

# ProLiant Essentials Intelligent Networking – Active Path Failover in Microsoft® Windows® environments

white paper



Abstract.....	2
Introduction.....	2
Benefits of Active Path Failover.....	3
How the Active Path Failover feature works.....	3
Setting up Active Path Failover.....	6
Conclusion.....	6
For more information.....	7

# Abstract

This document describes the Active Path Failover feature of the ProLiant Essentials Intelligent Networking Pack and how it can enhance the functionality of a network that includes HP ProLiant servers. This paper is intended for IT professionals familiar with ProLiant network adapter teaming. For readers who are not already familiar with this technology, it is described in the white paper “HP ProLiant Network Adapter Teaming,” which is available at this URL:

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

# Introduction

The ProLiant Essentials Intelligent Networking Pack (INP) is an innovative networking product designed and developed by HP. INP enables ProLiant servers that are running basic ProLiant teaming software to adapt to and change the network path to achieve maximum reliability and performance. INP can monitor and analyze network conditions and redirect traffic to the optimum path.

To illustrate, Table 1 identifies several common causes of network disruption and the affect of the disruption in a computing environment without INP: loss of client access to applications. If INP is installed in the environment when any of these problems arise, however, most or all clients retain access to business-critical applications on the server.

**Table 1.** Common causes of network disruption

Possible Network connectivity problem	Result without Intelligent Networking Pack
Cable between the first tier switch and the core network becomes unplugged.	Clients lose access to business-critical applications on the server because the path is blocked.
Server has ports configured for a virtual LAN (VLAN), but second tier switch has been incorrectly configured in support of the VLAN.	Clients lose access to business-critical applications because the switch cannot route traffic to the VLAN on the server.
A switch in the path to the core network crashes, experiences a firmware malfunction, or is removed for maintenance.	Clients lose access to business-critical applications because the path is unavailable, or the alternate path is very slow.
A port or a fiber connector (GBIC) beyond the second tier switch fails.	Clients lose access to business-critical applications because the path is unavailable.

INP includes these features:

- Fast Path Failover<sup>1</sup> — Allows a ProLiant server to use the quickest available path to the core network for all server traffic.
- Active Path Failover — Allows a ProLiant server to detect blocked paths and to redirect data along an unblocked path to the core network.
- Dual Channel Teaming<sup>2</sup> — Allows users to configure a team that spans two switches and supports receive and transmit load balancing by means of Switch-assisted Load Balancing (SLB) teams.

This paper describes the Active Path Failover feature of the INP.

<sup>1</sup> For a similar white paper describing ProLiant Essentials Intelligent Networking - Fast Path Failover, see <http://h18004.www1.hp.com/products/servers/networking/whitepapers.html>.

<sup>2</sup> For a similar white paper describing ProLiant Essentials Intelligent Networking – Dual Channel Teaming, see <http://h18004.www1.hp.com/products/servers/networking/whitepapers.html>.

