Hewlett Packard Enterprise

Enhance your network scalability and flexibility

Network Partitioning for HPE ProLiant servers

HPE and Marvell deliver adapter-based virtualization with Network Partitioning for HPE FlexFabric and Ethernet adapters in HPE ProLiant servers.

Network scalability you've been waiting for

Today's networking efficiency challenge
The explosion of applications and rich media content, coupled with increased virtualization and cloud computing growth, place heavy demands on your networking efficiency.

Your choice in solutions can trigger challenges too. To handle increased workloads, your organization may have transitioned from 1 Gigabit Ethernet (1GbE) networks to 10 Gigabit Ethernet (10GbE) networks. This bandwidth increase can provide significant performance, cost reduction and consolidation benefits. However, as you continue to move from 1GbE to 10GbE networks, traffic flow for application workloads may not be able to utilize the entire bandwidth available in a 10GbE connection.

If yours is like many organizations, you may have built your infrastructure by adding separate servers, networks, and storage capacity for each application workload. While these siloed application deployments can help simplify management, you are also left with excessive pockets of unused I/O capacity and inefficient network sprawl.

Network and storage convergence plus server virtualization have helped address these problems. But the challenge with 10GbE networks comes with provisioning the appropriate bandwidth and data center resources to meet varying application demands in both physical and virtual environments.

Powerful problem solver

Working together, HPE and Marvell can help eliminate these networking efficiency problems with a network interface card (NIC) partitioning, or Network Partitioning (NPAR), in both physical and virtual environments. This approach enables your administrators to consolidate multiple individual adapters and split up the network pipe to divide and reallocate bandwidth and resources as needed at the adapter level. NPAR reduces the number of separate adapters needed to stream different traffic types, including Fibre Channel, Fibre Channel over Ethernet (FCoE), and iSCSI for HPE ProLiant blade, rack, and tower servers with 10GbE adapters.

How NPAR works

As an operating system and switch-agnostic technology, NPAR allows you to reduce the number of I/O adapters required to support different application workloads by virtualizing those I/O connections across high bandwidth channels like 10GbE. Traditional best practices require separate LAN or SAN connections for different aspects of application workloads. HPE FlexFabric 533/534/536 Series 10GbE

adapters and HPE CN1100R Converged Network Adapters (CNA) already support widely used SAN protocols like FCoE and iSCSI. This means your IT administrators can readily reduce the number of adapters needed for separate protocols, including Fibre Channel and Ethernet adapters. With NPAR, these adapters can deliver basic converged operations and partition your network bandwidth further into multiple virtual connections.

10 Gb port	**Flex NIC 1**	40%
	Flex NIC 2	20%
	Flex NIC 3	20%
	Flex NIC 4	20%
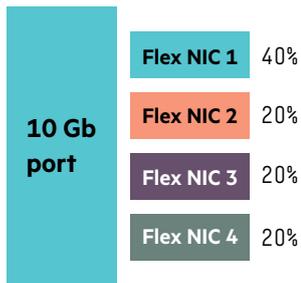
Virtual connections (also known as physical functions in NPAR) enable **HPE ProLiant rack** and **tower servers** with bandwidth management capabilities for each adapter. For example, a 10GbE port can be provisioned to operate as three separate physical functions: a full 8 Gb FCoE stream and two separated 1GbE streams, such as management or VMware vSphere® vMotion®. Dual-port 10GbE adapters deliver more flexibility to provision ports, reducing the need for multiple physical adapters performing the same functions.

Administrators can assign physical functions independently from each other. By reducing multiple physical adapters and increasing converged operations with NPAR, you can improve budget and bandwidth with HPE 530/533/534/536 Series adapters.

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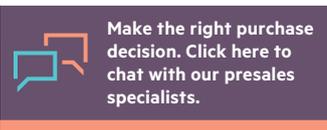
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Streamline the network

NPAR helps simplify your data center and your network and storage infrastructure in several key ways. For example, your administrators often have to purchase many cables to use when connecting servers to LANS and SANs. NPAR Network Partitioning provides an alternative by consolidating Ethernet connections—and iSCSI or Fibre Channel connections when using Converged or FlexFabric adapters—onto a significantly reduced number of ports.

HPE 533/534/536 Series and HPE StoreFabric CN1100R adapters from Marvell support this functionality. Like switches, NPAR reduces the number of cables without adding workloads on the network. Better yet, NPAR uses your existing adapter, eliminating the need to add switches and cables.

Benefits

NPAR from HPE and Marvell is designed to offer flexibility and scalability advantages over standard connectivity:

- Reduce network sprawl—A single dual-port HPE 530/533/534/536 Series adapter and HPE StoreFabric CN1100R CNAs can replace up to eight connections in a single server. This consolidates infrastructure onto much less equipment, simplifies management, reduces costs, and uses less energy and facility space.

- Improve network scalability—With a reduced number of network devices and cables, you can easily scale data center networks and add servers and network devices to meet growing IT demands. NPAR is switch-agnostic, working with standard Ethernet switches, converged top-of-rack (ToR) switches and pass-through devices.

- Simplify administration—NPAR reduces the number of physical adapters to manage and enables your administrators to add or replace network cards or move workloads from one partition to another within minutes. This in turn simplifies management task self-sufficiency.

- Fine-tune resource allocation—NPAR helps improve bandwidth allocation and the utilization of that allocation in both virtualized and non-virtualized environments. The problem: virtualization can reduce the number of physical servers but also increase I/O demand for each server. The solution: using 10GbE connectivity with NPAR Network Partitioning provides four functions per port on a single integrated network adapter built into the server. This lets the server efficiently handle bandwidth requirements. You can also easily plug in additional devices to meet and fine-tune growing bandwidth requirements.

- Enhanced CPU utilization—When virtualizing servers, system administrators can use the OS to create multiple virtual network connections. However, this approach requires CPU resources. Using NPAR offloads that responsibility from the OS and processor to the adapter itself, freeing up CPU resources to run more applications or manage more virtual machines.

Boost network efficiency

HPE and Marvell have a long partnership history delivering innovative networking solutions. Now, our NPAR approach makes migrating to today's powerful 10GbE networks an easy and compelling option for your organizations. So you can better utilize 10GbE networks to reap the performance, efficiency, and lower total cost of ownership (TCO) benefits.

Learn more at
hpe.com/servers/proliantnics

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