QLogic 8200 Series for Dell’s 12th Generation Server Platform

Frequently Asked Questions

QLogic 8200 Series Converged Network Adapter outperforms the alternative adapter in throughput per CPU utilization for both networking and converged traffic.

QUESTIONS AND ANSWERS

Q What new QLogic Converged Network Adapters are available for Dell’s 12G server platform?
A QLogic® offers Converged Network Adapters in three formats for Dell® 12G servers: QLE8262 standard PCI Express®, QME8262-k mezzanine for Dell blade servers, and QMD8262-k for the Dell Network Daughter Card.

Q Do the new formats offer any different functionality from the prior QME8242-k mezzanine Converged Network Adapter for Dell 11th generation M-Series servers?
A The functionality is the same, including Switch Independent Partitioning technology (formally known as NPAR or NIC Partitioning).

Q What is Switch Independent Partitioning?
A Switch Independent Partitioning is a method of dividing each QLogic 8200 Series Converged Network Adapter’s physical Ethernet port into a maximum of four partitions or virtual ports (eight virtual ports per adapter). These virtual ports can be assigned NIC, FCoE, or iSCSI personalities, and users can apply quality of service (QoS) settings by flexibly allocating minimum guaranteed bandwidth to each virtual port.

Q How is it different from SR-IOV?
A Switch Independent Partitioning is similar to SR-IOV in that both allow partitioning a physical port into multiple partitions. With Switch Independent Partitioning, the physical port is partitioned into multiple physical PCIe functions. However, in the case of SR-IOV, the physical port is partitioned into multiple virtual PCIe functions. This difference in partitioning allows Switch Independent Partitioning to be deployed in both bare metal (nonvirtualized) operating systems (OSs) and virtualized OSs. In contrast, SRIOV is primarily targeted towards virtualized platforms.

SR-IOV, which requires support from within an OS, is in its infancy; just a few OSs (Windows Server® 2012, VMware® ESX™ 5.1, and select Linux® kernels) have support for it. In contrast, Switch Independent Partitioning is a mature solution and is available on QLogic 8200 Series Converged Network Adapters and supported by all major OSs, including Windows®, VMware, and Linux, without any specific minimum server hardware or OS support requirements.
QLogic 8200 Series for Dell’s 12th Generation Server Platform

Q  How does Switch Independent Partitioning allow me to use fewer adapters?
A  With Switch Independent Partitioning, users can create up to eight virtual ports per QLogic 8200 Series Adapter. Each virtual port can be a NIC, FCoE, or iSCSI port with minimum guaranteed bandwidth. This means a single adapter can now replace multiple 1GbE NICs, Fibre Channel Host Bus Adapters, and iSCSI Host Bus Adapters.

Q  With Switch Independent Partitioning, what are the available choices of partitions when dividing a physical port?
A  With Switch Independent Partitioning, users can create up to four partitions per port and up to eight partitions per QLogic 8200 Series Adapter. Each partition can be either native Ethernet NIC, configured to support iSCSI or FCoE storage, or disabled. Changes to the personality of the partitions require a server reboot to be effective.

Q  What protocols are supported with Switch Independent Partitioning?
A  The function types supported on the virtual ports are TCP/IP (NIC), iSCSI, and FCoE. Both iSCSI and FCoE operate in full hardware offload mode.

Q  How many MAC addresses are supported by the adapter?
A  Using Switch Independent Partitioning, each physical function is assigned a unique MAC address. The number of layer-2 MAC addresses supported is a maximum of 64.

Q  What does “switch agnostic” mean? What are the benefits to the customer?
A  Switch independent means that the Switch Independent Partitioning feature works when the Converged Network Adapter is connected to any of Dell’s 10GbE –k switches, as well as when connected to any external 10GbE switch through the –k pass-through module. This implementation provides broad interoperability in an environment and more freedom when choosing a 10GbE switch.

Q  What are the benefits of using Switch Independent Partitioning?
A  With Switch Independent Partitioning, a single adapter can be divided into multiple flexible partitions and each NIC partition can be assigned a guaranteed bandwidth (QoS). As a result, a single adapter can replace multiple 1GbE NICs, Fibre Channel Host Bus Adapters, and iSCSI Host Bus Adapters.

