# Cisco UCS Virtual Interface Card 1225T

Cisco Unified Computing System Overview

The Cisco Unified Computing System™ (Cisco UCS®) is a next-generation data center platform that unites computing, networking, storage access, and virtualization resources in a cohesive system designed to reduce total cost of ownership (TCO) and increase business agility. The system integrates a low-latency, lossless 10 Gigabit Ethernet unified network fabric with enterprise-class blade and rack x86-architecture servers. The system is an integrated, scalable, multichassis platform in which all resources participate in a unified management domain.

Product Overview

A Cisco® innovation, the Cisco UCS Virtual Interface Card (VIC) 1225T (Figure 1) is a dual-port 10GBASE-T 10 Gigabit Ethernet and Fibre Channel over Ethernet (FCoE)-capable PCI Express (PCIe) card designed exclusively for Cisco UCS C-Series Rack Servers. With its half-height design, the card preserves full-height slots in servers for third-party adapters certified by Cisco. It incorporates next-generation converged network adapter (CNA) technology from Cisco, providing Fibre Channel connectivity over low-cost twisted pair cabling with a bit error rate (BER) of 10^{-15} up to 30 meters. The card enables a policy-based, stateless, agile server infrastructure that can present up to 256 PCIe standards-compliant interfaces to the host that can be dynamically configured as either network interface cards (NICs) or host bus adapters (HBAs). In addition, the Cisco UCS VIC 1225T supports Cisco Data Center Virtual Machine Fabric Extender (VM-FEX) technology, which extends the Cisco UCS fabric interconnect ports to virtual machines, simplifying server virtualization deployment.

Figure 1.   Cisco UCS VIC 1225T
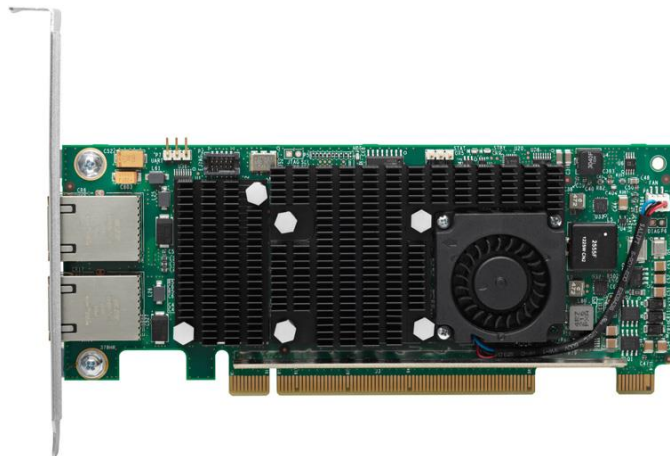

Features and Benefits

- Stateless and agile: The personality of the card is determined dynamically at boot time using the service profile associated with the server. The number, type (NIC or HBA), identity (MAC address and World Wide Name [WWN]), failover policy, bandwidth, and quality-of-service (QoS) policies of the PCIe interfaces are all determined using the service profile. The capability to define, create, and use interfaces on demand provides a stateless and agile server infrastructure (Figure 2).

Figure 2.   Virtual Device Support on the Cisco UCS VIC 1225T
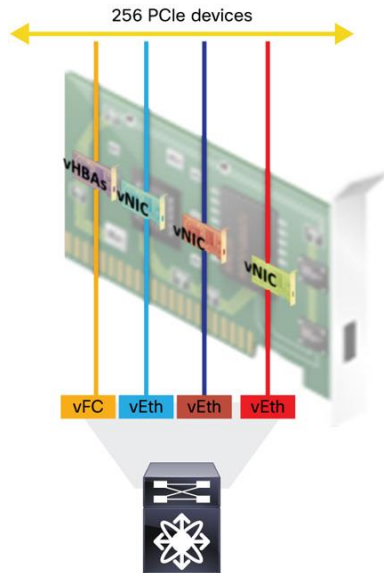
- Network interface virtualization: Each PCIe interface created on the VIC is associated with an interface on the Cisco UCS fabric interconnect, providing complete network separation for each virtual cable between a PCIe device on the VIC and the interface on the fabric interconnect (Figure 3).

