



WINTER 2011
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Ideal for virtualization, the HP ProLiant DL385 G7 Server lets you deploy even more virtual machines with complete confidence, giving you greater value for every IT euro you invest.

Ref.: 470065-384

HP PROLIANT DL385 GENERATION 7 - RACK MODEL

- AMD Opteron™ processor model 6128
- 4 GB PC3-10600R registered DIMMs
- 8 free SFF (2.5") SAS/SATA hard disk bays
- Smart Array P410i with 256 MB cache
- DVD optical drive
- Including a 3-year next business day on-site warranty

See page 4.

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Visit your new gateway for
HP Care Pack information.

See page 8 for more details.



LET'S DO AMAZING

In the last issue of the Smart Guide, you learned what servers are and how they are used. In this issue, we will take a closer look at another important IT topic, shared storage.

We will break down the seemingly-complex issue of shared storage by explaining the two most common types: file-based and block-based storage. We will also help you cut through shared-storage jargon like NAS, SAN, and snapshots.

We will also provide examples of how shared storage can be used, giving you a clearer understanding of how these solutions can fit into your organization.



Our series will continue in upcoming issues of the Smart Guide, with additional insights on the following topics:

1. Networks
2. Virtualization
3. Data protection
4. IT infrastructure management
5. Services

Storage: an introduction

Definition: shared storage is a technology used to give different servers or PCs simultaneous access to stored data.

Shared storage devices are connected to PCs via a data network (LAN or SAN) used solely for this purpose.

There are two main types of shared storage:

File-level storage: Files are shared on a dedicated rather than on a standard server. As the name suggests, this dedicated server does nothing other than share files. For example, a server running Windows® Storage Server offers an average of 20% better performance than a standard Windows® Server installation. File-level storage solutions are accessed via the network and are usually referred to as NAS (Network Attached Storage) solutions.

File-level storage solutions also offer features to optimize use. SIS (Single Instance Storage) deduplication technology ensures that a file is stored only once, even if several users place a copy of the file on the network. In addition, all users are alerted to the fact that other users are working on the same file.

These solutions also include a slate of management tools like reports that show who is using how much capacity, who is placing what sort of files on the network, and the types of files that are not allowed on the network.

Block-based storage: Generally (although incorrectly) called SAN storage, block-based storage takes the servers' internal drive controllers and internal hard drives and locates them on a network. The network is known as the Storage Area Network or SAN. The storage system itself is referred to as an external disk array.

In reality, the servers (not client PCs) on the network do not have access to the physical hard drives themselves, but rather to some of the capacity available on these drives. This capacity is presented to the servers as a volume. The server then detects a new, unformatted hard drive which it must then format before setting up a file system.

A Storage Area Network can be set up in one of three ways:

- A Fibre Channel Network: Built specifically to handle storage traffic, these networks are very fast and efficient (8 Gigabit/s), but also very expensive compared to the other options.
- A standard Ethernet LAN, based on TCP/IP. The hard drive communication language (SCSI) is converted into TCP/IP data packages, known as an iSCSI (IP SCSI or Internet SCSI) SAN. The network speed is then usually 1 Gigabit or 10 Gigabit (the latter is comparable in price with fibre channel). Note that iSCSI is a little less efficient than fibre channel, and thus this solution is usually used for small and medium enterprises.
- CEE or Converged Enhanced Ethernet: This 10 Gigabit Ethernet solution does not use TCP/IP communication. Instead, the Fibre Channel protocol is sent via Ethernet (also known as FCOE). This relatively new technology is not yet quite ready for large-scale production environments. It is also very expensive and requires the installation of special network switches and network cards on the servers.

Benefits of shared storage:

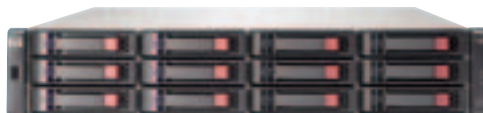
- 1.** Use current storage capacity more efficiently (do more with less)
- 2.** Facilitate high-availability server solutions (clustering)
- 3.** Streamline management
- 4.** Save time and effort backing up data



X1000 Network Storage Systems



X3000 Network Storage Systems



P2000 G3 MSA Storage Systems

The following HP products can help your organization reap the benefits of shared storage:

X1000 Network Storage Systems:

File sharing plus a basic option to build an iSCSI SAN. Based on HP ProLiant Servers in combination with Microsoft® Windows® Storage Server 2008 R2 Standard Edition.

