly with container workloads.

Puls8 is built for enterprise production environments, providing the stability needed for critical workloads on-premises or in the cloud. With 24/7 support, organizations can maintain smooth operations and resolve issues quickly, enabling high service levels for demanding Kubernetes applications.

Use Cases

These are several common Puls8 use cases spanning varied workload needs, with others widely deployed across organizations and Kubernetes service provider environments.

- ✔ Run high-performance databases like PostgreSQL, MySQL, and MongoDB on Kubernetes
- ✔ Support CI/CD systems that require durable, fast storage for builds and pipelines
- ✔ Standardize persistent storage across dev, test, staging, and production clusters
- ✔ Power logging, observability, and search stacks such as ELK and EFK with scalable storage

- ✔ Deliver low-latency storage for AI/ML workloads and data-intensive pipelines
- ✔ Support backup, restore, and disaster-recovery workflows for cloud-native applications
- ✔ Run stateful microservices that depend on consistent, portable storage across clusters
- ✔ Enable analytics, streaming, and event-driven workloads that require sustained throughput

Puls8: Key Features

CONSUMERS				
KUBERNETES STATEFUL APPLICATIONS (E.G., DATABASES, MESSAGE QUEUES, ANALYTICS, AI/ML, CI/CD, MICROSERVICES)				
ACCESS METHODS				
NVME–OF TCP		NVME–OF RDMA		
OPERATION & INSIGHTS	DATA SERVICES			COMMAND & CONTROL
ORCHESTRATION	⏫ PERSISTENT VOLUME PROVISIONING & MANAGEMENT	⊕ BACKUP & RECOVERY		GRAPHICAL USER INTERFACE
POOL MANAGEMENT	•|• VOLUME REPLICATION	☀ SNAPSHOTS		KUBECTL / CLI
PERFORMANCE & HEALTH MONITORING	� APPLICATION FAILOVER	● THIN PROVISIONING		
HISTORICAL / REAL-TIME CHARTS	🔒 ENCRYPTION WITH KMS SUPPORT	â–® OBSERVABILITY		REST API
STORAGE PROTOCOLS				
NVME/NVME-OF	FC	ISCSI	SAS/SATA	

CONSUMERS

Kubernetes stateful workloads that require persistent, high-performance, highly available storage inside the cluster, such as databases, message queues, analytics engines, AI/ML pipelines, CI/CD systems, and stateful microservices.

ACCESS METHODS

NVMe-oF TCP and NVMe-oF RDMA front-end data access protocols that Consumers use to connect to and interact with Puls8-provisioned volumes, delivering low-latency, high-throughput access to persistent data.

DATA SERVICES

Persistent Volume Provisioning & Management: Provides dynamically provisioned block volumes through Kubernetes, ensuring applications receive reliable, high-performance storage on demand.

Backup & Recovery: Integrates with backup tools such as Veeam Kasten and Velero to create application-consistent snapshots of persistent volumes and Kubernetes definitions for reliable restoration.

Volume Replication: Provides synchronous replication of persistent volumes, maintaining multiple active copies on different nodes in the cluster to enable immediate failover and ensure high availability.

Snapshots: Creates fast, space-efficient point-in-time snapshots of persistent volumes for protection, cloning, and quick recovery.

Application Failover: Provides transparent, automated failover by restarting workloads on healthy nodes and reattaching their replicated volumes, reducing disruption during node failures or rescheduling events.

Thin Provisioning: Lets you provision volumes without consuming physical space upfront, allocating storage only as data is written to maximize efficiency and minimize unused capacity.

Encryption with KMS Support: Protects data at rest using strong volume-level encryption and integrates with external Key Management Systems to centrally manage and secure encryption keys.

Observability: Integrates with Prometheus and Grafana to deliver monitoring and alerting for storage and volume performance, capacity, and health.

OPERATION & INSIGHTS

Puls8 streamlines storage operations by combining automation, intelligent resource management, and deep performance insight in one Kubernetes-native platform.

- **Orchestration:** Runs fully inside Kubernetes and uses native APIs, ensuring storage operations—deployment, scaling, upgrades—are automated and consistent with standard cluster workflows.
- **Pool Management:** Aggregates local block devices (NVMe, SSD, HDD, and others) into manageable storage pools, simplifying persistent volume provisioning and data plane operations.
- **Performance & Health Monitoring:** Continuously tracks volume and node performance, latency, I/O patterns, and device health to surface issues early and keep storage services reliable.
- **Historical / Real-Time Charts:** Provides real-time and historical visibility into storage and volume metrics, enabling trend analysis and faster troubleshooting through integrated dashboards.

COMMAND & CONTROL

Puls8 offers a graphical UI along with CLI and API options, giving operators an intuitive way to configure, manage, and automate Puls8 storage services as part of their Kubernetes workflows.

- **Graphical UI:** Provides an intuitive, visual interface for configuring volumes and data services, and performing common operational tasks without needing command-line expertise.
- **CLI:** Enables fast, scriptable, Kubernetes-native control for administrators who prefer command-line workflows or need to automate routine operations.
- **API:** Offers programmatic access for integration with automation frameworks, GitOps pipelines, orchestration tools, and enterprise management systems.

