

Oracle Dual Port 100 Gb Ethernet Adapter

Oracle Dual Port 100 Gb Ethernet Adapter enables high performance and flexibility for deploying network infrastructure in the next-generation clouds to Oracle servers and storage systems. The adapter converges network and storage traffic, dramatically expands resources for server virtualization, offers efficient I/O consolidation, and enables intelligent Remote Direct Memory Access (RDMA) for acceleration of clustered applications.

Product Overview

Modern, high-performance enterprise clouds demand some unique capabilities from the supporting networking infrastructure. To efficiently tap into the cloud's physical resources, infrastructure must support the network and storage needs of high-density, virtualized servers and also be capable of virtualizing L2 network infrastructure to enable virtual servers to be interconnected with secure virtual networks. To cater to these requirements, leading cloud deployments are embracing enhanced 100 Gb Ethernet, augmenting their virtualization technologies and leveraging overlay networking technologies.

Oracle Dual Port 100 Gb Ethernet Adapter is an ideal server interface for next-generation cloud-enabled data centers. The adapter brings leading edge performance and resources necessary to unleash the full power of multicore, high-performance servers and storage systems.

Key features and benefits include:

- **100 Gb Ethernet ports:** 4x the I/O bandwidth over 25 GbE to enable support for higher bandwidth and more virtual machines (VMs) per server
- **254 PCIe virtual functions:** 4x the virtual I/O resources for VMs
- **Overlay network support:** Virtualizes the physical network infrastructure allowing VMs to connect to different networks through software defined networking

Oracle Dual Port 100 Gb Ethernet Adapter offers industry leading throughput, dramatically reduces CPU and system resource utilization and consolidates software-defined I/O services for servers and storage systems, providing the most-efficient, flexible, and high-performance server interface for cloud deployments.



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Key Features

- Two QSFP28 ports, supporting 100 GbE, 40 GbE, 25 GbE, 10 GbE
- Server virtualization resources for up to 254 virtual machines
- Support for the overlay networks

Key Benefits

- Delivers 4x the bandwidth over 25 GbE adapters
- Virtualizes the data center Ethernet network infrastructure, enabling virtual machines to be provisioned with virtual networks
- Accelerates clustered and scale-out enterprise applications

Key Functionality and Technical Specifications

FUNCTIONALITY	
Ethernet	<p data-bbox="467 279 586 310">Features¹</p> <ul data-bbox="467 331 1138 401" style="list-style-type: none">• Jumbo frame support (9.6KB)• Interoperability with Ethernet switches (up to 100 GbE) <p data-bbox="467 453 639 485">CPU Offloads¹</p> <ul data-bbox="467 501 1268 806" style="list-style-type: none">• TCP/UDP/IP stateless offload• LSO,LRO, checksum offload• RSS (also on encapsulated packet), TSS, HDS, VLAN and MPLS tag insertion/stripping, Receive flow steering• Data Plane Development Kit (DPDK) for kernel bypass applications• Open VSwitch (OVS) offload using ASAP2• Intelligent interrupt coalescence• Header rewrite supporting hardware offload of NAT router <p data-bbox="467 858 537 890">Boot¹</p> <ul data-bbox="467 907 1019 1060" style="list-style-type: none">• Remote boot over Ethernet• Remote boot over iSCSI• Unified Extensible Firmware Interface (UEFI)• Pre-execution Environment (PXE) <p data-bbox="467 1113 594 1144">Standards</p> <ul data-bbox="467 1161 1403 1839" style="list-style-type: none">• 25G/50G Ethernet Consortium “Low Latency FEC” for 50/100• PCI Express 3.0 and 4.0• IEEE 802.3cd, 50, 100 Gigabit Ethernet• IEEE 802.3bj, 802.3bm 100 Gigabit Ethernet• IEEE 802.3by, Ethernet Consortium 25, 50 Gigabit Ethernet supporting all FEC modes• IEEE 802.3ba 40 Gigabit Ethernet• IEEE 802.3ae 10 Gigabit Ethernet• IEEE 802.3az Energy Efficient Ethernet (supports only “fast-Wake” mode)• IEEE 802.3ap based auto-negotiation and KR startup• IEEE 802.3ad, 802.1AX Link Aggregation• IEEE 802.1Q, 8021P VLAN tags and priority• IEEE 802.1Qau (QCN) Congestion Notification• IEEE 802.1Qaz (ETS)• IEEE 802.1Qbb (PFC)• IEEE 802.1Qbg• IEEE 1588v2

<p>Virtualization</p>	<p>Network Virtualization</p> <ul style="list-style-type: none"> • VXLAN, NVGRE, GENEVE <p>Converged Networking</p> <ul style="list-style-type: none"> • LAN • iSCSI <p>Server Virtualization</p> <ul style="list-style-type: none"> • SR-IOV • Address translation and protection • VMware NetQueue support <ul style="list-style-type: none"> ○ Up to 8 physical functions per host ○ Up to 254 virtual functions • Virtualization hierarchies (e.g., NPAR when enabled) <ul style="list-style-type: none"> ○ Virtualizing Physical Functions on a physical port ○ SR-IOV on every Physical Function • Configurable and user programmable QoS • Guaranteed QoS for VMs
<p>PCI Express (PCIe)</p>	<p>PCIe Interface²</p> <ul style="list-style-type: none"> • PCIe 4.0 • PCIe 3.0, 2.0 and 1.1 compatible • 2.5 5.0, 8.0, 16.0 GT/s link rate • Auto-negotiates to x16, x8, x4, x2, or x1 lane(s) • PCIe Atomic • TLP (Transaction Layer Packet) Processing Hints (TPH) • Embedded PCIe Switch: Up to 8 bifurcations <p>Features¹</p> <ul style="list-style-type: none"> • PCIe switch Downstream Port Containment (DPC) enablement for PCIe hot plug • Access Control Service (ACS) for peer-to-peer secure communication • Advance Error Reporting (AER) • Process Address Space ID (PASID) Address Translation Services (ATS) • Support for MSI/MSI-X mechanisms
<p>Supported Operating Systems, Hypervisors, and Distributions</p>	<p>Operating Systems</p> <ul style="list-style-type: none"> • Oracle Linux • Oracle Solaris • Windows Server

	<p>Hypervisors</p> <ul style="list-style-type: none"> • Oracle VM Server • VMWare ESXi <p>Distributions</p> <ul style="list-style-type: none"> • OpenFabrics Enterprise Distribution (OFED) • OpenFabrics Windows Distribution (WinOF-2) <p>Oracle's Ethernet adapters are components of the Oracle server or storage system in which they are installed. See the list of supported option cards for the applicable server or storage system to determine the relevant operating system support for the system and adapter combination.</p>
<p>Physical Interface</p>	<p>2 x QSFP28 ports</p>
<p>Operating Environment</p>	<ul style="list-style-type: none"> • Operating Voltage: 12 V • Operating Temperature: 0° C to 55° C • Power Consumption: 19.0 W (Typical)
<p>Cables and Transceivers</p>	<p>Supported Cables and Transceivers</p> <p>Oracle supplies Ethernet cables and transceivers that are supported with Oracle Dual Port 100 Gb Ethernet Adapter.</p>
<p>Disclosure</p>	<ol style="list-style-type: none"> 1. Features described here are available in the Oracle Dual Port 100 Gb Ethernet Adapter. Please consult adapter, server and operating system documentation to verify the features are supported in a specific system configuration. 2. Performance may be limited depending on the server configuration in which this adapter card is being used. Maximum performance can only be achieved on systems supporting PCIe 4.0 with 16 data lanes.

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