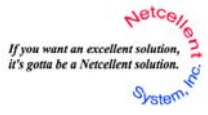
NETcellent Windows Systems Module

For
VERSION 6.X

From

NETcellent System, Inc.



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NETcellent Windows Systems Module

For
VERSION 6.X

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Chapter 1 Introduction

Overview

Supported Applications

NETcellent's Windows Systems Module (NWSM) is designed for NETcellent® V6.6/V6.7 users and Macola® V6.2 users who need to use a Windows environment. This maybe a result of memory requirements, the lack of DOS support for O/S, or the need for better multi-tasking support. NWSM is also bundled with Elliott® Business Software and serves as the Windows user interface for Elliott. NWSM will support the following different version applications:

Elliott Business Software V6.7
NETcellent® V6.6
NETcellent® V6.7
Macola® V6.2

16-bit vs. 32-bit

After V6.x.050, NWSM offers both 16-bit and 32-bit versions. Generally speaking, there's no significant difference between the 16-bit and 32-bit version on the features side. There is no significant performance difference between the 16-bit and 32-bit version either. However, the 32-bit version offers better stability and is less likely to crash. The 32-bit version also offers better multi-tasking abilities and works well with other applications. The following are a few features that are only available in the 32-bit version:

GUI Note (V6.7 only)
Tickler (V6.7 only)
Calendar
E-mails (After V6.x.060)
Laser Form Designer
Event Handling (After V6.x.062)

Because of the special requirements of the 32-bit environment, some of the application codes are required to change to support 32-bit. Since NETcellent does not maintain Macola® V6.2 application code, it is not practical to support Macola V6.2 with the NWSM 32-bit version. Therefore, Macola V6.2 users should only use the NWSM 16-bit

version. For V6.6 and V6.7 users, they must update their application code to **V6.62** and **V6.72** first before they can run 32-bit correctly.

Support Windows Versions - Client

NWSM will work with the following Windows versions:

Windows 3.1 (16-bit version only)
Windows 3.11 (16-bit version only)
Windows 95/98
Windows NT V4.0
Windows 2000 (32-bit version only)

Windows 2000

This is what we have found with Windows 2000:

- Windows 2000 will not work with NWSM 16-bit application
- Windows 2000 will work with NWSM 32-bit application:
    - For Micro Focus ISAM Database – No known issue.
    - For Btrieve Database – Must login as a power user. This issue had been corrected with PSQL 2000 later service pack.

The NWSM 32-bit application's performance on a Windows 2000 workstation is significantly faster than a Windows 95/98 workstation. For report printing, it is up to 50% faster than a Windows 95/98 workstation. The screen refresh speed improvement is probably even more.

Many of the problem related to Windows 2000 has to do with the way it changes how user groups work. Specifically, when you start up NWSM with a Btrieve database, NWSM is not able to update the local HKEY_LOCAL_MACHINE registry with Windows 2000. This causes problem for the Btrieve client. However, this is not a problem for power users. Therefore, we suggest you always log in as a power user in a Windows 2000 environment.

Determine Database Type

NWSM supports both Micro Focus® ISAM and Btrieve® databases. Generally speaking, the Micro Focus ISAM database is easy to setup and support. Btrieve, on the other hand is more difficult to setup and support. However, Btrieve may offer better performance over a Micro Focus ISAM database. Also, a Btrieve database is widely supported by third party tools, and is recommended if you need to access your database

from other applications. NWSM comes with a Btrieve local engine V6.15.430. If you need to use the Btrieve server engine, which will offer significant performance improvement and stability, you will need to purchase a Btrieve server engine (P.SQL 2000). The following is a comparison between different database options:

	Micro Focus ISAM Database	**Btrieve Database Local Engine**	**Btrieve Database Server Engine**
Is Database Engine Bundled With NWSM?	Yes	Yes – V6.15.430 local client engine is bundled.	No – Purchase Separately
Database Performance	Good	Excellent with single user, and acceptable in a Multi-User environment	Excellent
Database Reliability	Excellent	Good with single user, less reliable in a Multi-User environment, especially when over 3 users.	Excellent
Database Connectivity	Not many third party tools supported.	Excellent – many third party tools support in native Btrieve mode, or ODBC.	Excellent – many third party tools support in native Btrieve mode, or ODBC.
Local Workstation Single User Support	Yes	Yes	No
Multi-User Peer to Peer Network Support	Yes	Yes – however, not very reliable. It is not recommended for over 3 users.	No
Multi-User Server Base Network (Netware/Windows NT) Support	Yes	Yes – however, not very reliable. Not recommended for over 3 users.	Yes
Installation	Easy to install	Easy to install for single user. Can become tricky for peer-to-peer network.	More steps are required to install.
Support	Easy to Support	More efforts are	More efforts are

		required to support.	required to support.
Version Required for Database Engine	N/A	V6.15.430	V6.15.430 and higher (Netware) or V6.15.450 and higher (Windows NT); P.SQL 7; P.SQL 2000.
Comment	Recommended for small to medium size work group (< 20 users) where users does not wish to pay for a server based Btrieve Engine and are not concerned about using other tools to access the database.	Recommend for single user or very small work group (<= 3 users) only.	Recommend for medium to large size work group. Users are required to make additional investment to purchase Btrieve engine. Users may also need professional help to setup this environment.

Installation Directory

By default, NWSM will be installed into your "C:\NSI" directory, or "C:\ELLIOTT" if you are using Elliott Business Software. However, if you are in a network environment, we suggest you install NWSM on a network drive (i.e. F:\NSI or F:\ELLIOTT); so all users can share the same directory for NWSM. This will simplify your update and upgrade process as you only need to update one directory and that will apply to all users. In a network installation, there is no local client (DLLs) required to be installed on your local hard drive. The only requirement to setup a workstation to work with a network-installed version of NWSM is to setup a desktop shortcut.

Since NWSM is designed to be installed in a separate directory from Macola, if you feel NWSM is causing any problems with your Macola V6.x operations, you can delete NWSM without affecting any of your existing V6.x programs.

User Interface

NWSM is designed to have a similar user interface as the V6.x DOS environment. Users can use almost all of the conventional keystrokes as in the V6.x DOS environment. In most situations, users will find NWSM is transparent to their V6.x DOS software and no

additional training is needed to use NWSM. There are, however, some advanced features for NWSM that users can learn easily at their own pace. This includes the following functions:

Menu
Context Sensitive Menu
Tool Bar
Status Bar
Setup Preference
Mouse Operation
Keyboard
Fonts
Copy/Paste
Macro
Printing
Note/Tickler (V6.7 only)
Help

Difference with Previous Release

The previous general release version of NWSM is V6.X.012. After V6.X.012, we take a big jump to V6.X.050 to signal the starting support of 32-bit. At the time of writing, the current NWSM release is V6.X.062. The following are is an outline of the principle differences between V6.X.012 and V6.X.062:

	V6.X.012	**V6.X.062**
Type of Application	16-bit only	Both 16-bit and 32-bit
Btrieve Status Code	Translated Status Codes may not be accurate	Original Status Codes including support for 4-digit status codes in PSQL.
TTS	Not Supported	Supported With Btrieve
Help	Legacy Text Help	Windows Help
Macro	External Macro to control other applications only	Both External Macro and Internal Macro to automate routine Elliott tasks
Startup Option	Startup module directly Cannot by pass user name, password and company selection.	Startup a module or a menu item directly. Optionally allow to executing internal macro to make Elliott tasks callable from outside. Can optionally by pass user name, password and

		company selection.
Supported Application Versions	Macola V6.0, V6.2, Elliott V6.60, V6.61, V6.62, V6.70, V6.71, V6.72	Macola V6.2 (16-bit only), Elliott V6.62, V6.72
Segmented Btrieve Key Support (ODBC Support)	No	Yes
Login Process	Legacy Text Based	GUI User Interface
Printing to Screen	Legacy Text Based	GUI User Interface by using either Notepad or WordPad.
Context Menu at field level (right mouse button)	No support	Calendar, Calculator, Copy & Paste, Toggle, Case formatting…etc.
Error Message	Legacy Text Based	GUI User Interface
Laser Form	With Invoice Template. No Laser Form Designer.	With Invoice, PO, Picking Ticket, Service Invoice, Statement, A/P and P/R check, AP 1099 and P/R W2 templates. The laser Form Designer makes it easy to create and modify a template.
Barcode Printing	No Support	Support through laser forms
Note Function	Legacy Text Based	GUI User Interface with Knowledge Base Support
Tickler	Legacy Text Based	GUI User Interface with Auto Reminder and recurring function.
NWSM Startup	Main Menu, or direct startup in any Module Menu.	Main Menu, Module Menu, or direct startup at any Menu Item.
Show Printer Driver Info	No Support	Click on printer name in print option window

Licensing Issue

For Elliott Business Software users, there are no special licensing issues, and you can skip this section. However, for users who upgraded to NETcellent V6.6/V6.7 from the Macola V6.0 environment, or Macola V6.2, you must purchase the DOS LAN Group license separately from the NWSM license. Since you may have owned the DOS LAN Group license already, this is usually not an issue. You have to be aware that each NWSM user will take up 1 NWSM license as well as 1 DOS license, while each DOS user will take up 1 DOS license and no NWSM license. Therefore, purchasing the NWSM license alone will not increase your total user count. If you need to increase your total user count, you will need to purchase a DOS LAN Group as well as a NWSM license. For V6.2 users, you can purchase a DOS LAN Group from your Macola reseller. For V6.6/V6.7 users, you can purchase a DOS LAN Group from your NETcellent reseller.

The system counts each concurrent workstation using NWSM as one user; no matter how many sessions that workstation may open. The first time users start NWSM, or the tickler feature, the system will prompt for a user name and password. If on the same workstation a second session is started, the system will not prompt for a name and password since it was already supplied with the first session. The second session will not be counted as an additional user and no additional license counts are used. For the 16-bit version, each workstation can run up to five NWSM sessions. For the 32-bit version, theoretically, there's no limit on the number of NWSM sessions. However, with the Windows 95/98 OS, you probably won't be able to run over 18 sessions of NWSM.

The NWSM license file is REGIST66.DAT. You need to copy this file to your NWSM startup directory (i.e. \NSI or \ELLIOTT). Without this license file present, the system will go into demonstration mode with certain limitations imposed.

Chapter 2 Setting up NWSM

Installation Source

Installing from CD

Insert the CD-ROM. The setup should launch automatically. If not, click the start button on your Windows 95 desktop and select run. **Type D: nwsm32** and press **Enter**. If the CD-ROM drive is a different drive letter other than D:, then enter the exact letter. If you are running Windows 3.1, select **Run** from the File menu under the Program Manager. Type **D: nwsm16** and press **Enter**.

Installing from Floppy Diskettes

If your machine does not have a CD-ROM, you can optionally request floppy disks for NWSM. Insert program disk 1 in your floppy drive, choose "Run" from Start, and type in the following:

A:\setup

To run the NETcellent Windows Systems Module setup program. Follow the following instructions for installation.

Installation Directory

If you are an Elliott user, NWSM will be installed together with Elliott to the \ELLIOTT directory. If you are a V6.6/V6.7 or Macola V6.2 user, by default, the NWSM installation utility will copy NWSM to the C:\NSI directory. If this is a network installation, we suggest that you install NWSM on a network drive and let all users share the common NWSM directory like F:\NSI (or F:\ELLIOTT). This is better for updates and upgrades in the long run as you only need to update one directory on the network which will apply to all users. You still may install NWSM into C:\NSI for each workstation. However, this means you need to perform updates on each user's workstation when there is an update for NWSM to be installed. There are no clients (DLLs) that need to be installed on each workstation with NWSM. Setting up a workstation for NWSM is a simply a matter of setting up an icon on the desktop.

You may also install NWSM to a different directory other than \NSI (or \ELLIOTT). You can also install it in the \MACOLA directory if you wish to. To keep a clean directory structure between \MACOLA and \NWSM, you might want to avoid installing NWSM in the \MACOLA directory.

Copy Registration File

After the software is installed, if you have a registration diskette from NETcellent, please manually copy the file on the registration diskette to the NWSM startup directory (i.e. \NSI or \ELLIOTT). For example, place your Registration Disk in A drive and issue the following DOS command:

COPY A:*.* F:\NSI

You can also use Windows Explorer to copy the registration file from A: to the F:\NSI directory.

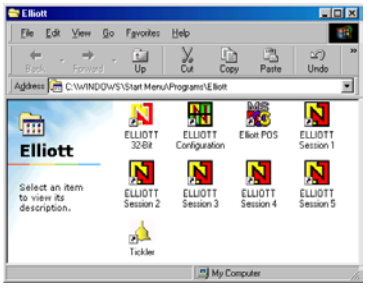
There are two files on the registration diskette:

REGIST66.DAT	-	This is the registration file
REGIST66.TXT	-	This is the text file that indicates what features you are licensed for

If the REGIST66.DAT file is not present in your NWSM startup directory (i.e. \NSI), then the system will go into demonstration mode with certain limitations imposed. You will still be able to evaluate the software. However, you cannot use it for production purposes.

Folder and Icons

Once the software is installed, the system by default will create either an Elliott or NETcellent folder similar to the following:



The following is an explanation for each icon:

- Elliott (NWSM) Configuration – You can use this utility to configure global flags that apply to all users that share this installation. If you do not configure Elliott first, when you startup Elliott for the first time, the system will automatically launch this configuration utility for you.
- Elliott (NWSM) 32-Bit – If you are running on Windows 95/98, Windows NT, or Windows 2000, we suggest you run Elliott/NWSM in 32-bit. If you need to run a second session of Elliott/NWSM, simply click on this icon again. Under the Windows 95/98 environment, you can run up to 18 sessions before your system resources will be depleted.
- Elliott (NWSM) Session 1 – This is the 16-bit version session 1. You can only run the 16-bit version if you are running Windows 3.1/3.11 or Macola V6.2.
- Elliott (NWSM) Session 2 – This is the 16-bit version session 2. In 16-bit, if you need to run the second session of Elliott/NWSM, you will need to click on this icon. If you click on the session 1 icon, the system will simply put your session 1 window into focus.
- Elliott (NWSM) Session 3 – This is the 16-bit version session 3.
- Elliott (NWSM) Session 4 – This is the 16-bit version session 4.
- Elliott (NWSM) Session 5 – This is the 16-bit version session 5.
- Tickler – This icon will be created for the Elliott 32-bit installation. Users can start the tickler tracking program independent of Elliott or NWSM.
- Elliott POS – This icon will be created by the Elliott installation. POS stands for Point of Sale, which is shipped with Elliott Business Software.

Multiple Sessions

Elliott/NWSM provides the ability to run multiple sessions of the application software while only taking one user license. For example, you may start one session in order entry, while another session is in stock status inquiry. Switching between these sessions is a matter of easily switching to a different window. This means you do not have to exit out of the order entry screen in the middle if you receive a phone call from a customer to inquire about a certain order, or to check stock availability. **The ability to do multi-tasking like this is one of the biggest advantages over running Elliott/Macola in the DOS environment.**

Hardware Requirements

If your system has a tendency seems to slow down a little when each additional session is added, it is probably normal. This is especially true of the 16-bit version. However, if each session becomes very slow, then you may be running low on system resources. A test performed in house found that 16-bit NWSM works on a 386-33Mhz machine with 4 Meg Ram running Windows 3.1. The screen refresh is slow compared to running in DOS. If you would like to have a comfortable screen refresh speed, it is recommended that you run Elliott or NWSM on a Pentium 100 machine, or above, with 16 or 32 Megs of RAM.

NWSM Special Startup Options

Startup A Module Directly

When you start up each session, by default it will bring up the main menu. If you wish to start up a session and go directly into a specific module, you should add the following startup parameters to the startup command line for 16-bit:

NWSM1.EXE 02

For 32-bit:

NW32.EXE 02

NWSM1.EXE or NW32.EXE is the executable file for the first session of 16-bit NWSM, or the 32-bit NWSM, respectively. "02" stands for Accounts Receivable. By using these parameters, when you choose this icon the system will start up the first session and go directly to Accounts Receivable. When you exit Accounts Receivable, the system will exit immediately without exiting to the main menu first. You may want to use this option if a user only has access to a limited number of packages, and there is no need to let them go through the main menu selection. The following is a list of package ids for each module:

01 – General Ledger
02 – Accounts Receivable
03 – Accounts Payable
04 – Payroll
05 – Asses & Depreciation (Not available in Elliott)
06 – Inventory Management
07 – Customer Order Processing
08 – Purchase Order
09 – Bill of Material Processor

Startup A Menu Item Directly

It is also possible to start at a specific menu item (module) directly from the icon. For example, you may setup an icon with the following startup command parameters:

NW32 02 0101 02 (for 32-bit)
NWSM1 02 0101 02 (for 16-bit session 1)

By clicking on this icon, the system will start at the customer file maintenance in change mode where:

02	–	Accounts Receivable
0101	–	Maintenance, Customer File
02	–	Change

After the user is done with the Customer file in change mode, the system will allow the user to access other menu items without exiting out of the system. However, once the user exits out of the A/R module, the system will exit out of the entire system (because "02" is specified).

This function is universal and applies to all menu items. If you wish to start at a menu item on the main menu utility section, specify "00" for the package id.

There are many potential uses for this function. One example is the accounting system administrator can setup the month end process by setting up a separate icon and parameters for all the steps that need to be done in the process. This makes it easy for the user to perform the month end process step by step without the need to lookup notes and navigate through the menu system.

This function does not bypass the user security rights. Therefore, the user must have the right to access the menu items before this function will work.

Execute A Program Directly

If you are licensed for Macro function, you may choose to execute a program directly from command prompt, or you can set it up as a short cut. For example, you may specify the command line parameters as:

NW32 02 0101 05 "000100" "000200" {enter} {enter} %S {enter} {close}

This command will start up NWSM 32-bit and go into Accounts Receivable, Customer File Maintenance, select print Numeric Edit List and supply the following information for prompt window:

Starting Customer No	000100
Ending Customer No	000200
Print Comment?	N (use {enter} to accept default value)

Any Change? N (use {enter} to accept default value)

After the print option window pops up, Alt-S (%S) will specify print to screen. It will then issue {enter} key to accept [OK] button. Once the edit list is printed, and the focus is returned to NWSM, the system will close the NWSM and exit.

In short, this command will print a copy of the numeric customer edit list to screen and exit out of NWSM. The implications of this function are enormous. You can automate most of your routine tasks by setting up the short cut as we just discussed, and placing them in a folder, and then executing them as needed. This also makes every single NWSM application callable from other applications.

Windows O/S allow up to 256 characters for the command prompt. If you need to execute a script that has more than 256 characters, you may put it in a macro file and execute it with the following command:

NW32 02 /F:ARLIST.MAC

NW32 will launch the 32-bit version. The "02" will launch the "Accounts Receivable" module. The "02" for the module is required. The rest of the menu path, along with the data will be stored in ARLIST.MAC file. The following is an example of what the macro file may look like:

```
0101 05
"000100" "000200"
{enter}
{enter}
%S {enter}
{close}
```

For writing the macro file, it is pretty much up to your personal preference to determine where to insert a line break. As long as you do not have more than 256 characters in one line, you will be OK. You can have unlimited number of lines in a macro file. This capability allows you, for example, to load a large number of customer or item records through a batch if you have another application that can create the macro file.

By default, the macro file has MAC as an extension. If you don't specify the file extension, the system will assume the extension to be MAC. By default, it will look for Macro file in MACRO directory if the path is not specified. That is, it will look for Macro file in:

\NSI\MACRO or
\ELLIOTT\MACRO

directories. Macro can also be executed inside NWSM. For more information about Macro, especially, the syntax for special keys, please refer to the chapter MACRO.

Bypass Username, Password and Company Selection

In some situations, the user may want to completely automate the startup process by not entering the password or selecting a company. To do so, you can add the following line in the AUTOEXEC.BAT file:

SET NWSMDLOG=$USERNAME$PASSWORD99

Where:

USERNAME is the name that the user logs into Elliott as.
PASSWORD is the password for the user.
99 is the company that the user wishes to log in to.

This information can also be setup in the login script instead of the AUTOEXEC.BAT. However, the setup of this information may potentially cause security problems since others can easily find out the user's password.

Installation for Each Workstation

If this is a network installation, once NWSM is installed, a F:\NSI or (F:\ELLIOTT) directory is created. You can go to each workstation and add the NWSM icon to that workstation by manually adding an icon or Shortcut to your Windows 3.1 or Windows 95/98 /NT or 2000 desktop by specifying:

Command Line	NW32.EXE (NWSM1.EXE for 16-bit)
Directory	F:\NSI

NWSM1.EXE is for 16-bit and is your first session of NWSM. NWSM2.EXE – NWSM5.EXE is your second to fifth session of NWSM.

To add a shortcut on the Windows 95/98 desktop manually, click your right mouse button on the desktop. Choose Add, and then choose Shortcut.

There are no clients (DLLs) that need to be installed on each workstation in a network installation. All workstations can share a common network directory for the NWSM program files. This is very helpful when there's an update or upgrade for NWSM since the update only needs to be installed once and it applies to all workstations.

Canadian Installation

If you are running Elliott or NWSM in Canada, make sure you put the following line into your AUTOEXEC.BAT or your network login script:

```
SET MCNTRY=CANADA
```

This will tell the system that this application is running in Canada and will make certain changes that are unique for Canada.

Special Path

In the Elliott or Macola V6.X DOS environment, users may specify the following environmental variables:

```
SET MDATA=M:\MACOLA\DATA_05
SET MPROG=M:\MACOLA\PROGRAMS
SET MHELP=M:\MACOLA\HELP
SET MANIFEST=M:\MACOLA\SHIP
```

You may achieve the same result in NWSM by specifying the following entries in the NSI.CFG file [Path] section:

```
[Path]
Mdata=M:\MACOLA\DATA_05
Mprog=M:\MACOLA\PROGRAMS
Mhelp=M:\MACOLA\HELP
Manifest=M:\MACOLA\SHIP
```

The NSI.CFG file can be located in the \NSI (or \ELLIOTT) directory. For Mprog, it is possible to specify multiple paths to look for program files:

```
Mprog=F:\STDPROG;F:\CUSTPROG
```

This is most helpful for the developer when there is a need to keep one central common program directory with many individual smaller custom modification directories.

Directory Structure

By default, NWSM will be installed into the \NSI (\ELLIOTT) directory. All program files are under the \NSI directory. There are the following subdirectories under \NSI:

\NSI
\NSI\HELP
\NSI\LOG
\NSI\MACRO
\NSI\SSCOUT
\NSI\WAVE

NSI root directory contains all the program and configuration files for NWSM.
HELP subdirectory contains the help files as well as error codes for NWSM.
LOG subdirectory contains log files for tracing and diagnostics purposes for NWSM .
MACRO subdirectory contains the macro files shared by all users.
SSCOUT subdirectory contains the Smart Scout Utility to diagnose Btrieve problems.
WAVE subdirectory contains the wave files for sound effects.

Important Files Under the \NSI directory

All files under the \NSI or \ELLIOTT directory are important. However, the following are files that maybe helpful to know:

EXE Files:

NW32.EXE	- 32-bit NWSM
NWTKL32.EXE	- Tickler (32-bit only)
NWSM1.EXE	- 16-bit NWSM 1st Session
NWSM2.EXE	- 16-bit NWSM 2nd Session
NWSM3.EXE	- 16-bit NWSM 3rd Session
NWSM4.EXE	- 16-bit NWSM 4th Session
NWSM5.EXE	- 16-bitNWSM 5th Session
NWCONFIG.EXE	- For both 16 and 32-bit NWSM Configuration Utility (Updates NSI.CFG File)
NWSMUSRS.EXE	- 16-bit NWSM User Login Control
NW32USRS.EXE	- 32-bit NWSM User Login Control
NPREPLAY.EXE	- Printing Log Replay Utility

Configuration Files:

NSI.CFG	- Contains settings affecting NWSM global

	Operation. Configure by NWCONFIG.EXE.
NWSM.CFG	- Special Controls for Report Width, Module, Help File and Id. **Do not change**!
NWSMUSER.CFG	- Similar to NWSM.CFG, however, it is to be Configured by users or developers. (Does not come with NWSM)
CALENDAR.CFG	- Configuration file for Holidays and Vacations.

Library Files:

NWSM.LBR	- 16-bit NWSM startup library file
NW32.LBR	- 32-bit NWSM startup library file
NWSMM.LBR	- NWSM Main Library file for both 16/32-bit
NW16M.LBR	- 16-Bit NWSM Main Library file
NW32M.LBR	- 32-Bit NWSM Main Library file
NWSM60.LBR	- Contains V6.0 Specific Run Time Files
NWSM62.LBR	- Contains V6.2 Specific Run Time Files
NWSM66.LBR	- Contains V6.6 Specific Run Time Files
NWSM67.LBR	- Contains V6.7 Specific Run Time Files
NW1660.LBR	- 16-Bit V6.0 Specific Run Time Files
NW1662.LBR	- 16-Bit V6.2 Specific Run Time Files
NW1666.LBR	- 16-Bit V6.6 Specific Run Time Files
NW1667.LBR	- 16-Bit V6.7 Specific Run Time Files
NW3266.LBR	- 32-Bit V6.6 Specific Run Time Files
NW3267.LBR	- 32-Bit V6.7 Specific Run Time Files
BFH32.LBR	- 32-Bit Btrieve File Handler
MFH32.LBR	- 32-Bit Micro Focus File Handler
BFH16.LBR	- 16-Bit Btrieve File Handler
MFH16.LBR	- 16-Bit Micro Focus File Handler
SYPROGWN.LBR	- System Level Library File
SYPROGW0.LBR	- System Library File for V6.0
SYPROGW2.LBR	- System Library File for V6.2
SYPROGW6.LBR	- System Library File for V6.6
SYPROGW7.LBR	- System Library File for V6.7
GLPROGW0.LBR	- GL Library File for V6.0
GLPROGW2.LBR	- GL Library File for V6.2
ARPROGW0.LBR	- AR Library File for V6.0
ARPROGW2.LBR	- AR Library File for V6.2
IMPROGW0.LBR	- IM Library File for V6.0
IMPROGW2.LBR	- IM Library File for V6.2
BMPROGW0.LBR	- BM Library File for V6.0

BMPROGW2.LBR	- BM Library File for V6.2
MAINMNU0.LBR	- NWSM Main Menu for Macola V6.0
MAINMNU2.LBR	- NWSM Main Menu for Macola V6.2
NPREPLAY.LBR	- Printing Log Replay Utility
NWCONFIG.LBR	- NWSM Configuration Utility
NWSMUSRS.LBR	- NWSM User Control Utility
GUIUTIL.LBR	- 16-Bit WINCOM Library File
GUIUTL32.LBR	- 32-Bit WINCOM Library File

Btrieve Files:

16-Bit
WBTR32.EXE
DBSETUP.EXE
WBMANAGE.EXE
NWLOCALE.DLL
DBU_UI.DLL
BUTIL.DLL
NWCALLS.DLL
WBTRCALL.DLL
WBTRVRES.DLL
WBT32RES.DLL
WBTRLOCL.DLL
NWIPXSPX.DLL

32-Bit
WBTRV32.DLL
W32MKDE.EXE
W32MKRC.DLL

DLL/DLW And Other Files:

NWSMBMP.DLL	- 16-Bit Bitmap Images for NWSM
NW32BMP.DLL	- 32-Bit Bitmap Images for NWSM
ELIBMP.DLL	- 16-Bit Bitmap Images for Elliott
ELI32BMP.DLL	- 32-Bit Bitmap Images for Elliott
CBLSSEG.DLL	- Micro Focus Run Time
SETPPTR.DLL	- Micro Focus Run Time
CBLWIN.DLL	- Micro Focus Run Time
GUILIB.DLL	- WINCOM Support Module

GUILIB32.DLL	- 32-Bit WINCOM Support Module
PAN2WIN.DLL	- Micro Focus Panels2 Support Module
BCDR16.DLL	- 16-Bit Barcode Printing Driver
BCXL16.DLL	- 16-Bit Barcode Printing Driver
BCXL32.DLL	- 32-Bit Barcode Printing Driver
BCDR32.DLL	- 32-Bit Barcode Printing Driver
COB32API.DLL	- Micro Focus 32-Bit Run Time
COB32ENV.DLL	- Micro Focus 32-Bit Run Time
MFINTERP.DLL	- Micro Focus 32-Bit Run Time
MFRTNS32.DLL	- Micro Focus 32-Bit Run Time
MFRTS32.DLL	- Micro Focus 32-Bit Run Time
MFRTSCAL.DLL	- Micro Focus 32-Bit Run Time
MFSCREEN.DLL	- Micro Focus 32-Bit Run Time
MFTXTWIN.DLL	- Micro Focus 32-Bit Run Time
MSVCRT20.DLL	- Micro Focus 32-Bit Run Time
PAN2NT.DLL	- 32-bit Panels2 Run Time
ROBOEX32.DLL	- Windows Help Support Module
_SORT.DLW	- Micro Focus Sort Support Module
_BTRV.DLW	- Micro Focus Btrieve Support Module
COBFP87.DLW	- Micro Focus Floating Point Support Module
CBLWIN31.DLW	- Micro Focus Windows 3.1 Support Module
MFEXTMAP.DLW	- Micro Focus Environmental Variable Support Module
REGMAC6.DLW	- Registration File Control Module
COBLIB.DLW	- Micro Focus Run Time Module
COBENV.DLW	- Micro Focus Run Time Module
NWSM.SF	- 16-Bit Panels2 Side File for NWSM
NW32.SF	- 32-Bit Panels2 Side File for NWSM
NWSM.INT	- For NWSM Animation Purposes

Developer's Files

If you are a developer, you should know that NWSM will also recognize the following Library files for enhancement or customization purposes. Users or developers may put their own enhancement library files in the following files:

NWSMMED.LBR	- NWSM Main Library ED file (from developers)
??PROGWE.LBR	- This library file should be in the \NSI directory
NWSM??ED.LBR	- Version Specific NWSM ED Library Files,

	?? = 60, 62, 66 or 67
??PROGWE.LBR	- Same as above, except it is for ED (from developers)
??PROGWC.LBR	- Same as above, except it is for custom programming

The following is the calling sequence of Library files:

??PROG01.LBR
??PROG02.LBR
??PROG03.LBR
??PROG04.LBR
??PROG05.LBR
??PROGUP.LBR
??PROGED.LBR
??PROGE1 - E9.LBR
??PROGN1 - N9.LBR
??PROGWN.LBR
??PROGW?.LBR
??PROGWE.LBR
??PROGWC.LBR

Where the first .LBR has the lowest priority and the last .LBR has the highest priority.

While the system expects ??PROG01.LBR - ??PROGN9.LBR in the \NSI\programs directory, the system will expect ??PRGWN.LBR - ??PROGWE.LBR files in the \NSI (NWSM Start up) directory.

Special-File-Path

In the NSI.CFG file, you may specify a flag, “Special-File-Path” to indicate that you have certain files that will be placed in a special directory that does not follow the NWSM or Elliott traditional directory structure:

[Path]
Special-File-Path=Y

If this flag is set to “Y”, the system will look for the following entries in the NWSMUSER.CFG file. The following is an example how the NWSMUSER.CFG file may look:

```
[File-Path]
ARCUSFIL.DAT=F:\SPECIAL\ARDATA
```

Every time the system tries to open the ARCUSFIL, it will look for this table to see if it is in a special path; if it exists, the system will use it. If not, the system will use the original path as designed by NWSM's directory structure. You should be aware of the following when entering entries in NWSMUSER.CFG:

- You can have a maximum of 200 entries in the [File-Path] section.
- When you specify Mdata=Null in NSI.CFG file, the system will use either the current directory or search path to look for data files. The entries you specify in [File-Path] of NWSMUSER.CFG will override the Mdata=Null feature.
- You must use .DAT as the file name's extension even though you may be using a Btrieve database.
- Malvern's file path must be specified by "Manifest" entries in the NSI.CFG file and will ignore the entry you specify in the NWSMUSER.CFG.
- Do not specify a path that's too long, the path and file name must not exceed 50 characters.
- The Special-File-Path feature is not supported in the DOS System Manager and therefore you must make sure that all your users, that may use these files, will use NWSM.

The purpose of providing this feature is for the following reasons:

(1) **Security Reasons**: You may have certain sensitive files that you may not want to let users access. You may block users out of the NWSM password setup. However, they still can access that file from the operating system level (DOS, Windows File Manager, etc.) since you can't block users' rights to access the \NSI\DATA directory. Placing it in a different directory will allow you the chance to define whether each user has access to that directory or not.

(2) **Wide Area Network Performance**: Wide area network requires data to travel through a slower link to reach the other side. The link can be 56K, 128K, fractional or full T1 line. The faster it goes, the more expensive it will be. The fact is that the wide area network link is much slower than the local area network. Therefore, the trick to get it working with acceptable performance is to minimize the data that needs to be transferred over the slow slink. In the DOS system manager, you can define the drive letter for each package. Therefore, different modules can be at different drives (and different servers). If a company has two locations, and one needs to use accounting modules, while the other needs to use distribution module, you can designate a drive letter for all the accounting modules with a different drive letter then the distribution modules. This means when the distribution facility needs to access the distribution data, it will access it locally. When it needs to access

accounting data, it needs to go across the slower link to access data remotely from the accounting site. This improves performance. However, the speed can be improved further by specifying each file's location. For example, in the AR module, we have the following files:

Customer File	Update Daily
Open Item File	Update Daily
Distribution File	Update Daily
Commission Due File	Update Daily
Control File	Update Daily
Salesman File	
Codes File	
Job Code File	
Service Type File	
Customer Type File	
Freight Rate File	
…Etc.	

For the files that will be updated daily, it must go across the slow link to get updated data. However, for the data that's not updated daily, you may consider having a copy right on your local site with the distribution files. When accessing those files, there would be no need to go across the slow link. So the performance can be improved. Also, if you wish to designate the order number as the invoice number, then a copy of the AR control file can be placed at the distribution site as well, to further improve the speed.

Wide Area Network & System Files Location

Under a wide area network environment, data may reside remotely while programs are executed locally. The system data, however, still comes from your local server, which may not be desirable. You may set up the environmental variable MSYSTEM=F, where F is the drive letter for your system files, through the NSI.CFG file in NWSM. In the NSI.CFG file, put the following entry in the [Path] section:

```
[Path]
Msystem=F
```

Then, the system will always look for system data from the M: drive instead of its start-up directory.

Make Malvern Manifest Work

Put the following entry into your NSI.CFG file [Path] section:

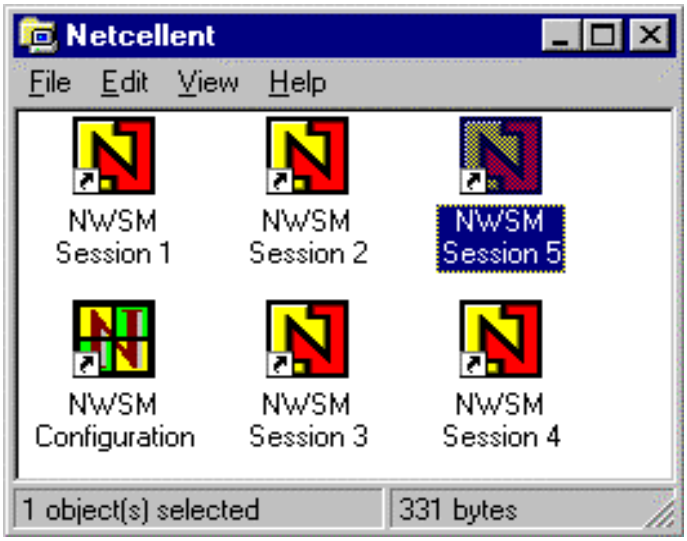
```
[Path]
Manifest=F:\NSI\SHIP
```

Where F:\NSI\SHIP is your Manifest directory. NSI.CFG file can be located under your \NSI or \ELLIOTT directory.

Chapter 3 Getting Started with NWSM

Starting up NWSM for the first time

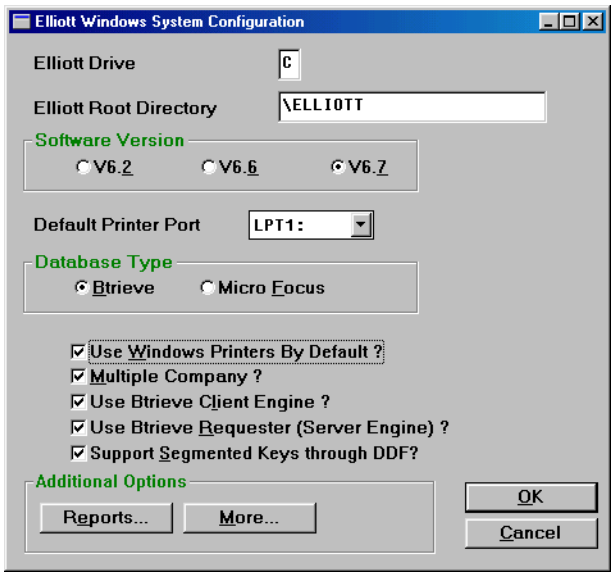
After installing NWSM successfully, you are now ready to explore NWSM. You should see the following six icons under the "NETcellent" group if you are performing a 16-bit installation. If you are performing a 32-bit installation, then you should see the NWSM 32-bit Icon as well.



For 16-bit users (Macola V6.2, or Windows 3.1 users), click on the NWSM Session 1 Icon to start the program. For 32-bit users (V6.6/V6.7 and Windows 95/98/NT/2000), click on the NWSM 32-bit Icon to start the program.

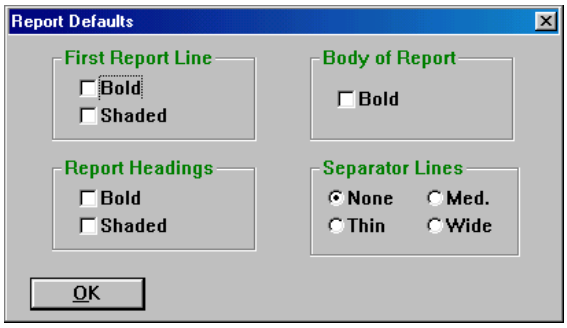
NWSM Configuration Utility

If this is the first time you have started NWSM, the system will detect that the NSI.CFG file does not exist in your startup directory. Therefore, the NWSM Configuration utility will start up automatically. Alternatively, you can click on the NWSM Configuration icon first. Once you are done with the configuration, click on NWSM Session 1 to start the program.



Drive: By default NWSM will be installed into a different directory then your V6.X applications. Therefore, NWSM will require the user to indicate the drive letter where V6.X is installed.
Root Directory: Similar to "Drive", the system needs the user to indicate the path is where V6.X is installed. Please make sure to put a "\" in front of the path, i.e. "\MACOLA" or "\ELLIOTT".
Software Version: Please indicate whether you are using Macola V6.2, or NETcellent V6.6 or V6.7. For Elliott users, please check "V6.7".
Default Printer Port: This is to specify the default LPT port for the "Raw Data Pass Through" feature. You should leave it at "LPT1" if you have no special reason to change it.
Database Type: Please specify whether you are using Btrieve or Micro Focus ISAM as your database.
Use Windows Printer By Default? Should the system try to use Windows printer drivers by default, or "Raw Data Pass Through" by default? We suggest that you check this field and use Windows printer drivers by default. The only time you may want to uncheck this box is when you are using mostly dot matrix printers in your organization. Windows printer drivers are usually not efficient when printing to dot matrix printers.
Multiple Company? Please indicate whether you are using the multiple company option or not.

Use Btrieve Client Engine? This flag is only valid if you are using a Btrieve database. We suggest you leave this box checked even if you are using a server based Btrieve engine.
Use Btrieve Requester (Server Engine)? If you install Btrieve (V6.15 and up) on your server (Netware/NT), then you should check this box.
Support Segmented Keys through DDF? We suggest that you leave this box checked to support segmented keys. The system will look for DDF files in the target directory's DDF subdirectory (i.e. \ELLIOTT\DDF or \MACOLA\DDF). When the system tries to initialize a file, it will attempt to create the segmented key structure as specified in the DDF definition. This is the key to supporting ODBC and many third party tools that can access a Btrieve Database.
Report: If you click on this button, another window will display and let you configure the default-printing layout for all users. Users still have the option to override this default setting at the time of actual printing. This includes report header shading, bold face, line separator between heading and body…etc. This option will work well and produce professional output with laser printers. However, it may slow down the printing with reports printed on dot matrix printers.

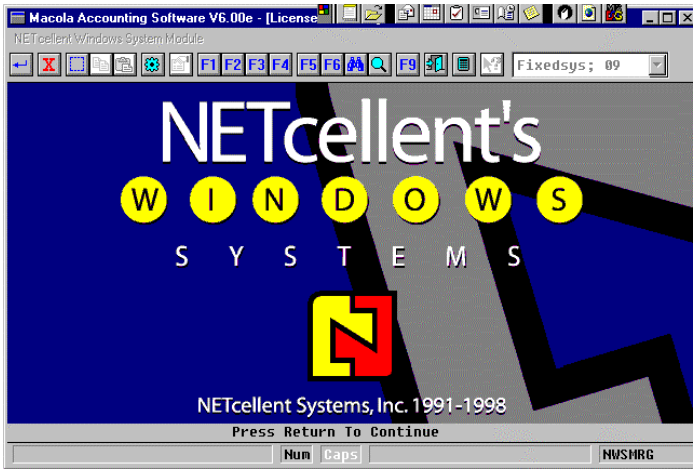


More: This is for changing the screen update interval. By default, NWSM makes screen updates for every 50 display actions, or when there's an input field or condition that is waiting for a keystroke. For example, in customer file maintenance, NWSM displays all literals at one time, instead of individually. This is for performance purposes. Sometimes, from a developers standpoint, when you animate a program and do not see get updates as the action is taking place it can be confusing. This maybe one reason that you may wish to change the default setting from 50 to maybe 1.

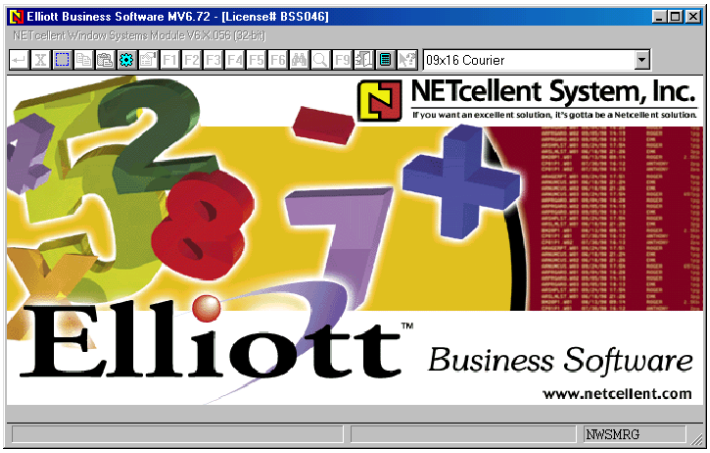
By default, the NWSM Configuration icon will only be installed on the first workstation installing NWSM from media. If you do need to run the NWSM Configuration utility from other workstations, you may go to the DOS prompt at a Windows 95/98/NT workstation, and from the NWSM startup directory (i.e. F:\NSI or F:\ELLIOTT), type: NWCONFIG. You can also setup NWCONFIG as a shortcut manually on your

workstation by specifying NWCONFIG.EXE as the startup command and F:\NSI or F:\ELLIOTT as the startup directory.

Once you are done with this setup screen, then click OK. The V6.2 NWSM startup screen will appear like the following:

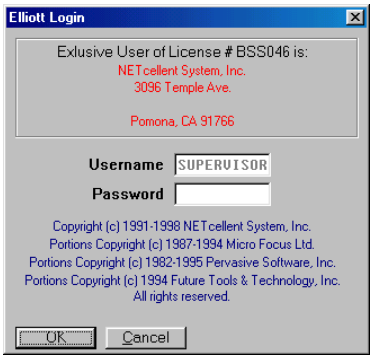


For V6.6/V6.7 and Elliott users, your screen will look like following:



NWSM Login

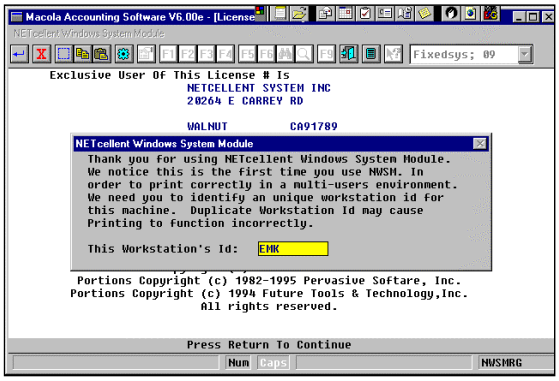
Shortly after seeing the startup splash screen, you will then be prompted to log in with your user name and password:



If the password is not enabled, you can simply click on the “OK” button to bypass the login process.

Assign An Unique Workstation Id

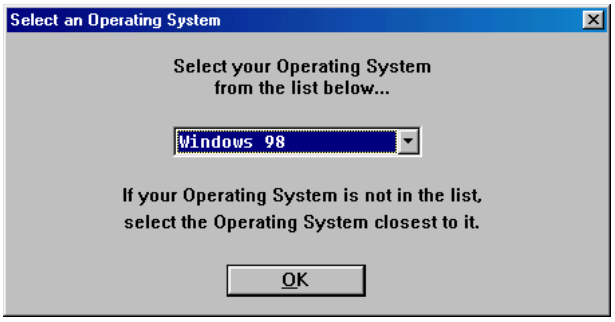
Once you pass the login screen, and the system detects this is the first time this workstation is using NWSM (because the system can’t find the NSI.INI file under C:\WINDOWS). The system will then automatically create the NSI.INI file by using the default value and prompting the user to identify a workstation id for this workstation:



The workstation id by default will be your login user name. However, you can override it. Workstation is a 10-digit alphanumeric field. You can choose any name you like. However, you must make sure that your workstation id is unique on the network (among all users that may access Elliott/Macola). Having duplicate workstation ids may result in printing problems in the future.

Assign Operating System Type

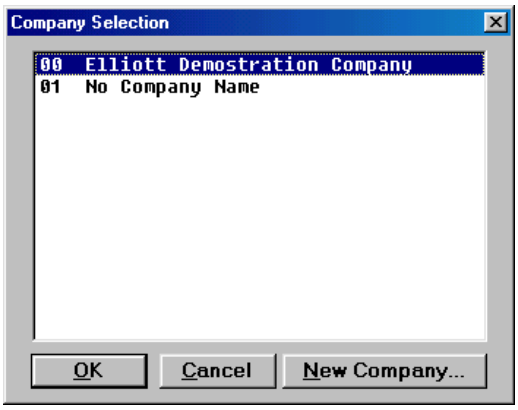
Once you assign a workstation id, the system will ask you for the operating system type for this workstation:



Please match the operating system type with your workstation and click OK to continue.

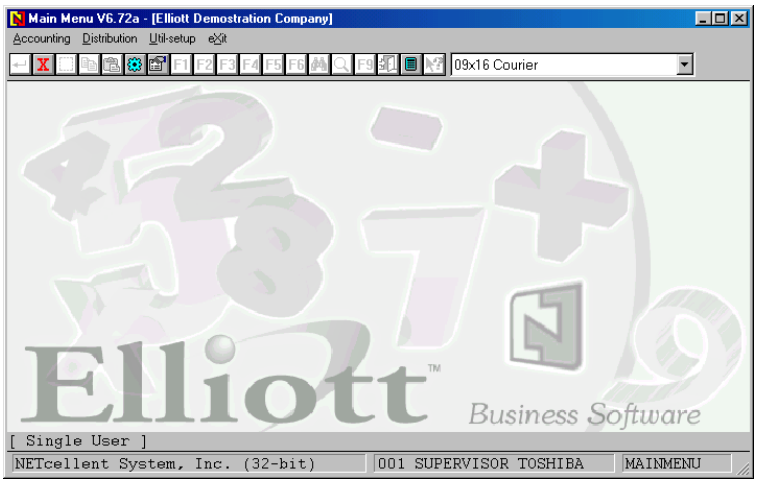
Multiple Company Option

If you are using the "Multiple Company" option, then you will be prompted to select the company to access:



Main Menu Screen

If you did not the choose “Multiple Company” option, then system will directly bring up your Elliott/Macola Main Menu like the following, and you are now ready to explore the system.



Startup NWSM for The Second Time

The first time you start NWSM the system will prompt you to setup the NSI.CFG (Global) and NSI.INI files (Local). When you start NWSM for the second time, since these two files have been already setup, the system will not prompt you to setup this information again.

However, if you should setup NWSM on another workstation, since the NSI.INI file has not been setup yet, the system will prompt you for the workstation id, as well as the operating system type.

NSI.CFG File

The NSI.CFG file is in your NWSM startup directory. The value in your NSI.CFG can be maintained through the NWSM Configuration Utility (NWCONFIG.EXE). The values in the NSI.CFG file controls the NWSM global functions and affects all workstations’ operations.

NSI.INI File

The NSI.INI file is in your C:\WINDOWS or C:\WINNT directory. Most of the values in your NSI.INI can be maintained through the "Setup Preference" toolbar button (or Ctrl-S). If you make changes to the NSI.INI file, it will only affect this particular workstation. The types of flags you can change are:

Set up your favor colors for NWSM.
Determine which fonts are available to use.
Determine your Laser Printer Paper Margin.
Determine whether to turn on auto skip or not.
Determine the number of local parallel ports (for capturing to a network).
Select your preferred editor for Macro editing and viewing spooled reports.
Define default paths for Macro, Help, Wave and Log files.
Diagnostic options.
Tickler function (for V6.7 and Elliott users only).

The following values in the NSI.INI file can't be set up through the "Setup Preference" toolbar button, and can only be manually changed with an editor:

```
[Preferences]
Use-Macro=Yes
Use-Preference=No

[Configuration]
Workstation=EMK
Win-Version=98
```

The following are default values saved in the NSI.INI file:

```
[Preferences]
Last-Login=EMK
Last-Company=00

[Tickler]
Future-Items=Yes
Quiet-Amount=1 hour
```

Disable Macro or Setup Preference Tool Bar Button

Use-Macro: You may decide not to let certain users access the Macro function by setting this field to “No”.

Use-Preference: You may decide not to let certain users access the “Setup Preference” function by setting this field to “No”.

Change Workstation Id

Workstation: This is the unique workstation id for this PC. Having duplicate workstation ids may cause printing problems. If you accidentally assign duplicate workstation ids, then you must manually change it with an editor.

Changes from DOS interface:

Once you start up NWSM, you’ll see that most of the DOS user interface is still preserved. This is to smooth your transition to the Windows environment. The following are a few changes from your Elliott/Macola DOS environment:

The F10 key has been substituted with the F12 key. The F10 key is used by Windows for highlighting menus and therefore is not available for application software use.

You need to use the Alt key + the underscore character, (_), to bring up a menu. In the DOS environment, you only need to type the character to bring up that menu. Also, in DOS, the first menu always drops down. In Windows, you need to press the Alt-? Key to drop down the menu.

There are many other added features in NWSM. However, they are all features related to the Windows environment and we’ll explain it in the next chapter. For now, you should be able to operate the entire system like you use to in the DOS environment, provided you remember the differences we mentioned above. If you would like to use Windows conventions, you may try to use the mouse and tab key to navigate the system as well.

Chapter 4 Screen User Interface

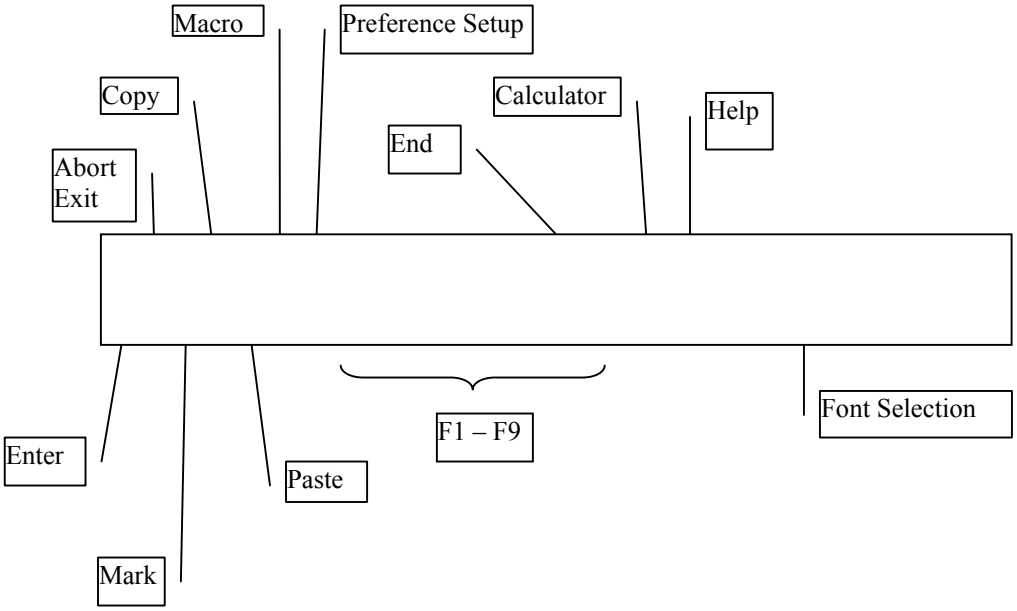
Menu

NWSM has improved the menu choices so that if users do not have access privileges to a certain menu item, that menu item will not even show up in the menu structure. This is different from the V6.x DOS System Manager where it will display the menu item with ******.

We think the NWSM menu implementation is better and less likely to create problems in an office environment where some people may feel that they are not respected if they see certain menu items on the screen that are blocked from them (especially if his/her peers have access to them).

The graph function in Macola DOS is currently not supported and is not displayed on the NWSM menu.

Toolbar



The following is a list of tool bar buttons from left to right:

Enter: You can use the Enter key on the keyboard, or if you are using the mouse, you can click on this button to generate the Enter keystroke.

Abort: Equivalent to the ESC key. You can either use the ESC key on the keyboard, or if you are using the mouse, you can click this button to generate the ESC keystroke.

Mark: The Copy button is used to copy the value of a field. If you wish to copy an area of the screen, you can click the "Mark" button first, then the system will allow you to click and drag to define the area to copy. You can then click the "Copy" button to copy the whole area.

Copy: This is to copy the value of a field, or to copy and mark area. You can also copy the value of a field by right clicking on the field and choosing "copy" from the context menu.

Paste: This is to paste the value from the clipboard to the current field.

Macro: Macro is designed for office automation. Macro can control another Window application from NWSM by sending it keystrokes. Macro is licensed as an add-on option and you may not have the license for this function.

Setup Preference: This button is used for setting up the preferences for the local workstation. The changes you make will be saved to the NSI.INI file in your C:\WINDOWS or C:\WINNT directory.

