Overview

HPE XP8 Storage

HPE XP8 Storage is a mission critical flash storage for enterprises requiring Tier-0 enterprise storage for mission-critical apps that require absolutely zero downtime. XP8 is the 8th generation in the very successful XP product line. The previous generation XP7 Storage was designed as a 7-nines architecture and did not have a single second of downtime across the entire installed base since launch in April 2014, delivering on the 100% data availability guarantee. The XP8 Storage takes this a step forward, XP8 Storage is designed for 8-nines of availability. XP8 also delivers more than 4 times improvement in performance compared to XP7 and has an intelligent management suite of software for simplified management and proactive support.

The XP portfolio contains a robust set of software that drastically reduces storage management and provisioning complexity as well as delivering advanced multi-datacenter high availability, migration, and automation. The essential software for provisioning and managing the storage array is included along with the XP8 Storage controller, making it simpler and economical to purchase software.

Together, XP8 hardware and software deliver unmatched availability, performance, and scale. Rest easy knowing that XP8 will always be online. No downtime for any reason, and backed up the XP8 100% data availability guarantee.

HPE XP8 is available in two models: HPE XP8 All-Flash Storage Array and HPE XP8 Hybrid Array. Both models can be purchased in either Base (2-controller) or Performance (4-controller) versions, and can scale up to a fully-loaded 12-controller configuration.

HPE XP8 Storage

Overview

What's New

- Get breakthrough performance and lower latency with new 375GB Storage Class Memory (SCM) media. Perfect solution for hot data, with support for DeCo, Encryption, and Smart Tiering.
- QoS enhancements for more service level control. Set upper limits on Volume Group IOPs and MB/s.
- Non-disruptive migration for CA-sync configurations from HPE XP7 to XP8.
- Expanded Online Migration support for data movement from non-XP storage to XP8 storage
- Online volume expansion support with HA/CA/CAJ/BC/FS

For more information about HPE XP8 visit**: hpe.com/storage/XP8**

Models

Description	SKU
HPE XP8 Hybrid Storage Array	R0L99A
HPE XP8 All Flash Storage Array	R0K99A

Standard Features

Scalability of the HPE XP8			
	Min	**increment**	**Max**
DKC (Disk Controller Chassis)	1 Pair	1 Pair	3 Pair
Controllers	2	2*/4	12
Racks	1	1	6
Data Drives SFF	0	4	2304
Data Drives LFF	0	4	1152
Data Drives SSD	0	4	2304
Data Media Modules FMD	0	4	576
Data Drives NVMe	0	4	288
Data Drives SCM	0	4	96
Spare Media	0	1	192
SBX (SFF Media Chassis)	0	1	24
UBX (LFF Media Chassis)	0	1	12
NBX (SFF NVMe Media Chassis)	0	1	3
FBX (FMD Media Chassis)	0	1	12
Capacity	0 GB in a diskless configuration	Single parity group of 4 or 8 HDD, SSD or FMD	69.1 PB raw ~60 PB useable
SAS I/O Backend Module 4 pack	0	1	6
NVMe I/O Backend Module 4 pack	0	1	6
Encrypted SAS I/O Module Backend 4 pack	0	1	6
Encrypted NVMe I/O Backend Module 4 pack	0	1	6
16 Gbps FC Host Ports	8	8	192
32 Gbps FC Host Ports	8	8	192
10GBps iSCSI Ports	4	4	96
16 Gbps FICON Host Ports	8	8	192
Cache w/Encrypted or Non-Encrypted backup	256 GB (8 x32 GB)	256 GB (8 x 32 GB)	6 TB
LDEVs	0	1	65,280

Notes: * 2 Controller increment if upgrading from Base to Performance DKC.

Standard Features

Disk Controller Chassis –DKC

The XP8 Disk Controller Chassis (DKC) is offered in two models and always in pairs. The Base Disk Controller Chassis pair is the entry model and contains one controller board in each DKC. This Base model is ideal for customers that require 100% availability, but have less stringent performance requirements. For those customers that require more IOPs the Performance Disk Controller Chassis pair comes with four controllers, 2 in each DKC. Customers that initially purchase the Base DKC can upgrade to the Performance DKC as needs grow.

Both Base and Performance DKC models ship with an MPU (Microprocessor Unit), cache, one Service Processor (SVP) and SSVP, Backup Memory Kit (BKM) , Cooling Fans and AC-DC Power Supplies.

Batteries and cache flash memories are installed in the Cache Backup Module Kit (BKM) to prevent data loss due to the occurrence of a power outage.

The options which can be added or configured to a Disk Controller Chassis (DKC) consist of Channel Host Boards (CHB), and cache. An optional SVP is available for continuous management access to the array.

The storage system continues to operate when a single point of failure occurs. In addition, the replacement of the components and the upgrading of the microcode can be performed while the storage system is in operation.

The SVP provides for managing and modification of the storage system configuration information, and observes the operational status. Connecting this SVP to HPE C-Track enables the remote monitoring of the storage system. An Option SVP may be added to provide storage management and monitoring continuity in case of the main SVP fails and need to be replaced.

Drive Chassis (DKU)/ Media Chassis – DKU

Four types of media chassis are available:
- SFF HDD/SSD Chassis for 2.5-inch media – Referred to as an SBX.
- LFF Drive Chassis for 3.5-inch drives – Referred to as an UBX.
- FMD Chassis for Flash Module Devices (FMD) – Referred to as an FBX.
- SFF NVMe and SCM Chassis for 2.5-inch media – Referred to as an NBX

SBX: The SFF Drive Chassis is a chassis to install the SFF media, and consists of SAS SW boards and the AC-DC Power Supplies equipped with built-in cooling fans.

UBX: The LFF Drive Chassis is a chassis to install the LFF disk drives, and consists of SAS SW boards and the AC-DC Power Supplies equipped with built-in cooling fans.

FBX: The FMD Chassis is a chassis to install Flash Module Devices, and consists of SAS SW boards and the AC-DC Power Supplies equipped with built-in cooling fans.

NBX: The NBX Drive Chassis is a chassis to install the SFF NVMe and SCM media, and consists of PCIe SW boards and the AC-DC Power Supplies equipped with built-in cooling fans.

Standard Features

Channel Host Boards– CHB

Channel Host Board (CHB) pairs provide connections to host or servers that use the HPE XP8 for data storage (either directly connected to the servers or through SAN switches). CHB pairs also provide connections to External Storage and remote replication devices. CHBs are configured in pairs for redundancy. The maximum number of CHB pairs that can be installed in an XP8 is 24 providing 192 ports for host connectivity.

- Max4 CHB pair with a 2DKC 2CTL array
- Max8 CHB pair with a 2 DKC 4CTLarray
- Max16 CHB pair with a 4 DKC 8CTL array
- Max24 CHB pair with a 6 DKC 12CTL array

CHB pairs and transceivers available for use in the HPE XP8 include:

Fibre Channel	HPE XP8 16/32Gb 4-port Fibre Channel 2-pack Host Bus Adapter
iSCSI	HPE XP8 10Gb 2-port iSCSI 2-pack Host Bus Adapter
FICON SW	HPE XP8 16Gb 4-port Mainframe Short Wave Fibre Channel 2-pack Host Bus Adapter
FICON LW	HPE XP8 16Gb 4-port Mainframe Long Wave Fibre Channel 2-pack Host Bus Adapter
LW	HPE XP8 16Gb SFP Long Wave 2-pack Transceiver
SW	HPE XP8 16Gb SFP Short Wave 2-pack Transceiver
SW	HPE XP8 32Gb SFP Short Wave 2-pack Transceiver

The Fibre Channel CHB pair uses SFP (small form factor pluggable) Transceivers on each port of the CHB. Each port is configurable as short wave or long wave by installing the appropriate transceiver.

Disk Controller Board – DKB

The Disk Controller Board (DKB) performs all data movement between the drives and Cache Memory. The HPE XP8 may have zero DKB pairs (for an all External Virtual Storage configuration), and from 2 to 24 DKB pairs for internal storage media connection depending on the number of DKC's. DKB's are determined solely on the number of controllers in the array. DKB's are available for both SAS and NVMe configurations.

Encryption Ready Disk Controller Board – E-DKB

The HPE XP8 encryption option requires the Encryption Ready Disk Controller Boards as well as an encryption software license. Data encryption occurs at the DKB device resulting in encrypted data at rest (DARE) on the drive/media. . Encryption DKB's are available for both SAS and NVMe configurations.

Please see the software section for information on the HPE XP8 DKA Encryption Software LTU.

Cache Memory

Cache Memory is used to temporarily store data from the host until it is written to drive storage, or to stage data requested by the host from a drive. The HPE XP8 contains global mirrored cache. All write data is duplicated in both cache clusters. Cache control data (Shared Memory) and Cache data is also backed up to SSD for each Cache Memory Adapter in case of power outage (back up battery installed by default) or DKC power off. Optional encrypted cache backup can be ordered for added security.

This insures that even if one cache board fails that the data is still in the other one until it is safely written to a drive. Read data is not mirrored as a copy of that data remains on the drives, allowing more of the total cache capacity available for data.

HPE XP8 Cache Memory can be configured into logical partitions allocated to particular host/port combinations to ensure that those hosts/ports enjoy optimized performance of cache-oriented I/O. These cache partitions are assigned to specified Array Groups. Up to 32 partitions of at least 4GB can be created in a HPE XP8. Assigning cache in this way provides another method for tuning performance for data access for performance critical applications.

Standard Features

Media: HDD / SSD Drives and Flash Modules

The HPE XP8 supports a variety of 2.5" small form-factor hard disk drives and solid state drives (SSDs), 3.5" large form-factor hard disk drives, and XP Flash Module Device. The number and type of media installed in a HPE XP8 is flexible. Media must be added in minimum groups of four. Additional capacity can be installed over time as capacity needs grow. The HPE XP8 media use the industry standard dual ported 12 Gbps SAS interface or NVMe PCIe interface. Each media is connected to both blades of the redundant DKB pair by separate connections. Spare media are automatically used in the event of a media failure.

SSDs have a limited number of writes that can occur before reaching the SSD's write endurance limit. The write endurance limit of enterprise MLC SSDs is generally high enough so wear out will not occur during the expected service life of an HPE XP8 under the great majority of configurations, IO patterns, and workloads. The HPE XP8 tracks all writes to SSDs and can report the percent of the total write limit that has been used. This allows any SSD approaching the write limit to be proactively replaced before they are automatically spared out.

Flash Module Device (FMD)

The HPE XP8 supports Flash Module Device's (FMD), which provide solid-state non-volatile high-performance data capacity. FMD capacity can be configured for use in the array in the same way as any other HDD or SSD. The number of FMDs that can be installed in a HPE XP8 is flexible. FMDs must be added in groups of four or more. Additional capacity can be installed over time as capacity needs grow. Spare FMDs are automatically used in the event of a FMD failure.

The FMD compression engine delivers double the flash capacity (2:1 compression ratio) along with world class performance and makes mission critical flash more affordable.

