National Semiconductor™

DP83820 NDIS4 for Windows NT Release Notes

Version 4.0.2.52, Release 1.6a

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Read This Document Before Attempting To Install Or Use This Product!

This document contains information about factors that must be considered before, during, and after installation.

Table of Contents

National Semiconductor DP83820 Gigabit Ethernet Adapter

1.0 Introduction

This document presents information to users about National Semiconductor's DP83820 Gigabit Ethernet adapter and the relevant NDIS4 software driver, dp83820.sys version 4.0.2.52 (copper PHY and fiber/TBI) for MS Windows NT operating system.

2.0 Product Overview

The DP83820 is a PCI 10/100/1000BaseT Media Access Controller, MAC, from National Semiconductor that supports a 33/66MHz, 32/64 bit PCI 2.1/2.2 bus interface. It complies with the emerging 1000 Mbps Ethernet 802.3z specification and supports full duplex operation.

Other features include:

• Maximized PCI efficiency and performance

• Pause Frames

• Checksum Offloading

• Jumbo Frames

• VLAN support

The driver for this adapter on Windows NT is designed to be a NIC driver for processing Ethernet data packets.

3.0 Installation

3.1 Release Media

The release media consists of the National Semiconductor's DP83820 GigMAC NDIS4 driver available on CD and the National Semiconductor website.

3.2 Installation Procedure

This section describes the installation of the adapter and the driver software for making the adapter functional on the Windows NT platforms.

3.2.1 Hardware Installation

This section describes the installation of the Gigabit Ethernet Adapter into a personal computer (PC). To install the card, you need:
• Gigabit Ethernet Adapter
• PC with an available PCI slot
• Screwdriver to open the PC and secure the Gigabit Ethernet Adapter
• Category 5 twisted-pair RJ-45 cable
• Wrist strap
• Blank, formatted floppy disk
Installing the card consists of one optional and three required stages: Copying the Driver to a Floppy Disk (optional), Inserting the Card, Connecting the Network, and Installing the Driver. If the PC into which you are installing the Gigabit Ethernet Adapter is equipped with a CD-ROM, you may skip the first stage and begin with stage II.

Inserting the Card

The second stage in the installation sequence is inserting the card into the PC. For this stage you will need the Gigabit Ethernet Adapter and the screwdrivers. Unplug the PC before opening it to avoid electrocution. Be sure to ground yourself before handling the GigMAC card to avoid ElectroStatic Discharge (ESD) damage to the card.
1. Shutdown the PC, and disconnect the power cord.
2. Open the chassis of the PC.
3. Choose an unused PCI slot and remove its metal bracket by loosening the screw on the inside. You will no longer need this metal bracket as the Gigabit Ethernet Adapter has its own. You will need the screw, however.
4. Remove the Gigabit Ethernet Adapter from the ESD-safe packaging.
Warning: Static charge from your body can permanently damage the Gigabit Ethernet Adapter. Do not handle the card without first electrically grounding yourself via wrist strap or by touching a large piece of metal.
5. Insert the Gigabit Ethernet Adapter into the empty PCI slot in the PC. Orient the card so that the RJ-45 connector points out of the computer.
Warning: The card may fit backwards (with the RJ-45 pointing in) into the PCI slot. Starting the computer with the card inserted backwards may damage the card and/or the PC.
6. When you are certain the card is oriented correctly, press firmly on the card to ensure that it is completely seated in the PCI slot. Secure the Gigabit Ethernet Adapter using the screw from step 3.
7. Close the computer, and reconnect the power cord.

Connecting the Network

The third stage in the installation sequence is connecting the Gigabit Ethernet Adapter to the network. In this stage, you will need only the twisted-pair Category 5 network cable.
After you have inserted the card and closed the PC, connect one end

of the twisted-pair cable to the RJ-45 connector on the GigMAC demo
card, and the other end to another PC or a network hub or switch.
When connecting the card to another PC, the cable
can be *crossover only for 10/100Mb speeds*, meaning that pins 1 and 2 must be
swapped with pins 3 and 6, respectively, between the two ends of
the cable. A crossover cable should not be used when connecting
the Gigabit Ethernet Adapter to a network hub or switch. The difference
between a crossover and non-crossover ("straight") cable is shown

The next time you turn on the PC, one of the two green link lights
on the Gigabit Ethernet Adapter should become illuminated almost immediately.
This signifies that the card has established link with the
device at the other end of the cable and is ready to send and receive
data.

3.2.2 Software Installation and Configuration

The fourth stage in the installation sequence is installing the driver
for the Gigabit Ethernet Adapter. The following subsections describe the
procedure for installing the driver for Windows NT.

Microsoft Windows NT 4.0 Driver Installation

1.   Restart the computer. Boot Windows NT 4.0.

2. Log in as administrator.

3. After the desktop comes up, right-click on the "Network
Neighborhood" icon. Choose "Properties" from the menu that
comes up. A window entitled "Network" will appear. Click on
the fourth tab, "Adapters." Then click on the "Add..." button.

