

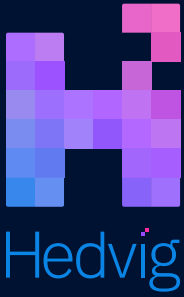


# VIRTUALIZATION STARTER KIT

*More VM's than you can count?*

*VMware works better at scale with Hedvig.*

Version 2.0  
May 2018



# Getting Started with VMware + Hedvig Virtualization

## KEY COMPONENTS OF OPENSTACK

- > Nova: “the primary computing engine behind OpenStack”
- > Swift: “a storage system for objects and files”
- > Cinder: “a block storage component, which is more analogous to the traditional notion of a computer being able to access specific locations on a disk drive”
- > Neutron: “provides the networking capability of OpenStack”
- > Horizon: “the dashboard behind OpenStack; it is the only graphical interface to OpenStack”
- > Keystone: “provides identity services for OpenStack”
- > Glance: “provides image services to OpenStack”
- > Ceilometer: “provides telemetry services, which allow the cloud to provide billing services to individual users of the cloud”
- > Heat: “the orchestration component of OpenStack, which allows developers to store the requirements of a cloud application in a file that defines what resources are necessary for that application”

[bit.ly/openstack-components](http://bit.ly/openstack-components)

*Organizations have turned to VMware to provision and manage their high volume of applications across business units and geographies. At the rate organizations are scaling, data creation is reaching new heights within virtualized data centers. Hedvig addresses this challenge through The Hedvig Distributed Storage Platform, which allows organizations to efficiently provision and scale storage across private and public cloud infrastructures. Hedvig creates a hybrid, unified storage system that has the ability to easily expand without interruption or downtime.*

## Virtualization Overview

“Virtualization is a proven software technology that makes it possible to run multiple operating systems and applications on the same server at the same time. It’s transforming the IT landscape and fundamentally changing the way that people utilize technology.” [Click here for more details](#)

## Benefits of Virtualization

“Virtualization can increase IT agility, flexibility, and scalability while creating significant cost savings. Workloads get deployed faster, performance and availability increases and operations become automated, resulting in IT that’s simpler to manage and less costly to own and operate.”

[Click here for more details](#)

- > The Hedvig Storage Service: a patented distributed systems engine that deploys on x86 or ARM servers and vCloud® Air™ compute instances to form a self-healing, scale-out storage cluster.
- > The Hedvig Storage Proxy: runs as a guest VM on the vSphere hypervisor to provide access to the Hedvig Storage Service and also provides local, deduplicated, SSD-based caching services to accelerate data access and eliminate network hops.



**SCALE**  
*Elastic, Distributed Storage for VMware vSphere*

Scale to petabytes of data. Start with a few nodes and scale to thousands. Easily add capacity when needed. Embrace the economics of commodity x86 servers and software-defined storage with your VMware-based cloud.



**BLOCK**  
*Block, file and object storage: no-compromise*

Support any application. Deliver any type storage for your business applications. Configure persistent, block, file, and object storage. Maximum flexibility means no-compromise delivery of storage to your business.



**INTEGRATION**  
*Seamless integration and automation*

Provision storage for vSphere environments at the pace your business demands. Leverage an easy-to-use user interface or customize integration with a full set of REST and RPC APIs

# Modern Storage for VMware

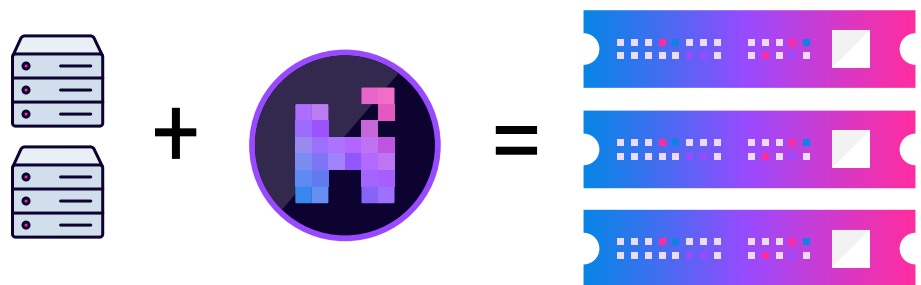
## Streamline storage operations with large-scale virtual

*Virtualization has transformed enterprise IT, increasing productivity, lowering costs, and improving business continuity. It is a fundamental enabler of the modern, software-defined data center. VMware®, the industry-leading virtualization software company, has lead ushering in an era of service oriented cloud architectures and on-demand IT.*

