FYI: "DOS Create Returned Error 3". Defining Printer 0
                                      FYI

          TITLE: "DOS Create Returned Error 3". Defining
Printer 0
   DOCUMENT ID#:   FYI.P.5786
           DATE: 16MAR92
        PRODUCT: NetWare
PRODUCT VERSION: v2.2
     SUPERSEDES: NA

        SYMPTOM: DOS create returned error 3. Description:
"System failed to create the file system\00120073\print.000".

ISSUE/PROBLEM

     The problem occurred when trying to define printer 0 in
PCONSOLE under a printserver called PSERVER. When hitting <ESC>
to save the printer configuration the error above was displayed.
The shell was current and SHELL.CFG did not have anything out of
the ordinary in it.

SOLUTION

     Deleted the printserver and all the queues. Made sure that
there were no number directories left by PCONSOLE in the system
subdirectory. Ran BINDFIX. Recreated the printserver and was
able to define a printer.

FYI: Abend: Disk Controller Channel 0... v2.2 INSTALL
                                      FYI

```
         TITLE:       Abend: Disk Controller Channel 0... v2.2
INSTALL
   DOCUMENT ID#:      FYI.P.5787
          DATE:       16MAR92
       PRODUCT:       NetWare
PRODUCT VERSION:      v2.2
    SUPERSEDES:       NA

        SYMPTOM:      Receiving the message: "Abend: disk
controller channel 0 reset error".
```

ISSUE/PROBLEM

     Received this error consistently during INSTALL, after it
was completed linking and configuring (from the first screen
during installation), and right as it was going to bring up the
ZTEST screen. This occurred when using the IDE driver from
IDE286.ZIP. ISADISK wouldn't work at all because it was a user
definable drive type.

SOLUTION

     Used ISAREM.ZIP which worked.

FYI: Server Abends With NMI Parity.
                                FYI

```
         TITLE:       Server Abends With NMI Parity.
   DOCUMENT ID#:      FYI.P.5794
          DATE:       16MAR92
       PRODUCT:       NetWare
PRODUCT VERSION:      v3.11
```

SUPERSEDES: NA

        SYMPTOM: Server abending with an NMI (Non-Maskable
interrupt) parity generated by I/O check.

ISSUE/PROBLEM

        Server abending with an NMI (Non-Maskable interrupt) parity
generated by I/O check.

SOLUTION

        The combination of the Compaq 386/33, NetWare v3.11 and
Proteon cards cause this problem with the server. Moving all
the hardware to an AST allowed the network to work fine.
Downgraded from v3.11 back to v3.10 and everything was fine.

        Note: Compaq tested the problem and could repeat it
consistently with NetWare v3.11, specifically the Compaq 386/33,
and any Proteon card (they tried both the 1308 and the pro-
net4). This scenario of equipment doesn't seem to work so avoid
it.

FYI: Workstation Reboots When Print Job Is Sent.
                                   FYI
(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

          TITLE: Workstation Reboots When Print Job Is Sent.
  DOCUMENT ID#:   FYI.P.5789
          DATE: 16MAR92
       PRODUCT: NetWare
PRODUCT VERSION: NA
    SUPERSEDES: NA

        SYMPTOM: Workstation running RPRINTER reboots itself
when a print job is sent to it.

ISSUE/PROBLEM

In this case the system was trying to run:

1.   Real World Accounting Software (compiled using Microfocus's Cobol compiler)
2.   XM (Microfocus's extended memory manager)
3.   RPRINTER (with a printer attached on the LPT port)

All on the same workstation. Whenever a print job is sent to the workstation it would reboot itself. However, if XM is not loaded everything prints fine.

SOLUTION

Set the following environment variable in the AUTOEXEC.BAT:

SET XM=+jkqr

XM places the program into protected mode, and the settings involve transmitting the protected mode interrupts to real mode interrupts.

J = transmits IRQ 1 (keyboard interrupt)
K = transmits IRQ 16
Q = transmits IRQs 10,17,1a
R = transmits IRQs 0-15 (except IRQ 1)

FYI: NetWare For VMS INSTALL Not Accepting Controller
                                    FYI

        TITLE: NetWare For VMS INSTALL Not Accepting
Controller Types
  DOCUMENT ID#:   FYI.P.5761
          DATE: 13MAR92

```
     PRODUCT:        NetWare for VMS
PRODUCT VERSION:     All Versions
   SUPERSEDES:       NA

     SYMPTOM:        When installing NetWare for VMS, not seeing
the correct VAX ethernet controller type and ethernet device
type.
```

ISSUE/PROBLEM

During the install process for NetWare for VMS the software
prompts for the VAX ethernet controller type (DEQNA etc.), and
the device type (XQA etc.). However, when the controller type
is entered the install utility will not accept it.

SOLUTION

There are newer DEC ethernet controllers as well as
different ethernet controller type and ethernet device type
combinations that NetWare for VMS does not understand. It is
possible to make the necessary changes during the install, or
the changes can be made after the install is completed by
following the directions in FYI.P.4937.

The controller type selection (DEQNA etc.) really doesn't
matter so any controller type can be chosen that install has
listed. The device type (XQA etc.) is the one required to have
the correct type for the controller. NetWare for VMS install
does not check what device type is entered against what types it
knows about. The appropriate VAX support person should be able
to tell what the correct device type is for the controller. The
following is a list of DEC VAX ethernet controllers and their
device types/names:

```
    DEBNT  for BI based VAX
    DEBNA  for BI based VAX
    DEBNI  for BI based VAX
    DEUNA  for UNIBUS based VAX
    DELUA  for UNIBUS based VAX
    DEQNA  for QBUS based micro VAX
    DELQA  for QBUS based micro VAX
    DESQA  for QBUS based micro VAX
    DESQA  for VAX 4000
    DESVA  for micro VAX 2000
    DEMNA  for VAX 9000

    DEBNTs use device names ETA, ETB ...
```

```
        DEBNAs use device names ETA, ETB ...
        DEBNIs use device names ETA, ETB ...
        DEUNAs use device names XEA, XEB ...
        DELUAs use device names XEA, XEB ...
        DEQNAs use device names XQA, XQB ...
        DELQAs use device names XQA, XQB ...
        DESQAs use device names XQA, XQB ...
        DESQAs use device names EZA, EZB ...
        DESVAs use device names ESA, ESB ...
        DEMNAs use device names EXA, EXB ...
```

Note: The third letter in the device name specifies the ethernet card, (i.e., ETA is the first ethernet controller, ETB is the second ethernet controller etc.).

FYI: Keyboard Problems In NetWare Lite Running Lotus
                                    FYI

(Note: The origin of this information may be internal or external to Novell. Novell makes every effort within its means to verify this information. However, the information provided in this document is FOR YOUR INFORMATION only. Novell makes no explicit or implied claims to the validity of this information.)

          TITLE: Keyboard Problems In NetWare Lite Running
Lotus
    DOCUMENT ID#:   FYI.P.5774
            DATE: 12MAR92
         PRODUCT: NetWare
 PRODUCT VERSION: v1.0
      SUPERSEDES: NA

          SYMPTOM: Numbers appear when pressing the cursor
arrows, not on the number pad.

ISSUE/PROBLEM

     A problem occurred when using Lotus 2.3. The keyboard would randomly insert a 2 when pressing the down arrow key (THE ONE NOT ON THE NUMBER PAD). It would happen worse when the computer's turbo button was off, and when in WYSIWYG. About every 20 lines when moving down the screen the cursor would

pause and insert a 2, or when pressing the up arrow key the
number 8 would appear. The problem did not exist unless the
numlock key was on. Removed TSR's, applied NWL004.ZIP, to no
avail.

SOLUTION

     Placing the following line in the CONFIG.SYS file solved
the problem: "install=c:\dos\keyb.com US,,c:\dos\keyboard.sys".

     Note: The KEYB.COM command configures the keyboard for a
specific language. In the indicated DOS command it forces the
country to US. The KEYBOARD.SYS file, according to the DOS 5.0
manual, specifies the location and name of the keyboard
definition file. The DEFAULT keyboard info sometimes gets loaded
wrong. Loading the keyboard driver in the CONFIG.SYS file is the
fix.

FYI: Watchdog Clearing Connections When Workstation Loads Shell
                              FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

          TITLE: Watchdog Clearing Connections When
Workstation Loads Shell
  DOCUMENT ID#:   FYI.P.5744
          DATE: 11MAR92
       PRODUCT: NetWare
PRODUCT VERSION: v3.11
    SUPERSEDES: NA

       SYMPTOM: Connection is cleared.

ISSUE/PROBLEM

Watchdog clearing connections when the workstation has the shell loaded.

SOLUTION

Make sure the "Delay Before First Watchdog Packet" is larger than the "Delay Between Watchdog Packet". It is recommended that the "Delay Before First Watchdog Packet" is twice as large as the "Delay Between Watchdog Packet". Leaving the watchdog parameters at default is usually the best solution.

FYI: Soft Booting Not Releasing RPRINTER Configuration
                                   FYI

(Note: The origin of this information may be internal or external to Novell. Novell makes every effort within its means to verify this information. However, the information provided in this document is FOR YOUR INFORMATION only. Novell makes no explicit or implied claims to the validity of this information.)

          TITLE: Soft Booting Not Releasing RPRINTER
Configuration
  DOCUMENT ID#:   FYI.P.5739
          DATE: 11MAR92
       PRODUCT: NetWare
PRODUCT VERSION: v3.11
    SUPERSEDES: NA

        SYMPTOM: While in RPRINTER receiving the message:
"Configured printer already installed"

ISSUE/PROBLEM

Using DOS 3.3 and the RPRINTER that ships with v3.11/v2.2, when soft booting the work station, the printer configuration is not released on the PSERVER VAP or NLM.

SOLUTION

One solution is to unload the VAP or NLM. In this case

just cold booting the work station took care of the proper
release of the printer configuration.

     Note: There is a timing issue with the print server not
releasing the connection in the time to soft boot. The cold boot
took enough time to have the connection released. The other way
to release the connection is to do "rprinter xxxxxx # -r" where
xxxxxx is the PSERVER name, # is the printer number and -r
removes the connection.

FYI: Problems Installing MHS On Volume Other Than SYS:
                                   FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

          TITLE: Problems Installing MHS On Volume Other Than
SYS:
   DOCUMENT ID#:   FYI.P.5745
           DATE: 11MAR92
        PRODUCT: NetWare
PRODUCT VERSION: v3.11
     SUPERSEDES: NA

        SYMPTOM: Unable to Install MHS

ISSUE/PROBLEM

     Unable to get MHS to install on a v3.11 file server. An
error message was indicating there weren't enough directory
entries.

SOLUTION

     MHS looks to see if there are a minimum of 200 directory
entries before it will install. Normally this isn't an issue as
most of the time, users install MHS on the SYS Volume. NetWare
v3.11 by default will allocate blocks of 32 entries for each

directory. An empty Volume will by default still contain 2
directories meaning it will have 64 directory entries. MHS
wouldn't install because the Volumes only had 64 directory
entries.

     One way to work around this is by copying some directories
and files (dummys) to this Volume and then deleting them.
Deleting files and removing directories that have been allocated
won't cause the directory entries to be de-allocated. After
copying and deleting the files and directories to this Volume,
installing MHS should be no problem.

FYI: Watchdog Dropping Connections
                              FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

            TITLE: Watchdog Dropping Connections
    DOCUMENT ID#:   FYI.P.5749
            DATE: 11MAR92
         PRODUCT: NetWare
 PRODUCT VERSION: v3.11
      SUPERSEDES: NA

         SYMPTOM: Losing connection to the network.

ISSUE/PROBLEM

     Workstations losing connections seemingly because of
watchdog.

SOLUTION

     The workstations were hanging, then the watchdog process
was deleting them. The machines were running Blue Max and
Carousel software on the workstation, it seems like they had a
conflict. Upon removing these two programs the problems went

away.

FYI: Unable To Clear Connections In MONITOR.
                                        FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

            TITLE: Unable To Clear Connections In MONITOR.
   DOCUMENT ID#:   FYI.P.5752
            DATE: 11MAR92
        PRODUCT: NetWare
PRODUCT VERSION: v3.11
    SUPERSEDES: NA

       SYMPTOM: Unable to clear connections in MONITOR. And
work stations were losing connection.

ISSUE/PROBLEM

    The system was using a 3c523 in PS2. The system was having
problems clearing connections in MONITOR, and keeping the work
stations up.

SOLUTION

    Apply the following files: PS2OPT.ZIP from Novell and
3C523.ZIP from 3COM with the latest model of the 3c523 twisted
pair board.

FYI: Utilities Possibly Corrupting NetWare VMS Bindery
                                        FYI

            TITLE: Utilities Possibly Corrupting NetWare VMS
Bindery
  DOCUMENT ID#:   FYI.P.5735
           DATE: 10MAR92
        PRODUCT: NetWare for VMS
PRODUCT VERSION: v2.1
     SUPERSEDES: NA

        SYMPTOM: Errors with bindery calls (i.e., logging in,
trustees, etc.)

ISSUE/PROBLEM

     If using utilities such as SYSCON, PCONSOLE, MAKEUSER, or
any utility that manipulates the bindery that comes from another
version of NetWare. These utilities could possibly corrupt the
NetWare for VMS bindery. This has been observed with utilities
from NetWare v3.x.

SOLUTION

     The only thing that can be done once a bindery is corrupt
with NetWare for VMS is to restore a backup of the bindery.
There is no Bindfix utility. If there is not a backup of the
bindery, a clean bindery from the NetWare for VMS installation
tape can be restored. To restore the bindery do the following.
The $ is the VMS prompt. The tape drive is assumed to be MUA0.
Use the tape drive in place of MUA0.

    $ MOUNT MUA0: NETWAR TAPE
    $ BACKUP TAPE:NetWare_VMS021.A/SAVE/SEL=([*...]*.BND,
[*...]*.DB) -
    $ NWVMS$SPECIFIC:*.*
    $ DISMOUNT TAPE:

    To backup the bindery with NetWare for VMS execute the
following command procedure with a parameter of AUTO.

    $ @NWVMS$SPECIFIC:NW_SRV_DBS.COM AUTO

FYI: Remote Boot Difficulty After v2.2 Upgrade
                                FYI
(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

          TITLE: Remote Boot Difficulty After v2.2 Upgrade
  DOCUMENT ID#:   FYI.P.5719
          DATE: 09MAR92
       PRODUCT: NetWare
PRODUCT VERSION: v2.2
    SUPERSEDES: NA

       SYMPTOM: After upgrading from NetWare v2.15a to v2.2,
workstations trying to remote boot were getting error reading
boot image.

ISSUE/PROBLEM

     After the upgrade the Samsung and Hyundai diskless
workstations would try to remote boot, and after loading NETX
the workstations would return an error something like unable to
read from boot image. Different versions of DOS were tried the
latest NE1000 driver, both 3.1 IPX and 3.22 NETX as well as
older NE1000 drivers, IPX and NETX versions all with the same
result. Hyundai and Samsung were contacted and ran the BIOS and
REMOTE versions that they both recommend to work with v2.15 and
v2.2.

SOLUTION

     Finally tried the ODI drivers and can now remote boot fine.

FYI: "Send ECB Was Re-Used RPL Halted"
                                FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided

```
         TITLE:        "Send ECB Was Re-Used RPL Halted"
   DOCUMENT ID#:       FYI.P.5721
          DATE:        09MAR92
       PRODUCT:        NetWare
PRODUCT VERSION:       v3.11
    SUPERSEDES:        NA
```

        SYMPTOM: Receiving the error: "Send ECB was reused
RPL halted" when attempting to remote boot

ISSUE/PROBLEM

     Received the error "Send ECB was reused RPL halted" when
attempting to remote boot on NetWare v3.11 server using the
RPL.NLM dated 3DEC91 (from RPLFT.ZIP, which can be obtained from
Novell Technical Support). If the work station was rebooted
after this error then remote boot proceeded with no problem.

SOLUTION

     Used NE2.LAN from NE386.ZIP (11NOV91) and error
disappeared.

FYI: "Unable To Write To VOL$LOG.ERR..." NetWare v3.11
                                    FYI

```
         TITLE:        "Unable To Write To VOL$LOG.ERR..."  NetWare
v3.11
   DOCUMENT ID#:       FYI.P.5714
          DATE:        06MAR92
       PRODUCT:        NetWare
PRODUCT VERSION:       v3.11
    SUPERSEDES:        NA
```

        SYMPTOM: Receiving the message: "Unable To Write To
VOL$LOG.ERR..."

ISSUE/PROBLEM

       Upon bringing up the server, which had two volumes, volume
SYS would mount fine, but was receiving the error: "Unable to
write to VOL$LOG.ERR". Then the volume would dismount and the
device deactivate.

       The file VOL$LOG.ERR had become corrupted. VREPAIR
reported no errors. IBM DIAGNOSTICS found data integrity
problems on two blocks.

SOLUTION

       Used a disk editor (Norton's) to rename the file, and the
server no longer had a problem mounting. No data was lost.

       Note: VOL$LOG.ERR keeps track of volume errors, but also
logs each mount and dismount occurrence. The OS recreated the
file when it couldn't find one.

FYI: VMSPT3.TXT WordPerfect & Lotus files being corrupted
                                        FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

          TITLE: VMSPT3.TXT WordPerfect & Lotus files being
corrupted
  DOCUMENT ID#:   FYI.P.5681
          DATE: 05MAR92
       PRODUCT: NetWare for VMS
PRODUCT VERSION: v2.01, r3.01
    SUPERSEDES: NA

       SYMPTOM: WordPerfect and Lotus files being corrupted.

ISSUE/PROBLEM

WordPerfect and Lotus files being corrupted.

SOLUTION

     VMS patch three is a patch for NetWare for VMS v2.1 r3.01
and v2.1 r4.01 to resolve problems saving files from Wordperfect
and Lotus where the file would end up as a 0 byte file and the
contents would be lost. The patch is recommended for anyone
with NetWare for VMS issues regardless of whether the
WordPerfect or Lotus problems exist. It is available on
NetWire, file name: VMSPT3.TXT.

FYI: Problem loading two frame types on NE3200.
                              FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

           TITLE: Problem loading two frame types on NE3200.
  DOCUMENT ID#:   FYI.P.5689
            DATE: 05MAR92
         PRODUCT: NetWare
 PRODUCT VERSION: v3.11
      SUPERSEDES: NA

        SYMPTOM: Problem loading two frame types on NE3200 in
Compaq System Pro.

ISSUE/PROBLEM

     File Server is a Compaq Systempro with one NE3200 with
802.2 and 802.3 frame types needing to be loaded. Loading the
802.3 wouldn't allow the 802.2 frame type to be loaded and vice
versa.

SOLUTION

     Moved the NE3200 in the Systempro from slot five (which
should work) to slot two. After doing this the two frame types
can be loaded on the card.

FYI: Bustek 4201 Busmastering SCSI Controller, NetWare
                                        FYI

          TITLE: Bustek 4201 Busmastering SCSI Controller,
NetWare v3.11
   DOCUMENT ID#:   FYI.P.5649
           DATE: 04MAR92
        PRODUCT: NetWare
PRODUCT VERSION: v3.11
     SUPERSEDES: NA

        SYMPTOM: Receiving the error: "GPPE Running Process
AFP 1 Process".

ISSUE/PROBLEM

     The server crashed after the error GPPE (General Protection
Processor Exception). After bringing the server back up one of
the volumes was having problems.

     Configuration: Bustek 4201 Busmastering SCSI controller
(Burst mode) with 486-33, EISA, Gateway 32Bit Ethernet, 32 MB
RAM, 1.6 GB SCSI hard drive

SOLUTION

     Bustek said to ensure that the controller was set to below
1 GB, (there is no disk loss), and check the hard drive to
ensure that it was a fast SCSI DRIVE (it was not). In this case
it was necessary to slow the controller down from 10MHz to 4MHz.

FYI: "IPX Received Incomplete Packet.." AMI BIOS
                                        FYI

```
           TITLE:        "IPX Received Incomplete Packet.." AMI BIOS
  DOCUMENT ID#:      FYI.P.5672
          DATE:      04MAR92
       PRODUCT:      NetWare
PRODUCT VERSION:     v3.11
    SUPERSEDES:      NA

       SYMPTOM:       Receiving the message: "IPX received
incomplete packet from network"
```

ISSUE/PROBLEM

The problem occurred trying to set up a new NetWare v3.11
network with two nodes. When trying to attach to the file
server from the workstation, the above message would come up on
the file server screen, and the workstation would eventually
timeout.

SOLUTION

The AMI BIOS on the workstation has an "Advanced CMOS
Setup" with lots of detailed parameters that can be manipulated.
One of these parameters was an "Advanced Chipset Setup", which
has as one of it's options, "ROM read Option". Disabling the
"ROM read Option" cleared up the above mentioned incomplete
packet problem and allowed login using all of the NIC/driver
combinations previously tried by setting to defaults. There was
no warning or mention in the documentation implying a need to be
concerned with disabling the "ROM read Option".

FYI: "There Are No Accessible Drives" Duplexing Maxtor
                              FYI

           TITLE: "There Are No Accessible Drives" Duplexing

Maxtor IDE
   DOCUMENT ID#:   FYI.P.5653
          DATE: 04MAR92
       PRODUCT: NetWare
PRODUCT VERSION: v3.11
    SUPERSEDES: NA

       SYMPTOM: Receiving the error message:"There are no
accessible drives" when trying to duplex

ISSUE/PROBLEM

     The problem occurred on an Everex 486/33 machine while
trying to duplex two Maxtor LXT 340 MB IDE drives, using two
Quantum controller cards Prodrive ISA-151a.

     The ISADISK that came with v3.11 could be loaded, and both
drives in disk options could be seen; however, it was extremely
slow. Using the same ISADISK with the /b /l parameter sped up
the server greatly, but only one drive could be seen.

SOLUTION

     Loading IDE.DSK driver from IDE386.ZIP allowed both drives
to be seen and allowed duplexing.

FYI: Login Script Problems With "MENU.BAT" File Name
                                    FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

         TITLE: Login Script Problems With "MENU.BAT" File
Name
   DOCUMENT ID#:   FYI.P.5657
          DATE: 04MAR92
       PRODUCT: NetWare
PRODUCT VERSION: v3.11
    SUPERSEDES: NA

SYMPTOM: Login Script Problems With "MENU.BAT" File
Name

ISSUE/PROBLEM

    Supervisor had changed the system login script, once
changed no one could login, not even supervisor. Issued login
from A: with the /s command to bypass the system login. In
SYSCON there was a #MENU.BAT. Changing the #MENU.BAT to EXIT
"MENU.BAT" did not help.

SOLUTION

    The program seemed to be confusing MENU.BAT with MENU.EXE.
Renamed the batch file to RUNMENU.BAT and it worked.

FYI: Print Jobs Ignoring Time Out Or Stay In Queue
                                    FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

        TITLE: Print Jobs Ignoring Time Out Or Stay In
Queue
  DOCUMENT ID#:   FYI.P.5654
          DATE: 04MAR92
       PRODUCT: NetWare
PRODUCT VERSION: v3.11
    SUPERSEDES: NA

        SYMPTOM: Print jobs either ignore time out and print
immediately or stay in queue forever.

ISSUE/PROBLEM

    Using the latest PSERVER.NLM (10JAN92) and RPRINTER with an
original Hewlitt-Packard LaserJet printer, attached to COM2 as a

serial printer. The system printed fine from DOS, but when
using network queues, the jobs would either print out
immediately, ignoring the 10 second time out or else stay in the
queue forever. LPT2 was being captured on the local
workstation.

SOLUTION

     Used the DOS mode command to assign COM2 to LPT2, then set
the printer up as LPT2 in PCONSOLE, removed the mode statement,
set the printer up as a remote serial printer using XON/XOFF.

FYI: Deleted OWNERID Causing Append Problems. NetWork C
                                        FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

         TITLE: Deleted OWNERID Causing Append Problems.
NetWork C
   DOCUMENT ID#:   FYI.P.5622
          DATE: 28FEB92
       PRODUCT: NetWare
PRODUCT VERSION: v3.11
    SUPERSEDES: NA

       SYMPTOM: Deleted OWNERID causes append problems

ISSUE/PROBLEM

     When a file is created it is given an OWNERID. If the owner
of this file gets deleted from the bindery, the file will have
an invalid OWNERID. When this file is opened by an NLM, in
append mode, and writes to the file, the NLM will get an I/O
error when a subsequent write causes the file to expand past the
next file allocation unit (default 4096).

SOLUTION

     If a user is deleted from the bindery all the files owned

should be changed to a valid OWNERID or deleted. If there is a file that is absolutely necessary to protect, making the OWNERID supervisor will ensure it will never have an invalid OWNERID.

FYI: Current APIs Only Able To Access First 250 Print Jobs
                                          FYI

(Note: The origin of this information may be internal or external to Novell. Novell makes every effort within its means to verify this information. However, the information provided in this document is FOR YOUR INFORMATION only. Novell makes no explicit or implied claims to the validity of this information.)

          TITLE: Current APIs Only Able To Access First 250
Print Jobs
   DOCUMENT ID#:   FYI.P.5619
           DATE: 28FEB92
        PRODUCT: NetWare
PRODUCT VERSION: v3.11
     SUPERSEDES: NA

        SYMPTOM: Current APIs only able to access the first
250 print jobs.

ISSUE/PROBLEM

      Queue functions for v3.11

SOLUTION

      In NetWare v2.15 and v3.10 a queue could only have 250 jobs. The API (Application Programming Interface) GetQueueJobList returns these 250 jobs. When v3.11 came out the queues were allowed to hold about 1000 jobs. The current APIs only allow access to the first 250 jobs of the queue. There are NCPs (NetWare Core Protocols) that allow access to the other jobs; however, but there are no APIs to call them.

FYI: "Runtime Error R6002, Floating..."
                                          FYI

(Note: The origin of this information may be internal or external to Novell. Novell makes every effort within its means to verify this information. However, the information provided in this document is FOR YOUR INFORMATION only. Novell makes no

explicit or implied claims to the validity of this information.)

```
         TITLE:        "Runtime Error R6002, Floating..."
  DOCUMENT ID#:        FYI.P.5628
          DATE:        28FEB92
       PRODUCT:        NetWare
PRODUCT VERSION:       v3.11
    SUPERSEDES:        NA
```

        SYMPTOM: Receiving the error message: "Runtime error
r6002, Floating point processor not loaded".

ISSUE/PROBLEM

        The above error was returned when trying to access SYSCON
and FCONSOLE from a 486/33 clone.

SOLUTION

        There was a PCTools TSR (the exact TSR is not known) loaded
on the 486/33 workstation. Unloaded the TSR and everything works
fine.

FYI: Installing PUBLIC And SYSTEM Files From B: Drive
                                FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

```
         TITLE:        Installing PUBLIC And SYSTEM Files From B:
Drive
  DOCUMENT ID#:        FYI.P.5620
          DATE:        28FEB92
       PRODUCT:        NetWare
PRODUCT VERSION:       v3.11
    SUPERSEDES:        NA
```

        SYMPTOM: Unable to install Public and System files
from drive b:

ISSUE/PROBLEM

A problem occurred while trying to install from drive A:,
B:, C: none of which would allow public and system files to load
from drive B:. The installation program would check A: and/or
C: but never B:

SOLUTION

    Install -J allows selection of the drive, as documented in
the README.311 file shipped with v3.11.

FYI: "The System Library File SYS$MSG.DAT..."
                                        FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

          TITLE: "The System Library File SYS$MSG.DAT..."
  DOCUMENT ID#:   FYI.P.5598
          DATE: 21FEB92
       PRODUCT: NetWare
PRODUCT VERSION: v2.2
    SUPERSEDES: NA

       SYMPTOM: Receiving the error message: "The system
library file SYS$MSG.DAT could not be opened Program terminated
Initialization failure".

ISSUE/PROBLEM

    Configuration:
              CompuAdd 433 EISA with Phoenix BIOS
              WD IDE 200 MB drive
              Intel Ether Express NIC
              MS DOS v5.0 and v3.3
              5.25" drive A:, 3.5" drive B:

    In this case NetWare installation was being done with 3.5"
diskettes on drive B. The installation program would get through
most of the generation of the OS up through the point where
installation asked for SYSTEM-2. After installing that disk the
above error message would be returned. Recopying the SYSTEM-2
diskette was attempted, even the SYS$MSG.DAT file from WSGEN

diskette, to no avail. Also tried DOS 3.3 in place of 5.0, and
advanced install, but the problem persisted.

SOLUTION

    Moving the 3.5" drive to drive A solved the problem.

FYI: SYSCON Hangs When Run From The Root Directory.
                                    FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

          TITLE: SYSCON Hangs When Run From The Root
Directory.
   DOCUMENT ID#:   FYI.P.5599
           DATE: 21FEB92
        PRODUCT: NetWare
PRODUCT VERSION: v3.11
     SUPERSEDES: NA

        SYMPTOM: SYSCON v3.62 hangs the workstations

ISSUE/PROBLEM

     The problem occurred after installation of a new v3.11
network. When trying to go into SYSCON at any workstation from
the root directory the background screen would turn red with
white lettering and freeze. There was no problem getting into
SYSCON when in the system or public subdirectory.

SOLUTION

     The problem was that the IBM$RUN.OVL file in the root
directory was being executed. After renaming the IBM$RUN.OVL
file in the root directory, SYSCON could find the IBM$RUN.OVL
file in the public directory and SYSCON ran fine.

FYI: "Parsed Driver Configuration Has Failed"
                                    FYI

```
        TITLE:      "Parsed Driver Configuration Has Failed"
  DOCUMENT ID#:     FYI.P.5601
         DATE:      21FEB92
      PRODUCT:      NetWare
PRODUCT VERSION:    v3.11
   SUPERSEDES:      NA

      SYMPTOM:      Problems Loading PS2SCSI Driver with IBM
Model 57sx with Internal SCSI Subsystem
```

ISSUE/PROBLEM

     Attempting to load PS2SCSI driver when installing v3.11, and received the message:

          Supported Slot Values are: None.
          All supported options are in use.
          Error: Parsed driver configuration has failed.

SOLUTION

     Use the SCSI driver in PS2OPT.ZIP

FYI: "File Server Cannot Be Found" v2.2 Nondedicated, DOS 5.0
                                   FYI

```
        TITLE:      "File Server Cannot Be Found" v2.2
Nondedicated
  DOCUMENT ID#:     FYI.P.7257
         DATE:      20FEB92
      PRODUCT:      NetWare
```

```
PRODUCT VERSION:    v2.2
   SUPERSEDES:      FYI.P.5567


      SYMPTOM:      Error "A file server could not be found"
with DOS 5.0.

ISSUE/PROBLEM


    Configuration: 3c503TP cards in both the file server and
the workstation.  Running non-dedicated on the file server.


    Every time IPX and NETX were loaded, the workstation would
error with "A file server could not be found" or "No free
connection slots".

SOLUTION


    Booting the non-dedicated file server with something other
than DOS 5.0 worked.
```

FYI: "File Server Not Found". Trident Video Card
                                     FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

```
         TITLE:      "File Server Not Found". Trident Video Card
  DOCUMENT ID#:      FYI.P.5566
          DATE:      20FEB92
       PRODUCT:      NetWare
PRODUCT VERSION:     v2.2
   SUPERSEDES:       NA


      SYMPTOM:       NA
```

ISSUE/PROBLEM

    Configuration:
            Clone server
          Trident TVGA 8900 video card
          3C503 NIC

After installing NetWare v2.2 the server booted without a problem. However, no workstations could see the server. Comcheck worked fine between all the machines. Tried various options on the 3C503, but all without success. However, it was noted that for IPX to run COMCHECK it was not necessary to select a base memory address for the card. Using the JUMPERS utility to configure the OS, the utility would appear to allow the selection: "none" for base memory, but would not save it that way.

SOLUTION

A reference in the manual that comes with the Trident graphics adapter said that the card has an option for "fast access" or "slow access" for what is called an address decode. The DIP switch position five was set to OFF for fast access, which apparently uses memory segments A000 to DFFF. Set that switch to ON for slow access and everything will work.

FYI: Error Initializing LAN Driver. Racore 8110 NIC
                                        FYI

(Note: The origin of this information may be internal or external to Novell. Novell makes every effort within its means to verify this information. However, the information provided in this document is FOR YOUR INFORMATION only. Novell makes no explicit or implied claims to the validity of this information.)

          TITLE: Error Initializing LAN Driver. Racore 8110 NIC
    DOCUMENT ID#:   FYI.P.5574
            DATE: 20FEB92
         PRODUCT: NetWare
 PRODUCT VERSION: All versions
      SUPERSEDES: NA

         SYMPTOM: NA

ISSUE/PROBLEM

Installing a Racore 8110 receives the error "Initializing LAN driver: open-function failure".

SOLUTION

Connect the Racore 8110 NIC to a MAU (Multiple Access Unit), which allows it to complete its initializing process properly. The card was initialized but to do a complete initialization the card has to be connected to a MAU.

FYI: Unable To Download Fonts. BankStar Application.
                                        FYI

(Note: The origin of this information may be internal or external to Novell. Novell makes every effort within its means to verify this information. However, the information provided in this document is FOR YOUR INFORMATION only. Novell makes no explicit or implied claims to the validity of this information.)

            TITLE: Unable To Download Fonts. BankStar
Application.
   DOCUMENT ID#:   FYI.P.5560
           DATE: 19FEB92
        PRODUCT: NetWare
PRODUCT VERSION: v3.11
     SUPERSEDES: NA

        SYMPTOM: Unable to download fonts.

ISSUE/PROBLEM

    Using BankStar application and BP1 (font package) to merge forms and download fonts. The application was working fine under NetWare v2.15c. However, after upgrading to v3.11 the application wouldn't download the fonts properly. Upgrading the PSERVER to the latest version did not work.

SOLUTION

    Changing from BP1 to JETFORM, which is another package that does the same thing as BP1, works perfectly. Seems to be some problem with BP1 and NetWare v3.11.

FYI: Returning User To Home Directory After Exiting MENU
                                FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

          TITLE: Returning User To Home Directory After
Exiting MENU
   DOCUMENT ID#:   FYI.P.5555
          DATE: 19FEB92
       PRODUCT: NetWare
PRODUCT VERSION: v3.11, v2.2
    SUPERSEDES: NA

       SYMPTOM: NA

ISSUE/PROBLEM

     There was a need to execute an application from MENU then
have the user end up in his home directory, after exiting the
application.

SOLUTION

     g:
     anyappldo
     f:
     cd user\%variablename% (BOTH PERCENT SIGNS ARE NEEDED)

     login script
     DOS set variablename = "%login_name"

FYI: "Invalid Drive Passed To Disk Process" v2.2 Install
                                FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

          TITLE: "Invalid Drive Passed To Disk Process" v2.2
Install

```
   DOCUMENT ID#:      FYI.P.5558
           DATE:      19FEB92
        PRODUCT:      NetWare
PRODUCT VERSION:      v2.2
     SUPERSEDES:      NA
```

        SYMPTOM: VREPAIR gets error: "Invalid drive passed to
disk process".

ISSUE/PROBLEM

     Configuration: IBM model 80 with a SCSI drive.

     Everything installed with no problems. While booting the
server it came to mounting the volume, which seemed okay, but
instead of saying mounted successful it said mounted UCCESSFUL
(no S). Ran VREPAIR, which gave the above error. At times this
indicates that the controller or perhaps the drive has a
problem.

SOLUTION

     Just to make sure it was decided to run install -f and
select write track 0 information. Once this was done the server
booted up okay.

FYI: "System Was Unable To Load Overlay File"
                                    FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

```
          TITLE:      "System Was Unable To Load Overlay File"
   DOCUMENT ID#:      FYI.P.5321
           DATE:      24JAN92
        PRODUCT:      NetWare
PRODUCT VERSION:      v3.11
     SUPERSEDES:      NA
```

        SYMPTOM: Receiving the error: "System was unable to
load overlay file".

ISSUE/PROBLEM

Receiving this error when trying to run any utilities.

SOLUTION

    In this case the short machine name was changed to 110.
Change the name to IBM, and everything works.

FYI: "Binderies Have Already Been Restored"
                                        FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

            TITLE: "Binderies Have Already Been Restored"
  DOCUMENT ID#:   FYI.P.5307
            DATE: 23JAN92
        PRODUCT: NetWare
PRODUCT VERSION: v3.11
    SUPERSEDES: NA

        SYMPTOM: Receiving the error: "Binderies have already
been restored" when running UPGRADE.

ISSUE/PROBLEM

    A situation occurred where UPGRADE was used to copy an
existing NetWare v2.2 file servers' binderies to a trial v3.11
file server to see if the client liked v3.11. During the trial
period the bindery objects were deleted and changed around using
SYSCON. Eventually, the client wanted the v2.2 file server
fully transferred to the v3.11 file server. However, when the
binderies were transferred again using UPGRADE the error:
"Binderies have already been restored", would be returned.

SOLUTION

    UPGRADE creates a file in the SYS:SYSTEM directory called
UPGR$000.BMF to track the upgrade procedure. Renaming this file
allowed the re-transfer of the v2.2 binderies using UPGRADE.

FYI: "Error Receiving From Network" PRINTCON.EXE
                                     FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

           TITLE: "Error Receiving From Network" PRINTCON.EXE
   DOCUMENT ID#:   FYI.P.5127
            DATE: 07JAN92
         PRODUCT: NetWare
 PRODUCT VERSION: v2.2
      SUPERSEDES: NA

         SYMPTOM: Executing PRINTCON.EXE and two other third
party applications resulted in the error "Error receiving from
Network".

ISSUE/PROBLEM

     Configuration: Ethernet twisted pair, Synoptics
Concentrator

     Only three applications would see the problem. All other
NetWare Utilities ran fine as did other applications. There were
no random occurrences of the error message. It only happened
when executing these files.

     After checking for obvious LAN problems, and looking into
file corruption, viruses, bindery problems, regenned the OS,
etc., did not fix the problem. Re-checked the LAN hardware.

SOLUTION

     The network was using Ethernet twisted pair. The Synoptics
concentrator had a bad connection. Regardless of whether the
connection was cabled to a node, the error would occur if there
was a cable plugged into the connection. The system works
properly as long as there isn't a cable plugged into the bad
connection.

FYI: "File Server Not Found" Binding IPX In AUTOEXEC.NCF
                                     FYI

         TITLE: "File Server Not Found" Binding IPX In
AUTOEXEC.NCF
  DOCUMENT ID#:   FYI.P.5101
          DATE: 06JAN92
       PRODUCT: NetWare
PRODUCT VERSION: v3.11
    SUPERSEDES: NA

       SYMPTOM: Receiving the error: "A file server could
not be found".

ISSUE/PROBLEM

     A problem occurred when installing a large 10BaseT system
with NetWare v3.11. In this case there were five other systems
like this that all worked fine. (NOTE: The only difference from
the other systems was that the newly installed system was a 10
user version.) Using COMCHECK worked great on server and
workstation; therefore, the cabling and concentrator were fine.
Went through many options to no avail.

SOLUTION

     After running through various options to fix the problem it
was discovered that IPX was not bound in the AUTOEXEC.NCF. After
binding, the workstation came up fine.

     Note: When receiving the error, "A File Server could not be
found" in NetWare v3.1x, the first thing to check is CONFIG at
the file server. CONFIG will show if IPX has been bound to the
LAN card.

FYI: Changing Network Number, NetWare For VMS
                              FYI

             TITLE: Changing Network Number, NetWare For VMS
    DOCUMENT ID#:   FYI.P.5118
            DATE: 06JAN92
         PRODUCT: NetWare for VMS
PRODUCT VERSION: v2.1
      SUPERSEDES: NA

         SYMPTOM: NA

ISSUE/PROBLEM

     A situation occurred where it was desired to change the
network number without reinstalling NetWare.

SOLUTION

     In the NWVMS$SPECIFIC directory, edit the files
NW_DEF_CONFIG.COM (look for an entry labeled DEF_NETWORK_NUMBER)
and NW_LOAD_DRV.COM (look for an entry labeled /network). Each
of these two entries has a number within quotations that is the
network number.

     The file NW_DEF_CONFIG.COM is actually just a record of the
configuration selected when NetWare for VMS was installed. The
file does not affect the operation of NetWare for VMS. When
changing the network address, the only file that requires
changing is NW_LOAD_DRV.COM. However, it is important to change
NW_DEF_CONFIG.COM to maintain an accurate record of the
configuration of the server for future upgrade. Additionally,
after changing the file NW_LOAD_DRV.COM, it is necessary to
reload the QX (???) driver, which might involve rebooting the
VAX.

FYI: Preferred Server Timeout Patch In SHELL.CFG
                                    FYI

```
         TITLE:       Preferred Server Timeout Patch In SHELL.CFG
   DOCUMENT ID#:      FYI.P.5109
          DATE:       06JAN92
       PRODUCT:       NetWare
PRODUCT VERSION:      v3.11, v2.2
     SUPERSEDES:      NA

       SYMPTOM:       NA
```

ISSUE/PROBLEM

In this situation a preferred server was specified in the
SHELL.CFG. However, it was necessary to run NETX four times
before it would get a connection. The first three attempts
would yield the error: "Unknown file server."

SOLUTION

Applied this patch. In the SHELL.CFG put:

```
patch = 58933, 131
patch = 58934, 193
patch = 58935, 10
```

Note: When the patch was originally applied the '20' was
set to '10'. However, it still took two attempts of NETX to get
a connection. By increasing the buffer zone to '20' NETX could
be loaded on the first try.

FYI: No Free Connection Slots Available, Turbo ISADISK
                                    FYI

```
         TITLE:       No Free Connection Slots Available, Turbo
ISADISK
   DOCUMENT ID#:      FYI.P.5091
          DATE:       02JAN92
```

```
       PRODUCT:        NetWare
PRODUCT VERSION:       v2.2
   SUPERSEDES:         NA

       SYMPTOM:        Receiving the error message: "No free
connection slots available".
```

ISSUE/PROBLEM

       In this case there was a 50 user version running
nondedicated in a 286 machine.   After pulling the controller,
drive, and Thomas Conrad NIC out of the 286 and putting them in
a 486 ALR POWERFLEX the nondedicated workstation was the only
station that could log in. All other workstations would get the
above error message, regardless of whether the nondedicated
workstation was logged in.

SOLUTION

       There was an option for TURBO ISADISK in the setup of the
file server. The option was disabled and the workstations were
able to get connections to the server.

FYI: Using xRestrict on a VIEW with a Restriction
                                    FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

```
         TITLE:        Using xRestrict on a VIEW with a Restriction
  DOCUMENT ID#:        FYI.A.2108
          DATE:        19MAR92
       PRODUCT:        XQL
PRODUCT VERSION:       2.11
   SUPERSEDES:         NA


       SYMPTOM:        NA
```


ISSUE/PROBLEM

What happens when a restriction is placed on a recalled
VIEW that was previously defined with a restriction? The answer
to this question depends on which type of XQL functions is being
used.

SOLUTION

Suppose a VIEW is created with a restriction defined as
follows:

```
CREATE VIEW V_ZIP AS
    SELECT * FROM PATIENTS
    WHERE ZIP = "78759"
```

With XQL Manager level calls, the statement:

```
SELECT * FROM V_ZIP
    WHERE Last^Name BEGINS WITH "A"
```

will result in the new restriction being appended to the
existing restriction with an AND operator. Therefore, records
will be retrieved that satisfy both restrictions (ZIP = "78759"
AND Last^Name will begin with "A").

Using XQL Primitives, an application would perform an
xRecall of the VIEW "V_ZIP" and then an xRestrict with the
expression 'Last^Name BEGINS WITH "A"'. However, which iOption
is specified on the xRestrict call will determine what the
overall restriction on the view will be.

If the iOption specified in the xRestrict call is set to 1,
then the new restriction will replace the previously defined
restriction. If the iOption parameter is set to 0, then the new
restriction will be appended to the previous restriction with an
AND operator. In addition, you can also specify an iOption of 0
and precede the restriction statement with the OR operator (||
Last^Name BEGINS WITH "A"). This will cause the new restriction
to be appended to the previous restriction with the OR operator.

