Competitive Intelligence Report

DCIG

A Comparison of Dell PowerProtect Data Domain and HPE StoreOnce Cyber Resilience Solutions

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PRODUCT

HPE StoreOnce

COMPANY

Hewlett Packard Enterprise Development LP
1701 E Mossy Oaks Rd
Spring, TX 77389
(888) 342-2156
https://www.hpe.com/us/en/storage/storeonce.html

PRODUCT

Dell PowerProtect Data Domain

COMPANY

Dell
1 Dell Way
Round Rock, TX 78664
(877) 275-3355
https://www.dell.com/en-us/shop/data-protection/sf/powerprotect-appliances

Product Models

HPE StoreOnce Hardware Models:

- HPE StoreOnce 3720
- HPE StoreOnce 3760
- HPE StoreOnce 5720
- HPE StoreOnce 7700
- Data protection accelerator node for HPE Alletra Storage MP X10000

HPE StoreOnce Software Appliance:

- HPE StoreOnce VSA

Dell PowerProtect Data Domain Hardware Models:

- Dell PowerProtect DD3410
- Dell PowerProtect DD6410
- Dell PowerProtect DD9410
- Dell PowerProtect DD9910
- Dell PowerProtect DD9910F
- Dell PowerProtect All-Flash Ready Node

Dell PowerProtect Data Domain Software Appliance:

- Dell PowerProtect Data Domain Virtual Edition (DDVE)

Evolving Threat Landscape Demands that Organizations Create Cybersecure IT Environment

All size organizations recognize the total amount of data that they manage, store, and protect continues to grow year-over-year. However, they also recognize they must protect this data from increasingly sophisticated and more frequent cyberattacks. Originating from both inside and outside their IT environment, organizations must proactively take steps to protect their data.

AI-powered malware and ransomware threats demand that organizations implement robust, cyber-resilient solutions throughout their IT environment.

Bad actors may now use one or even multiple means to attack and compromise corporate data. These can include, but are not limited to:

- Botnets
- Rootkits
- Supply-chain attacks
- Trojans
- Viruses
- Zero-day exploits

To get inside of organizations, more bad actors employ artificial intelligence (AI) in phishing attacks to penetrate IT defenses. For instance, AI-powered malware and ransomware may first monitor and track user behavior. Once they "understand" legitimate user patterns of behavior, they mimic these patterns to avoid detection by traditional security systems.[1]

Once inside an organization's IT environment, attackers may encrypt, delete, or copy data. Copying, or exfiltrating, data has become prevalent with many ransomware strains exfiltrating data during an attack.[2] This may result in bad actors exposing or selling sensitive data for profit or other nefarious motives.

These risks have made the need for reliable, secure, and isolated backups essential to every organization. They enable recovery and business continuity in the event of an attack while ensuring regulatory compliance and overall business viability.

These threats demand that organizations implement robust, cyber-resilient solutions throughout their IT environment. These solutions must do more than account for continuing data growth. They must also offer increased performance to meet modern backup and restore requirements while delivering required cyber resilience features.

Purpose-built Backup Appliances Enhance Cyber Resilience in Enterprise IT Environments

Organizations tend to initially focus on obtaining the appropriate storage solutions for their production data. Consideration of how to most efficiently protect this data should then drive the choice of the storage systems they use in their backup infrastructure.

While some may consider using the same storage system for all their data, this may represent neither the most efficient nor safe choice. Optimizing a storage system for both production and backup workloads becomes challenging, at best. This stems from, in part, the differing requirements for primary storage and backup target systems.

Purpose-built backup appliances (PBBAs) often get preference over primary storage systems for multiple reasons. These include:

- Enterprise data protection software can integrate with and manage PBBAs.
- PBBAs offer backup acceleration protocols.
- PBBAs offer data reduction algorithms such as compression and deduplication optimized for backup data.
- PBBAs come preconfigured for required capacity and throughput, removing the sizing, tuning, and management requirements that general purpose storage systems need when deployed for use as a backup target.
- PBBAs offer preconfigured features that accelerate restores and secure restore points.

Any PBBAs being considered by an organization must satisfy the organization's backup capacity and performance requirements.

These reasons and others contribute to PBBAs remaining a fixture in enterprise IT environments. Further, PBBAs continue to mature to address today's organizational IT challenges. This maturity involves modern PBBAs:

- Handling increasing performance and storage requirements.
- Offering high performance data deduplication to reduce physical storage capacity requirements.
- Improving and strengthening their cybersecurity posture.
- Integration with primary storage platforms to simplify operations and coordinate backups with snapshots
- Supporting and integrating with enterprise data protection software.
- Utilizing backup acceleration protocols.
- Offering modern means of technical support.

HPE StoreOnce Systems and Dell PowerProtect Data Domain represent two popular PBBAs that organizations often consider. To assess how well these two solutions deliver on these modern requirements, organizations must evaluate each solution's respective:

- Product architecture.
- Data protection optimized protocols.
- Software features.
- Integration with enterprise data protection software and production storage system snapshots.
- Ability to expand its storage capacity using object storage.

Product Architecture

Evaluating HPE StoreOnce Systems' and Dell PowerProtect Data Domain's respective product architectures represents a logical starting point for evaluating them. Any PBBAs being considered must first satisfy an organization's backup capacity and performance requirements. Once met, organizations can evaluate the product's other features.

Key features to examine include its:

- Configuration and deployment options.
- Software features.
- Licensing requirements and options.

Configuration and Deployment Options

Both HPE StoreOnce Systems and Dell PowerProtect Data Domain include multiple hardware models and a software appliance in their respective product portfolios. Their various offerings address a spectrum of data protection requirements that organizations must address. These include options to deploy their hardware models and software appliances in small environments, data centers, and virtual environments.

Dell currently offers five hardware models in the PowerProtect Data Domain portfolio and have announced a sixth model that will be available in 2026.

Dell PowerProtect Data Domain

Dell currently offers five hardware models in the PowerProtect Data Domain portfolio with formal plans to introduce a sixth model in the first quarter of 2026. These models include:

MODEL 1 Dell PowerProtect DD3410: Entry-level and Remote Office Workloads *(Q126)*

Dell announced the DD3410 in September 2025 with plans to make it available in the first quarter of 2026. The DD3410 will fill the existing gap in Dell's product portfolio and positions it for use in entry-level and remote offices. Dell has released minimal technical specifications, only announcing that the DD3410 will scale from 8 – 32 TBs of usable capacity.[3]

MODEL 2 Dell PowerProtect DD6410: Entry-level and Mid-size Workloads

Dell positions the PowerProtect DD6410 as appropriate for entry-level and mid-size workloads. However, its hardware configuration best aligns with mid-sized workloads.

