AS/400

IBM Network Station Manager for AS/400 November 1997

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SC41-0632-03

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SC41-0632-03

Note

Before using this information and the product it supports, be sure to read the general information under “Notices” on page vii.

Fourth Edition (November 1997)

This edition replaces SC41-0632-02. This edition applies only to reduced instruction set computer (RISC) systems.

Contents

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About IBM Network Station Manager for AS/400, SC41-0632

Who should read this book

This information is for the person responsible for installing and administering the IBM Network Station Manager for AS/400 licensed program. This guide refers to you as the IBM Network Station administrator.

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Chapter 1. Introduction to the IBM Network Station Manager for AS/400

The IBM Network Station Manager for AS/400 is a desktop network computer that provides:

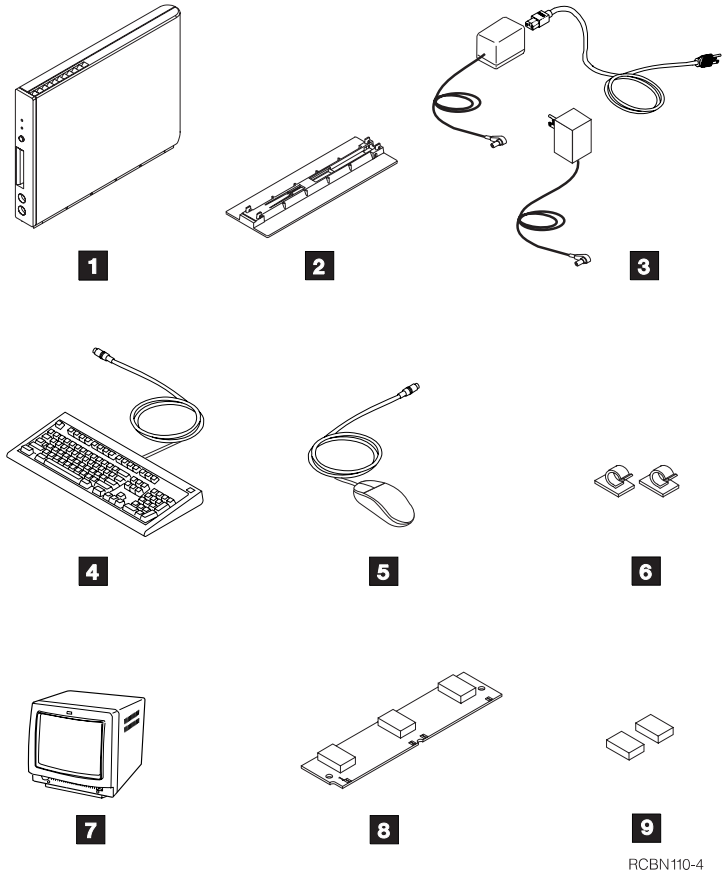
- Low cost of ownership
- Central management of software and data
- Access to the Internet and corporate intranets
- Simplicity in installation and administration
- Graphical interface with browser-based administration features

About Names: The name of this manual is the IBM Network Station Manager for AS/400. This manual documents the licensed program of the same name.

Also discussed in this manual is a program used to administer IBM Network Stations. This program is the IBM Network Station Manager program. The name of the licensed program and the name of this administering program are very similar. When discussing the program that is used for administering IBM Network Stations, the text will read *IBM Network Station Manager program*. See Chapter 6, “Using the IBM Network Station Manager Program” on page 6-1 for specific information.

What Does an IBM Network Station Look Like?

The following diagram shows the components of the IBM Network Stations:



1. Logic unit
2. Logic unit base
3. Power module
4. Keyboard
5. Mouse
6. Cable clamps
7. Monitor
8. Memory SIMM
9. Video memory modules

How Does the IBM Network Station Communicate with the AS/400?

The IBM Network Station for AS/400 uses:

- BOOTP (Bootstrap Protocol)
- TFTP (Trivial File Transfer Protocol)

What is BOOTP?

BOOTP is a TCP/IP protocol that is used to allow a diskless client (IBM Network Station) to request an IP address and the name of the load file.

When the BOOTP server receives an IBM Network Station boot request, the server looks up the MAC address that is defined for the IBM Network Station. BOOTP then returns a reply with the IP address and the name and path of the load file that was requested. (The load file is the file that contains the operating system kernel for the IBM Network Station.) The IBM Network Station then initiates a TFTP request to the server for the load file.

The BOOTP server stores the IP address of the IBM Network Station and the name of the load file in a table. This table is called the BOOTP table. To help manage your IBM Network Station installation and configuration, IBM has provided a Setup Assistant. The Setup Assistant helps you update the BOOTP table. See Chapter 4, “Working With the Setup Assistant” on page 4-1 for more information.

What is Trivial File Transfer Protocol (TFTP)?

TFTP is a TCP/IP protocol that is used to transfer files. TFTP can read or write files from or to a remote server. On the AS/400 system, TFTP is a server that you can configure using the TCP/IP licensed program. The Setup Assistant does the necessary work to configure and start the TFTP server. See Chapter 4, “Working With the Setup Assistant” on page 4-1 for more information.

How Do I Manage the IBM Network Stations?

There are several programs that are provided that allow you to manage the IBM Network Stations on a day-to-day basis. They are:

- The IBM Network Station Manager program
- The IBM Setup Utility
- User Services
- The IBM Network Station Setup Assistant

What is the IBM Network Station Manager Program?

The IBM Network Station Manager program is a browser-based application that allows you to set and change settings for:

- All or specific IBM Network Station users
- All or specific IBM Network Station workstations

User settings can be for application programs (5250 emulation, 3270 emulation, browser sessions) or hardware settings such as mouse configuration or desktop background. See Chapter 6, “Using the IBM Network Station Manager Program” on page 6-1 for a more detailed discussion.

What is the IBM Setup Utility?

The IBM Setup Utility on the IBM Network Station allows you to **View** and then **Set** (change) configuration settings on a particular IBM Network Station. For example, you can view or set the MAC address or monitor resolution setttings of any IBM Network Station.

The system administrator can access the IBM Network Station Setup Utility while the IBM Network Station is going through the boot-up process. See Chapter 8, “Working with the IBM Network Station Setup Utility” on page 8-1 for a more detailed discussion.

What Are User Services?

User services are programs that provide users with tools to manage the IBM Network Station's operational environment.

Following are some of the user services:

- Monitoring messages applicable to a specific IBM Network Station
- Locking your screen (with password control)
- Monitoring statistics (for example, how much memory is available on a specific IBM Network Station)

See Chapter 7, “Working with User Services” on page 7-1 for a more detailed discussion.

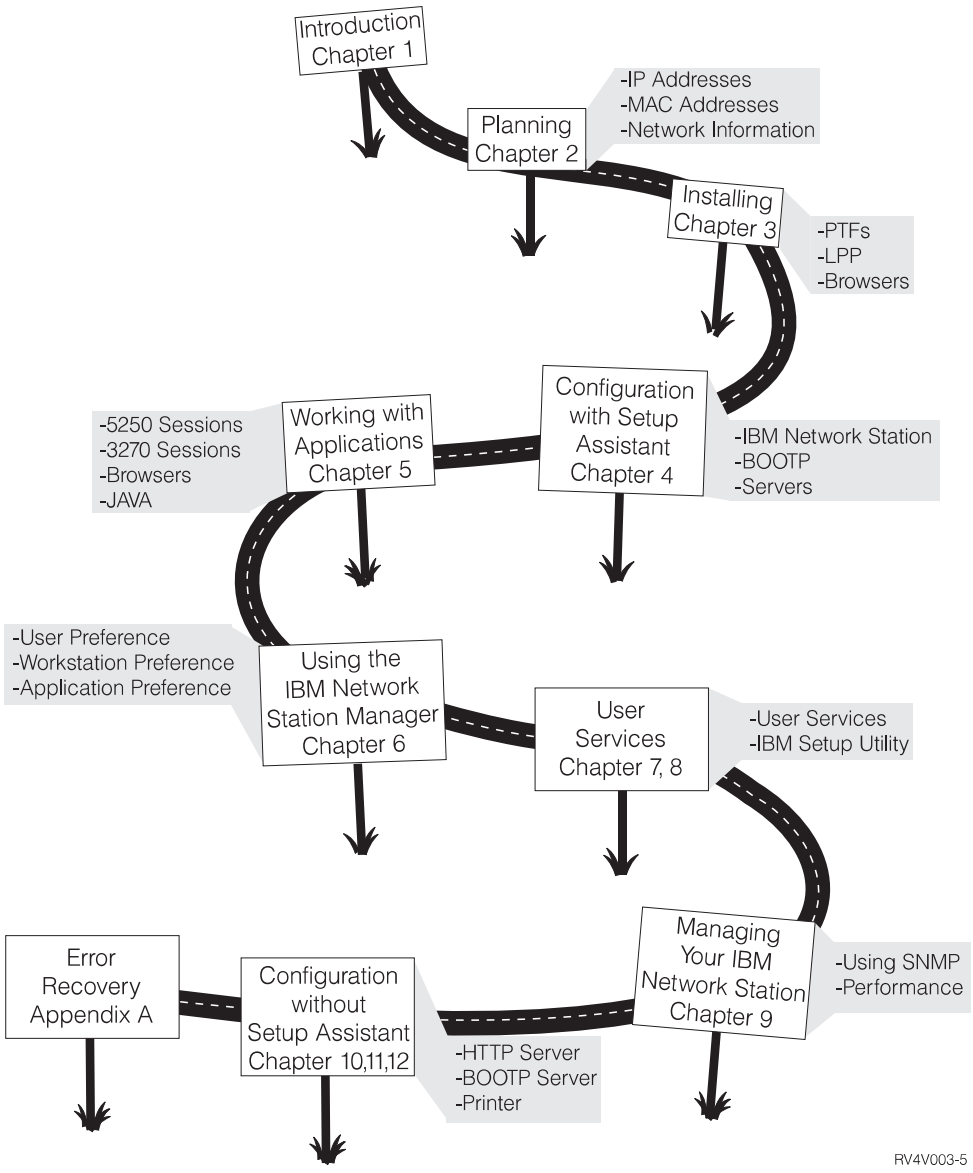
What is the Setup Assistant?

The IBM Network Station Setup Assistant is an AS/400 program. The Setup Assistant simplifies and automates the process that is required to configure your AS/400 to support IBM Network Stations. The Setup Assistant guides you through the following tasks:

- Verifying that all software is installed
- Configuring TCP/IP lines and interfaces that are used by the IBM Network Station
- Defining IBM Network Station devices
- Startup and verification of required servers

Using the IBM Network Station Roadmap

The following diagram represents a roadmap of the tasks you can perform while working with your IBM Network Stations. It is recommended that the roadmap be followed to facilitate smooth transition from planning, to installing, to configuring, to using.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Chapter 2. Planning for the IBM Network Station Manager for AS/400

As system administrator, you need to plan the integration of IBM Network Stations into your computing environment. To assist you, IBM has created an IBM Network Station Setup Assistant. This Setup Assistant, with information probided by you, ensures that all components of setup, install, and configuration will complete successfully.

Note: If you do not use the Setup Assistant to help you integrate your IBM Network Station into your computing environment, you must follow the configuration steps in:

- Chapter 10, “Configuring the HTTP Server” on page 10-1
- Chapter 11, “Configuring the BOOTP Server” on page 11-1
- Chapter 12, “Configuring Printers for use With IBM Network Stations” on page 12-1

You must record some of the planning information that you gather on information charts. See Table 2-2 on page 2-10 and Table 2-3 on page 2-16 to familiarize yourself with their contents. The following are the planning task divisions:

- General planning

  This section is not just for reading! There are tasks that must complete before you move to the next planning section.

- AS/400 (Host) TCP/IP network planning

  The Setup Assistant uses the information that you provide to create and verify TCP/IP configuration for your AS/400.

- IBM Network Station planning

  The Setup Assistant uses information that you provide to define your IBM Network Stations.

General Planning

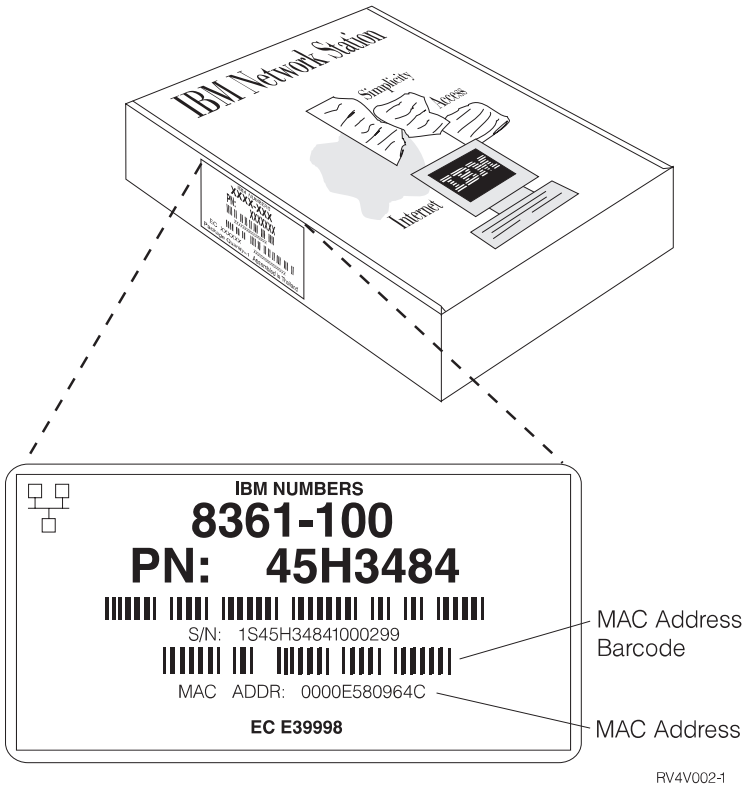
The general planning information is mostly verification to ensure that your AS/400 system and IBM Network Stations are ready to receive the software and hardware that is associated with IBM Network Stations.

___ 1. **Obtain the IBM Network Station Media Access Control (MAC) address.**

Use the MAC addresses to create BOOTP entries for assigning IP addresses.

You need to do this step for each IBM Network Station that you will be adding.

This address is on the box that the IBM Network Station system unit is packaged in. The following diagram shows the MAC address location on the box that contains the system unit:



Note: If you no longer have the box that the IBM Network Station system unit is packaged in, you may also find the MAC address through the Setup Utility:

a. Boot the Network Station.

b. Press the Escape key after the keyboard controller is tested during the boot.

c. Press F4 to view the Hardware. You will find the MAC address here.

___ 2. **Familiarize yourself with your TCP/IP network.**

___ 3.

We recommended that you have a good working knowledge of your network. Having a topology map or diagram of your network will help you to more easily complete the planning tasks and Setup Assistant. If you do not have this familiarity, you will not be able to use the Setup Assistant successfully. Figure 2-1 on page 2-4 shows a physical rendering of a TCP/IP network with example addresses. Addresses from your network (similar to these) will be required on planning forms later in this section.

The following is information that relates to the network map that is presented in Figure 2-1.

```
System name:                    AS400TEST
AS/400 Host Name:               AS400TEST
AS/400 Domain Name:             MYCOMPANY.STATE.COM
Line Description:               ETHLINE  and TRLINE
ETHLINE Line IP Address:        199.5.9.22
TRLINE Line IP Address:         199.5.10.48
Device Naming:                  L=Local, R=Remote, E=Ethernet, T=Token-Ring
       Local example name:      LNSDEV3E
       Remote example name:     RNSDEV2T
```

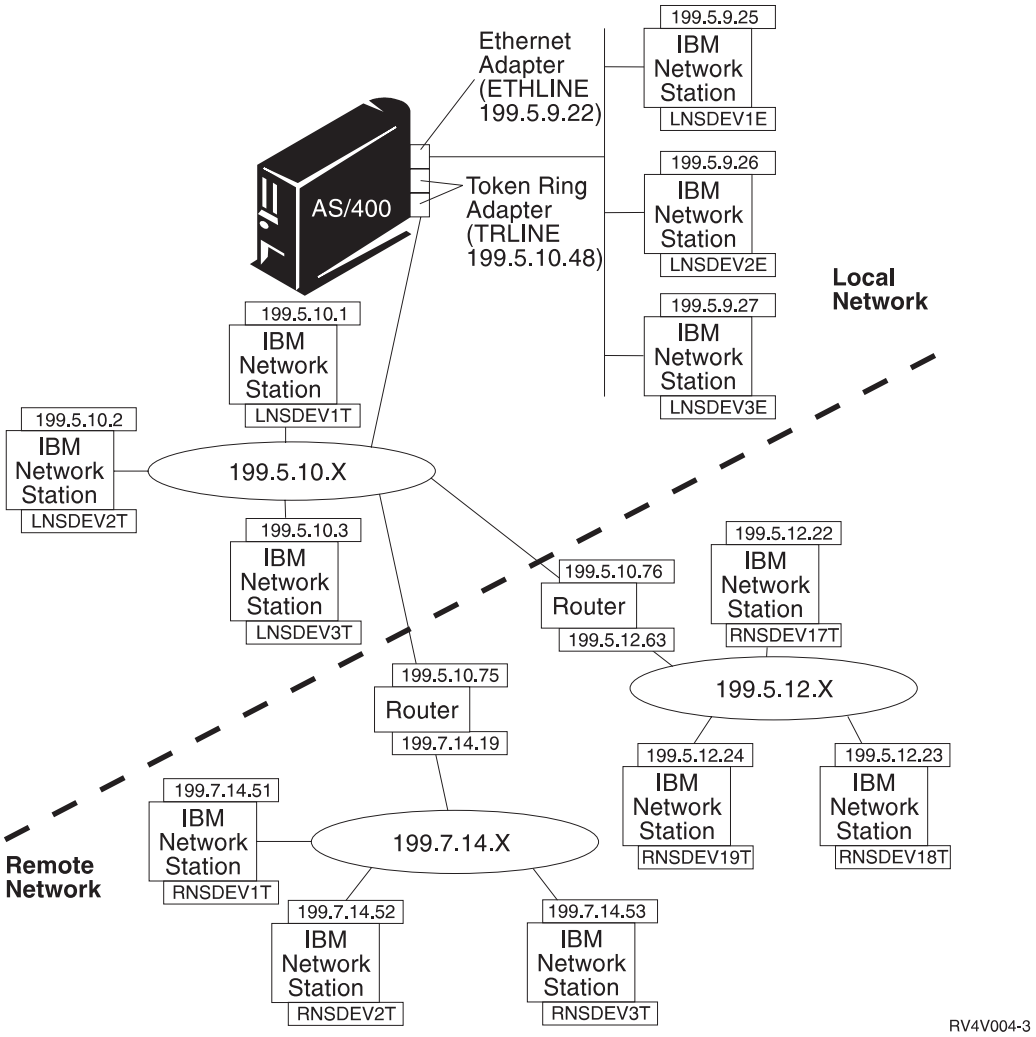


Figure 2-1. Sample TCP/IP Network Map

___ 4. **Verify that you can configure your routers or gateways as BOOTP relay agents.**

If your network uses routers or gateways, ensure that you can enable them to be BOOTP relay agents. Enabling the routers or gateways for BOOTP allows you to propagate (send) the BOOTP packets across the network to other LAN segments.

If you can not configure routers to be BOOTP relay agents, you could:

- Use a UNIX system or RS/6000 system that has the necessary configuration support to receive limited BOOTP broadcasts. Then forward those broadcasts to the appropriate AS/400 host server. See your network administrator or the system administrator of the UNIX or RS/6000 system for information on how to configure BOOTP relay agents.
- The AS/400 server could be located on the same LAN segment as the IBM Network Stations. This would eliminate any need for routers or intermediate UNIX systems to pass on the broadcast requests of the IBM Network Stations.