FYI: Problem with WATCOM C/386 v9.0
                                        FYI

explicit or implied claims to the validity of this information.)

```
            TITLE:      Problem with WATCOM C/386 v9.0
  DOCUMENT ID#:        FYI.A.3141
           DATE:       18MAR92
        PRODUCT:       Network C for NLMs
PRODUCT VERSION:       SDKb
     SUPERSEDES:       NA

        SYMPTOM:       Invalid code generation
```

ISSUE/PROBLEM

There is a bug in the WATCOM C/386 v9.0 compiler that causes it to generate invalid code when optimizing. In the following example, TestA() works, but TestB() and TestC() both fail. All of them work if the example is compiled with C/386 v8.5.

```c
        #include <stdio.h>
        #include <string.h>
        #include <conio.h>
        #include <ctype.h>

        /*
        compiled with /ez/d1/e99/oail/3s/fpc/w4
        */

        void testB(LONG x, BYTE  *name, BYTE *output);
        void testA(LONG x, BYTE  *name, BYTE *output);

        main()
        {
        int i;
        BYTE name[6];
        BYTE output[32];
        long x = 0x01020304;

        strcpy(name, "PAULA");
        testC(x, name, output);
        for(i = 0; i < 32; i++)
        printf("%.2x", output[i]);
        printf("\n");

        strcpy(name, "PAULA");
        testB(x, name, output);
```

```c
    for(i = 0; i < 32; i++)
    printf("%.2x", output[i]);
    printf("\n");

    strcpy(name, "PAULA");
    testA(x, name, output);
    for(i = 0; i < 32; i++)
    printf("%.2x", output[i]);
    printf("\n");
    }

    void testC(LONG x, BYTE  *name, BYTE *output)
    {
    BYTE    tempBuffer[32];
    WORD    index;

        memset(tempBuffer, 0, 32);
        for (index = 0; index < 32; index++)
           tempBuffer[index] ^= *(((BYTE *)&x) + (index &
0x03));
        memcpy(output, tempBuffer, 32);
    }

    void testB(LONG x, BYTE  *name, BYTE *output)
    {
    BYTE    tempBuffer[32];
    WORD    index;

        memset(tempBuffer, 0, 32);
        for (index = 0; index < 32; index++)
           tempBuffer[index] ^= ((BYTE *)&x)[index & 0x03];
        memcpy(output, tempBuffer, 32);
    }

    void testA(LONG x, BYTE  *name, BYTE *output)
    {
    BYTE    tempBuffer[32];
    WORD    index;
    BYTE  *ptr;

        memset(tempBuffer, 0, 32);
        for (index = 0; index < 32; index++)
        {
            ptr = (BYTE *) &x;
            tempBuffer[index] ^= *(ptr + (index & 0x03));
        }
        memcpy(output, tempBuffer, 32);
```

```
          }
```

SOLUTION

     Use the format described in the TestA() example.

FYI: Patch for CLib v3.11 readdir() Problem
                              FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

          TITLE: Patch for CLib v3.11 readdir() Problem
  DOCUMENT ID#:   FYI.A.3140
           DATE: 18MAR92
        PRODUCT: Network C for NLMs
PRODUCT VERSION: SDKb
     SUPERSEDES: NA

        SYMPTOM: Server abends when readdir() made to remote
2.x server

ISSUE/PROBLEM

     Calling the function readdir() against a remote 2.x server
abends the local server under certain circumstances. This can
be reproduced by creating a directory path with many levels
totaling 130 bytes.

SOLUTION

     A patch, called CLIBP002.NLM is available which corrects
this problem. It is a PATCHMAN-Compatible patch, and is on
NovDev, in Library 7, under the name CLP002.ZIP. Developers can
distribute this patch to their end-users, if they are using
readdir() to remote 2.x servers in their applications. This
patch also requires PATCH311.NLM, available in NOVLIB Library 4,
under the name PAT311.ZIP.

FYI: Wildcards Passed to access()

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

              TITLE: Wildcards Passed to access()
  DOCUMENT ID#:   FYI.A.1652
          DATE: 18MAR92
       PRODUCT: Network C for NLMs
PRODUCT VERSION: SDKb
    SUPERSEDES: NA

       SYMPTOM: NA

ISSUE/PROBLEM

     The function, access(), works with wildcards.

SOLUTION

     Although access() is not an ANSI standard function, it is a
standard function for DOS and UNIX compilers. The
implementation under DOS for the major compiler manufacturers
is to allow wildcards in the file specification.   This is also
true for the CLIB implementation. For example,

     access("\\a*.*", ACCESS_RD);

     will return successfully if any file exists in the root of
the current directory starting with the letter 'A' and you have
access to it.

FYI: NetWare 2.2 Spooler & Non-Dedicated Workstation

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided

         TITLE: NetWare 2.2 Spooler & Non-Dedicated
Workstation
  DOCUMENT ID#:   FYI.A.2657
          DATE: 17MAR92
       PRODUCT: NetWare C for Windows
PRODUCT VERSION: 1.2
    SUPERSEDES:

      SYMPTOM: Spooler very slow

ISSUE/PROBLEM

     Problems when the spooler is active.

     Apparently, if the spooler is busy printing, and the non-
dedicated workstation is running an application or waiting for
keyboard input, the spooler will slow down considerably, but
still functions.

SOLUTION

     Using the DOS int 28h Idler interrupt will permit the
spooler to do its work at a normal pace. Essentially, the
spooler is not using the protected mode switch that the non-
dedicated workstation usually uses, thus the spooler is
dependent on the application to permit it to actually run.

FYI: QMS JobType
                                 FYI

         TITLE: QMS JobType
  DOCUMENT ID#:   FYI.A.2659
          DATE: 17MAR92
       PRODUCT: NetWare C for Windows
PRODUCT VERSION: 1.22
    SUPERSEDES: NA

SYMPTOM: JobType in JobStruct needs to be IntSwapped

ISSUE/PROBLEM

     In the C-Interface for Windows, the JobType field in the
JobStruct structure is not being swapped with the IntSwap()
function. As an example, setting JobType to the value one will
force the type to actually become 256, which is incorrect.

SOLUTION

     Use the IntSwap() function on the JobType value.

FYI: Problems with VIPX 1.11
                              FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

           TITLE: Problems with VIPX 1.11
    DOCUMENT ID#:   FYI.A.2658
            DATE: 17MAR92
         PRODUCT: NetWare C for Windows
 PRODUCT VERSION: 1.22
     SUPERSEDES: NA

        SYMPTOM: IPXCloseSocket Problems and not Cancelling
ECBs

ISSUE/PROBLEM

     The IPXCloseSocket function in the C-Interface for Windows
1.22 does not cancel the ECBs as is documented.

     A workaround for VIPX 1.10 and the NWIPXSPX.DLL 1.30, was
to explictly cancel each ECB that was still posted using the
IPXCancelEvent function. This worked fine until the VIPX 1.11
and NWIPXSPX.DLL 1.31 was introduced.   The IPXCancelEvent for
this version returns error 0xF9 in the ECB's status flag field.

SOLUTION

The recommendation at this time is to use the VIPX 1.10 and the NWIPXSPX.DLL 1.30.

FYI: LogPhysicalRecord Does Not Wait
                                         FYI

(Note: The origin of this information may be internal or external to Novell. Novell makes every effort within its means to verify this information. However, the information provided in this document is FOR YOUR INFORMATION only. Novell makes no explicit or implied claims to the validity of this information.)

          TITLE: LogPhysicalRecord Does Not Wait
    DOCUMENT ID#:   FYI.A.3359
           DATE: 17MAR92
        PRODUCT: Network C for NLMs
PRODUCT VERSION: 20b
     SUPERSEDES: NA

        SYMPTOM: Immediate return even though timeout specified if record locked

ISSUE/PROBLEM

     The LogPhysicalRecord function will not wait the specified timeout if it tries to access a record previously locked by itself or another NLM. The problem is connection-oriented and does not appear if the NLM logs into a connection, rather than using the default connection zero.

SOLUTION

     The current work-around is to login to a separate connection for each NLM. This will allow multiple NLMs to use LogPhysicalRecord against the same record and wait the specified timeout.

FYI: GetBroadcastMessage Documentation Error
                                         FYI

(Note: The origin of this information may be internal or

external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

```
          TITLE:     GetBroadcastMessage Documentation Error
  DOCUMENT ID#:      FYI.A.3357
           DATE:     16MAR92
        PRODUCT:     NetWare System Calls
PRODUCT VERSION:     1.0
     SUPERSEDES:     NA

        SYMPTOM:     Workstation hang.
```

ISSUE/PROBLEM

    The NetWare System Calls - DOS, version 1.00, states that
the maximum length that can be returned for any given message
is 55 bytes. This is incorrect. The maximum lenth that can be
returned is 58 bytes, including the NULL terminator.

SOLUTION

    Increase the maximum message reply size to 58 bytes. This
increases the overall reply buffer size to 61 bytes.

FYI: GetBroadcastMessage Code Error
                              FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

```
          TITLE:     GetBroadcastMessage Code Error
  DOCUMENT ID#:      FYI.A.3358
           DATE:     16MAR92
        PRODUCT:     NetWare C Interface DOS
PRODUCT VERSION:     1.2
     SUPERSEDES:     NA

        SYMPTOM:     Workstation Hang
```

ISSUE/PROBLEM

The NetWare C Interface - DOS, version 1.20, GetBroadcastMessage function only expects messages of 55 bytes or less to be returned. However, broadcast messages up to 58 bytes may be returned from the server console. A long message corrupts system memory and may cause a work station hang.

SOLUTION

Modify the source to the GetBroadcastMessage function in the BRODCAST.C source files as follows:

Old:

```c
int GetBroadcastMessage(messageBuffer)
char *messageBuffer;
{
    char sendBuf[3], replyBuf[58];
    int len, ccode;

    *((int *)sendBuf) = 1;
    sendBuf[2] = (char) 1;
    *((int *)replyBuf) = 56;
    replyBuf[2] = (char)55;
    ccode = _ShellRequest((BYTE)0xE1, (BYTE *)sendBuf,
(BYTE *)replyBuf);
    if (ccode)
      return (ccode);
    len = (int)replyBuf[2];
    memmove(messageBuffer, replyBuf + 3, len);
    messageBuffer[len] = 0;
    return (0);
}
```

New:

```c
int GetBroadcastMessage(messageBuffer)
char *messageBuffer;
{
    char sendBuf[3], replyBuf[61];
    int len, ccode;

    *((int *)sendBuf) = 1;
    sendBuf[2] = (char) 1;
```

```
        *((int *)replyBuf) = 59;
        replyBuf[2] = (char)58;
        ccode = _ShellRequest((BYTE)0xE1, (BYTE *)sendBuf,
(BYTE *)replyBuf);
        if (ccode)
          return (ccode);
        len = (int)replyBuf[2];
        memmove(messageBuffer, replyBuf + 3, len);
        messageBuffer[len] = 0;
        return (0);
    }
```

FYI: Long Function Names
                                FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

          TITLE: Long Function Names
  DOCUMENT ID#:   FYI.A.3835
           DATE: 16MAR92
       PRODUCT: Network C for NLMs
PRODUCT VERSION: SDKb
    SUPERSEDES: NA

       SYMPTOM: Long Names cause Internal Compiler Error 5
in WATCOM v8.5

ISSUE/PROBLEM

     If an application's function names are more than 80
characters long, WATCOM C/386 Compiler v8.5 issues an Error 5:
Internal Compiler Error, and the program is not compiled. In
the 9.0 version of the compiler, function names can be greater
than 80 characters but only if the program is not compiled with
any debugging information (without /d2).

SOLUTION

     Right now there is no solution for this problem.

FYI: Brequest Hangs If No Network Connection Established
                                    FYI
(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

          TITLE: Brequest Hangs If No Network Connection
Established
   DOCUMENT ID#:   FYI.A.1746
           DATE: 13MAR92
        PRODUCT: NetWare Btrieve NLM
PRODUCT VERSION: 5.15
     SUPERSEDES: NA

        SYMPTOM: Workstation hangs when loading Brequest

ISSUE/PROBLEM

      Attempting to load BREQUEST.EXE v5.16 on a workstation that
does not have a network connection will hang the workstation.

SOLUTION

      Make sure the network shell is loaded before attempting to
load Brequest. When loading Brequest from the AUTOEXEC.BAT file,
check the DOS ERRORLEVEL after loading the network shell. If it
is set, do not load Brequest. For example:

```
        SET B_LOAD=YES
        IPX
        NETX
        IF ERRORLEVEL 1 SET B_LOAD=NO
        ...
        IF %B_LOAD% == YES BREQUEST /D:8192
        SET B_LOAD=
        ...
```

FYI: Specifying Server Name And Volume Name in BLOG.CFG
                                        FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

          TITLE: Specifying Server Name And Volume Name in
BLOG.CFG
   DOCUMENT ID#:   FYI.A.3015
           DATE: 12MAR92
        PRODUCT: NetWare Btrieve NLM
PRODUCT VERSION: 5.15
     SUPERSEDES: NA

        SYMPTOM: BROLLFWD error: Cannot find log file

ISSUE/PROBLEM

     If the BLOG.CFG file contains ServerName\VolumeName to
specify the path to the log file used by BROLLFWD, BROLLFWD will
return the error message "Cannot find log file". For example,
if BLOG.CFG contains:

     \TestDir\FileName=ServerName\VolumeName:\TestDir\LogFile

     BROLLFWD will not be able to find the log file.   However,
if a drive letter is specified instead of ServerName and
VolumeName, BROLLFWD works correctly.

SOLUTION

     Use a drive letter to specify the path to the log file.

FYI: maxECBs in Windows IPXInitialize()
                                        FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no

explicit or implied claims to the validity of this information.)

```
        TITLE:      maxECBs in Windows IPXInitialize()
  DOCUMENT ID#:     FYI.A.3834
         DATE:      05MAR92
      PRODUCT:      Network C for Windows
PRODUCT VERSION:    v.1.2
   SUPERSEDES:      NA

      SYMPTOM:      Unrecoverable Application Error in Windows
```

ISSUE/PROBLEM

In Windows Enhanced mode, passing 0 for maxECB parameter in the IPXInitalize() function, and then managing the allocation of ECBs in low memory results in a UAE (Unrecoverable Application Error).

SOLUTION

In Windows Enhanced mode, passing 0 for maxECBs is allowed only for compatibilty with the Standard mode. That is, specifying 0 for the maxECB parameter will be ignored, and VIPX will do the managing of allocation of ECBs. However, in Standard mode, the application has the option of passing 0 for the maxECBs and then the application may allocate its own ECBs.

FYI: Btrieve DATE Data Type and BASIC
                                        FYI

(Note: The origin of this information may be internal or external to Novell. Novell makes every effort within its means to verify this information. However, the information provided in this document is FOR YOUR INFORMATION only. Novell makes no explicit or implied claims to the validity of this information.)

```
        TITLE:      Btrieve DATE Data Type and BASIC
  DOCUMENT ID#:     FYI.A.2110
         DATE:      04MAR92
      PRODUCT:      Btrieve
PRODUCT VERSION:    ALL
   SUPERSEDES:      NA
```

SYMPTOM: NA

ISSUE/PROBLEM

       Developing Btrieve applications with Microsoft BASIC PDS
7.X or Visual Basic v1.0, the Btrieve DATE data type is required
if sorting on a date field.

SOLUTION

       The Btrieve documentation describes the DATE data type
field as being stored internally as a 4-byte value. The day and
month are each stored in 1-byte binary format. The year is
stored as a 2-byte integer value. The day is in the first byte,
the month in the second byte, and the year is a two byte word
following the month.

       In order to match this key type in a BASIC application,
create a structure using the user-defined TYPE and END TYPE
statements.

         TYPE Date
             Day   AS STRING * 1
             Month   AS STRING * 1
             Year   AS INTEGER
         END TYPE

       DIM Birthdate AS Date -------> Name the structure using
the DIM   statement for BASIC
PDS 7.X

       Global Birthdate AS Date ----> Name the structure using
the
                                      Globalstatement for Visual
Basic v1.0

       Assign values to these variables using the MKI$ and the
CHR$ functions. Since the day and month variables need to be
stored as a 1 byte string, the integer values must be converted
to string values using the MKI$ or CHR$ function.

       Birthdate.Day   = MKI$(20)   Birthdate.Day
= CHR$(20)
       Birthdate.Month = MKI$(6)   OR   Birthdate.Month
= CHR$(6)
       Birthdate.Year = 1999   Birthdate.Year
= 1999

The MKI$ function converts a 2-byte integer to a 2-byte
string. The CHR$ function converts a decimal value to its
equivalent ASCII charachter.

Since the day and month variables will never exceed 255,
only the low-order byte is being manipulated. Either function
will store the same value.

NOTE: Visual Basic v1.0 does not support the MKI$ function,
therefore,
         the CHR$ function must be used instead.

Once these values have been inserted into the Btrieve file,
the same birthdate structure can be used as a key buffer
parameter to retrieve the data with a GET operation. Once the
record is returned into the birthdate structure, the day and
month variables need to be converted back to their numeric
values.

```
     CALL BTRVFAR(GETFIRST%, PosBlk$, VARPTR(DataBuffer),
VARSEG(DataBuffer),_
                  BufLen%, BirthDate, KeyNum%)  ---> For PDS
7.X

     Status%=BTRCALL(GETFIRST%, PosBlk$, DataBuffer, BufLen%,
BirthDate,
                  KeyBufLen%, KeyNum%) ----> For Visual
Basic 1.0
```

The conversion can be accomplished with the ASC function
which returns the numeric value of the equivalent ASCII
character.

```
     Day%   = ASC(Birthdate.Day)
     Month% = ASC(Birthdate.Month)
     Year%  = Birthdate.Year
```

FYI: SPXEstablishConnection
                                        FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no

explicit or implied claims to the validity of this information.)

```
            TITLE:      SPXEstablishConnection
  DOCUMENT ID#:     FYI.A.2656
          DATE:     02MAR92
       PRODUCT:     Network C for Windows
PRODUCT VERSION:    1.22
   SUPERSEDES:      NA

       SYMPTOM:     NA
```

ISSUE/PROBLEM

    Just a reminder: (SPX Communications)

    When SPXEstablishConnection is being called and an ESR is
being used, it may fire prior to the function completing. On
faster machines this is very likely, but on slower machines the
function may complete, and the ESR will fire afterwards. If a
developer codes an ESR with special control features it may work
differently depending on the speed of the processor.

    In addition, the IPXWorkspace in the connection ECB is not
completed until SPXListenForSequencePacket APIs are used. It is
not completed for SPXEstablishConnection.

SOLUTION

    NA

FYI: Sockets: Long or Short Lived???
                                        FYI

```
            TITLE:      Sockets: Long or Short Lived???
  DOCUMENT ID#:     FYI.A.2655
          DATE:     02MAR92
       PRODUCT:     Network C for Windows
PRODUCT VERSION:    1.22
   SUPERSEDES:      NA
```

SYMPTOM: NA

ISSUE/PROBLEM

     If an SPX communication oriented TSR, or application that
spawns another application is being written, it must open
sockets as LONG LIVED. This ensures that the socket will not be
automatically closed when the first EOJ (End Of Job) is sent to
the server. SHORT LIVED sockets are automatically closed on the
first EOJ.

SOLUTION

     NA

FYI: Additional Status Codes Possible on Update Operation
                                FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

          TITLE: Additional Status Codes Possible on Update
Operation
   DOCUMENT ID#:   FYI.A.2342
           DATE: 02MAR92
        PRODUCT: NetWare Btrieve NLM
PRODUCT VERSION: 5.15
     SUPERSEDES: NA

        SYMPTOM: Status 54 or Status 43 returned on an
Update.

ISSUE/PROBLEM

     There are situations where a Btrieve Update operation might
return a status 54 'Variable Page Error' or status 43 'Invalid
Data Record Address'. The following scenario describes one such
circumstance using NetWare Btrieve (NLM or VAP):

     Workstation 1 has accessed a file from within a

transaction, resulting in a file-level lock.

     Workstation 2 is reading records from the same file, and
wants to update a record that was inserted or updated by
workstation 1 within the transaction.

     If workstation 2 reads this record to be updated, but then
workstation 1 aborts the transaction, workstation 2 will receive
the following non-zero status codes when issuing the update
operation:

          if the records are variable length --> status 54
       if the records are NOT variable length --> status 43

SOLUTION

     NA

FYI: Watcom Compiler Switch /oaxt
                              FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

          TITLE: Watcom Compiler Switch /oaxt
  DOCUMENT ID#:   FYI.A.3833
           DATE: 02MAR92
        PRODUCT: WATCOM C Compiler
PRODUCT VERSION: 8.5
     SUPERSEDES: NA

        SYMPTOM: NA

ISSUE/PROBLEM

     If a program is compiled with Watcom C/286 compiler and the
/oaxt switch was used for optimization, the program will not
work. If the /oaxt switch is not used, the program will work.

SOLUTION

     There is a problem with the /oaxt switch. The Data Segment

does not get updated correctly, and incorrect code will be
produced.

     The /oailt and /s switches can be used instead.

     This problem does not exist in version 9.0 of the compiler.

FYI: Btrieve and DOS 5.0
                              FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

          TITLE: Btrieve and DOS 5.0
   DOCUMENT ID#:   FYI.A.2506
           DATE: 28FEB92
        PRODUCT: Btrieve DOS
PRODUCT VERSION: 5.10a
     SUPERSEDES: NA

        SYMPTOM: Dos file handles remain open

ISSUE/PROBLEM

     If Btrieve is loaded using a C spawn function after DOS
files have been opened, the handles for the DOS files are not
released when the files are closed and the program terminates.
This does NOT happen if:

          - a version of DOS earlier than 5.0 is used
     or - if Btrieve is loaded before going into the
application
     or - if Btrieve is loaded using a system call
     or - if Share is loaded

SOLUTION

     NA

FYI: Repeated SELECT Statement Returns Inaccurate Data
                              FYI

           TITLE: Repeated SELECT Statement Returns Inaccurate
Data
  DOCUMENT ID#:   FYI.A.1027
          DATE: 28FEB92
       PRODUCT: NetWare SQL 386 NLM
PRODUCT VERSION: 2.11
    SUPERSEDES: NA

        SYMPTOM: Different data returned when statement
executed twice.

ISSUE/PROBLEM

     A SELECT statement with an ORDER BY clause using non-
indexed fields returns inconsistent data. The first time the
statement is executed the appropriate data is returned.
Subsequent executions of the same statement only return a
portion of the data, which seemed to be the last records
retrieved during the first execution of the statement.

SOLUTION

     NA

FYI: DR DOS problems
                                      FYI

           TITLE: DR DOS problems
  DOCUMENT ID#:   FYI.A.1029
          DATE: 28FEB92
       PRODUCT: DR DOS
PRODUCT VERSION: 6.0

SUPERSEDES: NA

           SYMPTOM: NA

ISSUE/PROBLEM

     There are several patches available for DR DOS version 6.0
which fix a wide variety of problems. Anyone using DR DOS v6.0
should get and apply these patches.

SOLUTION

     Patches may be acquired in several ways:

     1. download the patches from their CompuServe Forum called
DRFORUM;

     2. request patches via mail by calling Digital Research
directly
        at 408-646-6464;

     3. request patches via mail by faxing Digital Research at
408-649-8209.

FYI: Sparse Files on NetWare 3.x
                                   FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

           TITLE: Sparse Files on NetWare 3.x
   DOCUMENT ID#:   FYI.A.1031
            DATE: 28FEB92
         PRODUCT: Btrieve
PRODUCT VERSION: ALL
      SUPERSEDES: NA

         SYMPTOM: Btrieve file size larger than the disk
volume size

ISSUE/PROBLEM

     A problem has been seen where a Btrieve file appears to be
many times larger than the actual hard disk size. A DIR on this
file showed the file size to be in excess of 400 megabytes, even
though the hard disk was only 150 megabytes in size. This
occured under NetWare 386 version 3.11 using the Btrieve NLM
version 5.15 patched up to #49. This phenomenon occurs when
NetWare creates a sparse file, which causes a DIR to show a size
much larger than what was actually allocated.

     The Btrieve application had been running successfully for
several months with no problems, but recently several new
workstations had been installed on the ethernet network. Also,
several different shell versions were being used, up to but not
including the latest version (3.22a). What caused the Btrieve
file to become a sparse file was not determined, but a Butil
-Recover followed by a Butil -Load successfully rebuilt the
file, after which, the sparse file was deleted.

FYI: PressAnyKeyToContinue Displays Wrong Message
                                   FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

            TITLE: PressAnyKeyToContinue Displays Wrong Message
  DOCUMENT ID#:   FYI.A.4111
             DATE: 26FEB92
          PRODUCT: Network C for NLMs
PRODUCT VERSION: SDKb
     SUPERSEDES: NA

        SYMPTOM: NA

ISSUE/PROBLEM

     The PressAnyKeyToContinue() displays the message <Press any
to continue> rather than <Press any key to continue>.

SOLUTION

    NA

FYI: Number of NLM Connections
                              FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

            TITLE: Number of NLM Connections
     DOCUMENT ID#:   FYI.A.1651
             DATE: 26FEB92
          PRODUCT: NetWare Operating System
  PRODUCT VERSION: 3.11
       SUPERSEDES: NA

          SYMPTOM: NA

ISSUE/PROBLEM

    How many NLM connections are supported for each "flavor" of
NetWare v3.11?

SOLUTION

    Each "flavor" of NetWare 3.11 (1 user, 100 user, etc.)
supports exactly 100 NLM connections, even though the number of
remote connections varies.

FYI: WHEREIS.C Does Not Support Multiple Volumes
                              FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no

```
              TITLE:       WHEREIS.C Does Not Support Multiple Volumes
   DOCUMENT ID#:           FYI.A.3356
               DATE:       26FEB92
            PRODUCT:       Network C for NLMs
   PRODUCT VERSION:        2.0b
        SUPERSEDES:        NA

            SYMPTOM:       Specified file is not found.
```

ISSUE/PROBLEM

The WHEREIS NLM example in the 2.0b Network C For NLMs SDK does not support volumes other than SYS. In other words, it will not search other volumes for files, even if a different volume is specified.

SOLUTION

Make the following code changes to the dowhereis() function in the WHEREIS NLM and recompile.

Before Modifications:

```
    void    dowhereis(char *s)
    {
     // startup the recursive file find operation

        findit(both);
          chdir(dir);
    }
```

After Modifications:

```
    void    dowhereis(char *s)
    {
     // startup the recursive file find operation

        chdir(fsv);
      findit(both);
    }
```

This change will force the current working directory to be the volume specified when the file specification was issued.

FYI: GetVolumeInfoWithNumber() Returns LONGs Instead of WORDs
                                         FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

            TITLE: GetVolumeInfoWithNumber() Returns LONGs
Instead of WORDs
   DOCUMENT ID#:   FYI.A.3139
           DATE: 26FEB92
        PRODUCT: Network C for NLMs
PRODUCT VERSION: SDKb
     SUPERSEDES: NA

        SYMPTOM: The GetVolumeInfoWithNumber() function is
returning LONGs instead of WORDs.

ISSUE/PROBLEM

     The GetVolumeInfoWithNumber() function is returning LONGs
instead of WORDs. This can cause corruption of your data areas
in your NLM, depending on how you defined the original
variables. This is only true when making this call to the local
server, as everything is handled properly on remote calls.

SOLUTION

     Define the parameters as LONGs, and cast the pointer to
WORD * when you make this function call. If you initialize the
parameters to zero first, then this should work regardless of
whether the call is made to a local or remote server.

FYI: Creating Basic Quick Libraries For Btrieve Interfaces
                                         FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

            TITLE: Creating Basic Quick Libraries For Btrieve

```
Interfaces
   DOCUMENT ID#:      FYI.A.2109
          DATE:       26FEB92
       PRODUCT:       Btrieve for DOS
PRODUCT VERSION:      ALL
    SUPERSEDES:       NA


       SYMPTOM:       NA



ISSUE/PROBLEM

     When developing Btrieve applications using Microsoft
QuickBasic version 4.X or 7.X using the QuickBasic interpreter
environment, a Quick Library must be created which includes the
required Btrieve interface.

SOLUTION

     For Microsoft PDS 7.X:


                              |--> Name of Quick Library
                              |
     Link /q bc7rbtrv.obj, bc7.qlb, , qbx.lib qbxqlb.lib;
               |                               |
               |--> Btrieve Interface          |--> Required
Libraries




     To load the QuickBasic environment to include the newly
created Quick Library execute the following command:

     QBX /L BC7



     For Microsoft QuickBasic 4.X:


                              |--> Name of Quick Library
                              |
     Link /q qbixbtrv.obj, bc4.qlb, , bqlb4X.lib;
               |                           |
               |--> Btrieve Interface      |--> Required
Libraries
                                           X = 5 for
QB4.5
```

X = 0 for
QB4.0

     To load the QuickBasic environment to include the newly
created Quick Library execute the following command:

     QB /L BC4

FYI: Bconsole Out of Memory Problem
                                        FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

          TITLE: Bconsole Out of Memory Problem
   DOCUMENT ID#:   FYI.A.3355
           DATE: 25FEB92
        PRODUCT: NetWare Btrieve NLM
PRODUCT VERSION: 5.15
     SUPERSEDES: FYI.A.3006

        SYMPTOM: CreatePortal returned error -2

ISSUE/PROBLEM

     (The following information is an addendum to FYI.A.3006.)

     Bconsole returns the above error when more than thirteen
files are opened on multiple workstations. The complete
description of the error message is "The system was unable to
allocate additional memory". This message is received when the
user attempts to view the list of open files for a specific
user. The message will only be received when attempting to view
users who have more than thirteen files opened. If only one
user has more than thirteen files open the message is not
displayed and program execution continues normally.

SOLUTION

     This problem has been reported. Currently the only work-
around is to use the Bconsole NLM.

FYI: readdir() Abends When Used Against Remote 2.x Server
                                  FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

          TITLE: readdir() Abends When Used Against Remote
2.x Server
  DOCUMENT ID#:   FYI.A.3138
          DATE: 21FEB92
       PRODUCT: Network C for NLMs
PRODUCT VERSION: SDKb
    SUPERSEDES: NA

      SYMPTOM: Server abend

ISSUE/PROBLEM

      There is a problem with the readdir() function in CLib 3.11
and PATCH311.NLM. If it is used against a remote 2.x server, the
local server may abend.

SOLUTION

      There is currently no solution.

FYI: CLIB Documentation Error
                                  FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

          TITLE: CLIB Documentation Error

```
    DOCUMENT ID#:       FYI.A.3832
            DATE:       20FEB92
         PRODUCT:       Network C for NLMs
PRODUCT VERSION:        SDKb
     SUPERSEDES:        NA


        SYMPTOM: NA
```

ISSUE/PROBLEM

    In the NetWare Loadable Module Library Reference Volume I,
page 3-8 under the description of compiler option /3s, it
mentions that stack-based parameter passing is the compiler
default. This is not true.

SOLUTION

    Register based parameter passing (switch /3r) is the
compiler default for the Watcom 32 bit compiler.

FYI: NetWare Technical Overview
                                   FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

```
          TITLE:       NetWare Technical Overview
  DOCUMENT ID#:        FYI.A.3831
           DATE:       11FEB92
        PRODUCT:       Network C for Windows
PRODUCT VERSION:        1.22
     SUPERSEDES:        NA


        SYMPTOM:        NA
```

ISSUE/PROBLEM

    The index for NetWare C Interface for Windows has
references to the NetWare System Interface Technical Overview.
However, the Technical Overview is not part of the NetWare C
Interface for Windows SDK.

SOLUTION

    The Technical Overview comes with NetWare C Interface for
DOS, or it can be purchased separately by calling 800-RED-WORD.

FYI: NetBios Documentation Error
                                    FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

            TITLE: NetBios Documentation Error
  DOCUMENT ID#:   FYI.A.2935
          DATE: 11FEB92
       PRODUCT: NetWare OS/2 SDK
PRODUCT VERSION: 1.3a
     SUPERSEDES: NA

        SYMPTOM: NA

ISSUE/PROBLEM

    The documentation for the OS/2 SPX section specifies the
wrong SPX return codes for the following functions:

    SpxAbortConnection()
    SpxCancelPacket()
    SPXEstablishConnection()
    SpxEstablishConnection2()
    SpxGetConfiguration()
    SpxGetConnectionStatus()
    SpxGetConnectionStatus()
    SpxListenForConnection()
    SpxListenForConnection2()
    SpxListenForConnectionPacket()
    SpxSendSequencePacket()
    SpxTerminateConnection()

    The documentation specifies that the above SPX function
calls return "0x3000 SPX_SUCCESSFUL". This return code should
be "0x0000 SPX_SUCCESSFUL" instead. There is no way for an SPX

function to return successful with 0x3000 as the return code.
The documentation should specify that the "0x3000" return code
is for the ECB's completion code and not for the SPX function
completion code.

SOLUTION

      NA

FYI: Communications and VIPX.386 1.1
                                    FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

            TITLE: Communications and VIPX.386 1.1
  DOCUMENT ID#:   FYI.A.2654
            DATE: 11FEB92
       PRODUCT: NetWare C Interface for Windows
PRODUCT VERSION: 1.22
    SUPERSEDES: NA

        SYMPTOM: Machine hangs

ISSUE/PROBLEM

      Using VIPX version 1.1 may cause the machine to hang as a
result of calling the IPXCancelEvent function. This results
from a problem involving a circular ECB list that is posted to
IPX via VIPX.

SOLUTION

      There is no workaround available at this time.

FYI: Multiple Threads Using The Same Socket
                                    FYI

(Note: The origin of this information may be internal or

```
          TITLE:      Multiple Threads Using The Same Socket
   DOCUMENT ID#:      FYI.A.2936
           DATE:      11FEB92
        PRODUCT:      NetWare OS/2 SDK
PRODUCT VERSION:      1.3a
     SUPERSEDES:      NA

        SYMPTOM:      NA
```

ISSUE/PROBLEM

     It is important to note that OS/2 and NetWare 3.x are both
connection based operating systems, as opposed to the DOS
operating system, which is socket based. Under DOS, different
processes should not use the same socket number. The same rules
apply under the OS/2 operating system, except when generating
multiple threads under OS/2. Multiple threads can share the
same socket number, but each thread has its own connection
number. The main thread will open the socket once, and the rest
of the threads will just use the socket. SPX under OS/2
distinguishes the sending and receiving of packets for multiple
threads using the same socket. Also, it is important to note
that all of the packets under the OS/2 environment are received
in the same order they are sent, since the OS/2 operating system
set them up in a queue.

SOLUTION

     NA

FYI: Incorrect Grace Login Message Displayed on Macintosh
Workstation
                              FYI

TITLE: Incorrect Grace Login Message Displayed on
Macintosh Workstation
   DOCUMENT ID#:   FYI.W.0107
           DATE: 26MAR92
        PRODUCT: NetWare for Macintosh
PRODUCT VERSION: v3.x
     SUPERSEDES: NA

        SYMPTOM: User logging in from a Macintosh workstation
receives a message that their password has expired and that they
have 255 grace logins remaining. The 255 grace login number
does not increment as the user keeps logging in.

ISSUE/PROBLEM

      The AFPFIX3.NLM allows Macintoshes to receive a
notification message when a grace login is used.When using the
AFPFIX3.NLM patch on the File Server, this error will occur with
the Force Periodic Password Changes option in Syscon-Account
Restrictions set to YES, but the Limit Grace Logins options set
to NO. When the password expiration date arrives, NetWare for
Macintosh displays this incorrect message saying there 255 grace
logins remaining when in fact the Limit Grace Logins option has
been turned off.

SOLUTION

      Disregard the 'Grace Login' portion of the error message.
Or set the 'Limit Grace Logins' option in Syscon-Account
Restrictions to YES, and NetWare for Macintosh will display the
correct number of grace logins remaining.

FYI: Atalk error message
                                     FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

            TITLE: Atalk error message
   DOCUMENT ID#:   FYI.W.0106
           DATE: 25MAR92

PRODUCT: NetWare for Macintosh
PRODUCT VERSION: v3.01
    SUPERSEDES: NA

          SYMPTOM: A customer noticed the following error
message in their system error log, "Atalk warning: severity 1,
0XFE Bad dst socket"

ISSUE/PROBLEM

     This error indicates that an application tried to send a
packet to an illegal DDP destination socket, 0XFE which is
socket 254. In our implementation of the Appletalk stack,
socket 254 is illegal Possibly an application could not find an
open socket and just happened to pick socket 254.

SOLUTION

     This should be a rare error message and since the severity
was 1, which is only a warning, it is nothing to worry about.

FYI: FINDER block size algorithmns and file size statistics
                                    FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

          TITLE: FINDER block size algorithmns and file size
statistics
  DOCUMENT ID#:   FYI.W.0103
          DATE: 24MAR92
       PRODUCT: NetWare for Macintosh
PRODUCT VERSION: v3.x
    SUPERSEDES: NA

          SYMPTOM: The Macintosh FINDER does not accurately
report file/folder sizes for NetWare file server resident
files/folders.

ISSUE/PROBLEM

     This problem is caused by the block size allocation
algorithm used by FINDER and how it differs from NetWare's

method of determining the same information. NetWare allows the
user to configure block sizes in the installation procedure (4k,
16k, etc...). Once this parameter has been set, a table is
constructed which lists each file/folder and the disk space
occupied by the file/folder. The number of entries in this
table is dependent on the number files/folders on the volume,
the block size (which is user configured) and the size of the
volume. The Macintosh operating system uses a different
algorithm. FINDER employs a fixed number (64k) of entries in
it's file system table (called a BIT MAP TABLE). Therefore, the
block size is largely dependent on the volume size. For
example, the FINDER would AUTOMATICALLY divide a 640meg hard
drive into 65,536 10k storage blocks. However, NetWare allows
the USER to specify a 4k (or 16k, 32k, etc...) block size at
system installation.

        This means that the Macintosh's FINDER has no accurate
method for determining block size (and thus file/folder size) on
a NetWare volume. Therefore, a file's/folder's reported volume
space occupation statistics may diverge widely between the two
platforms (Macintosh and native NetWare or DOS). In other
words, one may save a 1k MS WORD file to the NetWare server,
only to have the FINDER window report the size as 10k. One may
use the GET INFO utility to find the accurate file size.
Reported will be the actual file size (in parenthesis) and the
occupied volume space. The file size is accurate while the
occupied volume space statistic is incorrect because of the
reasons reported above. On the other hand, the NetWare NDIR and
FILER utilities will report the file size as 1k and will also
indicate how many blocks (and bytes in the block(s)) have been
used. Assuming the NetWare volume was configured to use 4k
block sizes, this 1k file would occupy a single 4k block.
Therefore, the NDIR and FINDER utilities should be relied on to
return ACCURATE file sizes and occupied volume spaces for all
files and folders on the NetWare file server's volume(s).

SOLUTION

        If truly accurate file size statistics are needed, use
either the NDIR or FILER utility. The Macintosh FINDER cannot
accurately determine this information. This is the only
"solution" to this "problem." In short, the differences in
file sizes reported by FINDER and NDIR or FILER are direct
results of the differences in file system algorithms used by the
Macintosh and NetWare.

FYI: A PostScript error "NOSTRINGVAL" is generated when printing
through the ATPS queue from a Macintosh client.
                                                FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

        TITLE: A PostScript error "NOSTRINGVAL" is
generated when printing through the ATPS queue from a Macintosh
client.
   DOCUMENT ID#:   FYI.W.0104
          DATE: 24MAR92
       PRODUCT: NetWare for Macintosh
PRODUCT VERSION: v2.x and v3.x
    SUPERSEDES: NA

        SYMPTOM: When printing from a Macintosh (with 5.2
LaserPrep) to a queue attached to a LaserWriter IIG, a
"NOSTRINGVAL" PostScript error was reported on the banner page
at the printer. The print job fails. If the printer was printed
to directly it worked fine. And after that, one could print
through the queue. If the printer was re-started, the same
failure occurred. We had to send the job directly to the
LaserWriter IIG before the queue would work.

ISSUE/PROBLEM

     The dictionary (or server resident LaserPrep) file had
somehow been corrupted.

SOLUTION

     After deleting the *.PRS file from the SYS:SYSTEM\ATPS,
power-cycling the printer, and then re-sending a print job (so
the *.PRS was re-created) all printed fine. Even after re-
starting the printer (so the LaserPrep had to be downloaded by
ATPS) the printing worked as needed. For the future we have
devised a brute force method for fixing this problem: Create a
SYS:SYSTEM\PRINTER.BAT which contains a single line that deletes
the SYS:SYSTEM\ATPS*.PRS.Create a SYS:\SYSTEM\PRINTER.NCF to
UNLOAD and LOAD ATPS.NLM.If the problem occurs again, verify the
queues are not in use, and no jobs are waiting to be serviced.
Then, invoke PRINTER.BAT to delete the dictionary (*.PDF) files.

PRINTER.NCF can be invoked from the server console prompt.
Finally, re-start the printer and send a print job (from a
Macintosh) through the NetWare queue so the *.PRS file gets
created.

FYI: DIABLO 630 EMULATION is not supported by the IIG and IIF
LaserWriters

                                    FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

          TITLE: DIABLO 630 EMULATION is not supported by the
IIG and IIF LaserWriters
   DOCUMENT ID#:   FYI.W.0102
           DATE: 24MAR92
        PRODUCT: NetWare for Macintosh
PRODUCT VERSION: 2.x and 3.x
     SUPERSEDES: NA

        SYMPTOM: The Apple LaserWriter IIG and IIF light
flashes, but no job emerges from the printer when the job has
been sent from the DOS workstation. In this scenario, a print
job has been configured to use the DIABLO 630 EMULATION MODE.

ISSUE/PROBLEM

     The new LaserWriter IIGs and IIFs do not support DIABLO 630
emulation. Apparently this functionality will be added in
subsequent ROM versions, but the time table is not know for that
addition.

SOLUTION

     As a workaround, use the POSTTEXT MODE in the print job
configuration. Appropriate PDF files are located on NetWire
under NOVLIB 8 The file name is PDF.ZIP. These print devices
are also bundled with the 3.01 NetWare for Macintosh product.
Both the APLASER2.PDF and PSTSCRPT.PDF printer definition files
provide the POSTTEXT MODE in the print job configuration
(PRINTCON) utility.

FYI: Finder imposed volume size limitations
                                FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

          TITLE: Finder imposed volume size limitations
  DOCUMENT ID#:   FYI.W.0105
          DATE: 24MAR92
       PRODUCT: NetWare for Macintosh
PRODUCT VERSION: v3.x
    SUPERSEDES: NA

       SYMPTOM: The Macintosh cannot save file(s)/folder(s)
to the NetWare server because the volume is reportedly out of
space. But it is known that there is plenty of space on this
LARGE volume. Furthermore, other absurd file statistics (like
negative file sizes) are reported by the Macintosh FINDER.

ISSUE/PROBLEM

     The problem appears to be caused by the fact that FINDER
treats a volume parameter variables as a SIGNED LONG INT. This
variable type has 2k billion (2 gig) unique values. So, one can
thus uniquely identify 2 trillion different volume sizes (from 1
byte to 2 gigabytes). Therefore, larger volumes (for example,
2.00001 gigabytes) cannot be uniquely identified, so the
Macintosh FINDER reports absurd file system statistics when
dealing with volumes of this size. Block size algorithms may
further reduce this 2 gig volume size limit. Volumes as small
as 1.3 gigabytes may have similar problems, but these reports
have not been verified in the laboratory.

SOLUTION

     At this point there is only one solution to this problem:
NetWare volumes that will support Macintosh users should not
exceed 2 gigabytes in size. To avoid all questions of this
nature, volume sizes should not exceed 1.3 gigabytes. If the
volume sizes are over 2 gigabytes, the user must reduce the
volume size to eliminate this problem. This is a problem in the
Macintosh FINDER.

FYI: AppleTalk Print Server Cannot Attach to a 'Hidden'
LaserWriter

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

          TITLE: AppleTalk Print Server Cannot Attach to a
'Hidden' LaserWriter
   DOCUMENT ID#:   FYI.W.0101
           DATE: 23MAR92
        PRODUCT: NetWare for Macintosh
PRODUCT VERSION: v2.x
     SUPERSEDES: NA

        SYMPTOM: When APSVAP (the Macintosh Print Services
VAP) tries to attach to a LaserWriter IINT, an error message
occurs 'Printer type does not match queue type.' This error
occurs even when the queue type has been selected correctly as
'LASERNT,' either in MacSetup or using the file server console
ATTACH command. The LaserWriter IINT also shows up as 'running
off-line servicing 0 queues.' However, Macintosh users can see
the printer from the Chooser and can also print to it directly
by bypassing the NetWare print queue.

ISSUE/PROBLEM

     Check to see if Apple's AppleShare Print Server program is
running on an AppleShare server elsewhere on the network. The
AppleShare Print Server program changes the LaserWriter IINT's
NBP type to LaserShared (thus making it 'hidden' from users) and
advertises its AppleShare spooler with the same name that the
LaserWriter IINT had previously. The Macintosh users are
actually printing to the AppleShare spooler even though it
appears with the same name as the LaserWriter IINT printer.
When APSVAP tries to attach to what it thinks is a LaserWriter
IINT (but is really the AppleShare spooler), it receives
incorrect information about the printer type and fails to
attach.

