

Overview

Designed for the c-Class BladeSystem enclosure, the HP 1:10Gb Ethernet BL-c Switch delivers sixteen 1Gb downlinks, four 1Gb uplinks along with 3 10Gb uplinks (CX4, XFP) and a 10Gb cross-connect in a single bay form factor. A robust set of industry standard Ethernet Layer 2 switching and Layer 3 routing functions, QOS, security and High Availability features round out this extremely flexible and capable switch. The HP 1:10Gb Ethernet BL-c Switch dramatically reduces cabling, power and cooling requirements compared to stand-alone switches, while providing over 34Gb of uplink bandwidth to handle the most demanding applications. A combination of excellent performance which includes low latency, wire speed performance for Layer 2 and Layer 3 packets and low power consumption makes the HP 1:10Gb Ethernet BL-c Switch an ideal solution for any large data center environment.

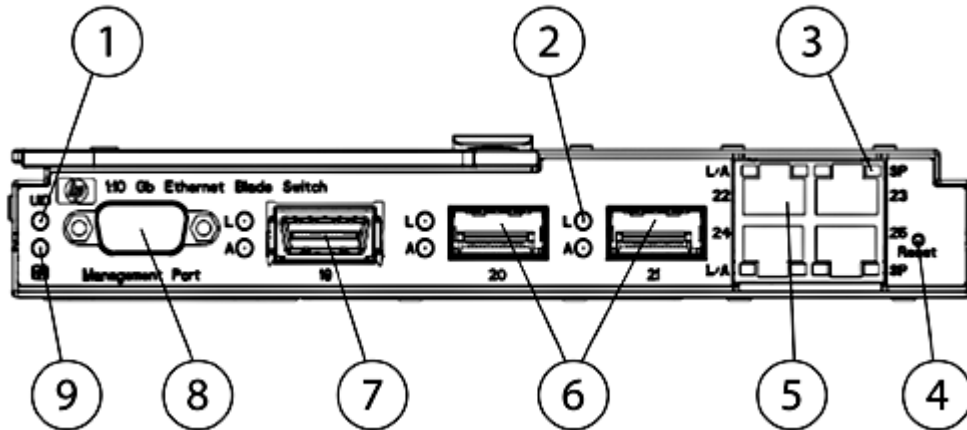


Figure 1 HP 1:10Gb Ethernet BL-c Switch Front Bezel

- | | |
|---------------------------|--------------------------------|
| 1. UID LED | 6. 10Gb XFP Module Cages |
| 2. Link Activity LEDs | 7. 10Gb CX4 Uplink Port |
| 3. Speed LEDs | 8. DB-9 Serial Management Port |
| 4. Reset Button | 9. Health LED |
| 5. RJ-45 1Gb Uplink Ports | |

What's New

- Support for new HP ProLiant G7 server blades

Overview

At A Glance

Performance:

- Non blocking architecture
- Wire speed switching on all four 10/100/1000T RJ-45 uplink ports
- Wire speed switching on all three 10Gb uplink ports
- Wire speed switching on all sixteen 1Gb server ports
- 178.5 millions pps (full duplex)
- Greater than 1:1 downlink to uplink bandwidth ratio
- Store and Forward Switching

Management:

- Offers simplified management through two CLI options - Alteon or iSCLI
- Can be managed through HTTP, HTTPS, SNMP, and Blade Network's BladeHarmony Manager

Security:

- Robust ACLs provide maximum security.
- Port security based on 802.1x limits access to unwanted users
- Secured access through SSH and HTTPS (SSL)
- Offers RADIUS Authentication
- Traffic can be forwarded between VLANs (802.1Q) through IP forwarding-preventing traffic from being exposed unnecessarily to the outside network
- Offers TACACS+ Authentication