## Benefits of Active Path Failover

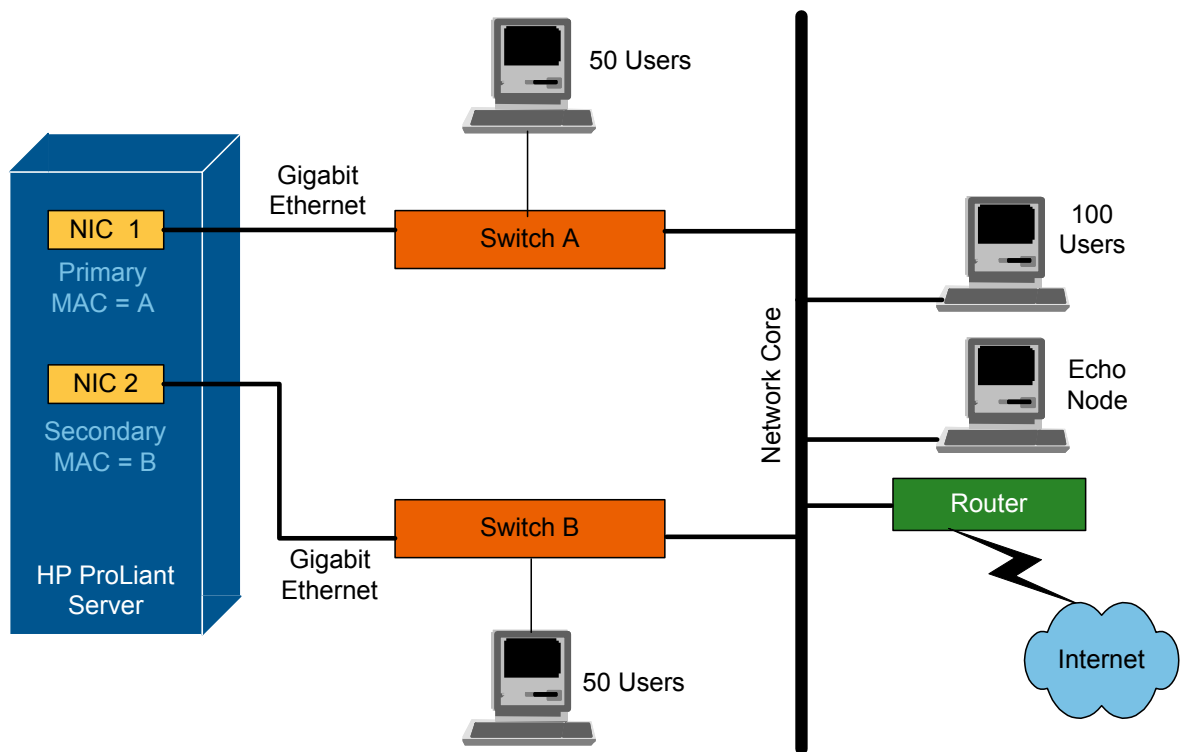
The Active Path Failover feature of INP uses the failover capabilities of ProLiant NIC teams, allowing users to configure for a failover based on network path availability to a user-selected device in the network. The ports in a team constantly check for path availability to the core network, and the primary port fails over as soon as its path becomes unavailable. As a result, the server always sends data along an unblocked network path.

The Active Path Failover option uses a user-selected device on the network, called the Echo Node, to confirm connectivity to the core network. The Echo Node needs no special software because standard packets are used to determine connectivity of the teamed NICs.

## How the Active Path Failover feature works

This section illustrates how Active Path Failover works in a typical business configuration and network failover scenario. Figure 1 shows the primary and secondary ports in a ProLiant server, the network core, and the echo node attached to the network core.

**Figure 1.** Typical Active Path Failover configuration showing the Echo Node attached to the network core



In Figure 2, a failure has occurred in the connection between Switch A and the network core. Without Intelligent Networking software, this failure results in server connectivity loss. Clients lose access to the server.

**Figure 2.** Primary NIC loses network connectivity. This isolates the server so that only users connected to Switch A have access to the server.