F1 - F9: You can either use your keyboard F1 thru F9 buttons, or you can use the mouse to click on theses buttons and produce the same result.

End - Equivalent to the V6.x F10 key. However, F10 is being used by MS-Windows to highlight the menu bar. Therefore, we are using F12 to represent the End key in NWSM. If users press F12, or use a mouse to click on the End button on the tool bar, it is equivalent to pressing the F10 key in the V6.x DOS environment. Any time users see a message showing, press F10= ???...Etc., please remember, you need to press F12 to generate the result; pressing F10 will simply highlight the menu bar and do nothing else.

Calculator – You can either use Shift F2 on the keyboard, or click on this button to bring up the Windows calculator. You may also bring up a calculator by right clicking on a numeric field. In the context menu, choose "Send to Calculator".

Help – You can either use Shift F1 on the keyboard, or click on button to display NWSM Help. After the V6.X.057 release, the system supports Windows Help by default. If you wish to turn off windows help for any reason, you can put the following lines line in NSI.CFG file [Configuration] section:

```
[Configuration]
Windows-Help=No
```

The following modules are supported with Windows Help:

System Manager
General Ledger
Accounts Receivable
Accounts Payable
Payroll
Inventory Management
Customer Order Processing
Purchase Order
Bill of Material Processor

If you use any other module, the traditional character based help will pop up. Windows Help is available in NWSM 32-bit for all Windows O/S. It is also available in NWSM 16-bit if you are running Windows 95/98. Windows Help is not available in NWSM 16-bit for Windows 3.1 or Windows/NT or 2000.

Fonts Selection – The default is the Fixed Sys Font. However, you can select any mono spacing font that is available on this workstation. This will result in the screen being resized when the font size is changed.

Status Bar

Status Message – Displays either your company registration name, or status message.

User Info – Displays user-id, user name, and workstation id.

Task Name – For Help and Macro purposes. It also offers a way to easily identify the current screen and facilitate support.

Color

The NWSM default colors are hard coded. However, each user can also customize the colors in “Setup Preferences”.

Mouse Operation

You can use the mouse to click on a field and position it on that field. This will work only if the screen fields have been populated in change mode. When a field is highlighted, users can use the copy toolbar button to copy. Users can also paste into a field from the clipboard when the field is highlighted by clicking on the paste button on the tool bar. You can also Click and Drag to highlight an area for copying by first clicking on the toolbar button “Mark”.

When a search window is displayed, double-clicking in a search window is equivalent to pressing the enter key. If you double click a line in the search window, it means highlight and return the line being selected. A single click simply means highlight the line. You can also use a mouse to click on the words PgUp, PgDn, Up, Dn and Return at the bottom of the search window, then it is equivalent to pressing those keys. This feature is applicable system-wide. The following is a list of special key words recognized by NWSM when you use a mouse to click on them:

Up	down	dn	left	right	pgup	Pgdn	enter	return
f1	f2	f3	f4	f5	f6	f7	f8	home
end	Esc							

Context Menu

If users use the right mouse button to click on a field when it is highlighted, it will display a context menu for that field. The following are some special features that can be performed via the context menu:

Alpha Field:	Upper, Lower, Proper Case
Date Field:	Calendar
Yes/No Field:	Toggle Between Yes/No
Numeric Field:	Send to Calculator/Paste from Calculator

Calendar.CFG File

You may create a CALENDAR.CFG file in your startup directory (i.e. \NSI or \ELLIOTT) like the following:

[Company]
20000221=President Day
20000529=Memorial Day
20000704=Independence Day
20000904=Labor Day
20001123=Thanksgiving
20001124=Thanksgiving
20001225=Christmas
20001226=Floating Holiday

[EMK]
20000508=Vacation
20000509=Vacation

This file is used to define the company holiday and personal vacation day. When user uses Calendar function, for the company holiday, everybody will see the date on calendar as bold. For the personal vacation day, only that user will see the date as bold.

Keyboard

Tab-Key = Down Arrow Key
Shift-Tab-Key = Up Arrow Key

In the Date Field, the Delete Key and Backspace Key are not allowed in NWSM. Accidentally pressing these two keys is one of the main reasons for a wrong date being entered. It really does not make a lot of sense to use the backspace and delete key in the date field. Therefore it was disabled it in NWSM. If you wish to erase the whole date field (choose the system date, or all dates), the space key can be pressed at the first digit of the date field and this erases the whole date.

Autoskip

Autoskip is a special way of data entry input that allows you to skip from one field to the next without the need to use the “Enter” key. The system simply issues an enter key automatically when the field is fully populated. Thus we call this feature “Autoskip”.

You may enable the auto skip feature by using the “Preference Setup” button. Alternatively, you can edit the NSI.INI file under the C:\windows or C:\winnt directory:

[Preferences]
Autoskip=Yes

Once this feature is enabled, it only affects the local workstation only.

Fonts

Only mono-spaced (non-proportional spacing) fonts can be used. You cannot use any fonts that will cause an 80-column screen display to be bigger than the maximum screen allowed. Also, users cannot choose any fonts that will cause the 80-column screen display window that to be so small that the toolbar will be cutoff. Therefore, the number of fonts and font sizes that are available are limited. The following are typical fonts available:

Terminal
Fixedsys
Courier

Terminal is the system default font because it will support a wide range of character sets, including extended ASCII code. Fixedsys fonts look best if you do not have a concern for the extended ASCII code.

If you change the font on the toolbar, the system will remember it and use it next time when you start NWSM. It will also update the NSI.INI file (in your c:\windows or c:\winnt directory) with the following entry:

[Preferences]
User-Font=09x16 Courier

There are situations where certain fonts appear to be available. However, when you choose them, the screen becomes unreadable. These types of fonts are for special purposes and should not be used. You can exclude these types of fonts from the font selection combo box by going to “Preference Setup” and choose the “Fonts” tab.

Chapter 5 Macro – Office Automation

Introduction

Macro is designed for office automation by sending pre-defined keystrokes to the application. There are two types of macros supported by NWSM: External and Internal. The external macro is used for controlling applications outside of NWSM, like Word, Excel…etc. The internal macro is used for controlling NWSM's applications, like printing an invoice.

External Macro

External Macro is used to control applications outside of Elliott which includes tasks such as: generating a letter for a customer, printing labels, dialing a customer's telephone number, bring up an image of an item, or any other daily routine that can be accomplished with one of the Windows applications. With External Macro, the system utilizes the data that is on the Elliott side and utilizes other Windows programs to perform necessary functions. You can accomplish the same purpose with copy and paste, which is currently supported by NWSM as well. However, copy and paste may not be fast enough and may require too many steps and keystrokes by comparing with Macro.

NWSM's External Macro accomplishes the office automation by sending data from the current NWSM screen to another Windows application by sending keystrokes and data to that application with a pre-written script. Once the script is written, it can be re-used over and over again. By default, macros are shared by all users. You can have up to 999 external macros per screen (help-id).

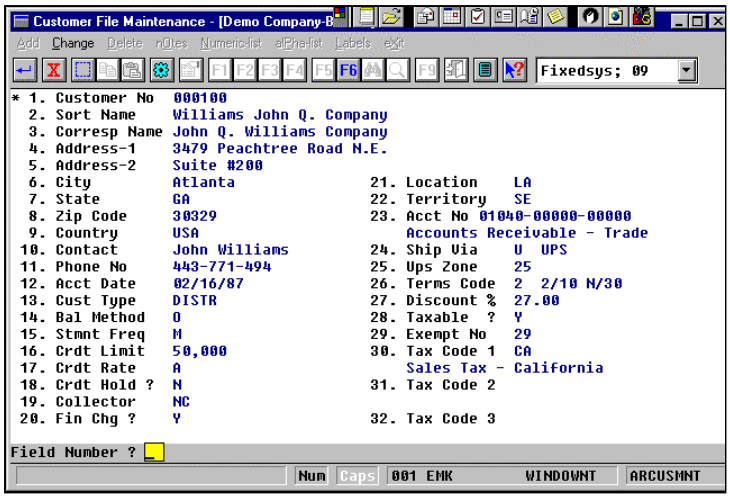
For example, you can develop an External Macro that sends a Microsoft Word welcome letter to any new customer that has just been added to your customer database. To do so, you will first develop the welcome letter in Microsoft Word without the customer name and address. Save the letter in a file that's located on the network drive so all users can share it. Second, you need to develop the script for the Macro that will start Microsoft Word, and then bring up the letter that's stored on the network. In the Macro, you will send the fields on the customer screen that need to be sent to the letter and place them in the right positions. Then all the users have to do is to print out the final letter with the address that comes from the customer. The macro will greatly reduce the time required to do some of the office routines. As long as the data is on one of the Macola screens, and you need the data to be used in another Windows application, Macro can help. The possibilities are endless.

Internal Macro

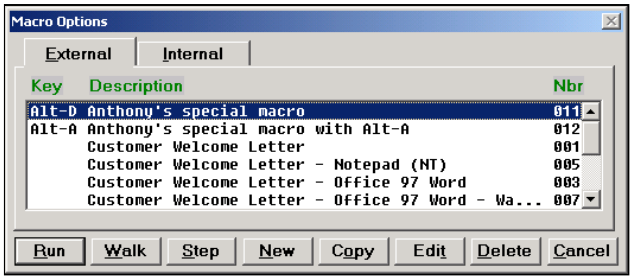
Internal Macro is used to automate tasks inside Elliott/Macola. Similar to the external macro, internal macro sending key strokes to Elliott/Macola applications and automate routine tasks. The syntax and format for internal macro and external macro are similar, however, not identical. You can have up to 99 internal macros per screen (help-id).

Define an External Macro

To define a new macro, you will need to click the Macro button (Ctrl-a) on any one of the screens that contains data. For example, you can click on the Macro button on the Customer Screen when a customer record is displayed on the screen.



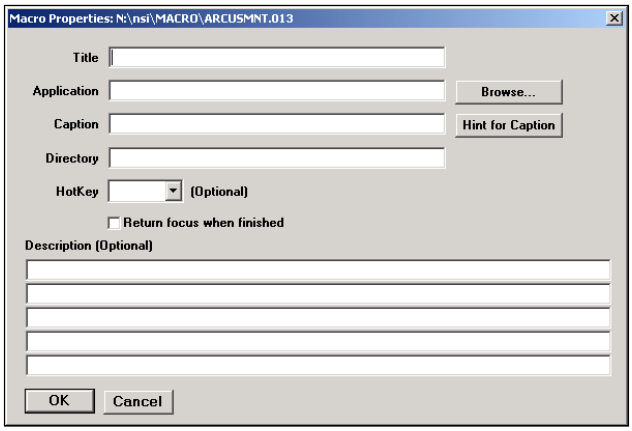
Once the Macro function is selected, the following window will display on top of the current screen:



Only the macros defined for the current screen will display in the list box. For example, the macros you defined for Customer File Maintenance will not display in the Item File Maintenance screen. The following is a brief description for the function of each button:

Run: Run the highlighted Macro.
Walk: Run the highlighted Macro with one second delay between every line of script.
Step: Run the highlighted Macro in debug mode where users can step through each line of script.
New: Create a new Macro.
Edit: Edit the highlighted Macro.
Delete: Delete the highlighted Macro.
Cancel: Exit the Macro Options Screen.

At the external tab, click on the "New" button to create a new external Macro, and the following window will display:



Title: Enter a title for the Macro you want to create. The title you entered here will display in the Macro option window. Therefore, it is important that you do not create duplicate titles among different macros.

Application: The name of the application you wish to run., i.e. Winword.exe. If you do not know the exact spelling of your application, you may click the browse button to explore your hard drive and find your application.

Under 32-bit, a special application, START, can be used to launch a document file (any file that has an associated application for it). In this case, enter the document name (file name or http: address) as the only line in the [Script] section of the macro file.

Browse: To find the application, if you do not know the exact spelling. Alternatively, if you do not know the path for your application, you can use browse to find it as well.

Caption: Unless Macro has problems communicating with the Windows application you try to run, you should always leave this field blank. When you first try to write a Macro, it is suggested to leave it blank.

Hint for Caption: Clicking on this button will give you a hint for entering the caption if you need to (when Macro fails to communicate with your application). For example, if you are using Microsoft Word 6.0, the startup application is Winword.exe. However, once Winword.exe starts, it calls another EXE for the Microsoft Word main process and Winword.exe will terminate itself. Therefore, the macro will not be able to communicate with Winword.exe.

In this case, you need to specify the caption as "Microsoft Word" so the macro can communicate with Microsoft Word even though the startup application EXE has terminated itself. This, however, is not a problem with Office 97.

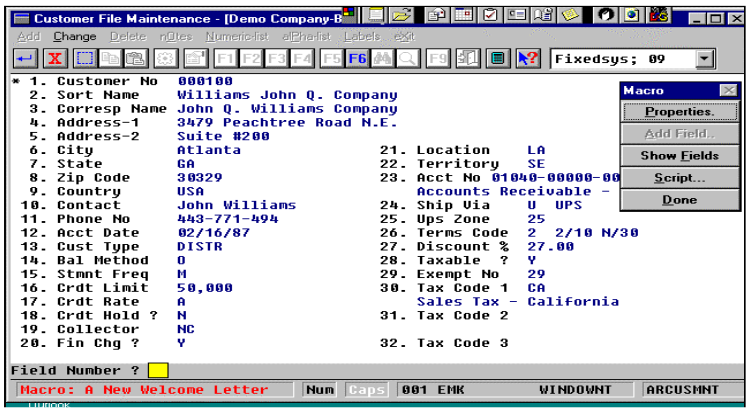
Directory: If you choose the browse button earlier, the right directory should have been returned back to this field. Otherwise, enter the directory where your Windows application resides.

Hot Key: You can assign a hot key with combination of the Alternate key, (Alt), and 26 alphabetic characters from A – Z to execute a macro. For this reason, you can only have maximum 26 macros that can be assigned with a hot key. Hot key speeds up the process of a macro since you don't have to pick and choose from the macro list box. This is an optional function.

Return Focus When Finished: By default, leave the check box off. In most situations, when you finish executing your macro, you want to leave the focus in the Windows application you try to run. For example, if you try to send a welcome letter to your customer, you may want to leave the focus in Microsoft Word and let the user choose which printer to print to. However, if you wrote the macro so that the printing is automatically done and Microsoft Word automatically, then you might want to check this field and return to Macola after the macro finishes the executing.

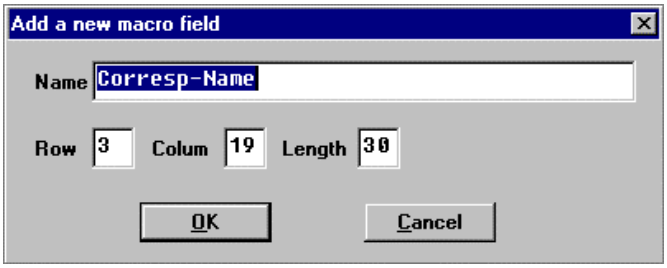
Description: Five lines of free format for you to enter the detailed description for the macro.

Once you finish entering each field, you can click on the OK button, and then a floating window will pop up on top of your current screen:



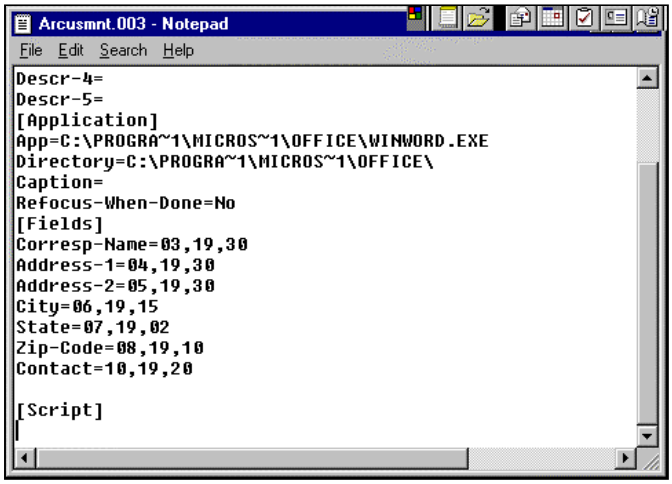
At this moment, the focus is back on the Elliott/Macola screen where you invoked the Macro function. What you need to do now is to decide which fields on this screen are needed for your letter. For example, you may need the Customer Corresp Name on the letter. Therefore, you will put your cursor on field 3. Corresp Name by either using the mouse or entering field number 3.

When the cursor is on field 3, the "Add Field" button on the floating window will be enabled. By clicking on the "Add Field" button, the following window will display:



The system will determine the field name, the position and length of the field automatically. In most situations, you will not need to do anything on this screen, just click the OK button to accept the default value. Repeat this step for all the fields you want on the letter. For example, you will want Address-1, Address-2, City, State, Zip Code, and Contact to complete a letter address portion. Repeat this step for these fields.

Now you are ready to write the actual script for the macro. Click on the "Script" button on the floating window. A notepad with the macro as we have so far created it is displayed. At the end of the macro, you'll find a section starting with [SCRIPT] that is currently empty. The following is the sample script:



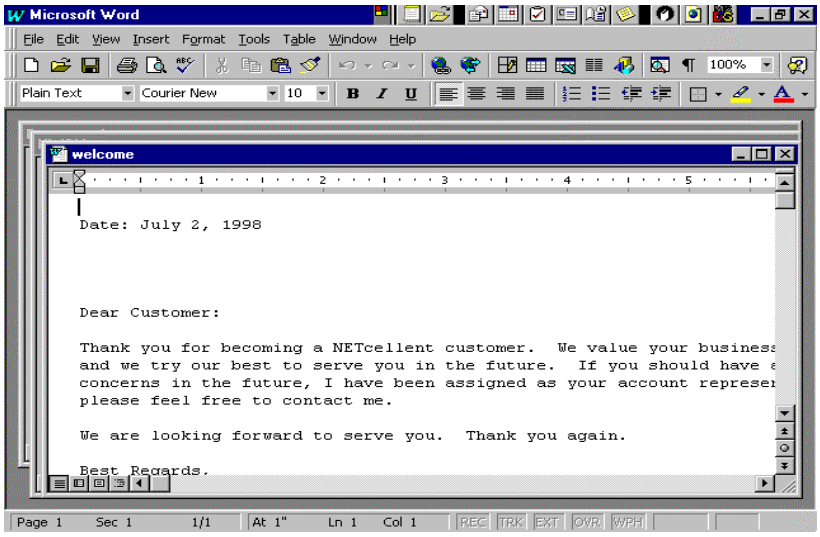
You'll notice the fields you added earlier through the interactive user interface are in the macro as well. You can manually add these fields if you want to, provided you know the position and length of each field on the screen you try to capture. At this moment, NWSM has just created a skeleton of a macro where it contains the Macro Name, Application Name, Field Names and Position...etc. It does not contain the actual keystrokes that you wish to send to the other software application. It is your responsibility to write the script now.

The script you need to write are the actual keystrokes that you need to send to the Windows application. In this case, it is Microsoft Word. When the first keystroke is sent to Microsoft Word, the Microsoft Word application has been brought up already and it is in focus. Typically, you need to ask Microsoft Word to open a file for you. You will do so by sending two lines of script:

```
%fo
c:\nsi\welcome.doc{enter}
```

"%f" means Alt-f which will bring down the file menu in Microsoft Word. "o" means open a file on the file menu. Therefore, the file open dialog will display and the cursor is at the file name field.

If you send over the path and the file name, followed by an enter key, then this will open welcome.doc in Microsoft Word. At this moment, your screen may look like the following:

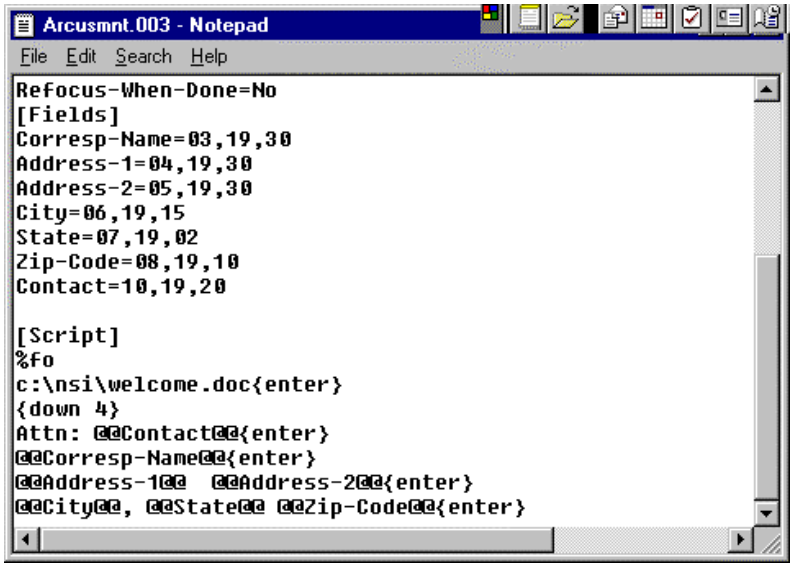


Since your cursor is at the beginning of the document, you need to move your cursor down before sending over the actual address information. Therefore, you'll need to write the following lines of script:

```
{down 4}
Attn: @@Contact@@{enter}
@@Corresp-Name@@{enter}
@@Address-1@@  @@Address-2@@{enter}
@@City@@, @@State@@ @@Zip-Code@@{enter}
```

{down 4} means press the down arrow key 4 times which will bring it to the correct position to populate the address information.

@@Contact@@ means send over the actual contents in the "Contact" field. Anything beginning with "@@" and ending with "@@" is the field name. You can have multiple fields per line and they can be combined with other characters. We put Address-1 and Address-2 in the same line because many times, address-2 is blank and we do not want to waste a blank line. Words like "Attn:" will be sent over to Microsoft Word as is. At the end, your script will look similar to the following screen:



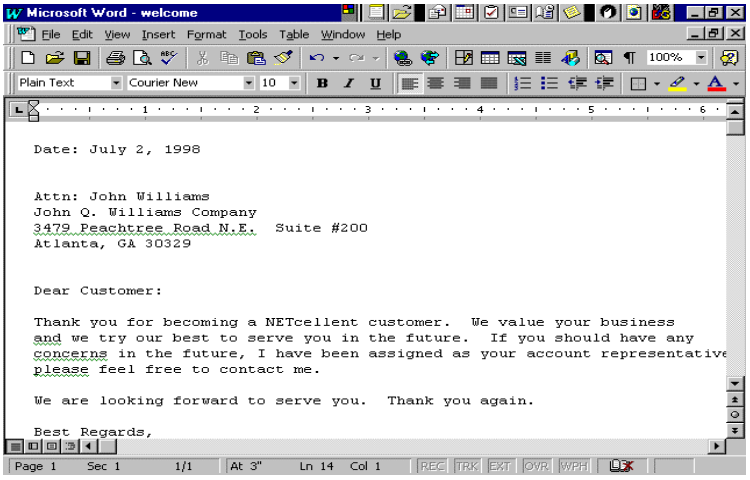
If you would like to display the print dialog window so the only thing users have to do is select or confirm the printer, then you can add the following line at the end of the script:

%fp

Where "%f" means Alt-f and will bring up the file menu and "p" means "Print".

At this moment, if you save your script and exit notepad, you will be back at the Elliott screen. Click the "Done" button on the floating window. Now you have finished defining the macro and you are ready to run it.

Click on the "Macro" button (or use Ctrl-a), the macro option window will be displayed and you will see the macro you just created. Highlight the macro you just created and click on the "Run" button. You should see the following result:



If your script does not produce desirable results, it is possible there is a problem in your script. You can use the "Step" method to let the system confirm every single line of the script before it sends it over to the Windows application. You will then see exactly the position where your script fails and you can then determine the measure to fix your problem.

Syntax for External Macro Script:

Execute a Special Command: Any line beginning with **&&** indicates whatever follows on this line is either a DOS, or a special command to be executed. The following are some special commands:

&&Wait n – Wait for number of seconds. When the system does not respond fast enough with certain steps, and you can see the keystroke it is sending before the system can respond to it, there's a possibility of losing keystrokes. You might want to consider using this command to delay the sending of keystrokes. For example, &&Wait 1 means wait 1 second before sending the next line or keystroke. Alternatively, if the run method seems to lose keystrokes, you can try the "Walk" method, which delays 1 second between every line. If you omit the number of seconds, the script will use 1 second by default.

&& Wait Close – Use for waiting for a dialog box window to close before sending the next keystroke. This should only be used it only if you have a problem with your Macro that is sending script faster then it is closing the window.

&&Dos Command - In the above example, you may want to save the original document in the welcome.tbl file and copy it to the welcome.doc file after you execute this script. This is a safety precaution just in case users accidentally override the welcome.doc file. You can only have one DOS command per line. Do not try to put multiple && on the same line to execute multiple DOS commands.

Sending a Field: @@field Name@@ means send the information in this field to the Windows application. No trailing spaces will be sent. This is the same field name that was defined earlier. You can have multiple fields on the same line. You can also mix fields with regular text.

Putting Comments in a Script – ";;" means that whatever follows after until the end of the line is a comment and will not be sent to the Windows application software. ";;" can begin anywhere, even in the middle of the line. Anything before ";;" will still be processed normally.

Other special symbols:

character - send the character
{{} - send the { character
{}} - send the } character
{+} - send the + character
{^} - send the ^ character
{%} - send the % character
{char number} - send the character number of times
+ - next character (or set in parens) is SHIFT
^ - next character (or set in parens) is CONTROL
% - next character (or set in parens) is ALT
(chars) - group of characters (can all be shift/control/alt)
{backspace} or {bs} or {bksp}
{break}
{capslock}
{clear}
{delete} or {del}
{down}
{enter} or ~
{escape} or {esc}
{help}
{home}
{insert}
{left}
{numlock}
{pgdn}
{pgup}

{prtsc}
{right}
{scrollock}
{tab}
{up}
{f1} {f2}{f3} {f4}{f5} {f6} {f7} {f8} {f9} {f10}
{f11} {f12} {f13} {f14} {f15}

Sample strings:

+(EC)	Uppercase E then C
+EC	Ec
{X 10}	XXXXXXXXXX
%fo	Alt-f then o (as in File Open)
{left 42}	Press left arrow 42 times

Sample Scripts:

```
&& copy f:\users\public\welcome.tbl f:\users\public\welcome.doc
%fo    ;;Alt-F for file menu, choose open a file
f:\users\public\welcome.doc{enter}    ;;type in the file name and hit the
;;enter key
&&Wait Close    ;;waiting for the file open dialog to close before
;;sending the keystroke
{down 5}   ;;press the down arrow key 5 times
Attn: @@Contact@@{down}   ;;@@Contact@@ indicates the field
;;name just created
@@Corresp-Name@@{down}
@@Address-1@@   @Address-2@@{down}
@@City@@, @@State@@ @@Zip-Code@@{down}
@@Country@@
%fp{enter}    ;;Alt-F for file menu, choose to print and press enter to
;;choose the default printer
%fxn   ;; Alt-F for file menu, choose exit and do not save the change
```

In the above example, the first line will copy welcome.tbl to welcome.doc and the third line will use welcome.doc as the letter file. This may be beneficial if you do not want your users to accidentally override the original document when exiting Microsoft Word.

Writing and Testing Your External Macro Script:

Writing the script: The best way to write the macro script is to start the application software and try to find the keystrokes that are needed to perform the process you need, step by step. Then you can write the keystrokes in the script. Any time you need to send a combination key like %f (Alt-f), make sure you use the lower case "f". %F will be interpreted by the system as (Alt-Shift-f) and will not produce desirable results.

Captions: In most situations, you should leave Captions blank. The only time you may need to put something in the Captions field is when your Macro seems to fail to communicate with the Windows application you try to run. This may happen, for example, with Microsoft WinWord 6.0. WinWord 6.0 starts up with Winword.exe and calls another EXE for the main process, then terminates itself. Therefore, when the Macro tries to communicate with Winword.exe, since it has been purged from memory, nothing will happen. In this situation, you need to put the caption, "Microsoft Word" (as in the WinWord title bar) for Macro to establish the communication.

If you do need to put something in the caption in order for your Windows applications to work, the rule for determining the caption is to bring up your Windows application first and see what displays in the title bar. For example, when you start WinWord 6.0, by default the title bar is "Microsoft Word – Document1". You don't really want to put "Document1" as part of the Caption as that's not always part of the Caption for WinWord 6.0. In this case, putting "Microsoft Word" is sufficient because the Macro will match with the prefix.

If a caption is entered when it is unnecessary, then you may get unexpected results. Lets use, NOTEPAD in Windows 3.1, for example. When NOTEPAD is executed it will have "Notepad – (Untitled)" in the title bar. If you enter "Notepad" as the caption, then it will work fine in the Windows 3.1 environment. However, in Windows 95/98, NOTEPAD uses "Untitled – Notepad" as the caption. The caption that works for Windows 3.1 Notepad won't work for Windows 95/98's Notepad. In both situations, if you leave the captions blank, the system will function correctly. Therefore, you are better off leaving the caption blank if the Macro works. There's really no rule to determine in advance whether captions are needed or not with certain Windows applications. Users simply have to test each application.

Test the script: You may need to test and revise the script a couple times before you achieve the final desirable results. Please be aware that different users may have different setups for their application programs and therefore, the same keystrokes that work for one user may not work for another. You need to take this into consideration and define keystrokes that will work for everybody.

Test the script with animation mode: The best way to test a script for problems is to execute the script in animation mode and choose the time delay for each line. Users can set the time delay anywhere between 1 to 99 seconds. This is done at the time of

executing the Macro. In the Macro window, there is a checkmark where users can set the execution in animation mode, then the "time delay field" will become available. Each statement will first be displayed and users will see the result of execution. At any moment, if you wish to stop the execution, choose "Stop" or "Edit". "Edit" will start your favorite editor for the script you are currently executing and you can make changes if you have discovered any mistakes.

Running the Macro: Once a macro has been defined, you can run this macro over and over again. In our example, when a new customer is added into the system, the user only has to click on the macro button, then choose "New Customer Welcome Letter", and the letter will automatically be printed. This will be a great time saving tool. Just use your imagination. You'll find that there will be many applications to use with this feature to save you significant amounts of processing time.

Make Your Macros Private: You can specify a different macro directory for each user in the preference setup. By default, the system uses the Macro subdirectory of the NWSM startup path (i.e. \NSI\MACRO) as the default macro path for all users. This means that macros will be shared by all users. However, you may change this if you have the following concerns: (1) security issues – you may not want to let users run all Macros in the system. (2) compatibility issues – A macro written for one workstation may not work for another because (a) not all workstations have the same applications installed, and (b) not all of them are installed in the same directory. In this case, you can simply designate a different macro path for each user.

Use A Different Editor for Macro Editing: By default, the system will use NOTEPAD as the editor for your Macro script. However, you can choose to use your favorite editor by changing the default setting in the preference setup. You should be aware that by changing your default editor, it also changes the default viewer for your spooled reports.

Tips for Speeding up Macro Execution: You can use "&&Turbo On" to speed up the execution of Macro. Another technique is to combine multiple lines of script into one single line to avoid the delay between each line. Just keep in mind that the maximum length for a script line is 255 characters. For example, you can change the following script:

```
{down 4}
Attn: @@Contact@@{enter}
@@Corresp-Name@@{enter}

To:
{down 4}Attn: @@Contact@@{enter}@@Corresp-Name@@{enter}
```

The system will then process the script as one request instead of three requests and thus speed up the performance.

Defining an Internal Macro

An internal macro has two different formats depending on where it should be executed from: (1) To be executed from the command prompt. (2) To be executed inside of NWSM. The command prompt macro is in free text format. It can be named anything you like, and can be placed your macro directory, or in any directory you like. On the other hand, the macros to be executed inside of NWSM are subject to certain rules.

Command Prompt Macro

The following is an example of command prompt macro. It will print customer numeric edit list for customer number 100 – 200 to the screen and then exit NWSM.

```
0101 05
“000100”
“000200”
{enter}
{enter}
%S
%O
{close}
```

Normally, we will name this macro something similar to “CUSNLIST.MAC” and place in the MACRO directory which is either:

\NSI\MACRO or
\ELLIOTT\MACRO

To run this macro, you would use the following command prompt (or setup in short cut):

```
NW32 02 /F:CUSNLIST.MAC
```

‘NW32” will launch the 32-bit application. “02” will open the Accounts Receivable module. You must specify the module for which the command prompt macro should run. If you wish to run an menu item on the main menu that doesn’t belong to any module, then you should use “00”. For example, the following command will startup defer processing:

```
NW32 00 0406 %P
```

Again, 'NW32" will open the 32 bit application. "00" accesses the Main Menu. "0406" stands for drop down menu 4 (Util-Setup) and menu item 6 (Defer Processing). Depending on whether the manufacturing module is turned on or not, you may need to use "0306" in the above scenario if you only have accounting and distribution modules turned on. "%P" stands for Alt-P which is the keystroke for "Process" button. You may want to backup your entire system without leaving any file opened by deferred processing. You can let Windows scheduler startup defer processing at certain hours after the back up is done. In this example, we execute internal macro script directly on the command line. The command line is limited to 256 characters. Therefore, you will have to use command prompt macro file if your script is longer than the command prompt limitation.

By default, command prompt macro use MAC as an extension. If you specify a command prompt macro without the extension, the system will assume MAC is the extension. You can also use macro file from any directory. When you do not specify the directory, then it assumes the macro file is in MACRO directory.

Syntax for Command Prompt Macro

The command prompt macro must begin with the menu path (excluding the module portion) first. In the previous example, 0101 stands for customer file maintenance. 05 stands for customer numeric edit list. Once the cursor is in the actual application, you will use the following scripts:

"000100"
"000200"
{enter}
{enter}

Which is corresponds to numeric edit list:

Starting Customer No	000100
Ending Customer No	000200
Print Comment?	N (Use enter to accept default)
Any Change?	N (Use enter to accept default)

Anything contained in a double quotes stands for the data that will be entered into a field. After that, an enter key will be issued automatically. At this moment, the print option window will pop up. The following line will cause the print job to print to screen:

%S	- Alt-S stand for print to screen
%O	- Alt-O for OK button

After the print job is sent to the screen. The {close} command will close NWSM and exit.

You may combine each line of text on one line, as long as each command is separated by a space and the maximum length per line does not exceed 255 characters.

Using % Symbol at Command Prompt

One thing you should be aware of when using the "%" symbol at the command prompt is that there is a special meaning associated with this symbol. For example, if you use %XYZ% on the command prompt, it tell the system is to substitute the value of environmental variable XYZ with %XYZ%. This may create problem with the following example:

NW32 02 0101 05 "000100" "000200" {enter} {enter} %S %O {close}

The system will interpret "%S %" and an environmental variable. However, since this variable does not exist , it will be substituted with blank space. The actual command parameters that NW32 receives in this case is:

NW32 02 0101 05 "000100" "000200" {enter} {enter} O {close}

As a result, the command will not work as you would expect. The alternative to this is to use:

NW32 02 0101 05 "000100" "000200" {enter} {enter} %S {enter} {close}

Since %O (OK Button) is the default, you can substitute with an enter key.

Another alternative is to create a macro file and let the command prompt execute the macro file, instead of using direct keystrokes.

Special Keys for Internal Macro

The Internal Macro supports the following special keystrokes:

{F1} = F1 Key
{F2} = F2 Key
{F3} = F3 Key
{F4} = F4 Key
{F5} = F5 Key

{F6} = F6 Key
{F7} = F7 Key
{F8} = F8 Key
{F9} = F9 Key
{F10} = F10 Key (End)
{ENTER} = Enter Key
~ = Enter Key
;; = Anything on the same line after will be comment
{ESC} = Escape Key
{ESCAPE} = Escape Key
{UP} = Up Arrow Key
{DOWN} = Down Arrow Key
{PGUP} = Page Up Key
{PGDN} = Page Down Key
{CLOSE} = Close NWSM and Exit
{COPY} = Copy the value in the current field to the clipboard
{COPY 0000 9999} = Copy the value in the area as defined from 0000 to 9999 to the clipboard. For example {COPY 0119 0124} will copy the area from column 1, row 19 to column 1, row 24.
{PASTE} = Paste the value from clipboard to the current field (a enter key will not be issued automatically).
{RUN 999} = Call and run an external macro. "999" is the external macro id.
{WAIT} = Wait for user to enter input before continuing with the script.

These special keystrokes are similar to external macro, however, not identical. These keystrokes are supported by all NWSM screens except GUI windows. GUI windows refer to note windows, tickler, help, macro…etc. There are, however, two GUI windows that support certain macro keystrokes – the Print Option Window and the Defer Processing Menu. More GUI windows may be added to the support list in the future.

Print Option Window supports the following macro keys:

%P = Alt-P (Print to printer)
%S = Alt-S (Print to screen)
%D = Alt-D (Print to disk)
%O = Alt-O (OK button)
%C = Alt-C (Cancel button)
{ENTER} = Enter (OK button)

Defer Processing Menu supports the following macro keys:

%P = Alt-P (Process button)

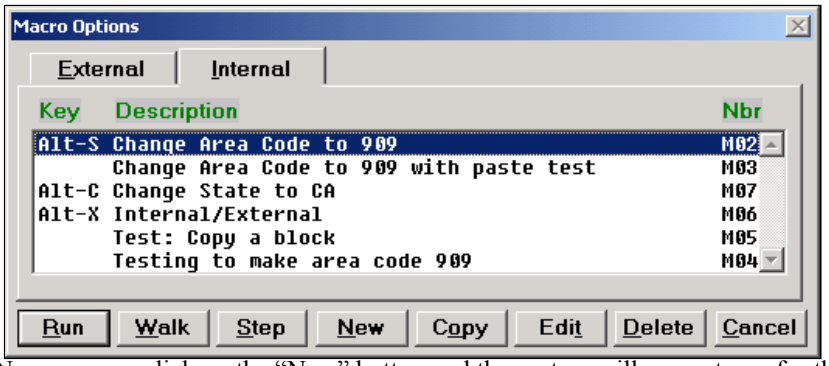
%C = Alt-C (Cancel button in processing screen)
%E = Alt-E (Exit button)

Defining an Internal Macro inside an Application

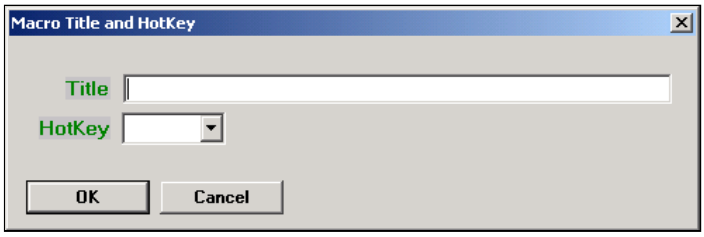
You can create an Internal Macro from any screen where the Macro button is active. Unlike the External Macro which applies to the whole screen (help-id) and you can execute the external macro anywhere in the screen. Internal Macro is cursor sensitive. An internal macro that executes successfully if the cursor is at phone number field will not work correctly if the current cursor is at the fax number field. For that reason, when an internal macro is saved, the cursor position for execution is also saved in the macro file heading area. When you try to execute an internal macro, only the internal macro that matches the cursor position will be made available to you.

The following is an example of adding an internal macro in customer file maintenance screen. The macro will be executed from "Field Number to Change" position:

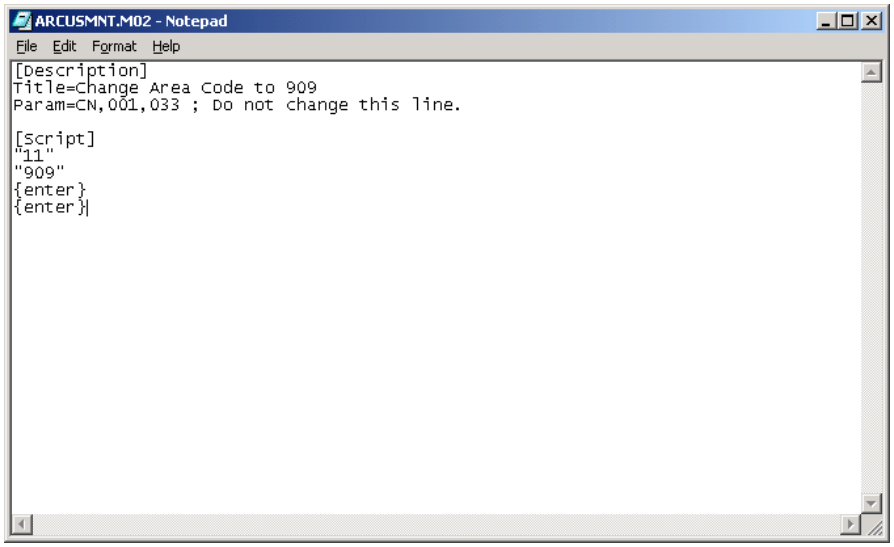
First go to customer file maintenance and bring up a customer record in change mode. Then place the cursor at "Field Number to Change". Then click the Macro button (Ctl-A) and choose the Internal tab. You should see the following screen:



Now you can click on the "New" button and the system will prompt you for the name of the macro:



We can enter, for example, “Change Area Code for 909” and confirm OK. After that, you will see the script for the macro show up in your favor editor (by default – notepad) like the following screen. Currently, there is only the heading area without any script. You will need to enter the following script beneath the [SCRIPT] specification.



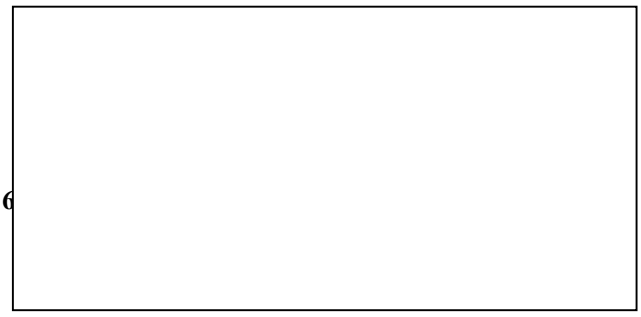
“11” means field 11 (Phone Number).

“909” indicates the first three digits of the pone number should be changed to 909. You will need to make sure that you are not in the insert mode when you execute this macro.

The first {enter} is to be execute at “Field Number to Change”.

The second {enter} is to respond to the question “Do you wish to display next screen?” to which the default answer is “N”.

In short, after executing this script, the current customer records’ phone number area code will be changed to 909 and the screen will be cleared. Save the script in notepad and exit. If you wish to execute this macro, simply go to customer file maintenance and bring up a customer. Place the cursor at “Field Number to Change” and then click the macro button (Ctl-a) and choose the internal tab. You should see the following screen:



Click on the button “Run” to run the macro. If you wish to change the macro script, simply choose on the “Edit” button. The internal macro will be saved in the MACRO directory with a naming convention of:

ARCUSMNT.M99

Where ARCUSMNT is the help-id of the current screen and 99 is from 01 – 99 sequentially assigned per help-id. You can have up to 99 internal macros per help-id.

The syntax for internal macro that is to be executed from inside the application is similar to the command prompt macro with two exceptions:

- Command prompt macro require startup menu path.
- Command prompt macro does not have heading area.

A macro executed in one help-id can change itself to another menu item by supplying the menu path. To exit a menu, you may supply the menu number for exit, or simply use {esc} in your script. You may also use {close} at menu level to exit NWSM.

Chapter 6 Printing

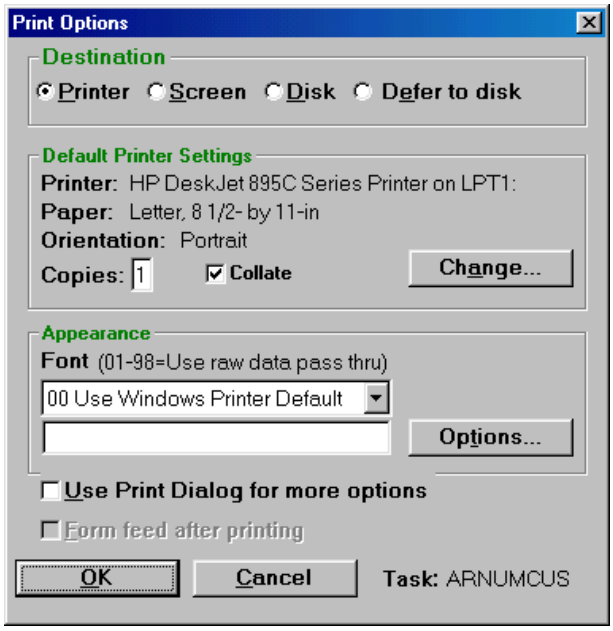
Overview

NWSM allows you to use virtually any Windows-enabled printer, as well a printer that only works in MS-DOS mode. Additionally, you may specify your own preferences for the printer including paper size, orientation, number of copies and collating for each report or printed form. NWSM will remember these defaults each time the report or form is printed. This function can save you a great deal of time and help ensure consistent printed output.

For example, you may have a specific printer that you use for printing invoices, where special invoice forms are always loaded. Once you have specified this printer for printing invoices, it will always default to that printer – you will not accidentally send invoices to the wrong printer.

Printing Option Window

The following screen is the print options window that will display every time a report is printed:



The first time the Print Option Window is displayed for each report, the default printer for this workstation will be selected. You may use these defaults, or change them by pressing the "Change" button. Subsequently, each time you choose this report for printing, these selections will be used by default, unless you change them using the "Change" button or select the "Use Printer Dialog for More Options" box.

Printing Destination

In the **Destination** group, users can choose between four different printing destinations:

Printer - Send printed output to a Windows printer, or port.
Screen – Display printed output to the screen.
Disk – Spool printed output to disk.
Defer – Defer this print job and define start date and time.

Choose A Different Printer or Port

When you choose to print to a printer, depending on the font you choose, either the default Windows printer, or default port will display. If you choose font 0 or 99, then a Windows printer will be used. If you choose font 1 – 98, then the printer port will be used (Raw Data Pass Through).

The default paper size and orientation will be displayed along with the Windows printer. If you would like to choose a different printer, you have two options:

(1) Click the **Change** button, and change the default printer or port. This change applies not only for now, but it also applies to future print jobs. The system will use the preferred printer or port you choose for this print job as the default for this workstation next time. In other words, NWSM remembers the default printer you choose for each print job by workstation. This is the reason why a unique workstation id is important. NWSM stores default printing information in the PRINTWIN file, which can be located under your data directory. The PRINTWIN file gets created automatically upon the first use of NWSM.

(2) Check the box for "**Use print dialog for more options**". This signals the system to prompt you with a print dialog window when you start to print. The print dialog window allows you to choose a different printer, change paper size, orientation, choose different printing resolutions, and many other different options depending on your printer's ability. However, by choosing this option, it will not change the default setting for the next print job.

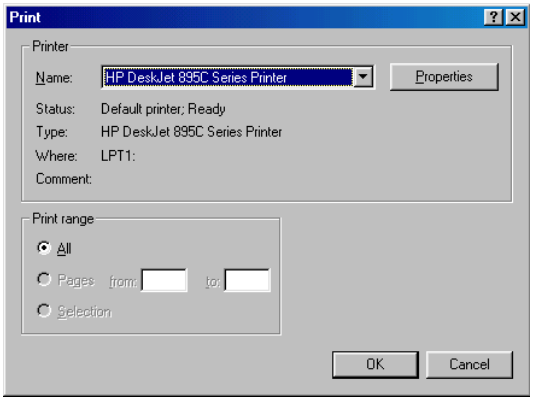
Paper Size
You can change the paper size by clicking the "Change" button and selecting a different paper size in the printer dialog box. Changing paper size may also change the printer font selected by NWSM since the paper width is now changed.

Orientation
You can change the paper orientation by clicking the "Change" button and select either "Portrait" or "Landscape" in the printer dialog box. Once you press OK on the main Print dialog window, this will become the default orientation for this report or form in the future.

Copies/Collate
You can print up to 9 copies of the same report. You can choose to collate your output when you print multiple copies of a report. For a print job of 3 pages printing two copies, to collate means to print page 1-2-3-1-2-3. Not to collate means print pages 1-1-2-2-3-3. The collate function is supported in NWSM by opening the output as multiple print jobs with the same content. If you do not collate the output, then the support of multiple copy printing comes from the printer hardware. Usually a laser printer has enough memory to hold a full page and allow printing of multiple copies while a dot matrix printer may not be able to.

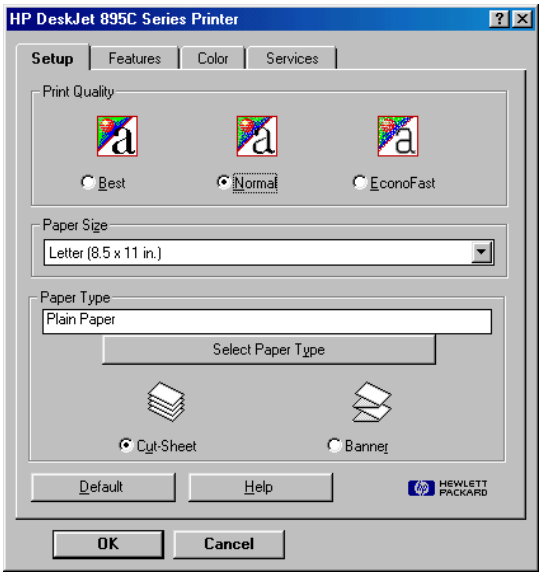
Using Special Printer Features By Enabling Print Dialog

More and more, higher-end printers are adding unique new features. Some allow for such things as two-up and four-up printing, duplex printing, special watermarks for official documents, choosing the default bin for paper source, and so on. Because all these special features are not common across most printers, NWSM cannot save their default values for you.



In order to use such features, you must actively specify them each time a report or form is printed when you select "Use Print Dialog for More Options". This will result in the print dialog box displaying before the printing starts. You may press the "Properties" button to review and change settings for these special features. When you press the "OK" button on the main Print dialog, the setting you selected will be used for this time only. Each time you print this report, you will need to review and possibly change these special settings. For that reason, once you select "Use Print Dialog for More Options", it remains set and forces you to use the Print dialog until you unselect this option.

When you click on the "Properties" button, you will be able to make additional selections on a printer's specific features:



Font

For the font selection box, we suggest you choose font "**00**" for "**Use Windows Printer Default**" unless the printing output is incorrect. By choosing font "00", it implies that (1) you want to use a Windows printer and use Windows printing conventions. (2) You'll let NWSM determine what font to use to produce the best output on the printer you choose.

For example, when you try to print a 132-column report on a HP LaserJet with 8 ½" x 11" paper, NWSM knows to choose a compressed font so that the 132-column printing result will fit on the letter size paper. On the other hand, if you print a 80-column report

(i.e. Picking Ticket), the system knows the regular 10 pitch font will fit, and does not use the compressed font. Since this is determined by NWSM automatically, the user does not need to know what font to use for a particular print job.

Raw Data Pass - Through

Letting NWSM choose the best-fit font usually produces the best result. However, in some situations, you may want to control the font yourself instead of letting Windows figure it out for you. This may happen in the following two situations: (1) The printing slows down significantly on a dot matrix, (2) The alignment is incorrect with form printing such as: invoices, POs, checks, statements…etc.

When you use a font between "01" to "98", this will tells NWSM not to use a Windows printer. Instead, it sends printing output to port LPT1 – LPT3. This is called the "**Raw Data Pass -Through**" method. Since this bypasses the Windows printer driver and sends printing output directly to a port, it will produce identical output and results as in the DOS printing environment.

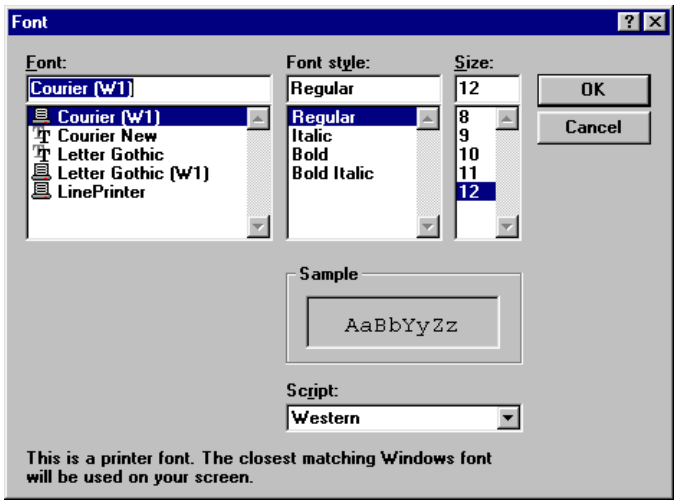
By default, When the system uses the Raw Data Pass-Through method no form feed characters will be sent to the printer port at the end unless it is a report. The system determines whether a print job is a report or a form by checking (1) If any form feed characters are sent, (2) if any page breaks are encountered. If either of these two conditions are met, the print job is will assumed to be a report. Otherwise, it will assumed the print job is a form. Since form printing uses line feed to control advancing pages, and controls line-count manually to prevent automatic form feed (where the page heading will be printed). This method will work well. If for any reason you need to print an extra page at the end of printing, you can mark the check box "**Form feed after printing**". This box is only available if you use "Raw Data Pass Through". When printing to a network printer, your windows/network client setting will also determine whether or not an extra form feed character will be sent at the end of your print job.

If you need to send the output to a network printer, you must capture your local port to a network printer first. To capture a local port in Windows 95/98 OS, you go to printer setup and choose properties for the printer. At the "Detail" tab, choose "Capture Printer Port".

The Raw Data Pass Through method works well with Windows 3.1/3.11, Windows 95 and 98. It can work for a Windows NT Workstation's local printer. However, it won't work for a Windows NT workstation trying to print to a network printer. To print to a network printer on a Windows NT workstation, you must use the Windows printer conventions (font 0 or 99). Make sure to keep your Windows NT workstation's printer name under 15 characters to avoid potential printing problems.

Font Dialog

You may choose to let NWSM prompt you with a font dialog box before printing starts. To do so, choose font '99'. Before the printing starts, the following font dialog box will display:



Users can then pick the desirable font, style and size for this print job. The highlighted font, style and size is the best-fit font selected by NWSM. When you use Font 99, you may see a font with "TT" beside it, which means this is a true type font (soft font). If you see a "Printer" icon beside it, it means this is a printer built-in font. By default, NWSM will pick built-in fonts over true type fonts since true type fonts are a soft font and may take longer to print. Typically, with laser printers, the speed difference between a true type font and printer built-in font is not significant. However, with dot-matrix printer, there maybe significant performance differences.

Font 99 is a good tool to diagnose printing problems when the printing result is incorrect or slow. Understanding why the best-fit font picked by NWSM does not produce the correct results can often help forge a solution to the problem.

How does NWSM pick the best-fit font?

When you use font 00, NWSM will pick the best font for the print job. It will first query the print driver to see if there are any built-in fonts for this printer. If there are, then it will use the best-fit built-in font for the report. The system picks built-in fonts over soft-fonts (like True Type fonts) because built-in fonts are typically faster than soft-fonts.