4. A smaller window entitled "Select Network Adapter" will
appear. Click on the "Have Disk..." button.

5. Insert the driver floppy or GIGMAC CD. If using a driver floppy,
type A: in the field at the bottom of the window. If you are
using the GIGMAC CD, type D:\Drivers\WintNT\. This assumes that your
floppy drive is A:
and your CD-ROM drive is D:. Use the correct drive letters for
your system. Click "OK."

6. A window entitled "Select OEM Option" will appear, with "National Semiconductor Corp. DP83820 10/100/1000 GigMAC PCI Adapter" highlighted. Click "OK."

7. A window will appear entitled "National Semiconductor Corp. DP83820 10/100/1000 GigMAC PCI Adapter." This window allows you to choose default settings for the adapter. You can leave the settings as they are and choose "OK."

8. The "Network" window will reappear with the Gigabit Ethernet Adapter listed under "Network Adapters." Click "close."

9. A window will appear entitled "Microsoft TCP/IP properties." Use this window to set the TCP/IP properties (IP address, sub-net mask, gateway, etc.) for the Gigabit Ethernet Adapter. Click "OK."

10. The PC will need to be restarted. Windows will prompt you to restart automatically. Remove all floppy disks and CDs before restarting.

3.2.3 Installation Troubleshooting

This section describes the problems that commonly occur during driver installation, along with their solutions.

• Microsoft Windows does not automatically detect that the Gigabit Ethernet Adapter has been installed.
In this case it is possible that the card is not securely seated in its PCI slot. None of the copper PCI connectors should be visible when the card is completely seated.
It is also possible that the PCI slot containing the card is faulty or has been disabled in the BIOS. Try using a different PCI slot.
The Gigabit Ethernet Adapter may be conflicting with other PCI cards in the system. Remove other PCI cards and restart Windows.
Windows NT has a Wizard to help you with hardware that is installed but not detected or working correctly. To access this wizard, click on "My Computer" using the right mouse button, then choose "Properties" from the menu that appears. A new window will appear. Click on the "Hardware" tab, then click on the "Hardware Wizard…" button, then follow the instructions.

• There is no link light when the Gigabit Ethernet Adapter is connected to
another PC or network hub or switch.
In this case it is possible that the Gigabit Ethernet Adapter is not seated
properly in the PCI slot. It is also possible that the network
cable is too long (IEEE standard 802.3 section 14.4.2 recommends
that the cables not exceed 100 meters in length), or that
the cable is faulty. Remember that a crossover cable may be
used to connect the card to another PC, but not to a network
switch or hub. See the "Connecting the Network" section of
this User's Guide for a description of crossover cables.
Finally, check that the PC is turned on! The Gigabit Ethernet Adapter
can not establish link without power from the PC.

• The Gigabit Ethernet Adapter links at 10/100 Mbps instead of
1000 Mbps.
This occurs if the device connected to the Gigabit Ethernet Adapter is
not capable of 1000 Mbps communication. When this happens
the card links and communicates at 10/100 Mbps to accommodate
the remote device, even though the Gigabit Ethernet Adapter is capable
of 1000 Mbps communication.
If you are running Microsoft Windows, the driver might be
configured to force the Gigabit Ethernet Adapter into 10/100 Mbps mode. To
see if this is the case, open the Control Panels window in the
"Settings" sub-menu under the "Start" menu. Then open on the
"Network" icon. Click on the Gigabit Ethernet Adapter in this list of
adapters and click on the "Properties" button. Then click on the
"Advanced" tab, and click the "Network Media" property. This
property should be set to "Auto Negotiate." Any other setting
forces the card into a specific mode.

3.2.4 Disk Space Requirements

50 KB of disk space is required for driver installation.

3.2.5 Advanced Features

This section describes advanced features provided by this release of the driver.

VLAN (802.1Q) & QoS (802.1P) Support

Support for VLAN and QoS has been implemented in the driver. Quality of Service, QoS, is
always enabled.   Support for one VLAN ID is enabled by assigning a VLAN ID in the advanced
parameter settings of the NIC.

TCP/IP Checksum Offload and Jumbo Frames Support

The current release of this driver supports both transmit, receive checksum offload and jumbo frames as specified in the Windows NT DDK. Optimum performance is achieved by enabling these features.

Pause Frames Support

The current release of this driver supports pause frames, a hardware based flow control mechanism for Ethernet, fast Ethernet and Gigabit networks. By default the driver will advertise this capability upon auto-negotiation with the switch.

IEEE Compliance Support

A number of older Gigabit switches and hubs have been found to be using non-IEEE compliant PHY's, physical layer devices. In order to enable the NIC card to be compatible with these older devices, the advanced properties of the NIC card features a parameter to enable compatibility with these non-compliant devices.

3.2.6 Errata

PCI BIOS Issues: Bus Mastering

Some BIOS's also require that you manually enable bus mastering in the BIOS configuration Setup. Without enabling bus mastering the NIC will not function properly.

4.0 Product Documentation

This release notes document, *National Semiconductor Corp* DP83820 NDIS4 for Windows NT Release Notes, provides detailed information about installing the National Semiconductor Corp DP83820 Gigabit Ethernet Adapter and Driver software.

5.0 Problem Reporting

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