MARCH 1993

NOVELL® RESEARCH

NetWare and Microsoft Windows for Workgroups 3.1 Interoperability

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In testing the released version of Microsoft's Windows for Workgroups version 3.1, Novell uncovered several compatibility and performance problems. This Application Note outlines the problem sencountered to date and provides solutions where possible. It also details a workstation configuration using Novell's ODINSUP driver, which solves many of the problems that stem from using Microsoft's MSIPX and NDIS drivers.

Related AppNotes

ODINSUP Interoperability Configurations for DOS Workstations (Feb 93)

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Overview

Novell was not involved in the development or testing of Microsoft's Windows for Workgroups (WFW) version 3.1 before it was released. Consequently, Novell testers have uncovered several problems while working with the released product. This Application Note describes the problems encountered to date and presents solutions where possible.

In testing the released WFW product, Novell found it to work generally as specified by Microsoft when communicating with a NetWare file server. However, instead of supporting Novell's Open Data-Link Interface (ODI) specification, Microsoft chose to use the older dedicated IPX model coupled with an Network Driver Interface Specification (NDIS) driver. Microsoft refers to their IPX driver as MSIPX. The use of MSIPX and NDIS drivers results in the WFW client being limited as to the NetWare resources available, and introduces a number of compatibility problems.

Several of these problems can be solved by using Novell's ODINSUP.COM driver in place of the MSIPX-NDIS driver combination. ODINSUP allows NDIS protocol stacks to run unmodified over the ODI Link Support Layer (LSL) and talk to an ODI LAN driver.

Problem Areas

Novell's initial testing found problems in the following areas:

- WFW installation
- NetWare utility compatibility
- Network connections using NDIS
- Performance degradation using NDIS
- SPX communications using NDIS
- WFW lack of support for DR DOS when using NDIS
- LAN driver compatibility using NDIS

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- NetWare functionality inaccessible using NDIS
- Printing using NDIS

The following sections describe these problems in greater detail and explain what solutions, if any, are available.

General Compatibility Problems

WFW Installation. An intermittent problem appeared when the NetWare drivers were installed during WFW setup, but are not actually invoked. When this occurs, Novell NetWare appears in the Other Networks In Use list in the Compatible Networks dialog box, but the user does not have access to NetWare services.

To avoid this problem, do not use the Enter key as prompted. Instead, use the mouse to click on the Add button or drag the icon.

To correct this problem once it has occurred, open the Control Panel, then select Network. Next, click on the Networks button. Add the "Novell NetWare" option from the "Available Network Types" box to the "Other Networks in Use:" box. If it already appears in the "Other Networks in Use:" box, remove it, then add it again.

NetWare Utility Compatibility. Most NetWare utilities work as expected, with the following exceptions:

- The version of NCOPY that shipped with NetWare version 3.11 (v3.56) dated 2-11-91 does not work with WFW. Updated copies of NCOPY dated 7-18-91 or newer work properly.
- Copy utilities, including NCOPY and XCOPY, fail after exiting WFW when copying from local and network drives to or from WFW shared drives. This is due to the fact that WFW does not detect that the peer workstation has been downed.
- RENDIR works as it should, but WFW does not detect that the directory name has been changed. Hence, it is no longer shared.
- SEND works as expected, but the default setting in WFW is disable incoming messages. Therefore, until the default is changed, workstations cannot receive any messages.
- SYSCON intermittently exited ungracefully when creating a full name for a group using the function keys.
- PCONSOLE requires the ODINSUP driver to be loaded to work properly.

Problems When Using NDIS Drivers

The following problems occur when using the NDIS drivers and MSIPX supplied by Microsoft. Most of these problems can be solved by loading Novell's ODINSUP driver.

Lost Network Connections. When using NDIS, network and local shared drives periodically lose their connection. Swap files may become corrupt as a result, and must be recreated by the user. No solution has been found to this apparently random problem other than recreating the swap file.

Performance Degradation. Access to NetWare file services was considerably slower using the NDIS drivers. After installing the Novell ODINSUP driver, performance improved dramatically. Novell's performance testing on an NE2000 interface card showed throughput of 100 KB/s with NDIS improving to 243 KB/s with ODINSUP loaded.

SPX Communications Problem. Some applications which make use of the SPX protocol will fail with

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several errors when using the NDIS drivers. These errors include application faults and general protection faults. When these same tests were conducted with the ODINSUP driver loaded, they ran to completion without error.

