Answers to frequently asked questions about the NC150T

Introduction 2
Executive summary 2
What is the NC150T? 2
Does the NC150T work in all ProLiant servers? 3
Does the NC150T require any software? 3
What operating system drivers support the NC150T? 3
Can the NC150T be connected to an external switch? 4
Will the NC150T remain powered on when the server is turned off? 5
Can you plug in more than one NC150T into a server? 5
Can the NC150T be teamed? 6
Is the NC150T a 4-port NIC? 8
Does the NC150T support VLAN tagging? 8
What are some typical uses? 8
Conclusion 10
For more information 10
Notice 10

Introduction

In today's computer environment, connectivity is everything. Whether in a SOHO (small office/home office) or a satellite branch office of a larger organization, connecting computers together is a top priority. Typically this is done with external network switches and network interface controllers installed in a server. This is expensive and requires external devices to achieve connectivity. It is also complicated to set up and requires IT knowledge. HP's NC150T provides a simpler, two-step solution in a cost-effective manner. The NC150T is an integrated gigabit switch and adapter. It achieves the function of an additional network interface controller (NIC) and creates a local-area network in a single device. The NC150T is the first switch on a NIC available in the market. Therefore, customers may have some of the following questions about the NC150T:

- Does the NC150T work in all ProLiant servers?
- Does the NC150T require any software?
- What operating systems does the NC150T support?
- Can the NC150T connect to an external switch?
- Can you plug more than one NC150T into a server?
- Is the NC150T a 4-port NIC?
- What are some typical applications of the NC150T?

This paper answers these and other questions. In answering these questions, it also explains how the NC150T provides cost-effective ways for SOHO organizations and remote offices of larger organizations to create and maintain their networks more efficiently.

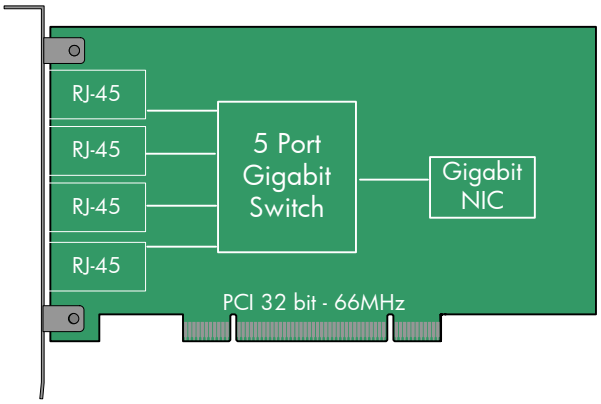
Executive summary

Today's office environments require network connectivity. Businesses must find a cost-effective way to meet their growing networking demands quickly and simply. This paper answers frequently asked questions about HP's NC150T and, in doing so, explains how SOHO organizations as well as remote offices of enterprise businesses can use the HP NC150T to create and maintain their networks more efficiently.

What is the NC150T?

The NC150T has four external gigabit switch ports and a fifth gigabit switch port that functions as the server uplink. The uplink is internally connected to the on-board 32-bit, 66MHz PCI network interface controller (NIC). The figure below depicts the main components on the board.

Figure 1: NC150T



Does the NC150T work in all ProLiant servers?

The NC150T can work in all ML/DL ProLiant servers with the exception of the DL560. Although it can work with nearly all ML/DL ProLiant servers, it is not listed on the QuickSpecs of all them such as those in the 500 and 700 series. This is primarily because the NC150T is a PCI card and could affect the performance of higher speed PCI-X cards. Additionally, some of the newer servers have PCI Express slots, in which the NC150T will not work. It will only work in PCI and PCI-X slots. The NC150T is listed as a networking option on all supported servers.

Does the NC150T require any software?