Up to four 48-slot FMD Chassis may be configured to each DKC pair. FMD Chassis use the industry standard dual ported 12 Gbps SAS interface. Each FMD Chassis is connected to both blades of the redundant DKB pair by separate connections.
Notes: The FMD is supported in Mainframe environments, but with FMD compression turned off.

Service Processor

The Service Processor (SVP) manages the HPE XP8 configuration, gathers statistical information, and is used for some maintenance activities.

The HPE XP8 Storage does not require a functioning SVP in order to make capacity available for reading and writing. However, as external management functions have become dependent on the availability of the SVP in the HPE XP8, some customers may desire to have fast recovery from an SVP failure by having a standby SVP. If the primary SVP fails, the hot standby SVP is switched into operation automatically within approximately six minutes.

Continuous Track Remote Support

The HPE Continuous Track (C-Track) remote support solution uses internet connectivity to transmit heartbeats, system information messages (SIMs), and configuration information to the HPE Storage Technology Centers (STCs) for remote data collection and remote monitoring purposes.

C-Track also enables the STCs to remotely diagnose certain issues that may exist on the HPE XP8. With Hewlett Packard Enterprise secure remote device access, Hewlett Packard Enterprise support personnel have the enhanced ability, in many cases, to quickly fix a support issue entirely through remotely performed actions.

The HPE XP8 Continuous Track remote support functions require connection to HPE Insight Remote Support via the internet.

Server connectivity

The HPE XP8 connects to a variety of servers and operating systems. For details on which servers and operating systems are currently supported, please contact your sales representative.

Standard Features

Switch support details

The HPE XP8 connects to the leading Fibre Channel and iSCSI switches in the industry today. For detailed information on supported switch configurations, please contact your sales representative.

Application Solutions

HPE XP8 is the newest member to the HPE XP Storage family that has been shipping for over 20 years. Over that time XP Storage earned a reputation for superior availability, performance, and scale. The HPE XP8 is ideal for customers running Oracle, Microsoft, SAP, and VMware environments that simply cannot afford any downtime or tolerate any data loss.

The HPE XP8 provides these mission critical application environments with a complete hardware/ software storage solution to decrease risks, lower costs, and accelerate business growth and agility. Data replication and tightly integrated clustering solutions, along with disaster recovery support, enable a multi-site disaster tolerant design to achieve business continuity in the most mission-critical environment.

The HPE XP8 is the premier enterprise-class storage solution for database environments that demand a mission critical solution to meet business and storage demands of Oracle, Microsoft, SAP, and Vmware environments with technology that helps drive business success and mitigates risk with constant data availability.

Hewlett Packard Enterprise has developed an in-depth understanding of Oracle, Microsoft, SAP, and VMware technologies by extensive lab-testing best practices with the HPE XP8 Storage, HPE servers, and management software; high availability and disaster recovery solutions; and backup and recovery on the Oracle, Microsoft, and SAP application platforms. As a result, our customers can expect a wide range of operational and business benefits where they can:

- Maintain Hardware Redundancy. Every active component within an HPE XP8 array is redundant, hot-swappable, and can be upgraded online.
- Achieve Data Loss Protection to monitor the array around the clock for unseen issues, and investigate and resolve problems proactively and immediately.
- Increase utilization efficiency and reduce storage costs with HPE XP8 Smart Tiers, HPE XP8 Thin Provisioning and HPE XP8 data reduction technologies.
- Increase return on investment with reduced cooling and power requirements along with increased reliability and storage density with HPE Smart Tiers.
- Maximize performance and consistent low response times with HPE XP8 ultra high performance configurations and HPE XP8 Flash Module Devices.
- Easily integrate to existing Oracle, Microsoft, SAP, and Vmware environments with choice of FC, iSCSI, NVMe or SAS attached controllers.

To learn more about specific HPE Storage Solutions that are built with Oracle, Microsoft, SAP, and VMware environments in mind, visit the Storage Solutions for Mission Critical Applications site:
https://www.hpe.com/us/en/storage/mission-critical-applications.html

Standard Features

HPE XP8 Software Products

The HPE XP8 family offers a complete portfolio of software applications designed to help you confidently manage and maximize availability, performance, and scale of your HPE XP8 Storage. For convenience all essential XP8 management and replication software is included as part of the array purchase. Other advanced software is still optional, and purchased individually.

For additional information regarding HPE XP8 Software products, refer to the following:
- Trial licenses are available for most HPE XP8 software products. Please contact your HPE Sales Representative for details.

Base software suite bundled with XP8 Storage

The HPE XP8 essential software suite RTU (right to use) is included with the purchase of the XP8 array. Management and Replication SW features from the prior generation HPE XP7 are included (except for CVAE Device) plus the new Intelligent Storage Manager (ISM) and Data Protection Manager (DPM).

Included titles and features.

Intelligent Storage Manager is a unified configuration management tool that reduces the complexity of managing HPE XP storage systems. HPE Intelligent Storage Manager's intuitive Graphical User Interface shortens the learning curve, and allows users to get at-a-glance status of XP storage resources. Built-in configuration intelligence provides best-practice recommendations to help users simplifying deployment, management, and maintenance. Quickly and easily create parity groups, pools, volumes and then set their replication policies for up to 50 XP storage systems. Intelligent Storage Manager reduces complexity, and the effort required to manage storage resources, allowing for more time to focus on strategic initiatives.
Improve storage administrator productivity by reducing complexity and simplifying management
- Intelligent Storage Manager's intuitive GUI streamlines storage life-cycle tasks. Deploy, monitor, and tune storage infrastructure using just a few clicks of the mouse. Use recommended best practices to simplify deployment and get it right the first time.
- Use the comprehensive dashboard view to quickly assess storage infrastructure health. See alerts for HW issues, capacity, and data protection. Drill down to individual storage resources to view used and available capacity. If action is needed, tasks which sometimes took hours and days can now be done in minutes with a few clicks to the mouse.
- Integrate Intelligent Storage Manager easily integrates into existing environments with no disruption. The REST-API interface allows easy integration with existing infrastructure management tools, and lessens the learning curve.
- Improve storage administrator productivity by reducing complexity and simplifying management
- Single management interface to manage all storage lifecycle needs. No need for multiple tools and differing resource skills to manage them.
- Deploy new or modify existing configurations in a fraction of the time.

Create and deploy service level profile tiers to match SLA requirements. Deploy only the profile that is required, no more or less.

HPE XP8 Remote Replication Suite

HPE XP8 Remote Replication Suite offering provides everything need to meet the most demanding availability requirements. Remote Replication Suites combines High Availability, Continuous Access, Continuous Access Journal, 3-Data Center Continuous Access Continuous Access Journal, 3-Data Center Continuous Access Journal / Continuous Access Journal, 3-Data Center High Availability / Center Continuous Access Journal and Business Continuity Manager into one convenient package.

High Availability (HA) Software is an Active-Active High Availability Solution offering on HPE XP8 Storage. HPE XP8 High Availability reduces application downtime in the event of an array or array component failure and allows for transparent virtual machine mobility across sites. The high availability feature is implemented based on the HPE XP8 Multi Array Virtualization capability. HPE XP8 High Availability Software supports two use cases: Active-Active HA and Active-Active Access.

Active-Active HA provides storage uptime from a disaster recovery configuration even when an array and/or entire datacenter goes offline. Active-Active Access provides non-disruptive, transparent VM and/or clustered application mobility between hosts or servers at the same or different sites.

Standard Features

The HA Virtual Storage Machine features Multi Array Virtualization (MAV) which provides the virtualization architecture software to setup local or clustered mirrored volumes that look the same to any supported Host multi-path/cluster software. MAV replicates the data across HPE XP8 arrays up to a synchronous distance and provides delta re-sync capability in case of failure/maintenance.

HA can be combined with any of the other traditional mirroring program product like Business Copy, Fast Snap to make additional copies. HA may or may not require a quorum. Today, the quorum, if any, may reside on external storage or local storage and the quorum can be virtual as well (no quorum).

Host then can use generic multi-path solutions for Active-Active access, load balancing as the Virtual Storage Machine hides and handles HA complexity.

With the HPE XP8 3DC HA solution, HPE XP8 Storage arrays on two sites replicate data synchronously while configured for Active-Active High Availability, while the HPE XP8 Storage on a third site many miles away protects against a regional disaster that hits the first two. Lose any of the sites and the other two keep going. When the "down" sites come back up the data is re-synced again to the full 3DC HA solution.

The solution combines the high availability and synchronous replication at metropolitan distances with the long distance capability of journal replication. This solution protects against local and wide area disasters. A wide area disaster could disable both data centers 1 and 2. Operations can be shifted to data center 3. A campus/metropolitan HA implementation allows for data currency due to Active-Active configuration at data center 1 and 2 with no impact to application availability or performance.

The High Availability with Synchronous replication at Site 1 & 2
- The HA pair volume are configured for Active-Active setup to provide for 14 9s availability
- If a failure at Site A, prevents host access to primary volume at Site 1, read and write I/O can still continue to Site 2 , providing continuous server I/O to the data volume
- In a server-cluster configuration, HA pair need not be suspended/resynchronized during server failover/failback
- Server load balancing without storage impact

The CA Journal delta resync at Site 3
- Involves creating a Continuous Access Journal copy pair called delta-resync pair between HA S-VOL on the local site and CA Journal S-VOL on the remote site
- The journal for delta resync pair holds the differential data between the S-VOLs on local and remote sites
- Delta resync operation is performed during primary site disaster

Differential data stored in delta resync pair journal is used to synchronize the S-VOL

HPE XP8 for Business Continuity Manager provides centralized and automated management and monitoring of Business Copy for Mainframe, Continuous Access Synchronous for Mainframe and Continuous Access Journal for Mainframe.

HPE XP8 Business Continuity Manager includes Business Continuity Manager Extended CT Group functionality for synchronous replication, allowing you to maintain data consistency within and across multiple HPE XP8 Storage for Continuous Access Synchronous for Mainframe operations.

HPE XP8 Business Continuity Manager Continuous Access Journal 4x4 Ext CTG Software allows the user to maintain data consistency within and across multiple (up to four) HPE XP8 Storage for Continuous Access Journal for Mainframe operations.

The HPE XP8 Continuous Access family of high availability data and disaster recovery tools enable real-time data mirroring between HPE XP8 Storage. They provide continuous availability for all your important data and protect you from catastrophic failures. HPE XP8 Continuous Access products deliver host-independent, array-based remote recovery for a wide range of open systems environments. HPE XP8 Continuous Access provides high-performance remote mirroring in high-workload environments. Using shared mirroring and host-connect interfaces, you will better utilize your array resources. In addition, with seamless integration into a full spectrum of remote mirroring-based solutions, HPE XP8 Continuous Access can be deployed for activities ranging from data migration to high-availability server clustering.

Standard Features

HPE XP8 Continuous Access Suite includes HPE XP8 Continuous Access Synchronous and HPE XP8 Continuous Access Journal. HPE XP8 Continuous Access Synchronous, the base product, provides replication using a synchronous link between HPE XP8 Storage. HPE XP8 Continuous Access Journal provides replication using an asynchronous link between HPE XP8 Storage. HPE XP8 Continuous Access can be used to copy data between HPE XP8 Storage and between XP Disk Arrays of different generations. For up to date information on HPE XP8 Continuous Access compatibility between HPE XP8/XP Disk Array generations, please contact your HPE representative.

