



virtensys

# VIO-4000

## PCIe Sharing Series

### KEY BENEFITS

- Wire your servers once and reconfigure them at will without any physical changes
- Lower your server management complexity and operating expenses by >60%
- Maintain and extend your existing capabilities without physical changes to your network or storage infrastructures
- Reduce I/O CapEx costs and power consumption by up to 60%
- Stateless computing is now possible using standard x86 rack-mount servers
- Optimize up to 80 Gbps Ethernet, 32 Gbps FC, and/or 12 Gbps local SAS/SATA RAID shared I/O among attached servers

VIO-4001  
VIO-4004

VIO-4008  
VIO-4010



## The VIO-4000 Series PCIe Sharing Appliances

### OVERVIEW

The award-winning VIO-4000 Series PCIe Sharing appliances are evolving how servers get deployed and managed in data centers. It consolidates and virtualizes network and storage connectivity to a rack of servers, and provides up to 80 Gbps Ethernet and up to 32 Gbps Fibre Channel (FC) uplink bandwidth to the attached servers.

The VIO-4000 PCIe Sharing appliances remove the physical I/O adapters (Ethernet NICs, FC HBAs and SAS/SATA RAID adapters) and local disk drives from the servers within a rack, leaving them as stateless compute and memory nodes. The I/O adapters are pooled and consolidated within the VIO-4000 appliance, which creates hardware-virtualized images of the I/O adapters (vNICs, vHBAs and local disk drives (HDDs, SSDs) from the servers within a rack. The vNICs, vHBAs and vDisks emulate the physical adapters and local disk drives. They don't require changes to the servers, OS or applications.

Multiple servers use and share the physical adapters concurrently.

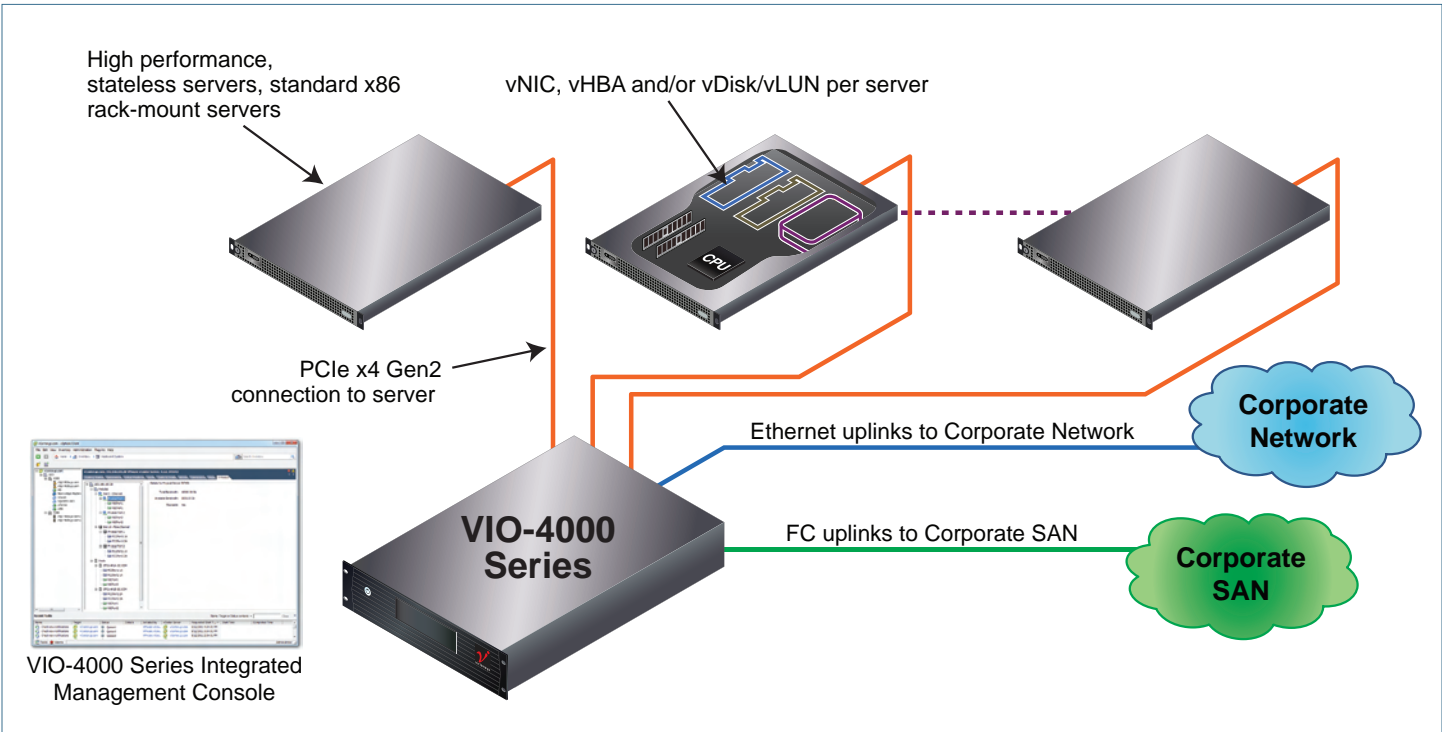
The VIO-4000 Series PCIe Sharing appliances connect to servers using a single x4 PCI Express® (PCIe) Gen2 cable per server that attaches directly to the server's native PCIe bus. Finally, the VIO-4000 appliance provides I/O connectivity that connect directly to the corporate infrastructure without the additional layer of access switching.

