HP Simply Storage Consolidation
Shared storage for file serving and application data
Table of contents

HP Simply StorageWorks overview ................................................. 4
Select the HP StorageWorks solution that best suits your business ........... 5
Typical customer scenarios ................................................................. 6
  Scenario 1: Unified storage for maximum flexibility .............................. 6
  Scenario 2: HP shared DAS for the small business or workgroup ............ 8
  Scenario 3: HP SAN disk array storage for your structured data .............. 9
Choose the right storage network ...................................................... 11
  Scenario 4: Mixing NAS and SAN with unified storage gateways .......... 12
Choose the right solution .................................................................. 14
HP Simply Storage Consolidation at a glance ......................................... 16
Complement your storage solution with HP Services ............................. 19

HP Simply StorageWorks
Storage is easy when you choose HP
For most mid-sized and even small businesses, managing data is a major challenge. The growth of structured data from databases, email, and other applications, as well as file data such as PDFs, audio, video, and graphics has been exponential. Furthermore, no end is in sight. According to IDC, the need for online data storage capacity is increasing at a rate of nearly 50 percent per year; by 2013, it is estimated that companies worldwide will require disk storage of more than 52,000 petabytes of data.

The increasing flood of data can lead to a host of problems, like added time and system slowdowns due to the sheer volume of data; added cost, in new equipment and especially in management overhead, to provide for all this data accumulation; and the added business risk that comes with larger data stores.

The temptation is to accommodate added data by increasing the number of servers and disk drives. But simply adding servers is not the answer—in fact, without planning, the direct attachment of additional drives or servers can create islands of storage, resulting in greater management requirements. Such an unplanned and reactive approach to storage is inefficient, raising costs while limiting flexibility and the capacity to respond to new business opportunities.

Furthermore, whenever multiple devices are deployed to serve the same basic need, risks increase because there are now multiple devices and file volumes to protect.

Failing to recognize that data storage must be managed as a critical resource often results in a very difficult environment to manage, a higher cost of ownership, less responsiveness to change, and added risk to the business.

**The answer: Consolidating storage with HP Simply StorageWorks solutions**

HP network storage provides many advantages over the limitations of unplanned or direct attached storage. By consolidating storage into a dedicated resource, you can make your data available to any computer or server on the network—there are no isolated silos or islands of capacity. A dedicated, optimized network storage solution can reduce operating costs by simplifying management and improving capacity utilization.

---

HP Simply StorageWorks overview

HP Simply StorageWorks delivers better business outcomes by bringing together tools, solutions, products, and services to help you navigate the storage landscape—and bridge the gap between data explosion and your IT infrastructure. With simple, affordable, and reliable storage and data protection solutions, HP and our channel partners can help you improve the efficiency, performance, and continuity of your business.

About this guide

If you are trying to respond to data growth and business change, this guide can help you. We present a portfolio of solutions along with real-world scenarios and product information that will help you take the next step toward a more efficient data environment. This guide is designed for someone with a basic understanding of storage technologies. If you need to familiarize yourself with storage concepts first, be sure to read the HP Simply StorageWorks: Introduction to Storage Technologies guide. Data protection is another key area of storage. To learn more about how HP can help you keep your data safe and more secure, see the HP Simply Business Protection solution guide.

We understand that servers, business applications, and storage must work seamlessly together. To see more detailed information on specific business applications, we provide a series of Simply Business Solution briefs for targeted applications such as Microsoft® Exchange, VMware, and more. All of this information is available from your local HP resource or online at: www.hp.com/go/ssw
Select the HP StorageWorks solution that best suits your business

**Unified storage:** Add affordable and expandable Windows-powered shared storage to your IT environment quickly and manage it more easily with HP StorageWorks X1000 and X3000 Network Storage Systems. These flexible and intelligent unified storage solutions offer file serving (NAS) and iSCSI (SAN) services, powerful management tools, ready expandability, and a variety of configurations to meet virtually any deployment need.