Product Highlights
- Remote data mirroring between HPE XP8/XP Disk Arrays
- Enables a wide range of remote mirroring solutions
- HPE XP8 Continuous Access Synchronous: Synchronous copy mode
- HPE XP8 Continuous Access Journal: Asynchronous copy mode
- Fast failover/failback for seamless, reliable mirroring recovery
- Provides data consistency for Open/Mainframe VOLs in a Multi-DKC 3 Data center multi-target configuration
- Host Agent integration using HPE XP8 RAID Manager
- Supports 3DC Continuous Access Journal x Continuous Access Journal configuration
- HPE XP8 Continuous Access Sync includes licenses for Continuous Access Synchronous for Mainframe, providing synchronous remote replication for mainframe volume types
- HPE XP8 Continuous Access Journal includes licenses for Continuous Access Synchronous for Mainframe, Continuous Access Journal for Mainframe, and Continuous Access Journal 3DC & 4x4 for Mainframe, providing asynchronous journal-based remote replication for mainframe volume types
- Provides Active-Active High Availability
- 100% Storage uptime in the event of an array or datacenter failure
- Non-disruptive, transparent VM o clustered application mobility between hosts (Active-Active Access)
- HA CLI management through HPE XP8 Array Manager Plus Suite (or MF Basic Suite + Array Manager Conversion Suite) and HA GUI Management through Command View Advanced Edition
- Works with general multipath software. HDLM is not mandatory.
- Support for external volumes
- BCM is required for z/OS host management of CA Journal for MF, 3DC and Journal 4*4 for Mainframe

HPE Data Protection Manager is the answer for implementing contemporary data protection and copy management to improve data availability, compliance, governance, agility, and costs. HPE Data Protection Manager enables administrators for create policies and workflows to automate replication and copy data management, removing vast amounts of complexity and the need to create and manage custom scripts. Copy data configurations that sometimes took weeks to deploy can now be done in minutes. Its whiteboard-like GUI make it easy to create and manage replication and copy services to meet quality of service requirements. Data Protection Manager tightly integrates copy services with applications to ensure application and crash consistent backup.

HPE Data Protection Manager is structured into three sub-products; Storage Replication, Storage File System Protection, and Storage Application Protection. Storage Replication is bundled into the Intelligent Management Suite included with the purchase of the array. File System Protection and Application Protection offered as optional.

Array Manager software provides web-based volume management, resource allocation, access control, and data security for your HPE XP8 Storage. Configure and manage data volumes for most effective use of your HPE XP8. Partition array resources to isolate applications, reserve cache memory for your most frequently accessed data, and control host port usage so that your most critical applications have the port bandwidth they need. Configure, manage, and secure all host access to the HPE XP8 so that you have efficient access to your data. Create read-only volumes for archiving and data retention, and securely delete your data when necessary.

Standard Features

HPE XP8 Performance Advisor Software

HPE XP8 Performance Advisor Software is a web-based application for collecting, monitoring, and displaying the performance of your HPE XP8 Storage. With HPE XP8 Performance Advisor, you choose the time and duration of performance data collection-so you can pinpoint activities that significantly affect your HPE XP8 and tune the array accordingly. You can easily monitor storage performance and display usage statistics for your storage system at any level, from a complete system overview down to individual components. You can also filter hosts, arrays, and array components, so you are only seeing the hosts and arrays you want to see. You can also generate, schedule and view detailed performance reports that will allow you to identify any performance bottlenecks in your HPE XP8 Storage.

Performance Advisor now supports VM Analytics which enables you to analyze your VMware virtual environment, detect potential issues, and take corrective action before problems occur. Performance Advisor integrates with HPE XP8 Tiered Storage Manager, providing Array Group performance data. This allows Tiered Storage Manager to monitor access patterns so that you can consider performance implications before migrating data.
Not supported in mainframe environment.

Thin Provisioning software allows you to supply storage capacity to your applications from a pool of virtualized storage. By enabling you to allocate your anticipated future storage capacity needs from virtual storage, HPE XP8 Thin Provisioning Software reduces the amount of physical drive capacity initially required. As utilization of physical drive space increases over time, you can purchase more drive capacity as it is needed, and install it without affecting your applications. By removing the guessing from capacity planning, HPE XP8 Thin Provisioning reduces the cost of volume management.

Resource Partition allows role based access control of HPE XP8 resources. It allows storage administrators to partition HPE XP8 resources, at physical and logical level and to assign these resources to sub-administrators while retaining overall control. Administrators can partition a HPE XP8 Storage at a physical level (ports, hosts, LDEVs and Parity Groups) and dedicate part of their arrays for specific requirements. They can also partition at a logical level (Host Groups and LDEVs) and keep Ports, Parity Groups and External Storage as a shared infrastructure. Resource Partition software is ideal for a multi-tenant environment set up where dedicated sub-administrators need to manage the IT infrastructure needs of their respective business units. At the same time, it allows the datacenter administrator retain complete control of HPE XP8 Storage resources. Datacenter administrators can decide to partition HPE XP8 Storage resources either at a logical level to improve storage utilization efficiency or at a physical level to improve quality of service and avoid data and access breaches across multiple tenants.

External Storage allows you to host HPE XP8 Storage LUNs on select external storage subsystems. HPE XP8 External Storage allows you to tier storage capabilities and provision a HPE XP8 solution to optimize return on IT investment - letting you focus high-performance/high availability native HPE XP8 Storage capacity against your most mission-critical data while hosting less critical data on cost optimized external storage subsystems. Data stored on external devices connected behind a HPE XP8 appear to a server to be stored inside the HPE XP8.

External Storage provides significant consolidation scalability - up to 255 Petabytes (PB) of external storage can be configured behind a single HPE XP8 Storage. Coupled with the significant cost advantages that external storage systems can provide, you can confidently scale your HPE XP8 solution to simplify configuration complexity and reduce ongoing management cost.

HPE External Storage is compatible with a wide range of HPE XP8 software tools, including HPE XP8 Business Copy for local replication, HPE XP8 Continuous Access for remote replication, and HPE XP8 Auto LUN for performance optimization.

Notes: The HPE XP8 External Storage Base LTU is included in the base software suite which is included with the purchase of the XP8 array. The HPE XP8 External Storage Base LTU allows for HA quorum to be configured on an external resource. For any other additional external storage requirements, the R0W57A LTU must be ordered.

Standard Features

Business Copy makes nearly instantaneous copies of data from HPE XP8 Storage for development, testing or backup, without ever interrupting your online production. HPE XP8 Business Copy creates and maintains RAID-protected copy volumes without interrupting access to the source volumes. Because it makes asynchronous copy volume updates, copies stay up to date with minimal I/O response time degradations for your primary applications. These copy volumes can at any time be "split" from their corresponding source volume and accessed by other applications. Therefore, while copy volumes are being utilized, primary applications can continue to access and update their source volumes as needed, without taking a performance hit. By creating multiple online copies of critical business data without disrupting your business, HPE XP8 Business Copy lets you get the most from your data.

Fast Snap is a feature of Business Copy that also replicates data volumes. However, it is slightly different in that it makes space-efficient secondary copies that might only be a fraction of the size of the primary copy. Only data that is about to be overwritten in the primary volume is written to the secondary volume. This is called Copy-after-Write. As a result, if the volume capacity required for Snapshot HPE XP8 can be smaller, then the cost of replication can be lowered. Fast Snap Pool Capacity Optimization provides additional efficiencies by re-arranging fragmented data.Fast Snap is recommended for application environments where the I/O to the secondary volume is not write-centric or intensive (reads or writes).

Software compression and dedupe for data reduction. Reduces bit cost and overall TCO for HPE XP8 storage. Data reduction is applicable on all media – FMD, HDD, NVMe/SAS SSD, and external storage. Block sizes larger than 64K are processed inline, while smaller block sizes are post-process. Works in conjunction with DKB encryption.

Remote Web Console provides basic single HPE XP8 Storage management. It can be easily accessed by the HPE XP8 Command View AE GUI. If Remote Web Console is used as the only array device manager, it is accessed via a remote IP URL to the SVP. (See user manual for more details). Also note that the SVP shipped with HPE XP8 Storage includes a native CLI/SMI-S provider.

Smart Tiers and Smart Tiers for Mainframe improves storage performance and controls costs by transparently migrating data to appropriate tiers of storage within the HPE XP8 Storage. Smart Tiers manages data in thin provisioning pools. It monitors performance at the page level and can migrate data online to a different tier, automatically or manually, based on policies. Smart Tiers supports up to three tiers per pool. Smart Tiers supports external storage, which allows users to setup inexpensive external storage as one of the storage tiers for infrequently accessed data. RAID 1, RAID 5 and RAID 6 are supported.

Smart Tier and Real Time Tiering Smart Tier for Mainframe further enhances its tiering capability through real time tiering enhancement. Apart from period based tiering ranging from 30 minutes to 24 hour cycle, with real time tiering, the cycle time is reduced to seconds and sub-seconds level providing rapid response to workload changes. This is specifically beneficial for applications which experience a sudden surge in usage and require the Smart Tier monitor cycle to be less than 30 minutes to respond rapidly to the sudden increase in application usage.

Smart Manager for Mainframe runs on z/OS and provides centralized management of Smart Tiers volumes in a mainframe environment. It works together with Smart Tiers to help mainframe users conveniently and easily manage the location of volumes by tier. It allows mainframe storage administrators to transparently manage the location of volumes in a Smart Tiers pool such that SLA requirements can be satisfied. With Smart Manager for Mainframe your storage resources can be further optimized and efficiently utilized.

Auto LUN Software provides web-based automatic or manual monitoring and load balancing for all your HPE XP8 Storage. Now you can make the most of your arrays by moving high-priority tasks to underutilized volumes, replicating volumes for backup and recovery, and viewing the health of your arrays. You set performance goals, you set the limits, and HPE XP8 Auto LUN does the rest. It proposes a migration plan and even estimates how much your storage performance will improve when it is done. HPE XP8 Auto LUN lets you evaluate array usage and determine whether resources are overloaded or out of balance. Use its easy-to-follow menus to define when data is collected and arrays are monitored. It makes spotting trends simple, using up to 90 days of stored historical data to create up-to-the-minute reports. You can even export data to third-party analysis tools like Microsoft Excel. If resources are overloaded, HPE XP8 Auto LUN will create a plan to move volumes, then stands by for your approval to make changes.

Standard Features

DLM Advanced for VMware, HPE XP8 DLM Advanced for IBM AIX, HPE XP8 DLM Advanced for Sun Solaris, HPE XP8 DLM Advanced for Windows, and HPE XP8 DLM Advanced for Linux are server-based software tools that provide I/O path failover and load balancing for your HPE XP8s. They offer load balancing to improve performance, while the software's automatic error detection features provide a fault-tolerant infrastructure to avert data stoppages or catastrophic halts. It automatically routes I/Os to an alternate path, and administrators see and manage all I/O activity via an easy-to-use graphical interface - while users see only reliable system performance.