Switch Independent Partitioning maximizes data center efficiency. It provides the following key advantages:

- **Lowers TCO**
  - Consolidates cables, infrastructure, and I/O
  - Saves precious server resources
  - Reduces operational complexity
  - Provides a flexible SAN and LAN personality

- **Reduces operational complexity**
  - Provides a flexible SAN and LAN personality

- **Efficient I/O Utilization**
  - Allows dynamic bandwidth provisioning
  - Minimizes bandwidth waste
  - Scales I/O workloads and connections
  - Enables scale-out performance for virtualized servers
  - Provides finer control for SLA/on-demand services

- **Simpler Deployment**
  - Switch- and OS-agnostic solution
  - Configuration at pre-boot or OS level via integrated tools

Q  What’s the difference between a physical function and a virtual function?
A  Physical functions are standard PCI functions that the OS can communicate with using a driver. Virtual functions are like “light weight” physical functions. Virtual functions apply only to SR-IOV implementations.

Q  What is an eSwitch? What is a vSwitch?
A  The eSwitch is an embedded switch that has layer-2 functionality. Each physical port has one instance of the eSwitch. This function is inside the QLogic 8200 Series Adapters and creates a low-latency communication path between virtual ports (partitions). The virtual switch (vSwitch) is a component of the hypervisor that sits above the eSwitch, allowing for communication between virtual machines (VMs).

Q  Is Switch Independent Partitioning included when I purchase my adapter?
A  Yes. Full Switch Independent Partitioning functionality comes with your purchase. There are no additional licensing fees incurred.

Q  What protocols are supported with Switch Independent Partitioning?
A  The function types supported on the virtual ports are TCP/IP (NIC), iSCSI, and FCoE. Both iSCSI and FCoE operate in full hardware offload mode.

Q  Is Switch Independent Partitioning enabled by default?
A  Yes, Switch Independent Partitioning is enabled by default (see Figure 2).

---

**Figure 1. Up to Four Physical Functions on Each Physical Port**

Note: The partitions on port 1 are even numbered and are odd numbered on port 2. The default function state for PF0 and 1 NIC function is always enabled.

**Figure 2. Available Protocols**

Q  What are the key features of Switch Independent Partitioning for the QLogic 8200 Series Converged Network Adapter?
A  The Switch Independent Partitioning solution has the following key attributes:

- Divide a physical port into four partitions
- Each partition can be assigned personalities to be NIC, FCoE, or iSCSI, with a maximum of one FCoE and one iSCSI partition per physical port
- For each of the NIC partitions, only “transmit rate” QoS attributes can be set
QLogic 8200 Series for Dell's 12th Generation Server Platform

- An “eSwitch” (Embedded Switch) onboard the adapter routes traffic between NIC partitions on the same physical port
- No OS or BIOS changes required
- Functionality independent of external network switch
- Changes in partition personality and QoS attributes are user configurable
- Full offload for iSCSI and FCoE with Switch Independent Partitioning
- Concurrent FCoE, iSCSI, and NIC support

Q What is meant by Quality of Service (QoS)?
A By definition, QoS means having the ability to control and enforce the relative distribution of finite resources among different entities.

For Switch Independent Partitioning, QoS is a technology that distributes NIC bandwidth among VMs or applications through Switch Independent Partitioning NIC functions according to configured parameters.

Q How is the QoS set? How does the bandwidth allocation work? What tools are used to set the bandwidth?
A The QoS parameter setting is supported from a minimum bandwidth of 100Mbps to 10Gbps. The settings can be allocated in blocks of 100Mbps increments.

There are five tools that the user can employ to configure the Switch Independent Partitioning functionality. They are the following:

- Pre-boot utility
- Dell’s Unified Server Configurator (USC)
- QLogic’s QConvergeConsole® management tool (GUI and CLI)
- Microsoft Windows properties pages
- VMware vCenter plug-in from QLogic

Q For Switch Independent Partitioning QoS, what are the configurable parameters?
A For every NIC partition (also known as a function), the following bandwidth control related parameters can be dynamically set (without requiring a reboot):

Minimum Bandwidth Setting (Guarantee)

- Provides a guaranteed amount of bandwidth available through the NIC function
- Specified as a percentage of the NIC’s portion of the physical port’s bandwidth
- The sum of all the minimum settings for the NIC functions of a physical port must be less than or equal to 100 percent
- Maximum bandwidth setting (oversubscription)
- Sets the maximum amount of bandwidth a NIC function is allowed to use
- The sum of all the maximum settings for the NIC functions of a physical port may exceed 100 percent, allowing for oversubscription capabilities

