Overview

The HP StorageWorks Enterprise Files Services (EFS) Clustered Gateway delivers scalable file serving performance with assured availability for mid-range and enterprise customers on an industry standard platform.

The EFS Clustered Gateway can be purchased as either a pre-installed hardware/software configuration (single node and two-node initial cluster), or as a software only package (HP Clustered File System software or HP PolyServe File Serving Utility software) or as an integrated storage solution (Enterprise Virtual Array File Services). The EFS Clustered Gateway supports both Windows and Linux.

What Is a Clustered Gateway?

The HP StorageWorks Enterprise File Services (EFS) Clustered Gateway is a file server gateway. Based on a truly symmetrical cluster file system, EFS Clustered Gateway nodes and storage can be added to linearly scale file serving performance or storage capacity. High availability services and cluster management services are added to create a truly unique and powerful file serving offering.

With EFS Clustered Gateway you can leverage the volume economics of industry-standard HP ProLiant or HP Blade server platforms including the new c-Class BladeSystems and storage to create a single high-performance file serving system. EFS Clustered Gateway integrates Network File System (NFS) functionality, Common Internet File System (CIFS) or SAN-Direct I/O protocol with a true symmetric cluster file system, high-availability services and cluster and storage management capabilities. The product can aggregate up to 16 Windows or Linux EFS Clustered Gateway servers for high-performance, fault-tolerant file serving across a SAN. Shared data and management capabilities ease IT administration by enabling and storage to be managed as one.

At the heart of EFS Clustered Gateway is HP Clustered File System (CFS), the shared data clustering software that allows the performance of multiple ProLiant servers to be aggregated together. CFS and ProLiant servers running Windows or Linux change the economics of file server deployment. A cluster of inexpensive ProLiant servers can now function as a single, easily managed, incrementally scalable ("pay as you grow"), highly available file serving appliance, solving the problems posed by conventional file serving appliance approaches.

QuickSpecs

Product Highlights

Scalability	• Scale from 2 to 16 nodes with a linear increase in file serving performance and throughput.
	• Purchase the file serving capacity and throughput requirements that you need today and have the flexibility to add nodes to your existing cluster to meet future business needs.
	• Support for 128 TB per file system for Linux and 16 TB per file system for the Windows.
High Availability	• Fully symmetrical file system architecture means that all nodes see the same file system and that means no hot spots or bottlenecks.
	• Hardware node failures are detected and failed over to all remaining nodes in as little as 5 seconds.
Data Integrity	• The Linux version provides scalable NFS file serving and transparent failover for NFS clients with no need to remount in the event of one or more node failures. This feature is unique in the industry. The Linux version also supports CIFS file serving in a non-scalable mode via Samba.
	• The Windows version provides scalable CIFS file serving and transparent failover for CIFS clients with no need to reconnect in the event of one or more node failures. The Windows version also supports NFS file serving in a non-scalable mode via Hummingbird NFS Maestro™.
	• Complete session state, data and cache coherency is maintained among all nodes in the cluster.
	• Both the Windows and Linux versions support scalable SAN-Direct I/O.
Performance	• Each node provides up to 170 MB/second of sequential write throughput; approximately 190 MB/second sequential read throughput regardless of the base OS selected.
	• HP StorageWorks Clustered Volume Manger Software (included with both the Linux and Windows versions of the Gateway products) provides additional capabilities with configurable striping to tune performance and optimizing specific workloads. Clustered Volume Manger can also be used to aggregate storage across multiple arrays to provide flexibility for creating very cost effective price/performance solutions.
Industry standard	• Built with the HP ProLiant DL380 G5 server as the hardware platform and takes advantage of the rock solid platform and all of the ProLiant manageability features such as iLO, ProLiant Essentials and Insight Manager.
	• SUSE Linux v9 Enterprise edition is the OS foundation for the Linux version.
	• Windows Storage Server x64 2003 R2 is the OS foundation for the Windows version.
	• Windows Server 2003 R2 and RedHat is also supported by the software only version of EFS Clustered Gateway, the HP PolyServe File Serving Utility.
Flexibility	• Fully compatible with HP StorageWorks full portfolio of SAN storage products including MSA, EVA and XP storage arrays.
	• Support for 3rd party arrays to leverage existing SAN infrastructures.
	• Utilize existing data center tools and solutions for backup, management and anti-virus protection that support the OS you have selected.
	• Leverage training, knowledge, experience and parts that are in place for HP ProLiant hardware.
Manageability	• With a fully symmetrical file system you can mange the cluster from any node or remotely from a Windows or Linux workstation.
	• Perform rolling upgrades of individual nodes by removing nodes from the cluster and then re-inserting them into the cluster. This can be done without any disruption to clients or concern about data integrity with the failover over capabilities that are part of the architecture.
Lower Cost	• Purchase the file serving needs for today confident that you can add additional file serving throughput put and performance as your needs grow. There is no need for a "forklift upgrade" in the future.
	• By building the solution with industry standard components flexibility can be maintained in the infrastructure - no need to buy proprietary hardware and software.
	• Integration in the data center is straight forward as there no need to specialized training to learn about custom hardware and proprietary software.