### COST SAVINGS

The VIO-4000 Series PCIe Sharing appliance delivers improved price/performance and lower energy consumption for connecting servers to network and storage infrastructures. They significantly reduce I/O capital equipment costs, power consumption, server management complexity and operational expense.

PRODUCT  
BROCHURE

**SERVER I/O DEPLOYMENTS WITH THE VIO-4000 SERIES**



**VIO-4000 SERIES**

The three PCIe Sharing appliances in the VIO-4000 Series are based on the same platform. Each virtualizes a different kind of server I/O to provide you with the right solution for your environment:

- The **VIO-4001** virtualizes four 10 Gbps Ethernet ports and four 8 Gbps FC storage ports
- The **VIO-4004** virtualizes eight 10 Gbps Ethernet ports
- The **VIO-4008** virtualizes four 10 Gbps Ethernet ports and two 6 Gbps local virtualized Direct Attached Storage (vDAS) SAS/SATA RAID controllers. The VIO-4008 provides different levels of RAID protection and up to 8 hot-swappable disks supporting SAS and SATA RAID. It also presents vLUNs and vDisks to the servers which appear as native, local storage to the servers.

- The **VIO-4010** virtualizes and shares up to two physical PCIe 10 Gbps Ethernet ports and two 6 Gbps local virtualized Direct Attached Storage (vDAS) SAS/SATA RAID controllers. Connected servers access a set of logical devices (vLUNs), which are created from a pool of enterprise class Solid State Disks (SSDs).

**WIRE ONCE – RECONFIGURE AT WILL**

The VIO-4000 Series PCIe Sharing appliances enable you to wire your servers once, and dynamically reconfigure them with different Ethernet, FC and/or local disk storage profiles, without making any physical changes. The available I/O bandwidth and disk capacity can be optimized and dynamically allocated among the servers based on application demand. Server resources and I/O resources can be added independently as needed.

**UNCOMPROMISING PERFORMANCE**

The VIO-4000 Series I/O appliances are built upon Virtensys’ patented and hardware-based PCIe PCIe Sharing technology and deliver full I/O connectivity to each connected server. Furthermore, the VIO-4000 Series PCIe Sharing appliances connect to each server using a single x4 PCIe Gen2 cable to support the connectivity and performance requirements of both traditional and virtualized environments.

**SIMPLIFIED MANAGEMENT**

The VIO-4000 Series PCIe Sharing appliances consolidate and simplify I/O management into a single console and enable you to automate and remotely manage the servers’ I/O within the rack, as a single entity. A single Server Administrator – as opposed to a team of different administrators – can set up server

I/O and connectivity in minutes. As a result, you can significantly reduce your server management complexity and operational expenses.

**NO CHANGES TO YOUR INFRASTRUCTURE**

The VIO-4000 Series PCIe Sharing appliances do not require deployment of a new data center fabric, and are deployable without modifying existing servers or networks in the data center. All existing capabilities of your network and storage infrastructures are maintained.

The VIO-4000 Series PCIe Sharing appliances work with traditional and virtualized servers, and support major networking and storage connectivity including Ethernet, Fibre Channel, iSCSI and SAS/SATA RAID.

**STATELESS COMPUTING WITH STANDARD SERVERS**

The VIO-4000 Series PCIe Sharing appliances convert industry-standard

x86 servers into high-performance and stateless compute nodes that can be interconnected in a seamless way by pooling, consolidating and abstracting servers' I/O resources and state. They also facilitate 'local' diskless server booting and enable you to dynamically reconfigure servers with different I/O profiles based on the application's or hypervisor's needs.

As a result, you can now deploy stateless computing in your environment using industry-standard servers and operating systems. This enables you to deploy cloud infrastructure using a platform-neutral approach, without requiring wholesale forklift upgrades or being locked into a single vendor's proprietary solution.