Global Link Manager uses multipath management software path control functionality to provide integrated path management for large sized system configurations. While multipath management software manages paths for a host, HPE XP8 Global Link Manager batch manages paths for multiple hosts.

When you use a large sized system configuration containing many hosts, the workload for managing paths from each host grows in proportion to the size of the system. Global Link Manager enables you to reduce the workload by providing unified management of the path information for the multiple hosts.

FlashCopy® Mirroring Software provides snapshot capability for local copy of mainframe volumes. It enhances data availability for mainframe data and improves productivity by providing IBM FlashCopy® compatible point-in-time copies within an HPE XP8 Storage. As soon as a copy is created, it becomes available for use. The copy can be either virtual or physical. If a virtual copy is specified, it remains a pointer-based copy that only saves the changes from the original. However, if a physical copy is specified, a full copy will be completed in the background while both the source and the copy remain available for access.

For additional availability, FlashCopy® can be combined with Business Copy for Mainframe, Continuous Access Synchronous for Mainframe, Continuous Access Journal for Mainframe, and HPE XP8 for Compatible Extended Remote Copy.

FlashCopy® Space Efficient - Storage space required by copies can be reduced with FlashCopy® Space Efficient. FlashCopy® SE uses space based on actual data being copied, not based on the S-VOL size, thus reducing the physical capacity used for T-VOLs. which are managed as a track space efficient (TSE) volume. The TSE is a thin provisioned volume subtype for use with FlashCopy® SE. Only the NOCOPY option can be used with Space Efficient FlashCopy® and a whole volume must be used as the S-VOL and T-VOL.

Standard Features

Other base software highlights

LUN Manager

Add paths, delete paths, set host mode, set/reset command device, configure ports, create LUNs and assign them to ports, configure port security, prevent IOSCAN by unauthorized servers from finding secure LUNs, and check every I/O for proper security.

Supported Systems: Open Systems		
Open Volume Manager	Open Systems	Create expanded volumes that are larger than standard volumes (also called LU Size Expansion or LUSE), and create custom size volumes that are smaller than standard volumes (also called Custom Volume Size or CVS).
Virtual LVI (VLVI)	Mainframe	Create custom size mainframe volumes that are smaller than standard volumes. Also called Custom Volume Size or CVS.
Data Retention Utility	Open Systems	LUN access control, enabling archiving and data retention. Protect key files from being updated, copied, accessed, or queried. Also known as LUN Security XP Extension.
Cache Residency Manager for Mainframe	Mainframe	Improve performance by reserving areas of Cache Memory for frequently accessed data.
Volume Retention Manager for Mainframe	Mainframe	Volume access control, enabling archiving and data retention. Assign access permissions (read/write, read-only, and protect) to mainframe volumes.
Performance Control	Open Systems	Allocate disk array port I/Os and transfer rate so that your most important applications have the performance they need. Also known as Server Priority Manager.
Performance Monitor	Both	Monitor usage, workload, and performance of drives, volumes, processors, and host interfaces in the HPE XP7 Storage. View the information in graphical formats
Volume Shredder	Both	Securely delete data with repetitive overwrites to minimize the likelihood that it could be recovered. Overwrite up to eight times with random or user selected patterns. Also known as Data Shredder.
RAID Manager	Both	Host based command line interface that controls HPE XP7 Continuous Access, HPE XP7 Business Copy, and Data Retention Utility (LUN Security XP Extension).
Cache Partition	Both	Improve performance by reserving areas of cache to store frequently accessed data. Divide Cache into up to 32 partitions and configure dedicated Cache for critical applications to improve their performance.
MF performance collector	Mainframe	Improves the time and precision in analyzing mainframe performance data from host and storage
HPE XP7Info (Previously known as XPInfo)	Open Systems	Understand the mapping between device files on the server and their associated storage ports and LDEVs in the HPE XP7 by using the HPE XP7Info command line utility.
Advanced QoS	Both	Set volume level upper limits for IOPs and MB/s
Policy-based media sanitization	Both	Set media sanitization policies to erase retired media, eliminating need to send media back to vendor or hire 3rd party.

Standard Features

Optional Software

HPE XP8 Automation Director
HPE XP8 Automation Director Software is the answer to unlocking the full potential of storage administration teams. It utilizes a service delivery automation engine that catalogs routine and repetitive tasks, as well as advanced processes, for quick, repeatable, and predictable storage service delivery. This software enables an innovative approach to storage infrastructure management. Automatically or with a few clicks of the mouse, quickly provision, replicate, analyze, and customize your environment. It comes with a service catalog of pre-optimized templates using proven best practices. Templates are customizable using Service Builder to tune for your workloads, such as SAP®, Microsoft®, Oracle®, OpenStack®, and VMware®.

Intelligent automation with HPE XP8 Automation Director Software simplifies storage infrastructure management, improves productivity, reduces cost, and frees up resources for strategic innovation.

Product Highlights
- Automated storage provisioning will improve costs and quality by simplifying storage administration
    - HPE XP8 Automation Director replaces repetitive time consuming tasks and complex workflows with easy to use templates. Provisioning becomes completely automated or as simple as a few mouse clicks.
    - Human error is often a leading contributor to downtime. XP8 Automation Director virtually eliminates human error by replacing mundane repetitive tasks with a service template for repeatable, reliable, and predictable outcomes. Provision automatically, and with confidence.
- Quickly provision storage by selecting from a catalog of best-practice-tuned templates.
    - HPE XP8 Automation Director eliminates complexity and accelerates provisioning by providing a pre-populated catalog of templates that were created using known best practices across a variety of common workloads.
    - Respond rapidly to new requests for storage, even if it's for an application new to the environment. For example, if the request is for a virtualized environment, select and deploy a template from the XP8 Automation Director Service Catalog with best practices based on VMware.
- Create customized service templates from scratch or tune existing templates with Service Builder.
    - HPE XP8 Automation Director comes with a robust catalog of pre-defined templates, but sometimes a new application needs a slightly different workflow. Service Builder, included with Automation Director, contains tools needed to modify an existing template and then create a new catalog entry.
    - The Service Builder tool, included in Automation Director, contains everything needed to create workflow templates from scratch. Use Service Builder to create a totally custom workflow template connecting resources in your environment for a simple, repeatable, high quality provisioning experience.
- Manage and automate more infrastructure. In addition to automating storage provisioning, Automation Director Node licensing enables automation of associated infrastructure management tasks such as fabric and virtual machine operations
    - Direct Node LTU provides access to individual hosts and user defined web services connections.
    - Proxy Node LTU provides access to hosts and FC switches through proxy servers.

Support
See Service and Support section

Prerequisites
HPE XP8 Intelligent Management Suite

Licensing
- License-to-use is based on the total usable (internal+external) capacity of the HPE XP8 being managed.
- See Capacity-Licensed HPE XP8 Software section.

Standard Features

HPE XP8 for Compatible Extended Remote Copy (XRC)

Provides asynchronous remote copies using IBM's System Data Mover on the mainframe host. Compatible XRC works with the SDM functions for z/OS Global Mirror to provide compatible replication. Required for IBM GDPS/XRC implementations. An excellent mainframe data migration solution for long distances (e.g. intercontinental) if migrating from IBM or HV storage to HPE XP8 storage

Support
See Service & Support section

Licensing
- Licensing on one HPE XP8 Storage based on total capacity of XRC P-VOLs. Also, add the total capacity of the XRC S-VOLs on the array if reverse copy will be used for recovery operations.
- See Capacity-Licensed HPE XP8 Software section

Mainframe Environment

HPE XP8 Mainframe Performance Suite

HPE XP8 Mainframe Performance Suite consist of Compatible PAV, Compatible Hyper PAV, Compatible Super PAV, and High Performance FICON software.

Compatible PAV Enables high performance concurrent access of mainframe volumes by permitting a mainframe host system to issue multiple I/O requests in parallel to individual logical devices within the HPE XP8 Storage. Compatible PAV also enables the use of the multiple allegiance feature in z/OS when using multiple physical mainframes to access the same volumes in a single array. Compatible PAV provides static or dynamic PAV functionality

Compatible Hyper PAV greatly reduces the number of PAV aliases needed per logical subsystem while maintaining response times. PAV aliases are only bound to PAV bases for the duration of a single I/O operation, thus reducing the number of aliases needed. Compatible SuperPAV is an extension of the compatible Hyper PAV architecture and implements multiple logical control units (LCUs) within an alias management group (AMG). With compatible Super PAV, when a new I/O request occurs and there are no alias PAV devices available in the alias pool for the base PAV device's LCU, z/OS® attempts to use an alias PAV device from another LCU within the AMG subgroup.

High Performance FICON for system z or zHPF is an enhancement of the FICON channel architecture; which also means compatibility with certain standards such as Fibre Channel Physical and Signaling standard (FC-FS), Fibre Channel Switch Fabric and Switch Control Requirements (FC-SW), and Fibre Channel Single-Byte-4 (FC-SB-4) standards. Enhancements have been made to the z/Architecture® and the FICON interface architecture to deliver improvements for online transaction processing (OLTP) workloads. zHPF is implemented exclusively in System z10. When High Performance FICON is exploited by the FICON channel, the z/OS operating system, and the control unit; the FICON channel overhead will be reduced. This is achieved by simplification of the protocol, and by reducing the number of information units processed, resulting in more efficient use of the fibre link

Support
See Service & Support section

Licensing
Mainframe Performance Suite is licensed by usable capacity

Standard Features

HPE XP8 Data Protection Manager – Storage File System and Storage Application Protection

HPE Data Protection Manager is the answer for implementing contemporary data protection and copy management to improve data availability, compliance, governance, agility, and costs. HPE Data Protection Manager enables administrators to create policies and workflows to automate replication and copy data management, removing vast amounts of complexity and the need to create and manage custom scripts. Copy data configurations that sometimes took weeks to deploy can now be done in minutes. Its whiteboard-like GUI make it easy to create and manage replication and copy services to meet quality of service requirements. Data Protection Manager tightly integrates copy services with applications to ensure application and crash consistent backup.
HPE Data Protection Manager is structured into three products; Storage Replication, Storage File System Protection, and Storage Application Protection. Storage Replication is bundled into the Base Software Suite included with the purchase of the array. File System Protection and Application Protection offered as optional.

Product Highlights

- Create end-to-end copy-data automation and orchestration services
  - Create policy based workflows for Recovery services which include snapshots, local and remote replication, active-active and active-passive configurations, and backup parameters
  - Provide ancillary copy services to support analytics, DevOps, troubleshooting, financials, and other business functions without impacting host IO performance. This would be controlled by policy and workflow to ensure accuracy, access, and life-cycle
  - Governance copy services that keeps track of all copies. Copies are indexed to enable search, audit and analytics. Set retention policies to guard against sprawl.