The DD6410 does distinguish itself from the other five Dell Data Domain appliances in one notable way. It represents the only Data Domain model to support two storage configurations for storing user data.

The first two DD6410 base storage configurations offer a single controller with two 16-core Intel Xeon processors and 256GB of memory. They also each utilize two 3.84TB boot SSDs, one 3.84TB cache SSD, and internal storage for user data.[4,5]

The DD6410 configurations differ in how much internal storage each one offers. The first base storage configuration offers ten internal 8TB HDDs. This configuration currently represents the best option available from Dell for entry-level workloads.[6] The second DD6410 base configuration starts to better address mid-size workloads by supporting twenty internal 8TB HDDs.[7]

Organizations that need still more capacity may consider the third DD6410 configuration that supports both internal and external local storage. This model continues to use two 3.84TB boot SSDs, two 3.84TB cache SSDs, and twenty internal 8TB HDDs.[8]

However, it supports up to four Dell ES120 external shelves.[9] Each ES120 shelf can hold up to twelve 8TB 7.2K SAS HDDs with Dell licensing capacity in these shelves in 4TB increments. This third configuration provides up to 256TB of local storage.[10]

All DD6410 configurations support the Dell Data Domain Cloud Tier. Using Cloud Tier, the DD6410 can tier deduplicated data from local storage to cloud storage for long-term retention. The DD6410 tiers up to about 512TB in Cloud Tier storage.[11]

Unlike the DD9910, the DD9910F supports neither an Active-Passive HA configuration nor Dell's Cloud Tier feature.

MODEL 3 Dell PowerProtect DD9410: Mid-tier Enterprise Workloads HA Option

The PowerProtect DD9410 meets mid-tier enterprise workloads that have moderate capacity and performance needs. The DD9410 utilizes the Dell PowerEdge R760 server platform for the base unit. The DD9410 supports two 16-core Intel Xeon CPUs, up to 768GB of memory, and up to nine internal SSDs. It utilizes four internal 1.92TB SSDs as boot drives and five internal 3.84TB SSDs as a cache tier.[12]

The DD9410 represents one of three models to utilize Dell PowerProtect's Data-Less Head (DLH) architecture. Using the DLH architecture, the DD9410 does not store any user data on the head unit's internal drives. Rather, it stores all user data on the external Dell DS600 shelves, of which it supports up to four (two per set).[13]

The DD9410 also represents one of two Dell PowerProtect models with a high availability (HA) option available in an Active-Passive (AP) configuration. This requires deploying two DD9410 controller heads, one of which sits idle until the active one goes offline.

This HA configuration does require deploying a separate FS240 shelf that hosts five 3.84TB SSD cache drives. Both controllers can access the SSDs on the FS240 shelf for their cache.

Finally, the DD9410 represents the second PowerProtect model to support the Dell Data Domain Cloud Tier. The DD9410 tiers up to about 1.5PB of Cloud Tier storage.[14]

MODEL 4 Dell PowerProtect DD9910: High-Capacity Enterprise Workloads with HA Option

The PowerProtect DD9910 handles the highest capacity enterprise workloads, utilizing the Dell PowerEdge R760 server platform for the base unit.[15] The DD9910 supports two 52-core Intel Xeon CPUs, up to 2048GB of memory, and contains up to fourteen SSDs.[16,17] It utilizes four internal1.92TB SSDs as boot drives and ten internal 3.84TB SSDs as a cache tier.[18]

The DD9910 utilizes the same DLH architecture as the DD9410 and offers an Active-Passive HA configuration option. Like the DD99410, the DD9910 utilizes an FS240 external shelf in its HA configuration. Unlike the DD9410, the DD9910 requires the FS240 to host 24 3.84TB SSDs in RAID 6 configuration for use as a cache tier.

Finally, the DD9910 represents the third PowerProtect model to support the Dell Data Domain Cloud Tier. The DD9910 tiers up to about 3.0PB of Cloud Tier storage.[19]

MODEL 5 Dell PowerProtect DD9910F: High Performance Enterprise Workloads

The Dell PowerProtect DD9910 and DD9910F both use the same "DD9910" naming convention. However, the DD9910F gets deployed to satisfy a specific enterprise use case. Dell optimizes it for backup and recovery workload that require higher performance with lower capacity requirements.

The DD9910F offers the same base unit as the DD9910. It utilizes the Dell PowerEdge R760 with two 52-core Intel Xeon CPUs, up to 2048GB of memory, and fourteen SSDs.[20, 21, 22]

The similarities between the DD9910 and DD9910F models end there. Unlike the DD9910, the DD9910F supports neither an Active-Passive HA configuration nor Dell's Cloud Tier feature.

While DD9910F does support Dell PowerProtect's DLH architecture, it only supports up to two FS240 external shelves. Each FS240 shelf supports up to 272TB usable capacity using 24 15.36TB SSDs in a RAID 6 configuration.

MODEL 6 Dell All-Flash Ready Node: Most Performance Intensive Backup and Recovery Workloads

A Dell All-Flash Ready Node gets deployed to address the most performance intensive backup and recovery enterprise workloads. This model differs in it does not ship as a preconfigured hardware appliance. Rather, it gets built using a bill of materials and instructions provided by Dell.

Deployed as a single controller, it uses the Dell PowerEdge R760 with its own configuration. It utilizes 384GB of memory, two 40-core Intel CPUs and comes populated with 24 Boot Optimized Storage Solution (BOSS) SSDs.[23] It reserves four 3.84TB SSDs for a cache tier and allocates the remaining twenty 15.36TB SSDs (220TB) for data.[24]

HPE currently offers four StoreOnce Gen 5 hardware models.

The Dell configuration whitepaper describes two options to configure and deploy the All-Flash Ready Node. The first option involves configuring it as a standalone Linux host and using scripts to install the software. The second option requires obtaining VMware ESXi 8.0 or greater and installing vCenter software and licenses.[25]

HPE StoreOnce Systems

HPE currently offers four StoreOnce Gen 5 hardware models. The StoreOnce Gen 4 Plus models (not covered in this report) remain available for organizations that have standardised on and want to continue to deploy on these models. The StoreOnce Gen 5 models are covered below, along with the data acceleration node on the HPE Alletra MP X10000.