The HP StorageWorks X500 Data Vault provides a simple and cost-effective solution for a small business to store, protect, and share data for under $1000. Based on Microsoft Windows® Home Server, it provides a user-friendly interface with easy installation and management. The HP X500 provides you with automated backup for up to 10 PC clients and Macs on the network while providing additional background features like folder duplication and data deduplication.

**Shared direct-attached storage (shared DAS):** For small, cost-effective deployments, HP offers disk array solutions that connect directly to your servers for simple management. The HP StorageWorks P2000 G3 SAS is an excellent way to increase your server storage capacity and set up a small cluster environment.

**Storage area network (SAN) disk arrays:** HP SAN solutions provide shared disk capacity to servers over a dedicated iSCSI or Fibre Channel network. The disk array and SAN centralize storage and allow server applications direct access to disk resources as if they were locally attached, for improved performance.

The HP StorageWorks SAN disk array family includes the HP StorageWorks 2000 Modular Smart Array (P2000 G3/MSA2000i G2) family, HP StorageWorks P4000 G2 SAN Solutions, and the HP StorageWorks Enterprise Virtual Array (EVA) family.

“Potential energy savings was definitely among the main reasons for going to VMware in the first place, and subsequently for getting HP P4000 SANs. The green benefit was an important reason for going to blades. We have some impressive numbers on expected energy savings with the HP BladeSystem, and blades use less space in the data center. The 48 HP ProLiant server blades fit in one rack. With rack mount servers that would take at least two racks, so there is a space savings of at least 50 percent.”

—Shane Nicely, Vice President, Information Services, Network Services Manager, Heartland Financial USA, Inc.
“We can immediately consolidate network storage and make it available to users. Consequently, users get faster service and our help desk gets fewer calls.”
—Jørgen Kjærlund, IT Manager, Atkins Danmark

**Typical customer scenarios**

**Scenario 1: Unified storage for maximum flexibility**

You have better things to do than worry about storage. You are juggling multiple management interfaces, security concerns, and shrinking backup windows—all while your users demand more and more space. You need a shared storage solution that is powerful and easy to manage, and you need it now.

HP StorageWorks X1000 Network Storage Systems are fast and easy way to add Windows-powered shared storage to your IT environment. It is a versatile unified storage solution, so you get more for your money since it can be a file server, an iSCSI target for application data storage, or both. You will spend less time and effort on maintenance and management, once you consolidate to a single and centralized shared storage system. Industry-standard building blocks protect your investment by providing compatibility with your network and applications, and the operating system is pre-installed.

**Key features and benefits**

- **Get more for your money:** Versatile unified storage, so it can be a file server (or backup/replication target), an iSCSI target, or both.
- **Do more with fewer resources:** Everything is pre-installed and ready for turnkey deployment. Plus, the X1000 Automated Storage Manager software is like getting a storage expert in the box.
- **Protect your investment:** Built on industry-standard ProLiant server hardware and taking advantage of the Windows Storage Server operating system, this solution integrates seamlessly into your existing environment and allows you to draw on your existing skill set.
Real-world example: HP StorageWorks X1000 Network Storage Systems

**Scenario:** Heterogeneous file-serving environment in a small firm with 75 users. The firm also has a rapidly growing application server and has been researching iSCSI SANs as a way to scale their capacity.

**Solution:** Use of the X1000 Network Storage Systems means that there is only one file server to manage and allow its integrated, pre-configured storage to be used not only for file serving, but also as iSCSI storage, and print management.

For more information, visit: [www.hp.com/go/X1000](http://www.hp.com/go/X1000)
Scenario 2: HP shared DAS for the small business or workgroup

Shared DAS can be an excellent choice for small deployments where storage is managed by a server administrator. Shared DAS using an HP StorageWorks P2000 G3 SAS is a good way for a small environment to allocate storage among a few servers—in a small application cluster, for example.