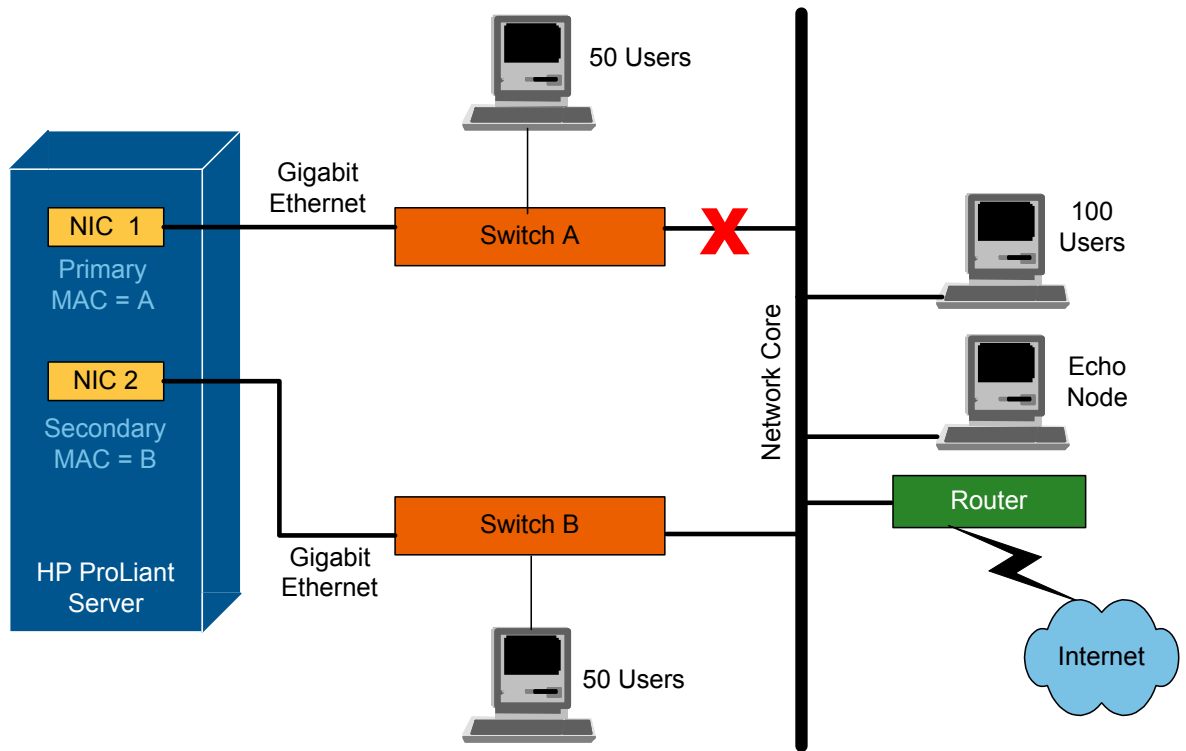
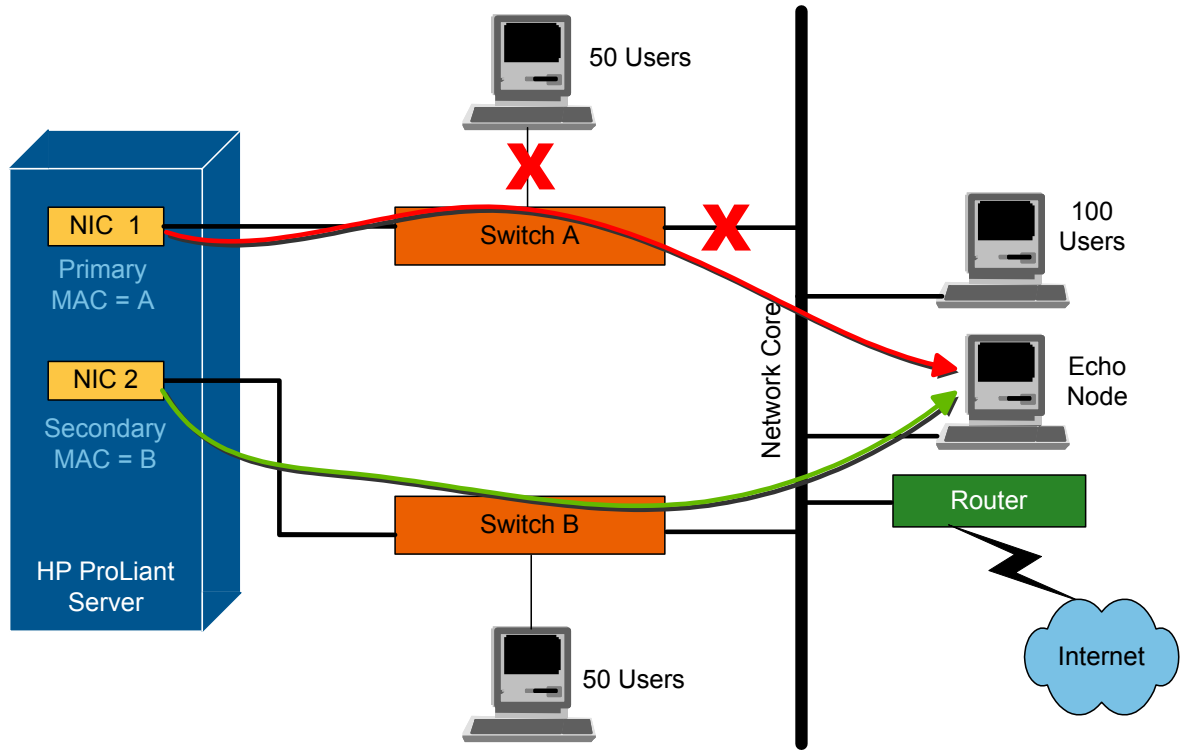


