



# Simplifying Virtual Server Management in a SAN with Emulex HBAs and PlateSpin Orchestrate from Novell

## Integrated management of NPIV-enabled SANs

### At a Glance

This paper describes how Emulex LightPulse® Host Bus Adapters (HBAs) teamed with PlateSpin Orchestrate software, deliver an integrated solution solving many of the challenges frequently experienced by administrators when running virtual machines and HBAs.

### Solution Components

- Emulex LightPulse Host Bus Adapters (HBAs)
  - Featuring NPIV technology
- PlateSpin Orchestrate from Novell
  - Virtual machine management software

### Introduction

Virtualization continues to be one of the hottest topics in the data center today.

However, virtualization of everything from servers to processors has presented administrators with a unique set of demands and in some cases, added complexity. In particular, fabric and storage connectivity have been impacted. This paper will describe how Emulex LightPulse Host Bus Adapters (HBAs) teamed with PlateSpin Orchestrate software, delivers an integrated solution to solving many of the challenges frequently experienced by administrators when running virtual machines and HBAs. The solution offered by Emulex and Novell provides virtual ports via N\_Port ID (NPIV) technology with each Emulex LightPulse HBA. The management of NPIV is then automated with PlateSpin Orchestrate software for efficient, unified and time saving management of all virtual assets.

### Key Benefits of Solution

- Allows administrators to manage virtual storage the same way as they would manage physical machines- leveraging existing best practices
- NPIV preserves individual fabric registration so there is no loss of individual zoning, array LUN masking and mapping –a considerable time savings while adhering to security best practices
- NPIV enables fabric quality of service to the individual VM level
- Management of NPIV is automated along with other virtual processes via PlateSpin Orchestrate software - providing unified and simplified management
- Optimizes, scales and protects the virtual environment

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## Challenges This Solution Addresses

Administrators have experienced the following challenges when running an environment consisting of multiple virtual servers sharing one Fibre Channel attachment (HBA):

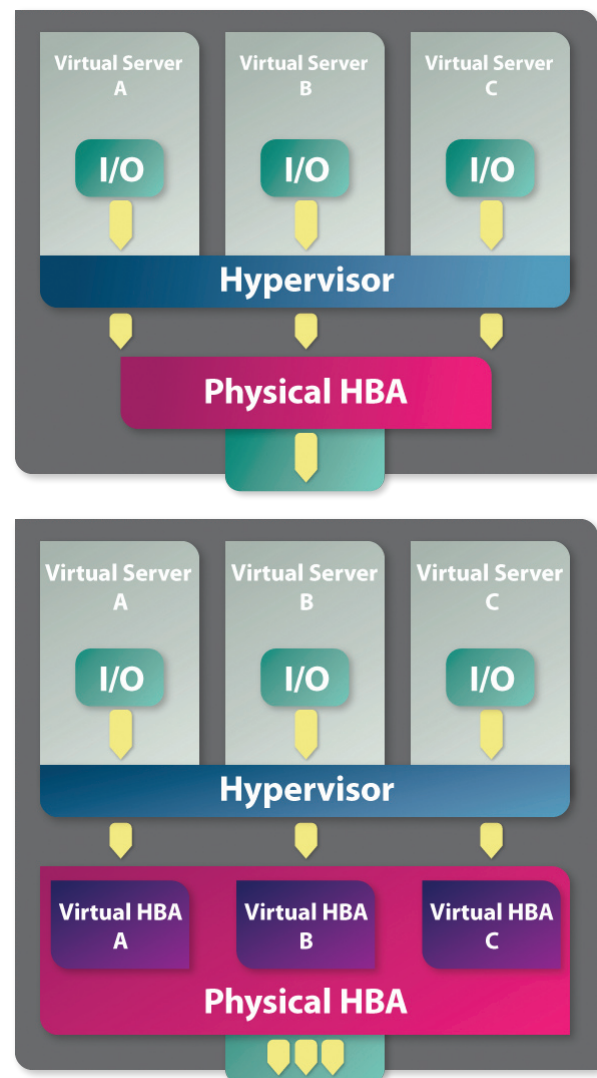
- Servers lose individual fabric registration and the use of services connected to this registration, including zoning, array LUN masking and mapping
- Fabric security through zoning isolation is compromised- forfeiting an important and auditable safeguard
- Effective fabric management through zone-based discovery and configuration is lost- fabric administration is more time-consuming and fabric events more disruptive
- A few of the above services are replaced by virtual server mechanisms which result in two sets of processes and skills (server-based and fabric/storage-based) to accomplish similar tasks- further adding complexity to their processes
- Fabric quality of service cannot be applied to critical VMs
- Individual VMs cannot selectively access targets in remote Virtual Fabrics (VSANs)
- Other features available on free-standing servers are simply lost once these servers get virtualized, creating major limitations in large virtualized, mission –critical production environments
- Management of all virtual assets within the enterprise is complex and time consuming