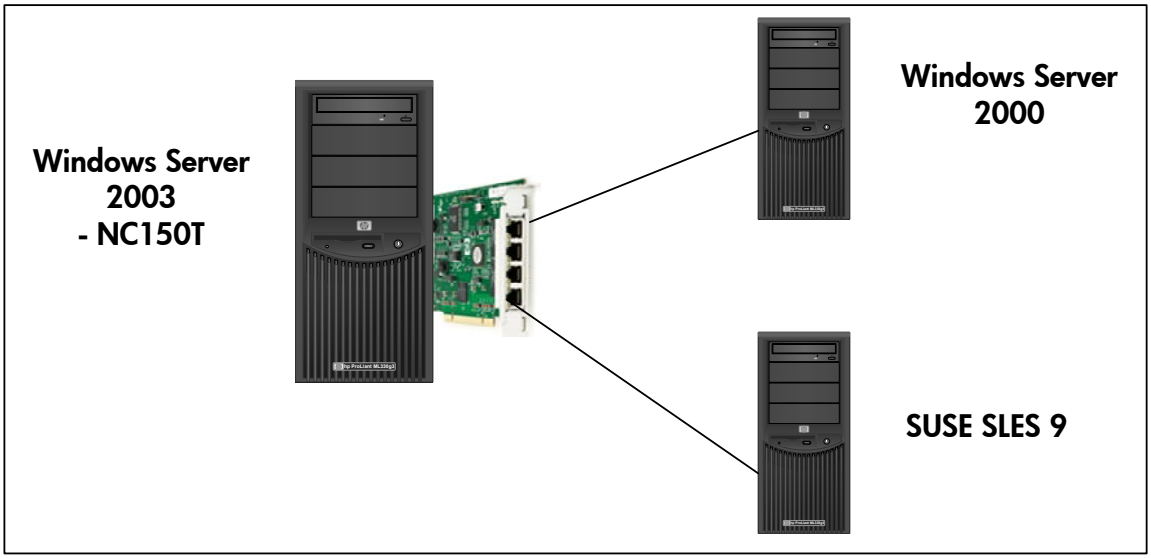
The NC150T requires no software. It simply uses the server-class driver for the NIC portion of the adapter. This driver can be obtained from the HP NC10xx/67xx/77xx/150x/320x Gigabit Ethernet driver available at: http://h18004.www1.hp.com/products/servers/networking/index.html. There is no software to configure the switch portion of the adapter. The switch is completely unmanaged and requires no configuration.

What operating system drivers support the NC150T?

- Windows Server 2003, 2003 Datacenter, 2003 Web Edition, 2003 Small Business Server
- Windows 2000 Server, Windows 2000 Advanced Server, Windows 2000 Datacenter
- Microsoft certified miniport and teaming drivers
- Red Hat Linux 8.0, 7.3, 7.2, Enterprise Advanced Server 3 and 2.1, Enterprise Server 3 and 2.1
- SUSE SLES 7
- United Linux 1.0
- Novell certified NetWare 5.x, and 6.x drivers
- UnixWare 7.0, OpenUnix 8, and Open Server 5.0
- Solaris 7.0, 8.0, and 9.0
- Support for double byte languages (Unicode)
- NDIS 2 for DOS unattended operating system install (43K or less in size)
- NDIS 5.1 for Microsoft XP and Windows 2003
- Management agents for all of the above, except for FreeBSD and DOS

In addition, the switch ports of the NC150T are OS-independent. Moreover, you can connect 1 port of the switch to a server running Windows and another port of the switch to a server running SUSE. See Figure 2 for an example of this usage.