This is especially important for dot-matrix printing. A built-in font will have a symbol of a printer beside the font name in the Font Dialog Box.

When there are no built-in fonts available, NWSM will pick the best-fit soft-font available. By looking at the font dialog box (using font 99), we will discover the available fonts (including built-in and soft font) and size for this printer driver and many times discover the reason why NWSM can't produce the right result.

Many times when the printing output is incorrect, it is the result of the printer driver. A typical solution is either to download the latest driver from the printer's manufacturer website, or to use a different, but compatible printer driver. If none of these methods work, your last resort is to use "Raw Data Pass - Through".

Font Selection for Dot-Matrix Printers

Generally speaking, dot-matrix printers are relatively slow. Therefore, it is desirable to select a "built-in font", which a fast font for printing. Most of the time, NWSM will select a "built-in" font automatically. Sometimes, however, NWSM will select a slower font that is technically a better fit than any "built-in" font. If it is a long report, you may wish to override the font that NWSM selects. Of course, you can select the "Use Font Dialog for More Options" and select the desired font yourself each time.

NWSM provides another way to help ensure that fast, "built-in" fonts are selected automatically. You may supply a file named DOTMATRX.CFG in the \NSI or \ELLIOTT root directory with the following information:

Line 1: A number from 1 to 9. This number indicates the relative importance of this list over NWSM's internal font-selection algorithms. The higher the number, the more likely this list will be used. You might wish to try and initial value of 3 and raise it as necessary to get the desired result.

Line 2: Entries comprised of two columns. The first column contains the first few characters of the name of a printer (e.g., "Oki" or "Okidata" for Okidata printers. "Epson" for Epson printers). The second column contains the first few characters of the desired font name (e.g., "Line" for "Linedraw"). The first and second columns are separated by one or more spaces.

When this file is present and NWSM selects a font for a dot-matrix printer, it will search this file for an entry that matches the selected printer in column one and an available font from column two. When such an entry is found, it will override the "best-fit" font that NWSM would otherwise select, if the priority number from line one is high enough. You might need to experiment a little to get these entries to select the desired fonts.

Once set, NWSM will automatically select the desired fonts for your dot-matrix printers. The following is an example of how this file may look:

```
9
Panasonic Sans Serif 17cpi
```

The font you choose in DOTMATRX.CFG file should be a printer built-in font. However, “Script” font will never be used. Soft Fonts, like True Type fonts, will be ignored because of the speed problem. To find out what is a printer built-in font, versus. a True Type font, print a short document and select font 99 to activate font dialog. In the font dialog, the font with a printer icon is a printer built-in font. The font with a “TT” icon is a True Type font (soft font). Only define those fonts with a printer icon in DOTMATRX.CFG file.

Report Width

In order for NWSM to correctly pick the best-fit font, it has to know the number of columns on the report to be printed. The report width is determined by looking at the 1st line of the report at the time of printing. In most situations, the 1st line of a report is the line with a page number, which is also the widest line of the whole report. Therefore, the system can correctly determine the report width in terms of number of columns and set up the correct font and size to accommodate the report.

For example, when users wish to print a 132-column report on a HP LaserJet in portrait mode, the system will automatically determine that we need a 16.67 point pitch font to fit the 132- column report on 8-1/2” paper. If users choose to print Landscape, it will choose a different pitch because the paper is now wider.

However, in some situations, the 1st line may be blank, or it may not be the widest line of the whole report. This may be the case when you print an invoice, a check, a label, or GL financial statements. An invoice may begin with a few line feeds first. If the first line is blank, the system will assume it is an 80-column report. When the system prints the GL financial statement, the system automatically assumes it is a 132-column report. However, if this assumption is not correct, users can set up the NWSMUSER.CFG file specify the actual length of the report and override the system defaults. The following a sample NWSMUSER.CFG file:

```
[Reports-Width]
CPINVPRT=132
PLSTMT=175
```

The NWSMUSER.CFG file should be placed in the \NSI directory, or whichever directory you install NWSM in. In the same directory, there's a NWSM.CFG file that serves the same purpose. However, the NWSM.CFG file is a standard file distributed by NETcellent and users should not change the content of the file. Anything specific to the user should be put into the NWSMUSER.CFG file.

In the above example, CPINVPRT is the printing program for COP Invoices. The spooled report will be using the same name. By entering a line CPINVPRT=132 indicates that the COP Invoice is 132 columns wide instead of the 80 columns that the system normally assumes (because the first few lines are probably a line feed). The next example, PLSTMT=175 indicates that the profit and loss statement is a 175-column wide report. By default, the system assumes all financial statement reports to be 132 columns. PLSTMT is the spooler name, not the actual printing program name.

More than 95% of the time, the spool report name is the printing program name. There are some exceptions when the report name is the Spooler name as in V6.x DOS mode. You can find the spool report name by printing the report to disk, and the system will show you the name of the spooled report at the bottom of the screen. This is the name you want to use when entering it into the NWSMUSER.CFG file to indicate a different length than the system default.

Margins

In your NSI.INI file (under c:\windows) directory, you can change the printing margin of your reports with the following entries:

[Laser-Printers]
Top-Margin=0.50
Bottom-Margin=0.50
Left-Margin=0.25
Right-Margin=0.25

[Non-Laser Printers]
Top-Margin=0.00
Bottom-Margin=0.00
Left-Margin=0.00
Right-Margin=0.00

These are the system default values, you will notice there are separate sections for Laser printers and Non-Laser Printers. Do not change the Laser printer margin to zero as no laser printer can print a page without any margins. If the above section is not in your NSI.INI file yet, it means you have not printed any reports yet. Simply sending a report to the printer will create these sections with the default values.

Page Length

Since users can determine the paper size with NWSM, the number of lines per page is really dependent on the paper size users select. The system is assumes 6 lines per inch. By taking removing top and bottom margin define in the NSI.INI file, the system can predict how many lines exist per page.

However, you should be aware that there are certain printing programs that have 60 lines per page hard coded and therefore will not work correctly with this assumption. Most of these programs are form printing programs like invoices or pick tickets. We suggest you print the form using Raw Data Pass - Through. The alignment may not work correctly if you do not use the "Raw Data Pass - Through" option when you print a form. If you do not wish to use the "Raw Data Pass - Through" option with forms, then you must go to the Windows printer setup and set up a custom form for the printer that matches the length and width of the form (i.e. checks).

The reason we support the Raw Data Pass - Through feature is to support Form Printing. Since users do not need form feed with form printing, and the printing position of data on the form needs to be accurate, it is best if the data is sent to the printer directly (Raw Data format) without any manipulation by the Windows printer driver to distort the true position.

To use the Raw Data Pass -Through feature for form printing, choose a font between 01 – 98; this will tell NWSM to print directly to the printer port without any printer driver manipulation. If you choose font 00, it tells NWSM to choose the best-fit font automatically and send the output to a Windows printer.

If you need to send the printout to a fax modem, the Raw Data Pass - Through feature will not work.

Windows NT Workstation's printing

If you use a Windows-NT workstation, you need to know that it will not support capture of the LPT1- LPT3 printer ports. This means you can't print to a network printer with the Raw Data Pass - Through feature (which is the default method of printing with NWSM). If you need to print to a network printer, then you will need to use the Windows printing method by choosing the font '00'. The Windows printing method may have alignment issues with checks, statements or invoices printing. Therefore, we suggest you print to a local printer for printing these types of forms when using a Windows-NT workstation.

Laser Form Support

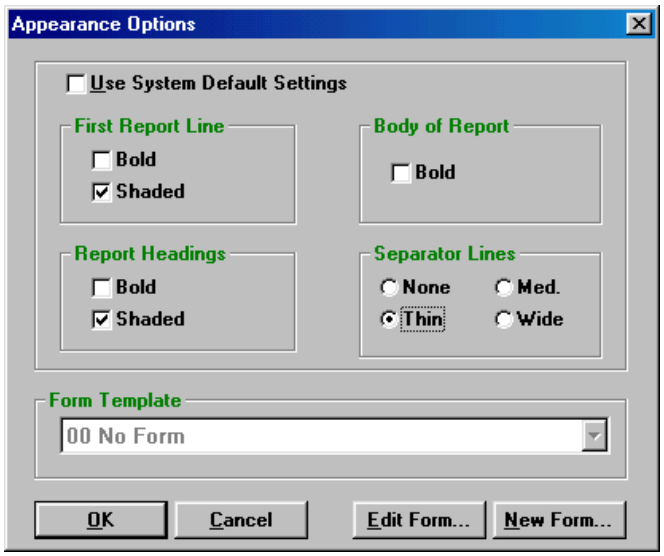
If you want a complete Windows printer solution without using the Raw Data Pass - Through method, you should look at the **Laser Form Printing and Designer** in chapter 9. This will help you with form printing in two ways: (1) Print laser forms without alignment issues. (2) Setup a template with number of columns, page length, and margin pre-set to produce a correctly aligned form.

Option Button

If you wish to change printing output and make it look more professional, you can do the following:

Shading your report heading
Put a separator line between the heading and body
Make a report bold

Click on “Option” button of the “Print Option” Window, and the following will display:

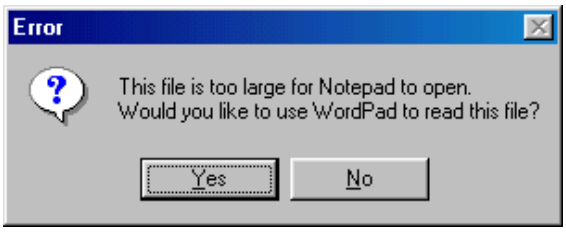


Try the various options and see what happens to your report. The Form Template combo box, Edit Form and New Form buttons are for Laser Form Printing and Design. Refer to chapter 9 for more information.

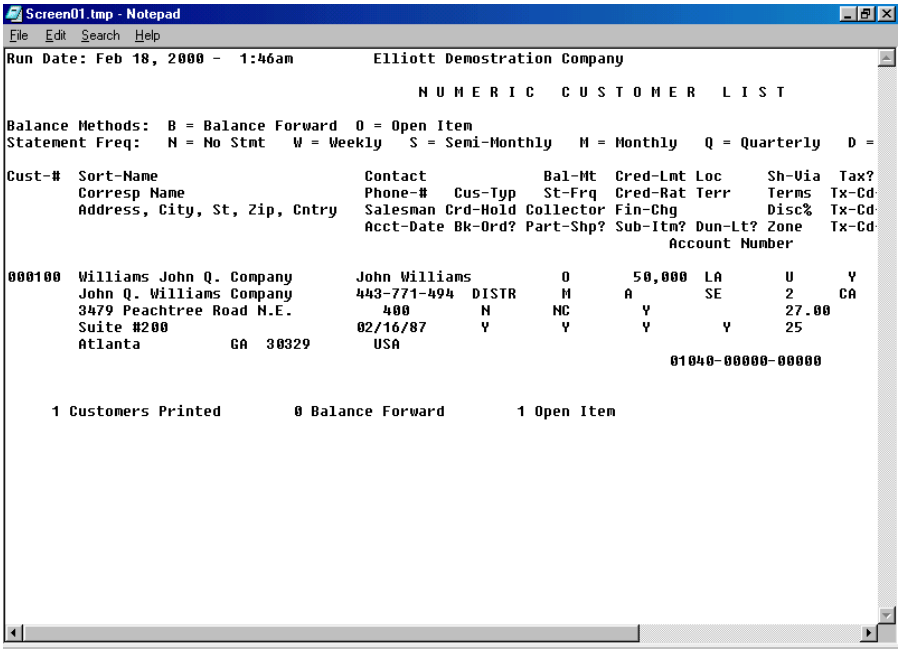
The default report printing format can be setup with NWCONFIG. The value is stored in NSI.CFG file (under \NSI or \ELLIOTT).

Print to Screen

When you choose to print to screen, NWSM will utilize notepad by default to display your output. You may choose your favorite editor to display the screen output. A good choice will be WordPad, which does not have any limitations on the size of the print job. When you use notepad, you might encounter a message indicating that the output is too large for notepad to open it and would you like to use WordPad instead if you should answer "Yes".



If you would like to avoid seeing this message in the future, you can change your default editor to WordPad in preference setup. The following is a sample of a report that was sent to screen by using notepad for viewing.



Please be aware that even though notepad will let you print the output to the printer, it will not produce the right result (i.e. it will not compress the 132-column report).

If your notepad displays the output with incorrect alignment, chances are you are using the word wrap feature. Turn off word wrap feature by going to the "Edit" menu and selecting "Word Wrap" in Notepad. Incorrect alignment may also be caused by an incorrect font. Normally, notepad will use a mono spacing font. However, if you choose a proportional spacing font, then it may cause an alignment issue.

Temporary Directory for Print to Screen (and E-mail Attachments)

Reports that are printed to screen, as well as e-mail attachments, are first written to a temporary file, then opened by your editor, (or sent by your E-mail package). The directory where the temporary file is written is determined as follows:

1. If the environmental variable TMP is set and points to an existing directory, this directory is used.

2. If TMP does not work and an environmental variable TEMP is set and points to an existing directory, that directory is used.
3. If neither TMP nor TEMP work, the Windows System directory with \TEMP attached is tried.
4. If none of the above work, the normal data directory for the current company is used.

Defer To Disk

Defer processing is a powerful tool in NWSM/Elliott to automate daily or month end routines. All defer requests must be spooled to disk. This is because, in a Windows environment, there's no way to guarantee that the deferred processing machine will have the same printer driver as the request machine. Therefore, all defer processing has to be spooled to disk.

When you choose to defer a report to disk, a "Defer Print Option" window will pop up and ask for the following information:

- **Starting Date/Time:** This is the date and time when this report will be executed. The Defer Processing Server will execute this report at the time specified if the Defer Server is not processing any other request. If the Defer Server is processing other requests at the specified date and time, then this request will wait in the queue along with any other requests that may be waiting until the Defer Server is available to process the request. For more information on the Defer Server, refer to the Chapter 8, "Defer Report Processing Manager".

- **Batch Code**: This is a user definable field where any value can be entered. During defer report processing, users can specify to process a specific batch code. One reason for using a batch code is to have multiple defer processing servers to improve the throughput. Each defer processing server can handle certain batch codes to distribute the load.

- **Recurring Frequency:** This can be as a one time defer request, or it may recur on a daily, weekly or monthly basis. For example, any daily postings to the journal can be deferred and recur on a daily basis. This means you will set up the defer request one time and the defer server will perform the posting for you automatically on a daily basis. During the weekend, there may not be any need to post and you can stop the defer processing server. The next time the defer server is started it will only process the daily defer request and skip the missing days. Monthly defer processing is usually setup for the month end process. By using the recurring method, users can make defer processing a powerful automation tool with minimum user intervention.

- **Description:** The description specifies how you want this defer request to be read by the "Defer Report Processing Manager". This is important information, don't leave it blank.

When Things Go Wrong

Most of the time, printing within NWSM is convenient and straight-forward. This is especially true with printing to screen or disk. However, you may encounter issues when you try to print a hard copy report. If you are having some difficulty with NWSM's printing. Consider the following:

- **Use the Latest Printer Driver**
  NWSM uses advanced printer driver capabilities to provide you with the best output with the least intervention on your part. Sometimes, this makes NWSM more picky than software packages like Microsoft® Word or Excel. If the printer driver does not match the printer capabilities correctly, was installed improperly, or has been replaced by the printer manufacturer since it was installed on your computer, you may need to reinstall the printer driver. By far, an incorrect printer driver is the single most common cause of printing problems with NWSM. The first thing to do when experiencing printing problems with NWSM is to download and reinstall the appropriate printer driver. This usually resolves most printing problems.

- **Try Printing with WordPad, Word, or Notepad**
  If you are not able to print correctly from these Microsoft programs, you are likely to experience problems printing from NWSM as well. Once you resolve any problems printing from these programs, you should be able to print from NWSM too.

- **Print a Test Page from Windows Printer Properties**
  If you can't successfully print a test page from Windows Printer Properties, then this is not a Windows compatible printer and you won't be able to print with NWSM by using the Windows printing method either.

- **Use Font Dialog**
  Choose font 99 and the system will display the font dialog before printing starts. The font dialog will display the available fonts for this printer driver and highlight the font and size that NWSM believes to be the "best-fit". By seeing all the available fonts, you might discover the reason why the printing result is incorrect.

- **Use Raw Data Pass - Through**

By selecting a font between 1 – 98, you are using Raw Data Pass - Through. Raw Data Pass - Through always works, except this method of printing in Windows is being phased out. Raw Data Pass - Through is fully supported with Windows 3.1/3.11 and Windows 95/98. Raw Data Pass - Through may work with Windows NT and Windows 2000 local printers. However, Raw Data Pass - Through will not work with Windows NT/2000 workstation on network printers.

- **Create a Printer Log File**
  If you have to use the Windows Printer and you can't get it work right, you should contact your technical support representative. He or she may ask you to produce a Printer Log file for remote analysis. To do this, you need to go to preference setup, under the diagnostic tab check "Log Next Print Job". The next time you print from NWSM, instead of producing a hard-copy, two files will be created in your \MACOLA or \ELLIOTT root directory:

  WINCOMPR.LOG
  WINCOMPR.OUT

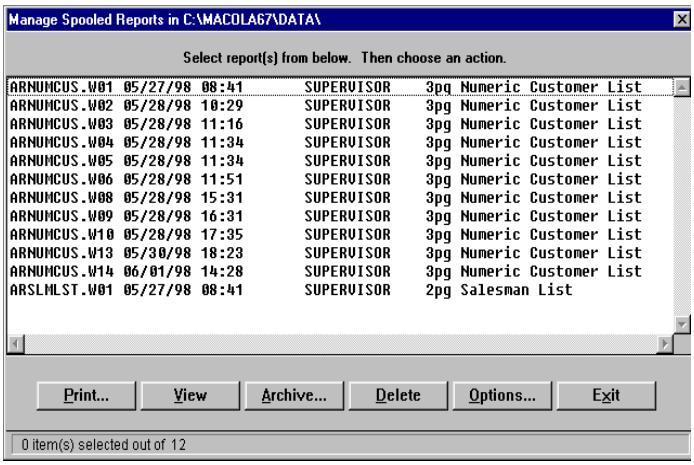
  You may go back to your preference setup, under the diagnostic tab, right click the file path and name beside "Log Next Print Job". Click OK on the next screen and the system will start to perform an analysis and return the analysis results in notepad. Either e-mail the result, or fax the output to your technical representative for further analysis.

Chapter 7 Spooled Reports Manager

Overview

Spooled Report Printing is a total redesign from the V6.x DOS version. It supports the paperless office concept by providing archive and retrieve functions. It has a better user interface and is much easier to operate. Because Windows Spooled Reports List provides more information than the DOS version does, the Windows Spooled Reports catalog is stored in the file **SPOOLWIN** which is different than DOS's **SPOOLFIL**. The **SPOOLWIN** file is created when the user's first spools a report in NWSM.

The naming convention for the spooled file is also different. DOS uses a hard-coded 6-digit spooled report ID for each report. NWSM uses the 8-digit report task id as the spooled report name and marks the extension as **W??** where ?? ranges from 01 to 99. For this reason, the reports spooled in NWSM can only be viewed in NWSM while the reports spooled in DOS can only be viewed in DOS. The following is the Spooled Reports Printing Screen:



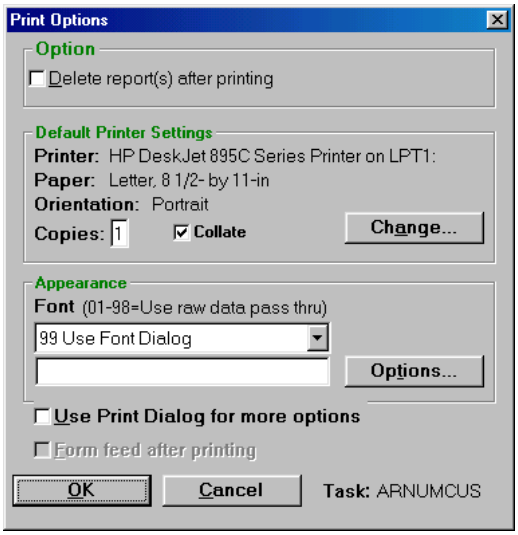
In the list box, you can either use the cursor key for up and down, or press the space key for selection. You may also use the mouse click to make a selection as well. To select multiple reports, you can hold down the shift key and click the mouse button. You can also use the click and drag technique for selecting a range of reports. To unselect a report, you can hold down the control key and press the mouse button (or click and drag for a range of reports).

This screen by default will only show the reports that belong to the current user. You can optionally see other users reports if you have the security clearance (V6.7 and Elliott users only). Additional information like number of pages and the name of the report are added for easy reading.

If for some reason, SPOOLWIN file is corrupted, you may re-initialize it by simply deleting it from the data directory. The next time you spool another report to disk, the file will be created automatically. However, after you initialize the SPOOLWIN file, you will not see previously spooled reports in the list box, even thought they are physically on your hard disk, because they are not in the SPOOLWIN catalog file. To view previously spooled reports, you can click the "Option" button, and check "Show All Users", box (if you have the security clearance). Security clearance is setup in V6.7 Main Menu -> "Util-Setup" -> "Enhancement Setup" -> "System" -> "Printing Enhancement". By requesting to see all users, the Spooled Report Manager will show all files in the data directory, (or current directory), with W?? extension. The report name and user-id will not displayed since that information has to come from SPOOLWIN file.

Print

By selecting one more spooled report, you can click the "Print" button and print the selected reports to your desired printer:



T lows except that you do not have the c ever, have the option to delete the spooled report after printing it.

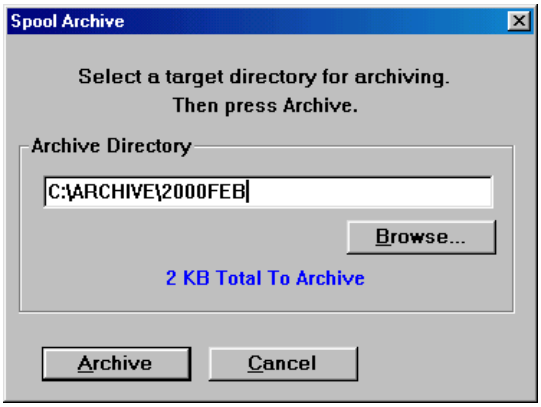
View

NWSM will use the default editor (notepad) to view your spooled reports. This is identical to printing a report to screen. You can change your preferred editor by clicking on the preference setup toolbar button.

Archive And Paperless Office

By design, each type of spooled report (i.e. COP Sales Journal) can spool up to 99 copies. If you post COP invoices every day and spooled to disk, after 3-4 months, you will run out of space for further spooling. If you continue to spool, it will override your existing spooled reports. 3-4 months is not sufficient for users who wish to store reports on disk for historical auditing purpose. Your auditor may audit your books once per year and when the IRS audits you, they can ask for up to three years of information. For these reasons, users would still need to print the hard copy of the posting journal and store it for auditing purposes.

The Archive function was developed to make the paperless office concept possible. What we envision is at the end of each month (during month end processing), you will select all the spooled posting journals for this month and archive them to either (1) a network directory, or (2) a local storage device. This will remove the spooled reports from your spooled report list. However, they can still be retrieved by simply pointing to the archive directory with the "Option" button. This way, archiving is possible without printing the spooled reports, but instead storing an electronic copy of the reports on the storage device.



When you choose the Archive function, the system will prompt you for the drive and directory that you wish to archive to. You can use the browse function if you are not sure of the drive or directory. The archive function does not allow duplicate reports to be

archived into the same directory. Therefore, you should choose a different directory, or use a different removable media next month when you archive again.

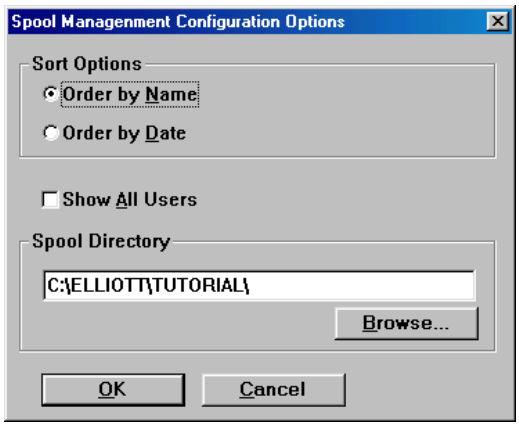
If you are using a Btrieve database and you will be archiving and retrieving spooled reports to a local drive like A: or C:, you should turn on Btrieve Local Engine in order to archive to the local drive. Otherwise, the system can't successfully create or read SPOOLWIN.BTR from your local drive. You can do this by running the NWSM Configuration Utility (nwconfig.exe).

Delete

You can highlight one or more reports and click the "Delete" button to delete them.

Options

The "Option" button allows you to change the sorting sequence of the spooled reports, choose to see other users' reports if security clearance is allowed (security control apply V6.7 or Elliott users only), or retrieve spooled reports from a different directory (retrieve archived reports).



For V6.7 and Elliott users, if you are setup as a spooled reports supervisor in the enhancement setup, printing enhancement function, then you will be able to check the "Show All Users" box. Otherwise, the check box will be grayed out and you will not have the opportunity to see other users' reports.

Exit

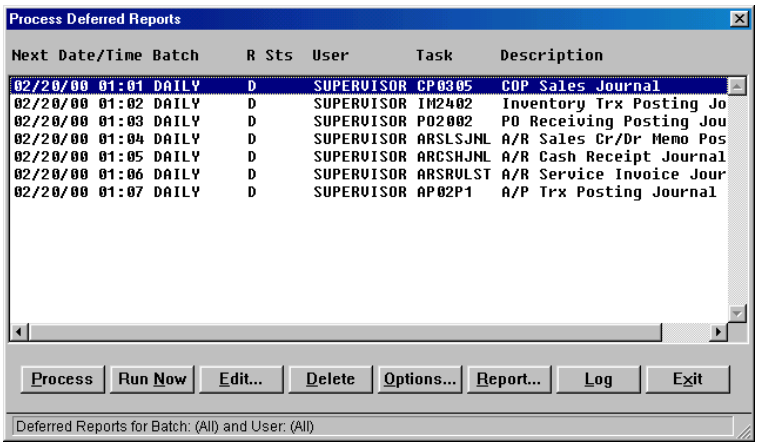
If you need to exit out of this screen, simply click on the “Exit” button, or press the ESC key to exit.

Chapter 8 Defer Report Processing Manager

Overview

Defer Report Processing is a re-design from the V6.X DOS defer processing user interface. Many new features were added in NWSM for Defer Processing and a different file, DEFERWIN, was needed to store the defer request which is different from DOS's DEFERRPT file. For this reason, the defer requests made in NWSM can only be managed by NWSM's defer processing, while the defer requests made in DOS can only be managed by DOS's defer processing. The DEFERWIN file will be created upon the first use of defer processing in NWSM.

Defer Report Processing Manager

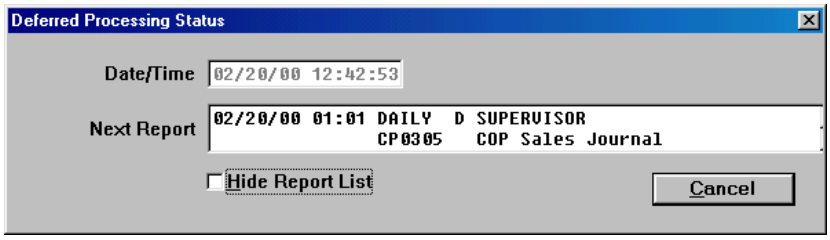


The defer request that users make during the printing processing will be sent to a defer queue. You can display this queue by going to the Main Menu -> Util_Setup -> Defer Processing. You will then see the above screen.

Process

When you click the "Process" button, you make this machine a "Defer Processing Server". It will constantly monitor to see if there are any tasks in the queue that are ready to be processed against its internal system clock. When a task becomes ready,

NWSM will display a pre-processing count down window to indicate the process is about to begin. It is displayed for 10 seconds before the final action occurs. If your machine has a sound card and speakers, the system will make a count down sound and give you audio indication. You still can cancel the defer processing during the count down period if you click on the cancel button.



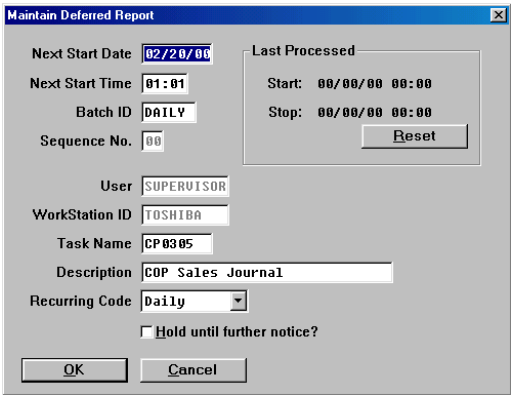
If you want to exit the Defer Processing Server mode, you can simply click on the "Cancel" button to exit.

Run Now

Sometimes, the user may want to run a defer task even though it is not the specified date and time. You can highlight the tasks that you wish to run now and click on the "Run Now" button to immediately execute the selected tasks.

Edit

This function is very useful for making adjustments to deferred tasks in the queue. This may be a result of an incorrect request in the first place, or the defer task's starting time needs to be rescheduled. Sometimes, you may even want to put a defer task temporarily on hold until further notice.

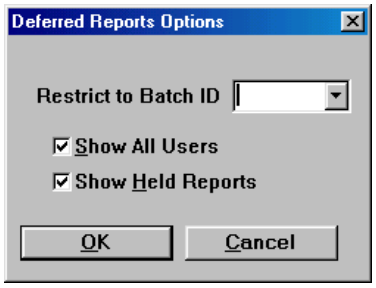


Delete

You can highlight one or more tasks and press the “Delete” button to delete them from the defer task queue.

Options

As we discussed in Chapter 7, “Spooled Reports Manger”, you can have multiple defer processing servers to distribute the load. This can be done by specifying a batch code for each different defer processing server. By specifying a batch code in the Options window, only the defer tasks with that code will be displayed. Only the tasks that display in the list box will be processed by the defer processing manager.



Report

If you wish to print a list of Deferred Tasks, you can choose this option to print a list. Only the defer tasks that appear in the list box will be printed.

Log

Once processed, all deferred tasks will be logged in a history file. If you choose to see the processing status of the defer task, this is the function you will need. The log function will provide information about the last 400 processed deferred tasks.

Exit

You can either click on the “Exit” button to exit the Defer Report Processing Manager screen, or press the “ESC” key.

Chapter 9 Laser Form Printing and Designer

Introduction

NWSM/Elliott Laser Form supports form printing on blank paper with professional output. NWSM supports user definable form printing. This includes invoices, purchase orders and pre-defined laser printer forms. Other forms, like statements and picking tickets, although non-user definable, are still supported for laser printing. However, in the past, to print these documents on laser printers, you would need pre-printed laser forms. If you were printing on blank paper the output will not look professional, since only text is supported for printing. This is where NWSM Laser Form printing support becomes valuable as it allows printing with line draw, box, shading, text, color, bitmap images, and makes the output look professional when printing on blank paper. NWSM Laser Forms does not support printing checks on blank paper because of the micro coding required for bank routing, and the necessity for account and check numbers.

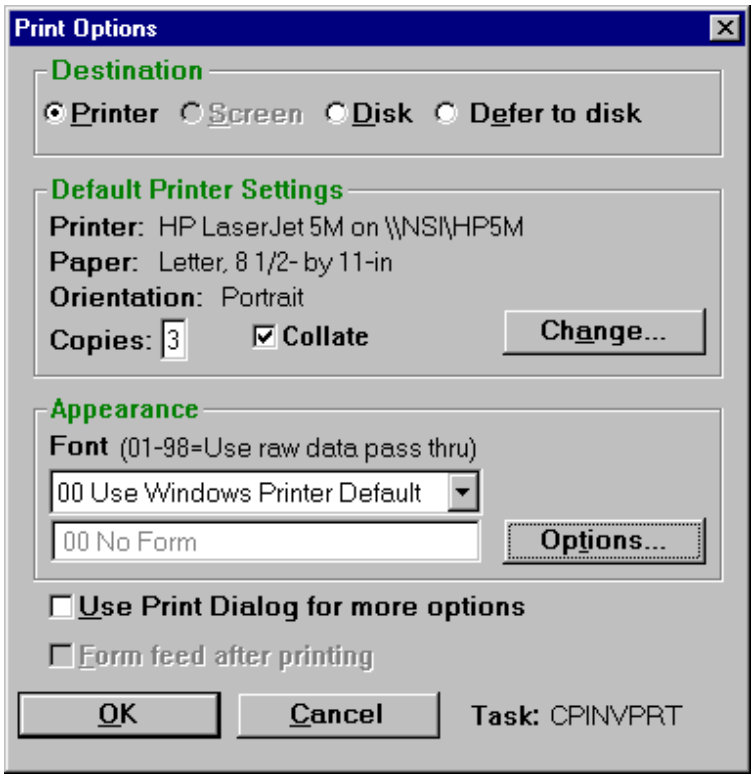
Starting with V6.X.009, NWSM began supporting Laser Form printing. Starting with V6.X.054, NWSM began supporting bar code printing with Laser Forms. As of the writing of this document, the standard laser form has been defined for COP and AR invoices, PO, Picking Tickets and AR statements. Even though A/P and P/R Check printing still require pre-printed forms for laser printing, multiple pre-defined laser form templates have been defined to allow A/P and P/R laser checks to align correctly when printing on a laser printer.

The sample logo and address that will be printed is the NETcellent logo. You can delete the bitmap file from your data directory, (COMPLOGO.BMP and COMPADDR.BMP). Alternatively, you can substitute the bit map with your own company logo. You may also change the standard laser form layout to fit your needs. The following chapter serves as necessary technical information for you to design a laser form yourself.

Concept

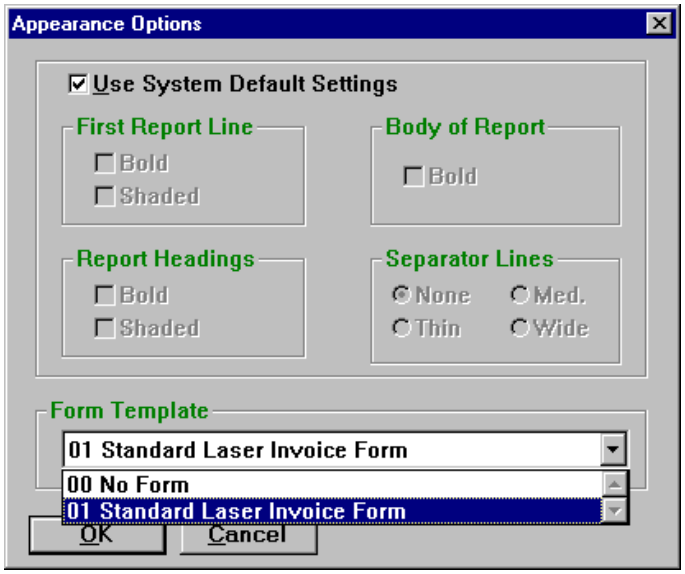
The traditional Elliott/Macola printing programs output text data to the printer. However, if users choose laser forms on the Print Options window, which provides the line draw, shading and image for the laser form, then the system will merge the text and laser form together to print on your printer. **The printer can be any kind of printer and is not limited to a laser printer.** For example, you can print to a color inkjet printer and have beautiful output since NWSM Laser Form printing supports color. You can also print to a dot matrix printer. However, the dot matrix printing output will be too

slow to make it practical. Although the color inkjet printer will achieve great output, it is also slow for the line draw, shading and image printing. Laser printers are fast even with the line draw, shading and image printing, and therefore are practical solution if you intend to print forms, like invoices, on blank paper.

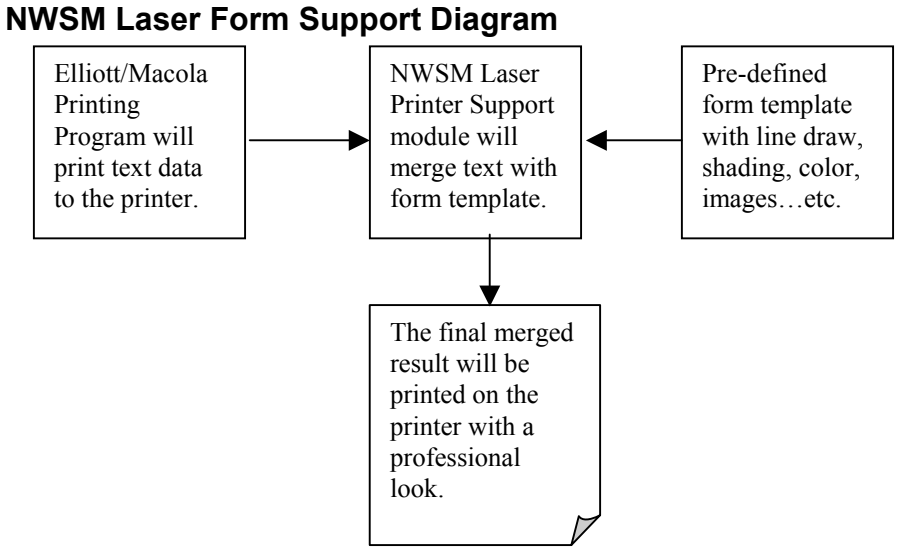


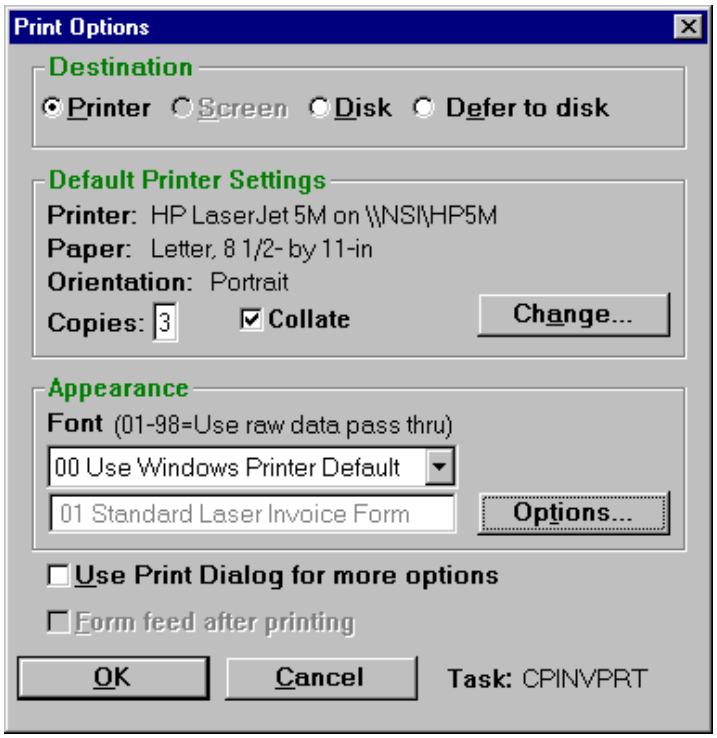
NWSM will support Laser form printing by using the Windows Printer driver. Therefore, you must make sure the specified font in the Print Options Window is either "00" or "99". At the Print Options Window, click the "Options" button to display the Options Windows and select the desired laser form template that you wish to use. The Pre-defined Laser Form templates include COP Invoices, Picking Tickets, Purchase Orders, A/R Statements, Service Invoices, and A/P and P/R Checks.

The following screen is the "Options Window" that allows you to select the appropriate Laser Form Template. for the "Options Windows".



The following diagram outlines the basic concept of how NWSM supports Laser Form printing.





Once the proper item in the form template is selected, the combo box beside the Options button will show the template form you chose. The system will then print the text data and merge it with the template form to produce a professional looking form. From this point on, your print options window will remember the form template you chose the last time and use it as the default form.

Setup NWSM to Use Standard Laser Forms

In Elliott or Macola, the application by default will assume the printing of a form is on a dot matrix printer with 66 lines per page. However, laser printers usually print 60 or 62 lines of text and may or may not have the same length as regular forms. Therefore, the user is required to setup Elliott or Macola to tell the system that you are using laser forms. The following are steps required to setup each form to print on a laser printer:

COP Invoice

- COP Main Menu -> Util_Setup -> Invoice Form Setup -> Reset -> Laser

- COP Main Menu -> Util_Setup -> COP Setup -> 14. Default Invoice Form -> 99
- COP Main Menu -> Util_Setup -> COP Setup -> 21. Print On Laser Forms -> I or B

COP Picking Ticket

- COP Main Menu -> Util_Setup -> COP Setup -> 19. Print Pick Tic On Forms ? -> Y
- COP Main Menu -> Util_Setup -> COP Setup -> 20. Print Co Name On Pic Tic -> N
- COP Main Menu -> Util_Setup -> COP Setup -> 21. Print On Laser Forms? -> P or B

AR Service Invoice

- AR Main Menu -> Util_Setup -> Invoice Form Setup -> Reset -> Laser
- AR Main Menu -> Util_Setup -> A/R Setup -> 37. Default Invoice Form -> 99
- AR Main Menu -> Util_Setup -> A/R Setup -> 48. Print On Laser Forms? -> I or B

AR Statement

- AR Main Menu -> Util_Setup -> A/R Setup -> 17. Print Co Name On Stmt? -> N
- AR Main Menu -> Util_Setup -> A/R Setup -> 48. Print On Laser Forms? -> S or B

PO Purchase Order

- PO Main Menu -> Util_Setup -> P/O Form Setup -> Reset -> Laser
- PO Main Menu -> Util_Setup -> P/O Setup -> 12. Default PO Form Number -> 99
- PO Main Menu -> Util_Setup -> P/O Setup -> 20. Print PO's On Laser ? -> Y

PR Check

Even though NWSM does not support printing of checks on blank paper, (because of the micro code issue), it does support printing pre-printed PR Laser Checks. One of the issues related to PR Laser Check printing is the margins and line spacing, which must be set up correctly for the laser check to align correctly. One way you can set the margin is through the preference setup. However, the margins you set will affect all printing for that workstation. Therefore, we have introduced two PR Check Laser Form Templates, one for Macola Form LC111, one for Macola Form LC111 New, with the margin and line spacing pre-set correctly. These two templates do not print any lines, shading or bitmaps. The only thing the template does is set the proper margin and line spacing for the associated form. To print a payroll check on a laser printer, follow these steps:

- PR Main Menu -> Util_Setup -> P/R Setup -> Last Screen -> 10. Print Checks On Laser? -> Y

AP Check

Similar to PR Check, we have introduced one AP Check Laser Form Template. The purpose is to set the proper margin and line spacing. The template does not print any lines or shading. To print an AP check on laser printer, follow these steps:

- AP Main Menu -> Util_Setup -> A/P Setup -> 34. Print Checks On Laser? -> Y

PR W2 Laser Form

There is nothing you need to set up in order for you to print PR W2 Laser Form. All you have to do is to make sure to select the PR W2 Laser Form template when printing W2. Then the proper margin will be set. The PR W2 Laser Form can be purchased at office supply stores.

AP 1009 Laser Form

There's nothing you need to setup in order for you to print AP 1099 Laser Form. All you have to do is to make sure to select the AP 1099 Laser Form template, then the proper margin will be set. The AP 1099 Laser Form can be purchased at office supply stores.

Customize the Sample Laser Form

The sample laser form templates in NWSM use two bitmap files:

COMPADDR.BMP
COMPLOGO.BMP

These two bitmap files reside in the \NSI or \ELLIOTT directory, or whatever your NWSM startup directory may be. When NWSM accesses a company for the first time, it will check for the necessary bitmap files to print the pre-defined forms that exist in the data directory. If the images are not found, the system will copy them from the \NSI or \ELLIOTT directory to the appropriate data directory.

The sample laser form is a pre-defined form. The easiest way to print a laser form is to use the sample form provided and modify it as needed. However, the bitmap it prints is for "NETcellent System, Inc." The easiest way is to prevent these images form being printed on your Laser Form is to delete these two bitmap files from the data directory after NWSM accesses it for the first time. Then during the printing, if the system can't find these two bit map files, it simply does not print any bitmap images. One option for using your own company logo on the laser form is to have letter head pre-printed with your company name and logo for the laser printing purpose.

The second option you have is to modify the existing bitmap image in your data directory, or create your own. You can use a tool like Paint, which comes with the

Windows Operating System, to make the necessary changes. The size of the bitmap file does not have to be identical to the sample that NWSM provided. As long as your bitmap file ratio is identical or very close to our sample bitmap, the bitmap should print reasonably well. The following is the ratio of the two bit map files:

File	Ratio Width:Height
COMPADDR.BMP	7.25:2
COMPLOGO.BMP	1:1

If you would like to change the template beyond just making simple changes to the bitmap files, you will need to continue to reading for more information.

Laser Form Designer

The Laser Form Designer is supported after the release of NWSM V6.X.056. Currently, the Laser Form Designer is supported in 32-bit only. Most likely, the only changes you might need to make to the sample laser form are the bit map images. But if you require further alteration, the Laser Form Designer provides an easy and yet complete method for changing the sample laser form. It also allows users to easily create a new laser form starting from scratch or copying from an existing template. To change an existing laser form, you must login to Elliott or Macola as "SUPERVISOR". Click the "Option" button on the "Print Option" Window, then the Option window will display. Highlight the form you wish to change in the combo box, then click the "Edit Form" button". You will see the editing screen of Laser Form Designer as shown below:

The designer is broken down into 7 different tabs for different types of data:

Defaults: This is the header data. Information on this tab affects the entire form.

Text: Items on this tab are used to print literals on the form.

Lines/Boxes: Items on this tab are used to print lines and boxes on the form.

Shading: Items on this tab are used to create shading effects on the form.

Bit Maps: Items on this tab are used to control bitmap images like the company logo.

Bar Codes: Bar Codes can be printed on laser forms. This tab controls what types of barcodes and specifies the data source for the barcodes.

Copies: You may wish to print multiple copies of a laser form. For example, users may need to have one copy of a laser form sent to the Customer and a 2nd copy to keep for in-house records. The copies tab lets users specify the identifier literal and position for each copy (i.e. "Customer Copy", "Accounting Copy"…etc.).

The following buttons will help you achieve the changes you need to make to your Laser Form Template:

Save/Close: By clicking this button, all the changes you make in the design screen will be saved and the designer window will be closed.

Close: By clicking on this button, the designer window will be closed. The system will give you an option to save the changes before you exit.

Copy: Allows you to copy the current design to a new form. Before you start to make major changes to an existing laser form template, it is a good idea to copy to a new form and change the new form without affecting the original form data.

Delete/Close: This will delete the current form and exit out of the designer.

Import/Export: If you are a developer, this is a useful function to let you export your design to a text file. Send this text file to your users, and they can import the text file and use your design on their system. The export function can also serve as a backup function before you make major changes to the existing form layout.

Preview: If you wish to see how the form layout will look, you can choose this function to preview the form. In the Preview screen, if you notice any changes are required, you can conveniently click on the object in the Preview Screen and make changes directly. The preview screen also allows you to choose sample data from a spooled file to display directly on the form template. Subsequently, you will be able to preview not only the form template, but also how the form will look with data in it.

The following detailed descriptions of each tab of information in the Laser Form Designer will aid you in creating you Laser Form Template.

Default

- **Margin:** The margin you specified here will override the default margin you specify for the workstation. This information is very critical for printing forms like A/P and P/R Checks.

- **Page Properties:** This includes the page width and height. The lines per inch control the vertical spacing and is critical to A/P and P/R Check printing.

- **Default Color:** This will be the default color for text, line and shading when printing the laser form. The black and while value (between 1-255) is used to control the intensity when printing on black and white printer (a laser printer).

- **Line Per Page:** Since the form printing program typically does not perform form feed, (it instead uses line feed to control advancing to the next page), it is important for the NWSM Laser Form program to know how many lines per page a form is so the system will perform a form feed at the correct position.

- **Columns Per Page:** This value should include the form border and is important to the printing program so it knows what type of font and horizontal spacing to use when printing.

- **Vertical and Horizontal Offset:** You need to use this because your application programs start to print from row 1 and column 1. For example, if you want to draw a box around the outside border of your form, and row 1 and column 1 is on the line, then you can specify the offset for the text printing portion so the text won't overlay with the line. If you need a border, it is typically it is offset by a value of 1 for row, and/or, column.

Text

Text is used to print literal information like field headings. You may specify the position, (after the vertical and horizontal offset is added), where you want the text and the text information to be printed.

- **Starting Position:** Specify starting position row and column after the vertical and horizontal offset is added. This is where the text will be printed on the form.

- **Color:** Specify the color of the text, or simply indicate the default color to use as specified in the default tab.

- **Description:** The text you wish to print at the Starting Position.

- **Bold/Italic:** You can make the text bold or italic. However, you can't choose your own fonts and size. All fonts and size must be identical on the page. If you wish to have different font and size, then you should use the Bitmap option.

Lines/Boxes

For NWSM Laser Forms, lines and boxes are the same type of object. When you specify a starting position and ending position, if they form a box (the ending row and column are both different then starting row and column), then it is a box. If they form a line, then it is a line. Only vertical and horizontal lines are supported.

One of the important concepts that you need to know is called "**Sub Cell**". A Sub Cell is used in NWSM Form Design to better control the exact position of certain objects. The internal data of a sub cell is between 1 – 9. The following diagram shows the position of each sub cell value. By default, the system will use sub cell 5 (center position of a cell) to draw a line or box from a starting position to an ending position. However, sometimes

this is not accurate enough and potentially may waste space.

1	2	3
4	5	6
7	8	9

Sometimes you will need to draw a horizontal line between two consecutive rows of data. Using the default sub cell 5 will not to work. This is one reason why users may need to use sub cell to more accurately position the object. The current cell's sub cell position 2 is physically in the same position as the above cell sub cell position 8. With the same principle, the current cell's sub cell position 4 is physically in the same position as the left cell sub cell position 6.

- **Starting/Ending Position:** This includes the column and row position, as well as the sub cell position. You will specify the sub cell position between 1 – 9 by clicking on one of the squares in the cell.

- **Color:** You can either use the default color or pick your own color for this object.

- **Line Thickness:** It can be thin, medium or thick.

Shading

Shading is necessary to make a laser forms look professional. Shading usually will make a box that contains a field heading literal look better. You may also apply shading to different columns in the line item areas to clearly separate one column from another.

- **Starting/Ending Position:** Shading must cover an area (box). Therefore, the starting and ending position can not form a line. The sub cell concept has been explained in the previous subject (lines/boxes). Please refer to that subject if you have more questions.

- **Color:** The default color of the shading.

- **Black and White Intensity:** The shading intensity when printing on a black and white printer such as a laser printer.

Bitmaps

Bitmaps are used in NWSM Laser Form to print a company logo or any kind of special font or text size that is different from the default. The default bitmaps distributed with the sample laser form are NETcellent's company logo and address. Therefore, to use a sample NWSM form, you must first change the bitmap files to match your company.

- **Starting/Ending Position:** Like Boxes or Shading, the starting and ending position need to form an area for the bit map image. You should not encroach upon other objects on your form with your bit map. Also, the area you specify for the bitmap may not be the exact size and proportion for the bit map file. Subsequently the image may appear stretched.

- **Use Absolute Path**: By default, the system will use a relative path to retrieve bit map images like "$DATA\COMPLOGO.BMP". This tells the NWSM Laser Form to look in the data directory for COMPLOGO.BMP file. If you are using a multiple company option, your COMPLOGO.BMP file may be different for different companies. For multiple companies, all you have to do is change the COMPLOGO.BMP file under each data directory to reflect the proper logo and all companies can share the same laser form template. You can also use an absolute path like

  M:\ELLIOTT\DATA\COMPLOGO.BMP

  Obviously, if you use an absolute path, you probably won't be able to share the same design among different companies.

- **Stretch:** Since the area you specify for the bit map may not match exactly with the bitmap file itself, there is a potential presentation issue. To avoid presentation issues we provide the following four different types of options:
  - **Do Not Stretch:** This is usually not a good choice because often the system will not produce the right size of bit map on your printer. However, since there is no stretch, there is no distortion of the image.
  - **Stretch to Fit:** This will allow the bit map to occupy the full space as specified in the design area. Provided that the bitmap file's horizontal to vertical ratio is similar to the area designated, this can produce good results.
  - **Use Proportional Stretch:** Stretch the bit map image proportionally and not to exceed the size of area designated for the bit map. This will

not distort the image, and will occupy most of the space in the designated area.
    - **Integral Stretch:** Stretch the bit map image with a integral multiple (1, 2, 3…). It may not occupy the entire designated area. However, it will have the least distortion because of the integral stretching.

- **Edit:** If you wish to change the bitmap file, you can click on the "Edit" button and the system will launch the Paint program automatically (or whichever application you register as the default program for Bit Map file). You can make changes as necessary and save and exit Paint to return to the designer mode.

Tips for editing a bitmap: When you edit a bit map image for a NWSM Laser form, leave as little border space as possible.

Bar Codes

Starting with NWSM V6.X.054, Laser Forms supports Bar Code Printing. This is for both 16-bit and 32-bit versions. There are two types of barcodes on Laser Forms: (1) Absolute position bar code; (2) Relative position bar code. Absolute position bar codes are used for header information such as the order number on an invoice or picking ticket. Relative position bar codes are used for line item information such as the item number even if the position of the item number is not known until the time of printing. Relative barcodes require a data pattern to identify the line item and produce a barcode relative to the data pattern line.

Most of the one-dimensional barcodes are supported with NWSM Laser Forms. Two-dimensional barcodes (a barcode you can scan from any direction and still results in a good read) like UPS's MaxiCode are not supported at this time.

Absolute Position Barcode

The following is an example of an absolute position bar code:

In the above example, a bar code will be printed from row 10 column 60 to row 12 column 78 (right above the shipping address area) on the invoice form. The source of the data will come from row 23, column 1 (This is the position before the offset is added. In this case, it is the order number of the invoice) for 6 digits. It will use "Interleave 2 of 5" as the symbol for the bar code. The ratio by default should be 1:3. The following is an explanation of each field:

Starting/Ending Position: The starting and ending position is the an area where the barcode will be printed.

Color: By default, the barcode color will be black.

Bar Code Type: The type of bar code you should choose depends on the kind of information you want to encode, the printing space available, the degree of readability needed, and the scanning equipment you use.

When choosing a bar code type, make sure that your bar code reader has the ability to read it. The type of bar code reader you use is a major factor when considering problems and read-errors. Bar codes are also more prone to read-errors as they get very large or very small. The starting row/column/sub cell, and the ending row/column/sub cell determines the size of the barcode. This is the maximum area that the bar code will print and usually the width will be somewhat smaller than the area designated.

If the system detects there is an error when printing the bar code and it cannot create the bar code, it will print an error number in the position where the barcode should print. For a complete list of barcode code error numbers and explanations, please see the appendix.