Product Highlights

Support

- Installation and Startup service are included with the Initial Cluster configuration. This service is strongly encouraged for the first cluster at a customer site. By using HP professionals who are knowledgeable about this product and general SAN and networking, the cluster will be up and running in the shortest possible time. This service also includes documentation and on-site training for IT personnel on typical cluster management tasks.
- Hardware and software are covered 24 x 7 for one year.

Benefits of a Clustered Gateway

Outstanding scalability	While some NAS appliances have a fixed throughput, the HP StorageWorks Enterprise File Services Clustered Gateway allows you to add incremental throughput capacity in a linear fashion by adding additional nodes. Get exactly the amount of throughput capacity and performance that you need when needed.
High availability	A fully symmetrical file system means that all nodes have the same view of the file system. If a node is removed from the cluster for maintenance or fails, the failover to another node happens in as little as 5 seconds - faster than other cluster products.
Lower initial cost	Built on industry standard components means a lower initial cost and adding additional capacity and performance can be done quickly, simply and at a lower cost. There is no need to purchase an expensive proprietary appliance in anticipation of future needs.
Consolidation	Consolidating data into a cluster reduces administration costs - manages a single cluster not individual servers or multiple NAS devices.
Reduced Backup Costs	With symmetrical file system architecture all nodes have access to the same file system. By designating one or more node as the backup node(s), the entire file system can be backed up from this node(s). Backup licenses can be purchased only for those nodes actively being used for backup.
Easy Cluster Expansion	Single cluster nodes include: HP ProLiant server, Linux or Windows operating system, HP Clustered File System with CIFS or NFS file serving option and Cluster Volume Manager option software. The HP ProLiant server has high availability features such as redundant power supplies and fans, HBA and NIC cards already configured. This means that nodes can be ordered and quickly integrated into an existing cluster.
Flexible configurations	Software only options allow a choice of hardware platforms and operating systems allowing re-use of existing hardware and/or operating system licenses.
Initial cluster configuration	The initial cluster configuration represents HP's best practices for hardware, software and support. The configuration consists of two cluster nodes and installation and start up service. The recommended rack, SAN switch, Ethernet switch and cables can be ordered at the same and the system will be fully racked (as appropriate) at the factory for even quicker startup. The installation and startup service includes setup and on-site customer training on typical administrative tasks.

Software Components

| Optional Non-Clustered Gateway HP Software | HP Open View Storage Data Protector | The HP Open View Storage Data Protector (DP) software is enterprise data protection and disaster recovery, ensuring recovery from any disruption. Data Protector integrates a variety of techniques to eliminate backup and recovery windows. The capabilities to eliminate planned downtime range from online backup and backup of open files to zero-downtime, zero-impact backup. The software provides industry-leading instant recovery as well as several disaster recovery alternatives to eliminate unplanned downtime, allowing recovery of entire data centers in minutes.

Data Protector is enabling organizations to reduce costs by automating routine tasks to maximize the effectiveness of the data protection staff. For the price of an entry-level product, it provides the enterprise functionality customers need. Data Protector scales from single server to distributed enterprise, covering an extensive range of heterogeneous applications, operating environments and storage configurations with a single solution.

The HP StorageWorks Clustered Gateway supports using Data Protector a backup software solution for Linux and Windows (note: Under Windows DP does not support backing up open files).
Support for DP 5.5 requires a SSP (Site Specific Patch). This patch is available from DP support team.

For more information on HP Open View Data Storage Protector:
http://h18006.www1.hp.com/products/storage/software/dataprotector/index.html

Also please refer to EBS compatibility matrix for the complete list of interoperability of backup software solution with HP StorageWorks EFS Clustered Gateway
http://h18000.www1.hp.com/products/storageworks/ebs/ |

Service and Support, HP Care Pack, and Warranty Information

HP Care Pack Services

HP Care Pack Services offer upgraded service levels to extend and expand your standard product warranty with easy to buy, easy to use support packages that help you make the most of your hardware and software investments. They let you choose the support levels that meet your business requirements, from basic to mission-critical. They help you contain total cost of ownership.