___ 5. **Obtain IP Addresses and a Domain Name for your organization.**

Each node on a network is known as a host and has a unique address called an Internet Protocol (IP) address. This address is a 32-bit integer that is expressed in the form nnn.nnn.nnn.nnn.

For the networks within your organization, you can assign your own addresses. However, if you want to connect to the Internet, a central authority must officially assign the network addresses and domain names. The authority at the time of this writing is Network Solutions, Inc.. The address is:

```
Network Solutions
InterNIC Registration Services
505 Huntmar Park Drive
Herndon, VA 22070
1-703-742-4811
E-mail:  hostmaster@internic.net
WWW:  http://rs.internic.net/
```

Note: If your organization already has a range of IP addresses, you can use those instead of obtaining new IP addresses. For more information see the *TCP/IP Configuration and Reference*, SC41-5420 .

___ 6. **Verify that you have the correct PTF (Program Temporary Fix) media.**

As system administrator, you will need to install PTFs on your system.

If you are installing on a Version 3 Release 2 system, use the tape that is labeled:

```
Network Station Manager
Enabling PTFs for AS/400

Marker PTF:NS32SS1
```

If you are installing on a Version 3 Release 7 system, use the CD that is labeled:

```
Network Station Manager
Enabling PTFs for AS/400

Marker PTF:NS37SS1
```

See Chapter 3, “Product Installation” on page 3-1 for more information about PTFs.

___ 7. **Verify your Licensed Program Software for the IBM Network Station Manager for AS/400.**

Verify that you have the correct licensed program software. You will install this software later.

Licensed Program Product (LPP) numbers are 5733-A06 for Version 3 Release 2 and 5733-A07 for Version 3 Release 7.

___ 8. **Verify your browser media.**

IBM offers two browser products. They are:

- IBM Browser

  There are two versions of the IBM Browser licensed program. Licensed program 5648-B08 is a 40-bit RC4 encryption version and can be obtained free of charge. You can download it from an IBM web page or order it from your IBM marketing representative.

  The other version, 5648-B18, is a 128-bit RC4 encryption version. This version offers advanced encryption features for secure transactions on the Internet. You must purchase this version, and it is only available in the United States and Canada. To order, contact your IBM marketing representative.

  You can find instructions for obtaining and installing either version in “Installing the IBM Network Station Browser” on page 3-7.

- Navio NC Navigator

  There are two versions of the Navio NC Navigator licensed program. Licensed program 5648-B10 is a 40-bit RC4 encryption version and can be obtained free of charge. You can download it from an IBM web page or order it from your IBM marketing representative.

  The other version, 5648-B20, is a 128-bit RC4 encryption version. This version offers advanced encryption features for secure transactions on the Internet. You must purchase this version, and it is only available in the United States and Canada. To order, contact your IBM marketing representative.

  You can find instructions for obtaining and installing either version in “Installing the IBM Network Station Browser” on page 3-7.

___ 9. **Verify that you have the TCP/IP product installed.**

To see if the TCP/IP LP is already installed, at any command line enter:

```
GO LICPGM
```

and then select Option 10 to display the installed licensed programs. If you are using Version 3 Release 2, the licensed program is 5763TC1. If you are using Version 3 Release 7, the licensed program is 5716TC1.

If the TCP/IP LP and the TCP/IP Connectivity Utilities LP are not on your system, use Option 11 on the Work with Licensed Programs (GO LICPGM) menu to install them.

If you need more information about TCP/IP, see *TCP/IP Fastpath Setup*, SC41-5430 or *TCP/IP Configuration and Reference*, SC41-5420.

___ 10. **Verify System Administrators Security Level.**

As the system administrator, your user profile should have the following special security authorities that you need to properly install and configure your system for IBM Network Station use.

*SECADM

*ALLOBJ

*IOSYSCFG (communication configuration)

To check your security authorities, type the following command at the AS/400 command line to view your user profile:

```
DSPUSRPRF youruserid
```

where *youruserid* is the userid you will be using when installing and configuring the products for IBM Network Station use.

You can add or change security authorities in your user profile.

___ 11. **Verify IBM Network Station Memory Requirements.**

Verify that your IBM Network Stations have the amount of memory they will need to run the applications your users expect.

Each of the applications that are downloaded to the IBM Network Station require memory. Use Table 2-1 on page 2-9, as a guide in determining how much memory each IBM Network Station should have.

Notes:

a. If some users require many different applications and if they will be using various IBM Network Stations, you will need to ensure each IBM Network Station has adequate memory to handle the projected applications.

b. Subsequent releases may have increased memory requirements.

Table 2-1. Network Station Memory Requirements for Downloaded Software

Software	Memory Requirement
Base System, includes the following: • Motif Library • Window Manager • Fonts • IBM Login Utility	5.35MB
5250 Session (1st session) • Additional session • Help viewer • Keyboard remap • Color remap • Miscellaneous preferences	1.4MB • 0.3MB • 0.3MB • 0.55MB • 0.45MB • 0.35MB
3270 Session (non-graphic) • Additional session (non-graphic)	0.7MB • 0.25MB
3270 session (graphics) • Additional 3270 session (graphics)	1.4MB • 0.55MB
IBM Network Station Browser	5.6MB
Navio NC Navigator (Browser)	5.6MB
Java VM Session	5.0MB default or 1.3MB in minimal configuration. Code size of each Java Applet must be added to either number. **Note:** If you want to run large Java applications, you should calculate memory requirements from the default size of 5.0MB.
Video Memory Guidelines (Resolution) • 800 x 600 • 1024 x 768 • 1280 x 1024 • 1360 x 1024 • 1600 x 1280	 • 1MB • 1MB • 2MB • 2MB • 2MB

AS/400 TCP/IP Planning

One of the keys to success in a TCP/IP network is that each system in the network must have its own unique address. This address is known as the internet protocol address (or IP address) of your system. An IP address consists of four numbers (0-255) that are separated by periods. For example, 128.1.15.95 is a valid format for an IP address.

An additional part of TCP/IP addressing is the subnet mask. The subnet mask allows you to divide a single network into smaller networks that are called subnetworks.

For the AS/400 planning steps that follow we assume that your network administrator assigned the IP address and subnet masks for your systems. A complete discussion of TCP/IP addressing and subnet masks is beyond the scope of this book. If you need help defining the addressing scheme for your network, consult the *TCP/IP Fastpath Setup*, SC41-5430. You can also contact your IBM representative for information on classes or workshops that may be available.

Note: Use Table 2-2 to record information that you will obtain in the next three sections.

Table 2-2. AS/400 TCP/IP Information Chart

Host Information			
1. AS/400 Local Host Name:			
2. AS/400 Local Domain Name:			
3. AS/400 IP Address:			
4. Next Hop IP Address			
5. Remote Name Server IP Address:			
Local Area Network (LAN) Information			
	LAN Adapter 1	LAN Adapter 2	LAN Adapter 3
1. Line Description			
2. LAN IP Address:			
3. LAN Subnet Mask:			
IP Router/Gateway Information			
	Router 1	Router 2	Router 3
1. Route (Remote LAN) IP Address:			
2. Route (Remote LAN) Subnet Mask:			
3. Next Hop Address:			

Host Information

Use the Host Information form in Table 2-2 to capture the information that relates specifically to your AS/400 system. The IBM Network Station Setup Assistant will use this information to configure your AS/400 to actively participate in a TCP/IP network.

Note: If TCP/IP is already operational on your AS/400, the Setup Assistant will automatically locate and use this information. You can continue with “Local Area Network (LAN) Information” on page 2-11.

If you are installing or using TCP/IP for the first time on your AS/400, then complete the following fields in Table 2-2:

___ 1. **AS/400 Local Host Name:**

The local host name is the name that is used to uniquely identify this system in a TCP/IP domain. We suggest that you use the AS/400 system name for the local host name (for example, AS400TEST).

___ 2. **AS/400 Local Domain Name:**

Remote servers use the domain name to identify the local host to other systems. Domain names consist of labels that are separated by periods (for example, DOMAINXYZ.ACME.COM). Your local domain name should be descriptive of your organization. The last portion of the local domain name should follow Internet conventions; that is, use COM for commercial enterprises, GOV for government organizations, and EDU for educational institutions.

___ 3. **AS/400 IP Address:**

The AS/400 IP address is the address that uniquely identifies this AS/400 to TCP/IP (for example, 199.5.10.48). This address will be associated with the local host name to create a name entry in the Host Names table.

___ 4. **Next Hop IP Address:**

The next hop address is the address of the IP router (if any) that your local LAN uses to route network traffic to other networks within and outside of your organization. Use this address to create a default route for all network traffic that does not terminate on this host. You only need this information if your local LAN attaches to one or more IP routers. You will need to obtain the IP address of the IP router from your network administrator or consult your network topology map.

___ 5. **Remote Name Server IP Address:**

The domain name server IP address is the address of the system (if any) that will act as primary name server in this domain. You will need to check with your network administrator to determine if your organization utilizes a domain name server and to obtain its IP address.

Local Area Network (LAN) Information

Your AS/400 may be capable of supporting multiple directly attached Local Area Networks. Table 2-2 on page 2-10 provides a Local Area Network (LAN) Information form for you to record the TCP/IP information for up to three directly attached LANs. The IBM Network Station Setup Assistant will use this information to create a TCP/IP interface to each directly attached LAN.

Note: If you are attaching your IBM Network Stations to existing LANs that are configured to use TCP/IP, then you do not need to complete this section. You can continue with “IP Router/Gateway Information” on page 2-12.

If you have installed a new communication adapter or want to configure an existing LAN for TCP/IP use, then you need to complete a column in the LAN Information form of Table 2-2 for each LAN that you want to support TCP/IP. Record the following information:

___ 1. **Line Description:**

You must create a line that you will use when attaching your IBM Network Stations. First you must determine which resource you will use. To view the communications resources for your system, on any command line, type:

```
WRKHDWRSC *CMN
```

After you have selected a resource from this list, you must create the line description by using one of the following commands:

```
CRTLINTRN LIND(TRNLINE) RSRCNAME(LINxxx)
  ADPTADR(*ADPT) SSAP(*SYSGEN)
  TEXT('Token-Ring Line')

CRTLINETH LIND(ETHLINE) RSRCNAME(LINxxx)
  ADPTADR(*ADPT) SSAP(*SYSGEN)
  CNNINIT(*LOCAL)
  TEXT('Ethernet Line')
```

where LINxxx is the communication resource, and TRNLINE or ETHLINE is the line description. Record the name of the line description you just created.

Note: For Version 3 Release 2 systems, the resource name has the form LINxxx. For Version 3 Release 7 and later systems, the form for the resource name is CMNxxx.

___ 2. **LAN IP Address:**

The LAN IP Address is the address that uniquely identifies the communication line that connects the AS/400 to the LAN. Each LAN should have a unique IP address assigned. However, one of the directly attached LANs should share the same IP Address that you assigned to the AS/400 (Line 3 of “Host Information” on page 2-10).

___ 3. **LAN Subnet Mask:**

A subnet mask is a configuration value that allows you to specify how your system determines what are the network and host parts of an IP address. For example, the subnet mask (255.255.255.0) indicates that the first 3 parts of the IP address relate to the network and the fourth part identifies unique hosts on this subnetwork. You will need to get the subnet mask for your LAN from your network administrator.

IP Router/Gateway Information

Your directly attached networks may access other networks through an IP Router. Your network configuration may have zero or many IP Routers within it. Table 2-2 on page 2-10 provides an IP Router/Gateway Information form for you to record the TCP/IP information for up to three IP Routers. The IBM Network Station Setup

Assistant will use this to create a TCP/IP route entry for each IP Router that you describe.

Note: If you do not have any IP routers in your network, or if you will only be attaching your IBM Network Stations to directly attached LANs, then you do not need to complete this section. You can continue with "IBM Network Station Planning."

If your AS/400 will be servicing IBM Network Stations that connect to remote LANs (ones that do not directly attach to your AS/400) you will need to provide some specific information about the remote LAN and the IP Router that can be used to reach it. You can obtain all of this information from your network administrator or network topology map.

__ 1. **Route (Remote LAN) IP Address:**

The network portion of the IP address of the remote LAN (for example, 199.5.12.0).

__ 2. **Route (Remote LAN) Subnet Mask:**

The subnet mask for the route.

__ 3. **Next Hop Address:**

The IP address of the router that will handle any requests that match the route IP address.

IBM Network Station Planning

This section will help you record the specific information that is needed to identify each IBM Network Station to your network environment. You should record this information in Table 2-3 on page 2-16. The Setup Assistant will use this information to create a BOOTP entry for each IBM Network Station.

The information that is contained on this form is LAN-specific. You should fill out a separate form for each LAN to which you will be attaching IBM Network Stations. You need to provide the following information only once for each LAN:

__ 1. **Boot Type**

The Boot Type is already prefilled on your form as *IBMNSM*. This identifies this network device as an IBM Network Station.

__ 2. **Boot File Name**

The Boot File Name is the name of the file that the IBM Network Station will download and be use to boot the remote device. This is a constant and is pre-filled on your form as *kernel*.

__ 3. **Boot File Path**

The Boot file path is the path name that is used to access the boot file on the host. This is a constant and has been prefilled on your form as */QIBM/ProdData/NetworkStation*.

__ 4. **Determine the Gateway IP address and Subnet Mask for Remote LANs**

If the LAN that you are attaching IBM Network Stations to is not directly attached to your AS/400, it is referred to as a remote LAN. You will need to specify the IP Address of the IP Router/Gateway that your IBM Network Station will use to reach the AS/400. You will also need to specify the subnet mask of this router. You should obtain this information from your network administrator.

__ 5. **Determine the Hardware Type of your IBM Network Stations**

Your IBM Network Stations can either attach to a token ring or ethernet LAN. If you will be attaching this IBM Network Station to a token ring network, then your IBM Network Station's hardware type is 6. If you will be attaching this IBM Network Station to a Version 2 (802.2) ethernet network, then your IBM Network Station's hardware type is 1. For IEEE (802.3) ethernet networks, the hardware type is 6, which is the same as a token ring network.

You will also need to complete the following tasks for each IBM Network Station that you will be adding to this LAN.

__ 1. **Assign a fully qualified host name to the IBM Network Station.**

The host name identifies the IBM Network Station as a unique destination within a TCP/IP environment. The fully qualified host name consists of two parts, the host name and the domain name. For example, ABCNSM.MYCOMPANY.STATE.COM is a qualifed host name, where ABCNSM is the host name and MYCOMPANY.STATE.COM is the domain name. The host name can be anything that is meaningful to you or the owner. You should obtain the domain name from your network administrator. For additional information, see the topic on "Domain Naming Conventions" in the *TCP/IP Fastpath Setup*, SC41-5430.

__ 2. **Record the Media Access Control (MAC) Address.**

The MAC address is a hardware-specific identifier that is unique to each IBM Network Station. You can find this address on the outside of the box that the IBM Network Station was shipped in. You should have captured this information in Step 1 of “General Planning” on page 2-1.

__ 3. **Assign an IP address to the IBM Network Station.**

Each IBM Network Station requires a unique IP address. You will need to assign a specific address to each IBM Network Station. You should ensure that the IP address is valid for your organization and that no other device in the network is using it.

__ 4. **Identify the manufacturer of any attached printer.**

If you are going to attach a printer to an IBM Network Station, you will need to create a device description for the printer. The Setup Assistant will help you do this. You will need to record the manufacturer name and printer model here, and you will be able to prompt for the correct MFRTYPMDL values while using the Setup Assistant.

IBM Network Station Information Chart

You will use the information in Table 2-3 when running the Setup Assistant to install and configure your IBM Network Stations.

We recommended that you complete one copy of Table 2-3 for each LAN adapter that has IBM Network Stations attached to it. Therefore, you would have one copy of Table 2-3 for each LAN Adapter column in the LAN Information section of Table 2-2.

Table 2-3. IBM Network Station Information Chart			
IBM Network Stations			
1. Boot Type: IBMNSM			
2. Boot File Name: kernel			
3. Boot File Path: /QIBM/ProdData/NetworkStation			
4. Gateway IP address (IBM Network Station side):			
5. Router Subnet Mask (IBM Network Station side):			
6. Hardware type (Token-Ring (6) or Ethernet (1)):			
IBM Network Station Unique Information			
1. Host Name	2. MAC Address	3. IP Address	4. Printer Type (MFRTYPMDL)

Chapter 3. Product Installation

About installing and deleting the IBM Network Station Manager for AS/400 licensed program: If you delete the IBM Network Station Manager for AS/400 licensed program and then restore it, you will also have to restore the IBM Network Station Browser or Navio NC Navigator licensed program if you have either of them installed.

The IBM Network Station Manager for AS/400 uses several software products. You must complete the following installation steps in the following order:

1. PTFs for OS/400
2. IBM Network Station Manager for AS/400 Licensed Program (5733-A06 or 5733-A07),
3. PTFs for IBM Network Station Manager for AS/400 Licensed Program
4. IBM Network Station Browser (5648-B08 or 5648-B18) or the Navio NC Navigator** browser (5648-B10 or 5648-B20).

The remainder of this chapter presents the installation steps for the various software products that are associated with the IBM Network Station Manager for AS/400.

Product Installation Methods

You can install the software products that are associated with the IBM Network Station Manager licensed program in the following ways:

- Using media (tape or compact discs) that you received from IBM

  Go to “Installing from Tape or Compact Disc” to begin the process of software installation from media that you received from IBM.

- Downloading the licensed program from an IBM web site

  Go to “Downloading and Installing IBM Network Station Products from an IBM Web Site” on page 3-9 to begin the process of software installation from an IBM web site.

Installing from Tape or Compact Disc

This section of the manual contains instructions for installing the following:

- OS/400 PTFs
- IBM Network Station Manager for AS/400 licensed program
- PTFs for IBM Network Station Manager for AS/400 licensed program
- IBM Network Station Browser licensed program
- Navio NC Navigator browser licensed program

Installing OS/400 PTFs for the IBM Network Station Manager for AS/400

You are required to apply PTFs to your operating system to prepare it for installation of the IBM Network Station Manager licensed program.

If you are installing on a Version 3 Release 2 system, use the tape that is labeled:

```
Network Station Manager
Enabling PTFs for AS/400

Marker PTF:NS32SS1
```

If you are installing on a Version 3 Release 7 system, use the compact disc (CD) that is labeled:

```
Network Station Manager
Enabling PTFs for AS/400

Marker PTF:NS37SS1
```

If you are installing on a Version 4 Release 1 system, obtain and read INFORMATIONAL APAR II10566. Informational APAR II10566 contains information about PTFs for software products associated with the IBM Network Station Manager for AS/400 licensed program.

Applying PTFs

To apply PTFs, at any AS/400 command line type:

```
GO PTF
```

and press Enter. The following screen appears:

```
PTF                          Program Temporary Fix
                                                          System:   AS400TEST
Select one of the following:

     1. Load a program temporary fix
     2. Apply a program temporary fix
     3. Copy a program temporary fix
     4. Remove a program temporary fix
     5. Display a program temporary fix
     6. Order a program temporary fix
     7. Install a program temporary fix from a list
     8. Install program temporary fix package
     9. Compare program temporary fix level

    70. Related commands



Selection or command
===>8

F3=Exit   F4=Prompt   F9=Retrieve   F12=Cancel   F13=Information Assistant
F16=AS/400 Main menu
(C) COPYRIGHT IBM CORP. 1980, 1996.
```

Select option 8 and press Enter.

