

Cisco UCS Virtual Interface Card 1227T

Cisco Unified Computing System Overview

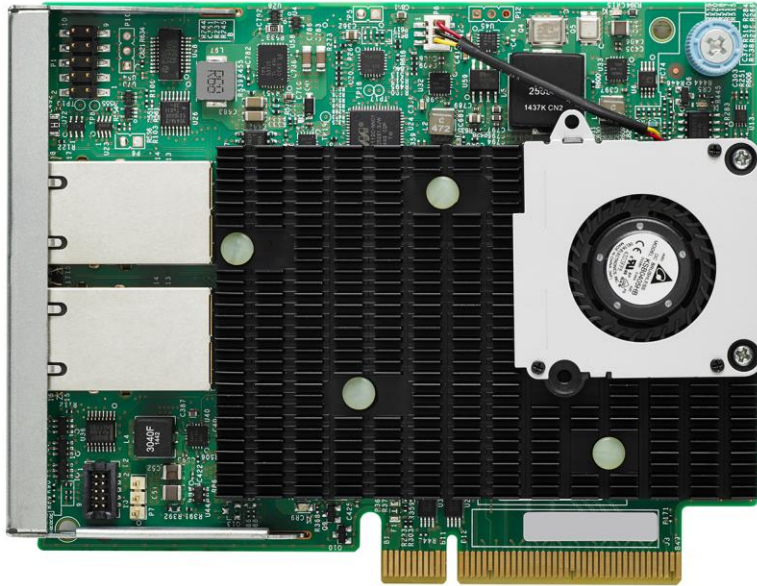
The Cisco Unified Computing System™ (Cisco UCS®) is a next-generation data center platform that unites computing, networking, storage access, and virtualization resources in a cohesive system designed to reduce total cost of ownership (TCO) and increase business agility. The system integrates a low-latency, 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

The Cisco UCS Virtual Interface Card (VIC) 1227T enables a policy-based, stateless, agile server infrastructure for your data center. It supports 10-Gbps Ethernet and Fibre Channel over Ethernet (FCoE). The card is a dual-port 10GBASE-T (RJ-45) PCI Express (PCIe) modular LAN-on-motherboard (mLOM) adapter designed exclusively for Cisco UCS C-Series Rack Servers (Figure 1). New to Cisco® rack servers, the mLOM slot can be used to install a Cisco VIC without consuming a PCIe slot, which provides greater I/O expandability. The card incorporates next-generation converged network adapter (CNA) technology from Cisco. The adapter provides Fibre Channel connectivity over low-cost twisted pair cabling with a bit error rate (BER) of 10 to 15 up to 30 meters and investment protection for future feature releases. The mLOM card can present up to 256 PCIe standards-compliant interfaces to the host, and these can be dynamically configured as either network interface cards (NICs) or host bus adapters (HBAs). In addition, the VIC supports Cisco Data Center Virtual Machine Fabric Extender (VM-FEX) technology. This technology extends the Cisco UCS Fabric Interconnect ports to virtual machines, simplifying server virtualization deployment.

Figure 1. Cisco UCS VIC 1227T





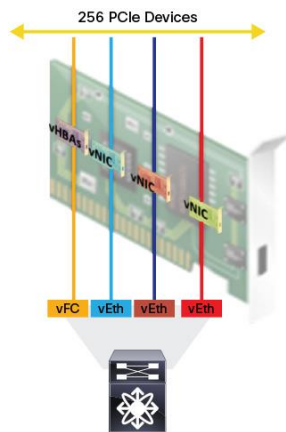
Features

The following sections present the main features of the Cisco UCS VIC 1227T.

Stateless and Agile Design

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).

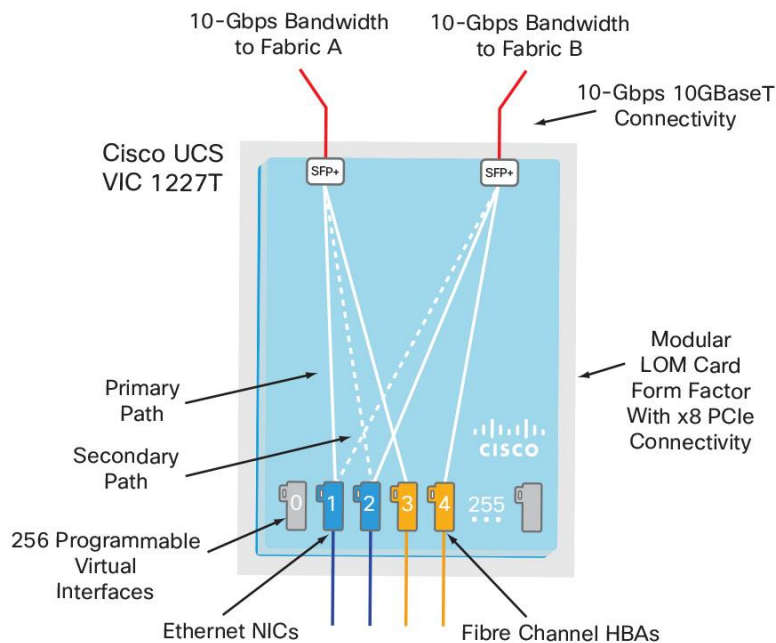
Figure 2. Virtual Device Support on the Cisco UCS VIC 1227T