*With VMware, enterprise customers dynamically provision and manage hundreds if not thousands of applications dispersed across business units and geographies. The challenge? The scale of modern IT deployments and the rate of data creation in the virtualized data center pushes the limits of traditional array-based storage infrastructure. To successfully manage the volume of data and applications and keep pace with the rate of change a new approach to storage is needed.*

## Hedvig and VMware – Powering the Modern Data Center

The Hedvig Distributed Storage Platform is the industry’s most complete software-defined storage solution built to deliver an elastic, resilient, modern storage solution for VMware vSphere® environments. Organizations with fast-growing, virtualized applications and data benefit from the ability to dynamically provision and scale storage across private and public cloud infrastructure with unprecedented simplicity and speed. Designed with distributed systems DNA, Hedvig takes advantage of commodity server infrastructure—including flash media and high-capacity hard drives—as well as public cloud services to form a single, unified storage system that is implicitly hybrid and expands on-demand without interruption or downtime. A full range of industry standard storage protocols combined with a comprehensive suite of enterprise storage capabilities provides VMware administrators with all the tools required to meet the storage and disaster recovery needs of even the most demanding applications running on vSphere.





## ADVANCED STORAGE FEATURES

- > iSCSI, NFS, and Object protocols
- > vCenter plug-in
- > VAAI integration
- > All-flash and hybrid storage configuration
- > Server-side SSD/PCIe caching
- > Inline deduplication and compression
- > Thin provisioning
- > Tunable replication
- > Self-healing
- > Cross rack and site disaster recovery policies
- > Zero-impact snapshots and clones
- > Auto-balancing and tiering
- > GUI, CLI, REST API, and RPC interfaces
- > I/O sequentialization

## BUSINESS BENEFITS

- > Lower TCO 50% or more
- > Scale to massive capacity
- > Eliminate operational headaches
- > Lower risk of data-loss
- > Eliminate storage downtime
- > Never migrate data again
- > Deliver projects on time



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[hedvig.io](http://hedvig.io)

## How it Works

The Hedvig Distributed Storage Platform features two main components:

- > The Hedvig Storage Service—a patented distributed systems engine that deploys on x86 or ARM servers and vCloud® Air™ compute instances to form a self-healing, scale-out storage cluster.
- > The Hedvig Storage Proxy, runs as a guest VM on the vSphere hypervisor to provide access to the Hedvig Storage Service and also provides local, deduplicated, SSD-based, caching services to accelerate data access and eliminate network hops.

To provision storage, administrators use Hedvig’s intuitive graphical user interface to configure and share virtual disks with VMware vSphere hosts and virtual machines. Each virtual disk can be customized with a set of capabilities to best meet the performance, protection, and disaster recovery needs of a given application. Additionally, a full set of APIs enables developers to easily build self-service portals and app integrations that take advantage of the storage platform.

## Advantages of VMware with the Hedvig Distributed Storage Platform

- > Integrate Simplify and automate provisioning —spin up any number of virtual disks in just a few seconds.
- > Integrate public and private clouds —Build a unified hybrid environment to easily migrate to or from your data center and public clouds.
- > Set granular virtual disk policies — assign enterprise-class features on a per volume basis to best fit your application requirements.
- > Connect to any compute environment — use with any hypervisor, application, or bare-metal system.
- > Grow seamlessly with an elastic cluster — scale storage performance and capacity on-the-fly with off-the-shelf x86 and ARM servers.
- > Deliver predictable performance — massive parallelism, dedicated flash, and edge cache configurations deliver consistent high-IOPS performance for

### ABOUT HEDVIG

Built by software engineers of the world’s largest distributed systems, Hedvig delivers modern storage for enterprise compute environments running at any scale. Customers such as LKAB, Scania, IAG, and GE use the Hedvig platform to transform their storage into a fundamental enabler of digital business strategies.

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## Education Turns to Hedvig

*Holland's Largest Distributor of Educational Books Turns to Hedvig to Improve the Resiliency and Scale of VMware in Support of its Digital Business Transformation*



*Van Dijk Education is a Dutch distributor of educational content. As the country's largest educational distributor, the company delivers books and content to about 70% of the Netherlands, including traditional textbooks and school supplies, as well as technology and digital content.*

As it continues the transition from books to internally developed digital solutions, Van Dijk is simultaneously helping schools make the move to more interactive, blended learning methods.

### COMPANY PROFILE

*Van Dijk Education is Holland's largest distributor of educational books and content.*

The company has more than one million customers. Van Dijk is transitioning from a traditional logistics company to a digital media company in the cloud era. storage with your VMware-based cloud.

