

Cisco UCS P81E Virtual Interface Card



Cisco UCS C-Series Overview

Cisco® UCS C-Series Rack-Mount Servers extend unified computing innovations to an industry-standard form factor to help reduce total cost of ownership (TCO) and increase business agility. Designed to operate both in standalone environments and as part of the Cisco Unified Computing System™, the series employs Cisco technology to help customers handle the most challenging workloads. The series incorporates a standards-based unified network fabric, Cisco VM-FEX virtualization support, and Cisco Extended Memory Technology. It supports an incremental deployment model and protects customer investments with a future migration path to unified computing.

Product Overview

A Cisco innovation, the Cisco UCS P81E Virtual Interface Card is a virtualization-optimized Fibre Channel over Ethernet (FCoE) PCI Express (PCIe) 2.0 x8 10-Gbps adapter designed for use with Cisco UCS C-Series Rack-Mount Servers. The virtual interface card is a dual-port 10 Gigabit Ethernet PCIe adapter that can support up to 128 PCIe standards-compliant virtual interfaces, which can be dynamically configured so that both their interface type (network interface card [NIC] or host bus adapter [HBA]) and identity (MAC address and worldwide name [WWN]) are established using just-in-time provisioning. In addition, the Cisco UCS P81E can support network interface virtualization and Cisco VM-FEX technology.

Features and Benefits

Unique to the Cisco Unified Computing System, the Cisco UCS P81E is optimized for virtualized environments, for organizations that seek increased mobility in their physical environments, and for data centers that want reduced TCO through NIC, HBA, cabling, and switch reduction.

The Cisco UCS P81E can present up to 128 virtual interfaces on a given server. The 128 virtual interfaces can be dynamically configured by Cisco UCS Manager as either Fibre Channel or Ethernet devices (Figure 1). Initially, the Cisco UCS P81E will support up to 2 Fibre Channel and 16 Ethernet devices. The number of virtual interfaces will be increased over time. With Cisco UCS P81E, deployment of applications that require or benefit from multiple Ethernet and Fibre Channel interfaces is no longer constrained by the available physical adapters.

To an operating system or a hypervisor running on a Cisco UCS C-Series Rack-Mount Server, the virtual interfaces appear as regular PCIe devices. In a virtualized environment, Cisco VM-FEX technology allows virtual links to be centrally configured and managed without the complexity that traditional approaches interpose with multiple switching layers in virtualized environments. I/O configurations and network profiles move along with virtual machines, helping increase security and efficiency while reducing complexity. As a result of close cooperation between Cisco and VMware, network policies and virtual interfaces can be applied to virtual machines in VMware vCenter. The partnership also enables pass-through switching in the virtual switch, improving hypervisor performance.

Another significant virtualization innovation is a technology known as hypervisor bypass. The Cisco UCS P81E has built-in architectural support enabling the virtual machine to directly access the adapter when such technology becomes available in hypervisors. I/O bottlenecks and memory performance can be improved by giving virtual machines direct access to hardware I/O devices, eliminating the overhead of embedded software switches.

The Cisco UCS P81E also brings adapter consolidation to physical environments. The adapter can be defined as multiple different NICs and HBAs. For example, one adapter can replace two quad-port NICs and two single-port HBAs, resulting in fewer NICs, HBAs, switches, and cables.

