

Overview

Shape the Future of QuickSpecs – Your Input Matters

HPE Data Management Framework 7

HPE Data Management Framework 7 (DMF7) is a highly scalable data management system for unstructured data in HPC and AI environments. In an ever-expanding data universe of storage systems and data lakes, DMF7 is the tool that knows where data is. It helps users manage their files and helps administrators manage file systems.

With 30 years of real-world experience, DMF7 is a centralized system for storing files and copies of files. The DMF7 storage repository can be customized to store files to disk, tape, cloud, or in any combination. Administrators can choose the destinations, the number of copies, and the retention policies for each. DMF7 easily adapts to new storage technologies by automating file migration to the new storage systems and media from systems that have reached the end of their useful lives. DMF7 migrates data in the background, keeping this process completely transparent to the end users.

DMF7 provides a centralized database for storing metadata about files as they were stored in the managed filesystem. The scalable database within DMF7 supports extensible metadata that allows users and/or applications to better manage their data from cradle to grave. Users can uniquely tag their data files and directories with extended attributes, storing everything in DMF7, and then easily query DMF7 to manage and/or recall their data sets. DMF7 is designed to offload metadata intensive activities from production filesystems to maintain their performance for HPC applications.

DMF7 integrates with popular parallel filesystems commonly used in HPC and AI environments. It is a tool that helps administrators implement site policies consistently across one or many filesystems. It can act upon a system event, like a filesystem dropping below a threshold for free space. It can operate on a schedule, like taking a snapshot of the namespace reflection at prescribed intervals. It can automate site policies, like staging datasets or migrating files that have been untouched for 30 days. Taken together, the tools for managing filesystems in DMF7 help customers lower the total cost of ownership (TCO) for high performance storage systems, increase administrator productivity, and lower the cost of storing data.

DMF7 protects data at scale. It is a backup & recovery service for large parallel filesystems that uses an incremental forever approach to preserve versions of files, directories, and even entire filesystems. In the event of accidental data deletion, filesystem corruption, or complete unavailability it helps administrators implement and manage Recovery Point Objectives (RPO).

DMF7 helps users manage their data. Users can instruct DMF7 to move their files from filesystems and data lakes, into the data management system. This allows users to put their files into a centralized storage system and then later recall their data to a different computing system.

DMF7 automates the management of filesystem utilization. HPC system administrators are constantly challenged to optimize the performance of parallel filesystems. DMF7 automates management of the thresholds for both the storage capacity and the filesystem metadata. When the filesystem utilization reaches a preset threshold, DMF7 migrates files to a lower cost storage tier and frees up capacity and catalog space for new files.

DMF7 is a high-performance system for data mobility. It enables high speed parallel data transfers between storage resources. Data movement can be performed between parallel filesystems and DMF back end pools, between different DMF back end pools, or between different parallel filesystems.

Overview

Because data is the lifeblood of many HPC and AI workflows, DMF7 is a data management system designed for high availability and resiliency. DMF7 uses distributed databases and containerized frameworks to ensure uninterrupted operation through hardware component failures. Data Movers work in parallel to provide scalable and redundant data paths to the storage devices in the repository. Further, DMF7 is designed for multi-site operation, a common requirement for production HPC sites. In the event of a loss of the primary facility, DMF7 at the standby facility can recover individual files or sets of files into a locally managed filesystem helping administrators meet recovery time objectives (RTO) for their critical HPC/AI applications.

DMF7 is the industry-leading data management system for HPC/AI workflows that scales with Apollo and ProLiant servers.



Standard Features

Namespace Reflection

A standard feature in DMF7 captures changes in filesystem namespaces and metadata.

- Integrates with Lustre, HPE XFS and IBM Spectrum Scale (GPFS)
 - Low overhead reflection using changelogs without needing complete filesystem scans
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Distributed Scalable Metadata Database

The DMF7 database can be scaled out to accommodate the rate of change within the managed filesystems, the growth of the DMF7 storage repositories, or an increase in the number of managed filesystems.

- Allows users to use DMF7 for storage of their files, to query DMF7 for the files they need, and recovery to any managed filesystem
 - Database searches are parallel for high performance
 - Offloads metadata searches from the managed filesystem
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Flexible Policy Engine

DMF7 includes a powerful and flexible policy engine to manage data storage and automate workflows driven by filesystem and user defined metadata.