SOLUTION

If it's not needed, delete/remove the AppleShare queue using the AppleShare Print Server program, and reboot the LaserWriter IINT to return the printer to its regular NBP type of 'LaserWriter'.

FYI: ATPSHIDE command
                                        FYI

(Note: The origin of this information may be internal or external to Novell. Novell makes every effort within its means to verify this information. However, the information provided in this document is FOR YOUR INFORMATION only. Novell makes no explicit or implied claims to the validity of this information.)

            TITLE: ATPSHIDE command
  DOCUMENT ID#:   FYI.W.0098
            DATE: 19MAR92
        PRODUCT: NetWare for Macintosh
PRODUCT VERSION: v3.01
    SUPERSEDES: NA

        SYMPTOM: ATPSHIDE command returns the error ATPS: invalid printer/spooler name < printer name > when trying to hide a printer.

ISSUE/PROBLEM

    The customer was trying to hide the printer with the following command, ATPSHIDE "LaserWriter Plus". The above error was returned every time. The ATPSHIDE command will not allow the use of double quotes around a printer name.

SOLUTION

    Do not put quotes around the printer name when using the ATPSHIDE command even if the printer name has spaces in it.

FYI: ATPS and QMS PS 410 and QMS PS 815 Printers
                                        FYI

(Note: The origin of this information may be internal or

external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

```
          TITLE:      ATPS and QMS PS 410 and QMS PS 815  Printers
   DOCUMENT ID#:      FYI.W.0094
           DATE:      17MAR92
        PRODUCT:      NetWare for Macintosh
PRODUCT VERSION:      3.0 and 3.01
     SUPERSEDES:      NA
```

SYMPTOM: QMS PS 410 and PS 815 LaserWriter printers
might drop off the network when connected via LocalTalk. ATPS,
if loaded with the verbose option, will encounter: "Can't find
printer:Retrying" messages.

ISSUE/PROBLEM

There is a problem with some units of these popular laser
printers, where they might unexpectedly drop off the network
when used over AppleTalk.

SOLUTION

QMS has eliminated this AppleTalk problem on currently
shipping units and that users of an older PS 410 and PS 815 with
this problem can request a corrected ROM from QMS technical
support at 205-633-4500.

FYI: 3720 LAN Workstation for Macintosh and Printing
                              FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

```
          TITLE:      3720 LAN Workstation for Macintosh and
Printing
   DOCUMENT ID#:      FYI.W.0093
           DATE:      17MAR92
        PRODUCT:      3270 LAN Workstation for Macintosh
```

PRODUCT VERSION: 1.0
   SUPERSEDES: NA

        SYMPTOM: Trying to print to a locally attached
printer might not work. Symptoms will range anywhere from the
Macintosh crashing with a system error to the printer light
continually blinking, with no print job emerging.

ISSUE/PROBLEM

        One can print within the 3270 Macintosh Workstation
application by selecting the Print, PrintOIA key, or the Print
menu item in the File menu. The application uses as a default
the Novell 3270 font. This font includes all the 3270 special
characters, and are not part of the ASCII character set. There
is a problem when selecting this font.

SOLUTION

        Do not use the Novell 3270 font. Select a different font
by going into "Settings" and selecting "Terminal Setup". Any
other available font will not pose this printing problem.

FYI: System 7 TuneUp and Background Printing
                                        FYI

          TITLE: System 7 TuneUp and Background Printing
  DOCUMENT ID#:   FYI.W.0095
           DATE: 17MAR92
        PRODUCT: NetWare for Macintosh
PRODUCT VERSION: 3.01
   SUPERSEDES: NA

        SYMPTOM: ATPS.CFG was configured to advertise a
HPIIISI queue, being serviced by another print server other than
ATPS_PSRVR. Whenever a System 7 Macintosh submitted a print
job, Print Monitor would report an error message indicating that
it could not find the HPIIISI queue, even though it was readily

available in the Chooser.

ISSUE/PROBLEM

    When background printing was turned off through the
Chooser, this eliminated the problem, and the queue was readily
available.

SOLUTION

    Do not turn Background Printing to "on" after the System 7
TuneUp kit has been installed.

FYI: HandsOff Init
                                  FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

           TITLE: HandsOff Init
  DOCUMENT ID#:   FYI.W.0096
           DATE: 17MAR92
        PRODUCT: NetWare for Macintosh
PRODUCT VERSION: 3.0 and 3.01
     SUPERSEDES: NA

        SYMPTOM: When certain workstations accessed files on
a NetWare file server, users noticed that the Creator would
randomly change to either DOS, Word, Excel, and WordPerfect.
This caused confusion and usage problems for the users, while
other users accessing the same files would not experience any
problem.

ISSUE/PROBLEM

    There is a Macintosh init available through some BBS's
called HandsOff. When this system init is loaded on the
Macintosh, it will arbitrarily change the Creator type to
something other than the actual application that created the
file.

SOLUTION

Do not install the HandsOff init in your Macintosh. This is applicable for Macintoshes running 6.x and 7.x. When this init is either turned off or not installed, the problem of the Creator type does not occur.

FYI: 2.2 Server can't see Agfa printer on EtherTalk.
                              FYI

         TITLE: 2.2 Server can't see Agfa printer on EtherTalk.
  DOCUMENT ID#:   FYI.W.0091
          DATE: 17MAR92
       PRODUCT: NetWare for Macintosh
PRODUCT VERSION: v2.2
     SUPERSEDES: NA

       SYMPTOM: PLIST console command shows the Agfa printer running off-line servicing 0 queues.

ISSUE/PROBLEM

     The customer has NetWare 2.2 and the Macintosh VAPs. They also have a high end Agfa RIP printer that is connected via EtherTalk and LocalTalk. The printer can switch automatically between EtherTalk and LocalTalk. When the printer's name was in both upper and lower case, the printer would not be seen on EtherTalk by the Macintosh VAPs, it would however be seen on LocalTalk. The Macintoshes could also print directly to it. A packet trace revealed that the printer had a NBP (Name Binding Protocol) case sensitivity problem. When the printer was renamed to all uppercase, the Macintosh VAPs would communicate with the printer without a problem.

SOLUTION

     Rename the printer to all uppercase.

FYI: Can't logout of server

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

```
          TITLE:      Can't logout of server
  DOCUMENT ID#:       FYI.W.0092
          DATE:       12MAR92
       PRODUCT:       NetWare for Macintosh
PRODUCT VERSION:      3.0
     SUPERSEDES:      NA
```

        SYMPTOM: User could not logout of the server by
dragging the server's file cabinet icon to the trash.

ISSUE/PROBLEM

        The customer has v3.11 and v3.0 Macintosh NLM's, and when
they attempt to logout of the server by dragging the file
cabinet icon to the trash, the trashcan would be highlighted but
the icon would not go away. Turns out that the Macintosh had an
init called MACPUKE that was causing the problem.

SOLUTION

        Remove the MACPUKE init and you will be able to logout of
the server by dragging the file cabinet icon to the trashcan.

FYI: Volume not in Chooser

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

```
        TITLE:       Volume not in Chooser
   DOCUMENT ID#:     FYI.W.0087
         DATE:       11MAR92
      PRODUCT:       NetWare for Macintosh
PRODUCT VERSION:     3.0
   SUPERSEDES:       NA
```

        SYMPTOM: There is no volume to mount in the Chooser
even though the Macintosh Name Space was added to that volume.

ISSUE/PROBLEM

     After the Macintosh Name Space is added to the volume, the
AFP.NLN must be loaded. When the AFP.NLM loads, it creates the
desktop on the root of the volume and this is what allows the
Macintosh workstations to mount the servers volume.

SOLUTION

     Load the AFP.NLM after adding the Macintosh Name Space.

FYI: Server disappears from Chooser
                                FYI

(Note: The origin of this information may be internal orexternal
to Novell. Novell makes every effort within itsmeans to verify
this information. However, the information provided in this
document is FOR YOUR INFORMATION only.Novell makes no explicit
or implied claims to the validity of this information.)

```
        TITLE:       Server disappears from Chooser
   DOCUMENT ID#:     FYI.W.0079
         DATE:       11MAR92
      PRODUCT:       NetWare for Macintosh
PRODUCT VERSION:     v3.0 and v3.01
   SUPERSEDES:       NA
```

        SYMPTOM: Multiple servers running the NetWare for
Macintosh NLM's would appear and disappear from the Chooser.

ISSUE/PROBLEM

     Customer had two servers both running v3.11 with the v3.x
NetWare for Macintosh NLM's, a simple setup with the servers

connected by Ethernet. In the Chooser the servers would appear
and disappear   randomly. There were no errors messages on
either server. But the internal AppleTalk network number from
the "load APPLETLK net=50000 zone=("my_zone")" line of both
servers was the same.

SOLUTION

    The internal net numbers of each server must be unique.
Change the internal net number of one of the servers to a unique
number.

FYI: Installing System 7.0.1 from a Server
                                    FYI

(Note: The origin of this information may be internal orexternal
to Novell. Novell makes every effort within itsmeans to verify
this information. However, the information provided in this
document is FOR YOUR INFORMATION only.Novell makes no explicit
or implied claims to the validity of this information.)

          TITLE: Installing System 7.0.1 from a Server
  DOCUMENT ID#:   FYI.W.0086
          DATE: 11MAR92
       PRODUCT: NetWare for Macintosh
PRODUCT VERSION: v3.0 and v3.01
    SUPERSEDES: NA

       SYMPTOM: When running Apple's System 7.0.1 installer
from a file server (3.11) you will receive the error message:
"The file "filename(i.e. Chooser)" already on "Hard Drive Name"
is more recent than what you are about to install. Click
Continue to replace "filename" with the older version. Click
cancel to leave Hard Drive Name" untouched.

ISSUE/PROBLEM

    The problem is that NetWare evenizes the time stamp.
Apple┌s installer reads that time stamp and if it is evenized it
says that there is a problem in the date of the file and you
will get the error message above.

SOLUTION

As a work-around until Apple fixes the installer scripts, a user can install the 7.0.1 on a Macintosh and copy all files into a folder. Use Apple's Personal AppleShare to enable users to log into that Macintosh and see the folder that has the 7.0.1 installer on it and install from there.

FYI: Can't install NetWare for Macintosh NLM's
                                        FYI

(Note: The origin of this information may be internal orexternal to Novell. Novell makes every effort within itsmeans to verify this information. However, the information provided in this document is FOR YOUR INFORMATION only.Novell makes no explicit or implied claims to the validity of this information.)

```
        TITLE:      Can't install NetWare for Macintosh NLM's
  DOCUMENT ID#:     FYI.W.0080
         DATE:      11MAR92
      PRODUCT:      NetWare for Macintosh
PRODUCT VERSION:    v3.01
    SUPERSEDES:     NA
```

        SYMPTOM: The NetWare for Macintosh NLM's would not install from the NW-MAC diskette from the product install menu.

ISSUE/PROBLEM

    The NetWare for Macintosh disk was missing its label. The disk should have a label "NW-MAC".

SOLUTION

    Label the disk by typing Label a:at the DOS prompt. It will ask you for the label, so enter:NW-MAC

FYI: Copying alias, editions, or custom icons without Modify rights
                                        FYI

(Note: The origin of this information may be internal or external to Novell. Novell makes every effort within its means to verify this information. However, the information provided in this document is FOR YOUR INFORMATION only. Novell makes no

explicit or implied claims to the validity of this information.)

           TITLE: Copying alias', editions, or custom icons
without Modify rights
   DOCUMENT ID#:   FYI.W.0088
           DATE: 11MAR92
       PRODUCT: NetWare for Macintosh
PRODUCT VERSION: 3.0 and 3.01
    SUPERSEDES: NA

        SYMPTOM: If a user does not have Modify rights and
they try to copy an alias, edition, or use custom icons to the
directory in which they don't have that right, they will get an
error. The error can vary from "editions don't work the way
they are suppose to work. ....." , " Creation error...."...

ISSUE/PROBLEM

     The problem has to do with setting the Finder info flags.
You need the Modify right to set the Finder info flags.
Previous to System 7, the Finder info flags didn't need to be
set because there was no concept of alias, editions etc...

SOLUTION

     Currently Novell is looking into creating a patch for this.
It will be fixed in future releases of NetWare for Macintosh.
As a work-around include the Modify right, or use a System 6.x
Macintosh.

FYI: Creating a folder without Access Control
                                        FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

           TITLE: Creating a folder without Access Control
   DOCUMENT ID#:   FYI.W.0089
           DATE: 11MAR92
       PRODUCT: NetWare for Macintosh
PRODUCT VERSION: 3.0 and 3.01
    SUPERSEDES: NA

SYMPTOM: If a user doesn't have the Access Control
right to a folder and tries to create another folder inside that
folder they will get an error, You cannot create a folder in the
window <folder name>, because you do not have enough access
privileges, but the folder will be created anyway.

ISSUE/PROBLEM

     The Macintosh Finder doesn't know about inherited rights,
it needs to set the rights of the ancestry (the above folder)
and of the folder just created.

SOLUTION

     Currently the only solution is to grant the Access Control
right to the user or use a System 6.x Macintosh. Novell is
working on a solution for future releases.

FYI: Ehandler
                                FYI

(Note: The origin of this information may be internal orexternal
to Novell. Novell makes every effort within itsmeans to verify
this information. However, the information provided in this
document is FOR YOUR INFORMATION only.Novell makes no explicit
or implied claims to the validity of this information.)

          TITLE: Ehandler
  DOCUMENT ID#:   FYI.W.0085
          DATE: 10MAR92
       PRODUCT: NetWare for Macintosh
PRODUCT VERSION: v3.01
    SUPERSEDES: NA

        SYMPTOM: I'm having problems printing to my serial or
parallel PostScript printer through the NetWare for Macintosh
queues, but I don't get any banner pages with errors indicating
a problem. How can I get my serial or parallel PostScript
printer to display PostScript error messages when trying to
troubleshoot a printing problem?

ISSUE/PROBLEM

     PostScript printers that are attached through a serial or

parallel connection need to have this support turned on. By
printing a file called EHANDLER.PS to the printer from a DOS
workstation this support can be turned on.

SOLUTION

     This file can be downloaded from CompuServe in Adobe's
forum in library 4. The file is called EHNDLR.TXT and you must
capture to the queue that supports the printer and then
type:COPY EHNDLR.TXT LPT1 from the DOS workstation. This will
turn on PostSript error messages on the printer. To turn this
off just reboot the printer.

FYI: Error "ATALK error (...) DDP msg is not ATP, has type 2"
                              FYI

(Note: The origin of this information may be internal orexternal
to Novell. Novell makes every effort within itsmeans to verify
this information. However, the information provided in this
document is FOR YOUR INFORMATION only.Novell makes no explicit
or implied claims to the validity of this information.)

          TITLE: Error "ATALK error (...) DDP msg is not ATP,
has type 2"
  DOCUMENT ID#:   FYI.W.0081
          DATE: 09MAR92
       PRODUCT: NetWare for Macintosh
PRODUCT VERSION: v3.x
    SUPERSEDES: NA

        SYMPTOM: The server error log shows the following
message, "ATALK error (...) DDP msg is not ATP, has type 2."

ISSUE/PROBLEM

     This error indicates a packet was passed to the AppleTalk
stack that did not have a valid ATP type. This would usually be
a garbage packet and can indicate a hardware problem, like a bad
LAN card on the network or a LAN driver problem.

SOLUTION

     If only a few of these messages are received over a long
period of time, it would not be something to be concerned about.
If several messages appear in a short time period, it would be

something to look into. One thing to do would be to verify the
LAN drivers on the server are current. Otherwise, a packet
trace of the network may need to be gathered and analyzed to
find the source device of these garbage packets.

FYI: DeskWriter or PaintWriter problem
                                         FYI

(Note: The origin of this information may be internal orexternal
to Novell. Novell makes every effort within itsmeans to verify
this information. However, the information provided in this
document is FOR YOUR INFORMATION only.Novell makes no explicit
or implied claims to the validity of this information.)

            TITLE: DeskWriter or PaintWriter problem
  DOCUMENT ID#:   FYI.W.0084
            DATE: 09MAR92
        PRODUCT: NetWare for Macintosh
PRODUCT VERSION: v3.0 or 3.01
     SUPERSEDES: NA

        SYMPTOM: When trying to print to a queue with the
PaintWriter or DeskWriter driver on my Macintosh, it hangs.

ISSUE/PROBLEM

      If someone attempts to use the PaintWriter or DeskWriter
driver with the released versions of ATPS (v3.0, v3.01) it will
cause the Macintosh to hang indefinitely. The problem is that
the driver was designed to send data in chunks as the printer
processes it (considerably slower than spooling to the queue).
The driver can't handle the queue accepting all the job data
without pause for processing so it hangs the Macintosh.

SOLUTION

      The problem is in the PaintWriter and DeskWriter driver and
is not a Novell problem, but Novell may be providing a
workaround in a future release of NetWare for Macintosh.

FYI: MACPAC bug
                                         FYI

```
          TITLE:       MACPAC bug
   DOCUMENT ID#:       FYI.W.0082
           DATE:       09MAR92
        PRODUCT:       NetWare for Macintosh
PRODUCT VERSION:       all
     SUPERSEDES:       NA
```

        SYMPTOM: There is a new compression utility call
MACPAC. It will compress Macintosh files and will decompress
them from a DOS workstation. This utility is used out on
Business Talk or NetWare Express for upgrading to the v2.2 and
v3.11 updates. There is a bug with this utility causing it not
to allow the files to be uncompressed. An error will be
generated indicating the file server is not AFP compatible.

ISSUE/PROBLEM

     The problem occurs if the Macintosh Name Space is not on
the SYS volume. Even if the file you are decompressing is on
another volume that does have the Macintosh Name Space, SYS must
have the Mac name space as well.

SOLUTION

     The workaround is to add the Macintosh Name Space to SYS
before decompressing the files. If the Macintosh Name Space is
not there you will get errors when trying to decompress saying
the server is not AFP compatible.

FYI: Macintosh interface cards
                                    FYI

```
          TITLE:       Macintosh interface cards
   DOCUMENT ID#:       FYI.W.0083
```

DATE: 09MAR92
          PRODUCT: NetWare for Macintosh
  PRODUCT VERSION: all
       SUPERSEDES: NA

          SYMPTOM: When installing an Ethernet card into the
Macintosh workstation the EtherTalk icon did not appear in the
Network portion of the Control Panel even when the driver was
installed.

ISSUE/PROBLEM

     If there is a problem with the mother board on the
Macintosh communicating to the LAN board this will occur. The
same symptom will appear if no LAN board is installed.

SOLUTION

     Replace the Ethernet board in the Macintosh with a known
working board. If the problem persists try a different slot on
the Macintosh. This is usually a hardware problem with the LAN
board of the Macintosh.

FYI: ATPS error while printing to a queue
                                        FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

            TITLE: ATPS error while printing to a queue
     DOCUMENT ID#:   FYI.W.0097
             DATE: 03MAR92
          PRODUCT: NetWare for Macintosh
  PRODUCT VERSION: 3.01
       SUPERSEDES: NA

          SYMPTOM: Whenever a user tried to print to an ATPS
print queue from a Macintosh, the user would see in the ATPS
Verbose screen the following error "Write job to queue: No space
left on device" followed on the next line with "-ATPS: aborted
job 480 due to reception error". On the Macintosh screen, the
error "ATPS: can't place job in queue, queue write error" also

occurs.

ISSUE/PROBLEM

The user had his print queues defined in the ATPS.CFG file
with the -a option which means that the user must be logged in
via AFP and must be defined as a queue user also. They were
limiting the amount of Volume/Disk space available per user.
Turns out there was not enough space left on volume SYS/ for the
print job to be written to the queue because of the disk space
limitation imposed.

SOLUTION

They increased the amount of space the user was allocated
for the SYS/ volume. Printing to the queue from a Macintosh
worked without a problem after that.

Document 1000

Document 1000
GENERAL INFORMATION

Novell Desktop Systems Group

        Disclaimer
    1000 Master Index (this file)
02/10/91
    1001 Books on DR DOS *NEW*
06/05/92

DOS 6 Installation, Security, Non-Disk Utilities

    1101 NEC Computers using NEC DOS
    1105 If you can't boot from the DR DOS 6 floppy diskettes
    1106 Manual Installation of DR DOS 6
06/05/92
    1107 SECURITY
    1109 The SCRIPT utility
    1110 Some suggestions for the beginning DOS user
    1111 MS DOS/PC DOS/DR DOS command comparison
    1113 DR DOS 6.0 sample configurations
    1114 SID and DEBUG patch
    1115 SID and DEBUG script
    1116 SID Memory detection of ROMs
    1117 The DIREXIST Command   *NEW*

06/05/92
        1199 Creation of DR DOS 6.0 bootable floppy disk

DR DOS 6 Disk Utilities

        1200 Essential information about SuperStor disk compression
06/05/92
        1201 SuperStor Utilities and Troubleshooting
06/05/92
        1202 SuperStor and memory management
        1203 The DELWATCH utility
        1205 Slow Disk Access
        1206 SuperPCK Configuration and Trouble-shooting
        1208 FDISK and cluster size
        1209 ViewMAX
06/05/92

DR DOS 6 Memory Management

        1300 DR DOS 6 Memory Management overview
        1301 Basic Memory optimization
        1302 Trouble shooting
        1303 Using 3rd party memory managers
        1305 XMS-EMS memory pool
        1306 Preventing DR DOS from loading into HMA
        1307 The MEM /A Command   *NEW*
06/05/92
        1308 GATE A20 and Printing Problems
06/05/92

DR DOS 6 and Networks

        1402 Novell Netware general information
06/05/92
        1404 Paths to DR DOS Config files on a Network
        1405 Banyan Vines
        1406 LANtastic compatability with DR DOS
        1408 Login Script for network with DR DOS and Compaq DOS
3.31

DR DOS 6 and Hardware

        1501 All Chargecard
        1502 I.T.T. Extra 286
        1504 Fax boards
        1505 GRID Laptops and the Resume function

06/05/92

DR DOS 6 and Applications

    1602 Windows 3.0
    1603 Windows 3.1   *NEW*
06/05/92
    1604 Geoworks
    1605 DesqView
06/05/92
    1606 Netroom
    1607 Coretest
    1608 QEMM386 and Stealth
    1609 Applications that check the DOS version number
    1610 PCPaint
    1611 Quicken version 5
    1612 Glyphix
    1613 Magnavox version of PCGlobe
    1614 Falcon 3.0
    1615 Stacker 2.0 Manual Installation
    1616 OS/2 2.0 Installation   *NEW*
06/05/92
    1617 OS/2 2.0 Compatability *NEW*
06/05/92

Multiuser DOS 5.0

    1900 Cabling a Terminal
    1901 Troubleshooting CSPOOL
06/05/92
    1902 Troubleshooting Terminals
06/05/92
    1903 Using PCTERM
    1904 PRINTMAP and Printer commands
06/05/92
    1905 Troubleshooting Terminal Installation
06/05/92
    1906 Troubleshooting Memory
06/05/92
    1907 Manual Installation   *NEW*
06/05/92

Disclaimer

NOTE: The origin of this information may be internal or external to Novell. Novell makes every effort within its means to verify this information. However, the information provided in this document is FOR YOUR INFORMATION only. Novell makes no explicit or implied claims to the validity of this information.

Document 1101

(Note: The origin of this information may be internal or external to Novell. Novell makes every effort within its means to verify this information. However, the information provided in this document is FOR YOUR INFORMATION only. Novell makes no explicit or implied claims to the validity of this information.)

NEC DOS
SN

Description:

NEC DOS 3.3 PARTITIONS WITH DR DOS 5.0 and 6.0

INSTALL says that "you must first FDISK your hard drive;" When you go into DR DOS FDISK and try to remove the partition, FDISK indicates that "This is not a DOS partition."

End users are able to remove the partitions with NEC's FDISK, then recreate them with DR DOS's FDISK. DR DOS then installs fine. NEC Powermates are shipped with NEC DOS 3.3. This version has been HIGHLY modified from normal DOS 3.3. One of the changes is that their FDISK utility will create larger-than-32 MB partitions on the hard drive, however their method of doing this is NOT compatible with either the Compaq DOS 3.31 scheme or the MS DOS 4.01 scheme. Removing the partitions with NEC FDISK is the only solution - this is also required if the user wishes to install regular MS DOS 4.01.

It is important to note that running FDISK will result in the
loss of all data on the disk. Please have a backup before doing
this procedure.

Document 1105

BOOTING WITH DR DOS
BPT/RR

Description:

In order to install DR DOS you must make sure that you are
booting from a floppy in drive A:. DR DOS will not install from
drive B:. DR DOS comes on 3 1/2 inch low density floppies and 5
1/4 inch Hi-density floppies. If you need 5 1/4 inch low-density
disks (360K) send in the coupon that comes with your DR DOS.

If the boot disk hangs while trying to load, usually it means
there is an incompatible or faulty piece of hardware.

One of the things it can be is simply an older floppy drive that
is out of alignment. Sometimes the situation can be salvaged by
formatting a floppy on the boot drive with the old DOS, then
doing a diskcopy. The potential problem is that the diskcopy may
not be able to read the boot disk either. If you can't make a
backup then it may be necessary to get a replacement disk set
from Digital Research (in case there is an actual error with the
disk, which does sometime happen) or see about getting the
drives aligned.

****

Another problem is where you can make valid diskcopies but all
you get is the message "Loading...". Here the potential problem
may be the computer's bios. DR DOS must be able to direct the
system to the area where DOS Kernel files are located. Older
bioses are not able to perform this function. If your bios dates
from around 1987 or earlier you may need an update.

****

And finally, if you can read the disks but are unable to format
a disk or make a diskcopy DR DOS may think you have a different
type of floppy than you actually have. Another symptom of this
is if you are making a floppy installation and DR DOS asks you
for 5 1/4" floppies when you actually have 3 1/2" floppies. If
this is an XT type computer (by which we mean it has no CMOS
configuration program) then you can place a DRIVPARM statement
in your CONFIG.SYS. Refer to the DR DOS manual to see how to use
this parameter. DRIVPARM uses no RAM. It merely updates the DR
DOS drive tables with the type drive you specify. If your
computer does have a CMOS setup program then you need to correct
the entries for your floppy drives in CMOS.

Document 1106
                                    FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

Document 1106
MANUAL INSTALLATION
TJ/JD
2/6/92

Description:

                        INTRODUCTION

It is possible that users may need to perform a manual
installation of DR DOS if the normal DR DOS installation fails
or if a custom installation is required. If the installation

fails while executing SYS.COM the customer should manually "SYS" the drive (see steps 1-3) and continue with steps 4-13. If the installation fails when copying files to the disk (due to possible media error) but the target disk has been "SYSed" with DR DOS 6 the users can proceed with just steps 4-13.

INSTRUCTIONS

Note: for this example of a manual installation we have assumed that the bootable partition is lettered C:. If your bootable partition is labeled other than C:, please replace "C:" below with the drive letter representing your bootable partition.

The instructions for a manual install are as follows:

        1.   Boot the DR DOS Startup diskette to the first installation screen. (If this is a 360K set of disks strike CTRL-C, then Y when the screen asks you to insert the Utilities #1 disk.   Proceed with step 3.)

        2.   Break out of the installation by pressing <F10> and choosing "Exit to DR DOS".

        3.   From the A: prompt type "SYS C:" This will transfer the proper boot files from the installation diskette in drive A: to your C: bootable partition. Now drive C: is a bootable DR DOS 6.0 drive.

        4.   Move to the C: root directory. This would be accomplished by typing "C:" and then "CD\"

        5.   Type "MD DRDOS." This will create a DR DOS directory on your C: drive.

        6.   Type "A:" This will move you back to the A: root directory.

        7.   Type "COPY *.* C:\DRDOS." This will transfer all of the files from the installation diskette to the C:\DRDOS subdirectory.

        8.   Repeat step #7 (above) with the remaining DR DOS 6.0 diskettes.

        9.   Move to the DR DOS subdirectory on the C: drive. This

would be accomplished by typing "C:" and then "CD\DRDOS"

    10. Type "MOVE SSTORDRV.SYS C:\" This moves the
SSTORDRV.SYS device driver to its proper position in the C: root
directory.

    11. Type "MOVE DEVSWAP.COM C:\" This moves the DEVSWAP.COM
device driver to its proper position in the C: root directory.

    12. Type "REN INSTALL.EXE SETUP.EXE." This renames the
INSTALL.EXE to SETUP.EXE which is the setup program for DR DOS
6.0.

    13. type "SETUP." This executes the setup program and will
allow the customer to manually configure and install all of the
individual portions of DR DOS 6.0.

                            NOTES
Files on the DR DOS 6.0 diskette may fail to transfer to the DR
DOS subdirectory if the initial automated installation failed
due to a media (diskette) error. If this is the case, focus on
copying as much of the operating system into the DR DOS
subdirectory as possible and manually installing using SETUP.

Example: if the Viewmax portion of the installation results in a
diskette error, skip this installation portion and continue to
install as much of the remaining portions of DR DOS.

Please contact the Digital Research Technical Support if you
were unable to successfully install any portion of DR DOS.

Document 1107

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

SECURITY
BPT

Description:

Problem: How do you access a security protected hard drive that
has one or both of the following:

    1. Corrupted essential file (COMMAND.COM)
    2. Confused configuration that fails load

Solution: Use the Install/Boot disk which will ask for the
password, answer it, then exit from the install to the OS and
correct the Hard drive problem.

Example:
A virus that has attacked COMMAND.COM
A corrupted primary file
An error in judgment on configuration

    1. Boot from install disk
    2. Enter password
    3. Esc to DOS or reinstall
    4. The hard drive should now be accessible for repair.

Document 1109

SCRIPT
RR
12/28/91

Description:
SCRIPT will not load as a TSR for LPT1. It will give the error
message "Invalid Destination". It will, however, work correctly
for LPT2 & LPT3. Documents can be printed through SCRIPT to

LPT1. Only the TSR portion will return the error message. A
workaround is to first load MODE with the parameters LPT1=LPT2.
Then load SCRIPT for LPT2.

Example:
     MODE LPT1=LPT2
     SCRIPT LPT2

          ****

Description:
The syntax list by the internal help of SCRIPT has the position
of the switches incorrectly listed. All switches for SCRIPT
should be at the end of the command line not at the beginning.
DOSBOOK and the DR DOS manual have the correct order for
command syntax.

Document 1110

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

BEGINNERS TIPS

BPT

Description:

Q-   I'm just beginning to explore computers & DOS and want to
know what I should look at first?

A-   The most important concept to grasp is that of PATHS. The
next item is skill with commands such as TREE, XDIR, etc. And
perhaps the most fun is in the creation of BATCH files. Then the
real exploration can begin.

PATH:

The back of the "Users Guide" has an excellent index that will help you find explanations of these primary path commands:

        TREE
        CHDIR
        MDIR
        CD \
        CD ..
        PATH

It's important to remember that going into a path is much like driving a car up a cul-de-sac to find someone's house with a map.

        -       You start out on a main boulevard that you know (c:\)
        -       take various turns onto side streets (cd \drdos)
        -       and finally find the name your searching for (c: \drdos\tree.exe)
        -       To get back home, you must backup and retrace your steps (cd..) or you may know of a shortcut (cd \)

COMMANDS:

The DR DOS command set is quite a long listing but the first ones to get familiar with are:

        TREE
        DIR
        REN
        COPY
        DEL
        UNDEL

Some of them, like DEL are quite destructive so exercise caution. There are quite often "switches" that will customize the command that may suit your purpose better, these can be found by typing the command and a /h after it, for instance:

```
     TREE /H
```

Or you can browse through DOSBOOK, just type:

```
     DOSBOOK
```

BATCH FILES:

You could say that the machine (PC) is bi-lingual, there are two types of files it reads:

1.   "Executables" that can only be read by the machine , (they just look like gobblety gook to us).

2.   "Text" files that do make some sense! I say some sense because they often contain instructions for our machine.

Most of these files are critical to the happy operation of your PC and should not be changed, but it is certainly ok to go and look at them.

Some of the files that are "Text" based are:

1.   AUTOEXEC.BAT
2.   CONFIG.SYS
3.   *.INI

A safe way to look at them is to use the command "TYPE". Refer to *** below.

Example:
TYPE AUTOEXEC.BAT /P

There are things listed in your DR DOS "Users Guide" that will show you what can be done or ways to simplify loading programs, all it takes is making a "Batch" file (text file) or editing an existing file. Look in the back of the guide under the words:

BATCH
CONFIGURATION
AUTOEXEC.BAT
CONFIG.SYS
PROMPT

There are examples given in the guide that will get you started
on your exploration of DOS and the PC. Best of success to you.

***To do a DOS command like "TYPE", you must know how to get to
the command line first. If a machine has been setup by a
consultant or store, they sometimes put you in a menu program
which gives a list of choices, or straight into an application
like a data base. Often, these programs or applications offer a
way to get to the COMMAND LINE, or as it's sometimes called, the
DOS PROMPT. Typing EXIT will usually return to you to normal,
but if it doesn't rebooting the machine will start everything
all over again. There is an important rule regarding rebooting,
"NEVER REBOOT IF YOU ARE IN THE MIDDLE OF A PROGRAM" you should
always exit to the DOS PROMPT or use the "QUIT" option that is
usually available from a programs option list.

Example:

Page 35 to 44 Paths/Directories
Page 145 to 352 Commands
Page 113 to 136 Batch commands
Page 356 to 397 Config.sys
Page 294 Prompt

Document 1111

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

Command Comparison

Description:

Command Comparison

This chapter contains a comparison chart of the DR DOS 6.0
operating system commands and the PC DOS and MS-DOS command
sets. Note that Int. and I refers to internal commands (E are
external) and Enh are enhanced over their MS/PC DOS equivelants.

Commands	DOS 3.3(PC DOS)	DOS 4.1(MS-DOS)	DR DOS 5.0	MS-DOS 5	DR DOS 6.0
APPEND-E	X	X	X	X	X
ASSIGN-E	X	X	X(Int) (Enh)	X	X(Enh)
ATTRIB-E	X	X	X(Enh)	X	X(Enh)
BACKUP-E	X	X	X	X	X
BREAK-I	X	X	X	X	X

CACHE Super PC-Kwik			X	X	
CHCP-I	X	X	X	X	X
CHDIR/ CD-I	X	X	X	X	X
CHKDSK-E	X	X	X(Enh)	X	X(Enh)
CLS-I	X	X	X	X	X
COMMAND -E	X	X	X	X	X
COMP-E	X	X	X(Enh)	X	X(Enh)
COPY-I	X	X	X(Enh)	X	X(Enh)
CTTY-I	X	X	X	X	X

CURSOR			X	X
DATE-I	X	X	X	X
DEBUG	X	X	SID	X SID
DEL-I	X	X	X(Enh)	X X(Enh)
DELQ			DELQ	X
DEL PURGE-E				X
DELQ-I			X	X
DEL WATCH-E				X
DIR-I	X	X	X(Enh)	X X(Enh)

DISK COMP-E	X	X	X(Enh)	X	X(Enh)
DISK COPY-E	X	X	X	X	X(Enh)
DISKMAP-E					X
DISKOPT-E					X
DOSBOOK-E					X
DOSKEY				X	
DOS SHELL			VIEWMAX	X	VIEWMAX
EDIT				X	
EDLIN-E EDITOR	X	X	EDITOR	X	EDITOR

EMM386		X	X	X	X
ERAQ-I			X		X
ERASE-I	X		X(& ERAQ)	X	X(& ERAQ
EXE2BIN-E		X	X	X	X
EXIT-I		X	X	X	X
EXPAND				X	(req.for MS-DOS 5 comp. files only)
FAST OPEN-I/E	X	X	X	X	X
FC-E		X		X	X

FDISK-E	X	X	X(Enh)	X	X(Enh)
FILE LINK-E			X		X
FIND-E	X	X	X(Enh)	X	X(Enh)
FOR-I				X	
FORMAT-E	X	X	X(Enh)	X	X(Enh)
GRAFTABL-E	X	X	X	X	X
GRAPHICS-E	X	X	X	X	X
HELP-I DOSBOOK			X(-h opt)	X	X(-h opt
HILOAD-I			X		X

JOIN-E	X	X	X	X	X

Document 1111

KEYB-E	X	X	X	X	X
LABEL-E	X	X	X	X	X
LOADHIGH / HILOAD				X	
LOCK-E					X
MEM-E		X	X(Enh)	X	X(Enh)
MEMMAX-E			X		X
MIRROR / DISKMAP				X	
MKDIR /MD-I	X	X	X	X	X

MODE-E	X	X	X	X	X
MORE-I	X	X	X	X	X
MOVE-E,					X
NLSFUNC-E	X	X	X	X	X
PASSWORD-E			X		X
PATH-I	X	X	X	X	X
PRINT-E	X	X	X	X	X
PROMPT-I	X	X	X	X	X
QBASIC				X	

```
-
----------
RECOVER |              |              |              |            |
-E      |      X       |      X       |      X       |     X     |
X
--------|--------------|--------------|-------------|-------|
-
----------
RENAME-I|      X       |      X       |      X       |     X     |
X
--------|--------------|--------------|-------------|-------|
-
----------
RENDIR-E|              |              |              |           |
X
--------|--------------|--------------|-------------|-------|
-
----------
REPLACE |              |              |              |           |
-E      |      X       |      X       |   X(Enh)     |    X     |
X(Enh)
--------|--------------|--------------|-------------|-------|
-
----------
RESTORE |              |              |              |           |
-E      |      X       |      X       |   X(Enh)     |    X     |
X(Enh)
Document 1111
--------|--------------|--------------|-------------|-------|
-
----------
RMDIR   |              |              |              |           |
/RD-I   |      X       |      X       |      X       |     X    |
X
--------|--------------|--------------|-------------|-------|
-
----------
SCRIPT-E|              |              |              |           |
X
--------|--------------|--------------|-------------|-------|
-
----------
SELECT-E|      X       |      X       |              |           |
--------|--------------|--------------|-------------|-------|
-
----------
SET-I   |      X       |      X       |      X       |     X    |
```

					X
SETUP-E			X		X(Enh)
SETVER					X
SHARE-E	X	X	X(Enh)	X	X(Enh)
SID-E			X		X
SORT-E	X	X	X	X	X
SSTOR-E					X
SUBST-E	X	X	X(Int)	X	X
SUPERPCK					X
SYS-E	X	X	X(Enh)	X	X(Enh)

TASKMAX -E					X
TIME-I	X	X	X	X	X
TOUCH-E			X		X
TREE-E	X	X	X(Enh)	X	X(Enh)
TYPE-I	X	X	X(Enh)	X	X(Enh)
UNDELETE				X	X
UNFORMAT				X	X
UNINSTAL				X	X
VER-I	X	X	X	X	X

```
VERIFY-I|       X       |       X       |      X      |    X   |
X
-------|--------------|--------------|------------|-------|
-
----------
VIEWMAX |               |              |            |       |
-E      |              |              |     X      |       |
X
-------|--------------|--------------|------------|-------|
-
----------
VOL-I   |       X      |       X      |     X      |    X  |
X
-------|--------------|--------------|------------|-------|
-
----------
XCOPY-E |       X      |       X      |   X(Enh)   |    X  |
X(Enh)
-------|--------------|--------------|------------|-------|
-
----------
XDEL-E  |              |              |     X      |       |
X
-------|--------------|--------------|------------|-------|
-
----------
XDIR-E  |              |              |     X      |       |
X
-------|--------------|--------------|------------|-------|
-
----------
```

Document 1113

DR DOS Configuration files
JL/RR
12/26/91

Description:

These are some sample configuration files to help you decide how
best to set up your system. It is not necessary for you to use
them exactly as written but they can be used to give you ideas
on what can be done with DR DOS 6.0. What your computer can
actually accomplish is dependent on the hardware of your system.

                    PC / XT Computers 640K (only)

CONFIG.SYS

```
SHELL=C:\COMMAND.COM C:\ /P /E:256
BREAK=ON
BUFFERS=20
FILES=30
FCBS=4,4
FASTOPEN=256
HISTORY=ON, 256, ON, OFF, OFF
?"Load Netware (Y/N)? " set lan=on
?"Enable DelWatch TSR (Y/N)? " set delw=on
```


AUTOEXEC.BAT

```
@ECHO OFF
:DRDOSBEG
PATH C:\;C:\DRDOS;C:\NETWARE
VERIFY OFF
PROMPT [DR DOS] $P$G
if "%lan%"=="on" IPX
if "%lan%"=="on" NET3
if "%delw%"=="on" DELWATCH C: /M:200
DISKMAP C:
```


These files will setup an XT-type computer to use the following
DR DOS 6.0 features:

The DELWATCH command is a 5k TSR loaded to keep track of deleted
files. The options indicate that Drive C: will be watched and no
more than 200 deletions will be tracked.

The DISKMAP command takes a snap-shot of Drive C:'s file allocation table. In the instance of serious disk or file corruption problems this feature will aid in the recovery of your disk and files. This command, however, can be executed as many times as needed during your computing session in order to get the most recent FAT image (via the $x variable in PROMPT, see page 294 of the DR DOS manual).

Depending on the use of this type of configuration, this PC/XT could be used for other "light-duty" services on networks, et cetera, and therefore, other drivers can be implemented which would take more conventional memory such as SuperStor'ing the hard-disk for additional document storage for a printer server. SuperStor would take about 50K of conventional memory to run, and could have a serious impact on the ability to run some DOS applications. The examples for SuperStor in this document are for drives other than C:. If C: is compressed SuperStor will create a DCONFIG.SYS file on the uncompressed side and will place the SuperStor driver there. Refer to Document 1200 for more information on SuperStor.

PC / XT Computers 640K and LIM 4.0 Expanded Memory

CONFIG.SYS

```
SHELL=C:\COMMAND.COM C:\ /P /E:256
BREAK=ON
BUFFERS=20
FILES=30
FCBS=4,4
FASTOPEN=256
HISTORY=ON, 256, ON, OFF, OFF
DEVICE-C:\REMM.SYS
?"MemoryMAX w/no LIM (y/n)? "DEVICE=C:\DRDOS\HIDOS.SYS /C=EMSALL
/B=AUTO
?"MemoryMAX w/ LIM (y/n)? "DEVICE=C:\DRDOS\HIDOS.SYS
/C=EMSUMB /B=AUTO
HIDOS=ON
?"Use the Compressed Disk (Y/N)? "DEVICE=C:\SSTORDRV.SYS
?"Enable DelWatch TSR (Y/N)? " set delw=on
?"Load Netware (Y/N)? " set lan=on
```

```
AUTOEXEC.BAT

@ECHO OFF
:DRDOSBEG
PATH C:\;C:\DRDOS;C:\NETWARE
VERIFY OFF
PROMPT [DR DOS] $P$G
if "%lan%"=="on" IPX
if "%lan%"=="on" NET3
if "%delw%"=="on" DELWATCH C: /M:200
DISKMAP C:
:DRDOSEND
```

An XT-type computer, with LIM 4.0 expanded memory, will take advantage of the following DR DOS 6.0 features:

First, the computer's expanded memory driver is loaded (named REMM.SYS in this example). The driver supplied with your computer will probably be named something different, however, specify the use of this driver in the same location.

Second, the MemoryMAX driver HIDOS.SYS allows the operating system to relocate into Upper Memory via the /B=AUTO switch. The other switches, /CHIPSET=EMSALL or EMSUMB, allow either all the Upper Memory (128K) to be used for the operating system's purpose (but with no LIM support) or to allow an EMS page frame (LIM support) and an Upper Memory Block of 64K. The EMS memory manager and hardware must be LIM 4.0 compatible for this to properly work.

The Compressed Disk driver, SSTORDRV.SYS, could be used to access leftover disk space on another fixed disk partition.

The DELWATCH command is a 5k TSR loaded to keep track of deleted files. The options indicate that Drive C: will be watched and no more than 200 deletions will be tracked or saved. The DISKMAP command takes a snap-shot of Drive C:'s file allocation table and will further increase chances of a successful file "undeletion".