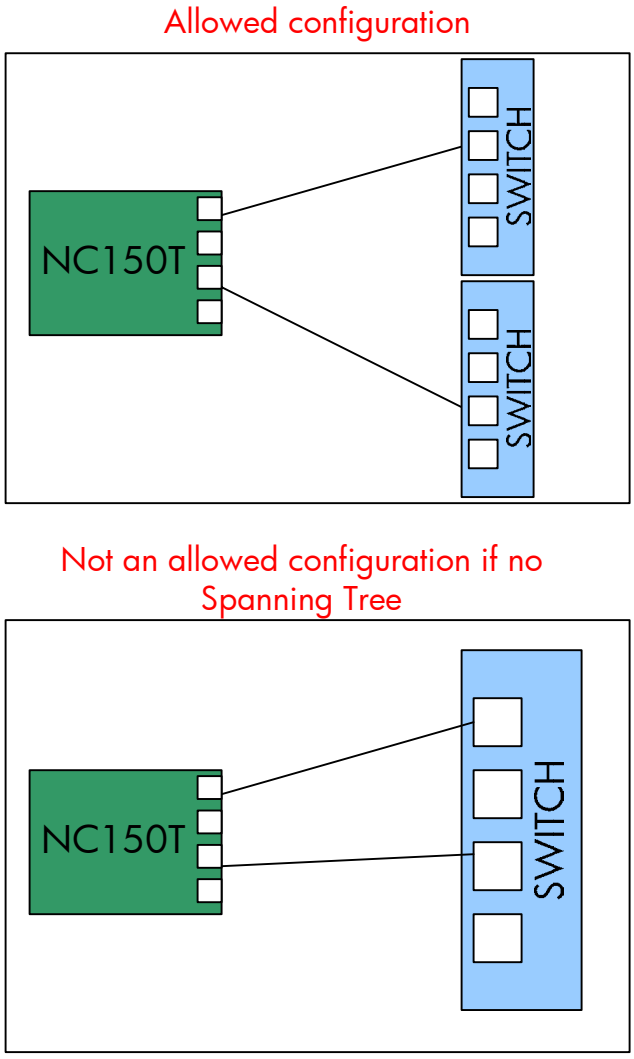
Figure 2: NC150T is OS Independent



Can the NC150T be connected to an external switch?

Yes. In general, you can connect a single port of the NC150T to another switch. This will extend the number of ports on the network. However, care must be taken if you want to connect more than one port of the NC150T to a single switch. In order to do this, the external switch must be running Spanning Tree Protocol (802.1d). The switch on the NC150T does not support Spanning Tree and thus would create a loop in the network when connected to multiple ports on the same switch. The result would produce undesirable network behavior. See Figure 3 below for correct usage.

Figure 3: Connection to an external switch



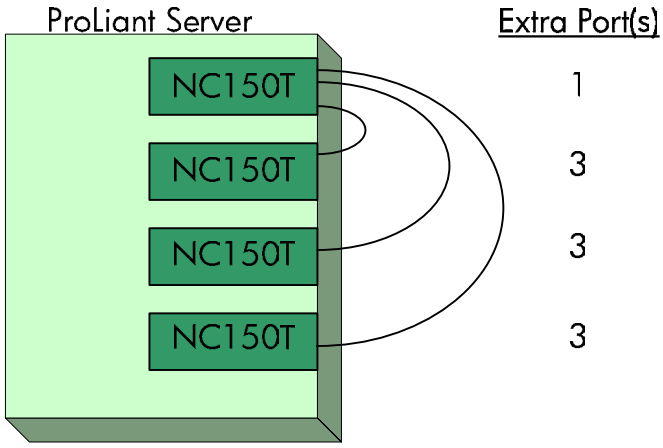
Will the NC150T remain powered on when the server is turned off?

No. The NC150T receives its power from the host system (the server). It completely powers off when the server is turned off. However, if the system is connected to a UPS (Uninterruptible Power Supply), the NC150T will remain powered on just as the server does.

Can you plug in more than one NC150T into a server?

Yes. You can plug in as many NC150Ts as the number of slots you have in a system. You may also connect one port of each NC150T to a single NC150T in order to extend the number of ports on the network. In Figure 4, the top NC150T is used to connect to the other NC150Ts in the system. With 4 boards connected in this fashion, you extend the number of available network ports to 10.