HP Care Pack warranty extensions can be purchased along with HP products to cost-effectively upgrade or extend your warranty. For many products, post-warranty HP Care Pack Services are available when your original warranty has expired.

Why purchase an HP Care Pack service?

Your standard warranty protects against product defects. HP Care Pack Services help you guard against unplanned downtime, which can reduce your productivity and profitability. These convenient service packages:

- Protect your investment in HP products
- Provide consistent, predictable levels of support across your entire department or business
- Ease budget planning with fixed-cost support that includes parts and labor
- Give you direct access to proven technical and problem-solving expertise
- Offer a choice of response-time and repair-time commitments
- Deliver prompt, measurable results
- Are available whenever and wherever you do business

HP Care Pack availability may vary by country and product.

Supporting your Adaptive Enterprise journey

HP Services helps you make the Adaptive Enterprise real for your organization. The breadth, depth, and quality of HP hardware and software support services can help you improve the performance of your IT support processes and resolve the complex software and hardware problems that tax user productivity. HP Care Pack services help you increase IT environment stability, efficiency, and agility from the desktop to the data center, and improve the productivity of your employees.

Warranty and Services Included with the Product

HP warrants only that the Software media will be free of physical defects for a period of ninety (90) days from delivery.
Includes one year of HP Software Support 24 x 7 (software technical support and software product and documentation updates).
Installation and Startup service is included with the Initial Cluster configuration SKU.

For more information about HP's Global Limited Warranty and Technical Support, visit:
ftp://ftp.compaq.com/pub/products/storageworks/warranty/EN_321708-008.pdf

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Service and Support, HP Care Pack, and Warranty Information

Recommended Services   Installation and Start Up Service

- Cost-effectively obtain specialized expertise for a complex, one-time task
- Enjoy top performance right from the start
- Shorten your time-to-ROI

Three years of HP Software Support 24 x 7

- Improve the productivity of system managers and operators
- Improve system performance and reduce downtime due to software defects
- Expedite problem resolution through expert-level technical resources
- Enjoy consistent service coverage across geographically dispersed sites
- Update HP and selected third-party software at a predictable cost
- Take advantage of subscription savings on software updates
- Keep your license compliancy up-to-date

HP Care Pack Services

4-Hour 24x7 Same Day Hardware Support

Responsive service coverage available whenever you need it
Increase equipment availability and productivity with round-the-clock onsite and remote support for your HP hardware, as well as selected multi-vendor equipment. This flexible HP Care Pack Service covers desktops, workstations, servers, storage systems, and network equipment.
Choose 4-Hour 24x7 Same Day Hardware Support when you need to:

- Extend your hardware warranty coverage with prompt, anytime service for key systems and devices
- Obtain easy-to-buy, easy-to-use onsite services
- Improve hardware performance and uptime
- Increase the return on your HP and multi-vendor hardware investments
- Enjoy consistent service coverage across geographically dispersed sites

Service highlights

- **Remote problem diagnosis and support** - HP Services uses electronic remote support tools to isolate your problem and facilitate resolution.
- **4-hour onsite response 24x7x365** - For issues that cannot be resolved remotely, an authorized HP Services representative arrives at your site within 4 hours after your call has been logged. Service is available around-the-clock every day, including all holidays. HP Services returns your covered hardware to operational condition, repairing or replacing components or entire units as necessary. Your coverage includes all required parts and materials.
- **Escalation management** - Established escalation procedures enlist specialized expertise from HP and selected third-parties.

Service and Support, HP Care Pack, and Warranty Information

Software Product Updates   **Enhance user productivity with the latest software versions.**
HP Software Product Updates support brings you new versions of HP and selected HP-supported third-party software products, patches, and technical manuals. This convenient HP Care Pack service also includes licensing to use and copy the new versions.

Updates for third-party and selected HP software products are automatically forwarded to you. You'll be notified when new versions of other HP software products become available, allowing you to choose whether you wish to receive updates. Subscription-based purchasing gives you substantial savings vs. the cost of individual software updates.

Choose Software Product Updates when you need to:

- Update HP and selected third-party software at a predictable cost
- Take advantage of subscription savings on software updates
- Have your system managers automatically notified of new software releases
- Keep your license compliancy up-to-date

Service highlights

- **Updates** - Complete HP and selected third-party software product and documentation updates are made available to your system manager. For certain products, you may have a choice of delivery media type. Software technical manuals may be available on media instead of paper.
- **Licensing** - You receive a license to use and copy software product updates for all systems covered by your original software license.
- **Electronic software information** - Access HP's electronic support facility for software patches, a symptom-solution database, product descriptions, specifications, technical literature, and more.

