Datrium ROI Advantage

Datrium™

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Business Report

The Complexity Challenge

Datrium DVX is an evolution of hybrid cloud infrastructure

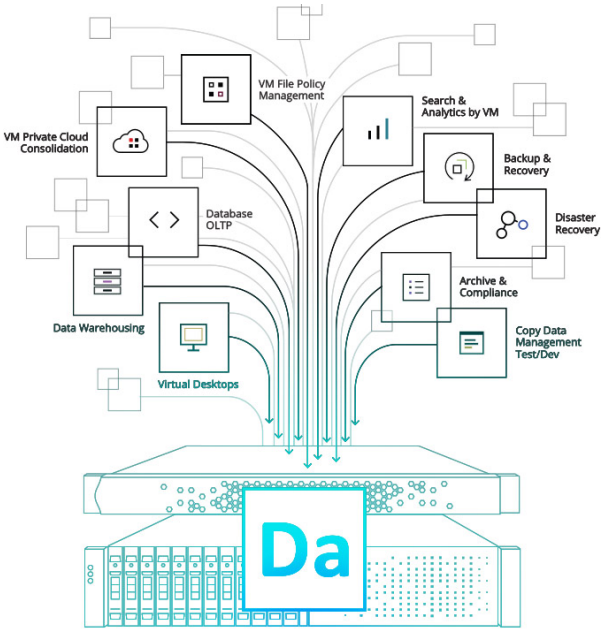
Infrastructure complexity is at the heart of most data center challenges. While the pace of modern business is accelerating, the weight of aging infrastructure can hold companies back and cost organizations first-mover advantage, market share and even financial viability.

As more IT talent focuses on next generation software, hybrid cloud data infrastructure must be as simple as possible to keep costs down. Ideally, all infrastructure can be run and protected by a VM administrator. Traditional 3-tier infrastructure is declining because it needs specialized training and expensive proprietary components bottleneck performance.

Consolidating data into a big, sharable and self-protecting pool that takes advantage of abundant and affordable server cores and host flash for IO speed is ideal for simple scaling; this is precisely the model in the hyperscale cloud today. Many hoped that hyperconvergence would mimic this at scale, however, experience is showing that HCI costs, performance and availability characteristics work best in smaller, homogeneous-use clusters for lower- criticality applications. Unfortunately more clusters means simplicity declines.

A New Breed of Convergence

Datrium offers IT organizations the opportunity to drive revenue 5x faster, to reduce the time spent managing infrastructure by as much as 95%, and to reduce infrastructure spend by up to 75% or more. To achieve these benefits, Datrium has evolved the server-powered, 1-tier model of hyperconvergence to achieve scalable data consolidation, including elastic, low-latency performance, resilience for mission-critical mixed workloads, mixed server environments and converged backup across and the hybrid cloud. Datrium customers commonly achieve return on investment (ROI) in a matter of months[1], after increasing their application performance 5X while reducing their investment by 75%[1].



To enable this, Datrium DVX separates infrastructure into two distinct tiers: a performance tier for VM and IO processing as well as backup operations, all of which run on stateless servers with flash ("Compute Nodes"); and a protection tier for low-cost persistence on a separate scale-out drive-chassis pool ("Data Nodes"). This two-tier architecture unlocks incredible performance, scalability, data reduction, security and resilience within a single DVX system, and enables a consistent and simplified service on AWS for backup and DR. DVX for the first time offers a consolidative, mission-critical hybrid cloud infrastructure option for multi-cloud data centers.

5x Faster Revenue

5x Faster Transactions, Reporting

Datrium DVX can speed revenue by 5x or more by accelerating database transactions and data warehouse reporting. Per IOmark.org, DVX can sustain 5x more VMs in a shared store with consistently low latency than the biggest all-flash array tested, and 10x more than the best HCI cluster.

At the heart of the DVX performance tier is its Server Powered foundation. Compute Node performance scales linearly for data services processing and read I/O. Read performance is blindingly fast and grows linearly with each additional server up to 128 hosts, or over 16M IOPS total, while avoiding traditional queuing delays and controller bottlenecks. In the protection tier, load-balanced write performance scales up to 16GB/s for the most performance intensive environments like multi-thousand seat VDI and IoT.

Unlike HCI, DVX nodes are architected for IO isolation. Hosts don't talk to other hosts, and Data Nodes don't talk to other Data Nodes, so an application on one host won't overwhelm a neighboring host.

