



virtensys



CUSTOMER
CASE STUDY

Accelerating software development and test results through I/O virtualization

As organizations continue to grow their data center server environments to keep up pace with accelerating business demands, the resource needs don't go away they only increase, and in many cases multiply. This causes more work for server administrators and puts other initiatives for improving IT efficiency at risk.

Many IT organizations are seeking improvements in process through becoming more agile, responsive and productive in the way they deploy servers to address business application needs. They are considering new approaches to reducing the resource intensive management tasks related to supporting and deploying network connectivity within their data centers.

About the customer

This company is a leading provider of electronic design automation (EDA) software and services. Their products are used worldwide by designers of integrated circuits (ICs) to develop, simulate, and test the physical design of ICs before production, and then to test finished products. The company has expanded into offering semiconductor intellectual property (SIP), providing the basic building blocks for circuit design. Their customers come from a variety of markets, including the semiconductor, consumer electronics, and aerospace industries.

In 2010 they made a strategic decision to leverage I/O virtualization (IOV) technology. They did this in order to solve a fundamental need within their data center – providing sufficient I/O connectivity, and of the right type, for their critical servers, when their business needs it most.

What were the challenges faced?

The company was seeking to improve service levels by reducing the time required to complete a typical set of processes for one of their critical applications. Their existing network solution and approach to deploying I/O connectivity wasn't delivering the necessary performance or response time objectives. One of their key objectives was to deliver test results within a specific period of time.

The requirement involved evaluating and selecting an I/O connectivity solution that would deliver the greatest possible performance with the lowest possible latency for “server-to-server” communication. Their particular application workload required optimal performance for a set of compute nodes working together in a cluster. A further objective, and a measurement of overall success, was to achieve lower latency. Ultimately, they were seeking to reduce and improve execution times per test cycle, and get the most out of the compute resources during each test period.

To this company, minimizing the execution time for a test run is one of the most critical elements, and a hallmark, to delivering their service level to internal business units. In an industry where their solution provides their customers with validation through software to determine the success/failure of a product design, minimizing the time to run a test is a key success factor.

Why did they select Virtensys?

Having evaluated a range of potential solutions, they selected Virtensys’ award winning VIO-4000 series IOV (I/O Virtualization) appliance to address their need to improve the Ethernet network performance for their high priority/mission critical applications. The VIO-4001, the specific model they implemented, provides both 10 Gigabit Ethernet (10 GbE) and Fibre Channel (FC) virtualized I/O connectivity to all connected server hosts. Each of their standard rack mount servers (HP DL380 G6, running RedHat Enterprise Linux 5.5) receives up to 4 virtualized adapters (vNICs, vHBAs) per connection.

Because the Virtensys VIO-4000 series leverages industry standard PCIe (PCI Express) connectivity between the servers and the IOV appliance, communications within the appliance (for example between connected server nodes) experience the lowest possible latency, communicating at PCIe bus speed (approximately 16 Gbps of raw PCIe bandwidth). This means that each server has the full throughput of a PCIe x4 Gen 2 native interface, and is capable of leveraging a pair of virtualized 10 GbE vNICs and FC vHBAs.

In this specific case, the VIO-4001 provides multiple virtual 10 GbE network interfaces per server within their compute cluster. It connects directly to a Cisco Nexus 5000 series network switch via 10 GbE uplinks. The network connectivity between each connected server is contained within the VIO-4001 IOV appliance. All storage access is achieved through traditional network connectivity, allowing the servers to communicate with an external network attached storage device (NAS).

