

Gigabit Ethernet Installation

Packet Engines GNIC-II, Intel Pro1000/x

Document Number
72-3288A-G

2002-02-26

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Revision History

Revision	Date	Author	Comments
3.0	February 15, 2002	Robyn Lundstrom	Complete rewrite of original document. Many errors fixed, compatibility updates.

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1. OVERVIEW

Gigabit Ethernet has become an accepted standard in the prepress industry, delivering high performance at a reasonable cost, and offering good interoperability with legacy systems. This document describes the installation procedure of the Packet Engines GNIC-II, the Intel Pro/1000-T, and the Intel Pro1000/F.

For Brisque systems, a special NIC is required. See the Networking Installation pages on TechPlanet for further details and installation instructions.

Note: The Packet Engines GNIC-II NIC has been discontinued by the manufacturer. It is included in this procedure for support purposes only.

1.1 Compatibility

This table was taken from the Gigabit Ethernet White Paper (available on eCentral). It lists which card/machine/OS combinations are supported.

Platform/Model	Packet Engines GNIC-II *		Intel Pro1000/F/T ****	
	NT 4.0	Win2K	NT 4.0	Win2K
Compaq Alpha AXP150	No	N/A	No	N/A
Compaq Alpha AS400	No	N/A	No	N/A
Compaq Alpha ETN30	No	N/A	No	N/A
Compaq Alpha AS500	No	N/A	No	N/A
Compaq Alpha PWS 400/500a/600a	N/R **	N/A	No	N/A
Compaq AlphaServer 2100	N/R ***	N/A	No	N/A
Compaq AlphaServer 2100a	N/R ***	N/A	No	N/A
Compaq Alpha 4000	Yes	N/A	No	N/A
Compaq Alpha 5300	Yes	N/A	No	N/A
DG AV1600	N/R **	No	N/R **	N/R **
DG AV2150	N/R ***	No	N/R ***	N/R ***
DG AV2200	N/R ***	No	N/R ***	N/R ***
DG AV2300	Yes	No	Yes	Yes

DG AV2600	N/R ***	No	N/R ***	N/R ***
DG AV2700	Yes	No	Yes	Yes
DG AV37000	Yes	No	Yes	Yes
Dell PE1400SC	No	No	Yes	Yes
Dell PE2400L	No	No	N/R **	N/R **
Dell PE2400H	No	No	Yes	Yes
Dell PE2500L	No	No	N/R **	N/R **
Dell PE2500H	No	No	Yes	Yes
Dell PE2500V	No	No	Yes	Yes
Dell PE4400	No	No	Yes	Yes
Dell PE6400/6450	No	No	Yes	Yes

N/R: Not recommended. See notations indicated (below).

N/A: Not applicable. This combination of server/OS is unsupported by Microsoft, and thus unsupported by Creo.

* The Packet Engines GNIC-II card has been discontinued by the manufacturer. It is included here because it is the only Gigabit Ethernet card supported by Creo on the Alpha platform, and is still available in very limited quantities through various dealers (no longer through Creo; you'll have to check around). The benchmarking results are still applicable, as there are several installations of these cards in the field. GNIC-II cards are unsupported under Windows 2000.

** This machine is only available as a single CPU solution. While a Gigabit Ethernet NIC is compatible, it is not recommended due to the strain such a card would place on the single CPU. Performance gained is minimal, and not worth the cost of upgrading.

*** While this machine has dual CPUs, it does not have sufficient horsepower to handle the demands placed on it by a Gigabit Ethernet NIC. It is compatible, but the performance gain is minimal, and not worth the cost of upgrading.

**** All connection flavours of the Intel Pro/1000 have been tested and are included in this matrix.

1.2 Cabling

Appropriate cables are needed for each model of NIC to operate. See the manufacturers specifications of each NIC for the appropriate cable types (type of cable needed varies due to the length of the run needed).

1.3 Items Required

- Gigabit Ethernet NIC of a supported type for the server being upgraded/installed (see chart is section 1.1)

- Drivers for the NIC being used. All of these are available on the TechPlanet Networking pages (techplanet.creo.com). Download them and place them on a floppy disk. If your NIC came with a driver CDROM, use the drivers on it.
- Appropriate cabling (usually supplied by the customer) for the card being installed.
- Unique IP address for the new card. If you are replacing an older Ethernet NIC, then you may use the old IP address. If the card is being added and the old one is being retained (and left active), you must obtain a new, unique IP address.