The NWSM Laser Form Printing routine supports the following types of bar code symbology:

Bar Code Type	Input	Encodes	Char	Comment

	Length	*	per inch **	
Code 39 Full (Extended Code 39)	2 – 50	U-L-D-C	3.3	Code 39 only supports 43 characters. However, it can be extended to a 128 character symbology (full ASCII) by combining one of the special characters ($, /, %, +) with a letter (A-Z) to form the characters that are not present in the standard Code 39 symbology. For example, in standard Code 39 a lowercase "a" cannot be represented. In Code 39 Full ASCII, however, "a" is represented as "+A".
Interleave 2 of 5	2 – 50	D	11	**Interleaved 2 of 5 is a variable length, even numbered, numeric bar code.** It is typically used in industrial and master carton labeling. The symbology uses bars to represent the first character and the interleaved (white) spaces to represent the second character. Each character has two wide elements and three narrow elements. A check digit is supported. However, if the checksum is added, the input string needs to be odd (the checksum adds one character, making it even).
Codabar	2 – 50	D	9	Codabar is a variable length symbology capable of encoding 16 characters within any length message. Codabar can encode six special alphanumeric characters, capital letters A through D, and all numeric digits. Codabar symbology for any new application today should not be considered except under unusual circumstances.
MSI Plessey	2 - 50	D	8.3	MSI Plessey is a variable length numeric symbol. Each character consists of four bars with intervening spaces for each encoded digit, one or

				two symbol check digits, and a reverse start code. MSI Plessey is primarily used in marking retail shelves.
Code 93 Full (Extended Code 93)	2 – 50	U-L-D-C	5.6	Code 93 encodes the full 128 ASCII character set using 9 modules arranged into 3 bars with adjacent spaces. Two of the characters are check characters. Code 93 is similar to Code 39 but encodes more characters per inch. Code 93 is not quite as easy for bar code readers to read because of the way it is encoded. Code 93 encodes the full 128 ASCII character set and is encoded similarly to the extended Code 39.
UPC-A	11, 13, 16	D	14	UPC-A (Universal Product Code-A) is a fixed length and is the most common UPC bar code for retail product labeling and is seen in most grocery stores across the United States. The symbology encodes a 12-digit numeric only number. The first six digits are assigned from the Uniform Code Council (UCC) in Dayton, Ohio, the next five digits are assigned by the manufacturer, and the final digit is a modulo 10 check digit. The nominal height for the UPC-A bar code is one inch. The reduced size is 80% of the nominal size.
UP-E	11, 13, 16	D	25	UPC-E (Universal Product Code-E) is also a fixed length and is a compressed six digit code used for marking small packages including magazines and paperback books. UPC-E symbols are UPC-A symbols that have been zero suppressed (i.e. consecutive zeros are not included in the symbol). The printed value of

				the UPC-E code is a twelve digit code. The nominal height for the UPC-A bar code is one inch. The reduced size is 80% of the nominal size.
PostNet	5, 9, 11	D	4.2	Postal Numeric Encoding Technique used to encode ZIP code information on letter mail. PostNet utilizes redundant information within a compact bar code format to provide error detection capability and a significant degree of error correction capability. The check digit is always enabled.
EAN/JAN-8	7, 9, 12	D	14	The EAN/JAN-8 is a fixed length and is similar to the UPC-E code, but includes two more digits for the country code. The nominal height for the EAN/JAN-8 bar code is one inch. The reduced size is 80% of the nominal size.
EAN/JAN-13	12, 14, 17	D	14	The EAN/JAN-13 is fixed length and is similar to the UPC-A symbology, but encodes a 13th digit. The 12th and 13th digit define the country code. The code 00-04 and 06-09 are assigned to the United States. The nominal height for the EAN/JAN-13 bar code is one inch. The reduced size is 80% of the nominal size.
Code 128	2 – 50	U-L-D-C	9	Code 128 is variable length and encodes the full 128 ASCII character set. Each character is represented by 11 modules that can be one of four bar widths. Code 128 is the most easily read code with the highest message integrity due to several separate message check routines. Of all the common linear symbologies, Code 128 is the most flexible. It supports both alpha and numeric characters easily, has the

				highest number of characters per inch, and is variable length. **Code 128 is usually one of the best choices when implementing new symbology.**
Code 39 Standard	2 - 50	U-D	6.7	Code 39 is variable length and is **the most frequently used symbology in industrial bar code systems today.** The principal feature is to encode messages using the full alphanumeric character set. Standard Code 39 contains only 43 characters (0-9, A-Z, $, /, %, +). Check digit is supported.

* U = uppercase, L = lowercase, D = digits, C= control characters
** Based on a 100 dpi resolution printer and the narrowest bar is 1 dot wide.

Ratio: This is a two-digit numeric field value from 2.0 to 3.0. It represents the ratio between the wide bar's width and the narrow bar's width. The default is 3.0 to 1.

Checksum: You may optionally add a checksum digit to certain bar code symbologies. Entering a value 0 means no Checksum and 1 means add the checksum digit.

Rotation: This is a 1 digit numeric field. You would normally print a bar code horizontally from left to right. However, you may rotate it with the following value in this field:

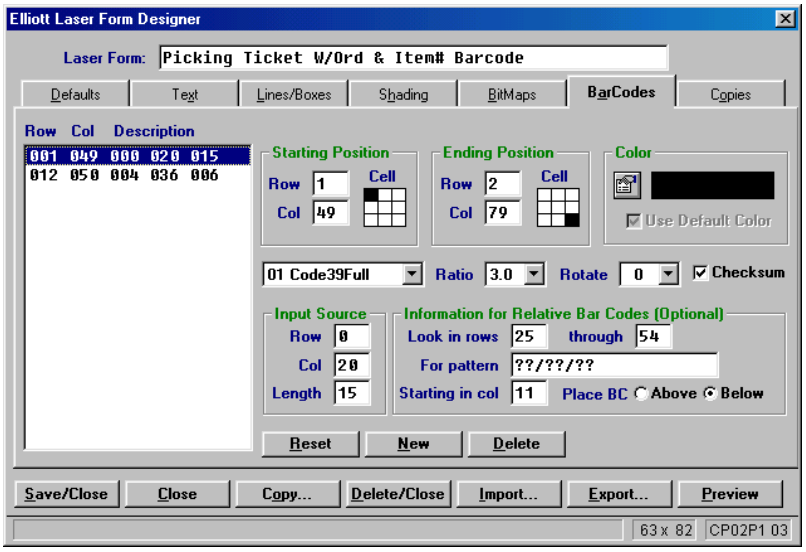
0 – No rotation
1 – Rotate 90 degrees counter clockwise
2 – Rotate 180 degrees counter clockwise
3 – Rotate 270 degrees counter clockwise

Input Row/Column: The input row/column/length identifies the source of the string required to produce the barcode. If it is for a relative position barcode, then this field is insignificant because the input row has to be the same row as the system row to find the pattern specified. The source may be an order number, PO number, item number or customer number. The form may be shifted horizontally and vertically to accommodate borders. The row/column entered should be the original row and column of data before it is shifted. You can get this information by printing the document you need to disk. View the spooled form with an editor and you should be able to determine the exact position of your input data. Keep in mind that we currently may not be able to support bar coding a line item if its position is not fixed relative to the beginning of the page.

Input Length: See Input Row. You need to make sure the length you choose can be supported by the bar code type you choose. Certain bar code types are a fixed length and have a required number of input digits.

Relative Position Bar Code

Relative position bar codes are used to print information like item numbers in the line item area. Usually multiple bar codes per page are need and the position (in terms of rows) is uncertain. Therefore, we can't use a simple input row and column to identify the source for the bar code data. A data pattern is used to identify the line where the data source resides. From there, we can determine whether or not the bar code will be printed. The following is an example of a relative position barcode:



In the above example, the system will search for a data pattern ??/??/?? (a date pattern) starting from row 25 and not exceeding row 54. The data pattern can be found starting in column 11. Once this row is identified, it looks for the same data line in column 20 for 15 digits to find the data source (in this case, the item number). The bar code will be printed one line below in the position of Row 1 (the relative position), Column 49 to Row 2, Column 79.

Relative Pattern: If you leave this field blank, it indicates to the system that the bar code is an absolute position barcode for the whole page. Specifying a pattern here indicates this is a relative position bar code. For example, to print a bar code for an item number on picking ticket, the system first needs to know how to find the line where the item number prints. Usually, there's some kind of pattern you can specify to let the system search for. For example, you may specify the following pattern:

> ??/??/??
> Where ? will match any character.

For example, we know on each line item, a request date will be printed at column 10. Therefore, whenever the system finds this pattern in a page at column 10, then the system will know this is the line item row. From there, we can find the item number and print a barcode.

Relative Pattern Column: This field indicates the relative pattern will start in the specified column. You do not need to specify a length because length is implied by the pattern you specify.

Relative Starting/Ending Rows: The relative position barcode is used mostly for line items. Therefore, the system should not search in the header and footer area for the pattern. These two fields are used to specify the range of rows for the line items to find the pattern.

Place BC Above or Below: When you are trying to print a relative position barcode, the starting row and ending row you specify is relative to the pattern line you find. You can print the barcode below or above the pattern line. The starting row number indicates the relative number of lines above or below the pattern line where the barcode will be printed. The same principle applies to the ending row.

Copies

This is used to specify the reference identifier for each copy of the laser form when multiple copies are printed. If you are only printing one copy, you do not need to specify anything here.

Starting Position: Specify the starting position where each copy's information will be printed.

Color: You can either use the default color, or specify a color when printing the copy's information.

Copy: A value from 1 to 9 to indicate the reference value of Copy 1, Copy 2… Copy 9.

Description: A literal description of each copy. For example "Customer Copy", "Salesman Copy"…etc.

Bold/Italic: Make the text bold or italic.

Preview

The preview function is a WYSIWYG implementation of the NWSM Laser Form Designer. It allows you to easily view the design result on the screen before it is printed. You can change the design easily by using the mouse and clicking on the object you intend to you change, and making the necessary modifications.

It is very helpful to include the printing data on the preview screen as well. To accomplish this, we suggest you spool the output of the form to disk first. In the preview screen, you can identify which spooled report is to be merged with the template from the "Data" drop down menu at the top of the preview screen. This will present a complete view of the laser form output:

Chapter 10 Notes And Ticklers

Overview

Notes and Tickler functions are available for V6.7 and Elliott Users only. This chapter does not apply to Macola V6.2 and NETcellent V6.6 users. Notes are well documented in V6.7 and Elliott's manual. This chapter focuses on the differences between Notes in NWSM and the Tickler function.

What are Notes?

Notes are a global function in both V6.7 and Elliott that lets users enter additional notes for any master record like a customer, item, vendor or order record. Unlimited amounts of information can be entered for each master record. Notes can be used in conjunction with a note type and can be controlled with security, or even behave like a database. Notes can be specified to print on a particular document. Notes can also be grouped into folders or used as a knowledge base with searching capabilities.

NWSM supports a GUI Note starting in V6.X.056. With this GUI note, there are the following improvements: (1) Graphical User Interface for Note function; (2) Support of folders (3) Easier for handling large amounts of notes; (4) Knowledge base searching capabilities.

What are Ticklers?

Ticklers are an extension to notes. When you have a note in the system, you can designate the note as a tickler also. By designating a note as a tickler, you will be reminded on a certain date and time that a task/tickler is due. Ticklers are a standard feature in V6.7 and Elliott. However, in the past, when a tickler was created you would have to check ticklers manually through a reporting function. There was no automatic "alarm clock" function to remind you. This was true until V6.X.054.

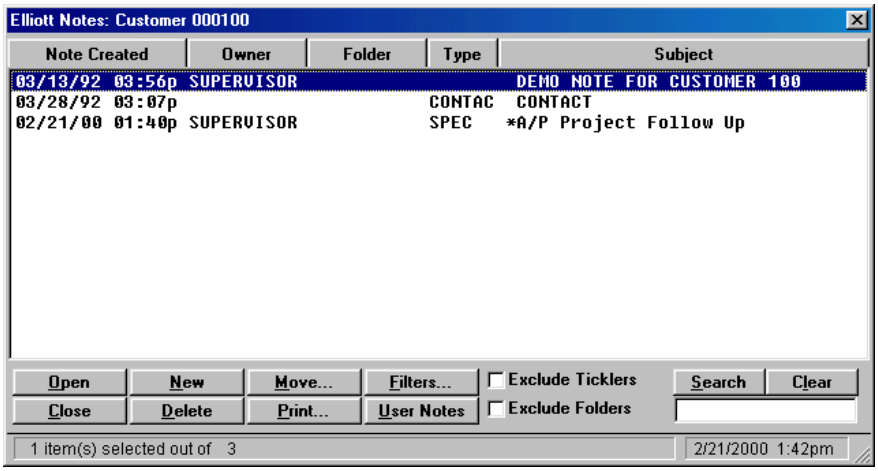
Starting in NWSM V6.X.055, there is an automatic reminder function for ticklers where users will be alerted of the tickler at the pre-set remind date and time. In addition, the system separates the remind date/time from the due date/time. Also, ticklers can now be designated as a recurring tickler.

Ticklers are not only useful as self-reminders, but they are also a very useful management tool. By setting up a company hierarchy structure in NWSM, supervisors will be allowed to view the ticklers of his/her subordinates. If a subordinate is a

supervisor as well, further drill downs can be allowed. A supervisor can also assign a tickler (task) to a subordinate.

New Notes Function in NWSM

The notes function after V6.X.056 uses a new Graphical User Interface. Instead of bringing up the last note, (or first note, depending on the setup), the system will bring up a list box of all the notes for the current reference. If there's only one note for this reference, the system will open and display the note automatically. If there's no note for this reference, the system will automatically go into the add mode of a note. The following is how the list box looks when you display a note in the customer file maintenance screen:



The traditional list box user interface is used to highlight a note – arrow key up, down, or page up, page down. Use the mouse or use scroll bar when there's more than one page of data. If the note has a "*" in front of the subject area this indicates that the note is a tickler. You may sort notes by any of the columns by clicking on the column heading. By default, they are sorted by the date/time sequence.

Once a note is highlighted, you can click on "Open" button or press the enter key to display the note detail. You can also double click on the note in the list box to display the note detail. The following options are available in the list box:

Open: Open the note that is highlighted.

Close: Close the note window and return to the application.

Delete: Delete the current note that is highlighted.

New: Create a new Note.

Print: You can print either the highlighted notes, or all the notes in the list box.

Move: Move a note from one folder (or blank folder) to another folder.

Filters: By default, all notes for the current reference (i.e. Customer 000100) will display in the list box. You may choose to narrow it down or expand it. For example, if you wish, you can see all notes for all customers in the list box. There is a limitation of 1,000 notes in the list box. You probably will need to use other criteria to narrow your list if your list exceeds 1,000 notes. Using Filters in conjunction with the "Search" function makes notes a powerful knowledge base tool.

User Notes: User notes are a special kind of note. It refers to the note that is attached to the current user (instead of the current reference). User notes are often used for tickler purposes.

Exclude Ticklers: If this box is checked, then tickler notes won't display in the list box.

Exclude Folders: If this box is checked, then ticklers that have been moved to a folder will not display in the list box.

Search/Clear: This is to search for a specific text string. For example, if you have hundreds of notes for a customer, and you are trying to find the cellular phone number for one of the contacts for that customer, you may enter "Cell" as the search string, and click on "Search", the system will then only display notes for this customer that contain the text "Cell". Using this tool in conjunction with the "Filter" function, you can search the entire note database for certain key words. Searching for multiple key words with an "And" condition is also allowed. This makes the notes function not only a database, but also a knowledge base.

Use Note as Knowledge Base

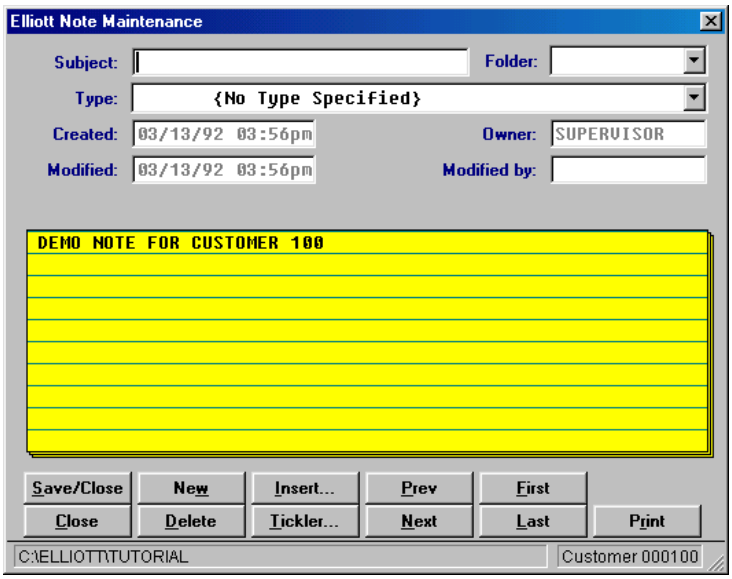
Typically when you use notes as a knowledge base, you will not limit the search to the current reference only (this customer record, order…etc.). You will normally expand the search to either the note for the whole table, or the entire note database. To accomplish this, after you enter the key word(s) into the search box, do not click on the search button, but rather the filter button. With the filter button, you can expand your search to either the note for the entire table, or for the whole database. Each search is limited to

1,000 matches. If you have more than 1,000 matches, the system will prompt you to choose different key word(s) to limit the matched results.

Searching the entire note database may take a while. The actual time depends on your overall system performance (network performance and your PC speed). If, when you search for a key word in the entire note database for the first time, many records were found and it may be too tedious to go through each one of them. Instead, you may consider putting a second key word, (and keep the first key word untouched), and search again. The system has the intelligence not to search the entire note database again, but rather only the matches from the first search. The system should quickly find all the notes that match with both key words.

Sorting of Notes in List Box

By default, the notes will be sorted by ascending sequence based on the creation date. However, you may click on any column of the list box to instruct the system to sort the note by that column sequence. If you wish to sort the note by the descending sequence of a column, then simply use must to click on the heading of the column twice.



Above is a sample note. This is a regular note without a note type. You can enter up to 10 lines with 60 characters per line of information. If additional information is needed, you can simply add another note and continue to enter more information. As long as

each note in the same reference is one second apart, you can continue to add additional notes without any limitations.

Context Menu

When your cursor is at the content area (yellow pad), you may use right click the mouse button and bring up a context menu for the following:

- **Upper Case:** Convert the entire line to upper case.
- **Lower Case:** Convert the entire line to lower case.
- **Proper Case:** Convert each word with a leading upper case for the entire line.
- **Insert a line**: Insert a blank line at the current position and push the other lines down by one line. This function will only work if the note type is blank, or the note type does not contain any literals.
- **Delete a line**: Delete the current line and pull subsequent lines up by one line. This function will only work if the note type is blank, or the note type does not contain any literals.
- **Copy:** Copy the content of current line.
- **Paste:** Paste the clipboard content to current line.
- **Cancel:** don't do anything and exit the context menu.

Note Type

In some situations further customization of notes may be necessary. This may be true if: (1) you want to make the notes like a database; (2) you want to add security to the note; (3) you want to control printing characteristics. You may want to define the different note types in advance to accomplish such tasks.

When setting up a note type, a specific field name (literal name) for each line in the note can be defined as shown below. When entering a note, you have the option to choose a note type. As a result, the note screen will display the name of the note type, and the note will be saved as the specified type, making it similar to a database. This can be helpful to collect information because the information will be entered in a fixed position, and a report writer can be used to print this data. With Design Your Own Form, (invoice, picking ticket, orders…etc.), users can also print a specific line of the note on the form and make this an extension of the database.

In the above example, a note type “CONTAC” is specified. The note content area displays the field name (literal name) for each line. This is a powerful extension to V6.7/Elliott’s database, because any information that you wish to collect for a customer, vendor, item or order can be entered on a note working in conjunction with the note type.

Note Type Setup

The following is the note type “CONTAC” which we discussed in the above example. It is setup in Main Menu, Util-Setup, Notes Processing, Note Type.

Note Type: The name of your note. This name will appear in the "Type" box of the note window when selected.

Description: Used for a brief description of the note type.

Literal 1 – Literal 10: Use for the field name. You can leave it blank if this is a blank note.

Fields 13 – 16, and 20 – 22: Used to control whether this note will be printed on a certain document or not.

Fields 17 – 19: Used to control security. By making a note non-sharable, only you, your supervisor, or your supervisor's supervisor…etc. can access that note. For example, if you have credit card information about a customer, you should make the note non-sharable for read, change and delete since it is sensitive information.

Folder

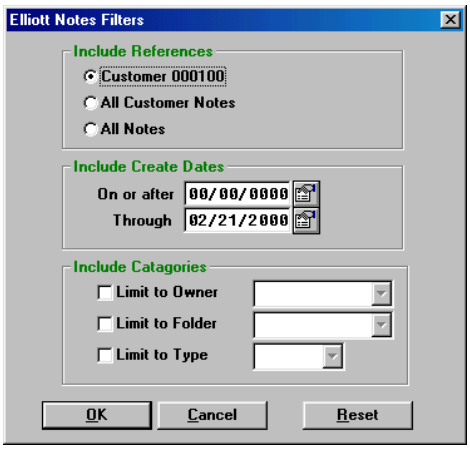
The folder is a new concept introduced after NWSM V6.X.054. It is intended to make notes more manageable. Consider this, you have hundreds of notes for a customer. Some of them need to be accessed frequently, but many of them are more or less historical information and probably can be set aside. Because there are hundreds of notes, it is difficult to find the note that you need to access frequently.

One option to resolve the issue is to move the notes that are not needed frequently to a folder. Categorize your infrequently used notes by folder type. Leave those notes that are frequently used in the blank folder. Then when you bring up a note, you can do one of two things: (1) Exclude notes in the folder by checking "Exclude Folders"; or (2) Sort

by Folder by clicking on the "Folder" heading. This way you can quickly locate your note without navigating through hundreds of them.

Use Notes as Knowledge Base

This is a new function introduced after NWSM V6.X.056. In the previous versions there was a search function but the searching capability was limited to the current reference (i.e. Customer 000100) only. After NWSM V6.X.056, you can search the entire note database. Therefore, to use the "**Knowledge Base**" function, you would use both the "**Search**" and "**Filter**" functions in the note list box window.



Let's take an engineering company for example. This engineering company has a customer technical support help desk where the representatives have the responsibility to answer customer's technical questions when they run into difficulty. This company has a policy of logging every single help desk call as a sales order and keeping track of the content of the conversation as a note that is attached to the order.

As a new support representative, it is very helpful to search other representative help incident information to learn about similar situations and how the problem was solved. This is one situation where the knowledge base becomes very helpful. The support rep needs to bring up the note list box window first. Then identify one or more key words of the problem, and enter them in the search box. Click on the "Filter" box, choose to search "All Notes" and click "OK" on the Filter Window. The system will start to search all the records in the notes database for the key words entered. If you enter more than one key word, the system will use the "AND" condition. That is, a note must contain

both words in order for the note to be found. You may want to start with one key word first. If this results in too many matched records, you can consider limiting it further by entering the second keyword. Enter the additional keyword after the first keyword with a space, start search again. The system has the intelligence to know that it does not need to go through the entire note database again. Instead, it will search the current result set narrow down the list. This results in a much faster search when entering the 2nd keyword.

It is possible to speed up the searching by narrowing down the search criteria. For example, you can speed up searching by choosing notes for a table, like "All Customer Notes", "All Order Notes", instead of "All Notes". Depending on where you bring up the note window, the table you can search will vary. You can also speed up the search by limiting the date criteria to a certain date range. For example, you might decide not to search for any notes that are from more than two years ago.

Tickler

Tickler is a standard feature in V6.7 and Elliott. The previous tickler function, before V6.X.056, would require checking for ticklers by manually using the notes reporting function. With V6.X.056, NWSM warns you about ticklers that are due. This is a 32-bit function only. 16-bit users can still use tickler function, however, they can't use the automatic reminder function. The Audio effect is available only if user has a sound card and speakers with their systems. The automatic tickler reminder can be started in one of two ways: (1) Launch the tickler reminder function when NWSM/Elliott is started; (2) Launch the tickler reminder independently of NWSM/Elliott.

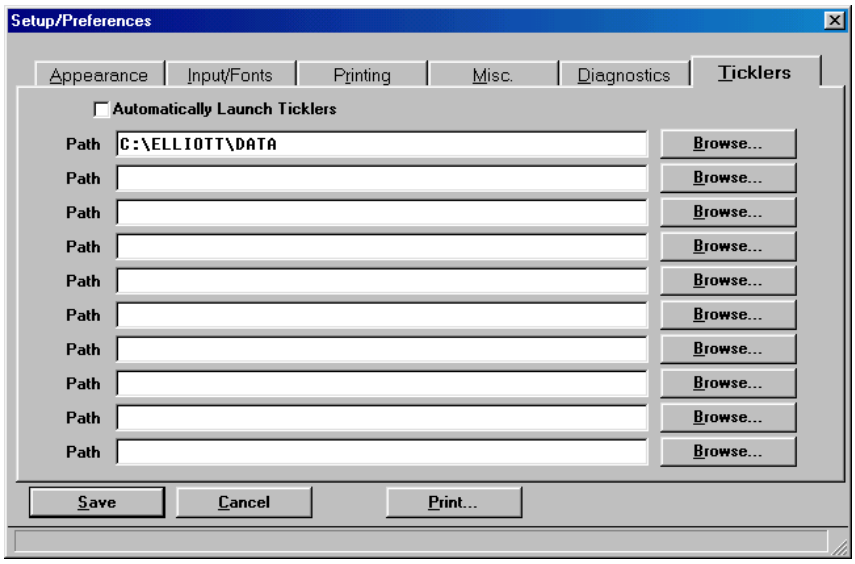
Ticklers are more than a to do list, or a reminder. They are also a very powerful management tool. One of the steps required to setup ticklers is to define the organization's hierarchy structure. Supervisors can not only can assign tasks to themselves, they can also assign tasks to subordinates. Supervisors can also view and manage the tasks (ticklers) that have been assigned to subordinates. By fully implementing ticklers in your organization, you can better manage your company.

Setting up the Tickler Function

The first step to setting up the tickler function is to go to "preference setup" (toolbar button) and indicate the directory where you want to scan for ticklers. Elliott supports the multi-company option. Therefore, you can have multiple notes and tickler databases in different directories. Chances are if a tickler becomes due in any one of the data directories, you want to know about it. The tab "Tickler" in the preference setup screen allows users to set up the directory where the note and tickler database resides. You can define up to 10 directories. By default, it will use the DATA (Company 1) directory to

look for tickler information. Even though the system will search multiple companies for the tickler information, only the first company's users and hierarchy structure are used to determine the security information.

The preference setup only effects the local workstation. Therefore, you should setup each workstation that will use the tickler function. The setup information is stored in the NSI.INI file in the C:\WINDOWS or C:\WINNT directory.



Launch Tickler Reminders with NWSM/Elliott

In the previous setup screen, if you check the box "Automatically Launch Tickler", then the tickler reminder function will start automatically when starting NWSM. Once the tickler reminder is started, it will stay active even if you exit NWSM. The only time it will be closed is if you shut down the system, or manually close the tickler reminder by right clicking on the tickler icon on the bottom right task bar.

Setting up the Organization's Hierarchy Structure

The tickler function can be used once you setup the tickler tab in preference setup. However, to get the best use of the tickler, especially for the manager, you should define the organization hierarchy by following these steps:

- Make sure passwords are turned on. To turn on passwords, go to Password setup, and choose “Turn On Password”.
- Make sure each potential user of the tickler function has been setup with a user name and password in the “Password Setup” function.
- Go to the Main Menu, Util-Setup, System File Maintenance, Choose “User File”. Use the “Add” function to define all users full names, positions, departments and extensions.
- Go to the Main Menu, Util-Setup, System File Maintenance, Choose “User Supervisor File”. Use the “Add” function to define the supervisor and subordinate relationship. You can define as many hierarchy levels as you like. Use the edit list to verify that the hierarchy structure is correct.

Launch Tickler Reminder Independently

If you are using Elliott the installation program after V6.X.056 should install the “Tickler” Icon in the “Elliott” group for the PC where the installation program was run. This icon, however, is not created for NWSM installations.

If you need to manually add this icon to the workstation, you can simply setup a shortcut by specifying the following in the command line:

C:\ELLIOTT\NWTKL32.EXE

Note: Substitute with the proper drive letter and directory to match your installation.

By clicking on this icon, the system will launch the tickler reminder function. This is the preferred method to starting the tickler rather than the automatic method where ticklers launch automatically with NWSM. If you want to launch ticklers automatically when you start your computer, simply copy and paste the tickler icon to your “Start Up” folder.

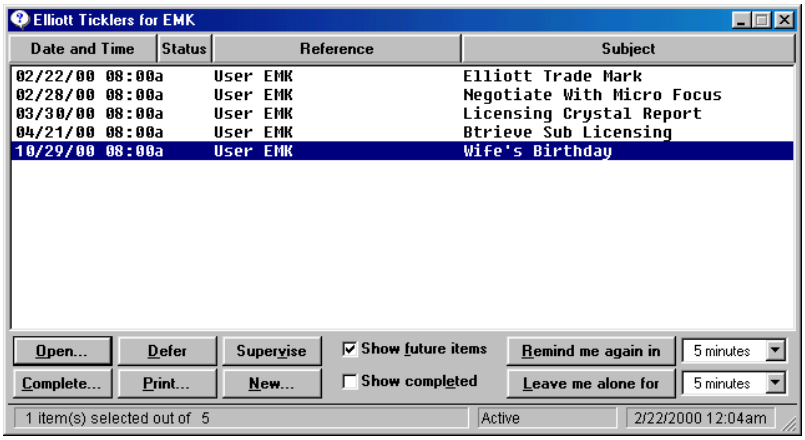
If the tickler is started before NWSM the system will ask you to login with a user name and password. Then if the ticker is still running when you start NWSM, the system will not prompt for a user name and password.

Once the tickler is running, the tickler icon will appear on the right side of your task bar. This icon will stay there even if all your NWSM sessions are closed. This icon is the tickler monitor. It will constantly (once per minute) scan all ticklers for the user and

remind the user of any tasks when the remind date and time is up. It is suggested that you have a sound card and speakers so you can get the audio effect for reminding. If you wish to see the outstanding ticklers, or add a new tickler, you can click on this icon and the user interface for the tickler function will display. You may manually remove the tickler monitor function by right clicking the icon on the right side of the task bar and choosing "Close".

Tickler List Box

When you click on the tickler icon on the right side of the task bar, the following list box window will display:



The items that display in this window depend on the two check boxes:

Show Future Items: By default, this window will only show the past due (past remind date and time) items. However, you may also want to see the items that will be due in the future. In that case you can check this box.

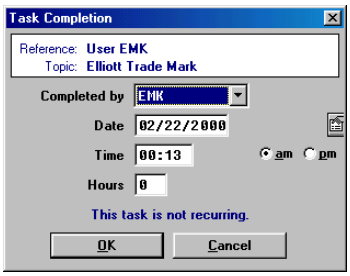
Show Completed: By default, this window will not show any items that are marked as completed. However, if you wish to see them, you can check this box.

The following is a brief explanation of each function in the window:

Sorting: By default, the items in the list box are sorted by the date/time field. You may click on any of the headings in the list box to sort the items by that field.

Open: This will open the currently highlighted tickler and display the detail window.

Complete: This will complete the currently highlighted tickler by prompting for the following information:



The hours field is for reference purposes and you may wish to add up the total hours you spent working on this task as a performance measurement tool.

Defer: Defer instructs the tickler reminder "not to remind me" about this item for today (as long as the tickler reminder remains in memory without being closed).

Print: This will allow you either to print the highlighted tickler, or all the ticklers in the list box.

Supervise: This button will only display if you are a supervisor. It allows you to drill down to subordinate's ticklers to review their progress with their tasks. There is more information about this function later in the chapter.

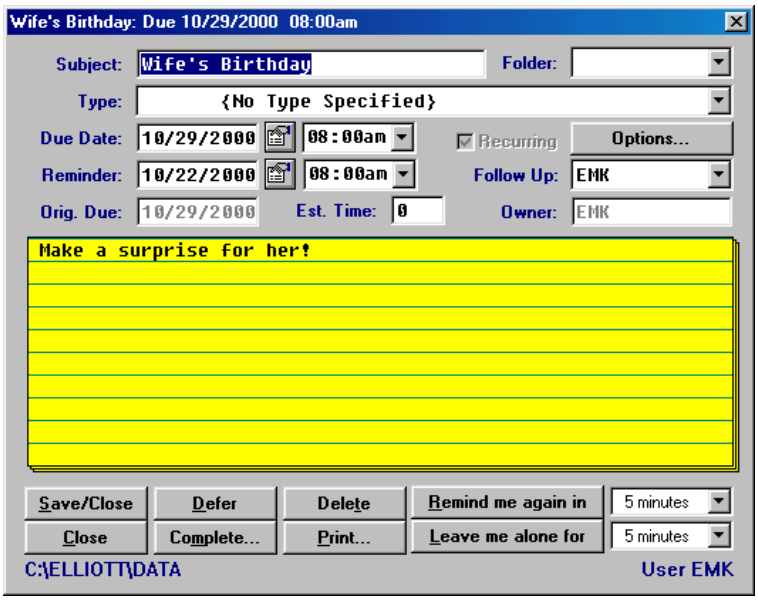
New: Click on this button to create a new tickler. A tickler is also a note. The new tickler that is created will be recorded as a user note.

Remind Me Again in: When a tickler becomes due, you may not have time to deal with it at that moment. Using this option will allow you to tell the system to remind you again sometime in the future. You can ask the system to remind you at another time, in as little as 5 minutes, or up to 1 year. This changes the remind date and time, and does not affect your due date and time.

Leave Me Alone for: When you start the tickler function, there may be a long list of ticklers that have are due and are waiting for your attention. If you know you will be busy for a while and do not wish to be disturbed by the tickler reminder you can choose "Leave Me Alone for" from 5 minutes to 4 hours. This will stop the tickler reminder function for that period of time. Once you decide that you need to enable the tickler

checking again, you can click on the button at the same position for “Resume Tickler Checking”.

Tickler Detail Window



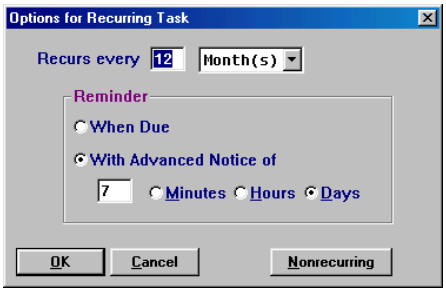
The tickler detail window by design is very similar to the notes detail window. A tickler is also a note. To create a tickler, you can do one of two things (1) Create a note and make the note a tickler, (2) Add a new tickler in the tickler list window (the new tickler will be a note attached to the user). The following are items on the tickler window that you should be aware of:

Due Date/Time: This is the date and time when this tickler will become due. You may click on the icon beside the date field and a calendar will display to help you to identify the due date. In the calendar screen, the dates that are bold are either company holidays, or your personal vacation days as specified in the CALENDAR.CFG file.

Reminder Date/Time: By default, the reminder date and time will be the same as the due date and time. However, you may choose to let the system remind you one week before the due date. Or you may choose to let the system to remind you 15 minutes prior to your appointment. The reminder date/time can be after the due date/time if you are behind with your tasks.

Original Due: When you are behind with your tasks, you may choose to extend your due date and time. However, the original due date (the due date when tickler was first created) will not be changed even if you change your due date. You can't change original date field. This serves as a performance measurement for how well you complete your tasks on time.

Options: A tickler can be recurring. For example, a performance reviews of an employee are usually done on a yearly basis and a supervisor should know when an employee should be reviewed again. A reminder for a birthday could be a recurring tickler on a yearly basis. The "Options" button is to setup recurring ticklers:



You may choose the frequency with which you want the task to recur. Also, you may choose to be reminded again with advance notice of the due date. In the above example, the tickler will recur once a year. The reminder date will be 7 days before the due date. When you complete a recurring tickler, NWSM will mark that tickler as completed, and create a new tickler with the same content for the new recurring date.

Est. Time: This is a reference field and is used to estimate how much time is required to complete this task. This can be used as a performance measurement tool.

Supervisor's Function

If you are a supervisor based on the User Supervisor File (not based on being logged in as "SUPERVISOR"), when you are in a Tickler List Window, you should see a "Supervise" button. If you click on this button, you should see a window similar to the following window:

This is a list of users that you directly supervise. User with a "+" symbol beside the user id are also supervisors. When you click on this type of user, you will further drill down to the users they supervise. At the end, when you click on the final user, you will be able to see the tickler list window for that user. There's no limitation for how many levels you can drill down to.

This is a useful function for seeing the outstanding tasks of your subordinates. It can be used to manage your department, or your company. If you can ensure that all the tasks a user needs to complete are entered into the tickler, then this tool can be used to manage not only the tasks you assign to your subordinates, but it will also give you a good idea a what your subordinate is working on. By understanding whether your subordinate prioritizes the tasks correctly, you can take necessary management actions to correct any potential problems.

Security Issue

A supervisor can create a tickler and assign them to him/herself, or to his/her subordinates. A subordinate can create a tickler and assign to him/herself but can't create a tickler to and assign to his/her supervisor.

The user who created the tickler will have full rights to that tickler, including add, change, delete, complete, defer and any other actions that can be done with a tickler.

The user may or may not have full rights to the tickler that is assigned by his/her supervisor depending on the note type. Previously in this chapter, we discussed that a note type can be used to control security by setting the flag for sharable read, change and delete. If the tickler does not have a note type, then there will be no security limitation to the user who has been assigned to the tickler. If the note type is defined, and the note type specifies is not shareable for read, change or delete, the user being assigned to the tickler will still have the minimum rights to read and complete the tickler. This is

obvious, for the supervisor must intend to at least let the user to read and complete that tickler when the tickler is assigned to that user.

Supervisors always have full rights to the ticklers created by his/her subordinate. If necessary, a supervisor can also reassign the tickler to another user that he/she supervises.

Chapter 11 Btrieve Engines

Introduction

If you have a problem with NWSM/Elliott, the most likely problem you encountered involves getting Btrieve to work. Many application software vendors distribute Btrieve components with various different versions. In many cases, you are using Btrieve without even realizing it. When different versions of Btrieve components are installed on your workstation, you might experience inconsistent results that are not completely functional with NWSM/Elliott. Most likely, you will receive a Btrieve Error 20, which indicates the Btrieve Engine is not loaded. This problem has been tremendously improved after PSQL 7. NWSM/Elliott comes with the Pervasive® Smart Scout diagnostic tool to help identify the inconsistent Btrieve component problems.

NWSM/Elliott is distributed with Btrieve V6.15.430 16-bit and 32-bit client engine components. It is easy to get the Btrieve client engine to work without any setup. This is good for a single user, or a workgroup of no more than 3 users. If you have more than 3 users it is not recommended that you use Btrieve client components, for it is not stable enough in a multi-user environment and is more likely to cause data corruption. In that case, you must use the Btrieve server engine, which you should purchase separately. There are many more steps involved in getting the Btrieve server engine working than there is in getting the Btrieve Client engine to work. However, the server engine will offer speed and reliability, which are difficult to achieve with the client Btrieve engine. The following are some of the issues related to Btrieve that you should be aware of:

Supported Btrieve Engine

Btrieve Server Engine Requirement for 16-Bit and 32-Bit

For 16-bit NWSM/Elliott users, it is possible to use the Btrieve 6.10x NLM that was distributed with Netware V3.12, 4.x and 5.x. However, NWSM/Elliott does not come with the Requester's Btrieve component. If you need to make it work in this environment, you will need to secure the WBTICOMM.DLL (Dated 1-30-97) component and place it in the \NSI or \ELLIOTT directory.

Btrieve 6.10x may work on a Windows NT workstation, if you are running 16-Bit version NWSM/Elliott. However, if you are using 32-bit NWSM/Elliott, you must make sure you have Btrieve 6.15.430 NLM or later on your Netware Server to work. With a

Windows NT server, you must make sure you have Btrieve 6.15.450 and above. You can't use the Btrieve 6.10x NLM that comes with Netware.

P.SQL 7 and P.SQL 2000 Support

P.SQL 7 and P.SQL 2000 will both work with 16-bit and 32-bit NWSM/Elliott. However, if you are using P.SQL and P.SQL 2000, you must run a client installation individually on each workstation. After you have completed the client installation, you should rename or delete The following Btrieve components in your \NSI or \ELLIOTT directory:

WBTRCALL.DLL	For 16-Bit
WBTRV32.DLL	For 32-Bit

If you do not get rid of these two DLL files from \NSI or \ELLIOTT directory, then you will still be using the 6.15.430 Btrieve Engine that we distribute (this is especially for 32-bit) even if you install the PSQL 7/2000 Client. One easy way to tell is check if you get PSQL 7/2000 flash screen when Elliott first started. If you do see it, then you are running on PSQL 7/2000 client. If you don't, then you are running on Btrieve 6.15.430 client.

Client Based Btrieve Record Manager

The 6.15.430 Btrieve components distributed with NWSM are stored in the \NSI or \ELLIOTT directory. If this is a network installation, then you will find them on the network drive instead of the local drive. By default, most of the applications using Btrieve, will install the Btrieve components into the C:\WINDOWS or the C:\WINDOWS\SYSTEM directory. NWSM/Elliott does not install the components in these directories to avoid overriding another application's Btrieve Components. Also NWSM/Elliott avoids the need to run a client installation for each workstation.

Btrieve Components

16-Bit Btrieve Components

The following is a list of 16-Bit Btrieve 6.15.430 client engine components that are distributed with NWSM/Elliott:

- **WBTR32.EXE**: The client-based Btrieve for the Windows engine, also referred to as the client-based Btrieve Record Manager.

- **WBTRLOCL.DLL**: The interface to the client-based engine.
- **WBT32RES.DLL**: The resource dynamic link library, or DLL, for the client-based Btrieve engine.
- **WBTRCALL.DLL**: The Loader and Requester Interface module. 16-Bit application calls this DLL first.
- **WBTRVRES.DLL**: The resource DLL for the Loader and Requester Interface.

32-Bit Btrieve Components

The following is a list of 32-Bit Btrieve 6.15.430 client engine components that are distributed with NWSM/Elliott:

- **WBTRV32.DLL**: This is the Loader and Requester Interface module for 32-bit. The 32-Bit application calls this DLL first.
- **W32MKDE.EXE:** The 32-Bit Micro Kernel (a new name for Btrieve) Database Engine.
- **W32MKRC.DLL:** The 32-Bit Micro Kernel Resource File.

Other 16-Bit Btrieve Components

The following are also distributed with NWSM/Elliott for Btrieve operation:

- **DBSETUP.EXE**: The Btrieve Setup utility allows you to change the settings of Btrieve configuration options and convert existing Btrieve v5.x files to Btrieve V6.x file format.
- **BUTIL.DLL**: This file is needed for DBSETUP.
- **DBU_UI.DLL**: This file is needed for DBSETUP.
- **NWLOCALE.DLL**: This file is needed. You may already have this file in the Windows directory. Some older Windows installations do not have this file. Therefore, this file is provided in the default startup directory.

Running Client Btrieve on a Peer-To-Peer Network

If you are on a Windows 95/98 peer-to-peer network, you may get Btrieve error 85, (File is locked), when two users are trying to access the same file. Normally, when this occurs, it is because you have Macola/Elliott's Btrieve data files installed on a PC and that PC is doubling as both a server and a client.

The Btrieve client engine, by default, will use the "Btrieve Single Engine" when you access Btrieve data on a local drive. It assumes no other clients will compete with it for resources and when you open a file for I-O, so it will lock that file exclusively.

On the other hand, when you access Btrieve data on a remote drive, the Btrieve Client Engine will use the "Btrieve Multi-Engine". It will use *.LCK files to manage record locking issues and work with other Btrieve clients peacefully.

What you can do to resolve the file locking issue is (1) separate the server PC from the Client PC. Do not run Btrieve client on the server PC. (2) Change the default settings so Btrieve loads "Multi-Engine" even if it accesses a local file. The following outlines the procedure to do so:

Btrieve Local Client by default uses the following setting in the BTI.INI file (in the C:\WINDOWS or C:\WINNT directory):

```
[Btrieve Client]
SharingOnLocalFiles=SingleEngine
SharingOnRemoteFiles=MultiEngine
```

By default, these two lines are not in the BTI.INI file and the default values are assumed.

For NWSM/Elliott 16-Bit, change the BTI.INI file by either changing the following line, or add the following line

```
[Btrieve Client]
SharingOnLocalFiles=MultiEngine
```

For NWSM 32-Bit, change the registry setting by using the REGEDIT command in the following path:

HKEY_LOCAL_MACHINE\

SOFTWARE\
Btrieve Technologies\
MicroKernel Workstation Engine\
Version 6.15\
Setting\

Change "File Sharing On Local Drives" value from "0" -> "1". You may test whether or not the new setting takes effect by running Elliott on the computer where it resides. Go to, for example, A/R Customer file Maintenance and check to see if the ARCUSFIL.LCK file has been created or not. If it has, then the system is using MultiEngine with local files.

You may also need to load the DOS SHARE program before you start Windows in order for Btrieve v6.15 to open files on a local drive in the proper mode. Refer to your network documentation to determine if you need to load the DOS SHARE program.

If you are on a client-server network or running a stand alone PC, you must load the DOS SHARE program before you start Windows in order for Btrieve v6.15 to open files on a local drive in the proper mode. If SHARE is not loaded, a file cannot be opened in multi-engine file sharing mode.

If you use large transactions (those with many modifications or read operations with locks), the DOS SHARE program may run out of locks. If so, load the SHARE program with a higher value specified for the /L and /F options.

Before starting Windows, load the SHARE.EXE program on your workstation for multi-engine file sharing on the local drive. Consult your DOS manual for detailed instructions about loading this program.

Supported Platforms Matrix for Btrieve

The section that follows lists the latest Windows-based Btrieve V6.15.430 (16-bit and 32-bit) products. If you are using PSQL 7/2000, this section does not apply to you. The DLL/EXE components needed for the Client/Server and Workstation Engine configurations are also listed. This chart can be used to verify the necessary components and settings required to run a 16 or 32-bit application on a specific platform. The following information is provided for each configuration:

- Workstation Operating System: WinNT, Win95, or Win3.1/WFW
- Network environment: Peer to Peer, Windows NT Server, or NetWare Server
- Type of application: Btrieve; 16 or 32-bit

- Registry Settings: HKEY_LOCAL_MACHINE\SOFTWARE\Btrieve Technologies\MicroKernel Workstation Engine\Version 6.15\MicroKernel Interface\Settings
- BTI.INI Settings: [Btrieve] and [ScalableSQL] sections

For example, if you want to run a 16-bit Btrieve application on a Windows 95 workstation using requesters to access Btrieve for NetWare, you should reference the section **WIN95 16-bit BTR App with Btrieve for NetWare**.

N/A indicates the Registry or BTI.INI Setting is not applicable for that configuration. The components for each configuration are listed in the order they are loaded.

********** Windows NT/95 Configurations**********

WINNT /WIN95 Peer to Peer 16-bit BTR App

WBTRCALL	DLL	43472	02-04-97	*Server:* **None**	Registry Settings		BTI.INI [Btrieve]		
WBTRVRES	DLL	4192	04-19-95		**Local**	**Requester**	**Local**	**Req**	**Thunk**
NWLOCALE	DLL	38576	11-02-93		Y	N	N	N	Y
WBTRTHNK	DLL	5824	07-15-96						
WBTRV32	DLL	68096	02-12-97						
W32MKDE	EXE	320512	10-07-96						
W32MKRC	DLL	110080	09-24-96						

WINNT /WIN95 Peer to Peer 32-bit BTR App

WBTRV32	DLL	68096	02-12-97	*Server:* **None**	Registry Settings		BTI.INI [Btrieve]	
W32MKDE	EXE	320512	10-07-96		**Local**	**Requester**	**Local**	**Req**	**Thunk**
W32MKRC	DLL	110080	09-24-96		Y	N	N	N	N

WINNT/WIN95 16-bit BTR App with Btrieve for NT Server*

WBTRCALL	DLL	43472	02-04-97	*Server*: **NT 3.51/4.0**	Registry Settings		BTI.INI [Btrieve]		
WBTRVRES	DLL	4192	04-19-95	NTMKDE.EXE 08-01-96	**Local**	**Requester**	**Local**	**Req**	**Thunk**
NWLOCALE	DLL	38576	11-02-93	NTMKDERC.DLL 08-01-96	N	Y	N	N	Y
WBTRTHNK	DLL	5824	07-15-96	NTBTISRV.DLL 11-01-96					
WBTRV32	DLL	68096	02-12-97						
W32BTICM	DLL	42496	02-13-97						

WINNT/WIN95 32-bit BTR App with Btrieve for NT Server*

WBTRV32	DLL	68096	02-12-97	*Server*: **NT 3.51/4.0**	Registry Settings		BTI.INI [Btrieve]		
W32BTICM	DLL	42496	02-13-97	NTMKDE.EXE 08-01-96	**Local**	**Requester**	**Local**	**Req**	**Thunk**
				NTMKDERC.DLL 08-01-96	N	Y	N	N	Y
				NTBTISRV.DLL 11-01-96					

WINNT 16-bit BTR App with Btrieve for NetWare

WBTRCALL	DLL	43472	02-04-97	*Server*: **NW 3.x/4.x**	Registry Settings		BTI.INI [Btrieve]		
WBTRVRES	DLL	4192	04-19-95	BTRIEVE.NLM v6.15.430	**Local**	**Requester**	**Local**	**Req**	**Thunk**

NWLOCALE	DLL	38576	11-02-93	BSPXCOM.NLM v6.15.824	Y/N	Y	N	N	Y
WBTRTHNK	DLL	5824	07-15-96						
WBTRV32	DLL	68096	02-12-97						
W32BTICM	DLL	42496	02-13-97						

WIN95 16-bit BTR App with Btrieve for NetWare

WBTRCALL	DLL	43472	02-04-97	*Server*: **NW 3.x/4.x**	Registry Settings BTI.INI [Btrieve]				
WBTRVRES	DLL	4192	04-19-95	BTRIEVE.NLM v6.15.430	**Local**	**Requester**	**Local Req**		**Thunk**
NWLOCALE	DLL	38576	11-02-93	BSPXCOM.NLM v6.15.824	N	Y	N	N	Y
WBTRTHNK	DLL	5824	07-15-96						
WBTRV32	DLL	68096	02-12-97						
W32BTICM	DLL	42496	02-13-97						
W32NR	DLL	18944	10-12-95						
W16NR	DLL	10784	10-12-95						
NWCALLS	DLL	147616	10-20-94						

WINNT/WIN95 32-bit BTR App with Btrieve for NetWare

WBTRV32	DLL	68096	02-12-97	*Server:* **NW 3.x/4.x**	Registry Settings BTI.INI [Btrieve]				
W32BTICM	DLL	42496	02-13-97	BTRIEVE.NLM v6.15.430	**Local**	**Requester**	**Local Req**		**Thunk**
				BSPXCOM.NLM v6.15.824	N	Y	N	N	N

Note: If running these configurations on the NT server where the Btrieve engine is running, you must have the following registry entry set to 1.

HKEY_LOCAL_MACHINE\SOFTWARE\Btrieve Technologies\MicroKernel Engine\Version 6.15\MicroKernel Interface\Settings

********** **Windows 3.x Configurations** **********

WIN3.1/WFW Peer to Peer 16-bit BTR App

WBTRCALL	DLL	43472	02-04-97	*Server:* **None**	BTI.INI [Btrieve]		
WBTRVRES	DLL	4192	04-19-95		**Local**	**Req**	**Thunk**
WBTRLOCL	DLL	17762	10-10-96		Y	N	N
WBTR32	EXE	315336	10-10-96				
WBT32RES	DLL	4290	10-10-96				

WIN3.1/WFW 16-bit BTR App with Btrieve for NT Server

WBTRCALL	DLL	43472	02-04-97	*Server:* **NT 3.51/4.0**	BTI.INI [Btrieve]		
WBTRVRES	DLL	4192	04-19-95	NTMKDE.EXE 08-01-96	**Local**	**Req**	**Thunk**
NWLOCALE	DLL	38576	11-02-93	NTMKDERC.DLL 08-01-96	N	Y	N
WBTICOMM	DLL	41980	01-30-97	NTBTISRV.DLL 11-01-96			

WIN3.1/WFW 16-bit BTR App with Btrieve for NetWare Server

WBTRCALL	DLL	43472	02-04-97	*Server:* **NW 3.x/4.x**	BTI.INI [Btrieve]		
WBTRVRES	DLL	4192	04-19-95	BTRIEVE.NLM v6.15.430	**Local**	**Req**	**Thunk**

NWLOCALE	DLL	38576	11-02-93	BSPXCOM.NLM v6.15.824	N	Y	N
WBTICOMM	DLL	41980	01-30-97				
NWIPXSPX	DLL	38544	11-02-93				
NWCALLS	DLL	147616	10-20-94				

(All NW*.* and TLI*.* files can be downloaded from Novell's WEB site or Novell's CompuServe Forum, NOVFILES)

Other Consideration for Btrieve

Btrieve Client or Brequest?

You need to decide whether to use Btrieve Client or Brequest with your Btrieve database. Btrieve Client loads the Btrieve engine on the local workstation and performs all Btrieve I-O functions across the network. Brequester will require that the Btrieve engine be loaded on the server and simply send the I-O request to the server and let the server perform the I-O function. It is easier to set up the Btrieve Client; however, it will generate more network traffic and will be significantly slower than the Brequester. Even though Brequester is faster, (because it takes advantage of client/server architecture), it is more complicated to set up. Since Brequest will require a Btrieve server engine, (purchased separately), it also costs more to implement.

If you are using a Novell NetWare file server, the Btrieve server engine comes with your file server and there's no additional cost to implement it. However, the Btrieve engine that comes with the Novell file server is an older version. If you are on Novell NetWare 3.12 or 4.1x, you have Btrieve 6.10. If you are on Novell NetWare 3.11 or older, you have Btrieve 5.15. To implement the DOS requester is relatively simple with the Novell file server. If you are using a Novell file server with a Btrieve database running a DOS application, chances are you are using Brequest already.

To implement the Windows version of Brequest, however, is much more complicated. First of all, the Btrieve 6.10 server engine may work with Windows Btrieve requester, but it is not supported by Pervasive Software (the owner of Btrieve). Pervasive will require users to upgrade to P.SQL 2000 to work with the Brequest Windows version. Second, the component requirements are more complicated than the DOS version.

