

Overview

HP Enterprise File Services (EFS) WAN Accelerators are comprehensive Wide-Area Data Services (WDS) solutions that improve the performance of applications used over Wide-Area Networks (WANs). The appliances are built on HP ProLiant servers and utilize a variety of technologies--including auto detection, compression, latency optimization, and transaction prediction--to enable LAN-like performance over a WAN. The family of EFS WAN Accelerator solutions also includes the HP Enterprise File Services (EFS) WAN Accelerator Manager, which can be used to centrally manage and monitor a fleet of up to 500 appliances. HP EFS WAN Accelerators deliver true value to enterprise customers wanting to consolidate distributed IT from remote sites to the datacenter by enabling centralization of remote office IT infrastructure, resulting in savings through reduction of the amount of equipment that needs to be maintained, IT staff needed, and complexity of a global network. EFS WAN Accelerators can accelerate many common enterprise applications by up to 100 times and optimize WAN bandwidth, helping to delay or avoid major WAN bandwidth upgrades.

HP EFS WAN Accelerators are designed for deployment at both remote offices (models DL320-520, DL320-1020, DL320-2020) and the datacenter (models DL380-3010 and DL380-5010 plus the WAN Accelerator Manager model DL320-M25), and can be quickly and transparently installed into existing network infrastructure. Each appliance employs one of three unique network controller (NIC) models that will fail through to wire in the event of a software, hardware or electrical failure, ensuring that the WAN connection is preserved.

What's New

- HP EFS WAN Accelerator models DL320-520, DL320-1020, and DL320-2020 replace models DL320-510, DL320-1010, and DL320-2010
 - Now based on HP ProLiant DL320G4 servers
 - Greater optimized bandwidth and TCP connection support
 - DL320-520 now supports Proxy File Service (PFS)
- HP EFS WAN Accelerator Manager model DL320-M25 now based on the ProLiant DL320G4 server

What are EFS WAN Accelerators?

HP Enterprise File Services (EFS) WAN Accelerators are appliances built on industry-standard HP ProLiant servers that utilize a variety of bandwidth and latency optimization technologies to improve the performance of applications used on WANs by up to one-hundred times. Unlike other WAN optimization products that focus solely on improving WAN bandwidth, EFS WAN Accelerators not only deliver the industry's highest bandwidth optimization, but also address the effects of high latency on TCP and applications that run on TCP. Unlike caching-based approaches, which are typically application-specific and inflexible, EFS WAN Accelerators optimize all TCP traffic for bandwidth and latency, and also offer additional application-specific optimization.

Product Highlights

Highest Performance WAN Application Acceleration

- HP EFS WAN Accelerators deliver the highest available performance for any TCP-based application on wide area networks using a variety of technologies:
 - Scalable Data Referencing (SDR): Works across all TCP applications including Microsoft Office, Lotus Notes, CIFS, NFS, CAD, ERP, FTP, HTTP and more to ensure that the same data is never sent more than once over the WAN. Reduces bandwidth consumption for some applications to less than 1% of previous levels.
 - Virtual Window Expansion: Allows applications to overcome TCP windowing limitations that affect long-distance WAN connections.
 - Transparent Pre-Population: Data stores can be automatically and transparently pre-populated with newly-generated data so that users experience immediate performance benefits.
 - Application-specific Optimizations: Reduces the impact of WAN

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latencies for a variety of chatty applications including Windows file sharing (CIFS), Microsoft Exchange (MAPI), Web (HTTP), Database (MS-SQL), FTP, backup, and replication, providing an additional order-of-magnitude throughput improvement.

- Bi-Directional Operation: TCP traffic is optimized in both directions--to and from remote offices and data centers.
- Permanent Disk-Based Store: HP EFS WAN Accelerators store between 80GB and 512GB of byte-level data on each appliance, providing a significant data store from which data commonalities can be leveraged.
- High-Speed TCP (HS-TCP) {DL380-5010 only}: For high bandwidth / high latency WAN links, native TCP flow control makes 'filling the pipe' difficult, leaving much of the often expensive WAN bandwidth unused. HS-TCP helps utilize more of that bandwidth, and supports up to 750 Mbps per connection for blazing fast data replication and backup.
- Proxy File Service (PFS) - PFS enables remote office workers local access to files even when the WAN link to the office goes down. PFS also enables remote office file shares to be replicated automatically to the data center, ensuring reliable backup.
- Policy and Security - Support for rules-based policy administration of optimization classes and packet marking for QoS and route control. Also supports packet filtering, optional IPsec encryption, and RADIUS/TACACS+ authentication.

Transparent Deployment

- Can be easily integrated into any enterprise network as in-path (between the local switch and WAN router), logically in-path (using policy-based routing or other traffic re-routing protocol), or out-of-path.