The SAS-connected P2000 G3 SAS provides shared storage without requiring any networking or switching infrastructure. This offers the ability to share storage among a few servers, but no requirement for a switched storage network. Available in single- and dual-controller configurations, the P2000 G3 SAS has standard 64 snapshots and cloning software for enhanced availability.

Features of the HP P2000 G3 SAS

- **Simple deployment**: For the server connection, the P2000 G3 SAS uses serial-attached SCSI (SAS), the ideal choice for connecting to a fixed number of servers without requiring a switch.

- **Flexibility in drive types and sizes**: Mix and match high performance, enterprise-class serial-attached SCSI (SAS) drives; and low-cost, high-capacity archival-class SAS Midline (MDL) or SATA.

- **Excellent scalability**: The modular design allows you to start small but supports future growth to 192 TB (LFF SAS MDL or SATA MDL) or 74.5 TB (SFF SAS MDL or SATA MDL) storage.

- **High availability for business continuity**: You get reduced risk of data loss, thanks to active controllers, dual-ported drives, RAID, redundant hardware, and snapshot options.
Real-world example: Clustered database servers sharing DAS in an P2000 G3 SAS

**Scenario:** A small business that wants to improve the reliability of its application deployment.

**Solution:** A pair of HP ProLiant database servers, placed in a two-node cluster, with storage shared in an HP P2000 G3 SAS. This is an easy and low-cost way to share storage among a small and fixed number of hosts. The capability to spread data across many large or small form factor hard drives improves performance.

For more information, visit: www.hp.com/go/p2000

---

**Scenario 3: HP SAN disk array storage for your structured data**

If your business has a great deal of structured data (sometimes called block data) on several servers running applications such as Oracle, VMware, Microsoft SQL Server, or Microsoft Exchange, a SAN is often the best choice.

HP offers different types of SAN disk array solutions for different customer needs—first, the HP StorageWorks P2000 G3 SAS which easily handles the data requirements of a small or midsize business and provides excellent storage flexibility at an affordable price; second, the HP StorageWorks P4000 G2 SAN Solution, which is perfect for businesses that require affordable, high availability, and scalable SAN performance especially for virtual environments; third, the Enterprise Virtual Array (EVA), which is a true enterprise-class solution, designed for businesses that have—or expect to have—scalability and performance requirements that demand the highest levels of availability and performance.

---

### Features of the HP StorageWorks P2000 G3 Modular Smart Array Systems

For a low-cost path to high availability, look to a Modular Smart Array such as the P2000 G3 FC, P2000 G3 SAS, or MSA2000i G2.

- **Choice of host connections:** Choose Fibre Channel for larger, more demanding environments; or iSCSI for a SAN that can use standard Ethernet hardware, or SAS for a direct attach, external shared storage solution.

- **Ease of management:** SAN management is easy, thanks to a powerful and intuitive set of management tools and a Web-based or CLI interface.
**High availability:** These SAN solutions have redundant hardware and snapshot and clone capabilities (standard on the P2000 G3), giving your small or medium-sized business a low-cost path to high availability.

- Efficiently manage and protect data with the P2000 G3 FC/iSCSI Combo controller option that offers both 8 Gb Fibre Channel (FC) and 1 Gb iSCSI ports. Data can be transferred through the 8 Gb FC ports to keep up with the needs of a full FC SAN while the iSCSI ports can be used by departments with smaller budgets and lesser performance needs, who would not otherwise justify the cost of a FC infrastructure.

- Build a low cost, fast shared storage solution with the P2000 G3 SAS MSA for up to four dual-path or eight single-path servers utilizing the power and speed of the latest 6 Gb SAS technology. Start small with as few as two drives and scale up to one hundred and forty-nine as the needs dictate.

- Keep important business information protected with Remote Snap, a new optional replication capability available with the new HP P2000 G3 FC and Combo FC/iSCSI systems. This software provides customers with a reliable disaster recovery by replicating important data to another P2000 G3 FC in concert with the standard Snapshot capability of the P2000 G3. To make sure critical data is accessible in the event of a failure, customers can configure the system to automatically capture local copies of stored data with Volume Copy software and a 64 snapshot license that ships standard with the P2000 G3.