If you have difficulty getting the Brequest version to work in a Windows environment, one easy way is to resolve the issue is to use the Client version of Btrieve, which is relatively easy to set up. However, if you have other DOS workstations using the Brequest version, this may cause file locking conflict issues. The Windows Btrieve Client version will create a file with a .LCK extension when a file is open for I-O. All other Btrieve Client versions will work correctly with this .LCK file when the same file is open again. However, the Btrieve engine on the server uses a different record locking

method. When it see this .LCK file, it simply does not know how to handle it and will return a “Record Lock” message.

Therefore, do not mix the Btrieve Client version and Requester version on the same network. If you do, do not let them access the same database (company). Mixing Btrieve Client and Requester on the same database will result in the Btrieve Client locking out the Requester version when the same data file is accessed for I-O.

The following documentation may be helpful in identifying the potential problems in getting the Btrieve Requester to work:

Windows V3.1

According to Pervasive Software, Windows 3.1 will not work properly, with the Brequest version for Windows V3.1. This is because Windows 3.1 is not a network aware system. Windows V3.11 and Windows for Workgroups will work with the Btrieve Requester properly. If you are on a Novell environment, do not use NETx. You must use VLM 1.21 and set it up to work with the Btrieve Requester. The latest VLM can be obtained from the Novell website.

Intranetware Client: When Novell introduced Intranetware Client, Btrieve 6.15.45 did not work properly. Btrieve developed 6.15.451 to correct this problem.

Thunking

There is a configuration flag in the BTI.INI file to allow use of a 16-bit application software with 32-bit Btrieve Components if the user is running on Windows 95/98 or Windows NT. Even though NWSM is both a 16-bit and 32-bit application, NWSM will not support V6.2 with 32-bit. If you are unable to get the 16-bit Btrieve to work for V6.2 installation, you might want to try using Thunking and use 32-bit Btrieve instead. This may resolve your 16-bit Btrieve problem. 16-Bit NWSM, by default, does not use Thunking. To use thunking, you must change your NSI.CFG file in \NSI directory to the following:

```
[Btrieve]
Local=No
Requester=No
Thunk=Yes
```

These settings tell Btrieve that the 32-bit Btrieve Engine needs to be brought up. This change is a global change. You can also set this up in you NSI.INI file in C:\WINDOWS or C:\WINNT directory to limit the effect to a specific workstation only.

This setting change will then update BTI.INI file upon starting up NWSM. The setting change simply tells Btrieve to use the 32-bit engine and does not specify whether to use a 32-bit client or 32-bit requester engine. This will depend on the registry setup. In the registry, there are the following two flags that need to be set up to specify whether the client engine or the requestor engine should be used:

Local
Requester

You should set the value of the flag to 0 if it is "No", and set the value to 1 if it is "Yes". You can set up these registries through REGEDIT under HKEY_LOCAL_MACHINE\SOFTWARE\Btrieve Technologies\MicroKernel Workstation Engine\Version 6.15\MicroKernel Interface\Settings.

You do not have to use Thunking if you don't have a problem with your 16-bit NWSM. In that case, you will set the NSI.CFG file to the following configuration if you are going to use Requester:

```
[Btrieve]
Local=No
Requester=Yes
Thunk=No
```

.

Chapter 12 Developer Reference

Modified Application Programs

Generally speaking, NWSM is a system layer change and does not change the application code for each module. However, the following are a few exceptions. If you have modified these programs with your enhancement or modifications, then you may need to change them by using NETcellent's Windows Systems Module source code to make them work for NWSM. As long as you have a valid source code license, then NETcellent will be able to license the following source code to you on a per request basis:

ARSRVPRC.CBL – V6.2 Only
BIDRPT.CBL
DEFERMNU.CBL
DEFERP1.CBL
MEXPORT.CBL – V6.2 Only
MIMPORT.CBL – V6.2 Only
BEXPORT.CBL
BIMPORT.CBL
BMCOPGEN.CBL – V6.2 Only
BMFPOGEN.CBL – V6.2 Only
CALLLBR.CBL
FILLER.CBL
GETPATH.CBL
GLRECENT.CBL – V6.2 Only
GNJNLENT.CBL – V6.2 Only
GNJNLRG2.CBL – V6.2 Only
IM10P2.CBL - V6.2 Only
MAINTGEN.CBL
PRINT240.CBL
PRINT30.CBL

Please check if you modified any one of the source code files listed here to determine whether your modification might have a compatibility issue.

To compile these programs, you will need to have RCM, (Reusable Code Manager), installed in your system. If you are a Macola V7.0 source code developer, then you should have RCM installed on your system already. You should compile these programs using a Micro Focus V3.2 or V3.4 compiler.

Custom Modification Issues

Generally speaking, if your enhancements or custom modifications follow the standard Macola V6.0 coding standard, they should work with NWSM. That is, if your custom code will work with Macola V6.0 Windows System Manager, then it should work with NWSM.

The following are some special considerations you need to be aware of when you create custom modifications and enhancements that will run in NWSM:

- **Line Draw**: In Macola V6.0, the system will determine if the operating system is Windows; if so, the system will not perform a line draw. If your programs perform a line draw regardless of the operating system type, you must change your practice now. Change the program so that it will not draw a line with the Windows environment. You can look for an example in GNJNLMNT.CBL and ARSRVMNT.CBL for examples.

- **Do not use any DOS function calls**: DOS function calls may cause unpredictable results with Windows. Any time you have any calls inside your program that are either **call by number** or **call by name**, you should check if they are compatible with Windows. For example, making an X"83" function call in DOS is equivalent to waiting for keyboard input. However, in Windows, you need to change it to a "GK" API call. Since a "GK" API call works for both DOS and Windows, you should avoid using X"83" in your programs. Another example, "CBL_SET_CSR_POS" is a DOS (Character Based) function call that you can't use in Windows. Avoid using call by number or call by name coding methods, and use Macola API calls, as they will result in a highly compatible program with NWSM.

  In some situations, you need to write your program so that it works with V6.0 Windows System Manager in order to work with NWSM. However, generally speaking, NWSM will work with all Macola V6.0 API calls as if it were written for a DOS application.

- **Search Windows**: In DOS, it does not matter whether you open a window by using the "OW" (Open Window) or "OL"(Open List Box) API call; both ways work. However, you should use "OL" if it is a search window in NWSM because this will signal to the System layer that this is a search window and the system will enable the mouse operation for highlighting and selection. When you use "OW" for a search window, you will find your mouse operation does not work properly in the search window. As for "RW"(Remove Window) and "RL"(Remove List Box), it will work

either way regardless if the program used “OW” or “OL” previously when opening the window.

One thing you should be aware of is the bottom message: In a typical search window, based on Macola V6.0 coding standards, you will typically call the paragraph START-SELECTION-MESSAGE to display the Page up and Page down message at the bottom of the search window. The following is how the code looks in the GENSRCH.PL file:

```
START-SELECTION-MESSAGE.
unixa       PERFORM GET-OS.
WINDOW      IF PCDOS-OS
unixa         IF UNIX
unixa           MOVE "DL,21,24,50" TO SCREEN-PARAMETERS,
unixa           MOVE "Up, Dn, PgDn, PgUp, RETURN To Select"
unixa                     TO SCREEN-LITERAL,
unixa         ELSE
                MOVE "DL,21,24,50" TO SCREEN-PARAMETERS,
                MOVE " ↑, ↓, PgDn, PgUp, RETURN To Select"
                           TO SCREEN-LITERAL,
unixa           END-IF
WINDOW      ELSE
WINDOW           MOVE "CL,21,24,50" TO SCREEN-PARAMETERS,
WINDOW           MOVE SPACES TO SCREEN-LITERAL,
WINDOW      END-IF.
            COMPUTE SCREEN-ROW = WINDOW-BOT-ROW-1 - 1.
            COMPUTE SCREEN-COLUMN = WINDOW-COLUMN + 2.
            COMPUTE SCREEN-MAXIMUM = WINDOW-WIDTH - 3.
            PERFORM DISPLAY-ROUTINE.
```

The “CL” API call signals NWSM to display the following line at the bottom of the search window automatically:

```
Up, Dn, PgDn, PgUp, RETURN To Select
```

If you wish to display a different message, then do not use the “CL” API call. Put the message you want in the SCREEN-LITERAL and use the “DL” API call instead.

- **Up and Down arrow key symbols**: In NWSM, most of the fonts do not support special symbols for up and down arrow keys. Therefore, you might see a solid rectangle at the position where you expect to see the up and down arrow key

symbols. Either you can change the font to terminal where it will support these special symbols, or you can change your programs to use “Up” and “Dn” instead of the special symbols.

- **Sequential READ operations After DELETE Operations with Btrieve:** With Btrieve databases in NWSM, it is not possible to perform a sequence of sequential READ and DELETE statements when the key of reference is on a key which allows duplicates. This is because it is not possible to reposition the Current Record Pointer (CRP) after the DELETE operation. However, this problem does not apply to Micro Focus databases. There are three examples in Macola V6.0 code that have this type of issue: GNJNLRG2.CBL, ARPRGARO.CBL and IM10P2.CBL.

- **SYSPASS.CBL**: If you modify this program for any reason, you need to be aware that when you perform a “GO”(Get Operating System) API call, you will always get a return for the MS-DOS-OS. This is because the portion of the SYSPASS.CBL code that was written for V6.0 Macola Windows System Manager will not work with NWSM. We decided not to modify SYSPASS.CBL to work for NWSM and distribute it with NWSM. This is because SYSPASS.CBL gets recompiled often when developers add a new menu choice. Modifying SYSPASS.CBL will not make NWSM highly transparent if users have a developer modifications on their system.

Special Considerations with 32-Bit

32-Bit application code does not work well with a relative path file name. That is, if you wish to open the password file, do not attempt to open the physical file name “SYPASS.DAT”. Instead, use a full path name like “M:\MACOLA\SYSPASS.DAT”. Also, the 32-bit application does not respond well to the “Change Directory” API call.

NWSM 16-bit starts up from the \NSI (startup directory) and once all NWSM DLLs and library files have been loaded, it will change its default directory to, for example, \ELLIOTT (target directory).

NWSM 32-bit starts up from the \NSI (startup directory) and it will stay at the start up directory without changing to the target directory. All files opened by the 32-bit application, including data and library files, are accessed by the full path name.

For this reason, if you have any custom modifications that open a file with a relative path, it will not work properly with NWSM 32-bit. One good example is the system password file (SYSPASS). In Macola V6.0 and V6.2, the system password file is opened with relative path “SYSPASS.DAT” and the system assumes the current path is \MACOLA and therefore does not specify a full path. This type of coding will not work

in NWSM 32-bit but 16-bit will continue to work. If you have any custom modification code with this problem, you need to first PERFORM GET-OS to determine if this is a 32-bit Windows environment. If it is a 32-bit Windows environment, you need to use a "RD" parameter to call "GETPATH". GETPATH will return the target root directory for the "SYSPASS" file. From there, you will be able to open the SYSPASS file with the correct full path. There are good examples in MAINMENU.CBL which is distributed with V6.62 and V6.67 code. Please refer to the source code for details. The following sample code is listed for your reference:

```
Build-SysPass-Path.
      Perform Get-OS.
      If MS-Windows-NT
            MOVE "RD" TO PASSING-DATA-ID
            MOVE SYSPASS TO PASSING-DATA-FILE
            PERFORM GET-PATH
            MOVE PASSING-DATA-PATH TO SYSPASS-PATH
      Else
            Move Syspass To Syspass-Path
      End-If.
```

Develop Your Own On-Line Help

With the release of NWSM 6.X.057, comes Windows on-line help when running on 32-bit O/S (for both NWSM 32 and 16-bit). If you wish to develop an application that works with NWSM and you need to develop on-line Windows help, please read this section.

In the standard Windows Help design, each help file (*.hlp) may contain multiple books. Each book can contain multiple topics. Each topic has a unique map-id. In NWSM's implementation, each field in each screen will corresponding to a unique topic to achieve context sensitive help.

Programming Requirements to Support Windows Help

If you add a new program, and want to provide Windows help for your program, you must first use the API call "SH" to tell NWSM what your help-id is. This is the standard API call in V6.0.

Which Tool Should I use?

Once this is done, you need to develop a Windows help file. A good tool to develop Windows help is RoboHELP®, which greatly speeds up the help development process. In fact, NWSM 6.X.056 and above is distributed with RoboHELP DLLs that are required to support the help file format. You may find more information about RoboHELP by visiting their web site http://www.blue-sky.com. However, if you develop your help file in standard Windows help format by using Rich Text format and the help compiler, it will work with NWSM as well.

Creating a Windows Help File

The most important thing you should know about creating Windows Help for NWSM is assigning the map-id in the help file. When you create a help file, it must have at least one book and multiple topics under that book. The first topic of that book should start with "Introduction" and you can randomly assign a map-id (numerical). You can add additional topics after the introduction if needed, otherwise, add topics for each field.

On the NWSM screen, each field has a field number associated with it. NWSM uses this as key information to find the map-id for that field. When you define each field, the map-id for each field should follow the formula of:

Map-Id(Field) = Map-Id(Introduction) + Field-No

For example, if the map-id for the introduction is 5000, the field 1 map-id should be 5001 and field 2 map-id should be 5002…etc. Once you have generated this Windows help file, place it in the \NSI\HELP directory. Do not use long file names for your help file. The name must be unique and should not conflict with any existing help files in the \NSI\HELP directory.

Change NWSMUSER.CFG File

Let's assume your program's help-id (as determined by the "SH" API call) is "CP2400" and the help file you copy to \NSI\HELP directory is "CUSTOM.HLP" with the introduction help-id of 5000. Add the following section to your NWSMUSER.CFG file

```
[Help]
CP2400=CUSTOM 5000
```

If your NWSMUSER.CFG file does not exist, create one. Refer to the NWSM.CFG file for more examples. However, do not modify the existing NWSM.CFG file.

This instruction tells NWSM that the introduction for CP2400 can be found in the help file CUSTOM.HLP file with map-id 5000. When the current help-id is CP2400 and the cursor is not at any field (i.e. at menu level, or field number), clicking on the help button, will bring up the Introduction section from help. Once you are on a field, NWSM will find the field number by looking to the left of the current field to find a text pattern like "99". Then it will add this field number to the introduction map-id to display the field level help (context sensitive help).

Animation with NWSM

- **Compiler**: You will need to compile your COBOL programs with the Merant (formerly Micro Focus) Object COBOL V3.4 compiler in order to animate for NWSM. You can also use Object COBOL V4.0 compiler if you will only plan on developing for a 32-bit environment. Cobol code compiled in INT format with V3.4 can be run in both a 16 and 32-bit environment. However INT compiled with V4.0 compiler can only be run in 32-bit environment. You can contact Merant if you need to purchase their Object COBOL V3.4 or V4.0 compiler.

- **Why Animate in NWSM?** Typically, the animation in DOS mode should produce the same result as the animation in NWSM. However, once in a while, due to the different characteristics between DOS and NWSM, or because the application code is written differently between DOS and Windows, you may need to animate in NWSM. Also, you can't animate Macola in DOS mode if you are running on a Windows 95 or above O/S. This is one reason why you might need to animate in NWSM because it will work with Windows 3.1, Windows 95 or above O/S.

- **How to Compile for Animation?** You should use the following DOS command to compile:
  With V3.4 16-bit Compiler
  ```
  XM  COBOL  XYZ.CBL,NUL,,NUL  ANIM
  ```
  With V4.0 32-bit Compiler
  ```
  COBOL XYZ.CBL,NUL,,NUL ANIM
  ```
  The system will then produce the following two files in the same directory:
  ```
  XYZ.INT
  XYZ.IDY
  ```

Please include both files in the appropriate library files. For example, if the XYZ program is part of the AR module, you may construct an ARPROGED.LBT file that contains two lines like above, then run the following command:

```
RUN LIBRARY ARPROGED.LBT
```

This will create an ARPROGED.LBR file. Copy ARPROGED.LBR to the \MACOLA\PROGRAMS or \ELLIOTT\PROGRAMS directory. It is not necessary to copy XYZ.CBL to the \MACOLA directory since the XYZ.IDY file is part of the ARPROGED.LBR. The XYZ.IDY file knows where to find the XYZ.CBL at the time of compilation. If you do not include XYZ.IDY in the library file, then you will need to copy XYZ.IDY and XYZ.CBL into the \MACOLA directory for animation.

- **How to Animate?** You can animate the above XYZ program by typing the following command at the DOS prompt from the \NSI directory (the NWSM startup directory) if you are running on Windows 95 or above:

  ```
  ANIMATEW  NWSM
  ```

  Make sure NWSM.INT exists in the \NSI directory. If you need to animate in Windows 3.1, please set up the proper icon with the above line as the command line. Please refer to the Micro Focus Object COBOL Manual for more instructions on how to use Animation tools.

- **Is There Any Behavior in NWSM That May Be Different From DOS?** One of the biggest differences that you may find when animating NWSM is when you step through statements of API calls like “DF”, “DL”, “CF”, “CL”, and it does not immediately update the screen. The system is waiting for an API call that needs keyboard input to update all pending screen changes at one time. This is done in NWSM for performance reasons. Therefore, even though you step through a statement that performs a “DF” or “DL” API call, the change may not be reflected on the screen right away. Do not be alarmed with this condition because this is an intentional design featured of NWSM. If there are no keyboard entry API calls (like “IN”, “GK”, “CN”, “MB”…etc.) for the last 50 pending screen updates, the system will update the screen upon the 50th update to the screen.

- **What if you need to change some of the system layer code?** Certain system layer code was not distributed with Macola V6.0 source code and there is no reason you need to change it. For example, SCREEN.EXE or SCREENL.EXE is replaced by NWSMSCRN.CBL in NWSM. We do not distribute the NWSMSCRN.CBL program. However, there are certain system layer programs that may have been

modified, and we may distribute these to you with a special license agreement. The following is some example code:

BIDRPT.CBL
MAINMENU.CBL
COMPNO.CBL
DEFERMNU.CBL
FILERR.CBL
PRINT30.CBL
PRINT240.CBL
SPOOL30.CBL
CALLLBR.CBL
MAINTGEN.CBL

The most likely conflict is the MAINMENU.CBL program. In NWSM, the Main Menu program has the following library files:

MAINMNU0.LBR	-	V6.0 Main Menu for NWSM
MAINMNU2.LBR	-	V6.2 Main Menu for NWSM

The main reason the Main menu has to be changed in NWSM is to support multiple sessions of NWSM on a workstation and only count them as one user. However, if you are not concerned with running multiple sessions of NWSM on each workstation, you may rename or delete the appropriate Main Menu library file from the \NSI directory to activate your modified version of the Main Menu program. This way, you do not need any special integration with NWSM.

If you want to modify some any the system layer code in NWSM, then you'll have to contact NETcellent System, Inc. for a special source code license.

You will also need to obtain a copy of RCM (Reusable Code Manager), and possibly RCM GUI or WINCOM from Reusable Technologies, Inc. If you are a Macola V7.0 COBOL source code developer, then you should have the RCM already. However, depending on the system source code that you need to modify, you may or may not need RCM GUI or WINCOM.

Execute NWSM From Search Path

It is possible to execute NWSM from a search path. That is, you do not need to startup NWSM from the \NSI directory. You may want to do so for various reasons. One example is, at NETcellent, we need to utilize this feature for developing custom modifications for various customers. For each customer's custom modification, we will

keep a different directory to store the relevant files for this custom project. This directory will contain custom modification library files, source code, INT & GNT object codes, and custom modification data. All standard programs and data will come from a search path. This way, we can effectively keep a small-sized directory for the custom project. Under the DOS environment, we will need to have the following directory in search path:

Macola Programs	-	This includes the files in \MACOLA & \MACOLA\PROGRAMS
Macola Data	-	This includes the data files in \MACOLA (SYSPASS) & \MACOLA\DATA

Develop Custom Modifications under the MS-DOS environment

Under the DOS environment, users use a batch file to start Macola. This batch file will contain the following lines:

```
SET MDATA=NULL
SET MPROG=NULL
```

The NULL value will direct the system to find data and program files from the current directory first. If it does not exist in the current directory, then the system will find it in the search path. This method works if you put Macola data and programs in the search path. You may do so by either using the PATH command, or using a login script.

This method works fine with a ISAM database, but it does not work with Btrieve in the DOS environment. To make Btrieve work, you can SET MDATA to a specific directory that contains all Btrieve data files. Alternatively, you can leave all Btrieve data files under your current directory. Therefore, the preferred database for modifications is Micro Focus ISAM database. It is possible to execute the DOS application for Elliott/Macola from an empty startup directory in DOS with Micro Focus Data. If you need to use Btrieve, then all Btrieve data files need to be in the current directory, or in the directory you specify with the MDATA environment variable.

Develop Custom Modifications in a Windows Environment

With NWSM, you can start from a directory with only a few files:

For 32-bit Execution:

```
NSI.CFG
NWSM.CFG
NW32.EXE
```

NW32.SF
NW32.LBR
NW32USRS.EXE
NWSMUSRS.LBR
GUILIB32.DLL
GUIUTL32.LBR
NW32BMP.DLL
ELI32BMP.DLL
MFRTS32.DLL
MFINTERP.DLL
COB32API.DLL
COB32ENV.DLL
MFRTNS32.DLL
MFRTSCAL.DLL
PAN2NT.DLL

You may move all *.DLL files to either the C:\WINDOWS or the C:\WINDOWS\SYSTEM directory to further minimize the size of this directory. If you will be using a Btrieve database, you will either install Btrieve components into this directory, or install to your C:\WINDOWS\SYSTEM directory by installing Btrieve client. If you need to animate from this directory, make sure to copy the following file to this directory.

NWSM.INT

For 16-bit Execution:

NSI.CFG
NWSM.CFG
NWSM1.EXE
NWSM.LBR
NWSM.SF
NWSMUSRS.EXE
NWSMUSRS.LBR
NWSMBMP.DLL
ELIBMP.DLL
GUILIB.DLL
GUIUTIL.LBR
REGMAC6.DLW
REGIST66.DAT
SETPPTR.DLL
MFTXTWIN.DLL
CBLWIN.DLL

CBLSSEG.DLL
PAN2WIN.DLL
PCINST.DLL
MSVCRT20 DLL
MFSCREEN.DLL
_SORT.DLW
CBLWIN31.DLW
COBENV.DLW
COBFP87.DLW
COBLIB.DLW
MFEXTMAP.DLW
_BTRV.DLW

If you need to use a Btrieve Database, then you should install your 16-Bit Btrieve Client Components to the C:\WINDOWS\SYSTEM directory.

You should set up the NSI.CFG file in the startup directory like the following:

```
[Path]
Mdrive=
Mroot=
Mprog=C:\NSI;C:\MACOLA;C:\MACOLA\PROGRAMS
Mdata=C:\NSI.PJT\TEST;C:\MACOLA;C:\MACOLA\DATA
Mhelp=C:\MACOLA\HELP
```

This will achieve the same result as DOS by setting environment variables for MPROG and MDATA to point to the directories where programs and data can be found. In this case, NSI.CFG file is under your project directory and you start up NWSM from your project directory.

If you are using NWSMUSER.CFG file, you should also place it in your project directory. As you execute NWSM, the system will find library and data files from the startup directory first. If it can't find them, it will try from the search path in the MDATA and MPROG by the priority sequence.

With the ability to execute NWSM from a search path, you will be able to keep your project directory down to a minimum and effectively manage your custom modifications.

New API Call

AP: Get SMA Values

This API returns various values from the Shared Memory Area. For example:

```
Move 'AP' To Screen-Parameters
Move 'EDITOR' To Screen-Literal
Perform Screen-Routine
```

This returns the user's preferred Editor in Screen-Alpha-Field.

The following values can be obtained with this API:

```
AUTOSKIP
DOS-USER-ID
EDITOR
LOGIN-DATE
LOGIN-TIME
LOG-PATH
HELP-PATH
MACRO-PATH
MAX-USERS
MANIFEST
MCMD
MDATA
MDRIVE
MHELP
MPROG
MROOT
MSYSTEM
NSI-CFG-PATH
NWSM-CFG-PATH
NWSMUSER-CFG-PATH
NWSM-MAX-USERS
PROCESS-EVENTS
REG-ADDR-1
REG-ADDR-2
REG-ADDR-3
REG-COBOL-DEVELOPER
REG-ELLIOTT
REG-LIC-NO
REG-NAME
ROOT-DIR
SHUTDOWN-FLAG
STARTUP-PATH
SUPPORT-SEGMENTED-KEYS
SYSTEM-VERSION
USE-ED
USER-FONT
VERSION
WAVE-PATH
```

```
WIN-USER-ID
WIN-VERSION
```

BT: Bar Text

This API call will set the left text area of the status bar to a Screen-Literal value. For example:

```
Move "BT" To Screen-Parameters.
Move "Hello" To Screen-Literal.
Perform Screen-Routine.
```

This will result in "Hello" being displayed on the left side of the status bar. To clear it, repeat the example above and move spaces to the screen-literal. Since this API only works for NWSM, you should check for the OS type in your program and only do so if you are running under the MS-WINDOWS-OS.

SH: Set Help

This is not a new API call. However, more options have been provided to this API. Traditionally, you can set the help Id by using the following:

```
Move "SH,02" To Screen-Parameters.
Move "ARCUSMNT" To Screen-Alpha-Field.
Perform Screen-Routine.
```

You now have a "PUSH" or "POP" options to construct a Help Id stack with maximum 20 deep. For example, in the beginning of your COBOL ARCUSGEN program, put the following lines:

```
Move "SH,02,PUSH" To Screen-Parameters.
Move "ARCUSGEN" To Screen-Alpha-Field.
Perform Screen-Routine.
```

Before exiting the COBOL program, add the following lines:

```
Move "SH,02,POP" To Screen-Parameters.
Perform Screen-Routine.
```

The screen help id will point to "ARCUSGEN" as soon as you do a "PUSH" operation, and will restore back to "ARCUSMNT" as soon as you exit "ARCUSGEN" program.

This API will only work in window environment and will be ignored by V6.62 and V6.72 program (version released after 3/30/00). The purpose of this API is to provide Windows Help for all programs in Elliott, not just the program that is accessible from the menu.

WV: Play A Wave File

This API call will play a wave file to give special sound effects that you might want to produce. For example:

```
Move  "WV" To  Screen-Parameters.
Move  "BLIP.WAV" To Screen-Alpha-Field.
Perform Screen-Routine.
```

The Wave file should be in the WAVE subdirectory of the NWSM startup directory (i.e. \NSI\WAVE).

EM: E-Mail

This is a set of API calls introduced after NWSM 6.X.060. Use them collectively. They will send out E-mails through MAPI interface. Developers who use these API calls do not need to know how MAPI works. The following are the options that you can use with these API calls:

Screen-Parameters	Required/ Optional	Comment

EM,BG,nn	Required	Begin Email Process
		• This is a required first call to begin the process of sending a message or using the Address Book. It logs on to the mail system. If the mail system is already connected, it uses that connection.
		• Screen-Column = nn (99 means Quiet mode)
		• Screen-Literal
		  ○ Input
		  Profile Name (opt). If a Profile Name is not supplied, Ini-Prompt-for-Profile is checked to see whether to prompt the user to select a profile or automatically use the system default MAPI profile.

		○ Output If the login fails, this will contain an error message. • Screen-Alpha-Field = Profile Password (opt) • Screen Numeric Field ○ Input ParentWindow handle (opt) ○ Output If the login fails, this will contain an error code that matches the error message in the Screen-Literal. • Screen Answer ○ Input "Y" = Display Status Messages on the Parent window's status Bar if supplied in Screen-Numeric-Field, or on the main NWSM StatusBar if not supplied (opt). ○ Output "Y" = MAPI is supported and the logon was successful. "N" = MAPI is not supported or the logon was not successful. • Screen-Column = '99' signifies Quiet Mode (opt). Error messages are suppressed and the default profile is automatically used if one is not specified.
EM,IN	Optional	Interactive Mode • Screen-Answer = "Y" = Interact with the Email application to send the message. • Screen-Answer = "N" = Send message in background mode.
EM,RR	Optional	Return Receipt Requested • Screen-Answer = "Y" = Request a return receipt. • Screen-Answer = "N" = Do not request receipt..
EM,CA	Optional	Clear Address Clear any address sent so far. This is automatically done when a 'BG' call is made.
EM,MA	Optional	Maximum Number of Addresses • The default is 100 if this API is not sent • Screen-Numeric-Field = Total Number of Addresses for TO, CC and BC. • Value under 100 will be ignored

		• This call can only be sent once and must proceed any other address call (TO, CC, BC).
EM,TO	Required	To Address or Name • Screen-Literal = Recipient Name or Address • Menu-Control = Address ID returned from GA or RN call • Screen-Numeric-Field = Length of Address ID • At least one E-mail address is required • You can execute this API call multiple times to send to multiple recipients. This is subject to the maximum E-mail addresses allowed. The default is 100.
EM,CC	Optional	Carbon Copy (CC) Address or Name • Screen-Literal = CC Recipient Name or Address • Menu-Control = Address ID returned from GA or RN call • Screen-Numeric-Field = Length of Address ID • You can execute this API call multiple times. It is subject to the maximum E-mail addresses allowed.
EM,BC	Optional	Blind Carbon Copy(BCC) Address or Name • Screen-Literal = BCC Recipient Name or Address • Menu-Control = Address ID returned from GA or RN call • Screen-Numeric-Field = Length of Address ID • You execute this API call multiple times. It is subject to the maximum E-mail addresses allowed.
EM,RN	Optional	Resolve Name • It is used to resolve a possibly ambiguous name • Input Screen-Literal = recipient name Screen-Numeric-Field = optional window handle of calling program • Output Screen-Literal = resolved name Menu-Control = Address ID from AddressBook Screen-Numeric-Field = Length of Address ID
EM,AD	Optional	Show Address Book • The API call the address book facility to change the address • Input

		Screen-Literal = Optional caption for the address dialog. • Output Screen-Numeric-Field = Total number of addresses • After this API, use the EM,GA API repeatedly until you have processed all the addresses the user selected.
EM,GA	Optional	Get Address • This API gets the next address returned from the address book facility. • Output Screen-Answer = "Y" means an addressee was returned. "N" means no addressee returned. Screen-Literal = Addressee name Screen-Alpha-Field = 'FR' means a "From" name returned. 'TO' means a "To" name returned. "CC" means a "CC" name returned. "BC" means a "BCC" name returned. Menu-Control = Address ID from AddressBook Screen-Numeric-Field = Length of Address ID
EM,SB	Optional	Subject • Screen-Literal = Subject
EM,AT	Optional	Attached File • Screen-Alpha-Field = Complete Path and File Name **Note that the path is required and the attached file must exist. • Screen-Function-Values = Visible filename (opt) If this area is used, the name of the file which will be visible to the recipient will be the value here followed by .TXT. • May be called up to 100 times per E-mail
EM,TX	Optional	Text Content of the Body of The E-mail • Screen-Area = Text Line • Screen-Area is a 160 bytes area with Screen-Literal make up the first 80 bytes and Screen-Alpha-Field make up the last 80 bytes • Screen-Numeric-Field = number of characters in the line to include. If Screen-Numeric-Field = Zeroes and Screen-Area is blank, a new-line

		character (X"0a") will be provided. • You may call this API multiple times to construct a multi-line E-mail body. • The message body can't exceed 1 MB.
EM,AB	Optional	Abort the E-mail • Abort constructing the current E-mail. The System will release all resources allocated for the current E-mail that is being constructed. • The message and all its characteristics are ignored. • Use only after a successful "EM,BG". You do not need to use this API if "EM,BG" was not executed successfully.
EM,SE	Required	Send E-mail Message • Returns 'Y' in Screen-Answer if the message was successful. Receiving 'Y' does not guarantee the E-mail is sent. It simply indicates that MAPI has accepted the E-mail, (i.e. E-mails may not sent because MAPI may not be able to connect to E-mail transport server). • Return 'N' in Screen-Answer if the message was not successful o Screen-Numeric-Field will contain an error code o Screen-Literal will contain an error message.
EM,EX	Required	Exit E-Mail and Disconnect from E-mail Services • This does a logoff from the mail system. • This is automatically called by NWSMSCRN at shutdown. • Follow this call with Cancel "NWSMMAPI". • Since the login process may be time consuming in certain environments, you may not want to call this API until all E-mails are sent.

Example:

```
MOVE "EM,BG" TO SCREEN-PARAMETERS.
PERFORM SCREEN-ROUTINE.
IF SCREEN-ANSWER = "N"
      PERFORM NO-MAPI-SUPPORT-MSG
      EXIT PARAGRAPH
END-IF.
```

```
MOVE "EM,TO" TO SCREEN-PARAMETERS.
MOVE "sales@netcellent.com" TO SCREEN-ALPHA-FIELD.
PERFORM SCREEN-ROUTINE.

MOVE "EM,SB" TO SCREEN-PARAMETERS.
MOVE "Sales Promotion" TO SCREEN-LITERAL.
PERFORM SCREEN-ROUTINE.

MOVE "EM,TX" TO SCREEN-PARAMETERS.
MOVE "Dear Business Partner:" TO SCREEN-AREA.
PERFORM SCREEN-ROUTINE.

MOVE "EM,TX" TO SCREEN-PARAMETERS.
MOVE "There's a sales promotion going on at NETcellent."
      TO SCREEN-AREA.
PERFORM SCREEN-ROUTINE.

MOVE "EM,SE" TO SCREEN-PARAMETERS.
PERFORM SCREEN-ROUTINE.
IF SCREEN-ANSWER = "Y"
      PERFORM MESSAGE-SENT
ELSE
      PERFORM MESSAGE-NOT-SENT
END-IF.
```

If you need more examples of source code, please contact NETcellent. "NWSMMAIL.CBL" can be provided for NETcellent's developer with more detail to show you how to construct your own E-mail program.

Error Handling

Any Invalid E-mail API calls will result in a message box on the screen and 'N' in SCREEN-ANSWER field. However, the process will continue. For example, specifying too many recipients will result in a message box being displayed, but the message may still be sent with the EM,SE call.

Depending on your situation, it might by desirable for you to write your code to check if SCREEN-ANWSER is equal 'N' to determine if the situation needs special handling by the code.

Setting E-Mail Values While Printing

It is possible to manipulate the values of an e-mail message during the process of sending print lines to the output file, assuming that the output is destined for an e-mail message.

To change an e-mail value, do the following:

- Add the following COPY statements to your program:

```
Copy SetEmail.WS.
Copy SetEmail.PL.
```

- MOVE a value type as follows TO DETAIL-LINE:

TO	A primary recipient
CC	A carbon copy recipient
BC	A blind carbon copy recipient
SB	The subject line
TX	A line of text in the message body

- MOVE the value itself TO DETAIL-LINE(4:)

- PERFORM SET-EMAIL-OPTION

Notes

1. You may specify as many TO, CC, and BC values as you wish.
2. The presence of any TO, CC. or BC value means that all the original recipients will be replaced by the new recipient(s).
3. You may specify as many TX values as you wish. Each value will be followed by a CR/LF.
4. The presence of any TX value means that all the original text in the message body will be replaced by the new text.
5. The SET-EMAIL-OPTION paragraph will MOVE SPACES TO DETAIL-LINE after calling PRINT30 or PRINT240.
6. If the user specifies output should go to the printer or to disk, these COBOL statements will be ignored.

EV: Event Handling

This is a set of API calls introduced after NWSM 6.X.060 for 32-bit only. They provide the ability to register and trigger events that can cause subsequent actions to take place

automatically (e.g., a receipt triggering an e-mail). SCREEN.WS and SCREENL.WS were modified to redefine SCREEN-AREA with EVENT-AREA, where event parameters can be passed.

In order for event handling to take place, it must be enabled in your registration file and turned on in your NSI control file.

The following are the options that you can use with these API calls:

Screen-Parameters	Required/ Optional	Comment
EV,BG	Required	Begin event handling. • This is a required first call to begin the process of registering and triggering events. • This call is automatically taken care of whenever the Company number is set in NWSM.
EV,RE,01	Required	Registers an event. • Event-Program = the calling program id • Event-Type = the event type • Event-Detail-File = the file this event is for (opt) • Event-Desc-or-Ref = the event description • Event-Detail-ID(1) = Name of 1st variable (opt) • Event-Detail-ID(2) = Name of 2nd variable (opt) • Event-Detail-ID(3) = Name of 3rd variable (opt) • Event-Detail-ID(4) = Name of 4th variable (opt) • Event-Detail-ID(5) = Name of 5th variable (opt)
EV,RE,02	Optional	Specifies additional variable names • Event-Detail-ID(1) = Name of 6th variable (opt) • Event-Detail-ID(2) = Name of 7th variable (opt) • Event-Detail-ID(3) = Name of 8th variable (opt) • Event-Detail-ID(4) = Name of 9th variable (opt)

		• Event-Detail-ID(5) = Name of 10th variable (opt)
EV,TR	Optional	Triggers a generic event (one with no parameters) • Event-Program = the calling program id • Event-Type = the event type • Event-Detail-File = the file this event is for (opt) • Event-Desc-or-Ref = the file reference On output, Screen-Parameters is formatted as && <program> <type> as defensive coding; see Notes, below.
EV,TR,nn,mm,tt	Optional	Triggers an event with a passed variable. • Event-Program = the calling program id • Event-Type = the event type • Event-Detail-File = the file this event is for (opt) • Event-Desc-or-Ref = the file reference • Screen-Alpha-Field or Screen-Numeric-Field = the passed variable o nn indicates the variable number o mm indicates the maximum display length o tt indicates the normal Screen-Types for formatting the variable.
EV,TR,99	Optional	Signals that the triggered event is complete. This must follow any EV,TR,nn,mm,tt calls. On output, Screen-Parameters is formatted as && <program> <type> as defensive coding; see Notes, below.
EV,PR	Optional	Begins processing queued events. This happens automatically, whenever the 'SH' call (to set the Help-Id) is processed. It also may be called explicitly, for example, at the end of the Closing-Procedure in a program, to make sure queued requests are processed immediately.
EV,R*	Optional	Reprocesses all or specific queued requests that previously terminated with an error. • Screen-Literal = a specific WorkStation or blank, meaning all WorkStations • Screen-Alpha = 'E' for E-mail events, 'T' for

		Tickler events, 'C' for all COBOL programs, 'C:*progname* for a specific COBOL program, or blank for all events.
EV,EX	Required	Terminates event handling in an application. • This is a required last call. • This call is automatically taken care of whenever the Company number is set in NWSM..

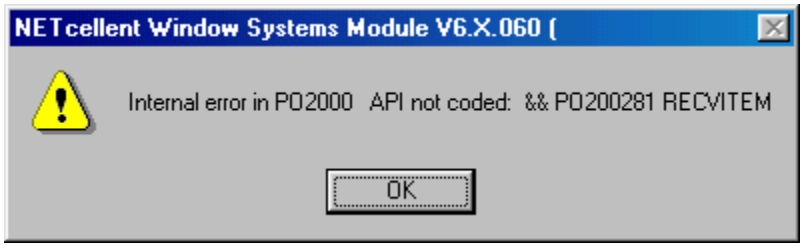
Example:

```
Register-Receipt-Event.
    Move 'EV,RE,01'             To Screen-Control
    Move 'PO2002'               To Event-Program
    Move 'RECVITEM'             To Event-Type
    Move 'Receive Item'         To Event-Desc-or-Ref
    Move 'Item'                 To Event-Literal(1)
    Move 'Desc 1'               To Event-Literal(2)
    Move 'Desc 2'               To Event-Literal(3)
    Move 'Qty Received'         To Event-Literal(4)
    Move 'Qty on Hand'          To Event-Literal(5)
    Perform Screen-Routine

    Move 'EV,RE,02'             To Screen-Parameters
    Move 'Location'             To Event-Literal(1)
    Move 'Allocated'            To Event-Literal(2)
    Move 'Back Ordered'         To Event-Literal(3)
    Perform Screen-Routine
    .

Trigger-Receipt-Event.
    Move 'EV,TR,01'             To Screen-Control
    Move 'PO2002'               To Event-Program
    Move 'RECVITEM'             To Event-Type
    Move Item-No                To Event-Desc-or-Ref
    Move Item-No                To Screen-Alpha-Field
    Perform Screen-Routine

    Move 'EV,TR,02,30,L'        To Screen-Parameters
    Move Item-Description-1     To Screen-Alpha-Field
    Perform Screen-Routine

    Move 'EV,TR,03,30,L'        To Screen-Parameters
    Move Item-Description-2     To Screen-Alpha-Field
    Perform Screen-Routine
```

```
Move 'EV,TR,04,13,3-'       To Screen-Parameters
Move Rec-Trx-Qty-Received   To Screen-Numeric-Field
Perform Screen-Routine

Move 'EV,TR,05,13,3-'       To Screen-Parameters
If  Item-Mfging-Location = Rec-Trx-Location
    Move Item-Quantity-On-Hand
                            To Screen-Numeric-Field
Else
    Move Inv-Loc-Qty-On-Hand
                            To Screen-Numeric-Field
End-If
Perform Screen-Routine

Move 'EV,TR,06,13,3-'       To Screen-Parameters
If  Item-Mfging-Location = Rec-Trx-Location
    Move Item-Quantity-Allocated
                            To Screen-Numeric-Field
Else
    Move Inv-Loc-Qty-Allocated
                            To Screen-Numeric-Field
End-If
Perform Screen-Routine

Move 'EV,TR,07,02,A'        To Screen-Parameters
Move Rec-Trx-Location       To Screen-Alpha-Field
Perform Screen-Routine

Move 'EV,TR,08,13,3-'       To Screen-Parameters
If  Item-Mfging-Location = Rec-Trx-Location
    Move Item-Qty-BO        To Screen-Numeric-Field
Else
    Move Inv-Loc-Qty-BackOrdered
                            To Screen-Numeric-Field
End-If
Perform Screen-Routine

Move 'EV,TR,99'             To Screen-Control
Perform Screen-Routine
.
```

Notes

When an event triggering is complete, the Screen-Parameters area is set as described above, as defensive coding. If the program does not update Screen-Parameters before performing the next Screen-Routine, a message similar to the following will occur:



This is an indication to the programmer that the API for triggering the event is in the middle of a loop where Screen-Parameters is not updated each time Screen-Routine is performed.

Performance Considerations

Event processing presents very powerful capabilities, but it also can use significant resources. One can easily imagine a typical Elliott session automatically generating hundreds of events. Great care has been taken to minimize the performance impact of these events. In particular, extensive caching of different kinds is used:

- Registration events are cached on an as-needed basis.
- Generic trigger requests are cached in their entirety when the event handler first loads. This means the generic trigger requests added after startup will not be recognized until the next startup or company change.
- Specific trigger events are cached on a read-ahead basis as each Program/Type combination is first encountered, unless the number of outstanding requests for a particular Program/Type combination (e.g., PO2000/RECVITEM) exceeds the caching limit, set in NSI.CFG:

  ```
  [Configuration]
  Event-Cache-Max=100
  ```

  It may be necessary to adjust this number, which defaults to 100, to maximize performance.
- See Event Logging in the **Debugging** section below to track activity and timing of event handling.

Debugging

Event logging can be specified for a particular user by adding the following entry in NSI.INI:

```
[Debug]
Log-Events=Yes
```

This produces a file, LOGEVENT.LOG in the log directory, showing the details of event registering, triggering and queuing during an Elliott session, as well as the total number of seconds spent in event processing code.

Normally, the event processing window is visible for a very short time. It is possible to have this window stay visible longer by adding the following entry in NSI.INI:

```
[Debug]
Events-Delay=nn
```

Where *nn* is a number of seconds from 1 to 99.

This keeps the event processing window on the screen for the specified number of seconds.

File Handling

NWSM supports both Micro Focus ISAM and Pervasive Btrieve Databases. The following are some issues you should be aware of:

TTS Support

TTS stand for Transaction Tracking System. It is a terminology used on Novell Netware® server. TTS allow multiple updates to either all go through successfully, or not go through at all if any one of the updates fail. This process of the operation can be broken down into three steps:

```
Start Transaction
Updates
End Transaction/Abort Transaction
```

Once the transaction is started, server will keep a roll back copy for each one of the update operations. If all updates are successful, then application will issue an “End Transaction” to signal the server that all updates were successful. The server will release the roll back copy and make the update final. If for any reason the update fails, the application will issue an “Abort Transaction” command. Sometimes, after logging in to

the system, it will get a roll back copy and restore the system to the status right before the "Start Transaction" operation.

TTS support is important for Elliott/NWSM posting functions. If you turn on TTS, then during the posting process, the system (file handler) will not lock files exclusively. The protection provided by TTS would make this unnecessary. This will allow on-line posting which is a great improvement from either overnight posting, or having all users logout when you post.

Netware supports TTS by flagging the file attribute as transactional. From that point on, all updates to that file will be saved with a roll back copy. Once you have completed all the necessary updates in a transaction, you can flag that file as normal mode which will release the roll back and make the update final. For example:

```
FLAG ARCUSFIL.DAT T
Updates
FLAG ARCUSFIL.DAT N
```

This is one reason why in your V6.X code, you will need to provide all the files that is a part of the transaction. This is how V6.X DOS support transaction for Micro Focus ISAM file.

Btrieve has its own transaction support. With a Btrieve database, you do not need to declare the files in a transaction set. From the point you declare "Start Transaction", the system automatically keeps a roll back copy for all updates for that connection. Once you declare "End Transaction", the system will make the update final and release the roll back copy. However, you can't open or close a file during a transaction set.

One of the issues you should be aware of is a transaction set should not be too large. If you have thousands of records that need to be updated in a single transaction set, you should consider redesigning your program. The backing of roll back data usually will work well if the number of updates is in the hundred range. However, as the transactions become larger, the roll back operation becomes very inefficient and may eventually crash your server when all resources are depleted. The following are few examples:

G/L Year End Closing
I/M Physical Count Posting
COP Invoice with thousands of serial number on one invoice
I/M or P/O transaction with thousands of serial number on one transaction

By design, these operations cannot be further subdivided into smaller operation. However, if you have a custom program performing posting of orders, you should start the transaction at the beginning of each order and end the transaction once an order is

posted. The wrong way of writing your code would be to start the transaction with the opening procedure and ending the transaction with the closing procedure.

NWSM started to support TTS beginning with V6.X.050. NWSM only support TTS for **Btrieve** databases.

Number of Open Files:

NWSM can support up to 50 Btrieve files open simultaneously and there is no limitation with Micro Focus ISAM files. However, your O/S may have a limitation on the number of files you can open. You should be aware that the DOS System Manger only allows 30 Btrieve files open simultaneously. If your application code needs to run in both Windows and DOS, then you should limit your program to open no more than 30 files.

Support Additional Keys:

If you decide to introduce a new key to a file, you can do so without recompiling all programs that need to access this file. This is true of Btrieve databases only. For example, if you decide that you need to add a key to the customer file zip code field, all you have to do is the following:

1. Modify ARCUSFIL.SL to indicate Customer-Zip-Code is a key file with Duplicate values.
2. Recompile ARFILES.CBL and build the new ARPROGED.LBR file.
3. Install ARPROGED.LBR file and initialize A/R Customer File. (If you need to keep the original data, you can export the ARCUSFIL file 1st and import it after initializing ARCUSFIL.)

Now the customer file has the new index for Customer-Zip-Code. Even though you did not recompile the ARCUSMNT.CBL program, you still will be able to maintain the customer record.

Segmented Keys

NWSM supports segmented keys in Btrieve which is required for supporting ODBC. All Elliott databases do not use segmented keys by default. However, if you need to use other tools to access Elliott Btrieve files, it is very likely you need to use a Btrieve database and the keys for each data file must be segmented as defined in the DDF. Otherwise, your tools may not produce the right results. This is especially true with ODBC type applications.

All new Btrieve data files created by Elliott V6.6/V6.7 DOS will be in a non-segmented key format. To convert non-segmented key Btrieve data files to segmented key format, you need to use the SQL2BTR.EXE utility provided by Macola or NETcellent. Make sure *.DDF files (can be found in \ELLIOTT\DDF directory) have been copied to the DATA directory. By placing the SQL2BTR.EXE program under your \ELLIOTT directory, execute the following commands for conversion:

```
BLOAD
SQL2BTR  DATA
```

This will convert your DATA directory files from non-segmented key format to segmented keys. Once the file is in segmented key format, NWSM will support it for all I-O, Input and Output operations. Therefore, the only time you ever need to use the SQL2BTR utility is when you use DOS to create a new company.

With NWSM, the system can create new files in segmented key format. You need to make sure to check the flag "Support Segmented Keys Through DDF" at configuration time (NWCONFIG.EXE). You can only enable this flag if the system can find DDF files in the \ELLIOTT\DDF directory (or whatever your root directory \DDF sub-directory is.) If you wish to place DDFs in a different directory, you can also put the following line in your NSI.CFG file:

```
[Path]
Mddf=path-name
```

To support ODBC, depending on your application, you may also need to copy DDFs to your data directory. Your best approach will be to turn on Segmented Key Support and initialize data files only in NWSM.

Non-Supported Operations

Not all operations supported by Micro Focus file handlers are supported by NWSM Btrieve file handlers. For example, if you have the following line in your COBOL code:

```
DELETE FILE …
```

Then you will receive the following message:

```
File Operation Not Implemented, Oper=0008
```

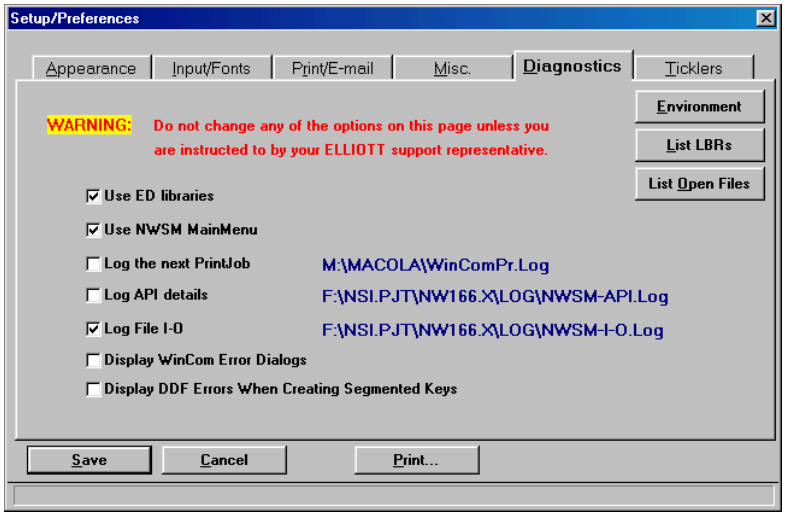
In the DOS environment, the Btrieve file handler will simply ignore this line of code and will not do anything. In NWSM, the system will give you the above warning message and you can continue with your operation.

The best suggestion for you is to avoid using any file operation that is not supported by the NWSM Btrieve file handler. If you wish to delete a file, you can use the COBOL call by reference function call, “CBL_DELETE_FILE” to delete a file and achieve the same result.

Chapter 13 Problem Diagnosis

Diagnostic Tools

The diagnostic tools can be found under the "Setup Preference" tool button (or Ctrl -S) by choosing the "Diagnostics" tab. The following is how the screen looks:



List Open LBRs

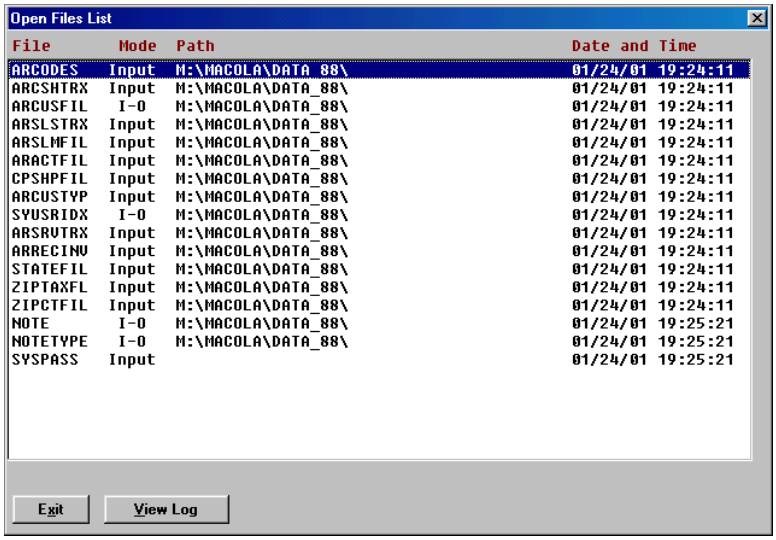
Clicking on this button, or pressing **Ctrl-L,** on any screen will display a window that lists all currently open library files with the path, date, time and size. This is helpful to answer the following questions:

- Are users running an older version of NWSM?
- Are users running other developers' ED library files?

List Open Files

Clicking this button or pressing **Ctrl-O** on any screen will display a window to list all currently open data files, with the open mode, path and open date and time. This can be used to get an overview of which files are being used.

Additionally, if I-O logging is being done, double-clicking on any file will list the current logging information for that file only.



Use ED Libraries

If there are problems running NWSM and users are running other developers' ED library files, try to turn off the ED library files to determine if the cause of the problem is from the ED library files. To do so, you need to uncheck the ED library files flag and then exit out of NWSM. Once you start NWSM again your ED library files are off and you can test to see if the problem you experienced still happens.

Use NWSM Main Menu

The main menu program controls the user count. With the original Macola main menu program, each Macola session was counted as one user. With the NWSM main menu, each workstation is counted as 1 user regardless of the number of Macola sessions on that workstation. However, if your developer modified the Main Menu program, it is possible that you need to turn off the NWSM main menu in order to retain the original functionality. Doing so will cause the counting of each Macola session as one user (because you will be running Macola's original logic). Alternatively, you can ask your developer to modify their main menu program to conform to NWSM standards.

Log the Next Print Job

Sometimes, your printing output format may be incorrect. It is most likely caused by a printer driver problem. You should download the most current driver from your printer manufacturer's website. If after downloading the latest driver the problem still exists, our support representatives may instruct you to turn on this flag to create a printing log file for diagnostic purposes.

Log API details:

Turning on this switch will cause all Screen API calls to be logged in the "NWSM-API.Log" file. Once this flag is turned on, you can press **Ctrl-P** from any screen to see the API Log. If you place your mouse on the log file name in the diagnostic screen and click the right mouse button, you will also be able to see the API Log.

It is not recommended that you turn on this switch unless our support representatives ask you to do so. You should always turn it off immediately after the necessary log information has been created. Never allow two users to turn on this flag at the same time.

Log File I-O:

Turning on this switch will cause all File I/O operations to be logged in the "NWSM-I-O.Log" file. Once this flag is turned on, users can press **Ctrl-F** in any screen to see the File I-O Log. If you place your mouse on the log file name in the diagnostic screen and click the right mouse button, you will also be able to see the File I-O Log.