24x7 Software Technical Support   **All day, every day problem resolution - plus cost-saving software updates**
HP 24x7 Software Technical Support provides comprehensive round-the-clock services and cost-saving updates to help you enhance the performance and availability of software from HP and other leading vendors.

This convenient HP Care Pack service gives your IT team direct access to HP IT Response Centers. Experienced Response Center engineers provide trustworthy advice on issues such as software features and use, problem diagnosis and resolution, and software defect identification. Any member of your IT staff can electronically access essential product and support information.

In addition, 24x7 Software Technical Support brings you software updates at substantial subscription savings. This includes new versions of HP and selected third-party software products, patches, and documentation, as well as licensing to use and copy these versions.

Choose 24x7 Software Technical Support when you need to:

- Improve the productivity of system managers and operators
- Improve system performance and reduce downtime due to software defects
- Expedite problem resolution through expert-level technical resources available whenever you need them
- Enjoy consistent service coverage across geographically dispersed sites
- Update HP and selected third-party software at a predictable cost
- Take advantage of subscription savings on software updates
- Keep your license compliancy up-to-date

Service and Support, HP Care Pack, and Warranty Information

Service highlights

- **24x7x365 access to technical resources** - Connect with HP Response Center engineers via telephone, electronic communication, or FAX for assistance in resolving software implementation or operations problems. Service is available around the clock every day, including all holidays.
- **Problem analysis and resolution** - HP Services provides corrective support to resolve identifiable and reproducible software product problems, and to help you identify problems that are difficult to reproduce. You can also receive assistance in trouble-shooting problems and setting configuration parameters.
- **Software features and operational support** - HP provides information on the latest product features and known problems and solutions, plus operational advice and assistance.
- **Escalation management** - Established escalation procedures enlist specialized expertise from HP and selected third-parties.
- **Installation advisory** - Advisory support is available for help with installation and updating of standalone applications or products installed in a network environment.
- **Software updates and licensing** - Complete HP and selected third-party software product and documentation updates are available to your system manager. You receive a license to use and copy software product updates for all systems covered by the original software license.
- **Electronic software information** - Access HP's electronic support facility for software patches, a symptom-solution database, product descriptions, specifications, technical literature, and more.

Available HP Care Pack Services

Extend your product warranty with a wide choice of cost-saving support packages.

HP Care Pack Services are sold by HP and HP authorized enterprise and commercial resellers. Services for customers purchasing via direct and enterprise resellers are quoted using HP order configuration tools. Additional information about HP Care Pack Service features and benefits is available at: http://www.hp.com/hps/carepack/services/.

Key for HP Care Pack Service availability in the table below:
E = Service available for customers purchasing direct and via enterprise resellers
C = Service available for customers purchasing via commercial resellers
N/A = Service not applicable

HP Care Pack Services Deployment and Per Event Services	Service Available
HP Installation	N/A
HP Installation & Startup	E
HP Implementation	E

For more information about Deployment and Per Event Services for HP Storage, visit: http://www.hp.com/hps/storage/.

Service and Support, HP Care Pack, and Warranty Information

HP Care Pack Services Availability Services	1 yr	3 yr	4 yr	5 yr
HP Next Day Hardware Support	N/A	N/A	N/A	N/A
HP 4 Hr, 9x5 HW Support	N/A	N/A	N/A	N/A
HP 4 Hr, 13x5 Hardware Support	N/A	N/A	N/A	N/A
HP 4 Hr, 24x7 Hardware Support	N/A	N/A	N/A	N/A
HP 6 HR Call-to-Repair HW Support	N/A	N/A	N/A	N/A
HP Software Support	E/C	E/C	E/C	E/C
HP Software Support 24x7	E/C	E/C	E/C	E/C
HP Support Plus	E/C	E/C	E/C	E/C
HP Support Plus 24	E/C	E/C	E/C	E/C
HP Proactive Essentials 9x5, 10 SW Incidents	N/A	N/A	N/A	N/A
HP Proactive Essentials 9x5, 25 SW Incidents	N/A	N/A	N/A	N/A
HP Proactive Essentials 9x5 Unlimited	N/A	N/A	N/A	N/A
HP Proactive Essentials 24x7, 25 SW Incidents	N/A	N/A	N/A	N/A
HP Proactive Essentials 24x7, 50 SW Incidents	N/A	N/A	N/A	N/A
HP Proactive Essentials 24x7 Unlimited	N/A	N/A	N/A	N/A
HP Proactive 24 Service	E	E	E	E
HP Critical Service	E	E	E	E

To find HP Care Pack Services available via HP authorized commercial resellers, visit:
http://h30125.www3.hp.com/csn/salesmktg/elfpack/elf_nonlkup_ctrylang.asp?code=elnl

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eSupport

HP eSupport is a portfolio of technology-based services that assist you with managing your business environment - from the desktop to the data center.

