



The Challenge with VMware Deployments

Server virtualization has become a requirement in every scale and size of data center worldwide. The goal is to maximize the ROI of a server virtualization deployment, primarily by placing as many virtual machines on a physical host as possible. The challenge in this environment is to “right size” the I/O fabric interconnects which provide the interface to other physical hosts and the outside world, and if not correctly architected, can be the most costly part of the overall implementation.

VMware offers two best practices to deploy I/O: Segment traffic, and use many 1Gb links and separate fabrics to transport the various traffic types (Management, iSCSI, VM, Vmotion) or deploy dual full 10Gb links and use VMware traffic QoS to enforce traffic priorities. The former drives-up port, cable and switch count and costs as well as management complexity and physical server cost to house additional I/O adapters. The latter removes some of the cable and adapter complexity but can also be more expensive due to underutilized 10Gb links while removing the physical traffic segmentation that many IT shops had built into their own best practices and initial deployments.

What is needed is a way to combine the best of both models into a low cost, flexible I/O solution.

I/O Virtualization: A Better Way to Architect

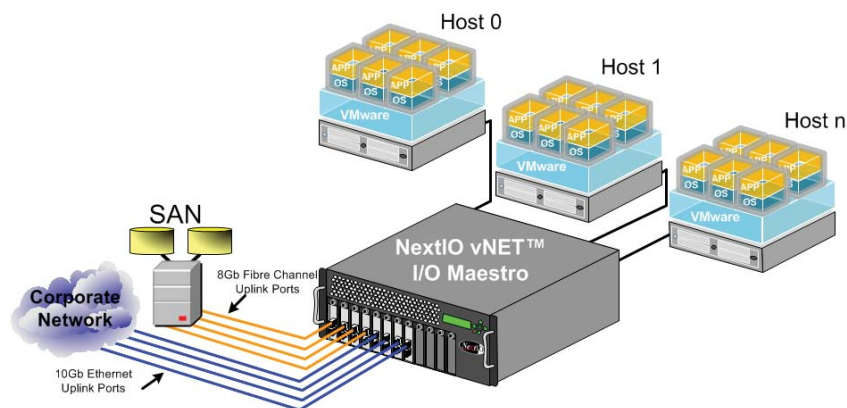
NextIO vNET™ I/O Maestro, is an innovative I/O consolidation solution that virtualizes server I/O into resource pools that are shared among the servers within a rack. vNET simplifies the deployment and management of complex server I/O and provides you with all the I/O connections, redundancy, and bandwidth you need for your virtualized environments with just two cables per server and eliminates the cable sprawl.

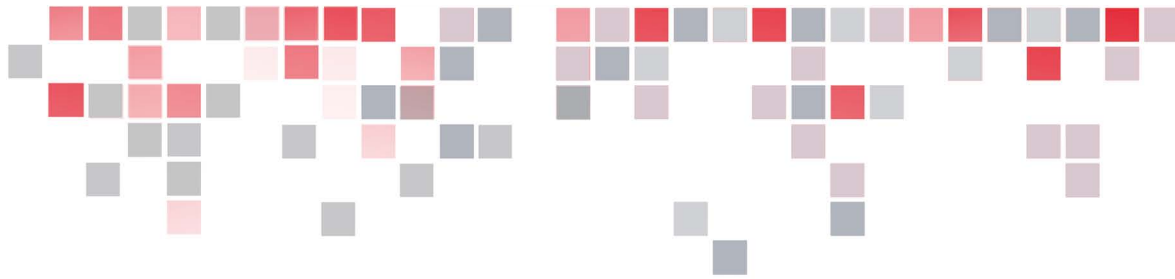


vNET I/O Maestro eliminates the physical storage and networking I/O adapters found in virtualized servers, and replaces the physical I/O resources with virtual NICs (vNIC) and virtual HBAs (vHBA). These virtual I/O resources can be dynamically deployed and reallocated to the servers and virtual machines at any time, providing you with a dynamic rack infrastructure to support changing workload demands based upon the applications' need.