- Enables set-it-and-forget-it policies for migration of files to less costly storage medium
 - Automates management of free space thresholds for high performance filesystems
 - Sets customized retention periods for number of copies and versions
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High Performance Parallel Data Movement

The DMF7 data movers can be scaled out to meet the data access requirements of users and applications.

- N+N Active/Active data movement delivers high performance and resiliency
 - Supports Tape, Zero Watt Storage, and Object Storage targets
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Zero Watt Storage

A standard feature in DMF7 software that is paired with the HPE high density storage enclosures to provide a high-performance power managed disk tier.

- Eliminates long latency inherent to tape
 - Used for fast backup to disk, fast recovery from disk, or tape caching
 - Power managed disk control enables spin down HDDs reducing power consumption and cooling costs
 - Sector parity protection provides fast recovery from minor on disk bit errors improving the MTBF of high capacity disk drives
 - Periodic disk scrubbing provides an efficient and effective option for data integrity verification
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Cloud Service Provider Namespace

A standard feature in DMF7 software for customers who wish to reduce utilization of an object store by moving infrequently accessed objects to a lower cost tier of storage e.g. tape. The feature connects DMF to a front end object storage namespace and uses the S3 API for transfer of objects between the namespace and DMF. Data Management SW in the object store manages workflows like backup, HSM, archive and/or recovery. DMF performs the storage management functions, like managing policies for copies, target storage pools and performance optimizations.

- Reduces the cost of storing data by moving objects from flash/disk based object stores to disk/tape based long term storage.
 - An object-based workflow using the S3 API
 - Currently supported with Scalify ARTESCA.
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Standard Features

Tier Zero Storage

A standard feature in DMF7 software that enables HPC and AI workflow acceleration via dynamic flash storage pools.

- Used for dynamic provisioning of flash storage for machine learning applications
- Dynamically creates a managed namespace on demand and allows users to recall files into a high-performance flash tier
- The user or an automated policy can migrate new or modified files back to DMF7 before the storage resources are returned to the unallocated flash pool

Supported Servers

- HPE ProLiant DL360 Server
- HPE ProLiant DL380 Server
- HPE ProLiant DL325 Server
- HPE ProLiant DL385 Server

<https://www.hpe.com/us/en/servers/proliant-dl-servers.html>

Supported Tape Libraries

HPE Tape Libraries

- Spectra TFinity ExaScale Edition Tape Library
- Spectra Cube Tape Library
- Spectra T950 and T950V Tape Libraries
- T950, T950V, Cube and TFinity libraries behind the Swarm Ethernet Bridge
- HPE StoreEver MSL4048, MSL3040, and MSL6480 Tape Libraries
- HPE StoreEver ESL G3 Tape Library

<https://www.hpe.com/us/en/storage/storeever-tape-storage.html>

Other Tape Libraries

- Spectra Logic® T50, T120, T200, T380, T680, T950, T950V, Stack, Cube and TFinity
 - IBM® TS3100, TS3200, TS4300 (3573), TS3310 (3576), and TS3500, TS4500 (3584)
 - Oracle® SL150, L180, L700, L700e, SL500, SL3000, SL8500, and all ACSLS controlled libraries
 - Overland® NEO series libraries
 - Qualstar® XLS series libraries
 - Quantum® i6, i40, i80, i500, i2000, and i6000
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Supported Tape Drives

HPE Tape Drives

- HPE LTO Ultrium Generation 2, 3, 4, 5, 6, 7, 8, 9

Other Tape Drives

- IBM® LTO Ultrium Generation 2, 3, 4, 5, 6, 7, 8, 9
- Oracle® T10000A, T10000B, T10000C, T10000D
- IBM® TS1120 (3592-E05), TS1130 (3592-E06), TS1140 (3592-E07), TS1150 (3592-E08), TS1155 (3592-55F), TS1160 (3592-60F), TS1170 (3592-70F)

Advanced Tape Features

- Logical Block Protection
 - Recommended Access Order
 - Spectra Logic TAOS
 - Multi-Accessor Control
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Standard Features

Disk Storage

Zero Watt Storage

Zero Watt Storage (ZWS) is a software-defined, performance oriented and power managed high density storage system created exclusively for HPE DMF. Combining HPE DL380 or DL385 server technology and HPE D6020, D8000 or DMF ZWS4106 JBOD storage hardware with an innovative on-disk format that enables very high data transfer rates, low mount time, and intelligent power management. ZWS represents the ideal warm tier storage option with optimized power utilization.