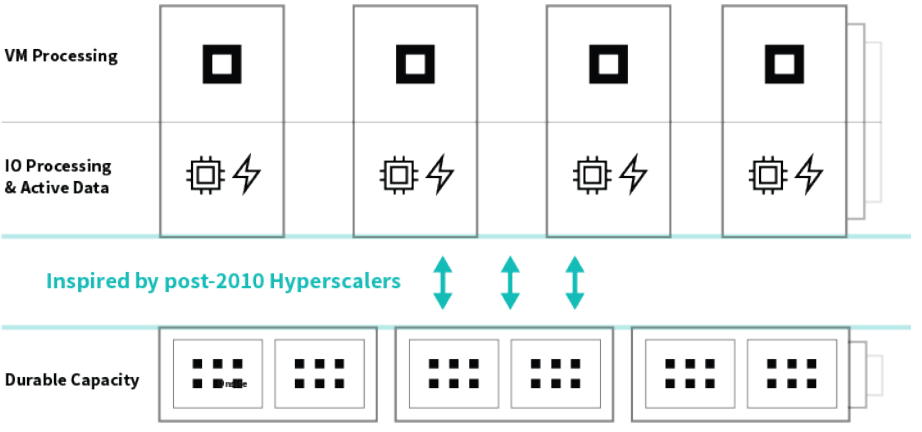
10x Better Application Uptime

With Datrium DVX, performance remains high and predictable, protecting revenue generating applications. With its Enterprise Resilience features, host downtime has zero impact on data access, so server failures, maintenance, or software upgrades will never impact revenue. The protection tier can tolerate up to two drive failures. Should a drive failure occur, drive rebuilds get faster as the system gets larger. A system with four Data Nodes provides rebuild performance four times faster. Like midrange arrays, each Data Node has no single point of failure including redundant controllers, one of which can fail while the node remains operational. Using techniques also leveraged by blockchains, all data at rest is verified multiple times per day against crypto-strength checksums to avoid creeping corruptions.

By contrast, HCI systems are typically configured with 1-failure tolerance to keep fewer data copies and reduce system cost. As an example, downtime estimates with Nutanix RF2 is 3 orders of magnitude higher than DVX. In addition, HCI server nodes are stateful so software updates and cluster failure modes are fragile. Checksums are often optional and may affect performance. Necessary data evacuations for server maintenance can be many hours for each server, otherwise double-failure risk is significant.

Faster Mean Time to Repair

Split Provisioning supports incremental independent scaling of performance and capacity as more Compute Nodes and Data Nodes are added. This split architecture eliminates east-west traffic between compute nodes except in certain transient cases, and therefore makes VM/storage troubleshooting faster because all host side traffic is isolated to a single Compute Node. Troubleshooting hours and even days becomes just minutes with DVX's inherent host isolation and real-time VM analytics. None of this is possible in a 1-tier HCI model and an IDC study found DVX had 63% lower mean time to repair than alternatives[1].



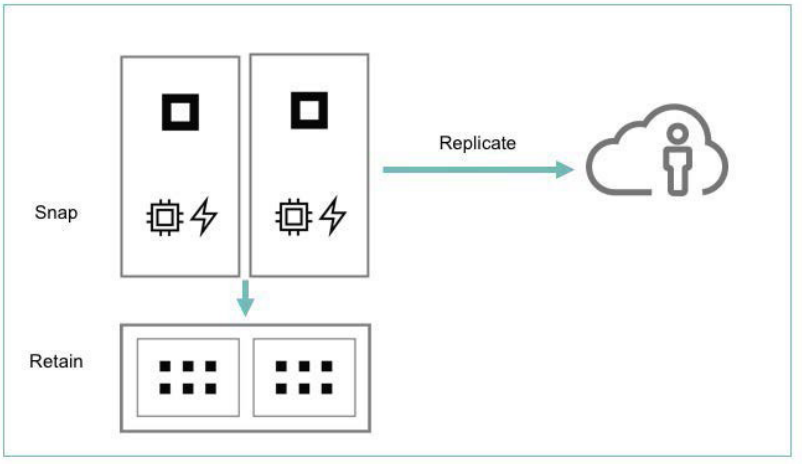
Split Provisioning

Faster Application Recovery with Zero RTO

The Datrium DVX is the first system that can both serve applications with world-class performance and protect them with Built-in Backup/ Instant Restart. While a single DVX supports over one million vDisk- granular backups, they are compressed, deduped and redirect-on-write (RoW) always, so retention has no impact on speed. Recovery is at