It is not recommended that you turn on this switch unless our support representatives ask you to do so. You should always turn it off immediately after the necessary log information has been created. Never allow two users to turn on this flag at the same time.

Display WinCom Error Dialogs

NWSM utilizes a product called WinCom to perform certain Windows functions like printing, memory management, application execution control, etc. In the execution of certain WinCom functions, it is expected to have some types of errors. Such errors can be ignored, and the system by default will suppress these errors so it will not confuse users. However, there are certain errors that may be fatal and it is important that they are reported so we can make proper diagnoses.

It is not recommended that you turn on this switch unless our support representatives ask you to do so. You should always turn it off immediately after the necessary log information has been created.

Environment

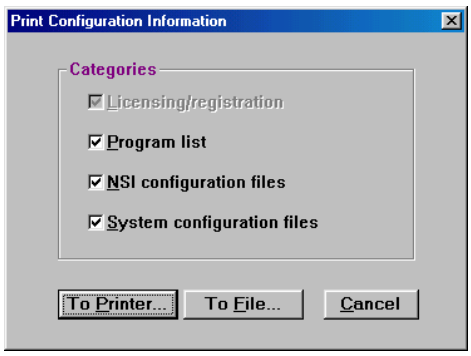
Clicking on this button will display a Windows which gives you information about your current environment. This includes the following information:

Licensing Information
Con-Current Users Information
Software Version
Directory Configuration

This a good tool to identify your environment without needing to go to many different places to find out the information:

Printing of Diagnostic Information

Sometimes your system does not work correctly. Your support representative may ask you to print out the diagnostic information and ask you to fax it for further analysis. You may access this printing function by going to "Setup Preference" and choose the "Print" button at the button of the screen.



Most Frequently Encountered Problems

Why do I get GPF Errors? You may get GPF (General Protection Fault) errors in various different forms. Sometimes, the system may give you a COBOL runtime error 114. Or, the system may come up with a message like "NWSM1 caused a general

protection fault…". GPF errors may be inconsistent. Occasionally on certain workstations, NWSM will not even start up because of a GPF error In most of the situations, GPF errors are related to the 16-bit application. It rarely happens in 32-bit applications. This is simply because the 16-bit application uses memory in 64K blocks at a time and the stack may overflow with limited memory space. With 32-bit, there is no such limitation and thus, it is much less likely to have GPF error. The following are some suggested solutions to follow when you encounter GPF errors:

	Symptom	Solutions
NWSM 16-bit vs. 32-bit	NWSM 16-bit is more likely to encounter GPF errors than NWSM 32-bit	You should use NWSM 32-bit if you can. However, NWSM 32-bit does not support Macola V6.2. If you have to use NWSM 16-bit, you can increase your stack size for Micro Focus Runtime by putting the following line in your C:\AUTOEXEC.BAT file: `SET COBSW=-F0/S15000+P3` This line will increase the Micro Focus stack size from the default 8,000 to 15,000 bytes. You can further increase the stack size if necessary. However, do not set the stack size over 32,000 bytes.

Btrieve 16-bit vs. 32-bit	Btrieve 16-bit is more likely to encounter GPF errors than Btrieve 32-bit	If you have to use NWSM 16-bit, you may want to use the "Thunk=Yes" option with Btrieve settings to force the NWSM 16-bit application to use 32-bit Btrieve. You can turn on thunking either in NSI.CFG (global) or NSI.INI(local) files. Local settings override global settings. Set the following section in the NSI.CFG or NSI.INI file to enable thunking for 16-bit NWSM:
		`[Btrieve]`
		`Local=No`
		`Requester=No`
		`Thunk=Yes`
		Whether you can actually use the Local or the Requester engine is determined by the registry. Please use the 32-bit setup utility provided by Pervasive to setup the Local or Requester flag. (You should use Requester if possible when running on a network).

Btrieve V6.15 vs. P.SQL	P.SQL 7 or P.SQL 2000 is more likely to create GPF than	When running in NWSM 16-bit, if you encounter GPF with P.SQL7, you may be able to avoid it by using Btrieve V6.15 client which is

	Btrieve V6.15	distributed with NWSM. Btrieve V6.15 client will work with the P.SQL 7 or 2000 engine on the server. To accomplish this, rename or delete the WBTRCALL.DLL in the C:\WINDOWS\SYSTEM directory. This will prevent the system from loading the P.SQL driver and instead load the V6.15 Btrieve driver in the \NSI directory. If you do not see the Pervasive splash screen as you start NWSM, then most likely you are loading V6.15 Btrieve.

Why do I get an extra page at the end of my print job? – Most of the time, this problem is caused by your network client/printer setup. You can confirm this problem by sending the same print job to your local printer. If there is no extra page does not on your local printer, then it is certainly a network setting problem. The solution will depend on your network type and client:

- If you are using **Novell network with Novell Client**: You need to right click "Network Neighborhood" on your desktop and choose "Properties". Under the configuration tab, choose "Novell Netware Client" and click the "Properties" button. On the Default Capture tab, uncheck the "Form Feed" box. If you have previously captured any printer port, un-capture them and then recapture them.
- If you are using **Microsoft for Novell client**, or **client for Microsoft network**, then the form feed is determined at the printer level. Go to "Start" -> "Settings" -> "Printers". Right click the printer need to be changed. Choose "Properties" and on "Printer Settings" tab, uncheck the "Form Feed" box.

Why is printing to a dot-matrix printer is slow? – NWSM uses a Windows printer driver to print to dot-matrix printers. In many cases, it prints to a dot-matrix printer in graphic mode. As a result, it slows down printing significantly. The easiest way to solve this problem is to use the "Raw Data Pass Through" method, By choosing a font from 01 – 98 from the Print Option Window. You will then see the printer name become a printer port such as LPT1. When you use "Raw Data Pass Through", you bypass the Windows printer driver. This method will restore the same speed as you would experience when printing in DOS mode. Windows 95 and 98 workstations support the "Raw Data Pass Through" interface. However, "Raw Data Pass Through" is not well supported in Windows NT or Windows 2000 workstations.

If you have to use the Windows printer driver to print, then the key to solving this problem is to choose the right font (built-in printer fonts instead of soft fonts). Use font "99" to force the font dialog box to display and list all the fonts supported by the printer driver. If there are no built-in fonts with the printer driver, maybe you can choose a different and compatible printer driver. If there are built-in fonts with the printer driver, however, NWSM is not using it by default, you can setup a dotmatrx.cfg file to force NWSM to pickup the built-in font. Please refer to Chapter 6, Printing, Font Selection for the Dot-Matrix Printers section.

When printing with a Windows Printer, an 80-column report is compressed – This is more than likely a printer driver problem. You may try to use font 99 to force the font dialog to display to find the font and point size that NWSM selects. NWSM may have selected the only built-in font similar to "line printer" which only supports fonts of 8 point in size. For example, if you choose HP Laser jet 6P Enhanced driver, you will encounter this problem. On the other hand, if you choose HP Laser jet 6P standard driver, compression will not take place.

When printing with a Windows Printer on a Windows NT workstation, displays is error message "No Printer Name …. Is defined" – Windows NT has a special way of concatenating the printer name, path and id as the full printer name. NWSM has a limitation of 32 bytes for a printer name. Keeping your printer name short on Windows NT workstations will solve this problem. This is not a problem on Windows 95 or 98 workstations.

Using the same printer driver at two workstations, one works, one doesn't – More than likely you are using a different printer driver even though you think it's the same driver. Click on the printer name when print option window displays. The system will display the printer driver it uses. Compare them on the two workstations and you may find that they are different.

A file opened by a NWSM user is reported to be locked on a DOS workstation – More than likely you are using NWSM with local a btrieve engine while you are also using requester with a DOS workstation. The local btrieve engine will create a .LCK file when opening a file in I-O and this will prevent the requester user from accessing it. Solution – Do not mix local and requester btrieve engines in a network environment.

Running NWSM in a peer-to-peer network, gives a file lock message when a second user opens the same file as the 1st user – For 16-bit NWSM, make sure the following lines are in the BTI.INI file (under C:\WINDOWS OR C:\WINNT):

```
[Btrieve Client]
 SharingOnLocalFiles=MultiEngine
```

The default is “SingleEngine” if not specified. SingleEngine will lock files exclusively and make it not possible to share. For 32-bit NWSM, make sure to modify the registry:

HKEY_LOCAL_MACHINE\
SOFTWARE\
Btrieve Technologies\
MicroKernel Workstation Engine\
Version 6.15\
Setting\
Change "File Sharing On Local Drives" value from "0" -> "1".

The shading is too dark when faxing Laser Forms with WinFax – You can setup the WinFax Printer to use an intensity value of 125 and higher. The default value 100 will result in the shading being too dark.

The text is too light when faxing a report with WinFax – This is a known problem. You may choose to print bold from the "option" button of the Print Option Window.

My system crashes when I try to print to a WinFax printer – Make sure the controller for WinFax is loaded before you print to a WinFax printer.

Using Raw Data Pass Through with LPT2, the capture output does not print until NWSM is closed – This is an inconsistent problem and reason is unknown as of this writing. We do know the auto endcap feature is not working consistently with LPT2. If you encounter this problem, try to use LPT1 or LPT3 for capture output. You may also specify a time out option in the capture to solve this problem.

Receive Btrieve Error 95 on System Password File – This may be an indication of a network problem. Replace your network card, use the most current network card driver, or even change your network hub to see if it makes any difference. If you are running on a 100-BaseT network, you may also want to connect to a 10-BaseT hub to see if this resolves the problem.

Receive Btrieve Error 20 on System Password File – Mixing of Btrieve components is usually the cause for this problem. This is usually because of installing multiple applications that use different Btrieve versions were installed. NWSM by default, installs Btrieve components into the \NSI directory. However, there are other Btrieve applications that install Btrieve components into \WINDOWS or the \WINDOWS\SYSTEM directory. This may cause the system to get confused when trying to start NWSM as different versions of Btrieve components may co-exist on a

workstation. This problem can usually be diagnosed by using the Smart Scout utility. Please refer to "Diagnose Btrieve with Smart Scout" later on in this Chapter.

Receive Runtime Error 165 – This error means "incompatible version". However, if this is not a consistent problem, then the most likely cause for this problem is either the network card or network card driver. Download the latest network card driver from the manufacturer's web site and see if the problem is corrected. If the latest network card driver is not available, change to a different network card.

Invoice alignment is off when using font 00 - Use the Raw Data Pass Through method (font 1 - 98) and usually this type of problem can be resolved.

Can't shut down NWSM by closing NWSM Window – When you try to shut down NWSM Windows by clicking on the "X" button on the top right corner, you get a message "Can't Shut Down NWSM from This Point". When you try to shut down NWSM, it will simulate generating ESC keys to the application. If the application does not accept the ESC key, then system cannot shut down NWSM. This only happens in few places, or if you have some custom written application that does not accept ESC keys.

Can't use the mouse to position the cursor on a field – NWSM uses the field number to move the mouse to an entry field. If the field you try to access does not have a field number (i.e. "1.") on the left side of the same line, then NWSM won't be able to figure out which field you are trying to access when you use the mouse to click on that field.

When starting NWSM the system does not prompt for password - If this is the second session of your NWSM, this is perfectly normal. Since you have logged in with your first session, there's no point to ask you to login the second time. If you are using ticklers and ticklers are active in the memory (check for a bell icon on the right side of your task bar), then this is normal as well.

However, if this is the first session and there's no other NWSM sessions running, this is probably caused by a previous NWSM session terminated abnormally and the system thinks there is another session currently running. To resolve this problem, simply reboot your machine.

When I print to the screen, the output alignment in notepad does not look right - If your notepad display the output with incorrect alignment, chances are you are using the word wrap feature. Turn off the word wrap feature from the "Edit" menu of notepad. This may also be caused by an incorrect font. Normally, notepad will use a mono spacing font. However, if you choose a proportional spacing font, then it may cause alignment issues.

How do I control financial statements printing font pitch? - If you use the Raw Data Pass - Through method, you are controlling the printing font pitch by the font you select (font 01 to 98). If you choose font "00" and let the system determine the printing font for you, then the system assumes all financial statements to be 132-column reports (as specified in the NWSM.CFG file). This assumption will work in most situations. However, sometimes you may want your balance sheet to be an 80-column report while the profit and loss is 240 columns wide. You may accomplish this by adding lines like the following into the [Reports-Width] section in the NWSMUSER.CFG file under the \NSI directory:

```
[Reports-Width]
BSSTMT=80
PLSTMT=240
```

Then the system will know that the Balance Sheet Statement is an 80-column report while the profit and loss statement is 240-columns wide. If the NWSMUSER.CFG does not exist, simply create one. You can look at NWSM.CFG file for a sample reference. However, do not modify the NWSM.CFG file because NETcellent may update that file in the future. NETcellent will override any changes you made to NWSM.CFG. NETcellent does not distribute the NWSMUSER.CFG file. The entries in NWSMUSER.CFG file override the NWSM.CFG file. Therefore, any changes that are unique to the user should be in the NWSMUSER.CFG file.

The following are the spool names for financial statements and you may use them in the NWSMUSER.CFG file:

BSSTMT	Balance Sheet
BSSCHD	Balance Sheet Schedule
PLSTMT	Profit & Loss Statement
PLSCHD	Profit & Loss Schedule
FINPOS	Change In Financial Position
WRKCAP	Working Capital Statement
CSHFLW	Cash of Funds Flow Statement

Set them to the length that fits your layout specification. If you do not define them, the system will assume that they are 132-column reports (as specified in the NWSM.CFG file).

File Access Error: 013 on Defer Report Win File (File Not Found): The DEFERWIN file stores the deferred processing reports to be executed for NWSM. This file will be created automatically when users send the first deferred job in NWSM

(there's no need for file initialization). If users have not yet processed a deferred print job and try to access Deferred Report Processing in NWSM, they will get this error message.

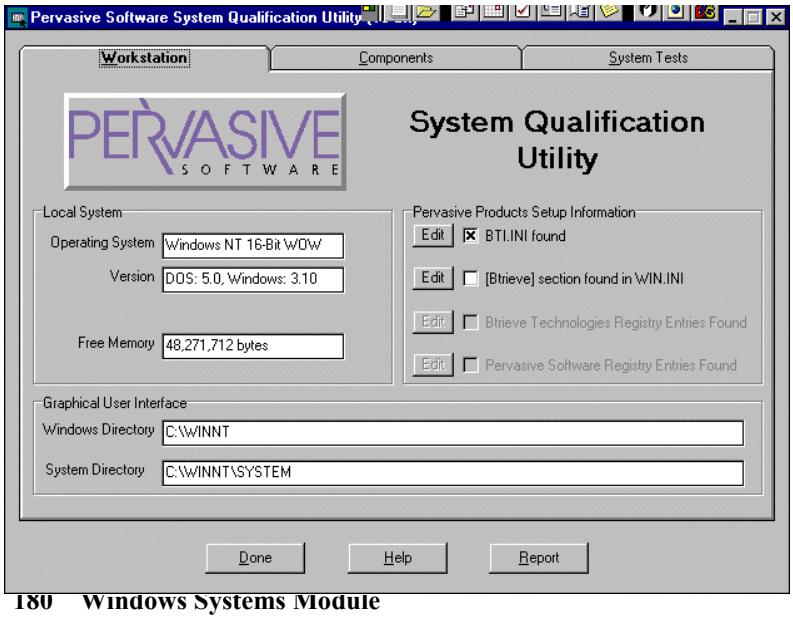
Diagnose Btrieve with Smart Scout

When you have a Btrieve problem, especially when you cannot get NWSM to run, you can use the Smart Scout utility to diagnose the Windows version of Btrieve. Most of the time, the cause for this problem is either a missing component (DLL file) that is required by the Btrieve Windows version, or there is a mixing of different versions of Btrieve components. These inconsistencies can usually be found by the Smart Scout utility.

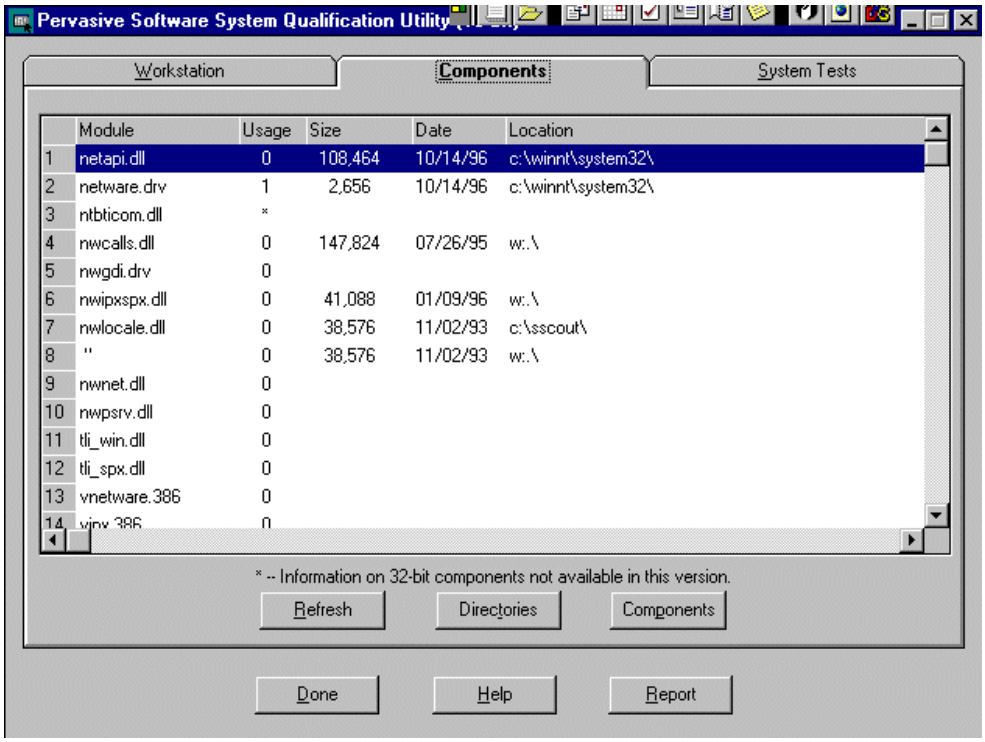
If there are multiple workstations with NWSM installations and some of the workstations work and some other workstations receive this message, then the best way to diagnose the problem is to use Smart Scout on both the workstation that works and the workstation that does not work. Comparing the differences between the components list and test results between them will usually give clues for fixing the problem.

Installing Smart Scout: Under your NWSM startup directory (i.e. \NSI), there's a \SSCOUT subdirectory. Run the SETUP.EXE in that directory. The setup process is self-explanatory; follow the setup instructions to install Smart Scout.

Startup Smart Scout: Once Smart Scout is installed, you should have a program group/folder called "Pervasive Software Database". Choose the "16-Bit SmartScout" to start the Smart Scout utility. You should see the following screen:

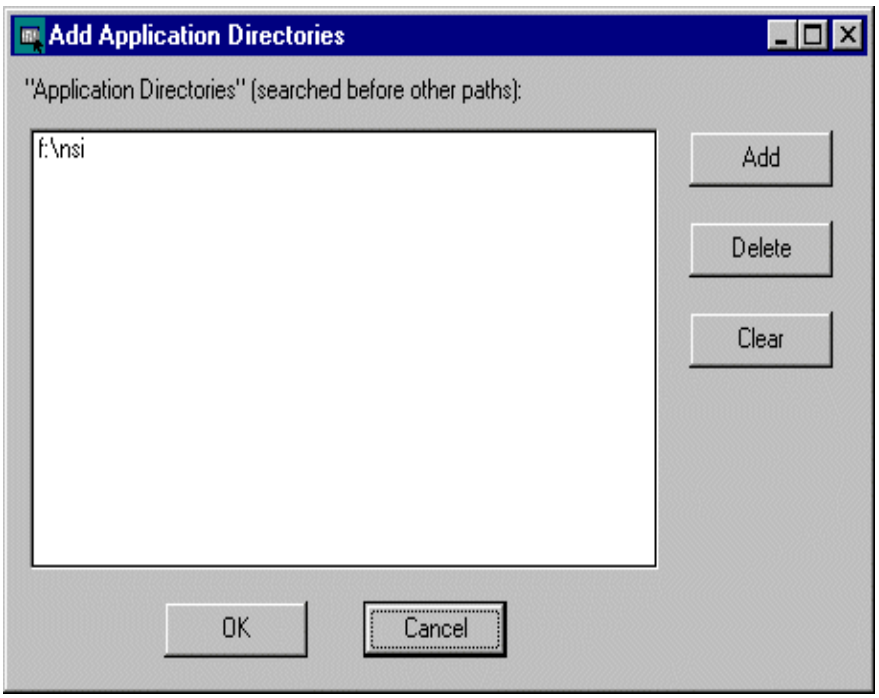


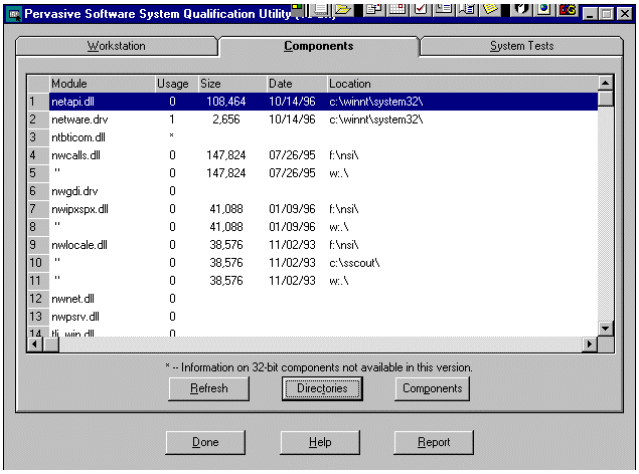
On the workstation tab, it shows the basic information of the operating system and where your Windows and System directory are.



If you choose the Components tab, the above screen will display. It will search your Windows System Directory and all search paths to find Btrieve components. NWSM installs Btrieve components in its own directory (i.e. \NSI) and is not in a search path; therefore, the components tab can't find the Btrieve components distributed with NWSM.

You can click on the Directories button, to add NWSM as a search path (i.e. F:\NSI) so the system can locate the Btrieve components distributed with NWSM. Your screen should look like the following:





After you add "F:\NSI" to the search directory, you will see certain components that have "F:\NSI" beside them. This means Smart Scout finds that piece of the component in the "F:\NSI" directory. Keep in mind that we only distribute Btrieve client (local) engine with NWSM. There are certain components that should be part of your operating system, or part of your network client. If you need to run Btrieve server engine, there are certain components that should come with your Btrieve server engine.

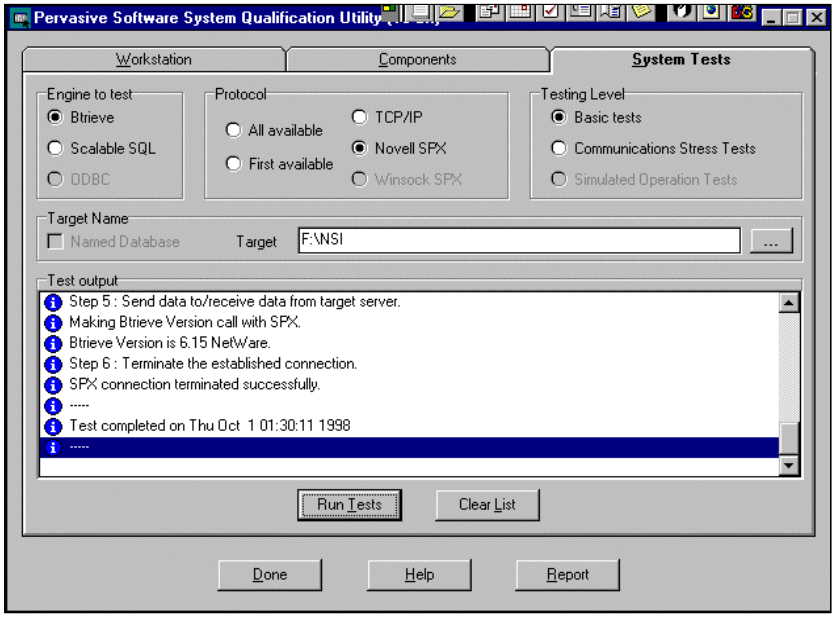
Depending on the platform you try to run, you may need different sets of Btrieve components to run successfully. Please refer to the section titled "**Supported Platforms Matrix for Btrieve & ScalableSQL**" in Chapter 11 for more information about the necessary components that are needed to run for your environment.
From the components window, you should be able to determine whether you have the correct components. Most of the time the reason you have problems with Btrieve is caused by two reasons:

(1) You are missing a Btrieve component. For example, if you're missing the "netware.drv" components, then you will be able to run Btrieve client (local) engine, but you won't be able to run Btrieve Requester (server engine). Netware.drv should come with your operating system and may be purged from the system for various reasons.

(2) You have a mixture of Btrieve components. For example, in the components window, you may have certain components of one version while other components are of a different version. This is typically because you may have multiple applications that may come with different versions of Btrieve components when distributed. Typically, Btrieve will not be loaded if different versions of Btrieve components are encountered. If Btrieve components are listed in multiple different directories with different dates and sizes, this may be a cause for concern.

Your best way to diagnose this problem is to run Smart Scout with one machine that can successfully run Btrieve and another one that has Btrieve problems. Compare the difference between the components on these two different machines. This typically will give you good clues for diagnosing problems.

If you still cannot determine the problem after checking the components list, choose the "System Tests" tab and the following screen will display:



Choose

(1) “Btrieve” under “Engine to Test”.
(2) The appropriate network protocol. For example, Novell SPX if you are running netware.
(3) Basic test under “Test Level”
(4) NWSM startup path (i.e. F:\NSI) in target field.

Then choose to “Run Tests”. This will yield additional information that is helpful to diagnose the problem. Most of the time, your Btrieve installation problems can be resolved by using this Smart Scout utility.

Appendix A NWSM Control Flags

Environmental Variables

In the Macola DOS V6.0 environment, the application starts up with a batch file. One of the main functions of this batch file is to set environmental variables to configure Macola applications' characteristics. Many environmental variables are now replaced by the NSI.CFG file setup. However, some of the environmental variables are still required. The following are the environmental variables if you need to use them:

```
SET MCNTRY=CANADA        - This is used for Canada installation.
SET COBSW=-F0/S15000+P3  - This is necessary for 16-bit
```

The best place to set up the environmental variables is in your autoexec.bat file. You can also set up environmental variables through your network login script. However, please do not attempt to set up environmental variables through a DOS session in Windows 95, or Windows NT. In a Windows 32-bit environment, the environmental variable you set in a DOS session will only be available for that DOS session, and as soon as you exit the DOS session, all the environmental variables you set in DOS are cleared. Since our application runs in Windows, it will not recognize the environmental variables that you set in the DOS session.

NSI.CFG file:

The NSI.CFG file should reside in your NWSM directory (default "\NSI"). It contains the information about the path of Macola V6.x software and the startup option. All users share this file and any changes to this file will affect all users. The following is how a typical NSI.CFG file looks:

```
[Path]
Mdrive=M
Mroot=\MACOLA67
Mhelp=
Mdata=
Mprog=
Msystem=
Manfiest=
Mddf=

[Configuration]
```

```
Mcmd=MXX00
Version=6.7
Revision=056
Release=6.X
Default-Printer-Port=1
Update-Grid-Max=50
Use-Win-Prt-By-Default=Yes
Windows-Help=Yes

[Btrieve]
Local=Yes
Requester=No
Thunk=No
Support-Segmented-Keys=Yes

[Report]
First-Line-Bold=No
First-Line-Shade=No
Heading-Bold=No
Heading-Shade=No
Body-Bold=No
Heading-Line=None
```

NSI.INI file:

The NSI.INI file should reside in your C:\WINDOWS directory. It contains the information about users' preferences for NWSM. Changing the setting in the NSI.INI file on a PC will only affect the operation of that PC. The following is how a typical NSI.INI file looks:

```
[Preferences]
User-Font=09x16 Courier
Last-Login=EMK
Autoskip=No
Editor=Notepad
Last-Company=00

[Configuration]
Workstation=JANE
Local-Printers=3
Win-Version=98
MACRO-Path=C:\ELLIOTT\MACRO
```

```
HELP-Path=C:\ELLIOTT\HELP
WAVE-Path=C:\ELLIOTT\WAVE
LOG-Path=C:\ELLIOTT\LOG

[Laser-Printers]
Top-Margin=0.50
Bottom-Margin=0.50
Left-Margin=0.25
Right-Margin=0.25

[NonLaser-Printers]
Top-Margin=0.00
Bottom-Margin=0.00
Left-Margin=0.00
Right-Margin=0.00

[Debug]
Log-Printjob=No
Use-Ed=Yes
Use-NWSM-Mainmenu=Yes
Log-API=No
Log-I-O=No
Disp-WinCom=No
Disp-DDF-Errors=No

[Color]
Base Text Foreground=black
Base Text Background=bright white
Base Border Foreground=black
Base Border Background=white
Prompt Text Foreground=black
Input Text Foreground=blue
Input Text Background=bright yellow
Window A Background=white
Window B Background=white
Window C Background=white
Window D Background=white
Window E Background=white
Window F Background=white
Window G Background=white
Window H Background=white
Window I Background=white
Window J Background=white
```

[Tickler]
Future-Items=Yes
Quiet-Amount=1 hour

Workstation: This field is used to set the workstation id. By default this field is equivalent to the first login user of this workstation for NWSM. However, users can change it manually in the NSI.INI file. Only the 1st 10 digits will be used by the system. This field is important for print processing. This file is where the default printing options for each report are saved based on the workstation id. Therefore, **it is important that you make sure each workstation has a unique workstation id**. Duplicate workstation id's will cause different workstations to share the same printer name. However, different workstations inevitably will use different printer names in Windows, duplicate workstation id's will cause problems printing.

Macro-Path: This field is used to set the Macro Path directory. If you do not specify a value or leave this field blank, then the system will use the \MACRO directory under the NWSM startup directory to be the place to store macro files. If this field is set with a valid path, then the system will use this path to find the Macro file. You may want to do this if you feel each user should have their own private macro and not share with others (for compatibility, or security issues).

Log-Printjob: If this flag is set to "Yes", it means every time when printing to a printer, the system will not actually print to the printer, instead it will create the following two files under the Macola or Elliott directory (i.e. \MACOLA):

WINCOMPR.LOG	Request & Apply Between Apps & Wincom
WINCOMPR.OUT	The actual output data to printer

The main purpose of these two files is for debugging purposes so if the printing output is incorrect, users can turn the flag on and generate these two files. Typically, the problem will either be a printer driver problem or a Wincom problem. By sending these two files to us, it will enable us to determine where the problem comes from and either provide a fix or suggest getting an updated printer driver.

Use-Ed: This flag by default will be set to "Yes". Even if the flag does not exist in this file, the default value is assumed by the system to be "Yes". If this flag is set to "No", then Ed libraries will not be used by Windows System Manager, this includes RUN500ED.LBR, ??PROGED.LBR, NWSMED.LBR, ??PROGWE.LBR ...etc. This flag can be used in a situation when a problem is suspected to be caused by ED library files, setting this flag to "No" can quickly confirm whether that's the case or not. By

setting this flag to “No”, it will only affect this workstation and not others (since the NSI.INI file is usually set by workstations in their C:\WINDOWS directory).

Use-NWSM-Mainmenu: This flag by default will be set to “Yes”. The main menu program controls the users’ license access logic. In NWSM, each workstation is counted as one user even though there may be multiple NWSM sessions running on the same workstation. Therefore, the main menu program has been modified. However, if you have a custom modification and change the main menu program, you might want to consider disabling NWSM’s main menu. Setting this flag to “No” will disable NWSM’s main menu. As a result, the system will execute your custom modification’s main menu. However, to do so, each session will be counted as one user. If you wish to use only one user count per workstation instead of per session, then you should have your developer contact NETcellent and we will license our main menu program to them so they can make the necessary changes. There are four main menu library files:

MAINMNU0.LBR	Contains V6.0 Mainmenu
MAINMNU2.LBR	Contains V6.2 Mainmenu
MAINMNU6.LBR	Contains V6.6 Mainmenu
MAINMNU7.LBR	Contains V6.7 Mainmenu

You may also delete these library files to activate your custom modification's main menu. However, doing so will affect all your users. Setting Use-NWSM-Mainmenu to “No” will only affect this workstation.

Appendix B Micro Focus Status Codes

Quick Reference

001 Insufficient buffer space
002 File not open when access attempted
003 Serial mode error
004 Illegal file name
005 Illegal device specification
006 Attempt to write to a file opened for INPUT
007 Disk space exhausted
008 Attempt to input from a file opened for OUTPUT
009 No room in directory
010 File name not supplied
012 Attempt to open a file, which is already open
013 File not found
014 Too many files open simultaneously
015 Too many indexed files open
016 Too many device files open
017 Record error: probably zero length
018 Read part record error: EOF before EOR or file open in wrong mode
019 REWRITE error: open mode or access mode wrong
020 Device or resource busy
021 File is a directory
022 Illegal or impossible access mode for OPEN
023 Illegal or impossible access mode for CLOSE
024 Disk input-output error
025 Operating system data error
026 Block I-O error
027 Device not available
028 No space on device
029 Attempt to delete open file
030 File system is read-only
031 Not owner of file
032 Too many indexed files, or no such process
033 Physical I-O error
034 Incorrect mode or file descriptor
035 Attempt to access a file with incorrect permission
036 File already exists
037 File access denied

038 Disk not compatible
039 File not compatible
040 National Language initialization not set up correctly
041 Corrupt index file
042 Attempt to write on broken pipe
043 File information missing for indexed file
044 Attempt to OPEN an NLS file in a non-NLS program
045 Attempt to OPEN an NLS file using incompatible language definition
046 NLS support module not found
047 Indexed structure overflow
048 Attempt to divide by zero
048-057 Host file status, not an RTS message
055 Routine table overflow
065 File locked
066 Attempt to add duplicate record key to indexed file
067 Indexed file not open
068 Record locked
069 Illegal argument to ISAM module
070 Too many indexed files open
071 Bad indexed file format
072 End of indexed file
073 No record found in indexed file
074 No current record in indexed file
075 Indexed data file name too long
076 Can't create lock file in /ISAM directory
077 Internal ISAM module error
078 Illegal key description in indexed file
079 COBCONFIG syntax error
081 Key already exists in indexed file
082 CALL convention not supported
086 Remote file system failure
100 Invalid file operation
101 Illegal operation on an indexed file
102 Sequential file with non-integral number of records
103 Parameter cannot be passed BY VALUE
104 Null file name used in a file operation
105 Memory allocation error
106 Dictionary error
107 Operation not implemented in this Run-Time System
108 Failure to initialize data division
109 Invalid checksum in Run-Time System
110 Generated code not supported by this RTS
114 Attempt to access item beyond bounds of memory

115 Unexpected signal
116 Cannot allocate memory
117 Bad collating sequence
118 Symbol not found
119 Symbol redefined
120 Symbol string table of zero size
121 Symbol is not in TEXT section
122 Coblongjmp() called below level of cobsavenv()
123 Unknown relocation type
124 Communication failure during I/O request to the central file handler
125 All locks/current transactions canceled due to exceeding time limit
126 Record size exceeds system limit
129 Attempt to access record zero of relative file
135 File must not exist
137 Illegal device specification - not mass storage
138 File closed with lock - cannot be opened
139 Record length or key data inconsistency
141 File already open – cannot be opened
142 File not open – cannot be closed
143 REWRITE/delete in sequential mode not preceded by successful read
144 Boundary violation
146 No current record defined for sequential read
147 Wrong open mode or access mode for read/start
148 Wrong open mode or access mode for write
149 Wrong open mode or access mode for REWRITE/delete
151 Random read on sequential file
152 REWRITE on file not opened I-O
153 Subscript out of range
154 PERFORM nested too deeply
155 Illegal command line
156 Too many parentheses in compute statement
157 Not enough program memory: object file too large to load
158 Attempt to REWRITE to a line-sequential file
159 Malformed line-sequential file
160 Overlay loading error
161 Illegal intermediate code
162 Arithmetic overflow or underflow
163 Illegal character in numeric field
164 Run-Time subprogram not found
165 Version number incompatibility
166 Recursive COBOL CALL is illegal
167 Too many USING items
168 Stack overflow

169 Illegal configuration information
170 System program not found
171 Japanese operations illegal with this RTS
172 Recursive non-MF PERFORM is illegal
173 Called program file not found in drive/directory
174 Imported file not found
175 Attempt to run intermediate code program, which has severe errors in it
176 Illegal intersegment reference
177 Attempt to cancel program failed
178 Error during save
179 Error during chain (program not found)
180 End-of-file marker error
181 Invalid parameter error
182 Console input or console output open in wrong direction
183 Attempt to open line sequential file for I-O
184 ACCEPT/DISPLAY I-O error
185 File malformed
186 Attempt to open stdin, stdout or stderr with incorrect mode
187 Run-Time System not found on $COBDIR path
188 Filename too large
189 Intermediate code load error
190 Too many arguments to CALL
191 Terminal type not defined
192 Required terminal capability description missing
193 Error in variable length count
194 File size too large
195 DELETE/REWRITE not preceded by a read
196 Record number too large in relative or indexed file
197 Screen handling system initialization error
198 Load failure
199 Operating System error code lies outside expected range
200 Run-Time System internal logic error
201 I-O error in paging system
202 Exported functionality error
203 CALL parameter not supplied
206 Reading unwritten data from memory
207 Machine does not exist
208 Error in multi-user system
209 Network communication error
210 File is closed with lock
211 Program not executable by Run-Time System
213 Too many locks
214 GO TO has not been ALTERED

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215 Cannot ANIMATE a program running COMMUNICATIONS
216 Cannot initialize the named communications device
217 Incompatible host for native code file
218 Malformed MULTIPLE REEL/UNIT file
219 Operating system shared file limit exceeded
220 Attempt to execute more than one SORT or MERGE simultaneously
221 SORT/MERGE error: see status keys
222 SORT/MERGE error: see status keys
223 SORT/MERGE error: see status keys
224 External Language Initialization failure
225 Dynamic load error – program component missing
226 EXTERNAL file definition inconsistent
227 EXTERNAL data definition inconsistent
228 Could not allocate memory for EXTERNAL item
229 SORT/MERGE module does not support EXTERNAL using/giving files
230 Floating Point Support Module not found
235 Error in animator communications channel
236 Animated program has terminated unexpectedly
237 Unable to initialize animated process
254 Keyboard interrupt to ANIMATOR during ACCEPT

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Micro Focus List of Messages

001 Insufficient buffer space

- You have tried to open a file directly or indirectly and, although you have not exceeded your system's file limit, something in your system is unable to allocate enough memory space for this operation.

- Although you can trap this error you must do STOP RUN as soon as it is reported.

002 File not open when access attempted

- You have tried to access a file without opening it first.

- Open the file with the open mode that you need and try the operation again. As this error implies that your program logic contains a mistake, you might want to terminate the run and recode your program.

003 Serial mode error

- You have tried to open a device as a relative or indexed file. You are trying to execute a device, not a program.

- Open the device in the correct mode or close any open files, do STOP RUN and recode your program.

The name of your program is recognized by the operating system as a valid device. Rename your program.

004 Illegal file name

- A file-name contains an illegal character. This could be any character that is not part of the permitted character set or it could be the system-dependent delimiter, which on most systems is the space.

- Try the file operation again using the correct file-name.

005 Illegal device specification

- Devices to which your COBOL program can write are defined by the operating system. You have tried to write to a device that is not defined by your system.

- Try the operation again using a device name that your system recognizes.

006 Attempt to write to a file opened for INPUT

- You have tried to WRITE to file that is open for input only.

- Close the file and open it with a mode such as I-O, which allows you to write to the file. As this error implies that your program logic contains a mistake, you might want to terminate the run and recode your program.

007 Disk space exhausted

- The disk is full.

- This error can be trapped, but once it has been reported you must do a STOP RUN immediately to terminate your program's run. When your program has terminated, delete any files that you no longer need. Alternatively, if your operating system supports this, put a new disk in a floppy disk drive and redirect your program's file operations to this.

008 Attempt to input from a file opened for OUTPUT

- You have tried to read from a file that is open for output only.

- Close the file and open it with a mode such as I-O, which allows you to read from the file. As this error implies that your program logic contains a mistake, you might want to terminate the run and recode your program.

009 No room in directory

- Either the directory is full, or your program cannot find it.

- Either delete any files that you no longer need, or if your operating system supports this, put a new disk in a floppy disk drive and redirect your

program's file operations to this. Alternatively, specify a different drive or directory for your file operations.

010 File name not supplied

- You have tried to open a file that you have declared as an external file, but have not named.

- Specify the external file-name.

012 Attempt to open a file, which is already open

- You have tried to open a file, which is already open and so cannot be opened again.

- Cancel your second attempt to open the file. If the fact that the file is already open is acceptable to you, continue to run your program.

013 File not found

- The operating system has been unable to find a file, which you have tried to access in your program.

- Ensure that you are in the correct directory or that a path to the file concerned exists. You can then try the file operation again. If the error is the result of a spelling mistake then ask for the correct file and try the file operation again.

014 Too many files open simultaneously

- You have tried to exceed the maximum number of files which you can have open at any one time. This can be a software or an operating system constraint, but you must not violate it.

- Close some of the open files, which you are not currently accessing, and then try to open the relevant file again. You should then be able to continue to run your program.

Depending on your operating system, you might be able to increase the maximum number of files you are allowed to have open. For example, on DOS, add the line

FILES=128

to your config.sys file. On Novell, add the lines

CACHE Buffers=0
File Handles=128

To your shell.cfg file.

015 Too many indexed files open

- You have tried to exceed the maximum number of indexed files which you can have open at any one time. This can be a software or an operating system restraint, but you must not violate it.

- Close some of the open indexed files, which you are not currently accessing, and then try to open the relevant file again. You should then be able to continue to run your program. (Indexed files count as two files, one for data and one for the index.)

016 Too many device files open

- You have tried to exceed the maximum number of device files which you can have open at any one time. This can be a software or an operating system constraint, but you must not violate it.

- Close some of the open device files which you are not currently accessing, and then try to open the relevant file again. You should then be able to continue to run your program.

017 Record error: probably zero length

- You have probably tried to access a record that has had no value moved into it.

- Although this error is recoverable in the sense that it can be trapped, once it has been reported you must execute a STOP RUN statement immediately and then record your program to ensure that the COBOL record length is not zero.

018 Read part record error: EOF before EOR or file open in wrong mode

- A part record has been found at the end of a file. Consequently your run-time system treats the data file as a record, and not finding a full record, reports this error.

- Ensure that the record size you give when you read from or WRITE to a file is consistent.

019 REWRITE error: open mode or access mode wrong

- You are trying to do a REWRITE to a file that has not been opened with the correct access mode for this operation.

- Close the file and reopen it in a mode such as I-O, which allows you to do REWRITE operations on that file. As this error implies that your program logic contains a mistake, you might want to close any open files and then execute a STOP RUN. You can then recode your program to eliminate the logic error.

020 Device or resource busy

- You have tried to open a file that is assigned to a device or resource (for example, a line printer) that is not available at this time.

- You can trap the error status returned by open and retry the open at regular intervals until it succeeds.

021 File is a directory

- You have tried to WRITE to a directory instead of to a file. Alternatively, the attributes are not set up correctly to allow you to access a file. That is, it is marked as read-only or you don't have sufficient rights to open it.

- Recode your program so that it writes to a file and not to a directory.

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You need to either change your file access attributes or recode your program so that it does not violate the existing attributes.

022 Illegal or impossible access mode for OPEN

- The mode in which you are trying to open a file violates the General Rule of COBOL for that type of file; for example you might have opened a line sequential file in the I-O mode.

- Open the file with a mode that is compatible with that type of file.

023 Illegal or impossible access mode for CLOSE

- The mode in which you are trying to close a file is not possible for that type of file.

- Close the file with a new access mode, which is compatible with that type of file, or execute a STOP RUN statement and recode you program.

024 Disk input-output error

- You might have performed a READ after a WRITE, or there might be either a verification failure or a parity error.

- In some circumstances this error is fatal, but if it occurs during a read you can trap it and then do a close on the file before executing a STOP RUN statement.

025 Operating system data error

- You are trying to set up terminal characteristics for a device, which is not a terminal.

- Recode your program.

026 Block I-O error

- An error has occurred while you are trying to access a disk. This could be the result of a corrupt disk.

- If you have a corrupt disk try to run your program again using your backup copy.

027 Device not available

- You are trying to access a device which either is not attached to your machine or if attached is not on-line.

- Attach the device to your machine and ensure that it is on-line. Repeat the file operation.

028 No space on device

- You have tried a file operation such as WRITE for which insufficient space is available on your disk.

- When your program has terminated you should delete some of the files or directories on your current logged in disk. Ensure that you delete sufficient files on your disk so that you have enough room to carry out successful file operations.

029 Attempt to delete open file

- You have tried to perform a DELETE FD operation on an open file.

- Close the file before performing the DELETE FD operation.

030 File system is read-only

- The file system, which you are using, is read-only, which effectively means that it is write-protected. You have tried to change a file in some way, for example you might have tried to WRITE to a file or to DELETE information in it.

- You should abandon your attempt to alter the file unless you can make your own personal copy of it. You should then be able to alter the contents of your copy, but not of the original source.

031 Not owner of file

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- You are trying an operation on a file but the file's owner has not given you the necessary permission for that operation. You could for example be trying to alter the access modes for a file, which only the file's owner can do.

- You should abandon your tried file operation unless the file's owner gives you the permission necessary to do the operation you want to carry out.

032 Too many indexed files, or no such process

- You have tried to open an indexed file but the number of files that you currently have opened is the system limit.

Alternatively, you could be trying to use a process id which does not exist, or which your operating system no longer recognizes.

- You should close some of the indexed files, which you are no longer accessing, and you should then be able to open the file you require.

In this case you must REWRITE your code so that it uses a process id, which your system recognizes.

033 Physical I-O error

- You have a hardware error of some type. Perhaps you have not put a disk in the relevant drive or you might have tried to WRITE to a disk but the processor detected hardware interface has failed.

- You should try to correct the fault in your hardware; for example put a disk in the necessary drive.

034 Incorrect mode or file descriptor

- You are either trying to write to a file, which is open for read purposes only, or read a file, which is open for write purposes only.

- You should close the file and reopen using the correct access mode. As this error implies that your program logic contains a mistake, you might want to close any open files, execute a STOP RUN statement and then recode your program to eliminate the logic error.

Shareable files opened INPUT (read-only) by the COBOL system still require write-permission (from the operating system) to enable temporary locking to take place.

035 Attempt to access a file with incorrect permission

- You are trying a file operation, which you do not have sufficient permission to achieve. For example you could be trying to write data to a file, which has been set up with the read attribute only.

- If you are the owner of the file you can alter the attributes of the file so that you have the permission needed to effect the particular file operation you were trying. If you are not the owner of the file you cannot to carry out that operation successfully unless you copy the file and make the changes to the copy only. You cannot alter the source file.

036 File already exists

- You are trying an inappropriate operation on an already existing file.

- As this error implies that your program logic contains a mistake, you might like to recode your program to eliminate this mistake.

037 File access denied

- Your attempt to access a file has been denied by the operating system. You might have tried to write to a write-protected file or you could have tried to read from an output device.

- Alter the access permission on the relevant file. Access can be read-only, if you just want to read the contents of the file without making any changes, or it can be read and write in which case you can alter its contents.

038 Disk not compatible

- You have tried to access a disk that is incompatible with the current version of your operating system. This could be because it was created under a previous version of the system or it could have been created under a completely different operating system. You would also receive this error if you tried to load a disk with a name that clashed with a disk that was already loaded.

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- If the error is a result of a clash of names you can rename one of the disks and then you can load both disks together if this is what you want.

039 File not compatible

- You have tried to access a file that is not compatible with the structure of files under the current release of your software. This could be because the file was created either under a different operating system or under a previous version of your current system.

- You should create a new copy of the file, which has the correct structure.

040 National Language initialization not set up correctly

- You have tried to use the additional language variants, but the environment or side file that is required to set up the language either has not been set up correctly, or does not exist, or is invalid.

This might be because you have the LANG environment variable set for use by another system in a format not recognized by this COBOL system.

- Set up the required environment or side file before you try to run the program again.

Use the COBLANG environment variable to set the locale information for the COBOL system.

041 Corrupt index file

- Your run-time system does not recognize the control information for an indexed file and as the index has been corrupted in some way the data in the file is no longer accessible by your system. This error is recoverable in the sense that it can be trapped but should you receive it, you can do little except to close any open files and stop your program's run.

- You should rerun your program using the backup copy of that file. If you have added a great deal of information to the file since you last took a backup you might like to rebuild the file using the Rebuild utility, which reads the data (if this has not been corrupted) and builds a new index for it.

042 Attempt to write on broken pipe

- One of the following has occurred:

- Your program has created a process as a result of a DD-logical file-name mapping assignment (for example, the process might be a line printer spooler). The process was not created properly, or has ended prematurely. This error occurs when your program tries to write to the process.

- Your application has terminated abnormally or prematurely, thus breaking the pipe.

- You can trap the error status returned by the write operation, then open the file again.

043 File information missing for indexed file

- The system has crashed on your program's previous run, while the file was open. Information was probably added to the end of the file, but the directory information was not updated and so that data cannot be accessed by your system. Alternatively, you have copied the indexed file from one disk to another but have copied either only the data part of the file or only the index.

- If the error is the result of a crash then whether you can access the necessary data or not is entirely system dependent. If, however, it is the result of a faulty copy you should be able to restore the missing part of the file from the **.dat** or **.idx** file.

044 Attempt to OPEN an NLS file in a non-NLS program

- The logical file-name is preceded by "%NLS%", but the program, which OPENS the file, has been complied without the NLS directive set: the OPEN fails.

045 Attempt to OPEN an NLS file using incompatible language definition

- The NLS control information for a file in your program does not match the same NLS control information in the header of your index file. Alternatively, your index file has become corrupted.

- Rebuild your index file, or rerun your program using the backup copy of that file. If you have added a great deal of information since you last took a backup, you might want to rebuild the file using a utility that is able to read the data, if it is not corrupt, and build a new index for it.

046 NLS support module not found

- Your system could not find the National Language Support module COBNLSMG.

Alternatively, your system cannot find **cobnls.dll** (OS/2), **cobnls.dle** (DOS), or **cobnls.dlw** (Windows).

- Ensure that **cobnlsmg.gnt** is present in either **utils.lbr** or in a directory on COBDIR, or, if your program is linked, ensure that **cobnlsmg.obj** is linked in to it.

Ensure that **cobnls.dle** is present in **utils.lbr**, or that **cobnls.dlw** is present in a directory specified in COBDIR, or that **cobnls.dll** is present on the LIBPATH.

047 Indexed structure overflow

- The structure of your indexed file contains a fault. You have probably tried to put another entry in the index when there is no room for it.

Alternatively, you have tried to access an old format indexed file, created perhaps using CIS COBOL.

- If your index has no room for further entries you should reorganize your file.

If you have tried to access an old format indexed file, you can run the Rebuild utility to check the consistency of this indexed file, and to construct a new indexed file if the old one was found to be corrupt.

048 Attempt to divide by zero

- You are executing a program that is trying to perform a fixed-point divide by zero.

Alternatively, if you have COBFSTAT environment variable set to HOSTSTAT, this could be mainframe file status code “90”.

- Either recode your program so that you can trap the error with an ON SIZE ERROR clause, or run your program without the RTS O switch set, or recompile your program without the CHECKDIV”OSVS” directive set.

048-057 Host file status, not an RTS message

- If you have COBFSTAT environment variable set to HOSTSTAT, this is a mainframe file status code “9x”, where x is given by subtracting 48 from the error number.

055 Routine table overflow

- You have tried to load too many programs simultaneously.

Alternatively, if you have COBFSTAT environment variable set to HOSTSTAT, this could be mainframe file status code ”97”.

- Cancel any programs that you are no longer using, or use fewer separate programs.

065 File locked

- You have tried to open a file, which has already been locked, or opened for output by another user. Alternatively, you have tried to lock or open for output a file, which another user already has open.

- Your program can inform the system operator (if there is one) that it is unable to access this file and should wait until the other user has finished using the file and closes it. You should then be able to continue to run your program.

066 Attempt to add duplicate record key to indexed file

- You have tried to add a duplicate key for a key, which you have not defined as being able to have duplicates.

- As this error implies that your program logic contains a mistake, you probably should recode.

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067 Indexed file not open

- You are trying to access an indexed file, which you have not opened.

- Open the file in the relevant access mode and then retry the unsuccessful file operation.

068 Record locked

- You have tried to access a record, which is currently locked by another user.

- Your program can inform the system operator (if there is one) that the record is currently locked, and you should then wait until the other user has released the lock on that record. You should then be able to access the relevant record. You should not continually retry to gain access to the record without operator intervention, as this could result in your application hanging.

069 Illegal argument to ISAM module

- This is the result of an internal system error.

- Contact Technical Support who will help you discover the cause of your error and how if can be rectified.

070 Too many indexed files open

- You are trying to open an indexed file but you have already exhausted the system limit which specifies how many of these files can be opened at any one time.

- Close some of the open indexed files, which you are not currently accessing. You should then be able to open the indexed files, which you require and continue the program run.

071 Bad indexed file format

- You are either using a file, which has been corrupted, or there is an internal system error.

- If the disk you are using is corrupt, rerun your program using your backup copy of the disk. If this is not the cause of the error then you should contact Technical Support who will help you discover the cause of your error and how it can be rectified.

072 End of indexed file

- This is the result of an internal system error.

- Contact Technical Support who will help you discover the cause of your error and how it can be rectified.

073 No record found in indexed file

- This is the result of an internal system error.

- Contact Technical Support who will help you discover the cause of your error and how it can be rectified.

074 No current record in indexed file

- This is the result of an internal system error.

- Contact Technical Support who will help you discover the cause of the error and how it can be rectified.

075 Indexed data file name too long

- When creating indexed files, the extension **.idx** is added to the user-defined file-name, and so your file-name must not exceed x-4 characters in length, where x is the maximum length of file-name.

- Rename the file with a shorter file-name, that is, one that is less than 10 characters in length.

076 Can't create lock file in /ISAM directory

- For some reason your system is unable to create a lock file in the /ISAM directory. One reason for this could be that in its previous run your program terminated abnormally (perhaps due to a power failure) leaving some files locked.

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- You should manually remove all of the files that are still locked from the /ISAM directory before you can successfully run your program.

077 Internal ISAM module error

- This is the result of an internal system error.

- Contact Technical Support who will help you discover the cause of your error and how it can be rectified.

078 Illegal key description in indexed file

- This is the result of an internal system error.

- Contact Technical Support who will help you discover the cause of your error and how it can be rectified.