- HPE Data Protection Manager's drag-n-drop GUI minimizes Copy Data Management complexity
  - Data Protection Manager uses a whiteboard-like GUI for easy creation of policies based workflows. Those workflows can then be applied using simple drag-n-drop on that same whiteboard.
  - Scale to any number of policy-based workflows to meet variations in business QoS requirements across the enterprise. Once created, quickly deploy, update, or replace workflows as needed. The result is an agile and predictable copy data environment.
  - Data Protection Manager eliminates error-prone manual repetitive tasks and the need to create and maintain scripts

- Maximize recoverability and availability
  - HPE Data Protection Manager ensures application consistency on recovery by tightly coordinating application and storage copy services. Operations across local and remote copy services are also coordinated for complete end-to-end data protection.
  - Use tight integration between storage and application

- Multi-tenancy and reduced risk and costs with robust Copy Data Governance Control
  - Restrict access with granular role-based access control. HPE Data Protection Manager allows for up to 50 different parameters to govern access and supports many thousands of individual user profiles. Control what users can view and change, if and when data is updated, and when data is expired.

Governance reduces costs by controlling the lifecycle of copy data. HPE Data Protection Manager knows where data resides, and when it should be deleted. No more terabytes of stale data using up valuable storage.

Support

See Service and Support section

Prerequisites

HPE XP8 base suite that comes bundled with the array.

Licensing

License-to-use is based on the total usable source data capacity, which is the source capacity of the application or files that you are protecting.

Standard Features

HPE XP8 Online Migration Suite

HPE XP8 Online Migration Suite enables customers to perform the migration of open system volumes themselves through an intuitive user interface. The Online Migration product is used for the data migration when storage systems are replaced. Supported migration paths: XP7/P9500/XP24000/XP20000 to HPE XP8, XP8 to XP8, and now non-XP to XP8).

Always ON Disaster Recovery: By using Online Migration, you can migrate the data including the data services like Business Copy configuration data, continuing business online non-disruptively. Even if a new storage system is introduced in the future, and the storage system is replaced with the new one, the server is able to use the new storage system as the same virtual storage machine continuously.

These products have a 120-day fixed term license.

Notes:
-HPE XP8 Storage also has a services led online data migration offering performed by the trained professionals from HPE Services.
-Some migration paths are only supported when performed by HPE Services.

Product Highlights
- Truly online – no application outage or rebooting of hosts required
- Non-disruptive to users /application
- Supports a wide variety of applications and host operating systems
- Transparent to host operation
- Always ON Disaster Recovery
- Always On Disaster Recovery – before, during and after array migrations
- Increased disaster tolerance, Reduced risk of data loss
- Avoids a "no active DR solution" window
- Minimizes customer admin impacts through intuitive GUI
- Flexible licensing options – both perpetual and fixed term options available

Support
See Services/Support section

Prerequisites
No prerequisite

Licensing
This product has a 120-day fixed term LTU. Licensing must be purchased for the source and target arrays.

HPE XP8 DKA Encryption Software

HPE XP8 DKA Encryption software enables the encryption capability for all the data that stored on the internal drives of the HPE XP8 Storage. The Enhanced DKA encrypts the data on drives so that data cannot be read off a drive that is removed from the HPE XP8. Only data on the drives is encrypted (data in cache is not encrypted). HPE XP8 provides enhanced security and compliance requirements with FIPS 140-2 Level 2 encryption. Enabled through license key on Level 2 compliant eDKAs, the encryption protects customer records against large scale attacks and data breaches and meets industry compliance and regulatory requirements.

Support
See Service & Support section

Standard Features

Licensing
License-to-use for unlimited storage capacity on one HPE XP8 Storage

HPE XP8 External Storage
HPE XP8 External Storage allows you to present data stored on select external storage devices as HPE XP8 Storage LUNs . HPE XP8 External Storage allows you to tier storage capabilities and provision a HPE XP8 solution to optimize return on IT investment - letting you focus high-performance/high availability native HPE XP8 Storage capacity against your most mission-critical data while hosting less critical data on cost optimized external storage subsystems.

HPE XP8 External Storage provides significant consolidation scalability - up to 255 Petabytes (PB) of external storage can be configured behind a single HPE XP8 Storage. Coupled with the significant cost advantages that external storage systems can provide, you can confidently scale your HPE XP8 solution to simplify configuration complexity and reduce ongoing management cost. HPE XP8 External Storage is compatible with a wide range of HPE XP8 software tools, including HPE XP8 Business Copy for local replication, HPE XP8 Continuous Access for remote replication, and HPE XP8 Auto LUN for performance optimization.

Notes: The HPE XP8 External Storage base LTU is included in the base software suite which is included with the purchase of the XP8 array. This product is an LTU to cover the capacity of external storage.

Licensing
The License-To-Use is based on the sum of the total usable external capacity.

HPE XP8 for Data Exchange
HPE XP8 Data Exchange Software allows seamless data exchange between mainframe and open systems hosts. It provides management of data format and code conversions, and allows information sharing across computing platforms.

Product Highlights
- Mainframe and open systems data managed and stored on single HPE XP8 Storage
- Automatic data format and code conversions
- Supports HPE UX, Windows, Linux, Sun Solaris, and AIX Operating Systems

Support
See Service & Support section

Licensing
License-to-use on a per server basis (per server connected to one HPE XP8 Storage). One License required for each server running HPE XP8 for Data Exchange Software.

HPE XP HDLM Advanced Upgrade
Sole use of this product is to upgrade existing customers using HDLM to HDLM Advanced Suite.

Support
See Service & Support section

Licensing
1 HDLM Advanced Upgrade LTU required for each HDLM server connected the HPE XP.

Standard Features

HPE XP8 Plug-ins

HPE XP8 Storage supports major plug-ins for VMware, Oracle and Microsoft which are critical for the High End storage requirements. For the OpenStack community, HPE XP8 Storage has its own cinder driver for integrating with cloud. Below are some major plug-ins for HPE XP8.

HPE XP8 Storage Replication Adapter Software for VMware vCenter SRM

HPE XP8 Storage Replication Adapter (SRA) Software for VMware vCenter SRM. The SRA, developed for HPE XP8, XP7, XP P9500, XP 24000/XP20000, and XP 12000/10000 disk arrays, enables Site Recovery Manager (SRM) to work with Continuous Access array-based replication. The VMware Site Recovery Manager (SRM) protects the virtual machine systems on VMware from disasters and other emergencies. It streamlines the protection of critical virtual machines with data, and continuously tests their availability for the highest level of business continuity. During SRM configuration, SRA is used to discover local and remote HPE XP8 disk arrays. SRA is also used to discover HPE XP8 DR Groups and ensure DR Group is in synchronized state prior to failing VM from local to remote site.

HPE XP8 Storage Plug-In for VMware vCenter

This is a plug-in that provides integrated management of XP storage subsystems within vCenter 6.x   The plug-in allows the vCenter 6.x administrator to automatically configure ESX hosts to XP storage subsystems.

XP Storage Adapter for VMware vRealize Log Insight

Log collection and analytics virtual appliance that enables administrators to collect, view, manage and analyze syslog data. Log Insight provides real-time monitoring of application logs, network traces, configuration files, messages and performance data.

XP Storage Adapter for VMware vRealize Orchestrator

Facilitates automation and orchestration of tasks that involve HPE XP Storage. It augments the capabilities of VMware's vRealize Orchestrator solution by providing access to HPE storage specific workflows.

HPE XP8 Performance Advisor Adapter for VMware vRops

HPE XP8 Performance Advisor Adapter for VMware vRops 1.0 provides integrated performance and configuration details to the vCenter Operations Manager custom Graphical User Interface (GUI). The software uses the vRops analytics engine to monitor and analyze the performance of the HPE XP8 Storage Array environments.

HPE XP Storage adapter for VMware vCOPS – vCenter Operations Manager

This adapter enables users to bridge the gap between physical and virtual storage infrastructure. Monitor and manage performance and capacity through a single pane of glass.

HPE XP8 Storage Provider for VMware vCenter (VASA Provider)

VVol provides efficient granular storage management at VM level:
- 1:1 mapping of Virtual Disk to Storage Volume(VVol)
- Allows native storage services and policies applied at per VM level
- Heavy VM operations like Clone, Snapshots, Migration offloaded from ESXi Server to Storage system

HPE XP8 VASA provider will match the requests from vSphere (via storage policy profiles) with HPE XP8 Storage (via capability profiles).

HPE XP Storage Adapters for Oracle Database

Enables Oracle Database Administrators to use Enterprise Manager Cloud Control and Oracle VM Manager to display and manage Oracle databases, and Oracle Virtual Machines hosted on HPE XP storage infrastructure.

Standard Features

HPE XP8 Storage Cinder Volume Driver
To support the need that large organizations and service providers have for Enterprise class storage on cloud:
- HPE XP8 launches Cinder driver which supports OpenStack technology and is based on Block Storage(Cinder) plug-in architecture
- Provides flexibility and cost-effectiveness of a cloud based open source platform to customers with mission critical requirements

Supports FC protocol. The HPE XP8 Cinder driver will be qualified with OpenStack Liberty release.

HPE XP8 Storage Adapter for Microsoft Volume Shadow copy Service
Allows backup and restore operations via coordination between backup applications, line-of-business applications that are being backed up, and the storage management hardware and software. This ultimately enables customers to back up application data without taking the application offline. HP's provided service offloads the task of creating and maintaining shadow copies from the host operating system.

XP Storage Adapter for Microsoft Powershell
Task-based command-line shell and scripting language designed especially for system administration. control and automate the administration of the Windows operating system and applications that run on Windows

Microsoft System Center Operations Manager
The HPE XP Storage Adapter for Microsoft System Center Operations Manager (SCOM) enables HPE XP storage device configuration, health and alert information to appear in the SCOM console.

HPE XP Storage Plug-in for Containers
Enables collaboration between XP and Docker to create persistent containers for applications that require persistent storage beyond a single host

VAAI vStorage APIs for Array Integration
The HPE Storage VMware® API for Array Integration (VAAI) plugin for HPE XP Storage enables the offloading of some VMware vSphere operations to the storage array. The plug-in offered by HPE supports VAAI primitives such as Write Same, XCOPY, VMSTUN, UNMAP, etc. VAAI interaction is also supported with other XP program products such as Business Copy, Continuous Access, etc.

Support
See Service & Support section

Licensing
The plug-ins are available for free download from the software depot.

Standard Features

HPE Serviceguard Metrocluster with HPE XP8 and XP Continuous Access and HPE Serviceguard for Linux x86 Enterprise edition

HPE Serviceguard Metrocluster with HPE XP8 and XP Continuous Access seamlessly integrates HPE XP8 Storage remote replication capabilities with HPE Serviceguard for HPE-UX and Linux. It provides automatic and bi-directional failover/failback of business critical data and applications between data centers. HPE Metrocluster with HPE XP8 and XP Continuous Access supports HPE XP8 Storage in a two Data Center configuration.

For HPE Serviceguard for Linux, Enterprise edition brings in disaster recovery capability and is for customers who want to protect their applications against site outages up to any distance where latency between the sites is lower than 100ms. This edition provides automatic, bi-directional failover and failback across data centers up to several hundred miles apart. Enterprise edition supports storage array-based replication technologies with HPE P9000/EVA Continuous Access, P6000/XP Continuous Access, HPE 3PAR Remote Copy and EMC SRDF for Symmetrix arrays.