## N\_Port ID Virtualization (NPIV) Technology

### Virtual port technology available with Emulex LightPulse® Host Bus Adapters (HBAs)

N\_Port ID Virtualization (NPIV) is a key feature of Emulex LightPulse Virtual HBA technology that enables each Fibre Channel HBA to register multiple “virtual ports”, identified by Worldwide Ports Names (WWPN) with the fabric. These virtual ports can then be assigned each virtual machine, restoring individual fabric registration (see Figure 1). NPIV is part of the Fibre Channel protocol standard published by the ANSI T11 committee and implemented by leading fabric switch vendors as part of their standard offering. The first vendor to provide NPIV Fibre Channel support as part of its standard product, Emulex provides an NPIV implementation that conforms to the T11 standard and readily interoperates with existing fabric switches, transparently to storage devices. By restoring virtual machine level SAN connectivity, NPIV enables administrators to manage storage on behalf of the virtual machine in much the same way they manage storage attached to physical machines, leveraging familiar best practices and existing SAN management tools. This provides users with the following essential capabilities to optimize, scale-up and protect their virtualized environment:

- Optimization of storage connectivity to the need of the individual application or line of business, is provided by WWPN-based fabric quality of service and zoning tools offered by fabric switch vendors, as well as storage masking, mapping or quality (drive speed, mirroring, etc) provided by storage array vendors.
- Advanced provisioning, with seamless SAN reattachment of migrated workloads, and possible server and storage pre-provisioning.
- Compliance with corporate storage processes and utilization of corporate storage tools and skill sets.
- Enhanced incident resilience upon loss of server, storage or HBA resources, or upon resource overload.



**Figure 1** NPIV restores virtual machine storage connectivity. The first diagram shows a server without Virtual HBAs enabled. The figure below shows how the Virtual HBA port can facilitate VMs access to physical storage.

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## PlateSpin Orchestrate Software Virtual machine management software automates management of NPIV

PlateSpin Orchestrate is a Novell product that helps data center administrators to automate the management of large collections of virtual machines. It dramatically simplifies the management of heterogeneous virtual assets, by controlling the entire lifecycle of each virtual machine. Via built-in automation, resource usage can be kept aligned with business requirements. This helps maximize the value of physical and virtual data center resources including VMware, Xen or Microsoft Hyper-V based resources.

By providing comprehensive data center virtualization and workload management solutions, for example, provisioning a virtual machine together with 3rd party SAN storage can be simplified through workflows that create a SAN LUN, generates a unique Fibre Channel NPIV and assigns it to a virtual machine, and configures the 3rd party SAN storage array to grant access from the virtual machine (using its NPIV identity) to the LUN. Sophisticated automation helps break down management silos and reduces the complexity and risk of managing virtualized data centers. The result is an increased level of operational agility that creates a fluid enterprise; a data center operating environment that's aligned to the demands of business services hosted in virtual machines.