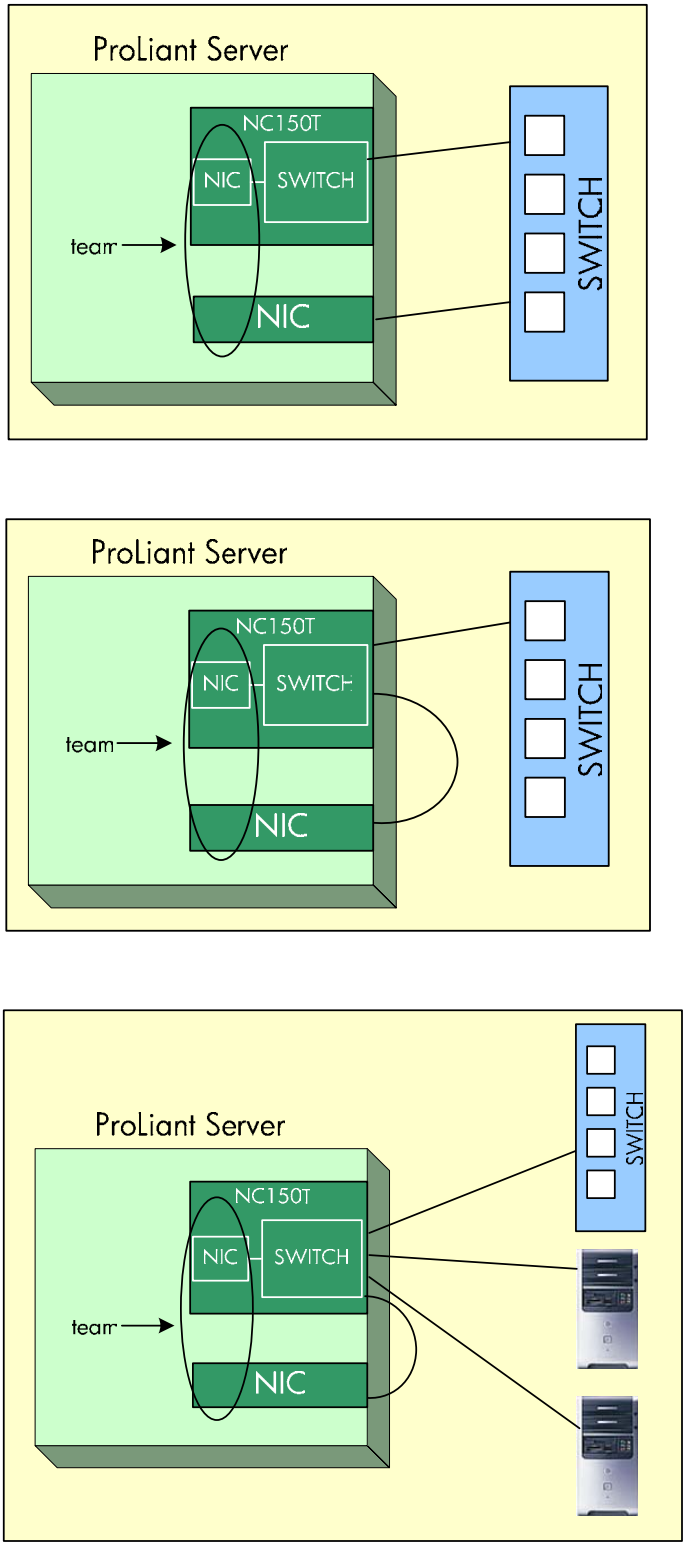
Figure 4: Multiple NC150Ts in a system



Can the NC150T be teamed?

The answer is a qualified 'yes.' Though teaming is not typically done with switches, the NIC portion of the NC150T can be teamed. Two types of teams can be used with other NC-series server adapters including Network Fault Tolerance (NFT) and Transmit Load Balancing (TLB). However, it does not support Switch-Assisted Load Balancing (SLB) or 802.3ad Link Aggregation Teams because the NC150T is an unmanaged switch. Figure 5 demonstrates several proper ways to team with the NC150T.

Figure 5: Teaming with the NC150T[1]

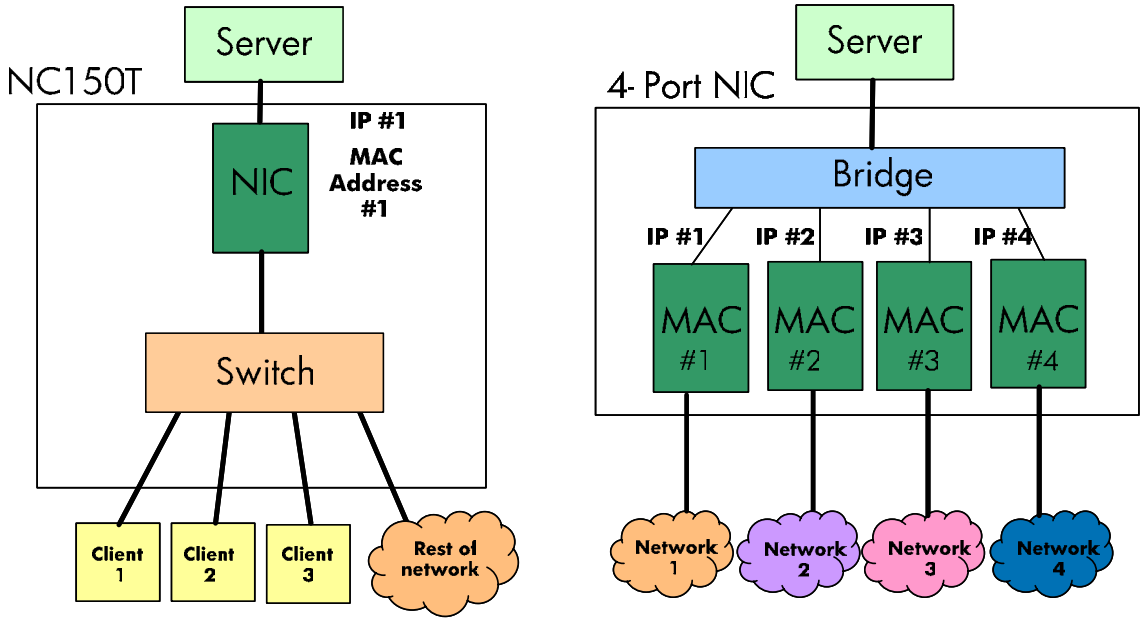


[1] Note: The NIC in these servers could also be the LOM or embedded NIC port on the server.