Models

Models

HP 1:10Gb Ethernet BL-c Switch

438031-B21



Standard Features

Compatibility

HP ProLiant Server Blades HP ProLiant BL2x220c G7
HP ProLiant BL2x220c G5
HP ProLiant BL260c G5
HP ProLiant BL280c G6
HP ProLiant BL460c G7
HP ProLiant BL460c G6
HP ProLiant BL460c G5
HP ProLiant BL460c
HP ProLiant BL465c G7
HP ProLiant BL465 G6
HP ProLiant BL465 G5
HP ProLiant BL465c
HP ProLiant BL480c
HP ProLiant BL490c G7
HP ProLiant BL490c G6
HP ProLiant BL495c G6
HP ProLiant BL495c G5
HP ProLiant BL680c
HP ProLiant BL685c G7
HP ProLiant BL685 G6
HP ProLiant BL685 G5
HP ProLiant BL685c

NOTE: Some servers listed above may be discontinued.

HP Integrity Server Blades HP ProLiant BL860c
HP ProLiant BL860c i2
HP ProLiant BL870c
HP ProLiant BL870c i2
HP ProLiant BL890c i2

ProLiant BL c-Class Server Blade Enclosures HP BladeSystem c3000 Enclosure
HP BladeSystem c7000 Enclosure

Required Network Cabling	10Base-T	Categories 3, 4 or 5 UTP (100 meters) EIA/TIA-568 100-ohm STP (100 meters)
	100Base-TX	Category 5 UTP (100 meters) EIA/TIA-568 100-ohm STP (100 meters)
	1000Base-T	Category 5 UTP (100 meters) EIA/TIA-568 100-ohm STP (100 meters)
	10Gb	Multimode fiber cable; 62.5/125 or 50/125 microns Singlemode fiber cable: 9/125 micron The following CX4 cable lengths have been qualified and can be purchased directly from HP. Please see the Related Options section of this QuickSpecs. HP BLadeSystem c-Class.5m 10-GbE CX4 Cable HP BLadeSystem c-Class 1m 10-GbE CX4 Cable HP BLadeSystem c-Class 15m 10-GbE CX4 Cable



Service and Support

Service and Support

HP Care Pack Services: Packaged server and storage services for increased uptime, productivity and ROI

When you buy HP server and storage products and solutions, it's also a good time to think about what levels of support you may need. Our portfolio of service options reduce deployment and management worries while helping you get the most out of your server and storage investments. We take a holistic approach to your environment, bridging servers, blades, storage, software and network infrastructures with our packaged HP Care Pack Services for servers and storage.

Protect your business beyond warranty

When it comes to robustness and reliability, standard computing equipment warranties have matured along with technology. Good news that can also create problems stemming from depending on standard warranties designed to only protect against product defects and some downtime causes. Using a standard approach to warranty uplifts, such as HP Care Pack Services, helps reduce downtime risks and provides operational consistency for mission-critical and standard business computing.

HP Care Pack Services: Upgrading or extending standard server and storage warranties cost effectively

HP Care Pack Services offer a standard reactive hardware and software support services suite sold separately, or combined with our Support Plus and Support Plus 24 services. The portfolio also provides a combination of integrated proactive and reactive services, such as Proactive 24 Service and Critical Service. In addition with HP Proactive Select, you can acquire the specific proactive constancy and technical services. HP Proactive Select menu offers a broad set of service options that you can mix and match depending on your specific requirements. Proactive service options include offers for server, storage, network, SAN device, software, environment and education services.

HP server and storage lifecycle support services offers a full spectrum of customer care-from technology support to complex migrations to complete managed services. HP Factory Express provides customization, integration and deployment services for turnkey solutions. HP Education Services offer flexible, comprehensive training on to help your IT staff get the most out of your server and storage investments. HP Financial solutions extend innovative financing and cost-effective asset management programs-from purchase to equipment retirement.

Learn more: www.hp.com/services/servers and www.hp.com/services/storage

NOTE: Care Pack Services availability may vary by product and country.

HP Care Pack Services are sold by HP and HP Authorized Service Partners:

- Services for customers purchasing from HP or an enterprise reseller are quoted using HP order configuration tools.
- Customers purchasing from a commercial reseller can find HP Care Pack Services at <http://www.hp.com/go/lookuptool>



Service and Support

Recommended HP Care Pack Services for optimal satisfaction with your HP product

Recommended Services **Hardware Options Support**

HP Care Packs provide support for all HP-branded hardware options qualified for inclusion in your server or storage solution. Any additional HP-qualified options installed within the server are covered at the same service level and for the same period as the server and no additional cost.