Support Portal
The HP support portal provides one-stop access to the information, tools and services you need to manage the daily operations of your IT environment.

Features include:

- Access to self-solve tools (including search technical knowledge base)
- Efficient logging and tracking of support cases
- Collaboration with other business and IT professionals
- Download of patches and drivers
- Access to diagnostic tools
- Proactive notification of relevant information

Access to certain features of the support portal requires an HP service agreement. To access the support portal, visit: http://www.hp.com/support

Service and Support, HP Care Pack, and Warranty Information

Instant Support Enterprise Edition (ISEE)
HP Instant Support Enterprise Edition (ISEE) provides a single remote monitoring and support solution for your IT data center. ISEE uses continuous hardware event monitoring and automated notification to identify and prevent potential critical problems.

ISEE is a feature of HP Hardware Support Onsite Service with Next-Day response or better, Proactive Essentials, Proactive 24, Critical Service and warranty support for the selected products.

For more information or to download ISEE, visit: http://www.hp.com/go/instantsupport

HP Education Services	For more information about HP Education Services for Storage and SAN, visit: http://h10076.www1.hp.com/education/curr-storsan.html
Awards	HP IT Resource Center (ITRC) and HP Business Support Center (BSC) were selected as two of the Association of Support Professional's (ASP) Top Ten award winners in its seventh annual Ten Best Web Support Sites competition for 2004, an award that showcases excellence in online service and support. http://www.hp.com/hpinfo/newsroom/press/2004/040616a.html
	HP earned the No. 1 ranking in customer satisfaction among vendors of corporate information technology (IT) service and support, according to the newly released Technology Business Research Inc.'s Corporate IT Service and Support survey covering the first quarter of 2004. http://www.hp.com/hpinfo/newsroom/press/2004/040624a.html
Additional Services Information	For more information about Deployment, Per Event, Consulting and Education services for HP Storage, visit: http://www.hp.com/hps/storage/ For more information about HP Care Pack Services for Storage, visit: http://www.hp.com/hps/carepack/storage/cp_networked.html For more information about HP Storage Software, services and updates, visit: http://h18006.www1.hp.com/storage/software.html If you have specific questions, contact your local HP representative. Contact information for a representative in your area can be found at "Contact HP" http://www.hp.com

Components   The following brick level options/components do not have individual HP Care Pack Services. These items will be included in product HP Care Pack Services into which they are installed.

Disk Drives	Tape Drives	CD/DVD ROM	SCSI Hubs in SBBs
Bus Converters	Backplane RAID Controllers	Power Supplies	Cabling

Product Ordering Information

Ordering EFS Clustered Gateway is easy. First you pick the primary file serving protocol you need, either NFS or CIFS. Then you pick either a single node or an initial cluster configuration.

NOTE: The Initial Cluster model can be ordered with rack, SAN switch, Ethernet switch, PDU and associated cabling fully racked from the factory. The Initial Cluster model includes Installation and Startup service. Note that the -SL indicates SUSE Linux 9 SP3 while -WSS indicates Windows Storage Server x64 2003 R2 as the base OS.

Pick the primary file serving protocol, NFS (Linux) or CIFS (Windows)

NFS File Serving Models

Model Number	Model Description	Part Number
HP DL380G5-SL Clustered Gateway	Single cluster node that includes HP DL380G5 ProLiant server, Linux OS, HP Clustered File System software with the NFS File Serving option and Clustered Volume Manger option and supporting documents.	AG513A
HP DL380G5-SL Initial Cluster	Includes Installation and Startup Service and two HP DL380G5-SL Clustered Gateway nodes (AG513A). In addition to basic setup and configuration, customer training is provided on basic operations. This SKU can be configured to include a rack, FC switches, network switch, and all necessary cables.	AG514A

CIFS File Serving Models

HP DL380G5-WSS Clustered Gateway	Single cluster node that includes HP DL380G5 ProLiant server, Windows Storage Server x64 2003 R3 OS, HP Clustered File System software with the CIFS File Serving option and Clustered Volume Manger option and supporting documents.	AG515B
HP DL380G5-WSS Initial Cluster	Includes Installation and Startup Service and two HP DL380G5-WSS Clustered Gateway nodes (AG515B). In addition to basic setup and configuration, customer training is provided on basic operations. This SKU can be configured to include a rack, FC switches, network switch, and all necessary cables.	AG516B