MODEL 1 HPE StoreOnce 3720: Remote, branch, and small offices

HPE specifically positions the StoreOnce 3720 for use with workloads typically found in remote, branch, and small offices. Like all HPE StoreOnce models, the 3720 utilizes a single controller that HPE delivers in a 2U form factor. The base 3720 system includes one 12-core Intel CPU, 128GB of memory, and 18TB usable capacity (twelve 4TB HDDs).[30]

Organizations may non-disruptively expand the base system's capacity from 18TB to 36TB with a capacity expansion license. Organizations may also add an expansion kit and expansion license to the base system to bring the total capacity up to 56TB or 72TB.[31]

The HPE StoreOnce models distinguish themselves by all supporting external object storage, using HPE StoreOnce Cloud Bank Storage. Organizations typically use it to retain an offsite copy of a restore point or to store long retention restore points. StoreOnce 3720 can store up to 144TB in the HPE StoreOnce Cloud Bank Storage.

MODEL 2 HPE StoreOnce 3760: Midsize deployments

The HPE StoreOnce 3760 best meets the requirements of midsize deployments. The StoreOnce 3760's ability to better meet the requirements for midsize deployments shows up in its support for more CPUs and increased storage capacity.

The base 2U 3760 system includes two 12-core Intel Xeon-Silver CPUs, 128GB of memory, and 108TB (twelve 12TB HDDs).[32] Organizations may expand the base 3760 system from 108TB to 216TB with a capacity expansion kit.[33] StoreOnce 3760 can store up to 432TB in the HPE StoreOnce Cloud Bank Storage.

The HPE StoreOnce 7700 represents a new addition to the HPE StoreOnce portfolio. HPE specifically designed the all-flash StoreOnce 7700 to handle today's performance-oriented enterprise backup workloads.

MODEL 3 HPE StoreOnce 5720: Capacity-oriented Midrange to Enterprise Workloads

The HPE StoreOnce 5720 represents one of two new additions to the HPE StoreOnce portfolio. This 4U single controller model specifically meets the requirements of capacity-oriented midrange and enterprise backup workloads.

The 5720 offers more powerful CPUs, more memory, and more storage capacity than the 3760. Like all the StoreOnce Gen 5 models, capacity expansion takes place in the single chassis. This eliminates the need for extra rack space to provision storage capacity.

The StoreOnce 5720 system includes two 24-core Intel Xeon-Silver CPUs, 768GB of memory, and scales up to 576TB. The StoreOnce 5720 can then store up to ~1.15PB in the HPE StoreOnce Cloud Bank Storage.

MODEL 4 HPE StoreOnce 7700: Performance-oriented Enterprise Workloads

The HPE StoreOnce 7700 represents the other new addition to the HPE StoreOnce portfolio. HPE specifically designed the all-flash StoreOnce 7700 to handle today's performance-oriented enterprise backup workloads. These performance-oriented workloads include scanning backup data to detect the presence of malware.

The StoreOnce 7700's focus on performance quickly becomes apparent. It uses more CPUs, two 32-core Intel Xeon-Gold CPUs, and offers 1536GB of memory. Further, the 2U single controller 7700 only uses SSDs to store user data with its capacity scaling up to 552TB. The StoreOnce 7700 can then store up to ~2.2PB in the HPE StoreOnce Cloud Bank Storage.

MODEL 5 Data protection accelerator node for HPE Alletra Storage MP X10000: High Capacity, High-Performance Enterprise Workloads

The HPE Storage Alletra MP X10000 with one or more data protection accelerator nodes offers more performance and more scale than the four HPE StoreOnce models. It offers the highest levels of capacity, performance, and multiple configuration options with the flexibility to independently scale out or up.

Although each data protection acceleration node uses HPE StoreOnce technology, HPE does not market the solution as StoreOnce. Organizations may configure this solution as a high-performance backup target for any enterprise data protection software provider. The HPE Alletra MP X10000 can also support other workloads alongside backup.

Unlike the StoreOnce Systems, this scale-out solution uses the data protection accelerator node to deduplicate user data that the HPE Alletra Storage MP X10000 then stores. As a disaggregated storage system, the X10000 can scale both capacity and performance up and out.

Using the X10000, organizations can start with one data protection accelerator node that contains 92TB of cache. As backup performance needs increase, a single X10000 can scale out to support up to four data protection accelerator nodes. Alternatively, should capacity requirements increase, each X10000 data protection accelerator node can scale to support up to 2PB of flash capacity.[34]

Table 1: Dell PowerProtect DD and HPE StoreOnce Base Unit Configurations

Mfg	Base Unit (BU) Model	Architecture	Capacity			CPUs	Memory (Max GBs)	Rack Units (Max)	External Shelves (Max)
			Max Local (TB)	Max External Object (TB)	User Data Drive Types				
Dell	All-Flash Ready Node	Scale-up	220	0	SSD	(2) Intel SPR 8460Y+	384	2U	-
Dell	DD6410 (Config 1)	Scale-up	12	512	HDD	(2) Intel Xeon 5416S	256	2U	-
Dell	DD6410 (Config 2)	Scale-up	24	512	HDD	(2) Intel Xeon 5416S	256	2U	-
Dell	DD6410 (Config 3)	Scale-up	256	512	HDD	(2) Intel Xeon 5416S	256	10U	4
Dell	DD9410	Scale-up	768	1500	HDD	(2) Intel Xeon 5416S	768	10U	4
Dell	DD9910 [26]	Scale-up	1500	3000	HDD	(2) Intel Xeon 8470N	2048	26U	4
Dell	DD9910F [27]	Scale-up	544	0	SSD	(2) Intel Xeon 8470N	2048	6U	2
HPE	StoreOnce 3720 [28]	Scale-up	72	144	HDD	(1) Intel Xeon Silver 4410Y	128	2U	-
HPE	StoreOnce 3760 [29]	Scale-up	216	432	HDD	(2) Intel Xeon Silver 4410Y	256	2U	-
HPE	StoreOnce 5720	Scale-up	576	1132	HDD	(2) Intel Xeon Silver 4516Y+	768	4U	-
HPE	StoreOnce 7700	Scale-up	552	2208	SSD	(2) Intel Xeon Gold 6538Y+	1536	2U	-
HPE	HPE Alletra Storage MP X10000 with data protection acceleration node(s)	Scale-up & Scale-out	8000	0	SSD	(2) Intel Xeon Gold 6538Y+ per data protection acceleration node	1536 per data protection acceleration node	2U per data protection acceleration node + X10000	-

Hardware Upgrade Options

The options available to upgrade a PBBA may factor into a buying decision. Upgrade options range from adding more processing and capacity to an existing PBBA to upgrading to a new generation PBBA. Both Dell and HPE provide multiple options to upgrade their respective PBBAs.

Dell PowerProtect Data Domain Upgrade Options

Most Dell PowerProtect Data Domain models offer a storage configuration that utilize a scale-up architecture with external shelves/enclosures. This design permits adding one or more shelves, depending on the model, as their storage capacity demands increase.

