PRODUCT DATASHEET

vNET™ I/O Maestro

Consolidation and Virtulization Simplifies Complex I/O

vNET I/O Maestro is a rack-level appliance that simplifies the deployment and management of complex server I/O. vNET I/O Maestro eliminates the need for individual physical storage and networking adapters to be installed in every server by consolidating these devices into a shared pool of I/O resources. vNET replaces the physical servers I/O resources with virtual NICs (vNIC) and virtual HBAs (vHBA) that can be dynamically deployed and re-allocated to servers any time workloads change.

The virtual I/O resources function exactly like traditional server I/O and appear to the OS and application just like physical NICs and HBAs, so they require no application or OS modification. These virtual I/O devices also appear as traditional server I/O to the network and SAN resources. They are discovered and managed as physical entities so they do not require any changes to your infrastructure. vNET consolidates the multiple Ethernet and Fibre Channel cables per server into a single industry standard PCI Express® (PCIe) cable (or two for redundancy) and eliminates the corresponding network and storage leaf switches from the rack.

- **Scalable**
  Supports up to 30 rackmounted servers and up to 8 I/O modules
- **Any-To-Any Connectivity**
  Dynamically connects any server to any storage or network resource in minutes
- **Open Standards**
  Supports industry standard servers, I/O adapters, Operating Systems, applications and networking and storage infrastructures without requiring any changes
- **High Performance**
  Up to 20Gb/s bandwidth per server connection
- **High Availability**
  Ensures continuous uptime and availability supported by hot plug capability of components and advanced management capabilities

vNET Increases Operational Efficiencies and Lowers Total Cost of Ownership:

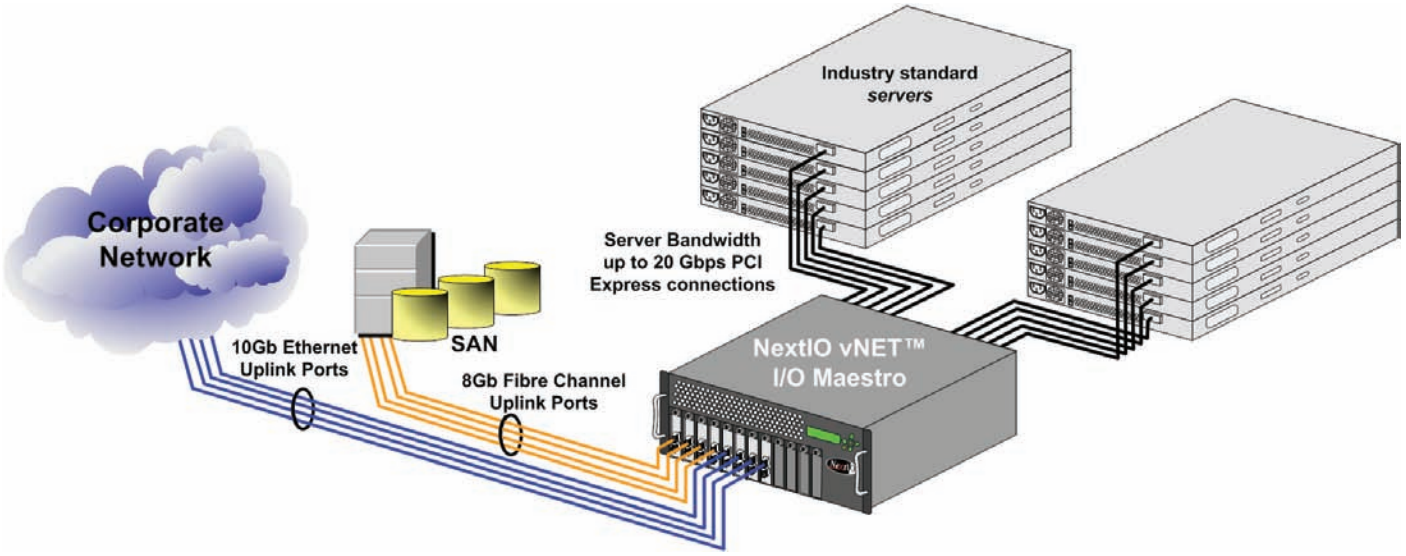
Simplified Server I/O Management: vNET lets you manage all of the servers' I/O within a rack as a single entity. You can speed your time to revenue by setting up, configuring and dynamically allocating network or storage resources to any server in minutes rather than days or weeks.

Greater Flexibility and Agility: With vNET you can remotely repurpose servers on-the-fly to accommodate changing workloads. You can re-allocate the virtual I/O resources to live servers and set quality of service parameters (QoS) to guarantee bandwidth to the applications.

Up to 40% Reduction in CapEx: vNET reduces the number of server I/O devices, cables and leaf switches typically required with traditional server I/O deployments and switching infrastructure.