**Features of HP StorageWorks P4000 G2 SAN Solutions**

Deliver enterprise functionality in a clustered, virtualized storage architecture. Using the iSCSI protocol, it is ideally suited for virtual server and business continuity requirements. P4000 SANs enhance virtual environments, simplify scalability, and reduce costs. The P4000 SAN was the first SAN to exceed the 100,000 user mark of the Microsoft Exchange Solution Reviewed Program.

**Pay-as-you-grow and all-inclusive pricing model:** Avoid up-front cost. Purchase only what’s needed today, then grow the performance, capacity, and redundancy of your HP P4000 G2 SAN online as storage requirements evolve. Buying storage only when needed simplifies planning and relieves budget pressures.

**Superior availability and disaster recovery:** With features like integrated replication, snapshots, remote copy, and Network RAID your data will remain available in the event of a disk, node, controller, power, network, or even a site failure.

**Scalable performance:** Each time an additional P4000 G2 storage node is added to the cluster, all aspects—performance, capacity, and redundancy of the SAN increase. All available capacity and performance are aggregated and available to every volume in the cluster. This helps you avoid bottlenecks and costly controller upgrades.

**Easy to manage SANs for virtualized environments:** The Centralized Management Console allows for simple, easy-to-manage storage. Streamlined storage management for VMware, Hyper-V, and Citrix is available and the Best Practice Analyzer provides superior operation automatically recommending SAN best practices and how to implement those.

**Unified storage via P4000 NAS Gateway:** Specifically configured for P4000 SANs, this gateway (1 or 2 nodes) offers unified storage capabilities when placed in front of a P4000 SAN.

**Features of the EVA4400**

For mid-sized businesses with large volumes of data, an Enterprise Virtual Array, such as the EVA4400 offers the ultimate in affordable, high-capacity storage.

**Virtualized environment for easier management:** Virtualization reduces the installation complexity typically found in traditional arrays, keeping administrative overhead to a minimum. You can install the EVA4400 in only a few hours, freeing yourself to manage business priorities and not your storage solution.

**High availability for planned uptime:** You can expect 99.999% percent availability, thanks in part to dual-redundant architecture that supports robust local and remote replication capabilities.

**Enterprise-class scalability and connectivity:** The EVA4400 can scale to support more than 64 hosts and up to 96 terabytes of total storage, and can connect to hosts running Windows, Linux, VMware, UNIX®, and more.

Choose the right storage network

**Fibre Channel:** For larger, more demanding environments, Fibre Channel provides the highest levels of performance and scalability. Fibre Channel speeds are typically 4 Gb per second, but 8 Gb per second connectivity is now becoming more widely available.

**iSCSI:** For many IT environments, iSCSI (or IP) SANs are ideal. A dedicated Gigabit Ethernet network will provide sufficient bandwidth to connect several servers to a SAN storage device, either with standard network interface cards (NICs) or with optional TCP/IP offload engine (TOE) cards. SANs such as the P4000 SAN offer 10 GbE upgrades. iSCSI provides the benefits of shared storage coupled with lower budgets requirements and ease of networking.

**Real-world example: HP StorageWorks P4500 G2 Multi-Site SAN**

**Scenario:** A mid-size company with several remote sites is deploying a virtual server solution and needs shared storage to enable high availability. At the same time, they would like to set up site redundancy, so they are protected against a major disaster.

**Solution:** HP ProLiant G6 servers running VMware ESX connected through iSCSI to an HP P4500 G2 Multi-Site SAN in the primary site. Both the HP P4000 SAN and the ESX cluster would be strategically located in separate buildings on the campus for real-time, multi-site protection. The Replication for Remote Office Pack allows to pool server disks in the remote sites into a virtual SAN and tie these to the primary site through remote copy—all managed from one pane of glass.