When combined with the HPE Continental clusters product, HPE Serviceguard Metrocluster with HPE XP8 and XP Continuous Access or HPE Serviceguard for Linux x86 Enterprise edition can also be used to replicate data and to perform application recovery across three data centers using the following storage devices: HPE XP8, XP P9500, XP24000, XP20000, XP12000, and XP10000.

Notes: HPE Metrocluster is a component of HPE Serviceguard for Linux x86 Enterprise edition since February 2014.

Product Highlights
- Extends protection provided by a Serviceguard cluster to cover disasters that affect the whole data center.
- Functions as an automatic failover/failback disaster recovery solution for HPE Serviceguard for HPE-UX and Linux.
- When combined with the HPE Continental clusters product, provides the ability to replicate data across three data centers (with HPE XP8, P9500, XP24000, XP20000, XP12000 and XP10000 Disk Arrays) resulting in minimal Recovery Point Objective (RPO) / Recovery Time Objective (RTO). This configuration provides protection against widespread disasters that may affect an entire region.

Support
Please contact your HPE representative for details

Prerequisites Software
- HPE-UX 11i v1 or higher. The 3 Data Center capability is available only on HPE-UX 11i v2 or higher.
- RHEL 5 or 6, SUSE 11 (SP2 or higher)
- HPE Serviceguard
- HPE XP8 Continuous Access (HPE XP8 Continuous Access Sync, or HPE XP8 Continuous Access Journal)
- HPE XP8 RAID Manage

Licensing
One license needed for every clustered environment

Standard Features

HPE Serviceguard Continentalclusters

HPE Serviceguard Continentalclusters software provides the highest levels of disaster tolerance by eliminating the cluster itself as a single point of failure. It uses data replication technologies to provide application recovery across multiple widely separated HPE-UX or Linux Serviceguard clusters.

Continentalclusters provides the ability to monitor a Serviceguard cluster and recover mission-critical applications to a remote Serviceguard cluster, should the monitored cluster become unavailable or if there is a disaster at the cluster site. Continentalclusters allows for a semi-automatic push button type of recovery. When a cluster failure or a site disaster is detected, Continentalclusters generates a notification. An operator, upon receipt of a notification, can start the recovery of applications at a recovery cluster using a single Continentalclusters command that automates the recovery procedure. Continentalclusters supports mutual recovery across two clusters. In a mutual recovery pair, each cluster is configured to recover the mission-critical applications running in the other cluster.

Applications can be configured in Continentalclusters for disaster tolerance using HPE XP8 Storage and HPE XP8 Continuous Access data replication technology.

Product Highlights
- Continentalclusters supports recovery of single instance applications like Oracle over LVM, VxVM and CVM/CFS 5.0.1 and 5.1 SP1
- Continentalclusters supports recovery of multi-instance applications like Oracle RAC over SLVM and CVM/CFS 5.0.1 and 5.1 SP1.
- HPE Serviceguard for Linux Continentalclusters does not support Oracle RAC over SLVM or CVM/CFS

Support
Please contact your HPE representative for details

Prerequisites Software
- HPE-UX 11i v1 or higher, RHEL 5 or 6, SUSE 11 (SP2 onwards) (For more information, please refer to: **http://docs.hpe.com**)
- HPE Serviceguard (11.20)
- HPE Metrocluster with HPE XP8 Continuous Access

Licensing
- One license of Serviceguard Continentalclusters covers two pairs of clusters (Primary and Recovery). Use Option 888 (designed for use with HPE Metrocluster with HPE XP8 Continuous Access).
- Each license of Serviceguard Continentalclusters requires one license of HPE Metrocluster with HPE XP8 Continuous Access.
- When purchasing HPE Serviceguard for Linux, appropriate number of Licenses to Use (LTU) must be ordered and a copy of the Software must be ordered separately. The Software copy can be ordered by e-Delivery or by Physical Media (DVD).
- One License to Use (LTU) must be ordered for each active socket running HPE Serviceguard for Linux software. This new Per Socket License (PSL) is offered, replacing System-wide licenses and Per Core Licenses (PCL).

HPE XP Cluster Extension Software

HPE XP Cluster Extension Software offers protection against system downtime to critical applications for enterprise customers using the HPE XP Storage family. It allows for hands-free failover/failback of server-storage system. It detects failures and automatically manages recovery without human intervention, offering comprehensive disaster tolerance against application downtime from fault, failure, or site disaster. HPE XP Cluster Extension Software resurrects your critical applications at a remote site within seconds/minutes after a failover event over both metropolitan and global distances. XP Cluster Extension works seamlessly with your open-system clustering software, HPE XP Continuous Access Software and your XP Storage system to provide a highly available IT system.

Standard Features

Product Highlights

- Automatic failover/failback recovery solution for native clusters on Red Hat and SUSE Linux, Microsoft Cluster Service (MSCS) for Windows
- Seamless integration of remote mirroring with server clusters
- Fully scripted turnkey solution for disaster recovery on Linux and Widows

Support

See Service & Support section

Prerequisites Software

- HPE XP8 Continuous Access Synchronous (required for synchronous copy mode-integrated solution)
- HPE XP8 Continuous Access Journal (required for asynchronous copy mode-integrated solution)
- HPE XP8 RAID Manager (required for host agent integration)

Licensing

- License-to-use either on a per-server node basis or an array basis.
- Node based: One License required for each server running XP Cluster Extension Software.
- Array based: One License required for every array connected to the server running XP Cluster Extension Software.

HPE XP8 Virtualization Adapter

HPE XP8 Virtualization Adapter (HPE XP8 Virtualization Adapter) provides an interface between VMware Site Recovery Manager (SRM) and HPE XP8 Storage. The interface enables SRM to provide automatic access to remote data copies when virtual machines become unavailable locally.

HPE XP8 Virtualization Adapter supports HPE XP8, XP7, XP P9500, XP24000/XP20000, XP12000/XP10000 Disk Arrays.

Product Highlights

HPE XP8 Virtualization Adapter performs the following functions for SRM:
Discovers disk arrays
Discovers replicated LUNs
Fails over storage for testing (test a recovery plan)
Fails over storage for recovery (execute a recovery plan)

Prerequisites

Servers with VMware Site Recovery Manager
HPE XP8 Continuous Access Synch and/or HPE XP8 Continuous Access Journal installed on both the local and remote HPE XP8 Storage
RAID Manager 1.24.13 or later (to support HPE XP8 Storage)
Optional: HPE XP8 Business Copy installed on both the local and the remote HPE XP8 Storage

Licensing

The HPE XP8 Virtualization Adapter is provided as a free download.

Service and Support

Warranty
Warranty level of hardware reactive support is 3 years, 24×7, with 4-hour onsite response.

Achieve your desired outcomes with the services experience you expect
Get the expertise you need at every step of your IT journey with **HPE Pointnext Services**. With **Advisory and Professional Services**, we focus on your business outcomes and goals, partnering with you to design your transformation and build a roadmap tuned to your unique challenges. With **Operational Services,** we help you lower your risks and costs and help you deliver the IT service levels your business expects. Our services can be leveraged to help speed up time-to-production, boost performance and move your business forward. HPE Pointnext Services specializes in flawless and on-time implementation, on-budget execution, and creative configurations that get the most out of software and hardware alike.

Free up resources with Operational Services from HPE Pointnext Services
HPE delivers services for IT by using proven best practices as well as automation and methodologies that have been tested and refined by HPE experts and artificial intelligence through thousands of deployments globally. Choose from the recommended services for customers purchasing from Hewlett Packard Enterprise or an authorized reseller. Services are quoted using Hewlett Packard Enterprise order configuration tools.

HPE Datacenter Care helps customers to address the pressing needs of IT today and smoothly transform to a more agile cloud-like IT operations model. We help run and monitor your IT by offloading the day to day routine tasks, helping customers be more predictive and proactive, and saving time with one place to call for your IT environment. Datacenter Care is available as both tailored statement of work and as a packaged service for 3, 4, and 5 year terms. The service is flexible and can address the needs of businesses and IT environments of any size.
Partner with an assigned account team backed by local and global experts, access HPE enhanced call experience with priority access, use specialized support for complex, technologies, choose hardware and software support for your devices, implement proactive monitoring to stay ahead of issues , and access HPE IT best practices and Intellectual Property. HPE Datacenter Care advantage options are available to add to your agreement to give you specialized expertise for performance, security, back up analysis, and much more. The service is available in 3, 4, and 5 year terms with a choice of response levels: Next Business day (NBD), 24x7 with a 4 hour response, and 24x7 with 6 hour call to repair (CTR).

HPE GreenLake
The following HPE GreenLake cloud services are available for your business:
- **HPE GreenLake:** Delivers a pay-as-you-grow solution that enables you to scale up your capacity instantly to handle growth needs without the usual long procurement process.
- HPE **GreenLake** Management Services: Management of infrastructure and middleware so that IT can focus on adding more value to the organization.

Connect your devices
Unlock all of the benefits of your technology investment by connecting your products to Hewlett Packard Enterprise. Reduce down time, increase diagnostic accuracy and have a single consolidated view of your environment. By connecting, you will receive 24x7 monitoring, pre-failure alerts, automatic call logging, and automatic parts dispatch. HPE Proactive Care Service and HPE Datacenter Care Service customers will also benefit from proactive activities to help prevent issues and increase optimization. All of these benefits are already available to you with your server storage and networking products, securely connected to HPE support. Learn more about getting connected at **http://www.hpe.com/services/getconnected**

Service and Support

Other related services from HPE Pointnext Services
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.

Defective Media Retention
An option available with HPE Datacenter Care, HPE Proactive Care and HPE Foundation Care, and applies only to Disk or eligible SSD/Flash Drives replaced by HPE due to malfunction.

HPE Service Credits
Offers flexible services and technical skills to meet your IT demands as your business   evolves. With a menu of services, you can access additional resources and specialist skills to help you maintain peak performance of your IT. HPE Service Credits help you proactively respond to your dynamic IT and business needs.

HPE Education Services
Provides comprehensive training designed to expand the skills of your IT staff and keep them up to speed with the latest technologies.