Up to 60% Decrease in OpEx: vNET lowers your operational expenses by minimizing and automating routine server I/O management tasks. You can dynamically scale up compute capabilities and add connectivity bandwidth to an entire rack of server faster than for a single server. With vNET you can also eliminate layers of data center hardware lowering your power and cooling costs

Maximized Network and Storage Utilization: vNET shares the physical NICs and HBAs among multiple servers, enabling you to maximize the efficiency and utilization of your network and storage infrastructures.



Open Standards and Easy to Integrate

NextIO offers you an industry standard solution that lets you use the servers, networking and storage equipment of your choice. Most alternative solutions lock you into proprietary devices that limit your options. vNET I/O Maestro is interoperable with x86 servers from all vendors. It does not require you to make any changes to your existing infrastructure including servers, OS, applications, network or storage equipment.

Any-To-Any Connectivity

vNET enables you to dynamically connect any server to any storage or network resource in minutes without having to change any cable connection. You can also scale up the connectivity bandwidth for your entire rack of servers by simply hot-plugging additional I/O resource modules into vNET, rather than adding I/O resources to every individual server.

Uncompromised Performance

To achieve predictable application performance vNET features non-blocking architecture that supplies up to 20Gbps of dedicated bandwidth to each individual server. It enables virtual machines and applications on each server to access the network and storage infrastructure at wire speed through single or multiple 10GbE and 8Gb Fibre Channel uplink connections. vNET supports Quality of Service (QoS) to guarantee a minimum percentage of bandwidth to the applications.

Increased Reliability

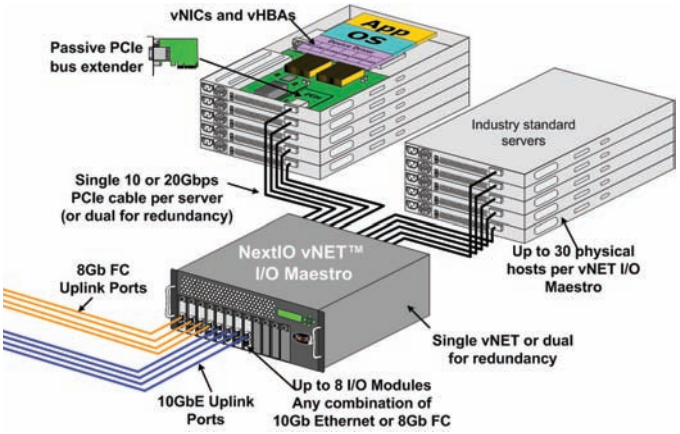
vNET ensures continuous uptime and availability in data center environments. It supports fully redundant and hot-pluggable power supply units and fans. The I/O modules are also hot-swappable and support failover through NIC teaming and Multi-Path I/O. System level redundancy across multiple vNETs is also supported.

The 10GbE and 8Gb FC uplinks from vNET connect directly to the core network and storage infrastructures, thus eliminating multiple leaf and end-of row switches.

vNET I/O Maestro Chassis

vNET I/O Maestro provides storage and network connectivity to all attached servers. Within the servers, vNICs and vHBAs appear as conventional Ethernet NICs and Fibre Channel host adapters. Passive PCIe bus extenders inside the servers extend the server-native PCIe bus to a PCIe cable that is used to connect vNET I/O Maestro to the servers. Two chassis models are available:

- N100-15X8IOM: Supports up to 15 servers and 8 I/O modules in a 4U system. Connects to each server using 20Gbps PCIe interface.
- N100-30X4IOM: Supports up to 30 servers and 8 I/O modules in a 4U system. Connects to each server using 10Gbps PCIe interface.



I/O Modules

Hot-swappable I/O modules provide storage and network connectivity to the servers. Two different I/O modules are currently available:

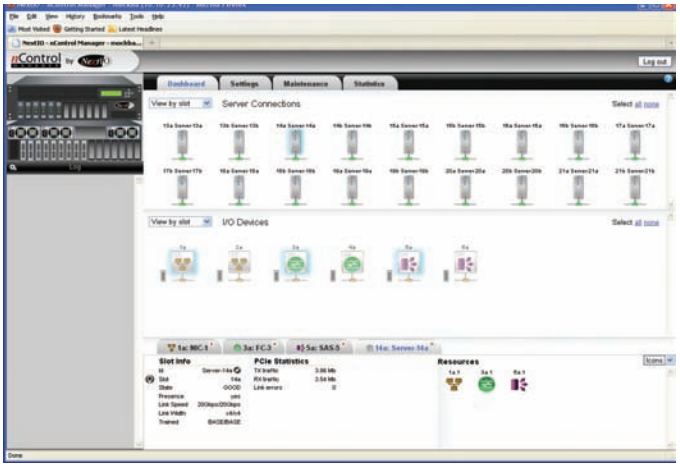
- Dual-port 10Gb Enet I/O Module
- Dual-port 8Gb FC I/O Module

The I/O Modules utilize 3rd party industry-standard PCIe 10GbE NICs and 8Gb FC HBAs. Any combination of up to 8 I/O Modules can be used with a single vNET.