Q What is oversubscription and what are the advantages?
A Oversubscription is defined as the ability to configure the total maximum bandwidth settings of the NIC functions/partitions of a physical port to exceed the port’s actual bandwidth. It provides the following advantages:

- Each NIC partition can claim up to 100 percent of a physical port’s bandwidth if no other NIC partition is using it
- Unused bandwidth can be dynamically shifted to where it is needed
- Oversubscription prevents bandwidth wastage

Q What is the minimum bandwidth that can be allocated to a NIC partition?
A The QoS parameter setting is supported from a minimum bandwidth of 100Mbps. The settings can be allocated in blocks of 100Mbps increments (as a percentage of the total bandwidth) up to a maximum of 10Gbps.

Q What tools can be used to set the Switch Independent Partitioning QoS minimum and maximum bandwidth?
A There are various tools that users can employ to configure the Switch Independent Partitioning functionality, including:

Offline/Preboot

- QLogic NIC Fast!UTIL (Ctrl-Q) Pre-boot utility
- Dell’s Unified Server Configurator (USC)

Microsoft Windows

- QLogic’s QCC Management Application GUI
- QLogic’s QCC Management Application CLI
- Microsoft Windows Device Manager properties pages for QLogic NICs

Linux

- QLogic’s QCC Management Application GUI
- QLogic’s QCC Management Application CLI

VMware ESX/ESXi

- QLogic QCC Plug-in for VMware vCenter

Q What limitations are there to changing bandwidth allocations?
A Bandwidth changes are in increments of 100Mbps (1 percent of 10Gbps). The total minimum bandwidth allocated for the functions associated with a single physical port must be no greater than 100 percent. Bandwidth allocations pertain to NIC functions only. The allocations must be saved for each changed NIC function but the modifications do not require a reboot.

Q Is one virtual port’s unused bandwidth available for use by other active virtual ports?
A Yes. The minimum settings are bandwidth guarantees, specified as a percentage of the link speed. If one or more virtual ports aren’t consuming their full allotment, that bandwidth can be temporarily consumed by other virtual ports if they need more than their guaranteed allotment. Traffic is automatically rebalanced every 16ms based on the current needs of the active partitions and assigned bandwidth settings.
QLogic 8200 Series for Dell’s 12th Generation Server Platform

Q How do the Switch Independent Partitioning QoS bandwidth settings work in a DCBX-enabled network where ETS controls the actual bandwidth?
A When bandwidth settings exist for both Switch Independent Partitioning and DCBX (controlled via Enhanced Transition Services—ETS), DCBX takes precedence over Switch Independent Partitioning. DCBX sets the bandwidth distribution between NIC, iSCSI, and FCoE traffic, and then Switch Independent Partitioning sets the bandwidth for the NIC partitions by dividing the NIC bandwidth allocated by DCBX.

For example, if ETS sets the bandwidth distribution as 50 percent for NIC (5Gbps), 25 percent for FCoE (2.5Gbps), and 25 percent (2.5Gbps) for iSCSI, setting a minimum bandwidth for QoS for a NIC partition to a value of 20 percent effectively means setting the NIC partition minimum bandwidth guarantee to 20 percent of 5Gbps, which equals 1Gbps.

Q What is an eSwitch and what functionality does it provide?
A The QLogic 8200 Series Converged Network Adapter provides an embedded switch (eSwitch) per port of the dual-port adapter. The eSwitch provides a basic Layer-2 switch for Ethernet frames to route traffic between NIC partitions that share the same physical port without having to traverse the external switch.

The eSwitch operation is transparent and the administrator does not need to perform any specific configuration.

The eSwitch does not participate in FCoE or iSCSI traffic flow (see Figure 3 for a logical diagram).

Q What are the advantages of the eSwitch?
A The eSwitch provides an efficient way of routing Ethernet traffic between VMs that share NIC partitions on the same physical port. Ethernet traffic between such VMs need not traverse through the uplink to the external switch and is transparently and efficiently routed through the eSwitch.

This routing method effectively reduces utilization and congestion of the external Ethernet Switch and improves overall performance.