Figure 3.   Cisco UCS VIC 1225T Architecture
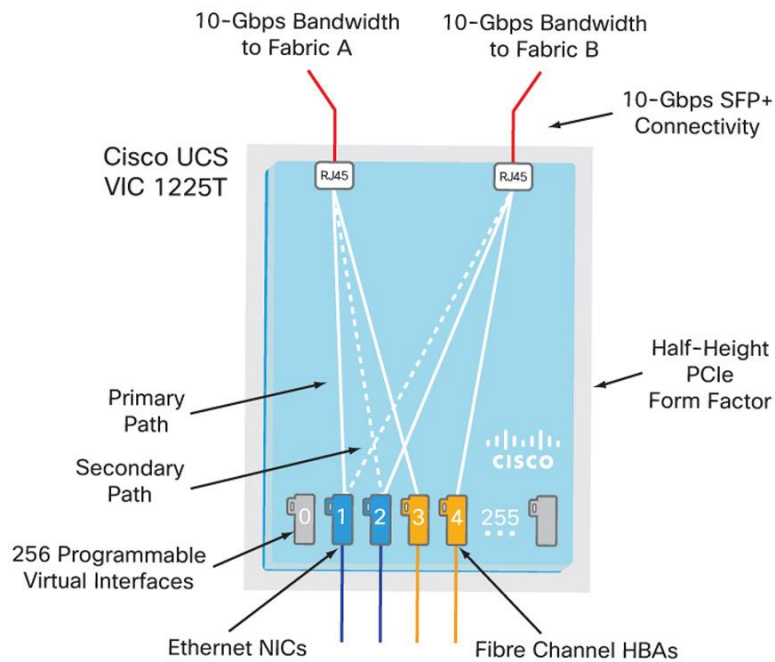
- Cisco Data Center VM-FEX Technology: Cisco Data Center VM-FEX technology extends fabric interconnect ports directly to virtual machines, eliminating software-based switching in the hypervisor. Cisco Data Center VM-FEX technology collapses virtual and physical networking infrastructure into a single infrastructure that is fully aware of the virtual machines' locations and networking policies (Figure 4). Cisco Data Center VM-FEX technology is implemented by Cisco VICs with an implementation of IEEE 802.1BR Port Extender.