Is the NC150T a 4-port NIC?

No. The NC150T is not a 4-port NIC. It is a single gigabit NIC internally connected to a gigabit switch. It has only 1 MAC address. Therefore, only one segment or domain is created by the NC150T. Figure 6 gives a pictorial representation of both the NC150T and a 4-port NIC.

Figure 6: NC150T vs 4-Port NIC



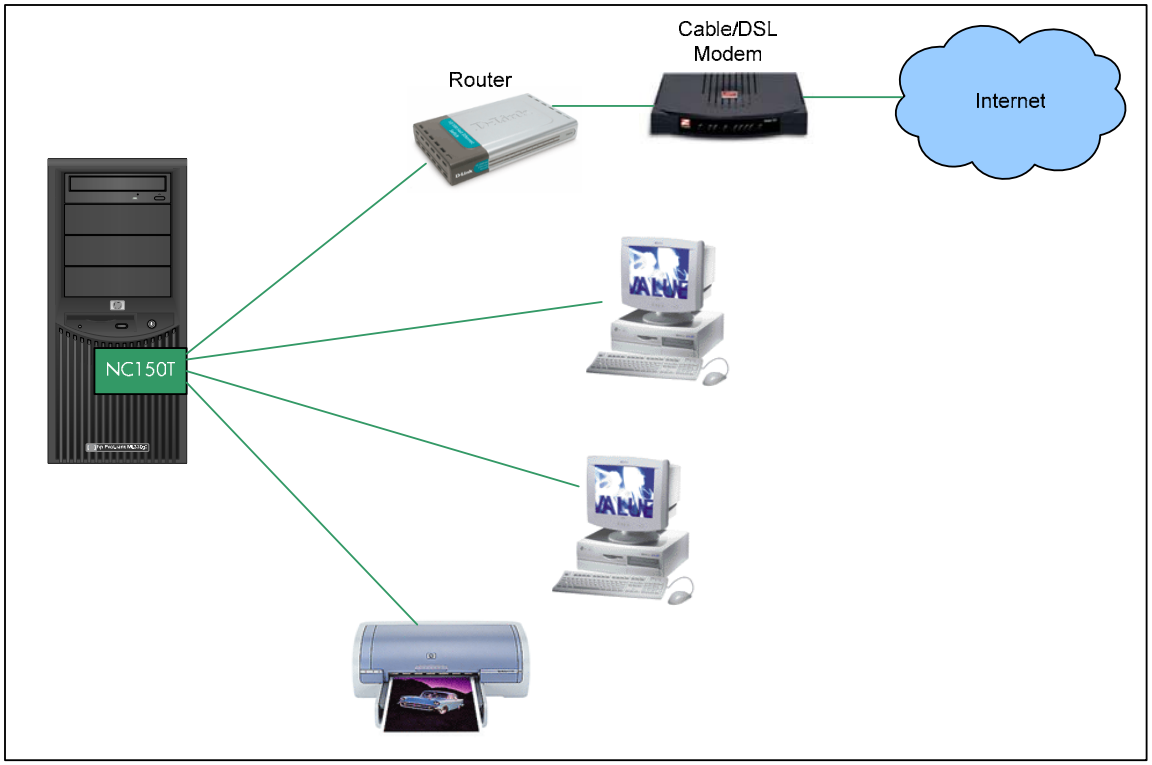
Does the NC150T support VLAN tagging?

The switch portion of the NC150T is an unmanaged Layer 2 switch, which means that it can not be configured for port-based, protocol-based, or MAC-based VLANs. (All switch ports are on the default VLAN only.) Additionally, the switch portion does not support the Network Configuration Utility's (NCU) advanced features including Switch Assisted Load Balancing (SLB) teaming, creation of port-based VLANs, or tagged VLANs on switch ports.
The NIC portion of the NC150T allows VLAN tags to be placed on outbound frames which will pass through the switch untouched. The driver's NCU displays the properties of the NIC and allows basic VLAN teaming for Network Fault Tolerance (NFT) and Transmit Load Balancing (TLB).