Document 1113

PC/AT or 286 based Computers with 640K and LIM 4.0 Expansion
Boards

CONFIG.SYS

```
SHELL=C:\COMMAND.COM C:\ /P /E:256 /R
BREAK=ON
BUFFERS=20
FILES=30
FCBS=4,4
FASTOPEN=256
HISTORY=ON, 256, ON, OFF, OFF
device=remm.sys
?"MemoryMAX w/no LIM (y/n)? "DEVICE=C:\DRDOS\HIDOS.SYS /C=EMSALL
/B=FFFF
?"MemoryMAX w/ LIM (y/n)? "DEVICE=C:\DRDOS\HIDOS.SYS
/C=EMSUMB /B=FFFF
HIDOS=ON
?"Use the Compressed Disk (Y/N)? "DEVICE=C:\SSTORDRV.SYS
?"Load Netware (Y/N)? " set lan=on
?"Enable DelWatch TSR (Y/N)? " set delw=on
```


AUTOEXEC.BAT

```
@ECHO OFF
:DRDOSBEG
PATH C:\;C:\DRDOS;C:\NETWARE
VERIFY OFF
PROMPT [DR DOS] $P$G
if "%lan%"=="on" IPX
if "%lan%"=="on" NET3
if "%delw%"=="on" DELWATCH C: /M:200
DISKMAP C:
:DRDOSEND
```


This basic setup is similar to an XT with 640K RAM and
additional LIM 4.0 expanded memory.

The LIM 4.0 Expansion Board will be outfitted with some amount
of memory and they will come with a device driver which enables
it to work and function with DOS applications. The device driver
that the memory expansion board comes with could be named
REMM.SYS. Please read your documentation for your memory
expansion board for the location and name of the driver that

enables that memory. If the driver supplied with your computer is named differently, you can still specify the use of this driver in the same location as indicated by the REMM.SYS line above.

The MemoryMAX driver HIDOS.SYS is allowing the operating system to relocate into High Memory via the /B=FFFF switch. You must be able to configure at least 64K of extended memory at FFFF (decimal 1Meg) for this option to work. Otherwise, you can use /B=AUTO.

The other switches, /CHIPSET=EMSALL or EMSUMB allow either all the Upper Memory to be used for the operating system's purpose or to allow an EMS (LIM) page frame as well as an extra portion of upper memory. As stated earlier the EMS memory manager and the LIM hardware must be LIM 4.0 to work properly.

The DELWATCH command is a 5k TSR loaded to keep track of deleted files. The options indicate that Drive C: will be watched and no more than 200 deletions will be tracked (the tracked being saved in a hidden file of the same drive). The DISKMAP command takes a snap-shot of Drive C's file allocation table.

        286-Based Computer with Special Chipsets and Extended Memory

CONFIG.SYS

```
SHELL=C:\COMMAND.COM C:\ /P /E:256
BREAK=ON
BUFFERS=20
FILES=30
FCBS=4,4
FASTOPEN=256
HISTORY=ON, 256, ON, OFF, OFF
device=remm.sys
?"Load MemoryMAX (y/n)? "DEVICE=C:\DRDOS\HIDOS.SYS /B=FFFF
/C=AUTO
HIDOS=ON
?"Use the Compressed Disk (Y/N)? "DEVICE=C:\SSTORDRV.SYS
?"Enable DelWatch TSR (Y/N)? " set delw=on
```

```
?"Load Netware (Y/N)? " set lan=on


AUTOEXEC.BAT

@ECHO OFF
:DRDOSBEG
PATH C:\;C:\DRDOS;C:\NETWARE
VERIFY OFF
PROMPT [DR DOS] $P$G
if "%lan%"=="on" hiload IPX
if "%lan%"=="on" hiload NET3
if "%delw%"=="on" DELWATCH C: /M:200
DISKMAP C:
:DRDOSEND
```

These files can be used if your 286/AT has been manufactured with special ROM chips which offer control of certain memory functions (page 418-423). These systems offer favorable upper memory support for DR DOS's MemoryMAX software to enable and use Upper Memory for TSR's and device drivers. Shadowing should be enabled in the computer's CMOS to support the creation of upper memory by DR DOS 6.0.

The important line in this example is the MemoryMAX driver HIDOS.SYS. This allows the operating system to sense the type of chipset within the 286/AT, enable Upper Memory and relocate the operating system files into Upper or High Memory via the /B= switch. The valid switch options for /CHIPSET= are:

EMSALL
or
EMSUMB   (for 286s with LIM 4.0 compatible hardware/drivers)

NEAT   (for 286s with Chips & Technologies NEAT, NEATsx, LeAPSet, or LeAPSetsx)

SCAT   (for 286s with Chips & Technologies SCAT chipset)

RAM   (for permanent Upper Memory. Must be used with the /USE option on the HIDOS.SYS driver)

NONE   (for telling HIDOS.SYS not to use Shadow RAM)

```
AUTO        (for AUTO detection of chipset installed)

Document 1113

              386/486 Based Computers with 1 Megabyte of RAM

CONFIG.SYS

SHELL=C:\COMMAND.COM C:\ /P /E:512
BREAK=ON
HIBUFFERS=20
FILES=30
FCBS=4,4
FASTOPEN=256
HISTORY=ON, 256, ON, OFF, OFF
DEVICE=C:\DRDOS\HIDOS.SYS /B=FFFF /C=RAM /I=C800-EFFF
HIDOS=ON
?"Use the Compressed Disk (Y/N)? "DEVICE=C:\SSTORDRV.SYS
?"Enable DelWatch TSR (Y/N)? " set delw=on
?"Load Netware (Y/N)? " set lan=on


AUTOEXEC.BAT

@ECHO OFF
:DRDOSBEG
PATH C:\;C:\DRDOS;C:\NETWARE
VERIFY OFF
PROMPT [DR DOS] $P$G
if "%lan%"=="on" hiload IPX
if "%lan%"=="on" hiload NET3
if "%delw%"=="on" DELWATCH C: /M:200
DISKMAP C:
:DRDOSEND
```

This configuration will allow a 386 or 486 based computer to
relocate the operating system into High Memory and enable the
use of Upper Memory. With an average of 120K of RAM in Upper
Memory, one can put network and other drivers, as well as TSR
programs, into that 120K space by using HIDEVICE, HIINSTALL or
HILOAD (for TSRs).

IMPORTANT:
EMM386.SYS can be used on some systems but the majority of
computers will not have any extended memory, which is required

by EMM386. HIDOS.SYS is used instead with the /C=RAM option.
This option may not be valid on some computers and the actual
addresses of RAM that can be included will vary due to the
variety of hardware that may be installed in the computer. The
user must define the RAM addresses to be included. Do not use
the addresses we list above as an absolute because usable
addresses will vary from machine to machine. If you are unsure
what address to use try the range D000-EFFF. Be sure and use a
"?" at the beginning of HIDOS.SYS. This will allow you to bypass
this line in case you get an error.

The SuperStor driver is useful in doubling the apparent capacity
of the disk partition to which it's applied. If this has not
been applied to your disk drive, you can elect not to use this
driver and therefore save a substantial amount of conventional
memory. Therefore, the "?" allows the driver to be loaded at
will, whenever that particular partition needs to be accessed.
If the driver is loaded, you can expect to achieve about 603K of
conventional memory. The above example is for a drive other than
C:. If C: is compressed SuperStor will create a DCONFIG.SYS file
on the uncompressed side and will place the SuperStor driver
there. Refer to Document 1200 for more information on SuperStor.

        386/486 Based Computers with GREATER than 1 Megabyte of
RAM

CONFIG.SYS

SHELL=C:\COMMAND.COM C:\ /P /E:512
BREAK=ON
HIBUFFERS=20
FILES=30
FCBS=4,4
FASTOPEN=256
HISTORY=ON, 256, ON, OFF, OFF
HIDOS=ON
DEVICE=C:\DRDOS\EMM386.SYS /F=NONE /K=AUTO /B=FFFF /R=AUTO
?"Use the Compressed Disk (Y/N)? "DEVICE=C:\SSTORDRV.SYS
?"Enable DelWatch TSR (Y/N)? " set delw=on
?"Load Netware (Y/N)? " set lan=on

AUTOEXEC.BAT

```
@ECHO OFF
:DRDOSBEG
PATH C:\;C:\DRDOS;C:\NETWARE
VERIFY OFF
PROMPT [DR DOS] $P$G
if "%lan%"=="on" hiload IPX
if "%lan%"=="on" hiload NET3
if "%delw%"=="on" DELWATCH C: /M:200
DISKMAP C:
:DRDOSEND
```

This configuration will allow a 386 or 486 based computer to
relocate the operating system into High Memory. With an average
of 120K of RAM in Upper Memory, a portion of the SuperStor
driver, the IPX and possibly the NET3 (or NETX) software will
also fit into Upper Memory.

The SuperStor driver is useful in doubling the apparent capacity
of the disk partition to which it's applied. If this has not
been applied to your main disk drive, you can elect not to use
this driver and therefore save a substantial amount of
conventional memory. Therefore, the "?" allows the driver to be
loaded at will, whenever that particular partition needs to be
accessed. The above examples have been for drives other than C:.
If C: is compressed SuperStor will create a DCONFIG.SYS file on
the uncompressed side and will place the SuperStor driver there.
Refer to Document 1200.

386/486 Based Computers with greater than 1 Megabyte of RAM
running TaskMAX

CONFIG.SYS

```
SHELL=C:\COMMAND.COM C:\ /P /E:512
BREAK=ON
HIBUFFERS=20
FILES=30
FCBS=4,4
FASTOPEN=256
HISTORY=ON, 256, ON, OFF, OFF
HIDOS=ON
DEVICE=C:\DRDOS\EMM386.SYS /F=NONE /K=AUTO /B=AUTO /R=AUTO
?"Use the TaskMAX task switcher (Y/N)? " set tasker=on
```

```
?"Enable DelWatch TSR (Y/N)? " set delw=on
?"Load Netware (Y/N)? " set lan=on
```

Document 1113
AUTOEXEC.BAT

```
@ECHO OFF
:DRDOSBEG
PATH C:\;C:\DRDOS;C:\NETWARE
VERIFY OFF
PROMPT [DR DOS] $P$G
if "%lan%"=="on" hiload IPX
if "%lan%"=="on" hiload NETX
if "%tasker%"=="on" share
if "%tasker%"=="on" taskmax
if "%delw%"=="on" DELWATCH C: /M:200
DISKMAP C:
:DRDOSEND
```

This minimal configuration will allow a 386 or 486 based
computer to relocate the operating system into Upper Memory.
Although this is not optimal for the EMM386.SYS driver, the
amount of memory available on most 386/486 computers will allow
the Upper Memory to be addressed and used for the relocation of
the operating system files, drivers or TSR's. With an average of
120K of RAM in UPPER Memory, the operating system will be able
to get SHARE into HMA, TaskMAX and the Netware drivers into
UPPER Memory. Before Netware is loaded you should be able to
have 625K available conventional memory. Alternately, you can
load the drivers in the AUTOEXEC file from the command line (eg.
SHARE, TASKMAX, HILOAD IPX and HILOAD NETX).

The NETX utility found on the last DR DOS 6.0 floppy disk is
included to allow you to task-switch on the Network. This will
not allow multiple logins. However, it is designed to allow you
to execute more than one on application on the network.

                    WINDOWS Enhanced mode Configuration for 386/486
                         Based Computers 4 Megabytes or better

CONFIG.SYS

SHELL=C:\COMMAND.COM C:\ /P /E:512
```

```
BREAK=ON
HIBUFFERS=8
FILES=30
FCBS=4,4
FASTOPEN=0
HISTORY=ON, 256, ON, OFF, OFF
HIDOS=ON
DEVICE=C:\DRDOS\EMM386.SYS /F=NONE /K=AUTO /B=FFFF /R=AUTO
DEVICE=C:\DRDOS\PCKWIN.SYS
?"Load Netware (Y/N)? " set lan=on
?"Enable DelWatch TSR (Y/N)? " set delw=on


AUTOEXEC.BAT

@ECHO OFF
:DRDOSBEG
PATH C:\;C:\DRDOS;C:\NETWARE;C;\WINDOWS
VERIFY OFF
PROMPT [DR DOS] $P$G
if "%lan%"=="on" hiload IPX
if "%lan%"=="on" hiload NET3
SUPERPCK /EM /S:2048
if "%delw%"=="on" DELWATCH C: /M:200
DISKMAP C:
:DRDOSEND
```

This basic configuration allows a 386 or 486 based computer to
run WINDOWS in the "enhanced mode" or "real mode". The
EMM386.SYS driver indicates that a LIM page-frame location is
being established by the operating system driver (/F=AUTO). The
amount of memory allocated to be converted to expanded memory is
1024K (/K=1024). The operating system is being relocated to HMA
(/B=FFFF) and the information in the video and system BIOS ROMs
are being "shadowed" to faster RAM (/R=AUTO).If you want more
upper memory you can disable the LIM Page Frame with the
parameter /F=NONE. This will give you an additional 64K of upper
memory but you will not have any EMS. SuperPCKwik is going to be
2 Megabytes insize (/S:2048) and use the extended memory (/EM)
set aside with the EMM386.SYS driver. It will lend approximately
half of its memory for use as XMS memory for WINDOWS. SuperPCK
is using the WINDOWS compatible portion of its driver
(PCKWIN.SYS) so that WINDOWS performance is enhanced because of
better disk performance. With the EMM386.SYS driver, an average
of 120K of RAM may be available to relocate network drivers,
TSRs and other drivers into Upper Memory. This configuration has

been able to provide 625K of Conventional Memory before WINDOWS
is loaded.

               WINDOWS Standard mode Configuration for 386/486
                     Based Computers with more than 2 Megabytes

CONFIG.SYS

```
SHELL=C:\COMMAND.COM C:\ /P /E:512
BREAK=ON
HIBUFFERS=20
FILES=30
FCBS=4,4
FASTOPEN=256
HISTORY=ON, 256, ON, OFF, OFF
HIDOS=ON
DEVICE=C:\DRDOS\EMM386.SYS /F=NONE /B=FFFF /R=AUTO /WINSTD
DEVICE=C:\DRDOS\PCKWIN.SYS
?"Load Netware (Y/N)? " set lan=on
?"Enable DelWatch TSR (Y/N)? " set delw=on
```


AUTOEXEC.BAT

```
@ECHO OFF
:DRDOSBEG
PATH C:\;C:\DRDOS;C:\NETWARE;C;\WINDOWS
VERIFY OFF
PROMPT [DR DOS] $P$G
if "%lan%"=="on" hiload IPX
if "%lan%"=="on" hiload NET3
SUPERPCK /EM
if "%delw%"=="on" DELWATCH C: /M:200
DISKMAP C:
:DRDOSEND
```


This basic configuration allows a 386 or 486 based computer to
run WINDOWS in the "Standard mode" or "real mode". The
EMM386.SYS driver indicates that NO LIM page-frame be
established by the driver (/F=NONE), the operating system is
being relocated to HMA (/B=FFFF) and the information in the
video and system BIOS ROMs are being "shadowed" to faster RAM.
SuperPCKwik is going to use all of the extended memory enabled

by EMM386.SYS for caching the disk drive. Half of this amount
will be "lent" to Windows. SuperPCK is using the WINDOWS
compatible portion of its driver so that WINDOWS performance is
enhanced because of better disk performance. This configuration
has been able to provide 625K of Conventional Memory before
WINDOWS is loaded.

Document 1113

        Windows Enhanced mode Configuration for 386/486 with 2
Megabytes

CONFIG.SYS

```
SHELL=C:\COMMAND.COM C:\ /P /E:512 /MU
BREAK=ON
BUFFERS=20
FILES=30
FCBS=4,4
FASTOPEN=256
HISTORY=ON, 256, ON, OFF, OFF
HIDOS=ON
DEVICE=C:\DRDOS\EMM386.SYS /F=NONE /B=AUTO /R=NONE
?"Load Netware (Y/N)? " set lan=on
?"Enable DelWatch TSR (Y/N)? " set delw=on
```

AUTOEXEC.BAT

```
@ECHO OFF
:DRDOSBEG
PATH C:\;C:\DRDOS;C:\NETWARE;C;\WINDOWS
VERIFY OFF
PROMPT [DR DOS] $P$G
if "%lan%"=="on" hiload IPX
if "%lan%"=="on" hiload NET3
if "%delw%"=="on" DELWATCH C: /M:200
DISKMAP C:
:DRDOSEND
```

A 2 megabyte computer is not the optimal system for Windows in
enhanced mode. System performance may be greatly reduced because
Windows will need to use swap files and no cache can be used to
help accelerate disk I/O.

This configuration will allow a 386/486 with 2 Megabytes to run
Windows in Enhanced mode. Because Windows requires a minimum of
1 Megabyte of XMS this configuration does not use the HMA. The
SHELL statement has the switch /MU to force it to upper memory.
EMM386 is loading the kernel into upper memory with /B=AUTO and
we use BUFFERS (upper) instead of HIBUFFERS (HMA). Finally,
because we need all of the XMS memory available SuperPCK is not
used in this configuration. Start Windows with "WIN /3".
HIDOS.SYS can also be used to replace EMM386.SYS.

```
                 * * * * * * * * * * * * * * * * * * * * * * * * * * * *
```

MODELS OF CONFIGURATION FILES

The following configuration ideas should be considered advanced
and for those who are interested in more sophisticated
organization of their configuration and autoexec files.

Only the basic ideas are outlined in each example. The rest of
the file can be filled in with your own specifications.

EXAMPLE 1 - The use of GOTO in the CONFIG file.

```
?"Do you want to run QEMM (y/n)? " goto QEMM
?"Do you want to run MemoryMAX (y/n)? " goto DRDOS

:QEMM
DEVICE=c:\QTR_DECK\QEMM386.SYS
DEVICE=C:\DRDOS\HIDOS.SYS /B=FFFF
(additional QEMM driver lines go here...)
goto COMMON


:DRDOS
hidos=on
DEVICE=C:\DRDOS\EMM386.SYS /F=AUTO...
....

:COMMON
files=40
hibuffers=20
...
```

EXAMPLE 2 - The use of CHAIN in the CONFIG file. This example
shows that you can "link" to other files that hold your
configurations for each system "setup". In the following
CONFIG.SYS file, the two lines direct the configuration process
to the files: QCONFIG and MCONFIG.SYS-files. The appropriate
FILES, BUFFERS, etc. information is contained within those files
and not the main CONFIG.SYS file.

```
?"Do you want to run QEMM (y/n)? " chain=QCONFIG.SYS
?"Do you want to run MemoryMAX (y/n)? " chain=MCONFIG.SYS
```

EXAMPLE 3 - The following CONFIG file demonstrates the use of
SWITCH/RETURN commands and use of labels. Select the option by
number and continue processing. Notice the use of the ECHO
statement for setting up the menu options.

```
ECHO =          Choose how much Extended Memory you want to
convert
ECHO =            to LIM Memory for this session.
ECHO =
ECHO =           1 (or ENTER)    No LIM Memory
ECHO =        2         512K of Memory
ECHO =        3         1024K of Memory
ECHO =        4         2048K of Memory
ECHO =
ECHO =          Make your selection...

SWITCH NOLIM, 512K, 1024K, 2048K
GOTO DEFAULTS
Document 1113

:NOLIM
DEVICE=C:\DRDOS\EMM386.SYS /F=NONE /K=AUTO /B=FFFF /R=AUTO
RETURN

:512K
DEVICE=C:\DRDOS\EMM386.SYS /F=AUTO /K=512 /B=FFFF /R=AUTO
RETURN

:1024K
DEVICE=C:\DRDOS\EMM386.SYS /F=AUTO /K=1024 /B=FFFF /R=AUTO
RETURN
```

```
:2048K
DEVICE=C:\DRDOS\EMM386.SYS /F=AUTO /K=2048 /B=FFFF /R=AUTO
RETURN


:DEFAULTS
SHELL=C:\COMMAND.COM \C: /P /E:512
HIDOS=ON
HIBUFFERS=20
FILES=30
etc...
```

EXAMPLE 4 - The following CONFIG file section shows how
"environment variables" can be set according to the
configuration options one chooses. These variables are passed to
the command processor (COMMAND.COM) where they can be tested and
processed through the AUTOEXEC.BAT or other batch files. The
CLS, CPOS, EXIT and SET commands are featured in this example.

```
:DEFAULTS
SHELL=C:\COMMAND.COM \C: /P /E:512
HIDOS=ON
HIBUFFERS=20
FILES=30
etc....


ECHO =          Choose which TSRs and Utilities you want loaded
ECHO =              at BOOT time for this session.
ECHO =
ECHO =          1 (or ENTER)      None... just continue
ECHO =          2                 Mouse & Cursor Drivers
ECHO =          3                 Keyboard "Speeder"
ECHO =          4                 Novell Network
ECHO =          5                  Done with selections
ECHO =
ECHO =          Make your selection...


:MORE
CPOS 10,33
SWITCH NOTHING, CURSMOUS, SPEEDKEY, NOVELL, DONE
GOTO MORE
```

```
:DONE
:NOTHING
CLS
EXIT

:CURSMOUS
SET THINGS=ON
RETURN


:SPEEDKEY
SET SPEEDKEY=ON
RETURN

:NOVELL
SET NETWORK=ON
RETURN
```

The accompanying AUTOEXEC below picks up the environment variables.

The AUTOEXEC.BAT file now allows testing of the environment variables and executes commands based upon the conditionals as illustrated below:


```
@ECHO OFF
:drdosbeg
VERIFY OFF
PATH C:\;C:\DRDOS;C:\BATS;C:\TOOLS;C:\WINDOWS
if "%ansi%"=="on" prompt $e[s$e[0;70H$e[1;36m$t$e[u$e[1;36mDR
      DOS6$p$g$e[2;32m
if "%ansi%"=="off" PROMPT [DR DOS] $P$G
SET TEMP=C:\TEMP
IF NOT "%TEMP%"=="" MD %TEMP% >NUL
if "%things%"=="on" HILOAD MOUSE
if "%things%"=="on" HILOAD CURSOR /s10
if "%speedkey%"=="on" c:\drdos\mode con:rate=30 delay=1
if "%network%"=="on" hiload c:\lan\ipx
if "%network%"=="on" hiload c:\lan\net3
:drdosend
```


Document 1113

OTHER EXAMPLES

Select different configuration options from the CONFIG.SYS file
using the ?

?SHELL=C:\COMMAND.COM C:\ /P /E:512
?SHELL=C:\COMMAND.COM C:\ /P /E:1024
?BREAK=OFF
?BREAK=ON
BUFFERS=20
FILES=20
?HISTORY=ON, 256, ON, OFF, OFF
?DEVICE=C:\DRDOS\ANSI.SYS

Select different AUTOEXEC.BAT's from CONFIG.SYS using the ?

?"Default Autoexec? (y/n) "SHELL=C:\COMMAND.COM C:\ /P /E:256
?"Alternate Autoexec? (y/n) "SHELL=C:\COMMAND.COM C:\
/P:ALTERNAT.BAT /E:256

Select and use different configuration files from CONFIG.SYS at
bootup.

?"Do you want to run Windows? (y/n) " chain = WCONFIG.SYS
?"Do you want to use QEMM? (y/n) " chain = QCONFIG.SYS
?"Do you want to use MemoryMAX? (y/n) chain = MCONFIG.SYS
?"Do you want to use 386MAX? (y/n) chain = 386CONF.SYS

(Each line is printed on the screen and you are asked to
load/run the chained configuration file. Each configuration file
is a complete CONFIG.SYS-like file complete with all appropriate
options.)

The idea above can be accomplished by making number-selectable
"menu" choices using SWITCH. Note how the "SET environment"
variables can be used and tested for different "autoexec.bat"
files in this example:

ECHO =   1 For Windows Configuration

```
ECHO =    2  For QEMM Configuration
ECHO =    3  For DR DOS' MemoryMAX Configuration
ECHO =    4  For 386MAX Configuration
ECHO =    5  For no Configuration... just exit
SWITCH win, qemm, memm, 386m, none
:none


set autoexec=norm
exit

:win
set autoexec=win
chain=wconfig.sys

:qemm
set autoexec=qemm
chain=qconfig.sys

:memm
set autoexec=memm
chain=mconfig.sys

:386m
set autoexec=386m
chain=386conf.sys


Autoexec.bat for the above

@echo off
PATH C:\DRDOS;C:\;C:\UTIL;
VERIFY OFF
PROMPT $P$G
DISKMAP C: D:
IF "%autoexec%"=="norm" goto DRDOSEXIT
SHARE /L:40
IF "%autoexec%"=="win" SUPERPCK /EM /L:2048
IF "%autoexec%"=="qemm" CALL QEMM.BAT
IF "%autoexec%"=="memm" SUPERPCK  /A /L:2048
IF "%autoexec%"=="386m" CALL 386.BAT
:DRDOSEXIT


Document 1114

(Note: The origin of this information may be internal or
```

external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

SID and DEBUG
04/13.92
BK

SID AND THE DEBUG PATCH

Often software manufacturers will have to make changes to their
software after it has been released to customers. Usually these
are very small changes to the instructions that make up the
software, sometimes only affecting 1 or 2 bytes out of the
entire program. Since the changes are so small, they can often
be completed by the customer by following a patch listing
from the manufacturer. These patch listings depend on the use
of DEBUG. A typical patch listing will look something like
this:

1) COPY BROKFILE.EXE BROKFILE.SAV
2) DEBUG BROKFILE.EXE
3) -S 100 L FFFF B2 01 7C 56 8B 1E
4) -E xxxx:yyyy 91 92 93 94 88 1F
5) -W
6) -Q

DR DOS 6.0 has a similar utility called SID. While the
function of the two applications is the same, the actual
commands are a little different. Below is the typical listing
with the purpose of each step explained and the SID equivalent
described. The format in each step explained here is:

DEBUG COMMAND LINE

        GENERAL COMMENTS AND CLARIFICATION

                              EQUIVALENT SID COMMAND LINE

1) COPY BROKFILE.EXE BROKFILE.BAK

Just in case things do not go as planned, make a backup.

(same command)

2) DEBUG BROKFILE.EXE

DEBUG is loading and reading the subject file into memory. To accomplish this in SID, type SID at the command line and then use the R command to read the subject file into memory starting at memory offset address 100. SID will display the starting and ending address of the file in memory in a SEGMENT:OFFSET format. Note these addresses.

SID
#RBROKFILE.EXE,100

3) -S 100 L FFFF B2 01 7C 56 8B 1E
DEBUG is searching from the offset address 100 to the last address of FFFF (a hexadecimal number) for the pattern of bytes listed (B2 01 7C 56 8B 1E B8). this is a pattern that is unique to the area or areas of the file that need to be changed. DEBUG will return the addresses of the desired patterns in a SEGMENT:OFFSET format like 2345:1DF5. The specific values returned will vary. There may be more than one found. The patch listing will usually refer to these values as 'xxxx:yyyy'.
    The SID SR command is very similar. Some of the arguments are separated with commas instead of spaces. The address or addresses that contain the desired pattern will be returned in the same xxxx:yyyy format. Record the addresses returned.
                        #SR100,FFFF,B2 01 7c 56 8B 1E

4) -E xxxx:yyyy 91 92 93 94 88 1F

DEBUG is entering new values for the bytes in memory.

This is how the software is actually changed. The
xxxx:yyyy is the address at which the new values should
be added. The following numbers are the new values
themselves. In SID, use the S command and specify where
the new values should start.

SID will display that starting address and the
current value in memory and be waiting for the new
value. Enter the first value listed after xxxx:yyyy in
the -E command line of the patch listing. Press Enter.
SID will now show the next address and its current
value and be waiting for the new value. Enter the next
value in the -E command line. Continue entering the
remaining values. After the last value has been en-
tered, SID will display the next address and be waiting
for a new value. Simply enter a '.' and press ENTER.
SID will return to its '#' prompt.

```
                              #Sxxxx:yyyy
                              xxxx:yyyy B2 91
                              xxxx:yyyz 01 92
                              xxxx:yyya 7C 93
                              xxxx:yyyb 56 94
                              xxxx:yyyb 8B 88
                              xxxx:yyyb 1E 1F
                              xxxx:yyyb 22 .
                              #
```

5) -W

The update version of the software is written from
memory to the original file name. In SID use the
W command followed by the filename.

```
                              #WBROKFILE.EXE
```

6) -Q

You're done. Quit. SID's command is the same.

```
                              #Q
```

On the next page is a sample of what this patch process
would look like in SID.

[DR DOS] C:\MYFILES>SID

*** Symbolic Instruction Debugger *** Release 3.2
     Copyright (c) 1983,1984,1985,1988,1990,1991
   Digital Research, Inc. All Rights Reserved

#RBROKFILE.EXE,100
 Start   End
1056:0100 2056:7BF2
#SR100,FFFF,B2 01 7C 56 8B 1E
1056:2344
#S1056:2344
1056:2344 B2 91
1056:2345 01 92
1056:2346 7C 93
1056:2347 56 94
1056:2348 8B 88
1056:2349 1E 1F
1056:234A B8 .
#WBROKFILE.EXE
#Q

[DR DOS] C:\MYFILES>

Document 1115

SID and DEBUG Script
04/13/92
BK

SID AND THE DEBUG SCRIPT

Below is a generic listing of a typical DEBUG script that one
can often find on BBS's or in magazines that will create some
nice little utility file using the command:

        DEBUG < filename.ext

What follows are the steps that one would use to adjust a script
so that DR DOS 6.0's SID utility will produce the same file
using the command:

        SID < filename.ext

These scripts will usually follow a pattern. They will first
establish the name of the file. SID does not require the name of
the file until it is actually saved at the end. Then they will
use the 'A' command to start assembling the instruction. DEBUG
defaults to an offset of 100. In SID, one specifies that
assembly should begin at offset 100 by the A100 command. Then
the instructions for the utility itself are listed. These
instructions should be identical under both DEBUG and SID.
Finaly, DEBUG is told how many bytes of information to save
using the RCX command.

When one saves the file using SID, one specifies what the
beginning and ending addresses should be. The beginning address
is 100. The ending address is 100 + the number of bytes to be
saved - 1 (In the example below, the ending address is
represented by the word END). Since the arithmetic is in
hexadecimal values, one may want to use the H command in SID to
do the calculations (See the HEX NOTE below). The last command
is to quit. It is the same under both utilities.

GENERIC SCRIPT

DEBUG SCRIPT   SID SCRIPT   COMMENTS

-
N filename.ext   (not required)   -SID uses file name when
it is saved.
A   A100   ---------+ -Begin assembling
instructions.
(instructions   (instructions | -Use the original
commands.
go   go |

```
here)             here)                    |
                                           |
<CR>              <CR>                      | -<CR> to exit assembling
RCX               (not required)            | -DEBUG is preparing to
save y bytes
y                 (not required)            |   of data.
+---------------+
W                 Wfilename.ext,100,END|  -SID writes|from offset
100 to END
                                           |    ( 100 + y - 1 = END )
                                           |        |
                                           +-------+
Q                 Q                         -And Quit.
```

Below is an example of a script that will build BEEP.COM, a
program that simply beeps the speaker once. Notice again that
the arithmetic is in hexadecimal. (If that is something with
which you are unfamilure, see the HEX NOTE at the end of this
example.)

```
DEBUG SCRIPT      SID SCRIPT       COMMENTS
------------------------------------------------------------------
-
------
N BEEP.COM        (not required)          SID saves file name at
end
A                 A100           --------+  Begin assembling
instructions
MOV AH,2          MOV AH,2                |  Use the original
commands
MOV DL,07         MOV DL,07               |
INT 21            INT 21                  |
MOV AH,4C         MOV AH,4C               |
INT 21            INT 21                  |
<CR>              <CR>                    |  <CR> to exit assembling
RCX               (not required)          |  DEBUG is preparing to
save 10 (A Hex)
A                 (not required)          |   of data.
+---------------+
W                 WKEYD.COM,100,109  |   SID writes|from offset
100 to 109
Q                 Q                  |      ( 100 + A - 1 = 109 )
```

```
                                        |        |
                                        +--------+




HEX NOTE:        SID can do the hex math for you. In the above
example,  to do the first addition ( 100 + A ), load SID and
type

                 H100 A

                 SID will respond:

                 + 010A   - 00F6   * 00000A00   / 0019 (0006)

                 The first value, 010A, is the sum. Use that value
in the next command:

                 H10A 1

                 SID will respond:

                 + 010B   - 0109   * 0000010A   / 010A (0000)

                 The second value, 0109, is the END value you want
to use.




Document 1116

(Note: The origin of this information may be internal or
external to Novell.  Novell makes every effort within its means
to verify this information.  However, the information provided
in this document is FOR YOUR INFORMATION only.  Novell makes no
explicit or implied claims to the validity of this information.)

SID Memory detection of ROMs
03/13/92
BK
```

SID, THE MEMORY DETECTOR

Occasionally when loading DR DOS 6.0's EMM386.SYS memory
management driver, one will find that the MEM /A display shows
an area of upper memory excluded from use. After attempts to
access the memory area through the use of the /Include or /Use
switches for EMM386.SYS have failed, one might begin to suspect
that some memory addressed ROM chips are occupying that area.
One can use DR DOS 6.0's SID to check on that. To do this, load
SID and have it search the desired areas of memory for a
copyright. If one is found, displaying it will probably tell
one which piece of hardware is using the memory addresses.
Below is an example:

Here is an excerpt of a MEM /A display that shows an area
excluded at D7FF:0000 and a ROM chip at D800:0000 (the
exclusion will precede the ROM chip itself to protect the ROM's
address).

```
.. CF00:0000 . -------- .   9000h,  36,864 . ---------- Upper
RAM
.......................................................................
..
.. CF00:0000 .   DR DOS .   8FF0h,  36,848 . System
.. CFE3:15C0 .   DR DOS .    DE0h,   3,552 . DR DOS BIOS code
.. D7FF:0000 . EXCLUDED .   2010h,   8,208 . Upper system memory
.......................................................................
..
.. D800:0000 . -------- .   2000h,   8,192 . ------------- ROM
---
.. DA00:0000 . -------- .  16000h,  90,112 . ---------- Upper
RAM
.......................................................................
..
.. DA00:0000 .   DR DOS .   9450h,  37,968 . System
.. D701:3000 .   DR DOS .   9440h,  37,952 . DR DOS kernel code
```

To get SID to investigate that area, first load SID. SID
will display its '#' prompt. Tell it to search the area of

memory using the SR command looking for all the permutations
of copyright markings. For example, the MEM display shows
something at D800:0000, so use the command

```
 SRD800:0000,FFFF,"COPYRIGHT"
 |_____|-> Change this number to investigate different areas of
memory.
```

"COPYRIGHT","Copyright","copyright","(C)",and "(c)" will usually
cover all the bases. Notice that upper case/lower case IS
important. If SID finds some data in memory that matches one's
search parameters, it will display the address of that data
in the SEGMENT:OFFSET format. There may be more than one.
Record those addresses. Then display the data at each of those
locations using the D command. The company name should give one
some idea of the hardware occupying the area of memory. Below
is what the investigation of the above machine looks like:

```
[DR DOS] C:\>SID
-------------------------------------------------------
*** Symbolic Instruction Debugger ***  Release 3.2
     Copyright (c) 1983,1984,1985,1988,1990,1991
   Digital Research, Inc. All Rights Reserved
-------------------------------------------------------
                                         ( COMMENTS )
#SRD800:0,FFFF,"COPYRIGHT                 ( Nothing found )
#SRD800:0,FFFF,"copyright                 ( Nothing found )
#SRD800:0,FFFF,"Copyright
D800:0056                                 ( BINGO !! )
#DD800:0056                               ( Display that area )

D800:0056 43 67 68 74 20 28 43 29 20 31 39 Copyright (C) 19
D800:0066 38 42 54 72 61 6E 74 6F 72 20 53 89-90, Trantor S
D800:0076 79 73 2C 20 4C 74 64 2E 0D 0A 00 1A ystems, Ltd.....
D800:0086 00 07 73 01 CB 8D 36 34 00 E8 A6 04 ....9.s...64....
D800:0096 B8 C6 06 74 00 00 C6 06 75 00 00 C6 .@.....t....u...
#
```

The copyright is held by the company that made the card that
connects to the CDROM player in this particular machine, thus
the presence of the card is why this area of memory is excluded.

Document 1199

CREATION OF A BOOTABLE DR DOS FLOPPY DISK
LS/JJ
3/19/92

Description:
            PROCEDURE TO CREATE A DR DOS 6 BOOTABLE DISK

The disk created by this procedure will allow access to a
SuperStor'ed hard disk as well as a secure one.

1.   When booted from your hard disk, insert a blank floppy into
drive A: Then type the following:-
                         FORMAT A: /S

The floppy will be formatted and the operating systems files
transferred.

2.   When this is complete, you will need to copy some device
drivers on to the floppy too.

Copy the following files from hard disk to floppy:-

   SSTORDRV.SYS
   DEVSWAP.COM   These 2 files are in the root
directory.

```
   LOGIN.EXE
   LOGIN.TXT
   LOGIN.ERR                          These 3 files are in the DRDOS
directory.
```

3.   You will then need to create a CONFIG.SYS file on the
floppy. To use the DR DOS editor type in:-
                         EDITOR A:CONFIG.SYS

When asked if you want to create a new file, answer Y. Then type
the following lines:-