HPE XP Storage Installation and Startup Service - Installs, configures, and tests your HPE XP8 hardware and software onsite. We deliver deployment of your HPE XP8 storage properly integrated into your environment.
http://h20195.www2.hpe.com/V2/GetPDF.aspx/4AA2-4064ENW.pdf

HPE Storage Transformation Workshop explore data management to business-aligned visions, covering cloud, object, end to end data protection and BC/DR.
http://h20195.www2.hpe.com/V2/GetPDF.aspx/4AA4-9541ENW.pdf

HPE XP Storage Data Migration proven methodology, expertise and tools to help facilitate the XP migration process when migrating data to eligible HPE XP Storage solutions and provide a flexible way to migrate your organization's critical data and minimize impact on your operations.
https://h20195.www2.hpe.com/V2/GetPDF.aspx/4AA6-7229ENW.pdf

HPE Storage Modernization Service modernize your storage environment to take better advantage of physical or virtualized server environments, all flash, cloud, and object storage solutions.
http://h20195.www2.hpe.com/v2/GetPDF.aspx/4AA5-8498ENW.pdf

HPE Backup and Recovery Efficiency Analysis Service rapid health check of your current backup environment, focusing on operational stability, problem identification, and capacity constraints. The output of this service provides clear metrics and high-level recommendations for your backup environment.
https://h20195.www2.hpe.com/V2/getpdf.aspx/4AA3-9104ENW.pdf

HPE SAN Deployment Service delivers complete design and implementation services for Fibre Channel, FCoE, FCIP, SAS, and iSCSI SAN connectivity components.
https://h20195.www2.hpe.com/V2/GetPDF.aspx/5981-8527ENW.pdf

HPE Storage Virtual Volume Design and Implementation Service - Activities your organization needs to design and implement a new LUN, virtual volume, or virtual disk (Vdisk) configuration.
https://h20195.www2.hpe.com/V2/GetPDF.aspx/4aa2-3764enw.pdf

Service and Support

HPE Data Replication Solution Service for HPE XP Business Copy enables snapshots and mirroring to facilitate data restores, minimize downtime for backups, perform application testing and support data mining use with decision-support tools.
https://psnow.ext.hpe.com/doc/5982-4153ENN

HPE Data Replication Solution Service for HPE Remote Replication software for HPE XP Disk Array Family
configures real-time data mirroring between local and remote storage systems to safeguard critical business information.
https://h20195.www2.hpe.com/V2/GetPDF.aspx/5982-4154enw.pdf

HPE Performance Analysis Service for HPE Storage provides data collection, detailed I/O analysis and enhancement recommendations for HPE Storage arrays.
https://h20195.www2.hpe.com/V2/GetPDF.aspx/5982-6668enw.pdf

HPE Data Sanitization Storage and Server Services provides the skilled resources and tools to help your organization address the need to protect data when your organization is retiring systems, upgrading storage and servers, returning leased equipment, or redeploying data storing devices. Using specialized software techniques, an HPE service specialist or authorized service partner will help ensure that data cannot be reconstructed or retrieved from hard disk media in your server and storage devices. These services offer you a smart alternative or augmentation to physical hardware destruction by executing procedures to remove data from disk media.
https://h20195.www2.hpe.com/V2/GetPDF.aspx/5981-9510ENW.pdf

Accessories
An extensive list of accessories is available for this product; for more information, please contact your HPE sales representative.

Safety
This product meets all applicable safety and regulatory specifications.

Digital and Data Driven Support
Achieve faster time to resolution with access to product-specific resources and expertise through a brand-new digital and data driven customer experience.

Sign into the customer engagement platform, featuring modern self-serve case creation and management capabilities with inline knowledge recommendations. You will find powerful troubleshooting support through a new intelligent virtual agent with seamless transition when needed to a live support agent.

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

Learn More
http://www.hpe.com/services
https://www.hpe.com/us/en/services/operational.html

For more information consult your HPE Sales Representative or Authorized Channel Partner of choice for any additional questions and support options.
https://www.hpe.com/us/en/contact-hpe.html

Configuration Information

Each HPE XP8 can be a custom configuration. For more information, please contact your reseller or authorized Hewlett Packard Enterprise representative to work with the requirements to configure the product correctly.

Description	SKU

SSP

HPE XP8 Hybrid Storage Array	R0L99A
HPE XP8 All Flash Storage Array	R0K99A

Notes: The XP8 is a Structured Solution Product (SSP). These product number (R0L99A and R0K99A) is a zero-price ordering mechanism that is used as an "umbrella" product to indicate to the ordering system that this is a new HPE XP8 order.

Rack

HPE XP8 Storage Rack	R0K76A

Notes: Each HPE XP8 rack is suitable for DKC and DKU racks. The rack SKU includes a key kit.

DKCs – Disk Controller Chassis

HPE XP8 Dual Base Disk Controller Chassis	R0K82A

Notes: Includes: 2 Disk Controller Chassis each with 1 controller, Interconnect & Management Network Switch Chassis, XP8 Software Suite, 1 SVP, Bezels and Rail Kits.

HPE XP8 Dual Performance Disk Controller Chassis	R0K80A

Notes: Includes: 2 Disk Controller Chassis each with 2 controllers, Interconnect & Management Network Switch Chassis, XP8 Software Suite RTU, 1 SVP, Bezels and Rail Kits.

HPE XP8 Dual Secondary Performance Disk Controller Chassis	R0K81A

Notes:
– Includes: 2 Disk Controller Chassis, each DKC with 2 controllers, XP8 Software Suite RTU, 1 SVP, Bezels and Rail Kits.
    HPE XP8 Upgrade Controller Module (R0K85A)
– Includes: 2 controller upgrade set, XP8 Software Suite RTU.
    HPE XP8 Controller Module Upgrade PCIe Cable Kit (R0M00A)
    HPE XP8 Controller Module Fan Kit (R0M10A).

Media Chassis SBX

HPE XP8 Small Form Factor Drive Chassis	R0K90A

Notes: 96 slot SFF Drive Chassis with Bezels and Rail Kit.

Media Chassis NBX

HPE XP8 NVMe Drive Chassis	R0K92A

Notes: 96 slot SFF Drive Chassis with Bezels and Rail Kit.

Media Chassis UBX

HPE XP8 Large Form Factor Drive Chassis	R0K91A

Notes: 96 slot LFF Drive Chassis with Bezels and Rail Kit.

Media Chassis FBX

HPE XP8 Flash Module Chassis	R0K93A

Notes: 48 slot Flash Module Chassis with Bezels and Rail Kit.

Configuration Information

Description	SKU
Power Distribution Unit (PDU)	
HPE XP8 Basic 3-phase 60Hz 4-pack NA/JP PDU	R0L87A
Notes: Includes C19 to C13 adapter cables	
HPE XP8 3-phase 50Hz 2-pack PDU	R0L76A
HPE XP8 Basic 1-phase 60Hz North America/Japan 4pk PDU	R0L86A
HPE XP8 Basic 1-phase 50Hz 4-pack INTL PDU	R0L79A

Power Cords	
HPE XP8 C13 to C14 240V 1.3m 4-pack WW AC Power Cord	R0M06A
HPE XP8 C13 to C14 240V 2m 4-pack IN AC Power Cord	R0M07A
SVP	
HPE XP8 Service Processor and Hub	R0K86A
HPE XP8 Service Processor/Hub LAN Cable Kit	R0L80A
Notes: For redundant array management functions.	
HPE XP8 LAN to LAN 5m 2-pack Service Processor/Hub Cable	R0L81A
HPE XP8 LAN to LAN 10m 2-pack Service Processor/Hub Cable	R0L82A
HPE XP8 LAN to LAN 20m 2-pack Service Processor/Hub Cable	R0L83A
HPE XP8 LAN to LAN 30m 2-pack Service Processor/Hub Cable	R0L84A
DKC connecting kits	
Notes: 5, 10, 20, and 30 meter cables to connect primary and secondary DKC pairs.	
HPE XP8 QSFP to QSFP 5m 8-pack PCIe Optical Cable	R0M01A
Notes: Default to this kit when secondary controller is ordered.	
HPE XP8 QSFP to QSFP 10m 8-pack PCIe Optical Cable	R0M02A
Notes: Can be used instead of R0M01A	
HPE XP8 QSFP to QSFP 20m 8-pack PCIe Optical Cable	R0M03A
Notes: Can be used instead of R0M01A	
HPE XP8 QSFP to QSFP 30m 8-pack PCIe Optical Cable	R0M04A
Notes: Can be used instead of R0M01A	
DKA	
HPE XP8 Backend 4-pack SAS I/O Module	R0L10A
HPE XP8 Backend 4-pack NVMe I/O Module	R0L12A
Notes: Disk Adapter controls data transfer between the drives and cache memory.	
eDKA	
HPE XP8 Encrypted Backend 4-pack SAS I/O Module	R0L11A
HPE XP8 Encrypted Backend 4-pack NVMe I/O Module	R0L13A
Notes: Encryption is supported with this DKA and optional encryption software LTU.	

Configuration Information

Intra-rack DKC to Media Bay Cables

Description	SKU
HPE XP8 QSFP to QSFP Basic 8-pack SAS Metal Cable	R0L90A

Notes: Backend SAS Copper cables – will default for the DKC to SAS Media Chassis connections.

HPE XP8 QSFP to QSFP 1m 16-pack SAS Metal Cable	R0L91A

Notes: 1 meter backend SAS Copper cables – will default for the intra-rack connections among SAS Media Bays

HPE XP8 QSFP to QSFP 1.5m 16-pack SAS Metal Cable	R0L92A

Notes: 1.5m backend SAS Copper cable for connecting to UBX only

HPE XP8 QSFP to QSFP Basic 8-pack NVMe Metal Cable	R0L98A

Notes: DKC to NBX – NBX always in same rack as DKC

Optical Inter-rack Device Interface Cables

HPE XP8 QSFP to QSFP 5m 16-pack SAS Optical Cable	R0L93A

Notes: 5 meter backend SAS Optical cables – can be swapped out for longer cables if the racks are not adjacent

HPE XP8 QSFP to QSFP 10m 16-pack SAS Optical Cable	R0L94A

Notes: 10 meter backend SAS Optical cables – can be used for connecting non-adjacent racks

HPE XP8 QSFP to QSFP 20m 16-pack SAS Optical Cable	R0L95A

Notes: 20 meter backend SAS Optical cables – can be used for connecting non-adjacent racks

HPE XP8 QSFP to QSFP 30m 16-pack SAS Optical Cable	R0L96A

Notes: 30 meter backend SAS Optical cables – can be used for connecting non-adjacent racks

Cache Memory with Backup Module

HPE XP8 8x32GiB Cache Memory with Backup Module	R0L00A
HPE XP8 8x32GiB Cache Memory with Encryption Backup Module	R0L02A

Notes: Consists of 8 32GiB DIMMs and Small Backup Memory Kit

HPE XP8 8x64GiB Cache Memory with Backup Module	R0L01A
HPE XP8 8x64GiB Cache Memory with Encryption Backup Module	R0L03A

Notes: Consists of 8 64GiB DIMMs and Small Backup Memory Kit.

CHB – Channel Host Boards

HPE XP8 16/32Gb 4-port Fibre Channel 2-pack Host Bus Adapter	R0L24A

Notes: 1 Pair of 4 port 16/32Gbps Fibre Channel Host Adapters.

Notes: SFP Transceivers are required to be ordered with R0L24A

HPE XP8 10Gb 2-port iSCSI 2-pack Host Bus Adapter	R0L30A

Notes: 1 Pair of 2 port 10Gbps iSCSI Channel Host Adapters.

HPE XP8 16Gb 4-port Mainframe Short Wave Fibre Channel 2-pack Host Bus Adapter	R0L20A

Notes: 1 Pair of 4 port 16Gbps FICON Shortwave Fibre Host Adapters.

HPE XP8 16Gb 4-port Mainframe Long Wave Fibre Channel 2-pack Host Bus Adapter	R0L21A

Notes: 1 Pair of 4 port 16Gbps FICON Longwave Fibre Host Adapters.

