

BCM57410 Ethernet NICs

NetXtreme® E-Series Ethernet Solutions

High-Performance PCIe Network Interface Cards for Dell PowerEdge 14G Servers

Key Features

- PCIe half-height, half-length adapters available with low-profile or full-height brackets
- Flexible, power-efficient 10 GbE and 25 GbE solutions
- 10Gb SFP+, 10GBASE-T and 25 Gb SFP28 connectivity
- Line-rate bidirectional throughput on all ports
- TruFlow™ Flow Accelerator—programmable packet processing in hardware boosts application performance
- High performance and low latency across full range of frame sizes
- Support for Data Plane Developer Kit (DPDK) framework
- Low-latency for RDMA over Converged Ethernet (RoCE) v1 and v2
- Single Root I/O Virtualization (SR-IOV) with Function Level Reset (FLR) support
- Comprehensive stateless offload support to minimize host CPU workload
- Silicon-based Root of Trust enables Secure Firmware for best-in-class security
- Tunnel-aware stateless offloads for VXLAN, NVGRE, Geneve
- NPAR EP support for up to 16 Physical Functions (PFs)
- Reliability and interoperability assured by Broadcom's market-proven Ethernet expertise

Overview

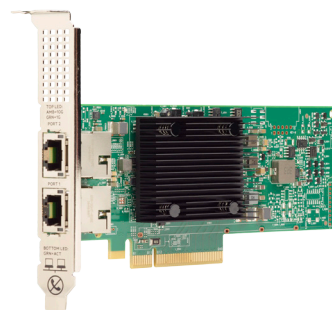
The Broadcom® dual-port 10GbE and 25GbE Network Adapters for Dell PowerEdge 14G servers are based on Broadcom's NetXtreme E-Series BCM57412, BCM57414, and BCM57416 Ethernet controller technology. This full portfolio of high-performance NICs extends Broadcom's long-standing Ethernet industry leadership into Dell's 14G PowerEdge servers.

As application workloads and virtualization technologies drive increased demands on server performance, network performance requirements scale accordingly. This growth demands a new breed of Ethernet connectivity solutions. Broadcom NetXtreme E-Series adapters in Dell's PowerEdge servers deliver high throughput, low latency, and key features to enable optimal performance for a variety of workloads.

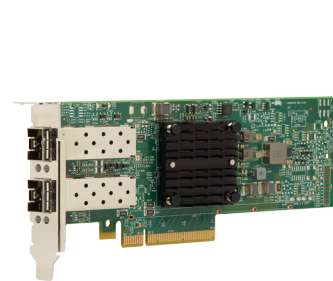
Whether in a native bare-metal platform or in a virtualized environment, NetXtreme-E Series solutions are designed to deliver the networking performance and flexibility needed to ensure optimal application performance. Features such as SR-IOV with 128 Virtual Functions (VFs) and VMQ hardware support give IT administrators the tools to address any networking challenge.

NetXtreme E-Series adapters help IT organizations control cost of ownership by keeping the cost of management and power to a minimum. Integrated support for Dell's embedded management framework—integrated Dell Remote Access (iDRAC) with Lifecycle controller; ensures that deployment and management are as simple as possible. To keep power consumption to a best-in-class minimum, the NetXtreme E-Series devices take advantage of cutting-edge architectural and physical design features, such as optimized hardware state machines and Adaptive Voltage Scaling (AVS).

10GBASE-T Full-height



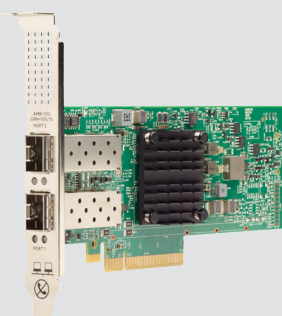
SFP Low-profile



Applications

- Network Functions Virtualization (NFV)
- Software Defined Networking (SDN)
- Enterprise and Cloud Storage
- High-Performance Computing
- Machine Learning