WAN-LAN NIC Fail Through

- In the event of hardware, software or power failure, HP EFS WAN Accelerators utilize one of three NICs that effectively fails through to wire. In that event, clients still have access to remote servers, albeit at the native WAN performance.

Based on HP ProLiant server hardware

- HP EFS WAN Accelerators are based on HP ProLiant DL320G3 and DL380G4 server hardware, ensuring seamless integration into established ProLiant environments, and including support for HP Systems Insight Manager and Integrated Lights-out (iLO) features.

High Reliability and Availability

- DL380-based models feature redundant disks and dual power supplies for higher reliability.
- Can be deployed in a variety of high-availability clustered (active/passive or active/standby) configurations

Easy to install

- Can be installed quickly and easily in most enterprise networks.
- Transparent to existing servers and clients-absolutely preserves the client-server relationship, unlike caching solutions.

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Centralized Management

- HP EFS WAN Accelerators include a CLI and GUI-based management system
- The optional HP EFS WAN Accelerator Manager is a turnkey solution for centrally managing up to 500 EFS WAN Accelerators distributed across a wide area network (WAN). It simplifies the process of deploying, configuring, and managing WAN Accelerator deployments.
 - 'Touchless' Appliance Deployment: EFS WAN Accelerator appliances will automatically contact the EFS WAN Accelerator Manager for configuration and operation information and start accelerating applications immediately.
 - Single, Group, or Global EFS WAN Accelerator configuration: Powerful grouping feature provides administrators with the flexibility of creating groups of appliances based on geographical location, business function, or personal preference.
 - CLI Command Broadcasting: Extends the EFS WAN Accelerator CLI functionality to its powerful group capability allowing administrators to broadcast scripted CLI commands to designated appliance groups.
 - Aggregate Performance Reports: Provides the ability to centrally view performance statistics for all EFS WAN Accelerator appliances network-wide.
 - Centralized Software Upgrade, Health Monitoring, and Log Retrieval: Facilitates software upgrades for all deployed EFS WAN Accelerators and presents a centralized view of health, status, and appliance logs.

Benefits Of EFS WAN Accelerators

Consolidation of distributed file servers from remote offices to datacenters

Access to centralized storage from remote sites at LAN-like speeds

Faster file transfers

Elimination of local remote office backup

Easy collaboration, even across the country

Avoidance of costly WAN upgrades

- HP EFS WAN Accelerators reduce cost and complexity of distributed IT infrastructure, by enabling consolidation and centralization of file and application servers to the datacenter and allowing IT managers and compliance officers to gain tighter control of sensitive data.
- Many enterprise customers are already enjoying the benefits of centralized high performance storage. But, with today's global workforce, it is critical to deliver high-performance, near-real-time access to centralized storage--no matter where employees are located--and current access and replication solutions are not meeting those needs.
- Because HP EFS WAN Accelerators optimize both WAN bandwidth and latency, file transfers can be accomplished at LAN-like speeds--a file transfer that normally takes an hour can be done in under a minute.
- Installation of HP EFS WAN Accelerators in remote offices provides a means to eliminate remote office backup headaches. Server data can be copied across the WAN at high performance to a server in the data center, and then go to tape there.
- HP EFS WAN Accelerators eliminate the bottlenecks caused by low bandwidth and high latency, allowing users to share information at LAN-like speeds no matter where they are.
- By removing all repetitive traffic from the WAN, HP EFS WAN Accelerators will typically remove 60% to 95% of WAN traffic, which means the effective bandwidth of an existing WAN links can be increased by up to twenty-fold.

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Based on industry-standard ProLiant server hardware

"Serverless" office

- Ensures seamless integration into established ProLiant environments, including support for HP Systems Insight Manager and Integrated Lights-out (iLO) features.
- When it comes time to open new remote offices, instead of deploying local file servers, a local email server, and local tape backup, it's much more economical to deploy an HP EFS WAN Accelerator, and minimize the remote office infrastructure that needs to be deployed, maintained, upgraded and patched.

Product Features	Model	DL320-520	DL320-1020	DL320-2020	DL380-3010	DL380-5010	DL320-M25
Part Number		AG421A	AG422A	AG423A	AE356A	AE357A	AG424A
Profile		1U	1U	1U	2U	2U	1U
SDR Disk Cache		74GB	74GB	150GB	250GB	512GB	n/a
Proxy File Service (PFS) Capacity		100GB	100GB	210GB	210GB	210GB	n/a
WAN Capacity (outbound)*		1Mbps	2Mbps	10Mbps	10Mbps	45Mbps	n/a
Optimized TCP Connections (PFS disabled)		300	625	2000	2400	4500	n/a
Optimized TCP Connections (PFS enabled)		150	300	1000	1300	2200	n/a
PFS Connections		50	50	100	100	140	n/a
Disk Redundancy		No	No	No	Yes	Yes	No
Dual Power Supplies		No	No	No	Yes	Yes	No
Hot-Swappable disks		No	No	No	Yes	Yes	No
Remote Management		HP iLO2	HP iLO2	HP iLO2	HP iLO	HP iLO	HP iLO2

*NOTE: Inbound (WAN to LAN) capacity is unrestricted.

