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NIC Partitioning (NPAR) FAQs

Revision History

<i>Revision</i>	<i>Date</i>	<i>Change Description</i>
2CS57712-K-FAQ100-R	04/20/11	Initial release

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About This Document

Purpose

This document provides a list of frequently asked questions (FAQs) pertaining to the NIC Partitioning (NPAR) on a Dell® PowerEdge® M710HD Blade Server installed with the Broadcom® 57712-k Converged Network Daughter Card (NDC) Dual Port 10 GbE option (see [Figure 1](#)).

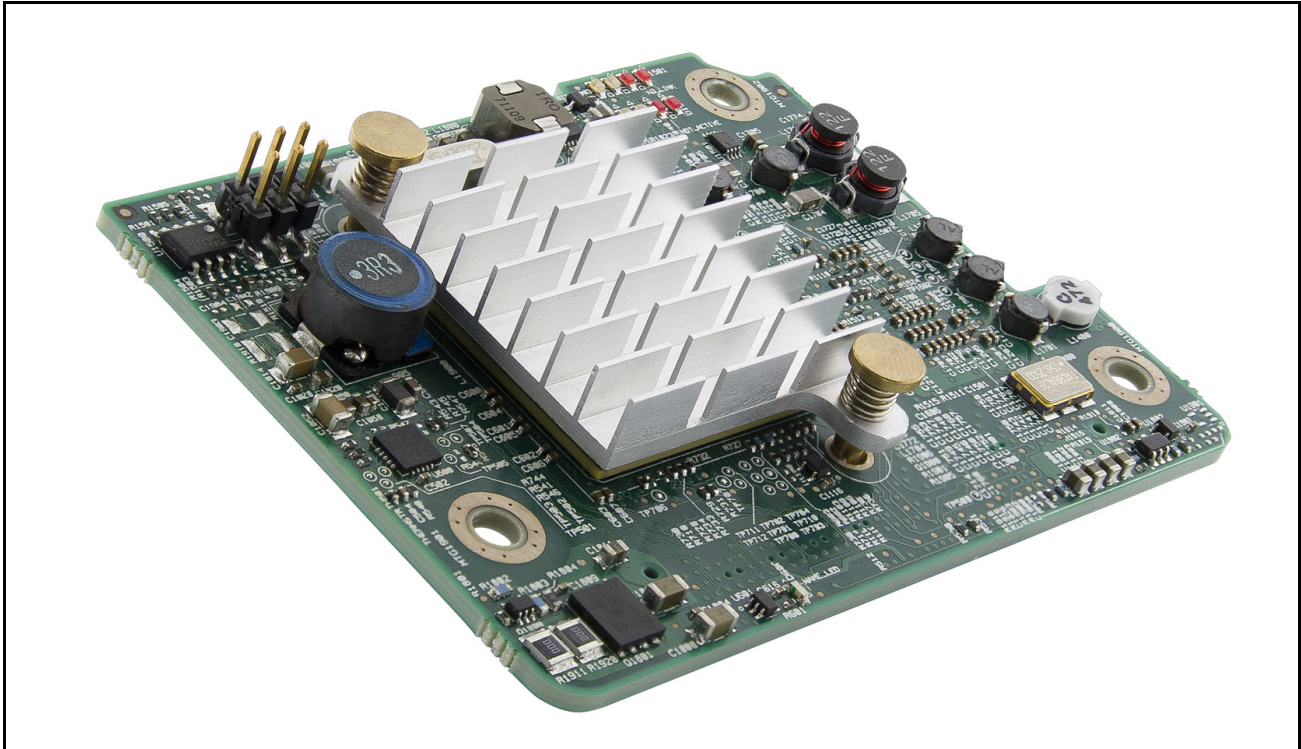


Figure 1: Broadcom 57712-k Converged NDC

Audience

This document is written for the network administrator who wishes to partition the Broadcom network controller on a Microsoft® Windows Server 2008 R2 and Red hat Enterprise Linux® v5 system with up to eight functions (four per port) over Ethernet and /or four functions (two per port) over iSCSI HBA.

Acronyms and Abbreviations

In most cases, acronyms and abbreviations are defined on first use. For a comprehensive list of acronyms and other terms used in Broadcom documents, go to:
<http://www.broadcom.com/press/glossary.php>.