2. INSTALLATION

2.1 Packet Engines GNIC-II (NT 4.0 only)

Note: Disable the on-board NIC (if present) in the CMOS settings. It is not sufficient to disable it from within Windows.

Note: This section should take approximately ½ hour.

1. With the system powered off, open the case.
2. Insert the GNIC-II into the appropriate slot. If the machine is not explicitly listed here, then any slot is appropriate.
    - **DG AV2200**: First free PCI slot from the bottom, which is available. (PCI Slot 1, 2, 3)
    - **DG AV2300**: PCI Slot 1-5, 1-6.
    - **DG AV2700**: PCI 1 slot 1, or PCI 1 slot 2
    - **DG AV3700**: PCI 1 slot 2, PCI 1 slot 3
    3. Close the case. Power up the server.
4. Open the Network control panel.
5. Select the Adapters tab, and click Add.
6. Select the Have Disk button.
7. Place the media containing the GNIC-II driver into the appropriate drive (CD or floppy, depending on how you received it).
8. Enter the path to the driver files in the dialog box that appears (varies with the media type used). Click OK.
9. Select “Packet Engines GNIC-II Ethernet Adapter” from the list that appears (may be the only one listed). Click OK to accept the selection.

Note: The .zip file that contains the drivers expands to two folder: Disk1 and Disk2. The installation process may complain that files are missing. If this occurs, simply point the installer at the Disk2 folder. The install should proceed normally after this.

10. Go to the Adapters tab. The old NIC will still be listed. Select it and click Remove. Answer yes to any prompts to remove it.
11. Go to the Protocols tab.
12. Highlight “TCP/IP Protocol” and click Properties.
13. Assign an appropriate IP address (obtained earlier, see Items Required) and netmask to the card. Clock OK when finished.
14. Go to the Bindings tab.
15. For the binding assignments All Services and All Protocols, make sure that the GNIC-II is at the top of every list (may be the only card there, depending on the system configuration).
16. Click Close. The system will review its bindings. This may take a few minutes.
17. If you are prompted about AppleTalk zones:
    - Click Yes to continue configuration.
    - Make sure the GNIC-II is selected as the default adapter.
    - Click Close. Installation will continue.
18. Click Yes to restart the system when prompted.
19. When the server comes back up, login and open the Registry Editor by clicking Start:Run and typing `regedt32.exe` in the field. Click OK.
20. Go to HKEY LOCAL MACHINES \ SYSTEMS \ CURRENT CONTROL SET.\ SERVICES \ TCP/IP \ PARAMETERS \
21. Go to the *Edit* Menu and click on *Add Value.*
22. The new value must have the following parameters:
    - *Value Name*: TcpWindowSize
    - *Data Type*: REG_DWORD
23. Click OK and type the following values and click OK.
    - *Data:* ffff
    - *Radix:* Hex
24. Close the Registry Editor. Power down the system.
25. Connect the fibre-optic cable by aligning the nubs on the Duplex SC connector with slots on the transceiver, and lock them together by pushing firmly, then power up the system. You’re done.

2.2 Intel Pro1000 Installation

Note: This section is identical for each type of Pro1000 NIC available (T/TX/F). The only differences are the driver and the type of cabling used.

Note: Disable the on-board NIC (if present) in the CMOS settings. It is not sufficient to disable it from within Windows.

2.2.1 Installation of the Intel Pro1000 NIC on NT Server 4.0

Note: The Intel Pro1000 cards work with Service Pack 4 and above.

Note: This section should take approximately ½ hour.

Note: The Intel Pro/1000 cards are compatible with x86 systems only!