Software Components

Optional Software

- HP Insight Manager - HP EFS WAN Accelerators support Insight Manager through SNMP. For more information on HP Insight Manager:
<http://h18013.www1.hp.com/products/servers/management/hpsim/index.html>

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

1. HP StorageWorks Enterprise File Services (EFS) DL320 WAN Accelerator SKUs include 36/12/12 month (parts/labor/on-site) hardware warranty. However additional hardware service coverage is bundled with the product for the first year of support. See "**Services Included with the Product**".
Default warranty:

- 36 months of material replacement (parts).
- 12 months of Hardware Maintenance On-Site service w/diagnosis and repair labor.
- Hardware diagnosis, material and repair labor.
- Standard warranty response is Next Business Day (NBD), support 9 hours per day (local time), 5 days per week (restrictions may apply) for Year 1; Next Business Day (NBD) support 9 hours per day (local time), 5 days per week (restrictions may apply) response time for Years 2 and 3 (parts only).

Service and Support, HP Care Pack, and Warranty Information

2. HP StorageWorks Enterprise File Services (EFS) DL380 WAN Accelerator SKUs include 36/36/36 month (parts/labor/on-site) hardware warranty. However additional service coverage is bundled with the product for the first year of support. See "**Services Included with the Product**".
Default warranty:
 - 36 months of Hardware Maintenance On-Site service w/diagnosis, material and repair labor.
 - Hardware diagnosis, material and repair labor.
 - Standard warranty response is Next Business Day (NBD), support 9 hours per day (local time), 5 days per week (restrictions may apply) for three years.
3. All HP EFS WAN Accelerator Fail-through NICs (Models N2c, N4c, and N2f) include a 12-month hardware (parts-only) warranty.
4. Standard HP software warranty states that the Software media will be free of physical defects for a period of ninety (90) days from delivery. However additional service coverage is bundled with the product for the first year of support. See "**Services Included with the Product**".

Services Included with the Product

- One year 24x7, 4-hour response hardware support.
- One year of HP Software Support 24 x 7, 2 hour call back (software technical support and software product and documentation updates).

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

Recommended Services

Appliance Installation 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

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. Addition/al 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

inc = Included

Service and Support, HP Care Pack, and Warranty Information

HP Care Pack Services Deployment and Per Event Services	Service Available
HP Installation	E
HP Installation & Startup	n/a
HP Storage Area Management Solution Service	n/a

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

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	inc	E	n/a	n/a
HP 6 HR Call-to-Repair HW Support	n/a	E	E	E
HP Software Support	n/a	E	E	E
HP Software Support 24x7	inc	E	E	E
HP Support Plus	n/a	n/a	n/a	n/a
HP Support Plus 24	n/a	E	E	E
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.

Service and Support, HP Care Pack, and Warranty Information

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>

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/instant-support>

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>

Product Configuration

The following steps will guide you through configuring an EFS WAN Accelerator and adding options.

NOTE: Options ship separately and are not factory integrated.

Step 1 - Order base models

Select here one of the available base models

EFS DL320-520 WAN Accelerator AG421A	Form Factor	Rack (1U), (1.70 in/4.45 cm)
	WAN Capacity	1Mbps
	Disk Storage	74GB SDR cache; 100GB PFS capacity
	Optimized TCP Connections	300 with PFS disabled; 150 with PFS enabled (50 PFS connections)
	Processor	Intel Pentium D Processor 940 - 3.2GHz dual-core w/ 2MBx2 L2 cache
	Memory	2 GB Advanced ECC PC2-4200 UB DDR2 SDRAM DIMM Memory
	Chipset	Intel E7230 chipset with 800MHz Front Side Bus
	On-board Network Controller	Embedded NC324i Dual Port 10/100/1000T Gigabit network adapter
	Storage Controller	Intel® 82801GR Integrated Serial ATA Host Controller
	Hard Drives	One 250GB SATA
	Optical Drive	DVD-ROM
	Diskette Drive	Standard
	Remote Management	iLO2 Port with Advance License Pack Included

EFS DL320-1020 WAN Accelerator AG422A	Form Factor	Rack (1U), (1.70 in/4.45 cm)
	WAN Capacity	2 Mbps
	Disk Storage	74GB SDR cache; 100GB PFS capacity
	Optimized TCP Connections	625 with PFS disabled; 300 with PFS enabled (50 PFS connections)
	Processor	Intel Pentium D Processor 940 - 3.2GHz dual-core w/ 2MBx2 L2 cache
	Memory	2 GB Advanced ECC PC2-4200 UB DDR2 SDRAM DIMM Memory
	Chipset	Intel E7230 chipset with 800MHz Front Side Bus
	On-board Network Controller	Embedded NC324i Dual Port 10/100/1000T Gigabit network adapter
	Storage Controller	Intel® 82801GR Integrated Serial ATA Host Controller
	Hard Drives	One 250GB SATA
	Optical Drive	DVD-ROM
	Diskette Drive	Standard
	Remote Management	iLO2 Port with Advance License Pack Included