What are some typical uses?

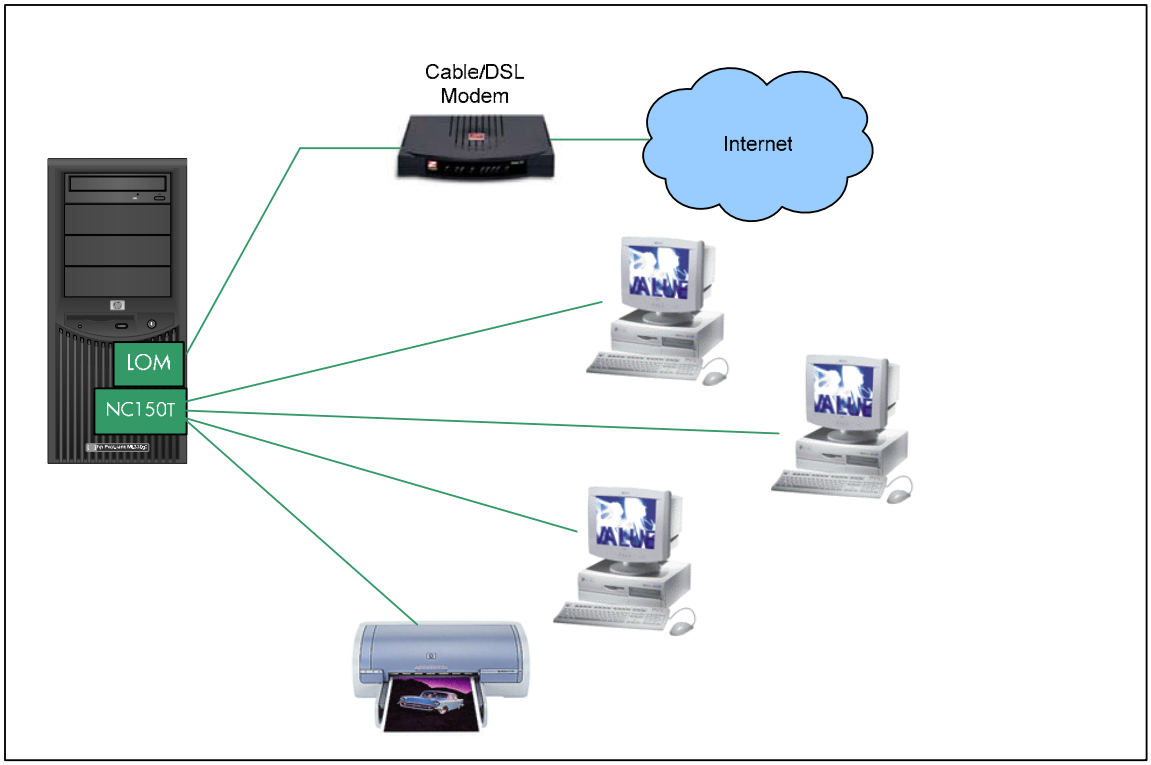
So how might a doctor's office or a small retail store use the NC150T? Below are two examples of typical applications with the NC150T such environments. Figure 7 depicts a NC150T installed in a ProLiant server. It is connected to several clients on the network as well as router/switch device. In this case, the NC150T is providing more gigabit ports on the local-area network.

Figure 7: Using the NC150T with an external router



In Figure 8, the NC150T is also installed in a ProLiant server. The difference here is that the server is acting as a router instead of using an external box to achieve this function. With Microsoft Small Business Server for example, the LOM (LAN-on-Motherboard) port can be configured to connect directly to your cable or DSL modem and route traffic between the Internet and your local-area network. The NC150T is then fully utilized to connect clients on your local network.

Figure 8: Using the NC150T without a router



Conclusion

HP's NC150T Switch adapter provides a simple, cost-effective way to meet the needs of network connectivity in an SMB or small office environment. Simply by installing the board into a ProLiant server and connecting desired clients, high performance connectivity is achieved. Cost savings are realized by the simple installation and elimination of additional network IT support or consulting. In addition, less components and cabling are needed thus freeing up space in the office environment. The NC150T is an ideal product for any SOHO or branch office environment desiring network connectivity.

For more information

For more information, go to this URL: http://www.hp.com/servers/networking/nc150t

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NSP1004WP, 5/2005