**ENHANCED VIRTUALIZED AND CLOUD ENVIRONMENTS**

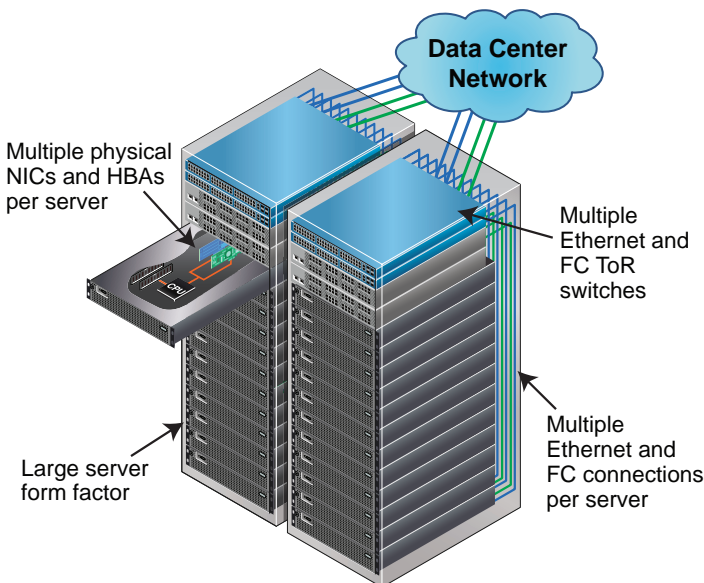
Enterprise server virtualization combined with the VIO-4000 Series PCIe Sharing appliances provides

integrated support for application migration and enables you to more effectively utilize your network, storage and computing resources to control costs and respond faster to changing business requirements.

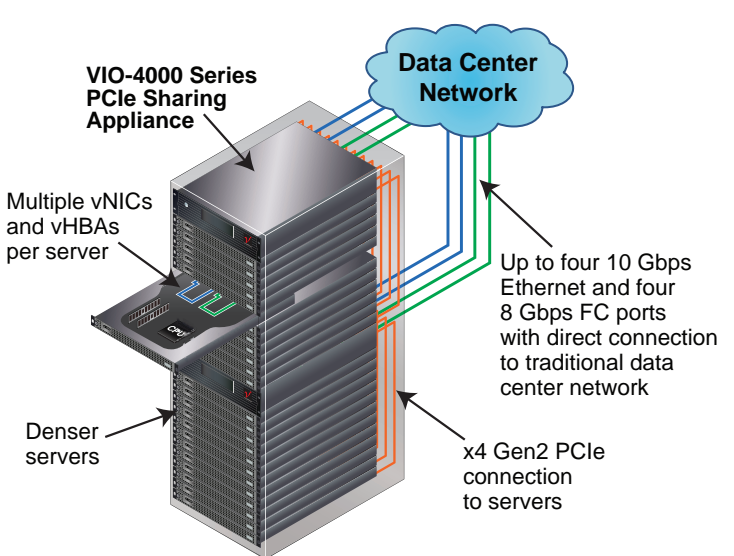
Networking connectivity and storage capacity can be treated as a pool of resources, to be optimized and allocated on-the-fly to software services and/or applications.

The VIO-4000 Series PCIe Sharing appliance increases the utilization and efficiency of I/O in virtualized environments. It creates multiple virtual adapters in each of the servers and provides line rate I/O to servers and VMs. This enables traditional as well as "hard-to-virtualize" applications to run much more efficiently in your virtualized environments, and maximize the value in the investments in networking and storage infrastructures.

