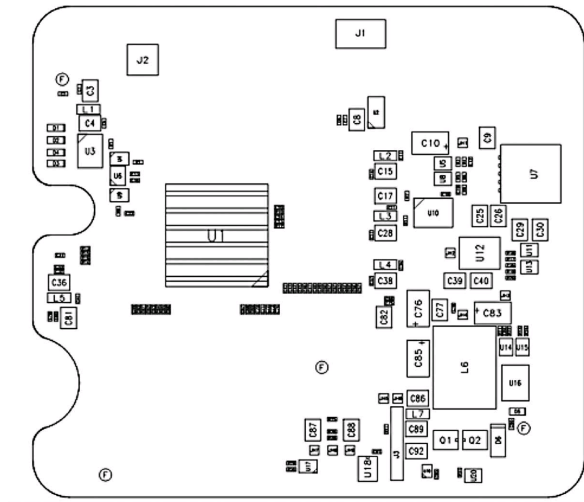


### Overview

## HP 10 GbE Dual Port Mezzanine Adapter for HP BladeSystem c-Class server blades

The HP 10GbE dual port mezzanine Ethernet Network Interface Cards (NIC) for HP BladeSystem c-Class is based on Mellanox ConnectX EN technology. The HP 10GbE mezz NIC improves network performance with stateless offloads that increases available bandwidth to the CPU and is designed for scale-out computing solutions and Enterprise Data Centers.

The HP 10GbE mezz NIC is supported in selected ProLiant c-Class server models.



HP 10 GbE Dual Port Mezzanine Adapter for HP BladeSystem c-Class server blades

### At A Glance

- Dual 10 Gigabit Ethernet ports
- Type I mezzanine card supported in selected BladeSystem c-class server blades (recommend to plug the card on the x8 PCI Express connector for the best performance)
- Stateless TCP/UDP/IP offloading including TCP/UDP/IP checksum offload, TCP Large Send (< 64B) or Giant Send (64KB-16MB) Offload for segmentation
- Receive Side Scaling (RSS) up to 32 queues
- IEEE 802.1p QoS, 802.3x flow control, and 802.3ap 10GBase-KX4
- Jumbo frame support (10K)
- 128 MAC/VLAN addresses per port
- Multicast
- Traffic steering across multiple cores
- Intelligent Interrupt coalescence
- Compliant to Microsoft RSS and NetDMA

### Overview

### Models

HP 10 GbE Dual Port Mezzanine Adapter for HP BladeSystem c-Class

516936-B21

**NOTE:** The HP 10 GbE Dual Port Mezzanine Adapter requires the doublewide HP 10Gb Ethernet BLc Switch Blade (P/N: 445860-B21) in appropriate switch bays of HP BladeSystem c7000 Enclosure or HP BladeSystem c3000 Enclosure.

**NOTE:** The 10 GbE Dual Port Mezzanine Adapter requires a minimum of 1GB of server memory.

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### Kit Contents

1. One (1) HP 10 GbE DUAL PORT mezzanine card
2. Quick install card
3. Product warranty statement
4. Drivers, user guide, and utilities via <http://www.hp.com>

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### Standard Features

#### Server Support

- HP ProLiant BL260c G5
- HP ProLiant BL280c G6
- HP ProLiant BL460c
- HP ProLiant BL460c G5
- HP ProLiant BL460c G6
- HP ProLiant BL465c
- HP ProLiant BL465 G5
- HP ProLiant BL465 G6
- HP ProLiant BL480c
- HP ProLiant BL495c G5
- HP ProLiant BL495c G6
- HP ProLiant BL680c
- HP ProLiant BL685c

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

### Performance

<b>Dual-port 10 Gigabit Ethernet Throughput</b>	The HP 10 GbE MEZZ NIC delivers line-rate 10Gb/s throughput per port and low TCP latency with low CPU utilization to alleviate I/O bottlenecks in the server. High bandwidth and low latency ensures the high productivity of the BladeSystem c-Class BladeSystem.
<b>TCP/IP Stateless Offloading</b>	Hardware-based stateless offload engines handle the TCP/UDP/IP segmentation, reassembly, and checksum calculations that would otherwise burden the host process. Large Send (frames up to 64KB) or Giant Send (frames from 64KB to 16MB) offloads are both supported. These offload technologies are fully compatible with Microsoft RSS and NetDMA. Total cost of ownership is optimized by maintaining an end-to-end Ethernet network on existing operating systems and applications.
<b>I/O Virtualization</b>	The HP 10 GbE MEZZ NIC support for hardware-based I/O virtualization provides dedicated adapter resources and guaranteed isolation and protection for virtual machines (VM) within the server. I/O virtualization with HP 10 GbE MEZZ NIC gives data center managers better server utilization and LAN and SAN unification while reducing cost, power, and cable complexity.
<b>Quality of Service</b>	Resource allocation per application or per VM is provided by the advanced QoS supported by (HP model number). Service levels for multiple traffic types can be based on IETF DiffServ or IEEE 802.1p/Q allowing system administrators to prioritize traffic by application, virtual machine, or protocol. This powerful combination of QoS and prioritization provides the ultimate fine-grain control of traffic - ensuring that applications run smoothly in today's complex environment.
<b>IEEE 802.1Q VLANs</b>	IEEE 802.1Q virtual local area network (VLAN) protocol allows each physical port of the NIC to be separated into multiple virtual NICs for added network segmentation and enhanced security and performance. VLANs increase security by isolating traffic between users. Limiting the broadcast traffic to within the same VLAN domain also improves performance.
<b>IEEE 802.1p QoS Tagging</b>	IEEE quality of service (QoS) 802.1p tagging allows the adapter to mark or tag frames with a priority level across a QoS-aware network for improved traffic flow.
<b>IEEE 802.3x Flow Control</b>	IEEE 802.3x allows the adapter to suspend data transmission upon request from the switch, or notify the switch to suspend transmission if the adapter becomes congested and is in risk of dropping a packet.
<b>RDMA</b>	Not Supported
<b>Accelerated iSCSI</b>	Not Supported

### High Availability

#### Dual port

The two ports on the HP 10 GbE MEZZ NIC transmit to separate enclosure interconnect bays providing redundant signal paths.