Product Configuration

EFS DL320-2020 WAN Accelerator AG423A	Form Factor	Rack (1U), (1.70 in/4.45 cm)
	WAN Capacity	10 Mbps
	Disk Storage	150GB SDR cache; 210GB PFS capacity
	Optimized TCP Connections	2000 with PFS disabled; 1000 with PFS enabled (100 PFS connections)
	Processor	Intel Pentium D Processor 940 - 3.2GHz dual-core w/ 2MBx2 L2 cache
	Memory	4 GB Advanced ECC PC2-4200 UB DDR2 SDRAM DIMM Memory
	Chipset	Intel E7230 chipset with 800MHz Front Side Bus
	On-board Network Controller	Embedded NC324i Dual Port 10/100/1000T Gigabit network adapter
	Storage Controller	Intel® 82801GR Integrated Serial ATA Host Controller
	Hard Drives	Two 250GB SATA, configured as RAID0
	Optical Drive	DVD-ROM
	Diskette Drive	Standard
	Remote Management	iLO2 Port with Advance License Pack Included

EFS DL380-3010 WAN Accelerator AE356A	Form Factor	Rack (2U), (3.5-inch)
	WAN Capacity	10 Mbps
	Disk Storage	250GB SDR cache; 210GB PFS capacity
	Optimized TCP Connections	2400 with PFS disabled; 1300 with PFS enabled (100 PFS connections)
	Processor	Intel Xeon Processor 3.4 GHz/ 800MHz FSB w/ 1MB L2 cache
	Memory	3 GB 2-way interleaved PC2-3200R 400MHz DDR2 SDRAM
	Chipset	Intel E7520 chipset with 800MHz Front Side Bus
	On-board Network Controller	Embedded NC7782 Dual Port Gigabit NIC
	Storage Controller	Smart Array 6i Plus Controller with 128MB BBWC (integrated on system board)
	Hard Drives	Four 300GB 1" Ultra320 10K RPM, configured as RAID1+0
	Optical Drive	DVD-ROM
	Diskette Drive	Standard
	Remote Management	iLO Port with Advance License Pack Included

Product Configuration

EFS DL380-5010 WAN Accelerator AE357A	Form Factor	Rack (2U), (3.5-inch)
	WAN Capacity	45 Mbps
	Disk Storage	512GB SDR cache; 210GB PFS capacity
	Optimized TCP Connections	4500 with PFS disabled; 2200 with PFS enabled (140 PFS connections)
	Processors	Intel Xeon Processor 3.4 GHz/ 800MHz FSB w/ 1MB L2 cache
	Memory	4 GB 2-way interleaved PC2-3200R 400MHz DDR2 SDRAM
	Chipset	Intel E7520 chipset with 800MHz Front Side Bus
	On-board Network Controller	Embedded NC7782 Dual Port Gigabit NIC
	Storage Controller	Smart Array 6i Plus Controller with 128MB BBWC (integrated on system board)
	Hard Drives	Six 300GB 1" Ultra320 10K RPM, configured as RAID1+0
	Optical Drive	DVD-ROM
	Diskette Drive	Standard
	Remote Management	iLO Port with Advance License Pack Included

EFS DL320-M25 WAN Accelerator Manager AG424A	Form Factor	Rack (1U), (1.70 in/4.45 cm)
	Maximum Number of WAN Accelerator Appliances Managed	25 (Optional license upgrades can increase maximum number of units managed up to 500)
	Manager Version	WAN Accelerator Manager 8000
	Disk Storage	80GB
	Processor	Intel Pentium D Processor 940- 3.2GHz dual-core w/ 2MBx2 L2 cache
	Memory	1 GB Advanced ECC PC2-4200 UB DDR2 SDRAM DIMM Memory
	Chipset	Intel E7230 chipset with 800MHz Front Side Bus
	On-board Network Controller	Embedded NC324i Dual Port 10/100/1000T Gigabit network adapter
	Storage Controller	Intel® 82801GR Integrated Serial ATA Host Controller
	Hard Drives	One 80GB SATA
	Optical Drive	DVD-ROM
	Diskette Drive	Standard
	Remote Management	iLO2 Port with Advance License Pack Included
	Web Browser Support	Any browser that supports a color display (tested with Mozilla and Internet Explorer)

Product Configuration

Step 2 - Select fail-through network controller

All HP EFS WAN Accelerator WAN-to-LAN bypass network controllers feature the ability to fail-to-wire in the event of a software or hardware failure, ensuring no loss in network connectivity.