1. With the system powered off, open the case.
2. Insert the Pro1000 into the appropriate slot. If the machine is not explicitly listed here, then any slot is appropriate.
    - **DG 2200**: First free PCI slot from the bottom, which is available.
    - **DG 2300**: PCI Slot 1-5, 1-6.
    - **DG 2700**: One of the first two slots from the top (The ones closest to the DIMM slots) in 2700 map, They are marked as PCI 1 slot 1, or PCI 1 slot 2.
    - **DG 3700**: PCI slots A2 or A3. (Farthest ones from ISA slot)
    - **Dell 4400, 6400**: One of the two Green 64bit slots, or any available slots.
3. Close the case. Power up the server.
4. Open the Network control panel.
5. Select the Adapters tab, and click Add.
6. Select the Have Disk button.
7. Place the media containing the Intel Pro1000 driver into the appropriate drive (CD or floppy, depending on how you received it).
8. Enter the path to the driver files in the dialog box that appears (varies with the media type used). Click OK.
9. Select “Intel Pro1000/xxx Server Adapter” from the list that appears (may be the only one listed). The exact name of the driver will vary depending on the exact flavour of the cards you’re installing. Click OK to accept the selection.
10. Go to the Protocols tab.
11. Highlight “TCP/IP Protocol” and click Properties.
12. Assign an appropriate IP address (obtained earlier, see Items Required) and netmask to the card. Clock OK when finished.

13. Go to the Bindings tab.
14. For the binding assignments All Services and All Protocols, make sure that the Pro1000 is at the top of every list (may be the only card there, depending on the system configuration).
15. Click Close. The system will review its bindings. This may take a few minutes.
16. If you are prompted about AppleTalk zones:
    - Click Yes to continue configuration.
    - Make sure the Pro1000 is selected as the default adapter.
    - Click Close. Installation will continue.
17. Click Yes to restart the system when prompted.
18. When the server comes back up, login and open the Registry Editor by clicking Start:Run and typing `regedt32.exe` in the field. Click OK.
19. Go to HKEY LOCAL MACHINES \ SYSTEMS \ CURRENT CONTROL SET.\ SERVICES \ TCP/IP \ PARAMETERS \
20. Go to the *Edit* Menu and click on *Add Value.*
21. The new value must have the following parameters:
    - *Value Name*: TcpWindowSize
    - *Data Type*: REG_DWORD
22. Click OK and type the following values and click OK.
    - *Data:* ffff
    - *Radix:* Hex
23. Close the Registry Editor. Power down the system.
24. Connect the Ethernet cable to the NIC, then power up the system. You're done.

2.2.2 Installation of the Intel Pro1000 NIC on Windows 2000

1. Power down the system and open the case.
2. Insert the card into the appropriate slot as indicated in Section 2.2.1 step 2.
3. Power up the system and log in as Administrator. The system will automatically detect the card and the "Found new hardware wizard" window will start.
4. Click next to get to install hardware device drivers page.
5. Select the second option "Display a list of available drivers." Do not search for currently installed drivers, as the drivers included with Windows 2000 for the Intel Pro1000 card are old and unstable.

6. Now you are in "hardware Type" window. In this step scroll down the window and select the Network Adapters.
7. Click on have disk, select browse and point to the place you have downloaded the recent qualified network driver for the card.
8. Choose the appropriate driver for the type of adapter you are installing, then click Next:
   - For Fiber gigabit card choose “Intel Pro/1000 F Server Adapter”
   - For Copper Gigabit card choose “Intel Pro/1000 T Server Adapter”
9. After Windows installs the driver (may take a minute or two), click Finish.
10. Open the Network and Dial-Up Connections control panel.
11. Right click on the adapter icon that represents the Intel Pro1000 NIC, and select Properties.
12. Uncheck the NetBEUI protocol if it is present and/or checked.
13. Highlight the TCP/IP protocol and click Properties.
14. Input the appropriate IP address and netmask (obtained in advance, as noted in the Required Items section) and any other required entries. Click OK when done.
15. Back at the NIC Properties window, click Configure.
16. Select the Advanced tab.
17. Highlight Link Speed and Duplex. Make sure it is set to Auto Detect. All the other settings should be left at their defaults.
18. Click OK to close the Configuration window.
19. Click OK to close the NIC Properties window.
20. Power down the system.
21. Connect the Ethernet cable to the NIC, then power up the system. You’re done.

3. VERIFYING FUNCTIONALITY

After the cabling is plugged in, make sure that the LINK light is illuminated when the system is powered on (located on the outside of the card itself, right next to the cable socket). If it is not, make sure the other end is plugged into the switch. If it is, you may have a faulty cable. Replace it. If it still does not work, the NIC itself may be faulty.

Do a performance check using the Netperf utility. This can be downloaded from TechPlanet, along with the document entitled “Using the Netperf Utility.”

Note: The performance of Copper and Fibre Gigabit adapters is virtually identical.

4. END