Supported Zero Watt Storage JBODs:

- HPE D6020
- HPE D8000
- HPE DMF ZWS4106

Supported Zero Watt Mover Nodes:

- HPE ProLiant DL380
- HPE ProLiant DL385

Cloud Storage

The DMF platform supports cloud and object storage environments that are based on the Simple Storage System (S3) interface originally created by Amazon. Cloud and object-based storage within DMF installations may be used for large-scale data storage as well as a repository for storing DMF recovery metadata and configuration information. This latter use case, when used with public cloud storage, provides an excellent means of implementing off-site metadata backups as part of a disaster recovery plan.

Cloud and object storage systems supported through the S3 interface include:

- Amazon S3®
- Ceph Object Gateway
- Scality® RING and ARTESCA
- Netapp StorageGRID® Webscale
- HGST Active Archive System®
- IBM® Cloud Object Storage
- Dell/EMC ECS

Supported Managed Namespaces

HSM Enabled Parallel Filesystems

HPE Clustered Extents File System (HPE XFS)

IBM® Spectrum Scale (GPFS 4.2.3 and newer)

Lustre 2.10.5 and newer*

- HPE Scalable Storage for Lustre (2.12.3 and newer)
- DDN EXAScaler (5.0 and newer)
- Cray® ClusterStor (3.0 SU19 and newer)

Notes: *Community Lustre versions prior to 2.12.3 require applying the HSM patches listed in HPE Customer Advisory document titled “Lustre Filesystem Issues That Affect HPE Data Management Framework (DMF)” available from support.hpe.com.

Non-HSM POSIX Filesystems

- HPE Clustered Extents File System (HPE XFS)
- IBM® Spectrum Scale (GPFS)
- Lustre
- NFS (v3 and v4)

Cloud Service Provider Namespaces

- Scality® ARTESCA (1.5 and newer)



Standard Features

Supported Operating Systems

DMF 7.10

- RHEL 8.10
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Service and Support

HPE Services

No matter where you are in your digital transformation journey, you can count on HPE Services to deliver the expertise you need when, where and how you need it. From planning to deployment, ongoing operations and beyond, our experts can help you realize your digital ambitions.

<https://www.hpe.com/services>

Consulting Services

No matter where you are in your journey to hybrid cloud, experts can help you map out your next steps. From determining what workloads should live where, to handling governance and compliance, to managing costs, our experts can help you optimize your operations.

<https://www.hpe.com/services/consulting>

HPE Managed Services

HPE runs your IT operations, providing services that monitor, operate, and optimize your infrastructure and applications, delivered consistently and globally to give you unified control and let you focus on innovation.

[HPE Managed Services | HPE](#)

Operational services

Optimize your entire IT environment and drive innovation. Manage day-to-day IT operational tasks while freeing up valuable time and resources. Meet service-level targets and business objectives with features designed to drive better business outcomes.

<https://www.hpe.com/services/operational>

HPE Complete Care Service

HPE Complete Care Service is a modular, edge-to-cloud IT environment service designed to help optimize your entire IT environment and achieve agreed upon IT outcomes and business goals through a personalized experience. All delivered by an assigned team of HPE Services experts. HPE Complete Care Service provides:

- A complete coverage approach -- edge to cloud
- An assigned HPE team
- Modular and fully personalized engagement
- Enhanced Incident Management experience with priority access
- Digitally enabled and AI driven customer experience

<https://www.hpe.com/services/completercare>

HPE Tech Care Service

HPE Tech Care Service is the operational support service experience for HPE products. The service goes beyond traditional support by providing access to product specific experts, an AI driven digital experience, and general technical guidance to not only reduce risk but constantly search for ways to do things better. HPE Tech Care Service delivers a customer-centric, AI driven, and digitally enabled customer experience to move your business forward. HPE Tech Care Service is available in three response levels. Basic, which provides 9x5 business hour availability and a 2-hour response time. Essential which provides a 15-minute response time 24x7 for most enterprise level customers, and Critical which includes a 6-hour repair commitment where available and outage management response for severity 1 incidents.