- A minimum quantity of one bypass NIC must be configured for all base models except AG424A.
- Only one type of network controller allowed per appliance.
- DL320-based models accept only a single NIC.
- DL380-based models accept up to three N4c NICs, or up to two N2f or N2c NICs.
- All network controllers include a 12-month hardware warranty.

HP EFS N4c WAN Accelerator 4-port NIC

Option

- Quad gigabit Ethernet copper (1000TX) fail-through network controller
- Single NIC supported on DL320-based models; up to three supported on DL380-based models

HP EFS N2f WAN Accelerator 2-port NIC

Option

- Dual gigabit Ethernet fiber (1000SX) fail-through network controller
- Single NIC supported on DL320-based models; up to two supported on DL380-based models

HP EFS N2c WAN Accelerator 2-port NIC

Option

- Dual gigabit Ethernet copper (1000TX) fail-through network controller
- Single NIC supported on DL320-based models; up to two supported on DL380-based models

EFS WAN Accelerator NIC upgrade kits

All HP EFS WAN Accelerator NIC upgrade kits include a single bypass network interface card designed to fail-to-wire in the event of a software or hardware failure, ensuring no loss in network connectivity.

- Can replace or augment factory-integrated fail-through NIC installations
- Require EFS WAN Accelerator v2.1 (or higher) software
- Only one type of network controller allowed per appliance.

HP EFS N4c WAN Accelerator 4-port NIC upgrade kit

AE497A

- 4-port gigabit Ethernet copper (1000TX) fail-through NIC
- Supports redundant WAN connections
- DL320-based models support one N4c NIC; DL380-based models support up to three N4c NICs

HP EFS N2f WAN Accelerator 2-port NIC upgrade kit

AE498A

- 2-port gigabit Ethernet fiber (1000SX) fail-through NIC
- DL320-based models support one N2f NIC; DL380-based models support up to two N2f NICs

HP EFS N2c WAN Accelerator 2-port NIC upgrade kit

AE499A

- 2-port gigabit Ethernet copper (1000TX) fail-through NIC
- DL320-based models support one N2c NIC; DL380-based models support up to two N2c NICs

Product Configuration

EFS WAN Accelerator Manager LTU Upgrades	HP EFS M50 WAN Accelerator Manager LTU	AE362A
	<ul style="list-style-type: none"> • LTU upgrade for AG424A: increases maximum number of WAN Accelerator appliances managed from 25 to 50 	
	HP EFS M100 WAN Accelerator Manager LTU	AE363A
	<ul style="list-style-type: none"> • LTU upgrade for AG424A with AE362A: increases maximum number of WAN Accelerator appliances managed from 50 to 100 	
	HP EFS M200 WAN Accelerator Manager LTU	AE364A
	<ul style="list-style-type: none"> • LTU upgrade for AG424A with AE362A & AE363A: increases maximum number of WAN Accelerator appliances managed from 100 to 200 	
	HP EFS M500 WAN Accelerator Manager LTU	AE365A
	<ul style="list-style-type: none"> • LTU upgrade for AG424A with AE362A, AE363A, and AE364A: increases maximum number of WAN Accelerator appliances managed from 200 to 500 	

Step 3 - Order Optional Service Care Packs

Service Care Packs or warranty upgrades enhance the base hardware warranty provided with HP EFS WAN Accelerator products. The Care Packs provide support for product software and operating system with extended hours of coverage and reduced response time. And Care Packs allow the customer to budget fixed cost support rather than variable costs that include parts and labor.

Note that the standard HP warranty ensures software media will be free of physical defect for a period of 90 days from delivery. The HP warranty does not provide any O/S or software support for the product beyond a replacement copy. For support of software, including operating system, the customer will be paying "Time & Material" charges unless there is a support contract or service Care Pack in place.

However, HP EFS WAN Accelerator products all come with a full year of 24 hours by 7 days software advisory and remedial software telephone support, new version license rights, and media and documentation distribution service. Additional years of service are available-contact your HP representative or authorized reseller for details.

Technical Specifications (DL320-520, DL320-1020, DL320-2020, and DL320-M25)