For more information on HP disk storage systems, visit:
- [www.hp.com/go/p4000](http://www.hp.com/go/p4000)
- [www.hp.com/go/eva4400](http://www.hp.com/go/eva4400)
Scenario 4: Mixing NAS and SAN with unified storage gateways

Add IP-based gateway services to your enterprise or workgroup array/SAN quickly and manage them more easily with HP StorageWorks X3000 Network Storage Systems. These flexible and intelligent Windows-powered gateway solutions add file, print, iSCSI, and management services to an array or SAN, or they can be used in conjunction with array storage to build an affordable and highly-available unified storage solution.

HP StorageWorks X3000 Network Storage Systems are the fast and easy way to add Windows-powered IP-based gateway services (file, iSCSI, management) to an array or SAN.

Key features and benefits

- **Add value to your array investment:** Use your SAN disk array to hold growing amounts of unstructured file data. Utilize the X3000 to host application services such as SAN management or backup.
- **Do more with fewer resources:** Tier your storage so that critical data is on high performance Fibre Channel disk and tier II data is available through iSCSI. Consolidate both file and block access to a single array for simplified growth and protection.
- **Protect your investment:** It’s Windows, so it integrates seamlessly into your existing environment, runs your antivirus, and backup on the box, and has a familiar look and feel. Includes Microsoft Cluster Server (MSCS) license to provide high availability and reduce downtime.

For more information, visit: [www.hp.com/go/X3000](http://www.hp.com/go/X3000)
Why an X3000 and P2000 G3 FC are required for this scenario?

- **Pooled storage and central management**: File-serving and iSCSI gateway functionality allows clients and non-Fibre Channel-connected servers to gain the advantages of a SAN.

- **High availability**: The X3000 can be clustered for redundancy and load balancing.

**Real-world example: NAS/SAN hybrid using a NAS gateway with a Fibre Channel SAN**

**Scenario**: Mid-sized business that wants to gain the advantages of a SAN for its non-critical database servers and file servers.

**Solution**: Adding a cluster of two X3000 Network Storage Systems to the P2000 G3 FC provides SAN access for application servers, as well as file serving to end-user clients and workstations, thus enabling centralization of all storage for improved utilization and lower management costs.

For more information, visit:
- [www.hp.com/go/X3000](http://www.hp.com/go/X3000)
- [www.hp.com/go/msl](http://www.hp.com/go/msl)
Choose the right solution

Which HP storage solution is right for you?
Use the following chart to help decide how best to consolidate your data.

**Unified Storage**
- Select best fit deployment type and redundancy requirements

**Unified storage (NAS/iSCSI) system for file and print serving plus application data storage. Simple management for IT generalists with HP ASM**

**SAN**
- Select best fit for size of environment, performance, and scale requirements

**Unified storage (NAS/iSCSI) gateway in front of SAN array. Cluster support for high availability; Windows-based management**

**Simple storage expansion for ProLiant, x86, and BladeSystem servers. Lowest storing price, host-based replication and support for Windows, Linux, HP-UX, Solaris**

**Server virtualization and/or business continuity requirements call for scalable storage, leading availability and disaster recovery on Windows, Linux, or HP-UX**

**Direct Connect 6 Gb SAS for good performance**
- Up to 4 rack/tower servers per controller

**1 Gb Ethernet/iSCSI for moderate performance**
- Up to 32 servers

**8 Gb Fibre Channel for high performance**
- Up to 64 servers

**1 Gb or 10 Gb Ethernet**

**P2000 G3 SAS**

**MSA2000i G2 (iSCSI)**

**P2000 G3 FC (Fibre Channel)**

**P4000 G2 SAN (iSCSI)**

**Files**

**Application Data**

**Note:** These product recommendations are a starting point for your investigation but this flow does not represent all possible decision factors. Your HP representative or channel partner can help you determine the best fit based on your business needs.
**Enhance your network storage solution with optional data services**

**Replication:** The HP StorageWorks EVA family and the P2000 G3 FC and FC/iSCSI models support array-based replication, while the X1000, and X3000 Network Storage Systems support replication with HP StorageWorks Storage Mirroring software. The HP P4000 G2 SANs include replication and Network RAID as part of the standard feature set.