Software Version of EFS Clustered Gateway

The HP PolyServe File Serving Utility is the software only version of the EFS Clustered Gateway. The HP PolyServe File Serving Utility includes the Matrix Server, Cluster Volume Manager and File Serving Solution Pack. The product is for users wishing to add high performance File Services to an HP XP array, HP EVA array or an supported third-party array. The product can be ordered with either a physical License-to-Use or an electronic License-to-Use. The software version supports SUSE Linux, RedHat Linux, or Windows Server 2003 Release 2. Below are the part numbers. Product support must be ordered separately. The installation and startup service must be order with the first cluster.

HP Product Name	Description	Part Number
HP PolyServe File Serving Utility Pack 1 CPU LTU	The File Serving Utility Pack is comprised of the applicable number of CPUs of each of the following Software modules: (i) Matrix Server; (ii) Cluster Volume Manager; and (iii) File Serving Solution Pack. This product includes a physical License-to-Use (LTU).	T5394AA
HP PolyServe File Serving Utility Pack 1 CPU E-LTU	The File Serving Utility Pack is comprised of the applicable number of CPUs of each of the following Software modules: (i) Matrix Server; (ii) Cluster Volume Manager; and (iii) File Serving Solution Pack. This product includes an electronic License-to-Use (E-LTU).	T5394AAE

Product Ordering Information

HP PolyServe File Serving Utility Pack 8 CPU E-LTU	The File Serving Utility Pack is comprised of the applicable number of CPUs of each of the following Software modules: (i) Matrix Server; (ii) Cluster Volume Manager; and (iii) File Serving Solution Pack. This product includes an electronic License-to-Use (E-LTU).	T5394ABE
HP PolyServe Software Media CD	Hard-copy product CDs	T5392AA
HP PolyServe Software Installation and Startup	Provides onsite installation and startup services for HP PolyServe software products.	HA 114A1 57Q

Below are the technical specifications of the EFS Clustered Gateway.

Version	Windows	Linux
Maximum number of node supported	16	16
Maximum File System Size supported	Up to 32 TB	Up to 128 TB
Maximum number File System supported	Up to 128	Up to 512
Maximum LUNs per cluster	Up to 256	Up to 512
File Serving Protocols	NFS, CIFS, FTP, HTTP, HTTPS, DNS, IMAP4, POP3, NNTP, SMTP	NFS, CIFS, FTP, HTTP, HTTPS, DNS, IMAP4, POP3, NNTP, SMTP
Storage Arrays supported	HP StorageWorks Modular Smart Arrays, HP StorageWorks Enterprise Virtual Arrays, HP StorageWorks XP Disk Arrays, 3rd-Party Disk Arrays from EMC, IBM, Sun, DDN, NetApp.	HP StorageWorks Modular Smart Arrays, HP StorageWorks Enterprise Virtual Arrays, HP StorageWorks XP Disk Arrays, 3rd-Party Disk Arrays from EMC, IBM, Sun, DDN, NetApp.

Below are the technical specifications of the DL380 G5 ProLiant Server used by the EFS Clustered Gateway. Unless otherwise noted technical specifications are the same for the Linux and Windows version of EFS Clustered Gateway.

HP DL380G5 Clustered Gateway Node ProLiant Server	Operating System	SUSE Linux v9 Enterprise Edition or Windows Storage Server 2003 x64 Release 2, Standard Edition
	Processor	(2) Dual-Core Intel Xeon 5150 Processors (2.67 GHz, 1333 FSB) for Linux version/ (2) Quad-Core Intel Xeon E5345 Processors (2.33 GHz, 1333 FSB) for Windows version
	Cache Memory	4MB (1 x 4MB) Level 2 cache - 5100 Series
	Memory	4 GB Standard (2 x 2 GB) for Linux version / 8 GB (4 x 2 GB) for Windows version. PC2-5300 Fully Buffered DIMMs (DDR2-667) with Advanced ECC, up to 32GB supported
	HBA	HP FC1242SR Dual Channel 4 Gb PCI-E HBA
	Server Adaptor	HP NC380T Dual Port Gigabit PCI-E Server Adapter (NIC)
	Expansion Slots (PCI-Express)	Slot 3 (x4): HP FC1242SR FC HBA installed Slot 4 (x8): NC 380T NIC installed Slot 5 (x8): Empty
	Network Controller	Embedded Dual NC373i Multifunction Gigabit NICs
	Storage Controller	Smart Array P400 Controller with 256MB cache (RAID 0/1/5)