<https://www.hpe.com/services/techcare>



Service and Support

HPE Lifecycle Services

HPE Lifecycle Services provide a variety of options to help maintain your HPE systems and solutions at all stages of the product lifecycle. A few popular examples include:

- Lifecycle Install and Startup Services: Various levels for physical installation and power on, remote access setup, installation and startup, and enhanced installation services with the operating system.
- HPE Firmware Update Analysis Service: Recommendations for firmware revision levels for selected HPE products, taking into account the relevant revision dependencies within your IT environment.
- HPE Firmware Update Implementation Service: Implementation of firmware updates for selected HPE server, storage, and solution products, taking into account the relevant revision dependencies within your IT environment.
- Implementation assistance services: Highly trained technical service specialists to assist you with a variety of activities, ranging from design, implementation, and platform deployment to consolidation, migration, project management, and onsite technical forums.
- HPE Service Credits: Access to prepaid services for flexibility to choose from a variety of specialized service activities, including assessments, performance maintenance reviews, firmware management, professional services, and operational best practices.

Notes: To review the list of Lifecycle Services available for your product go to:

<https://www.hpe.com/services/lifecycle>

For a list of the most frequently purchased services using service credits, see the [HPE Service Credits Menu](#)

Other Related Services from HPE Services:

HPE Education Services

Training and certification designed for IT and business professionals across all industries. Broad catalogue of course offerings to expand skills and proficiencies in topics ranging from cloud and cybersecurity to AI and DevOps. Create learning paths to expand proficiency in a specific subject. Schedule training in a way that works best for your business with flexible continuous learning options.

<https://www.hpe.com/services/training>

Defective Media Retention

An option available with HPE Complete Care Service and HPE Tech Care Service and applies only to Disk or eligible SSD/Flash Drives replaced by HPE due to malfunction.

Consult your HPE Sales Representative or Authorized Channel Partner of choice for any additional questions and services options.

Parts and Materials

HPE will provide HPE-supported replacement parts and materials necessary to maintain the covered hardware product in operating condition, including parts and materials for available and recommended engineering improvements.

Parts and components that have reached their maximum supported lifetime and/or the maximum usage limitations as set forth in the manufacturer's operating manual, product quick-specs, or the technical product data sheet will not be provided, repaired, or replaced as part of these services.

How to Purchase Services

Services are sold by Hewlett Packard Enterprise and Hewlett Packard Enterprise Authorized Service Partners:

- Services for customers purchasing from HPE or an enterprise reseller are quoted using HPE order configuration tools.
- Customers purchasing from a commercial reseller can find services at <https://ssc.hpe.com/portal/site/ssc/>



Service and Support

AI Powered and Digitally Enabled Support Experience

Achieve faster time to resolution with access to product-specific resources and expertise through a digital and data driven customer experience

Sign into the HPE Support Center experience, featuring streamlined self-serve case creation and management capabilities with inline knowledge recommendations. You will also find personalized task alerts and powerful troubleshooting support through an intelligent virtual agent with seamless transition when needed to a live support agent.

<https://support.hpe.com/hpesc/public/home/signin>

Consume IT On Your Terms

HPE GreenLake edge-to-cloud platform brings the cloud experience directly to your apps and data wherever they are—the edge, colocations, or your data center. It delivers cloud services for on-premises IT infrastructure specifically tailored to your most demanding workloads. With a pay-per-use, scalable, point-and-click self-service experience that is managed for you, HPE GreenLake edge-to-cloud platform accelerates digital transformation in a distributed, edge-to-cloud world.

- Get faster time to market
- Save on TCO, align costs to business
- Scale quickly, meet unpredictable demand
- Simplify IT operations across your data centers and clouds

To learn more about HPE Services, please contact your Hewlett Packard Enterprise sales representative or Hewlett Packard Enterprise Authorized Channel Partner. Contact information for a representative in your area can be found at "Contact HPE"