```
   DEVICE=SSTORDRV.SYS
   DEVICE=DEVSWAP.COM
   INSTALL=LOGIN.EXE
```

Then save the file by pressing CTRL K X.

You should now be able to boot from this floppy disk.

(NB. When prompted for a password, you must enter the MASTER
password.)

Document 1200
                                FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

Document 1200
SUPERSTOR - INSTALLATION & OPERATION
JD/RS
6/5/92

Description:

                            INSTALLATION

A full installation and usage of the SuperStor disk compression
utility consists of several user steps. First, the user should

prepare their drive in order to ensure a smooth compression
process. Second, the user will compress the drive using the
SSTOR.EXE compression utility. Finally, the user will observe
and maintain their compressed partitions using DR DOS utilities.

SuperStor requires that a Config.sys file be present in the root
directory on a bootable drive to run properly. If you do not
have a Config.sys file, you can create one using the DR DOS 6.0
EDITOR. Use the DR DOS "DEVICE=" statement to load the
SSTORDRV.SYS and DEVSWAP.COM drivers.

STEP #1: Preparation of Drive
The preperation of a prospective compressed drive is the most
vital step in order to ensure a smooth compression process and
smoothly operating compressed partition.

Backup
It is HIGHLY recommended that the user backup their hard disk
drive previous to running the SSTOR program. This is done for
two reasons. First, BACKUP is done to ensure that a user is
able to recover from any error which may occur with the disk
compression. Second, if the user wanted to return their
compressed drive to a non-compressed state, they would have to
remove their SuperStor partition, thus loosing all their data on
that partition. Note: There is no uncompress feature which
restores a currently compressed drive back to its previous
uncompressed state.

Remove Copy Protected Software
Generally copy protected software cannot reside on a SuperStor
drive. This is because copy protected software will generally
put its copy protection at a specific location on the drive. As
soon as SuperStor is used, the copy protection will be moved and
the application will not work. Copy protected software may be
reinstalled after a drive has been compressed with SuperStor.
Free Up Disk Space
SuperStor requires a minimum of 1.5 MB of drive space. Make
sure that you have at least 1.5 MB prior to running SSTOR.
Please see the Delwatch/Delpurge section for further information
regarding freeing up drive space.

Delwatch/Delpurge
Often the DR DOS 6.0 SETUP will install a delete tracking
utility called DELWATCH. DELWATCH then becomes active as a TSR
which loads from the Autoexec.bat. As files are deleted from
DOS they are marked by DELWATCH as Pending Deletes. These files
no longer show in a directory, but still exist on the disk until

they are purged with a second utility called DELPURGE. It is
recommended that all files which have been deleted, with
DELWATCH active, be DELPURGEd from the soon to be compressed
drive prior to compressing the drive with SuperStor. Please see
the DR DOS 6.0 User Guide for additional information about
DELWATCH and DELPURGE.

NOTE: The 12/6/91 DR DOS 6.0 Business Update will allow users to
use DELWATCH and DELPURGE on a SuperStor compressed partition.
The DR DOS 6.0 Business Update is currently being shipped to all
registered DR DOS 6.0 users.

CHKDSK
It is recommended that a user use CHKDSK on a drive prior to
using SuperStor. CHKDSK is helpful in order to verify the
current integrity of your hard disk. Any errors reported by
CHKDSK may be fixed using the CHKDSK /F command. Please see the
DR DOS 6.0 User Guide for additional information regarding the
CHKDSK and CHKDSK /F commands.

DISKOPT
DISKOPT is a DR DOS utility which helps to optimize the
performance of a hard disk drive. It is recommended to run
DISKOPT on a drive prior to using the SuperStor compress utility
on the drive. Please see the DR DOS 6.0 User Guide for
additional information about the DISKOPT utility.
Document 1200
Third Party Surface Analysis
As a third and final aid to ensure a smooth compression, a
surface analysis of your hard disk is recommended. There are
several third party surface scanning utilities on the market.
These utilities will further verify the integrity of your hard
disk's low level formatting.

Virus Programs and SuperStor
Many of todays viral detection software report viruses on the
basis of the changes the viral program detects within various
system structures. These viral programs may incorrectly report a
virus on a SuperStor drive if the program was installed prior to
the compression of the drive. This is due to the virus program
suddenly seeing vast changes to the drive structure after the
drive has been compressed. It is recommended that virus
protection software be removed prior to compression by SuperStor
and then reinstalled once compression is complete. This will
allow the virus program to accept the SuperStor structures as
normal DOS structures.

STEP #2: Compression of Partition
Once a user is confident that their drive is void of any
hardware or software level defects, they may continue to the
compression of a particular partition. This particular phase is
described in the DR DOS 6.0 User Guide. However, key areas of
interest are outlined in additional detail below.

Choosing Amount of Uncompressed Area (in k)
The SSTOR compression utility allows the user to define an
amount of space to be left uncompressed by SuperStor. Certain
applications such as a programming compiler may perform better
if on an uncompressed portion of a drive.

Note: that a Windows 3.0 permanent swap file cannot reside on a
compressed volume. Also, applications which create fixed length
data files should also be stored on an uncompressed volume.

The actual amount left uncompressed will depend on the data
compression ratio and the disk space available before the
compression was done (in other words, SuperStor will use as much
space as necessary to compress all of your files). Uncompressed
space should be entered in K. For instance, if a user wants to
set aside 4mb of a 20mb drive as uncompressed, the number
entered would be 4000.

Verify, Compress, and Defragment
Verify, Compress, and Defragment are the three phases of actual
disk compression which are performed by SuperStor. Verify
further analyzes the chosen SuperStor drive for its integrity.
Compress, the longest of the three phases, actually does the
compression of the files on the drive. Defragment reorders the
compressed files so that they are in a contiguous order.

Operation

STEP #3: Understanding and Maintenance of a SuperStor Drive
The results of compression on a drive can be difficult to
understand. There are two particular scenarios which can occur.
That is, one can compress their primary Boot Partition or a
Secondary Non-Boot Partition.

Installation to a Boot Partition (scenario #1)
On default, a 512k uncompressed boot partition will be created
when SuperStor is utilized on the Entire Boot Partition of a
hard disk. As the user you have the option to increase the size
of this partition as explained above in "Choosing Amount of
Uncompressed Area (in k)." This uncompressed boot partition is

needed to accommodate system files which must remain in an
uncompressed state in order to boot the system. During the
booting process the SuperStor driver will load from this
uncompressed boot partition and mount all of the compressed
partitions found. Then, the uncompressed boot partition will
swap drive letters with the original boot partition where the
remaining of the DR DOS operating files exist.

The following is a list of files which MUST be in the root
directory on the uncompressed boot drive in order for SuperStor
to operate properly.

IBMBIO.COM - Hidden system file used in booting process

IBMDOS.COM - Hidden system file used in booting process

COMMAND.COM - DR DOS Command Processor

DCONFIG.SYS - Your computer's boot configuration file

DEVSWAP.COM - Device swap allows for the swapping of drive
letters.

SSTORDRV.SYS - SuperStor driver which mounts all presently
compressed drives.

SSPARTSS.* - This is the SuperStor compressed drive. It is
marked read-only, system, and hidden so it is not harmed. ANY
MANIPULATION OF THIS FILE COULD LEAD TO THE LOSS OF ALL DATA ON
THE COMPRESSED PARTITION.

Additional files may be needed in the root directory such as a
device driver for an additional I/O device or for a Memory
Manager. The DR DOS memory manager should also exist in the
DRDOS subdirectory on this uncompressed boot partition.
Document 1200
DCONFIG.SYS
The DCONFIG.SYS file is the acting boot configuration file which
will be created on the uncompressed boot drive after SuperStor
has been used on the boot partition of a hard disk. The basic
contents of this file, in the proper order, are as follows:

MEMORY MANAGER - A DR DOS or 3rd party memory manager which
creates Upper Memory Blocks (UMBs) should begin the DCONFIG.SYS
file. This will allow SUPERSTOR.DRV to put a portion of itself
into the available Upper Memory Blocks created. For further

information about SuperStor and memory management see DR DOS Tip
#1202.

ADDITIONAL I/O DEVICE DRIVER - If a driver is needed on your
system to access a certain drive, (disk partitioning utility) it
should be placed here (before SSTORDRV.SYS). Drivers such as
Disk Manager's DMDRVR.BIN or a CD ROM driver should be loaded
prior to SuperStor so that their existence is properly
recognized by the SuperStor driver.

SSTORDRV.SYS - The SuperStor device driver

DEVSWAP.COM - Device Swap device driver.

ADDITIONAL I/O DEVICE DRIVER - It is possible that an additional
I/O device driver will be loaded after loading the SuperStor
drivers.

CHAIN STATEMENT - Chains or jumps to execute the CONFIG.SYS
which exists on the now compressed old boot partition.

EXAMPLE (Compression of a Bootable Drive):
Prior to using the SuperStor compression utility a user has one
C: drive partition. The user decides to compress this entire
boot partition. Once the SSTOR compression utility has done its
job the user reboots and watches the booting messages display.

The machine now boots and activates the DCONFIG.SYS which exists
on what now is the 512k uncompressed C: boot partition. The
first SuperStor message to display is:

SuperStor fixed disk drive C: mounted as drive D:

The above message is displayed by the SSTORDRV.SYS device driver
as it mounts the newly compressed C: drive as D:.

Drives C: and D: swapped

The above message is displayed by the DEVSWAP.COM device driver
as it swaps drive letters so that the newly compressed C: drive
shows once again as C:.

REMEMBER, the drive letter used for the uncompressed boot
partition will vary depending on the next available drive
letter.

Installation to a Non-Bootable Drive (scenerio #2)
Installation of SuperStor to a Non-Bootable Drive is a much
simpler process than to that of the boot partition. As with the
Bootable Partition, the full Non-Bootable Drive may be
compressed entirely or uncompressed space may be set aside as
another drive letter (see "Choosing Amount of Uncompressed Area
(in k)" above).

The following is a list of the files seen on a Non-Bootable
Drive having booted without the SuperStor driver installed.

SSPARTSS.* - This is the SuperStor compressed drive. It is
marked read-only, system, and hidden so it is not harmed. ANY
MANIPULATION OF THIS FILE COULD LEAD TO THE LOSS OF ALL DATA ON
THE COMPRESSED PARTITION.

EXAMPLE (compression of a Non-Bootable Drive):
Prior to using the SuperStor compression utility a user has one
C: partition and a D: partition. The user decides to compress
the entire D: partition. Once the SSTOR compression utility has
done its job the user reboots and watches the booting messages
display.

The machine now boots and activates the CONFIG.SYS which exists
on the C: drive. The first SuperStor message to display is:

SuperStor fixed disk drive D: attached

The above message is displayed by the SSTORDRV.SYS device driver
as it mounts the newly compressed D:.

Note: DEVSWAP.COM is not needed as a device driver if Non-
Bootable Drives are the only to be compressed.

Common Questions

Q: Can SuperStor be used on a network server to compress the
drive?

A: No, SuperStor is not designed to be used on a network server.

Q: If a previous version of DOS had a partition which was
created using SuperStor, can it be used under DR DOS 6.0?

A: Possibly. The AddStor retail version 1.3 partitions will be recognized using DR DOS 6.0's SuperStor drivers.

Q: Can the version of SuperStor which comes with DR DOS 6.0 work with another version of DOS?

A: ABSOLUTLEY NOT! DR DOS 6.0's version of SuperStor was designed specifically for DR DOS 6.0 and may cause severe disk corruption if used with any other DOS version.

Q: What is the largest SuperStor compressed partition I can create with SuperStor?

A: You can compress physical partitions of up to 256 Mbytes to create a 512 Mbyte SuperStor partition. If you have a larger than 256 Mbyte partitions you will have to back up your hard disk and use FDISK to create a smaller partition size before using SuperStor to compress the partition.

Q: Can I use a third party disk optimizer on my SuperStor partition?

A: It is not recommended to use a third party disk optimizer on a SuperStor partition as data may be lost or corrupted. This is because third party optimizers might not properly recognize the structure of the SuperStor partition and will therefore cause worse fragmentation than that which existed prior to the optimization process. Therefore, we recommend that you use the DR DOS 6.0 DISKOPT utility, which will properly handle the SuperStor partition.

Q: How large is the cluster size for the SuperStor partition?

A: The cluster size is 512 bytes. Therefore, 512 bytes is the smallest size compressed file possible.

Q: What if there are 30Mb of compressed (zip'd or Arc'd) files on a 30Mb drive that has been SuperStor'd?

A: There will be very little drive space left for other files.
This is a very inefficient use of a SuperStor'd drive. The best
files to compress will be data, document, or ASCII files. The
files which compress the least will be .COM or .EXE files as
well as files which have already been compressed (eg. arc'd or
zip'd files). The compression ratios will show using the XDIR
command or the statistics option in the SSTOR.EXE utility.

Q: How does SuperStor Work?

A: It works transparent to the person using it. Once the driver
has been installed and the SuperStor utility has created the
partition, it is completely unnoticeable to the user. It
provides the compression and decompression activity to the files
as they are read or written to the partition. Also, a user who
has compressed a drive using SuperStor shouldn't notice any
reduction in speed with respect to file execution on average
systems.

Q: Does it effect data going to tape of floppy drives?

A: No. It will require that you have as much backup space as is
shown in the SuperStor partition. For example, if the SuperStor
partition reports 45Mb used out of 60Mb, you will need 45Mb of
floppy or tape storage to backup the drive. In this sense, it
is compatible with your existing backup software.

Q: Can I try SuperStor on a diskette before trying it on my hard
drive?
A: No. The DR DOS 6.0 version of SuperStor will only work on
media which is considered fixed.

Sources: DR DOS 6.0 Optimization and Configuration Tips Guide
            DR DOS 6.0 User Guide

Document 1201

Document 1201
SUPERSTOR - UTILITIES/TROUBLESHOOTING
JD/RS
2/6/92

                        UTILITIES

*Maintenance
Third Party - Most disk utilities, other than those shipped with DR DOS 6.0, will not be able to properly define the internal structure of a SuperStor drive. This is why it is recommended that utilities which access internal drive information SHOULD NOT be used on a SuperStor drive.

DISKOPT - DISKOPT is a DR DOS 6.0 disk optimization utility which is recommended for optimization of a SuperStor drive. DISKOPT is able to properly analyze the internal allocation tables of a SuperStor drive by letting the SuperStor driver act as an interpreter to the drive.

CHKDSK - CHKDSK is another DOS command which allows the analysis of a drive. CHKDSK may be used to check the SuperStor drive integrity and fix lost clusters which occurr on a SuperStor drive or any on any other drive. However, as noted below, CHKDSK may not always accurately report available space on a SuperStor drive.

*Reported Statistics
Often the statistics reported by various DR DOS utilities and third party utilities will vary with respect to space available on a SuperStor drive. This is due to the utilities' individual understanding of SuperStor and its internal tables.

CHKDSK/Third Party Utilities - CHKDSK WILL NOT normally portray the proper amount of available space on a SuperStor drive. This is because CHKDSK bases all of its information on a perfectly formatted hard drive. That is to say, CHKDSK will always assume the optimum result. In SuperStor's case, CHKDSK will assume that a perfect 2:1 compression ratio is always maintained. However,

as SuperStor is used, its compression ratio will vary due to the differing compression ratios of the individual files put on the drive. Some files will have better than 2:1 compression ratios and some will have less than 2:1. Therefore, actual statistics will vary from CHKDSK and third party utilities as they are using this perfect 2:1 compression ratio to calculate free space.

DIR/XDIR/SuperStor Statistics - DIR, XDIR, and the SuperStor Statistics option may be used to properly determine the current SuperStor free space. All three of these options have adjustments built into them to account for the different compression ratios of each individual file kept on the SuperStor drive. In fact these three commands are kept aware of the internal allocation tables which SuperStor keeps.

*Reserved Units
While performing a CHKDSK on a SuperStor partition, a user may notice the reporting of: XXXX Bytes in SuperStor Reserved Units. Also, the user may notice a great reduction in the amount of disk space free on their SuperStor partition.

SuperStor reserved units are entries in the SSTOR allocation table that are marked as unusable due to the storage of uncompressable data on the SuperStor partition. Note: Table entries refer to SuperStor's own internal allocation table; uncompressable data is defined as that which cannot be compressed further by using SuperStor (Arc'd, Zip, Gif files, Exepacked files, etc.) The following is an explanation of how reserved units are applied:

	Actual Drive	SuperStored (compressed) Drive
	50 MB	100 MB (2:1 compression ratio)
20% of drive (uncompressed)	10 MB Zipped File	10 MB
	----------------	-----------------------------
Space (reported)	40 MB Free Space	90 MB Free

SuperStor   10 MB
Reserved Units

Document 1201

----
                                                  80 MB

80 MB Free
Space (actual)

Above: a 50 MB hard disk has been compressed with SuperStor to
create a 100 MB SuperStor partition. On this partition exists a
uncompressable zip file 10 MB in size. Prior to using SuperStor
the zipped file would have taken up approximatly 20% of the 50
MB drive. (i.e. 10MB zipped file / 50 MB of total space = .20 or
20%.) The same applies after a SuperStor volume is created on
the drive. However, in order to maintain the 20% occupancy of
the zipped file, 10 MB of Reserved Units are needed. i.e. 10MB
zipped file + 10 MB Reserved Units = 20 MB compressed. 20 MB
compressed / 100 total space (after SuperStor) = .20 or 20%.

Since the 10 MB zipped file cannot be compressed it is stored on
the SuperStor drive uncompressed. It is actually using 10
physical MB of disk space (as if SuperStor had never been used).
Since the zipped file was not compressed, it has essentially a
1:1 compression ratio (Remember, SSTOR cannot further compress a
file which already is compressed). Using a CHKDSK /F may clear
the Reserved Units message shown previously by CHKDSK, but will
not free up the disk space. In fact, the message will usually
reappear after a few reads or writes have been made to the
SuperStor partition.

Reserved Units will generally appear when your drive is 90% full
or greater. If Reserved Units have appeared due to the storage
of uncompressable data on a SuperStor drive, move the
uncompressable data to a uncompressed drive. Then, free the
SuperStor Reserved Units by performing a CHKDSK /F on the
SuperStor drive.

*Backing Up a SuperStor Drive
Direct Memory Access- Todays backup software offer a vast array
of backup and restore options. Many of these backup options
allow Direct Memory Access (DMA) backups which are sometimes
called direct acess or fast backups. These types of backups do
not use conventional DOS routines. This method does not allow

the SuperStor driver (SSTORDRV.SYS) to act as a translator
during the backup process. Use of a DMA backup option on a
SuperStor compressed partition can result in a error message
from the backup program such as "Drive not ready".

Image Backup (or Mirror Backup)- Image backup options allow a
user to take an entire physical backup of a drive from begining
to ending cylinder of a drive. Think of it a as a photograph
that duplicates the entire contents of a disk including all
system, hidden and read-only files along with FATs and
directories. These backups are not recommended for a SuperStor
drive as the prospective restore drive may not properly accept
the backup. The restore drive MUST have the exact same
parameters as the the backup drive (drive size, total sectors,
sectors per track, etc.).

File-by-File Backup- File-by-file backups are the most reliable
backup method for use on a SuperStor compressed partition. This
backup option will allow intervention of the SuperStor driver so
that files on the backup are uncompressed and can be restored to
either a compressed or a non-compressed drive.

                    HELPFUL TROUBLESHOOTING TIPS

*If SuperStor will not compress a Non-bootable partition.

If SuperStor detects any files marked with the S for System
attribute, SuperStor will not install. Use XDIR on the
prospective drive to locate files with the System attribute
active. Then, remove these files, or their System attribute so
that SuperStor will execute.

*SuperStor has been used on a boot drive which was partitioned
with a 3rd party disk partitioning scheme. Now, the drive
letters are out of sequence.

This is because the partitioning driver (Diskmanager, Speedstor)
is loading after the SuperStor (disk compression) drivers have
loaded. Place the partitioning driver before the SuperStor
drivers in the correct configuration file. Please see Tip #1200
for additional information regarding third party driver
placement with respect to a SuperStor drive.

*A third party disk partitioning scheme had been used on a drive
in which SuperStor has now been used to compress data. All
precautions to move the partitioning driver to its correct

positioning have been taken. However, several additional
"phantom" drive letter now appear which did not appear prior to
SuperStor.

Check to see if the disk partitioning scheme has a driver
loading in another configuration file as well. Make sure that
this driver is only loading once in the appropriate location.
Please see Tip #1200 for further information regarding third
party driver placement with respect to a SuperStor drive.

*Available space on the SuperStor drive is quickly reduced

First, scan the current compression ratios of the various files
on the SuperStor drive. Using the XDIR command will allow the
user to determine the compression ratios of each individual
file. Once you have determined which files have poor
compression ratios (1.3:1 or less), you may wish to move them to
an uncompressed portion of the drive to improve the performance
of SuperStor.

Second, perform a CHKDSK on the SuperStor drive and see if there
are any bytes used by SuperStor Reserved Units. If so, check
for and remove any files which may be uncompressable (those
which have a approximately a 1:1 compression ratio). The
SuperStor Reserved Units may be freed up by performing a
CHKDSK /F. However, the Reserved Units message in CHKDSK may
reappear if uncompressable data remains on the SuperStor drive.

Sources: DR DOS 6.0 Optimization and Configuration Tips Guide
DR DOS 6.0 User Guide

Document 1202

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

HILOADING SUPERSTOR

Description:

The device driver which loads SuperStor, SSTORDRV.SYS, is
designed to load portions of its code into upper memory when
that memory has been made available via an XMS (eXtended Memory
Specification) compatible UMB (Upper Memory Block) provider,
like EMM386.SYS.

When using EMM386.SYS, loading SSTORDRV.SYS is made simple, that
is, DEVICE=C:\SSTORDRV.SYS or HIDEVICE=C:\SSTORDRV.SYS will load
the driver properly. This is because SSTORDRV.SYS has been
altered to load the same with either command. It knows when
HIDEVICE is used, but loads like it does with DEVICE anyway.

Because a portion of SSTORDRV.SYS must remain in conventional
memory there will be approximately 22K less conventional memory.
If the driver cannot be loaded into upper memory users will see
about a 48K loss of conventional memory.

When using Third Party XMS UMB providers with SSTORDR.SYS
however, loading SSTORDRV.SYS may not be so straight forward.
We have seen that users have had problems with 386MAX's
386MAX.SYS driver and QEMM's QEMM386.SYS driver. The problem
seems to arise when users (or the Memory Manager's "optimize"
program) tries to load ALL of SSTORDRV.SYS into upper memory
with their own "HIDEVICE" equivalent. The SuperStor driver is
unable to tell when it has been loaded with "HIDEVICE"
equivalent commands. Users of QEMM and 386MAX (and other Third
Party XMS UMB providers) should only load SSTORDRV.SYS with the
DEVICE=C:\SSTORDRV.SYS syntax.

Example:
Loading SSTORDRV.SYS with the following commands may cause
problems:

     DEVICE=C:\QEMM\LOADHI.SYS C:\SSTORDRV.SYS
     DEVICE=C:\386MAX\386LOAD.SYS PROG=C:\SSTORDRV.SYS

Use :
     DEVICE=C:\SSTORDRV.SYS instead.

Document 1203

(Note: The origin of this information may be internal or

external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

DELWATCH TIPS
RR

Description:

If Delwatch has been enabled and an end-user then compresses his
disk he will receive an error message from Delwatch indicating
that compressed drives cannot be Delwatched. Because of the
dynamic nature of the compressed drive any memory resident
delete tracking utility will have trouble with SuperStor.
However, utilities such as Diskmap will work on the compressed
drive. This type of utility makes a copy of the FAT to use for
recovery.

Superstor will compress pending delete files so be sure and
perform a Delpurge of the pending delete files to remove them
from the disk before compressing the drive.

It is highly recommended that Delwatch be turned off and the
pending delete files be purged prior to compressing the drive.

                  ****

Description:

Delwatch is also reported to cause problems with Norton's
Speedisk and Disk Doctor. This may also be true of other
utilites such as PCTools' Diskfix. The applications in question
think of the pending delete files as lost clusters or invalid
directories. The problem is due to the fact that when a file is
deleted with Delwatch the cluster chain in the FAT is left
intact and the filename in the directory has the first character
replaced with an ascii 05dec. Programs can think of this
character as an indication of a corrupted directory entry.

                  ****

Description:

Because of the way Delwatch keeps pending files some programs
may think that they have run out of disk space as they check the
disk with a direct call on free space. If this happens just have
the end-user perform a delpurge to clear the necessary space for
the application and reinstall.

Document 1205

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

Slow Disk Transfers

Description:

Some customers may experience very slow data transfer rates when
their applications are doing direct disk input. The slow
transfer rate is a result of how DR DOS handles device drivers
or applications which use upper memory blocks while writing data
to the disk drive

Under DR DOS, disk access going through UMBs is transferred to
conventional memory before it is written. It is then written one
sector at a time. This reduces 1:1 interleave down to 17:1 which
results in disk writes being 3 to 8 times slower than disk
writes going directly through conventional memory. It is only a
problem with writes to the disk, not reads.

What would cause this slow transfer rate under DR DOS?

1) A disk I/O driver loaded into upper memory, such as the
Stacker disk compressor or Disk Manager. The workaround is to
load the driver in conventional memory.

Note: The DR DOS SuperStor driver averts this problem by leaving
the DMA TRANSFER part of its code in conventional memory.

2) An application that makes disk transfers through UMBs, such
as Lotus 3, Paradox 3, Autocad 386, Autocad 11.

Digital Research designed DR DOS to make disk writes through
conventional memory in order to protect customers with Bus
Master controllers (newer PS/2 models) or some older hardware.
Without this protection, data on their drives could be severly
corrupted. Digital Research is currently investigating this
problem. Please keep in contact with technical support for more
information.

****

Slow disk access on older systems

Some customers with old systems, BIOS etc. report slow disk
access time. This is not at initial log to the drive, but
rather during file reads from within specific applications.
This is not resolved by eliminating memory manager, or booting
without TSR's, etc. SUPERPCK cannot be run due to memory
limitations. Customers have reported that the problem is
resolved by using DRIVER.SYS in CONFIG.SYS. After DRIVER.SYS is
loaded, refer to the drive with the new drive spec assigned; for
example, A: drive might be accessed with D:. You may use the
command ASSIGN A=D, for example, in order to continue to access
the drive as A: for consistency with existing applications.

Note that DRIVEPARM does achieve the same results, because the
BIOS is still used for drive access.

****

There is an apparent delay when first accessing a floppy drive,
during which DR DOS actually reads data from the disk. This
initial read will make subsequent commands from a floppy run
faster since the directory and FAT tables have already been
accessed.

Document 1206

SUPER PC-KWIK

DESCRIPTION:

Using Super PC-Kwik and Windows 3.0

Disk caching with Super PC-Kwik is recommended for improved
performance with Windows. Important notes on using PC-Kwik with
Windows are in Chapter 13 of the DR DOS 6.0 User Guide.

Although PC-Kwik attempts by default to use all available
extended memory, it lends back up to half of that to
applications as requested.

Windows is unique in that it allocates all extended memory as it
is loaded. Other applications use varying amounts of extended
memory as they need it.

Because Windows needs 2 Mbytes or more of extended memory to run
efficiently in enhanced mode, you must force PC-Kwik to lend at
least 2 Mbytes of extended memory back to Windows on systems
with insufficient extended memory for both the cache and Windows
(i.e., those with less than 4 Mbytes of extended memory).

For example, on a system with a total of 4 Mbytes of memory (3
Mbytes extended), Super PC-Kwik would lend only 1536 Kbytes by
default (3072 / 2 = 1536). Because Windows prefers 2048 Kbytes

or more, increase the default by using the following command:

SUPERPCK /L:2048

If total system memory is 5 Mbytes, or more, the Super PC-Kwik
default lending of one-half of extended memory is sufficient to
have an effective cache and run Windows in enhanced mode. If you
run several applications through Windows and run out of memory,
you can increase the lending amount with the PC-Kwik /L:xxxx
switch.

If total system memory is large, for example 8 Mbytes or more,
and you use Windows extensively, turn off lending completely and
set the allocated amount for the cache buffer. For example, on a
system with a 10 Mbyte total (9 Mbyte extended) use the
following PC-Kwik switch: SUPERPCK /L- /S:3072. This keeps the
cache buffer high, while giving Windows 6,144 Kbytes of extended
memory for its own use. Once again, enable lending if Windows is
running out of memory.

Using Super PC-Kwik

Size of Cache

Super PC-Kwik moves as much of its code into upper memory as
possible; you do not need to use HILOAD or HIINSTALL on Super
PC-Kwik. Super PC-Kwik will use the least amount of memory for
its executable code if it is configured to cache in expanded
(EMS) memory. The Super PC-Kwik code "footprint" is typically
about 17 Kbytes in upper memory.

When Super PC-Kwik is configured to cache extended memory, the
code footprint in the first 1 Mbyte of memory varies in size
according to the amount of extended memory that is cached.

The Super PC-Kwik footprint in upper memory can be controlled by
limiting the amount of extended memory allocated to the cache.
If your system has more than 8 Mbytes of RAM, you might want to
use the Super PCKwik /S:xxxx switch to limit the cache buffer
size.

The Super PC-Kwik maximum cache buffer size is 16 Mbytes.

For information about running Super PC-Kwik with Windows, see "Running EMM386.SYS with Windows" on page 22 and Chapter 13 of the DR DOS 6.0 User Guide.

Using Super PC-Kwik with Networks

You can load Super PC-Kwik on a DOS-based network server (e.g., Lantastic 4.0). However, advanced cache reads and writes should be disabled (use the Super PC-Kwik /H- and /D- switches.)

If you are using Novell NetWare, load Novell drivers before loading Super PC-Kwik to permit unloading the cache. You can load the Novell drivers after, but you must then leave Super PC-Kwik in memory.

Super PC-Kwik will not cache remote network drives (i.e, across the network). However, local drives can be cached.

When used on a network, the DR DOS 6.0 operating system must reload COMMAND.COM after Super PC-Kwik loads. You must use the DR DOS SHELL and SET COMSPEC commands to point to the location of COMMAND.COM. See Chapter 11 of the DR DOS 6.0 User Guide for a discussion of how to use the SHELL command, and Chapter 10 on how to use the SET command.

Do not use the DR DOS VERIFY=ON command when using a network as it will negate any gain from caching.

Also, when using Super PC-Kwik, the BUFFERS=4 command in the config.sys file is adequate, and the FASTOPEN command is generally not needed.

Generally, Super PC-Kwik should be loaded early in autoexec.bat. TSRs loaded after Super PC-Kwik must be unloaded from memory before Super PC-Kwik can be unloaded with the /U parameter.

If you use Lotus 1-2-3 v3.1, note that it uses the Rational
Systems DOS Extender. Use the DR DOS SET DOS16M=:384 command in
the autoexec.bat file and use the Super PC-Kwik /R:400 switch.

Troubleshooting Super PC-Kwik

If, after eliminating the factors listed above, Super PC-Kwik
still malfunctions, check the parameters used when loading Super
PC-Kwik. Begin with the simplest settings, such as /H-, /T-, and
/D-.

If you suspect an upper memory conflict, use the Super PC-
Kwik /&U- switch to prevent parts of Super PC-Kwik from moving
into upper memory.

If you are having problems reading a drive, try the Super PC-
Kwik /I+, /X /I+, or /T- switches. Also, see "Upper Memory
Conflicts" on page 17.

Floppy Drive Does Not Work

If you have installed Super PC-Kwik and have enabled the /D+
switch, your disk controller must be 100% IBM compatible. Reset
the /D+ switch to /D- (the /D# switch works on some controllers)
to turn off PC-Kwik's advanced caching for the floppy drives
(advanced caching for your hard drive remains in effect).

Document 1208

FDISK CLUSTER SIZE

Description:

The cluster size that FDISK will select depends on the size of
the partition being created. The cluster size for a particular
partition size is shown in the following table:

Partition Size	Bytes/Sector	Sectors/Cluster	Cluster Size
0 - 127.9MB	512	4	2K
128 - 255.9MB	512	8	4K
256 - 511.9MB	512	16	8K
512MB - 2GB	512	32	16K

The cluster size is adjusted for different partitions because of
the use of a 16 bit File Allocation Table (FAT). DR/PC/MS DOS
use a 16 bit FAT and can therefore keep track of 65,536
clusters. If each of these clusters is 2k, 2k x 65,536 is about
127.9MB. If a larger partition is desired, the cluster size has
to be increased since the number of clusters is limited. Thus
the cluster size goes to 4k. 4k x 65,536 is about 255.9MB. At
that point, the cluster size has to be adjusted again.

If a third party utility is used to create a partition using
different cluster sizes, the bytes per sector setting must be a
power of 2 (..,64,128,256,512,1024,..).

The above information is based upon using the FDISk utility
included in the February Business Update of DR DOS 5 or in
releases manufactured after that time. This includes DR DOS 6
and DR MULTI-USER DOS.

The following is for releases of DR DOS prior to 2/1/91

Partition Size	Bytes/Sector	Sectors/Cluster	Cluster Size

0 - 63.9MB	512	4	2K
64 - 127.9MB	512	8	4K
128 - 512MB	512	16	8K

Document 1209

Document 1209
ViewMAX
1/6/92
RR

Description:

        Installing ViewMAX through DR DOS Setup

DR DOS Setup has a section that allows end users to choose basic
configuration options for ViewMAX. Available options include the
ability to select screen type, mouse type and port, and color
palette.

Video
The DR DOS default for screen driver is VGA. If a user is not
sure what screen type to select choose the default. If a blank
screen appears when running ViewMAX the wrong screen driver has
probably been selected. Try Ctrl-Q to restore the DOS prompt.
Ctrl-Q is the keyboard shortcut for quitting ViewMAX. Check the
video card manual for the type of video card installed. DR DOS
comes with drivers for the most common types of video cards.

Setup also allows a choice of color palette. There are 8
different color palettes available, although more can be created
by editing the VIEWMAX.INI file. Two of the palettes (Monochrome
and LCD/Plasma) can be used on the special displays that come
with some laptops. These same two palettes are also usable on

color systems.

IMPORTANT for monochrome video displays
If a monochrome display is installed it is recommended that the
user choose the monochrome palette. Choosing a full color
palette could result in some sections of the ViewMAX screen
having the same foreground and background color.

IMPORTANT for CGA video displays
Because of the limited amount of video memory in a CGA video
card, ViewMAX can only display in black and white (2 color mode)
on CGA displays. Any of the color palettes can be selected when
installing ViewMAX for CGA but the screen may not be acceptable
when translated into black and white (this is the same problem
that was mentioned above for monochrome displays). It is
recommended that CGA users select the monochrome palette when
setting up ViewMAX.

IMPORTANT for EGA video displays
Early EGA displays did not come with enough memory to display
640x350 in 16 colors. If one of these cards is installed select
the CGA driver. If an end user is not sure what type of EGA card
is being used try the EGA driver. If it is one of the older
cards vertical stripes that may have blinking characters in them
will appear or the screen may fill with random characters as the
mouse is moved.

If the video adapter is not an EGA card and the screen gets
characters as mentioned above or simply gets a blank screen with
a cursor blinking in the upper left corner then the video card
is not 100% compatible with the video driver selected. Check
hardware manuals for compatibility.

At this time Digital Research does not offer any screen drivers
other than the ones found on the DR DOS 6 ViewMAX disk. If the
video card is not compatible with the drivers included please
submit an SPR form detailing the manufacturer, type and model of
the video card.

Mouse
The ViewMAX setup offers 5 different choices for mouse. The
first option is for keyboard only support. The second option is
for Bus mouse or a pointing device that requires its own driver.
This option is the default. As long as the device has a driver
that can emulate a mouse then it can be used with ViewMAX. This
includes devices such as trackballs and graphics tablets. The
PS/2 mouse option is for any computer that uses a PS/2 type

mouse. The other options are drivers for the specific devices
listed.

IMPORTANT for mice that use drivers
If a mouse driver is loaded in CONFIG.SYS, AUTOEXEC.BAT or
command line prior to running ViewMAX then the Bus Mouse option
(default) should be used.
Document 1209
This option is also recommended if there is trouble configuring
a mouse to work with ViewMAX. Set ViewMAX for bus mouse and load
the driver. If the problem continues make sure the mouse is
installed correctly. Most pointing devices come with their own
diagnostic software to help trouble shoot problems. When ViewMAX
is set for Bus it does not matter if the mouse is a true bus
mouse or is attached to a COM port. ViewMAX does not try to
control the mouse directly but instead communicates with the
mouse driver.

The Microsoft and Logitech options in Setup are drivers. If a
driver is already loaded and either of these options is chosen
the mouse may behave erratically or not move at all. Either
unload the mouse driver or change the ViewMAX setup to bus
mouse.

If you find yourself in ViewMAX with your mouse not working you
can exit ViewMAX with a CTRL-Q (holding the Control key and
striking Q). If you wish to continue using ViewMAX a CTRL-RIGHT
SHIFT will toggle the cursor to keyboard control. This is not
the same as choosing keyboard control from Setup. When cursor
control has shifted to keyboard the HOME key takes the place of
the mouse button, not the ENTER or SPACEBAR key. To drag a
selection box use the END key. Double clicking is accomplished
by striking the HOME key twice quickly.

IMPORTANT for all mouse users
If you have trouble executing applications from ViewMAX (double
clicking) you may wish to adjust the double click speed in the
Options/Preferences menu in ViewMAX. The default setting is 3
(medium) but it may be easier for some users to select 1 (slow).
If you change this setting be sure to Save Preferences so that
this speed setting is preserved.

Automatic startup
The final question in Setup is whether to load ViewMAX at boot
time. If the answer is yes then the ViewMAX command will be
added to your AUTOEXEC.BAT.

Users can enter Setup at any time and change the ViewMAX
configuration without affecting any other installation settings.
Changing the configuration through Setup will not affect any
User Preferences set previously nor will it affect configured
applications.

   Configuration Tips and Common Questions about ViewMAX

ViewMAX requires 512K of RAM to run. ViewMAX memory requirements
can be reduced by disabling the clock and calculator accessory.
To do this rename VIEWMAX.ACC (for example to VIEWMAX.ACX).
ViewMAX will then not attempt to load the accessory. This will
save approximately 20K. Refer to the RENAME command description
in the DR DOS 6.0 User Guide.

ViewMAX will use approximately 20K of the available DOS memory
to execute an application. This is due to overhead required to
shell.

ViewMAX will not reduce DOS memory when executing an application
if TaskMAX is running and ViewMAX controls TaskMAX. Each
application that is executed from ViewMAX will be spawned as a
new task.

If ViewMAX is used to control TaskMAX it is recommended that the
Bus mouse option be used. This will allow the user to have mouse
control in other applications. It is important to remember that
any device loaded before TaskMAX is universal to all tasks. Any
driver or TSR loaded after TaskMAX is available only in the task
in which it was loaded.

The Format command in the ViewMAX File Menu does not pass
parameters. This means that if a computer has a high-density
drive then no low-density disks can be formatted using this menu
command. The workaround for this is to execute the FORMAT
utility in the DR DOS directory. ViewMAX will then ask for any
parameters that need to be entered.

Changing the date and time on the ViewMAX clock will update
system date and time in the CMOS. This is a convenient way to
update the clock without having to enter CMOS Setup.

Users who have complex sub-directory structures (such as network
drives) may wish to turn off the Tree. This is due to the fact
that ViewMAX reads the entire directory file structure when it
starts or returns from an application. Not displaying the Tree
will cause ViewMAX to read only the current directory, not the

entire drive structure.

Under some configurations ViewMAX may want a user to insert a
floppy disk every time that ViewMAX loads. The user has Saved
Preferences with a window open on a floppy drive. To stop this
from happening simply Save Preferences when no window is open on
a floppy drive.
Document 1209
        Advanced User Configuration of VIEWMAX.INI

This section is primarily intended for advanced users who feel
comfortable with changing configurations and would like a better
understanding of how ViewMAX works. Novices will find the first
section of this note on DR DOS setup useful in understanding
what choices are available and how to do some basic trouble
shooting but we do not recommend that they try to directly edit
the VIEWMAX.INI file.

ViewMAX configuration
The file VIEWMAX.INI is an ASCII file that contains the
configuration information that ViewMAX uses on initialization.
The file includes parameters for screen colors, mouse type and
port, screen driver to be used, and programs that have been
configured. Also stored in this file are the User Preferences,
starting directories for each window, window size, and other
defaults.

If a user makes a mistake and ViewMAX indicates that the
VIEWMAX.INI file is missing or unusable just copy the file from
the ViewMAX disk or better yet make sure there is a backup copy
before making any changes. The DR DOS Editor will automatically
make a backup with the extension .BAK when a file is changed and
saved.

Editing the VIEWMAX.INI file
The DR DOS EDITOR program or any other ASCII editor can be used
to edit the VIEWMAX.INI file. Keywords in the file are case
sensitive. For example, if a colorset is added it must be
spelled "ColorSet". The C and S must be upper case and all other
letters lower case or ViewMAX will not recognize the line.

Anything after a pound sign "#" is regarded as a comment and is
ignored by ViewMAX. Comments will not affect Setup's ability to
read the file but beware: Changing the VIEWMAX.INI file with
Setup will remove all comments.

Brackets "[ ]" indicate different paragraphs within the

configuration file. It is not recommended that the order of
these be changed.

VIEWMAX.INI fields
[PREFS] A series of switches from the OPTIONS/PREFERENCES menu
where 0=off and 1=on. It is not really necessary to manually
edit these functions as ViewMAX has the ability to adjust these
values easily.

[WINDOW] This section controls the size of the two ViewMAX
windows. While this may give the impression that users can
configure ViewMAX windows to any size they want on the screen,
there are only 3 windows sizes that can be used. It is
recommended that users not adjust these except via the ViewMAX
program. Also stored here are the sort order, view, path, tree
and wildcards. These are also easily configurable from within
ViewMAX.

[PROGRAMS] This is for configured applications. The paragraph
contains information about the selected icon, the name of the
application, whether or not it takes parameters and what the
associated document extensions are. Do not change or modify the
first 6 entries that contain wildcards (*.exe,*.*, etc.).
ViewMAX sets aside a 1K buffer for the storage of the
information in this section. That amounts to approximately 35
configured applications. If you need to enter more applications
you can remove the GEM and DR DOS applications that are
preconfigured in this section.

Example:

a b c   d   e
| | | | |

(G:12,44) DRAW.APP *.GEM

syntax: (a:b,c) d [e]

a   D = folder

      G = GEM application

      m = DOS, no params, needs full memory

      M = DOS, no params

      p = DOS, params, needs full memory

P = DOS, params

b,c   internal id numbers for app and document icons; -1 means no
        icon

d   application name; ~ means not applicable

e   document type(s); ~ means none
[COLORS] This section is the one that will probably attract the
attention of most users. This is where information on colorsets
are stored for the various windows and dialog boxes. Remember
that CGA and Monochrome monitors will interpret the color to
black and white and so little will be gained by changing
palettes on these systems. MaxColors should equal the total
number of ColorSets. MaxColors will determine the total number
of colors listed in the OPTIONS/COLOR SCHEMES dialog.
CurrentColor indicates the palette that is currently selected to
be the startup palette. This value can be changed by both Setup
or the OPTIONS/COLOR SCHEMES dialog. If using the OPTIONS/COLOR
SCHEMES dialog be sure to SAVE PREFERENCES to change the
CurrentColor in VIEWMAX.INI.

Information contained in the ColorSets indicates individual
colors and fills for each component of a window. Below is a
listing of the ColorSet variables and a reference of where they
appear on the ViewMAX screen. Refer to page 20 of the ViewMAX
User Guide for a diagram of the ViewMAX screen.

ColorSet   ViewMAX diagram page 20
--------   -----------------------

NAME   TITLE BAR (active window)

INFO   INFORMATION TITLE

SLCTDNAME   TITLE BAR (inactive window)

DESKTOP   background color

SLIDER   SLIDER

BUTTON   SCROLL BAR

Document 1209

The ColorSet called Button is also used as the color of ViewMAX
dialog boxes.

Each ColorSet setting has 4 numbers that are in groups of 2. The
first 2 digits are colors. The next 2 numbers establish the fill
by which the two colors are blended together. The following is a
section of a ColorSet called Bright. The name of the ColorSet
must be in quotes. The chart indicates what portions of the
sequence are colors and which ones are fill patterns. Commas
must be used as delimiters for proper syntax. All spaces are
ignored.

          ColorSet3="Bright"

             Name= 2,0, 1,0
             Info= 3,4, 2,4

ColorSet	Color 1	Color 2	Fill	Fill
Name	2,	0,	1,	0
Info	3,	4,	2,	4

There are 16 possible colors in ViewMAX. Valid numbers are 0-15
with the first 8 as high intensity colors.

Color number	Color
0	white
1	black
2	red
3	green

4	blue
5	cyan
6	yellow
7	magenta
8	light gray
9	dark gray
10	dark red
11	dark green
12	dark blue
13	dark cyan
14	dark yellow
15	dark magenta

Document 1209
There are a total of 39 fills that can be used with the above colors. ViewMAX will generally use the first few fills in its default ColorSets.

As indicated earlier it takes a pair of numbers to define a fill. If the first digit is 0 a hollow or white fill is displayed. If the first digit is 1 then the first number is used as a solid fill. In both of the cases the second digit has no meaning. For example the fill 1,n has the same result as 2,8. If the first digit is 2, then a pattern is generated where the two colors are blended together in various proportions. There are 24 combinations possible whose values range from 2,1 to 2,24. A first digit of 3 indicates a hatch. Valid values for hatches are 3,1 to 3,12. Some of these fills can be very busy so test them first. If a color or fill is out of range ViewMAX will substitute a 0 in its place.

Here are the total range of color combinations that are possible. The letter "n" indicates that any number can be used.

Hollow	Pattern	Pattern	Pattern	Hatch	Hatch
0,n	2,1	2,9	2,17	3,1	3,9
	2,2	2,10	2,18	3,2	3,10
Filled	2,3	2,11	2,19	3,3	3,11
1,n	2,4	2,12	2,20	3,4	3,12
	2,5	2,13	2,21	3,5	
	2,6	2,14	2,22	3,6	
	2,7	2,15	2,23	3,7	
	2,8	2,16	2,24	3,8	

[DRIVERS] This section is for screen and mouse drivers. MaxDrv
indicates the total number of drivers listed. DR DOS comes with
4 screen drivers that can be used on 7 different type of video
cards.

CurrentDrv is the driver that ViewMAX is configured to use on
startup.
VidPatch sets internal switches for screen drivers. When ViewMAX
is configured to use an EGA or VGA display, it automatically
determines the current display type, either Monochrome or Color,
EGA, or VGA. If, for any reason, a different display mode is
required, ViewMAX can be forced to work with a specified display
type by editing the VIDPATCH keyword with the following
contents:
VIDPATCH = nn

where nn is replaced by a digit between 00 and 03.

        00   Monochrome EGA Display

        01   Color EGA Display

02   Monochrome VGA Display

          03   Color VGA Display

MouseType describes the type of mouse chosen in DR DOS Setup.

MousePort is the communications port to be used by the mouse.
Any device that uses the Bus mouse option will have 255 as the
port number.

Document 1300

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

Memory Management

Description:

Memory Management Overview

The purpose of a memory management system is to effectively
manage the Random Access Memory (RAM) available on your computer
and to maximize memory in which to load your applications. When
personal computers were first introduced, they operated with as
little as 64 kilobytes (Kbytes) of RAM. However, as PCs became
more sophisticated and powerful, so did the application programs
that ran on them.

Today, modern applications frequently require 540 Kbytes of
memory, or more, to load. Ten years ago, that amount of required
RAM would have seemed vastly excessive. Many common
configurations do not have sufficient memory for proper
fractioning of large applications.

And, although today's computers typically have over 1 Mbyte of
RAM available, only a portion of the first 640 Kbytes are
available for DOS applications. Device drivers and TSRs are
also typically loaded into this area, reducing the memory

available for an application.

Memory management software is designed to overcome the problem
of insufficient conventional memory. The DR DOS memory
management system is called MemoryMAX.

The DR DOS MemoryMAX System

The term MemoryMAX describes the collection of device drivers
and commands that are used for memory management under the DR
DOS 6.0 operating system to take advantage of all RAM memory
available on your computer.

The MemoryMAX system is designed to free-up as much conventional
memory as possible. It achieves this goal by utilizing certain
previously unused areas of high and lower memory and by
remapping and moving other memory areas.

The MemoryMAX system extends the amount of memory available to
applications, so that even with network drivers and TSRs loaded,
there can still be 620 Kbytes, or more, conventional memory
available. However, the exact amount of additional memory that
MemoryMAX provides is dependent on your particular system's
configuration.

The MemoryMAX system consists of three device drivers and six
commands. The MemoryMAX device drivers and commands are detailed
in Chapter 11 of the DR DOS 6.0 User Guide, "Customizing your
System". This table lists MemoryMAX drivers and features by
various hardware configurations.

MemoryMAX Features Available with Hardware/Device Driver
Combinations

_____
_
_____
| Applicable | Driver | LIM | DR DOS Kernel | XMS | DRDOS |
| Hardware | | | Kernel Relocation | | |

UpperMemory

386sx, 386 or 486	EMM386.SYS	YES	YES	YES	YES
386sx,386, or 486,	HIDOS.SYS with Third-Party XMS Memory Mgr	?	YES	YES	N/S
IBM PS/2 80286 with IBM XMA card	EMMXMA.SYS	YES	N/S	N/S	N/S
80286 with Extended Mem	HIDOS.SYS	N/S	YES	YES	N/S
80286 with Mappable Shadow Ram with Ext Memory	HIDOS.SYS	N/S	YES	YES	YES
80286 with Mappable Shadow Ram No Extended Memory	HIDOS.SYS	N/S	YES	YES	YES
80286 with NeAT, LeAP, or SCAT	HIDOS.SYS	N/S	YES	YES	YES

```
-
-------
80286 with  | HIDOS.SYS | YES |     YES          | YES | YES
LIM 4.0     | with third|     |                  |     |
driver and  | party     |     |                  |     |
extended    | driver    |     |                  |     |
memory      |           |     |                  |     |
```
Document 1300
```
------------|----------|-----|------------------|------|------
-
-------
8088/8086/  | HIDOS.SYS | YES |     YES          | YES | YES
80286 with  | with third|     |                  |     |
LIM 4.0 EMS | party     |     |                  |     |
card and no | LIM 4.0   |     |                  |     |
extended    | driver    |     |                  |     |
------------|----------|-----|------------------|------|------
-
-------
```

Supported feature = YES
Unsupported feature = N/S
? = This entry depends on the features offered by third-party
memory manager

If upper memory is not supported, HIDEVICE, HIBUFFERS,
HIINSTALL, and HILOAD commands have no effect. HIDOS=ON|OFF
might be supported if the third-party memory manager allocates
XMS upper memory blocks (UMBs).

MemoryMAX System Commands and Drivers

The following is a listing and brief description of the
components of the MemoryMAX memory management system. Refer to
the DR DOS 6.0 User Guide for a complete description of each of
these features and commands.

EMM386.SYS

EMM386.SYS is a device driver that allows the DR DOS 6.0
operating system to make better use of the memory available on
Intel i386, i386SX, and i486-based computers. Using EMM386.SYS,

you can use LIM 4.0 expanded memory without the need for special
add-on cards; relocate the DR DOS operating system kernel to
upper or high memory, and enable upper memory to be used for
TSRs, device drivers and operating system data structures by
using the /AUTOSCAN, /INCLUDE, /EXCLUDE, and /USE options. You
can also add up to 96 Kbytes to conventional memory using the
/VIDEO option.

HIDOS.SYS

If you have an Intel 80286-based computer with extended memory,
you can use the HIDOS.SYS driver to relocate the DR DOS
operating system kernel to high memory (see the /BDOS option).
On computers that support Shadow RAM, HIDOS.SYS relocates the
kernel to upper memory, and enables you to load TSRs, drivers
and operating system data structures into upper memory. Using
the /VIDEO option, you can also add up to 96 Kbytes to
conventional memory.

Example config.sys entry:

DEVICE=C:\DRDOS\HIDOS.SYS /BDOS=AUTO

HIDOS.SYS can also work in conjunction with LIM 4.0 expanded
memory (EMS) device drivers to provide upper memory support on
8088/8086/80286 computers. This feature is detailed in the
readme file or Release Notes.

Note:
The HIDOS.SYS driver should not be confused with the similarly-
named DR DOS MemoryMAX "HIDOS = ON/OFF" command (see below).

EMMXMA.SYS

Use this driver on PS/2 80286 computers with IBM XMA and 100%
compatible memory cards, to convert memory from extended to LIM
expanded memory.

Example config.sys entry:

DEVICE=C:\DRDOS\EMMXMA.SYS /FRAME=D000

Document 1300
Note:
The EMMXMA.SYS driver can be used only on PS/2 computers, and
you cannot use the EMMXMA.SYS driver with any third-party memory
managers (e.g., the Qualitas 386/MAX, or the Quarterdeck
Expanded Memory Manager 386). You can use HIDOS.SYS following
EMMXMA.SYS to obtain upper memory support.

The MemoryMAX commands listed below can be used when upper
memory is supported by loading the EMM386.SYS or HIDOS.SYS
drivers in the config.sys file.

HIBUFFERS

Use HIBUFFERS to specify the number of memory buffers that the
DR DOS 6.0 operating system uses. HIBUFFERS performs the same
function as BUFFERS, except that HIBUFFERS allocates as many
buffers as possible into high memory rather than conventional
memory. The following entry in your config.sys file sets the
number of buffers to 20 and forces the DR DOS 6.0 operating
system to allocate as many as possible from high memory.

Example config.sys entry:

HIBUFFERS = 20

HIDEVICE

The HIDEVICE command loads specified device drivers into upper
memory. If the device is unable to load into upper memory using
HIDEVICE, it will be loaded into conventional memory. The
following command loads the ANSI.SYS device driver into upper
memory:

HIDEVICE=C:\DRDOS\ANSI.SYS

HIDOS

The HIDOS command relocates as much of the DR DOS operating system data structures as possible into upper memory. The default is OFF.

Example config.sys entry:

HIDOS=ON

HIINSTALL

The HIINSTALL command loads specified TSRs into upper memory. If there is insufficient upper memory for the specified TSR, it is loaded into conventional memory. Although similar to the HILOAD command (see below), HIINSTALL must be loaded via the config.sys file. Use HIINSTALL when you want a TSR permanently loaded at boot time because of best memory allocation (see the example in Chapter 2). The following command installs the CURSOR program into upper memory:

HIINSTALL=C:\DRDOS\CURSOR.EXE

Notice that you must give the full path name to the program and its extension (.com or .exe).

Document 1300
HILOAD

HILOAD loads specified TSRs and network drivers into upper memory. HILOAD is similar to the HIINSTALL command (which must be loaded using the config.sys file), but can be executed from the command line or from the autoexec.bat or other batch file. Before using HILOAD, you must be sure that upper memory has been enabled with the MEMMAX +U command.

For example,

C:> HILOAD C:\LAN\NET3

MEMMAX

The MEMMAX command selectively enables and disables those
enhanced memory areas provided by the DR DOS 6.0 operating
system that might conflict with some applications. By using the
MEMMAX +V switch, MEMMAX also enables extra memory if it has
been reserved in the video adapter area by EMM386.SYS or
HIDOS.SYS. You can execute the MEMMAX command from the command
line or a batch file (see Chapter 10 of the DR DOS 6.0 User
Guide).

Note:
If you enabled the video adapter area by using MEMMAX +V, you
must use the MEMMAX -V command to release this memory before
loading graphics applications.

The HIDOS.SYS and EMM386.SYS device drivers can increase the
conventional memory available to applications by using upper
memory. However, some programs fail because they do not expect
to find memory in this region. MEMMAX allows you to selectively
enable and disable upper and lower memory from the command line
or from batch files. MEMMAX +U and -U will respectively enable
and disable upper memory. The DR DOS 6.0 installation will
place the command "MEMMAX -U > nul" onto the autoexec.bat file.
The "> nul" disables the display of the MEMMAX status message on
the screen.

MEMMAX -L and +L will respectively disable and enable the first
64 Kbytes of conventional memory. This region is termed "low
memory". Usually the operating system resides in low memory;
however, by using the DR DOS 6.0 MemoryMAX features, most of
this area can be made available for running applications. Some
applications were written using packing utilities that become
confused when run in this low memory. If this happens, the
following message appears:

"Packed file is corrupt".

To correct this situation, use the MEMMAX -L command to disable
low memory before running the application. After exiting the
application, use MEMMAX +L to enable the low memory area once
again.

Example:
The following example shows how you can use the MEMMAX command in a batch file that loads network drivers into upper memory. The example assumes that you have already loaded a DR DOS 6.0 device driver that supports upper memory.

