chapter **4**

Running NetWare with Other Network Operating Systems

Chapter Overview

ODINSUP allows you to connect to disparate networks from your workstation and use them as if they were one network.

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ODINSUP: Connectivity for Disparate Networks

ODINSUP (Open Data-link Interface/Network Driver Interface Specification Support), is an interface that allows coexistence of the two main network driver interfaces: the Network Driver Interface Specification (NDIS) and the Open Data-link Interface (ODI) Specification.

For example, after you load ODINSUP on your workstation, you can log in to a network running 3+Share® or LAN Manager™, and also log in to a NetWare network. You can then copy files and run applications as if you were on one network.

When ODINSUP is loaded, you can use a wider variety of programs without compatibility problems. You also don't have to reconfigure or reboot your workstation to switch from one type of network to another.

Prerequisites

To complete ODINSUP installation, you must have access to the NDIS protocols and documentation. You should also have a working knowledge of the NDIS protocol.

How ODINSUP Works

ODINSUP functions as a default protocol stack by accepting requests from the ODI Link Support Layer (LSL) that are not specifically marked for another registered protocol (such as IPX or TCP/IP).

When ODINSUP receives requests, it passes them to the NDIS protocol stack. With ODINSUP, the NDIS Protocol Manager can communicate with a network interface board without being aware of the details of the transmission on that board (such as frame type).

Instead, the details are handled at the ODI driver level and then transmissions are passed to the Link Support Layer, which in turn passes them to the correct protocol stack or to ODINSUP. ODINSUP translates the request for the Protocol Manager.

Installing ODINSUP on DOS

Following are instructions for installing ODINSUP on the client workstation for DOS. You must modify the CONFIG.SYS, AUTOEXEC.BAT, NET.CFG, and PROTOCOL.INI files.

Requirements

- Place the ODINSUP.COM file from the *WSDOS_1* diskette in the same directory as the NET.CFG file.
- The LSL.COM file must be v1.10 or above. To check the version number, move to the directory containing the file and type

  `LSL?`

  LSL.COM v1.10 and v1.21 require that ODINSUP.COM be loaded from the same directory as the LSL.COM file.

- The ODI LAN drivers must be dated later than May 21, 1991. To check the date of the drivers, type

  DIR *drivername*

- If you are running a DOS shell with a DOS redirector or DOS requester, you can't run Windows in Standard or Enhanced mode.

After it is installed, ODINSUP.COM uses about 4900 bytes of DOS memory. Each additional network board that ODINSUP binds to increases memory usage by about 2800 bytes.

The installed LSL.COM and the ODI LAN driver usually take about the same amount of memory as the corresponding NDIS PROTMAN and NDIS MAC drivers. Using ODINUP.COM instead of an NDIS MAC driver means you need an additional 4900 bytes of memory, depending on the LAN driver used.

ODINSUP.COM is not unloadable because NDIS v1.0 doesn't provide a dynamic interface for its protocols and MACs. Because it must be loaded after the LSL.COM and the ODI LAN drivers, these modules are not unloadable, either.

If you want to be able to unload the ODI protocol modules, load them after the NETBIND.EXE and the NDIS protocols.

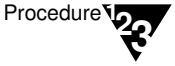
Connecting to a 3+Share Server

The instructions for installing ODINSUP on a DOS workstation that you want to connect to a 3+Share server are similar to those for installing ODINSUP on a workstation. The differences are documented in the necessary steps.

Changing the CONFIG.SYS File

Edit the CONFIG.SYS file to

- Set the LASTDRIVE variable to indicate which drive letters can be used by Redirectors and which drive letters can be used by NetWare.
- Load the NDIS Protocol Manager.



1. Set the LASTDRIVE variable by including a line similar to the following in the CONFIG.SYS file:

   LASTDRIVE = *drive of your selection*

   NetWare uses drive letters after the LASTDRIVE variable, while Redirectors uses drive letters that are prior or equal to the LASTDRIVE variable.

   For example, in a 3+Share network, you move to the NetWare network by typing the next drive letter after the letter you specified in LASTDRIVE. If you specified the LASTDRIVE as H:, you would type I: to go to the NetWare network. To move from the NetWare system to the 3+Share system, you would type a drive letter prior to the one you specified in LASTDRIVE.

2. Load the NDIS Protocol Manager by adding a line similar to the following in the CONFIG.SYS file:

   DEVICE = *path* **PROTMAN.DOS /I:***path*

   where /I: tells the CONFIG.SYS file to look for the PROTOCOL.INI file in the following pathname, and

   where *path* refers to the directory location of the PROTOCOL.INI file.

   If you want to connect to a 3+Share server that uses the XNX protocol, you must also include the following line in the CONFIG.SYS file:

   DEVICE = *path* **XNSTP.DOS**

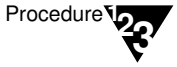
3. Remove all references to the NDIS LAN drivers from the CONFIG.SYS file.

   For example, if your CONFIG.SYS file has a "DEVICE=*path* ELNKII.DOS" statement to load a ELNKII.DOS NDIS driver, you would remove it from the file.

4. Save your changes and exit the CONFIG.SYS file.

Changing the AUTOEXEC.BAT File

Edit the AUTOEXEC.BAT file to load the Link Support Layer (LSL), the ODI LAN driver, the ODINSUP protocol, the protocol stacks, and the NetWare DOS Requester.



