

Broadcom® 25G and 10GBASE-T OCP 3.0 NICs

Dual-Port 25G and 10GBASE-T Ethernet

High-Performance, Industry's Most-Secure OCP NIC 3.0 Ethernet Adapters for Dell PowerEdge Servers

Overview

The Broadcom® dual-port 10G and 25G OCP NIC 3.0 Ethernet adapters for Dell PowerEdge servers are based on Broadcom BCM57412 and BCM57414 Ethernet controller technology. This full portfolio of high-performance OCP NIC 3.0 Ethernet adapters extends Broadcom's long-standing Ethernet industry leadership into Dell's 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 OCP 3.0 NICs 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, Broadcom OCP 3.0 NICs 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.

Broadcom OCP 3.0 NICs 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 Broadcom OCP 3.0 NICs take advantage of cutting-edge architectural and physical design features, such as optimized hardware state machines and adaptive voltage scaling (AVS).

Key Features

- Standards-compliant PCIe 3.0 OCP 3.0 NICs with line-rate, full-duplex throughput
- Flexible, power-efficient 10GbE and 25GbE solutions
- 1GBASE-T, 10G SFP+, 10GBASE-T, and 25G SFP28 connectivity
- Line-rate bidirectional throughput on all ports
- TruFlow™ Flow Accelerator—programmable packet processing in hardware boosts application performance
- CNSA 1.0 ensures strong secure boot, secure firmware update, and advanced security for secured NIC configuration and data communication
- High performance and low latency across full range of frame sizes
- Support for Data Plane Developer Kit (DPDK) framework
- Single Root I/O virtualization (SR-IOV) with function level reset (FLR) support

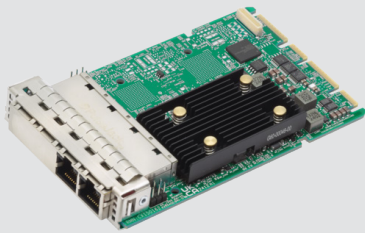


Figure 1: 2×10GBASE-T OCP 3.0 Adapter



Figure 2: 2×25G OCP 3.0 Adapter



Key Features (cont.)

- 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

Applications

- High-performance computing
- Cloud data center servers
- Network function virtualization
- NVMe storage disaggregation
- Software defined networking
- Traditional enterprise data centers
- Machine learning
- Mobile edge computing and telco
- Storage servers

BCM57414/12 NIC Features

- Multi-port interface: 1GBASE-T, 10GBASE-T, 10G SFP+, 25G SFP28
- x8 PCI Express v3.0 compliant host interface (BCM57414)
- x4 PCI Express v3.0 compliant host interface (BCM57412)
- OCP 3.0 Design Specification Version 1.2 compliant
- Low power consumption using adaptive voltage scaling (AVS)
- NIC partitioning (NPAR) for up to 16 physical functions (PFs)
- CNSA 1.0 compliant (SHA-512)
- Meets FIPS 140-3 requirements
- Silicon-based Root of Trust (RoT) enables secure boot and firmware updates
- Attestation (SPDM)
- Single Root I/O virtualization (SR-IOV): 128 VF with flexible assignment
- Function level reset (FLR) support
- VXLAN and NVGRE encapsulation and decapsulation
- RBT, MCTP over SMBus, and MCTP over PCIe VDM
- Jumbo frames (up to 9600 bytes)
- 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
- MSI and MSI-X
- IEEE 802.1q VLAN insertion/removal
- IEEE 802.3x flow control
- IEEE 802.3ad link aggregation
- IEEE 1588v2 precision time protocol
- IEEE 802.1AS timing and synchronization

Specifications

General	
Item	Support
Form Factor	OCP NIC 3.0 Small Form Factor (SFF)
Host Interface	BCM57412: x4 PCI Express 3.0; Link rates of 8, 5, 2.5 GT/s BCM57414: x8 PCI Express 3.0; Link rates of 8, 5, 2.5 GT/s
Network Interface (10GBASE-T)	RJ-45 interface compliant to IEEE 802.3an and IEEE 802.3ab
Network Interface (25Gb SFP28)	SFF-8402 interface, supports 25-Gb or 10Gb direct-attach copper (DAC) or optical transceivers
Controller ASICs	BCM57412: 10GBASE-T BCM57414: 25G SFP28
OS Support	
Item	Support
Microsoft	Windows Server 2025, 2022
Linux	Red Hat Enterprise Linux, SUSE Linux Enterprise Server, Ubuntu
VMware	vSphere ESXi
Management	
Broadcom	Diagnostics (UEFI, Linux, DOS)
Dell	Embedded Management Framework (iDRAC and Lifecycle Controller)

Specifications (cont.)

Environmental Requirements					
Parameter		Condition			
Storage Humidity		10% to 90% RH, non-condensing			
Storage Temperature		-40°C to +70°C			
Operating Temperature		0°C to +65°C			
Electromagnetic Compatibility (EMC) and Electrostatic Discharge (ESD) Compliance					
Standard/Country		Certification Type	Compliance		
CE/EU		EN 55032:2015 +A11:2020, Class A EN 55035:2017 +A11:2020 EN 61000-3-2:2014 EN 61000-3-3:2013	CE report and CE DoC		
FCC/USA		CFR47 Part 15 Subpart B Class A	FCC SDoC and EMC report referencing FCC standards		
IC/Canada		ICES-003 Issue7, Class A	Report referencing IC standards		
ACA/Australia, New Zealand		AS/NZS CISPR 32:2015, Class A	ACA certificate		
BSM/Taiwan		CNS 15936:2016	BSMI certificate		
BSMI/Taiwan		CNS 15663	BSMI certificate/RoHS table		
KC/South Korea		KN32 Class A KN35	Korea certificate KC mark R-R-BCM-CX150162		
VCCI/Japan		VCCI-CISP 32:2016	Copy of VCCI online certificate		
ESD/EN55035 (EN 61000-4-2)		Air/Direct Discharge	Yes		
Regulatory and Safety Certifications					
Item		Standard	Approval/Certificate		
CE/European Union		EN IEC 62368-1:2020 +A11:2020 IEC 62368-1:2018 (Ed3)	CB report and certificate		
UL/USA		IEC 62368-1:2018 (Ed3) UL 62368-1, 3rd edition	CB report and certificate		
Safety		CB Scheme UL 1977 (connector safety) UL 796 (PCB wiring safety) UL 94 (flammability of parts) CSA C22.2 No. 62368-1-19, 3rd Ed			
Channel Part Number Mapping					
Dell Orderable Broadcom Part Number		Broadcom Equivalent Channel Part Number			
BCM957412-N210TDI0S		BCM957412-N210TGI0S			
BCM957414-N225DI0S		BCM957414-N225GI0S			
Ordering Information					
Configuration		I/O Bracket	Broadcom Part Number	Dell SKU	Customer Kit SKU
Dual-Port 10GBASE-T		Internal Lock Bracket	BCM957412-N210TDI0S	540-BFPX	540-BFPR
Dual-Port 25/10G SFP28		Internal Lock Bracket	BCM957414-N225DI0S	540-BFPV	540-BFPM