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 1227T Architecture



Cisco SingleConnect Technology

Cisco SingleConnect technology provides an exceptionally easy, intelligent, and efficient way to connect and manage computing in the data center. SingleConnect technology dramatically simplifies the way that data centers connect to:

- Rack and blade servers
- Physical servers and virtual machines
- LANs, SANs, and management networks

The solution addresses the challenges of today's data center, and the result is a simple, intelligent, and efficient fabric that is:

- **Easy to use:** SingleConnect technology provides a “wire once and walk away” solution that eliminates traditional manual, time-consuming, error-prone processes and instead makes connecting servers to Cisco UCS fast and easy.
- **Intelligent:** The technology is intelligent because it uses a zero-touch model to allocate I/O connectivity (LAN, SAN, and management) across any type of server: physical rack and blade servers and virtual machines. The network intelligence helps Cisco UCS adapt to the needs of applications. Rather than limiting applications to specific servers, Cisco UCS makes it easy to run any workload on any server.
- **Efficient:** The technology is highly efficient because LAN, SAN, and management connections are shared over a single network, increasing utilization while reducing the number of moving parts compared to traditional approaches with multiple networks.

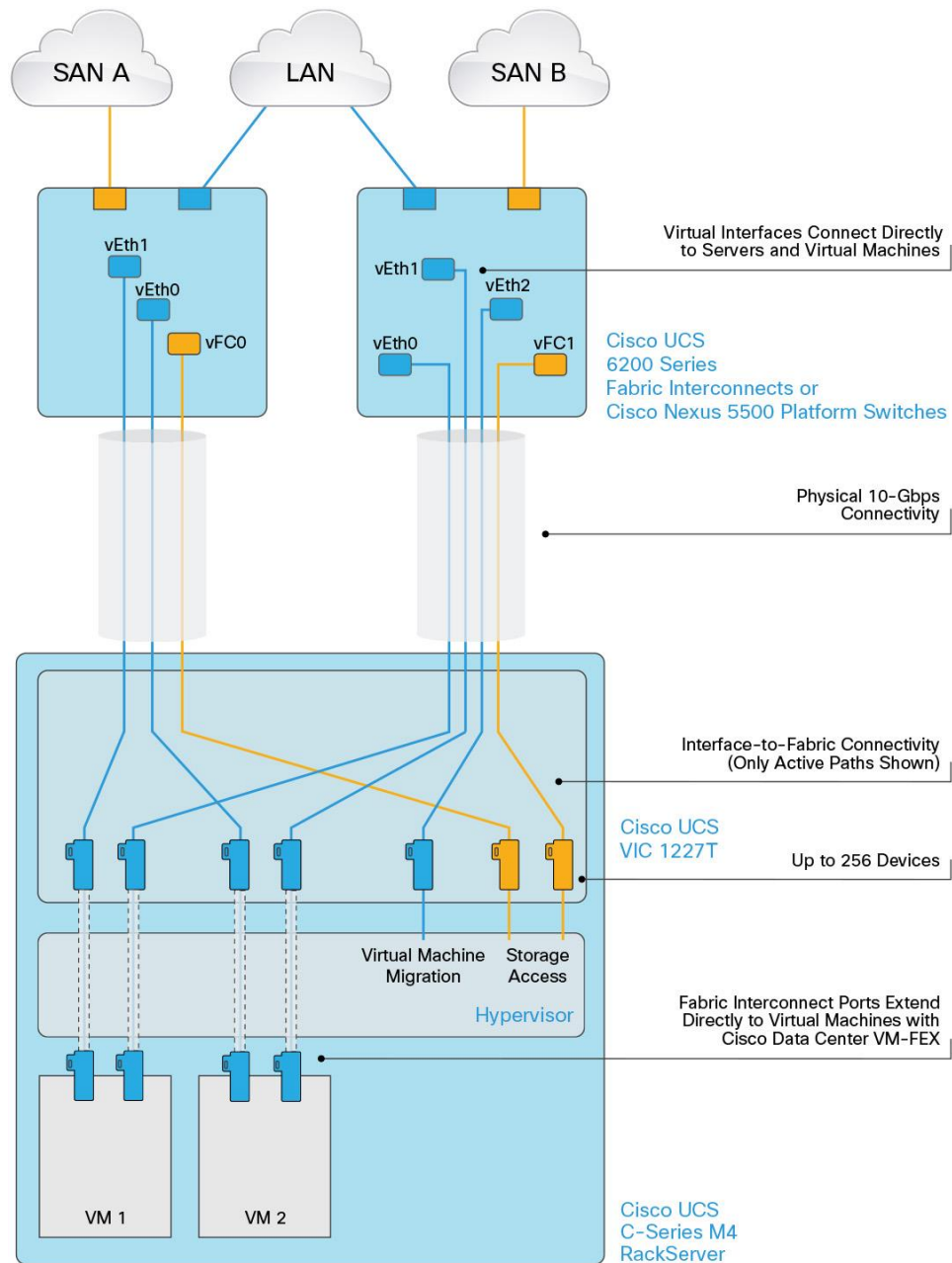
SingleConnect technology is implemented with an end-to-end system I/O architecture that uses Cisco Unified Fabric and Cisco Fabric Extender Technology (FEX Technology) to connect every Cisco UCS component with a single network and a single network layer. As customers expect from Cisco, the Cisco UCS I/O architecture is based on open standards and is highly reliable, available, and secure.