Also, using the eSwitch versus the vSwitch helps reduce CPU utilization because the eSwitch offloads a part of the Ethernet switching burden from the host CPU to the Converged Network Adapter.

Q Can the two eSwitches pass traffic between each other?
A For traffic to flow from one eSwitch to another, it must first pass through an external switch or have been forwarded by a VM that has a path through both eSwitches.

Q What are the various paths Ethernet traffic can traverse for communication between VMs?
A The path Ethernet traffic can take between two VMs depends on if they share a vSwitch or share an eSwitch. The following describes the possible scenarios:

- VMs that share a vSwitch: traffic is looped back via the vSwitch
- VMs that are on different vSwitches but share the same physical port (via NIC Partitioning) of the QLogic 8200 Series Converged Network Adapter: traffic passes through the vSwitch and is looped back via the eSwitch
- VMs that are on different vSwitches and on different physical ports of the QLogic 8200 Series Converged Network Adapter: traffic passes through the vSwitch and eSwitch and is looped back via the external switch

Figure 4 depicts the various scenarios (only one port of the QLogic 8200 Series Converged Network Adapter is shown for illustration).
QLogic 8200 Series for Dell’s 12th Generation Server Platform

FAQs

Q Is there a limit to the number of VMs that can be supported by the QLogic 8200 Series Converged Network Adapter using Switch Independent Partitioning?

A No. There is no limit imposed by the QLogic 8200 Series Converged Network Adapter solution on the number of VMs that can be deployed on a Hyper-V, VMware ESX/ESXi, or KVM deployment. The number of VMs can be limited by the amount of CPU, memory, disk space, and network bandwidth constraints in the server.

Q Is there a limit to the number of VMs that communicate with other VMs on the same physical server when using the QLogic 8200 Series Converged Network Adapter using Switch Independent Partitioning?

A No, but there are a few design considerations. Recall that VM-to-VM Ethernet traffic between VMs on different vSwitches is routed via the eSwitch (onboard the QLogic 8200 Series Converged Network Adapter) if the communicating VMs are attached to NIC partitions derived from the same physical port.

The eSwitch handles VM-to-VM communication by learning MAC addresses of the vNICs of the VMs. This information enables the eSwitch to switch packets destined to another VM on the same host.

The maximum number of vNIC MAC addresses that the eSwitch can learn (Layer-2 MAC address filters) is limited by the amount of memory available onboard the adapter. The QLogic 8200 Series Converged Network Adapter supports a maximum of 64 Layer-2 MAC address filters across all partitions and ports. The filters are equally distributed across the total-enabled NIC partitions on both ports of the adapter.

The available number of MAC address filters per partition determines the number of VMs that can communicate to other VMs via the eSwitch without the eSwitch having to forward the traffic to an external switch.

For most deployments, this limit is not reached and applies only when a large number of VMs need to communicate with other VMs on the same host via the eSwitch.

Q In my deployment, the traffic from the VMs or hypervisor flows to entities outside of the physical server. Are there any limitations on the number of VMs that are supported?

A No. There is no limit imposed by the QLogic 8200 Series Converged Network Adapter solution on the number of VMs that can be deployed on a Hyper-V, VMware ESX/ESXi, or KVM deployment. The number of VMs can be limited by the amount of CPU, memory, disk space, and network bandwidth constraints in the server.

Q What is a simple use case for deploying the Switch Independent Partitioning and QoS capabilities of the QLogic 8200 Series Converged Network Adapter solution?

A Table 1 depicts how the Switch Independent Partitioning capabilities of partitioning a 10GbE NIC port into multiple partitions and the ability to assign bandwidth limits to each provides a compelling use case for VMware ESX/ESXi-based deployments.

Most of these workloads are highly network dependent, have dynamic network bandwidth demands, can be unpredictable, and greatly affect SLA delivery.

