SOLUTION BRIEF:

Storware and VergeOS

A Complete Solution for Modern Data Protection and Resiliency

verge.io

As enterprises continue to scale their IT infrastructures, they face increased challenges in ensuring the resiliency and protection of their critical data. Data centers are becoming more complex, encompassing a variety of platforms, operating systems, hypervisors, containers, and cloud services. Traditional backup and data protection solutions are often inadequate in providing the flexibility and performance required by modern organizations. This is where **Storware**, a leading backup software solution, comes into play, especially with its recent support for **VergeOS**.

Storware, renowned for its stability and advanced integration capabilities, offers a unique approach to enterprise data protection by safeguarding a wide range of infrastructures, specifically focusing on KVM-based hypervisors. Its newly enhanced support for VergeOS, an ultraconverged infrastructure and a leading VMware alternative, makes the combination of Storware and VergeOS one of the most complete data protection and resiliency solutions available for modern infrastructures

THE SHARED RESPONSIBILITY MODEL:
Data Resiliency for Modern Infrastructures

One of the core principles of VergeIO's data protection philosophy is the **shared responsibility model.** This model requires the infrastructure software (hypervisor, storage, and networking) and backup software to participate equally in the data resiliency, protection, and recovery process.

Infrastructure software must ensure resiliency and uptime in the event of hardware failures, while backup software safeguards against user errors and software issues and provides long-term retention. Too often, the organization must depend too much on backup software for protection and recovery because of limitations in the infrastructure software's ability to protect itself.

Storware and VergeOS together deliver on this shared responsibility:

- **VergeOS** ensures that infrastructure is protected against multiple simultaneous hardware failures, service disruptions, and site disasters, giving organizations the confidence that their workloads remain available even during hardware outages.
- **Storware** complements VergeOS by protecting against soft errors (e.g., accidental deletions, software failures), offering long-term retention, and enabling organizations to meet compliance requirements for off-site and immutable backups.

Storware and VergeOS offer a holistic solution that ensures hardware resiliency and comprehensive data protection. VergeOS fills the typical protection gap left by other infrastructure software solutions by delivering robust infrastructure resiliency through its advanced snapshot technology, high-performance architecture, and integrated ioGuardian technology to protect against multiple simultaneous drive or server failures. Storware compliments the VergeOS foundation by ensuring soft-error data recovery and long-term retention.

STORWARE'S COMPREHENSIVE DATA PROTECTION CAPABILITIES

Storware stands out in the backup market due to its ability to protect a wide variety of sources.

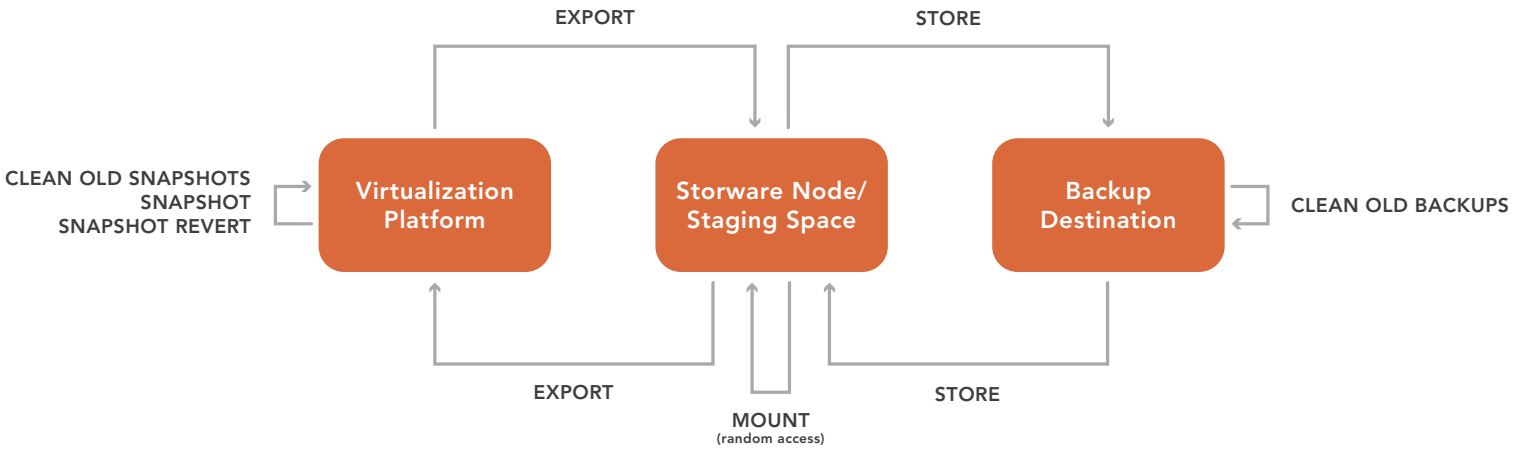
These include:

- **KVM-based hypervisors**, including the newly integrated VergeOS.
- **Bare-metal systems**, supporting both Windows and a broad range of Linux operating systems.
- **Containers**, including Kubernetes environments.
- **Major cloud providers**, such as Amazon AWS, Microsoft Azure, Google Cloud Platform, and Microsoft 365.