System Unit	Dimensions (HxWxD)	1.70 x 16.78 x 24.0 in (4.32 x 42.62 x 60.96 cm)	
	Weight (no drives installed)	24.0 lb (10.91 kg)	
	Weight (fully configured with two hard drives, four DIMM modules, and a PCI expansion board)	27.0 lb (12.27 kg)	
	Input Requirements	Range Line Voltage	90 to 264 VAC
		Nominal Line Voltage	100 to 120 VAC/220 to 240 VAC
		Rated Input Current	6 A (100 to 120 VAC) to 3 A (200 to 240 VAC)
		Rated Input Frequency	47 to 63 Hz
		Rated Input Power	@ 115V input, Rated input power = 486W (assume output wattage=350W) @ 230V input, Rated input power = 479W (assume output wattage=350W)
		Power Supply Output Power	Steady State Power
			NOTE: 1. +3.3V and +5V total O/P power 130W Maximum. 2. +3.3V, +5V and +12V total O/P power 324W Maximum.
Environmental Operating	Operating	Ambient Temperature	50° to 95° F (10° to 35° C)
		Temperature Derating	1.8° F per 1000 ft to 10,000 ft (1° C per 300 m to 3000 m)
		Relative Humidity	10% to 90% (non-condensing)
		Maximum wet bulb temperature	82° F (28° C)
	Non-operating Storage	Temperature	-22° to 140° F (-30 to 60° C)
		Relative Humidity	5% to 95% (non-condensing)
Maximum wet bulb temperature		102° F (38.7° C)	
Non-operating Shipping	Temperature	-22° to 140° F (-30 to 60° C)	
	Relative Humidity	5% to 95% (non-condensing)	
	Maximum wet bulb temperature	102° F (38.7° C)	

Technical Specifications (DL320-520, DL320-1020, DL320-2020, and DL320-M25)

Acoustic Noise	Idle at 23 degree C ambient (Fixed Disk Drives Spinning)	L WAd (BELS)	=6.4
	Operating (Random Seeks to Fixed Disks)	Bystander L pAm (dBA)	=47
		L WAd (BELS)	6.4
		Bystander L pAm (dBA)	47

Serial ATA Hard Drives	HP 80GB 1.5G SATA 7.2K 3.5" HDD	Capacity	80,000 MB		
		Height	1.028 in (2.611 cm)		
		Width	4.0 in (10.16 cm)		
		Interface	Serial ATA		
		Transfer Rate Synchronous (Maximum)	1.5 Gb/s		
		Seek Time (typical reads, including settling)	Single Track	0.9 ms	
			Average	9.0 ms	
			Full-Stroke	17.0 ms	
		Physical Configuration	Rotational Speed	7,200 rpm	
			Bytes/Sector	512	
	Logical Blocks	156,301,488			
Operating Temperature	41° to 131° F (5° to 55° C)				

Power Supply	Input voltage specifications	Rated input voltage	100 VAC to 240 VAC		
		Input Specifications	Rated input line	90 VAC to 264VAC	
			Frequency range	47 to 63 Hz	
			Rated input power	@ 115V input, Rated input power = 486W (assume output wattage=350W) @ 230V input, Rated input power = 479W (assume output wattage=350W)	
		Rated input current	6 A, 3 A (110 V, 220 V)		
		Steady state power	450W (rated)		
	BTU Rating	1710 BTU/hr			
	Ambient temperature range	Operating	50° to 118° F (10° to 48° C)		
		Non-operating	-40° to 158° F (-40° to 70° C)		
	Relative humidity (non-condensing)	Operating	55% to 85%		
		Non-operating	5% to 95%		
	Dielectric voltage withstand	Input to output	1800 VAC/minute		
		Input to ground	1800 VAC/minute		

Technical Specifications (DL320-520, DL320-1020, DL320-2020, and DL320-M25)

Maximum Wet Bulb Temperature 41.3C

Embedded NC324i PCI Express Dual Port NIC	Network Interface	10Base-T/ 100Base-TX/ 1000Base-TX		
	Compatibility	IEEE 802.3 10Base-T IEEE 802.3ab 1000Base-T IEEE 802.3u 100Base-TX		
	Data Transfer Method	Four lane (x4), 100MHz PCI Express Reference Clock		
	Network Transfer Rate	10Base-T (Half-Duplex)	10 Mb/s	
		10Base-T (Full-Duplex)	20 Mb/s	
		100Base-TX (Half-Duplex)	100 Mb/s	
		100Base-TX (Full-Duplex)	200 Mb/s	
		1000Base-TX (Half-Duplex)	1000Mb/s	
		1000Base-TX (Full-Duplex)	2000Mb/s	
	Connector	RJ-45		
Cable Support	10Base-T	Categories 3, 4 or 5 UTP; up to 328 ft (100 m)		
	10/100/1000Base-TX	Category 5 UTP; up to 328 ft (100 m)		

Integrated Serial ATA Controller	Transfer rate synchronous (maximum)	150 MB/s per channel; 300MB/s in RAID 0 pair	
	Protocol	Serial ATA	
	Drive support	HP Universal Serial ATA	
	Data transfer modes	ATA data-transfer modes supported	
		SATA 1.0, SATA II	
		PIO modes 0-4 Multiword DMA modes 0-2 Ultra DMA modes 0-6	
	RAID levels supported	0, 1	
Feature	Supports Warranty of SATA Hard Drives Supports multiple logical volumes Setup through ROM based Array Configuration Utility Installation scripting support		

Technical Specifications (DL380-3010 and DL380-5010)