- Help improve or maintain system uptime
- Convenient onsite support
- Committed response time

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5982-6547EEE>

3-Year HP Hardware Support Onsite Service, 4-hour response, 24x7

Provides you with rapid remote support and if required an HP authorized representative who will arrive on site any time and day of the year to begin hardware maintenance service within 4 hours of the service request being logged.

This service provides a trained HP service specialist to perform an installation that meets HP quality standards, for:

- Help improve or maintain system uptime
- Convenient onsite support
- Committed response time

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5982-6547EEE>

HP Installation and Startup of HP ProLiant Servers

Provides for the installation of your new HP ProLiant server and operating system to assist you in bringing your new HP ProLiant server and operating system into operation in a timely and professional manner.

This service provides a trained HP service specialist to perform an installation that meets HP quality standards, for:

- Delivery of the service at a mutually scheduled time convenient to your organization
- Availability of an HP service specialist to answer basic questions during the onsite delivery of this service
- Custom installation as detailed in "Delivery specifications" or in a Statement of Work (SOW)
- Verification prior to installation that all service prerequisites are met

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5982-7572ENN.pdf>



Service and Support

Optional HP Care Pack Services that will enhance your HP product experience

Optional Services

3-Year HP Hardware Support Onsite Call-to-Repair (CTR) Service, 6- or 24-hour

As an alternative to our recommended support level, for customers who need committed call-to-repair for server hardware.

Provides your IT manager with a team of support specialists who will quickly begin troubleshooting the system to help return the hardware to operating condition within 6 or 24 hours of the initial service request to the HP Global Solution Center.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5982-6547EN.pdf>

3-Year HP Support Plus 24

As an alternative to our recommended support level, for customers who need access to responsive 24x7 hardware and software support plus software updates on HP and selected third party products:

For a higher return on your server and storage technology, our 3-year combined reactive support service delivers integrated onsite hardware/software support services available 24x7x365, including access to HP technical resources, 4-hour response onsite hardware support and software updates.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-6638EEE>

HP Proactive Select Service

Customer needs on demand access to consulting, technical proactive services and education courses

Provides a flexible way to purchase HP best-in-class consultancy and technical services. You can buy Proactive Select Service Credits when you purchase your hardware and then use the credits over the next 12 months.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA2-3842ENN>

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>

HP Insight Remote Support software delivers secure remote support for your HP Servers and Storage, 24



Service and Support

X 7, so you can spend less time solving problems and more time focused on your business. You can have your systems remotely monitored for hardware failure using secure technology that's been proven at thousands of companies around the world. In many cases, you can avoid problems before they occur.

Customer Technical Training

In today's cost-conscious business environment, IT professionals, developers, consultants and users face an interesting challenge: how to keep up with the latest technologies and expand important skills while delivering profitable results on current projects. To help address this challenge, HP offers innovative training solutions that help keep you up-to-date on virtualization, server, storage, Insight Control, Citrix, Microsoft® and open source/Linux-related topics-while spending less time away from business-critical activities.

HP Services Awards

HP Technology Services continues to be recognized for service and support excellence by customers, partners, industry organizations and publications around the world. Recent honors and award reflect our services team's dedications, technical expertise, professionalism and uncompromising commitment to customer satisfaction.