NetWare Functionality Inaccessible. WFW clients using WFW-supplied networking components are not able to access certain ODI-dependent features such as Novell's Network Management or Novell's TCP/IP services. Future planned products which require ODI drivers to be loaded will also be beyond the reach of WFW clients using NDIS. Loading the ODINSUP driver provides the WFW client access to all ODI services.

Printing Problems. PSERVER does not run on WFW workstations using NDIS. PSERVER requires an option to be set in NET.CFG, which is not read by NDIS. PSERVER ran successfully on a WFW workstation when ODINSUP was loaded.

RPRINTER does not run under WFW. Attempting to do so causes the machine to hang. This problem has been attributed to WFW and no solution is known.

Print jobs issued in PCONSOLE get stuck in the queue and do not print. Loading ODINSUP solves this problem, and print jobs print normally.

Occasionally the Print Manager will lose connection to the server and print jobs will appear in Print Manager with the message !ERROR. This connection problem was resolved by loading ODINSUP.

Printers attached to NetWare file servers are accessible only to those workstations which are directly attached to that server. The network printer cannot be accessed by the shared printer option in the WFW work group.

WFW Lack of Support for DR DOS. Currently, the Microsoft NDIS protocol stack will not load if run on the DR DOS operating system. Attempting to do so results in the machine hanging. Novell is currently working on a resolution to this problem.

LAN Driver Compatibility. WFW is not supported by any of the (over 400) Novell certified third-party ODI LAN drivers. If ODINSUP is loaded, all of these drivers work normally. The only exception is Arcnet drivers, because NDIS protocols do not support Arcnet frame types.

ODINSUP Configuration

This section details a sample ODINSUP configuration for use with Windows for Workgroups. The sample files listed were those used in testing WFW. The workstation had an NE2000 card installed. (ODINSUP.COM is available from Novell. It is included as part of the DOSUPx.ZIP file on NetWire.)

CONFIG.SYS

```
FILES=30
        BUFFERS=30
        DEVICE=C:\WINDOWS\PROTMAN.DOS /I:C:\WINDOWS
        DEVICE=C:\WINDOWS\WORKGRP.SYS
        LASTDRIVE=P
        DEVICE=C:\WINDOWS\HIMEM.SYS
        STACKS=9,256
```

AUTOEXEC.BAT

```
PATH=C:\WINDOWS
        C:\WINDOWS\SMARTDRV.EXE
        LSL
        NE2000
        ODINSUP
        C:\WINDOWS\NET START
```

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```
IPXODI
REM C:\WINDOWS\MSIPX
SET TEMP=C:\WINDOWS\TEMP
NETX
REM C:\WINDOWS\NETX
Q:
LOGIN SUPERVISOR
```

NET.CFG

```
PB BUFFERS 7
        PROTOCOL ODINSUP
                BIND NE2000
                BUFFERED
        LINK DRIVER NE2000
                FRAME ETHERNET_802.2
                FRAME ETHERNET_802.3
                FRAME ETHERNET_II
                FRAME ETHERNET_SNAP
                PROTOCOL IPX 0 ETHERNET_802.3
```

PROTOCOL.INI

```
[NETWORK.SETUP]
          VERSION=0X3100
          NETCARD=NE2000,1,NE2000
          TRANSPORT=MS$NETBEUI,MS$NETBEUI
          TRANSPORT=IPX,IPX
          LANA0=NE2000,1,IPX
          LANA1=NE2000,1,MS$NETBEUI

[PROTMAN]

    DRIVERNAME=PROTMAN$

    PRIORITY=MS$NETBEUI

[NE2000]

    DRIVERNAME=NE2000

    IOBASE=0X300

    INTERRUPT=3

[MS$NETBEUI]

    DRIVERNAME=NETBEUI$

    SESSIONS=10

    NCBS=32

    BINDINGS=NE2000

    LANABASE=1

[IPX]
```

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DRIVERNAME=IPX

MEDIATYPE=NOVELL/ETHERNET

BINDINGS=NE2000

Summary

While Windows for Workgroups using NDIS and the MSIPX driver alone does allow for connection to a NetWare file server, a number of problems exist with this configuration. Most of these problems are solved by adding the ODINSUP driver to allow access to Novell's LSL. Other problems are WFW specific and must be addressed by Microsoft. Still others will need to be addressed by Novell.

WFW configured with only the Microsoft NDIS drivers is not fully supportable by Novell. WFW configured with the ODINSUP driver, while not an optimal solution, is generally supportable by Novell.

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