

### Overview

Designed for the c-Class BladeSystem enclosure, the HP GbE2c Layer 2/3 Ethernet Blade Switch for c-Class BladeSystem (GbE2c L2/3) provides a full set of industry standard Gigabit Ethernet Layer 2 switching and layer 3 routing features, sixteen internal downlinks, five uplinks and two internal cross-connects in a single low cost blade switch. The GbE2c L2/3 switch is not only reliable but flexible as well, by providing both copper and optical 1Gb uplinks in the same module, making it one of the most cost effective switches on the market. The GbE2c L2/3 switch can operate in any Ethernet network environment and can be mixed with switches from any other vendor. By using this switch, datacenter managers can dramatically reduce cabling, power and cooling requirements compared to stand-alone switches and pass-thru modules, allowing them to realize the full cost saving benefits of the HP c-Class BladeSystem.

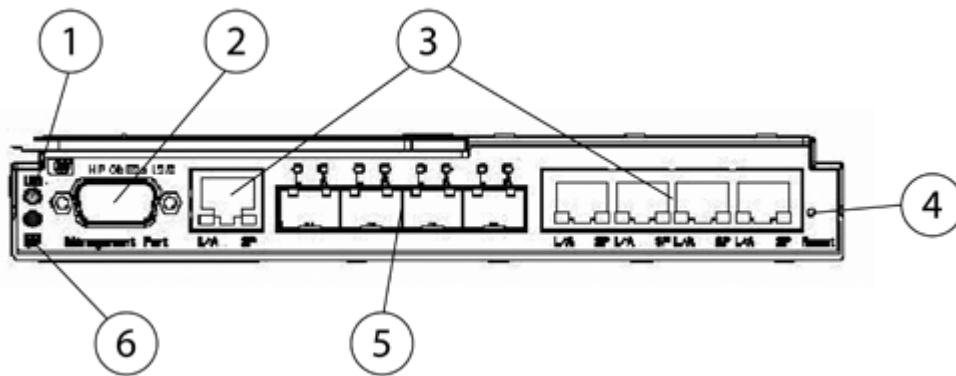


Figure 1 GbE2c Front Bezel

- |                                |  |
|--------------------------------|--|
| 1. UID LED                     | 4. Reset Button                                |
| 2. DB-9 Serial Management Port | 5. SFP module cages for optional Fiber Uplinks |
| 3. RJ-45 1Gb Uplink Ports      | 6. Health LED                                  |

### What's New

- Support for HP ProLiant Generation 7 blade servers

### At A Glance

#### Performance:

- Wire speed switching on all five 10/100/1000T uplink ports
- Wire speed switching on all sixteen 1Gb server ports
- 71 millions pps (full duplex)
- 16:5 downlink to uplink bandwidth ratio
- Store and Forward Switching

#### Management:

- Offers simplified management
- Can be managed through CLI, HTTP, SNMP
- iSCLI offers a Cisco® compatible CLI to reduce the learning curve.

#### Security:

- Robust ACLs provide maximum security

### Overview

- 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 to the outside network unnecessarily
- Offers TACACS+ Authentication

### Models

#### Models

HP GbE2c Layer2/3 Ethernet Blade Switch

438030-B21

### Standard Features

#### Compatibility

##### HP ProLiant Servers

HP ProLiant BL685c G7  
HP ProLiant BL685c G6  
HP ProLiant BL685c G5  
HP ProLiant BL680c G7  
HP ProLiant BL680c G5  
HP ProLiant BL660c Gen8  
HP ProLiant BL620c G7  
HP ProLiant BL495c G6  
HP ProLiant BL495c G5  
HP ProLiant BL490c G7  
HP ProLiant BL490c G6  
HP ProLiant BL465c Gen8  
HP ProLiant BL465c G7  
HP ProLiant BL465c G6  
HP ProLiant BL465c G5  
HP ProLiant BL460c Gen8  
HP ProLiant BL460c G7  
HP ProLiant BL460c G6  
HP ProLiant BL460c G5  
HP ProLiant BL460c  
HP ProLiant 420c Gen8  
HP ProLiant BL280c G6  
HP ProLiant BL260c G5  
HP ProLiant BL2x220c G7  
HP ProLiant BL2x220c G6  
HP ProLiant BL2x220c G5

**NOTE:** Some of the servers listed above may be discontinued.

##### HP Integrity Servers

HP Integrity BL860c  
HP Integrity BL860c i2  
HP Integrity BL860c i4  
HP Integrity BL870c  
HP Integrity BL870c i2  
HP Integrity BL870c i4  
HP Integrity BL890c i2  
HP Integrity BL890c i4