Additional Services Information

To learn more on HP ProLiant servers, HP BladeSystem servers and HP storage products, please contact your HP sales representative or HP Authorized Channel Partner. Or visit: www.hp.com/services/proliant or www.hp.com/services/bladesystem or <http://www.hp.com/hps/storage>



Related Options

HP 1-10GbE Advanced Software	<p>HP 1:10 GbE BLc Advanced Functionality Software</p> <p>NOTE: Provides additional feature functionality such as Hot Links, PVLan Edge, IGMPv3 Snooping and VMready. Purchase of this SW entitles users to three years of additional software upgrades as made available. This option may be purchased at any time.</p>	485193-B21
HP 10-GbE CX4 Cables	<p>HP BLadeSystem c-Class .5m 10-GbE CX4 Cable</p> <p>HP BLadeSystem c-Class 1m 10-GbE CX4 Cable</p> <p>HP BLadeSystem c-Class 1.5m 10-GbE CX4 Cable</p>	<p>444477-B21</p> <p>444477-B22</p> <p>444477-B27</p>
XFP Options	<p>HP SR XFP Option Kit</p> <p>NOTE: Each kit contains a single 850nm SR XFP fiber module. Only HP supplied XFP modules will operate in the HP 1:10Gb Ethernet BL-c Switch.</p> <p>HP LR XFP Option Kit</p> <p>NOTE: Each kit contains a single 1310nm LR XFP fiber module. Only HP supplied XFP modules will operate in the HP 1:10Gb Ethernet BL-c Switch.</p>	<p>443756 B21</p> <p>443757-B21</p>
Service and Support Offerings	<p>NOTE: The HP Care Pack service part numbers below for ProLiant BL c-Class server blades, cover the server blade and all HP branded hardware options qualified for the server, purchased at the same time or afterwards, internal to the server.</p> <p>Hardware Services On-site Service</p> <p>4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic</p> <p>4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic</p> <p>6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic</p> <p>Support Plus 24</p> <p>Onsite Hardware support 24x7, 4-Hour response and Microsoft O/S Software Technical support offsite, onsite at HP's discretion, 24x7 2-Hour response time including HP holidays, Electronic</p> <p>NOTE: HP Care Pack services for the c7000 and c3000 Enclosure cover the enclosure, power supplies and fans. HP qualified rack options are covered by these services when installed within the same rack. HP supported c-Class enclosure devices including pass thru, Ethernet interconnect and virtual connect modules are also covered by the c7000 and c3000 enclosure Care Pack services.</p> <p>NOTE: SAN/Fabric switches for the HP c-Class BladeSystem are not covered under the c7000 and c3000 enclosure Care Packs, SAN/Fabric switches carry separate Care Packs. SAN/Fabric Switch Care Pack service level support should always be uplifted to match existing storage or server service level.</p> <p>Hardware Support Services On-site Service</p> <p>Next Business Day On-site Service, 5-Day x 9-Hour Coverage, 3 Years, Electronic -</p> <p>NOTE: Uplifts the Ethernet devices to the same level of warranty as the c-class enclosure</p> <p>4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic</p> <p>4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic</p> <p>6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic</p> <p>Installation & Start-up Services</p> <p>HP BladeSystem c-Class Infrastructure Installation and Startup Service, Electronic</p> <p>HP BladeSystem Enhanced Network Installation and Startup Service, Electronic</p> <p>ProLiant BL c-Class Blade Server Hardware Installation, Electronic</p> <p>ProLiant BL c-Class Enclosure and Server Blade Hardware Installation, Electronic</p>	<p>UE458E</p> <p>UE459E</p> <p>UE460E</p> <p>UE473E</p> <p>UE477E</p> <p>UE478E</p> <p>UE479E</p> <p>UE480E</p> <p>UE602E</p> <p>UE603E</p> <p>UE493E</p> <p>UE494E</p>



Related Options

NOTE: For more information, customer/resellers can contact
<http://www.hp.com/services/blade-system-services>