System Unit Rack	Dimensions (HxWxD)	3.38 x 17.54 x 26.01 in (8.59 x 44.54 x 66.07 cm)	
	Weight	Maximum	60 lb (27.22 kg)
		No drives	47.18 lb (20.41 kg)
Input Requirements	Rated Input Voltage	100 to 132 VAC/200 to 240 VAC	
	Rated Input Current	7.5A (100V) to 3.8A (200V)	
	Rated Input Frequency	50 to 60 Hz	
	Rated Input Power	635W	
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 G4 - Click on: "Power Calculator" link. (You may need to scroll down to see it.)		
SCSI Connectors	One external VHDCI connector		
Power Supply Output Power (per power supply)	Rated Steady-State Power	575W	
	Maximum Peak Power	575W	
Temperature Range <i>NOTE: All temperature ratings shown are for sea level. An altitude derating of 1.8 FR per 1000 ft (1 Cj per 300 m) to 19,000 ft (3048 m) is applicable. No direct sunlight allowed.</i>	Operating	50° to 95° F (10° to 35° C)	
	Shipping	-40° to 158° F (-40° to 70° C)	
Relative Humidity (non-condensing) <i>NOTE: Storage maximum humidity of 95% is based on a maximum temperature of 113°F (45°C). Altitude maximum for storage corresponds to a pressure minimum of 70 KPa.</i>	Operating	10% to 90%	
	Non-operating	5% to 95%	
Maximum Wet Bulb Temperature	82.4° F (28° C)		
Acoustic Noise	Idle Minimum (Fixed Disk Drives Spinning)		
	L WAd (BELS)	7.4	
	L pAm (dBA)	58	
	Operating Minimum (Random Seeks to Fixed Disks)		
	L WAd (BELS)	7.4	
	L pAm (dBA)	58	

Technical Specifications (DL380-3010 and DL380-5010)

Smart Array 6i Controller (integrated on system board)	Data Compatible with all Smart Array Controllers	Yes
	Instant Upgrades to other Smart Array Controllers	Yes
	Consistent Software Manageability Tools	Yes
	PCI-X Bus	64-bit up to 133 (integrated on system board)
	PCI-X Peak Data Transfer Rate	800 MB/s
	SCSI Protocols Supported	Ultra 320, Ultra3, Ultra2
	SCSI Peak Data Transfer Rate	320 MB/s per channel NOTE: For ProLiant servers having TWO internal drive bays on separate SCSI ports: SCSI Peak Data Transfer Rate is 320 MB/s; 160 MB/s per channel and Channels is 2
	Channels	2 NOTE: For ProLiant servers having two internal drive bays on separate SCSI ports: SCSI Peak Data Transfer Rate is 320 MB/s; 160 MB/s per channel and Channels is 2.
	SCSI Ports (external/internal)	0/2 NOTE: For ProLiant servers having two internal drive bays on separate SCSI ports: SCSI Peak Data Transfer Rate is 320 MB/s; 160 MB/s per channel and Channels is 2.
	Drives Supported (maximum)	Maximum = total number of drives NOTE: True Maximum is 14HDs per channel with up to 2TB per logical volume.
	Cache	64 MB Read Cache
	Battery-Backed Write Cache	Yes, with installation of Battery-Backed Write Cache Enabler, up to 128MB
	RAID Support	0, 1, 1+0, 5
	Logical Drives (maximum)	Maximum = total number of drives
	Online Configuration	Yes
	Online Capacity Expansion	Yes
	Logical Drive Capacity Extension	Yes
	Online Stripe Size Migration	Yes
	Online RAID Level Migration	Yes
	Online Spare Support	Yes
	Automatic Data Recovery	Yes
	Drive Roaming	Yes
	Redundant Controllers	No

Technical Specifications (DL380-3010 and DL380-5010)

Embedded NC7782 Dual Network Interface Port Gigabit NIC	10Base-T/ 100Base-TX/ 1000Base-TX	
Compatibility	IEEE 802.3 10Base-T IEEE 802.3u 100Base-TX IEEE 802.3ab 1000Base-T	
Data Transfer Method	64-bit/100MHz PCI-X	
Network Transfer Rate	10Base-T (Half-Duplex)	10 Mb/s
	10Base-T (Full-Duplex)	20 Mb/s
	100Base-TX (Half-Duplex)	100 Mb/s
	100Base-TX (Full-Duplex)	200 Mb/s
	1000Base-TX (Half-Duplex)	1000Mb/s
	1000Base-TX (Full-Duplex)	2000Mb/s
Connector	RJ-45	
Cable Support	10Base-T	Categories 3, 4 or 5 UTP; up to 328 ft (100 m)
	10/100/1000Base-TX	Category 5 UTP; up to 328 ft (100 m)

Technical Specifications (Fail-through Network Controllers)