Type in the name of the device to be used for installation in the Device field. (In this example, the device name is OPT01). Type N for Automatic IPL (unless you are sure you want to IPL immediately after these PTFs are installed). When you press Enter, the IBM Network Station PTF cumulative package will begin installing.

```
                Install Options for Program Temporary Fixes
                                                        System:   AS400TEST
Type choices, press Enter.

  Device  . . . . . .   OPT01        Name, *SERVICE

  Automatic IPL . . . . . .   N      Y=Yes
                                     N=No

  PTF type  . . . . . .   1          1=All PTFs
                                     2=HIPER PTFs and HIPER LIC fixes
                                       only
                                     3=HIPER LIC fixes only
                                     4=Refresh Licensed Internal Code

  Other options . . . . . .   N      Y=Yes
                                     N=No




F3=Exit   F12=Cancel
```

Performing an IPL

The PTFs that you just installed require that you perform an IPL of the AS/400 system before you install the LPP. This is because some of the OS/400 code needs to be updated in order for the IBM Network Station Manager for AS/400 licensed program to install properly.

Complete the following steps to perform an IPL:

1. Ensure that the system IPL mode is in the normal position.
2. Use the following command to perform the IPL:

   ```
   PWRDWNSYS *IMMED RESTART(*YES) IPLSRC(B)
   ```

You will need to determine the best time to IPL your system.

Add the QTODSYS Library to Your System Library List if You are using OS/400 Version 3 Release 2 or 7

Notes:

1. If you are installing the IBM Network Station Manager for AS/400 on Version 4 Release 1, you do not have to add QTODSYS to your system library list.
2. If you are upgrading to Version 4 Release 1, you can remove library QTODSYS from your system library list.

The supported communications for the IBM Network Station Manager licensed program were not included in OS/400 for Version 3 Release 2 or Version 3 Release 7.

However, this support is provided by some of the PTFs you were required to install on your AS/400 system.

For the communications support to work correctly, you must add library QTODSYS to the system library list.

In addition, if your system's primary language is not 2924, you must also add library QSYS2924 to the system library list (if it does not already exist).

Complete the following steps to change your system library list:

__ 1. At any command line type WRKSYSVAL QSYSLIBL.

__ 2. Select option 2, Change the library list.

__ 3. Add library QTODSYS to the top of the list.

__ 4. In addition, if your system's primary language is not 2924, look to see if library QSYS2924 exists in the system library list. If 2924 is not in the list, add it to the bottom of the system library list.

__ 5. Press F3 to exit.

__ 6. Sign off the AS/400 system to have the changes to the system library list take effect.

Installing the IBM Network Station Manager for AS/400 Licensed Program

The IBM Network Station Manager for AS/400 licensed program product is available for AS/400 systems with Version 3 Release 2, Version 3 Release 7, or Version 4 Release 1 levels of OS/400. Table 3-1 provides the version and release level of OS/400 and the correct licensed program number to install for either release level.

Table 3-1. IBM Network Station Manager for AS/400 Licensed Programs

OS/400 Version 3 Release 2	**OS/400 Version 3 Release 7 or Version 4 Release 1**
Install Licensed Program 5733A06	Install Licensed Program 5733A07

Use the Restore Licensed Program (RSTLICPGM) command to install the LPP.

You may have received special installation instructions with this product. If you did, you should use those instructions.

__ 1. **Load the media that contains the licensed program on the installation device.**

In the following step, TAP01 is used for the installation device if your system is Version 3 Release 2. If your system is Version 3 Release 7 or Version 4 Release 1, the installation device is OPT01.

__ 2. **Install the licensed program.**

To install a new licensed program, type the following command on any AS/400 command line:

```
RSTLICPGM LICPGM(xxxxxxx) DEV(yyyyy) OPTION(*BASE)
```

where:

- xxxxxxx is the product identifier (See Table 3-1 on page 3-5 to verify the correct LP number).
- yyyyy is the installation device name (DEV). Remember, that it will be a tape drive for V3R2 and a CD for V3R7 or V4R1.

__ 3. **Verify that the restore was successful.**

To verify if the restore successfully completed, a message will appear at the bottom of the AS/400 screen immediately following the restore. The message will be similar to the one that is shown below:

```
*PGM objects for product 5733A07 (or 5733A06) option
*BASE release *FIRST restored.
```

If you place your cursor on this message and scroll ahead, you will also see two other messages that confirm a successful restore:

```
*LNG objects for product 5733A07 (or 5733A06) option *BASE
release *FIRST restored.

Objects for product 5733A07 (or 5733A06) option *BASE
*FIRST restored
```

Note: If your primary language is not English, use the LNG parameter on the RSTLICPGM program and specify the value 2924 as shown in the following example:

```
RSTLICPGM LICPGM(xxxxxxx) DEV(yyyyy) OPTION(*BASE) LNG(2924)
```

Installing IBM Network Station Manager for AS/400 PTFs

You must apply PTFs to the IBM Network Station Manager for AS/400 licensed program.

PTF Information for the IBM Network Station Manager for AS/400 licensed program is available in INFORMATIONAL APARs. There are several informational APARs for the IBM Network Station Manager for AS/400 licensed program:

- Information APAR II10405

  Information APAR II10405 is a common information APAR. This information APAR discusses the IBM Network Station Manager for AS/400 licensed program for either Version 3 Release 2 (5733-A06) or Version 3 Release 7 (5733-A07).

  Specify product 5733-A07 when you order Information APAR II10405.

- Information APAR II10406

  Information APAR II0406 discusses only Version 3 Release 2 (5733-A06) of the IBM Network Station Manager for AS/400 licensed program.

- Information APAR II10309

  Information APAR II10309 discusses only Version 3 Release 7 (5733-A07) of the IBM Network Station Manager for AS/400 licensed program.

- Information APAR II10566

  Information APAR II10566 discusses only Version 3 Release 7 (5733-A07) of the IBM Network Station Manager for AS/400 licensed program running Version 4 Release 1.

The Information APARs listed above will be updated on a periodic basis. To keep current, consider acquiring the APARs on an ongoing basis.

Installing the IBM Network Station Browser

There are two versions of the IBM Browser licensed program. Licensed program 5648-B08 is a 40 bit RC4 encryption version and can be obtained free of charge. You can download it from an IBM web page or order it from your IBM marketing representative.

Note: See “Downloading and Installing IBM Network Station Products from an IBM Web Site” on page 3-9 for instructions on how to download the IBM Browser from an IBM web site.

The other version, 5648-B18, is a 128 bit RC4 encryption version. This version offers advanced encryption features for secure transactions on the Internet. This version must be ordered from IBM and installed from physical media only. To order, contact your IBM marketing representative.

Note: If you attempt to install the 5648-B18 version over 5648-B08 version (or the other way around), you will get an error message during installation. If you want to install one version over the other version, you need to run the Delete Licensed Program (DLTLICPGM) command to remove the currently installed browser. Then, follow the installation process below.

Installing the IBM Browser from Tape or CD

Use the Restore Licensed Program (RSTLICPGM) command to install the LPP.

You may have received special installation instructions with this product. If you did, you should use those instructions.

__ 1. **Load the media containing the licensed program on the installation device.**

| In the following step, TAP01 is used for the installation device if your system is
| Version 3 Release 2. If your system is Version 3 Release 7 or Version 4
| Release 1, OPT01 is used for the installation device.

__ 2. **Install the licensed program.**

To install a new licensed program, type the following command on any AS/400 command line:

```
RSTLICPGM LICPGM(xxxxxxx) DEV(yyyyy) OPTION(*BASE)
```

where:

- xxxxxxx is the product identifier. The product identifier could be either 5648-B08 or 5648-B18.

- yyyyy is the installation device name (DEV). Remember, that it will be a tape drive for V3R2 and a CD for V3R7 or V4R1.

__ 3. **Verify that the restore was successful.**

To verify if the restore successfully completed, a message will appear at the bottom of the AS/400 screen immediately following the restore. The message will be similar to the one that is shown below:

```
*PGM objects for product 5648B08 option
*BASE release *FIRST restored.
```

If you place your cursor on this message and scroll ahead, you will see two other messages that confirm a successful restore:

```
*LNG objects for product 5648B08 option *BASE
release *FIRST restored.

Objects for product 5648B08 option *BASE
*FIRST restored
```

Note: If your primary language is not English, use the LNG parameter on the RSTLICPGM program and specify the value 2924 as shown in the following example:

```
RSTLICPGM LICPGM(xxxxxxx) DEV(yyyyy) OPTION(*BASE) LNG(2924)
```

Installing the Navio NC Navigator Browser

There are two versions of the Navio NC Navigator Browser licensed program. Licensed program 5648-B10 is a 40 bit RC4 encryption version and can be obtained free of charge. You can download it from an IBM web page or order it from your IBM marketing representative.

Note: See "Downloading and Installing IBM Network Station Products from an IBM Web Site" on page 3-9 for instructions on how to download the Navio NC Navigator Browser from an IBM web site.

The other version, 5648-B20, is a 128 bit RC4 encryption version. This version offers advanced encryption features for secure transactions on the Internet. This version must be ordered from IBM and installed from physical media only. To order, contact your IBM marketing representative.

Note: If you attempt to install the 5648-B20 version over 5648-B10 version (or the other way around), you will get an error message during installation. If you want to install one version over the other version, you need to run the Delete Licensed Program (DLTLICPGM) command to remove the currently installed browser. Then, follow the installation process below.

Installing the Navio NC Navigator Browser from Tape or CD

Use the Restore Licensed Program (RSTLICPGM) command to install the LPP.

You may have received special installation instructions with this product. If you did, you should use those instructions.

___ 1. **Load the media containing the licensed program on the installation device.**

In the following step, TAP01 is used for the installation device if your system is Version 3 Release 2. If your system is Version 3 Release 7 or Version 4 Release 1, OPT01 is used for the installation device.

___ 2. **Install the licensed program.**

To install a new licensed program, type the following command on any AS/400 command line:

```
RSTLICPGM LICPGM(xxxxxxx) DEV(yyyyy) OPTION(*BASE)
```

where:

- xxxxxxx is the product identifier. The product identifier could be either 5648-B10 or 5648-B20.
- yyyyy is the installation device name (DEV). Remember, that it will be a tape drive for V3R2 and a CD for V3R7 or V4R1.

___ 3. **Verify that the restore was successful.**

To verify if the restore successfully completed, a message will appear at the bottom of the AS/400 screen immediately following the restore. The message will be similar to the one that is shown below:

```
*PGM objects for product 5648B10 option
*BASE release *FIRST restored.
```

If you place your cursor on this message and scroll ahead, you will see two other messages that confirm a successful restore:

```
*LNG objects for product 5648B10 option *BASE
release *FIRST restored.

Objects for product 5648B10 option *BASE
*FIRST restored
```

Note: If your primary language is not English, use the LNG parameter on the RSTLICPGM program and specify the value 2924 as shown in the following example:

```
RSTLICPGM LICPGM(xxxxxxx) DEV(yyyyy) OPTION(*BASE) LNG(2924)
```

Downloading and Installing IBM Network Station Products from an IBM Web Site

You can download the following IBM Network Station products from an IBM Web site:

- IBM Network Station Manager for AS/400 licensed program (5733-A06 or 5733-A07)
- IBM Network Station Browser licensed program (5648-B08)
- IBM Navio NC Navigator licensed program (5648-B10)

Using any browser, go to URL **http://service.boulder.ibm.com/nc/**

Once you reach this web page, you must access the README file.

The README file is available by clicking on the README button.

The README file contains the necessary information for downloading PTFs, IBM Network Station licensed programs, and other objects that are used to support downloading activities.

Chapter 4. Working With the Setup Assistant

The IBM Network Station Setup Assistant should be used to simplify and automate the process required to configure your AS/400 to support IBM Network Stations.

The Setup Assistant will guide you through the following tasks:

- Verification that you installed all software (LPPs and PTFs)
- Configuring TCP/IP lines and interfaces used by the IBM Network Station
- Defining IBM Network Station devices
- Startup and verification of required servers

Note: If you do not use the Setup Assistant to integrate your IBM Network Station into your computing environment, you need to follow the configuration steps in the following chapters:

- Chapter 10, “Configuring the HTTP Server” on page 10-1
- Chapter 11, “Configuring the BOOTP Server” on page 11-1
- Chapter 12, “Configuring Printers for use With IBM Network Stations” on page 12-1

Starting the Setup Assistant

To run the IBM Network Station Setup Assistant you must sign onto the AS/400 with a user profile that has the *SECADM, *ALLOBJ, and *IOSYSCFG special authorities.

Note: We recommend that you run the Setup Assistant from the system console as opposed to a PC. You will need to end TCP/IP during task 5000 of the Setup Assistant. If you are on a PC, you will be disconnected when TCP/IP ends.

Start the IBM Network Station Setup Assistant by typing the following command at any command line:

```
STRNSSA
```

The Setup Assistant introductory display appears.

```
                    IBM Network Station Setup Assistant
                                                          System:   AS400TEST
Welcome to the IBM Network Station Setup Assistant for the AS/400!

This setup assistant will guide you through the process of preparing
your AS/400 to service IBM Network Stations.

To successfully complete all the steps in the setup process it is
important that you first work through the planning and preparation steps
in the IBM Network Station Manager for AS/400 manual.  This manual
guides you through the installation of required software and helps you
gather the information that is needed to describe your network
environment.  Press F3 at this time if you need to complete the planning
and preparation tasks.




                                                                     Bottom
Press Enter to continue with the setup process.

F3=Exit
```

If you have completed Chapter 2, “Planning for the IBM Network Station Manager for AS/400” on page 2-1, press Enter on this display to begin the setup tasks. The Setup Assistant automatically verifies that all required software has been installed on your AS/400. The IBM Network Station Setup Tasks display then appears.

```
                        IBM Network Station Setup Tasks
                                                          System:   AS400TEST
Type option, press Enter.
  1=Select

       Task
Opt    ID       Description                                      Completed
       2000     Install Required Software                           YES
       3000     Configure TCP/IP for IBM Network Stations            NO
       4000     Define Network Devices                               NO
       5000     Start and Verify Required Servers                    NO









                                                                     Bottom
Parameters or command
===>
F3=Exit   F4=Prompt   F10=Display job log   F12=Cancel
```

This display shows the main IBM Network Setup Assistant task IDs, a description of the task, and a completion status. A completion status of YES means that the task finished. NO means that it still needs to finish. Select the tasks in the following order. Subsequent tasks are dependent on previous tasks that have completed successfully. You must select every task to guarantee that the IBM Network Stations will boot successfully. You must select tasks which seem optional, such as creating routes to remote networks, or configuring printers, to ensure that you have considered them.

Notes:

1. If a task does not complete, you will see an error message on the bottom line. For more information about the error, and to find out how to recover, press F10 (Display job log). Press F10 again to see the detailed messages. Then press F1 (Help) with the cursor on the error message to find out what recovery actions to take.
2. It is a good idea to review the job log as you complete these main tasks.
3. To start a task, type 1 (to select) next to the task.

Task 2000 - Install Required Software

Task 2000 will have a completion status of YES if you have the correct PTFs and the TCP/IP product installed on your system. See steps 4 and 7 of the “General Planning” on page 2-1. You can continue with “Task 3000 - Configure TCP/IP for IBM Network Stations” on page 4-4.

If task 2000 has a completion status of NO, you must first select task 2000. The following display appears.

```
                          Install Required Software
                                                                 System:   AS400TEST
Type option, press Enter.
  1=Select

        Task
Opt     ID       Description                                          Completed
        2100     Install TCP/IP Connectivity Utilities/400               YES
        2200     Display Missing Required PTFs                           YES
        2300     Install OS/400 - Host Servers                           YES









                                                                          Bottom
Parameters or command
===>
F3=Exit   F4=Prompt   F10=Display job log   F12=Cancel
Task 2100 was ended by user.
```

Task 2000 allows you to install TCP/IP, display the missing PTFs, or install OS/400 Host Servers. If one of these required software is not installed, the completion status will be set to NO.

If TCP/IP is missing, select task 2100, Install TCP/IP Connectivity Utilities/400. The Restore Licensed Program display appears. Ensure that you have the licensed program CD or tape loaded in your AS/400. Fill in the type of media in the Device field and press Enter to start the install.

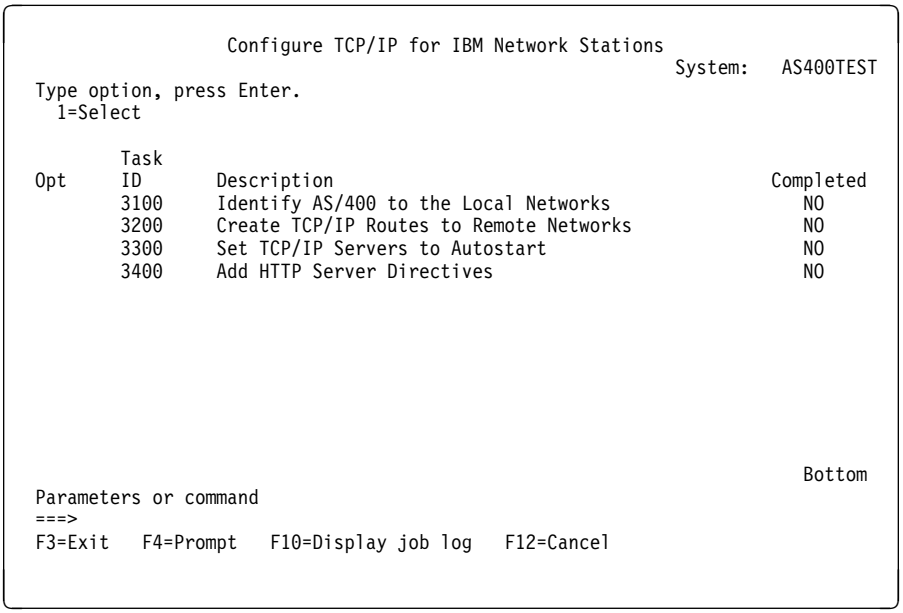
If PTFs are missing, select task 2200 - Display Missing Required PTFs. After recording the missing PTFs, exit the Setup Assistant by pressing F3. Load and apply the missing PTFs before restarting the Setup Assistant by using the STRNSSA command.

If the OS/400 Host Servers are missing, select task 2300, Install OS/400 - Host Servers. The Restore Licensed Program display appears. Ensure that you have the licensed program CD or tape loaded in your AS/400. Fill in the type of media in the Device field and press Enter to start the install.

Task 3000 - Configure TCP/IP for IBM Network Stations

This task and its subtasks will help you establish an operational TCP/IP environment to support IBM Network Stations.

Type 1 next to task 3000 and press Enter. The Configure TCP/IP for IBM Network Stations display appears.