Technical Specifications

Shipping Dimensions	Length	11.42 in (290 mm)	
	Width	14.49 in (368 mm)	
	Height	2.36 in (60 mm)	
Shipping Weight		2.0 kg (4.41 lbs)	
Product Specifications Hardware	Performance	34 Gbps external port bandwidth per BladeSystem enclosure (68 Gbps full duplex)	
		Forwarding rate 1.5 million pps per Gigabit port, (64-byte packets) and 14.8 million pps per 10 Gig port	
	Non-blocking, full-wire speed for all connections Auto-MDI/MDIX, auto-negotiation and auto-sensing with full-duplex support.		
	Forwarding Mode	Store and forward	
	MAC Addresses	Supports 16K MAC addresses per switch in a BladeSystem Enclosure	
	Forwarding Table Age Time	1 to 1,000,000 seconds (default: 300 seconds)	
	(Maximum age)		
	Jumbo Frame Support	9278 Byte	
	Multicast Groups	1000	
	Memory	256 MB Main, 64MB flash and 1MB packet buffer per interconnect switch	
Connectors and Cabling	Connector	4 RJ-45	
		2 10Gb XFP Module cages	
		1 10Gb CX4	
		1 DB-9 Management	
	Cable Support	FCC Class A	
		ICES-003 Class A	
		AS/NZS 3548 Class A	
		VCCI Class A	
Network Transfer Rate	10 Base-T (half-duplex)	10 Mbps	
	10 Base-T (full-duplex)	20 Mbps	
	100 Base-TX (half-duplex)	100 Mbps	
	100 Base-TX (full-duplex)	200 Mbps	
	1000 Base-TX (half and full-duplex)	2000 Mbps	
	10Gb (full duplex)	20000 Mbps	
Indicators	For the front panel Ethernet ports, there are 2 LEDs per port.		
		RJ-45 Port Speed LED	RJ-45 and 10 Gb Link/Activity LED
		Off 10 Mbps	Solid Green Link
		Green 100 Mbps	Blinking Activity
		Amber 1 Gbps	
Dimensions	Length	10.5 in (267.7 mm)	
	Width	7.5 in (192.79 mm)	
	Height	1.1 in (27.94 mm)	
Weight		1.7 kg (3.7 lbs.)	



Technical Specifications

Environmental Ranges	Temperature Range	
	Operating	50° to 95° F (10° to 35° C)
	Non-operating	-40° to 158° F (-40° to 70° C)
	Relative Humidity (non-condensing)	Operating 5% to 95%
Power Specification	Power Requirements	12VDC: 4.0A, 50 W maximum (per interconnect switch)

Product Specifications Software

Security Features	SSHV2, TACACS and TACACS+ VLANs can be configured to provide segregation for data - improving bandwidth, performance and limiting traffic to its designated domains. The Switch also provides secured access through SSH v2, protecting against IP spoofing as well as DNS spoofing. Support of HTTPS, RADIUS TACACS and TACACS+ enables users to meet their security requirements.
Spanning Tree Features	802.1d, 802.1w, 802.1s Industry standard Spanning Tree provides redundancy and the loop avoidance capabilities to keep the network not only up, but operating at peak performance. Based on the industry standard 802.1w, Rapid Spanning Tree Protocol (RSTP) offers fast convergence - reducing packet loss and downtime in high-availability and high resilient networks. Industry-standard based RSTP offers instant failover to secondary links in an unlikely event of primary link failure. This switch also offers Multiple Spanning Tree Protocol (MSTP; 802.1s) for seamless integration into networks running 802.1s. Multiple Spanning Tree enables networks to utilize individual uplinks for separate VLANs thus improving the overall performance of the network. Up to 32 Spanning Tree Groups (STGs) are supported.
Trunking Features	802.3ad Reduced downtime in an unlikely event of link failure by supporting link aggregation protocol. This link aggregation is compatible with Cisco Etherchannel® thus providing seamless integration into Cisco® based networks.
VLAN Features	Up to 1000 VLANs (802.1Q) can be configured to provide segregation for data - improving bandwidth, performance and limiting traffic to its designated domains.
Management Features	This switch provides multiple easy-to-use configuration and management options. For compatibility, the switch offers the same Alteon CLI as the GbE2 family of switches. This switch also uses an industry standard network administrator CLI (comparable to Cisco®). A Web-based management interface enables administrators to easily configure the most advanced features such as Rapid Spanning Tree, Uplink Failure Detection and SNMP management by pointing and clicking. The switch also enables sophisticated administrators to configure and manage the switch through SNMP. Full Support is provided for SNMP v1v2 and v3.
QoS Features	Data can be classified in different priority queues to ensure maximum bandwidth availability for time sensitive and mission critical traffic. Data can be prioritized based on 802.1p CoS and DSCP. Data can be easily reclassified from 802.1P to DSCP or from DSCP to



Technical Specifications

Layer 3 Features

802.1.