## Conclusion

Emulex LightPulse HBAs combined with PlateSpin Orchestrate software takes virtualization to the next level. Obstacles arising from the virtual machine to physical HBA interaction can be overcome with this solution. By offering virtual ports within each HBA via NPIV technology, security, effective management, quality of service and remote SAN access are enabled, making your operations easier, more secure, more effective and more flexible. The solution helps to automate the NPIV management process, bridging virtual server management into fabric and storage management, and unifying management of the other virtual assets within an enterprise.

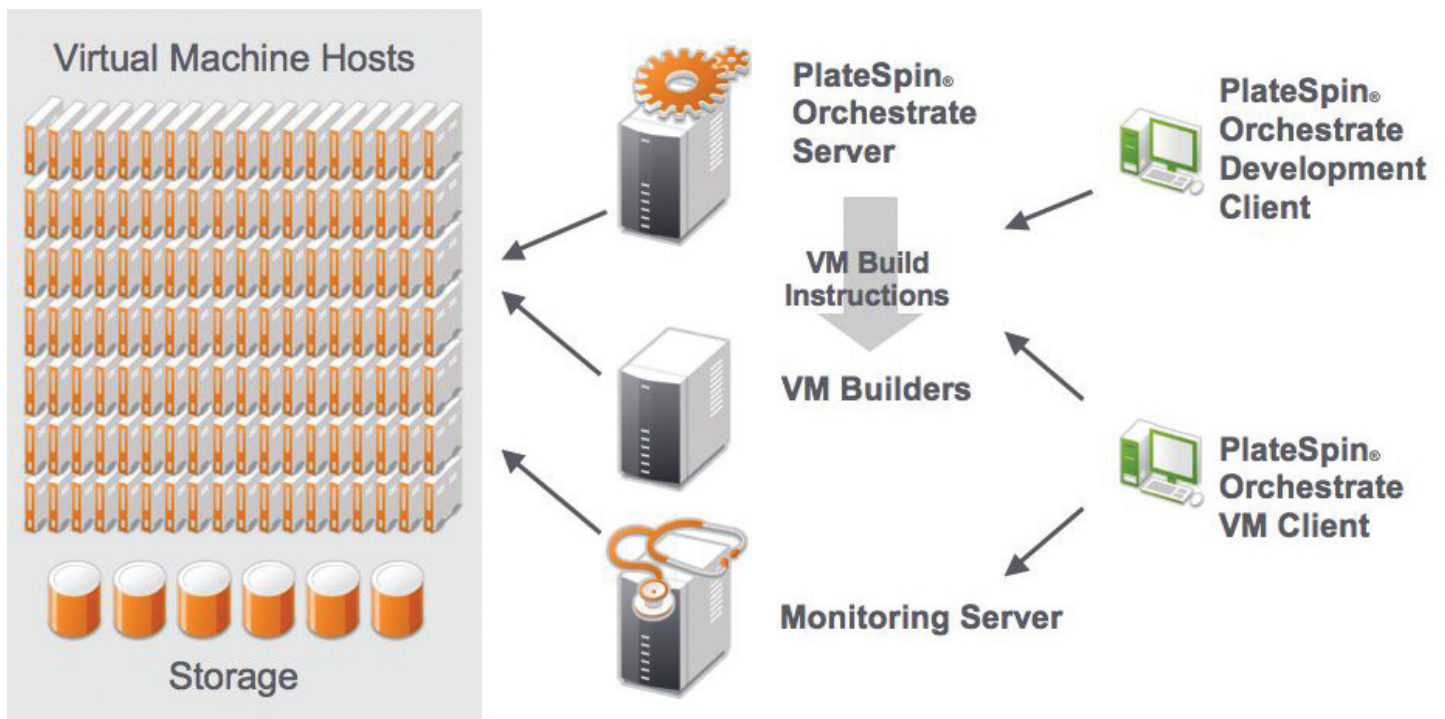


Figure 2 PlateSpin Orchestrate provisions virtual resources.

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