



HP0-J64^{Q&As}

Designing HP Enterprise Storage Solutions

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QUESTION 1

A customer in the financial needs full high availability and optimal write performance of an HP StoreVirtual 4000 solution in case of a data center failure.

Which Network RAID level should you recommend?

- A. Network RAID 6
- B. Network RAID 10
- C. Network RAID 10+1
- D. Network RAID 10+2

Correct Answer: D

Network RAID-0, Network RAID-5, and Network RAID-6 will not tolerate site failures. Network RAID 5 - Stores three data and one parity as a minimum configuration i.e 3+1 , meaning three nodes as a starting point.

Network RAID 6 - Stores three data and two parity as a minimum configuration i.e 3+2 , meaning five nodes are required initially.

Network RAID 10 - Stores two copies of each volume's block, providing continuous data availability across any single node failure.

Network RAID 10+1 - Stores three copies of each block for mission-critical data that needs to be available despite any double node failure.

Network RAID 10+2 - used in situations where a cluster is divided between two locations, and the data must be continuously available in the event of both a site failure and a node failure at the alternate site (Campus SAN).

Full high availability and optional write performance of and HP StoreVirtual 4000 <http://h20565.www2.hp.com/portal/site/hpsc/template.PAGE/public/kb/docDisplay/?>

sp4ts.oid=4118659andspf_p.tpst=kbDocDisplayandspf_p.prp_kbDocDisplay=wsrp- navigationalState%3DdocId%253Dmmr_kc-0108305-19%257CdocLocale%253Den %257CcalledBy %

253DSearch_Resultandjavax.portlet.begCacheTok=com.vignette.cachetokenandjavax.portlet.endCacheTok=com.vignette.cachetoken

Network RAID10+1: Data is striped and mirrored across three or more storage systems. Three copies of the Data in a volume configured with Network RAID10+1 are available and preserved in the event that any two storage systems become

unavailable. Best applications for Network RAID10+1 are those that require data availability even if two storage systems in a cluster become unavailable.

Network RAID10+2: Data is striped and mirrored across four or more storage systems. Four copies of the Data in a volume configured with Network RAID10+2 is preserved in the event that any three storage systems become unavailable.

Network RAID10+2 are designed for Multi- Site SANs to preserve data in the event of an entire site becoming unavailable. Best use for Network RAID10+2 volumes is for data that must be synchronously replicated between two locations and



must remain fully redundant in the case of an entire site failure.

QUESTION 2

Which technology was introduced with HP Store Virtual Lefthand OS 11.0?

- A. Site Recovery Manager (SRM) Support
- B. Peer Motion
- C. Adaptive Optimization
- D. Persistent Ports

Correct Answer: C

Reference: <http://h20195.www2.hp.com/v2/GetPDF.aspx%2F4AA4-8544ENW.pdf> (page 2)

QUESTION 3

A customer storage infrastructure consists of eight HP StoreVirtual 4000 nodes in a cluster, connected to an HP 2910-24G al network environment. Server virtualization is done using VMware vSphere 5.1 on six hosts across two sites. Which drawbacks must the customer consider when upgrading the solution? (Select two.)

- A. When adding more nodes in the cluster, additional 1Gb network ports have to be added in each node.
- B. When using more than eight nodes in a cluster, a 10 Gb connection is recommended.
- C. When upgrading to VMware version 5.1, the iSCSI multipathing driver has to be configured.
- D. When using a server across the sites, VMware Site Recovery Manager is needed.
- E. When using 10 Gb the customer has to implement new network switches.

Correct Answer: BE

Recommended network switches for HP StoreVirtual 4000 Storage HP Networking has an extensive portfolio of Ethernet switches that are ideally suited for iSCSI deployments. These switches are designed to deliver high-performance, low-latency, and wire-speed Layer 2 to 4 network services. HP Networking top of rack series of switches offer unmatched combination of 1GbE and 10GbE ports density, high availability architecture, Intelligent Resilient Framework (IRF) technology as well as a full range of Layer 2 and or Layer 3 features depending on switch selection. These switches are built to support open and industry-standards networking protocol. These switches can be deployed within the network core or as a highperformance switch in the convergence layer or network edge of SMB and enterprise networks. Listed below is a selection of recommended top of rack models. These are the 3800, 5830, 5920, and 6600 series.