Product Ordering Information

Hard Drive (Internal storage)	72GB 3G SAS 10K SFF HDDs
Diskette Drive	1.44 MB (3.5") Floppy Disk Drive
Optical Drive	Slimline DVD-ROM Drive (8x24)
Fibre Channel (SAN) **Storage Compatibility**	The entire HP storage portfolio of SAN attached storage is supported including MSA, EVA and XP storage arrays. Consult your HP Storage Specialist for information on compatibility with non-HP storage arrays.
Remote Management	HP Lights-Out Drivers and Agents Windows Storage Server

Intelligent Management

- HP Systems Insight Manager (HP SIM) helps maximize system uptime and performance and reduce system maintenance costs by providing proactive notification of problems before these problems result in unplanned downtime or reduced productivity. For more details on HP SIM visit: http://www.hp.com/go/hpsim
- SmartStart is a tool that simplifies setup, providing a rapid way to deploy reliable and consistent server configurations. For more information, visit: http://www.hp.com/servers/smartstart
- Management Agent form the foundation for HP's intelligent Manageability strategy. They provide direct, browser-based access to in-depth instrumentation built into HP servers and send alerts to HP Systems Insight Manager and other enterprise management applications in case of subsystem or environmental failures. For more information, visit: http://www.hp.com/servers/manage
- Redundant ROM
- Remote Flash ROM
- Integrated Management Log
- Automatic Server Recovery (ASR)
- Dynamic Sector Repairing (with Smart Array Controllers)
- Drive Parameter Tracking (with Smart Array Controllers)
- Hot Spare Boot

NOTE: Upon the event of a failed processor or VRM in a multi-processing environment, the system will automatically reboot and use the remaining good processor(s).
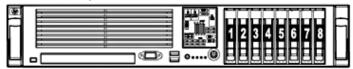Pre-Failure Warranty covers processors, hard drives and memory.

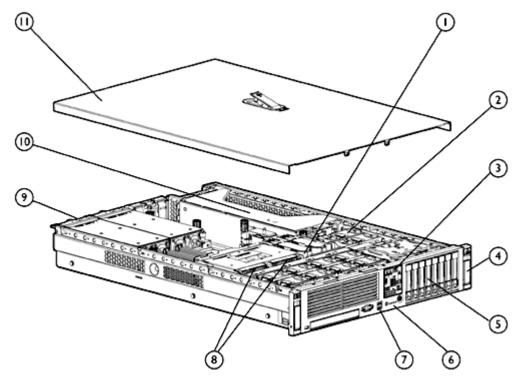|	
Power Supply	575 Watt, CE Mark Compliant Hot Plug Redundant power supply included
System Fans	5 hot plug fans with an additional 3 fans for fan failure redundancy included.
Form Factor	2U