This breadth of coverage ensures that Storware can provide a unified data protection solution for enterprises that rely on a mix of on-premises infrastructure, virtualized environments, containerized workloads, and cloud services.

STORWARE'S BACKUP ARCHITECTURE

Storware's architecture is built around a highly scalable and flexible **two-stage backup process**:



Stage One: Backup to Storware Nodes

Storware collects backup data from various sources and stores it temporarily in **Storware nodes**. Each node runs the Storware backup software and contains a staging area for inbound backups. Storware nodes are easily scalable; enterprises can add nodes to meet growing performance or capacity demands. Additionally, Storware offers the flexibility to group nodes so that specific backup sources can be directed to specific or even dedicated backup resources, ensuring that critical data receives the highest levels of protection.

Stage Two: Backup to Final Repository

After the data is backed up to the Storware node, it is transferred to a final repository. Storware supports a wide variety of backup repositories, including:

- **Object storage** (e.g., cloud providers like AWS S3, Azure Blob Storage).
- **File systems**, including NFS and SMB.
- **Enterprise-grade storage systems**, such as Dell/EMC Data Domain, ExaGrid, and HPE StoreOnce.
- **Tape drives and libraries**, for organizations that require or prefer an offline copy of their data.
- **Enterprise backup applications**, such as Dell/EMC Networker, Avamar, IBM Spectrum Protect, Rubrik, and Veritas NetBackup.

This two-stage process offers significant advantages. For instance, if a backup fails due to a network or hardware issue, Storware doesn't need to restart the backup process from scratch. Instead, it can simply resend the failed data to the final repository, saving time and reducing operational disruption. Additionally, this two-step process enables Storware to send backups to multiple repositories, offering enterprises a high degree of flexibility in managing their data protection workflows.

ADVANCED DATA RECOVERY FEATURES

Storware's backup solution is optimized not only for efficiency during backups but also for rapid recovery. The software supports an **incremental forever** data protection strategy, capturing only changes after the initial full backup. This significantly reduces backup times, but unlike traditional incremental forever strategies, Storware performs data consolidation during the backup process in the staging area. Consolidating during the backup instead of waiting for a restore, allows for full-speed restores, even when multiple incremental backups must be applied during recovery.

Moreover, Storware's support for **incremental and differential backups**, combined with granular recovery options, ensures that organizations can restore their data quickly and efficiently when needed.

STORWARE/VERGEOS INTEGRATION:
A Critical Advancement in VMware Alternative Protection

The most significant update to Storware's capabilities comes from direct support for VergeOS. VergeOS, known for its efficiency, scalability, and resiliency, is an ultraconverged infrastructure that collapses virtualization, storage, and networking into a single, integrated platform. This new integration enables enterprises using VergeOS to experience seamless, highly efficient production operations and optimized backups through Storware.

One of the key features of this integration is the use of **VergeOS's Change Block Tracking (CBT)** technology, which tracks modifications to data blocks in real time. By leveraging CBT, Storware minimizes the network traffic required to back up VergeOS environments, resulting in faster backups with less strain on the infrastructure. Furthermore, Storware supports **multi-tenant environments** in VergeOS, enabling different backup policies and schedules for each virtual data center. This flexibility is essential for enterprises and service providers running multiple tenants or workloads on VergeOS.