```
REM * * * MEMMMAX to open upper memory * * *
MEMMAX +U
HILOAD C:\LAN\IPX
HILOAD C:\LAN\NET3
REM * * * * Disable lower memory * * *
MEMMAX -L
I:
CD LOGIN
REM * * * * Reopen lower memory * * * *
MEMMAX +L
```

Conclusion

While the MemoryMAX memory system works well with most application programs, you might still encounter occasional difficulty. The following chapters present the steps recommended for resolving such memory conflicts.

Document 1301

(Note: The origin of this information may be internal or external to Novell. Novell makes every effort within its means to verify this information. However, the information provided in this document is FOR YOUR INFORMATION only. Novell makes no explicit or implied claims to the validity of this information.)

Basic Memory Optimization

Description:

System Memory Optimization

Because the DR DOS 6.0 operating system has been designed to work with all IBM-compatible personal computers and software applications, there is no single perfect memory setup that will optimize memory use for all situations. Memory optimization will depend both on your particular hardware setup and the software applications you will be using. However, with a bit of trial-and-error system fine tuning, you can optimize DR DOS memory management to meet your particular needs. Below are techniques and suggestions that will help you optimize your computer/software setup.

Changing Order of Memory Allocation

The first step in optimizing your system memory can be as simple as rearranging the order in which memory blocks are assigned by the config.sys and autoexec.bat files. The general rule here is to use upper memory and high memory as much as possible to free conventional memory for your applications. With this in mind, you should typically use HIBUFFERS and relocate the DR DOS kernel code to high memory by using the /BDOS=FFFF option of the DR DOS memory management drivers, HIDOS.SYS and EMM386.SYS. Also, if you have any add-on cards that use RAM, make sure that they are configured so that their RAM is allocated from the beginning or end of upper memory. For example, place a network card immediately above the video RAM area instead of in the middle of upper memory.

Following this, device drivers and TSRs can be loaded into upper memory. For best memory allocation, those drivers and TSRs that occupy the largest blocks of memory should be loaded first and contiguously. For example, if you need to load three device drivers and two TSR programs, order them in descending order in your config.sys file, beginning with the driver that will occupy the most RAM, to the driver or TSR that will occupy the least RAM. The documentation for the drivers and TSRs should indicate the amount of RAM they require; however, if they do not, you can determine this yourself by using the following procedure:

1.   Load the driver or TSR.

2.   Use the MEM /U or /B command to see a report of your memory

usage (see Chapter 10 of the DR DOS 6.0 User Guide for a full
description of the MEM command and Chapter 12 regarding loading
device drivers and TSRs).

Expanding Files

If, after determining the size of your drivers and TSRs and
loading them into high memory, a driver or program fails to run
properly or produces an out of memory error message, the problem
might be that the driver or program is expanding itself in RAM.

Some device drivers and TSR programs occupy a minimal amount of
RAM after they are loaded into memory, but, while initializing,
might actually expand and take up considerably more RAM than
they will ultimately need. Another method of verifying the
program's true RAM size is to load it into conventional memory
(i.e., by deactivating the HIDEVICE, HIINSTALL, or HILOAD
commands), activate the program, and then run the MEM /B command
to see the actual amount of RAM the program occupies. If the
program or driver is expanding itself in RAM, and you want to
load it into upper memory, you will have to allow sufficient
upper memory RAM to accommodate the initialization size of the
program. It might be necessary to use trial-and-error to
determine this size. See also "Using MemoryMAX with NetWare" on
page 33 for an example.

Example

In the following example, let's assume you want to load Device
Drivers 1, 2, and 3, and TSR programs 1 and 2, each requiring
the following amounts of memory:

Driver #1   = 13Kbyte of RAM
Driver #2   = 10Kbyte of RAM
Driver #3   = 16Kbyte of RAM
TSR #1 = 4Kbyte of RAM
TSR #2 = 6Kbyte of RAM

Using the MemoryMAX HIDEVICE and/or HIINSTALL commands, enter
these lines into your config.sys file:

```
HIDEVICE = C:\DRIVER#3.SYS       ; which uses 16kb RAM
HIDEVICE = C:\DRIVER#1.SYS       ; which uses 13kb RAM
HIDEVICE = C:\DRIVER#2.SYS       ; which uses 10kb RAM
HIINSTALL = TSR#2                ; which uses 6kb RAM
HIINSTALL = TSR#1                ; which uses 4kb RAM
```

Note:
There can be exceptions to loading TSRs and drivers in the
"largest first" system described previously. Some device drivers
must be loaded in a specific order. Read the manufacturer's
documentation carefully before installing any driver.

Note that in the above example, you can load the two TSRs with
the HILOAD command placed in the autoexec.bat file. For a
discussion of the MemoryMAX HIINSTALL, HIDEVICE, and HILOAD
commands, see "MemoryMAX System Commands and Drivers" on page 4
in the DR DOS 6.0 User Guide.

LIM Page Frame

Some applications run better with the availability of LIM memory
(sometimes called EMS, or expanded memory). The documentation
for each of your applications will indicate if LIM memory is
required.

If the application does not require LIM memory, be sure that no
LIM page frame is defined. This will save 64 Kbytes of upper
memory. In the EMM386.SYS line of your config.sys file, disable
the page frame with the switch /F=NONE. If using HIDOS.SYS on a
machine with a LIM 4.0 memory card, you can disable the page
frame by specifying /CHIPSET=EMSALL.

Document 1302

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

Troubleshooting

Description:

Troubleshooting

Isolating the Problem

If you encounter memory conflicts after you have arranged your
device drivers and TSRs in the manner described in the previous
chapter, your next step should be to isolate and identify the
offending conflict. The best way to do this is to methodically
load each of your drivers, TSRs, and application programs one at
a time until you encounter the problem driver or program.

Note:
To complete the following steps, you should be familiar with
editing your config.sys and autoexec.bat files with a
wordprocessor or text editor such as the DR DOS EDITOR, and with
the REM command. Refer to Chapters 7 and 11 of the DR DOS 6.0
User Guide.

Whenever you experiment with and change your config.sys and
autoexec.bat files, you should always have a separate bootable
floppy disk available containing the unedited, original versions
of your config.sys and autoexec.bat files in case you need to
reboot your computer from the A: drive. Then, if you need to go
back to your original configuration, you can copy the original
config.sys and autoexec.bat files from your backup diskettes
onto your boot disk. (See Chapter 10 in the DR DOS 6.0 User
Guide for information on how to create a bootable floppy disk.)

To isolate the source of your memory conflict, turn off those
lines in your config.sys or autoexec.bat file that might be
causing the problem. Do this by editing the config.sys or
autoexec.bat file and placing a REM comment at the beginning of
each line you want to turn off. For example, to turn off the
following config.sys line:

```
DEVICE = C:\DRDOS\EMM386.SYS /F=AUTO /K=2024
```

add the REM comment to the beginning of the line:

```
REM DEVICE = C:\DRDOS\EMM386.SYS /F=AUTO /K=2024
```

If you find a particular line is not causing a problem, you can
reactivate it by simply removing the REM statement.

Note:
You can also use the DR DOS conditional "?" statement to
activate/deactivate config.sys line commands. See Chapter 11 of
the DR DOS 6.0 User Guide for details. If you use this option,
make careful note of whether you said "yes" or "no" to loading
each line.

After turning off the suspect lines with a REM statement, reboot
your computer to retest the driver/application with which you
first encountered your memory problem. If the system runs
correctly, reenter your config.sys or autoexec.bat file and
remove the REM command from one line and then reboot and reload
the application. Continue this process until you again encounter
the memory problem. When it recurs, you will have isolated the
line in the config.sys or autoexec.bat file that is causing the
memory conflict. You can now take action to resolve the
conflict, as described in the following sections.

Document 1302
Possible Problems

After you have isolated the problem driver or program, you can
use the techniques described below to make the appropriate
corrections to your computer's configuration.

Some problems that you might encounter after installing the
MemoryMAX drivers include:

*Insufficient conventional memory to load a particular driver or
program.
```

*HILOAD, HIINSTALL, or HIDEVICE features do not seem to operate correctly
*Computer locks up
*Upper memory conflicts
*Video problems
*Error message: "Packed file is corrupt."

Each of these problems, and the techniques to correct them, are described below.

Insufficient Conventional Memory

After using the DR DOS 6.0 memory management system to increase conventional memory, there should not be a problem due to insufficient memory. However, if a large number of device drivers or TSRs are in use, this problem might still occur. Review Chapter 1 of this guide to ensure you have taken the proper steps to optimize system memory. Try the MEMMAX +L command in case an earlier command or batch file disabled available low memory. Finally, if the application does not use the graphics display area, try the /V switch of the DR DOS 6.0 memory manager, followed by MEMMAX +V before loading your application.

HILOAD, HIINSTALL, or HIDEVICE Considerations

Each of these commands requires the availability of upper memory blocks (UMBs). You can verify that the UMBs are available by using the DR DOS MEM /B or /U commands to see a report of your memory usage (see Chapter 10 of the DR DOS 6.0 User Guide for a full description of the MEM command). Available UMB blocks will be marked as FREE under the Type column in the MEM listing.

The HILOAD, HIINSTALL, and HIDEVICE commands require prior installation of the EMM386.SYS or HIDOS.SYS driver. If the MEM report shows that upper memory is not being utilized, check your config.sys to make sure the driver has been properly installed and that the option switches have been entered correctly. If they are set, pay particular attention to the /FRAME, /AUTOSCAN, /INCLUDE, /BDOS, and /EXCLUDE switches to ensure that any upper memory address specified by these switches have been correctly

set (a common error is using an "oh" instead of a zero).

If you use Microsoft Windows 3.0, the /WINSTD switch might have been set. The /WINSTD switch automatically blocks access to the UMBs, making them unavailable to HILOAD, HIINSTALL, and HIDEVICE. Windows 3.0 will not run properly in standard mode if UMBs have been used by something else. (See the "Using EMM386.SYS with Windows" on page 22.)

If you do not require the use of expanded memory, set the /FRAME switch to /FRAME=NONE.

The HILOAD command must be invoked before using the MEMMAX -U command to disable upper memory. Use the MEMMAX +U command to re-enable upper memory, if necessary. (Note that the DR DOS installation program automatically inserts the MEMMAX -U command in the autoexec.bat file; therefore, you must either put HILOAD above it, or use MEMMAX +U to enable upper memory).

If there appears to be sufficient upper memory available, but HILOAD, HIINSTALL, or HIDEVICE fail to put a particular TSR or driver into upper memory, some device drivers and TSR programs when initializing might actually expand and take up considerably more RAM than they will ultimately need. See "System Memory Optimization" on page 9 for a complete description of this problem.

Computer will not boot or locks up

Reboot your machine with a bootable floppy disk in drive A:. Follow the instructions in "Isolating the Problem" above and edit the C: drive config.sys and/or autoexec.bat files to turn off and isolate, with the REM command, those lines in the files that might be causing the problem.

The most probable cause is that the DR DOS 6.0 memory manager has moved something into a region of upper memory required by a hardware device driver attempting to use the same areas of memory. Use the /EXCLUDE option (see page 18) switches to remedy the problem.

If a hardware device is not causing a conflict, and the lockup
occurs with a particular program, this program might become
confused when upper or low memory is available. Try using the
command MEMMAX -U and/or MEMMAX -L before loading the program.

Upper Memory Conflicts: Using /EXCLUDE

Your machine or the accessories in your machine might be using
upper memory addresses that are also being accessed by the DR
DOS 6.0 memory manager. To prevent this, exclude EMM386.SYS or
HIDOS.SYS access to the upper memory address range that is
causing the conflict. The following recommendations apply to the
EMM386.SYS driver for 386 and 486 computers, or the HIDOS.SYS
driver on 286 computers with shadow RAM.

Some typical symptoms of upper memory conflict include:

*inability to log onto networks
*inability to access hard or floppy disk drives
*inability to format low-density floppy disks in high density
drives
*error messages such as "card not found."

Document 1302
A good starting place to check for upper memory usage is the
documentation for any accessory boards or drivers you have
installed; if they require upper memory, it will usually be
indicated in the documentation.

If you encounter such problems and suspect that upper memory
conflicts can be the cause, first REM out the memory manager
line of the config.sys file completely. If the problem
disappears, you know that the memory driver is part of the
conflict and you can begin to look at changing switches to
correct the problem. Use the DR DOS EDITOR and change the
following settings in your config.sys file:

1.   If the EMM386.SYS /BDOS option is set to /BDOS=AUTO, switch
it to /BDOS=FFFF,

2.   Save config.sys.
3.   Reboot.
4.   Retest.

If the problem recurs, change the /R=AUTO setting to /R=NONE,
and then save the config.sys file, and reboot the computer to
retest.

You can also use the /EXCLUDE switch to exclude an area of upper
memory that the /AUTOSCAN feature detects as being available
but, in fact, might be used by another device, such as a network
card.

The /EXCLUDE Option

If the hardware documentation does not specify a memory range to
be excluded, you can use the /EXCLUDE option to discover if
there is an upper memory conflict. This option is used to
systematically exclude sections of upper memory from being used
by EMM386.SYS by excluding upper memory "half-at-a-time." For
example, use this "halving" method to exclude the top half of
the upper memory range first, reboot the computer and test the
problem. Then, if the problem recurs, change the /EXCLUDE
setting to exclude the lower half of upper memory, reboot, and
retest.

After discovering in which half of upper memory the conflict
resides, repeat the process by dividing that memory range in
half. You can use this technique to break down the entire upper
memory range, half-by-half, until you pinpoint the area of
conflict.

You must use the hexadecimal notation of the memory address with
the /EXCLUDE switch. The following brief explanation is provided
for those unfamiliar with using the hexadecimal system.

Hexadecimal Addresses

The 384 Kbyte range of upper memory resides between the

hexadecimal memory addresses of A000 and FFFF. The upper half of
this range lies between the addresses D000 and FFFF; the lower
half lies between A000 and CFFF. Because A000 to BFFF is
typically reserved for video display, you will normally work
only with addresses C000 to FFFF.

To exclude the lower half of the C000 to FFFF range, enter the
following /EXCLUDE command in your EMM386.SYS or HIDOS.SYS line
in the config.sys file:

/E=C000-DFFF

Then, reboot your computer to test the exclusion. If the problem
persists, edit the /EXCLUDE statement to exclude the other half
of the C000 to FFFF range by entering the following in the
config.sys file:

/E=E000-FFFF

Continue excluding a smaller and smaller range of memory until
you have found the smallest possible exclusion, which still
permits proper functioning.

Note:
The first address in each range of memory (EXCLUDE, INCLUDE,
etc.) must end in "00" and the second must end in "FF."

Note that you can also exclude multiple memory ranges with
the /EXCLUDE statement by separating the ranges with a comma,
e.g., /E=D000-D7FF,DA00-DBFF.

Document 1302
The chart below shows how this process works, and shows the
memory address for the 64 Kbyte range in the "D" segment of
upper memory.

D000-DFFF = 64K = D000-D7FF = 32K + D800-DFFF = 32K = 64K TOTAL
D000-D7FF = 32K = D000-D3FF = 16K + D400-D7FF = 16K = 32K TOTAL
D800-DFFF = 32K = D800-DBFF = 16K + DC00-DFFF = 16K = 32K TOTAL
D000-D1FF = 8K + D200-D3FF = 8K = 16K TOTAL
D400-D5FF = 8K + D600-D7FF = 8K = 16K TOTAL

```
D800-D9FF = 8K + DA00-DBFF = 8K = 16K TOTAL
DC00-DDFF = 8K + DE00-DFFF = 8K = 16K TOTAL
```

(The first "D" in each hex address above can be replaced with C,
E, or F when working with those segments.)

Once you find the conflicting range of upper memory, permanently
exclude it from being used by EMM386.SYS or HIDOS.SYS by using
the /EXCLUDE statement.

Video Problems

If you experience problems with your video display after
installing MemoryMAX drivers, a possible cause is that your
video adapter is attempting to use some of the same upper memory
addresses being allocated by EMM386.SYS or HIDOS.SYS.

A quick way to determine if your current memory setup is causing
a conflict with a video (or other device) board is to "turn off
the entire memory driver line in your config.sys file by using
the REM command or the "?" technique discussed previously in
"Isolating the Problem." If the problem does not recur with the
memory driver "turned off," the cause of the problem is probably
an upper memory conflict.

See "The DR DOS MemoryMAX System" on page 2 for information
abouthow to determine if upper memory is being used by drivers
and hardware boards.

Use the EMM386.SYS or HIDOS.SYS /VIDEO option to reserve
graphics memory addresses normally occupied by video display
adapters (see Chapter 11 of the DR DOS 6.0 User Guide).

If the /VIDEO option is set, and the video corruption is
occurring with a graphics program, be sure that the MEMMAX -V
switch is operative. When only text displays are required, the
MEMMAX +V switch can borrow some of the graphics memory areas
and add it to conventional memory, providing more space for text
applications. However, if an application requires graphical
displays, you must be sure this memory area is available to

video by issuing the MEMMAX -V command.

If the video display is corrupted only during use with the DR
DOS TaskMAX task switcher, refer to the readme file (in the DR
DOS directory) or the Release Note for instructions on how to
use the TaskMAX /F switch.

Document 1302
Network Hardware Interfacing

It is common for network hardware to utilize areas of upper
memory and thus conflict with MemoryMAX allocations of that
memory. If this occurs, you might be unable to log onto the
network or random lockups might occur. See "Upper Memory
Conflicts" on page 17, and "Using Network Software" on page 30,
for a full discussion of how to deal with upper memory conflicts
such as these and how to use the EMM386.SYS /EXCLUDE switch to
exclude the conflicting areas of upper memory.

Another possible cause of network problems is that your network
driver is designed for use with MS-DOS versions other than
versions 3.3+. Network drivers designed for use with MS-DOS
versions 4.0+ and 5.0 would not be appropriate for the DR DOS
6.0 operating system. (See "Using Network Software" on page 30)

Floppy Drive Does Not Work

If you have installed Super PC-Kwik and have enabled the /D+
switch, your disk controller must be 100% IBM compatible. Reset
the /D+ switch to /D- (the /D# switch works on some controllers)
to turn off PC-Kwik's advanced caching for the floppy drives
(advanced caching for your hard drive remains in effect).

SCSI Disk Drive Problems

The DR DOS 6.0 operating system supports virtual DMA and bus
master controllers. Any problem with SCSI drives is probably due
to a memory conflict (see "Upper Memory Conflicts" on page 17).

Expanded (EMS) Memory Problems

If a program that requires EMS memory reports that no EMS is
available or locks up when executed, the problem might be that
the application assumes that the LIM page frame starts at a
specified address.

Remedy this problem by ensuring that the LIM page frame defined
in the application's SETUP program or documentation matches the
settings in EMM386.SYS or EMMXMA.SYS. The /F= switch defines the
start of the LIM page frame.

Another cause of insufficient LIM memory occurs if you are using
TaskMAX in expanded memory and too many tasks have been loaded.
Unload a few of the tasks and restart the program.

Error message: "Packed file is corrupt."

This error might occur when the first 64 Kbytes of conventional
memory (called low memory) have been made available through the
use of MemoryMAX. Normally, the operating system occupies this
entire area. Some applications were written using packing
utilities that become confused when run in this low memory. If
this happens, the following message appears:
Packed file is corrupt.

For an easy workaround, use the MEMMAX -L command to disable low
memory before running the application. Then load and run your
application. After exiting the application, use MEMMAX +L to
enable the low memory area once again.

Because this problem can occur with other memory managers,
including QEMM.386, your application vendor might be able to
supply you with an updated application that does not exhibit
this problem.

Document 1303

Third Party Memory Managers

Description:

Relocating the Kernel

When you use a memory manager from another vendor, you can gain
additional conventional memory space by relocating the DR DOS
kernel to upper or high memory. The third-party memory manager
must support the XMS specification, and upper or high memory
must be available. To relocate the kernel, insert the statement:

        DEVICE=C:\DRDOS\HIDOS.SYS

after the statement that loads the third-party memory manager.

HIDOS.SYS attempts, by default, to relocate the DR DOS kernel to
upper memory. If upper memory is not supported or not available,
the kernel is placed in high memory. You can force the kernel to
high memory by using the following DEVICE statement:

        DEVICE=C:\DRDOS\HIDOS.SYS /BDOS=FFFF

The following examples show how and where to add the statement
when loading Qualitas 386MAX or the Quarterdeck QEMM or QRAM
drivers.

Qualitas 386MAX

        DEVICE=C:\386MAX\386MAX.SYS [...etc.]
        DEVICE=C:\DRDOS\HIDOS.SYS [...etc.]
        DEVICE=C:\386MAX\386LOAD.SYS [...etc.]

```
Quarterdeck QEMM.386

        DEVICE=C:\QEMM\QEMM.SYS [...etc.]
        DEVICE=C:\DRDOS\HIDOS.SYS [...etc.]
        DEVICE=C:\QEMM\LOADHI.SYS [...etc.]


Quarterdeck QRAM (with Intel AboveBoard)

        @SCREEN = DEVICE=C:\ABOARD\EMS.SYS AT 208 MC
        DEVICE=C:\QRAM\QRAM.SYS.
        DEVICE=C:\DRDOS\HIDOS.SYS
        DEVICE=C:\QRAM\LOADHI.SYS [...etc.]
```

Note:

EMM386.SYS cannot be used with other memory managers.

When a third-party memory manager is loaded, the following
config.sys statements have no effect:

HIINSTALL
HIDEVICE

If a user loads a third party memory manager which creates and
makes available XMS upper memory blocks compatible with the 2.0
specification, HIDOS=[ON|OFF] itself will relocate DR DOS 6.0
data structures in upper memory. Those blocks will appear as
"XMS UMB"'s from within any memory mapping utilities provided
with the third party memory manager. However, HILOAD, HIDEVICE,
and HIINSTALL commands have no effect. Most memory managers
offer equivalent commands that you can use.

Quarterdeck DESQview

When running the Quarterdeck DESQview proggram under the DR DOS
6.0 operating system, use the QEMM386.SYS driver as the primary
memory management driver instead of EMM386.SYS provided with the
DR DOS 6.0 operating system. When QEMM386.SYS loads from the
config.sys file, it then becomes responsible for controlling
both the upper memory area, between 640 Kytes and 1 Mbyte, and
the high memory area, the first 64 Kytes above 1 Mbyte.

Move device drivers and memory resident software to upper memory using the normal QEMM LOADHI commands. After loading QEMM386.SYS, the operating system kernel can still be moved to upper memory or high memory by loading the DR DOS HIDOS.SYS driver in the config.sys file right after the QEMM386.SYS driver. To move the kernel to upper memory, use the option /B=AUTO at the end of the HIDOS.SYS line in config.sys.

To specify that the kernel should be placed in high memory, leaving more upper memory available for device drivers and memory resident programs, use the option /B=FFFF.

Depending on the configuration of DESQview, a gain in available memory might not be seen after loading HIDOS.SYS. DESQview uses the high memory for 63Kbytes of code that normally sit in conventional memory, while HIDOS.SYS moves approximately 45Kbytes into that area. Because the high memory area can be used by only one application at a time, experiment with /B=AUTO, /B=FFFF, or do not load HIDOS.SYS. These different options can be quickly tested using the DR DOS 6.0 question mark option (?) in config.sys. Placing a ? in front of any line in config.sys displays that line at boot-up and then you can select Y(es) or N(o) to execute that instruction.

You might insert the following lines while experimenting:

```
?"Do you want to avoid moving the KERNEL (Y/N)"GOTO SKIP
?"Kernel in Upper Memory (Y/N)"
DEVICE=C:\DRDOS\HIDOS.SYS /B=AUTO
?"Kernel in High Memory (Y/N)"
DEVICE=C:\DRDOS\HIDOS.SYS /B=FFFF
:SKIP
```

Refer to Chapter 11 of the DR DOS 6.0 User Guide for a full discussion of this feature.

If you are running QEMM386.SYS without DESQview, you should always move the kernel to high memory.

Document 1305

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

MEMORY USE

Description:

When using the EMM386.SYS device driver, you may notice that the
MEM command can display a memory report that seems to show more
memory available than exists on your computer. For example,
consider the following EMM386.SYS device driver line on a
computer with 3,072 Kbytes of Extended memory:

DEVICE=C:\DRDOS\EMM386.SYS /F=AUTO /K=AUTO /B=FFFF /R=AUTO

This line has the effect of converting all Extended memory into
Extended via XMS and EMS (expanded) memory. The resulting MEM
report might show that the computer has 3,072 Kbytes of Extended
memory and 3,072 Kbytes of EMS memory under the "Total Bytes"
column, with 2,864 Kbytes of Extended via XMS memory and 2,864
Kbytes of EMS memory under the "Available" column as shown
below.


```
| Memory Type -------- Total ---------- Available ---|
|                   |                 |               |
| Conventional      |  (    60K )  |    (    626K )  |
| Upper             |  (    96K )  |    (    79K )   |
| High              |  (    64K )  |    (    18K )   |
| Extended          |  ( 3,072K )  |    (     0K )   |
| Extended via XMS  |      N/A     |    ( 2,864K )   |
| EMS               |  ( 3,072K )  |    ( 2,864K )   |
|----------------------------------------------------|
```


To understand this, it might be helpful to view the total

Extended memory available on a computer as comprising a dynamic
pool of memory. This memory can be viewed as dynamic because it
is available to be accessed either as Extended via XMS memory or
as EMS (expanded) memory depending on the "/K" setting on the
EMM386.SYS device driver. In the case shown above, "/K=AUTO"
tells EMM386.SYS to allow ALL of the Extended memory pool to be
accessed as Extended via XMS memory and EMS memory in equal
portions. The MEM command therefore shows both amounts of memory
as being available because you or your applications might want
to use a portion or all of the memory pool as either Extended
via XMS memory or EMS memory. The "/K" switch can be used to put
a limit on the amount of EMS memory to be created from the total
memory pool. The following EMM386.SYS device driver line on the
same computer with 3,072 Kbytes of Extended memory will limit
the amount of EMS memory to be created from the total memory
pool by setting the "/K" option to "/K=1024":

DEVICE=C:\DRDOS\EMM386.SYS /F=AUTO /K=1024 /B=FFFF /R=AUTO

This line will still cause EMM386.SYS to convert all of the
memory pool into Extended via XMS, but it will limit the amount
of EMS to 1,024 Kbytes. The resulting MEM report might show that
the computer has 3,072 Kbytes of Extended memory and 1,024
Kbytes of EMS memory under the "Total Bytes" column, with 2,864
Kbytes of Extended via XMS memory still available but only 896
Kbytes of EMS memory under the "Available" column as shown
below.


```
| Memory Type -------- Total ---------- Available ---|
|                   |                   |            |
| Conventional      |    (   640K )     |   (   626K )   |
| Upper             |    (    96K )     |   (    79K )   |
| High              |    (    64K )     |   (    17K )   |
| Extended          |    ( 3,072K )     |   (     0K )   |
| Extended via XMS  |       N/A         |   ( 2,864K )   |
| EMS               |    ( 1,024K )     |   (   896K )   |
|----------------------------------------------------|
```


You will notice in both of the above examples, that there is a
difference between the "Total Bytes" of Extended memory and the
"Available" bytes of Extended via XMS memory and a similar
difference between the "Total Bytes" of EMS memory and the
"Available" bytes of EMS memory. This is due to the amount of

"overhead" memory used by the EMM386.SYS software to convert the
memory pool into both types of available memory.

XMS memory is extended memory created by memory management
software which conforms to the XMS specification developed by
Lotus, Intel, and Microsoft. The DR DOS memory management
software device driver (EMM386.SYS) fully supports this
specification and, as a result, initially converts ALL of the
computer's available extended memory into XMS extended memory.
This is the reason that there is no "Extended" memory listed in
the "Available" column of the DR DOS MEM report; it has all been
converted to XMS memory by the EMM386.SYS device driver. This is
also the reason why Extended via XMS lists as "N/A" under the
"Total Bytes" column; XMS memory is created by a software device
driver and is not present at boot time.

Note: EMS memory is listed with a specific value under the
"Total Bytes" column by the MEM report unlike the Extended via
XMS listing. EMS memory can be created by a software device
driver (like EMM386.SYS alone) or can be created by EMS (LIM
4.0) hardware memory boards and their accompanying device
driver. This specific value is intended to reflect this EMS
memory created by the "/K" option on the EMM386.SYS device
driver line or "hardware" EMS memory created by certain
platforms, typically non- 386/386sx/486 platforms, which
actually contain EMS (LIM 4.0) hardware.

Document 1306

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

LOADING DR DOS IN UPPER MEMORY ONLY

Description:

There are certain conditions under which you may wish to not

load DR DOS system files into HMA (High Memory Area) due to the fact that other applications may need to use it. Some of these applications include Desqview and XMSNET (Novell Netware). Another application under which you may wish to not use the HMA is if you are trying to run Windows in enhanced mode on a 2 megabyte computer. Since Windows requires 1 megabyte of XMS memory you cannot use any of the HMA.

Example:
To keep DR DOS 6.0 out of the HMA:

1) Make sure that the /MH option is not used on any of the DR DOS 6.0 commands that support it. This includes SHELL, SHARE and Delwatch. Use the /MU option instead on these files.

2) Make sure that the HIBUFFERS command is not used in the CONFIG.SYS file. This command will use the HMA even if the Kernel is not put there with /BDOS=FFFF.

3) Make sure that the /BDOS option reads: /BDOS=AUTO.

386 computers can also use HIDOS.SYS with /B=AUTO. This will prevent you from hiloading but this is not an issue with 3rd party memory managers.

Document 1308
                                FYI

(Note: The origin of this information may be internal or external to Novell. Novell makes every effort within its means to verify this information. However, the information provided in this document is FOR YOUR INFORMATION only. Novell makes no explicit or implied claims to the validity of this information.)

Document 1308
GATE A20 and Printing
BPT
2/7/92

Description:

286, 386, 486 machines may have a problem printing if their BIOS

Setup has the ability to enable GATE A20. If the port seems to
hang as though the printer is off line, then GATE A20 may be the
problem.

GATE A20 indicates protected mode is already in use. Some
motherboards have been found to set GATE A20 as active. If so,
it will conflict with ANY protected mode program such as the
EMM386.SYS driver that comes with DR DOS 6.0 with the result
that the LPT port may hang.

Often, there is a solution in the BIOS SETUP (usually accessable
just as the machine runs its memory count). Many BIOS Setup
menus allows you to turn off GATE A-20. The type of printer is
not relevant, nor the video or CPU. Newer version motherboards
do not automatically set the GATE A20 on and will therefore work
correctly.

Example:

ERROR: (pin A-20 already set), or the machine hangs when trying
access the parallel port.

     Enter BIOS Setup and disable GATE A20.

Document 1402
                              FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

Document 1402
Novell Netware

Description:

The Novell NetWare Program

The DR DOS 6.0 operating system has been thoroughly tested on
the Novell NetWare program from version 2.15 and above.

The vast majority of questions about the NetWare program deal

with:

*Installation/Compatibility considerations of the DR DOS 6.0
operating system on a Novell network.

*Using TaskMAX with NetWare.

*Using MemoryMAX with NetWare, or maximizing the amount of
conventional memory for applications.

*Installation/Compatibility Considerations

The DR DOS 6.0 operating system is internally compatible with
DOS 3.31 data structures. As a result, when programs like the
Novell NetWare shell programs ask the DR DOS 6.0 operating
system for a version number, the DR DOS 6.0 operating system
reports 3.31. It is important to understand this when
installing the DR DOS 6.0 operating system onto NetWare
workstations and onto NetWare servers. If you have a mix of
different DOS versions, follow the manufacturer's suggestions in
regard to configuring the network for COMPAQ DOS 3.31
workstations.

Server Installation

If you choose to install the DR DOS 6.0 operating system onto a
non-dedicated server, consult the Novell NetWare reference
manuals or your network administrator for information on
installing and configuring a non-dedicated server. The DR DOS
6.0 operating system requires no unique consideration in this
case.

When configuring a network so that all the system utilities are
loaded on the server, the NetWare server should contain copies
of all the required DOS files used at each workstation. If
certain workstations are running DOS 4.x, then a particular
directory on the server will hold a copy of the set of all DOS
4.x system files used by the workstation when it is running
independent of the network. When a DR DOS 6.0 workstation is
logged onto the network, at least one of the workstation's
network drives will be mapped to the directory on the server
holding the DR DOS 6.0 system files.

Refer to the DR DOS 6.0 User Guide, Appendix F, for information
on configuring a NetWare server to properly load the DR DOS 6.0
operating system on remote diskless workstations.

Workstation Installation

When installing the DR DOS 6.0 operating system on a network
workstation that is part of an existing network, you will
usually not have to make any changes to the workstation; simply
install the DR DOS 6.0 operating system once the NetWare server
has been updated with the DR DOS 6.0 operating system. If you
are upgrading from DOS 3.x to the DR DOS 6.0 operating system,
it should not be necessary to upgrade your existing NetWare
shells. However, if you are upgrading from DOS 4.x or MS-DOS 5,
you will have to use NetWare shells intended for use with DOS
3.x. You can use the proper set of NetWare shell programs
obtained from your network administrator or Novell, or you can
use the set provided in the NETWARE directory on the DR DOS 6.0
ViewMAX installation diskette.

If you have to change shell programs, you might need to generate
a new IPX.COM program to accompany the new shell version.
Consult the Novell NetWare reference manuals or your network
administrator for information on how to accomplish this.

Using TaskMAX with NetWare

Before using TaskMAX on a NetWare workstation, you must update
your NetWare shell programs. The necessary files are provided
in the NETWARE directory on the last DR DOS 6.0 operating system
diskette (typically labelled ViewMAX). This update should be
done by you Network System Administrator.

Under most circumstances, no further adjustments will be
necessary to run TaskMAX on a NetWare workstation.

Load the NetWare shell programs and all drives and printers
mapped before loading TaskMAX. If NetWare utilities like MAP,
LOGIN, and SESSION are run from more than one DR DOS command
prompt via TaskMAX, the resulting drive and printer mappings
might not work as expected.

If within one or more tasks under TaskMAX, you choose to run an
application that makes direct calls to the Novell IPX or SPX TSR
program (sometimes called a peer-to-peer application), you might
need to load the IPX data buffering program called TBMI2.COM
before loading TaskMAX. This program will handle the buffering
of information from IPX or SPX so that data is not lost after
switching away from one of these peer-to-peer applications.
Further information on TBMI2.COM can be found in a file called
TBMI2.DOC on the DR DOS 6.0 ViewMAX diskette.

Using MemoryMAX with NetWare

When using the DR DOS 6.0 operating system on a NetWare
workstation that supports upper memory, you can move both of the
required NetWare programs outside conventional memory and into
upper memory to maximize the amount of memory available to
applications running after the NetWare programs have been
loaded. (See Appendix C in the DR DOS 6.0 User Guide for a
description of the various regions of memory within a computer,
and Chapter 12 for information on what regions will be available
on your particular computer.)

When upper memory is available, the NetWare programs IPX.COM and
NETX.COM or NET3.COM (NETX is hereafter used to describe either
program), can be loaded into upper memory using the HILOAD
command from the AUTOEXEC.BAT file or from the DR DOS command
line.
Document 1402
Memory Usage

To determine if IPX and NETX programs will fit into upper
memory, do the following:

     1.   Determine the memory size requirements of these
programs by examining the output of the MEM /A /P command after
the programs have been loaded into conventional memory or loaded
without MemoryMAX. (See the DR DOS 6.0 User Guide, Chapter 10,
for more information on the MEM command.)

     2.   Disable any and all upper memory used by device
drivers, TSRs, and/or applications by inserting a REM statement
or a "?" command at the beginning of each line containing
HIDEVICE, HIINSTALL, and HILOAD commands in your CONFIG.SYS and
AUTOEXEC.BAT files. Use the DR DOS Editor program.

     3.   Make upper memory available on your machine by
inserting the appropriate MemoryMAX device driver line into your
CONFIG.SYS file or by running SETUP, and then reboot your
computer by typing Ctrl-Alt-Del.

     4.   Without having loaded any of the NetWare programs,
examine the size of areas in upper memory that are marked as
FREE in the TYPE column of the MEM /U /P command output.

As a general rule, when the size of one or more of these upper
memory areas marked as FREE exceeds the size of a program that

is loaded into conventional memory, it will be possible to relocate that program into upper memory. It is important to note that the size of total FREE upper memory is not as important as the size of the individual FREE areas of upper memory, because applications require contiguous free memory to load.

Using HILOAD

When upper memory is available and when FREE areas exist large enough to contain the NetWare programs, the HILOAD command can be used to move the NetWare programs into upper memory. Upper memory is made available by loading the appropriate MemoryMAX driver at boot time and executing the MEMMAX +U command to "open" upper memory so that it will accept programs loaded by HILOAD. The following four lines describe one way you can load the NetWare programs using HILOAD:

```
MEMMAX +U
HILOAD IPX.COM
HILOAD NETX.COM
MEMMAX -U
```

These lines can be appended to your AUTOEXEC.BAT file or they can be executed from the DR DOS command line. Note that the DR DOS INSTALL program will automatically insert the command, MEMMAX -U >NUL, into your AUTOEXEC.BAT file, so you must insert MEMMAX +U to override it. (The >NUL portion of the command instructs the DR DOS 6.0 operating system not to display the output of the MEMMAX command on the screen.) In addition, please note the following about the HILOAD command:

*HILOAD will work only with the DR DOS MemoryMAX drivers, and not with third party memory managers such as QEMM386.SYS and 386MAX.SYS.

*HILOAD will not run after NET3.COM has been loaded. This is because Novell replaces the DOS routines (INT 21 functions) that handle HILOADs under the DR DOS 6.0 operating system with their own routines, which cannot place programs into upper memory.

Troubleshooting

NetWare shell programs won't load into upper memory.

Make sure that upper memory is available and that the size of one or more upper memory areas marked as FREE exceeds the size

of the NetWare shell program that is loaded into conventional
memory instead of upper memory. (See the DR DOS 6.0 User Guide,
Chapter 10, for more information on the MEMMAX and MEM commands
and how they can be used to determine if the above conditions
are met.) Also, consider the following.
For EMM386.SYS users:

*You can append the /LOWEMM switch to the EMM386.SYS device
driver line in your CONFIG.SYS file. The EMM386.SYS device
driver leaves its program code in conventional memory, which
should give you an additional 28K of upper memory.

*If LIM (Expanded memory) is not really necessary, you might
consider disabling it: change the /FRAME switch on the
EMM386.SYS device driver line so that it reads /F=NONE.
*If LIM is necessary, you might consider using another NetWare
shell instead of NETX.COM. (Refer to your Novell reference
manuals for information on how EMSNETX.COM and XMSNETX.COM
work.)

*With both EMSNETX.COM and XMSNETX.COM, do not use the HILOAD
command.

*With XMSNETX.COM, the /BDOS switch on the EMM386.SYS device
driver line should be changed so that it reads /B=AUTO or
/B=NONE.

*Try changing the line that reads HIDOS=ON in your CONFIG.SYS
file so that it reads HIDOS=OFF. This prevents the DR DOS 6.0
operating system from automatically relocating certain portions
of the operating system into upper memory.

*If only text-based applications will be run at this
workstation, use the /VIDEO switch on the EMM386.SYS device
driver line along with the MEMMAX +V command to enable the use
of video RAM for extending conventional memory. This relieves
the need to relocate the NetWare shell programs into upper
memory.
Document 1402
For HIDOS.SYS users:

*Make sure that your machine will support upper memory. (See
the DR DOS 6.0 User Guide, Chapter 12, for information on what
regions are available on your particular computer.)

*Consider using XMSNETX.COM instead of NETX.COM. With
XMSNETX.COM, change the /BDOS switch on the HIDOS.SYS device

driver line so that it reads /B=AUTO or /B=NONE.

*If you are using HIDOS.SYS with the /CHIPSET option set to
EMSUMB, consider disabling the LIM (Expanded memory) support
provided by your LIM 4.0 driver by using the /CHIPSET=EMSALL
option instead. EMSALL will disable the LIM 4.0 page frame and
make available a larger region of upper memory for mappable RAM.

*If your machine is equipped with at least 64K of extended
memory above one megabyte, make sure that the /BDOS switch on
the HIDOS.SYS device driver line reads /B=FFFF.

*Try changing the line that reads HIDOS=ON in your CONFIG.SYS
file so that it reads HIDOS=OFF. This prevents the DR DOS 6.0
operating system from automatically relocating certain portions
of the operating system into upper memory.