To define your TCP/IP configuration for the IBM Network Stations, complete these tasks in the following order:

- Task 3100 - Identify Your AS/400 To The Local Network(s)

  Identifying your AS/400 to the local network(s) is comprised of the following tasks which are described in the this section:

  - Task 3110 - Set Host Specific Internet Information
  - Task 3120 - Create New TCP/IP Interfaces
- Task 3200 - Create TCP/IP Routes To Remote Networks
- Task 3300 - Set TCP/IP Servers To Autostart
- Task 3400 - Add HTTP Server Directives

Task 3100 - Identify AS/400 to the Local Networks

Type 1 next to task 3100 and press Enter. The Identify AS/400 to the Local Networks display appears.

```
                    Identify AS/400 to the Local Networks
                                                          System:   AS400TEST
Type option, press Enter.
  1=Select

        Task
Opt     ID       Description                                    Completed
        3110     Set Host Specific Internet Information            NO
        3120     Create or Verify TCP/IP Interfaces                NO









                                                                    Bottom
Parameters or command
===>
F3=Exit   F4=Prompt   F10=Display job log   F12=Cancel
```

Task 3110 - Set Host Specific Internet Information

On the Identify AS/400 to the Local Network display, type 1 next to task 3110 and press Enter. The Set Host Specific Internet Information display appears.

```
                    Set Host Specific Internet Information
                                                          System:   AS400TEST
Type choices, press Enter.

Internet Addresses:
  AS/400 . . . . . . . . . . . . . . .   199.5.10.48
  Default Route  . . . . . . . . . . .   199.5.76.1
  Remote Name Server . . . . . . . . .   199.5.100.76

Names:
  Local Host Name  . . . . . . . . . .   AS400TEST

  Local Domain Name  . . . . . . . . .   MYCOMPANY.STATE.COM









                                                                    Bottom
F3=Exit   F12=Cancel
```

If you have an existing TCP/IP network, this display will have the names and addresses filled in. You do not need to change them. Simply verify that they match what you have in your planning worksheets and press Enter to continue.

If you are creating a TCP/IP network for the first time, fill in the data on this display from Table 2-2 on page 2-10 and Table 2-3 on page 2-16.

IP ADDRESS FOR YOUR AS/400
Line 3 of the Host Information section of Table 2-2.

IP ADDRESS OF DEFAULT ROUTE/NEXT HOP
Line 4 of the Host Information section of Table 2-2. If you are attaching your IBM Network Stations to a LAN that is connected to a router, you need to supply this address. Otherwise, leave this field blank. Next hop is the IP address of an IP router/gateway where you want to forward all IP requests that are not satisfied on this host.

IP ADDRESS OF REMOTE NAME SERVER
Line 5 of the Host Information section of Table 2-2. If you do not use a remote name server, leave this field blank.

LOCAL HOST NAME AND DOMAIN NAME
Lines 1 and 2 of the Host Information section of Table 2-2. We recommend that you use the AS/400 system name as the host name.

When you complete the information on this display and press Enter, the Setup Assistant will automatically:

- Create or update the local host name and domain name
- Create a host name table entry for the AS/400
- Add a remote name server entry

The Setup Assistant then returns to the Identify AS/400 to the Local Networks display. Task 3110 will have a completion status of YES if the task ran successfully.

Task 3120 - Create New TCP/IP Interfaces

On the Identify AS/400 to the Local Network display, type 1 next to task 3120 and press Enter. The Define or Verify TCP/IP Interface(s) display appears. Enter any new lines, their IP addresses, and their subnet masks from LAN Information section of Table 2-2 on page 2-10.

```
                    Create or Verify TCP/IP Interface(s)
                                                          System:   AS400TEST
Type choices, press Enter:

First Interface:
  Line Description . . . . . .   bobsline     Name
  Internet Address . . . . . .   199.5.10.48
  Subnet Mask  . . . . . . . .   255.255.255.0

Second Interface:
  Line Description . . . . . .               Name
  Internet Address . . . . . .
  Subnet Mask  . . . . . . . .

Third Interface:
  Line Description . . . . . .               Name
  Internet Address . . . . . .
  Subnet Mask  . . . . . . . .




                                                                      Bottom
F3=Exit   F12=Cancel
```

You must enter a different IP address for each line. However, one of the IP addresses must match the IP address of your AS/400 host (line 3 of the Host Information section of Table 2-2). If this line exists, the information will be pre-filled. Verify that the information for this line is correct.

If you use a new line for your IBM Network Stations, and the line does not exist, you must first create it as described in “Local Area Network (LAN) Information” on page 2-11. Then enter the line description, the internet address, and the subnet mask on this display in order to create the new TCP/IP interface.

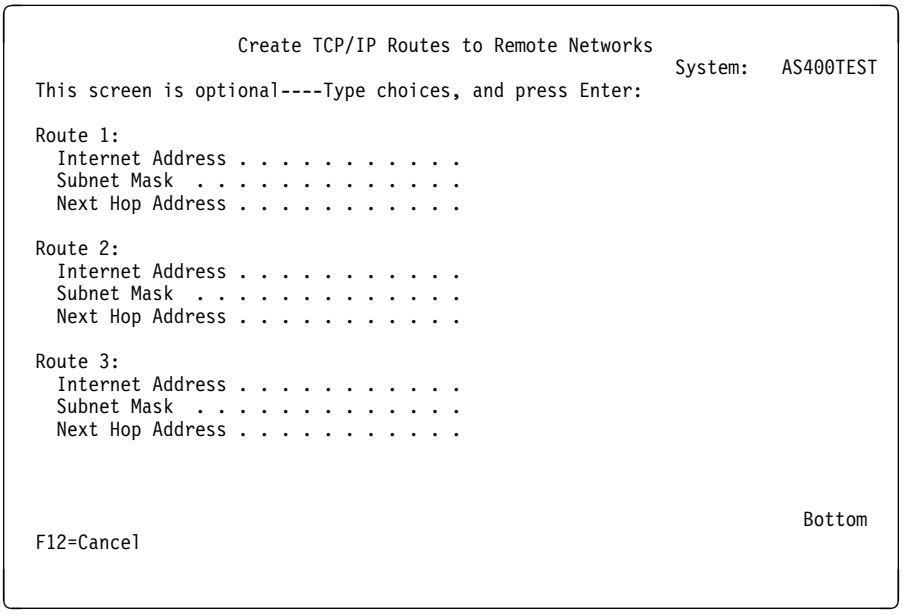
Press Enter to create a TCP/IP interface and return to the Identify AS/400 to the Local Networks display. Task 3120 will have a completion status of YES if the task ran successfully. Press Enter to return to the Configure TCP/IP for IBM Network Stations display.

Task 3200 - Create TCP/IP Routes To Remote Networks

On the Configure TCP/IP for IBM Network Stations display, type 1 next to task 3200 and press Enter. When you select task 3200, the Setup Assistant creates a default route for your AS/400 if one does not already exist. The IP address you entered in task 3110 is used.

Note: If you do not plan to create any routes to remote networks, you will still need to select task 3200. Press Enter to complete the task.

After the default route is created, the Create TCP/IP Routes to Remote Networks display appears. You can use this optional display to create additional routes to remote networks if necessary.



If you have remote LANs that you reach through an IP router or a gateway, record the IP address, subnet mask, and next hop address for each one. You can get this information from the IP Router/Gateway Information section of Table 2-2 on page 2-10.

If you do not have remote LANs, leave this display blank.

Press Enter to return to the Configure TCP/IP for IBM Network Stations display. Task 3200 will have a completion status of YES if the task ran successfully.

Task 3300 - Set TCP/IP Servers To Autostart

On the Configure TCP/IP for IBM Network Stations display, type 1 next to task 3300 and press Enter. The Set TCP/IP Servers to Autostart display appears. Press Enter and the following commands will set the required servers to start automatically when TCP/IP is started by the STRTCP command:

CHGBPA AUTOSTART(*YES)

CHGTFTPA AUTOSTART(*YES)

CHGHTTPA AUTOSTART(*YES)

CHGTELNA AUTOSTART(*YES)

Note: If the CHGBPA command is not found, this might be because you do not have library QTODSYS in front of QSYS in your library list. Type command WRKSYSVAL QSYSLIB and select option 2 (Change) to add QTODSYS before QSYS.

After pressing Enter, you will return to the Configure TCP/IP for IBM Network Stations display. Task 3300 will have a completion status of YES if the task ran successfully.

Task 3400 - Add HTTP Server Directives

On the Configure TCP/IP for IBM Network Stations display, type 1 next to task 3400 and press Enter. The Add HTTP Server Directives display appears. The following directives, which are needed to serve the IBM Network Stations, are added to the HTTP Configuration file when you press Enter:

```
HostName   (your host name)
ENABLE POST
ENABLE GET
Map   /QIBM/NetworkStation/Admin /QYTC/QYTCMAIN.PGM
Pass  /QIBM/NetworkStation/* /QIBM/ProdData/HTTP/Protect/NetworkStation/*
Exec  /QYTC/* /QSYS.LIB/QYTC.LIB/*
```

Note: These directives are case-sensitive.

These directives can be viewed or changed using the WRKHTTPCFG command.

After pressing Enter, you will return to the Configure TCP/IP for IBM Network Stations display. Task 3400 will have a completion status of YES if the task ran successfully.

Task 4000 - Configure IBM Network Stations

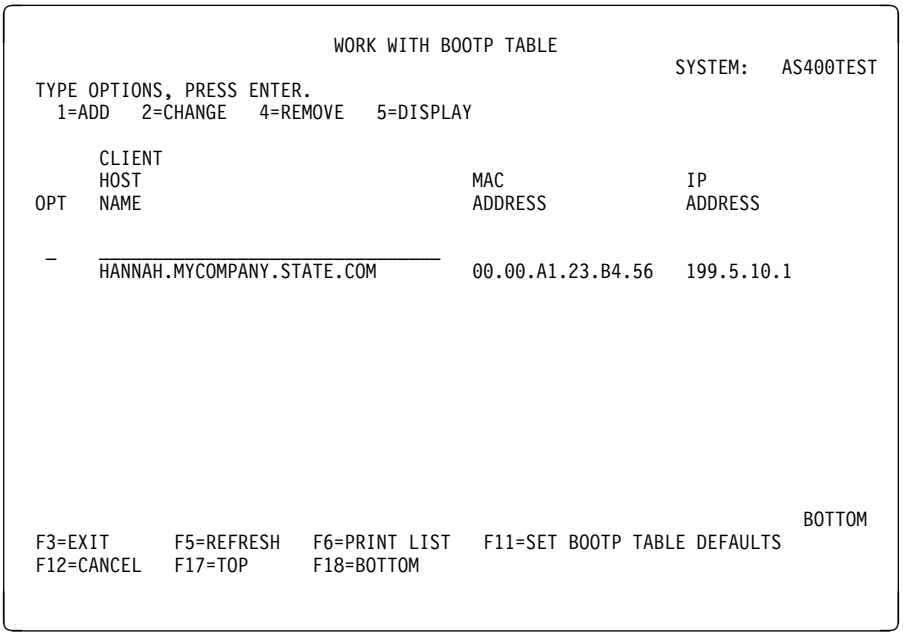
Type 1 next to task 4000 on the Network Station Setup Task List display and press Enter. The Configure IBM Network Stations display appears.

Task 4000 assists you in defining the IBM Network Station devices. There are two tasks in this section. The first task, task 4200, will take you to the WRKBPTBL (Work with BOOTP Table) command. This command allows you to create BOOTP entries for each IBM Network Station you wish to support from this AS/400. The second task, task 4300, allows you to create and vary on printers which are attached to the IBM Network Station devices.

You must select task 4300 even if you have no printers attached to your IBM Network Stations. This is to make sure that you have verified that you are not using any printers. If you do not have printers, select the task and press Enter to continue.

Task 4200 - Define IBM Network Stations

Type 1 next to task 4200 on the Configure IBM Network Stations display and press Enter. The Work With BOOTP Table (WRKBPTBL) command runs, and the Work With BOOTP Table appears.

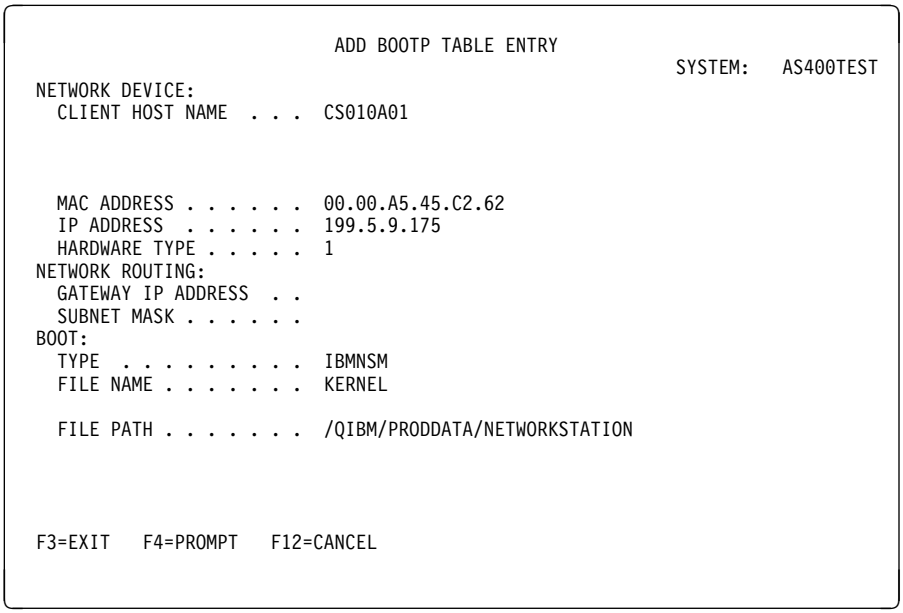


The BOOTP table contains entries for all network devices that require boot assistance from this AS/400.

Note: Task 4200 allows you to add BOOTP entries for each of your IBM Network Stations. However, this task does not require that you add any entries. If no entries are provided task 4300, where you will define IBM Network Station attached printers, will appear empty. You should update the BOOTP table using task 4200 if you want the Setup Assistant to help you define attached printers in the next task.

Note: If you press F11 on this display, you will be able to set BOOTP table defaults for when you add BOOTP table entries. You will be able to set defaults for the hardware type, subnet mask, gateway IP address, boot file name, and boot file path. This saves time and typing if you will be setting up multiple Network Stations. The defaults can be changed at any time by pressing F11 from this display.

Type 1 (Add) on the empty first line to add an entry for an IBM Network Station. The Add BOOTP Table Entry display appears.



Use the information from Table 2-3 on page 2-16 for client host name, MAC address, IP address, hardware type, boot file name, and boot file path when adding BOOTP table entries. Use the information from the IBM Network Station section in Table 2-3 on page 2-16 for the Gateway IP address and subnet mask when filling in the Network Routing.

Note: The Hardware Type, Subnet Mask, Gateway IP Address, Boot File Name, and Boot File Path will already be filled if you set these BOOTP Table defaults (F11 from the Work with BOOTP Table display).

Note: Some of the fields on this display are case-sensitive, such as the MAC address. You should type in all information in upper-case.

Routing information only needs to be provided if this IBM Network Station is located on a remote network, for example one which connects to an AS/400 through a router or gateway. Use the information from the IP Router/Gateway Information section of Table 2-2 on page 2-10 for the Gateway IP Address and Subnet Mask.

The boot information describes the BOOT software used for the network device. This information will always be the same for all IBM Network Stations.

After you have added entries for all of your IBM Network Stations, you should check to make sure that no duplicate host names, MAC addresses, or IP addresses are in the table. Verify this information on the Work With BOOTP Table display. If an address is wrong or mistyped, the IBM Network Station will not boot correctly.

Press Enter to return to the Configure IBM Network Stations display. Task 4200 will have a completion status of YES.

Task 4300 - Define IBM Network Station Attached Printers

Type 1 next to task 4300 on the Configure IBM Network Stations display and press Enter. The Setup Assistant will read the BOOTP table and the Define IBM Network Station Attached Printers display appears. This display lists all IBM Network Stations found in the table.

```
                  Define Network Station Attached Printers
                                                          System:   AS400TEST
Type options, press Enter.
  1=Create Printer Device Description

Opt     Host Name      IP Address
        HANNAH         199.5.10.1

                                                                        Bottom
F3=Exit   F5=Refresh   F10=Display job log   F12=Cancel   F17=Top
F18=Bottom
```

If you do not have printers attached to your IBM Network Stations, press Enter to continue without creating printer device descriptions.

If an IBM Network Station has an attached printer, select option 1 (Create and Vary on Printer Device Description) next to that IBM Network Station. Use the planning information you recorded in the Printer Type field of Table 2-3 on page 2-16 to provide the manufacturer type and model. To see a list of possible manufacturer types and models, press F1 or F4 while the cursor is on that field.

The IP address for your IBM Network Station is used as the default for the remote location name. If you would prefer to use the host name, you can change this field. However, you would also need to add a TCP/IP host table entry for that host name using the CFGTCP command option 10.

Press Enter to return to the Configure IBM Network Stations display. Task 4300 will have a completion status of YES if the task ran successfully.

After your IBM Network Station is operational, you must also start a print writer for the printer before you can print using the IBM Network Station attached printer. Use the Start Printer Writer (STRPRTWTR) command to start a spooling writer to the specified

printer. The writer, which is a system job, takes spooled files from an output queue and produces (writes) the output on the printer device.

Task 5000 - Start and Verify Required Servers

Type 1 next to task 5000 on the Network Station Setup Task List display and press Enter. The Confirm Start and Verify of Required Servers display appears.

```
                Confirm Start and Verify of Required Servers
                                                          System:   AS400TEST
Type choice:

End TCP/IP . . . . . . . . . . . . . . . . . . . .   *NO         *NO, *YES


If you configured new lines and/or added new TCP/IP interfaces, you have
to end TCP/IP for the changes made to take affect.

The following commands are needed to start the required servers:

===>    STRTCP

===>    STRSBS QSERVER

===>    STRHOSTSVR SERVER(*ALL)

Press enter to run these commands.


                                                                        Bottom
F3=Exit   F12=Cancel
```

If TCP/IP is active, task 5000 will give you the option to end TCP/IP. If you have created new lines or TCP/IP interfaces, you will need to end TCP/IP in order for them to become available. Next, user profiles and authorities which are needed when using the IBM Network Stations are verified. The following commands are run:

CRTUSRPRF USRPRF(QTFTP) PASSWORD(*NONE)

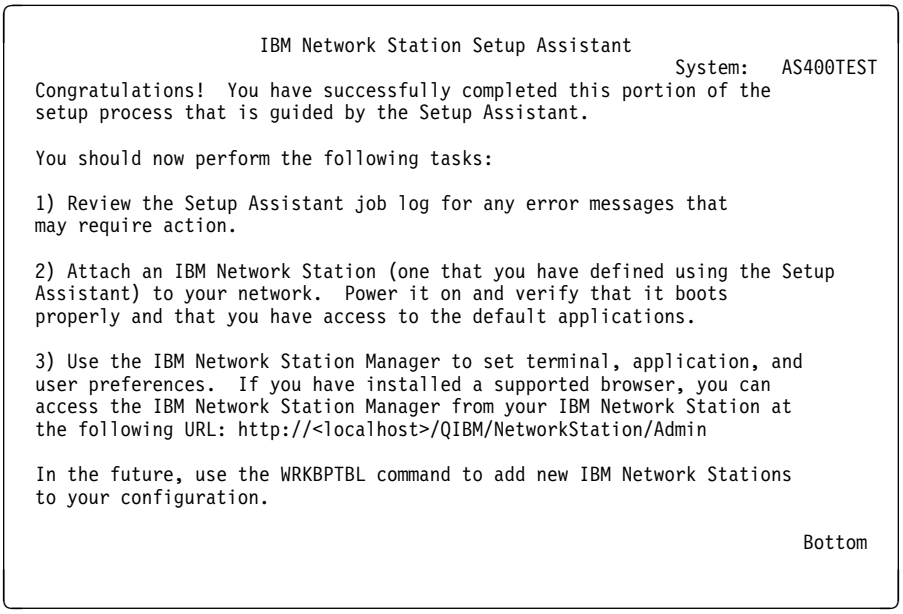
CHGAUT OBJ('/QIBM/Service/NetworkStation/FFDC') USER(QTFTP) DTAAUT(*RWX)

CHGAUT OBJ('/QIBM/ProdData/NetworkStation/kernel') USER(QTFTP) DEFAULT(*RX)

Finally, the following commands are run to start the required servers (as seen on the Confirm Start and Verify of Required Servers display):

- STRTCP
- STRSBS QSERVER
- STRHOSTSVR SERVER(*ALL)

After you press Enter, the following display appears if task 5000 ran successfully.