**NOTE:** Some servers listed above may be discontinued.

##### ProLiant BL c-Class

##### Server Blade Enclosures

HP BladeSystem c3000 Enclosure  
HP BladeSystem c7000 Enclosure

### Standard Features

#### 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)
1000Base-SX	50/125 $\mu$ m Multimode Fiber, 400 MHz/Km (500 meters) 50/125 $\mu$ m Multimode Fiber, 500 MHz/Km (550 meters) 62.5/125 $\mu$ m Multimode Fiber, 160 MHz/Km (220 meters) 62.5/125 $\mu$ m Multimode Fiber, 200 MHz/Km (275 meters)

### 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](http://www.hp.com/services/servers) and [www.hp.com/services/storage](http://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>

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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>

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



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### Service and Support

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.

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### 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.

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### 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.

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### 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](http://www.hp.com/services/proliant) or [www.hp.com/services/bladesystem](http://www.hp.com/services/bladesystem) or <http://www.hp.com/services/storage>

### Related Options

<b>HP GbE2c Advanced Software</b>	<p>HP GbE2c Layer 2/3 Ethernet Blade Switch Advanced Functionality Software Option  <b>NOTE:</b> Provides additional feature functionality such as Hot Links, PVLAN Edge and IGMPv3 Snooping. 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>	485192-B21
<b>GbE2c L 2/3 Option Kit</b>	<p>HP BLc GbE2c Layer 2/3 Fiber SFP Option Kit  <b>NOTE:</b> Each kit contains two SX SFP fiber modules. Only SFP modules with this part number will operate in the GbE2c Layer 2/3 Ethernet Blade Switch.</p>	440627-B21
<b>Service and Support Offerings</b>	<p><b>NOTE:</b> 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><b>Hardware Services On-site Service</b></p> <p>HP 3year 4hour 13x5 c-Class Server Blade HW Support <span style="float: right;">UE458E</span>            HP 3year 4hour 24x7 c-Class Server Blade Hardware Support <span style="float: right;">UE459E</span>            HP 3year 6hour 24x7 Call to Repair c-Class Server Blade Hardware Support <span style="float: right;">UE460E</span></p> <p><b>Support Plus 24</b></p> <p>HP 3year SupportPlus24 Microsoft c-Class Server Blade Service <span style="float: right;">UE473E</span>  <b>NOTE:</b> 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. <span style="float: right;">UE480E</span>  <b>NOTE:</b> 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 Services On-site Service</p> <p>Next Business Day On-site Service, 5-Day x 9-Hour Coverage, 3 Years, Electronic - <span style="float: right;">UE477E</span>  <b>NOTE:</b> 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 <span style="float: right;">UE478E</span>            4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic <span style="float: right;">UE479E</span>            6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic <span style="float: right;">UE480E</span></p> <p><b>Installation &amp; Start-up Services</b></p> <p>HP BladeSystem c-Class Infrastructure Installation and Startup Service, Electronic <span style="float: right;">UE602E</span>            HP BladeSystem Enhanced Network Installation and Startup Service, Electronic <span style="float: right;">UE603E</span>            ProLiant BL c-Class Blade Server Hardware Installation, Electronic <span style="float: right;">UE493E</span>            ProLiant BL c-Class Enclosure and Server Blade Hardware Installation, Electronic <span style="float: right;">UE494E</span>  <b>NOTE:</b> For more information, customer/resellers can contact <a href="http://www.hp.com/services/bladessystemservices">http://www.hp.com/services/bladessystemservices</a></p>	