Another recommended switching platform is the HP Networking 2920 series, to learn more visit hp.com/go/networking.
<http://h17007.www1.hp.com/docs/products/4aa4-5213enw.pdf>

Networking 2910 <http://www8.hp.com/pt/pt/products/networking-switches/product-detail.html?oid=3901673#!tab=specs>

Recommended switch infrastructure for an HP P4000 SAN HP does not recommend any particular switch for use with HP P4000 SANs. However, there is a set of minimum switch capabilities that make building a high-performance, high-



availability storage network a relatively easy and cost effective task. The following are three commonly recommended HP switches, but ultimately you will need to follow the recommended switch capabilities in Table 1 below which provides guidance for general switch selection based on your specific needs. As a rule of thumb, any enterprise-class managed switch typically has the capabilities required for most customer installations.

HP E2910 al Switch Series (10/100/1000Base-T and 4 x optional 10GbE)

HP A5810-48G Switch (10/100/1000Base-T and 2 x 10GbE)

HP E6600 Switch Series (10/100/1000Base-T and 10-GbE SFP+)

QUESTION 4

Scenario Following the merger of two financial companies, management is considering combining the two distinct customer call centers into a single physical location. In addition to the overall call center headcount increasing by 30%, the support for two distinct customer bases presents the potential of having two different desktop PCs on the desk of each call center employee. Instead of correspondingly increasing IT support headcount to manage the single, larger call center and call center infrastructure, management believes they can reduce the required time to support call center operations by 40% if they employ virtual desktop technology.

An initial assessment has identified the need for a centralized storage solution that could support 500 virtual desktops running a variety of applications that can scale quickly to accommodate an expected increase in call center staff. The customer is already an HP Blade System customer using HP Virtual Connect Flex-10.

Some of the additional business criteria identified in customer planning interviews includes:

Use client virtualization for the desktops.

Achieve the highest possible density and performance for the virtual desktops, but keep the virtual desktop storage traffic off the network due to a current, existing limitation of only 1GbE.

Do not use standalone, network-attached storage.

Limit the impact of additional rack space.

Minimize the risk of additional help-desk tickets.

Present multiple solutions, prioritized with a recommendation.

Refer to the scenario.

The customer is concerned about data migration from their third-party storage array to a new solution. How do you solve this concern.

- A. Focus on an HP StoreServ 7000 Storage solution to use the online import from data migration.
- B. Advise a new backup and recovery concept using HP StoreOnce Backup Systems to avoid data loss.
- C. Present Hyper Visor storage migration functionalities to migrate data online.
- D. Include HP Virtual Connect FlexFabric modules in the design to keep all migration paths open.

Correct Answer: C

Present HyperVisor storage migration functionalities to migrate data online

**QUESTION 5**

Which techniques are used in an HP 3PAR StoreServ array for storage virtualization? (Select two)

- A. Logical disks
- B. vDisk
- C. Redundant Storage Sets (RSS)
- D. Network RAID
- E. chunklets

Correct Answer: DE

QUESTION 6

At a minimum, which HP 3PAR StoreServ software should be included in a design to seamlessly adjust the RAID level?

- A. HP 3PAR Adaptive Optimization
- B. HP 3PAR Data Optimization suite v2
- C. HP 3PAR Dynamic Optimization
- D. HP 3PAR Data Optimization Suite

Correct Answer: C

QUESTION 7

A very large application service provider (ASP) is going through a major virtualization effort. After the initial meeting with the ASP team, your notes are:

- Customer objective is to virtualize their environment. Modernize and simplify their infrastructure
- All servers are on HP BladeSystem c7000 Virtual Connect 1/10-F and Virtual Connect FC modules, G5 physical blade servers. Lease is up.
- 48 blades require virtualization and NFS connections. Existing filer is third party Lease is up to Need more I/O and Scale.
- 12 blades are Clustered SQL Server. No virtualization on these blades required. Storage today is on new FC-based HP 3PAR StoreServ 7400
- 16 new virtualized servers are targeted to be connected to the existing HP 3PAR StoreServ 7400 FC

As you develop a proposal, what should be part of the design to meet the customer goals? (Select two)

- A. Add an HP StoreEasy X3830 Gateway rackmount server to the front end of the 3PAR



- B. Add an HP StoreEasy X5000 rackmount server to the front end of the 3PAR
- C. Add new Hp BladeSystem c700s and Gen8 blades with Virtual Connect Flex 10
- D. Add new Hp BladeSystem c700s and Gen8 blades with HP Virtual Connect Flex Fabric.