X3000 Network Storage Systems:

The “big brother” of our X1000 systems. Enterprise version operating systems suitable for larger environments. Disk capacity is generally provided via external disk arrays connected to a SAN.

P2000 G3 MSA Storage Systems:

Entry-level SAN-connected external disk arrays with a range of options to suit different requirements. Start small, with just a few hard drives, and expand to up to 149 hard drives on a single P2000 machine. Users can also select what network to use since both Fibre Channel, 1 Gb iSCSI and 10 Gb iSCSI are supported.

See page 6 to learn more about products from the X1000 and P2000 ranges.

Or, learn more online at:

www.hp.com/go/X1000

www.hp.com/go/X3000

www.hp.com/go/P2000



Servers + storage + services =



HP PROLIANT SERVER

HP PROLIANT MICROSERVER

AFFORDABLE ALL-ROUND PERFORMER I: HP PROLIANT DL385 G7

SMALL OFFICE SERVER V: HP PROLIANT ML110 G6

Product reference number	612275-421	470065-384	578930-425
Price	299 € excl. VAT 361,79 € incl. VAT	1 835 € excl. VAT 2 220,35 € incl. VAT	400 € excl. VAT 484 € incl. VAT
Processor	AMD Athlon™ II NEO N36L processor (1.3 GHz, 15 W, 2 MB)	AMD Opteron™ processor model 6128 (2.0 GHz, 12 MB Level 3 cache, 80 W)	Intel® Pentium® processor G6950 (2.80 GHz, 3 MB L2 cache, Dual-Core)
Memory	1 GB PC3-10600 unbuffered DIMM (8 GB maximum)	4 GB (2 x 2 GB) PC3-10600R (DDR3-1333) registered DIMMs	1 GB PC3-10600 unbuffered DIMM
Storage	160 GB LFF (3.5") SATA no hot plug hard drive	No integrated hard drive - 8 free SFF (2.5") SAS/SATA hard drive bays	250 GB 7.2K rpm LFF (3.5") SATA no hot plug hard drive
Storage controller	Embedded SATA controller with embedded RAID (0, 1)	Smart Array P410i with 256 MB cache	Smart Array B110i SATA RAID controller (RAID 0, 1, 10)
Optical drive	Available as an option	DVD optical drive	DVD optical drive
Power supply redundancy	N/A	N/A	N/A
Warranty	1-year next day parts replacement	3-year, next business day on-site	1-year, next business day on-site