BENEFITS

- **Reduce** your CapEx by up to 40%
- **Lower** your OpEx by up to 60%
- **Achieve** wire speed performance to your virtualized servers
- **Increase** the flexibility and agility of your data center
- **Simplify** manageability and reduce complexity





Reduce Your CapEx by 40%

With vNET I/O Maestro you can reduce the total acquisition costs of your VMware deployments up to 40% (including 60% reduction in server I/O costs). Eliminating the I/O adapters from the servers minimizes the number of Ethernet NICs and Fibre Channel HBAs required for your virtualized environment. Just 1 or 2 NICs and/or HBAs inside vNET is all you need to support up to 30 physical hosts. This compares to traditional server I/O deployments that require as many as 16 NICs and HBAs per server. vNET I/O Maestro replaces all the Ethernet and Fibre Channel cables per server with a single industry standard PCI Express® (PCIe) cable (or two for redundant deployments using dual vNETs) allowing denser and cheaper 1U or 2U servers. vNET also eliminates all of the network and storage leaf switches from the rack and provides direct uplink connections to the core network and storage infrastructures.

Lower Your OpEx by 60%

vNET allows you to lower your OpEx costs up to 60%, nControl Management Software is a unified and centralized I/O management console at the heart of the vNET appliance. nControl lets you automate and minimize the daily server I/O management tasks in your virtualized environment so your IT staff can focus on important revenue generating projects. Fewer I/O adapters, cables and switches in your environment, reduces your power consumption and cooling requirements.

Wire Speed Performance

Predictable application performance requires guaranteed bandwidth. vNET features a non-blocking architecture that supplies up to 20Gbps of dedicated bandwidth to each individual

server. Quantifying vNET Costs Savings Virtual Machines and applications on each server can access the network and storage infrastructure at wire speed through single or multiple 10Gb Ethernet and 8Gb Fibre Channel uplink connections. This enables you to leverage 10Gb Ethernet speeds and to create multiple virtual networks to support a variety of traffic types. vNET allows you to apply Quality of Service (QoS) parameters at the vNIC level to allocate a maximum percentage of bandwidth to an application or server. You can also dynamically scale up the connectivity bandwidth for your entire virtualized rack by hot-plugging additional I/O resource modules into the vNET appliance.

Further Increase the Flexibility and Agility of Your Data Center

One of the primary reasons organizations virtualize servers is to quickly change their infrastructure and deploy new workloads to respond to “real-time” business’s needs. Traditional server I/O deployments create barriers that limit the full agility of the IT infrastructure. vNET I/O Maestro complements server virtualization by providing the flexibility to remotely and rapidly repurpose servers on-the-fly. You can create new I/O profiles and the equivalent of a cabled network or storage connection without ever touching a wire.

Simplify Manageability

vNET substantially reduces the complexity of your VMware deployments by enabling you to manage all of the servers’ I/O within a rack as a single entity. You can speed your time to revenue by setting up, configuring and dynamically connecting any server to any network or storage resource in minutes rather than days or weeks.

For more information, or to purchase vNET, contact info@nextio.com

Quantifying vNET Cost Savings

Hardware	Traditional Server I/O	
	Description	Cost
Top of Rack Switches	6x 48-port 1Gbps Ethernet switch with 10GbE uplinks	\$42,000
	6x 24-port Fibre Channel switch with 8Gbps uplinks	\$78,000
Server I/O Adapters	60x quad-port 1GbE NICs	\$24,000
	60x dual-port 4Gbps FC HBAs	\$120,000
Cables	360x Ethernet and FC cables	\$15,600
Servers	30x 4U servers	\$255,000
	Total Traditional	\$534,600

NextIO vNET™ I/O Maestro		Savings
Description	Cost	
2x vNET I/O Maestro (each populated with 4x dual-port 10GbE and 2x dual-port 8Gbps)	\$95,556	\$24,444
NICs included above	\$0	\$144,000
HBAs included above		
60x PCIe cables	\$12,506	\$3,094
30x 1U servers	\$195,000	\$60,000
Total NextIO	\$303,062	\$231,538

This example is based on a typical virtualized environment with 30 ESXi hosts; each 4U host (HP DL580 G7) has 8x 1GbE and 4x Fibre Channel connections for full redundancy. The equivalent solution uses 30x 1U servers (HP DL360 G7 configured with the same memory and compute capacity) and redundant active-active dual vNETs. Each vNET is populated with 4x dual-ported 10GbE NICs and 2x dual-ported 8Gb FC for a total of 160Gbps Ethernet and 64Gbps Fibre Channel uplinks. Pricing based on MSRP.