Correct Answer: AD

Storage today is on new FC-base HP 3PAR StoreServ 7400 FC HP Virtual Connect FlexFabric: HP Virtual Connect FlexFabric 10Gb/24-port Modules are the simplest, most converged and flexible way to connect virtualized server blades to any data or storage network. VC FlexFabric modules eliminate up to 95% of network sprawl at the server edge with one device that converges traffic inside enclosures and directly connects to LANs and SANs.
<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA1-0311ENW.pdf>

HP Virtual Connect Flex-10 Simplify and make your data center change-ready. The HP Virtual Connect Flex-10 10Gb Ethernet Module for c-Class BladeSystem allows administrators to fine-tune network bandwidth at the server edge by dividing each 10 Gb network connection into four independent physical FlexNIC server connections. Each FlexNIC can be configured from 100 Mb up to 10 Gb, allowing just the right amount of network bandwidth based on your application needs.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA1-0311ENW.pdf>

HP StoreEasy X5000 <http://www8.hp.com/pt/pt/products/file-object-storage/product-detail.html?oid=5335827#!tab=features>

HP StoreEasy 5000 Storage is a new breed of efficient, secure, and highly available storage to simply address the file and application storage challenges of customers' medium to large business and branch office environments. StoreEasy 5000 Storage, built on industry leading ProLiant DNA and Microsoft Windows Storage Server, integrates easily into new and existing environments with a straightforward, consistent management experience for IT generalists.

HP StoreEasy X3830 <http://www8.hp.com/pt/pt/products/file-object-storage/product-detail.html?oid=5335920#!tab=features>

[-] SAN / Array Compatibility

Host Bus Adapter (HBA) Support

HP StoreEasy 3000 Gateway Storage products are designed to be connected to a SAN or storage array by adding a recommended Fibre Channel or SAS HBA, or by using an iSCSI initiator.

HBA selection is left as your choice based on existing infrastructure and/or desired array support. Please see compatible HBAs listed in the 'Options' section below.

NOTE: See the following URL for additional information about Fibre Channel HBAs:
<http://h18006.www1.hp.com/storage/saninfrastructure/hba.html>

HP SAN / Array Support

HP 3PAR StoreServ	http://h18006.www1.hp.com/storage/disk_storage/3par/index.html
HP StoreVirtual	http://h18000.www1.hp.com/products/quickspecs/13254_div/13254_div.html
HP P9000/XP	http://h18006.www1.hp.com/storage/xparrays.html
HP P6000/EVA	http://h18006.www1.hp.com/products/storageworks/eva/index.html
HP P2000/MSA	http://h18006.www1.hp.com/storage/disk_storage/msa_diskarrays/index.html

In client virtualization environments, up to 80% of network traffic is server-to-server and server-to-storage. Legacy, multi-tier, fibre-channel network architectures require a complex web of network cards, interconnects, cables, and switches to keep pace with this changing traffic. This approach creates performance bottlenecks and drives higher costs and complexity to build, maintain, and secure at scale.



To address this problem HP announced HP Virtual Connect for 3PAR with FLAT SAN technology, the industry's first direct connection to fibre channel-based storage that does not require dedicated switches. This technology provides a

simplified architecture with best-in-class storage and network innovations such as BladeSystem Virtual Connect, and the HP 3PAR StoreServ.

Customer benefits include these features:

Single layer fibre channel storage network eliminates SAN switches and Host Bus Adapters (HBAs)

- Massive simplification of fabric management
 - 2.5x faster fibre channel storage provisioning
 - 50% less infrastructure costs
 - Automated zoning capabilities to set up zones with one-click
 - Up to 55% less latency by removing the SAN fabric layer
-

QUESTION 8

A customer is interested in considering eight physical servers using virtualization technologies. The environment analysis shows that no SSD drives and redundancy across data centers is needed for the 2 TB of data. Which storage product archives a quicker ROI?

- A. HP StoreVirtual 4130
- B. HP MSA 1040
- C. HP StoreVirtual 4330
- D. HP MSA2040

Correct Answer: B

HP MSA 1040 Storage--with up to 50% more performance² at a 25% lower entry price point³, the MSA 1040 delivers 4th generation MSA technology to a whole new set of businesses. Fuel your consolidation, messaging and virtualization initiatives with full-featured easy to use storage that stretches your budget--with dual controller iSCSI/FC configurations, capacity expansion and an easy upgrade to MSA 2040

QUESTION 9

Which rule applies when designing a routed HP StoreVirtual 4000 Remote Copy environment to replicate data from a branch office to the main data center?