Note: If task 5000 fails to complete successfully, retry the task and select to not end TCP/IP. If it fails to complete successfully again, check the job log (F10) and take appropriate action.

Chapter 5. Logging on and Working with IBM Network Station Manager Applications

This chapter discusses how to log on to the IBM Network Station and work with various applications that are supported by the IBM Network Station. Topics are:

- Logging on to the IBM Network Station
- Working with applications such as:
  - 5250 Emulation sessions
  - 3270 Emulation sessions
  - Browser sessions
  - Java applications
  - Java applets

Login

After you power-on your IBM Network Station, the following login screen appears:

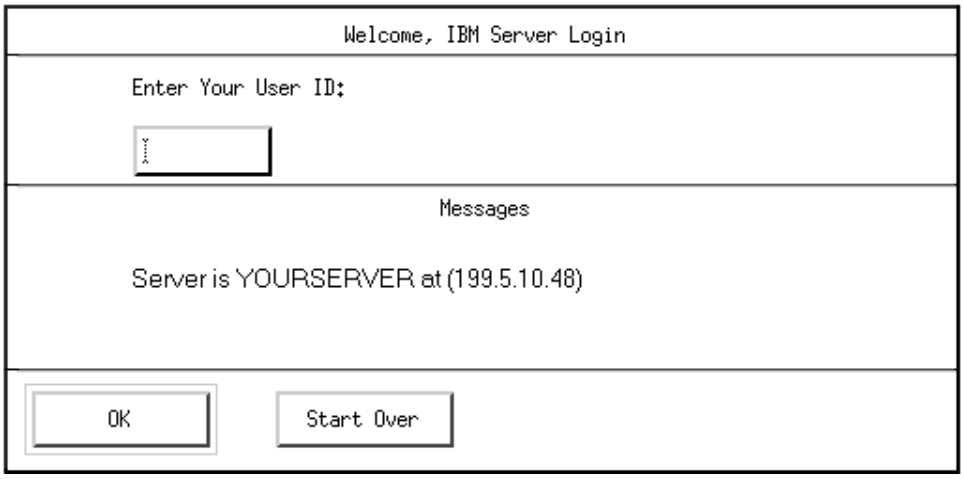


Figure 5-1. IBM Network Station Login Screen - Logon

Figure 5-1 shows the initial IBM Network Station login screen. Type your user profile name and press Enter. Type your password and press Enter.

Note: The mouse must be inside the window to make the window active.

Figure 5-2 on page 5-2 shows the IBM Network Station Menu bar, which contains the available applications to select. If any applications were specified to autostart by the IBM Network Station Manager (see Chapter 6, “Using the IBM Network Station Manager Program” on page 6-1 for more information), they will appear on your screen.

If no applications were set to autostart, select any applications that appear in your Menu bar. Available default application buttons are: 5250, 3270, IBM Browser, and Navio (a browser).

Figure 5-2. IBM Network Station Menu Bar - newmenu

The buttons within the menu bar are:

- Log Out

  Clicking Logout logs you off the IBM Network Station.

- Hide or Show

  Clicking Hide makes the menu bar float out of view when you move the mouse pointer off the menu bar. To retrieve the Menu bar, move your mouse pointer to the very bottom of your screen. (If you clicked the Move to Top button, go to the very top of the screen instead.) This is useful if the Menu bar covers part of an application window. Click the Show button to enable the Menu bar to be displayed on the screen.

- Move to Top or Move to Bottom

  Clicking Move to Top moves the Menu bar to the top of the screen. The Move to Top button will change to read Move to Bottom after the menu bar moves to the top. Clicking the Move to Bottom moves the Menu bar back to the bottom.

- Other buttons

  Other buttons on the Menu bar will be applications available to select and use.

- Lock Screen

  The Lock Screen button allows you to lock the screen when you leave the workstation. You will be prompted for a lock screen password.

Note: You can control the presentation of buttons on the Menu bar. In your environment you may or may not want users to have access to various applications (for example, additional 5250 sessions). The IBM Network Station Manager program allows you the flexibility of controlling access to various applications through Menu Bar Options. See “Startup Settings Example - Working with Menu Bar Options” on page 6-15 for more information on working with Menu Bar Options.

Working with the 5250 Emulation Application

The 5250 application provides access to an AS/400 system. How each 5250 session is presented on the IBM Network Station depends on how you configured the session using the IBM Network Station Manager program.

If you used the Menu feature of the Startup function (within the IBM Network Station Manager program), and you added a new 5250 session labeled MY5250, that menu button (labeled MY5250) will appear within the Menu bar as shown in Figure 5-3 on page 5-3.

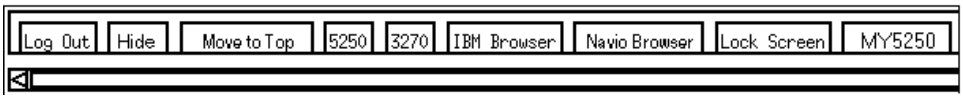


Figure 5-3. Menu Bar with MY5250 Button - menu5250

If, using the IBM Network Station Manager program, the 5250 session was set to autostart, a 5250 session will appear on your IBM Network Station as shown in Figure 5-4.

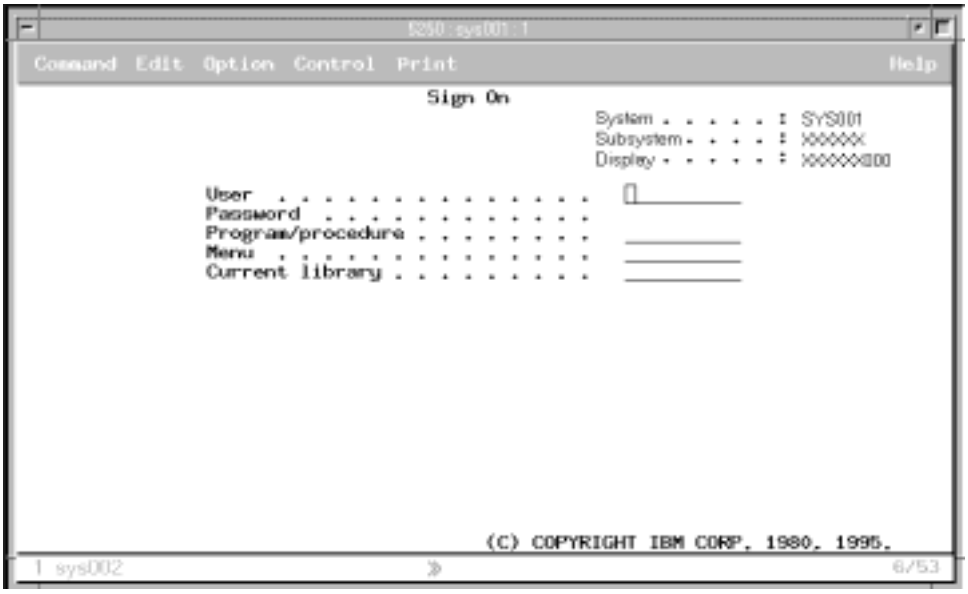


Figure 5-4. 5250 Session Display - 5250

If you click the 5250 button within the IBM Network Station Menu bar, a New 5250 Session window appears as shown in Figure 5-5 on page 5-4.

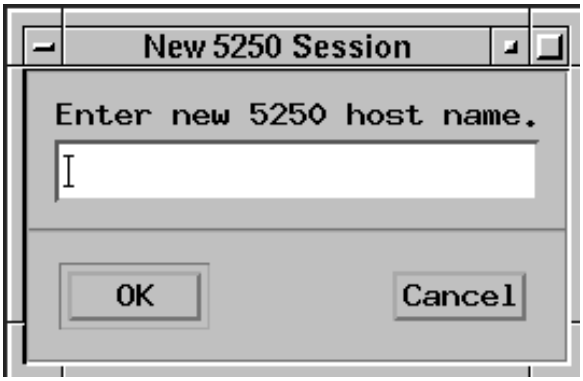


Figure 5-5. New 5250 Session Dialog Box - 5250

Note: You can use the name of the system or the IP address of the system to connect to or start a session. To use a system name, you must set up name translation (using the Domain Name Server (DNS)) information in your TCP/IP configuration.

Depending on the volume of network traffic, it can take from several seconds up to a minute to see the AS/400 sign-on display appear.

Learning About the 5250 Emulation Function

5250 emulation provides AS/400 system users with greater function than they normally receive if they just use a nonprogrammable work station (NWS) to access the system. This additional function is available by clicking various pulldown options from the 5250 Menu bar as shown in Figure 5-6:

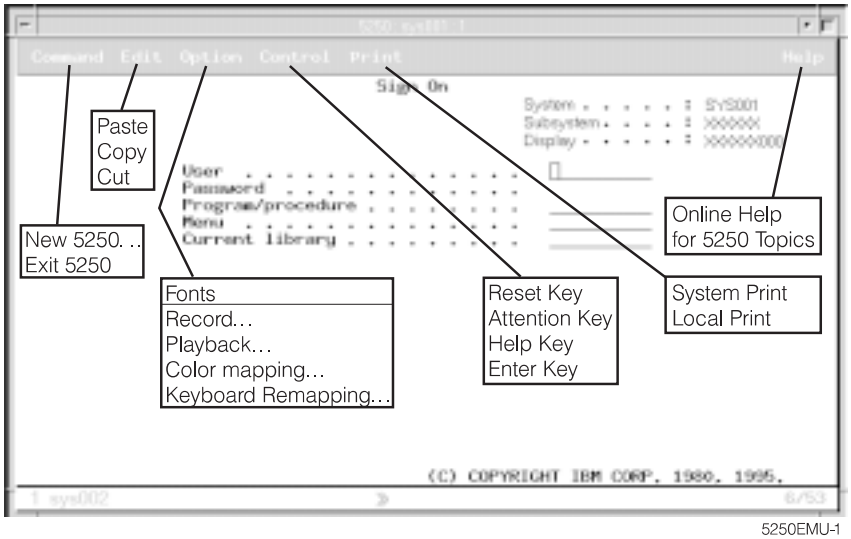


Figure 5-6. 5250 Emulation Session with Expanded Pulldowns - 5250EMU

As shown in Figure 5-6, pulldowns are available to allow you to quickly access 5250 emulation functions. For example, multi-session support (Command pulldown), font selection by session (Option pulldown), local or system print (Print pulldown), and online help (Help).

The following list contains additional 5250 emulation support:

- Keyboard remapping[1]
- Color mapping (basic and advanced)[1]
- Record/playback capability[1]
- Autostart of playback file (from the Record/playback function)[1]
- Auto-logon[1]
- Enter/Field Exit key locations (you can specify your choice of keys to be used for the Enter and Field Exit keys)
- Multiple screen size support (for example: 24 X 80, 27 X 132)
- OV/400 controller text assist
- Cut, copy, paste function[1]
- Hotspot support
- Cursor style options (for example, block or underscore)
- Rule line support
- Row and column indicator
- Customizable window title[1]
- Column separator function

All the 5250 emulation functions have shipped defaults. Those functions that are managed by the IBM Network Station Manager program also have IBM-supplied defaults. See Appendix C, “IBM Network Station Manager Program Shipped Default Settings” on page C-1 for a listing of all 5250 emulation defaults controlled by the IBM Network Station Manager program.

Accessing the online 5250 Emulation Help (by clicking the Help button) will provide more information on how to make each of these 5250 Emulation functions work.

Accessing Help

You can access help for the 5250 Emulator or your AS/400 session.

For the 5250 emulator, place your mouse pointer in the emulator's Menu bar and click Help. To access help for AS/400, sign on to the AS/400, place your mouse pointer in the AS/400 session window and press F1.

---

1 The IBM Network Station Manager program controls these 5250 Emulation functions. See Chapter 6, “Using the IBM Network Station Manager Program” on page 6-1 for more information. Also, the online help in the IBM Network Station Manager program provides more information along with all 5250 emulation default settings.

Working with the 3270 Application

The 3270 application provides access to a System/390. How a 3270 session is presented on the IBM Network Station depends on how you configured the session using the IBM Network Station Manager program.

If you used the Menu feature of the Startup function (within the IBM Network Station Manager program) and you added a new 3270 session labeled MY3270, that Menu button (labeled MY3270) will appear within the Menu bar as shown in Figure 5-7.

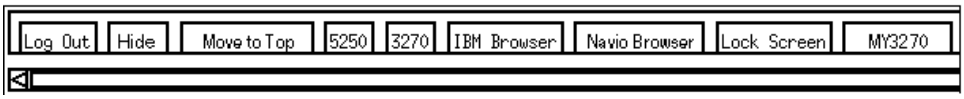


Figure 5-7. IBM Network Station Menu Bar with MY3270 Button - menu3270

If you had set the 3270 session to autostart, a 3270 session will appear on the screen of your IBM Network Station as shown in Figure 5-8.

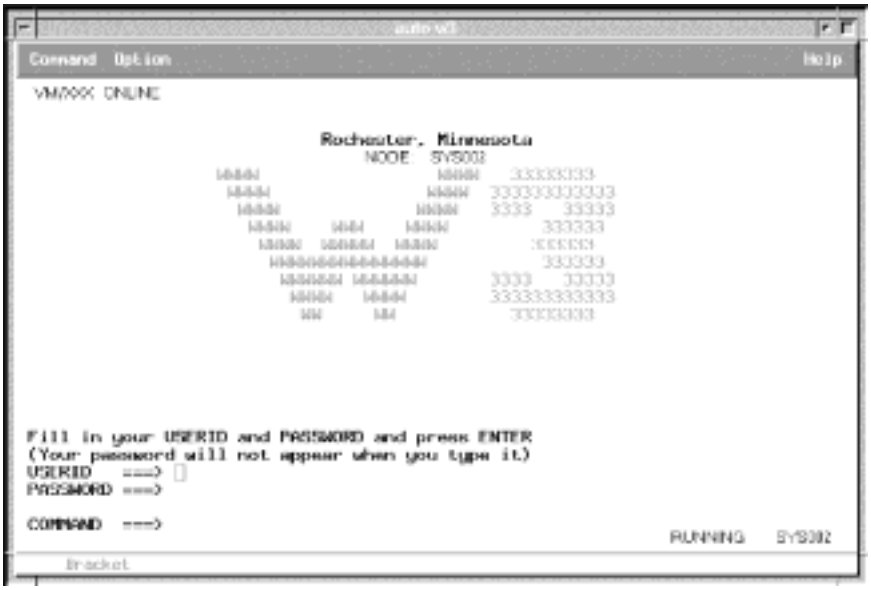


Figure 5-8. 3270 Session Display - 3270

If autostart was not specified, and you click the 3270 button within the IBM Network Station Menu bar, a New 3270 Session window appears as shown in Figure 5-9 on page 5-7.

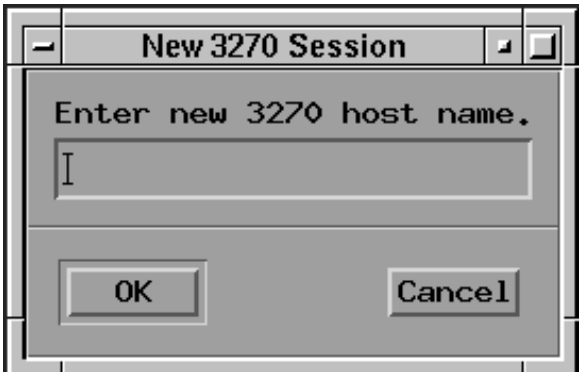


Figure 5-9. New 3270 Session Dialog Box - 3270dia

Note: You can use the name of the system or the IP address of the system to log on. To use a system name, you must set up name translation information (using the Domain Name Server (DNS)) in your TCP/IP configuration.

Depending on the volume of network traffic, it can take from several seconds up to a minute to see the Host Login Session screen appear.

Learning About the 3270 Emulation Function

3270 emulation provides AS/400 system users with greater function than they normally receive if they just use a 3270 nonprogrammable work station (NWS) to access a System/390. This additional function is available by clicking various pulldown options from the 3270 Menu bar as shown in Figure 5-10 on page 5-8:

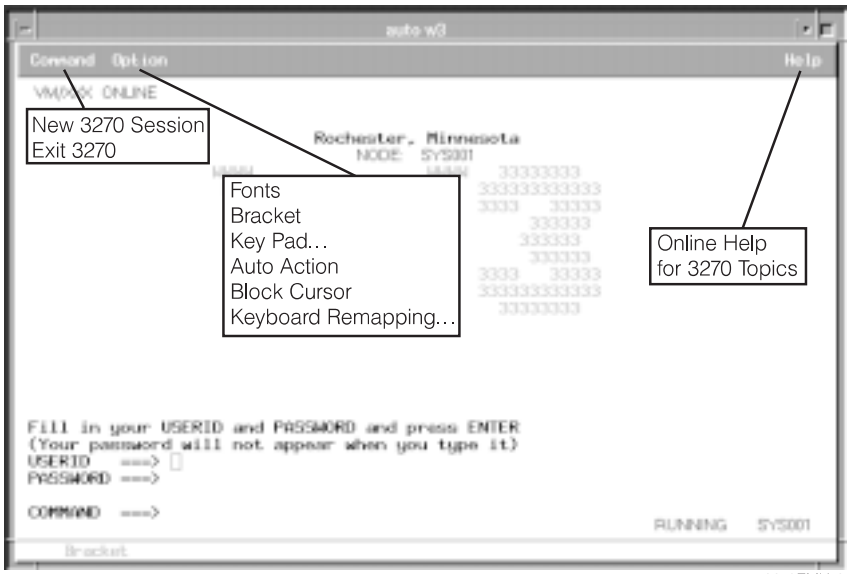


Figure 5-10. 3270 Emulation Session with Expanded Pulldowns

As shown in Figure 5-10, pulldowns are available to allow you to quickly access 3270 emulation functions such as:

- Multi-session support (Command pulldown)
- Font selection by session (Option pulldown)
- Online help (Help)

The following list contains some of the 3270 emulation support:

- Keyboard remapping[2]
- Graphics support[2]
- Choosing an Enter key location[2]
- Screen size support (for example: 24 x 80, 32 x 80, 43 x 80, and 27 x 132)[2]
- Pop-up keypad support[2]
- Copy and paste functions
- Auto action[2]
- Cursor style options (for example: underscore, block)
- Customizable window title[2]

All the 3270 emulation functions have shipped defaults. Those functions that are managed by the IBM Network Station Manager program also have IBM-supplied

2 The IBM Network Station Manager program controls these 3270 emulation functions. See Chapter 6, “Using the IBM Network Station Manager Program” on page 6-1 for more information. Also, the online help in the IBM Network Station Manager program provides more information along with all 3270 emulation default settings.

defaults. See Appendix C, “IBM Network Station Manager Program Shipped Default Settings” on page C-1 for a listing of all 3270 emulation defaults controlled by the IBM Network Station Manager program.

Accessing the 3270 emulation Help (clicking the Help button) will provide more information on how to make each of these 3270 emulation functions work.

Accessing Help

You can access help for the 3270 Emulator or your Host session.

For the 3270 emulator, place your mouse pointer in the emulator's Menu bar and click Help. In general, to access help for the 3270 application, place your mouse pointer inside the Host session window and press F1.