Model Design

1-8   Eight SFF SAS hot plug hard drive bays

Product Ordering Information

1. Eight sockets for PC2-5300 Fully Buffered DIMMs (DDR2-667)

2. Hot-plug fans, full redundancy

3. Systems Insight Display

4. Quick release lever for rapid server access

5. Support for eight Small Form Factor hot plug hard drives bays

6. Front LEDs (show server status) and Unit Identification button/LED (for easy in rack server identification)

7. Two front USB ports (2 rear USB ports, 1 internal USB port)

8. Intel Xeon Processor (Performance models include two processors)

9. Hot plug power supply, redundancy option (High performance models include redundant power supply)

10. Three PCI-E non-hot plug expansion slots (one that is empty)

11. Quick removal access panel

Technical Specifications

System Unit Node	Dimensions (H x W x D) (with feet/bezel)	3.38 x 17.54 x 26.01 in (8.59 x 44.54 x 66.07 cm)	
	Weight (approximate)	Maximum	60 lb (27.22 kg)
		Minimum	47.18 lb (20.41 kg)
	Input Requirements (per power supply)	Range Input Voltage	100-132 VAC, 200-240 VAC
		Rated Input Current	10A (100VAC), 10A (120VAC), 6.1A (200VAC)
		Rated Input Frequency	50 to 60 Hz
		Rated Input Power	1000/1056/1205 W
	BTU Rating	BTU/HR	3490/3680/4150
	Power Specifications	To review typical system power ratings use the Active Answers Power Calculator which is available via the online tool located at URL: http://h30099.www3.hp.com/configurator/powercalcs.asp. To drill down to calculators: - Click on: "ProLiant Servers" - Click on the Server of interest. Example: DL380 G5 - Click on: "Power Calculator" link. (You may need to scroll down to see it)	
	Power Supply Output Power (per power supply)	Rated Steady-State	800/850/1000 W
		Maximum Peak Power	800/850/1000 W
	Temperature Range	Operating	50° to 95° F (10° to 35° C) at sea level with an altitude de-rating of 1.8° F per 1000 ft (1.0° C per 304.8 m) to 10,000 ft (3048 m) no direct sunlight allowed. Maximum rate of change is 18° F/Hr (10° C/Hr). Upper operating limit is 10,000 ft (3,048 m) or 70 Kpa/10.1 psia. System performance may be reduced if operating with a fan fault or above 30° C.
		Non-operating	-22° to 140° F (-30° to 60° C) Maximum rate of change is36° F/Hr (20° C/Hr). Upper non-operating limit is 30,000 ft (9,144 m) or 30.3KPa/4.4 psia.
	Maximum Wet Bulb Temperature	101.7° F (38.7° C)	
	Relative Humidity (non-condensing)	Operating	10% to 90% relative humidity (Rh), 28° C maximum wet bulb temperature.
		Non-operating	5% to 95% relative humidity (Rh), 38.7° C maximum wet bulb temperature.
	Acoustic Noise	Idle Minimum (Fixed Disk Drives Spinning)	
		L WAd (BELS)	6.4
		L pAm (dBA)	47
		Operating Minimum (Random Seeks to Fixed Disks)	
		L WAd (BELS)	6.6
		L pAm (dBA)	49

QuickSpecs

Technical Specifications

HP Clustered File System Software - Hardware Support Matrix

		HP ProLiant				
		DL360 G5	DL380 G5	DL385	DL580 G3	DL585
Platform	Hard Drive	2x36GB	2x36GB	2x36GB	2x36GB	2x36GB
Config	Processor (min)	2.4 GHz	2.4 GHz	2.4 GHz	2.4 GHz	2.4 GHz
	Memory (min)	4 GB	4 GB	4 GB	4 GB	4 GB
OS	Windows Storage Server 2003 (32-bit)	Yes	Yes	Yes	Yes	Yes
	Windows Server 2003 (32-bit)	Yes	Yes	Yes	Yes	Yes
	Suse Linux Enterprise Server 9 SP2 (32/64 bit)	Yes	Yes	Yes	Yes	Yes
NIC	HP NC7771 PCI-X 1000T Gb Server Adapter (290563-B21)	Yes	Yes	Yes	Yes	Yes
	HP NC320T PCI Express Gig Server Adapter (367047-B21)	No	Yes	Yes	No	Yes
	HP NC7781 PCI-X Gb (Standard on Blades)	No	No	No	No	No
HBA	FCA2214 2Gb FC HBA for Linux and Windows (281541-B21)	Yes	Yes	Yes	Yes	Yes
	HP FC1242SR 4Gb PCI-E DC HBA (AE312A)	Yes	Yes	Yes	Yes	Yes
	HP FC2243 4Gb PCI-X 2.0 DC HBA (AD168A)	No	Yes	Yes	No	Yes
	HP BL20p G2 Dual Port FC Mezz Card (300874-B21)	No	No	No	No	No
	HP BL20p G3 FC Adapter Card (361426-B21)	No	No	No	No	No
	Emulex Based BL20pG3 FC Mezz HBA (394757-B21)	No	No	No	No	No
	HP BL25/45p Fiber Channel Adapter (381881-B21)	No	No	No	No	No
	Emulex Based BL25/30/45p FC Mezz HBA (394588-B21)	No	No	No	No	No

HP Clustered File System Software - Hardware Support Matrix

		HP BladeSystem		
		BL460C	BL465C	BL480C BL685C
Platform	Hard Drive	2x36 GB	2x36 GB	2x36 GB
Config	Processor (min)	2.4 GHz	2.4 GHz	2.4 GHz
	Memory (min)	4 GB	4 GB	4 GB
OS	Windows Storage Server 2003 (32-bit)	Yes	Yes	Yes
	Windows Server 2003 (32-bit /64 bit)	Yes	Yes	Yes
	Suse Linux Enterprise Server 9 SP2 (32/64 bit)	Yes	Yes	Yes
NIC	HP NC373m PCI Express Dual Port Multifunction Gigabit server adapter	Yes	Yes	Yes
	HP NC326m PCI Express Dual Port Gigabit server adapter	Yes	Yes	Yes
HBA	HP Emulex LPe1105-HP 4Gb FC HBA	Yes	Yes	Yes
	HP QLogic QMH2462 4Gb FC HBA	Yes	Yes	Yes

Technical Specifications