Figure 1. Cisco UCS P81E Architecture

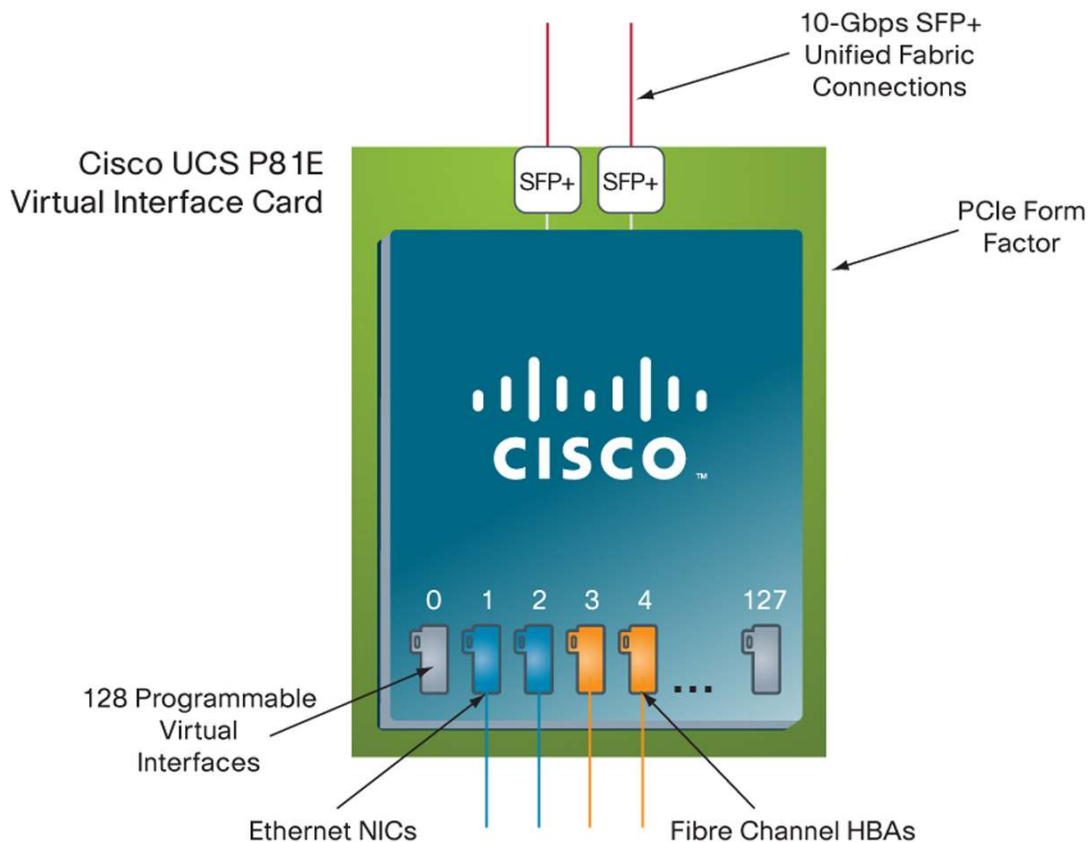


Table 1 summarizes the features and benefits of the Cisco UCS P81E.

Table 1. Features and Benefits

Feature	Benefit
Gen 2 x8 PCIe interface	Allows high throughput and is PCI 2.0 compliant
22 watts (W) typical power demand	Reduces power and cooling requirements compared to separate Ethernet and Fibre Channel adapters
Unified I/O	Helps reduce TCO by reducing the overall number of NICs, HBAs, cables, and switches because LAN and SAN traffic is consolidated on the same adapter and fabric
Up to 128 dynamic virtual adapters	Allows up to 2 Fibre Channel and 16 Ethernet adapters; will allow up to 128 virtual Fibre Channel and/or Ethernet adapters (future) Helps create a highly flexible I/O environment needing only one card for all I/O configurations, including virtualized environments

Feature	Benefit
Cisco VM-FEX technology	Provides network visibility to virtual machines; configurations and policy follow the virtual machine during migration (future) Note: Cisco UCS VIC 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 UCS Manager configuration limits for your specific OS and environment in the configuration guide .
Management	Local management of adapter; managed by Cisco UCS Manager (future)
Network architecture	Provides redundant path to fabric interconnect using dual 10 Gigabit Ethernet ports to the fabric carrying both Fibre Channel and Ethernet traffic
500,000 I/O operations per second (IOPS) \	Performs significantly faster than other Ethernet or HBA cards
Support for lossless Ethernet	Uses priority flow control (PFC) and IEEE 802.3x Pause to enable FCoE as part of the Cisco unified fabric
Optimization for VMware	Provides hardware-based implementation of Cisco Nexus™ 1000V Series Switches innovations; enables pass-through switching with VMware (future)
Pass-through switching enabled	Reduces virtual machine latency and increases performance through remotely configurable virtual NICs (future)
Broad OS and hypervisor support	Supports customer requirements for Microsoft Windows Server 2008, Red Hat Enterprise Linux 5.4, and VMware vSphere 4 Update 1

Platform Support and Compatibility

The Cisco UCS P81E is designed specifically for Cisco UCS C-Series Rack-Mount Servers.

Table 2 summarizes the specifications for the Cisco UCS P81E.

Table 2. Product Specifications

Item	Specification
Form factor	Full-height, half-length PCIe adapter
PCI interface	PCIe Version 2 x8
Ports	2x 10 Gigabit Ethernet
External connectivity	Small Form-Factor Pluggable Plus (SFP+) connectors with support for SFP+ copper, SR, LR, and LRM media
Network (or programming or other) interfaces	2x 10 Gigabit Ethernet Up to 2 Fibre Channel and 16 Ethernet interfaces (up to 128 virtual interfaces in the future)
Standards	10 Gigabit Ethernet, IEEE 802.3, IEEE 802.1q VLAN support, IEEE 802.1Qaz, 1000BASE-BX, jumbo frames up to 16 KB, 1/2/4-Gbps Fibre Channel, and T11 FCoE
Components	Cisco Unified Computing System custom application-specific integrated circuit (ASIC); Broadcom BCM8727 dual-channel 10 Gigabit Ethernet transceiver
Memory	128 MB
Performance	10-Gbps line rate per port
Physical dimensions	Length = 6.6 in. (16.8 cm) Width = 4.37 in. (11.1 com)
Typical power	22W
Inlet operating temperature range	0 to 40°C

System Requirements

The Cisco UCS P81E is designed to be used only on Cisco UCS C-Series Servers.

Warranty Information

Find warranty information for the Cisco UCS P81E 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. Cisco began the unified computing phase of our Data Center 3.0 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. The Cisco Unified Computing System completes this phase, delivering innovation in architecture, technology, partnerships, and services. Cisco is well-positioned to deliver this innovation by taking a systems approach to computing that unifies network intelligence and scalability with innovative ASICs, integrated management, and standard computing components.

For More Information

For more information about the Cisco UCS P81E Virtual Interface Card, visit http://www.cisco.com/en/US/prod/collateral/ps10265/ps10493/at_a_glance_c45-558247.pdf or contact your local Cisco representative.



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