Working with the IBM Browser

The IBM Browser can provide access to the Internet. It is also used to access the IBM Network Station Manager program, which is used to manage IBM Network Station users and workstations. See Chapter 6, “Using the IBM Network Station Manager Program” on page 6-1 for more information.

If you used the Menu feature of the Startup function (within the IBM Network Station Manager program) and you added a new IBM Network Station Browser session labeled MYBROWSER, that Menu button (labeled MYBROWSER) will appear within the Menu bar as shown in Figure 5-11.

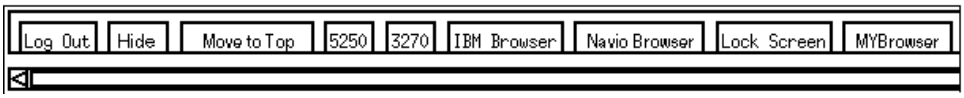


Figure 5-11. IBM Network Station Menu Bar with IBM Browser Button - menu

If the IBM Browser session was set to autostart, an IBM Browser session will appear on the screen of your IBM Network Station. This is shown in Figure 5-12 on page 5-11:

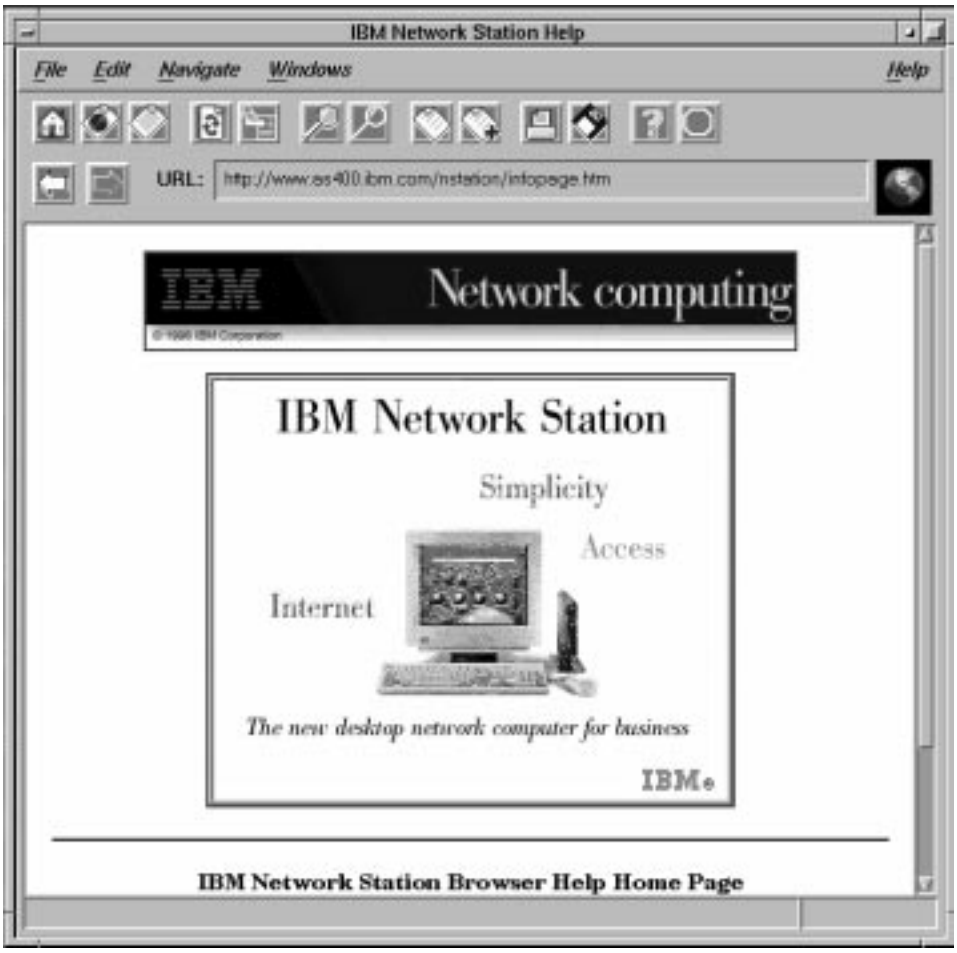


Figure 5-12. IBM Browser Session Display - NSBHP

If you click the IBM Browser button, and autostart was not specified, an instance of the IBM Browser appears.

Depending on the volume of network traffic, it can take from several seconds up to a minute to see the new IBM Browser screen appear.

IBM Browser News - What is the Latest?

To find out the latest information about IBM Browser features and what is new with this level of the IBM Browser product, click Help on the IBM Browser main page.

Select the HELP option from the Help pulldown.

In the Contents frame, scroll to Frequently Asked Questions (FAQ) or the README items. Either of these items provide late-breaking information about the IBM Browser.

IBM Browser Capabilities

Key IBM Browser features that are available in the first release of the browser include the following:

- Ability to display Web pages that contain text, HTML, GIF images (including animated GIFs), and JPEG images
- JavaScript 1.1 or compatible
- HTML 3.2
- Frames
- SSL 2 at 128 or 40 bit levels (in separate versions of the product, for US and Canada, or for export, respectively)
- Java applets can be run by the IBM Network Station Java Virtual Machine (VM)

IBM Browser MIME Types:

Table 5-1. IBM Browser MIME Types

TYPE/SUBTYPE	USAGE
Text/plain	plain text with no HTML tags
Text/HTML	text with HTML markup tags
Image/gif	GIF images, including animated GIFs
Image/jpeg	JPEG images
Note: No other MIME types are supported (because they require plug-ins or helper applications).	

IBM Browser URL Types Supported

The IBM Browser can handle the following URL types:

Table 5-2. IBM Browser URL Types Supported

URL TYPE	USAGE
HTTP	Display content using HTTP protocol, such as any web page with HTML
HTTPS	Same as HTTP, but using SSL security
MAILTO	Start the e-mail editor to create and send an e-mail message
ABOUT	Display copyright information about the browser
FTP	Open an FTP session
JAVASCRIPT	Run JavaScript
VIEW SOURCE	Display source file

Learning About IBM Network Station Browser Functions

The IBM Network Station Browser licensed program has many capabilities to help you manage Internet access and quick connection the IBM Network Station Manager program.

These functions, and others, are available by clicking various pulldown options from the IBM Browser Menu bar as shown in Figure 5-13:

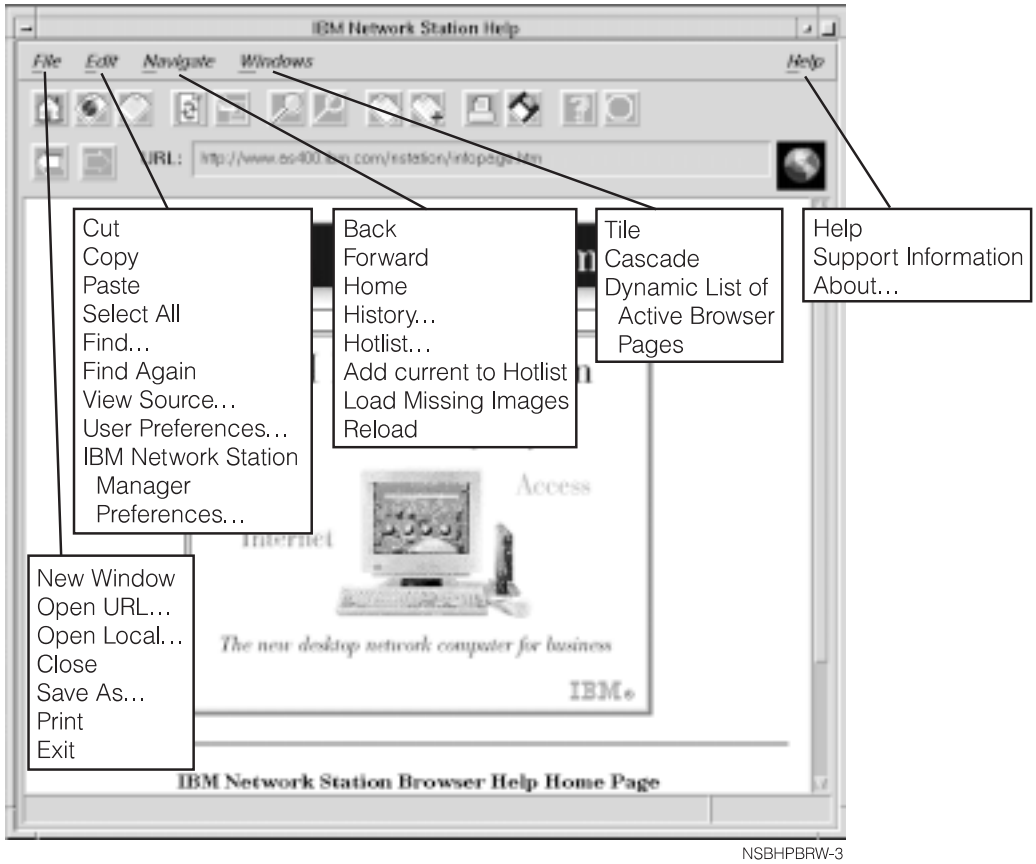


Figure 5-13. IBM Network Station Browser with Extended Pulldowns

As shown in Figure 5-13, pulldowns are available to allow you to quickly access IBM Browser functions such as:

- Multiple IBM Browser session support (New Window in the File pulldown)
- Font selection by user (User Preferences in the Edit pulldown)
- Online help (Help)

The following list contains some of the IBM Network Station Browser support:

- Open URL. . .
- Open Local. . .

  Opens an ASCII or HTML file.
- Close
- Save As. . .

  Saves a file with user-specified name and file extension.
- Print[3]
- View Source. . .

  Views the program source for the file in the current IBM Browser session.
- User Preferences[3]

  Allows configuration of fonts, colors, printing, caching and so on.
- IBM Network Station Manager program preferences. . .

  Provides a direct link to the IBM Network Station Manager program.
- History. . .

  Provides a list of web pages that were visited during the current IBM Browser session.
- Hotlist

  A list of frequently visited web pages. Access the web page by clicking the Hotlist entry.
- Tile

  Tile allows you to manage how multiple IBM Browser sessions will be presented on the display screen. For example, assume that you want four sessions. Use the Tile function to specify two side-by-side sessions at the top of the display followed by two side-by-side sessions at the bottom of the display.
- Cascade

  Cascade allows you to manage multiple IBM Browser sessions on the display screen by layering one over the other. Each new session is slightly lower that the previous session, thus allowing a user to work with all active IBM Browser sessions.
- Help

  Allows a user to access Help for the IBM Browser through a Contents listing on this page. Key topics are the README and the Frequently Asked Questions (FAQ).

---

3 The IBM Network Station Manager program controls these IBM Browser functions. See Chapter 6, “Using the IBM Network Station Manager Program” on page 6-1 for more information. Also, the online help in the IBM Network Station Manager program provides more information along with all default settings.

- Support Information

  Allows a user to view and save IBM Browser support information to a file.

Many of the IBM Browser functions have shipped defaults. Those functions that are managed by the IBM Network Station Manager program also have IBM-supplied defaults. See Appendix C, “IBM Network Station Manager Program Shipped Default Settings” on page C-1 for a listing of all IBM Browser defaults controlled by the IBM Network Station Manager program.

Accessing Help

You can access help for the IBM Browser using the Help menu option. The help includes a Frequently Asked Questions (FAQ) section, and an addendum for last-minute changes.

For IBM Browser help, place your mouse pointer in the IBM Browser Menu bar and click Help.

Changing the IBM Browser Encryption Level for Improved Transaction Security

To change the IBM Browser encryption capability, use the IBM Network Station Manager program. You will need to work with the Internet Setup Task and select Network. Chapter 6, “Using the IBM Network Station Manager Program” on page 6-1 provides information on using the IBM Network Station Manager program.

Working with the Navio NC Navigator Browser

Navio NC Navigator can provide access to the Internet. It is also used to access the IBM Network Station Manager program, which is used to manage IBM Network Station users and workstations. See Chapter 6, “Using the IBM Network Station Manager Program” on page 6-1 for more information.

If you used the Menu feature of the Startup function (within the IBM Network Station Manager program) and you added a new Navio NC Navigator Browser session labeled NAVIO2, that Menu button (labeled NAVIO2) will appear within the Menu bar as shown in Figure 5-14.

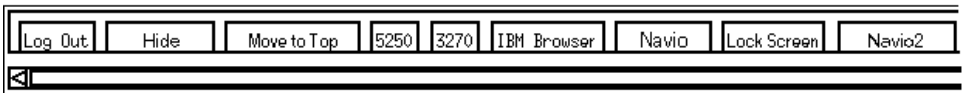


Figure 5-14. IBM Network Station Menu Bar with Navio Button - navio

If the Navio NC Navigator session was set to autostart, an Navio NC Navigator browser session will appear on the screen of your IBM Network Station as shown in Figure 5-15 on page 5-16.

Figure 5-15. Navio NC Navigator Browser Session Display - NAVSPL

If autostart was not specified, and you click the Navio Browser button within the Menu bar, an instance of the Navio NC Navigator browser appears.

Depending on the volume of network traffic, you can expect it to take from several seconds up to a minute for the Navio NC Navigator screen appear.

Navio NC Navigator Browser News - What is the Latest?

To find the latest information about Navio NC Navigator features and what is new with this level of Navio NC Navigator, click Help on the Navio NC Navigator main page.

Select the HELP for Navio NC Navigator option from the Help pulldown.

In the Contents frame, scroll to Frequently Asked Questions (FAQ) or the README items. Either of these items provide late-breaking information about the Navio NC Navigator browser.

Navio NC Navigator Browser Capabilities

In general, Navio NC Navigator is a compatible subset of the popular Netscape Navigator 3.0x UNIX browser (exact version may change as enhancements are made). Key features that are available include the following:

- Ability to display Web pages that contain text, HTML, GIF images (including animated GIFs), and JPEG images
- Javascript
- HTML Compatible with Navigator 3.0x
- Frames
- SSL 2 and 3 at 128 or 40 bit levels

  With server and client certificates, there are separate versions of the product, for US and Canada, or for export.
- Java applets can be run by the IBM Network Station Java Virtual Machine (VM)

Navio NC Navigator MIME Types:

Table 5-3. Navio NC Navigator MIME Types

TYPE/SUBTYPE	USAGE
Text/plain	plain text with no HTML tags
Text/HTML	text with HTML markup tags
Image/gif	GIF images, including animated GIFs
Image/jpeg	JPEG images
Note: No other MIME types are supported (because they require plug-ins or helper applications).	

Navio NC Navigator URL Types Supported

The Navio NC Navigator browser can handle the following URL types:

Table 5-4. Navio NC Navigator URL Types Supported

URL TYPE	USAGE
HTTP	Display content using HTTP protocol, such as any web page with HTML, and so forth
HTTPS	Same as HTTP, but using SSL security
MAILTO	Start the E-mail editor to create and send an E-mail message
ABOUT	Display copyright information about the browser
FTP	Open an FTP session
JAVASCRIPT	Run JavaScript
VIEW SOURCE	Display source file

Learning About Navio NC Navigator Browser Functions

The Navio NC Navigator browser licensed program has many capabilities to help you manage Internet access and quick connection to the IBM Network Station Manager program. These functions, and others, are available by clicking various pulldown options from the Navio NC Navigator browser Menu bar as shown in Figure 5-16:

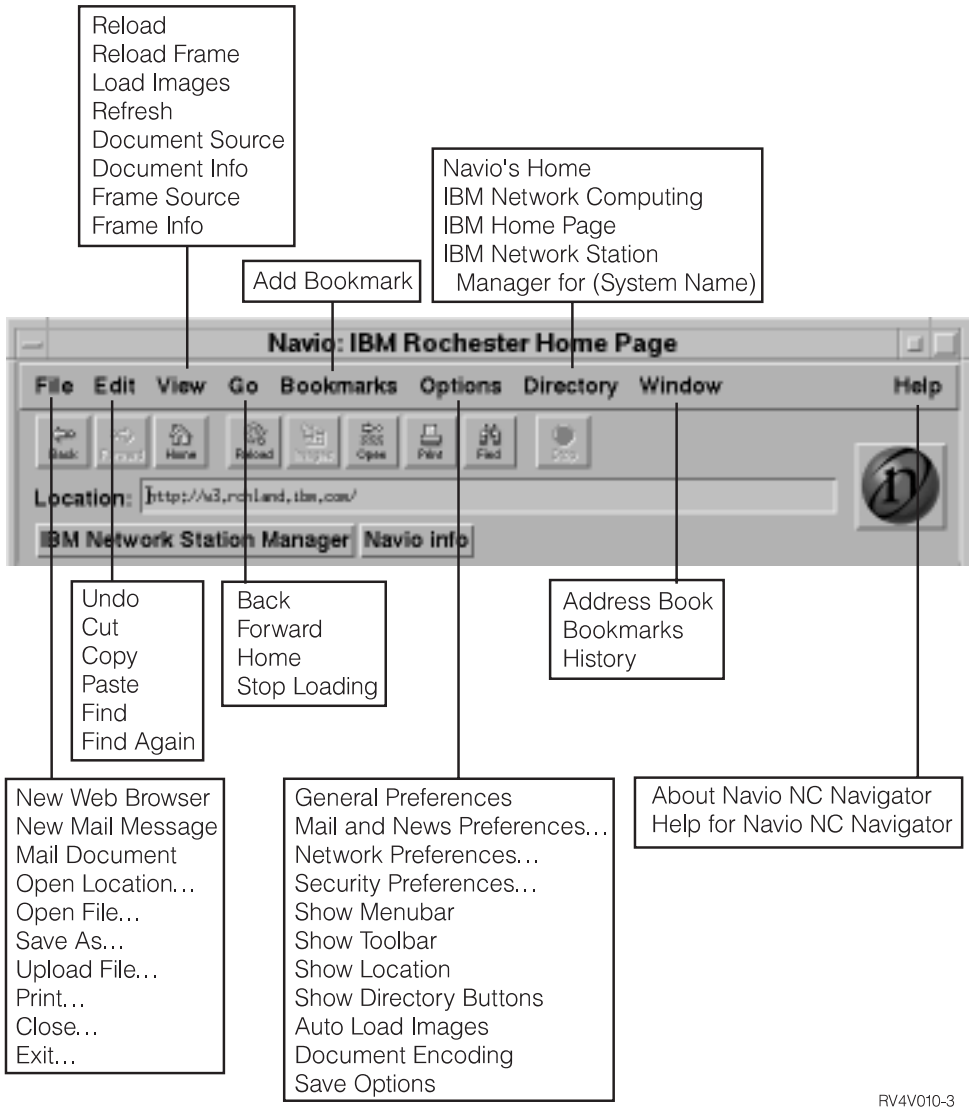


Figure 5-16. Navio NC Navigator Browser with Extended Pulldowns

As shown in Figure 5-16, pulldowns are available to allow you to quickly access Navio NC Navigator functions. For example:

- Multiple Navio NC Navigator session support (New Web Browser in the File pulldown)
- Font selection by user (General Preferences in the Option pulldown)
- Online help (Help)

The following information presents and describes some of the Navio NC Navigator browser support.

File Pulldown

The following Navio NC Navigator functions are available from the File pulldown:

New Web Browser
Provides another session of the Navio NC Navigator browser to appear on your screen.

New Mail Message
Provides the capability to address and send E-mail to another person. To use New Mail Message, you must have the Identity tab, located in the Options pulldown under Mail & News Preferences, completed.

Mail Document
Provides the capability to address and send documents to another person. To use Mail Document, you must have the Identity tab, located in the Options pulldown under Mail & News Preferences, completed.