**Snapshot and clone software:** The P2000 G3/MSA2000i G2 provides additional levels of data protection with array-based snapshots. The EVA and X-series Storage Systems also offer snapshot and cloning capability.

---

**Enterprise class Fibre Channel performance**—leading availability and disaster recovery for Enterprise applications, virtual servers, and broad OS support

---

Increase efficiency by adding a NAS/iSCSI gateway to your SAN storage array
# HP Simply Storage Consolidation at a glance

Details of HP network storage products for small and midsized businesses

## HP StorageWorks X1000 Network Storage Systems

<table>
<thead>
<tr>
<th>Product Name</th>
<th>HP X500 Data Vault</th>
<th>HP X1400 Network Storage Systems</th>
<th>HP X1500 Network Storage Systems</th>
<th>HP X1600 Network Storage Systems</th>
<th>HP X1800 Network Storage Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
<td>Delivers consolidated data storage, file sharing, and data protection that are specifically designed for the small business that has no or limited IT staff.</td>
<td>A 1U rack-mount shared storage solution that delivers multi-protocol file sharing, print serving, and application storage in an affordable package. It is easy to install and manage, making it perfect for a small workgroup, small business, or remote office.</td>
<td>A 5U tower shared storage solution that delivers high capacity multi-protocol file sharing, print serving, and application storage in a compact and affordable package. They’re easy to install and manage, making them perfect for a small workgroup, small business, or remote office.</td>
<td>A 2U 12-drive unified storage solution that delivers high capacity, easy expandability, and high performance with entry-level affordability. A great fit for small, medium, and workgroup environments.</td>
<td>Delivers enterprise-class performance, expandability, and flexibility. Plenty of room for additional options and built-in external SAS connections for additional disk enclosures make it the shared storage solution of choice for SMB, workgroup, and small enterprise environments.</td>
</tr>
<tr>
<td><strong>Models and Capacities</strong></td>
<td>1 TB model</td>
<td>2 TB model</td>
<td>3 TB model</td>
<td>1 TB Starting</td>
<td>6 TB Maximum</td>
</tr>
<tr>
<td></td>
<td>2 TB model</td>
<td></td>
<td></td>
<td>1 TB Starting</td>
<td>6 TB Maximum</td>
</tr>
<tr>
<td></td>
<td>3 TB model</td>
<td></td>
<td></td>
<td>1 TB Starting</td>
<td>6 TB Maximum</td>
</tr>
<tr>
<td></td>
<td>1 TB Starting</td>
<td>6 TB Maximum</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6 TB Maximum</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>13.5 TB Maximum, with external storage options</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Base model with configure-to-order drives</td>
<td>Base model—zero drives standard; SATA, SAS LFF drives supported</td>
<td>Base model with configure-to-order drives</td>
<td>Base model with configure-to-order drives</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 TB SATA model</td>
<td>4 TB SATA model</td>
<td>292 GB SAS model</td>
<td>292 GB SAS model</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(4 x 500 GB SATA)</td>
<td>(4 x 1 TB SATA)</td>
<td>(2 x 146 GB 6G SAS)</td>
<td>(2 x 146 GB 6G SAS)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 TB SATA model</td>
<td>8 TB SATA model</td>
<td>6 TB SATA model</td>
<td>6 TB SATA model</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(4 x 1 TB SATA)</td>
<td>(4 x 2 TB SATA)</td>
<td>(6 x 1 TB SATA)</td>
<td>(6 x 1 TB SATA)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8 TB SATA model</td>
<td></td>
<td>12 TB SATA model</td>
<td>12 TB SATA model</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(4 x 2 TB SATA)</td>
<td></td>
<td>(12 x 1 TB SATA)</td>
<td>(12 x 1 TB SATA)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>24 TB SATA model</td>
<td>24 TB SATA model</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(12 x 2 TB SATA)</td>
<td>(12 x 2 TB SATA)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3 TB SAS model</td>
<td>3 TB SAS model</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(10 x 300 GB 3G SAS)</td>
<td>(10 x 300 GB 3G SAS)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7.5 TB SAS model</td>
<td>7.5 TB SAS model</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>25 x 300 GB 3G SAS</td>
<td>25 x 300 GB 3G SAS</td>
</tr>
<tr>
<td><strong>Storage Controller</strong></td>
<td>Gigabit Ethernet Network Controller</td>
<td>HP Smart Array</td>
<td>HP Smart Array</td>
<td>HP Smart Array</td>
<td>Embedded HP Smart Array</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P212/256 MB Controller with battery-backed write cache (BBWC)</td>
<td>P411/256 MB Controller with BBWC</td>
<td>P212/512 MB Controller with BBWC</td>
<td>P410/256 MB Controller with BBWC plus HP Smart Array P411/512 MB Controller with BBWC</td>
</tr>
<tr>
<td></td>
<td>External: USB External Hard Disk Drive or eSATA Hard Disk Drive</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Number of Users</strong></td>
<td>1 to 10 PC Clients and unlimited Macs</td>
<td>10 to 1300</td>
<td>10 to 1300</td>
<td>100 to 3400</td>
<td>200 to 3300</td>
</tr>
</tbody>
</table>
## HP StorageWorks X3000 Network Storage Systems