OPTION PACKS

OS Pack	This server plus Microsoft® Windows® Server 2008 R2 Foundation ROK (EN) software Ref.: 612275-421 + 589222-B21 499 € excl. VAT 603,79 € incl. VAT	This server plus Microsoft® Windows® Server 2008 R2 Standard Edition (EN) with 5 CALs Ref.: 470065-384 + 589256-B21 2 415 € excl. VAT 2 922,15 € incl. VAT	This server plus Microsoft® Windows® SBS 2008 SP2 Standard Edition ROK (EN) with 5 CALs Ref.: 578930-425 + 578891-B21 1 055 € excl. VAT 1 276,55 € incl. VAT
Performance Pack	2 GB (1 x 2 GB) unbuffered DDR3 PC3-10600 dual-rank memory kit (2x) Ref.: 2 x 593921-B21 120 € excl. VAT 145,20 € incl. VAT	2 GB (1 x 2 GB) registered DDR3 PC3-10600 dual rank memory kit (2x) + AMD Opteron™ processor model 6128 (2.0 GHz, 12 MB/DDR3-1333 8C, 80 W) option kit (DL385 G7) Ref.: 2 x 593907-B21 + 585330-B21 425 € excl. VAT 514,25 € incl. VAT	2 GB (1 x 2 GB) unbuffered DDR3 PC3-10600 dual-rank memory kit Ref.: 2 x 500670-B21 120 € excl. VAT 145,20 € incl. VAT
Storage Pack	500 GB 3G SATA 7.2K rpm LFF NHP MDL hard drive (3.5") Ref.: 458941-B21 180 € excl. VAT 217,80 € incl. VAT	146 GB SFF 6G SAS 10K rpm hot plug DP ENT hard drive (2.5") (4x) + 650 mAh P-Series battery pack for Smart Array P410 Ref.: 4 x 507125-B21 + 462969-B21 935 € excl. VAT 1 131,35 € incl. VAT	500 GB 3G SATA 7.2K rpm LFF NHP MDL hard drive (3.5") Ref.: 458941-B21 180 € excl. VAT 217,80 € incl. VAT
Uptime Pack	N/A	Hot Plug 460 W high-efficiency power supply kit Ref.: 503296-B21 180 € excl. VAT 217,80 € incl. VAT	N/A
HP Care Pack	3-year, 4-hour response - 13x5 HP ProLiant MicroServer HW support Ref.: UR483E 179 € excl. VAT 216,59 € incl. VAT	3-year, 4-hour on-site response - 13x5 Ref.: U4544E 778 € excl. VAT 941,38 € incl. VAT	3-year, 4-hour response - 13x5 HP ProLiant ML11x HW support Ref.: U4434E 304 € excl. VAT 367,84 € incl. VAT



HP STORAGEWORKS SOLUTIONS

HP STORAGEWORKS RDX160 INTERNAL BUNDLE WITH 3 MEDIA

HP STORAGEWORKS 1/8 G2 LTO 920 SAS AUTOLOADER WITH 8 TAPES

HP STORAGEWORKS RDX160 INTERNAL BUNDLE WITH 3 MEDIA

Product reference number	AP708AT	AP707AM	AP708AT
Price	410 € excl. VAT 496,10 € incl. VAT	2 755 € excl. VAT 3 333,55 € incl. VAT	410 € excl. VAT 496,10 € incl. VAT
Specifications	<ul style="list-style-type: none"> 160 GB removable disk backup system Cartridges: from 160, 320, 500 up to 750 GB Data transfer rate: 108 GB/hour HP continuous backup software included 1-year parts exchange warranty 	<ul style="list-style-type: none"> 3.2 TB native, 6.4 TB compressed (= 8 x 400/800 GB) Cartridges: from 400 up to 800 GB Data transfer rate: up to 432 GB/hour HP Data Protector Express Basic backup software included 1-year parts exchange warranty <p>Requires the following options:</p> <ul style="list-style-type: none"> HP Smart Array P212/zm Ref.: 462828-B21 160 € excl. VAT 193,60 € incl. VAT HP StorageWorks Mini-SAS cable for LTO internal tape drive Ref.: AE470A 95 € excl. VAT 114,95 € incl. VAT 	<ul style="list-style-type: none"> 160 GB removable disk backup system Cartridges: from 160, 320, 500 up to 750 GB Data transfer rate: 108 GB/hour HP continuous backup software included 1-year parts exchange warranty

your complete solution in three easy steps!