*Use the /VIDEO switch on the HIDOS.SYS device driver line along
with the MEMMAX +V command to enable the use of video RAM for
extending conventional memory. This relieves the need to
relocate the NetWare shell programs into upper memory.

Machine locks up when trying to load NetWare shell programs.

Some network cards maintain ROM addresses in the upper memory
region. It is possible that the MemoryMAX driver (EMM386.SYS or
HIDOS.SYS) is not able to recognize such areas as being already
in use by the network card. If the DR DOS 6.0 operating system
has written some portion of the operating system to a region of
upper memory, which later gets used by the network card's ROM,
the system might hang unpredictably. To correct this problem,
you can append an /EXCLUDE switch to the MemoryMAX device driver
line in your CONFIG.SYS file to prevent the MemoryMAX driver
from attempting to use an area known to be used by the network
card. Refer to your documentation on the network card for
information on areas used in upper memory and follow the
instructions for using the /EXCLUDE switch on those areas as
shown in the HIDOS.SYS and EMM386.SYS sections of Chapter 11 in
the DR DOS 6.0 User Guide.

If you installed Novell NetWare, or you installed additional
hardware in your computer after you installed the DR DOS 6.0
operating system, it is possible that the IRQ or DMA settings on
the new hardware might be conflicting with existing hardware. In
this case, it is best to resolve hardware conflicts by changing
the configuration of one or more installed boards before
changing the configuration of the DR DOS 6.0 operating system.

*Machine locks or generates "Packed file corrupt" error message
when executing Novell NetWare utility programs.*

This situation might occur in older versions of the NetWare
utilities. The error message does not reflect the true cause of
the problem. Use the MEMMAX -L command before executing the
problematic NetWare utility, and then use the MEMMAX +L command
after. The following is an example of how this might look in
your AUTOEXEC.BAT or login file:

MEMMAX -L
LOGIN
MEMMAX +L
Document 1402
COMPAQ DOS 3.31/DR DOS clients mapping same directories

When setting up a Novell NetWare Network Server machine, it is
normal for a Network Administrator to actually create a
directory structure on the server's hard drive which contains
all the various DOS operating system files for all the various
DOS operating systems being used by the network's DOS clients.
This is often done to accommodate clients who do not have their
own hard drive. That is, such clients can use the server to
access their DOS files and programs instead of their local
floppy drive.

For instance, a network server serving five clients using two
different operating systems, say MS DOS 3.30 and COMPAQ DOS
3.31, will have two directories which contain all the operating
system files contained in the clients' DOS directories. These
directories might have paths on the server like
SYS:PUBLIC/MSDOS/V3.30 and SYS:PUBLIC/COMPAQ/V3.31.

When a client running MS DOS 3.30 attaches to the server and
logs in to this environment, it is important that the client's
DOS PATH and COMSPEC variables be adjusted to "point" (or MAP)
to the server's copy of the client's DOS files. This is
normally accomplished by the Network Administrator who makes
some changes and adjustments to one of the server's files called
the System Login Script. This Login Script is the NetWare
Operating System's DOS operating system batch file equivalent.
Using a few basic commands in this System Login Script, the
Network Administrator can determine which DOS operating system
the server client is currently using and then map that client in
the right direction.

If a user is using DR DOS as the client operating system on a
Novell Network, it may not be immediately apparent as to how a
DR DOS client can be properly identified and mapped from within
the System Login Script.

Normally, a line like MAP INS S2:=SYS:PUBLIC/%OS/%OS_VERSION in
the System Login Script will handle the mapping properly. When
DR DOS is the DOS client's operating system, however, the %OS
and %OS_VERSION variables actually return MS DOS and v3.31
respectively. It is obvious how this can cause confusion. The
DR DOS operating system is most compatible with MS DOS/COMPAQ
DOS version 3.3X. It is for this reason that DR DOS appears to
the NetWare operating system to be MS DOS 3.31. As a result,
both COMPAQ DOS 3.31 and DR DOS versions 5.0 and 6.0 will end up
being mapped to the same sub-directory on the NetWare server's
hard drive.

In order to prevent such conflicts, a little extra work is
required when writing the System Login Script. Because the DR
DOS client operating system actually maintains two environment
variables called OS and VER which equal DRDOS and 5.0 or 6.0
respectively, it is actually possible to test the DOS client
operating system in the System Login Script to determine if the
DOS client is running COMPAQ DOS 3.31, DR DOS 5.0 or DR DOS 6.0.
Once the DR DOS client is detected, the Login Script should map
the client to a directory with one of the following paths:

SYS:PUBLIC/%MACHINE/DRDOS/5.0 or SYS:PUBLIC/%MACHINE/DRDOS/6.0

This sample System Login Script explains and implements such a
technique:

REM These lines establish environment variables OS and VER
REM if the DOS client is NOT running DR DOS (any version.)
REM That is, any DOS client operating system other that
REM DR DOS does not already maintain the environment
REM variables OS and VER, and as a result,
REM they need to be set.

IF <OS> != "DRDOS" AND <OS> != "DRMDOS" THEN BEGIN
    DOS SET OS="%OS"
    DOS SET VER="%OS_VERSION"
END

REM All that's left to be done is to map the DOS client using
REM the DOS environment variables <OS> and <VER>.

```
MAP INS S2:=%FILE_SERVER/SYS:PUBLIC/%MACHINE/%<OS>/%<VER>
COMSPEC=S2:COMMAND.COM
```

The above script would result in the following:

Compaq DOS 3.31's map would be: SYS:PUBLIC\PC_DOS\MSDOS\3.31\

DR DOS 6.0's map would be: SYS:PUBLIC\PC_DOS\DRDOS\6.0\

DR Multiuser DOS's map would be: SYS:PUBLIC\PC_DOS\DRMDOS\5.0\

Document 1404

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

PATHS TO DR DOS CONFIGURATION FILES ON NETWORKS

Description:

If paths are being lost over the network, it is likely that the
files:

     *.INI
     *.CFG

are being stored in the wrong place.

Use: DR DOS SETUP
     "System Parameters" menu
     Sub menu #6

to point configuration and information files to the users home
directory.

Example:

ViewMax and other files, have .ini (information) files. If you
load these utilities from a server (Z::)

z::viewmax

DR DOS will look for the VIEWMAX.INI file on the path set by the
local SETUP, System Parameter menu, sub menu number 6. The
default may not work on a network. Usually the network is setup
so that you have a special "user path" that will allow you to
write files, remember the Network knows who you are and what
privileges you have. That "user path" is the one to put the
preferences and information files.

Example:

     z:\netusers\Boris\

Your network system administrator will know the name of your
special "user path".

Document 1405
BANYAN VINES

Description:

Loading BAN.EXE after having already loaded SUPERPCK locks the
system. The correct order for loading is BAN.EXE first then
SUPERPCK. This was confirmed with Banyan Vines version 4.1 but
may apply to all versions.

Document 1406

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

DR DOS 6.0 COMPATIBILITY WITH LANTASTIC NETWORK
SKN
12-13-91

Description:

DR DOS 6.0 and LANtastic 4.0 have been tested together by both
Digital Research and Artisoft, and were found to be extensively
compatible. Customers with earlier versions of either DR DOS or
LANtastic may achieve partial functionality when running the two
products together, however such functionality is coincidental
and is not supported by either Digital Research or Artisoft.
Customers who have earlier products and who experience problems
should upgrade LANtastic or DR DOS as necessary.

Testing of DR DOS 6.0 and LANtastic 4.0 revealed only a small
number of minor configuration issues, which are as follows:

1.   SUPER PC KWIK
Super PC Kwik advanced disk reads and writes should be disabled
on LANtastic because the Super PC Kwik scheduler conflicts with
the LANtastic scheduler causing machines to hang. To avoid this
problem on a machine running SERVER, use the Super PC Kwik
switches /D- /H- to disable advanced disk reads and writes.
Normal caching is still active when these switches are used.

Note that you do not need to disable advanced disk writes on a
node which is not running SERVER.

As is true of most server/cache combinations, Super PC Kwik
cannot cache redirected network drives.

2.   WINDOWS 3.0 IN ENHANCED MODE
To run Windows 3.0 in enhanced mode using the DR DOS 6.0
EMM386.SYS memory manager, customers need to use an Artisoft
LANTASTI.386 driver dated 08-16-91 or newer. Customers with
older LANTASTI.386 files can obtain a current one from Artisoft
Technical Support.

3.   LANPUP UTILITY

Network redirections will work properly under DR DOS 6.0,
however the LANPUP terminate and stay resident utility will not
display the redirection properly.

4.   DR DOS 6.0 DISK UTILITIES
Certain DR DOS 6.0 disk utilities are intentionally designed for
use only on local drives and will return an error message if run
on a redirected (network) drive or on a machine running the
SERVER program. These utilities are summarized below:

Utility	On SERVER?	On network drive?
CHKDSK	N	N
DELPURGE	N	N
DELWATCH	N	N
DISKMAP	Y	N
DISKOPT	N	N
FDISK	N	N
FORMAT	Y	N
PASSWORD	Y*	N
RECOVER	N	N
UNDELETE	Y	N
UNFORMAT	N	N

* Files on a server protected by PASSWORD cannot be accessed
from LAN workstations, even when the correct password is
provided. They may, however, be accessed at the server on its
own physical drive.

5.   SUPERSTOR
One LANtastic 4.0 test system was run with a DR DOS 6.0 server
whose hard drive had been prepared using the SuperSTOR disk
compression utility. All nodes on the network, even non-DR DOS
nodes, could access data on the SuperSTOR drive.   Efforts were
made to exercise the test system heavily, however customers
should consider use of SuperSTOR partitions on LANtastic servers
as "at their own risk" at the current time and use standard
precautions such as frequent backups of essential data.   We
also strongly recommend that customers read DR DOS Technical Tip
#1200 before creating or using a SuperSTOR drive.

6.   RARE QUICKBASIC PROBLEM

The initial shipments of DR DOS 6.0 had a rare problem in which
server pathing was not handled correctly by a Microsoft
Quickbasic application under LANtastic 4.0. This problem was
reported by only a single user in the field and was very
difficult to reproduce even in our testing laboratories so is
unlikely to be seen by most customers. The problem relates to
the "double backslash" \\ before the server name, and has been
corrected. Customers who see the problem, and who have DR DOS
files dated prior to 12/91, should contact Digital Research
technical support for updated files.

7.   TASKMAX
LANtastic software should be loaded before TASKMAX is invoked.
This permits all TASKMAX task sessions to access the network.

8.   INTERNATIONALIZATION ISSUES (Country, Keyboard, Codepage,
and Graftabl)
The U.S. version of LANtastic will run only with the default
(U.S.) DR DOS 6.0 country and keyboard. DR DOS 6.0 customers
who require alternate country support, codepage, or graftabl
support should contact Artisoft for an international version of
LANtastic 4.0.

ADDITIONAL INFORMATION
Artisoft provides a similar but more extensive document on DR
DOS 6.0 compatibility with LANtastic 4.0. This document, which
details the hardware and network cards tested, can be obtained
from Artisoft's technical support bulletin board at (602) 293-
0065 or from the Artisoft forum on CompuServe.

Document 1408

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

COMSPEC MAPPING ON NOVELL NETWORK

Description:
LOGIN SCRIPT FOR SYSTEM WITH BOTH COMPAQ DOS 3.31 AND DR DOS 6.0

When setting up a Novell NetWare Network Server machine, it is
normal for a Network Administrator to actually create a
directory structure on the server's hard drive which contains
all the various DOS operating system files for all the various
DOS operating systems being used by network's DOS clients. This
is often done to accommodate clients to the server who do not
have their own hard drive. That is, such clients can use the
server to access their DOS files and programs instead of their
local floppy drive.

For instance, a network server serving five clients using two
different operating systems, say MS DOS 3.30 and COMPAQ DOS
3.31, will have two directories which contain all the operating
system files contained in the clients' DOS directories. These
directories might have paths on the server like
SYS:PUBLIC/MSDOS/V3.30 and SYS:PUBLIC/COMPAQ/V3.31.

When a client running MS DOS 3.30 attaches to the server and
logs in to this environment, it is important that the client's
DOS PATH and COMSPEC variables be adjusted to "point" (or MAP)
to the server's copy of the client's DOS files. This is
normally accomplished by the Network Administrator who makes
some changes and adjustments to one of the server's files called
the System Login Script. This Login Script is the NetWare
Operating System's DOS operating system batch file equivalent.
Using a few basic commands in this System Login Script, the
Network Administrator can determine which DOS operating system
the server client is currently using and then map that client in
the right direction.

If a user is using DR DOS as the client operating system on a
Novell Network, it may not be immediately apparent as to how a
DR DOS client can be properly identified and mapped from within
the System Login Script.

Normally, a line like MAP INS S2:=SYS:PUBLIC/%OS/%OS_VERSION in
the System Login Script will handle the mapping properly. When
DR DOS is the DOS client's operating system, however, the %OS

and %OS_VERSION variables actually return MS DOS and v3.31
respectively. It is obvious how this can cause confusion. The
DR DOS operating system is most compatible with MS DOS/COMPAQ
DOS version 3.3X. It is for this reason that DR DOS appears to
the NetWare operating system to be MS DOS 3.31. As a result,
both COMPAQ DOS 3.31 and DR DOS versions 5.0 and 6.0 will end up
being mapped to the same sub-directory on the NetWare server's
hard drive.

In order to prevent such conflicts, a little extra work is
required when writing the System Login Script. Because the DR
DOS client operating system actually maintains two environment
variables called OS and VER which equal DRDOS and 5.0 or 6.0
respectively, it is actually possible to test the DOS client
operating system in the System Login Script to determine if the
DOS client is running COMPAQ DOS 3.31, DR DOS 5.0 or DR DOS 6.0.
Once the DR DOS client is detected, the Login Script should map
the client to a directory with one of the following paths:

SYS:PUBLIC/%MACHINE/DRDOS/5.0 or SYS:PUBLIC/%MACHINE/DRDOS/6.0

This sample System Login Script explains and implements such a
technique:

REM These lines establish environment variables OS and VER
REM if the DOS client is NOT running DR DOS (any version.)
REM That is, any DOS client operating system other that
REM DR DOS does not already maintain the environment
REM variables OS and VER, and as a result,
REM they need to be set.

IF <OS> != "DRDOS" AND <OS> != "DRMDOS" THEN BEGIN
     DOS SET OS="%OS"
     DOS SET VER="%OS_VERSION"
END

REM All that's left to be done is to map the DOS client using
REM the DOS environment variables <OS> and <VER>.

MAP INS S2:=%FILE_SERVER/SYS:PUBLIC/%MACHINE/%<OS>/%<VER>
COMSPEC=S2:COMMAND.COM

The above script would result in the following:

Compaq DOS 3.31's map would be: SYS:PUBLIC\PC_DOS\MSDOS\3.31\

DR DOS 6.0's map would be: SYS:PUBLIC\PC_DOS\DRDOS\6.0\

DR Multiuser DOS's map would be: SYS:PUBLIC\PC_DOS\DRMDOS\5.0\

Document 1501

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

ALL CHARGECARD

Description:

We've had reports that the ChargeCard from ALL Computers is
functioning properly with DR DOS 6.0 where it did not with DR
DOS 5.0.

The ALL ChargeCard is a device that plugs into the processor
slot of a 286 machine giving it advanced memory addressing
capabilities. The ChargeCard can allow access to upper memory
as RAM and can also convert Extended memory into Expanded memory
with the use of their ALLEMM4.SYS v.2.7 device driver.

By loading HIDOS.SYS after the ALLEMM4.SYS driver in the
CONFIG.SYS, DR DOS 6.0 users will find that HIDOS.SYS
automatically detects and uses upper memory for relocating the
Kernel, device drivers, and TSR's.

Document 1502

I.T.T. Extra 286

Description:

Several users have reported that DR DOS memory management features do not work properly on I.T.T. Extra 286 machines. These machines are no longer in production.

On investigation, it appears that the A20 line which controls HMA access was not properly implemented at the hardware level on these machines. Therefore, DR DOS 6's HIDOS.SYS cannot use the HMA for memory management. Since there is no LIM memory capability on this computer, DR DOS utilizes this machine as a 640K 286 computer.

Document 1504

MAXFAX FAX BOARD

Description:

MAXFAX TSR was incompatible with DR DOS 5.0 (the hot key was not recognized) The MAXFAX people have tested with DR DOS 6.0 and find it to be compatible. MAXFAX is a low price FAX card that can be upgraded to a more powerful unit, at full discounts, it runs about $100.

Document 1505

Document 1505
GRID Laptops and Resume Function
BPT
2/6/92

Description:

The resume feature (battery saver) has a section of code in the
Upper Memory Blocks some where between the end of video (usually
C000) and the D000 area. This function may not work if EMM386
is being used due to an upper memory conflict. To see if this
is the problem, set EMM386.SYS to:

EMM386.SYS /E:C000-DFFF /F=AUTO /R=AUTO

Leave the original settings for /B and /K as the were.

Using trial and error, it is possible to use the EXCLUDE option
and keep narrowing the scope of excluded areas to maximize
memory while still isolating the problem area down to its
smallest size.

See page 19 of the "Optimization and Configuration Tips" guide
or page 410 of the "User Guide" for more information.

Example:

Edit CONFIG.SYS to ask these questions when loading:

? "c000 to dfff" EMM386.SYS /E:C000-DFFF /F=AUTO /R=AUTO
? "c000 to d7ff" EMM386.SYS /E:C000-D7FF /F=AUTO /R=AUTO

? "c000 to cfff" EMM386.SYS /E:C000-CFFF /F=AUTO /R=AUTO

Document 1602

Windows 3.0

Description:

Overview

This document tries to address many of the questions that we
have received regarding Windows compatibility. DR DOS 6 is
compatible with Windows 3.0 and 3.0A in all 3 modes. DR DOS 6 is
a feature rich operating system and many of the utilities that
are a part of DR DOS have special configuration requirements
when running with Windows. This document will address DR DOS 6
installation and those utilities most commonly used with Windows
and how to configure them for optimum performance. Also because
end-users will have various hardware configurations we will also
discuss what type of hardware requirements are necessary to
properly run Windows. Finally, there will be a list of the most
common problems detected and how to correct them.

Windows' Requirements

Microsoft Windows 3.0 is designed to run on only 286, 386SX, 386
and 486 computers. It has 3 modes of operation. The most basic
is called Real Mode. This mode will run with only 640K of RAM
but it will also make use of EMS memory if available. The EMS
memory can be provided with either a third party memory manager
or via EMM386.SYS. Real Mode is also used to create or delete
Windows permanent swap files which we will discuss later.
Windows Standard mode requires there be at least 1 Megabyte of
total memory and the presence of an XMS memory manager such as
HIDOS.SYS or EMM386.SYS. Enhanced Mode will only run on a 386SX
or better CPU and requires a minimum of 1 Megabyte of XMS memory

to function. If you are not sure what mode you are using you can find out by selecting the HELP menu from the Windows Program Manager. Select ABOUT PROGRAM MANAGER and you will see a dialog box that indicates the mode you are currently using.

What Selections to Make in Install

The DR DOS Install program will have some sections that you will need to configure carefully if you are going to run Windows.

The MemoryMAX section of Install will first ask if you would want Memory Support. We recommend that you say YES unless you intend to use a third party memory manager such as QEMM or 386 to the MAX. Near the bottom of the screen there will be a couple of asterisks (*). These indicate the type of CPU that you have and the amount of extended memory the Install program detects on your computer. The total amount of extended memory will be critical for running Windows so we will make recommendations for computers with 2, 3 and 4 Megabytes. Systems with more than 4 Megabytes can use recommendations for 4 Megabyte computers.

Document 1602
The next screen on 386 and 486 machines will have some important selections. There will be a line concerning LIM 4.0 support. The LIM 4.0 EMS support is not required by Windows except for Real Mode. If you do not have any DOS applications that require EMS memory, select NO. If you use Windows Enhanced Mode as a Shell for running your DOS programs, Windows itself can provide your DOS applications with EMS memory, you can also say NO to EMS Support (see the Windows documentation on how to PIF edit a DOS application for EMS support). Saying NO to EMS support will give you an additional 64K of Upper Memory (the size of the page frame) for use in Hiloading drivers. If you have applications that require EMS memory and you do not use Windows Enhanced Mode as a DOS Shell, select YES and then enter the amount of EMS memory that you wish to create. DR DOS's EMM386 uses extended memory as a pool for use as both XMS and EMS memory. The amount of EMS memory you specify will cause EMM386.SYS to convert all of the memory pool into Extended via XMS, and will then lend from that XMS memory for EMS to use up to the amount specified. Also on this screen will be a line for support of Windows in Standard Mode. This switch will have serious repercussions on available DOS memory so a YES answer is not always appropriate. EMM386.SYS cannot provide upper memory support and run Windows

in Standard Mode. This is a Windows limitation. If you choose
YES, EMM386 will disable all upper memory. You will not be able
to Hiload device drivers although you can still use the High
Memory Area (HMA) for relocation of DOS and its structures. If
you regularly use Windows in Standard Mode you should say YES
here. There will be an impact on available conventional memory
but since Windows will use your total system memory it will not
affect Windows applications. DOS applications, however, may be
impacted. If you regularly use Windows in Enhanced Mode or Real
Mode you can say NO.

Note: Some Windows applications use Standard Mode to install
from. If you have an install program that suddenly aborts when
it tries to run Windows it may be trying to use Standard Mode.
Go Back through SETUP and say YES to using Standard Mode.

For both 286 and 386 installations you will be asked if you want
to use Spare Video Memory. This is a special switch for
HIDOS.SYS and EMM386 that will take video memory addresses and
assign them to conventional memory. This means that you can
only run text based applications if you say YES to this option
and then run MEMMAX +V. We recommend that you say NO to this
option as Windows will not run if video memory is used for DOS.

The DiskMAX section of the Install program can also have an
impact on Windows performance. Drivers such as SuperPCK and
VDISK can run from extended memory so care must be exercised in
deciding how large to create these systems.

VDISKS

A VDISK can be used for the storage of Windows temporary files
and is used in this manner to speed up Windows performance.
Because Windows uses such large temporary files a VDISK must be
several megabytes in size or Windows will fail when the VDISK is
full. It is therefore not recommended for computers with less
than 8 megabytes of RAM. If you use a VDISK for other purposes
then all you need do is make sure that you have enough memory
left to run the correct mode of Windows. Typing "MEM" at a DOS
prompt will give you the total amount of available conventional
and XMS memory. Remember that Windows Enhanced Mode will require
at least 1 Megabyte of XMS memory available. Computers with only

2 Megabytes or less of total memory should not use a VDISK if they wish to run Windows in Enhanced Mode.

SUPERPCK

SuperPCK is probably the most needed and most commonly misconfigured DiskMAX application for use with Windows. Windows users with 2 Megabytes or less of total memory who wish to run in Enhanced Mode should not use SuperPCK because of their limited memory resources.

When you say yes to SuperPCK you will see an additional screen with some configuration selections. Windows users should always say YES to the selection that asks if you run Windows in Standard or Enhanced Mode. This will configure SuperPCK to use XMS memory instead of EMS memory and will place the PCKWIN.SYS driver in the CONFIG.SYS. The PCKWIN.SYS driver is mandatory for running Windows in Standard or Enhanced Mode with SuperPCK. The next selection will be whether or not to use Automatic Memory Allocation. If this selection is YES (default) then SuperPCK will use all of the available XMS memory and will lend half of that amount back to Windows. We recommend that this option should only be used on computers with 4 or more Megabytes of total memory. If Automatic Allocation is YES then the next line will ask for an amount of RAM to reserve. This option will reserve the specified amount of memory for use by other applications and prevent SuperPCK from using this memory. Lending is still valid. On computers with less than 4 megabytes total memory or for machines where users wish to limit the size of the cache Automatic Memory Allocation should be NO. This will change the next couple of options you see on the screen. You will now see selection boxes for the Cache Size and the Lending Amount. Users with 3 megabytes systems will be very close to the minimum needed to run Windows in Enhanced Mode. Make sure the size of the cache and the lending amount give you enough memory to run in the mode that you use.

For example: A 4 Megabyte computer can use SuperPCK with a 3 Megabyte cache size and 2 megabytes of lending. This means that when Windows runs the cache will be reduced to 1 megabyte (because of lending) and Windows will have 2 megabytes of XMS memory to use (the 1st megabyte is DOS conventional memory).

Document 1602
Examples:

SUPERPCK /EM /R:1024

These parameters instruct SuperPCK to use all XMS memory less 1
megabyte. On a system with 3 megabytes of XMS memory Superpck
will use 2 megabytes. Half of that amount (1 megabyte) will
still be available for lending. This gives Windows a total of 2
megabytes to use. Lending can be turned off with the switch /L-.

SUPERPCK /EM /L:1024

These parameters will instruct SuperPCK to lend 1 megabyte of
memory no matter what the size of the cache is. This parameter
could conceivably be more or less than half of the total cache
size (default).

SUPERPCK /EM /S:1024

These parameters will restrict the size of the cache to only 1
megabyte. Any additional XMS memory will not be used by the
cache. Half of the cache is still available for lending unless
the /L- switch is used.

SUPERSTOR

We cannot emphasize enough the importance of not having Windows
permanent swapfiles on a SuperStored drive. If you use a
permanent swap file make sure that you leave 5 to 10 megabytes
of uncompressed disk space for this file.

Note: The Windows permanent swap file does not have to be
located on the same drive as Windows. To find out if you have a
permanent swapfile follow the steps in the example below.

Example:

        1) Start Windows in real mode : WIN /R
        2) From the Program Manager select the FILE menu.
        3) select RUN

4) Key in SWAPFILE

If a permanent swapfile exists you will see a dialog box asking
you if it is ok to delete the permanent swapfile. If one does
not exist the dialog will ask you if you want to create one. It
is important to remove permanent swap files before compressing
your disk. You can then recreate the swapfile on the
uncompressed drive after the SuperStor drive has been created.

Remember to leave enough uncompressed disk to create the
permanent swap file. The SuperStor default is about 500k which
is not enough for a permanent swapfile. We would also recommend
that Windows temporary files be created on the uncompressed disk
(the environment variable TEMP determines where Windows will
create its temporary files). Endusers should DISKOPT their drive
fairly regularly to remove any free spaces created when the
temporary swap files are deleted.

Document 1602
Getting the Most From Windows

End-users with 2 megabyte systems should also refrain from
loading DOS into High Memory if they wish to run in Enhanced
Mode. Since Windows requires 1 megabyte of XMS memory to run in
Enhanced Mode you cannot use any of the HMA. To keep DR DOS 6.0
out of the HMA you will need to:

1) Make sure that the /MH option is not used on any of the DR
DOS 6.0 commands that support it. This includes SHELL, SHARE
and DELWATCH. Use the /MU option instead on these files. If no
switch is used then DR DOS will try to locate them in the
highest memory position by default. This means that you must use
the /MU switch on these commands to keep them out of the HMA.

2) Make sure that the HIBUFFERS command is not used in the
CONFIG.SYS file. This Command will use the HMA even if the
Kernel is not put there with /BDOS=FFFF. Use the command BUFFERS
instead.

3) Make sure that the /BDOS option reads: /BDOS=AUTO.

Using these switches will still enable an end-user to move DR DOS structures outside of conventional memory while using EMM386. However, there is a trade-off. EMM386 does use some of the XMS memory as overhead and on a machine with 1 megabyte of extended memory this means that you will have about 800-900K available as XMS. You can force Windows into Enhanced Mode by keying in "WIN /3" on the command line but application speed may be reduced due to additional disk access. If you feel it is absolutely imperative that you have 1 megabyte of XMS memory you can use HIDOS.SYS instead of EMM386.SYS with the parameter /B=AUTO. This will give you 1 Megabyte of XMS memory if you use the 3 steps outlined above.

Users with 3 megabyte system will be very close to the minimum needed to run Windows in enhanced mode but they should be able to use a small cache. VDISK would not be recommended. Use MEM and SUPERPCK /P to determine the total amount of XMS memory available. The SUPERPCK /P is the parameters listing of SuperPCK and the amount available for lending will be listed under the /L parameter. Make sure that the lending amount available is enough to enter the correct mode.

Users with 4 megabyte systems need to be careful about any device drivers loaded that use extended memory of any type such as VDISKs. This will impact on the amount of memory available for SuperPCK to use and the amount it is able to lend. Systems with greater than 4 megabytes of memory will probably always have enough XMS memory available but again other devices using any type of extended memory need to be considered. Also bear in mind that the less memory that is available to Windows means that fewer applications will be running before it has to move to a swapfile. Going to a swapfile usually means a decrease in the speed of Windows. We have noticed that a good balance on performance is achieved when Windows has 2 megabytes or more of XMS memory.

Common Problems

- Windows begins but not in the mode that I was using previously.

First check available memory with the MEM command. Windows in
Enhanced Mode will require 1024K (1 Megabyte) of available XMS
memory to run.

If you are unable to enter Standard Mode make sure that MEM
indicates that you have no EXTENDED memory available. If you do
then you are not using an XMS memory manager and one is required
for Enhanced or Standard Mode. Make sure that you have
HIDOS.SYS, EMM386.SYS or a third party XMS memory manager in
your CONFIG.SYS file.

If you are using SuperPCK the command "SUPERPCK /P" will give
you a listing of the parameters that are currently in use.
The /L command will indicate the total amount of memory
available for lending, the amount currently lent and the amount
remaining to be lent. Make sure that the amount remaining is
enough for the mode that you are trying to enter. Also, make
sure that the cache is using XMS memory. This will be indicated
by the /EM option.

If you are trying to use Enhanced Mode, Windows may not have
enough memory and is trying to start in Standard Mode. Unless
you have the /W option in EMM386.SYS Windows will not be able to
run Standard mode and will abort. Try placing the /W switch in
EMM386 and see if Windows starts. If it runs in Standard Mode
then you need to use the suggestions listed in the previous
discussion to find out why you are not entering Enhanced Mode.

If the /W switch does not work check to see if your Windows TEMP
directory has any files that begin with "~" and have the
extension .SWP. If you do and you are not currently running
Windows then delete them. These files are Windows temporary
files and should have been deleted when you quit Windows.

If you are using a permanent swapfile this file may have been
corrupted. Try deleting the file and then creating a new one.

Document 1602
- Windows runs but it seems much slower than before.

Make sure that you are running in the correct mode. Use the
ABOUT PROGRAM MANAGER dialog box on the Windows HELP menu to
determine what mode you are using. If you are not in the correct
mode use the above tips to determine why not.

Windows may be in the correct mode but you do not have enough
XMS memory remaining and Windows is having to use swapfiles. Use
MEM to find out your available XMS memory. If the figure is very
near the minimum remember that DR DOS has several utilities that
can use XMS memory. You may wish to change the size of a VDISK
or cache to allow Windows to use more of your available RAM.

If you are using SuperPCK try increasing the lending amount (/L)
or limiting the size of the cache (/S). Also SuperPCK should
not be used with VERIFY=ON in AUTOEXEC.BAT. You should use
VERIFY=OFF.

- When I start Windows a lot of strange characters appear on the
screen and then it locks or drops back to DOS.

This one is unusual in that it generally happens on a SuperStor
drive (or any other disk compression software that swaps disks)
with a 3rd party memory manager. SuperStor has a utility called
DEVSWAP.COM that swaps DOS drive letters around. This is so that
if you compress a boot disk the applications that you have will
still be installed to drive C: rather than the drive that was
created by SuperStor. SuperStor boot disks will have an
uncompressed segment where DOS can load from. This uncompressed
drive will also have a file called DCONFIG.SYS. If you place
your memory manager in the DCONFIG.SYS SuperStor will be able to
move a portion of itself into upper memory. Caution: Do not try
to HILOAD the entire SuperStor driver (it can relocate itself
and only portions of it may go into upper memory). Windows will
reinitialize a memory manager as it starts. To do so it will
look for the driver on the drive from which it was originally
loaded from. In the case of a swapped drive though, the driver
may no longer be there and Windows will abort. This can be a
confusing issue so here is a step by step sequence.

1.   A memory manager is loaded from C:\ (uncompressed segment

of the disk)
2.   The SuperStor driver is loaded creating a drive D:
(compressed)
3.   DEVSWAP.COM is run. This turns the drives around making
uncompressed drive C: into drive D: and compressed D: into C:
4.   Windows is run. As it initializes it looks for a memory
manager in C:\ (which is where it was loaded in step 1) but the
memory manager is no longer there. It is now in drive D: because
of the swap. Windows aborts.

The solution to this is straightforward. Copy the memory manager
into the same directory on the compressed drive that you loaded
it from in the uncompressed drive. In the case above have a copy
of the memory manager in both the compressed and uncompressed
root directories (C:\ & D:\ ).

This situation does not generally occur with the DR DOS
utilities HIDOS.SYS and EMM386.SYS because the DR DOS Install
program makes sure that the driver is located in the DR DOS
directory on both drives.

- I am experiencing difficulty shelling to DOS from Windows. It
either locks or I get a message that I am out of environment
space.

Check your environment from DOS by typing "SET". There should be
a variable called COMSPEC and it should point to the either the
root directory (preferred) or to the directory where DR DOS
files are located. On a network this variable may point to your
network DOS directory. Make sure that this is the correct
directory and that DR DOS is located there. Check the SHELL
statement and make sure that there is a /P statement and that an
environment has been set (/E:). Make sure that the environment
size is large enough. Windows may need a fairly large
environment size if you run several applications at the same
time and it does add lines to the environment. It is not
necessary to have a COMSPEC line in your AUTOEXEC.BAT with DR
DOS as the shell statement will insert one.

If a third party memory manager is in use it is possible to
receive an error loading a second command processor when you

relocate COMMAND.COM to upper memory. Try loading COMMAND.COM in conventional memory.

There may also be a TSR that is interfering with loading another command processor. Try removing TSR's from memory to see if you have a conflict.

If you have a large environment and still get the message "Out of Environment Space" you can edit the properties of the DOS PROMPT Icon and put a /E:(# of bytes) parameter in the command line. Editing the properties of the DOS PROMPT Icon can also help to eliminate the message "COMMAND.COM NOT FOUND". Windows does not place the full path on the filename. The command line only shows "COMMAND.COM". If you change that to be "C:\COMMAND.COM", for example, Windows will not use the DOS path to locate the file. This can also alleviate any message about "INVALID COMMAND.COM". This message is usually due to the fact that you have another DOS's command interpreter somewhere in your path.

Final Words

An update to DR DOS 6.0 is currently being sent to all registered users. If you are still having conflicts with getting Windows to run with DR DOS you may need this update. To determine if you have the update already (the updated files are combined with DR DOS as we manufacture it) look at the date of your COMMAND.COM. A date of December 1991 or later means that you have the update.

Document 1603
                              FYI

(Note: The origin of this information may be internal or external to Novell. Novell makes every effort within its means to verify this information. However, the information provided in this document is FOR YOUR INFORMATION only. Novell makes no explicit or implied claims to the validity of this information.)

Document 1603
Windows 3.1
06/05/92

Novell Desktop Systems Group

Microsoft Windows 3.1

The April update of DR DOS 6.0 is fully compatible with
Microsoft Windows 3.1. If users do not have the update they can
download it from the Novell Host System BBS or CompuServe. All
registered users will be sent the business update at no charge.
The update has already been incorporated into all currently
manufactured product. The Novell Host System is at 408-649-3443
and is 2400,8,N,1.

Windows' Requirements
Microsoft Windows 3.1 is designed to run on only 286, 386SX, 386
and 486 computers. It has 2 modes of operation. Windows
Standard mode requires there be at least 1 Megabyte of total
memory and the presence of an XMS memory manager such as
HIDOS.SYS or EMM386.SYS. Enhanced Mode will only run on a 386SX
or better CPU and requires a minimum of 1 Megabyte of available
XMS memory to function. If you are not sure what mode you are
using you can find out by selecting the HELP menu from the
Windows Program Manager. Select ABOUT PROGRAM MANAGER and you
will see a dialog box that indicates the mode you are currently
using.

Windows users cannot use the /V option for HIDOS.SYS and
EMM386.SYS. This option takes video memory addresses and assigns
them to conventional memory. This means that you can only run
text based applications when this switch is on.

SuperStor
The Windows 3.1 default drive for temporary swap files is the
drive on which Windows was installed. If Windows is installed on
a SuperStor drive it is strongly recommended that users change
the default drive for swap files to an uncompressed drive. This
should be done for both temporary and permanent swap files.

To change the location of the swap file it is necessary to be in
enhanced mode. Open the Control Panel by double clicking on the
icon. Next select the 386 Enhanced icon. You should see a dialog
box with several buttons. One of the buttons will be labeled
Virtual Memory. Select this button. The next dialog will
indicate whether or not a permanent swap file is in use and the
drive that is being used for the swap file. It is very important
that swap files not be created on a SuperStor drive. Select the
appropriate options to place the swap file on the uncompressed

drive.

If the uncompressed drive does not have enough space for the
swap file do not continue to run Windows in enhanced mode until
enough free space has been cleared on the uncompressed drive.
Standard mode can still be used. It may be necessary to backup
the compressed drive and remove it in order to create enough
uncompressed free space for Windows swap files. Swap files range
in size from about 2 MB to 8MB.

SuperPCK
Users must configure SuperPCK to use XMS memory instead of EMS
memory and have the PCKWIN.SYS driver in the CONFIG.SYS.
SuperPCK is configured to use XMS with the /EM option. The
PCKWIN.SYS driver is mandatory for running Windows in Standard
or Enhanced Mode with SuperPCK.

Both of these options can be enabled through DR DOS Setup. Go to
the DISKMAX menu and say YES to SuperPCK. The next screen will
be the SuperPCK dialog. There you check YES to the selection
that asks if Windows is run in Standard or Enhanced modes.

The next selection in DR DOS Setup will be whether or not to use
Automatic Memory Allocation. If this selection is YES (default)
then SuperPCK will use all of the available XMS memory and will
lend half of that amount back to Windows. We recommend that this
option should only be used on computers with 4 or more Megabytes
of total memory. If Automatic Allocation is YES then the next
line will ask for an amount of RAM to reserve. This option will
reserve the specified amount of memory for use by
otherapplications and prevent SuperPCK from using this memory.
Lending is still valid. On computers with less than 4 megabytes
total memory or for machines where users wish to limit the size
of the cache Automatic Memory Allocation should be NO. This will
change the next couple of options you see on the screen. You
will now see selection boxes for the Cache Size and the Lending
Amount. Users with 3 megabytes systems will be very close to the
minimum needed to run Windows in Enhanced Mode. Make sure the
size of the cache and the lending amount give you enough memory
to run in the mode that you use.

For example: A 4 Megabyte computer can use SuperPCK with a 3 MB
cache size and 2 MB of lending. This means that when Windows
runs the cache will be reduced to 1 MB (because of lending) and
Windows will have 2 MB of XMS memory to use (the 1st MB is DOS
conventional memory).

Examples:

SUPERPCK /EM /R:1024

These parameters instruct SuperPCK to use all XMS memory less 1
MB (1024K). On a system with 3 MB of XMS memory Superpck will
use 2 megabytes. Half of that amount (1 MB) will still be
available for lending. This gives Windows a total of 2 MB to
use. Lending can be turned off with the switch /L-.

SUPERPCK /EM /L:1024

These parameters will instruct SuperPCK to lend 1 MB of memory
no matter what the size of the cache is. This parameter could
conceivably be more or less than half of the total cache size
(default).

SUPERPCK /EM /S:1024

These parameters will restrict the size of the cache to only 1
MB. Any additional XMS memory will not be used by the cache.
Half of the cache is still available for lending unless the /L-
switch is used.
Document 1603
Windows 3.1 Installation
If Super PC-Kwik is already loaded when you install Windows 3.1,
you are informed by the Windows SETUP program that SUPERPCK.EXE
is running and you are warned that your system may fail. Ignore
this message and continue with the Windows installation
procedure. This message will also appear whenever the Windows
SETUP program is used to change Windows configurations.

The Windows 3.1 standard installation makes changes to
AUTOEXEC.BAT and CONFIG.SYS on installation. It is recommended
that backups of these files be made before installing.

By default, Windows installs the SMARTDrive disk cache program
and the HIMEM.SYS memory manager. However, the DR DOS 6.0 disk
cache, Super PC-Kwik, and the DR DOS 6.0 MemoryMAX drivers
provide superior functionality over the Windows 3.1 SMARTDrive
disk cache and HIMEM.SYS.

To use Super PC-Kwik and the DR DOS MemoryMAX drivers instead of
SMARTDrive and HIMEM.SYS, you simply remove one line from your
AUTOEXEC.BAT and CONFIG.SYS files. Edit AUTOEXEC.BAT to remove
the line:

```
      C:\WINDOWS\SMARTDRV.EXE
```

and edit CONFIG.SYS to remove the line:

```
      DEVICE=C:\WINDOWS\HIMEM.SYS
```

The above lines should be removed after Windows 3.1 has been
installed but prior to rebooting.

If you are using the DR DOS 6.0 EMM386.SYS MemoryMAX driver,
Windows may also replace the EMM386.SYS line in your CONFIG.SYS
file with the Windows EMM386.EXE line. As a result of this
change, an error may be generated when rebooting. The EMM386
line should be changed back to its original form after
installing Windows 3.1 for the system to boot properly. Refer to
the backup of CONFIG.SYS to be sure that the correct syntax is
used. Windows will also change the path to the driver.

The Windows 3.1 installation will insert a STACKS command into
the CONFIG.SYS. Even though DR DOS does not use a STACKS
command, the line can be left in CONFIG.SYS. No error will
result.

SMARTDrive
DR DOS 6.0 is compatible with both the SMARTDrive disk cache and
with HIMEM.SYS. If you want to continue using these drivers, you
must run the DR DOS SETUP program, and remove MemoryMAX and
Super PC-Kwik. However, if you do use SMARTDrive instead of
Super PC-Kwik, do not use the SMARTDrive + (plus) option to
enable caching on a SuperStor compressed drive. Unexpected
errors may result when this option is used.

EMM386.SYS supports upper memory for Windows 3.1 running in
Standard or Enhanced mode. You no longer need to use the /WINSTD
option on the EMM386.SYS command line to run Windows 3.1 in
Standard mode. (Note: As a result, if you use SETUP to
configure MemoryMAX /EMM386.SYS to run Windows 3.1, you should
respond "No" to the question "Support Windows Standard Mode"
when prompted.)
Document 1603

Issues/Troubleshooting:

*DOS applications lock up when attached to a network but are
fine when not loading the network. -Machines that have LPT1

ports and are using NE2000 network cards configured for I/O address 360 have occasionally hung or had trouble running DOS applications under Windows 3.1. If this is encountered, try setting the NE2000 for a lower I/O address.

*Windows 3.1 will not run. But it was installed with no problems. - One of the key areas here is that it was installed over a Windows 3.0. The update has been installed and a check of IBMDOS.COM and EMM386.SYS indicate that they are from the April update. In order to install Windows 3.1 the install program will actually load Windows 3.1. So at least during the installation Windows was in fact running in Standard mode. However, one of the things that does change when running it again is that Windows will use the old WIN.INI file from Windows 3.0. This file contains 2 lines that may be effecting performance. One line begins with LOAD and the other with RUN. These two lines tell Windows to execute an application on startup. Not all old Windows 3.0 applications seem to be working under 3.1. Try commenting out the RUN and LOAD lines of the WIN.INI with a semicolon ";". If this does not seem to be of any help then rename WIN.INI and SYSTEM.INI and reinstall Windows 3.1. Windows will then create new INI files.

*Following the update to the April files or after installing Windows
3.1 from defaults the system is crashing out of and loosing the AUTOEXEC.BAT. After dropping out of the AUTOEXEC the computer appears to have corrupt directories. Booting from a clean floppy such as the DR DOS Startup Disk shows that all is well with SSTOR. - Here SMARTDRV.EXE was added as the first line in the AUTOEXEC.BAT and the + option was used to cache the SuperStor drive. SMARTDRV will not normally cache a SuperStor drive and users are strongly cautioned not to do so. Super PC-Kwik is fully compatible with both SuperStor and Windows 3.1.

* When trying to load, Windows 3.1 gets an error indicating that the SYSTEM.INI could not load EMM386.SYS. The user is then dropped to DOS. - The system has returned to a pre-April EMM386 driver. If SuperStor is involved make sure that all copies of EMM386 are the April version. This includes any copies that maybe on the uncompressed drive. This error will immediately go away when the correct EMM386.SYS is used. Be sure and check all other updated files for the correct dates.

*Windows has the ability to provide EMS memory to DOS based applications when in Enhanced Mode. Its ability to do this is dependent on which memory driver is being used and what options

are selected.

