

What's new in HP ProLiant network adapter teaming



Abstract	2
New features of the NC-series network drivers	2
Adapter teaming operating system support.....	3
Features supported by team type	3
For more information	4

Abstract

This white paper provides an overview of the latest ProLiant network teaming software for the HP NC-series Ethernet adapters (NICs) used in ProLiant servers. The paper summarizes new features found in the latest releases of NC-series network drivers, the NICs that can be teamed under specific operating systems, and the utilities to use for configuring NIC teams.

New features of the NC-series network drivers

The current release of the NC-series teaming drivers continues to build on many years of experience. Numerous enhancements have been made ranging from simple cosmetic changes to new functionality (table 1). HP even takes teaming to a new height with the optional HP ProLiant Essentials Intelligent Networking Pack (INP), which increases the reliability of the network, decreases network down time, and enhances security.

Table 1: New NC-series network adapter teaming features

Category	Feature	Description	Customer Benefit
Advanced	Fast Path Failover	Teaming failover by the length and speed of the path from team member to the destination. Activation of this feature requires an INP license key.	Allows a ProLiant server to determine the quickest route to the core network (or the root switch) during teaming failover.
	Active Path Failover	Teaming failover based on network path availability to a user-selected device in the network. Activation of this feature requires an INP license key.	Allows a ProLiant server to detect blocked paths within the network and to redirect data along an unblocked.
	Dual Channel Teaming	Teaming that spans multiple switches and performs both send and receive load balancing. Activation of this feature requires an INP license key.	A team of teams that spans across multiple switches eliminates any single point of failure in the switches. Transmit and receive load balancing across multiple switches further provides maximum throughput.
General	Automatic	Teaming method to achieve the best network throughput.	Automatically configures teaming to the advantage of the server infrastructure.
	Network Configuration Utility (NCU) Updates	Interface enhancements for ease of use and support of new NICs.	Windows and panes provide additional status information. Intuitive user interfaces supporting the new teaming features, such as the advanced items mentioned above.
	Teaming Utilization Tab	NCU usage information for a selected team.	Provides transmit and receive utilization and throughput in an easy-to-read, real-time bar meter format, including current and peak loads. This allows administrators to quickly determine the performance status of their network teams.
	Network Configuration Replication	Allows a network configuration to be replicated to a group of ProLiant servers.	Allows an administrator to replicate network configuration settings from one server to a group of target servers using the HPSIM group configuration mechanism.
	LCD	Allows heterogeneous teaming with large send offload (LSO) enabled.	Permits dissimilar NICs to be teamed and gain the performance benefits of LSO. Previously, this required that LSO be disabled.
	LACP	Link aggregation control protocol.	Allows the formation of a channel with the switch without user configuration of the switch. The resulting channel behaves just like a Switch-assisted Load Balancing team.
	Dual Switch-Assisted Load Balancing (Dual SLB)	Allows teams to be formed across switches.	Provides transmit aggregation across multiple ports when connected to the same supported switch. Dual SLB allows the user to utilize an additional switch for aggregation and for redundancy. Dual SLB abstracts two separate SLB teams, or aggregation groups, into one virtual team.

Adapter teaming operating system support

The HP NC-series Ethernet network adapters support all major server operating system. However, not all types and features of adapter teaming are supported by each operating system. A cross-reference chart is available indicating which NC-series adapters may be teamed under the various supported operating systems; for more information, see <ftp://ftp.compaq.com/pub/products/servers/networking/type.pdf>.

Features supported by team type

Table 2 below identifies the teaming features available by type of teaming deployed. For details on the different types of teaming, refer to ProLiant teaming home page: <http://h18004.www1.hp.com/products/servers/networking/teaming.html>

Table 2: Teaming features by teaming method

Teaming Feature	Teaming Method					
	NFT	TLB	SLB	802.3ad	Dual	Auto
Number of adapters per team	2 - 8	2 - 8	2 - 8	2 - 8	2 - 8	2 - 8
Maximum theoretical transmit/receive throughput (Mbps) using maximum number of 100-Mbps adapters	100/100	800/100	800/800	800/800	800/800	800/800
Maximum theoretical transmit/receive throughput (Gbps) using maximum number of 1-Gbps adapters	1/1	8/1	8/8	8/8	8/8	8/8
Fault tolerance	✓	✓	✓	✓	✓	✓
Transmit load balancing		✓	✓	✓	✓	✓
Receive load balancing			✓	✓	✓	✓
Requires a switch that supports a compatible form of load balancing			✓	✓	✓	✓
Connect a single team to more than one switch for switch redundancy (must be same broadcast domain)	✓	✓			✓	✓
Heartbeat for network integrity checks	✓	✓			✓	✓
Team adapters that do not support a common speed	✓					✓
Team adapters operating at different speeds, as long as the adapters support a common speed	✓	✓	✓	✓	✓	✓
Team adapters of different media	✓	✓	✓	✓	✓	✓
Load balances TCP/IP		✓	✓	✓	✓	✓
Load balances non-IP traffic		✓	✓	✓	✓	✓
Active Path Failover	✓	✓			✓	✓
Fast Path Failover	✓	✓			✓	✓

Table 2: Teaming features by teaming method (continued)

Teaming Feature	Teaming Method					
	NFT	TLB	SLB	802.3ad	Dual	Auto
LACP (requires switch to support 802.3ad LACP)				✓		✓
Load balancing by destination IP address, destination MAC address, TCP port, and round robin.		✓	✓	✓	✓	✓
All adapters within a team use common MAC address on the network			✓	✓	✓*	✓
All adapters within a team use common IP address on the network	✓	✓	✓	✓	✓	✓

* Dual channel teaming transmits frames with the same source MAC address from all teamed ports in the same aggregation group, but not across both aggregation groups.

For more information

For more information about NC-series network adapters and adapter teaming, see the following URLs:

<http://h18004.www1.hp.com/products/servers/networking/whitepapers.html>

<http://h18004.www1.hp.com/products/servers/networking/teaming.html>