Cisco Data Center VM-FEX Technology

VM-FEX technology extends Fabric Interconnect ports directly to virtual machines, eliminating software-based switching in the hypervisor. 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). VM-FEX technology is implemented by Cisco VICs with a prestandard implementation of IEEE 802.1BR Port Extender.

Figure 4. Cisco Data Center VM-FEX with Cisco UCS VIC 1227T

With VM-FEX



Main Features and Benefits

Table 1 summarizes the main features and benefits of the Cisco UCS VIC 1227T.

Table 1. Features and Benefits

Feature	Benefit
x8 PCIe generation-2 interfaces	Delivers greater throughput
2 x 10-Gbps unified I/O	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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 <p>Note: Cisco UCS VIC 1227T 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</p>
Low-cost structured cabling	<ul style="list-style-type: none"> • 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 Category 6A and Category 7 twisted-pair copper cable already in place
Cisco Data Center VM-FEX technology	<ul style="list-style-type: none"> • 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
Support for advanced features	<ul style="list-style-type: none"> • Cisco user-space NIC (usNIC) • Small Computer System Interface over IP (iSCSI) and iSCSI boot • Ethernet NIC (eNIC) and Fibre Channel NIC (fNIC) • VM-FEX • VMware VMDirectPath • SR-IOV • Virtual Machine Queue (VMQ) • Microsoft System Center Virtual Machine Manager (SCVMM) • Data Plane Development Kit (DPDK) • Cisco NetFlow • Adapter FEX • N-Port ID Virtualization (NPIV) • Receive Flow Steering • Extended Receive (Rx) Ring • Receive Segment Coalescing (RSC) • VMware NetQueue • Multi-RQ • Receive-Side Scaling
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, CentOS and Ubuntu, VMware vSphere, and Citrix XenServer

Product Specifications

Table 2 lists the specifications for the Cisco UCS VIC 1227T.

Table 2. Product Specifications

Item	Specifications
Standards	<ul style="list-style-type: none">• 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)• SCSI-FCP• T11 FCoE
Components	Cisco UCS custom application-specific integrated circuit (ASIC)
Ports	<ul style="list-style-type: none">• 2 x 10-Gbps FCoE 10GBASE-T ports• Port speed 1/10/100/1000/10-Gbps autonegotiating
Connectivity	PCIe 2.0 x8 mLOM form factor
Supported cabling	Ethernet to 100m: <ul style="list-style-type: none">• 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: <ul style="list-style-type: none">• Category 6A UTP or STP up to 10 Gbps• Category 7 STP up to 10 Gbps
Performance	10-Gbps line rate per port
Management	Cisco UCS Manager Release 2.2.4 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)
Supported media	
Physical dimensions	<ul style="list-style-type: none">• Length = 4.5 in (11.43 cm)• Width = 3.625 in. (9.2075 cm)
Typical power	16 watts (W)

System Requirements

The Cisco UCS VIC 1227T is designed for use only on Cisco UCS C-Series Rack Servers. It is supported on Cisco UCS C220 M4 and C240 M4 Rack Servers and on Cisco UCS C3160 Rack Servers, which are dense storage servers. Up to two VIC 1227T 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?

The Cisco Unified Computing System 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. We began the unified computing phase of the Cisco 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 solution by taking a systems approach to computing that unifies network intelligence and scalability with innovative ASICs, integrated management, and standard computing components.

Cisco Capital

Financing to Help You Achieve Your Objectives

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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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