- If the DR DOS EMM386.SYS is being used a page frame must be created to enable Windows to provide EMS support. To create a page frame with EMM386.SYS it is necessary to use the parameter /F=AUTO or /F=address. If DR DOS's HIDOS.SYS or Windows' HIMEM.SYS is being used Windows will be able to create EMS memory. HIDOS.SYS would be preferred because this will still permit DR DOS to use the HMA.

*Windows begins but not in Enhanced Mode
-First check available memory with the MEM command. Windows in Enhanced Mode will require 1024K (1 Megabyte) of available XMS memory to run. If you are using SuperPCK the command "SUPERPCK /P" will give you a listing of the parameters that are currently in use. The /L command will indicate the total amount of memory available for lending, the amount currently lent and the amount remaining to be lent. Make sure that the amount remaining is enough for the mode that you are trying to enter. Also, make sure that the cache is using XMS memory. This will be indicated by the /EM option.

* Windows seems to start but suddenly a lot of strange characters appear fon the screen and then it locks or drops back to DOS. -This one is unusual in that it generally happens on a SuperStor drive (or any other disk compression software that swaps disks) with a 3rd party memory manager. SuperStor has a utility called DEVSWAP.COM that swaps DOS drive letters around. This is so that if you compress a boot disk the applications that you have will still be installed to drive C: rather than the drive that was created by SuperStor. SuperStor boot disks will have an uncompressed segment where DOS can load from. This uncompressed drive will also have a file called DCONFIG.SYS. If you place your memory manager in the DCONFIG.SYS SuperStor will be able to move a portion of itself into upper memory. Caution: Do not try to HILOAD the entire SuperStor driver (it can relocate itself and only portions of it may go into upper memory). Windows will reinitialize a memory manager as it starts. As it does the XMS driver will go back to the original path it was loaded from. In the case of a swapped drive though, the physical file may not be there because of the swap and Windows will abort. This can be a confusing issue so here is a step by step sequence.

    1.   A memory manager is loaded from C:\ (uncompressed segment of the disk)
    2.   The SuperStor driver is loaded creating a drive D:

(compressed)
        3.   DEVSWAP.COM is run. This turns the drives around
making uncompressed drive C: into drive D: and compressed D:
into C:
        4.   Windows is run. As the memory manager reinitalizes it
looks to the old path that it was originally loaded from in C:\
(which is where it was loaded in step 1) but the memory manager
is no longer there. It is now in drive D: because of the swap.
Windows aborts.

The solution to this is straightforward. Copy the memory manager
into the same directory on the compressed drive that you loaded
it from in the uncompressed drive. In the case above have a copy
of the memory manager in both the compressed and uncompressed
root directories (C:\ & D:\ ).

Document 1604

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

GEOWORKS

Description:

GeoWorks version 1.2 works fine under DR DOS but it does require
some special configuration. Files need to be set at 120. This
may seem like a high figure but it will only use about 9K of RAM
and if you are using EMM386 no impact need occur on conventional
memory. Ensemble will not even begin with files equal to 30.

TaskMAX can be initialized only with CTRL-ESC. No other hot keys
can be used. Also end-users may find that they have no keyboard
in their other tasks. We have also received reports that even if
it does switch TaskMAX will eventually fail. At this time we
cannot recommend the use of TaskMAX with GeoWorks Ensemble
v.1.2.

Any version of GeoWorks prior to 1.2 will not work under DR DOS
6.

GeoWorks uses XMS memory when available and will use the HMA if it is available.

There have been some reports that GeoWorks will not run when SuperPCK is loaded into upper memory (/&U+). If you are having trouble loading Ensemble try the switch /&U-. Also if you are using SuperPCK in expanded memory (/A+) advanced disk transfers must be turned off with a /H-.

GeoWorks Pro

GeoWorks Pro now has an interface that is fully compatible with DR DOS 6.0s TaskMAX interface. In fact, if users have installed the new DR DOS 6.0 update that is dated 12/91 they will be able to use the TaskMAX cut and paste features with GeoWorks Pro.

Document 1605

                                FYI

(Note: The origin of this information may be internal or external to Novell. Novell makes every effort within its means to verify this information. However, the information provided in this document is FOR YOUR INFORMATION only. Novell makes no explicit or implied claims to the validity of this information.)

Document 1605
DESQVIEW

Description:
DesqView is a multi-tasking DOS based program that relies on very specific uses of system memory. Specifically, it accomplishes its multi-tasking by bank-switching applications in and out of conventional memory (much like Concurrent DOS XM) and can use XMS UMB's (Upper memory blocks) and the HMA (High Memory Area) for storing its own program code and data. For maximum performance of DesqView under DRDOS 6.0, one should use QEMM386.SYS instead of EMM386.SYS and one should make sure that nothing from DRDOS is taking control of the A20 line (that is,

using the HMA.)

QEMM386.SYS should be used instead of EMM386.SYS, because the LIM driver which is a part of QEMM386.SYS has been enhanced for DesqView multi-tasking in conventional memory.

HIDOS.SYS can be used along with QEMM386.SYS (as with DRDOS 5.0) to relocate the operating system, but, unlike DRDOS 5.0, it takes more work than just using the /BDOS=AUTO switch to keep DRDOS 6.0 out of the HMA. To keep DRDOS 6.0 out of the HMA for DesqView:

    1)   Make sure that the /MH option is not used on any of the DRDOS 6.0 commands that support it. This includes SHELL and SHARE.

    2)   Make sure that the HIBUFFERS command is not used in the CONFIG.SYS file. This command will use the HMA even if the Kernel is not put there with /BDOS=FFFF.

    3)   Make sure that the /BDOS option reads: /BDOS=AUTO.

(NOTE: If one is unsure if the HMA is being allocated to DRDOS 6.0 instead of DesqView, one can use MEM /F before starting DesqView. This command will display an empty box if DRDOS 6.0 is not using the HMA.)

Example:
Here is an example CONFIG.SYS that will work properly with DesqView:

```
SHELL=C:\DRDOS\COMMAND.COM C:\DRDOS6 /P /MU /E:512
BREAK=ON
BUFFERS=5
FILES=30
LASTDRIVE=M
HISTORY=ON, 256, ON, OFF, OFF
DEVICE=C:\QEMM60\QEMM386.SYS R:2 NOVIDEOFILL RAM ROM ST:
FXST=F000
DEVICE=C:\DRDOS\HIDOS.SYS /B=AUTO
DEVICE=C:\QEMM60\LOADHI.SYS /R:3 C:\DRDOS\PCKWIN.SYS
DEVICE=C:\QEMM60\LOADHI.SYS /R:1 C:\MOUSE\MOUSE.SYS
DEVICE=C:\SSTORDRV.SYS
HIDOS=ON
```

Document 1606

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

NETROOM

Description:

We have had customer reports that NETROOM 1.1 (1.14?) was having
a problem under DR DOS 6.0. The symptom was that certain
applications were generating a DOS error message when the
applications were terminated; "Can't load file : C:\COMMAND.COM
Insert correct disk and press any key to retry..."

As it turns out, the NETROOM utility has the ability to relocate
the DOS command interpreter into upper memory. When this option
is disabled, the "problem" applications no longer generated the
error message.

Current shipping product: NETROOM 2.0 (with an "update" to
2.1)

     Helix Software
     47-89th Street
     Long Island City, NY 11101
     Technical Support: (718) 392-3735

Document 1607

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

SuperPCK with Coretest

Description:

Coretest is a public domain application that comes in many
different versions. It runs various benchmark tests on a system.

Some of the Taiwanese computer manufacturers rely on Coretest
for their production quality assurance. Multisoft and the
Digital Research engineering labs are working on a problem
reported from Taiwan.

If SuperPCK is running in extended memory, Coretest causes the
cache to get corrupted and Diskopt reports cross-linked files.
Actual data on the drive is not lost or corrupted. Rebooting
corrects the error.

Workaround to avoid any problems is:

1.   Run SuperPCK in expanded memory, or

2.   Set the switch /B- which decreases interrupt timeout.

This problem is expected to be fixed in the near future.

Document 1608

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

QEMM v.6

Description:

The third party compatibility unit at Quarterdeck reports that

DR DOS 6 and QEMM386 v6 are compatible. OPTIMIZE does not
recognize all of the CONFIG.SYS enhancements offered by DR DOS
6, such as SWITCH, but will work properly otherwise

We have the most recent version of QEMM (v.6.01), and it seems
to be working very well on the new 386/33mhz. AMD 386/40mhz.
Processor machines with AMI BIOS we have.

There's been a lot of talk about their new and major feature
STEALTH. The STEALTH technology actually relocates/re-maps ROM's
off into extended memory, thus freeing up more contiguous upper
memory for use by QEMM (as much as a 128k block on the AMD
386/33mhz. machine.) STEALTH has two specific modes of operation
specified by using ST:F or ST:M on the QEMM device driver line.
It is important to understand that an advanced feature like this
is difficult to troubleshoot. The QEMM documentation (written,
and on-line via the OPTIMIZE program) gives some very helpful
"first-step" debugging hints.

If you are using QEMM with DR DOS 6.0 and are seeing strange
behavior, try removing the ST option on the QEMM device driver
line altogether.

STEALTH confuses many disk caches which use expanded memory
(EMS) because STEALTH technology uses the LIM page frame in an
advanced, non-standard way. To prevent data corruption advanced
hard disk reads and writes (/H-) are automatically disabled by
SuperPCK when STEALTH is used. Quarterdeck, Multisoft and
Digital Research are working together on this problem.

Document 1609

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

Applications that Check the DOS Version Number

Description:
The DR DOS 6.0 Version Numbers

A few applications and device drivers have been encountered
which, when loading under the DR DOS 6.0 operating system,
display an error message that states the current version of
operating system is not supported. This can occur for several
reasons, which are outlined below.

Device drivers for disk drives or networks are sometimes
produced for specific versions of DOS or occasionally will use
specific configurations for different versions of DOS. The DR
DOS 6.0 operating system will appear to be COMPAQ DOS 3.31 to
applications and drivers. Usually, a DOS 3.3 driver works
properly. If you have been running previously with MS/PC DOS
4.x, the driver that you have been using might be designed
specifically for that version. Contact the manufacturer of the
driver to see if they have any specific configuration
information or drivers for DOS 3.3x.

When applications request the DOS version number from the
operating system, the DR DOS 6.0 operating system returns
version 3.31. The application then knows that it should expect
support for DOS 3.3-level calls and support for larger than 32
Mbyte partitions using the COMPAQ Extended Interrupt 25 and 26
convention. Most applications do follow these conventions and
therefore work without any difficulty.

However, some applications have been designed to go beyond those
conventions and actually attempt to directly manipulate DOS data
structures or replace sections of the operating system code with
their own. These applications depend on having intimate
knowledge of each DOS version they detect and have been written
to react differently for each of those versions. If an
application uses this type of technique, the manufacturer will
have to design the application to take the DR DOS 6.0 operating
system into account as well. It is possible that the
manufacturer has already produced another version of your
application that runs under the DR DOS 6.0 operating system.
Contact the manufacturer to see if there is any information
about upgrades or specific configuration steps for the DR DOS
6.0 operating system. If the manufacturer is interested in more

information about the DR DOS 6.0 operating system, they are
welcome to contact Digital Research Inc. directly and we will
work with them on the situation.

Document 1610

PCPAINT

Description:

PC PAINT may alter memory report drastically showing numbers
such as 937k available if MEMMAX has been set with +U.

MEMMAX -U will solve the problem without taking away any
functionality.

PCPAINT (ver.2.0? Oct.85) Serial Mouse

Example:

In the AUTOEXEC.BAT, be certain this command reads:

     MEMMAX -U

Document 1611

QUICKEN v 5

Description:

We have recieved reports concerning Quicken. The application
seems to be having a difficult time executing from a SuperStor
partition.

Apparently, the folks at Intuit have started getting reports
from customers using Stacker from Stac Electronics and now from
customers using SuperStor from AddStor that Quicken 5.0 has
certain problems when executing from a compressed drive. As
they are now in the process of tracking these problems, we
should refer DRDOS 6.0/Quicken 5.0 users to Intuit for more
information. Where possible, we recommend that users run
Quicken from a non-compressed drive or from a floppy.

It has also been brought to our attention that TaskMAX will not
work when Quicken 5 is run. Apparently, Quicken intercepts all
keyboard input and TaskMAX is not getting any keystrokes. This
does not cause TaskMAX to fail. It only means that you cannot
switch tasks while Quicken is running. When you exit Quicken it
will restore the keyboard and TaskMAX will function normally.

    Intuit Technical Support: (415) 322-2800

Document 1612

GLYPHIX
EM
01/02/92

Description:
Glyphix has been tested with DR DOS 6.0 and it exhibits the same
symptoms that it did with DR DOS 5.0, ie. "GX" mode still does
not work with the HP LaserJet. It is recommend that end-users
change to GXL or GXS to start Glyphix.

If the you are using a Hewlett-Packard Series II, IID, or IIIP,
you should be aware of the following restrictions:

GLYPHIX laser font package for WordPerfect 5.1 has three modes
of operation. The user can choose any of the three modes when
starting the application. Two of the modes are successful with
DR DOS. The third is not.

These two modes run well under DR DOS...

GXL.EXE
This is the fastest mode, but it requires the most memory.
(Which is no problem when you use DR DOSs memory features).
Takes 110K of memory & can print 3-120 point sizes. Allows
background printing.

GXS.EXE
The smaller memory version of GXL.EXE. Allows you to print up
to 60 point, and takes approximately 59K of memory. Allows
background printing.

The following mode is not compatible with DR DOS. It will not
print correctly on the HP printers listed above.

GX.EXE
Requires about 26K of memory. Also requires over 500K of disk
space to create a temp print file.

If the customer is using a Hewlett-Packard Deskjet, the Deskjet
driver for Glyphix has no problems.

Document 1613

PCGLOBE
SGP
1/6/92

Description:

Magnavox licenses a program called PCGLOBE to run on their CD
461 CD ROM external drive. The commercial version of PCGLOBE has
no incompatibilities with DRDOS 6.0. However, the Magnavox
version generates an error "CHECK TO SEE IF YOU HAVE THE RIGHT
CD IN YOUR DRIVE". This occurs in a "vanilla" environment
without loading MemoryMax etc. Magnavox technical support (800)
722-6224 has reproduced the problem and offers the following
workaround: Remove the second line from the batch file that
invokes PCGLOBE. This disables the hardware check. The exact
circumstances of this error are being investigated and if any
additional information becomes available this document will be
updated.

Document 1614

Falcon 3.0
RR
2/6/92

Description:

Falcon 3.0 is compatible with DR DOS 6.0. There are, however,
very important memory requirements that must be met for this
application to properly run. Falcon requires a minimum of 600K
(614,400 bytes) of memory to run. This can make it difficult for
some users with SuperStored drives to access the program. If
this is the case it is possible to install the application to a
non-compressed drive and create an alternate CONFIG.SYS
(DCONFIG.SYS) that does not load the SuperStor driver. Other
TSR's should also be avoided. One of the advantages of DR DOS
6.0 is its ability to run alternate configuration files.
Additional configuration programming can be found in the DR DOS
6 users guide and in Document 1113.

The installation program may display an error that indicates the
computer only has 575K free and more memory needs to be made
available. DR DOS is detecting that the installation program may
be exepacked and is using up the first 64K of base memory before
launching the program. Users should ignore this message and
continue. If the install program returns to a DOS prompt try
using the command "MEMMAX -L" and restarting the install
program. In some cases users may see a screen that contains
control characters and asks for a Y/N response. Ignore the
unreadable portion and answer "N" and the installation will
proceed normally. Remember to use the command "MEMMAX +L" to
free up locked memory before running Falcon.

*There may also be an additional problem for users who have
single floppy computers. When the installation program is
"Decompressing Files" users may see a message that says,
"Insert diskette for drive (A or B) and press any key when
ready." Do not remove the floppy from the drive but merely
strike any key. This may require repeated strikes to continue
and will have to be done for every disk.

*If the installation program freezes or gives an error message
users should delete all installed files and the Falcon directory
and reinstall.

*If a user is unable to use the keyboard to select buttons in
the interface or the cockpit functions while flying around, the

user may need to add "BREAK=ON" to the CONFIG.SYS. If this fails
to work, unplug the keyboard from the computer and then plug it
back in again.

*Users need to be sure that they are using the latest version of
their mouse driver. Genius mice can be a possible problem and
need to be using a version 9.06 driver.

*If digitized radio messages are not playing, be sure that there
is at least 480K (491,520 bytes) of EMS memory for those sounds.
This will require a computer of at least 2 MB of RAM. All other
sound effects will be available without EMS memory. To determine
the amount of EMS memory available with DR DOS type "MEM" at a
DOS prompt.

*Minimum System Requirements for Falcon 3.0

. 12MHz 80286 IBM (or compatible) computer or IBM PS/2 Model 30-
286 or higher

. 1 MB of RAM

. DOS 5.0 or higher

. Hard drive with at least 11MB free space

. VGA graphics card and VGA color monitor

. One 1.2MB 5.25 in disk drive or one 1.44MB 3.5 in disk drive

*Information courtesy of Spectrum HoloByte and not necessarily
specific to DR DOS

Document 1615

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no

explicit or implied claims to the validity of this information.)

Manual installation with Stacker 2.0 currently installed
JD
3/12/92

NOTES

For these examples of a manual installation we have assumed that
the original boot partition is lettered C:. If your boot
partition is labeled other than C:, please replace "C:" below
with the drive letter representing your boot partition.

BACKUP YOUR HARD DISK BEFORE TRYING THE FOLLOWING. ALSO, have a
copy of your present operating system's CONFIG.SYS and
AUTOEXEC.BAT handy for reference. A full understanding of the
STACKER 2.0 disk compression utility is recommended before
attempting the following steps. It is also recommended that you
NOT install the security feature of DR DOS until we are sure DR
DOS and Stacker are working properly after installation.

INSTRUCTIONS

The instructions for a manual installation on a hard disk with
Stacker 2.0 already installed are as follows:

1.   Using DISKCOPY, make a backup of the DR DOS 6.0 STARTUP
diskette.

2.   Reboot with the DR DOS backup STARTUP diskette. Eventually
the drive will stop turning at the first installation screen.

3.   Break out of the installation by pressing <F10> and
choosing "Exit to DR DOS".

4.   From the A: prompt type EDITOR CONFIG.SYS to edit the
Config.sys on this backup diskette.

5.   Add the following lines to the END of the Config.sys file:

     DEVICE=C:\STACKER\STACKER.COM C:\STACVOL.DSK
     DEVICE=C:\STACKER\SSWAP.COM C:\STACVOL.DSK /SYNC

These additions will make the DR DOS 6.0 INSTALL program
"Stacker Aware". Meaning that DR DOS INSTALL will now recognize
your Stacker Volumes, as well as your uncompressed volume.

6.   Remove the lines: DEVICE=\SSTORDRV.SYS and
DEVICE=\DEVSWAP.COM   from this same CONFIG.SYS file. This
will disable SuperStor, DR DOS's disk compression utility, from
being loaded from the backup STARTUP diskette.

7.   Save your changes to CONFIG.SYS by performing a CTRL-K and
pressing X to Save and Exit. For additional information
regarding DR DOS's EDITOR program, please see the DR DOS 6.0
User Guide.

NOTE: Remember that the DR DOS backup STARTUP diskette is now
Stacker aware. Now if we were to reboot from this DR DOS backup
STARTUP diskette, we should notice the Stacker drives loading
and swapping the appropriate drive letters. PREPARE to
determine which drive letter is mounting as your Stacker
uncompressed volume (which drive is swapping with C:). We can
do this by watching Stacker as it mounts.

     Swapped drives C: and __:

     FILL in the above blank, and all of the below blanks
(underscores), in this tip, with the drive letter representing
the uncompressed boot partition that swaps with C:.

8.   Reboot with the DR DOS backup STARTUP diskette and note the
swap drive as explained in the NOTE above. Eventually the drive
will stop turning at the first installation screen.

9.   Break out of the installation by pressing <F10> and
choosing "Exit to DR DOS".

10. From the A: prompt type SYS __: This will transfer the
proper boot files from the installation diskette in drive A: to

your __: uncompressed boot partition. Now drive __: is a DR DOS
6.0 boot drive.

11.   Also from the A: prompt type SYS C:. This will transfer
the proper boot files from the installation diskette in drive A:
to your C: Stacker partition. Most importantly, this will
create a new DR DOS Boot Sector if your hard disk was previously
formatted under another version of the operating system.

12.   Move to drive __: and create a DR DOS subdirectory by
typing MD DRDOS.

13.   Move to drive C: and create a DR DOS subdirectory by typing
MD DRDOS.

14.   Move back to A: and copy all of the files from all of your
DR DOS 6.0 diskettes   into the C: DRDOS subdirectory. The
copying is accomplished by typing COPY *.* C:\DRDOS from the A:
prompt with each individual DR DOS diskette. You may use either
the original STARTUP or the backup STARTUP diskette here.

15.   Move to the C:\DRDOS subdirectory by typing C:\ and then CD
DRDOS.

16.   Delete COMMAND.COM, CONFIG.SYS, and AUTOEXEC.BAT from this
DR DOS subdirectory. These files will not be needed here. This
is accomplished by typing DEL <FILENAME>.

17.   Rename INSTALL.EXE to SETUP.EXE by typing REN INSTALL.EXE
SETUP.EXE.

18.   Run SETUP by typing SETUP, and install each portion of DR
DOS. Note: DO NOT INSTALL THE SUPERSTOR PORTION OF DR DOS.
SUPERSTOR AND STACKER CANNOT BE USED TOGETHER.

19. Once you are configured and have DR DOS installed, choose
EXIT TO DRDOS. DO NOT REBOOT YOUR MACHINE!

20. From the C:\DRDOS subdirectory type EDITOR C:\CONFIG.SYS.

21. Add the following lines to the end of the CONFIG.SYS file:

     DEVICE=C:\STACKER\STACKER.COM C:\STACKVOL.DSK
     DEVICE=C:\STACKER\SSWAP.COM C:\STACVOL.DSK /SYNC

These additions will make your DR DOS hard disk installation
"Stacker Aware". Meaning that DR DOS configuration files will
allow you to recognize your Stacker Volumes as well as your
uncompressed volume.

22. Also, write down any of the NEW (DR DOS) drivers which are
loaded prior to the last two lines added above. (NOTE: This is
why it is recommended that you have a copy of your old
CONFIG.SYS and AUTOEXEC.BAT handy. You may now compare your old
CONFIG.SYS with the new CONFIG.SYS DR DOS created and determine
which drivers DR DOS has added) Look for lines which begin with
a DEVICE, HIDEVICE, INSTALL, or HIINSTALL command. REMEMBER, all
of the drivers loading in your CONFIG.SYS before the above two
lines will be loaded from this __: drive. This is why we have
to make sure they are in the DRDOS subdirectory on the __: drive
for CONFIG.SYS to find them.

23. Save your changes to CONFIG.SYS by performing a CTRL-K and
then press X to Save and Exit. For additional information
regarding DR DOS's EDITOR program, please see the DR DOS 6.0
User Guide.

24. Copy all of the files noted in step #22 above to the DRDOS
subdirectory on __: (__:\DRDOS). This is accomplished by
issuing a COPY <FILENAME> __:\DRDOS.

25. Move back to the root directory by typing a CD \. From
here, copy your CONFIG.SYS and AUTOEXEC.BAT to the _: root
directory (__: \). This is accomplished by issuing a COPY
<FILENAME> __: \.

26. Stacker and DR DOS are now installed. You may now reboot
your machine.
          NOTE: If Stacker detects changes in your AUTOEXEC.BAT

or CONFIG.SYS   during boot, let Stacker make the changes by
pressing a "Y".

Disclaimer

Stacker is a trademark of Stac Electronics of Carlsbad, CA, and
is in no way a product of the Novell Desktop Systems Group.
While we make every effort to provide accurate information to
assist the user in installing DR DOS 6.O over Stacker 2.0, we
cannot guarantee the accuracy of these instructions in every
instance. Technical support questions involving Stacker
software are best addressed to Stac Electronics.

Document 1900

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

CABLING A TERMINAL FOR DR MULTIUSER DOS
4/1/92
MG

The cable needed to connect a dumb terminal or a PC terminal to
the host machine is an RS-232 Null Modem cable. The possible
pin configurations are as follows:

25-to-25 pin cable
HOST MACHINE   PC/TERMINAL

Transmit - 2   3 - Receive
Receive - 3   2 - Transmit
DSR   - 6   20 - DTR
Ground   - 7   7 - Ground
DTR   - 20   6 - DSR

9-to-25 pin cable
HOST MACHINE   PC/TERMINAL

```
Transmit  -  3              3  - Receive
Receive   -  2              2  - Transmit
DSR       -  6             20  - DTR
Ground    -  5              7  - Ground
DTR       -  4              6  - DSR


25-to-9 pin cable
HOST MACHINE            PC/TERMINAL

Transmit -  2              2  - Receive
Receive  -  3              3  - Transmit
DSR      -  6              4  - DTR
Ground   -  7              5  - Ground
DTR      - 20              6  - DSR


9-to-9 pin cable
HOST MACHINE            PC/TERMINAL

Transmit -  3              2  - Receive
Receive  -  2              3  - Transmit
DSR      -  6              4  - DTR
Ground   -  5              5  - Ground
DTR      -  4              6  - DSR
```

Document 1901

Document 1901
Troubleshooting CSPOOL
03/31/91
MG

       TROUBLESHOOTING CSPOOL PROBLEMS - MULTIUSER DOS

    1.   Make sure the user has the Multiuser DOS Business
Update of September, 1991. For upgrade information contact 1-

800-NETWARE.

    2.   In CCONFIG.SYS, put the line: SET CSPOOL C:
\OSUTILS\SPOOL.

    3.   If a secure system has not been installed, there will
be a system-wide CCONFIG.SYS file, a system-wide AUTOEXEC.BAT
file, and the possibility of STARTxxx.BAT files for each session
on each terminal. The START files are numbered according to
this convention: STARTxxy is the batch file that will be
executed on startup for terminal xx, session y. For example,
the file START032 is executed for terminal 03, session 2 upon
booting. (The main console is terminal 00.) If a secure system
has been installed, the system administrator should create an
AUTOEXEC.BAT file for EACH USER (in that user's subdirectory),
and execute that instead of a START file. Different programs
can be executed from each session on the terminal by using IF
"%1"=="x" for session x, in the user's AUTOEXEC file.

    4.   In the system-wide AUTOEXEC.BAT file, put the line: IF
"%1"=="1" CSPOOL START This starts CSPOOL from the main console.
If a secure system has been installed, and there are individual
user AUTOEXEC.BAT files, do NOT include this line in each of
those.

    5.   If STARTxxx.BAT files are used (in place of
AUTOEXEC.BAT), CSPOOL may have trouble initializing
simultaneously with other processes. The user can work around
this problem by using START001.BAT to initialize CSPOOL with a
pause, e.g.:

```
START001.BAT
PROMPT $P$G
PATH=C:\OSUTILS;C:\;...
SUSPEND=OFF
PAUSE
SET CSPOOL=C:\OSUTILS\SPOOL
CSPOOL START
```

thus giving other STARTxxx.BAT files time to start applications
before the user initializes CSPOOL. If AUTOEXEC.BAT is used,
and start files are not, the user can put this line: IF
"%1"=="1" PAUSE before the line IF...CSPOOL START line in
AUTOEXEC.BAT, to accomplish the same thing.

    6.   The C:\OSUTILS\SPOOL directory collects temporary
files which are sent to the spooler. Occasionally, a logjam of

corrupted files will block printouts. To solve this, get to a
prompt and type: CSPOOL QUIT then go to the C:\OSUTILS\SPOOL
subdirectory, and delete all files EXCEPT for CONFIG.CPL.

        7.   CONFIG.CPL is used to control settings for CSPOOL.
Most users want to reduce the TIME_OUT setting. The minimum time
out is 5 seconds. Most users also want to stop the form feed.
To do so, set FORMFEED to 0. This file can be edited in any
text editor.

        8.   CONFIG.CPL also contains a list of files not used by
the spooler. Printers 3 and 4 are on this list. If the user
has a printer on COM1 or COM2, these assignments need to be
removed from the NOT_PRINTER list. To exclude any other printer
from the spooler, add its printer assignment to the NOT_PRINTER
list. If there is a modem running off the multiport board, add
that port's printer assignment to the NOT_PRINTER list.

Document 1902
                               FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

Document 1902
Troubleshooting Terminals
04/13/92
MG

        TROUBLESHOOTING TERMINAL HANGING PROBLEMS - MULTIUSER DOS

     1.   Make sure the user has the Multiuser DOS Business
Update of September, 1991 or later. For upgrade information
contact 1-800-NETWARE.

     2.   If hanging problems occur that do not occur under
singleuser DOS, slow down all hardware options. The user could
disable Turbo (if the computer has Turbo), disable shadowing,
disable any onboard cache, and increase wait states in the CMOS
setup. If the video card is anything other than standard
CGA/EGA/VGA, switch the card or monitor to one of these standard
modes.

3.   To check for drive fragmentation, run CHKDSK *.* on
the hard drive. The first time CHKDSK is run, the user should
choose NOT to convert anything to files, and just see what's
going to be converted. After the names of the affected files
and directories have been noted, run CHKDSK *.* /F on the drive.
NETDRIVE must be set to LOCAL in order for CHKDSK to run in
Multiuser DOS.

4.   Be sure to turn the computer off daily, to minimize
the effect of memory fragmentation. (If 1k is used each time a
program is loaded, eventually these 1k pieces will add up to all
the available memory.)

5.   Check the power supply. A dedicated, grounded line
with surge protector is ideal. The humidity around the computer
and peripherals ought to be kept between 40% and 60%, as static
electricity can also cause hanging problems.

6.   If the computer is too near appliances or the wall, or
if the area isn't well ventilated, the computer could overheat
and cause unpredictable problems.

7.   Periodically (once every 6 months or so), the system
administrator should open up the machine, clean the insides of
the computer with canned air, and remove and reseat the cards,
reseat the chips, and check the contacts. This will correct the
effects of heat or dust on the computer.

Document 1903

Using PCTERM
04/13/92
MG

SETTING UP A PC AS A TERMINAL IN MULTIUSER DOS

DOCUMENTATION REFERENCES
- Chapter 1 in the Multiuser DOS User Guide

- Chapter 3 in the Multiuser DOS User Guide
- Appendix B in the Multiuser DOS User Guide

HARDWARE
- Host machine must be running Multiuser DOS, and have a free
serial port.
- PC to be used as a terminal must have at least 256k of RAM, a
monochrome or color display, and a free serial port (COM1 or
COM2).

CABLE
- The cable that will connect the serial port on the host to the
serial port on the PC must be an RS-232 Null Modem cable. As
there is no industry-wide specification, the cable must be wired
EXACTLY as outlined in the "CABLING A TERMINAL" tip.

SOFTWARE

PCTERM
Since the setup procedure is clearly outlined in Chapter 3 of
the Multiuser DOS User Guide, these points are to be used only
as enhancement to that documentation:

- The program that runs PCTERM is called PCTERM.COM. It is
stored in the OSUTILS subdirectory on the hard disk, and is on
the MDOS installation disks. The first time PCTERM is run, it
will create a file (in the same directory as itself) called
PCTERM.CON. Every subsequent time PCTERM is run, it will write
the changes to PCTERM.CON.

- It is recommended that the first time the user runs PCTERM,
they run it from the hard disk of the host machine. That way,
there will always be a backup file of PCTERM.CON in the OSUTILS
subdirectory, should anything happen to the floppy on which the
parameters are stored. - To run PCTERM, get to the C:\> prompt,
and type PCTERM. The user will see the main PCTERM menu. To
see or alter the terminal specifications, press F2. Most
parameters will not need to be changed. Keep in mind that all
these parameters refer to the CLIENT machine (the PC which you
are connecting as a terminal). These parameters are as follows:

F1 - Into which serial communications port (ON THE PC, not the host) will the cable that is going to the host machine (from the PC) be plugged? *

F2 - What is the speed at which these two machines will communicate? For trouble|shooting purposes, use a baud rate of 9600. Once everything is working perfectly, one might be able to run the terminal at 19200 baud or 38400 baud.

*F3 - Leave Parity at NONE.

*F4 - Leave Word Length at 8 (this is DATA BITS in MDOS Setup).

*F5 - Leave Flow Control at DTR (this is PROTOCOL in MDOS Setup).

F6 - Leave Colour Scroll Mode at FAST. If the PC has an older color adapter, this may need to be changed to Slow or Very Slow, if there is "snow" on the screen at FAST speed.

F7 - Leave Display Initial Menu at Yes, the first time that PCTERM is run. After the PC terminal is running perfectly, if the user wishes for the PC to act as a terminal on the host every time it boots up (rather than use the PC locally), this can be changed to No.

F8 - Leave Wrap-around at OFF.

F9 - Leave this at LPT1, to print to the local printer (off the printer port of the PC).

*F10- If the PC being connected has a monochrome display, choose PCTerm. If the PC being connected supports graphics, choose PC/CGA. (This corresponds with "Terminal supports graphics" in Setup.)

Once all the parameters have been set, press ESCape to return to

the PCTERM menu. Answer Y to the prompt "Update the
configuration file?".

- At this point, the file PCTERM.CON has been created, with the
parameters needed for the PC to act as a terminal. Copy
PCTERM.COM and PCTERM.CON from the hard disk onto a floppy disk,
and bring the floppy disk over to the PC. If the PC has a hard
drive, these two files should be copied into the root directory
of drive C on the PC (or into any other subdirectory which is
addressed by the PATH statement in the PC's AUTOEXEC.BAT file).
At this point, one should be able to turn on the PC, get to a C:
\> prompt, type PCTERM, and see the main menu for the PCTERM
program.

SETUP
Keep in mind that the options in the SETUP program refer
primarily to the main console and the host machine. To run the
SETUP program, get to a C:\> prompt, and type SETUP (enter).
The screens are the same as those seen during the initial
Multiuser DOS installation.

- Choose SERIAL PORTS as the area to configure in the SETUP
program.

- Choose the appropriate multiport card, if applicable.

- Choose VIEW PORT SUMMARY from the port configuration menu.

- Choose the port into which the null modem cable is plugged.

- Choose PC TERMINAL for this port's function.

* Set Baud Rate to 9600.

* Set Parity to NONE.

* Set Data bits to 8.

- Set Stop bits to 1.

* Set Protocol to DTR/DSR.

* If the PC has a monochrome monitor with no graphics card, answer NO to "Terminal Supports Graphics". If the PC has a Hercules (or compatible), CGA, EGA, or VGA card, answer YES.

- If the PC has an older, 84-key keyboard, change the keyboard default to be 84.

- Save all options, and finish Setup without any other changes.

* - For these parameters, SETUP and PCTERM need to agree.

At this point, the user will be able to boot the host computer, with the PC turned on, and get to a C:\> prompt on the PC by typing PCTERM, and choosing F1 to emulate a terminal. This C:\> prompt is coming from the Host Machine, and at this point the PC is nothing more than a terminal connected to the host. To return to the PCTERM menu (so that you can ESCape to the PC's own C:\> prompt), type Control-Alt-F10.

Document 1904
                                FYI

Document 1904
Printmap and Printer
04/13/92
MG

        USING THE PRINTMAP AND PRINTER COMMANDS IN MULTIUSER DOS

DOCUMENTATION REFERENCES
- Page 16-42 in the Multiuser DOS User Guide
- Pages 13-2 to 13-4 in the Multiuser DOS User Guide

DEFAULTS
- The first concept to understand about MDOS port assignments
is: while most DOS applications (and therefore most DOS users)
refer to the printer ports as LPT1, LPT2, etc., and to the
serial ports as COM1, COM2, etc., Multiuser DOS uses these
device names as logical names only, each of which can be mapped
to any physical port. The physical ports are known to Multiuser
DOS as PRN0, PRN1, etc. (for printer ports), and AUX0, AUX1,
etc. (for serial ports). - The default assignments for PRINTMAP
can be seen by typing PRINTMAP at a prompt. They are as
follows:

Logical name		MDOS Physical name		Physical port
LPT	1	Printer	0	Parallel Port 0
LPT	2	Printer	1	Parallel Port 1
LPT	3	Printer	2	Parallel Port 2
COM	1	Aux	0	COM1 Port
COM	2	Aux	1	COM2 Port or Multiport 1

- The default descriptions for each possible printer and serial
device are stored in a file called PRINTMAP.DAT (in the OSUTILS
directory). For printing from the console, they are as follows:

MDOS Physical name	Physical port
Printer 0	Parallel port 0
Printer 1	Parallel port 1
Printer 2	Parallel port 2
Printer 3	COM1 port
Printer 4	COM2 port or Multiport 1
Printer 5	Multiport 2
Printer 6	Multiport 3
.	.
Printer 15	Multiport 12
Aux 0	COM1 port
Aux 1	COM2 port or Multiport 1
Aux 2	Multiport 2
Aux 3	Multiport 3
.	.
Aux 15	Multiport 15

For printing from a terminal:
***The default printer for a terminal is the printer off the
back of that terminal. To the software running on a terminal,
"LPT1" is the printer that is local to the terminal, by default.
To change this, a PRINTMAP or PRINTER command would be needed.

- The syntax of PRINTMAP, in general is: PRINTMAP Logical name =
MDOS Physical name The effect of this is to map the physical
port to the logical port name for this session only. If the
mapping needs to take effect for every session on a given
terminal, put /* after the mapping.

EXAMPLES

- To send all output that software has directed to LPT3 (from
the session the terminal is in) to the printer defined by the
system as Printer 3 (the printer that is plugged into the device
which is plugged into port COM1), type
        PRINTMAP LPT3 = PRN3

- To assign the label LPT4 to the printer plugged into the
second parallel port on the system, type
        PRINTMAP LPT4 = PRN1

- To reassign the value of LPT1 for a session, one could either
type
        PRINTMAP LPT1 = PRNx
where x is the printer number one wishes to use, or one could
use the PRINTER command, to type PRINTER x. This will make all
output to LPT1 from this session go to printer x. The x is from
the MDOS physical device name, as listed above.

Document 1905
                                FYI

Document 1905
Troubleshooting terminal installation

04/13/92
MG

        TROUBLESHOOTING TERMINAL INSTALLATION - MULTIUSER DOS

    1.   Make sure the user has the Multiuser DOS Business
Update of September, 1991. For upgrade information contact 1-
800-NETWARE.

    2.   Cable is frequently a problem. A 5-wire null modem
cable is needed. The pin configuration is shown on page B-3 of
the Multiuser DOS User Guide. It is highly recommended that the
protocol be DTR/DSR.

    3.   For troubleshooting purposes ONLY, the user could
construct a cable with the following configuration:

    25 pin PC end   Terminal end (DB25)

    Transmit   2 -------- 3   Receive
    Receive   3 -------- 2   Transmit
    Ground   7 -------- 7   Ground

Using this cable, and setting the protocol (both in SETUP and on
the terminal) to NONE, one will be able to see whether any
signal at all is going from the main CPU to the terminal.
(Protocol may be referred to as Flow Control.)

    4.   Another good test of signal transmission is to define
the port into which the malfunctioning terminal is plugged as a
Printer/Aux port (so the terminal is treated by the system as a
serial printer), in SETUP. Reboot, select the correct printer
number (from another terminal) using the PRINTER or PRINTMAP
command on the working terminal, and type DIR > PRN. The
directory should "print" on screen of the terminal in question.

    5.   Refer to Chapter 3 in the Multiuser DOS User Guide for
setup specifications.

    6.   If a PC or terminal is having trouble at higher baud
rates, set the baud rate (in Setup and on the terminal/PC) to
9600.

    7.   In Setup, make sure that the question "Does this
terminal support graphics" is answered correctly. For standard
monochrome terminals, such as a Wyse 60/150, the answer is NO.
For a Wyse 370 to support graphics, its personality must be set

to GR/CGA. A PC in Terminal Emulation mode can be configured
for color graphics use, by selecting Emulation=PC/CGA in PCTERM.

Document 1906

                                 FYI

(Note: The origin of this information may be internal or
external to Novell. Novell makes every effort within its means
to verify this information. However, the information provided
in this document is FOR YOUR INFORMATION only. Novell makes no
explicit or implied claims to the validity of this information.)

Document 1906
Troubleshooting Memory
06/04/92
MG

TROUBLESHOOTING MEMORY PROBLEMS - MULTIUSER DOS

GENERAL RECOMMENDATIONS

If the version of Multiuser DOS being used is 5.0, make sure it
has been upgraded with the Multiuser DOS Business Update of
September, 1991.

If new memory has been installed, check the memory count upon
bootup, to verify that the system recognizes all the memory
available to it.

To minimize memory fragmentation, users could exit applications
frequently (e.g., before breaks, and at lunch time). Be sure to
turn the computer off daily. (If 1k is used each time a program
is loaded, eventually the total of these 1k pieces will equal
all the available memory.)

Be aware that loading something (e.g., a TSR) in CCONFIG.SYS or
AUTOEXEC.BAT will load it globally, and detract from the
available memory system-wide. If a TSR is only needed in one
session, it's best to load it via (a) a START file, or (b) a
conditional line in AUTOEXEC.BAT testing for the value of the
console number (%1, e.g., IF "%1"=="4" CALL TSR.BAT).

APPLICATION PROBLEMS

In order to increase the free memory available to all sessions, you can limit applications' access to memory in one of two ways:

1. To limit access for ALL applications on the system, lower the value of "Maximum memory per process" in SETUP.

2. To limit access for just one application, lower the value of "Maximum memory desired", on the PIFED screen for that application.

To use the second approach, one first needs to determine how much memory the application needs to run. This information is generally available from the application documentation, or from the manufacturer. If the user is not sure how much memory is needed, he/she could use the MEMSIZE command to limit the memory available, work with the program for a while, limit it some more, work with the program some more, and so forth, until the lowest limit that will allow the program to run comfortably has been reached. Thorough testing at this stage is essential, as an application with too little memory available to it may load and run for a while, but not be able to execute its more memory-intensive modules.

Once the maximum amount of memory needed for an application has been determined, run PIFED on the executable file that runs the application. (For example, to alter the specifications for wp.exe, one would type PIFED WP.EXE.) Each field in PIFED is explained on pages 15-8 to 15-13 of the Multiuser DOS User Guide. The most important steps would be to (a) reduce the value of the Maximum Memory Desired field, to get it closer to the amount demanded by the application, (b) set the Interrupt Vector Range from 0 to FF, so that all interrupt vectors are banked out and in with the application, and (c) alter the setting of the Program Waits in Idle Loop field; try "NO" first, then "YES."

For large multiuser systems, the value of the Additional System Memory Pool field in SETUP should be increased to allow for the additional system structures required.

When an application appears to be having memory problems, here are a few fields to check in SETUP:
- increase the system memory pool
- decrease the maximum memory per process
- choose NOT to set all upper memory to AUTOSCAN, then manually disable some of the blocks which are next to blocks disabled by Autoscan

TERMINAL HANGING PROBLEMS

Hanging terminals can be a result of memory shortages. The
following changes may alleviate the situation:

- In the BIOS setup, reduce the speed of all possible
parameters.
- In CCONFIG.SYS, set FILES=100 and FCBS=16,16.
- In SETUP, disable those memory blocks which are next to memory
blocks that have been disabled by Autoscan.
- In AUTOEXEC.BAT, alter the setting of NETDRIVE. Try Remote
first; if that doesn't help, try Local.
- In AUTOEXEC.BAT, use MEMSIZE to reduce the memory allocation
for each session.
- PIFED the application, making these changes:
        - set memory allocation down closer to amount needed.
        - set the interrupt vector range to 00-ff, so all
interrupt vectors are
        swapped out with the application.
        - answer NO to "Program waits in idle loop." If
thatdoesn't help, reset it via PIFED to YES.

NOT ENOUGH MEMORY

Occasionally, when a user moves from an application in one
session to another session, anything command issued by the user
will result in a "NOT ENOUGH MEMORY" error. To determine the
amount of memory available in the TPA (Transient Program Area),
type SHOW /M at a prompt, and note the amount of DOS Free
Memory. This is the maximum amount of conventional memory that
is available for any one session. If SHOW /M shows no memory
available after the user has switched from one session to
another, the user ought to (a) verify that all existing memory
is being recognized at boot time, then (b) run PIFED on the
application in the first session.

PC TERM

Occasionally, PCTERM, upon exiting back to its menu on a PC
terminal, will hang. In this case, the path is probably getting
lost on the 286/terminals, which means that the environment
variables are somehow being affected when they're stored in the
memory of the host machine. To correct this problem: - In SETUP:
increase system memory pool; decrease maximum memory per process

(to about 512k). - In CCONFIG.SYS: increase FILES and buffers (a lot); increase FCBS to 16,16.