<https://www.hpe.com/us/en/contact-hpe.html>

For more information

<http://www.hpe.com/services>



Configuration Information

HPE Data Management Framework Ordering Rules

HPE Data Management Framework Base SKUs

HPE Data Management Framework Base System 1PB 3-server 1-year Subscription E-LTU	R1D49AAE
HPE Data Management Framework Base System 1PB 3-server 3-year Subscription E-LTU	R1D50AAE
HPE Data Management Framework Base System 1PB 3-server 5-year Subscription E-LTU	R1D51AAE
HPE Data Management Framework Base System 10PB 3-server 1-year Subscription E-LTU	R1D52AAE
HPE Data Management Framework Base System 10PB 3-server 3-year Subscription E-LTU	R1D53AAE
HPE Data Management Framework Base System 10PB 3-server 5-year Subscription E-LTU	R1D54AAE
HPE Data Management Framework Base System 100PB 3-server 1-year Subscription E-LTU	R1D55AAE
HPE Data Management Framework Base System 100PB 3-server 3-year Subscription E-LTU	R1D56AAE
HPE Data Management Framework Base System 100PB 3-server 5-year Subscription E-LTU	R1D57AAE
HPE Data Management Framework 1EB 3-server Base System 1-year Subscription E-LTU	R1D41AAE
HPE Data Management Framework 1EB 3-server Base System 3-year Subscription E-LTU	R1D42AAE
HPE Data Management Framework 1EB 3-server Base System 5-year Subscription E-LTU	R1D43AAE

HPE Data Management Framework Increment SKUs

HPE Data Management Framework Additional Server 1-year Subscription E-LTU	R1D67AAE
HPE Data Management Framework Additional Server 3-year Subscription E-LTU	R1D68AAE
HPE Data Management Framework Additional Server 5-year Subscription E-LTU	R1D69AAE
HPE Data Management Framework 1PB 2-10PB 1-year Subscription E-LTU	R1D58AAE
HPE Data Management Framework 1PB 2-10PB 3-year Subscription E-LTU	R1D59AAE
HPE Data Management Framework 1PB 2-10PB 5-year Subscription E-LTU	R1D60AAE
HPE Data Management Framework 1PB 11-100PB 1-year Subscription E-LTU	R1D61AAE
HPE Data Management Framework 1PB 11-100PB 3-year Subscription E-LTU	R1D62AAE
HPE Data Management Framework 1PB 11-100PB 5-year Subscription E-LTU	R1D63AAE
HPE Data Management Framework 1PB 101PB+ 1-year Subscription E-LTU	R1D64AAE
HPE Data Management Framework 1PB 101PB+ 3-year Subscription E-LTU	R1D65AAE
HPE Data Management Framework 1PB 101PB+ 5-year Subscription E-LTU	R1D66AAE
HPE Data Management Framework 10PB 1EB+ 1-year Subscription E-LTU	R1D44AAE
HPE Data Management Framework 10PB 1EB+ 3-year Subscription E-LTU	R1D45AAE
HPE Data Management Framework 10PB 1EB+ 5-year Subscription E-LTU	R1D46AAE

Ordering Guidelines

- Base
 - One Base SKU is required for new installations.
 - Choose the desired capacity tier from 1PB, 10PB, 100PB or 1EB.
 - Choose the subscription term from 1, 3, or 5 years.
 - Base SKUs are updated as of August 2021.
- Capacity
 - Increase to the desired capacity in 1PB increments for 1PB/10PB/100PB tiers by ordering incremental capacity SKUs.
 - Increase to the desired capacity in 10PB increments for the 1EB tier by ordering incremental capacity SKUs.
 - Tier jumping is now allowed. The increment SKU tier must be the same as the Base.
- Cluster Size
 - All base SKUs include licenses for up to 3 nodes.
 - Add one (1) Additional Server SKU for each DMF server beyond the initial 3 nodes.
 - License all nodes that are listed in the DMF7 cluster inventory hosts file.
- Subscription Term
 - Increment capacity and additional server SKUs must have the same subscription term as the Base SKU.
 - License terms (1, 3, 5 year) can NOT be stacked. For example, a 1-year license cannot be simultaneously stacked with a 3-year license to have 4 years of subscription.
 - Order sufficient SKUs to cover the expected capacity and cluster size for the duration of the subscription term.



Configuration Information

Subscription Upgrades

Incremental SKUs purchased as add-ons to an existing system with an active subscription are not co-terminus. The term of an active subscription cannot be extended with additional SKUs.

Test and Development Systems

All of the DMF Base system SKUs include the use of one production system and one non-production test system at the same location.

Configuration Examples

Example: 3 Nodes and 5 PB of capacity for 3 years.