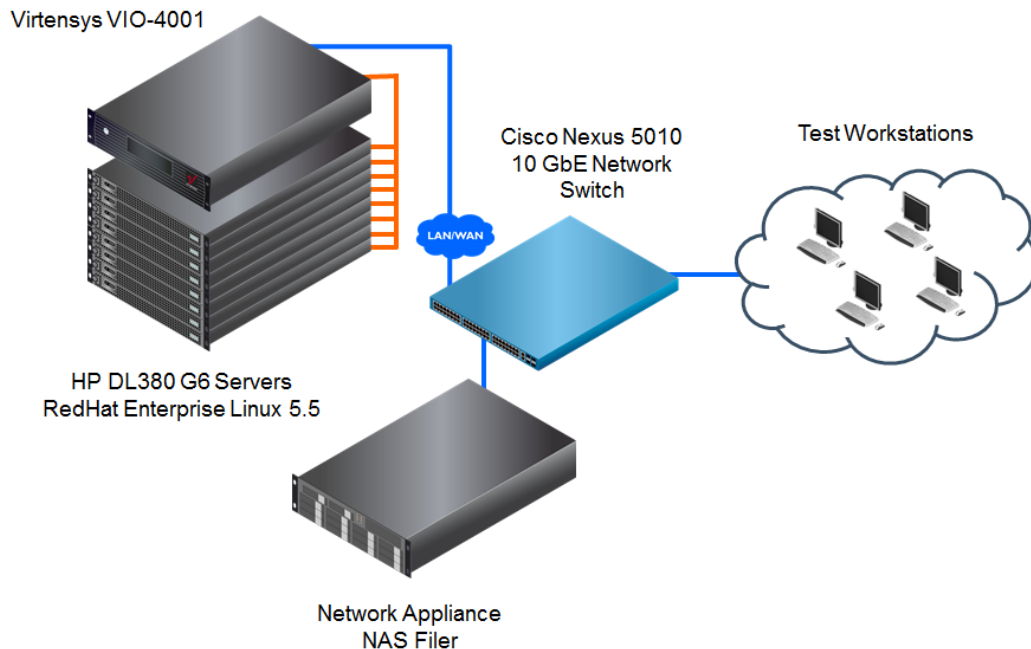


Figure 1: Deploying Virtensys VIO-4001 to support virtual I/O for rack mount servers

How did the customer benefit from the solution?

Through the adoption of Virtensys' VIO-4000 series IOV appliance, the company has experienced the benefits of reduced physical and logical layer connectivity complexity, as well as centralized I/O management and provisioning. This now makes the task of provisioning I/O to standard rack mount servers – easy, efficient and affordable. In addition, because Virtensys' IOV approach consolidates traditional I/O adapters (such as Intel's 10 GbE NIC and QLogic's FC HBAs), it maximizes adapter utilization, making more efficient use of these valuable, "high in-demand" resources.

As a result of deploying the VIO-4001 IOV appliance:

- they are now able to complete critical processing 2X faster than their previous network environment.
- they can run a test series in two hours rather than the four hours that it took previously; meaning the environment is better utilized and more processing can be performed per business day, having an immediate and positive impact on business productivity.
- they can execute the workload on just eight physical servers, whereas prior to implementing Virtensys' VIO-4001, they would have used 14 or more non-IOV enabled servers environment to execute the same workload.

About Virtensys

Traditional data centers take a conservative approach when it comes to provisioning and managing I/O connectivity to rack-mount based servers. This typically consists of installing multiple network interface cards (NICs) and storage host bus adapters (HBAs). To keep pace with business demands for greater connectivity bandwidth usually means installing more and more I/O resources. This impairs the IT organization's ability to remain agile and responsive to the business needs as time, cost and resource needs for setup/teardown simply becomes greater.

Virtensys approach to I/O provisioning and management leverages something called I/O virtualization (IOV). This means that servers can leverage virtual instances of traditional NICs and HBAs which appear to the server as locally installed physical I/O adapters. I/O provisioning to the servers is managed remotely and done "on-demand". The core value of the Virtensys' IOV appliance is to simplify the I/O provisioning process, thereby allowing IT to address greater operational and capital expense improvements.

Virtensys' award winning VIO-4000 series architecture leverages industry standard PCIe (PCI Express) technology to control how servers connect to the Virtensys appliance. PCIe is a universally adopted and accepted server technology; it is native to the server and is well known and understood by every server administrator.