STORAGE PROTOCOLS

Leverages NVMe/NVMe-oF, FC, iSCSI, and SAS/SATA to access backend storage devices, supporting local NVMe drives, SSDs, and other block devices across standard Kubernetes node hardware for high performance and flexibility.

DEPLOYMENT

Puls8 runs on standard Linux-based Kubernetes environments—on-premises, in the cloud, or at the edge—where nodes provide access to local NVMe, SSD, or other block devices. It supports both hyper-converged clusters, where storage and workloads share the same nodes, and dedicated storage nodes when required. Puls8 operates consistently across single- and multi-cluster deployments with predictable performance.

LICENSING

Puls8 is licensed based on the number of Kubernetes nodes in a cluster where it is installed. This includes all nodes regardless of role (worker or master), and applies to both virtual machines and physical servers. Licensing is unaffected by the number of pods, containers, volumes, IOPS, or total storage capacity, making it simple to predict costs and scale without hidden limits.

Puls8: Highly Available Persistent Storage Architecture
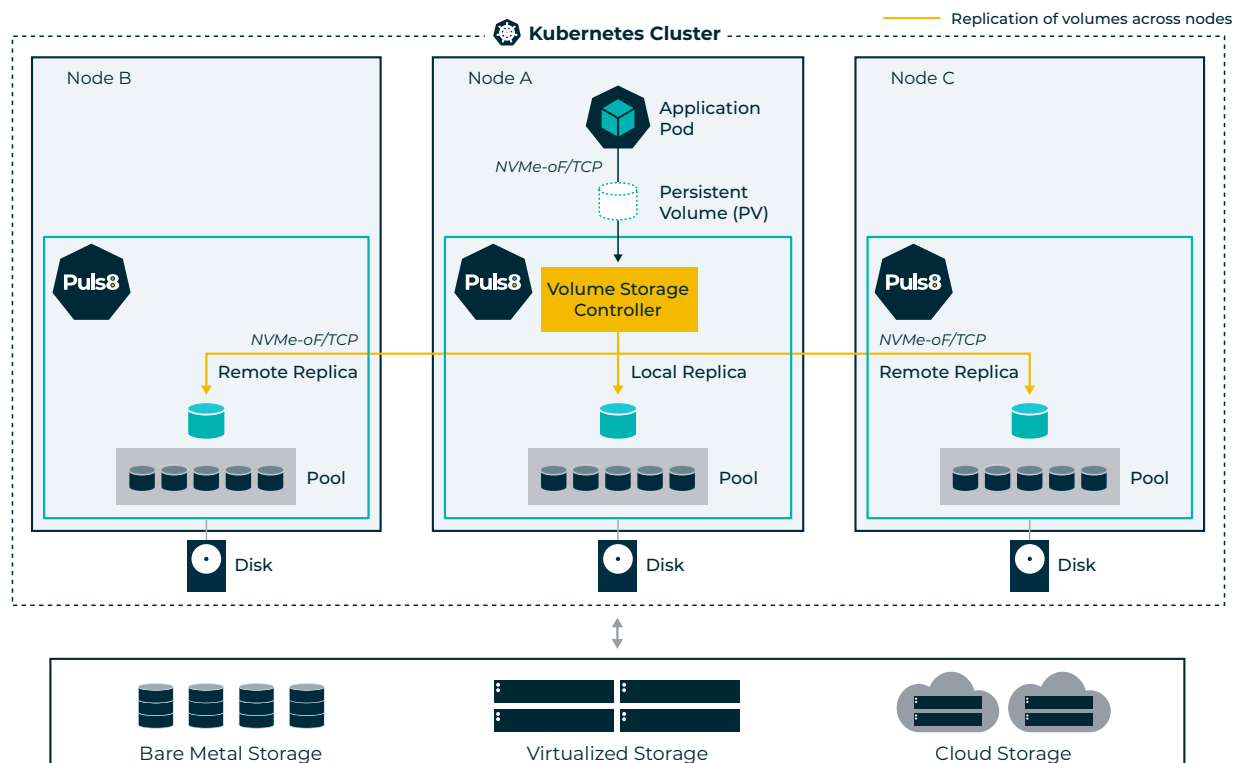
Puls8 provides replicated persistent volumes across Kubernetes nodes, delivering resilient I/O paths and automatic failover.

Minimum System Requirements

Processor	x86-64 CPU cores with SSE4.2 instruction set support
Operating System / Kernel	Linux kernel 5.19 or higher, with nvme-tcp and recommended nvme-core multipath enabled

CPU	Minimum: 4 cores Recommended: 8 cores
Memory	Minimum: 3 GiB RAM Recommended: 16 GiB RAM

Always-on Support

24x7

Customer Excellence

AWARDED 10+ TIMES

Customer Focused

DATACORE CSAT

99.68%

Experience round-the-clock global support from our Stevie Award-winning customer service team. Reach us via phone, email, or our online portal anytime you need assistance.

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DataCore empowers organizations to gain intelligent, secure, and flexible control of their data no matter where it lives. We simplify the way block, file, and object data is stored, protected, and managed across core, edge, and cloud environments. By streamlining operations and reducing infrastructure costs, we empower IT leaders with the agility and freedom to meet evolving business demands. **www.datacore.com**