### Technical Specifications

<b>Shipping Dimensions</b>	<b>Length</b>	11.42 in (290 mm)		
	<b>Width</b>	14.49 in (368 mm)		
	<b>Height</b>	2.36 in (60 mm)		
<b>Shipping Weight</b>		2.0 kg (4.41 lbs)		
<b>Product Specifications Hardware</b>	<b>Performance</b>	5 Gbps external port bandwidth per module (10 Gbps full duplex)		
		Forwarding rate 1.5 million pps per Gigabit port, (64-byte packets)		
	Non-blocking, full-wire speed for all connections Auto-MDI/MDIX, auto-negotiation and auto-sensing with full-duplex support.			
	<b>Forwarding Mode</b>	Store and forward		
	<b>MAC Addresses</b>	Supports 8K MAC addresses per switch in a BladeSystem Enclosure		
	<b>Forwarding Table Age Time</b> (Maximum age)	1 to 1,000,000 seconds (default: 300 seconds)		
	<b>VLAN IDs</b>	1000		
	<b>IGMP Groups</b>	64		
	<b>Memory</b>	128 MB Main, 16MB flash and 1MB packet buffer per interconnect switch		
	<b>Connectors and Cabling</b>	<b>Connector</b>	5 RJ-45 4 SFP Modules 1 DB-9 Management	
		<b>Cable Support</b>	FCC Class A  ICES-003 Class A AS/NZS 3548 Class A VCCI Class A	
	<b>Network Transfer Rate</b>	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		
<b>Indicators</b>	For the 5 front panel Ethernet ports, there are 2 LEDs per port.			
		<b>Speed LED</b>	<b>Link/Activity LED</b>	
		Off      10 Mbps	Solid Green      Link	
		Green      100 Mbps	Blinking      Activity	
	Amber      1 Gbps			
<b>Dimensions</b>	Length	10.5 in (267.7 mm)		
	Width	7.5 in (192.79 mm)		
	Height	1.1 in (27.94mm)		
<b>Weight</b>		1.8 kg (3.97 lbs)		

### Technical Specifications

<b>Environmental Ranges</b>	<b>Temperature Range</b>	
	Operating	50° to 95° F (10° to 35° C)
	Non-operating	-40° to 158° F (-40° to 70° C)
<b>Power Specification</b>	Relative Humidity (non-condensing)	Operating 5% to 95%
	Power Requirements	12VDC: 2.0A, 25 W maximum (per interconnect switch)

### Product Specifications Software

<b>Security Features</b>	<b>SSHV2, TACACS and TACACS+</b> VLANs can be configured to provide segregation for data - improving bandwidth, performance and limiting traffic to its designated domains. GbE2c also provides secured access through SSH v2, protecting against IP spoofing as well as DNS spoofing. GbE2c enables users to meet their security requirements by providing support of HTTPS, RADIUS and TACACS.
<b>Spanning Tree Features</b>	802.1d, 802.1w, 802.1s GbE2c's 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, GbE2c Rapid Spanning Tree Protocol (RSTP) offers fast convergence - reducing packet loss and downtime in high-availability and high resilient networks. GbE2c's industry-standard based RSTP offers instant failover to secondary links in an unlikely event of primary link failure. GbE2c 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.
<b>Trunking Features</b>	802.3 ad GbE2c reduces downtime in an unlikely event of link failure by supporting link aggregation protocol. GbE2c link aggregation is compatible with Cisco Etherchannel® thus providing seamless integration into Cisco® based networks.
<b>VLAN Features</b>	In GbE2c up to 256 VLANs (802.1Q) can be configured to provide segregation for data - improving bandwidth, performance and limiting traffic to its designated domains.
<b>Management Features</b>	GbE2c provides multiple easy-to-use configuration and management options. For compatibility, the GbE2c offers the same CLI as the GbE2. The GbE2c will also be software upgradeable to use an industry standard network administrator CLI (comparable to Cisco®) in a future release. GbE2c's 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. GbE2c also enables sophisticated administrators to configure and manage the switch through SNMP. GbE2c provides full support for SNMP v1v2 and v3.
<b>QoS Features</b>	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 802.1

### Technical Specifications

The GbE2c Layer 2/3 Ethernet Blade Switch adheres to a strict queue mechanism to ensure important business sensitive traffic is delivered ahead of other traffic

#### Layer 3 Features

- 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
- 128 IP interfaces
- 4096 ARP entries
- Global default route
- Static routing support with 128 routing table entries
- Dynamic routing support with entries in routing table (4K entries)
- Routing protocol (OSPF, RIPv1/v2)
- RIP v1
- RIP v2
- OSPF
- VRRP(Virtual Router Redundancy Protocol) to maximize high availability in complex network environments

#### 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)
- SNTP (RFC 1361)
- Telnet (RFC 854)
- TFTP client (RFC 783)
- BootP client, (RFC 2132), and XModem
- QoS (RFC 2474 and RFC 2475)

The GbE2c Layer 2/3 Ethernet Blade Switch uses the Differentiated Services (DiffServ) architecture to

### Technical Specifications

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provide QoS functions. DiffServ is described in IETF RFCs 2474 and 2475.

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**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

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

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**Environment-friendly** **End-of-life Management** Hewlett-Packard offers end-of-life HP product return, trade-in, and recycling  
**Products and Approach** **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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