Ethernet and Fibre Channel Modules

NextIO nControl™ Management Software

nControl is an integral part of the NextIO vNET solution. It provides remote and centralized management of the I/O resources for all the servers within a rack. Through an intuitive user interface, IT managers can configure, monitor and manage the I/O resource pool. nControl provides industry standard interfaces including web GUI, an open API and SNMP to actively manage vNET I/O Maestro. A fully scriptable CLI is also available to help automate repetitive tasks.



I/O TECHNICAL SPECIFICATIONS

Chassis Option and Product SKU		
Product SKU	N100-15X8IOM	N100-30X4IOM
Server interconnect Ports	• 15 non-blocking PCIe server ports	• 30 non-blocking PCIe server ports
Server interconnect Speed	• 20Gbps	• 10Gbps
Server interconnect cable	• Industry standard PCIe cable x8 (1, 2 or 3m)	• Industry standard PCIe cable x4 (1, 2 or 3m)
Number of I/O module slots	• 8x I/O module slots. Supports any combination of 10GE or 8G FC I/O Adapters	
10 Gigabit Ethernet I/O Module		
Physical port	• Dual port 10G Ethernet I/O adapter with SFP+ connectivity with support for 10 GBase-SR	
MAC address	• Each vNIC is assigned a unique MAC address. MAC addresses dynamically migrate between servers	
Checksum Offload	• Tx/Rx IP, SCTP, TCP and UDP checksum offloading capabilities • Tx TCP segmentation offload, IPSec offload and MacSec (IEEE 802.1ae)	
VLAN	• Supports IEEE 802.1Q VLANs and trunks	
IPv6	• Supports IPv6	
IPC Communications	• Supports server-to-server communications	
Quality of Service (QoS)	• Guaranteed max cap bandwidth	
8 Gigabit Fibre channel I/O Module		
Physical Ports	• Dual Port Fibre Channel with SFP+ connectivity with LC-style connector	
Protocols	• FC-PI-4, FC-FS-2, FC-FS-2/AM1, FC-LS, FC-AL-2, FC-GS-6, FC-FLA, FC-PLDA, FC-TAPE, FC-DA, FCP through FCP-4, SBC-3, FC-SP, FC-HBA and SMI-S v1.1	
World Wide Name	• Each vHBA is assigned a unique WWN. WWN can dynamically migrate between servers	
SAN Boot	• vHBA can be configured for SAN Boot	
Operating Systems		
Windows	• Windows 2008 (32-bit and 64-bit), Windows 2008 R2	
Linux	• RHEL 5.3, 5.4, 5.5 and 6.0, CentOS, SEL 11.x	
VMware	• ESXi 4.1 update 1	
Management – nControl Management Console		
Management Access	• Ethernet 10/100/1000 Mbps	
Management Interfaces	• Web-based management GUI (Firefox 3.5, Firefox 4, IE8, IE9, Chrome 11+) • CLI through Telnet/SSH and Open API for integration with 3rd party control management software	
Lights Out Management	• Support SNMPv3 Trap Configuration with 2 user accounts and 3 trap destinations • Environment monitoring and chassis alert	
High Availability		
Field Replaceable Units (FRUs)	• Redundant, hot-swappable power supplies & cooling fan modules	
Failover	• Supports 10Gbps Ethernet NIC teaming and failover • Supports Fibre Channel Multi-Pathing (MPIO)	
Power and Physical Dimensions		
Power	• Input: 110 - 240 VAC 47-63 hz Power Supply	• Active Power Consumption: 600W max
Physical Dimensions		
Physical Dimensions	• Height: 172.7 mm (6.8”) • Depth: 508 mm (20”)	• Width: 482.6 mm (19”) • Weight: 31.8 kg (70 lbs)
Environmental		
Temperature	• +10°C to 35°C	
Humidity	• 8% to 80% non-condensing	
Altitude	• 0 to +7,000ft	
Certifications and Regulatory Compliance		
Safety	• EN 60950-1:2001: UL60950	
Emissions	• Radiated and Conducted: EN 55022: 2006 (Amended by A1:2007) Class A; FCC CFR 47 Part 2 and 15: Class A	
	• Flicker: EN 61000-3-3:1995 (Amended by A1:2001, A2:2005)	
	• Harmonics: EN 61000-3-2:2006	
Emissions	• EN 55024:1998 (Amended by A1:2001 and A2:2003) and the provisions of the directives:	
	• - Low Voltage Directive 2006/95/EC	
	• - EMC Directive 2004/108/EC	