Figure 3 shows the failure scenario with Intelligent Networking software installed on the ProLiant server. The INP software detects the loss of connection, fails over to the port with the active path, and retains connectivity to the server. Network clients continue to have full access to the server.

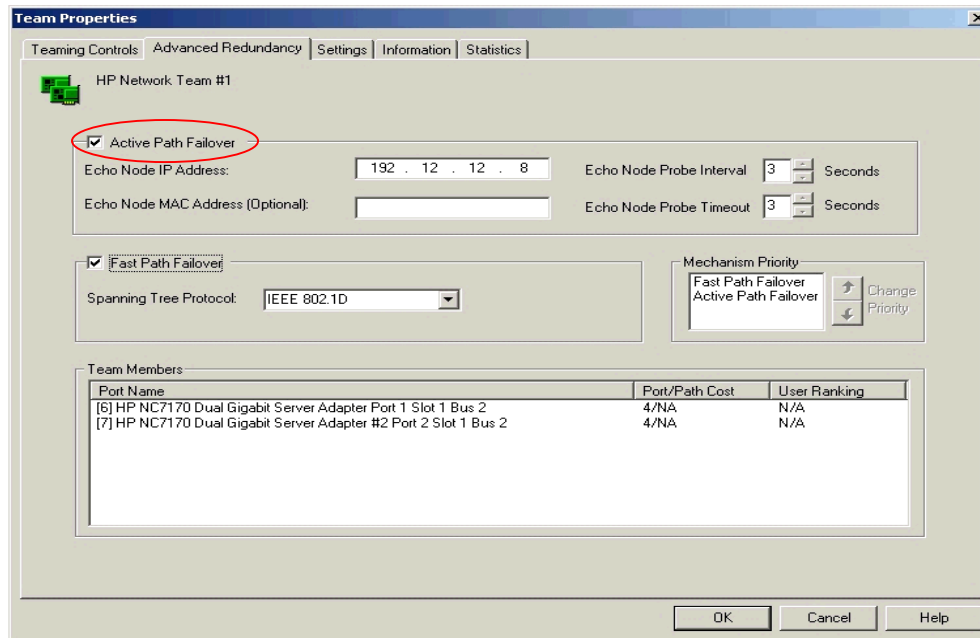
**Figure 3:** Failover to the open path to the network core restores server access for all network clients except for those connected to Switch A.



## Setting up Active Path Failover

Configuring a ProLiant NIC team to use Active Path Failover is simple by means of the Network Configuration Utility used to set up network teaming. The configuration is accomplished from a single screen, shown in Figure 4.

**Figure 4.** Using the Network Configuration Utility to set up Active Path Failover functionality



### Note

The HP SmartStart Scripting Toolkit can also be used to configure a ProLiant NIC team for Active Path Failover.

## Conclusion

As part of the ProLiant Intelligent Networking Pack, Active Path Failover offers an additional option to help ProLiant servers adapt to network conditions. Active Path Failover enables ProLiant servers to detect and avoid blocked paths to the core network.

## For more information

For more information and other white papers about HP ProLiant network adapters, go to this web page: <http://h18004.www1.hp.com/products/servers/networking/whitepapers.html>.

For information about how to purchase an HP ProLiant Essential Intelligent Networking Pack license, go to the HP website at <http://h18004.www1.hp.com/products/servers/proliantessentials/inp/index.html> or contact your HP reseller.

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