



SUMMARY

Metric: Reducing the CAPEX and OPEX per virtual machine for Managed Service Providers (MSPs).

Problem: The advent of virtual machines has allowed MSPs to reduce the processor cost per VM. However, VM environments have significantly increased the cost of the I/O infrastructure, which has limited the savings realized from the use of VMs.

Solution: By allowing I/O resources to be shared across servers, NextIO's vNET I/O Maestro allow MSPs to utilize less resources across more servers, significantly decreasing the cost of I/O per VM.

FC + GbE	NextIO vNET
Server Size: 4U	Server Size: 2U
6 TOR Switches (2 x FC, 4 x GbE)	2 vNETs
60 Server Cards (20 x FC, 40 x QUAD GbE)	20 Server Cards (Passive PCIe HICs)
180 Cables (20 x FC, 160 x CAT5)	20 Cables (PCIe)
TOTAL RACK SPACE: 46U	TOTAL RACK SPACE: 28U

Figure 1

RackSpace: *“We are constantly trying to improve our customers’ experiences while at the same time driving down our costs, which is why we are investing in the Open Compute Project (OCP). We believe that shared I/O systems such as NextIO’s vNET are critical to helping OCP realize the goal of better service at a lower cost.”*

—Joel Wineland, RackSpace CTO Office

The Challenge

Managed Service Providers (MSPs) have transitioned from renting physical machines to renting virtual machines (VMs) to their customers. The drivers for this are the same ones that have always been driving the MSP market:

- Reducing the cost per machine
- Lowering the time to deploy new customers
- Increasing the flexibility of the offering

However, the challenge with VMs is that they significantly increase the cost of the I/O infrastructure per server. It is not untypical for a VM environment to require 12-16 I/O cables per server (see Figure 1). The I/O cost per server is also multiplied by the number of leaf switches and cables required to connect the servers to the various local area networks (LANs) and Storage Area Networks (SANs). For the MSPs, this means that they have to overprovision I/O in their servers if they want to keep the time to deploy new customer low. The end result is an I/O infrastructure that significantly increases the cost per VM for MSPs.

The Solution

The easiest way to simplify server I/O is through the concept of shared I/O, which simplifies I/O acquisition and provisioning for MSPs. NextIO's vNET I/O Maestro network consolidation appliance realizes the concept of shared I/O in a way that is transparent to servers, operating systems, applications, and the network. By allowing multiple physical servers to share I/O devices, vNET significantly reduces server I/O and network complexity and cost (see figure 2). vNET also allows server I/O resources and connections to be reconfigured “on the fly”. Now MSPs can reprovision both physical and virtual servers, adding new resources without incurring server downtime. Finally, vNET makes it possible for MSPs to procure and own homogeneous server configurations, and then customize them by adding virtual resources through vNET. This significantly reduces the time to bring new customers online or to provide existing customers with more resources.

BlueChip: *“Our goal is to provide the best technologies to our customers. NextIO’s vNET will allow us to provide more resources to customers quicker than we can today, while at the same time driving down costs.”*

—Brian Meredith, Managing Director, BlueChip



The Impact

By reducing the CapEx for I/O per VM, vNET helps companies like RackSpace and BlueChip to successfully compete in the global managed service provider and cloud computing markets. Depending on the configuration, vNET can cut the cost per VM for an MSP by 20%-40%. At the same time, the ability to provision on the fly both reduces the time to revenue and the ongoing OpEx costs of adding new resources to customer VMs. The end result is significantly improved customer experience and value.

Traditional Server I/O			Traditional Server I/O		
HARDWARE	DESCRIPTION	COST	HARDWARE	DESCRIPTION	COST
Top of Rack Switches	4 x 48-port GbE Switches with 10GbE uplinks	\$28,000	Top of Rack Switches	2 x vNET Maestros (each with 4 x dual-port 10GbE and 2 x dual-port 8 Gbps FC)	\$95,556
	2 x 24-port Fibre Channel Switches with 8Gbps uplinks	\$26,000			
Server I/O	40 x quad-port GbE NICs	\$32,000	Server I/O	Included in above	\$0
	20 x 8 Gbps FC HBAs	\$24,000	Cables	20 x PCIe Cables	\$4,169
Cables	180 x Ethernet /FC Cables	\$18,000	Servers	10 x 2U Servers	\$65,000
Servers	10 x 4U Servers	\$85,000	TOTAL TRADITIONAL		\$164,725
TOTAL TRADITIONAL		\$213,000			

Figure 2

Savings = \$48,275 (29%)

ABOUT THE COMPANIES

RackSpace: Fanatical Support® has made Rackspace the world's leading specialist in the hosting and cloud computing industry. We deliver enterprise-level hosting services to businesses of all sizes and kinds around the world. We got started in 1998 and since have grown to serve more than 152,000 customers. Rackspace integrates the industry's best technologies for each customer's specific need and delivers it as a service via the company's commitment to Fanatical Support. Our core products include Managed Hosting, Cloud Hosting and Email & Apps. There are currently over 3,700 Rackers around the world serving our customers.

BlueChip: Founded in 1987, Blue Chip quickly established itself as a specialist in providing the highest quality of service and support of IBM mid-range systems. Now with multiple locations in the UK, Europe and with a software development division based in Sri Lanka, Blue Chip is the largest maintainer of IBM mid-range systems outside of IBM itself. Blue Chip's founding principles of service excellence and value for money remain the corner stone of its appeal today.

Although IBM maintenance remains a key service Blue Chip has become a leading facilitator of Cloud Computing strategies and virtualisation. Focussed on the delivery of business data and applications Blue Chip has invested in both Customer site based services and a range of services and solutions that are delivered from one of three data centres. Significant investment has been made in its flagship, tier 4, data centre located near Bedford and in the technical staff committed to supporting its Customers.

NextIO: NextIO provides rack-level IO consolidation and virtualization solutions that maximize value, productivity and efficiencies of complex server IO. Our innovative architecture is based upon industry standard PCIe switching technology. By separating the compute from the IO we create pools of server IO resources at the rack level that can be shared, virtualized or dynamically allocated across servers within the rack. Data center managers benefit from lower TCO and increased time to revenue. NextIO solutions address data center requirements across multiple industry segments including: Enterprise, Oil & Gas, High Performance Computing, Financial Services, Academia, and Government. For more information, visit www.nextio.com