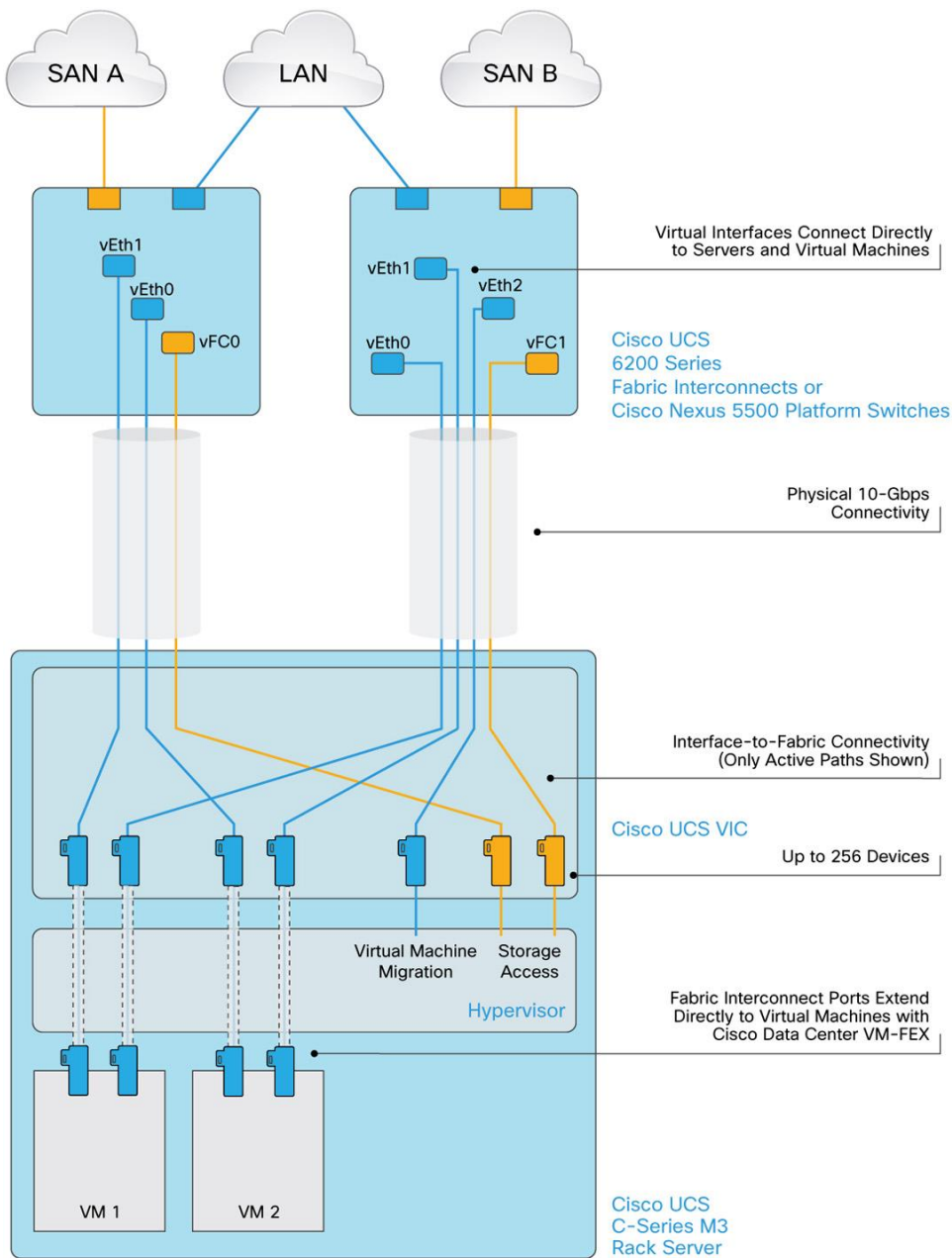**Figure 4.**　Cisco Data Center VM-FEX with Cisco UCS VIC 1225T

Table 1 summarizes the main features and benefits of the Cisco UCS VIC 1225T.

Table 1. Features and Benefits

Feature	Benefit
x16 PCIe generation-2 interfaces	Delivers greater throughput
2 x 10-Gbps unified I/O	• Delivers 20 Gbps to the server • Helps reduce TCO by consolidating the overall number of NICs, HBAs, cables, and switches because LAN and SAN traffic run over the same adapter card and fabric
Up to 256 dynamic virtual adapters and interfaces	• Creates fully functional unique and independent PCIe adapters and interfaces (NICs or HBAs) without requiring single-root I/O virtualization (SR-IOV) support from OSs or hypervisors • Allows these virtual interfaces and adapters to be configured and operated independently, just like physical interfaces and adapters • Creates a highly flexible I/O environment needing only one card for all I/O configurations **Note:** Cisco UCS VIC 1225T hardware is SR-IOV capable, and you can enable SR-IOV after SR-IOV is broadly supported by the popular operating systems. Please refer to Cisco UCS Manager configuration limits for your specific OS and environment in the configuration guide
Low-cost structured cabling	• Enables next-generation data centers to deploy twisted pair copper cabling for converged Ethernet and Fibre Channel connectivity from the server to the switch • Is compatible with widely used Cat 6A and Cat 7 twisted pair copper cable already in place
Cisco Data Center VM-FEX technology	• Unifies virtual and physical networking in a single infrastructure • Provides virtual machine visibility from the physical network and a consistent network operating model for physical and virtual servers • Enables configurations and policies to follow the virtual machine during virtual machine migration • Provides an implementation of the IEEE 802.1BR Port Extender standard
Centralized management	Enables the card to be centrally managed and configured by Cisco UCS Manager
Network architecture	Provides a redundant path to the fabric interconnect using hardware-based fabric failover
More than 600,000 I/O operations per second (IOPS)	Provides high I/O performance for demanding applications
Support for lossless Ethernet	Uses Priority Flow Control (PFC) to enable FCoE as part of the Cisco unified fabric
Broad OS and hypervisor support	Supports customer requirements for Microsoft Windows, Red Hat Enterprise Linux, SUSE Linux, VMware vSphere, and Citrix XenServer

Product Specifications

Table 2 lists the specifications for the Cisco UCS VIC 1225T.