SFP Full-height



Features

- Dual-port network interface (10GBASE-T, 10Gb SFP+, 25Gb SFP28)
- x8 PCI Express v3.0 compliant host interface
- PCI Express CEM Specification 3.0 compliant
- Low-power consumption using Adaptive Voltage Scaling (AVS)
- RDMA over Converged Ethernet (RoCE) v1 and v2
- NIC Partitioning (NPAR) for up to 16 Physical Functions (PFs)
- Silicon-based Root of Trust enables Secure Firmware for best-in-class security
- Single Root I/O Virtualization (SR-IOV) - 128 VF with flexible assignment
- Function Level Reset (FLR) support
- VXLAN and NVGRE encapsulation and decapsulation
- MCTP over SMBus and PCIe VDM
- Jumbo Frames (up to 9600 Byte)
- VMQ support
- IPv4 and IPv6 offloads
- TCP, UDP and IP checksum offloads
- Large Send Offload (LSO)
- Large Receive Offload (LRO)
- TCP Segmentation Offload (TSO)
- Receive-Side Scaling (RSS)
- Transmit-Side Scaling (TSS)
- Interrupt coalescing
- Network boot: PXE, UEFI, iSCSI
- MSI and MSI-X
- IEEE 802.1q—VLAN insertion/removal
- IEEE 802.3x—Flow control
- IEEE 802.3ad—Link aggregation
- IEEE 1588—Precision Time Protocol
- IEEE 802.1AS—Timing and Synchronization

Specifications

General	
Item	Support
Form factor	PCI Express CEM 3.0 (Low-profile)
Host interface	x8 PCI Express v3.0 (8.0 GT/s) and v2.0 (5.0 GT/s)
Network interface (10Gb Base-T)	RJ45, compliant to IEEE 802.3an and IEEE 802.3ab
Network interface (10Gb SFP+)	SFF-8402 interface, supports 10Gb direct attach copper (DAC) or optical transceivers
Network interface (25Gb SFP28)	SFF-8402 interface, supports 25Gb or 10Gb direct attach copper (DAC) or optical transceivers
Controller ASICs	BCM57416 (10GBASE-T) BCM57412 (10Gb SFP+) BCM57414 (25Gb SFP28)

Specifications (continued)

OS Support	
Item	Support
Microsoft	Windows Server 2016, Windows Server 2012, Windows Server 2012 R2
Linux	Red Hat Enterprise Linux, SUSE Linux Enterprise Server, XenServer
VMware	vSphere ESXi

Management	
Broadcom	Diagnostics (UEFI, Linux, DOS)
Dell	Embedded Management Framework (iDRAC and Lifecycle Controller)

Environmental Requirements	
Parameter	Condition
Storage Temperature	-40°C to +65°C
Storage Humidity	5% to 95% non-condensing
Vibration and Shock	IEC78-2-(*) and IEC721-3-(*)

Electromagnetic Compatibility (EMC) and Electrostatic Discharge (ESD) Compliance	
Item	Standard
CE / EU	EN 55022:2010 + *AC:2011 Class B, EN55024 Class B
FCC / USA	CFR47, Part 15 Class B
IC / Canada	ICES-003 Class B
ACA / Australia, New Zealand	EN 55022:2010 + *AC:2011 (RCM Mark)
BSMI / Taiwan	CNS13438 Class B
MIC / S. Korea	RRL KN22 Class B, KN24 (ESD) (MSIP Mark)
VCCI / Japan	V-3 / 2014 / 04
ESD	EN55024:2010 Air / Direct discharge

Regulatory & Safety Certifications	
Item	Standard
CE/European Union	EN 60950-1
UL/USA	EN 60950-1, CTUVus UL
CSA/Canada	CSA 22.2 No. 950
Taiwan	CNS14336 Class B
Safety	CB Scheme, ICES 003, UL 1977, UL 796, UL 94

Ordering Information				
Configuration	I/O Bracket	Broadcom Part Number	Dell SKU	Customer Kit SKU
Dual-port 10GBASE-T	Low-profile	BCM957416A4160DLPC	540-BBVJ	540-BBVM
	Full-height	BCM957416A4160DC	540-BBUI	540-BBUO
Dual-port 10Gb SFP+	Low-profile	BCM957412A4120LPC	540-BBVI	540-BBVL
	Full-height	BCM957412A4120DC	540-BBUH	540-BBUN
Dual-port 25Gb SFP28	Low-profile	BCM957414A4141DLPC	540-BBVK	540-BBVN
	Full-height	BCM957414A4141DC	540-BBUJ	540-BBUP