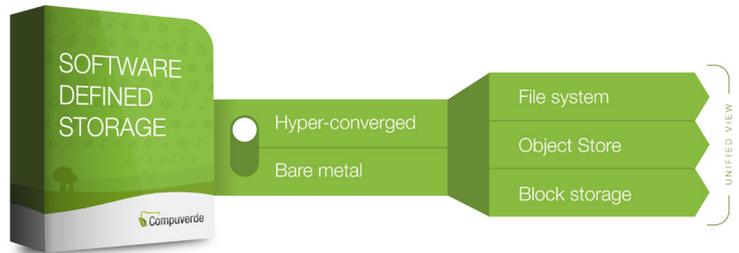


Product Overview: Hyperconverged vNAS

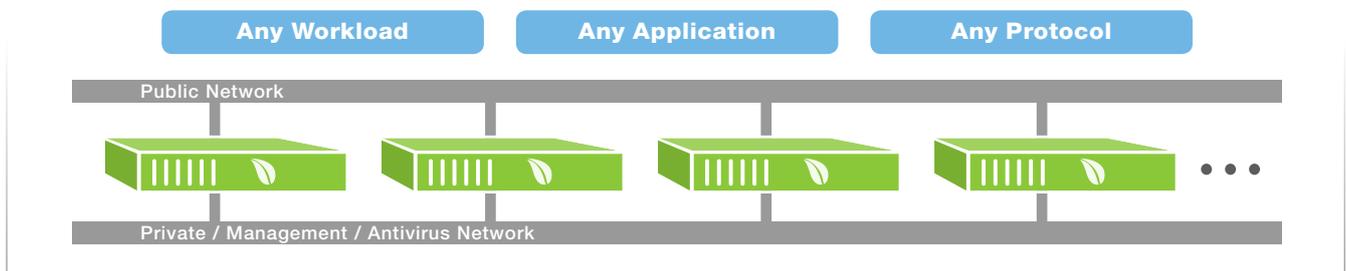
Compuverde delivers a unified storage solution with NAS (SMB/NFS), SAN (iSCSI) and Object Store (S3/Swift/Cinder) in one package. Fully software-defined, completely hardware-agnostic and massively scalable, eliminating the cost and worry of future data migrations and hardware replacements.

Compuverde Hyperconverged vNAS

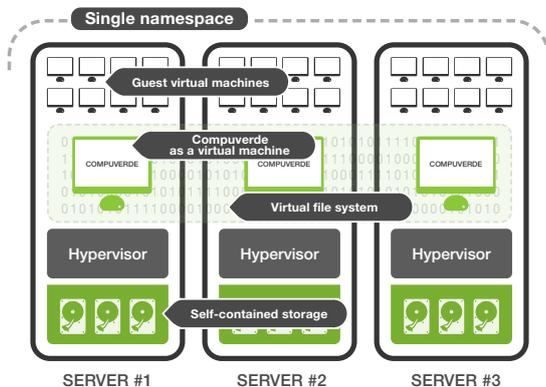
- ✓ Combines computing, network, virtualization and storage
- ✓ Efficient and prolonged storage solution
- ✓ Avoids VM boot storms and similar issues
- ✓ Extreme high IOPS and low latency
- ✓ Reduces power and space consumption



Compuverde scale-out storage cluster



Architectural overview



Private Network

For synchronization and communication between the nodes. Use high-speed connections for low latency and increased performance. Optionally, use separate networks for management and antivirus.

Management Tool

Designed to help perform administrative tasks, monitor the system, change configuration features, access logs and roll out new firmware updates. Connected to the management network, it is not part of the storage cluster or node-to-node communication.

In a Hyper-Converged setup, each node is a virtual machine installed together with other VMs on a hypervisor host. The node utilizes the cache and storage directly and passes it on to the clients.

One single namespace or file system spans all the nodes and is consistently available to applications and users inside the virtualized environment and to the outside through Ethernet. It keeps itself internally synchronized, horizontally throughout the cluster and vertically down to the physical storage.

Data and VMs are automatically distributed and replicated for protection. Full compatibility with hypervisors such as VMware, Hyper-V, KVM and Xen.

Note: Make sure that IGMP is properly configured for all switches and VLANs that are affected by private and management network traffic. All the switches should have IGMP Snooping enabled and only one switch in the group has IGMP Querier enabled for each network.

Installation

1. Create a virtual machine for Compuverde
2. Upload and mount the Compuverde ISO
3. Restart the virtual machine to install

Everything is embedded into a Compuverde installation, simplifying the installation and securing reliability and integration between protocols, file system and object store. No open source or third-party libraries are used.

Setup – web-scale storage made simpler

1. Create a VM and Install the Compuverde software on each hypervisor host
2. Allocate available storage to the VM
3. Install the Compuverde Management Tool
4. Run the setup wizard to create a cluster
5. Run the file system wizard to create a file system

Authentication services provide a layer of security by verifying users' credentials or applications before allowing access to read or modify data. Compuverde supports Active Directory, NIS, Kerberos and more.

Upgrades: To increase capacity and throughput, simply add nodes of any size to the cluster, on-the-fly with no need to take the service offline. Mixed sizes are supported, so if you later decide to add larger nodes than what is used today, there is no need for “forklift” upgrades. The storage cluster will automatically rebalance, distribute existing data and utilize the new capabilities. Similarly, firmware updates and hardware replacements are done on-the-fly using Virtual IP to ensure continuous service. To avoid hotspots, enable the feature Auto Rebalance before adding nodes to an existing cluster, so that existing data is distributed to the new and empty nodes.

Multitenancy: With multitenancy, you can add multiple file systems within a single storage cluster, where each file system has its unique domain, shares, users and groups. This allows for reduced overhead, easier administration and cost-savings on power consumption and hardware. The file systems and everything inside are isolated from each other. Disk Quotas can be set for file systems, shares and folders, by using the Management Tool.

Virtual IP makes your storage cluster highly available. The feature provides a failover mechanism for nodes, ensuring that all nodes appear online at all times even in the case that one goes down.

Erasur coding provides almost complete data redundancy and reduced footprint compared to mirroring. Compuverde distributes slices of data across nodes and locations so that data and services stay protected and sustained in case of failure. Each node will contain a mix of data and parity from other nodes' data, so that hot spots are avoided and all data is equally secured.

Read more about this and other features in the Technical Overview or Management Manual.

Storage disks: Increasing the number of storage disks within each node contributes to higher maximum throughput by spreading the load. Likewise, increasing the number of nodes increases the maximum throughput for the entire cluster.

Cache devices: One or more NVMe devices are recommended for each node, for performance and throughput. Use cache replication to keep write cache safe in case the node goes down or a cache disk malfunctions. Durability must be considered; enterprise class or similar (DWPD > 9).

Recommended hardware specifications

CPU	x64 (8+ cores) SSE4.1
RAM	32+ GB
Boot disk	60+ GB
Cache disk	100+ GB NVMe
Storage disk	SAS/SATA disks
Network	2 x 10 Gigabit or more
Network switch	2 x switches
Number of nodes	Scale out from 4 nodes

The Compuverde Management Tool requires a Windows computer (64-bit Windows 7 or later, 100 MB for installing the Management software) on the same subnet as the storage cluster back-end interface.