079 COBCONFIG syntax error

- An error exists in the run-time configuration sidefile accessed via the environment variable COBCONFIG.

- Check your syntax against your **COBOL System Reference.** You might have used incorrect syntax, or syntax that is not compatible with the type of RTS tuneable you are configuring (this could include assigning an illegal value to the RTS tuneable).

081 Key already exists in indexed file

- This is the result of an internal system error.

- Contact Technical Support who will help you discover the cause of your error and how it can be rectified.

082 CALL convention not supported

- The CALL convention you have specified is not supported.

- See your COBOL User Guide for a list of supported CALL conventions.

086 Remote file system failure

100 Invalid file operation

- You have tried a file operation, which violates a general rule of COBOL in some way. Most likely the cause of this error is that you have tried a REWRITE on a sequential file opened I-O, or on a relative file with access mode sequential also opened I-O, without preceding it with a successful read NEXT.

- Recode your program to ensure that the REWRITE statement in error is preceded by a read NEXT.

101 Illegal operation on an indexed file

- This is the result of an internal system error.

- Contact Technical Support who will help you discover the cause of your error and how it can be rectified.

102 Sequential file with non-integral number of records

- You have either specified an incorrect record length for a sequential file, or the sequential file you are trying to access is corrupt in some way, or the file, which you have specified is not a sequential file.

- Recode your program so that it specifies the correct type of file, or if the error is the result of a corrupt file, try to run the program again using a backup copy of that file.

103 Parameter cannot be passed BY VALUE

104 Null file name used in a file operation

- You specified a data-name for a file-name instead of a literal, and the data item contained only spaces when you tried to open the file.

- Recode your program specifying the correct file-name.

105 Memory allocation error

- The run-time system is unable to allocate sufficient memory space to successfully carry out the tried operation, probably because of insufficient memory space on your system.

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- You should obtain more memory in which to run your program. Refer to your operating system documentation for details of how you can obtain more memory, if this is possible.

106 Dictionary error

- This could be the result of a read or write error to file or disk, but it is more likely to be the result of an internal system error.

Alternatively, your application might have called many programs without CANCELING them afterward, so that memory becomes exhausted during Animation.

- Contact Technical Support who will help you to discover the cause of your error and how it can be rectified.

Ensure that as much memory as possible is available during Animation by CANCELING any program you do not currently need to access.

107 Operation not implemented in this Run-Time System

- You are trying to perform a file operation, which your run-time system does not support.

- You should recode your program so that it does not try such operations, or you should acquire a version of your system that does support facility.

108 Failure to initialize data division

- The run-time system cannot load your program properly because the data needed to correctly initialize the Data Division has become corrupted.

- You should compile your program again to try to obtain good intermediate code.

109 Invalid checksum in Run-Time System

- The internal information in the run-time system has been ALTERED. The run-time system might have become corrupted, or you might have illegally tried to change the internal run-time system information.

110 Generated code not supported by this RTS

- Contact Technical Support who will help you to discover the cause of the error and how it can be rectified.

114 Attempt to access item beyond bounds of memory

- Memory access violation has been detected by your operating system.

115 Unexpected signal

- A signal the run-time system was not expecting has been caught.

116 Cannot allocate memory

- For some reason a part of your run-time system is unable to allocate you sufficient memory to enable you to execute your code.

- You should try to reduce memory usage by CANCELING programs that are not in use, then try the operation that caused this message again.

117 Bad collating sequence

- This is an internal system error.

- Please contact Technical Support who will help you to discover the cause of the error and how it can be rectified.

118 Symbol not found

- You are unable to load your object file. You have tried to call a program that has not been specified in the COBPATH environment variable.

- Check that your COBPATH has been set up correctly. If not, revise your COBPATH to include the program being called.

119 Symbol redefined

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- You are unable to load your object file because it has an entry point with the same name as a module already loaded.

- Once your program has terminated recode it to remove the naming duplication. Resubmit your program to your COBOL system.

120 Symbol string table of zero size

- You probably have a malformed object file.

- Once the program has terminated you must correct your object file. If this does not work, contact Technical Support who will help you to discover the specific cause of the error.

121 Symbol is not in TEXT section

- You have tried to call a subprogram that is not an executable program.

Alternatively, you have used the same name for a called program as for a previously defined data item.

- Check that the subprogram being called is an executable one. If required, correct the subprogram's name in the calling program and resubmit it to your COBOL system.

Once your program has terminated, recode it to remove the naming duplication. Resubmit your program to your COBOL system.

122 Coblongjmp() called below level of cobsavenv()

- You might have returned control to a higher level in the CALL/PERFORM hierarchy than the level at which cobsetjmp was called. Coblongjmp must be called only from the same or from a lower level in the CALL/PERFORM hierarchy as cobsavenv was. See your **COBOL** system. Reference for detail of cobsavenv and cobolngjmp.

- Check and correct the logic of your program, and then resubmit your program to your COBOL system.

123 Unknown relocation type

- You are using incompatible versions of the object file and the COBOL run-time library.

- Once the program has terminated, resubmit your object file to your COBOL system with the current version of your COBOL run-time library. If this does not work, contact Technical Support who will help you to discover the specific cause of the error.

124 Communication failure during I/O request to the central file handler

125 All locks/current transactions canceled due to exceeding time limit

126 Record size exceeds system limit

129 Attempt to access record zero of relative file

- The value specified in the RELATIVE KEY data item contains the value zero.

- You should ensure that the value in the RELATIVE KEY data item is greater than zero, then continue to run your program.

135 File must not exist

- The operating system has been unable to find a file, which you have tried to access in your program.

- Ensure that you are in the correct directory or that a path to the file concerned exists. You can then try the file operation again. If the error is the result of a spelling mistake then ask for the correct file and try the file operation gain.

137 Illegal device specification - not mass storage

138 File closed with lock - cannot be opened

- You are trying to open a file, which you previously closed with lock, which violates one of the general rules of COBOL programming.

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- You cannot open the relevant file. As this error implies that your program logic contains a mistake, you might want to close any remaining open files, execute a STOP RUN statement and recode.

139 Record length or key data inconsistency

- A discrepancy exists between the length of a record, or the keys, which you have specified, in your current program and its definition in the program in which it was first opened.

- Your program has a fault, so you probably should edit your code, then resubmit it to your COBOL system before running it again.

141 File already open – cannot be opened

- You have tried to open a file, which is already open and so cannot be opened again.

- Cancel your second attempt to open the file and continue to run your program if the fact that the file is already open is acceptable to you. However as this error implies that your program logic contains a mistake, you might want to close any open files, execute a STOP RUN statement and then recode.

142 File not open – cannot be closed

- You have tried to close a file, which is not open which is impossible to achieve.

- You can abandon your attempt to close the relevant file and continue to run your program. However, as this error implies that your program logic contains a mistake, you might want to close any open files, execute a STOP RUN statement and then recode.

143 REWRITE/delete in sequential mode not preceded by successful read

- You have failed to do a successful read on a sequentially accessed file trying a REWRITE or DELETE on some of the information contained in that file.

- If the previous read was successful then perform a read on the relevant file before you retry the unsuccessful REWRITE or DELETE operation. If the

previous read was also unsuccessful close the file, execute a STOP RUN statement and then recode your program before you next run it.

144 Boundary violation

- You have tried to write a record to a variable length record file, the length of which is not within the defined range for that file.

- Recode your program.

146 No current record defined for sequential read

- The file position indicator in your file is undefined owing to a failed read/START or INVALID KEY condition. You have tried to read another record in the file but as the current record is undefined the system cannot find the start of the record for which you have asked.

- You should try a START operation, and continue to do so until the file position indicator is updated successfully.

147 Wrong open mode or access mode for read/start

You have tried to carry out a read or START operation on a file, which has not been opened for INPUT or I-O, or which is not open at all.

- Open the file for I-O or for INPUT and you should then be able to continue to run your program. However, as this error implies that your program logic contains a mistake, you might want to close any files, which are open, execute a STOP RUN statement and then recode.

148 Wrong open mode or access mode for write

- You have tried to write to a file in sequential access mode that you have not opened for OUTPUT or EXTEND, or you have tried to write to a file in random or dynamic access mode that has not been opened INPUT or I-O, or which is not open at all.

- Close the file and reopen it with the correct open mode for the file type. However, as this error implies that your program logic contains a mistake, you might want to close any files that are open, execute a STOP RUN statement and then recode.

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149 Wrong open mode or access mode for REWRITE/delete

- You are trying to do a REWRITE or a DELETE on a file that you have not opened for I-O, or which is not open at all.

- Close the file and reopen for I-O. However, as this error implies that your program logic contains a mistake, you might want to close any open files, execute a STOP RUN statement and then recode.

151 Random read on sequential file

- You are trying to do a random read on a file, which has sequential organization.

- Read the file with the correct access mode. As this error implies that your program logic contains a mistake, you might like to close any files, which are open, execute a STOP RUN statement and recode.

152 REWRITE on file not opened I-O

- You have tried a REWRITE on a file that is not open I-O.

- Close the relevant file and open it for I-O operations. You should then be able to carry out the REWRITE operation successfully. However, as this error implies that your program logic contains a mistake, you might want to close any open files, execute a STOP RUN statement and then recode.

153 Subscript out of range

- A subscript which you have used in your program is out of the defined range, that is, it is either less than one or it is greater than the number of occurrences of the item.

- You should recode your program.

154 PERFORM nested too deeply

- This error usually results if you have used “GO TO” to jump out of the range of a PERFORM rather than to jump to an EXIT statement at the end of its range.

- When your program has terminated you should to recode your program to ensure that the GO TO in question jumps to an EXIT statement at the end of the PERFORM's range.

155 Illegal command line

- The run-time system does not recognize as valid the command line format you have specified.

Alternatively, the generic command-line interpreter, which must be present if your program is to be run successfully, is not found on your system. Alternatively, you have set an invalid COBSW value.

- Rerun your application with a valid command line.

Make sure that the interpreter is present to enable your system to pick up the commands correctly and then rerun your program.

Reset COBSW to a valid value.

156 Too many parentheses in compute statement

- You have coded a COMPUTE statement, which is too complex for your system to handle successfully.

- You should recode your program. We strongly advise you to break the relevant COMPUTE statement into a number of simpler statements.

157 Not enough program memory: object file too large to load

- Either your program is too large for the available memory space, or the stack is full.

- If you have specified the ON OVERFLOW /EXCEPTION clause in the relevant CALL statement, the error is recoverable. Any associated imperative statement is executed before the next instruction.

158 Attempt to REWRITE to a line-sequential file

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- You have used the REWRITE statement in conjunction with a file whose organization is line sequential. The REWRITE statement cannot be used with line sequential files.

- Close the file in error before executing a STOP RUN statement to ensure that you do not lose any data from it. Recode your program to make the organization of the file to which you want to do a REWRITE either sequential, indexed sequential, or relative.

159 Malformed line-sequential file

- A line-sequential file, which you are trying to access is corrupt in some way.

- Rerun your program using the backup copy of that file.

160 Overlay loading error

- An error has occurred while trying to load the intermediate code for an independent segment. The segment is either missing or corrupted in some way.

- If the segment is missing, locate it. If you cannot find it, or if it is present and corrupt, resubmit your program to your COBOL system.

161 Illegal intermediate code

- The intermediate code, which is currently being processed is not valid code. You are probably trying to execute a corrupted file or one, which has not been submitted to your COBOL system successfully.

- You should resubmit your source program to your COBOL system, to try to obtain uncorrupted intermediate code.

162 Arithmetic overflow or underflow

- You are executing a program that is trying to perform a floating-point divide by zero.

- You should recode your program to avoid this illegal operation.

163 Illegal character in numeric field

- By default the value, which you enter into a numeric or numeric edited field is checked to ensure that it is numeric. You have entered either nonnumeric characters or uninitialized numerics into numeric or numeric edited fields: these are automatically space filled and are thus classified as nonnumeric items.

- You must adjust your code so that no invalid data is used. You can locate the invalid numeric data in your code by setting the +F switch on , and animating your program until you receive this error. You might need to use one of the Compiler directives, BADSIGNS, HOST-NUMCOMPARE, COMPARE or SPZERO, to resolve invalid data in numeric fields. See your **COBOL** System Reference for details of these directives.

164 Run-Time subprogram not found

- You have tried to call a subroutine whose entry address has not been set up in your run-time system.
- Check to see that you used a valid call number in the unsuccessful subroutine call. If not, revise your code to contain a call number, which your system recognizes. If you did use a valid call number but still received this error you should contact Technical Support.

165 Version number incompatibility

- One or more of the run-time support modules is incompatible with the run-time system you are using. The name of the incompatible support module is displayed.

Alternatively, the run-time system you are using is incompatible with the version of your COBOL system. Either "RTS" or the name of the run-time system file is displayed: **coblib.dll** (OS/2), **coblib.dle** (DOS)or **coblib.dlw** (Windows).

- Reinstall the support module, using your installation disks. Reinstall the run-time system file, using your installation disk. If no support module name is displayed, you have done one of the following:

- Used intermediate code, which has been produced on a version of your COBOL system that is incompatible with the run-time system you are using. Your RTS, therefore, cannot execute correctly any generated code you are producing or have already produced from this intermediate code.

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- Tried to execute a file, which is not your COBOL system's intermediate or generated code.

166 Recursive COBOL CALL is illegal

- You have tried to call a COBOL module that is already active.

- You should recode your program.

167 Too many USING items

- The list of items which you have supplied in a CALL....USING statement is longer than the run-time system can handle.

- Once your program has terminated recode it with group items rather than elementary items before rerunning it.

168 Stack overflow

- You have nested a PERFORM statement or a series of CALL statements too deeply.

- Edit your program to reduce the number of levels in a nested PERFORM or CALL statement, then resubmit your source code to your COBOL system.

169 Illegal configuration information

- You have tried an operation for which your machine is not configured; the most likely cause of this is that Adis is not configured correctly.

- Check that Adis is configured correctly. See your COBOL System Reference for details of how you can reconfigure Adis.

170 System program not found

- A system program, for example Adis or ExtFH, is not present on the current logged-in drive.

- Ensure that all the system programs are available on the logged-in drive and copy those which are not currently present using your backup system disk. Once all the necessary system programs are available you can run your program.

171 Japanese operations illegal with this RTS

- You are trying to perform Japanese operations with a non-Japanese run-time system, or you have used a Japanese version of your COBOL system to produce code, which you are now trying to run using a non-Japanese run-time system.

- You should resubmit your program using a non-Japanese run-time system, or if you still want your program to perform Japanese operations, you should acquire a Japanese run-time system.

172 Recursive non-MF PERFORM is illegal

- You have tried full recursion of a PERFORM statement in a program that was submitted to your COBOL system with OSVS parameter of the PERFORM-TYPE directive specified. That is, you have tried to end two PERFORMS with the same return address.

- You should either resubmit your program to your COBOL system with a parameter other than OSVS specified for the PERFORM-TYPE directive, or recode your program so that each PERFORM has its own unique return address before you resubmit it to your COBOL system with the MF parameter of the PERFORM-TYPE directive specified.

173 Called program file not found in drive/directory

- You have tried to call a program, which is not present on your current logged-in drive or directory, or in a directory pointed to by the COBDIR environment variable.

- Once your program has terminated you should copy the relevant file into your logged-in drive or directory. If insufficient space is available, you should set the COBDIR environment variable to search the directory or drive on which the file is present when your program calls it. Refer to your **COBOL** System Reference for details of the COBDIR environment variable. Once you have taken these steps, run your program again.

174 Imported file not found

- You have tried to load a **.dll** file, which contains references to another **.dll** file, which cannot be found by the operating system.

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- Locate the missing file and ensure it is located on the default search path for your operating system.

175 Attempt to run intermediate code program, which has severe errors in it

- You are trying to run a program that produced severe faults when you submitted it to your COBOL system with the run-time switch E turned off.

Alternatively, you could try to run the program with the E run-time switch set, though this might not give the desired results.

- You should edit your source code to correct all the severe faults, resubmit it to your COBOL system, and then run the intermediate code that is produced.

When your program is being animated, Animator reports this error and enables you to continue to run the program.
See Also: E TRS switch

176 Illegal intersegment reference

- You might have a corrupted file. Alternatively, your code contains a segment reference for the Forward Reference Table, which is illegal.

- Resubmit your source code to your COBOL system. If you receive this error again, contact Technical Support who will help you to discover the specific cause of the error.

177 Attempt to cancel program failed

- You have tried to remove a currently executing program or its parents or grandparents, from memory.

Alternatively, you have tried to cancel a DLL, either directly or indirectly as an imported DLL, that contains an entry point which has been registered as an EXIT LIST function via the OS/2 API call DosExitList.

- Once your program has terminated you need to recode your program to ensure that you do not try to cancel a program (or its parents or grandparents) while it is still being executed.

Locate the erroneous DLL and ensure that the EXIT LIST function is removed before you cancel the DLL. If you cannot recode the DLL, you can set the O RTS switch to force a logical cancel on the DLL.

See also: O RTS switch

178 Error during save

You cannot save the information, which your program has generated. This can be caused by several different reasons but one of the most common causes is that you have tried to build a module that is too large for the available memory space.

- If the error is caused by a lack of space you can either delete some of the files, which you no longer need on your current disk, or insert a new floppy disk to take the output from your program. You should then be able to rerun your program and save the information given by it.

179 Error during chain (program not found)

- You have tried to chain to another program, which your system is unable to find.

- Once your program has terminated you should copy the relevant file into your logged-in drive or directory. If insufficient space is available, you should set the COBDIR environment variable to search the directory or drive on which the file is present when your program calls it. Refer to your **COBOL** System Reference for details of the COBDIR environment variable. Once you have taken these steps, run your program again.

180 End-of-file marker error

- A file-marker used to indicate that the end-of-file has been reached is missing from one of your files.

- You should resubmit your code to your COBOL system, or use a debugger to place the end-of-file marker at the end of the file. You can then rerun your program.

181 Invalid parameter error

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- A parameter, which you have used is not one, which is recognized by your system. You have probably used a parameter for a run-time system subprogram, which is not in the first 64K of the Data Division.

Revise your code to contain a parameter, which is known by your system. That is, ensure that the parameter is in the first 64K of the Data Division.

182 Console input or console output open in wrong direction

- You are either trying to read input from the screen or write to the keyboard.

- You should recode your program.

183 Attempt to open line sequential file for I-O

- You have tried to open a line-sequential file in the input-output open mode, but this mode is not supported for files with this organization.

- When your program has terminated you should recode your program to ensure that the file with organization line sequential is opened for input, output, or extend. You can then rerun your code.

184 ACCEPT/DISPLAY I-O error

- You have either tried to read input from the screen or write to the keyboard, or the ADIS module has not been able to open your terminal's channels for I-O.

- Your program logic contains a mistake, so you must recode.

185 File malformed

186 Attempt to open stdin, stdout or stderr with incorrect mode

- You have tried to open either a standard input file with output mode, or some other file in an incorrect mode.

187 Run-Time System not found on $COBDIR path

- The run-time system cannot be found on the path you have set up in the COBDIR environment variable. Alternatively, you might not have installed your COBOL system correctly.

- Ensure that the run-time system is on the path you have set up in the COBDIR environment variable. Alternatively, ensure that your COBOL system has been installed correctly. If it has not, you must reinstall your COBOL system.

188 Filename too large

- A file-name, which you have used has more characters than the maximum number allowed by our operating system.

- You should recode your program to check the length of the file in error, and rename it with a shorter file-name. You can then run your program again.

189 Intermediate code load error

- You are unable to load your intermediate code. You might have tried to load intermediate code that either has not been successfully produced, or has been corrupted in some way.
- Try to obtain good intermediate code, for example, by resubmitting (or submitting) your source code to your COBOL system. You should then be able to load your code and run the program successfully.

190 Too many arguments to CALL

- A CALL statement in your program cannot be successfully executed because of the number of arguments, which you have used with it.

- When your program has terminated you can recode it using group items rather than elementary ones. You should then be able to run your program successfully.

191 Terminal type not defined

- Your terminal is not defined.

- Your terminal type is undefined, so your operating system is unable to drive your terminal. Set up the necessary environment for your terminal.

192 Required terminal capability description missing

228 Windows Systems Module

- A compulsory entry, for example cursor movement or clear screen, is missing from your terminal configuration database.

- Add the missing entry to your terminal configuration database.

193 Error in variable length count

- The intermediate code, which is currently being processed is not a valid operation. You are probably trying to execute a corrupt file or one, which has not been produced.

- You should resubmit your source code to your COBOL system.

194 File size too large

- A file, which your program is accessing is too large for successful execution to continue.

- When your program has terminated you should recode your program spreading the data over more than one file to ensure that no file becomes too large for your operating system to handle. Having recoded your program you can then rerun it.

195 DELETE/REWRITE not preceded by a read

- Before a DELETE or REWRITE statement can be successfully executed in sequential access mode the last input-output statement executed for the associated file must have been a successful read. In your code no read statement precedes your tried DELETE or REWRITE.

- When your program has terminated, recode your program, making sure that the last input-output statement to be executed before the DELETE or REWRITE is a real statement.

196 Record number too large in relative or indexed file

- The relative record key has exceeded the system limit, that is, the file is too large for the system to handle.

Alternatively, the record key which you have specified is too large for the system to deal with successfully, or the pointer to the record has been corrupted in some way so that it is either too large or it is not a multiple of the record length.

197 Screen handling system initialization error

- This error can be caused by one of the following:
- Your display adapter is in the wrong mode.
- Your screen handling interface has not been correctly initialized because your terminal does not have the required capabilities.
- Your terminfo file is corrupted.
- Memory has been incorrectly allocated.
- If you are using a DOS or OS/2 system, the monitor must be in alphanumeric display mode rather than graphics display mode. You can set the display mode to a valid alphanumeric mode by using the DOS MODE utility and then rerunning your program.

If you are using a UNIX-type system, you must check that your terminfo file contains the correct entry for your terminal. Refer to your **COBOL** System Reference for details. If your terminfo file is corrupt, or your screen handling interface has not been correctly initialized, you must advise your system administrator of the problem, and he will take steps to try to correct it. If your memory has been incorrectly allocated, you must rerun your program.

198 Load failure

- The system cannot load a program, usually because of insufficient memory.

Alternatively your program has run out of memory during the loading or reloading of a file. This occurs more frequently during Animation because of the extra memory required during Animation.

- Make more memory available and then rerun your program.

Ensure that as much memory as possible is available during Animation by CANCELING any program you do not currently need to access.

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199 Operating System error code lies outside expected range

- A system call has returned an unexpected error number, which is not documented.

- Contact Technical Support who will help you to discover the specific cause of this error.

200 Run-Time System internal logic error

- The amount of memory available on your machine is so low that not even the run-time system can be fully loaded. Alternatively, your run-time system has stopped as a result of an internal logic error from which you cannot recover.

- Free some memory and then you should be able to run your program successfully.

Contact Technical Support who will help you to discover the cause of the error.

201 I-O error in paging system

- No room is available in your current directory or on the floppy disk, which you are using for the paging file.

- When your program has terminated, delete any files, which you no longer need from your directory to make room for the paging file, or insert a new floppy disk.

202 Exported functionality error

- You have either caused an internal run-time system error by invalid use of an exported function, or the code produced by a preprocessor in your COBOL system contains errors.

- Ensure that all of your external assembler applications call and use run-time system functions correctly before you try to run your program again. If you are using a preprocessor as part of your COBOL system, you should use the software as a standalone preprocessor to isolate the problem areas.

203 CALL parameter not supplied

- The item you are trying to access in the Linkage Section of the currently executing program has not been initialized.

- Recode your program to ensure that it contains all of the necessary parameters, or check that it is a valid caller.

206 Reading unwritten data from memory

- You are trying to read data, which has not been written, from the core file.

207 Machine does not exist

- You have tried to access a machine that is not connected to your network, or which is not on-line.

- Make sure the machine is connected to the network and is on-line, then try to access it again.

208 Error in multi-user system

- This is normally caused by an unexpected error occurring in the network or file-sharing facilities. A corrupted network message also causes this error to be returned.

- Retry the unsuccessful operation. If the error persists, contact Technical Support who will help you to discover the specific cause of this error.

209 Network communication error

- This is normally given if an incorrect checksum has been received in a communications packet.

- Your program should continue to execute after you have received this error but results might be undefined.

210 File is closed with lock

- You have tried to open a file, which you have previously closed with lock.

- Recode your program to avoid opening a file, which has previously been closed with lock.

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211 Program not executable by Run-Time System

- You have tried to run a program that is incompatible with the current version of either your run- time system, your object file or your COBOL run-time library. For example, your run-time system does not run a program linked using a different object file format or COBOL run-time library.

- If your object file is incompatible with the current version of either your COBOL run-time library or your run-time system, you should relink with the current version of your COBOL run-time library.

213 Too many locks

- You have either tried to exceed the maximum number of simultaneous record locks per file you can have, or you have exhausted an operating system or network resource, for example dynamic memory.

- Execute a COMMIT or an UNLOCK operation on the relevant file and you should then be able to continue to run your program. You should try not to retain a record lock for longer than is necessary.

214 GO TO has not been ALTERED

- You have violated one of the general rules of COBOL programming.

- Close any files, which might be open, execute a STOP RUN statement and then edit your program to avoid such illegal operations.

215 Cannot ANIMATE a program running COMMUNICATIONS

- You have tried to animate a program, which makes use of the communications module. This cannot be done as both Animator and the communications module need full use of the CRT.

- You should run your program without the aid of Animator.

216 Cannot initialize the named communications device

- A device driver is probably missing.

- Ensure that all communications drivers are loaded before you try to run Communications.

217 Incompatible host for native code file

- The **.gnt** file is not valid for the host processor.

- You must resubmit your program to your COBOL system.

218 Malformed MULTIPLE REEL/UNIT file

- Either your file header is not correctly formatted, or you are not using a MULTIPLE REEL/UNIT file.

- You should try to run your program again using a backup copy of the relevant file.

219 Operating system shared file limit exceeded

- You have tried to exceed your operating system's limit on the number of shared files that you can have open simultaneously. As this figure is operating the system dependently, you should consult your Release Notes for details of how many shared files your system permits to be open at any one time.

- Close some of the open shared files you are no longer accessing and retry the file operation.

220 Attempt to execute more than one SORT or MERGE simultaneously

- You have coded your program in such a way that it is trying to execute more than one SORT or MERGE operation at the same time. For example, you might have coded a SORT statement in the input or output procedure of another SORT statement, an operation that is specifically prohibited under the rules of ANSI COBOL.

- You should recode your program to ensure that it does not execute more than one SORT or MERGE at any one time.

221 SORT/MERGE error: see status keys

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- You have tried a SORT/MERGE operation, which has been unsuccessful for some reason. You might have had too many files open when you tried a SORT/MERGE operation, or the file, which you are trying to access might be locked.

- The action you should take depends on the situation in which it occurs. Check the status of each file (USING/GIVING) defined in the SORT statement.

222 SORT/MERGE error: see status keys

- You have tried a SORT/MERGE operation, which has been unsuccessful for some reason. You might have had too many files open when you tried a SORT/MERGE operation, or the file, which you are trying to access might be locked.

- The action you should take depends on the situation in which it occurs. Check the status of each file (USING/GIVING) defined in the SORT statement.

223 SORT/MERGE error: see status keys

- You have tried a SORT/MERGE operation, which has been unsuccessful for some reason. You might have had too many files open when you tried a SORT/MERGE operation, or the file, which you are trying to access might be locked.

Alternatively, you have set the TMP environment variable to point to a directory that does not exist.

- The action you should take depends on the situation in which it occurs.

Either set TMP to point to a directory that does exist, or unset TMP.

224 External Language Initialization failure

225 Dynamic load error – program component missing

- The run-time system cannot locate the root or overlay of a program that is currently loaded in memory.

Alternatively, you have insufficient memory to load your program.

Alternatively, the run-time system could not find enough file handles to open and, therefore, load the code.

- Either the library that contained the program has been canceled, or the program is no longer available on the program search path. Ensure that the program is available either on disk or on an open library.

Free some memory, use XM, or restructure your application so that it uses less memory.

Increase your operating system file handles limit.

226 EXTERNAL file definition inconsistent

- Two or more programs define the same external file but with different formats. For example, maximum and minimum record lengths might be different.

- Make sure that all of your programs define the external file with the same format so that they are consistent. It is useful to have the file definition in a COPY file.

227 EXTERNAL data definition inconsistent

- Two or more programs are defining the same external data item, but the first loaded program has defined the size smaller than has the second or subsequent loaded program.

- Make sure that both or all of your programs define the size of the external data item as being the same.

228 Could not allocate memory for EXTERNAL item

229 SORT/MERGE module does not support EXTERNAL using/giving files

- You have tried a SORT or MERGE operation, which has USING/GIVING files, which are defined as EXTERNAL. The SORT/MERGE module does not support USING/GIVING files defined as EXTERNAL.

- Recompile your program to use the callable SORT module (EXTSM).

230 Floating Point Support Module not found

236 Windows Systems Module

235 Error in animator communications channel

- Animator has encountered system limits or conflicts resulting in communications errors. Perhaps two logins on the same UNIX system are trying to cross-session animate the same program file.

- Copy the animated program file to different directory and try animation.

236 Animated program has terminated unexpectedly

- A program you are animating has terminated without following the standard run-time system shut-down process. The termination was probably either initiated by the user or caused by a severe run-time error.

- Run your program without animation to determine if it runs successfully; if so, animate the program without cross-session or intrasession animation.

237 Unable to initialize animated process

- Animator has encountered system limits in starting your program. The animated program cannot start because of either insufficient memory or too many processes running on the UNIX system.

- Animate your program when the load on the system has reduced. Run the program without animation to determine if it runs successfully; if so, animate the program without cross-session or intrasession animation. Ask your system administrator to expand the number of process slots and virtual memory page maps.

254 Keyboard interrupt to ANIMATOR during ACCEPT

- While using Animator you have terminated your program with a keyboard interrupt.

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Appendix C Btrieve Status Codes

Quick Reference

1: The operation parameter is invalid.
2: The application encountered an I/O error.
3: The file is not open.
4: The application cannot find the key value.
5: The record has a key field containing a duplicate key value.
6: The key number parameter is invalid.
7: The key number has changed.
8: The current positioning is invalid.
9: The operation encountered the end-of-file mark.
10: The key field is not modifiable.
11: The specified pre-imaging filename is invalid.
12: Btrieve cannot find the specified file.
13: Btrieve could not open the extension file for an extended file.
14: Btrieve cannot create or open the pre-image file.
15: The application encountered an I/O error during pre-imaging.
16: The application encountered an expansion error.
17: The application encountered a close error.
18: The disk is full.
19: The application encountered an unrecoverable error.
20: Btrieve Engine or Requester is inactive.
21: The key buffer parameter is too short.
22: The data buffer parameter is too short.
23: The position block parameter is not 128 bytes long.
24: The page size or data buffer size is invalid.
25: The application cannot create the specified file.
26: The number of keys specified is invalid.
27: The key position is invalid.
28: The record length is invalid.
29: The key length is invalid.
30: The file specified is not a Btrieve file.
31: The file is already extended.
32: The file cannot be extended. 33: Btrieve cannot unload.
34: The specified extension name is invalid.
35: The application encountered directory error.
36: The application encountered a transaction error.
37: Another transaction is active.

38: Btrieve encountered a transaction control file I/I error.
39: A Begin Transaction operation must precede an End/Abort Transaction operation.
40: The file access request exceeds the maximum number of files allowed.
41: Btrieve does not allow the attempted operation.
42: A file previously opened in Accelerated mode was not closed.
43: The specified record address is invalid.
44: The specified key path is invalid.
45: The specified key flags are invalid.
46: Access to the requested file is denied.
47: The number of files opened exceeds the maximum allowed.
48: The alternate collating sequence definition is invalid.
49: The extended key type is invalid.
50: The file owner is already set.
51: The owner name is invalid.
52: An error occurred while writing to the cache.
53: The language interface version is invalid.
54: The variable-length portion of the record is corrupt.
55: The application specified an invalid attribute for an AUTOINCREMENT key.
56: An index is incomplete.
57: An expanded memory error occurred.
58: The compression buffer length is too short.
59: The specified file already exists.
60: The specified reject count has been reached.
61: The workspace is too small.
62: The descriptor is incorrect.
63: The data buffer parameter specified on an Insert Extended operation is invalid.
64: The filter limit has been reached.
65: The field offset is incorrect.
66: The maximum number of open databases has been exceeded.
67: Btrieve cannot open the SQL data dictionary files.
68: Btrieve cannot perform the RI Delete Cascade operation.
69: The Delete operation specified a file that is damaged.
71: There is a violation of the RI definitions.
72: Btrieve cannot open the RI referenced file.
73: The RI definition is out of sync.
74: Btrieve aborted the transaction.
75: The server routing list is too small.
76: There is a conflict on the referenced file.
77: The application encountered a wait error.
78: Btrieve detected a deadlock condition.
79: A programming error occurred.
80: Btrieve encountered a record-level conflict.
81: Btrieve encountered a lock error.

82: Btrieve lost positioning.
83: Btrieve attempted to update or delete a record that was read outside the transaction.
84: The record or page is locked.
85: The file is locked.
86: The file table is full.
87: The handle table is full.
88: The application encountered an incompatible mode error.
89: A name error occurred.
90: The redirected device table is full.
91: The application encountered a server error.
92: The transaction table is full.
93: The record lock types are incompatible.
94: The application encountered a permission error.
95: The session is no longer valid.
96: A communications environment error occurred.
97: The data buffer is too small.
98: Btrieve detected an internal transaction error.
99: Btrieve Requester is unable to access the NetWare Runtime server.
100: No cache buffers are available.
101: Insufficient operating system memory is available.
102: Insufficient stack space is available.
103: The chunk offset is too big.
104: Btrieve does not recognize the locale.
105: The file cannot be created with Variable-tail Allocation Tables (VATs).
106: Btrieve cannot perform a Get Next Chunk operation.
107: The application attempted to perform a chunk operation on a pre-v6.0 file.
109: An unknown error was encountered either creating or accessing a semaphore.
110: Btrieve cannot access the archival logging configuration file.
111: The specified filename was not found in the archival logging configuration file.
112: The specified file is in use by another client.
113: Btrieve cannot find the archival log for the specified file.
114: The archival log for the specified file is invalid.
115: Btrieve cannot access the archival logging dump file.
130: Btrieve ran out of system locks.
132: The file has reached its size limit.
133: More than 5 concurrent users attempted to access the same data file.

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Btrieve List of Messages

1: The operation parameter is invalid.

The operation parameter specified in the call is invalid.

2: The application encountered an I/O error.

Btrieve encountered an error while reading from or writing to the disk. One of the following has occurred:

- The file is damaged and must be recreated.
- There is a large pre-image file inside a transaction, and there is not enough space for a write to the pre-image file.

Note** Pre-image files are used only for file versions earlier than v6.0.

- For Btrieve v5.x files, there is one pre-image file for multiple data files. For example, if you name the data files CUSTOMER.ONE and CUSTOMER.TWO, both files will have pre-image files named CUSTOMER.PRE.
- For pre-v6.0 Btrieve files that are larger than 768 MB, there is a conflict among locking mechanisms. The Btrieve file has not been corrupted. Your application can retry the operation until the conflict is resolved (that is, when the competing application releases the lock required by your application).
- A Btrieve engine version earlier than v6.0 attempts to open a v6.x formatted file.

3: The file is not open.

The operation cannot be executed because the file is not open. The application must perform a successful Open operation before Btrieve can process any other operations.

This status code may also be returned if the application passed an invalid position block for the file, or if the application passed a position block with a different client ID than the client ID used to open the file.

4: The application cannot find the key value.

Btrieve cannot find the specified key value in the index path.

Also, pre v6.x versions of server-based Btrieve could return this status code if two separate files have different alternate collating sequences (ACSs), but those ACSs have the same name. Never use the same name for different ACSs, regardless of the version of Btrieve you are using.

5: The record has a key field containing a duplicate key value.

Btrieve cannot add or update a record for the designated index because the record has a key field that contains a duplicate key value, and the index does not allow duplicate values.

6: The key number parameter is invalid.

The value stored in the key number parameter is not valid for the file being accessed. The key number must correspond to one of the keys defined for the file. Valid key numbers are 0 through 118.

7: The key number has changed.

The key number parameter changed before a Get Next, Get Next Extended, Get Previous, or Get Previous Extended operation. The operation requires the same key number parameter as the previous operation because Btrieve uses positioning information relative to the previous key number.

Another related situation can also result in Btrieve returning this status code. That situation occurs when an application performs a Delete or Update operation immediately following a Get operation. If the application changes the value of the key number in the Delete or Update operation (from the value returned by the preceding Get operation), Btrieve will delete or update the record as requested and will not return Status Code 07, at least not at this point. However, Btrieve will return Status Code 07 on the very first Get operation performed after the deletion or update, even if that Get operation uses the same key value the application passed to the Delete or Update operation.

If you need to change key numbers between consecutive Get Next, Get Next Extended, Get Previous, or Get Previous Extended operations (or in Delete or Update operations as described in the preceding paragraph), use a Get position operation followed by a Get Direct/Record operation to reestablish positioning for the new index path.

8: **The current positioning is invalid.**

The current position must be established to update or delete a record. Perform a Get or Step operation to establish the current position.

This status code may also be returned if the application passed an invalid position block for the file.

9: The operation encountered the end-of-file mark.

This status code indicates one of the following conditions has occurred:

- The operation encountered an end-of-file boundary or tried to read past file boundary (end-of-file or start-of-file).
- In a Get Next Extended, Get Previous Extended, Step Next Extended, or Step Previous Extended operation, the number of records satisfying the filtering condition is less than the number of specified records to be returned, and the reject count has not been reached.
- When reading a file in ascending order according to an index path, Btrieve has already returned the last record in that index path. When reading a file in descending order according to an index path, Btrieve has already returned the first record in the index path.
- When using the Get By Percentage operation, either the value supplied for the percentage is too high, that is, it exceeds 10,000 decimal (0x2710)-or the file contains no records.

10: The key field is not modifiable.

During an Update operation, an attempt was made to modify a key field that is defined as nonmodifiable.

11: The specified pre-imaging filename is invalid.

This status code indicates that the filename specified does not conform to file naming conventions. Make sure the filename is valid for the environment. Status Code 11 can also have the following meanings in server-based versions of Btrieve:

- An attempt was made to open a file that has .^^^ as its extension. This extension is reserved for Btrieve to use during a continuous operation. (Continuous operations are used only in the server-based Btrieve environment.)

- The data buffer for a Begin or End continuous operation is not set up correctly.

12: Btrieve cannot find the specified file.

Check the key buffer parameter to make sure the pathname is terminated with a blank or a binary zero. Also, check to be sure the file exists. When accessing a Btrieve file on a NetWare server, be sure that you have FILE SCAN rights to the directory in which the Btrieve file resides.

13: Extended file error.

Btrieve v5.x or earlier could not find the extension file for an extended file that the application tried to open. Extension files must be loaded on the logical disk drive specified when the extension was created. Both the primary file and its extension file must be online to access an extended file.

14: Btrieve cannot create or open the pre-image file.

There are four possible causes for this status code:

Note** Pre-image files are used only for file versions earlier than v6.0.

- Btrieve cannot create a new pre-image file because the disk directory is full. Btrieve must be able to create a pre-image file.

- Btrieve cannot open the pre-image file to restore file integrity. If the pre-image file is erased or damaged, Btrieve cannot restore the file's integrity.

- In the server-based Btrieve environment, or in the DOS or OS/2 client-based Btrieve environments, either use the RECOVER command in the Btrieve File Manager utility to retrieve the damaged file's data records in a sequential file, or replace the file with its most recent backup.

- In the Btrieve for Windows environment, use the Save command from the Data menu of the Btrieve File Manager utility to retrieve the damaged file's data records in a sequential file. Be sure to specify no indexes when executing the Save command in this situation.

- Client-based Btrieve cannot assign a handle to the pre-image file because Btrieve was not started by a user with access rights to the pre-image file.

- The file structure of a pre-image file created by Btrieve v6.x is different from the file structure of a pre-image file created by Btrieve v5.x. If you have an extraneous .PRE file in Btrieve v5.x format and you are using Btrieve v6.x, Status Code 14 is returned when you try to open the Btrieve file to which the .PRE file belongs.

15: The application encountered an I/O error during pre-imaging.

This status code indicates either the disk is full or the pre-image file is damaged.

Note** Pre-image files are used for file versions earlier than v6.0. When this status code occurs, proceed as follows:

- If the pre-image file is damaged, the integrity of the Btrieve file cannot be ensured.

- In the server-based Btrieve environment, or in the DOS or OS/2 client-based Btrieve environments, either use the RECOVER command in the Btrieve File Manager utility to retrieve the damaged file's data records in a sequential file, or replace the file with its most recent backup.

- In the client-based Btrieve environment, use the Save command of the Btrieve File Manager utility to retrieve the damaged file's data records in a sequential file. Be sure to specify no indexes when executing the Save command in this situation.

- If the disk is full, erase any unnecessary files.

16: The application encountered an expansion error.

Pre-v6.0 versions of Btrieve return this status code when they encounter an error while writing the directory structure to disk prior to creating the expanded file partition. Either Btrieve cannot close the file, or a new page was added to the file and Btrieve cannot close and reopen the file to update the directory structure. Check for a disk hardware failure.

17: The application encountered a close error.

Pre-v6.0 versions of Btrieve return this status code when they encounter an error while writing the directory structure to disk prior to closing the file. Either Btrieve cannot close the file, or a new page was added to the file and Btrieve cannot close and reopen the file to update the directory structure. Check for a disk hardware failure.

This status code may also be returned if the application passed an invalid position block for the file.

18: The disk is full.

This status code can be returned in the following situations:

- The disk is full, and the file cannot be expanded to accommodate additional records. Erase any unnecessary files. If using a version of Btrieve prior to V6.0, you can possibly extend the file to gain additional disk space.

- There is not enough space to append a new page to the data file.

- The pre-image file is out of disk space. If you are working with files created by Btrieve versions earlier than v6.0 and you are in a transaction, the pre-image file size increases for the duration of the transaction. If you receive this status, either reduce the number of operations in the transaction or obtain more disk space.

- The NetWare owner name for the file is no longer valid, and your application tried to insert or update records in the file, thus causing the file to expand. In this case, this status code is returned when Btrieve needs to add a page to the file, regardless of how much disk space is available. To check for an owner name, use the NetWare utility NDIR. To add an owner name, use either FILER (a NetWare text utility) or the NetWare Administrator graphical utility.

- You can limit the amount of disk space available to each user in NetWare. This status code indicates an attempt was made to expand a Btrieve file beyond the amount of disk space allocated to the file's owner in NetWare.

19: The application encountered an unrecoverable error.

To ensure file integrity, recover the file as follows:

- In the server-based Btrieve environment, or in the DOS or OS/2 client-based Btrieve environments, either use the RECOVER command in the Btrieve File Manager utility to retrieve the damaged file's data records in sequential file, or replace the file with its most recent backup.

- In the client-based Btrieve environment, use the Save command of the Btrieve File Manager utility to retrieve the damaged file's data records in a sequential file. Be sure to specify no indexes when executing the Save command in this situation.

20: The Btrieve Engine or Requester is inactive.

In DOS and NetWare, you must load Btrieve and, if applicable, the Btrieve Requester before generating any requests.

By default in the Windows environment, the Setup utility turns on the Client Engine Usage option. If you want to access server-based Btrieve but do not want to access client-based Btrieve, turn the Client option off and turn the Requester option on. If you want to access both client-based Btrieve and server-based Btrieve, turn the Requester option on and leave the Client option on.

Also, in the Windows environment, be sure that the Btrieve for Windows DLLs and WBTR32.EXE are in your PATH or in the top level of your Windows directory. In the OS/2 environment, be sure that the Btrieve DLLs are in your LIBPATH directory.

21: The key buffer parameter is too short.

The key buffer parameter is not long enough to accommodate the key field for the index path requested. Verify that the length of the key buffer equals the defined length of the key specified in the key number parameter. Only language interfaces that track the buffer length can return this status code.

22: The data buffer parameter is too short.

The data buffer parameter is not large enough to accommodate the length of the data record defined when the file was created or the entire record including its variable portion. Verify that the length of the data buffer is at least as long as the file's defined record length.

- For Get or Step operations, Btrieve returns as much data as it can and a Status Code 22, indicating that it cannot return the entire record.

- For an Insert operation, Btrieve does not insert the record if the data buffer is shorter than the fixed-length portion of the record.
- For an Update operation, if the data buffer is too short to contain the fixed-length portion of a record, Btrieve does not update the record.
- For the Create operation, the last key defined in the file specification has the segmented attribute set, but has no definition for additional segments. Either remove the segmented attribute for the key or add the definition(s) for the missing segment(s).
- For the Create, Stat, and Create Index operations, the data buffer is not long enough to contain all the file specifications, the key specifications, and (if specified) the alternate collating sequence definition.
- For the Get By Percentage or Find Percentage operation, the data buffer length is less than 4 bytes.
- For the Version operation, the data buffer length is less than 5 bytes.

A status code 22 may indicate file corruption, especially in files with variable length records. You should rebuild the file if it is corrupt.

23: The position block parameter is not 128 bytes long.
Only older language interfaces that track the position block length can detect and return this status code. None of the currently-shipping language interfaces return Status Code 23.

24: The page size or data buffer size is invalid.

Two possible reasons for receiving this status code are as follows:

- The page size is invalid. The page size must be a multiple of 512 bytes and cannot exceed 4,096 bytes.
- During a Create operation, the page size is the first file specification Btrieve checks. A Status Code 24 at this point may indicate an invalid data buffer parameter.

In versions prior to Btrieve v6.1, this status code can be returned from the Open operation. In this case, Btrieve cannot open the file because the file's page size

exceeds the Largest Page Size configuration option. To successfully open the file, you must increase the value of the Largest Page Size configuration option and then reload Btrieve. Btrieve v6.1 will not return Status Code 24 from the Open operation.

25: The application cannot create the specified file.

Btrieve can return this status code if an application attempts to create a Btrieve file, but the disk directory or the disk itself is full. If the application is creating a file over an existing file, Btrieve returns this status code when the existing file is open or when the operating system prevents the operation for some other reason (for example, in NetWare the file is flagged transactional).

If you are using NetWare, some pre-v6.0 versions of Btrieve can also return Status Code 25 if the HOLD parameter in NET.CFG or SHELL.CFG is set to ON, and the application attempts to create a Btrieve file on a network drive. (The HOLD parameter is set to OFF by default.) Creation of the Btrieve file on a local drive will be successful regardless of the value of the HOLD parameter.

26: The number of keys specified is invalid.

The number of keys specified for the page size is invalid. The number of key segments must be within the following limits:

Page Size	Max. Number Key Segments
512	8
1,024	23
1,536	24
2,048	54
2,560	54
3,072	54
3,584	54
4,096	119

27: The key position is invalid.

The key field position specified is less than 1 or exceeds the defined record length for the file. Either the key position is greater than the record length or the key position plus the key length exceeds the record length.

28: The record length is invalid.

The record length specified (plus overhead for duplicates, record usage count, variable record pointers, key pointers, and blank truncation information) must be less than or equal to the page size minus 8 bytes, and greater than or equal to 4 byes.

29: The Key length is invalid.

The key length specified must be greater than 0 but cannot exceed 255 bytes. The length of a binary key must be an even number. Btrieve requires that each key page in the file be large enough to hold at least eight keys.

If the page size is too small to accommodate eight occurrences of the specified key length (plus overhead), either increase the file's page size or decrease the key length.

30: The file specified is not a Btrieve file.

Either Btrieve did not create the file, or a version of Btrieve earlier than v3.x created it.

This status code can also indicate that the first page of the file is damaged. Use a backup copy of your data file.

If you are trying to recover from receiving Status Code 30 and you suspect that the header page of the source file might be damaged, try using the File Manager utility or File Manager utility to create the new Btrieve file with a description file.

31: The file is already extended.

This status code is returned by pre-v6.0 client- and VAP-based versions of Btrieve if an application tried to extend a file that has already been extended. A file can be extended only once. Files on a NetWare v3.x or NetWare v4.x server using the Btrieve NLM cannot be extended. Also, Btrieve v6.x does not support the extended files feature.

This may also be error: **3103 Server name not found by Pervasive Network Services Layer.**

The search for a target server name was unable to resolve an address after searching NDS, bindery, named pipes, and DNS. Some possible causes include:

- No common communication protocol is available between the server and the client. To check this, use the Setup utility to check the Supported Protocols setting of the requester (under communications Requester section) and the server (under Btrieve Communications Manager and Scalable SQL communications Manager sections). Ensure that there is a common protocol (either SPX or TCP/IP) between the server and the requester.

- For Windows NT: The MicroKernel engine not running.

- For Netware:

  - The server Addressing Protocol (SAP) filtered out the server name. SAP is used in NetWare 3.x and can be used in version 4.x. This type of filtering is common on WAN environments.

  - NWCALLS.DLL and/or NWIPXSPX.DLL is missing when using the Win16 client. This is especially likely if the Win32 clients are functioning but the Win16 clients do not. These are NetWare system files that can be obtained from Novell's web site (http://www.nevell.com).

- For NetWare using TCP/IP: The server name is not in DNS.

- For Windows NT or OS/2 Warp Server: Named pipes are used in these two operating systems to resolve server names. The networking at the operating system level was unable to find the target named pipe.

Check the Pervasive Event Log (PVSW.LOG) for more information.

32: The file cannot be extended.

This status code is returned by pre-v6.0 client- and VAP-based versions of Btrieve if an application tried to specify a file that cannot be extended. Possible causes for receiving this status code are that the directory is full, the disk is full, or the disk is write protected.

This may also be error: **3104 The Pervasive Network Services Layer encountered a permission error.**

This status code is relevant to Windows NT and OS/2 Warp only.

Permission to access the target named pipe is denied. If you receive this status code:

- Verify that you have access to the inter process communication mechanism.

- Ensure that your passwords are identical if you have the same user name on two systems.

33: Btrieve cannot unload.

This status code is returned by Btrieve for DOS if you attempt to unload Btrieve when you have loaded another terminate and stay resident (TSR) program after you loaded Btrieve. Unload the other TSR before unloading Btrieve.

This may also be error: **3105 No available transport protocol for the Pervasive Network Services Layer.**

No transport protocol that is common to both the target server engine and clients is available. For example, Status Code 3105 could be caused by a client using SPX when the server engine only has TCP/IP available. To check this, use the Setup utility to examine the Supported Protocols setting of the client (under the Communications Requester section) and the Supported Protocols setting of the server (under the Btrieve communications Manager and Scalable SQL Communications Manager sections). For more information on the Setup utility, refer to the Pervasive. SQL User's Guide.

34: The specified extension name is invalid.

This status code is returned by pre-v6.0 client- and VAP-based versions of Btrieve if an application specified an invalid filename for the extended partition. Check the validity of the filename.

This may also be error: **3106 The Pervasive Network Services Layer encountered a connection failure.**

The Pervasive Network Services Layer was able to establish a transport connection at the client side, but the connection attempt at the target side failed. Some possible causes are:

- The Btrieve or Scalable SQL engine is not running on the server.

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- The network is overloaded.

- The connection path is invalid.

- You have more than one mapped drive to the same server.

- You are trying to access a Btrieve engine on a Windows NT server and the Accept Remote Requests setting of the Btrieve Communications Manager on that server is set to No. See the Pervasive.SQL User's Guide for more information.

Check the Pervasive Event Log (PVSW.LOG) for more information if you receive this status code.

35: The application encountered directory error.

Either a Get Directory operation specified a drive that does not exist, or a Set Directory operation specified an invalid pathname. Check the validity of both the drive and the pathname.

This may also be error: **3107 The Pervasive Network Services Layer is out of memory.**

The Pervasive Network Services Layer has insufficient memory to continue.

36: The application encountered a transaction error.

Btrieve tried to perform a Begin Transaction operation without configuring Btrieve to allow transactions. Run the Btrieve Setup utility and specify a higher value for the Number of Transactions configuration option. Next, stop and then restart Btrieve so that your changes will take effect.

On a workstation that is running both client-based and server-based Btrieve, be sure that both the client engine and the server engine are configured for transactions.

In server-based Btrieve, all servers that are running server-based Btrieve and to which the workstation is attached must be configured for transactions, even if the files involved in the transaction are only located on one of the servers.

This may also be error: **3108 The Pervasive Network Services Layout detected an invalid session.**

The application attempted to use a network session that was not recognized by the Pervasive Network Services Layer. If the error persists, contact Pervasive Software Customer Support.

37: Another transaction is active.

The application issued a Begin Transaction operation while another transaction was active by the same client (it can be an NLM or application). Btrieve does not accommodate nesting transactions.

38: Btrieve encountered a transaction control file I/O error.

Btrieve encountered an error when it tried to write to the transaction control file. Possible causes for receiving this status code are that the disk is full, the disk is write protected, the transaction control file (BTRIEVE.TRN) that is created when you load Btrieve has been deleted or the transaction control file is flagged read only.

This may also be error: **3110 The network layer is not connected.**

The application attempted to use a network connection that was no longer active. This happens when the session with the Pervasive Network Services Layer is still valid, but was dropped by the network. Stop and restart the application.

39: A Begin Transaction operation must precede an End/Abort Transaction operation.

The application issued an End or Abort Transaction operation without a corresponding Begin Transaction operation. Make sure that each End or Abort Transaction operation in your program is executed only after a successful Begin Transaction operation.

This may also be error: **3111 Failure during send to the target server.**

The Pervasive Network Services Layer attempted to send an application request to the target server and encountered a network specific error from the target. Check the Pervasive Event Log (PVSW.LOG) for more information.

You can receive this error when the server's Btrieve Communication Manager or Scalable SQL Communication Manager's Number of Sessions setting is too low.

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To resolve this, increase the Number of Sessions setting for these two components using the Setup utility. Refer to the Pervasive.SQL User's Guide for more information on the Number of Sessions setting and the Configuration Utility.

40: The file access request exceeds the maximum number of files allowed.

This status code is returned by pre-v6.0 client- and VAP-based versions of Btrieve if an application tries to access more than the maximum number of files allowed within a transaction. The maximum number of different files that can be accessed during a logical transaction is set when Btrieve is configured.

This may also be error: **3112 Failure during receive from the target server.**

The Pervasive Network Services Layer attempted to receive data from the target server and encountered a network specific error. Check the Pervasive Event Log (PVSW.LOG) for more information.

41: Btrieve does not allow the attempted operation.

This status code is returned for one of the following reasons:

- The application tried to perform an operation that is not allowed at this time. Btrieve does not allow some operations under certain operating conditions. For example, Btrieve returns this status code if the application attempts to perform a Step operation on a key-only file or a Get operation on a data-only file.

- If running NetWare Btrieve, the key number parameter of a continuous operation call is not 0, 1, or 2.