1. Put a Change Directory (CD) statement in the AUTOEXEC.BAT file to the directory where the ODINSUP.COM and NET.CFG files are located.

   See the following example. The ODINSUP protocol cannot execute unless it can access the NET.CFG file.

2. Add the following lines to load the ODI components.

   You must load LSL and the ODI LAN driver before you load the ODINSUP protocol.

   For a DOS workstation:

   CD *path*
   LSL *ODI LAN driver* (such as 3C503)
   ODINSUP
   NETBIND
   NETBIOS
   IPXODI
   VLM

   where

   path is to the directory ODINSUP.COM and NET.CFG files are found.

   For a DOS workstation to connect to a 3+Share server:

   CD *path*
   LSL *ODI LAN driver* (such as 3C503.COM)
   ODINSUP
   NETBIND
   XNSTP
   NETBIOS
   MINSES12

```
MSREDIR
SETNAME $$3COM$$
3CLOGIN username
IPXODI A
VLM
next available drive
```

where

path is to the directory ODINSUP.COM and NET.CFG files are found, and

next available drive is LASTDRIVE plus one.

For example, if LASTDRIVE=H:, the next available drive is I:. After the NetWare DOS Requester is loaded, login to the NetWare server by accessing the drive indicated by LASTRDRIVE + 1.

Use XNSTP if you are using XNS. Use IPXODI to load IPX only, not SPX.

3. Save your changes and exit the AUTOEXEC.BAT file.

Changing the NET.CFG File

Edit the NET.CFG file to

- Enable the required Ethernet and Token-Ring frame types. (ODINSUP supports only ODI LAN drivers that are compatible with Ethernet and Token-Ring.)
- Bind the ODINSUP protocol to a particular ODI drivers.

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1. Enable the frame types that ODINSUP requires.

   If you are using Token-Ring network boards, type the following lines in the NET.CFG, substituting the name of your ODI LAN driver for *drivername*:

   ```
   LINK DRIVER drivername
      FRAME TOKEN-RING
      FRAME TOKEN-RING_SNAP
   ```

   (Indent the lines beginning with *frame* and type them in the order shown.)

   If you are using Ethernet network boards, type the following lines in the NET.CFG, substituting the name of your ODI LAN driver for *drivername:*

   ```
   LINK DRIVER drivername
      FRAME ETHERNET_802.3
      FRAME ETHERNET_ii
      FRAME ETHERNET_802.2
     FARME ETHERNET_snap
   ```

2. Bind ODINSUP to one or more ODI drivers.

   Do this by using the "Protocol" option with the name of the ODI driver that is used with your network board.

   For example, if you have one NE2000 network board in your workstation, you would type

   ```
   PROTOCOL ODINSUP
      BIND NE2000
   ```

   If you don't bind ODINSUP to an ODI driver, ODINSUP searches for any Ethernet or Token-Ring drivers that are loaded. ODINSUP binds to and uses the first driver of these types that it locates. When ODINSUP binds to a driver, the network board for that driver is the board used for transmissions to and from the network.

If you have two or more network interface boards of the same type in your workstation, ODINSUP binds only to the driver for the first board unless you specify differently. You can specify exactly which driver to bind to, or you can bind ODINSUP to multiple drivers by typing an "instance" number with the "Protocol" option.

For example, if you have two NE2000 network interface boards in your workstation, you could bind ODINSUP to each board's driver by typing a 2 for the second board:

```
PROTOCOL ODINSUP
   BIND NE2000
   BIND NE2000 2
```

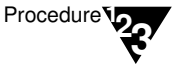
ODINSUP can bind to a maximum of four ODI drivers.

3. Save your changes and exit the NET.CFG file.

Changing the PROTOCOL.INI File

Edit the PROTOCOL.INI file to

- Bind the NDIS protocol stack to the ODI drivers.
- Remove NDIS-related information.



1. Bind each ODI driver you are using to the NDIS protocol, using the "BINDINGS = *drivername*" parameter.

   For example, to bind an NE2000 to the XNS NDIS protocol, you would modify the existing statement to read as follows:

```
[XNS]
   .
   .
   BINDINGS = NE2000
```

To bind an NDIS protocol to more than one ODI driver, type both driver names on the same line, separated by a comma. For example, to bind the Etherand protocol to both an NE2000 driver and an NE1000 driver, you would type the following:

```
[ETHERAND]
   .
   .
   BINDINGS = NE2000, NE1000
```

Following is a sample PROTOCOL.INI file showing binding instructions for a DOS workstation connecting to a 3+Share server using the XNS protocol:

```
[PROTOCOL_MANAGER]
   DRIVERNAME = PROTMAN$

[XNS]
   DRIVERNAME = XNSTP$
   BINDINGS = NE2000
```

In the PROTOCOL.INI file, driver names can't start with a number. Put an X in front of 3Com drivers and other drivers that start with a number, such as X3C503.

To bind an NDIS driver to an instance of an ODI driver other than the first instance, type the instance number at the end of the driver name (for example, NE20004). Don't put a space between the driver name and the instance number.

If you don't know the name of the ODI driver you are using, reboot your machine and read the startup messages carefully. The driver name you should use is displayed.

2. (Optional) Remove all NDIS driver-specific information from the PROTOCOL.INI file.

   ODINSUP doesn't require this information.

3. Save your changes and exit the PROTOCOL.INI file.

4. Reboot your machine for changes to CONFIG.SYS, NET.CFG, and PROTOCOL.INI to take effect.