Open Location
Provides the capability to specify an URL address that, when requested, is displayed in the browser window.

Open File
Provides the capability to specify a file that, when requested, is displayed in the browser window.

Save as
Provides the capability to save (with a different name and file type) a document or file that is currently displayed in the browser.

Upload File
Provides the capability to upload (send) a file to a specified location.

Print
Provides the capability to specify how (paper size, print orientation, font, which pages, and so on) a document that is currently displayed in the browser will be printed.

Close
Provides the capability to close the current browser window. Any other browser windows remain open.

Exit
Provides the capability to close all browser sessions at once.

Edit Pulldown

The following Navio NC Navigator functions are available from the Edit pulldown:

Undo
Provides the capability to undo or cancel the previous operation. For example, if you deleted a word and decided you did not want to, you could click undo and the word would return.

Cut
Provides the capability to delete specified pieces of a document.

Copy
Provides the capability to copy specified pieces of a document. The marked area can then be pasted elsewhere.

Paste
Provides the capability to paste (or insert) specified pieces of a document that had been marked for either copying or cutting (deleting).

Find
Provides the capability to search a document for a specified word or text string.

Find Again
Provides the capability to search a document for multiple occurrences of a word or text string.

View Pulldown

The following Navio NC Navigator functions are available from the View pulldown:

Reload
Provides the capability to reload (retrieve) the currently displayed page. You also have a Reload button in the Tool bar.

Reload Frame
Provides the capability to reload the active frame of a document that is currently displayed in the browser.

Load Images
Provides the capability to retrieve the images for the document that is currently displayed in the browser. Load Images only works if the Auto Load Images function (located in the Options pulldown) is off.

Refresh
Provides the capability to retrieve a new copy of the document that is currently displayed in the browser. The new copy of the documents retrieved from cache, not from a server.

Document Source
Provides the capability to view the HTML source of the currently displayed document.

Document Info
Provides the capability to retrieve basic information about the document that is currently displayed in the browser. For example, document info could be creation date, date last modified, size, number of URL links on the page.

Frame Source
Provides the capability to view the HTML source for the active frame that is currently displayed in the browser.

Frame Info
Provides the capability to retrieve basic information about the active frame that is currently displayed in the browser. For example, creation date, date last modified, size, number of URL links on the page.

Go Pulldown

The following Navio NC Navigator functions are available from the Go pulldown:

Back
Provides the capability to navigate backwards to previously accessed documents. Back is only active if you have been to one or more documents. A Back button is also available on the Tool bar.

Forward
Provides the capability to navigate forward to previously visited documents. Forward is only active if you have been to a document and then navigated (or moved) backwards. A Forward button is also available on the Tool bar.

Home
Provides the capability to return directly to your designated home page.

Stop Loading
Provides the capability to stop or end the activity of loading a new document to be displayed in the browser. A Stop button is also available on the Tool bar.

Remainder of Go Pulldown
Entries in the remainder of the Go pulldown represent URL locations that you have been to in the current browser session. You can access these locations by clicking on them or by pressing the listed combination of keys (usually Alt + a number).

Bookmarks Pulldown

The following Navio NC Navigator functions are available from the Bookmarks pulldown:

Add Bookmark
Provides the capability of adding the URL of the currently displayed document to your list of bookmarks. Bookmarks is a list of URLs that a user frequently visits. Placing the URL in the Bookmark list gives a user quick access to those URLs.

Remainder of Bookmarks Pulldown
Entries in the remainder of the Bookmarks pulldown represent URL locations that can be accessed by clicking them. To change or delete items that you have added to this list, use the Bookmarks item on the Window pulldown.

Options Pulldown

The following Navio NC Navigator functions are available from the Options pulldown:

General Preferences...

Provides the capability to customize browser appearance, browser fonts, and how images are handled by the browser.

Mail and News Preferences...

Mail and News Preferences consists of the following tabs:

- Compose

  Provides the capability to specify how E-mail is handled when it is mailed.

- Servers

  Provides the capability to view the name of the SMTP server.

- Identity

  Provides the capability of identifying yourself and your organization for the purpose of using E-mail and the sending of documents.

Network Preferences

Network Preferences consists of the following tabs:

- Cache

  Provides the capability to clear memory caches and specify how often cached documents are verified.

- Connections

  Provides the capability to specify the number of connections to an Internet server. It also identifies the size of the network buffer (amount of data Navio NC Navigator can receive in a transmission).

- Proxies

  Provides the capability to view your proxy configurations. You may have to work with the network administrator to understand or change any proxy configurations.

- Protocols

  Provides the ability for you to be notified before accepting a cookie from a remote server. A cookie is a mechanism that allows a server to remember information about you that the server can use in subsequent sessions.

- Languages

  Provides the capability to view how Java and JavaScript are configured. Java and JavaScript are controlled by the IBM Network Station Manager program. Work with your system administrator if changes need to be made to the configuration of Java or JavaScript.

Security Preferences

Security preferences consist of the following tabs:

- General

  Provides the capability to set an alert when entering, leaving, viewing, or submitting a document insecurely. These alerts can also remind you of when you change levels of security.

- Passwords

  Provides the capability to specify that a password be required when you request activity on your certificates. Password control prevents unauthorized activity on your certificates.

- Personal Certificates

  Provides validation of whom you say that you are when attempting to access a secure server. Personal certificates are password protected (from the password tab). To obtain personal certificates you have to contact companies that issue personal certificates. If a personal certificate is issued, it is typically downloaded to your computer and accessible through the browser. You can view or delete personal certificates. However, you can not edit or modify personal certificates.

- Site Certificates

  Provides validation that this user, on this machine (the site), is who they say that they are while attempting to access a secure server. Site certificates can be issued by secure servers. They are typically downloaded to your computer and accessible through the browser. You can view or delete site certificates. However, you can not edit or modify site certificates.

Show Menubar

Provides the capability to have the Menu bar displayed or not displayed during a browser session. The Menu bar contains the File, Edit, View, Go, Bookmarks, Options, Directory, Window, and Help pulldowns. If you deselect Show Menubar, the Menu bar immediately disappears from the browser. To retrieve the Menu bar, press the right mouse button and select Show Menubar.

Show Toolbar

Provides the capability to have the Toolbar displayed or not displayed during a browser session. The Toolbar provides buttons for Back, Forward, Home, Reload, Images, Open, Print, Find, and Stop buttons. If you deselect Show Toolbar, the Toolbar immediately disappears from the browser. To retrieve the Toolbar, select the Options pulldown and select Show Toolbar.

Show Location

Provides the capability to enter an URL directly from the keyboard and show the URL for the current document.

Show Directory Buttons

Provides the capability to display or not display directory buttons. Directory buttons provide users with quick access to specified URLs. Directory buttons are best used

to provide access to certain URLs for all users. Directory buttons are similar to Bookmarks; however, Bookmarks are generally used for personal preference rather than for a whole organization. Directory buttons, when specified, appear below the Location field in the browser. Directory buttons are managed through the IBM Network Station Manager program. No Directory buttons will be shown unless they have been defined by your system administrator.

Auto Load Images
Provides the capability to have images loaded automatically or not at all when a document is requested. You may want to select this option if you are browsing documents on remote servers. Auto Load Images works in conjunction with the Load Images item in the View pulldown. If Auto Load Images is disabled, images can be loaded for a particular document by using the Load Images function under the View pulldown.

Document Encoding
Document Encoding provides the capability to select which character set encoding a document uses when document encoding is either not specified or unavailable. By default, the browser expects that documents are encoded using Western (Latin-1) encoding unless the encoding is specified by the document. Not all of the document encoding character sets that appear on the pulldown list are supported. This is because the IBM Network Station does not currently provide fonts for all languages.

Save Options
Provides the capability to immediately save any changes made to any Options.

Directory Pulldown

The following Navio NC Navigator functions are available from the Directory pulldown:

Navio's Home
This Directory entry provides a link to Navio's home page.

You must be able to access the Internet to use this item.

IBM Network Computing
This Directory entry provides a link to IBM's Network Computing home page.

You must be able to access the Internet to use this item.

IBM Home Page
This Directory entry provides a link to IBM's corporate home page.

You must be able to access the Internet to use this item.

IBM Network Station Manager for (your system name appears here)
This Directory entry provides a link to the IBM Network Station Manager program for the server system from which your IBM Network Station was loaded . This program is used to manage all IBM Network Stations and their users. See Chapter 6, “Using the IBM Network Station Manager Program” on page 6-1 for more information.

Window Pulldown

The following Navio NC Navigator functions are available from the Window pulldown:

Address Book
Provides the capability to compile a book of names and addresses of individuals or groups you correspond with on a regular basis. This item is used for sending mail.

Search, editing, and filing capabilities are also provided in the Address Book function.

Bookmarks
Provides the capability to file, edit, and manage your personal lists of bookmarks.

The Bookmark function activities you perform are reflected in the bookmarks list that you can view using the Bookmarks pulldown in the Tool bar. For example, if you have bookmarks whose names are similar, you can add (edit) text that more readily identifies the bookmark.

History
Provides the capability to view a list of documents you have accessed during this session.

From this list you can create bookmarks for documents previously accessed or go directly to any selected document.

Remainder of Window Pulldown
The remainder of the Window pulldown contains a list of documents you have accessed during this session. You can access the document by pressing the push button next to it.

Help Pulldown

The following Navio NC Navigator functions are available from the Help pulldown:

About Navio NC Navigator
Provides the version level and trademarking information about Navio NC Navigator.

Help for Navio NC Navigator
Provides help information and Frequently Asked Questions (FAQs).

Many of the Navio NC Navigator browser functions have shipped defaults. Those functions that are managed by the IBM Network Station Manager program also have IBM-supplied defaults. See Appendix C, “IBM Network Station Manager Program Shipped Default Settings” on page C-1 for a listing of all Navio NC Navigator defaults controlled by the IBM Network Station Manager program.

Accessing Help

You can access help for the Navio NC Navigator browser using the Help menu option. The help includes a Frequently Asked Questions (FAQ) section, and an addendum for last-minute changes.

For Navio NC Navigator browser help, place your mouse pointer in the Navio NC Navigator browser Menu bar and click Help.

JAVA VM

You can set up Java applets and applications by using the IBM Network Station Manager. Applets and applications can be set to autostart (running on your workstation) or set as menu items (buttons in the menu bar).

Note: Only a single Java application can run within the IBM Network Station and, if running, also precludes applets from running in both the desktop and in the browser. However, many applets can be run simultaneously.

The Java Virtual Machine (JVM) and the supporting class packages that were installed provide an environment for programs written and compiled in the Java programming language. The current level of Java, supported by the IBM Network Station, is equivalent to the 1.1.2 level of the Java Development Kit (JDK) from JavaSoft. You can start and configure Java programs through the IBM Network Station Manager program.

What Is Java?

Java is an object-oriented programming language. Java is compiled into a byte code stream which JVM interprets at runtime. Java programs are portable and, in general, may be run on any computer that supports a JVM. This is a primary attraction of the Java language.

What do I do with Java?

In order to use Java, you must first obtain a program that was written in Java. This may be a program that you have purchased, downloaded from the Internet, or written and compiled by yourself. In general, the IBM Network Station is not geared towards being a development platform. Therefore, important programs should be developed on another platform before loading it on the IBM Network Station.

What are Java Applications and Applets?

There are two kinds of Java programs: those which are intended to be transferred and run across the Internet (applets), and those which run as programs from the local file system (applications). The first variety, applets, utilize a browser to provide windows and graphical layout for the applet. In general, these applets are not trusted by the browser since they are downloaded across the Internet. Therefore, the browser can restrict applets from reading or writing to local files and from connecting to machines other than machines from which they are downloaded. These restrictions are intended to protect the user from malicious programs and provide a safe environment to examine programs on the Internet.

Starting an Application

An application must be installed on the file system of the server - Integrated File System in the case of the AS/400.

Starting an Applet

Applets can be installed on the file system of the server that is your boot host, or downloaded from a remote system using a Universal Resource Locator (URL). The applet to load is specified through tags on an HTML page.

Applets can be run three different ways:

- By creating a button on the IBM Network Station menu bar for an applet
- By creating a button for a browser URL
- By starting a browser then loading an HTML page which contains an applet

Configuration of the applet is managed through parameter tags within the HTML file (the specific parameter names are determined by the applet vendor). Applets that load from the file system of your boot host should be well-known and trusted applets (the source of the applets is reliable). There are no security restrictions placed on applets that run from the local file system. The applet may write to files and communicate with other machines. Writing to other machines may be desirable if you are saving your spreadsheet, but could be a problem if a malicious applet erased your files.

Where do I find Additional Information on Java?

You can find additional information at the following web sites.

JavaSoft home page:

```
http://www.javasoft.com
```

IBM Java home page:

```
http://www.ibm.com/java
```

Chapter 6. Using the IBM Network Station Manager Program

The IBM Network Station Manager program is a browser-based application program. This application program allows you to perform the setup and management tasks that are associated with one or all of your IBM Network Stations and IBM Network Station users. Setup Tasks are:

- Hardware configuration:

  Examples of configurable Hardware settings are: specifying primary mouse buttons (left or right-handed), mouse pointer speeds, screen savers, desktop background, and more.
- Startup application and program selection
  - Programs and menus

    Examples of configurable Startup settings are:
    - IBM Network Station Menu bar control
    - 5250 sessions
    - 3270 sessions
    - Remote program sessions
    - Java applications or applets
    - IBM Network Station Browser sessions
    - Navio browser sessions
  - Environment variables

    Environment variable settings are also configured under Startup. Environment variables can be used with Startup programs, menus, or any applications that are running on the IBM Network Station.
- Desktop Management

  Examples of configurable Desktop settings are screen colors for window frames, Icon placement, Font selection, and specifying how windows on the workstation are made active.
- 5250 Session configuration

  Examples of configurable settings for 5250 sessions are screen size, key remapping capability, color customization (basic and advanced), record/playback, and edit/copy/paste functions.
- 3270 Session configuration

  Examples of configurable settings for 3270 sessions are screen size, key remapping capability, color customization, and 3270 sessions with graphics support.
- Internet configuration
  - Network

Examples of configurable Network settings are E-Mail address, default home page, proxy settings, and encrypted or non-encrypted version of the IBM Network Station Browser.

– IBM Browser

  Examples of configurable IBM Browser settings are disk caching, auto loading of images, print headers and footers, and print margins.

– Navio NC Navigator

  Examples of configurable Navio NC Navigator browser settings are caching, network buffer size, and auto loading of images.

– Java Applet Viewer

  Examples of configurable Java applet viewer settings are message style, heap and stack size settings, and defining properties.

This chapter discusses the following IBM Network Station Manager program topics:

- IBM Network Station Manager program overview
  - Who can use the IBM Network Station Manager program
  - Working with IBM Network Station Manager defaults
  - Working with settings
- Starting the IBM Network Station Manager program. This section discusses:
  - Starting the IBM Network Station Manager from a web browser
  - Signing onto the IBM Network Station Manager program
- Working with the IBM Network Station Manager program - Examples

IBM Network Station Manager Program - an Overview

Figure 6-1 on page 6-3 provides a graphical view of how the IBM Network Station Manager program flows. Take a moment to study Figure 6-1 on page 6-3; it highlights the differences between the defaults and setup tasks that a system administrator and end user can work with.

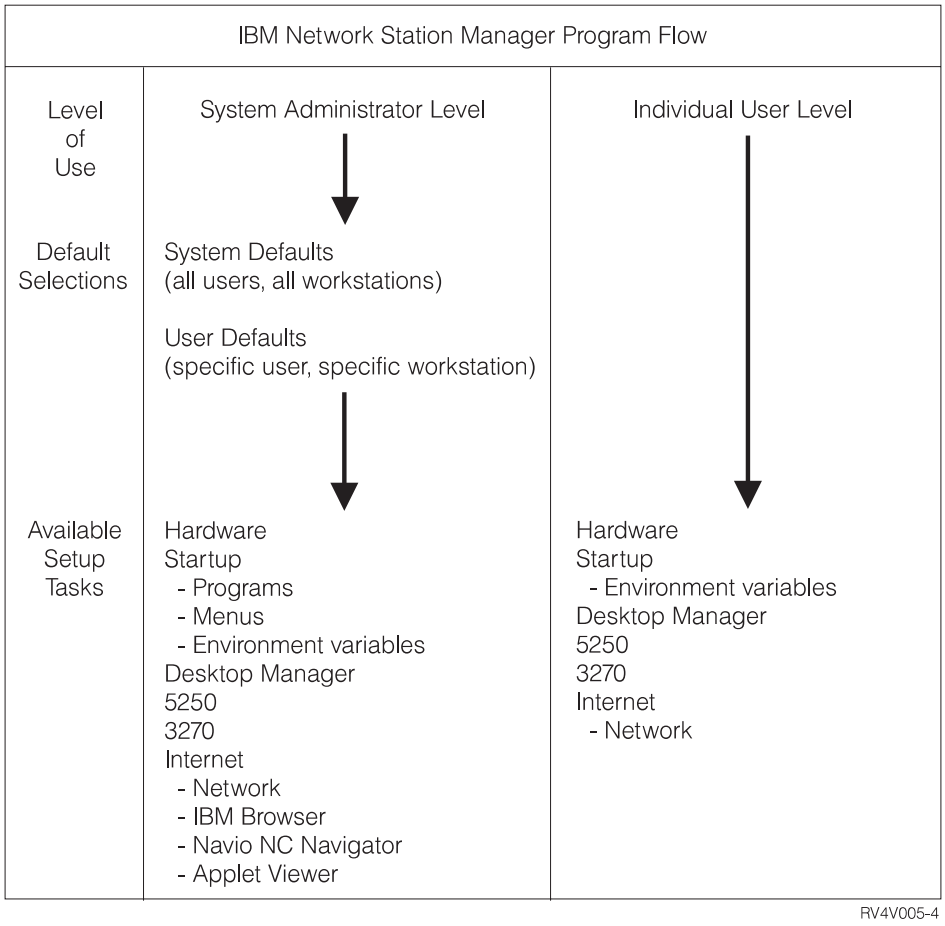


Figure 6-1. IBM Network Station Manager Program Flow

Who can use the IBM Network Station Manager Program?

As shown in Figure 6-1, both system administrators and individual end users can access and use the program.

The level of function a user can access is determined by the special authorities defined in each user's user profile. System administrators must have special authorities (SPCAUT (*SECADM and *ALLOBJ) authority). Other users should have a level of authority less than *SECADM and *ALLOBJ.

System Administrators

System administrators have full use of the program and can work at a level that is either system-wide or specifically for one user or one workstation. For example, an administrator could specify that all IBM Network Station users will have one 5250 emu-

lation session available and that one particular user could have an additional 5250 emulation session.

For information on how to sign on to the IBM Network Station Manager program, see “Starting the IBM Network Station Manager Program using a Browser” on page 6-9.

Figure 6-2 shows the screen a system administrator sees after signing onto the IBM Network Station Manager program. Notice that the range of functions presented in the Setup Tasks frame.

Note: This screen can vary in how it appears depending on the web browser you are using.