<table>
<thead>
<tr>
<th>VMware Traffic Types</th>
<th>Requirements</th>
<th>Bandwidth Requirements</th>
<th>Number of Ports</th>
<th>Switch Independent Partitioning Bandwidth Settings (Min, Max)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management Traffic</td>
<td>Always available, low bandwidth requirements</td>
<td>1–2Gbps</td>
<td>1</td>
<td>1Gbps, 2Gbps</td>
</tr>
<tr>
<td>vMotion Traffic</td>
<td>Infrequent use, high bandwidth requirements</td>
<td>4–8Gbps</td>
<td>2</td>
<td>4Gbps, 8Gbps</td>
</tr>
<tr>
<td>iSCSI Traffic</td>
<td>Frequent use, medium bandwidth</td>
<td>2–4Gbps</td>
<td>1</td>
<td>2Gbps, 4Gbps</td>
</tr>
<tr>
<td>NFS Traffic</td>
<td>Frequent use, medium bandwidth</td>
<td>2–3Gbps</td>
<td>1</td>
<td>2Gbps, 3Gbps</td>
</tr>
<tr>
<td>FT Traffic</td>
<td>Continuous use, high bandwidth</td>
<td>2–3Gbps</td>
<td>2</td>
<td>2Gbps, 3Gbps</td>
</tr>
<tr>
<td>VM Traffic</td>
<td>Unpredictable, dependent on backend bandwidth. Medium bandwidth requirements.</td>
<td>2–4Gbps</td>
<td>1</td>
<td>4Gbps, 8Gbps</td>
</tr>
</tbody>
</table>

Note: The above bandwidth requirements are examples used to illustrate the value of Switch Independent Partitioning; your environment may have different requirements.
QLogic 8200 Series for Dell’s 12th Generation Server Platform

FAQs

Q What OSs are supported with Switch Independent Partitioning?
A Currently, the following OS support is available: Microsoft Windows Server 2012, 2008/2008 R2; Red Hat® Linux 5.5, 6.0; Novell® SLES 10 SP3, SLES 11 SP1; and VMware ESX/ESXi 4.1 and higher. For the latest list of supported OSs, please check the Dell support Web site for the QLogic 8200 Series Converged Network Adapter.

NETWORKING

Q Is teaming supported? Why use teaming?
A Yes. QLogic supports teaming. Teaming allows for high link availability (fault tolerance). If one of the underlying physical NICs is broken or its cable has been unplugged, the OS will detect the fault condition and automatically move traffic to another NIC in the bond. This capability eliminates a single point of failure for any one physical NIC and makes the overall network connection fault tolerant.

In addition, teaming helps with load balancing and link aggregation. Outgoing traffic is automatically load balanced based by destination address between the available physical NICs. Load balancing on incoming traffic can be achieved by using and configuring a suitable network switch.

Q What advantage does this give a customer?
A Teaming can improve availability and capacity.

Q How does teaming work?
A The user creates, modifies, and deletes teams (or bonds) using tools available from the OS or NIC vendors. Creating a team involves picking which available physical ports belong to the team, then choosing which type of team to create. The type of teams available depends on the OS that is deployed.

Q What are its limitations?
A Switch dependent teaming is not currently supported whenever iSCSI or FCoE is enabled on the partition.

Q Is Wake-on-LAN (WoL) supported?
A No. WoL is not supported on the QLogic 8200 Series Converged Network Adapters.

Q How is teaming configured for the QLogic 8200 Series Converged Network Adapter?
A NIC Teaming for the QLogic 8200 Series Converged Network Adapter can be configured via both inbuilt, OS-based tools and QLogic management applications (see Table 2).

Table 2. Typical Configuration using Switch Independent Partitioning for VMware ESX/ESXi

<table>
<thead>
<tr>
<th>Operating System</th>
<th>Inbuilt Operating System Tool</th>
<th>QLogic Management Tool</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows Server 2012</td>
<td>Windows NIC Teaming Manager or Microsoft Windows Device Manager properties pages for QLogic NIC (requires installation of the QLogic VLAN Teaming Driver via the SuperInstaller)</td>
<td>QCC GUI or QCC CLI</td>
</tr>
<tr>
<td>Windows Server 2008/2008 R2</td>
<td>Windows NIC Teaming Manager or Microsoft Windows Device Manager properties pages for QLogic NIC (requires installation of the QLogic VLAN Teaming Driver via the SuperInstaller)</td>
<td>QCC GUI or QCC CLI</td>
</tr>
<tr>
<td>Linux</td>
<td>Linux Bonding Driver Interface</td>
<td>N/A</td>
</tr>
<tr>
<td>VMware ESX/ESXi</td>
<td>VMware NIC Teaming Interface</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Q Are additional software components required to be installed to configure teaming for the QLogic 8200 Series Converged Network Adapter?
A Only for Windows Server 2008/2008 R2 deployments and optionally for Windows Server 2012. In these OS deployments, use the QLogic SuperInstaller to deploy the VLAN Teaming Driver before configuring NIC teaming. Obtain the QLogic SuperInstaller via [http://support.dell.com/](http://support.dell.com/).