Technical Support

Broadcom provides customer access to a wide range of information, including technical documentation, schematic diagrams, product bill of materials, PCB layout information, and software updates through its customer support portal (<https://support.broadcom.com>). For a CSP account, contact your Sales or Engineering support representative.

In addition, Broadcom provides other product support through its Downloads & Support site (<http://www.broadcom.com/support/>).

Frequently Asked Questions (FAQs)

Q: How many partitions are created per port?

- A maximum of four partitions are created per port. There are two ports on the device, for a total of eight partitions made available in NPAR mode.

Q: How many Ethernet protocol device partitions are allowed?

- A maximum of four Ethernet protocol devices can be enabled per port on any or all four partitions of each port for a total maximum of eight on the dual-ported 57712-k device. For Windows OSs, the Ethernet device can be enabled with or without any other offload protocol being enabled on the same partition, while for Linux OSs, the Ethernet protocol for all partitions is always enabled.

Q: How many iSCSI offload protocol HBA device partitions are allowed?

- A maximum of two iSCSI offload protocol HBA devices can be enabled per port on any of the four partitions on each port for a total maximum of four on the dual-ported 57712-k device. In Windows OSs, the iSCSI offload HBA device can be enabled with or without the Ethernet protocol being enabled on the same partition; while in Linux OSs, the iSCSI offload protocol must be enabled with the Ethernet protocol being enabled on the same partition.

Q: What are the available protocols?

- For NPAR mode of operation using iSCSI non-offload pathway initiator mode on Windows, enable the Ethernet protocol for the specific port's partition. On Linux, the Ethernet protocol is always enabled.
- For NPAR mode of operation with iSCSI hardware offload HBA pathway initiator mode on Windows/Linux, enable the iSCSI offload protocol for the specific port's partition.
- For SF mode of operation, both Ethernet and iSCSI protocols are available, by default, on both ports.

Q: What is a partition's Relative Bandwidth Weight value range?

- The Relative Bandwidth Weight value is from 0 to 100, but the sum of the Relative Bandwidth Weights for all four partitions on the same port must equal either 0, which means all four partitions have the same relative weight factor, or 100.

Q: What does a partition's Relative Bandwidth Weight value affect?

- A partition's Relative Bandwidth Weight value affects only its send/transmit/outgoing traffic. The receive direction traffic of the four partitions of a single port is not weighted or controlled by the 57712-k device NPAR logic.

Q: What is a partition's Maximum Bandwidth value range?

- A partition's Maximum Bandwidth value range is from 1 to 100. The sum total of the four partition's Maximum Bandwidth values on the same port do not have to equal 100. The allowable sum-total value range is from 4 (all four set to 1) to 400 (all four set to 100).

Q: What does a partition's Maximum Bandwidth value affect?

- A partition's Maximum Bandwidth value affects only its send/transmit/outgoing traffic. The receive direction traffic is not limited and is always the maximum link speed.

Q: How does a partition's Maximum Bandwidth value affect the Link Speed of the partition adapter?

- A partition's Maximum Bandwidth value is used by some OS applications to display the partition

device/adapter link speed. This value represents the send/transmit/outgoing link speed and not the receive/incoming link speed, which is always the port's link speed with the understanding that the four partitions of a single port share the same receive direction port.

Q: What are the similarities and differences between SF and NPAR for advanced features such as stateless offload, teaming, and VLAN?