Table 2. Product Specifications

Item	Specifications
Standards	• 10 Gigabit Ethernet • IEEE 802.3an • IEEE 802.3x • IEEE 802.1q VLAN • IEEE 802.1p • IEEE 802.1Qaz • IEEE 802.1Qbb • IEEE 802.1BR • Jumbo frames up to 9 KB • Fibre Channel Protocol (FCP) • Small Computer System Interface (SCSI)-FCP • T11 FCoE
Components	Cisco UCS custom application-specific integrated circuit (ASIC)
Ports	• 2 x 10-Gbps FCoE 10GBASE-T ports • Port speed 1/10/100/1000/10-Gbps autonegotiating

Item	Specifications
Connectivity	PCIe 2.0 x16 form factor
Supported cabling	Ethernet to 100m: • Category 6 shielded twisted-pair (STP) up to 10 Gbps • Category 6A (unshielded twisted pair (UTP) or STP up to 10 Gbps • Category 7 STP up to 10 Gbps FCoE to 30m: • Category 6A UTP/STP up to 10 Gbps • Category 7 STP up to 10 Gbps
Performance	10-Gbps line rate per port
Management	Cisco UCS Manager Release 2.1.1 and later
Number of interfaces	256 virtual interfaces (approximately 8 are reserved for internal use; other factors such as the OS and hypervisor may limit this number further)
Physical dimensions	Length = 6.6 in. (16.76 cm) Width = 2.5 in. (6.35 cm)
Typical power	16 watts (W)

System Requirements

The Cisco UCS VIC 1225T is designed for use only on Cisco UCS C-Series Rack Servers. Cisco UCS VIC 1225 is supported on Cisco UCS C260 M2, C460 M2, C220 M3, C240 M3, C22 M3, C24 M3, C220 M4, C240 M4, and C460 M4 rack servers. One or more Cisco UCS VIC 1225 cards are supported on these servers depending on the slot configuration. See the server configuration guide for details.

FCoE over 10GBASE-T is supported on the Cisco Nexus® 5596T Switch and Cisco Nexus 2232TM-E 10GE Fabric Extender.

Warranty Information

Find warranty information at Cisco.com on the Product Warranties page.

Cisco Unified Computing Services

Using a unified view of data center resources, Cisco and our industry-leading partners deliver services that accelerate your transition to a unified computing architecture. Cisco Unified Computing Services help you quickly deploy your data center resources, simplify ongoing operations, and optimize your infrastructure to better meet your business needs. For more information about these and other Cisco Data Center Services, visit http://www.cisco.com/go/unifiedcomputingservices.

Why Cisco?

Cisco UCS continues Cisco's long history of innovation in delivering integrated systems for improved business results based on industry standards and using the network as the platform. Recent examples include IP telephony, LAN switching, unified communications, and unified I/O. Cisco began the unified computing phase of our Unified Data Center strategy several years ago by assembling an experienced team from the computing and virtualization industries to augment our own networking and storage access expertise. As a result, Cisco delivered foundational technologies, including the Cisco Nexus Family, supporting unified fabric and server virtualization. Cisco UCS completes this phase, delivering innovation in architecture, technology, partnerships, and services. Cisco is well-positioned to deliver this by taking a systems approach to computing that unifies network intelligence and scalability with innovative ASICs, integrated management, and standard computing components.

Cisco Capital

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For More Information

For more information about the Cisco UCS VIC, visit http://www.cisco.com/en/US/products/ps10265/index.html.

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