National Semiconductor™

DP83820 GigMAC NDIS5 Release Notes

Version 5.0.X.50, 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.

General Notice:

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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 NDIS5 software driver, dp83820.sys version 5.0.2.50 (copper & & fiber/TBI) for MS Windows 2000/Xp, version 5.0.1.50 (copper & & fiber/TBI) for Windows ME and Windows 98 operating systems.

2.0 Product Overview

The DP83820 is a PCI Gigabit Ethernet adapter 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

• Wake-on-LAN

• VLAN support

The driver for this adapter on Windows 2000 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 NDIS5 driver available on CD, National Semiconductor website and on the Windows XP RTM CD.

3.2 Installation Procedure

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

3.2.1 Hardware Installation

This section describes the installation of the GigMAC demo card into a personal computer (PC). To install the card, you need:
• The GigMAC demo card
• A PC with an available PCI slot
• Screwdrivers to open the PC and secure the GigMAC demo card
• A Category 5 twisted-pair RJ-45 cable
• A Wrist strap
• A 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 GigMAC demo card 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 GigMAC demo card 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 GigMAC demo card has its own. You will need the screw, however.

4. Remove the GigMAC demo card from the ESD-safe packaging.
Warning: Static charge from your body can permanently damage the GigMAC demo card. Do not handle the card without first electrically grounding yourself via wrist strap or by touching a large piece of metal.

5. Insert the GigMAC demo card 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 GigMAC demo card 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 GigMAC demo card 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*, meaning that pins 1 and 2 may 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 GigMAC demo card to a network hub or switch.

The next time you turn on the PC, one of the two green link lights on the GigMAC demo card 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 GigMAC demo card. The following subsections describe the procedure for installing the driver for Windows 98/Me and Windows 2000.

Microsoft Windows 98 / Windows ME Driver Installation

Follow this sequence for installation under Microsoft Windows 98 / Microsoft Windows ME.

1. Restart the computer.

2. During the boot process, a window will appear entitled “Add New Hardware Wizard,” saying that it will complete the installation of the PCI Ethernet Controller. Insert the driver floppy or GIGMAC CD, then press “Next.”

3. A window will appear presenting you with two options: (1) have Windows locate the driver for you or (2) display all drivers in a specific location so that you can choose one yourself. Choose option (2), then click on “Next.”

4. A window may appear asking you to select the type of device. If this window appears, select “Network Adapters” from the

list, then click “Next.”

5. A window will appear entitled “Select Device.” Click on the “Have Disk” button. A window entitled “Install from Disk” will appear. Click on the “Browse” button.

6. If you are using a driver floppy, navigate to the floppy drive, select the file net83820.inf, then click “OK” and proceed to step 6. If you are using the GIGMAC CD, navigate to the CD-ROM drive, then to the Drivers/win98 directory.
Click “OK.”

7. The “Install from Disk” window will reappear. Choose “OK.” The “Select Device” window will then reappear. Again choose “OK.”

8. Windows will begin copying the driver files to the hard disk. If it presents a dialog box saying that it cannot locate DP83820.sys, choose “Browse,” then double-click on DP83820.sys in the directory you navigated to in step 6. When it finishes, it will present a window saying that the driver has been successfully installed. Click on “Finish.”

9. After the driver files have been copied, the machine will need to be restarted. It will prompt you to restart automatically. Remove all floppy disks and CDs before restarting.

Windows 2000 Driver Installation

Follow this sequence for installation under Windows 2000. These instructions were written for Windows 2000.

1. Restart the computer. Boot Windows 2000.

2. Log in as Administrator. Windows 2000 will draw the desktop then bring up a window entitled “Found New Hardware,” and another one entitled “Found New Hardware Wizard.” If these windows do not appear, double-click on “My Network Places.” This should cause them to appear.

3. Bring the “Found New Hardware Wizard” window to the front and click on the “Next” button. The Wizard will then ask if you want it to search for a suitable driver or if you want to choose a driver yourself. Choose the second option, then click the “Next” button.

4. A window subtitled “Hardware Type” may appear. If it does, select “Network Adapters” from the list, then click “Next.”

5. After a few seconds, a window subtitled “Select Network Adapter” will appear. Click on the “Have Disk…” button. A smaller window entitled “Install from Disk” will appear.

6. Insert the floppy disk or GigMAC DEMO CD. If you are using the GigMAC DEMO CD, click on “Browse,” then navigate to the Drivers/ win2k directory on the CD. Click “Open” in the “Locate File” dialog box, then click “OK.”

7. A second window subtitled “Select Network Adapter” will appear with “National Semiconductor Corp. DP83820 10/100/1000 GigMAC demo PCI Adapter” highlighted. Click on “Next.”
8. A window subtitled “Start Device Driver Installation” will appear. Click “Next.”

9. Windows 2000 may issue a warning that the driver has not been digitally signed by Microsoft. The GigMAC demo driver will acquire a Microsoft digital signature when it completes WQHL certification. In the meantime, you can ignore this warning.

10. If Windows 2000 brings up a “Files Needed” dialog box saying that the file DP83820.sys is needed, navigate to the floppy drive (A:) or the GigMAC DEMO CD subdirectory from step 6, then click “OK.”

11. A window should then appear saying that Windows 2000 has finished installing the GigMAC demo driver. Click “Finish.” The PC does not need to be restarted.

3.2.3 Installation Troubleshooting

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

• Microsoft Windows does not automatically detect that the GigMAC demo card 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 GigMAC demo card may be conflicting with other PCI cards in the system. Remove other PCI cards and restart Windows.
Windows 98 can be forced to look for the Gigabit Ethernet Adapter card. Through the “Start” menu, view “Settings > Control Panel”. Then open the “Add New Hardware” icon and follow the instructions.

Windows 2000 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 GigMAC demo card is connected to another PC or network hub or switch.
In this case it is possible that the GigMAC demo card 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 GigMAC demo card can not establish link without power from the PC.

• The GigMAC demo card links at 10/100 Mbps instead of 1000 Mbps.
This occurs if the device connected to the GigMAC demo card 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 GigMAC demo card is capable of 1000 Mbps communication.
If you are running Microsoft Windows, the driver might be configured to force the GigMAC demo card 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 GigMAC demo card 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 in this release of the driver.

Wake on LAN / Power Management Support

The DP83820 chip does support power management, the current release of this driver supports only standby Wake On LAN as specified in the Windows 2000 DDK. The ability to turn this on and off will be added to the next revision of the driver.

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 2000 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.

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.

3.2.6 Errata

PCI BIOS Issues: Network Boot Scan and Bus Mastering

Some BIOS's require that you manually enable bus mastering in the BIOS Configuration Setup. Without bus mastering enabled the NIC will not function.

MS WHQL HCT Testing

Revision 5.0.2.50 of this driver has passed NDISTEST v.3.77 from Microsoft.

- In the Windows XP network status dialog for the DP83820, which shows

the number of transmitted and received packets, the reported values

are incorrect. This problem will be corrected in the near future. This

issue does not affect operation.

4.0 Product Documentation

These release notes document, *National Semiconductor* DP83820 GigMAC NDIS5 Release Notes, provides detailed information about installing the National Semiconductor Corp DP83820-based Gigabit Ethernet Adapter and Driver software.

5.0 Problem Reporting

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