Table 1: SF Versus NPAR Mode

Feature	SF	NPAR
Ethernet Adapters	2 - 1 per port	Up to 8 – 4 per port
iSCSI Hardware Offload HBAs	2 - 1 per port	Up to 4 – 2 per port
MS TCP Chimney Offload (TOE)	Yes	Yes
TCP Segmentation Offload (TSO)	Yes	Yes
Large Send Offload (LSO)	Yes	Yes
Giant Send Offload (GSO)	Yes	Yes
IPv4/IPv6 TCP-UDP-IP Checksum Offload (CO)	Yes	Yes
IP Address Multi-Homing	Yes	Yes
PXE/iSCSI Boot	Yes	Yes — 1st Partition of each port — see FAQ entry
Wake-on-LAN (WoL)	Yes	Yes — see FAQ entry
PAUSE Flow Control	Yes	Yes
Jumbo Frames (up to 9600)	Yes	Yes
RX/TX Queues (RSS/TSS/MQs/NetQueues/VMqs)	64 per port	16 per partition
MSI and MSI-X	Yes	Yes
OS specific Multipath I/O (MPIO)	Yes	Yes
Teaming - Smart Load Balancing - Switch Independent	Yes	Yes — see FAQ entry
Teaming - Link Aggregation - Switch Dependent	Yes	No — see FAQ entry
Teaming - Generic Trunking - Switch Dependent	Yes	No — see FAQ entry
VLAN	Yes	Yes

Q: How are PXE/iSCSI remote boots affected by NPAR mode?

- Remote booting is not affected by NPAR. Remote boots will always use the first partition of each port (as if not in partitioned mode) as that boot port's MAC address.

Q: How is Wake-on-LAN (WOL) Out-of-Band (OOB) affected by NPAR mode?

- Windows and Linux WOL – OOB Advanced Configuration and Power Interface (ACPI) S1/S3/S4/S5 states are supported for function 0 and 1 only (such as the first partition of each port) and also at 1 Gbps link speed only.

Q: How is non-OOB WOL affected by NPAR mode?

- Windows WOL ACPI S4/S5 states are supported for all partitions of both ports at 1 Gbps link speed only.
- Linux WOL ACPI S5 state is supported for all partitions of both ports at 1 Gbps link speed only.

Q: How is NPAR enabled through USC?

- Reboot to USC using the Dell UEFI bootup option and follow the setup instructions in this guide. More information on USC and the UEFI boot option can be found on the Dell support site.

Q: How is NPAR disabled?

- NPAR mode can be disabled (such as when it is changed to Single Function mode) in USC.

Q: Can I disable NPAR in the operating system?

- No, you cannot change the partitioning mode or settings in the operating system. You must reboot to USC and make the changes there.

Q: How are Windows BASP Teaming and Linux Bonding affected by NPAR mode?

- A team cannot contain more than one partition from the same port.
- NPAR adapters can be teamed with other non-NPAR port adapters, such as the BCM5709 and BCM57711 for example.
- Only Smart Load Balanced and Failover (SLB with or without Auto-Fallback) switch independent teaming mode is available for teams using NPAR adapters. This is due to the way the IEEE standards require Switch dependent teaming (IEEE 802.3ad Link Aggregation (LACP) and Generic Link Aggregation (Trunking)) mode to work (on a per port instead of MAC address granularity). Therefore, those teaming modes cannot be used with an NPAR adapter.

Q: What are the supported operating systems?

- The supported OSs are Microsoft Windows Server 2008 (and R2), Microsoft Windows Server Hyper-V, RHEL (v5.5 and v6), and SUSE Linux Enterprise Server 11 (SLES11) SP1. The drivers may not be in-box.

Q: Does NPAR support Jumbo frames?

- Yes, Jumbo frames, up to 9600 bytes, are supported in both Windows and Linux operating systems on all eight partitions, for both Ethernet and iSCSI offload protocol modes.

Q: Can I view the current NPAR settings in the operating system?

- Partially, you can see what protocols were enabled for a partition in both Windows Device Manager and BACS3, but you cannot see a partition's Relative Bandwidth Weight settings in the operating system or BACS3. The Maximum Bandwidth value for an Ethernet protocol-enabled partition can be found in the Network Connections Status window or BACS3. If a partition has only the iSCSI offload protocol enabled, you will only see an iSCSI device and not its Maximum Bandwidth value that was configured in USC. In Linux, you can see the Ethernet protocol-enabled partitions and the iSCSI protocol-enabled partitions have been loaded and are available for an application initiator use.

Dell has tested and certified the Broadcom 57712-k Dual-port 10 GbE Converged Network Daughter Card with NIC Partitioning, TOE, iSCSI, and FCoE ready technology. Dell specifically disclaims knowledge of the accuracy, completeness, or substantiation for all statements and claims made in this document regarding the properties, speeds, or qualifications of the adapter.

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