NETWORK INTERFACE CARD

(Machine Code: A732/A733)

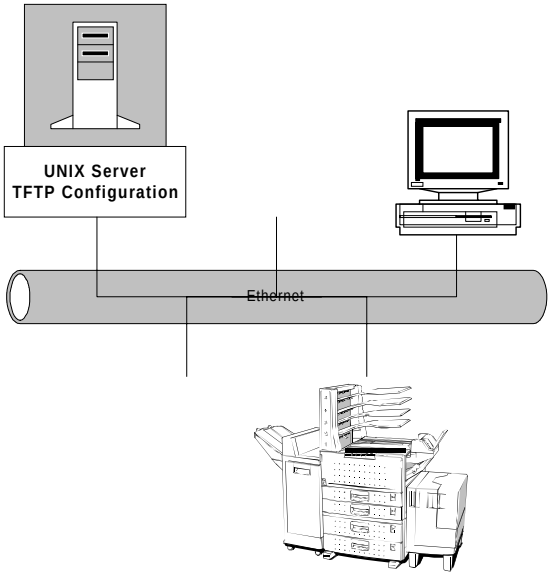
1. SPECIFICATION

Configuration:	Internal Network Interface Card
Type:	NIC401-E: for Ethernet 10BaseT/2
	NIC401-TR: for Token Ring 16Mbps/ 4Mbps
NOS and Protocol Support:	Novell NetWare:
	IPX/SPX, TES
	Windows NT:
	TCP/IP, LPD
	UNIX:
	TCP/IP, LPD, Telnet
	AppleTalk
Connector/Cable Type:	Ethernet (Type NIC401E):
	10BaseT: UTP(Unshielded Twisted Pair) Cable –with RJ-45 connector
	10Base2: Thinwire BNC connector and BNC T adapter
	Token Ring
	UTP(Unshielded Twisted Pair) Cable – with RJ-45 connector
	STP (Shielded Twisted Pair) Cable – with DB-9 connector

2. NETWORK INTERFACE CARD SOFTWARE UPGRADE

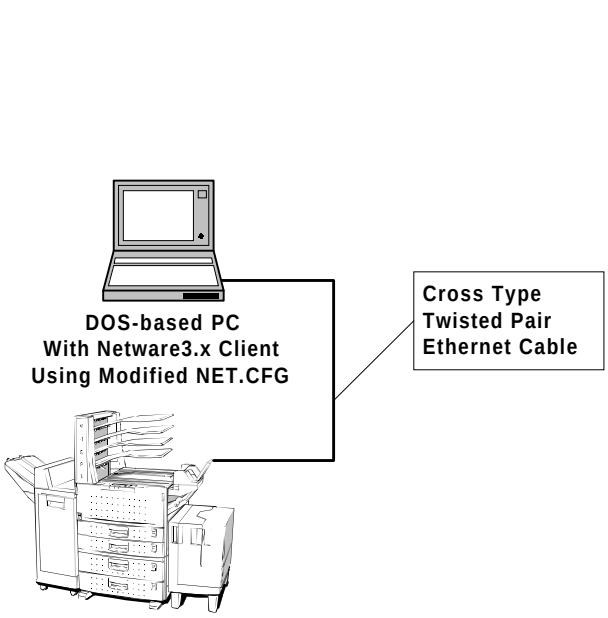
The printer server software in the Flash Memory can be upgraded using one of the following ways.

- Remote Downloading Software via TFTP. (Refer to the Network Printer Manager manuals.)



A732M500.WMF

- The DOS Flash Update Utility.



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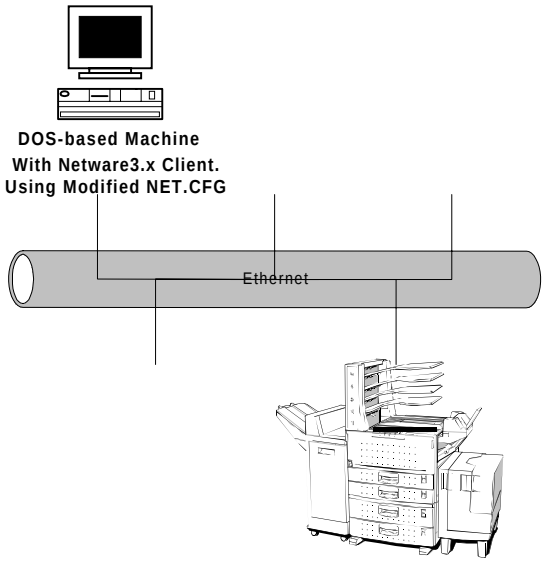

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2.1 DOS FLASH UPDATE UTILITY

Overview

The printer server software upgrade can be performed through the DOS Flash Update Utility. Anyone doing this must have a good understanding of DOS commands and needs to be familiar with the Network Interface Card documentation.