Some legacy PowerProtect Data Domain models that utilize external storage shelves permit upgrades to their controllers. Organizations may upgrade controllers on the DD6900, DD9300, and DD9400, to the DD9410. They may also upgrade controllers on DD9800 and DD9900 models to the DD9910.

Organizations that choose to upgrade an existing or older Data Domain should expect additional complexity and new costs. For instance, organizations must fully populate the attached shelves with disks, if the shelf is not already fully populated.

Older shelves that use 3TB HDDs must also be upgraded to newer HDDs. The DD9410 and DD9910 controllers only support shelves with 4TB or 8TB HDDs in them. Finally, migrating existing storage shelves from old to new models requires obtaining a storage migration license.[35]

The single chassis design of the HPE StoreOnce 3720, 3760, 5720, and 7700 models does not require extra drive enclosures and cabling thereby saving on rack space and overall power consumption.

HPE StoreOnce Upgrade Options

The HPE StoreOnce 3720, 3760, 5720, and 7700 models each utilize a scale-up, storage dense architecture that uses internal drives. In this configuration, organizations can start with the capacity they initially need and then scale up, if required.

This design also permits organizations to add more storage capacity without requiring more rack space or external cabling. Should a model reach its capacity or performance limits, adding more capacity requires introducing a new StoreOnce model.

The data protection accelerator node(s) for X10000 offers scale-up and scale-out options for performance and capacity. If needing to increase performance, the HPE Alletra Storage MP X10000 supports from one to four data protection accelerator nodes. If needing to increase capacity, organizations may add up 2PB of Alletra Storage MP capacity per data protection accelerator node, or up to 8PB in total.

Quantifying Heat Generation and Power Consumption Metrics

While all organizations concern themselves with energy costs, some have data centers located in geographies with high energy costs. These organizations must specifically weigh the total cost of ownership (TCO) associated with hardware ownership. They must know the total possible British Thermal Units (BTUs) the hardware generates, and the number of watts it consumes.

Dell PowerProtect Data Domain

Due to Dell's hardware architecture, the maximum BTUs generated, and watts consumed by each Data Domain model can vary. Dell discloses the maximum BTUs and watts associated with each PowerProtect model and the shelves it uses. To determine a specific configuration's maximum BTUs and watts, one must include the PowerProtect model and its shelves.

The All-Flash Read Node only offers a base unit that ships with 24 internal SSDs. This unit generates up to 4297 BTUs per hour of heat and consumes up to 1260 watts per hour.[36]

The DD6410 touches both the easy and difficult ends of the spectrum in determining its maximum heat generation and energy consumption. Two of the three DD6410 storage configurations only support internal storage. These two base DD6410 configurations will generate a maximum of 2592 BTU/hour and consume 760 watts.[37]

The DD6410's third storage configuration generates more BTUs and consumes more watts. In addition to the base unit, it supports up to four external Dell ES120 shelves.

Each ES120 shelf with twelve 8TB 7.2K HDDs per shelf will generate up to 659 BTU/hr and consume up to 193W/hour/shelf.[38, 39] A fully configured DD6410 with four ES120 shelves could theoretically generate up to 5188 BTUs/hour and consume up to 1592 watts/hour.

The DD9410, DD9910, and DD9910F only support external storage shelves. This requires determining the BTUs generated and watts consumed by each model's base unit and the shelves it supports.

The DD9410 and DD9910 also support HA configurations so enterprises must account for these additional HA components as well. Table 2 displays the maximum BTUs generated and watts consumed by each PowerProtect DD model in its largest possible configuration.

Continued on next page

HPE StoreOnce Models

Calculating the maximum possible heat generation and power consumption for all the HPE StoreOnce models, with one exception, represents an easier task. Each HPE StoreOnce system, the 3720, 3760, 5720, and 7700 ship as a base unit with no external shelves. Further, each model will only approach these maximums if it includes its optional additional internal storage capacity.

The data protection accelerator node for the HPE Alletra Storage MP X10000 will vary in heat generation and power consumption. This model scales from one to four data protection accelerator nodes with up to 2PB of flash behind each node. This model only achieves its heat generation and power consumption maximums when fully configured.

Table 2: Maximum BTUs and Watts in Largest Dell PowerProtect and HPE StoreOnce Configurations

	Base Unit (BU) Model			Max BUs	Shelf			External Shelves	Max Config	
Mfg	Model	Max BTUs	Max Watts		Model	Max BTUs	Max Watts	(Max)	Max BTUs	Max Watts
Dell	All-Flash Ready Node	4297	1260	1	N/A	0	0	0	4297	1260
Dell	DD6410 (Configs 1&2)	2592	760	1	N/A	0	0	0	2592	760
Dell	DD6410 (Config 3)	2592	760	1	ES120	649	193	4	5188	1532
Dell	DD9410	2367	694	1	DS600	2053	602	4	10579	3102
Dell	DD9410 (HA) [40]	2367	694	2	DS600	2053	602	4	12946	3796
Dell	DD9910 [41]	4368	1281	1	DS600	2053	602	4	12580	3689
Dell	DD9910 (HA)*	4368	1281	2	FS240	1147	336	1	18095	5306
Dell	DD9910F [42]	4368	1281	1	FS240	1147	336	2	6662	1953
HPE	StoreOnce 3720 [43]	3965	1163	1	N/A	0	0	0	3965	1163
HPE	StoreOnce 3760 [44]	4258	1249	1	N/A	0	0	0	4358	1249
HPE	StoreOnce 5720	8121	2546	1	N/A	0	0	0	8121	2546
HPE	StoreOnce 7700	7484	3402	1	N/A	0	0	0	7484	3402

*DD9910 (HA) supports up to four DS600 shelves and one FS240 shelf.

The data protection acceleration node for the HPE Alletra Storage MP X10000 is not included in this table as it is only a part of the solution and is available with many HPE Alletra Storage MP X10000 configurations.

Software/Virtual Storage Appliances

More organizations look to software appliances to address certain backup requirements. Organizations specifically deploy them when they have concerns about cost or where they cannot deploy physical PBBAs. Software appliances also give organizations the option to deploy them on private and public cloud infrastructures. Both Dell and HPE have software appliances to address this requirement.

Organizations will primarily deploy software appliances in cloud and entry-level environments as well as in remote and branch offices.

Organizations will primarily deploy these software appliances in cloud and entry-level environments as well as in remote and branch offices. Organizations can deploy both these appliances as stand-alone appliances with no dependencies on the provider's respective hardware appliances.

Both providers also offer full-featured 90-day evaluations for their respective software appliances, subject to certain conditions.[45] However, these two virtual appliances differ in other ways.

Dell PowerProtect Data Domain Virtual Edition (DDVE)

Dell supports deploying the PowerProtect DDVE in either virtual or cloud environments. DDVE can start with a storage capacity as low as 512GB and then scales by licensing storage capacity in 1TB increments.[46] However, DDVE imposes different requirements and limitations in these two environments.