<table>
<thead>
<tr>
<th>Product Name</th>
<th>HP X3400 Network Storage Systems</th>
<th>HP X3800 Network Storage Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
<td>The HP X3400 Network Storage Gateway is a 1U rack-mount solution that makes adding gateway services to an array or SAN more affordable than ever before.</td>
<td>With two quad-core Intel® Xeon® processors and six PCIe slots, the HP X3800 Network Storage Gateway sets the standard for performance and expandability in gateway services for your array or Fibre Channel SAN.</td>
</tr>
<tr>
<td><strong>Models and Capacities</strong></td>
<td>Gateways have OS drives included and connect to an external SAN array to provide clusterable file, iSCSI, and management services. Available 1 or 2 node HA bundle with MSA2312sa</td>
<td>Gateways have OS drives included and connect to an external SAN array to provide clusterable file, iSCSI, and management services. Available 2 node HA bundle with MSA2312fc</td>
</tr>
<tr>
<td><strong>Storage Controller</strong></td>
<td>HP Smart Array P212/256 MB Controller with BBWC</td>
<td>Embedded HP Smart Array P410i/256 MB Controller with BBWC</td>
</tr>
<tr>
<td><strong>Storage Expansion</strong></td>
<td>Attach to P2000, P4000, or EVA arrays/SANs</td>
<td>Attach to EVA, P2000, XP, or P4000 arrays/SANs</td>
</tr>
<tr>
<td><strong>Number of Users</strong></td>
<td>25 to 1300</td>
<td>25 to 3300</td>
</tr>
</tbody>
</table>

## HP StorageWorks Modular Smart Arrays

<table>
<thead>
<tr>
<th>Product Name</th>
<th>HP StorageWorks Enterprise Virtual Array family</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product Name</strong></td>
<td><strong>P2000 G3 FC</strong></td>
</tr>
<tr>
<td><strong>Number of servers</strong></td>
<td>Flexible and scalable 8 Gb Fibre Channel connection or FC/iSCSI combo or up to 64 hosts</td>
</tr>
<tr>
<td><strong>Scalability</strong></td>
<td>Scale up to 192 TB (SAS MDL or SATA MDL) or 74.5 TB (SAS MDL or SATA)</td>
</tr>
<tr>
<td><strong>Redundancy</strong></td>
<td>64 snapshots and Volume Copy cloning software standard. Remote Snap (replication) optional</td>
</tr>
</tbody>
</table>