MEDIUM OFFICE SERVER II: HP PROLIANT ML150 G6

HASSLE-FREE SMALL NETWORK SERVER VII: HP PROLIANT ML310 G5p

SMALL POWERHOUSE I: HP PROLIANT ML330 G6

NO NONSENSE FILE&PRINT XIII: HP PROLIANT ML350 G6

518177-425	470065-352	517607-425	470065-334
875 € excl. VAT 1 058,75 € incl. VAT	780 € excl. VAT 943,80 € incl. VAT	1 100 € excl. VAT 1 331 € incl. VAT	2 035 € excl. VAT 2 462,35 € incl. VAT
Intel® Xeon® processor E5502 (1.86 GHz, 6 MB L2 cache, Dual-Core)	Intel® Core™2 Quad processor Q9400 (Quad-Core)	Intel® Xeon® processor E5504 (2.0 GHz, 4 MB L2 cache, Quad-Core)	Intel® Xeon® processor E5507 (2.26 GHz, 4 MB L3 cache/DDR3-800, 80 W, Quad-Core)
1 GB PC3-10600 unbuffered DIMM	2 GB (1 x 2 GB) PC2-6400 advanced ECC DDR2	2 GB (1 x 2 GB) PC3-10600 unbuffered DIMM	8 GB (2 x 4 GB) DDR3 registered DIMMs (RDIMM)
2 x 250 GB LFF SATA hard drive (2 free HDD bays)	250 GB LFF SATA hot plug hard drive	2 x 250 GB 7.2K rpm LFF (3.5") SATA hot plug hard drive	2 x 146 GB 10K rpm SFF SAS hot plug hard drive
Smart Array B110i SATA RAID controller (RAID 0, 1, 10)	Embedded SATA with integrated SATA RAID 0, 1	Smart Array P410 - zero memory	Smart Array P410i with 512 MB flash backed write cache
DVD optical drive	DVD-RW optical drive	DVD-RW optical drive	DVD-R optical drive
N/A	2 x 430 W PFC hot plug redundant power supplies	N/A	N/A
1-year, next business day on-site	1-year, next business day on-site	3-year parts, 1-year labor and next business day on-site	3-year, next business day on-site

This server plus Microsoft® Windows® SBS 2008
SP2 Standard Edition ROK (EN) with 5 CALS
Ref.: 518177-425 + 578891-B21
1 530 € excl. VAT 1 851,30 € incl. VAT

This server plus Microsoft® Windows® Server 2008
R2 Standard Edition (EN) with 5 CALS
Ref.: 470065-352 + 589256-B21
1 360 € excl. VAT 1 645,60 € incl. VAT

This server plus Microsoft® Windows® Server
2008 R2 Standard Edition (EN) with 5 CALS
Ref.: 517607-425 + 589256-B21
1 680 € excl. VAT 2 032,80 € incl. VAT

This server plus Microsoft® Windows® Server
2008 R2 Standard Edition (EN) with 5 CALS
Ref.: 470065-334 + 589256-B21
2 615 € excl. VAT 3 164,15 € incl. VAT

2 GB (1 x 2 GB) unbuffered DDR3 PC3-10600
dual-rank memory kit + Intel® Xeon® processor
E5502 (1.86 GHz, 4 MB/DDR3-800, 80 W,
Dual-Core) option kit (ML150 G6)
Ref.: 500670-B21 + 507720-B21
330 € excl. VAT 399,30 € incl. VAT

2 GB unbuffered PC2-6400 ECC DIMM
(1 x 2 GB) memory kit
Ref.: 450260-B21
90 € excl. VAT 108,90 € incl. VAT

2 GB (1 x 2 GB) unbuffered DDR3 PC3-10600
dual-rank memory kit + Intel® Xeon® processor
E5504 (2.0 GHz, 4 MB/DDR3-800, 80 W,
Quad-Core) option kit (ML330 G6)
Ref.: 500670-B21 + 512712-B21
595 € excl. VAT 719,95 € incl. VAT

4 GB (1 x 4 GB) registered DDR3 PC3-10600
dual-rank memory kit (2x) + Intel® Xeon® processor
E5507 (2.26 GHz, 4 MB/DDR3-800, 80 W,
Quad-Core) option kit (ML350 G6)
Ref.: 2 x 500658-B21 + 601248-B21
680 € excl. VAT 822,80 € incl. VAT

250 GB 3G SATA 7.2K rpm LFF NHP ETY
hard drive (3.5") (2x) + HP Smart Array P212/
256 MB controller
Ref.: 2 x 571232-B21 + 462834-B21
465 € excl. VAT 562,65 € incl. VAT

HP 250 GB 3G SATA 7.2K rpm LFF (3.5") 1-year
warranty Entry hard drive + HP Smart Array
E200/128 MB controller with BBWC + HP ProLiant
ML310 G5 SAS cable
Ref.: 571230-B21 + 411508-B21 + 460310-B21
435 € excl. VAT 526,35 € incl. VAT

250 GB 3G SATA 7.2K rpm LFF hot plug ETY
hard drive (3.5") (2x) + 256 MB cache module
upgrade for Smart Array P212/P410
Ref.: 2 x 571230-B21 + 462968-B21
340 € excl. VAT 411,40 € incl. VAT