the application level, not the volume level. It is thus the first hybrid cloud system that can eliminate the need for separate backup storage and backup applications. More important for recovery time, snapshots are retained within the primary system as backups in a catalog database. RTO is near instantaneous versus using a separate backup application to copy data from a dedicated backup repository. Cloning or restore are single click operations,

guided by built-in snapshot search. Snapshots can be scheduled as often as every 10 minutes, and recovery of a VM takes just seconds. Restart gets critical business applications back online many times faster than copy-back restore. For example, DVX customers studied by IDC on average reduced their data backup windows by 60% and data recovery windows by 85%[1].



Built-in Backup/Instant Restart

While some HCI systems will make claims about backup capabilities, lack of always-on deduplication, unlimited snapshots with zero speed impact, and a scalable backup-class catalog mean they will not meet Enterprise best practices.

95% Less Administration Time

Zero Storage Management

DVX simplified management is VM-centric and is a non-event within vCenter or the standalone DVX GUI. There are no storage objects to administer—no LUNs, no SANs, no zoning, no Ethernet LACP. VMs and vDisks are created, managed and deleted by vCenter or Linux orchestration, so time can be spent on the high value tasks that move the business forward. In addition, DVX comes standard with path aggregation built in between DVX Software and Data Nodes, so it eliminates the need for switch LACP, a common support problem area for iSCSI and NFS arrays.

Easy Cluster Management

In addition, simple management means there are no HCI-like storage clusters or containers. There are no knobs necessary for configuring deduplication, compression, erasure coding—these data services are always on. Unlike HCI, there are no hot/cold zones to configure, no hot spot issues to manage if hosts do not match each other in a cluster, and no specialized hardware nor performance impacts to consider for encryption. A DVX system is configuration-free, versus an individual HCI cluster with many knobs and most customers will have to configure and maintain tens of clusters.

HCI maintains persistent data on every server, and each cluster is typically configured to survive one or sometimes two simultaneous component or host failures. As a result, HCI users tend toward smaller clusters, across which servers and workloads should be homogeneous. The average HCI cluster size ranges from 8 to 12 nodes, therefore any enterprise deployment will involve dozens of clusters, each of which must be configured and maintained individually. With DVX Split Provisioning, HCI cluster sprawl is eliminated. A single DVX system can scale mixed workloads across 10X more nodes than the average HCI cluster without failure risk, eliminating the tedious configuration and tuning of many, many HCI clusters.

No Separate Backup Management

Built-in Backup/Instant Restart provides a single console for VM consolidation, acceleration and protection, and more importantly eliminates the tedious workflow and re-work with a dedicated backup team. Over a million VM and/or container snapshot backups can be made for instant recovery points in a single DVX. All protection is handled automatically by DVX through flexible backup policies which can be set up by class of application as a simple plugin to vCenter. VMs can then be automatically included into existing policies based on pattern matching rules to enable data protection at scale. For example, all VMs named with 'SQL' in their name will inherit a given protection policy set for all database VMs.

54% Lower TCO[1]

Leverage Existing Server Infrastructure

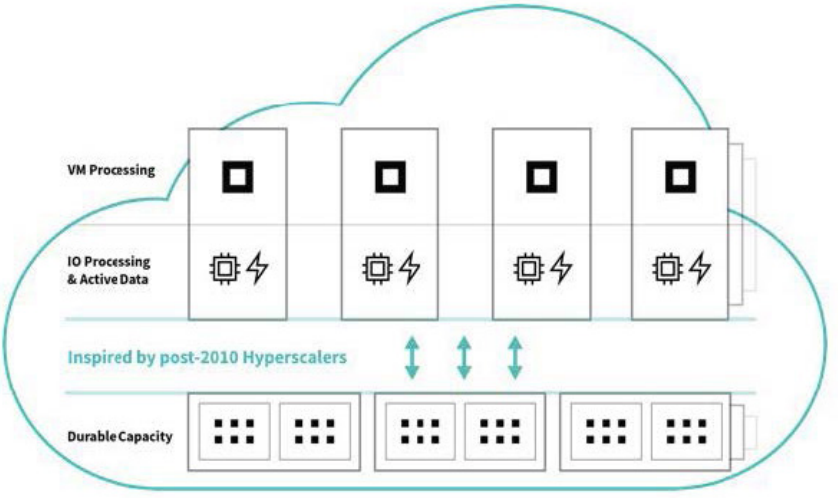
Being software-defined infrastructure, Datrium DVX leverages commodity servers and flash for IO processing, and supports any mix of host types and hypervisors. DVX systems support either turnkey deployment using Datrium Compute Nodes, or 3rd Party Servers powered by DVX Software. Many Datrium customers opting for the latter approach have experienced cost savings from 50% to 66% versus the server rip and replace approach with many traditional systems.