- A. The two IP subnets must have IP routes to each target network with forwarding.
- B. The two IP subnets must have IP routes to each target network with direct access mode configured.
- C. The two IP subnets must have IP routes to each target network without network address translation.
- D. The two IP subnets must have IP routes to each target network without a private VPN tunnel used.



Correct Answer: C

IP networking requirements You can use HP P4000 remote copy from one cluster to another cluster on a single IP subnet as well as across routed environments. In a routed environment, the two IP subnets must have IP routes to each target network without network address translation (NAT) or port forwarding. You can employ private WAN connections using point-to-point protocols, or you can set up a VPN tunnel between two networks that are separated by the public Internet. The VPN tunnel effectively acts as one hop on a router and will allow the use of private IP space on each end. <http://h17007.www1.hp.com/docs/justrightit/HP%20StoreVirtual%20P4000%20Networking%20Recommendations.pdf>

QUESTION 10

Which tool can be used to migrate data between existing storage clusters in an HP StoreVirtual environment?

- A. LeftHand OS Adaptive Optimization
- B. Network RAID Synchronous Replication
- C. LeftHand OS Motion
- D. Multi-Site cluster

Correct Answer: C

StoreVirtual 4000 Storage, based on the LeftHand operating system, is a scale-out storage platform that is designed to meet the fluctuating needs of virtualized environments. Intuitive, common management and storage federation meet the need for simplicity and flexibility in today's virtual datacenters

QUESTION 11

An insurance customer is planning to purchase an HP StoreVirtual SAN to support their large document management repository. They want to utilize Network RAID 6 to protect against multiple failures. What is the minimum number of nodes that must be included in the proposal to support this requirement?

- A. 3
- B. 4
- C. 5
- D. 6

Correct Answer: C

Network Raid-5 Minimum Systems is 3 " Min number of nodes for NRAID6 is 5."
http://h20565.www2.hp.com/portal/site/hpsc/template.PAGE/public/psi/mostViewedDisplay/?javax.portlet.begCacheTok=com.vignette.cachetokenandjavax.portlet.endCacheTok=com.vignette.cachetokenandjavax.portlet.prp_efb5c0793523e51970c8fa22b053ce01=wsrp-navigationalState%3DdocId%253Dmmr_kc-0108305-18%257CdocLocale%253Den_USandjavax.portlet.tpst=efb5c0793523e51970c8fa22b053ce01andsp4ts.oid=4118659andac.admitted=1385403834100.876444892.492883150

**Sample Configuration:****Example 1:** How much space will be available for NR volumes?

Basic Set-up: A Multi-Site SAN, with 4 HP P4500 nodes with 600GB disks. P4500 have 2 logical arrays of 6 disks. This means that 2 disks are configuration.

Raw Capacity : $4 \times 12 \times 600\text{GB} = 28.8\text{TB}$

Hardware RAID5 [TS]: $24.0\text{TB} = 4 \times (12 - (1 \times 2)) \times 600\text{GB} = [NN \times (N - (1 \times NL)) \times Ds]$

Total space available for NR# volumes:

[formatted]

+ NRAID0 : 24.0TB

+ NRAID10: (24.0/2) [12.0TB or 12 1 TB volumes at nr10]

+ NRAID10+1: (24.0/3) [8.0TB or 8 1 TB volumes at nr10+1]

+ NRAID10+2: (24.0/4) [6.0TB or 6 1 TB volumes at nr10+2]

+ NRAID5: (24.0 - (24.0 * (1/4))) [18.0TB or 18 1 TB volumes at nr5]

+ NRAID6: Min number of nodes for NRAID6 is 5.

QUESTION 12

Which HP Storage solution aligns with the HP federated storage approach?