When deployed on-premises, organizations may host DDVE on any commodity server hardware that supports its technical specifications. DDVE can operate as a virtual appliance in Linux kernel-based virtual machine (KVM), Microsoft Windows Hyper-V, and VMware ESXi and vSphere environments. It scales to support up to 96TB if using HDDs and up to 256TB using an all-flash reference architecture.[47]

DDVE also operates in multiple public clouds that include Amazon Web Services (AWS), Google Cloud Platform (GCP), and Microsoft Azure, among others.[48] Its storage scalability in the cloud varies depending upon the type of backend storage used. If using cloud block storage to store user data, DDVE scales up to 16TB. If using cloud object storage to store user data, it scales up to 256TB.[49]

HPE StoreOnce VSA

HPE supports deployment of the StoreOnce VSA into on-premises virtual environments and cloud environments. For on-premises deployments, HPE supports deploying StoreOnce VSA on either Microsoft Hyper-V or VMware vSphere hypervisors. For cloud deployments, HPE supports deploying StoreOnce VSA in Microsoft Azure.

The StoreOnce VSA does scale to support significantly larger amounts of storage capacity. Organizations may deploy the VSA with a minimum of 4TB of storage capacity and scale it up to 500TB in 1TB increments. The VSA also integrates with HPE StoreOnce Cloud Bank Storage with organizations able to store up to ~1PB in connected object storage.

StoreOnce VSA also differs in one other notable way from the PowerProtect DDVE. Organizations that need an extended evaluation of StoreOnce VSA may obtain a 1TB freeware version of it. They may deploy and use VSA in perpetuity in non-critical environments where they support it themselves.[50]

Table 3: Dell PowerProtect DDVE and HPE StoreOnce VSA Software Appliances

		Dell PowerProtect DDVE	HPE StoreOnce VSA
Architecture		Scale-up	Scale-up
Capacity	*Min. Starting*	512GB	4TB
	Licensing Increments	1TB	1TB
	On-premises (Max)	96TB	500TB
	Cloud (Max)	16TB (Block) 256TB (Object)	500TB
Clouds		Alibaba Cloud AWS/AWS Gov GCP Microsoft Azure/Azure Gov VMware Cloud	Microsoft Azure
Data Protection Acceleration Protocol		PowerProtect BOOST	StoreOnce Catalyst
Hypervisors		Linux KVM Microsoft Hyper-V VMware ESXi/vSphere	Microsoft Hyper-V VMware ESXi/vSphere

Product Warranty and Guarantee

Organizations vary in how much they emphasize the value a product's warranty and guarantee when making buying decisions. However, these come into play when organizations go to evaluate the PBBA's total cost of ownership (TCO).

Dell

Dell offers a 3-year satisfaction guarantee on PowerProtect Data Domain models with pre-purchase of a coterminous 3-year ProSupport contract. Under this guarantee, Dell will refund up to the purchase price plus support costs if the product fails to perform. Dell can at its discretion also optionally repair or replace the affected product.[51]

Dell separately offers a 1-year deduplication guarantee for its PowerProtect Data Domain models. During the first year after purchase, Dell PowerProtect Data Manager will achieve a deduplication ratio of at least 55:1 for qualified data using that Data Domain PBBA. Qualified data excludes multi-media, multiplexed, pre-compressed, and pre-encrypted data and any data not controlled by PowerProtect Data Manager.

If the Data Domain PBBA fails to meet the 55:1 data reduction guarantee, Dell may take various steps to resolve the issue. These steps involve tuning the system, providing additional equipment, and re-configuring the PBBA's microcode. Dell may also add or change equipment or software. The hardware changes may include adding up to 36TB of capacity or using software to unlock up to 12TB of capacity.[52]

In either case, organizations may make no more than one support claim per product during the Guarantee Period.[53]

HPE

HPE continues to offer a more popular hardware and software warranty for its StoreOnce appliances. Each HPE StoreOnce appliance includes three years of software support. HPE also offers three years of 9x5 phone support with parts, labour, and next business day onsite support.

As part of the Support entitlement, HPE StoreOnce systems offer Remote Support (call home). Using this feature, HPE systems automatically contact HPE when faults or warning events occur. HPE can then perform remote diagnosis and, if necessary, open and manage a support case. For security, organizations can configure this feature for outbound traffic only using HTTPS through a single port.

The use of data protection optimized protocols to optimize backup throughput has become almost a prerequisite to manage backup windows and increase control of data protection workflows.

Data Protection Optimized Protocols

The use of data protection optimized protocols to optimize backup throughput has become almost a prerequisite to manage backup windows and increase control of data protection workflows. Using this feature, data deduplication occurs on the client before sending it to the backup appliance. This process results in backup data being transmitted more quickly and efficiently.[54]

Enterprise data protection software already integrates with HPE's, and Dell's data optimized protocols. They are enabled using client libraries that enterprise data protection software uses to perform the client-side deduplication and to control restore point duration and location. These reasons prompt many organizations to use Dell's and HPE's data protection optimized protocols in conjunction with their chosen enterprise data protection software.

However, Dell and HPE differ in how they deliver their respective data protection optimized protocols in some of the following ways.

Dell PowerProtect BOOST

Dell developed PowerProtect BOOST as a dedicated data protection interface for PowerProtect Data Domain systems and compatible enterprise data protection software. If using Dell PowerProtect BOOST over a corporate LAN, BOOST runs using NFSv3.[55]

This approach capitalizes on NFS file networking protocols. However, organizations can become vulnerable to cyberattacks that target NFS. Organizations can potentially mitigate this risk by running PowerProtect BOOST on an FC or Ethernet SAN.[56]

Organizations must obtain a separate license to use PowerProtect BOOST. Dell does not include BOOST licenses with PowerProtect appliances. Rather, Dell charges for BOOST by each PowerProtect model.

HPE StoreOnce Catalyst

HPE developed its proprietary Catalyst protocol as a dedicated data protection interface for use with StoreOnce systems and compatible enterprise data protection software. Catalyst uses two TCP ports which create a smaller attack surface. This makes Catalyst less vulnerable to malware attacks, compared to using a general-purpose protocol such as NFS.

HPE includes Catalyst with every HPE StoreOnce system alleviating the need for enterprises to pay a license to use it.

Both Dell PowerProtect Data Domain and HPE StoreOnce leverage standard enterprise directory services to authenticate users.