VergeOS:
The Best Protected, Most Resilient VMware Alternative

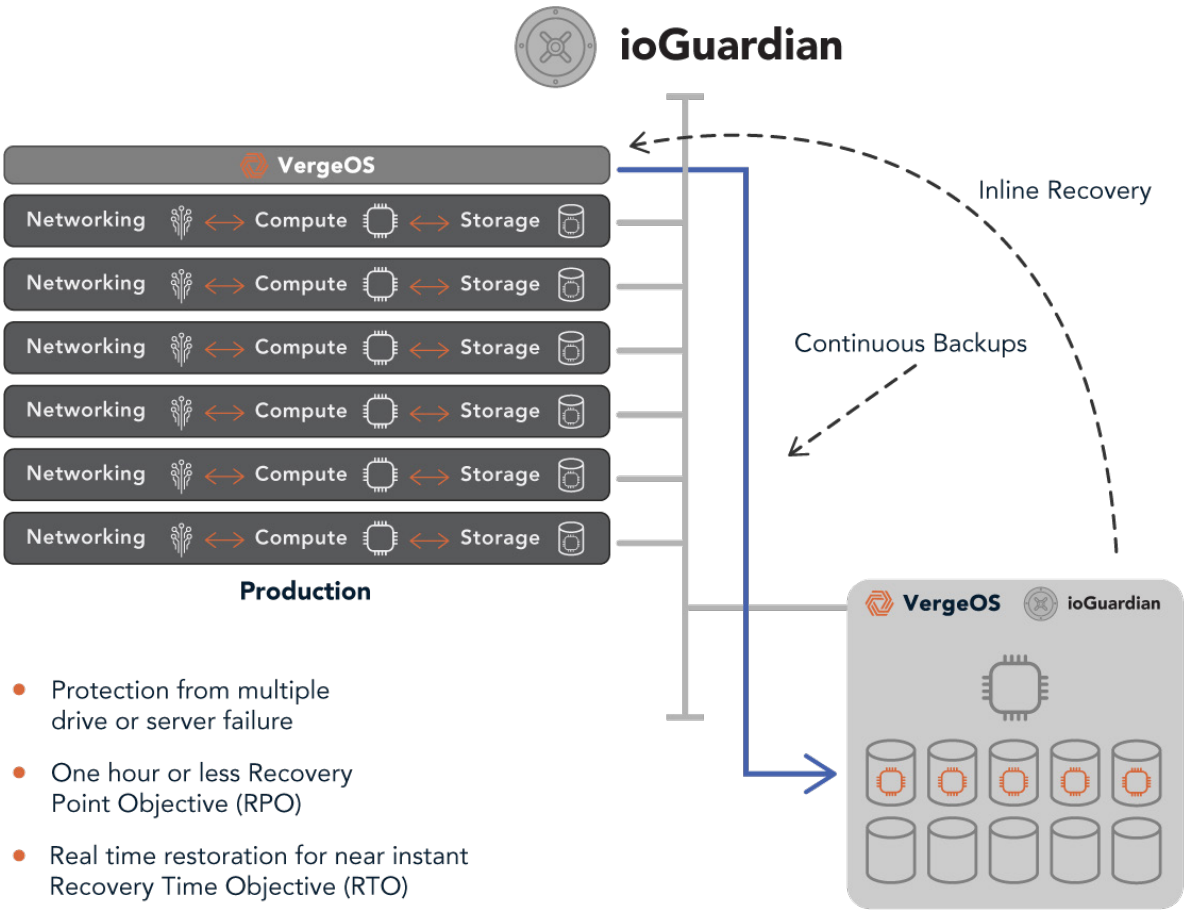
As discussed, most infrastructure software solutions leave too much of the data protection burden to the backup software. However, VergeOS protects against data loss and service interruptions caused by multiple simultaneous hardware failures, accidental deletion, or data corruption. It lives up to the shared data protection responsibility required for today's enterprises.

Powered by its unique **IOclone** technology, VergeOS sets a new high bar for snapshot technology. IOclone moves beyond the limitations of the traditional redirect-on-write technique, enabling VergeOS to create fully independent snapshots of selected objects, whether an entire instance, a virtual data center, or a specific virtual machine.

These snapshots are inline-optimized by VergeOS's built-in deduplication, ensuring maximum storage efficiency and fast execution. Unlike other snapshot methods, VergeOS snapshots are not dependent on the original object, so even if the original is deleted, the snapshot remains active and ready for use. With the ability to store numerous snapshots for extended periods without any performance degradation, VergeOS makes snapshots a seamless and vital part of any data protection plan. Additionally, VergeOS snapshots allow for **granular recoveries,** enabling users to restore individual files from any snapshot directly to a VM, providing even more flexibility and control over data recovery.

VergeOS also provides **ioGuardian**, a data protection solution that provides **inline recovery.** This unique capability enables continuous data access even during multiple simultaneous drive or node failures. Unlike traditional backup appliances, ioGuardian delivers missing data segments to virtual machines in real-time, meaning that VMs typically experience no downtime, even in the case of catastrophic hardware failure.

Additionally, the ioGuardian server can be updated multiple times an hour, enabling tighter **Recovery Point Objectives (RPO)** and **Recovery Time Objectives (RTO)**. ioGuardian is a separate server outside of the VergeOS production instance. It can even be an older or repurposed system, further lowering costs. Using VergeOS's global inline deduplication, ioGuardian reduces storage requirements on the backend storage and network bandwidth to transfer the data. Stringent RPO and RTO objectives can be met because ioGuardian performs all data recovery in real-time, requiring no IT intervention.



This innovative approach sets VergeOS apart from other "instant recovery" solutions, which typically require downtime and involve running VMs on backup appliances with potentially degraded performance. With ioGuardian, recovery is truly instant, allowing VMs to continue running from the primary instance while seamlessly pulling missing data from the ioGuardian server.

This combination of advanced snapshot technology and real-time recovery, plus the addition of Storware's robust backup and retention capabilities, makes VergeOS the best-protected, most resilient VMware alternative on the market.

CONCLUSION: STORWARE AND VERGEOS
A Winning Combination

In today's increasingly complex IT environments, businesses require solutions that protect their data and ensure resiliency and availability in the face of growing threats and challenges. **Storware's comprehensive backup capabilities**—with its support for a wide range of hypervisors, cloud services, and enterprise applications—combined with **VergeOS's ultraconverged infrastructure**—offer organizations a complete, integrated solution for data protection and resiliency.

Storware and VergeOS deliver a holistic solution for modern infrastructures, providing robust protection from hardware failures, user errors, and cyberattacks. This powerful combination helps organizations of all types and sizes ensure that their critical data is safe, secure, and available when they need it most.