- A. HP StoreSure
- B. Hp StoreAll
- C. HP StoreEasy
- D. HP StoreVirtual

Correct Answer: D

HP StoreAll <http://www8.hp.com/pt/pt/products/data-storage/data-storage-products.html?compURI=1225919#.UpvSw9K8D6A>

HP StoreEasy <http://www8.hp.com/pt/pt/products/data-storage/data-storage-products.html?compURI=1226325#.UpvS8dK8D6A> HP StoreVirtual <http://www8.hp.com/pt/pt/products/data-storage/data-storage-products.html?compURI=1279309#.UpvTINK8D6A>

<http://www8.hp.com/pt/pt/products/data-storage/data-storage-products.html?compURI=1225885#.UpvTNNK8D6A>

HP StoreSure <http://www8.hp.com/pt/pt/products/data-storage/data-storage-products.html?compURI=1401941#.UpvTtdK8D6A>

HP federated storage approach <http://www8.hp.com/us/en/products/data-storage/data-storage-technology.html?compURI=1225859#.UpvUOdK8D6A>



Products:

- HP 3PAR StoreServ Storage
 - HP StoreVirtual Storage
 - HP StoreOnce Backup with StoreOnce Catalyst
-

QUESTION 13

A company is replacing their outdated storage environment with an HP 3PAR StoreServ 7000 at the primary site and also in their co-location facility. These HP 3PAR 7000 Software Suites are included in the proposed package:

-

HP 3PAR 7000 Operating System Software Suite

-

HP 3PAR 7000 Reporting Software Suite

-

HP 3PAR 7000 Application Software Suite for VMware

-

HP 3PAR 7000 Replication Software Suite

A.

Taking a time-consistent snapshot of their Oracle volumes every 4 hours to protect against corruption

B.

Reduction in the amount of physical storage needed with the uses of thin technologies

C.

Autonomic storage tiring as their image files become dated

D.

Replication of all critical data to the co-location site for disaster recovery

E.

Frozen, point-in-time copies of employee data for compliance

What can be accomplished with the proposed software solution? (Select two)



Correct Answer: AE

http://www.hp.com/hpinfo/newsroom/press_kits/2012/HPDiscoverFrankfurt2012/3PAR7000_Op_System_DS.pdf

Software suites for HP 3PAR StoreServ 7000 Storage HP 3PAR Operating System Software Suite: (Option B) Required for all new HP 3PAR StoreServ 7000 systems, this foundational software suite gives you everything you need to get up and running quickly and efficiently. This suite includes the HP 3PAR Operating System, Management Console, Host Explorer, and SmartStart software designed to get you off to a quick start with your new HP 3PAR StoreServ 7000 system. It also includes all of the platform's thin software offerings Thin Provisioning, Thin Conversion, and Thin Persistence. Other highlights of this suite include Full Copy, autonomic rebalancing capabilities that help you optimize the use of future capacity expansions, and support for standard multi pathing software for high availability in clustered environments. A 180-day license for online import is included to enable migration from HP EVA storage

This optional suite bundles: HP 3PAR Replication Software Suite (Proposed package) This optional suite bundles HP 3PAR Virtual Copy with Remote Copy Software, both also sold separately for all HP 3PAR StoreServ 7000 models. Included in this bundle is Peer Persistence, which enables peer federation for VMware clusters to improve overall availability. Licensed based on system capacity

HP 3PAR Reporting Software Suite (Proposed package) Enhance system visibility and reporting capabilities with this optional suite, which includes HP 3PAR System Reporter Software and the 3PARInfo application, licensed on a per-system basis HP 3PAR Application Software Suite for VMware (Proposed package) Everything you need to make your VMware environment more agile and efficient including HP 3PAR Recovery Manager for VMware, Host Explorer for VMware, VASA support, and three essential plug-ins: the VMware Site Replication Manager (SRM) Adapter, the HP 3PAR VAAI plug-in, and the 3PAR management plug-in for VMware View. This suite is optional and licensed on a per-system basis

HP 3PAR Data Optimization Software Suite HP 3PAR Security Software Suite (option E) HP 3PAR Application Software Suite for Exchange HP 3PAR Application Software Suite for Oracle (option A) HP 3PAR Application Software Suite for SQL

QUESTION 14

Which IT factors support the customer in accelerating time to market? (Select two)

- A. optimized response times
- B. integrated systems that reduce redundancy
- C. 24x7 availability of applications
- D. centralized IT
- E. more efficient cost structures

Correct Answer: AC

Objective: Sought a reliable, secure and scalable high-performance platform to deliver managed cloud services, accelerate time-to-market and support rapid growth. Reduces hardware provisioning times three- fold, accelerating time-to-market. <http://h20195.www2.hp.com/v2/GetPDF.aspx%2F4AA4-6104EEW.pdf>

In commerce, time to market (TTM) is the length of time it takes from a product being conceived until its being available for sale. TTM is important in industries where products are outmoded quickly. A common assumption is that TTM matters most for first-of-a-kind products, but actually the leader often has the luxury of time, while the clock is clearly running for the followers.