Table 4: Dell PowerProtect BOOST and HPE StoreOnce Catalyst Feature Comparisons

	Dell PowerProtect BOOST		HPE StoreOnce Catalyst	
Licensing	Separate License		Included w/ StoreOnce Appliance	
Network Interfaces	FC, Ethernet		FC, Ethernet	
Enterprise Data Protection Software Integrations	Cohesity NetBackup Commvault HYCU OpenText Data Protector Oracle RMAN Quest NetVault Quest vRanger Veeam		Arctera Backup Exec Bridgehead HDM Cohesity NetBackup Commvault Nakivo Backup OpenText Data Protector Oracle RMAN Veeam	
Write Backup Throughput (Max)	DD6410	68.8TB/hour	3720	15TB/hour
	DD9410	75TB/hour	3760	25TB/hour
	DD9910	130TB/hour	5720	75TB/hour
	DD9910F	130TB/hour	7700	300TB/hour
	DDVE	4.2TB/hour	VSA	36TB/hour
	All-flash Node	56.4TB/hour	DPA Node for X10000 (4 Nodes)	1200TB/hour

Cyber Resilience

Insider threats and ransomware can target and attempt to compromise backup appliances and user data stored on them. These attacks can cripple an organization's ability to recover should their production systems come under attack. To handle these threats, both Dell and HPE offer multiple cyber resilience features in their respective systems.

Identity and Access Management (IAM)

Using IAM helps secure the PBBA from bad actors attempting to login and compromise it or data on it.

Both Dell PowerProtect Data Domain and HPE StoreOnce leverage standard enterprise directory services to authenticate users. They offer integrations with Active Directory (AD), the lightweight directory access protocol (LDAP) and role-based access controls (RBAC) to assign user roles.[57]

Once an organization accesses either a Dell or HPE PBBA, an administrator may optionally enable multi-factor authentication (MFA) to authenticate users.[58]

Data Preservation

PBBAs from both providers offer multiple features that protect stored user data on them from malicious attacks. Using these features can prevent stored user data from being deleted, encrypted, modified, and even read by bad actors. They each offer the following features to preserve user data stored on them:

- ***Air gap.*** Both Dell and HPE offer options to store data offline on a separate device or media. This option protects user data should the entire PBBA become compromised, disabled, or inaccessible. Dell utilizes a Data Domain PBBA kept in a Cyber Recovery vault that only periodically get reconnected to the network.[59] In conjunction with enterprise data protection software, both Dell PowerProtect DD and HPE StoreOnce can write backups to physical HPE Storage Tape (offline and offsite).[60] Both Dell and HPE can also store data off premises in the cloud with various cloud providers.
- ***Data encryption.*** Encrypting user data makes data unreadable even if a bad actor obtains a copy of the data. Both Dell and HPE support encryption of data at-rest and in-flight.[61]
- ***Data immutability.*** Storing user data in an immutable format prevents bad actors or ransomware from changing, deleting, or encryption data. Dell PowerProtect Data Domain offers a Retention Lock feature with Governance and Compliance options.[62] HPE StoreOnce offers two types of data immutability: server-controlled data immutability and independent software vendor (ISV) ISV-controlled data immutability. These both protect user data from deletions and modifications.[63]

HPE StoreOnce Catalyst provides an additional layer of protection by using APIs with IPC. Using IPC makes backups difficult to detect and often invisible during cyberattacks since HPE StoreOnce presents no file system interface.

HPE StoreOnce's use of StoreOnce Catalyst to store user data provides an additional layer of protection. Catalyst stores data using APIs with inter-process communications (IPC) occurring between enterprise data protection software and StoreOnce appliances. Using IPC makes backups difficult to detect and often invisible during cyberattacks since HPE StoreOnce presents no file system interface.[64]

Data Integrity

The length of time that PBBAs retain user data may result in data loss due to data corruption. Both Dell and HPE guard against this possible occurrence. Dell offers its Data Domain Invulnerability Architecture. It performs end-to-end verifications, only writes to new blocks, and does continuous disk fault detection and healing.[65] HPE StoreOnce Integrity Plus checks on data integrity at multiple times during a data's lifecycle. This includes validating data integrity during backups, restores, and multiple times while at rest.[66]

Table 5: Dell PowerProtect Data Domain and HPE StoreOnce Cyber Resilience Feature Comparisons

	Dell PowerProtect Data Domain	HPE StoreOnce
Air Gap	Cloud Tier Cyber Recovery Vault	HPE StoreOnce Cloud Bank Storage HPE Storage Tape
Data Integrity	Data Domain Invulnerability Architecture	HPE StoreOnce Integrity Plus
Data Immutability	Retention Lock - Compliance Retention Lock - Governance	Server-controlled ISV-controlled
Encryption	At-rest In-flight	At-rest In-flight
IAM	AD, LDAP, MFA NIS, RBAC, SSO	AD, LDAP, MFA RBAC, SSO

Software Features

Dell PowerProtect DD and HPE StoreOnce both offer comparable software features on their respective PBBAs. In addition to the software features already covered, they may also offer:

- Compression and deduplication algorithms that can achieve very high data reduction ratios.
- Data encryption, data immutability, MFA, dual authorization, air-gapped copies.
- Data replication between their respective hardware and software appliances.
- Expansion of local capacity with external object storage—local and cloud.
- Use NFS and SMB storage file networking protocols to present their respective appliances' storage as file shares on corporate LANs.
- Virtual tape library (VTL) emulation that presents their respective appliances as a tape library to backup software.

All HPE StoreOnce models include all software features considered standard and premium at no extra cost.

Despite the similarities in the software available on their respective appliances, differences exist between them. Two distinctions include their approaches to licensing their software features and support for object storage.

Software Licensing

A PowerProtect Data Domain does not include all the software features available in the Data Domain Operating System (DDOS). The exact baseline software features that DDOS includes Dell no longer explicitly discloses. The full disclosure of included and separately licensable features appeared to stop with the release of DDOS 8.x.

Based on the previous DDOS 7.x release, organizations should expect to pay to license premium software features. These may minimally include BOOST, data immutability, Cloud Tier for long-term retention, high availability, and replication, and VTL.[67]

In contrast, all HPE StoreOnce models include all software features considered standard and premium at no extra cost. Premium software features include Catalyst, data immutability, replication, VTL interface, and others.

Encryption represents one specific feature that HPE still requires organizations to license. However, regulatory requirements mandate that HPE make encryption a licensable feature. Therefore, HPE offers encryption functionality at a nominal additional cost.

Object Storage Integration

Dell and HPE both license access to object storage and charge based on the total amount of object storage capacity used.

Dell PowerProtect Cloud Tier

Dell DD offers Cloud Tier as a licensing option for the DD6410, DD9410, and DD9910 models. Once licensed, a PBBA can store and access data on object storage in the cloud or on-premises. However, a Dell PowerProtect Data Domain PBBA supports no more than two cloud object storage targets, or cloud units.[68]

Dell also only permits one PowerProtect Data Domain PBBA at a time to access its licensed object storage. If a second PowerProtect Data Domain PBBA attempts to access object storage owned by another, it needs its own license to do so.

