

## SwiftStack on SuperDense Storage by Redapt

### Summary

Capacity requirements continue to escalate, growing from terabytes to multiple petabytes as organizations increase their deployments of big data analytics, online archives, digital media workflows and repositories, disaster recovery backups, and other unstructured data sets.

SwiftStack storage nodes have the ability to scale up indefinitely, running on industry-standard servers with internal DAS drives. But scaling out to multiple petabytes while maintaining SwiftStack's low TCO and limiting the use of datacenter rack space requires a rethinking of how storage is connected to node servers.

SuperDense Storage by Redapt provides the high capacity foundation needed for petabyte-scale SwiftStack deployments, with storage densities over three times greater than conventional DAS and up to 588 drives and 2.35 PB of raw capacity per standard 44U rack.

Together SwiftStack and Redapt SuperDense Storage provide a complete petabyte-scale enterprise storage solution that delivers very low TCO and high rack utilization, far exceeding the capacity ceilings of both internal server storage and scaled-out SAN or NAS hardware.



### Benefits – at – a – Glance

- Highly efficient petabyte-scale on-premise cloud storage platform
- Easily scales to 2.35 PB per 44U rack, providing high utilization and low TCO
- Single pool of storage across all sites, easily managed via the SwiftStack Controller
- Durable by design with no single-point of failure and triple-redundant replicas
- Nodes and drives can be added, upgraded or swapped out with no downtime
- No vendor lock-in, based on low cost industry-standard servers and drives

### Challenge – Cost-Effective Petabyte-Scale Storage

Capacity requirements will keep growing, driven by new big data analytics, online archiving, digital media workflows, and the proliferation of user-generated unstructured data. Deploying petabyte-scale storage on traditional SAN or NAS hardware is both hard to manage and not cost effective. Storage admins are left with capacity scattered across multiple disconnected silos, facing inevitable forklift upgrades and drained budgets. Although SwiftStack storage can scale out indefinitely by adding more nodes, scaling up by adding more drives per node can quickly hit a ceiling using standard internal DAS drives. A rethinking of the storage architecture is needed to meet the challenge of cost-effectively scaling to multiple petabytes, especially if data is replicated to multiple sites to meet disaster recovery objectives or data availability SLAs.

## Solution – SwiftStack with SuperDense Storage by Redapt

By combining the flexibility and ease of management of SwiftStack’s software defined storage with the high-density hardware foundation of SuperDense Storage enclosures from Redapt, the ceiling on storage node capacities can be eliminated at a TCO far lower than traditional scaled-out NAS.

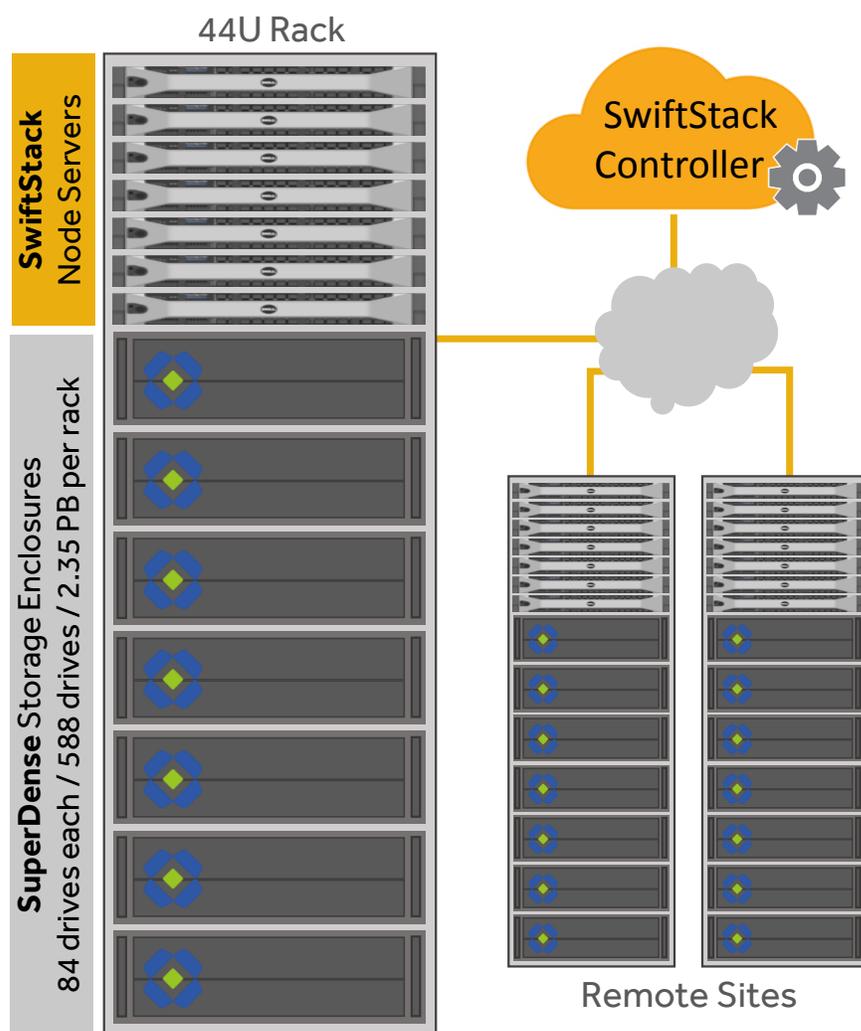
This combined SwiftStack/SuperDense solution is ideal for petabyte-scale capacity, providing a single high density pool of storage across all nodes and sites, able to grow indefinitely without ever facing forklift upgrades or obsolescence.