**QUESTION 15**

A customer has a small computer room with an existing HP BladeSystem c-Class Enclosure. The customer has 10 U of free space in their existing rack and would like to add an enterprise-class storage system. To keep costs down the customer would like a Flat SAN and a storage system that can be scaled up in the future into their existing rack space.

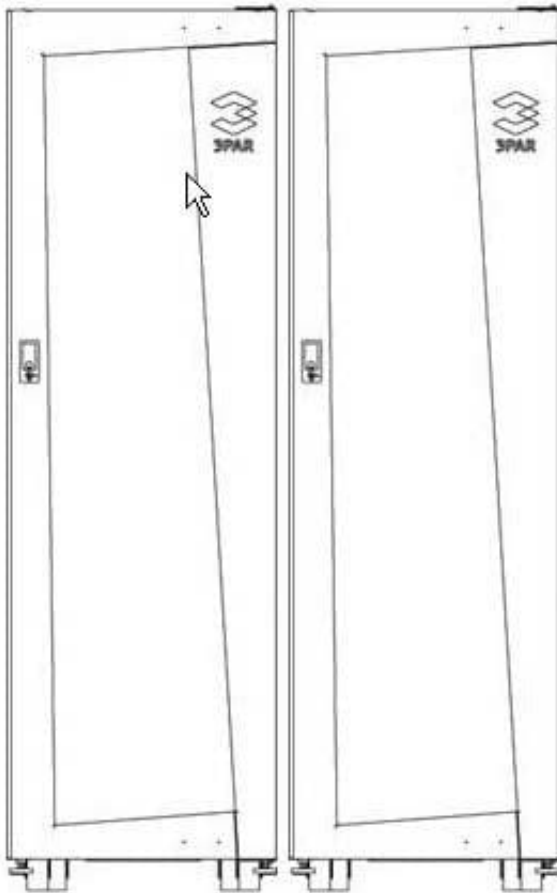
What should you recommend?

- A. HP 3PAR StoreServ 10000
- B. HP 3PAR StoreServ 7000
- C. HP StoreVirtual 4130 FC
- D. HP StoreAll 9300

Correct Answer: B

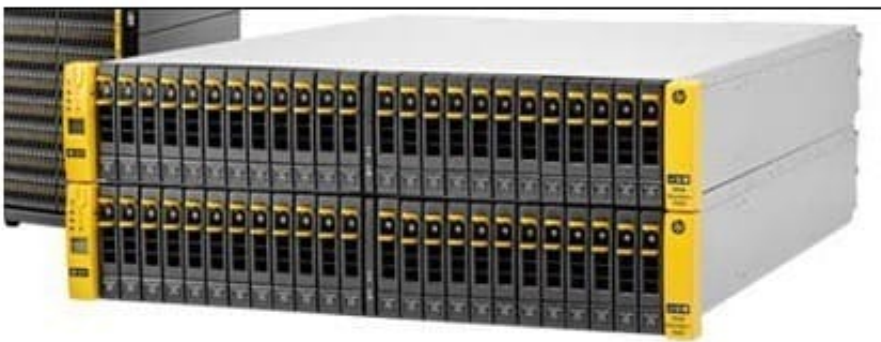
Flat SAN HP Virtual Connect for 3PAR with Flat SAN technology In virtual and cloud data centers today, up to 80% of the network traffic is server-to-server and server-to-storage. Legacy, multi-tier fibre-channel network architectures require a complex web of network cards, interconnects, cables, and switches in order to keep pace with this changing traffic. This approach creates performance bottlenecks and drives higher costs and complexity to build, maintain and secure at scale. Customer has a small computer room with an existing HP BladeSystem c-Class Enclosure and the customer has 10 U of free space in their existing rack HP 3PAR StoreServ 10000

[http://h18004.www1.hp.com/products/quickspecs/productbulletin.html#spectype=worldwideandty
pe=htmlanddocid=14103](http://h18004.www1.hp.com/products/quickspecs/productbulletin.html#spectype=worldwideandtype=htmlanddocid=14103)



HP 3PAR StoreServ 10000 Storage

HP 3PAR StoreServ 7000 <http://www8.hp.com/pt/pt/products/disk-storage/product-detail.html?oid=5335712#!tab=features>



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