Dell PowerProtect Data Domain supports multiple object storage offerings. It supports more well-known cloud object storage offerings such as Alibaba Cloud, Amazon S3, Google Cloud Storage, and Microsoft Azure Blob.[69, 70] It can also integrate with IDrive e2, Seagate Lyve Cloud, and Wasabi Hot Storage, and possibly others.[71, 72, 73]

Organizations looking to keep their data on-premises may configure Cloud Tier to use Dell Elastic Cloud Storage (ECS).

HPE StoreOnce Cloud Bank Storage

Any HPE StoreOnce system can access and read data stored in the owning HPE StoreOnce's Cloud Bank Storage.

HPE StoreOnce offers Cloud Bank Storage as a licensing option for all HPE StoreOnce systems including the VSA. Once licensed, any HPE StoreOnce system can access and read data stored in the owning HPE StoreOnce's Cloud Bank Storage.

To make this possible, all restore points in the HPE Cloud Bank Storage include self-describing metadata that make them readable. If other HPE StoreOnce systems access this data, the systems access the restore points in read-only mode.

Once accessed, they may restore backups to the primary or alternate locations. Further, organizations that want or need to use multiple object storage targets may do so. HPE StoreOnce Cloud Bank Storage places no limit on the number of object storage targets that organizations may use. Further, organizations may move data to a lower cost tier using an optional license for additional cost savings.

HPE StoreOnce supports cloud object storage in Amazon S3 and Microsoft Azure Blob. It also supports storing data on numerous on-premises object storage offerings. These include Scality, SUSE Enterprise Storage, Cloudian HyperStore S3, Dell ECS, Huawei OceanStor 9000, and Red Hat Ceph Rados Gateway.

Table 6: Dell PowerProtect Cloud Tier and HPE StoreOnce Cloud Bank Storage Feature Comparisons

	Dell PowerProtect Cloud Tier		HPE StoreOnce Cloud Bank Storage	
Licensing	Capacity-based Licensing		Capacity-based Licensing	
Cloud Object Storage Providers	Alibaba Cloud Amazon S3 Google Cloud Storage IDrive e2 Microsoft Azure Blob Seagate Lyve Cloud Wasabi Hot Storage		Amazon S3 Microsoft Azure Blob	
On-premises Object Storage Offerings	Dell Elastic Cloud Storage (ECS)		Cloudian HyperStore S3 Dell ECS Scality SUSE Enterprise Storage Huawei OceanStor 900 Red Hat Ceph Rados Gateway	
Max Object Storage	DD6410	512 TB	3720	144 TB
	DD9410	1532 TB	3760	432 TB
	DD9910	3000 TB	5720	1152 TB
	DD9910F	-	7700	2208 TB
	DDVE	-	VSA	1000 TB
	All-flash Node	-	DPA Node for X10000	2000TB per node

Organizations should view provider claims on their deduplication ratios as potential maximums or "up to" figures rather than guaranteed outcomes.

Setting Realistic Expectations for Space Savings

Data deduplication plays a pivotal role in modern data protection strategies, primarily through its substantial space-saving capabilities. This technology revolves around the principle of reducing the amount of storage space needed by eliminating duplicate copies of data. Promoted data reduction ratios offer insights into the logical capacity of stored backup data vis-à-vis the physical capacity consumed within the appliance.

Provider Claims and Data Reduction Realities

Both Dell and HPE make substantial claims regarding their respective data reduction capabilities.

HPE asserts that its products can achieve data reduction ratios of up to 60:1. Meanwhile, Dell offers multiple deduplication claims. It champions 65:1 for some models, 55:1 for others, and 25:1 for additional configurations.[74]

To realize these advertised deduplication ratios, organizations must satisfy specific criteria within their backup environment.

Setting Real-World Expectations

Organizations should view these provider claims as potential maximums or "up to" figures rather than guaranteed outcomes. Achieving the highest deduplication ratios requires adhering to precise circumstances. These ratios become challenging to consistently achieve in most environments. Consequently, organizations should set realistic data reduction expectations in the range of 5:1 to 25:1.

Both HPE StoreOnce and Dell PowerProtect PBBAs utilize robust technologies designed to enhance data deduplication processes. These technologies excel in segmenting backup data streams, identifying duplicated segments, and storing only unique segments. Further, they optimize caching, compute, memory, networking, and storage configurations to support data deduplication efficiently.

However, technical differences do exist between how they implement their respective data reduction technologies. One such difference lies in the segmenting methods they each employ. HPE's segments generally average about 4KB in size, while Dell's segments average about 8KB.[75]

The deduplication ratios an organization achieves also depends on various internal factors. The type of data being protected—whether databases, files, or virtual machine images—has a significant impact.

The change rates of the protected data and related data protection practices also come into play. Performing full or incremental backups, backup frequencies, backup retention policies, parallelization, and the backup software used can each impact data reduction ratios.

Ensuring Accurate Space Savings Projections

Organizations aiming to quantify potential space savings accurately will find conducting a proof of concept an effective approach. A proof of concept should minimally model two items: the actual data set to be protected and the data protection methodologies to be used.

Additionally, utilize the sizing tools provided by respective vendors.[76] These tools can help adjust deduplication ratios based on multiple environmental inputs. Further, organizations may use them to fine-tune their expectations and approach data management with improved precision.

Deduplication technology from HPE and Dell both dangle alluring high data reduction ratios in their promotional materials. However, achieving these results requires organizations to precisely align specified criteria and thoroughly understand influencing factors. In so doing, organizations can balance the claims that vendors promote with the realities of their own backup environment.

Enterprise Data Protection Software and Storage System Integrations

Dell PowerProtect DD and HPE StoreOnce backup appliances both integrate with storage systems and enterprise data protection software to optimize backup management.

Support for storage systems occurs by integrating with the storage system's replication feature, usually its snapshot functionality. This integration serves to move copies of data from the storage system to the PBBA. The snapshot integration may also facilitate recoveries of the snapshot from the PBBA.

Enterprise data protection software that more deeply integrates with HPE StoreOnce can obtain full control of the restore points on the object storage.

Integrations with third-party enterprise data protection software serves to better manage backups residing on the backup appliances. This management helps manage data retention on the PBBA, data place (local or in the cloud), and can facilitate faster restores.

Dell PowerProtect Data Domain Integrations

Dell PowerProtect Data Domain integrates with two Dell storage systems, Dell PowerMax and Dell PowerStore. Dell PowerProtect Data Manager first schedules and manages snapshots on Dell PowerMax.