The SwiftStack Controller provides a single management view across all storage at all sites, making deployment and management of your entire storage infrastructure simple and efficient. SwiftStack automatically replicates data across drives, nodes and even between multiple remote sites providing durable availability for data without the costs and management complexity of multiple legacy SAN or NAS storage silos.

SwiftStack storage can be directly accessed via RESTful HTTP and other programming APIs or as a mountable filesystem using an optional Filesystem Gateway.

SuperDense Storage by Redapt enables a huge increase in storage density for each SwiftStack node. Loaded with as many as eighty-four 4 TB NL-SAS drives, each 5U enclosure provides up to 336 TB of raw capacity, or roughly 2.35 PB raw capacity per 44U rack. By comparison, a full rack of twenty-two 2U servers, each holding eight internal drives can hold less than 30% as much storage in the same datacenter footprint. SuperDense enclosures are designed for 24 x 7 operations with fully redundant components and high availability features including hot insertion or swapping of drives and drive status/temperature indicators making it simple for admins to locate and swap out failed drives.

SuperDense Storage enclosures support economical high-capacity NL-SAS drives and can be either deployed in either half or completely filled configurations, letting customers meet their immediate capacity requirements while still leaving room for expansion. SAS HBA controllers set to a JBOD configuration allow SwiftStack to manage each drive as a separate logical volume, providing an optimal availability by replicating data across multiple drives, nodes, and sites. They are available in a preconfigured rack with room for switches and Dell servers configured as SwiftStack storage and proxy nodes.



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## Key Features

### Performance and Availability

SwiftStack's software defined design ensures that there is no single point of failure or performance bottlenecks, while the SuperDense Storage enclosure use enterprise-grade storage controllers and NL-SAS drives, with fully redundant components and data paths. SwiftStack automatically sends proactive monitoring alerts and redistributes replicated data to maximize availability and reliability.

### Reliable and Durable

SwiftStack's automated replication ensures data remains accessible with no loss of performance even during hardware and media failures. Every stored object is check-summed and saved with triple redundancy, while data replicas ensure that remote sites can still access and update data even if inter-site connectivity is lost.

### Nondisruptive Scaling and Maintenance

SwiftStack storage scales by adding nodes and drives with no downtime or disruption, requiring just a few clicks from in the SwiftStack Controller. Redapt SuperDense Storage enclosures let you hot swap failing drives and hot insert new drives to expand capacity, easily accessed via two separate drive drawers.

### Cost Effective, High Utilization

SwiftStack and SuperDense Storage by Redapt provide substantial savings with a low TCO per TB. Drives and nodes can be heterogeneous and added just when you need them - eliminating underutilized capacity and wasted resources and improving rack utilization by up to 70%, further reducing costs.

### Easily Managed, Seamlessly Integrated

SwiftStack's Controller provides an easy to use unified dashboard for your entire deployment across all sites. SwiftStack easily integrates with enterprise IT systems for authentication, automated updates and recovery, monitoring and alerts, capacity management and chargeback tools. The optional SwiftStack Filesystem Gateway makes it simple to migrate file-based applications and user workflows onto SwiftStack/SuperDense storage with no recoding or retraining required.

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## Supported for 24 x 7 Operation

Combined with the strongest pool of OpenStack Swift expertise in the industry, SwiftStack's around the clock technical support lets you focus IT resources on your users and applications, not on learning, building and supporting storage platform technology.

Redapt provides first line support for SuperDense Storage hardware and works closely with Dell, performing extensive validation and performance testing of SuperDense Storage in the Dell Solution Center labs.



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## Find Out More

For information on SwiftStack's capabilities please visit [www.SwiftStack.com](http://www.SwiftStack.com). For information on SuperDense Storage by Redapt please visit [superdensestorage.com](http://superdensestorage.com) and [www.redapt.com](http://www.redapt.com).

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