The HP 1:10Gb Ethernet BL-c Switch adheres to a strict queue mechanism to ensure important business-sensitive traffic is delivered ahead of other traffic.

- IP Forwarding enables traffic to be forwarded between VLANs without the need of an external router or Layer 3 switch. This reduces traffic in the core network by making Layer 3 routing decisions within the BladeSystem enclosure
- 256 IP interfaces
- 4096 ARP entries
- 2048 Dynamic Route entries
- Global default route
- Static routing support with 128 routing table entries
- Dynamic routing support with entries in routing table
- Dynamic Routing protocol
- RIP v1
- RIP v2
- OSPF
- VRRP(Virtual Router Redundancy Protocol) to maximize high availability in complex network environments
- VMready™ is a unique solution that enables the network to be Virtual Machine aware. The network can be configured and managed for 1000s of virtual ports (v-ports), rather than just a few physical ports.

VMready

With VMready, as VMs migrate across physical hosts, so do their network attributes. VMready allows you to manage virtual machines as they can be added, moved and removed while retaining the same ACLs, QoS and VLAN attributes. VMready allows for a "define once, use many" configuration that evolves as the server and network topologies evolve.

VMready works with all virtualization products, including VMware, Microsoft's Hyper-V, Xen and KVM, without modification of Virtual Machine Hypervisors or Guest operating systems.

NOTE: VMready requires the purchase Advanced Functionality Software package. Purchase of this SW entitles users to three years of additional software upgrades as made available. This option may be purchased at any time.



Technical Specifications

Standards Support

- Compliance
- IEEE 802.3
- 802.3u
- 802.3ab
- 802.1d
- 802.1p
- 802.3ac
- 802.3ad (Static), and 802.1Q
- 802.3x
- 802.1x
- SNMP v1 (RFC 1157)
- RMON v1 (RFC 1757) groups 1, 2, 3, and 9
- MIB-II (RFC 1213)
- Bridge MIB (RFC 1493)
- Interface Group MIB (RFC 2863)
- Ethernet MIB (RFC 1643)
- 802.1Q Extended Bridge MIB (RFC2674)
- Entity MIB (RFC 2037)
- SNMP Trap Convention (RFC 1215)
- Bridge Trap (RFC 1493)
- Remote Monitoring Traps (RFC 1757)
- and HP Enterprise Switch MIBs and Environmental Traps
- IGMP v1 (RFC 1112)
- IGMP v2 (RFC 2236)
- IGMP v3 (RFC 3376)
- SNTP (RFC 1361)
- Telnet (RFC 854)
- TFTP client (RFC 783)
- BootP client, (RFC 2132), and XModem
- QoS (RFC 2474 and RFC 2475)

The HP 1:10Gb Ethernet BL-c Switch uses the Differentiated Services (DiffServ) architecture to provide QoS functions. DiffServ is described in IETF RFCs 2474 and 2475.

Safety and Compliance	TUV to UL 60950-1, and CAN/CSA C22.2 No. 60950-1 and to EN 60950-1
Safety Certifications	CE Marking
	RoHS 5/6 compliant

Electromagnetic Emissions	FCC Part 15 Class A
Certifications FCC Part 15	EN 55022: 1998 (CISPR22)
Class A	EN 55024: 1998 (CISPR24)
	VCCI Class A
	AS/NZS 3548 Class A CE
	CNS 13438 Class A MIC
	MIC



Technical Specifications

Environment-friendly Products and Approach

End-of-life Management and Recycling

Hewlett-Packard offers end-of-life HP product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to <http://www.hp.com/go/green>. To recycle your product, please go to: <http://www.hp.com/go/green> or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.

The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: <http://www.hp.com/go/green>. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

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