Also, Btrieve prohibits certain operations during transactions because they have too great an effect on the file or on Btrieve's performance. These operations include Set Owner, Clear Owner, Extend, Create Index, and Drop Index.

42: A file previously opened in Accelerated mode was not closed.

Either the application tried to open a Btrieve v5.x file that was previously accessed in Accelerated mode by Btrieve v5.x and never successfully closed, or the application tried to open a file for which Btrieve v6.x encountered an unrecoverable error during a Set or Clear Owner operation. The file's integrity cannot be ensured.

- In the server-based Btrieve environment, or in the DOS or OS/2 client-based Btrieve environments, either use the RECOVER command in the Btrieve File Manager utility to retrieve the damaged file's data records in a sequential file, or replace the file with its most recent backup.

- In the Btrieve for Windows environment, use the Save command from the Data menu of the Btrieve File Manager utility to retrieve the damaged file's data records in sequential file. Be sure to specify no indexes when executing the Save command in this situation.

Another possible cause for receiving Status Code 42 is that your application tried to open a v5.x-formatted Btrieve file using a v5.x Btrieve engine; however, that same file was previously accessed by a Btrieve v6.x engine, which failed to close the file successfully due to a crash. Btrieve v5.x does not understand the format of a pre-image file created by Btrieve v6.x.

This may also be error: **3114 The routing table of the Pervasive Network Services Layer is full.**

The Pervasive Network Services Layer's Server Routing Table is full. This table normally grows dynamically as needed. Verify that you are not in a low memory condition.

43: The specified record address is invalid.

This status code is returned for one of the following reasons:

- The record address specified for a Get Direct/Record operation is invalid. The address is outside the file's boundaries, it is not on a record boundary within a data page or on a data page, or the record at the specified address has been deleted. For a Get Direct/Record operation, specify the 4-byte address obtained by a Get Position operation.

- When using Btrieve with NetWare and the files are Btrieve v5.x files, this error may indicate a file access conflict. For example, client 1 has a file locked in an exclusive transaction. Client 2 is reading records from the same file and tries to update a record that the transaction inserted. If client 2 reads the record and then client 1 aborts the

transaction, client 2 receives this status code when issuing the Update operation.

- For a find Percentage operation that is seeking a percentage based on a record's physical location within the file, the specified record address is invalid.

- The file may be corrupt, and you must rebuild it.

This may also be error: **3115 Pervasive Network Services Layer encountered a transport failure.**

The Pervasive Network Services Layer encountered a WinSock (Win32, Win16) or Berkeley Sockets (OS/2) error while creating the local transport endpoint on the client side. Check the Pervasive Event Log (PVSW.LOG) for more information.

44: The specified key path is invalid.

The application tried to use the Get Direct/Record operation to establish an index path for a key whose value is null in the corresponding record. Btrieve cannot establish positioning based on a null key value.

Some earlier versions of Btrieve return Status Code 82 in this situation; therefore, you should write your application to check for both of these status codes.

45: The specified key flags are invalid.

The key flags specification on a Create operation is inconsistent. If a key has multiple segments, the duplicate, modifiable, and null attributes should be the same for each segment in the key. Also, you cannot use the allseg or anysegs key attributes in a key-only file.

This status code is also returned if an attempt is made to specify a different alternate collating sequence for two or more segments of a segmented key.

46: Access to the requested file is denied.

This status code is returned for one of the following reasons:

- The application opened a file in read-only mode and tried to perform an Insert, Update, or Delete on that file.

- An attempt was made to perform an Insert, Update, or Delete on a file that is flagged read-only to NetWare or DOS.

- The owner name required for updates was not specified correctly when the file was opened.

47: The number of files opened exceeds the maximum allowed.

The number of files opened in Accelerated mode exceeded the number of buffers available in Btrieve's cache. When a file is opened in Accelerated mode, Btrieve reserves one of its cache buffers for the file. Btrieve always reserves five empty buffers for index manipulation. In client-based versions of Btrieve prior to v6.0, you should reconfigure Btrieve both with a smaller /P configuration option (to allocate more buffers) and a larger /M option. You will not encounter this error either in v6.x client-based Btrieve, or in server-based Btrieve.

48: The alternate collating sequence definition is invalid.

This status code is returned for one of the following reasons:

- The first byte of an alternate collating sequence definition (the identification byte) does not contain the hexadecimal value AC (for user-defined ACSs) or AD (for locale-specific ACSs). Make sure that the first byte contains the proper value.

- You are using Btrieve v6.x with the Create Btrieve Files in Pre-v6.x Format configuration option turned on and you attempt to create a Btrieve file that contains a key with a locale-specific alternate collating sequence.

- You attempt to add an index with a locale-specific alternate collating sequence to a file in Btrieve 5.x format.

49: The extended key type is invalid.

This status code is returned for one of the following reasons:

- You try to create a file or an index with an invalid extended key type , or you try to assign an alternate collating sequence to a binary key or key segment. You can assign an alternate collating sequence only to a string, lstring, or zstring key type.

- You define an index requiring an alternate collating sequence, but no alternate collating sequence definition exists (either in the file or in the key definition passed in the data buffer).

- You define an alternate collating sequence with case insensitivity. These two definitions are incompatible. Only Btrieve v6.0 interprets this condition as an error. In Btrieve v6.15, Btrieve creates the index using the first ACS in the file.

- You attempt to create a Btrieve file that contains multiple alternate collating sequences but your server or workstation has a version of Btrieve that predates v6.1 loaded.

- You are using Btrieve v6.x with the Create Btrieve Files in Pre-v6.x Format configuration option turned on and you attempt to create a file with a numeric key.

50: The file owner is already set.

The application tried to perform a Set Owner operation on a file that already has an owner. Use the Clear Owner operation to remove the previous owner before specifying a new one.

51: The owner name is invalid.

The possible causes for this status code are as follows:

- If the application received this status code after a Set Owner operation, the owner names specified in the key buffer and data buffer did not match.

- If this status code occurred during an Open operation, the application attempted to open a file that has an owner name assigned to it. The application must specify the correct owner name in the data buffer. Make sure that the owner name is null-terminated in the data buffer, and that the data buffer length is set long enough to include the owner name plus the null terminator.

- If an NLM application received this status code when accessing a file in continuous operation mode, then the client ID of the calling NLM differs from the client ID of the application that originally put the file into continuous operation mode.

52: An error occurred while writing to the cache.

53: The language interface version is invalid.

An application tried to access a file containing variable-length records with a language interface from Btrieve v3.15 or earlier. To access files with variable-length records, you must use a v4.x or later interface.

This may also be error: **3125 The Pervasive Network Services Layer was unable to resolve the Novell Directory Services name into a NetWare server name.**

The Pervasive Network Services Layer was unable to resolve the Novell Directory Services name into a NetWare server name. This occurs on Windows 95 workstations with the Microsoft Service for Novell Directory Services in cases where the system is unable to load the Windows 95 Requester support modules. Ensure that the Requester Win95 support modules are installed and available, and that NWCALLA.DLL is available on the Windows 95 workstation.

54: The variable-length portion of the record is corrupt.

During a Get or Step operation, Btrieve cannot read all or part of the variable-length portion of a record. Btrieve returns as much data as possible to the application. This status code usually indicates one or more pages used to store variable-length records is corrupt. Check the data buffer length returned by Btrieve to see how much of the record was returned.

- In the server-based Btrieve environment, or in the DOS or OS/2 client-based Btrieve environments, either use the RECOVER command in the Btrieve File Manager utility to retrieve as many as possible of the damaged file's data records in a sequential file, or replace the file with its most recent backup.

- In the Btrieve for Windows environment, use the Save command from the Data menu of the Btrieve File Manager utility to retrieve as many

as possible of the damaged file's data records in a sequential file. Be sure to specify no indexes when executing the Save command in this situation.

This may also be error: **3126 The Pervasive Network Services Layer was unable to resolve the given filename into a valid path.**

Check that the given filename is a valid file format.

55: The application specified an invalid attribute for an AUTOINCREMENT key.

The application tried to specify either the segmented or duplicate attribute for an auto increment key type. An auto increment key cannot be part of a segmented key and cannot allow duplicates.

56: An index is incomplete.

An index can be damaged if a Create Index operation (31) or a Drop Index operation (32) is interrupted before it runs to completion. Perform a Drop Index operation to completely remove the damaged index from the file, and then rebuild the index with the Create Index operation, if so desired.

57: An expanded memory error occurred.

58: The compression buffer length is too short.

The application tried to read or write a record that is longer than the value specified for the size of the compression buffer. Reconfigure Btrieve using the Btrieve Setup utility, specifying a higher value for the Largest Compressed Record Size option.

59: The specified file already exists.

This status code is returned for the Create operation if the application specified -1 in the key number parameter and the name of an existing file in the key buffer parameter. If you want to overwrite the existing file, remove the -1 from the key number parameter. If you want to preserve the existing file, alter the filename specified in the key buffer parameter.

60: The specified reject count has been reached.

Btrieve rejected the number of records specified by the reject count before a Get Next Extended, Get Previous Extended, Step Next Extended, or Step Previous Extended operation found the requested number of records that satisfy the filtering condition. Check the first two bytes returned in the data buffer for the number of records that were retrieved.

61: The work space is too small.

The Get Next Extended, Get Previous Extended, Step Next Extended, and Step Previous Extended operations use a buffer as work space. This status code indicates that the work space (set by default to 16 KB) is not large enough to hold the filtering data buffer structure and the largest record to be received.

62: The descriptor is incorrect.

The descriptor (data buffer structure), which is passed for a Get Next Extended, Get Previous Extended, Step Next Extended, or Step Previous Extended operation, is incorrect. The descriptor length (the first two bytes of the data buffer) on the extended operation call must be the exact length of the descriptor. This requirement does not apply to the data buffer length option, which can still be declared longer than necessary.

On a Get Direct/Chunk operation, the descriptor structure in the data buffer is incorrect, or it is inconsistent (either internally or in respect to the data buffer length). See the discussion of the Get Direct/Chunk operation in the Btrieve Programmer's Manual available with the Btrieve Developer Kit.

63: The data buffer parameter specified on an Insert Extended operation is invalid.

An Insert Extended operation provided an invalid buffer. Either the buffer length is less than 5 bytes, or the number or records specified is 0. Correct the buffer length or the number of records.

64: The filter limit has been reached.

During a Get Next Extended, Get Previous Extended, Step Next Extended, or Step Previous Extended operation, a rejected record was reached; no other record can satisfy the given filtering condition, going in the direction that the operation specified. This is applicable only if the first segment of the key that the key number specified is also used as the first term of the filtering field.

65: The field offset is incorrect.

The field offset in the extractor of a Get Next Extended, Get Previous Extended, Step Next Extended, or Step Previous Extended operation is invalid based on the length of the retrieved record. Make sure that the field offset is a valid value (from 0 through the record length minus 1).

This may also be error: **8001 The Services DLL encountered an error while allocating memory.**

Memory could not be allocated. Verify that your system resources are not exhausted.

66: The maximum number of open databases has been exceeded.

The application has tried to open too many databases configured for referential integrity checking at one time. See your database product documentation for more information on referential integrity.

This may also be error: **8002 The component ID string was not found.**

The Services DLL attempted to retrieve an ID from a component, and the component did not have an ID. This status code results from an error in the application.

67: Btrieve cannot open the SQL data dictionaries.

This status code may indicate that an application opened a data file containing referential integrity (RI) definitions but Btrieve cannot open one of the data dictionary files (FILE.DDF or RELATE.DDF) or the configuration file (DBNAMES.CFG).

A database that uses RI has a database name. You must log in to the database by using the database name. Btrieve must be able to find the DBNAMES.CFG file that contains the definition of the database name:

- If the database name is defined in the Btrieve for Windows v6.15 engine, make sure that the DBNAMES.CFG file is in your Windows directory.

- If the database name is defined in the Btrieve for DOS v6.15 engine, make sure that the DBNAMES.CFG file is in the DBNames directory.

- If the database name is defined on a NetWare server, make sure that DBNAMES.CFG is in the SYS:SYSTEM directory on that server.

Regardless of whether DBNAMES.CFG is on a workstation or a server, make sure that the FILE.DDF and RELATE.DDF files for the named database are placed in the dictionary location that the DBNAMES.CFG file defines. Refer to your database product documentation for more information about referential integrity.

This may also be error: **8003 Thunk path is not accessible to the Services DLL.**

Smart Component Management cannot find the address of the Win32 APIs.

68: Btrieve cannot perform the RI Delete Cascade operation.

Btrieve cannot enforce the Delete Cascade rule on a file under referential integrity control because the record that the application attempted to delete has more than 16 levels of descendants. Delete records from the lower levels, and then try again to delete the record that the application was attempting to delete initially. Refer to your database product documentation for more information on referential integrity.

69: The Delete operation specified a file that is damaged.

The application encountered an error while Btrieve was attempting to enforce the Delete Cascade rule in response to a Delete operation. This status code indicates that the related file has been damaged and must be recreated.

Refer to your database product documentation for more information on referential integrity and the Delete Cascade rule.

This may also be error: **8005 API not initialized.**

You receive this status code when an error causes an API to not initialize properly. Check the Pervasive Event Log (PVSW.LOG) for more information. This may also be error: 8006 the specified component was not found.

Smart Component Management cannot operate on the component because it was not found. Check the Pervasive Event Log (PVSW.LOG) for more information.

71: There is a violation of the RI definitions.

If you have attempted an Insert operation on a file under referential integrity control, you may receive this status code if a foreign key value in the record to be inserted does not have a corresponding primary key in the referenced file.

If you are performing an Update operation, there are two possible causes for this status code:

- You are attempting to change the value of a primary key.
- You are attempting to change the value of a foreign key to a value that does not exist for the define primary key.

If you have attempted a Delete operation, the restrict rule is being enforced, and a primary key value in the record you are trying to delete references a foreign key in the referenced file. Refer to your database product documentation for more information on referential integrity.

This may also be error: **8007 Error retrieving Win32 version information.**

An error occurred while retrieving the Win32 version information from the operating system. This error should not occur and it indicates a problem with your Windows environment. Contact Pervasive Customer Support.

72: Btrieve cannot open the RI referenced file.

The referenced file cannot be found at the location specified by FILE.DDF and DBNAMES.CFG. Be sure that the referenced file is in one of the data file locations that the DBNAMES.CFG file specifies for the named database:

- If the DBNAMES.CFG file is defined on a server, verify that the file location does not contain a drive letter.
- If the DBNAMES.CFG file is defined in the client engine, make sure that the drive letters are the same (and map to the same locations) as specified in DBNAMES.CFG.

Refer to your database product documentation for more information about referential integrity.

The may also be error **8008: Information mismatch in component ID.**

You receive this status code when an application has specified multiple platforms, types or versions in a component ID. The Services DLL therefore cannot bind to the correct component.

73: The RI definition is out of sync.

You have attempted to open a file for which the referential integrity (RI) definition either disagrees with the definition in RELATE.DDF or refers to a database not found in DBNAMES.CFG. This status code can also occur on an insert or delete operation, or on an update operation that would change a foreign key. Refer to your SQL database documentation for more information about repairing RI definitions.

This may also be error: **8009 Required information missing in component ID.**

You receive this status code when a component ID string is missing required information such as:

- Platform

- Type

- Major/Minor functional level

74: Btrieve aborted the transaction.

This is an informative status code. A pre-v6.x version of NetWare Btrieve replaced an End Transaction operation with an Abort Transaction after detecting an error for a Transaction Tracking System (TTS) file inside the transaction. In addition, Btrieve executed the Abort Transaction operation.

Status Code 74 will not be returned by v6.x NetWare Btrieve or by client-based Btrieve because TTS has a different meaning to v6.x NetWare Btrieve, and client-based Btrieve ignores the TTS flag.

This may also be error: **8010 Error while opening a file to retrieve component ID.**

The Services DLL attempted to open a file in order to retrieve a component ID, and the file did not exist.

75: The server routing list is too small.

If you use SET BRQPARMS=/S:1 with the Btrieve for OS/2 Requester, this status code occurs after you tried to either open a file or get the version number of server-based Btrieve. To solve the problem, set /S to 2 or higher. Do not set /S so that it defaults to 1.

You can also receive this message if there is a Btrieve file open that has not been updated to Btrieve v6.0.

76: There is a conflict on the referenced file.

The application has attempted to perform an Update, Insert, or Delete operation on an RI-controlled file that references another file. The application cannot open the referenced file for referential integrity checking because it is already opened in Exclusive mode. Wait until the referenced file is closed or is opened in a mode other than Exclusive, and then retry the operation. Refer to your database product documentation for more information on referential integrity.

This may also be error: **8012 Required information for binding rule is missing.**

You receive this status code when required information is missing, such as:

- Platform type

- Major/minor functional level

77: The application encountered a wait error.

This is an informative status code. You must retry the operation yourself; Btrieve does not automatically retry the operation. Server-based Btrieve returns this status code in one of the following situation:

- A wait lock bias is specified for an operation, but another user has locked the requested resource.

- The application is currently processing a wait transaction and tried to access a file that another user has locked.

When you are using the Btrieve Requester to access Btrieve, the Requester waits and retries if a requested resource is locked. When a server-based application is accessing Btrieve and the requested resource is locked, a wait is also required. In this case, Btrieve would be expected to perform the wait. Since this would occupy Btrieve and lock out other users who might be trying to release the requested resource, Btrieve does not perform the wait. Instead, it returns a Status Code 77, and the server-based application must retry later.

This may also be error: **8013 Error locating a component.**

An error occurred while opening an operating system directory to search for a component. Check the Pervasive Event Log (PVSW.LOG) for more information.

78: Btrieve detected a deadlock condition.

The application should clear all resources (for example, by aborting or ending the transaction, or releasing all record locks) before proceeding. This breaks the deadlock, allowing other applications to access the resources for which they are waiting.

79: A programming error occurred.

Although very rare, it is possible to receive this status code when there is a malfunction that Btrieve cannot specifically detect or from which Btrieve cannot recover. Retry the operation again. If the error persists, there may be system corruption; try to clear the system by rebooting, and then try the operation again.

80: Btrieve encountered a record-level conflict.

Btrieve did not perform the Update or Delete operation because of a record-level conflict. For example, station A reads a record, station B reads the same record and updates it, and then station A attempts to update the record. The application should reread the record prior to resending an Update or Delete operation. Alternatively, the application can employ record locks to avoid conflicts.

In pre-v6.0 client versions of Btrieve, a page-level conflict would also produce this error. For example, station A reads a record, station B reads and updates a

different record on the same data page, and then station A attempts to update the record it read.

This may also be error: **8016 Invalid instance specified.**

This error occurs when an application passes an instance handle to the Services DLL that is invalid.

81: Btrieve encountered a lock error.

This status code can result from one of the following conditions:

- The Btrieve lock table is full. Decrease the number of locks that the application uses, or use the Btrieve Setup utility to specify a higher value for the Number of Locks option.
- The application tried to unlock one record that is locked with a multiple record lock, but the record position stored in the data buffer does not correspond to any record locked in the associated file.
- The application tried to unlock a single-record lock with a multiple-record lock or vice-versa.
- You try to open a file in multi-engine file sharing mode on a local drive and the DOS SHARE.EXE program is not loaded.
- You manipulate a file (that is, you open and then lock all or part of the file) in multi-engine file sharing mode on a local drive and the DOS SHARE.EXE program runs out of locks. Load the SHARE program and specify a higher value for the /L and /F options.
- You redirect the lock file to a local drive with the /I option and the DOS SHARE.EXE program is not loaded.

This may also be error: **8017 Invalid version information structure.**

This error occurs when an application tries to free a version information structure and the Services DLL determines that the version structure is invalid.

82: Btrieve lost positioning.

When performing a Get Next or Get Previous operation on a key with duplicates, the application tried to retrieve a record that was deleted or whose key value was modified by another application. Use a Get Equal or a Get Direct/Record operation to reestablish positioning. (See Status Code 44 for a related positioning problem.)

This may also be error: **8018 Item not found by Services DLL.**

This error occurs when an application requests that the Services DLL free an item, and the Services DLL determines that the item did not originate from the Services DLL.

83: Btrieve attempted to update or delete a record that was read outside the transaction.

The application tried to update or delete a record within a transaction, but the record was not read within the transaction. The application must read the record within the transaction before attempting to modify the data.

This may also be error: **8019 Library not accepting API requests.**

This error occurs when the Services DLL cannot accept requests. In a multithreaded application, this can occur when one thread attempts to make a request while other threads are overloading the Services DLL. In this situation, subsequent retries should clear the error.

84: The record or page is locked.

The application tried to apply a no-wait lock on a record that is currently locked by another application, or the application tried to access a file in a no-wait transaction while another application holds one or more active record locks in that file.

This status code can also occur if the application tried to update or delete a record locked by another application.

The application can use either of the following recovery methods:

- Retry the operation until it is successful. Under light-to-moderate network use, this may be the simplest and quickest solution.

- Use the wait option (+100/+300) instead of the no-wait option (in versions of Btrieve that support the wait option).

Btrieve may return this status code on an Insert operation when it attempts to lock an index page to update the key value specified for a newly inserted record. If another user has already locked the record in question, then Btrieve returns a Status Code 84 when it attempts to update the key value. Have your application check for this status code and retry the operation if the status code is returned.

This may also be error: **8020 Error loading component.**

You receive this status code when the Services DLL receives an operating system error when trying to load a component. Check the Pervasive Event Log (PVSW.LOG) for more information. If there is no information in the Pervasive Event Log related to receiving a status code 8020, refer to "Diagnosing Load Errors" in the "Component Architecture" chapter of the User's Guide.

85: The file is locked.

Any of the following can cause this status code to occur:

- Client-based Btrieve has a file open, and another workstation that has the Requester loaded tries to open the same file. Btrieve cannot open the file since it cannot obtain exclusive access. The workstation that has the Requester loaded receives Status Code 85.

- In Btrieve clients, a Status Code 85 can occur on an open, insert, update, or delete operation for a file under heavy usage by multiple clients. Btrieve must momentarily have exclusive access to the file during these operations, and retries the operation several times before returning this error. In this case, the application can re-issue the operation.

- Btrieve v6.15 has a pending modification (insert, update, or delete) as an incomplete system transaction in a file that has been opened in multi-engine file sharing mode. If multiple clients attempt to a access (Get/Step) or modify (insert, update, or delete) the shared file, Btrieve for DOS v6.15 returns this status code. An access operation can get this error only if the writing phase of the system transaction has started. If you are a developer and you want more information about

system transactions and this error, refer to the Btrieve Programmer's Manual available with the Btrieve Developer Kit.

- Another workstation has the Requester loaded and has a file open, and client-based Btrieve tries to open the same file.
- While one user has a file locked in an exclusive transaction, another user attempts to lock all or part of that file.
- In NetWare Btrieve, a file is in transition into continuous operation mode. A retry will eventually work.
- In NetWare Btrieve, you have two Btrieve files with the same filename but different extensions (for example, INVOICE.HDR and INVOICE.DET). One file is open and in continuous operation mode, causing Btrieve to generate a delta file (for example, INVOICE.^^^). Btrieve returns Status Code 85 if you attempt to open the second file.

86: The file table is full.

Using the Btrieve Setup utility, specify a higher value for the Number of Open Files configuration option.

This may also be error: **8022 Component not initialized.**

You should not receive this status code except when using a multithreaded application where one thread has shut down a component and the others continue trying to use it.

87: The handle table is full.

Using the Btrieve Setup utility, specify a higher value for the Number of Handles configuration option.

This may also be error: **8023 Invalid filename passed to Services DLL.**

You received this status code when the Services DLL receives a filename that does not exist.

88: The application encountered an incompatible mode error.

This status code can indicate one of the following situations:

- If an application opens a file in Exclusive mode, all other applications get this status code when they try to open the same file in any mode.

- If an application opens a file in any mode other than Exclusive, all other applications get this status code when they try to open the same file in Exclusive mode.

- If a client opens a file in multi-engine file sharing mode, all other clients get this status code when they try to open the same file in single engine file sharing mode.

- Similarly, if a client opens a file in single engine file sharing mode, all other clients get this status code when they try to open the same file in multi-engine file sharing mode.

- If a client opens a file in Accelerated mode and multi-engine file sharing is enabled, all other clients get this status code when they try to open the same file in any mode.

- If another workstation has the Requester loaded and has the file open, applications running Btrieve for DOS v6.15 get this status code when they try to open the same file in single engine file sharing mode. In NetWare Btrieve's continuous operation mode, this status code can also indicate one of the following situations:

- You have attempted to remove a file from continuous operation, but the file is not in a continuous state.
- You have attempted to include two files that have the same name but different extensions in continuous operation.

- You have attempted to include a file in continuous operation, but the file is already in a continuous state.

This may also be error: **8024 Invalid function name.**

You receive this status code when an application asks to import a function that does not exist.

89: A name error occurred.

90: Redirected device table is full.

This status code is applicable only to server-based Btrieve v5.x or earlier.

The DOS Requester's redirection table or server routing table is full. This occurs if you attach to additional servers or map to additional drives after you loaded the Requester. Reload the Requester, specifying a larger number for either the Number of File Servers (/S) option or the Number of Mapped Drives (/R) option.

This error also occurs if you detach from a server and attach to a different server. Once a workstation has attached to a server, the Requester does not remove its name from the server routing table.

91: The application encountered a server error.

You can receive this status code in the following situations:

- The Requester cannot establish a session with the server. Either server-base Btrieve is not loaded or the server is not active.
- The setting for the Number of Remote Sessions configuration option is too low. Return to the server-based Btrieve Setup utility and specify a higher value for this option.
- An application specified a path for a file and did not include the volume name in the path.
- In the NetWare server-based environment, the Btrieve Message Router (BROUTER.NLM) has not been loaded, and the following situation has occurred: an NLM that uses both BROUTER.NLM and Btrieve to make remote calls (and which therefore includes the server and volume name when performing an Open operation) has attempted to open a remote file. Because BROUTER.NLM does not interpret the server name, Btrieve attempts to do so but cannot.

This may also be error: **8027 Required attribute missing in component ID.**

You receive this status code when an application program does not specify a required attribute in the component ID.

92: The transaction table is full.

The maximum number of active transactions was exceeded. Using the Btrieve Setup utility, specify a higher value for the Number of Transactions configuration option.

93: The record lock types are incompatible.

The application tried to mix single-record locks (+100/+200) and multiple-record locks (+300/+400) in the same file at the same time. All locks of one type must be released before a lock of the other type can be executed.

94: The application encountered a permission error.

You can receive this status code in the following situations:

- The application tried to open or create a file in a directory without the proper privileges. Btrieve does not override the network privileges assigned to users.
- The designated server is in the server routing table, but your particular workstation is not logged into that server.
- Served-based Btrieve and client-based Btrieve (versions earlier than Btrieve v6.15) are trying to access the same file at the same time.
- The application tried to access a Btrieve file using Netware Runtime support using the given username. Specifically, one of the following situations exists regarding the supplied username:
- The User is not a valid user on the NetWare Runtime server. Note** NetWare Runtime is a Novell product that was made available with NetWare SQL v3.00. NetWare Runtime is not available through Btrieve Technologies.
- The user does not have the appropriate rights to access the file.
- The username is SUPERVISOR. For security reason, Btrieve does not allow you to use SUPERVISOR as a username when enabling NetWare Runtime support.

This may also be error: **8030 Return buffer too small for information.**

This error occurs when an application passes the Services DLL a buffer in which to return information, and that buffer is not large enough to contain the information.

95: The session is no longer valid.

In server-based Btrieve, the previously established session is no longer active due to an error at the workstation, at the file server, or on the network. Verify that the workstation is still attached to the server, and then unload and reload the Btrieve Requester.

This status code can also indicate that the maximum number of sessions for server-based Btrieve has been reached. Use the Communication Statistics option of the server-based Btrieve Monitor utility to see if the maximum number of SPX sessions has been reached. If so, use the Btrieve Setup utility to specify a higher value for the Number of Remote Sessions configuration option. For more information, see the Btrieve Installation and Operation manual for server-based Btrieve.

In server-based Btrieve, this error could indicate a time delay problem if the workstation does not receive a response back from the server in an appropriate time frame or after an appropriate number of retries. Refer to your network configuration documentation for information on increasing timeout and retry parameters.

96: A communications environment error occurred.

You tried to attach to NetWare Btrieve on a server but the SPX connection table or the Btrieve client table is full. Use the server-based Btrieve Setup utility to specify a higher value for the Number of Remote Sessions configuration option. For more information, see the Btrieve Installation and Operation manual for server-based Btrieve.

An NLM application that calls the Btrieve NLM can return Status Code 96 in either of the following situations:

- Not all of the clients have been properly reset.

- The Btrieve NLM was loaded with too small a value for its /s (sessions) parameter. This /s parameter is not the same as BSPXCOM's /s parameter.

Btrieve v6.15 returns this status code if you try to run a Btrieve application, but the Btrieve clients table is full. Use the Setup utility to specify a higher value for the Number of Clients configuration option.

This may also be error: **8032 Component ID is invalid.**

You receive this status code when a component ID string was found but it may be invalid because it is too short, too long or contains invalid characters.

97: The data buffer is too small.

The application either tried to read or write a record that is longer than 0xFC00 (64,512 decimal) bytes (a Btrieve for DOS v6.15 internal allowable value), or a record that is longer than the current settings for Btrieve or the Btrieve Requester allow, as follows:

- For an Update, Insert, or Create operation, the application receives this status code if the data buffer length it specifies for the record exceeds Btrieve's message buffer length.

- For a Get, Step, or Stat operation, the application receives this status code if Btrieve's message buffer is shorter than the length of the data Btrieve would return, regardless of the data buffer length specified in the application.

- For a Get Chunk or Update Chunk operation, the total size of the retrieved or updated chunk exceeds Btrieve's message buffer length. To avoid receiving Status Code 97 in Btrieve for DOS v6.15, observe the 0xFC00 limit on data size. In the NetWare Btrieve environment, the effective message buffer size is the smaller of the values specified for the Largest Record Size option (from the Btrieve Setup utility, and used by BSPXCOM) and the Message Buffer Size (/D) option (specified when the Btrieve Requester was loaded). Therefore, to avoid receiving Status Code 97 in this environment, perform one or both of the following steps:

- Increase the size of the message buffer by using the Btrieve Setup utility to specify a higher value for the Largest Record Size option.

- Reload the Btrieve Requester, and specify a higher value for the Message Buffer Size (/D) option.

98: Btrieve detected an internal transaction error.

A pre-v6.x version of NetWare Btrieve detected an error while executing the operation on a NetWare Transaction Tracking System (TTS) file. The application can perform only an Abort Transaction operation at this point.

Neither v6.x NetWare Btrieve nor client-based Btrieve will return Status Code 98, because TTS has a different meaning to v6.x NetWare Btrieve, and client-based Btrieve ignores the TTS flag.

99: Btrieve Requester is unable to access the NetWare Runtime server.

The DOS Requester returns this status code when NetWare Runtime server support is enable (/C:1) and the Requester either detects no existing connection or cannot find a valid login username. SUPERVISOR is not a valid username, even if supplied with the correct password. If the Requester cannot find a login username other than SUPERVISOR, there is no valid name to pass.

This may also be error: **8035 Invalid API for NetWare platform.**

You receive this status code when an application makes a call to an API that is not supported on the NetWare platform.

100: No cache buffers are available.

This status code, which can be returned by Btrieve version 6.0 and later, indicates that Btrieve has used all the cache buffers it allocated at load time. Use the Btrieve Setup utility to increase the value for the Cache Allocation configuration option.

If running server-based Btrieve (v6.0 or later), you also can change the Number of Remote Sessions configuration option to decrease the number of concurrent Btrieve users.

101: Insufficient operating system memory is available.

This status code, returned by server-base Btrieve v6.0 and later, indicates that there is not enough operating system memory available to perform the requested operation. To fix this problem, perform one or more of the following:

- Use the Btrieve Setup utility to decrease the value for the Cache Allocation configuration option.
- Use the Btrieve Setup utility to decrease the value of the Number of Remote Sessions configuration option (thereby decreasing the number of concurrent Btrieve users).
- Add memory to the server.

102: Insufficient stack space is available.

This status code, returned as a run-time error by Btrieve v6.0 and later, indicates that Btrieve has run out of stack space. To increase the amount of stack space available to your application, relink the application, setting the stack size to a higher value. Btrieve returns this message only to Btrieve for Windows applications that call WBTRCALL.DLL, or NLM applications that call Btrieve on the local server.

103: The chunk offset is too big.

This status code, returned by Btrieve v6.0 and later, indicates one of the following possible situations:

- A Get Direct/Chunk operation has specified an offset beyond the end of the record, either explicitly or through the use of the next-in-record bias to the sub function value. Unless Btrieve returns this status while processing the first chunk, the operation was partially successful. Check the data buffer length parameter immediately after the call to see how much data (and therefore how many chunks) Btrieve retrieved.
- An Update Chunk operation has specified an offset that is more than one byte beyond the end of the record. In this situation, Status Code 103 indicates that Btrieve made no changes to the record.

This may also be error: **8039 Invalid operating system handle specified.**

You receive this status code when an operating system handle to a component ID string is invalid. This can occur when an application erroneously modifies a handle obtained using the GetFileVersionByHandle or the GetFileSizeByHandle functions.

104: Btrieve does not recognize the locale.

In Btrieve versions 6.0 and later, the Create or Create Index operation returns this status code to indicate that the operating system was not able to return a collation table for the country ID and code page specified. Check that the application specified the locale's country ID and code page correctly and that the operating system is configured to support the country ID and code page.

This may also be error: **8040 CRC check on component ID failed.**

A routine CRC check on the component ID failed. You receive this status code when an application erroneously alters a component ID.

105: The file cannot be created with Variable-tail Allocation Tables (VATs).

In Btrieve version 6.0 or later, the application specified that a Btrieve file should be created with Variable-tail Allocation Tables (VATs); however, the application failed to specify that the file was to use variable-length records (a precondition for files to use VATs).

106: Btrieve cannot perform a Get Next Chunk operation.

In Btrieve version 6.0 or later, the application called the Get Direct/Chunk operation to retrieve a chunk from a record and used the next-in-record bias on the descriptor sub function. However, after the application established its positioning in the record (but prior to this call), the target record was deleted.

107: The application attempted to perform a chunk operation on a pre-v6.0 file.

In Btrieve version 6.0 or later, the application tried to use either a Get Direct/Chunk operation or an Update Chunk operation on a pre-v6.0 formatted file.

109: An unknown error was encountered either creating or accessing a semaphore.

This status code is returned by server-based Btrieve (v5.15 and v6.x) when a transaction would cause more than 65,535 pages to be written to a pre-image file (for pre-v6.0 Btrieve files), and the version of Btrieve that returns the error cannot handle such a large pre-image files.

Break the transaction into two or more smaller transactions.

110: Btrieve cannot access the archival logging configuration file.

111: he specified filename was not found in the archival logging configuration file.

112: The specified file is in use by another client.

113: Btrieve cannot find the archival log for the specified file.

114: The archival log for the specified file is invalid.

115: Btrieve cannot access the archival logging dump file.

130: Btrieve ran out of system locks.

This status code is returned by v6.x versions of server-based Btrieve, and can indicate a temporary condition in which no system locks are currently available. For example:

- A single client is performing a very large transaction: one in which thousands of records are being modified.
- Many clients are performing large transactions concurrently.

A client can receive Status Code 130 whether or not it is in a transaction. In some cases, a client can simply retry the failed operation. If other clients have released system locks in the interim, the retried operation may succeed.

If a client in a transaction receives Status Code 130, end or abort the transaction. If the transaction is very large, consider breaking it into multiple smaller transactions.

You can also use the Setup utility to lower the number of system locks devoted to explicit locking. To do so, lower the values assigned to the Number of Locks and/or Number of Remote Sessions options.

132: The file has reached its size limit.

133: More than 5 concurrent users attempted to access the same data file.

In the Developer Kit version of client-based Btrieve, you have attempted to access a Btrieve file by more than five Btrieve engines at the same time. The Developer Kit version of client-based Btrieve limits the number of concurrent users of a file to five engines.

139: Record Length Or Key Data Consistency

Problem: This indicates that there is a mismatch between data files and the version of the software or that there is a problem with the index portion of the file.

Solution: Run the Rebuild File Utility against the specified data file. Verify that you do not have any modifications or enhancements to the affected package. If you do, contact the vendor that sold you the modification/enhancement. Reinstall the program diskettes. If the above steps do not correct the problem, contact your Authorized Macola Reseller.

This may also be error: 7061 Your Pervasive Database engine expired on <date>. Please contact Pervasive Software for more information.

You receive this status code when your temporary user license for the database engine is expired. Contact Pervasive Software to obtain a permanent user license key. This may also be error: 7062 Your Pervasive Database engine will expire on <date> because you have a temporary license key.

You receive this message when you start the MicroKernel and you have a temporary license key. This is an informational message only that reminds you when your license will expire. Contact Pervasive Software to obtain a permanent license key. This may also be error: 7063 your user count license limit has been reached.

The maximum allowed users for the database engine has been reached. Please contact Pervasive Software if you need additional users for your license. To check the current setting for maximum users, run the User Count Administrator:

1. Click Start, Point to Programs and then to Pervasive SQL 7.

2. Select the User Count Administrator.

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The User count Administrator displays the current maximum user license and allows you to add additional licenses. Refer to Getting Started with Pervasive.SQL for more information. 3000: The MicroKernel router encountered a memory allocation error.

The MicroKernel router could not internally allocate memory. Check the Pervasive Event Log (PVSW.LOG) for more information.

1001: The lock parameter is out of range.

This status code is obsolete in MicroKernel versions 7.0 and later.

Version 6.x MicroKernels returns this status code when the value specified for the Number of Locks configuration option is out of range. Pre-v6.0 MicroKernels returned this status code when the value specified for the Multiple Locks configuration option is out of range.

1002: A memory allocation error occurred.

Make sure that the workstation has enough memory to load all the programs it requires. For workstation versions of the MicroKernel, or client requesters, the insufficient memory may apply to conventional memory, expanded memory, or both.

1003: An invalid memory size parameter was specified.

Ensure that the value for the Cache Allocation configuration option is large enough to accommodate the required cache size. See the Pervasive.SQL User's Guide for more information.

1004: A page size error occurred.

This status code is obsolete in MicroKernel versions 7.0 and later.

The value of the Page Size configuration option must be an even multiple of 512, and it must be between 512 and 4096, inclusive.

1005: The pre-image or lock file drive parameter is invalid.

You must specify a valid drive letter for the Pre-Image/Lock File Drive configuration option.

Note: Pre-image file are used only for pre-v6.0 files. Lock files are used only for v6.0 and later files opened in MEFS mode.

1006: The pre-image buffer parameter is out of range.

The Extended Operation Buffer Size configuration option must be between 0 and 64,000, inclusive. Both the v6.15 and v7.0 MicroKernel return Status 1006 for this reason.

The Pre-Image Buffer Size configuration option must be between 1 and 64, inclusive. The pre-image file is used in pre-v6.0 files and by v6.0 and later MicroKernels that are loaded with the Create Files in Pre-v6.x Format configuration option set to yes.

1007: The files parameter is out of range.

For pre-v6.0 engines, the Open Files configuration option must be between 1 and 250, inclusive. For v6.0 and later engines, refer to the Pervasive.SQL User's Guide for valid range information.

1008: The initialization parameter is invalid.

The specified configuration options contain invalid or unidentifiable values.

1009: The transaction filename parameter is invalid.

This status code is obsolete in MicroKernel versions 7.0 and later.

The filename specified for the Transaction filename configuration option is not valid. Ensure that the transaction filename is correct.

1010: An error occurred during the access of the transaction control file.

This status code is obsolete in MicroKernel versions 7.0 and later.

The MicroKernel is unable to create, open, read, or write to BTRIEVE.TRN or MKDE.TRN. Set the TRNFILE setting in the BTI.INI file to C:\.

1011: The compression buffer parameter is out of range.

The Compression Buffer Size configuration option is out of range. Refer to the Pervasive.SQL User's Guide for valid range information.

1012: Invalid /n:option.

This status code is obsolete in MicroKernel versions 6.0 and later.

The Maximum Number Of Files In A Transaction configuration option is invalid. Valid values are 0 to 18; the default is 12.

1013: The task list is full.

In the Windows environment, this status code is returned if the task entry table is full. You can change the value for the Number of Tasks option using the Setup utility. For more information, refer to the Pervasive.SQL User's Guide.

In the DOS environment, this status code is returned if the BREQUEST or BREQNT requesters are used without the /t parameter when BTRVID calls are present in the application. Reload the requester with a non-zero value for the /t parameter. For more information on the DOS Requester parameters, refer to Getting Started with Pervasive.SQL.

1014: Stop warning. The application still has files or transactions active.

In the OS/2 environment, the MicroKernel returns this status code when an application calls the BTRVSTOP function while files are still open or while a transaction is still active. The application must close all files and end all transactions before calling BRRVSTOP.

1015: One of the pointer parameters passed to the MicroKernel in invalid.

One of the printer parameters passed into the MicroKernel in invalid. The MicroKernel checks for invalid pointers (and therefore only returns this status code) if you put the following line under the [BTRIEVE] heading in your initialization file: CHKPARMS=YES. By default, the MicroKernel performs no printer checking.

1016: The MicroKernel is already initialized.

This status code is obsolete in MicroKernel versions 6.0 and later.

The MicroKernel returns this status code if you attempt to initialize the MicroKernel when it is already initialized. To reinitialize the MicroKernel, close all files, end/abort all transactions, and issue Btrieve operation 25, using the BTRV API before calling the initialization function.

1017: The Btrieve Requester is unable to find the resource file WBTRVRES.DLL.

WBTRCALL.DLL returns this status code when it cannot find the resource file WBTRVRES.DLL. Place the WBTRVRES.DLL file in the same directory as the WBTRCALL.DLL file.

1018: The application attempted to call the MicroKernel from a Btrieve callback function.

The Windows MicroKernel does not allow a task to call the MicroKernel from a Btrieve callback function. You can only use the callback function with Btrieve for Windows.

1019: The MicroKernel cancelled the current Btrieve operation at the request of the application's Btrieve callback function.

The application's MicroKernel callback function returned a nonzero value, indicating that the application wants to terminate the current operation immediately. When the MicroKernel receives such a cancellation request, it attempts to terminate the currently executing operation and ceases to call the callback function for the duration of that operation. The MicroKernel may be unable to cancel the operation. However, if successful in doing so, the MicroKernel returns this status code.

1020: Btrieve Requester Interface communications error.

The MicroKernel loader and requester Interface returns this status code when it cannot send a message to the MicroKernel. This occurs when Windows is shutting down or when you terminate the MicroKernel using Ctrl+Alt+Delete. This is an informational status code only. No action is required. Your application continues the shutdown process. You also receive this status code when running an application that prevents Windows from processing messages.

1021: The MicroKernel failed to initialize.

The MicroKernel could not complete its initialization tasks. Check the MicroKernel's console or error log for a message that specifies the problem that prevented the MicroKernel from initializing. The NetWare MicroKernel displays the message on the server's system console, and it also writes the message to the Pervasive Event Log (PVSW.LOG), which is located at SYS:SYSTEM. The Win32 workstation MicroKernel displays the message in

the console message window and writes the message to the Pervasive Event Log (PVSW.LOG), which is located in the WINDOWS\SYSTEM or WINNT\SYSTEM32 directory. The Windows NT server MicroKernel does not display a message, but writes the message in the Pervasive Event Log (PVSW.LOG), which is located in the WINNT\SYSTEM32 directory.

Correct the problem, using the Setup utility if necessary, then retry the operation. If you are using a NetWare MicroKernel, you must first correct the problem, then unload and reload the MicroKernel before you can retry the operation.

2000: Internal error.

The Btrieve requester encountered an internal error. Check the Pervasive Event Log (PVSW.LOG) for more information.

2001: The memory allocation is insufficient.

In an OS/2 environment, the Requester cannot allocate enough memory for the parameters specified with the BRQPARMS environment variable. In a DOS environment, reduce the value specified for the /D configuration option.

2002: The option is invalid or out of range.

In an OS/2 environment, either one of the options specified with the BRQPARMS environment variable is invalid (such as /P instead of /D) or the value specified for a parameter is out of range. Check the SET BRQPARMS statement to make sure it is correct.

2003: The Requester does not allow local access to the specified file.

The application attempted to access a file stored on a local drive. The configuration of the MicroKernel installed at the client machine does not allow access to local files.

This status code has been supplemented in Btrieve 7.0. For a list of the new status codes, see "Status Code 2003 replacement".

2004: SPX is not installed.

Install the NetWare SPX v2.0 or later communications software for OS/2.

2005: An incorrect version of SPX is installed.

Install the NetWare SPX v2.0 or later communications software for OS/2.

2006: There is no available SPX connection.

SPX has already established the maximum number of sessions it can handle. To increase the maximum, edit the NET.CFG file. Refer to your NetWare documentation for more information about NET.CFG.

2007: A pointer parameter is invalid.

One of the pointer parameters passed to the MicroKernel is invalid. Check the program to ensure that the pointer parameters are correct.

2008: Router cannot find engine.

The MicroKernel Router cannot communicate with the 6.15 engine. This status code is only used with Scalable SQL v4.0.100.

2009: Cannot load MicroKernel Router component.

The Btrieve requester cannot load the MicroKernel Router. This can occur if the DLL fails to load or fails to obtain the necessary DLL entry point.

2010: Thunk not possible-the Win32 MicroKernel router could not be found or is incompatible.

You receive this status code when the system is configured for thunking and the path is not accessible. This can occur if a necessary system file cannot be found (for example, kernel32.dll). It can also occur if the required system calls (for example, Win32s library) are not available.

2011: Btrieve requester resource DLL not loaded.

The resource DLL controls options that you can set with the Setup utility. You receive this status code when the resource DLL is either missing or incompatible with the current version of the requester. If this happens, the MicroKernel reverts to its default settings and continues to run.

2012: The Btrieve requester encountered an operating system error.

Check the Pervasive Event Log (PVSW.LOG) for more information.

3001: Local access is unavailable to the MicroKernel router.

A call to the MicroKernel failed. This is most likely the result of an incorrect configuration. For example, if the MicroKernel is unavailable because of configuration settings and the file to be opened is local, then the MicroKernel router returns this status code.

3002: The MicroKernel router resource DLL is unavailable.

The MicroKernel router returns this status code when its resource DLL is either missing or incompatible with the current version of the router. If this happens, the MicroKernel reverts to its default settings and continues to run.

Check the Pervasive Event Log (PVSW.LOG) for more information.

3003: The MicroKernel router detected an incompatible network component.

The networking services component is not compatible with this version of the MicroKernel router. The most likely cause is that the Networking services DLL has been replaced by an older version.

Check the Pervasive Event Log (PVSW.LOG) for more information.

3004: The MicroKernel is not responding to the MicroKernel router.

The MicroKernel is not responding to requests from the MicroKernel router. Verify that the MicroKernel is running.

3005: The MicroKernel router encountered an operating system error.

The MicroKernel router encountered an unexpected error from the operating system, such as a shared memory failure.

Check the Pervasive Event Log (PVSW.LOG) for more information.

3006: The MicroKernel router detected an invalid session.

The session information contained in a position block is invalid. This status code occurs for one of the following reasons:

- The application is trying to use a position block for a file that resides on a remote server and for which the connection has been previously terminated via a B_STOP (25) or B_RESET (28) operation.

- The application is trying to use a position block for a file that resides on a remote server and that encountered an abnormal network error on a previous operation.

3008: Invalid configuration for MicroKernel router.

This status code results from an invalid configuration. For example, if the Local, Remote, and Thunk options have all been set to No, the router has no valid path to take. If this happens, set one of these options to Yes, depending on your setup.

3009: NETAPI.DLL is not loaded.

The MicroKernel router could not find NETAPI.DLL (or NETAPI32.DLL in OS/2).

3010: NetWare API DLLs are not loaded.

The MicroKernel router could not find the NetWare API DLLs.

3011: Thunk not possible - the Win32 MicroKernel router could not be found or is incompatible.

This status code is only relevant to the Win 16 MicroKernel router. You receive this status code when the Use Thunk option is set to Yes and the thunk path is not accessible. Possible causes include:

- The Win32 MicroKernel Router DLL does not exist or is not compatible.

- The Win32s routines failed to initialize.

Check the Pervasive Event Log (PVSW.LOG) for more information.

3012: Local engine is not accessible to the MicroKernel router.

Access to the local engine is not possible because it is not loaded or could not be launched. You can receive this status code if you try to access a local file on a client and you do not have a Micro-Kernel workstation engine installed or if you try to access a local file on a server and the MicroKernel server engine is not running.

If you have a only a server engine installed and your Pervasive Event Log (PVSW.LOG) contains Status Code 3012 warning entries, perform the following steps:

To Turn Off Local Engine support:

1. Click Start, point to Programs, then to the Pervasive folder.
2. Select Setup (Win32 or Win16).
3. Select the MicroKernel router component.
4. Select the Local setting and change it to Off.
5. Select the Scalable SQL Requester component.
6. Select the Local Usage setting and change it to Off.
7. Click Save and then Exit.

3013: The remote engine is inaccessible to the MicroKernel router because the networking component is not loaded.

Access to the remote engine is not possible because the MicroKernel router could not initialize the networking component. Possible causes include:

- The Remote option is incorrectly set to No.
- The required networking component could not be found or is not compatible.

3014: The MicroKernel router cannot find an engine.

The MicroKernel router could not complete the operation because it did nod find an engine (local or remote) that could process the operation. Possible causes include:

- The target network operation system is not available.
- The target engine is not available.

- In a Windows 3.x environment, you are using a shared drive name that contains a space. To resolve the condition, remove the space from the shared drive name. For example, if you connect to a server named "D Drive", change the share name to "D_Drive".

3015: The MicroKernel router encountered an initialization error.

An unexpected error occurred during the initialization of the MicroKernel router. Check the Pervasive Event Log (PVSW.LOG) for more information.

3016: The MicroKernel router encountered an internal error.

The MicroKernel router encountered an internal error. Check the Pervasive Event Log (PVSW.LOG) for more information.

3017: Data buffer of the local engine is too small.

You receive this status code when the requester has more data to send the MicroKernel that the MicroKernel's buffer can handle. This status code is only relevant to an engine running locally; it does not apply to client/server environments. Some possible solutions include:

- Specify a higher value for the Communications buffer size parameter in the Setup utility.
- Use smaller buffers in Btrieve operations.

3018: The file is already closed.

You receive this status code when the MicroKernel router is shut down and is not accepting any more requests.

3019: The MicroKernel router encountered a semaphore error.

A semaphore error occurred while trying to establish contact with the local engine. Check the Pervasive Event Log (PVSW.LOG) for more information.

3020: An error occurred while loading the MicroKernel.

You receive this status code when an error occurs while loading the MicroKernel or when access to the server and client machine's shared memory objects are unavailable.

Check the Pervasive Event Log (PVSW.LOG) for more information.

3021: The MicroKernel router received a badly formatted data packet.

The MicroKernel router rejected the response from the engine because it was badly formatted.

Check the Pervasive Event Log (PVSW.LOG) for more information.

3022: The MicroKernel router could not send the request to the remote engine because the specified data buffer length resulted in a data packet object that is too large.

A request to the MicroKernel router specified a data buffer length that resulted in a data packet size greater than 64 KB because the MicroKernel router adds some packet overhead as it
forms the data packet.

Check the Pervasive Event Log (PVSW.LOG) for more information.

3023: The task table of the MicroKernel router is full.

An internal table used by the MicroKernel router to manage tasks is full. This error should only occur in Win 16 environments and indicates that a large number of applications are using the Win 16 MicroKernel router at the same time.

The Btrieve® Status Code Listing, incorporated in this Documentation, has been provided with the written permission of Pervasive® Software Inc.

Appendix D Bar Code Error Codes

Outlined below is a complete list of bar code printing error codes and their respective descriptions.

32500
Incomplete number of UPC-A characters, must be 11, 13 (2 Digit supplement) or 16 (5 Digit supplement) digits.

32501
Incomplete number of UPC-E characters, must be 6, 8 (2 Digit supplement) or 11 (5 Digit supplement) digits.

32502
Incomplete number of EAN/JAN characters, must be 7, 9 (2 Digit supplement) or 12 (5 Digit supplement) digits.

32503
Incomplete number of EAN/JAN characters, must be 12, 14 (2 Digit supplement) or 17 (5 Digit supplement) digits.

32504
Incomplete number of PostNet characters, must be 5, 9 (Zip+4) or 11 (Zip+4+DP) digits.

32505
Illegal character for this symbology.

32506
Illegal character for this symbology. Character must be in ASCII range 0...127.

32507
Illegal character for this symbology. Character must be numeric.

32508
Illegal character for this symbology. First digit must be a '0'.

32509
Missing a required placement of one or more zeros for UPC-E.

32510
Too many characters for this symbology.

32511
Software Logic error, unknown symbology type.

32512
Returned string too long for given buffer.

32513
Software Logic error, contact manufacturer.

32514
Bar code value does not translate into a valid symbol for the current symbology.

32515
Invalid device context specified.

32516
Invalid bar code symbology specified. Check documentation for valid range.

32517
Invalid bar code ratio specified. Check documentation for valid range.

32518
Invalid rotation specified. Check documentation for valid range.

32519
Invalid magnification specified. Check documentation for valid range.

32520
Invalid units specified. Check documentation for valid range.

32521
Invalid bar width specified. Check documentation for valid range.

32522
Invalid bar height specified. Check documentation for valid range.

32523
An error occurred while attempting to create the specified font.

32524
An error occurred while attempting to select the specified font.

32525
An error occurred while attempting to draw the caption text.

32526
Software Logic error, unexpected character encountered in translation output string.

32527
Given character is not supported in Demo version of the software.

32528
Feature unsupported in Demo version of the software.

32529
Out of memory.

32530
A required DLL could not be loaded.

32531
The specified data will not fit in a PDF417 symbol. The maximum size of PDF417 symbol is approximately 2700 characters, if error correction level zero is used. The higher the error correction level, the fewer data characters can be used. Decrease the error correction level, or split your data into 2 or more separate bar codes.

32532
Error generating EDAC for a PDF417 symbol. Contact manufacturer.

32533
Error generating data code words for a PDF417 symbol. Contact manufacturer.

32534
Error generating symbol character for MaxiCode symbol. Contact manufacturer.

32535
The data characters would not fit in the symbol. Try decreasing the length of the input data or changing the mode to four (4) to increase the message capacity.

32536
Invalid MaxiCode mode. Range is 2 through 6.

32537
Error generating the primary and secondary messages. Contact manufacturer.

296 Windows Systems Module

32538
Error drawing the MaxiCode center bullseye. Contact manufacturer.

32539
Error drawing the MaxiCode modules. Contact manufacturer.

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