### SUMMARY

*Van Dijk is replacing legacy storage with the Hedvig Distributed Storage Platform.*

Hedvig provides Van Dijk with the multi-protocol support, storage performance, and advanced data services it needed to consolidate disparate storage solutions onto one software-defined storage platform.

### Challenges

Data volumes in the educational sector are growing at a phenomenal rate. In addition to managing more data, Van Dijk also faces a consolidation challenge. At present, many of the company's applications run on different storage systems in different locations, some hosted externally and some in-house. In the near future, Van Dijk will host all of its applications from their own data center and consolidate down to a consistent, simplified virtual server infrastructure across two data centers. The company's goal is to replicate data between the two sites for improved disaster recovery.

Van Dijk had already selected EMC VNX and EMC ScaleIO solutions for its storage needs. However, the move to a dual-datacenter environment meant they needed a new solution. Both EMC products were missing the disaster recovery (DR) replication, space efficiency with deduplication and compression, and multi-protocol support needed for all application types. "What we wanted in a software-defined storage solution seemed impossible," says Arnold Juffer, CTO at Van Dijk. "Our current vendors could not deliver a solution that fulfilled our needs for block, file, and object storage in a single platform that didn't compromise performance and feature set." Van Dijk needed a storage solution with the scalability, elasticity, and agility to keep up with the rate of change and the ability to introduce a new level of economics that closes the budget gap, while providing enterprise class features and data protection.

*"Hedvig is the only solution we've found that hit all three critical needs," concludes Juffer.*



## Solution

Van Dijk originally turned to software-defined storage (SDS) solutions in 2012, but was unable to replace traditional storage arrays with a single, software-defined platform. Van Dijk found SDS solutions were limited — for instance block-based (iSCSI) only — and lacked the feature-set like deduplication and compression that would help the company curb its exponential data growth.

By 2013 Van Dijk found itself saddled with a combination of traditional and software-defined storage, leading to unwanted costs and complexity from managing too many platforms.

Van Dijk set out to rethink its storage strategy again in 2014. After another survey of the SDS landscape, Van Dijk selected Hedvig as the only platform that met its requirements for performance, multi-protocol support, and advanced storage functionality.

“In 2014, after a lot of searching and testing we met Hedvig, a software-defined storage solution that seemed to have it all,” notes Juffer. “We started our rigorous testing and came to the conclusion that we had found what we were looking for, a next-generation storage solution that delivers the enterprise-class features and security we need to provide our business and customers with the continuity they need and depend on.”



After selecting the Hedvig Distributed Storage Platform, Van Dijk can now deploy a single platform to not only eliminate its hodgepodge of storage solutions, but to get its application consolidation effort back on track. The Hedvig solution is deployed across multiple data centers, providing a single pool of virtualized storage to Van Dijk’s VMware environment. Now Van Dijk seamlessly moves VMs among sites with a solution that supports vStorage API for Array Integration (VAAI). Moreover, Hedvig’s vCenter plugin ensures Van Dijk staff can manage the entire Hedvig cluster natively from within the vSphere Web Client user interface.

“Hedvig drastically simplifies our virtualized server infrastructure and enables us to really consolidate and transform our data center,” says Juffer. “It’s easier to maintain and Hedvig contributes significantly to the promise of our softwaredefined data center vision.”

Thanks to Hedvig’s multi-site replication and ease-of-use, Van Dijk not only has a better DR strategy, but an overall high-availability datacenter architecture to help avoid downtime and meet growing business demands. And all of this can be managed without requiring specialized IT skills.



*“Van Dijk is transforming its business. We’re transitioning from a traditional to a digital business. IT plays a key role in achieving that business goal.”*

— Arnold Juffer, CTO,  
Van Dijk Education





### Benefits

With the Hedvig Distributed Storage Platform, Van Dijk gains significant business benefits including the following advantages:

*“Hedvig drastically simplifies our virtualized server infrastructure and enables us to really consolidate and transform our data center.”*

— Arnold Juffer, CTO,  
Van Dijk Education



**Investment protection with hyperscale and hyperconverged support in the same deployment**



**Reduced downtime with disaster recovery capabilities and multi-datacenter replication built into the platform**



**Significantly lower TCO with block, file, and object storage in a single, software-defined storage platform**



**Better business alignment with elasticity and massive scalability to support digital transformation efforts**



**Faster time-to-value with native VMware integration including VAAI support and a VMware vCenter plugin**



**Decreased risk and vendor lock-in with storage that can be deployed on any industry standard server platform**



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