Qty	HPE SKU	Description
1	R1D50AAE	HPE Data Management Framework Base System 1PB 3-server 3-year Subscription E-LTU
4	R1D59AAE	HPE Data Management Framework 1PB 2-10PB 3-year Subscription E-LTU

Example: 3 Nodes and 26 PB of capacity for 3 years.

Qty	HPE SKU	Description
1	R1D53AAE	HPE Data Management Framework Base System 10PB 3-server 3-year Subscription E-LTU
16	R1D62AAE	HPE Data Management Framework 1PB 11-100PB 3-year Subscription E-LTU

Example: 3 Nodes and 120 PB of capacity for 5 years.

Qty	HPE SKU	Description
1	R1D57AAE	HPE Data Management Framework Base System 100PB 3-server 5-year Subscription E-LTU
20	R1D66AAE	HPE Data Management Framework 1PB 101PB+ 5-year Subscription E-LTU

Example: 20 Nodes and 280 PB of capacity for 1 year.

5 DMF DB/Core, 4 DMF Mover, 3 HPE XFS metadata servers, and 8 Tier Zero R-pool nodes

Qty	HPE SKU	Description
1	R1D55AAE	HPE Data Management Framework Base System 100PB 3-server 1-year Subscription E-LTU
180	R1D64AAE	HPE Data Management Framework 1PB 101PB+ 1-year Subscription E-LTU
17	R1D67AAE	HPE Data Management Framework Additional Server 1-year Subscription E-LTU

Expansion of DMF6 systems

Use of DMF6 software was entitled via perpetual licenses and all existing entitlement remains valid. However, all SKUs for DMF6 licensing have been retired and they can no longer be purchased.

DMF6 users who wish to expand entitlement for their DMF6 systems can continue to do so by purchasing additional entitlement via the subscription licenses above. Customers may add incremental capacity, incremental DMF servers and/or incremental HPE XFS servers.

Subscription SKUs are purchased as add-ons to an existing DMF6 system and are in addition to the active support contract for DMF6 perpetual licensing. They do not replace or invalidate the existing perpetual licensing and the existing support contract(s) remains in effect. Subscription SKUs and the active support contract for perpetual licensing are not co-terminus.

Licenses keys generated by the subscription SKUs are not required by the DMF6 software for release 6.9 and newer. However, customers who are running DMF 6.8 and older will need to contact HPE support for assistance to obtain license keys.



Configuration Information

HPE Data Management Framework Hardware Rules

HPE Data Management Framework Zero Watt Storage SKUs

HPE Data Management Framework ZWS4106 SAS 12G 4U Empty Disk LFF HDD Enclosure	R8V01A
HPE Data Management Framework ZWS4106 20TB SAS 12G Business Critical 7.2K LFF 512e HDD	S0A70A
HPE Data Management Framework ZWS4106 20TB SAS 12G Business Critical 7.2K LFF 512e 10-pack HDD	S0A71A
HPE Data Management Framework ZWS4106 20TB SAS 12G Business Critical 7.2K LFF 512e 24-pack HDD	S0A72A
HPE Data Management Framework ZWS4106 24TB SAS 12G Business Critical 7.2K LFF 512e HDD	S5D75A
HPE Data Management Framework ZWS4106 24TB SAS 12G Business Critical 7.2K LFF 512e 10-pack HDD	S5D76A
HPE Data Management Framework ZWS4106 24TB SAS 12G Business Critical 7.2K LFF 512e 24-pack HDD	S5D77A

Ordering Guidelines

- Enclosures
 - One or more empty disk enclosures are required for new installations.
 - Up to eight (8) disk enclosures can be attached to a set of one (1) or two (2) data mover nodes.
 - Larger configurations can be built by adding sets of data mover nodes and enclosures.
- Drives
 - Populate each empty enclosure with a minimum of 24 drives.
 - Valid configurations range from a minimum of 24 drives to a maximum of 106 drives per enclosure.
 - Drives are orderable as single drives or in bundles of 10 and 24 drives.
 - Partially populated enclosures are supported. Empty enclosure slots can be populated in the field.
 - Mixed drive sizes within an enclosure are supported.
- Data Mover Nodes
 - One (1) or two (2) data mover nodes are required for each set of up to 8 enclosures.
 - Configure two (2) data mover nodes for high availability.
 - Populate each data mover node with four (4) E208e-p SR Gen10 SmartArray SAS HBAs.
- SAS Cables
 - Mini-SAS HD 4x to Mini-SAS HD 4x Cables are required.
 - Peak Performance cabling supports one (1) or two (2) enclosures.
 - Maximum Capacity cabling support up to eight (8) enclosures.
 - Follow the cabling requirements as documented in the Zero Watt Storage System Administrator Guide.