300 GB SFF 6G SAS 10K rpm DP ENT hot plug
hard drive (2.5") (2x)
Ref.: 2 x 507127-B21
730 € excl. VAT 883,30 € incl. VAT

Hot plug RPS enablement kit (ML150 G6) + hot plug
750 W high-efficiency power supply kit + redundant
fan kit (ML150 G6)
Ref.: 508544-B21 + 2 x 512327-B21 + 513927-B21
635 € excl. VAT 768,35 € incl. VAT

N/A
3-year, 4-hour response - 13x5 HP ProLiant
ML310 HW support
Ref.: U4446E
515 € excl. VAT 623,15 € incl. VAT

Redundant fan option kit + hot plug RPS
enablement kit + hot plug 750 W high-efficiency
power supply kit
Ref.: 513927-B21 + 508544-B21 + 2 x 512327-B21
635 € excl. VAT 768,45 € incl. VAT
Ref.: UM872E
666 € excl. VAT 805,86 € incl. VAT

Redundant fan option kit (ML350 G6) + HP hot plug
460 W high-efficiency 12 V AC power supply kit
Ref.: 515081-B21 + 503296-B21
225 € excl. VAT 272,25 € incl. VAT
Ref.: U4512E
445 € excl. VAT 538,45 € incl. VAT



HP STORAGEWORKS RDX320 INTERNAL BUNDLE WITH 3 MEDIA

HP STORAGEWORKS DAT160 USB INTERNAL TAPE DRIVE WITH 5 TAPES

HP STORAGEWORKS ULTRIUM 920 LTO3 SAS TAPE DRIVE WITH 5 TAPES

HP STORAGEWORKS ULTRIUM 1760 LTO4 SAS TAPE DRIVE WITH 5 TAPES

AP709AT	AG908AT	AJ760BT	AP826AT
600 € excl. VAT 726 € incl. VAT	600 € excl. VAT 726 € incl. VAT	1 235 € excl. VAT 1 494,35 € incl. VAT	1 765 € excl. VAT 2 135,65 € incl. VAT
<ul style="list-style-type: none"> • 320 GB removable disk backup system • Cartridges: from 160, 320, 500 up to 750 GB • Data transfer rate: 108 GB/hour • HP continuous backup software included • 1-year parts exchange warranty 	<ul style="list-style-type: none"> • 80 GB native, 160 GB compressed • Cartridges: from 80 up to 160 GB • Data transfer rate: up to 49.3 GB/hour • HP Data Protector Express Basic backup software included • 3-year parts exchange warranty 	<ul style="list-style-type: none"> • 400 GB native, 800 GB compressed • Cartridges: from 400 up to 800 GB • Data transfer rate: up to 432 GB/hour • HP Data Protector Express Basic backup software included • 3-year parts exchange warranty <p>Requires the following options:</p> <ul style="list-style-type: none"> • HP Smart Array P212/zm Ref.: 462828-B21 160 € excl. VAT 193,60 € incl. VAT • HP StorageWorks Mini-SAS cable for LTO internal tape drive Ref.: AP746A 45 € excl. VAT 54,45 € incl. VAT 	<ul style="list-style-type: none"> • 800 GB native, 1.6 TB compressed • Data transfer rate: up to 576 GB/hour • HP Data Protector Express Basic software included <p>Requires the following options:</p> <ul style="list-style-type: none"> • HP Smart Array P212/zm Ref.: 462828-B21 160 € excl. VAT 193,60 € incl. VAT • HP StorageWorks Mini-SAS cable for LTO internal tape drive Ref.: AP746A 45 € excl. VAT 54,45 € incl. VAT

The G7 server line-up: Ready, steady, go!