For VMware ESX/ESXi, Linux, and Windows Server 2012 (when choosing to use the QLogic teaming driver versus the OS teaming driver), no additional QLogic components need to be installed before configuring NIC teaming.
QLogic 8200 Series for Dell’s 12th Generation Server Platform

FAQs

Q What are the various teaming types supported?
A For Linux and VMware ESX/ESXi deployments, the teaming types supported depend on the teaming types supported by the OS. Refer to the OS documentation for details. See Table 3 (above) for an example.

Q How can Switch Dependent NIC teaming capabilities be enabled?
A Switch Dependent teaming support is disabled by default; use the following instructions to enable it. These steps apply only for deployments when using the QLogic VLAN Teaming driver (Windows Server 2008/2008 R2 and Windows Server 2012). For other OS deployments, refer to the OS documentation to understand what teaming modes are supported and how to enable them.

Ensure that the following minimum versions of the drivers are installed:

- Minimum teaming driver version: 4.2.17.1221
- Minimum NIC driver version: 4.5.14.1020

Using the Microsoft Windows Device Manager Properties pages for QLogic NICs (see Figure 5).

1. Navigate to the Team Management tab in the Device Manage Property Pages for the NIC adapter.
2. Right-click on QLogic Adapters on the left panel of the screen.
3. Choose Custom Settings.
4. Check the Allow 802.3ad team over CNA box.
5. Click the OK button.
6. Using the QLogic QCC CLI, execute this command using the QCC v1.0.02.14 or newer:
   ```
   qacli-team_allowCNAsIn8023adTeam on
   ```

---

<table>
<thead>
<tr>
<th>Mode</th>
<th>Failover Capability</th>
<th>Switch Dependency</th>
<th>SFT (System Fault Tolerance)</th>
<th>Load Balancing</th>
<th>Number of Ports per Team (Range*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Failsafe</td>
<td>Yes: Layer 2</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>1–16</td>
</tr>
<tr>
<td>Tx load balancing</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes: Layers 3 or 4</td>
<td>1–16</td>
</tr>
<tr>
<td>Static 802.3ad**</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>1–16</td>
</tr>
<tr>
<td>Dynamic 802.3ad**</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>1–16</td>
</tr>
</tbody>
</table>

*Up to 16×16 ports can be aggregated per system: 16 ports per team and 16 teams per system.

**Switch dependent teaming support is disabled by default.

Figure 5. NIC Teaming Using Window’s Properties Page
QLogic 8200 Series for Dell’s 12th Generation Server Platform

**FAQs**

**Q** Is there a specific switch configuration required to support switch dependent teaming?

**A** Yes. Because switch dependent teaming requires participation from the switch to balance and switch traffic between participating NIC ports, the switch must be configured to support LACP (802.3ad). Refer to the switch vendor's documentation for instructions.

**Q** Are there any special considerations with configuring switch dependent teaming (LACP) with concurrent FCoE or iSCSI traffic via the Converged Network Adapter?

**A** Yes. In addition to switch configurations required to support LACP, additional configuration steps are required to enable concurrent FCoE traffic along with link aggregated (LACP) NIC traffic. Refer to the following links for additional details:

- Cisco Nexus® Configuration Topologies at https://supportforums.cisco.com/thread/2071713
  Read pages 2–35

**Q** Are there any teaming considerations when using Switch Independent Partitioning?

**A** When configuring NIC teaming, use caution so as not to team NIC partitions that are derived from the same physical port. Such a design does not provide the redundancy expected from NIC teaming because the event of a physical link down on the physical port will affect all partitions of the physical port.

Also, switch dependent team (802.3ad) is not supported for NIC partitions.

**Q** What are other documentation and references to learn more about Switch Independent Partitioning and NIC teaming?

**A** For more information, here is a helpful video: QLogic KnowHow: Configuring NPAR under Windows Server 2008 http://www.youtube.com/watch?v=rK1OXNKynNw