Fail-Through Intel 82546 Dual Port Gigabit Network Controller (model N2c)	Network Interface	10Base-T/ 100Base-TX/ 1000Base-TX	
	Compatibility	IEEE 802.3 10Base-T IEEE 802.3ab 1000Base-T IEEE 802.3u 100Base-TX	
	Data Transfer Method	64-bit/133MHz PCI-X	
	Network Transfer Rate	10Base-T (Half-Duplex)	10 Mb/s
		10Base-T (Full-Duplex)	20 Mb/s
		100Base-TX (Half-Duplex)	100 Mb/s
		100Base-TX (Full-Duplex)	200 Mb/s
		1000Base-TX (Half-Duplex)	1000Mb/s
		1000Base-TX (Full-Duplex)	2000Mb/s
	Connectors	2 x RJ-45	Supports one WAN-to-LAN connection
Cable Support	10Base-T	Categories 3, 4 or 5 UTP; up to 328 ft (100 m)	
	10/100/1000Base-TX	Category 5 UTP; up to 328 ft (100 m)	
Fail-through	Bypass capability during system power-off or software halt	Preserves WAN connection regardless of EFS WAN Accelerator appliance state	
Fail-Through Quad-Port Gigabit Network Controller (model N4c)	Network Interface	10Base-T/ 100Base-TX/ 1000Base-TX	
	Compatibility	IEEE 802.3 10Base-T IEEE 802.3ab 1000Base-T IEEE 802.3u 100Base-TX	
	Data Transfer Method	64-bit/133MHz PCI-X	
	Network Transfer Rate	10Base-T (Half-Duplex)	10 Mb/s
		10Base-T (Full-Duplex)	20 Mb/s
		100Base-TX (Half-Duplex)	100 Mb/s
		100Base-TX (Full-Duplex)	200 Mb/s
		1000Base-TX (Half-Duplex)	1000Mb/s
		1000Base-TX (Full-Duplex)	2000Mb/s
	Connectors	2 x RJ-45	Supports one WAN-to-LAN connection

Technical Specifications (Fail-through Network Controllers)

Fail-Through Dual Port Gigabit 1000SX Fiber Network Controller (model N2f)	Cable Support	10Base-T 10/100/1000Base-TX	Categories 3, 4 or 5 UTP; up to 328 ft (100 m) Category 5 UTP; up to 328 ft (100 m)
	Fail-through	Bypass capability during system power-off or software halt	Preserves WAN connection regardless of EFS WAN Accelerator appliance state
	Network Interface	1000Base-SX	
	Compatibility	IEEE 802.3z 1000Base-SX	
	Data Transfer Method	64-bit/133MHz PCI-X	
		1000Base-SX (Half-Duplex)	1000Mb/s
		1000Base-SX (Full-Duplex)	2000Mb/s
	Connector	2 x shortwave fiber connections (LC)	Supports one WAN-to-LAN connection
	Cable Support	Shortwave fiber LC	
	Fail-through	Bypass capability during system power-off or software halt	Preserves WAN connection regardless of EFS WAN Accelerator appliance state

Power Specifications (DL380-3010 and DL380-5010 only)

Models with Hot Plug Power (DL380-3010, DL380-5010)

Part Number	321632-001
Spare Kit	355892-B21
Operational Input Voltage Range (V rms)	90 – 264
Frequency Range (Nominal) (Hz)	47 - 63 (50/60)

Nominal Input Voltage (Vrms)	100	115	208	220	230	240
Max Rated Output Wattage Rating	575	575	575	575	575	575
Nominal Input Current (A rms)	7.4	6.4	3.4	3.2	3.1	2.9
Max Rated Input Wattage Rating (Watts)	728	719	701	693	693	693
Max. Rated VA (Volt-Amp)	743	733	716	707	707	707
Efficiency (%)	79	80	82	83	83	83
Power Factor	0.98	0.98	0.98	0.98	0.98	0.98
Leakage Current (mA)	0.31	0.36	0.65	0.69	0.72	0.75
Maximum Inrush Current (A peak)	35	35	35	35	35	35
Maximum Inrush Current duration (milliseconds)	2 - 3	2 - 3	2 - 3	2 - 3	2 - 3	2 - 3

NOTES:

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 - Click on: "ProLiant Servers"
 - Click on the Server of interest. Example: DL380 G4
 - Click on: "Power Calculator" link. (You may need to scroll down to see it)

Power Cords (Nema 5-15P to IEC320-C13)

Country	Standard Power Cord Part Number	Option Power Cord Part Number
JPN	139867-006	
US	163719-002	
APD	142259-001	100613-003
EURO	100614-003	100613-003
PRC	139867-006	100613-003

Power Cords (IEC320-C13 to IEC320-C14)

Country	Standard Power Cord Part Number	Option Power Cord Part Number
Worldwide	142259-001	142258-B21

NOTES:

- 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 G4

Power Specifications (DL380-3010 and DL380-5010 only)

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