HP PROLIANT SERVER

ENTRY-LEVEL RACK SERVER II: HP PROLIANT DL120 G6

HIGH-CAPACITY SERVER III: HP PROLIANT DL180 G6

CONCENTRATED COMPUTING POWER VII: HP PROLIANT DL360 G7

COMPACT ALL-ROUNDER IX: HP PROLIANT DL380 G7

Product ref. number	599148-425	470065-124	470065-356	470065-362
Price	660 € excl. VAT 798,60 € incl. VAT	1 165 € excl. VAT 1 409,65 € incl. VAT	1 925 € excl. VAT 2 329,25 € incl. VAT	2 255 € excl. VAT 2 728,55 € incl. VAT
Processor	Intel® Pentium® processor G6950 (2.80 GHz, 3 MB L2 cache, Dual-Core)	Intel® Xeon® processor E5504 (2.0 GHz, 4 MB L2 cache, Quad-Core)	Intel® Xeon® processor E5620 (2.40 GHz, 12 MB L3 cache, Quad-Core)	Intel® Xeon® processor E5620 (2.40 GHz, 12 MB L3 cache, Quad-Core)
Memory	4 GB (2 x 2 GB) PC3-10600 unbuffered DIMMs	4 GB (2 x 2 GB) PC3-10600 unbuffered DIMMs	8 GB (2 x 4 GB) PC3-10600 registered DIMMs	8 GB (2 x 4 GB) PC3-10600 registered DIMMs
Storage	250 GB 7.2K rpm LFF (3.5") SATA no hot plug hard drive	No integrated hard drive - 8 free LFF (3.5") SAS/SATA hard drive bays	No integrated hard drive - 4 free SFF (2.5") SAS/SATA hard drive bays	No integrated hard drive - 8 free SFF (2.5") SAS/SATA hard drive bays
Storage controller	Smart Array B110i SATA RAID controller (RAID 0, 1, 1+0)	Smart Array P410i with 256 MB cache	Smart Array P410i with 512 MB flash backed write cache	Smart Array P410i with 512 MB flash backed write cache
Optical drive	DVD optical drive	DVD-RW optical drive	DVD-RW optical drive	DVD-RW optical drive
Other	N/A	HP LO100i Advanced Pack, including 1-year 24x7 technical support and updates	N/A	N/A
Warranty	3-year, parts replacement only	3-year, parts replacement only	3-year, next business day on-site	3-year, next business day on-site