Notes: ZWS4106 JBODs and Disk Drives are only usable within the DMF software environment. No other use is supported.

Configuration examples

Example: Two (2) data mover nodes, one (1) ZWS4106 enclosure, and 106 drives using Peak Performance Cabling.

Notes: Ordering 10-pack and 24-pack drive bundles will reduce post-delivery packaging disposal compared to individual drives.

Qty	HPE SKU	Description
1	R8V01A	HPE Data Management Framework ZWS4106 SAS 12G 4U Empty Disk LFF HDD Enclosure
1	S5D76A	HPE Data Management Framework ZWS4106 24TB SAS 12G Business Critical 7.2K LFF 512e 10-pack HDD
4	S5D77A	HPE Data Management Framework ZWS4106 24TB SAS 12G Business Critical 7.2K LFF 512e 24-pack HDD
8	716199-B21	HPE External 4.0m (13ft) Mini-SAS HD 4x to Mini-SAS HD 4x Cable



Configuration Information

Example: Two (2) data mover nodes, eight (8) ZWS4106 enclosures, and 848 drives using Maximum Capacity Cabling.
Notes: Ordering 10-pack and 24-pack drive bundles will reduce post-delivery packaging disposal compared to individual drives.

Qty	HPE SKU	Description
8	R8V01A	HPE Data Management Framework ZWS4106 SAS 12G 4U Empty Disk LFF HDD Enclosure
8	SOA71A	HPE Data Management Framework ZWS4106 20TB SAS 12G Business Critical 7.2K LFF 512e 10-pack HDD
32	SOA72A	HPE Data Management Framework ZWS4106 20TB SAS 12G Business Critical 7.2K LFF 512e 24-pack HDD
16	716199-B21	HPE External 4.0m (13ft) Mini-SAS HD 4x to Mini-SAS HD 4x Cable



Summary of Changes

Date	Version History	Action	Description of Change
28-Jul-2025	<u>Version 15</u>	Changed	Update survey link.
14-Apr-2025	<u>Version 14</u>	Changed	Standard Features and Configuration Information sections were updated. Update Tape Library support. Add ZWS 24TB SKUs. Update for DMF 7.10
15-Apr-2024	<u>Version 13</u>	Changed	Standard Features section was updated. Update for DMF 7.9
18-Dec-2023	<u>Version 12</u>	Changed	HPE Services Rebranding
06-Sep-2022	<u>Version 11</u>	Changed	New SKUs for additional DMF servers, 20TB HDDs for ZWS4106, CSP Namespace in DMF 7.6
07-Feb-2022	<u>Version 10</u>	Changed	Added DMF release required for ZWS4106 Standard Features section was updated
06-Dec-2021	<u>Version 9</u>	Changed	Standard features and Configuration Information sections were updated
18-Oct-2021	<u>Version 8</u>	Changed	Update for DMF 7.5 Added DMF ZWS4106 SKUs, rules and configuration examples.
11-Oct-2021	<u>Version 7</u>	Changed	Service and Support section was updated
02-Aug-2021	<u>Version 6</u>	Changed	Updated 18 capacity licensing SKUs & configuration examples Configuration Information section was updated.
05-Oct-2020	<u>Version 5</u>	Changed	Added Exabyte tier SKUs Configuration Information section was updated.
06-Jul-2020	<u>Version 4</u>	Changed	Update for DMF 7.3. Overview, Standard Features and Configuration Information sections were updated.
04-Nov-2019	<u>Version 3</u>	Changed	Update for DMF 7.2, filesystem support, and ZWS JBOD Overview, Standard Features and Additional Options sections were updated.
04-Feb-2019	<u>Version 2</u>	Changed	Update Spectra Logic and IBM tape hardware support in Additional Options section
03-Dec-2018	<u>Version 1</u>	New	New QuickSpecs

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