If more than one printer server requires upgrading, a DOS batch file may be created to prevent re-entering commands for each printer server. See your DOS manual for help with batch files.

Outline of the Procedure

Preparing your Portable PC

1. Install Novell Netware 3.x on your portable PC. This will cause the net.cfg file to be automatically created.
   NOTE: Netware 4.x will not do this.
2. Make a backup copy of the net.cfg file and rename it (e.g., netcfg.bak).
3. Modify the net.cfg file to match the NIC installed in your portable PC, as explained in sections 2.2 and 2.3.
   NOTE: The net.cfg files modified for this process cannot be used for logging on to a Netware server. They are only good for connecting to a printer NIC.
4. Install the Flash Update Utility as explained in section 2.4.
5. Copy the latest NIC software version to the c:\download directory.

Using the Update Utility

There are two ways to do this.

- At the customer's site

At the service center

⚠**CAUTION**
Do not perform this operation using a PC belonging to the user, and do not connect your PC to the user's network. Otherwise, you may cause problems with the user's network configuration.

- Upgrade at the Customer's Site -

1. Connect your portable PC directly to the printer NIC using an Ethernet Cross-type Twisted Pair Cable. Do not hook up your portable to the user's network (see the above Caution).
2. Run the Flash Update Utility (see section 2.6). This copies the new software from your portable to the printer.

- Upgrade at the Service Center -

1. If you set up a network at your service center, you can bring the user's printer NIC and install it in the printer on your network.
2. Connect your portable PC to the network (a normal network cable can be used; there is no need to use a cross-cable).
   NOTE: The PC you use to run the Flash Update Utility must be on the same physical wire as the printer server. No bridges or routers are allowed between the PC running the Flash Update Utility and the printer server.
3. Run the Flash Update Utility (see section 2.6). This copies the new software from your portable to the printer.

2.2 MODIFYING NET.CFG

The net.cfg file must be modified before the Flash Update Utility can function. This utility only works under DOS; do not use Windows 3.1/95.

⚠**CAUTION**
Make a backup copy of the NET.CFG file before proceeding.

2.3 SAMPLE NET.CFG

Overview

Typical NET.CFG files are presented on the following pages. Your NET.CFG file will be somewhat different, but Emulex (the NIC manufacturer) recommends following one of the samples whenever possible. Required entries are in italic type.

The NET.CFG file requires certain entries to support the MOP Protocol. They are presented below.

1. During initialization, the Flash Update Utility (the protocol stack) checks the NET.CFG file for its main section header.
2. A main section heading for the MOP protocol is labeled "PROTOCOL" and must be on the left margin of the display screen.
3. The "PROTOCOL" entry is followed by the name of the protocol stack MOP.
4. The Flash Update Utility will search for a "BIND" configuration entry.
5. Under the main section heading for the Link Driver, the ETHERNET_II Frame type must be enabled. This is done with the entry "FRAME ETHERNET_II".
6. Under the Main Section Heading for the Link Driver, the following must appear:
   Protocol ID and frame type for the MOP (Dump/Load) Protocol
   Protocol ID for the MOPRC (Remote Console) Protocol
7. The protocol identification and frame types for the MOP are:
   MOP, Dump/Load, Ethernet Standard frame type II
   MOPRC, Remote Console, Ethernet Standard frame type I

SMC EtherCard Elite16C Ultra Ethernet Card

LINK SUPPORT
  BUFFERS 6 1600
LINK DRIVER smc8000
  FRAME ETHERNET_II MSB
  FRAME ETHERNET_802.3 MSB
PROTOCOL IPX 0 ETHERNET_802.3 (binds IPX to frame)
  PROTOCOL MOP 6001 ETHERNET_II
  PROTOCOL MOPRC 6002 ETHERNET_II
  PROTOCOL MOP
  BIND #1
Netware DOS Requester
:
:
these dots represent entries unique to your site)
:
:

2. 3Com 3C503 Etherlink II TCP Ethernet Card

LINK SUPPORT
  BUFFERS 6 1600
LINK DRIVER 3C503
  PORT 300
  mem d800
  INT 5
; CONNECTOR DIX
; the odipkt driver talks ethernet_ii
  FRAME ETHERNET_II MSB
; the ipxodi driver needs 802.3
  FRAME ETHERNET_802.3 MSB

```
   PROTOCOL IPX 0 ETHERNET_802.3   (binds IPX to frame)
   PROTOCOL MOP 6001 ETHERNET_II
   PROTOCOL MOPRC 6002 ETHERNET_II
PROTOCOL MOP
   BIND #1
Netware DOS Requester
                                :
                                :
(these dots represent entries unique to your site)
                                :
                                :
```

3. 3Com 3C509B-COMBO Ethernet Card

```
;This section is for configuration of linkwatch manageable end nodes.
;
Protocol DME
   BIND #1
; replace with your specific information for LinkWatch.
   USER_NAME "Your Name"
   NODE_NAME "Your Node Name"
   NODE_LOCATION "Your Node Location"
; set password according to your network administrator's instructions.
; NODE_PASSWORD "ABCDEFGH"
   PHONE_NUMBER "Your Phone Number"
   NOTES "Miscellaneous text"
   NOTES "and more text"
LINK DRIVER 3C5X9
; PORT 300
   FRAME ETHERNET_II
   FRAME ETHERNET_802.3
   ; FRAME ETHERNET_802.2 MSB
   ; FRAME ETHERNET_SNAP
   PROTOCOL IPX 0 ETHERNET_802.3
   PROTOCOL MOP 6001 ETHERNET_II
```

PROTOCOL MOPRC 6002 ETHERNET_II

;

; =======

; port [index] STARTING_PORT COUNT

; This setting is only required when there is two

; adapters in the workstation.

;

; All adapter specific parameters are read from the adapter.

;

; mem [index] MEMORY_WINDOW (Optional)

; If parameter not present in protocol.ini, driver auto selects a

; a free 4K memory window. Released after initialization of card.

; If specified, forces driver to use this address to map card's

; CIS memory during driver initialization. Window is released

; after driver finishes initializing card or fails to find card.

; Use 0xC000 - 0xEF00 in steps of 0x100

;

; NOTE: frame ethernet_802.3

; *****This is a version 4.X DOS ODI driver. The default

; frame type is 802.2, but you may be using 802.3.

;

; =======

PROTOCOL MOP

BIND #1

Netware DOS Requester

:

:

Novell NE2000PLUS-3 Ethernet Card

LINK SUPPORT

BUFFERS 6 1600

link driver ne2000

Int 5

Port 300

FRAME ETHERNET_II

Frame Ethernet_802.2

PROTOCOL IPX e0 ETHERNET_802.2 (binds IPX to frame)

PROTOCOL MOP 6001 ETHERNET_II

PROTOCOL MOPRC 6002 ETHERNET_II

PROTOCOL MOP

BIND #1

Netware DOS Requester

:
:

Intel Express Ethernet Card

```
LINK SUPPORT
   BUFFERS 6 1600
LINK DRIVER EXP16ODI
   PORT 300
   mem d800
   INT 5
; the odipkt driver talks ethernet_ii
   FRAME ETHERNET_II MSB
; the ipxodi driver needs 802.3
   FRAME ETHERNET_802.3 MSB
   PROTOCOL IPX 0 ETHERNET_802.3   (binds IPX to frame)
   PROTOCOL MOP 6001 ETHERNET_II
   PROTOCOL MOPRC 6002 ETHERNET_II
PROTOCOL MOP
   BIND #1
Netware DOS Requester
                                   :
                                   :
```

2.4 INSTALLING THE FLASH UPDATE UTILITY

1. Create a subdirectory:
   C:\md download
   This command creates a subdirectory called "download".
2. Insert the floppy disk
   Drive "A" is assumed; if a different drive is used, type the appropriate letter in the next step.
3. Copy the files to the designated drive by entering:
   Copy A:\utils\fwudate *.* C:\download
4. Enter:
   C:\cd download
   C:\download>> install
   This installs the Flash Update Utility.