OPTION PACKS

OS Pack	This server plus Microsoft® Windows® SBS 2008 SP2 Standard Edition ROK (EN) with 5 CALs Ref.: 599148-425 + 578891-B21 1 315 € excl. VAT 1 591,15 € incl. VAT	This server plus Microsoft® Windows® Server 2008 R2 Standard Edition (EN) with 5 CALs Ref.: 470065-124 + 589256-B21 1 745 € excl. VAT 2 111,45 € incl. VAT	This server plus Microsoft® Windows® Server 2008 R2 Standard Edition (EN) with 5 CALs Ref.: 470065-356 + 589256-B21 2 505 € excl. VAT 3 031,05 € incl. VAT	This server plus Microsoft® Windows® Server 2008 R2 Standard Edition (EN) with 5 CALs Ref.: 470065-362 + 589256-B21 2 835 € excl. VAT 3 430,35 € incl. VAT
Performance Pack	2 GB (1 x 2 GB) unbuffered DDR3 PC3-10600 dual-rank memory kit (2x) Ref.: 2 x 500670-B21 120 € excl. VAT 145,20 € incl. VAT	2 GB (1 x 2 GB) unbuffered DDR3 PC3-10600 dual-rank memory kit + Intel® Xeon® processor E5504 (2.0 GHz, 4 MB/DDR3-800, 80 W, Quad-Core) option kit (DL180 G6) Ref.: 500670-B21 + 508341-B21 345 € excl. VAT 417,45 € incl. VAT	4 GB (1 x 4 GB) registered DDR3-10600 dual-rank memory kit (2x) + Intel® Xeon® processor E5620 (2.40 GHz, 12 MB L3 cache/DDR3-1066, 80 W, Quad-Core) option kit (DL360 G7) Ref.: 2 x 500658-B21 + 588072-B21 775 € excl. VAT 937,75 € incl. VAT	4 GB (1 x 4 GB) registered DDR3-10600 dual-rank memory kit (2x) + Intel® Xeon® processor E5620 (2.40 GHz, 12 MB L3 cache/DDR3-1066, 80 W, Quad-Core) option kit (DL380 G7) Ref.: 2 x 500658-B21 + 587476-B21 775 € excl. VAT 937,75 € incl. VAT
Storage Pack	250 GB 3G SATA 7.2K rpm LFF NHP ETY hard drive (3.5") (2x) + HP Smart Array P212/256 MB controller Ref.: 2 x 571232-B21 + 462834-B21 465 € excl. VAT 562,65 € incl. VAT	500 GB 3G SATA 7.2K rpm LFF hot plug MDL hard drive (3.5") (3x) Ref.: 3 x 458928-B21 540 € excl. VAT 653,40 € incl. VAT	146 GB SFF 6G SAS 10K rpm hot plug DP ENT hard drive (2.5") (2x) Ref.: 2 x 507125-B21 410 € excl. VAT 496,10 € incl. VAT	146 GB SFF 6G SAS 10K rpm hot plug DP ENT hard drive (2.5") (4x) Ref.: 4 x 507125-B21 820 € excl. VAT 992,20 € incl. VAT
Uptime Pack	N/A	Hot plug 460 W high-efficiency power supply kit Ref.: 503296-B21 180 € excl. VAT 217,80 € incl. VAT	Hot plug 460 W high-efficiency power supply kit Ref.: 503296-B21 180 € excl. VAT 217,80 € incl. VAT	Hot plug 460 W high-efficiency power supply kit Ref.: 503296-B21 180 € excl. VAT 217,80 € incl. VAT
HP Care Pack	3-year, 4-hour on-site response - 13x5 Ref.: UJ252E 499 € excl. VAT 603,79 € incl. VAT	3-year, 4-hour on-site response - 13x5 Ref.: UH271E 695 € excl. VAT 840,95 € incl. VAT	3-year, 4-hour on-site response - 13x5 Ref.: U4496E 608 € excl. VAT 735,68 € incl. VAT	3-year, 4-hour on-site response - 13x5 Ref.: U4544E 778 € excl. VAT 941,38 € incl. VAT