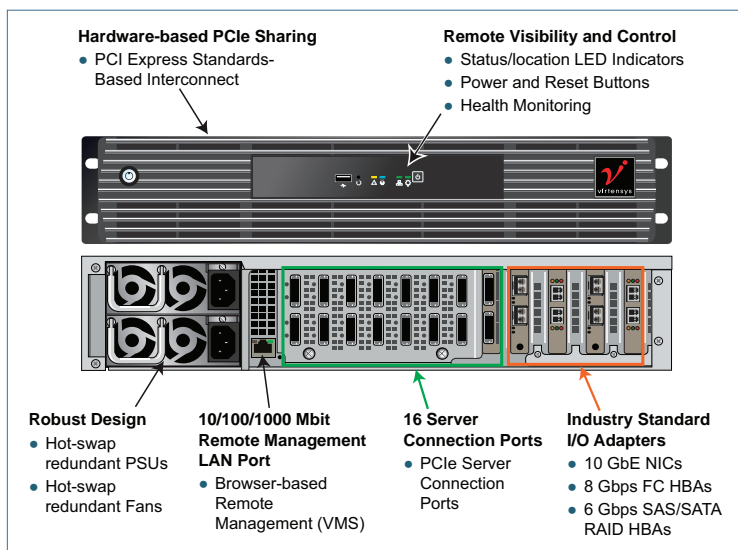
**TRADITIONAL SERVER I/O DEPLOYMENT**



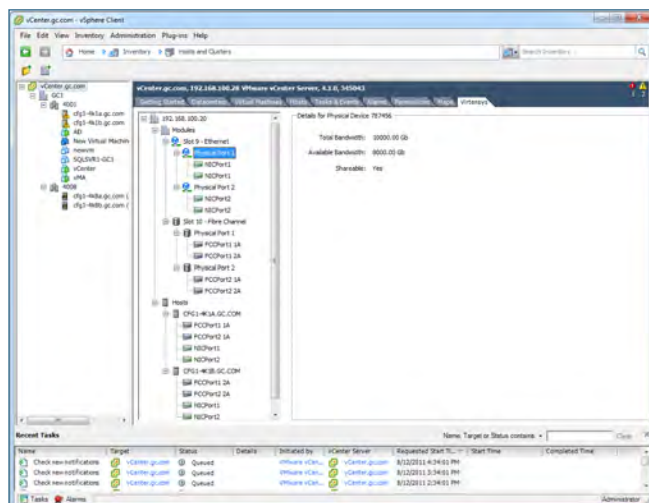
**SERVER I/O DEPLOYMENT WITH VIO-4000 SERIES**



## PRODUCT FEATURES



## VIRTENSYS MANAGEMENT SOFTWARE SUITE



### VIO-4000 Series Management Console

#### Remote Management Console

- VMware Integrated management with Virtensys' vCenter Server Plugin
- Native browser-based management user interface and command line tools
- Create virtual adapters from physical adapters
- Assign virtual adapters to servers
- Dynamically allocate available bandwidth to virtual adapters in servers
- Remove virtual adapters from servers
- Create LUNs from consolidated disks and assign to connected servers (VIO-4008 & VIO-4010)
- View and export reports of connectivity

#### Virtensys CLI, APIs and Protocols

- Scriptable Command Line Interface for automation
- SNMP/CIM/IPMI support for data center integration
- SMI-S for storage configuration

#### Health Monitoring

- IPMI 2.0 for active system health monitoring
- SNMP traps and alerts
- Alerts and events for monitored components

- Provides up to 80 Gbps Ethernet, 32 Gbps FC uplink bandwidth and/or 12 Gbps 'local' SAS/SATA RAID to up to 16 servers
- 19", 2U rack-mountable PCIe Sharing appliance
- Up to 16 server connection ports
- Consolidates, virtualizes and shares up to four dual-port I/O adapters between the connected servers:
  - Up to two dual-port 10 Gbps Ethernet adapters (VIO-4001, VIO-4008 & VIO-4010)
  - Up to four dual-port 10 Gbps Ethernet adapters (VIO-4004)
  - Up to two dual-port 8 Gbps FC HBAs (VIO-4001)
  - Up to two dual-port 6 Gbps SAS/SATA RAID adapters (VIO-4008 & VIO-4010)
- Presents virtual I/O adapters to each connected server:
  - Virtual adapters emulate physical adapters
- Connect to servers using server-native PCI Express:
  - x4 PCIe Gen1 at 8 Gbps (10 Gbps)
  - x4 PCIe Gen2 at 16 Gbps (20 Gbps)
- Works in traditional and virtualized/cloud server environments
- Hot-swap redundant PSUs
- Hot-swap redundant fans
- Remote 10/100/1000 Mb management LAN Port
- 8 x 3.5" hot-plug disk bays (VIO-4008 & VIO-4010)

The contents of this document are provided in connection with Virtensys products. Virtensys makes no representations or warranties with respect to the accuracy or completeness of the contents of this publication and reserves the right to make changes to specifications and product descriptions at any time without notice.

Virtensys and the Virtensys logos are trademarks of Virtensys Ltd or its subsidiaries in the United States and in other countries. PCI Express® and PCIe® design marks are registered trademarks and/or service marks of PCI SIG. Other brands and names may be trademarks of their respective companies or associations.



**US Headquarters**  
**Virtensys Inc**  
 14908 NW Greenbrier Parkway  
 Beaverton, OR 97006, USA

**European Headquarters**  
**Virtensys Ltd**  
 5500 Lakeside, Cheadle  
 Cheshire, SK8 3GR, UK

**Tel:** 503-210-5190  
**Fax:** 503-533-5707  
**Email:** [info\\_request@virtensys.com](mailto:info_request@virtensys.com)  
**Web:** [www.virtensys.com](http://www.virtensys.com)

**Tel:** +44 (0)161 495 1530  
**Fax:** +44 (0)161 491 4897  
**Email:** [info\\_request@virtensys.com](mailto:info_request@virtensys.com)