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#### Network Adapter Teaming

Link Aggregation and Fail Over (IEEE 802.3ad) provide fault tolerance and load balancing across a team of two or more network adapters. The team of adapters works together as a single virtual adapter. Teaming offers IT professionals an easy, efficient, and cost-effective way to provide network fault tolerance and increased network bandwidth.

## *Mezzanine Slot Compatibility*

Supported Interconnect Modules    HP 10Gb Ethernet BLC Switch

### Service and Support, HP Care Pack, and Warranty Information

#### Warranty

HP branded hardware options qualified for BladeSystem c-Class and p-Class servers are covered by a global limited warranty and supported by HP Services and a worldwide network of HP Authorized Channel Partners. The HP branded hardware option diagnostic support and repair is available for one year from date of purchase, or the length of the server they are attached to, whichever is greater. Support for software and initial setup is available for 90 days from date of purchase. Additional support may be covered under the warranty or available for an additional fee. Enhancements to warranty services are available through HP Care Pack services or customized service agreements.

Additional information regarding worldwide limited warranty and technical support is available at: <http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html>

#### Support Services

The HP Care Pack service for ProLiant BL c-Class and p-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. HP Care Pack Services provide total care and support expertise with committed response designed to meet your IT and business needs.

To fully capitalize on the capabilities of your HP BladeSystem servers, a service partner are required who thoroughly understands your server technology and systems environment. HP Services, an industry leader in the provisioning of multi vender support solutions, provides a range of support services designed to meet the varying needs of today's businesses. Whether an SMB or large global corporation, HP has a BladeSystem server support offer to help you rapidly deploy and maximize system uptime.

**Recommended Service** - Simplify BladeSystem solution implementation, maintenance, and management.

- Support - 3 year 4 hour response 24x7 same business day coverage.
- Deployment Service - Installation and start up for HP BladeSystem Infrastructure.

**Enhanced Service** - Optimum service level to increase IT performance and availability.

- Support - 1 year HP Proactive BladeSystem Service.
- Deployment Service - Enhanced Network Installation and start up for HP BladeSystem Switches.

Installation & Start-Up service for HP BladeSystem Infrastructure plus HP BladeSystem Enhanced Network Installation and Start-UP as per the Customer Description and/or Data Sheet. To be delivered on a scheduled basis 8am-5pm, M-F, excluding HP holidays.

For a complete listing of service offerings and information visit:

<http://www.hp.com/services/bladessystemservices>  
<http://www.hp.com/go/proliant/carepack>

### *Related Options*

HP 10GbE Switch

HP 10Gb Ethernet BLc Switch for HP BladeSystem c-Class

445860-B21

### Technical Specifications

General Specifications	<b>Network controller</b>	Mellanox ConnectX EN		
	<b>Data rate</b>	Two ports, each at 10 Gbps (20 Gbps aggregate full duplex)		
	<b>Bus type</b>	x8 PCI Express		
	<b>Form factor</b>	Type I mezzanine card supported in HP ProLiant c-class server type I or II mezzanine slots		
	<b>IEEE Compliance</b>	802.1p Priority, 802.1Q/p VLAN Tags, 802.3, 802.3ad Link Aggregation and Fail Over, 802.3x Pause and 802.3ap (10GBase-KX4)		
Power and Environmental Specifications	<b>Operating</b>	<b>Temperature</b>	32° - 140° F (0° - 60° C)	
		<b>Humidity</b>	5% to 85% non-condensing	
	<b>Non-operating</b>	<b>Temperature</b>	-40° to 158° F (-40° to 70° C)	
		<b>Humidity</b>	5% to 95% non-condensing	
	<b>Power requirement</b>	10.9 Watts maximum		
	<b>Emissions classification</b>	FCC Class A		
	<b>Agency approvals</b>	<b>USA</b>	FCC Class A	
		<b>Canada</b>	ICES Class A	
		<b>Japan</b>	VCCI Class A	
		<b>Australia</b>	C-Tick Class A	
<b>European Union</b>		EN55022 Class A, EN55024 Class A		
<b>RoHS Compliance</b>	5 of 6			
<b>Safety</b>	cTUVus UL (USA and Canada)			
	IEC60950 (EU)			
	CB Scheme (International)			

### Operating System Support Microsoft:

Microsoft Windows Server 2008  
Windows Server 2003(SNP), NDIS 5.2

### Linux:

RHEL 4 U6,U7 RHEL 5,RHEL5 U1,U2,U3  
CentOS 5 U2 SLES10  
SLES 10 SP1,SP2

### Virtualization:

VMWare ESX3.5 (U1) and VirtualCenter 2.5 VI  
Citrix XENServer 4.1



### 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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