HP STORAGEWORKS SOLUTIONS

HP STORAGEWORKS D2D2502i

HP STORAGEWORKS X1600 G2 BASE NETWORK STORAGE SYSTEM

HP STORAGEWORKS P2000 G3 MSA SMB SAN STARTER KIT

NEW HP STORAGEWORKS P2000 G3 MSA 3.6 TB iSCSI STARTER KIT

Product ref. number	EJ001B	BV859A	AP847A	BV919A
Price	6 300 € excl. VAT 7 623 € incl. VAT	4 000 € excl. VAT 4 840 € incl. VAT	14 900 € excl. VAT 18 137,90 € incl. VAT	7 590 € excl. VAT 9 183,90 € incl. VAT
Specifications	<ul style="list-style-type: none"> 2 TB gross capacity, up to 50x better thanks to deduplication technology Data transfer rate: up to 325 GB/hour Disk-based backup system for 4 servers maximum 1-year parts exchange warranty Options <ul style="list-style-type: none"> HP Care Pack: 3-year, 4-hour on-site response - 13x5 Ref.: UJ752E 1 361 € excl. VAT 1 646,81 € incl. VAT 	<ul style="list-style-type: none"> Basic NAS with: <ul style="list-style-type: none"> Intel® Xeon® processor E5520, 6 GB RAM - 32 GB max. (OS limit), 2 CPUs 2U rack chassis, 12 disk bays 2 x 146 GB SFF OS disks Microsoft® Windows® Storage Server 2008 R2 64-bit iSCSI Target (=SAN-on-NAS) HP Application Storage Manager 24 TB max. internal capacity, up to 96 TB with external JBODs 3-year, next business day on-site warranty + 1-year phone software support, 9x5 Options <ul style="list-style-type: none"> HP Care Pack: 3-year support plus, 13x5, 4-hour on-site response time + phone software support Ref.: URO96E 596 € excl. VAT 721,16 € incl. VAT 600 GB LFF 6G SAS 15K rpm hot plug DP ENT hard drive (3.5") Ref.: 516828-B21 560 € excl. VAT 667,60 € incl. VAT 2 TB LFF 3G SATA 7.2K rpm hot plug MDL hard drive (3.5") Ref.: 507616-B21 500 € excl. VAT 605 € incl. VAT 	<ul style="list-style-type: none"> Starter kit with: <ul style="list-style-type: none"> P2000 LFF JBOD 2 x P2000 G3 FC controller 2 x H-Series SN6000 8 port SAN Switch 4 x 8 GB FC HBA SFPs and cables 12 LFF hard drives max., up to 96 LFF drives max. with external P2000 LFF extensions/137 max. with SFF extensions 24 TB max. capacity with LFF Midline SAS drives, up to 192 TB LFF SAS with external JBODs 64 servers max. 3-year parts exchange warranty Options <ul style="list-style-type: none"> HP StorageWorks P2000 Dual I/O 3.5" 12 drive disk enclosure Ref.: AP843A 2 745 € excl. VAT 3 321,45 € incl. VAT HP StorageWorks P2000 G3 600B LFF 6G SAS 15K rpm hard drive (3.5") Ref.: AP860A 560 € excl. VAT 677,60 € incl. VAT HP StorageWorks P2000 G3 2 TB LFF 6G 7.2K rpm MDL SAS hard drive (3.5") Ref.: AW555A 500 € excl. VAT 605 € incl. VAT HP Care Pack: 3-year, 4-hour on-site response - 13x5 Ref.: UW544E 2 773 € excl. VAT 3 355,33 € incl. VAT 	<ul style="list-style-type: none"> Starter kit with: <ul style="list-style-type: none"> P2000 G3 SFF JBOD 2 x P2000 G3 MSA 1GB iSCSI controller 10 x 300 GB SFF 6G SAS 10K rpm hot plug hard drives SFPs and cables 24 x SFF hard drives max., up to 149 SFF hard drives max. with D2700 extensions 12 TB max. capacity with SFF Midline SAS drives, up to 49.5 TB SFF SAS with external JBODs 64 servers max. 3-year parts exchange warranty Options <ul style="list-style-type: none"> HP StorageWorks D2700 SFF with external JBOD Ref.: AJ941A 2 820 € excl. VAT 3 412,20 € incl. VAT 146 GB SFF 6G SAS 15K rpm hot plug DP ENT hard drive (2.5") Ref.: 512547-B21 325 € excl. VAT 393,25 € incl. VAT 300 GB SFF 6G SAS 10K rpm hot plug DP ENT hard drive (2.5") Ref.: 507127-B21 365 € excl. VAT 441,65 € incl. VAT HP Care Pack: 3-year, 4-hour on-site response - 13x5 Ref.: UV393E 1 849 € excl. VAT 2 237,29 € incl. VAT

HP ROK licenses: the perfect virtualization companion

The Microsoft® Windows® Server family is ideal for businesses interested in virtualization. And the HP ROK is simply the best way to leverage all its benefits.

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“You cannot use HP ROK licenses to migrate virtual machines from one host to another!”

WRONG: HP ROK licenses are perfect for live migration supported by Microsoft® System Center Essentials.

“The Datacenter Edition is super expensive!”

WRONG: Just one HP Windows® Server 2008 R2 Enterprise Edition ROK license is needed for every four virtual machines. When using three or more virtual machines per socket, the Datacenter Edition is the most cost-effective solution.

Which Windows® Server edition should I choose?

Specification	Foundation	Small Business Server Std	Small Business Server Premium	Standard	Enterprise	Datacenter
Cluster Nodes	N/A	N/A	N/A	N/A	16	16
Virtual Image Use Rights*	N/A	N/A	Host + 1 VM	Host + 1 VM	Host + 4 VM	Unlimited
Max Users	15	75	75	Unlimited	Unlimited	Unlimited
X64 RAM	8 GB	32 GB	32 GB	32 GB	2 TB	2 TB
X64 Sockets	1	2	4	4	8	64
Price	HP ROK is the most cost-effective way to purchase any of these products.					

*Virtual Image Use Rights corresponds to the number of Windows® Server virtual machines you are entitled to run (known as virtual instances).



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