Data Manager then moves selected snapshots to Dell PowerProtect Data Domain for long term retention. This integration also permits storing snapshots on PowerProtect Data Domain in native PowerMax format for faster recovery.[77]

Dell PowerProtect Data Domain integrates with Dell PowerStore in a different manner. In this configuration, the Dell PowerProtect DD System Manager replicates data from selected Dell PowerStore volumes to a Dell PowerProtect Data Domain appliance.[78]

On the backup software side, multiple enterprise data protection software providers support PowerProtect BOOST. However, they vary in how well they integrate with Dell PowerProtect Data Domain to provide additional management functionality.

Dell Avamar and Dell Networker illustrate the additional functionality that enterprise data protection software integration with Dell PowerProtect Data Protect can achieve. For instance, the Avamar Data Domain tab displays CPU, disk activity, and network activity for each Data Domain node.[79] Avamar can also perform tasks such as enabling the Data Domain Retention Lock feature and tiering data to the cloud.

Integrated Ecosystem with HPE StoreOnce

HPE StoreOnce integrates with the following HPE solutions, the HPE Alletra Storage MP B10000, HPE SimpliVity, and HPE Private Cloud Business Edition

HPE handles HPE StoreOnce's integration with the B10000 storage system using its Data Ops Manager management software hosted in the HPE GreenLake cloud. Within Data Ops Manager, it creates a protection policy that includes protection frequency, retention, snapshot expiration, and data immutability. Once configured, snapshots occur on the B10000 with backups of the snapshots sent to HPE StoreOnce 3720 or 3760 systems.[80]

HPE StoreOnce also integrates with the HPE SimpliVity hyperconverged system. HPE SimpliVity offers its OmniStack virtual controller software that takes VM-centric backups. In addition to storing backups on SimpliVity nodes, it can also store them on any HPE StoreOnce model.[81]

Enterprise data protection software similarly integrates with HPE StoreOnce and can manage backups on it. These include popular offerings like Veeam Backup and Replication, Cohesity NetBackup, Commvault Cloud Backup and Recovery, HPE Zerto Software, and OpenText Data Protector, among others.

The depth and type of integration each of these data protection software solutions have with HPE StoreOnce vary. However, enterprise data protection software that more deeply integrates with HPE StoreOnce can obtain full control of the restore points on the object storage. Using this feature, organizations may create differential retention times for on-system restore points and HPE StoreOnce Cloud Bank Storage restore points.

Enterprise data protection software can also take advantage of the ability of HPE StoreOnce systems to access HPE StoreOnce Cloud Bank Storage. Should the primary HPE StoreOnce become unavailable, the software can use another available StoreOnce system to access that StoreOnce's backups in Cloud Bank Storage.

PBBAs function as cyber-resilient platforms that protect organizational data against the threat of ransomware and other cyber-attacks.

HPE StoreOnce's Deployment and Performance Stand Out When Compared to Dell PowerProtect Data Domain

DCIG has witnessed the emergence and maturity of cyber resilience within PBBAs after researching and evaluating them for multiple decades. PBBAs function as cyber-resilient platforms that protect organizational data against the threat of ransomware and other cyber-attacks.

HPE's and Dell's respective PBBAs continue to deeply integrate with enterprise data protection software from multiple providers. They also both offer proprietary backup protocols that integrate with these solutions. These facilitate high levels of throughput during backups and significant storage space saving compared to using general-purpose protocols and storage.

Their respective integrations with multiple enterprise data protection solutions provide organizations a means to administer key cybersecurity features. These include encryption and immutability settings that provide viable, restore points even during sophisticated attacks.

Not surprisingly, Dell and HPE both play to their strengths. In Dell environments, Dell PowerProtect Data Domain PBBAs effectively interoperate with existing Dell server and storage systems. Likewise, HPE StoreOnce capitalizes on similar advantages within HPE ecosystems, providing optimized integrations for HPE-centric infrastructures.

However, the architecture of Dell's and HPE's PBBA's differ in core areas that impact their respective cyber-resilience, ease of management, and performance characteristics.

Dell PowerProtect Data Domain PBBAs primarily rely on a scale-up architecture. Dell's highest capacity models utilize the addition of external shelves and may require more complex, specialised configurations.

Five PowerProtect Data Domain models can connect to object storage to create a Cloud Tier. Organizations may also extend the PowerProtect DD9410 and DD9910 models with additional infrastructure and licensing to create an HA configuration.

These features contribute to Dell PowerProtect products remaining well-suited for high-capacity environments and organizations invested in Dell servers and primary storage. However, Dell's continued reliance on external shelves for capacity expansion and requiring additional licenses for advanced features contribute to creating a more complex operational model.

HPE StoreOnce PBBAs differentiate themselves architecturally from Dell PowerProtect PBBAs in multiple areas.

First, the entire StoreOnce Gen 5 portfolio delivers a storage-dense architecture that simplifies scaling by adding internal drives. This approach eliminates the need for external shelves, additional rack space and cabling while simplifying deployment and ongoing management.

Second, HPE StoreOnce offers Cloud Bank Storage for all its physical and virtual appliances, to enable the use of connected object storage. HPE's new all-flash, StoreOnce 7700, specifically aligns directly with modern cyber-resilience requirements.

Third, the HPE StoreOnce VSA, scales beyond Dell PowerProtect DDVE to offer up to 500TB of usable capacity.

Fourth, HPE configured all its StoreOnce PBBAs as single node models for simplicity which avoids the complexities that HA can introduce.

Finally, organizations that need the highest levels of performance, capacity, and HA may look to the HPE Alletra MP X10000 with one or more data accelerator nodes. When paired with the HPE Alletra Storage MP X10000, it effectively becomes the highest performing PBBA available today.

Both HPE and Dell can help organizations build a cyber-resilient storage infrastructure. However, they implemented different architectural approaches to do so.

HPE StoreOnce Systems simplify deployments and management with the HPE Alletra MP X10000 with data accelerator nodes well-positioned to handle the most demanding workloads. In contrast, most Dell PowerProtect Data Domain PBBAs rely more heavily upon external shelves for scaling capacity with some flexibility to introduce HA.

These architectural trade-offs dictate that organizations only choose a provider after first analyzing their data protection requirements. Those that already have a Dell or HPE environment will find it compelling to stay with their current provider. However, those that manage mixed IT environments should find HPE StoreOnce's ease of management, simpler deployment and licensing, and high performance provide sufficient justification to choose HPE over Dell. ■

Those organizations that manage mixed IT environments should find HPE StoreOnce's ease of management, simpler deployment and licensing, and high performance provide sufficient justification to choose HPE over Dell.

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