2.5 BEFORE RUNNING THE FLASH UPDATE UTILITY

Read the following section before executing the Flash Update Utility. Choose between defaults, paths, and changes.

Available Switches

/b Boot Target Server and exit program, no load

/c Remote Console Connection to target server
Type CTRL-D to exit RCF

/d Change path from default directory for load file

/o Output execution information to the specified log file

/f Netload Target Server and update Flash with load file

/h Display this Help Screen

/l Netload Target Server

/n Name of file to be loaded without the extension

/pl Printer Server Login Password, default = "access"

/pm Maintenance Password (RCF Connection), defaults to disabled.

/pp Printer Server Privilege Password, default = "system"

Switch Summary

Switches may be entered in any order. Parameters associated with a switch must follow the switch characters with no intervening spaces. Selections from the table in the preceding paragraph are described in detail below.

b

This switch causes the target printer server to be booted. No change occurs in the printer server settings and the printer server's Flash memory is not updated by the Flash Update Utility. This is a reboot only.

Switch format: /b

c

This switch causes a Remote Console Facility (RCF) connection to be made with the target printer server. After the connection is made, the "#" prompt is displayed. Enter the printer server remote login password (default is access). If the maintenance password has been changed in the printer server, an error will result unless the maintenance password switch (/pm) is also entered on the command line.

Switch format: /c

d

The default path for the load file is "c:\download". If the load file is in another directory, this switch permits a change of path.

Switch format: /d***path***

path Enter the new path for the load file if it has been changed from the default.

o

This switch causes a log file to be kept during execution. If the specified file does not exist, one is created and the execution information is written to it. If the file exists, the information is appended to the file. This allows the log to grow with multiple executions, such as from a batch file.

Switch format: /o***[path]filenam.ext***

path The path to the location of the log file.

filenam.ext Log file name.

f

This switch causes the printer server to perform a DECNet load and Flash update. The printer server is defined for a DECNet load. If the load filename switch is also entered on the command line, the file name for a DECNet load is defined. The printer server is rebooted so the DECNet load will take place. Upon completion of the load, the Flash Update Utility exits to DOS. The printer server will perform a Flash update at the completion of the load independent of the Flash Update Utility.

Switch format: /f

h

This switch causes the help screen to be displayed.

Switch format: /h

l

This switch causes the printer server to perform a DECNet load. The server is rebooted and upon completion of the load the Flash Update Utility exits to DOS.

Switch format: /l

n

This switch is used to enter a load file name different from the default NIC name. The file name is limited to 8 characters without an extension, which is assumed to be ".sys".

Switch format: /n***file_name***

pl

The default printer server remote login password is "access". If the default password is still in use, the switch is not needed. If the login password has been changed, this switch must be used with the /l or /f switches to allow the utility to login to the server.

Switch format: /pl***password***

pm

The maintenance password is disabled by default. If the maintenance password has been changed, the switch must be used when the /l, /f, or /c switches are entered. The maintenance password consists of 1 to 16 hexadecimal characters.

Switch format: /pm***password***

pp

The default privilege password is "system". If this password has been changed, this switch must be entered when the /l or /f switches are used.

Switch format: /pp***password***

2.6 RUNNING THE DOS FLASH UPDATE UTILITY

Command Syntax

To run the Flash Update Utility, type the following:

c:\download>> flashup mac_add[/switch]

mac_add Enter the Ethernet or MAC address.

switch Switches may be combined if the correct syntax is applied.

Sample Switch Applications

In each of these sample applications, the flashup command causes the printer server to perform a netload, and the MAC address remains the same: 00-00-c9-03-80-a5.

1. Enter

   C:\download> flashup 00-00-c9-03-80-a5 /f /nCPF518NB

   f This switch causes the printer server to perform a DECNet load and flash update.

   n This switch is used to enter a load file name different from the default NIC name (in this case, the filename is CPF518NB).
   The file name is limited to 8 characters without an extension, which is assumed to be ".sys".

   NOTE: The spaces after the MAC address and after /f are necessary.

1. Press Enter
2. Wait until the DOS prompt is displayed.
3. Wait for 3 more minutes.

⚠CAUTION

Do not turn off the machine soon after date transfer from the PC wait about 3 minutes after adta transfer completed (after returning to the DOS prompt) to allow complete soft ware replacement inside of the NIC memory area.

5. Reboot the NIC (either switch the machine off/on, or use the Network Printer manager).