Configuration Information

Transceivers

Description	SKU
HPE XP8 16Gb SFP Long Wave 2-pack Transceiver	R0L25A
Notes: Pair of 16Gbps Longwave Transceivers	
HPE XP8 16Gb SFP Short Wave 2-pack Transceiver	R0L26A
Notes: Pair of 16Gbps Shortwave Transceivers	
HPE XP8 32Gb SFP Short Wave 2-pack Transceiver	R0L27A
Notes: Pair of 32Gbps Shortwave Transceivers	

Flash Module FMD

HPE XP8 7TB Flash Module Device	R0L70A
HPE XP8 14TB Flash Module Device	R0L71A

HPE Drives

12G SAS Solid State Drives SFF (2.5")

HPE XP8 960GB SAS 12G SFF (2.5in) SSD	R0L50A
HPE XP8 1.9TB SAS 12G SFF (2.5in) SSD	R0L51A
HPE XP8 3.8TB SAS 12G SFF (2.5in) SSD	R0L52A
HPE XP8 7.6TB SAS 12G SFF (2.5in) SSD	R0L53A
HPE XP8 15.3TB SAS 12G SFF (2.5in) SSD	R0L54A
HPE XP8 30TB SAS 12G SFF (2.5in) SSD	R0L55A

12G SAS Hard Disk Drives LFF (3.5")

HPE XP8 10TB SAS 12G 7.2K LFF (3.5in) HDD	R0L60A
HPE XP8 14TB SAS 12G 7.2K LFF (3.5in) HDD	R0L61A

12G SAS Hard Disk Drives SFF (2.5")

HPE XP8 2.4TB SAS 12G 10K SFF (2.5in) HDD	R0L67A

NVMe Solid State Drives SFF (2.5")

HPE XP8 1.9TB NVMe x4 Lanes SFF (2.5in) Flash Drive	R0L40A
HPE XP8 3.8TB NVMe x4 Lanes SFF (2.5in) Flash Drive	R0L41A
HPE XP8 7.6TB NVMe x4 Lanes SFF (2.5in) Flash Drive	R0L42A
HPE XP8 15.3TB NVMe x4 Lanes SFF (2.5in) Flash Drive	R0L43A

SCM Solid State Drives SFF (2.5")

HPE XP8 375GB NVMe x4 Lanes SFF (2.5in) Storage Class Memory SSD	R0M20A

Configuration Information

Capacity-licensed HPE XP8 Software Product Structure

Many HPE XP8 software titles are licensed based on some measure of the storage capacity of the system. This structure allows customer costs for software to scale with the cost for their hardware solution. In all cases, a 1TB increment is the smallest increment available. Therefore, for all capacity requirement calculations, capacity figures should be rounded up to the next highest TB.

Capacity-licensed HPE XP8 Software licenses are ordered in 1TB increments only.

Description	SKU
Base License	R0WxxAA
1TB increment	R0WxxAB

Customers purchase the Base License and then purchase all capacity licenses under a fixed schedule depending on the license capacity required. All capacity figures should be rounded up to the nearest TB. Purchase of capacity-based software falls into two categories:

New Software purchase: Software licenses are being purchased along with a new HPE XP8 Storage or for a new software purchase for an existing HPE XP8 Storage implementation.

License Capacity upgrade purchase: A customer is adding usable storage capacity to their system or expanding the use of certain software titles, requiring that they expand the license capacity by purchasing additional LTU products.

Additional Options

Description	SKU
HPE XP8 Automation Director Software Base LTU	R0W49AA
HPE XP8 Automation Director Software 1TB LTU	R0W49AB
HPE XP8 Automation Director Software Direct Node 25 Nodes Pack LTU	R0W49AC
HPE XP8 Automation Director Software Proxy Node 5 Nodes Pack LTU	R0W49AD
HPE XP8 Data Protection Manager Storage File System Protection Base LTU	R0W56AA
HPE XP8 Data Protection Manager Storage File System Protection 1TB LTU	R0W56AB
HPE XP8 Data Protection Manager Storage Application Protection Base LTU	R0W62AA
HPE XP8 Data Protection Manager Storage Application Protection 1TB LTU	R0W62AB
HPE XP8 DKA Encryption Frame LTU	R0W47A

Notes: The HPE XP8 Performance Advisor Base License includes the media kit.

Description	SKU
HPE XP8 Data Exchange Server LTU	R0W44A
HPE XP8 Compatible Extended Remote Copy Base LTU	R0W45AA
HPE XP8 Compatible Extended Remote Copy 1TB LTU	R0W45AB
HPE XP8 Mainframe Performance Advanced Suite Base LTU	R0W43AA
HPE XP8 Mainframe Performance Advanced Suite 1TB LTU	R0W43AB
HPE XP HDLM Advanced Upgrade LTU	R0W55A
HPE MetroCluster with Continuous Access XP LTU	B8109CA
HPE Serviceguard for Linux x86 1yr 24x7 Enterprise PSL Flexible LTU	BB097AC
HPE Serviceguard for Linux x86 1yr 24x7 Enterprise PSL E-LTU	BB097ACE
HPE Serviceguard for Linux x86 Enterprise DVD Media	BB097AA
HPE Continental Clusters LTU	T2346BA
HPE Continentalcluster for Linux x86 1yr 24x7 PSL Flexible LTU	BB100AC
HPE Continentalcluster for Linux x86 1yr 24x7 PSL Flexible E-LTU	BB100ACE

Notes: Either of the above LTUs is required.

Description	SKU
HPE Serviceguard Continentalclusters for Linux Media Kit	BB086AA
HPE XP8 External Capacity Software Suite 1TB LTU	R0W57A

Term-based HPE XP8 Software Products

Description	SKU
HPE XP8 Online Migration Suite 120-day LTU	R0V01AA
HPE XP7 to XP8 Online Migration Suite 120-day LTU	R0V02AA

Technical Specifications

System Unit

System Capacity	0 GB – 69.1 PB raw 0 GB - ~60 PB usable
RAID Levels	RAID 1 (2D + 2D) RAID 1 (4D + 4D) RAID 5 (3D + 1P) RAID 5 (7D + 1P) RAID 6 (6D + 2P) Recommended RAID 6 (14D + 2P) Recommended
Maximum number of Logical Devices (LDEVs)	65,280
Cache Memory	256 GB - 6 TB
Operating Systems	HPE-UX, HPE NonStop, VMWare, AIX, Linux, Windows, Solaris, Mainframe, Open VMS
Host Interface	Fibre Channel, FICON, iSCSI
Host Ports	8 to 96 8/16 Gbps FC ports 8 to 88 10Gbps iSCSI ports 16 to 176 8/16 Gbps FICON ports
Regulatory Approvals	This product meets all applicable safety and regulatory specifications

Physical Dimensions – XP8 Rack

Width x Depth x Height	23.6x 45.3 x 81.0 in (60.0 x 115.0 x 205.7 cm)
Typical Weight	919 lbs. (417 kg) for 1 DKC pair with 48 SFF drives, host adapters, backend, cache, and cabling included.

Technical Specifications

Environmental Specifications		
Item	Condition [1][2][3]	Model Name XP8
Temperature range (ºC)	In operation	10 to 35
	In non-operation	-10 to 43
	In transportation/ Storage	-25 to 60
Relative humidity (%) [4]	In operation	20 to 80
	In non-operation	8 to 90
	In transportation/ Storage	5 to 95
Maximum wet-bulb temperature (ºC)	In operation	26
	In non-operation	27
	In transportation/ Storage	29
Temperature gradient (ºC/hour)	In operation	10
	In non-operation	
	In transportation/ Storage	20
Dust	In operation	0.15 or less
	In non-operation	—
Gaseous contaminant	In operation	Gaseous contamination should be within ANSI/ISA S71.04-2013 G1 classification levels. [5]
	In non-operation	
Altitude (Limit) (Temperature range)	In operation	3,050m (10ºC to 28ºC) [6] 950m (10ºC to 35ºC)
	In non-operation	-60m to 12,000m
Noise Level (dB) (Recommended)	In operation	90 or less [7]

Notes:

- [1]: Environmental conditions of operation should be completed before switch-on a system.
- [2]: "In non-operation" includes conditions of both packing and unpacking.
- [3]: "In transportation/storage" should be conducted in the packing of initial shipping.
- [4]: No dew condensation
- [5]: ITPD recommends that data centers be kept clean by monitoring and controlling the gaseous contamination.
- [6]: Meets the highest allowable temperature conditions and complies with ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers) 2011 Thermal Guidelines Class A2. The maximum value of the ambient temperature and the altitude is from 35ºC at an altitude of 950m (3000 feet) to 28ºC at an altitude of 3050m (1000 feet).
- The allowable ambient temperature is decreased by 1ºC for every 300m increase in altitude above 950m.
- [7]: Fire suppression systems & acoustic noise
- Some data center inert gas fire suppression systems when activated release gas from pressurized cylinders that moves through the pipes at very high velocity. The gas exits through multiple nozzles in the data center. The release through the nozzles could generate high-level acoustic noise. Similarly, pneumatic sirens could also generate high-level acoustic noise. These acoustic noises may cause vibrations to the hard disk drives in the storage systems resulting in I/O errors, performance degradation in and to some extent damage to the hard disk drives. Hard disk drives (HDD) noise level tolerance may vary among different models, designs, capacities and manufactures. The acoustic noise level of 90dB or less in the operating environment table represents the current operating environment guidelines in which Hitachi storage systems are designed and manufactured for reliable operation when placed 2 meters from the source of the noise.
  - o Hitachi does not test storage systems and hard disk drives for compatibility with fire suppression systems and pneumatic sirens.
  - o Hitachi also does not provide recommendations or claim compatibility with any fire suppression systems and pneumatic sirens.
  - o Customer is responsible to follow their local or national regulations.

Technical Specifications

- To prevent unnecessary I/O error or damages to the hard disk drives in the storage systems, Hitachi recommends the following options:
  - o Install noise-reducing baffles to mitigate the noise to the hard disk drives in the storage systems.
  - o Consult the fire suppression system manufacturers on noise reduction nozzles to reduce the acoustic noise to protect the hard disk drives in the storage systems.
  - o Locate the storage system as far as possible from noise sources such as emergency sirens.
  - o If it can be safely done without risk of personal injury, shut down the storage systems to avoid data loss and damages to the hard disk drives in the storage systems.
- Damage to hard disk drives from fire suppression systems or pneumatic sirens will void the hard disk drive warranty.

Summary of Changes

Date	Version History	Action	Description of Change:
07-Dec-2020	Version 6	Changed	Overview, Standard Features and Configuration Information sections were updated.
20-Jul-2020	Version 5	Changed	Overview and Standard Features sections were updated.
01-Jun-2020	Version 4	Changed	Overview, Standard Features and Configuration Information sections were updated.
16-Mar-2020	Version 3	Changed	Standard Features and Service and Support sections were updated.
09-Dec-2019	Version 2	Changed	Overview, Standard Features and Configuration Information sections were updated.
04-Nov-2019	Version 1	New	New QuickSpecs

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For drives, 1 GB = 1 billion bytes. Actual formatted capacity is less

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