Unlike HCI systems which store data on most hosts and require very specific server configurations to operate, DVX hosts are stateless. DVX data persists off-host, the system can support any leading server vendor or type, including blades.

Up to 93% Less Raw Drive Capacity Required

The Always-on Data Services built in to the DVX ensure maximum storage efficiency and the lowest possible capacity cost available—up to 6x for deduplication and compression and 2.5x for erasure coding (versus two mirrors for 2FT). Datrium DVX Data Nodes maintain the authoritative copy of data as well as all historical snapshot backups of that data, a shared scale-out pool accessible by any Compute Node. Data Nodes are cost-optimized for long term data persistence, and maintain always-on erasure coding, even for hot data. Data is deduplicated and compressed

inline before it is written to Compute Node flash, then is globally deduplicated across hosts once written to Data Nodes. When using Cloud DVX, a cloud native instance of DVX for backup/restore, data is globally deduplicated one more time across DVX systems and sites. Current Datrium customers experience data reduction in the range of 2x to 6x, and even more when replicating multiple DVX systems to the public cloud.



Cloud DVX

DVX does not require self-encrypting drives (SED's) or other proprietary hardware for data encryption, unlike HCI and traditional arrays. SED pricing is typically higher than other equivalent drives, and it only protects data at rest. With DVX Blanket Encryption, data is encrypted in use and in flight, as well as at rest. DVX encrypts after data reduction, so it preserves data efficiency for the life of the data, no matter how long or in which location data is kept. With Blanket Encryption, DVX is FIPS 140-2 certified, unlike any other converged system on the market today.

Lower Scaling and Network Costs

With Split Provisioning and expandable flash per host, DVX is incrementally expandable in small increments – pay as you grow – for balanced scaling. A sizing mistake is trivial and low cost to fix. With DVX, hosts (the performance tier) bring their own IO processing resources and local flash which maintains a full copy of all active VM data. Data Nodes (the protection tier) in a scale-out pool bring capacity and inline, load-balanced write bandwidth. Only add the resources you need when you need them. With HCI, often adding capacity can require the addition of compute resources and associated software licenses.

In addition, because Split Provisioning eliminates virtually all host-to-host traffic on the network, DVX avoids the need for costly network redesigns such as spine-leaf, typical with most large HCI deployments.

Zero Backup System/Software Costs

Built-in Backup/Instant Restart eliminates dedicated backup devices and software, saving hundreds of thousands of dollars in capital costs and associated management time. Highly efficient, secure and flexible asynchronous (snap-based) replication is also included by default for DR planning. In addition, using Cloud DVX for offsite backups can eliminate an entire second datacenter deployment. Virtually all arrays and many HCI deployments rely on 3rd party backup, DR and WAN optimization because long term snap retention is simply too expensive and may limit performance on their respective capacity resources.

Modernization Means Simplicity at Scale

Where most data centers are challenged by the complexity that comes with brittle, expensive traditional 3-tier and hyperconverged infrastructure, most have failed to deliver an answer for petabyte-scale consolidation, low latency workloads, and built-in backup on-prem and to cloud.

Datrium, however, has focused its mission on not only addressing these needs, but doing so with the simplest platform possible. The company has evolved the hybrid cloud model to go beyond small, homogeneous or edge workloads, addressing the needs of the multi-cloud enterprise data center. For those organizations who demand large-scale consolidation, including petabyte-scale, low-latency performance and resilience for mission-critical mixed workloads, Datrium DVX delivers a solution--in the simplest possible way.

The pace of modern business is indeed accelerating. Datrium offers IT organizations the opportunity to drive revenue 5x faster, to reduce the time spent managing infrastructure by as much as 95%, and to reduce infrastructure TCO by 59% or more. There is simply no other option for data center modernization.

[1] IDC White Paper: Datrium Generates Substantial Business Value by Providing a High Performing, Self-Protecting Enterprise Cloud