## Recommended Services for MSA Entry-level disk arrays


3-Year HP Proactive 24 Service (P24) | 3-Year HP Critical Service | HP Data Migration Service |
# HP Simply Storage Consolidation at a glance (continued)

Details of HP network storage products for small and midsized businesses

## HP StorageWorks P4000 G2 SAN Solutions

<table>
<thead>
<tr>
<th>Model Differentiator</th>
<th>Host Interface</th>
<th>Scalability</th>
<th>Capacity</th>
<th>Functionality</th>
<th>Availability</th>
<th>Supported Operating Systems</th>
<th>Recommended Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>P4300 G2 7.2 TB SAS Starter SAN Solution</td>
<td>optional upgrade to 10 Gb iSCSI (CX4)</td>
<td></td>
<td>16 TB [Starting] 256 TB [Maximum]</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P4500 G2 28.8 TB SAS Multi-Site SAN Solution</td>
<td></td>
<td></td>
<td>120 TB [Starting] 360 TB [Maximum]</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P4500 G2 120 TB MDL SAS Scalable Capacity SAN Solution</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:** For further product details please see the HP P4000 G2 QuickSpecs at: [www.hp.com/go/P4000](http://www.hp.com/go/P4000)
Complement your storage solution with HP Services

Strengthened by the HP Technology Services
In today’s rapidly changing business environment, every business relies heavily on technology to provide an advantage over their competition. When you want technology as a fundamental tool to drive change, lower costs, and bring in greater agility, you have to choose a technology partner whom you can trust. We, at HP, are the trusted business technology services experts who design, support, and manage your technology in action. Because when technology works, business works.

Going beyond warranty: HP Care Pack Services for storage
When it comes to robustness and reliability, standard warranties on today’s computing equipment have matured just as the technologies have matured. However, businesses need to consider operational consistencies and downtime risks that are beyond standard warranties. With HP Care Pack Services for storage, you can count on greater performance and operational consistency with flexible reactive and proactive support designed to meet your mission-critical storage computing and infrastructure requirements. [www.hp.com/services/carepack](http://www.hp.com/services/carepack)

With HP, you receive all of your IT support and consulting services from a single vendor, covering all your top issues, including storage consolidation and virtualization, support of multivendor SANs, data migration, installation and implementation, backup, recovery and archiving, or high availability and business continuity. HP expertise spans the entire technology environment and not just storage. HP offers your customers the industry’s widest portfolio of storage solutions within the context of their overall infrastructure. Trust the services professionals at HP to collaborate with you to make technology the difference in your business. For more information, contact your HP sales representative or HP-authorized Channel Partner or, visit [www.hp.com/services/storage](http://www.hp.com/services/storage)

HP Financial Services
HP Financial Services provides innovative financing and financial asset management programs to help you cost-effectively acquire, manage, and ultimately retire your HP solutions. For more information on Financial Services, please contact your HP representative or visit: [www.hp.com/go/hpfinancialservices](http://www.hp.com/go/hpfinancialservices)

HP Enterprise Services (HP-ES) provides the full spectrum of storage administration services from managing your storage environment up to a complete utility offering that bundles storage management and technology in a simple usage-based price-per-gigabyte. HP-ES provides storage services for primary network attached storage (NAS) and storage area network (SAN) environments; modern disk-based and traditional tape-based back up environments; as well as archive environments retaining fixed content for regulatory compliance or legal response. With our comprehensive services, you can reduce your storage total cost of ownership (TCO) and decrease storage-related capital purchases. [www.hp.com/services/storage](http://www.hp.com/services/storage)

To know how to consolidate your storage better and for more information on Simply StorageWorks solutions, visit [www.hp.com/go/ssw](http://www.hp.com/go/ssw)