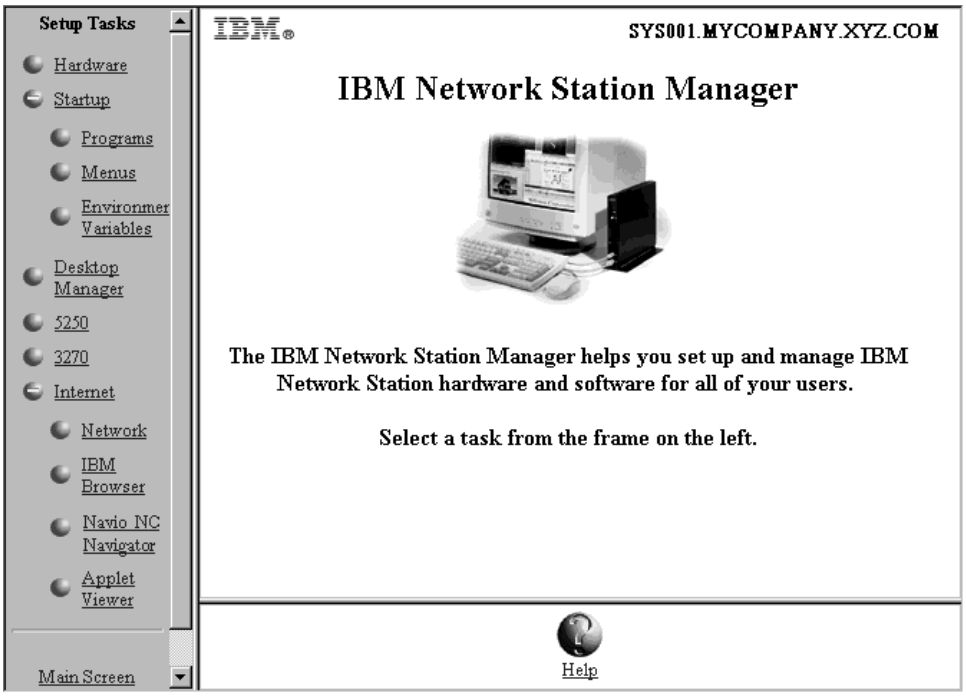


Figure 6-2. System Administrator Level - NETS003

Compare these functions to the range of functions that are available to individual end users as shown in Figure 6-3 on page 6-5.

Individual End Users

End users also have access to the IBM Network Station Manager program. However, the functions that an end user can work with are limited to settings that pertain only to themselves.

The following diagram shows the screen that an end user would see after signing onto the IBM Network Station Manager program. Notice that the range of functions presented in the Setup Tasks frame.

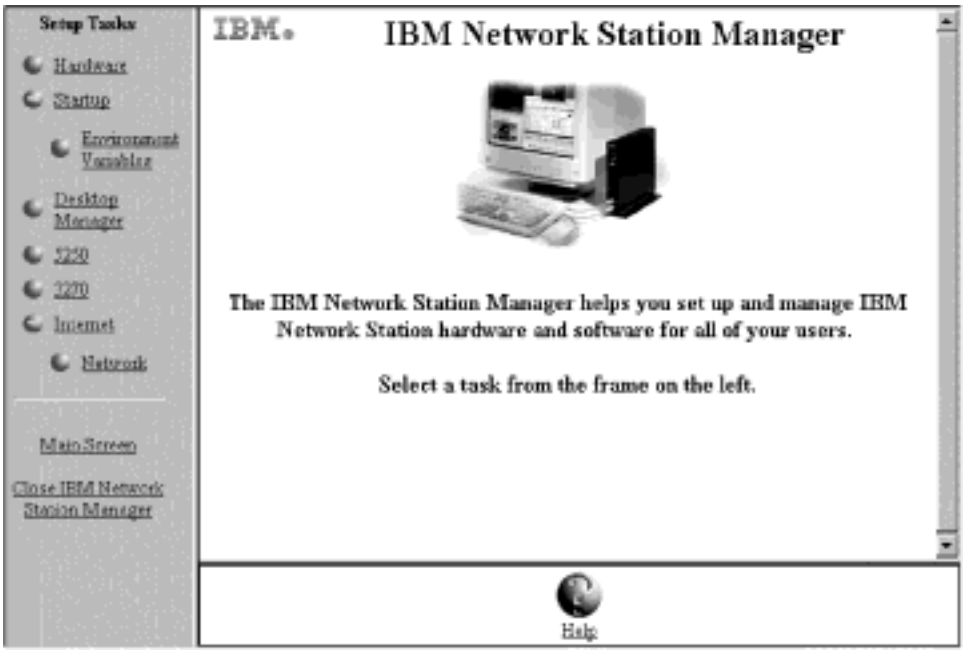


Figure 6-3. End-user Level - NSM007

As you can see, the program's flexibility allows broad system-wide settings management by the administrator and individual settings management by the end user.

> The following examples displayed in this chapter are representative of the displays a system administrator would see.

Working with IBM Network Station Manager Program Defaults

There are three levels of defaults. They are:

- IBM-supplied defaults

  IBM-supplied defaults are provided for all settings that are supported by the IBM Network Station Manager program.

  The IBM-supplied defaults can not be changed. They can be overridden using the IBM Network Station Manager program feature of System defaults or User level defaults.

  See Appendix C, “IBM Network Station Manager Program Shipped Default Settings” on page C-1 for a complete list of all IBM-supplied default values for the IBM Network Station Manager program.

- System defaults

  System defaults are used to change settings for all users or all workstations.

  System defaults take precedence over IBM-supplied defaults.

- User defaults

  User defaults are used to change settings for an individual user or individual workstation.

  User defaults take precedence over IBM-supplied defaults and system defaults.

Note: Settings work differently in the Startup function of Setup Tasks. For Programs, Menus, and Environment Variables, the IBM-supplied, System-specified, and User-specified, are additive. However, for the same environment variable, the value set at the user level takes precedence over the value set at the system or IBM-supplied levels. (The values for a given environment variable are not additive.) Any settings that are specified at the system or user level are added to those that are specified in the IBM-supplied default settings.

For example, every IBM Network Station user has one 5250 session specified as the IBM-supplied default. If the administrator used the System defaults function to assign all users an additional 5250 session, then all users would have two 5250 sessions available. If the administrator then used the User level default function to assign USERXYZ another 5250 session, then USERXYZ would have three 5250 sessions. The origin of these sessions would be one each from IBM-supplied defaults, System defaults, and User defaults.

IBM Network Station Manager Program Defaults - Example

This example uses the Desktop background setting that is in the Hardware function of Setup Tasks.

The IBM-supplied setting for Desktop background is the IBM bitmap.

At this point, the administrator determines that all Desktop backgrounds will be set to dark red. Using the IBM Network Station Manager program, the administrator applies the change by working through the System Defaults level. This change, to the color dark red, overrides the IBM-supplied value of the IBM bitmap for Desktop background.

After viewing the new desktop background color of dark red, a user determines it is too difficult to look at for long periods of time. The user then requests his Desktop background color be changed to green. The user can either change the Desktop background color or request the administrator to do it.

The administrator can make the change by selecting the Hardware Setup Task, User defaults and specify the user profile of the person who is requesting the change. Scroll to the Desktop background field and specify green. Click Finish to apply the change. This change, to a User default setting, overrides the IBM-supplied default and the administrator-set System Default value of dark red.

Notes:

1. If the user changed the background setting, they would go directly to the Hardware settings panel, bypassing the Default selection panel.
2. To see the Desktop background change you would have to log off and then log on to the workstation.

Working with System-Wide Defaults

Figure 6-4 is representative of the panel that appears when a selection is made from the Setup Tasks frame. In this example, the Hardware Defaults panel is used.

Figure 6-4. Hardware Defaults - NSM010

As you can see, the Hardware Defaults panel allows you to work with:

- Work with System defaults for all workstations and users
- Workstation defaults for a particular workstation
- User defaults for a particular user

Note: The Hardware Defaults panel is unique in that it allows you to specify settings for workstations in addition to specific users.

System defaults have settings that are not available when working with an individual user or workstation.

Working with WorkStation Defaults

You must have each IBM Network Station entered into the BOOTP table in order to use the IBM Network Station Manager program to set preferences for it. The BOOTP table

provides the IBM Network Station name, which is used for verification before completing the setting of the requested.preferences.

Working with Individual User Defaults

User defaults are designed to change settings on a user-by-user basis, one user at a time. This gives you flexibility in custom tailoring individual sessions.

From any of the Default panels, select User defaults, enter the user profile name, and press the Next button.

Note: If you don't know a user profile name or a workstation name, you can press the Browse button and a list of users or workstations is presented for you to choose from.

Working with Settings

Settings are fields that you see after you have selected which defaults (System or User) you want to work with. For example, Figure 6-5 shows the Desktop Manager Settings fields for Screen colors, Icon preferences, Fonts, and Window focus.

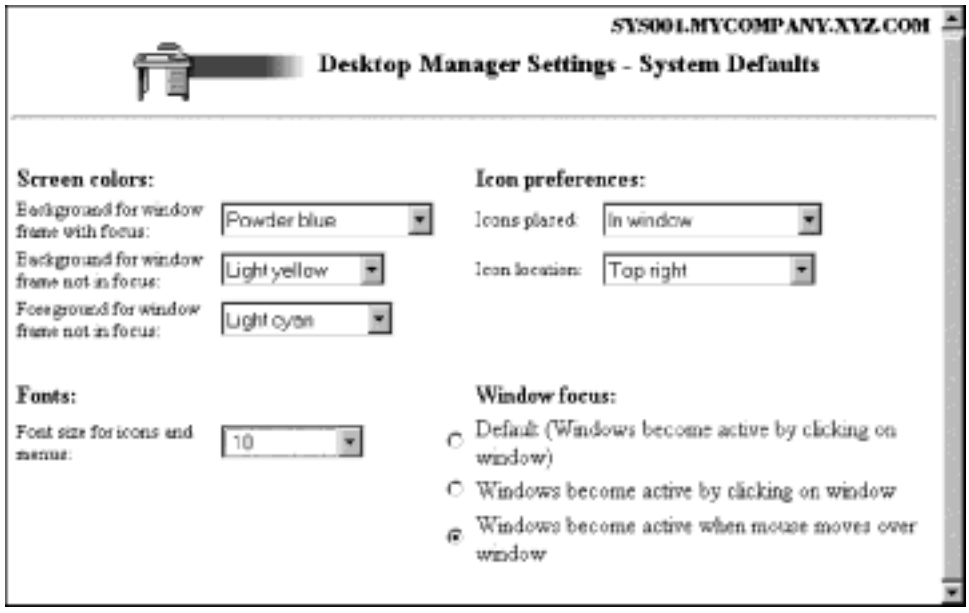


Figure 6-5. Desktop Manager Settings Fields - NSM014

In this example, Figure 6-5 represents Desktop settings that are being worked with from the System Defaults level. That means that any changes to the settings would be applied to **ALL** users.

Note: Settings in the Startup function of Setup Tasks work differently than the settings in other Setup Tasks. The difference is that any changes that are made at the system default level and user default level are added to the settings that are shipped with the IBM-supplied default settings.

For example, the IBM-supplied default is that all users have one 5250 session. Then, in Setup Tasks, the administrator selects Startup, Menus, System defaults, 5250 and applies this setting. The result is that all users would now have two 5250 sessions available to them.

Starting the IBM Network Station Manager Program using a Browser

To best understand and learn how the IBM Network Station Manager program works, we recommend that you now sign on and follow the examples in this chapter.

To start working with the IBM Network Station Manager, power-on your IBM Network Station and click **IBM Browser** or **Navio Browser** from the Menu bar on your IBM Network Station as shown in Figure 6-6.

Figure 6-6. IBM Network Station Menu Bar -Menu

Notes:

1. If you do not have, or have not installed, the IBM Network Station Browser or Navio NC Navigator licensed program, you can use the following web browsers to sign on to the IBM Network Station Manager program:
   - Netscape** 3.01 or later:
     - Windows 95
     - Windows NT
     - AIX
   - Microsoft Internet Explorer** 3.01or later
2. To access the IBM Network Station Manager program using Navio NC Navigator, click the Directory pulldown and select IBM Network Station Manager for (your host system name) Your host system name will be the name of the system your IBM Network Stations are booted from.

The IBM Network Station Browser appears as shown in Figure 6-7 on page 6-10:

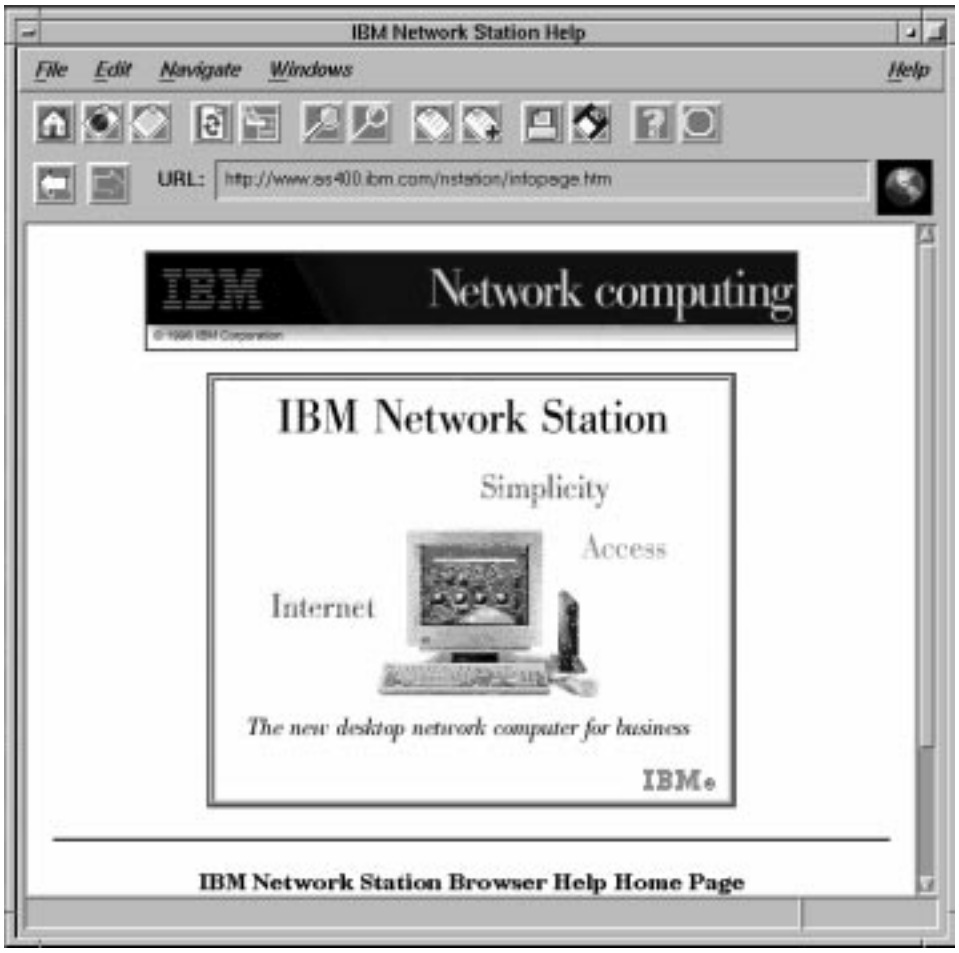


Figure 6-7. IBM Network Station Browser Sign on Screen - NSBHP

Click the Edit pulldown and select IBM Network Station Manager Preferences as shown in Figure 6-8 on page 6-11:

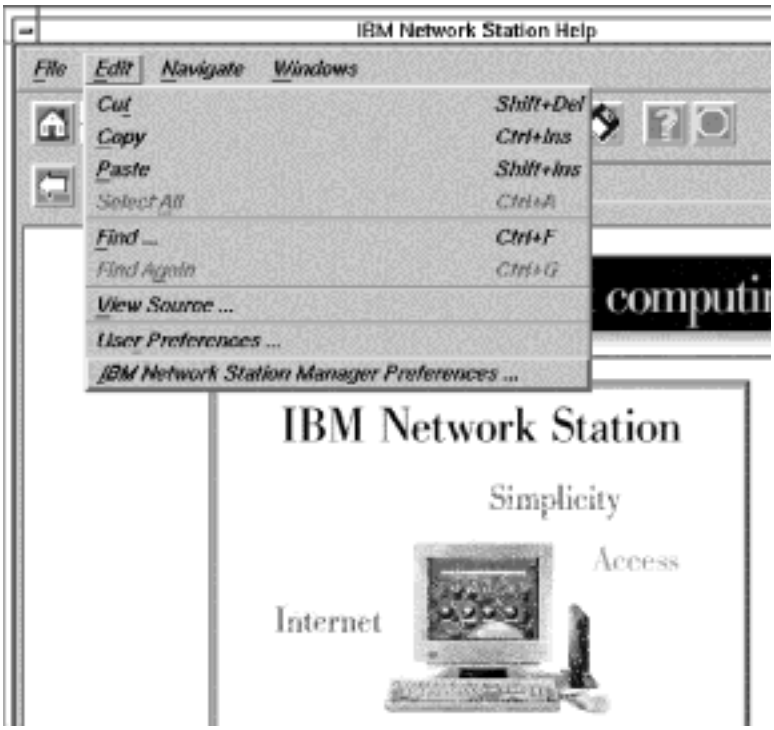


Figure 6-8. IBM Network Station Browser Sign on Screen with Edit Pulldown - NSBEDIT

The IBM Network Station Manager sign-on screen appears:

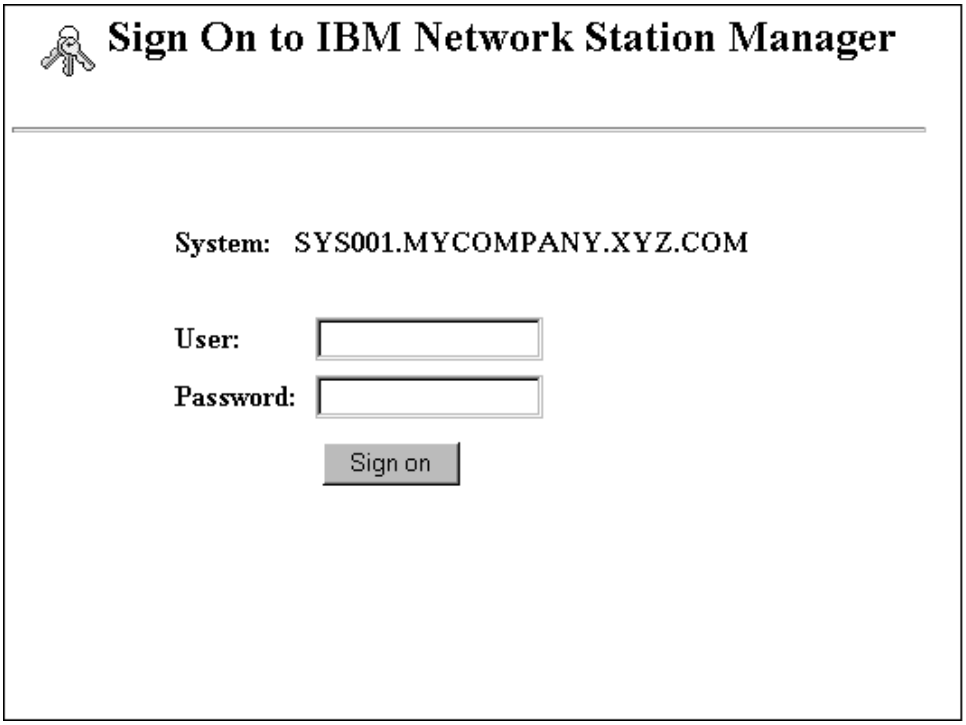


Figure 6-9. Sign on Screen - NETS002

Note: An alternative way to reach the IBM Network Station Manager sign-on screen is to enter the following case-sensitive URL in the IBM Browser's URL field:

http://yourservername/QIBM/NetworkStation/Admin

where ***yourservername*** is the AS/400 host name or TCP/IP address.

Type your user profile and password, then click **Sign on**.

The Main Screen of the IBM Network Station Manager appears:

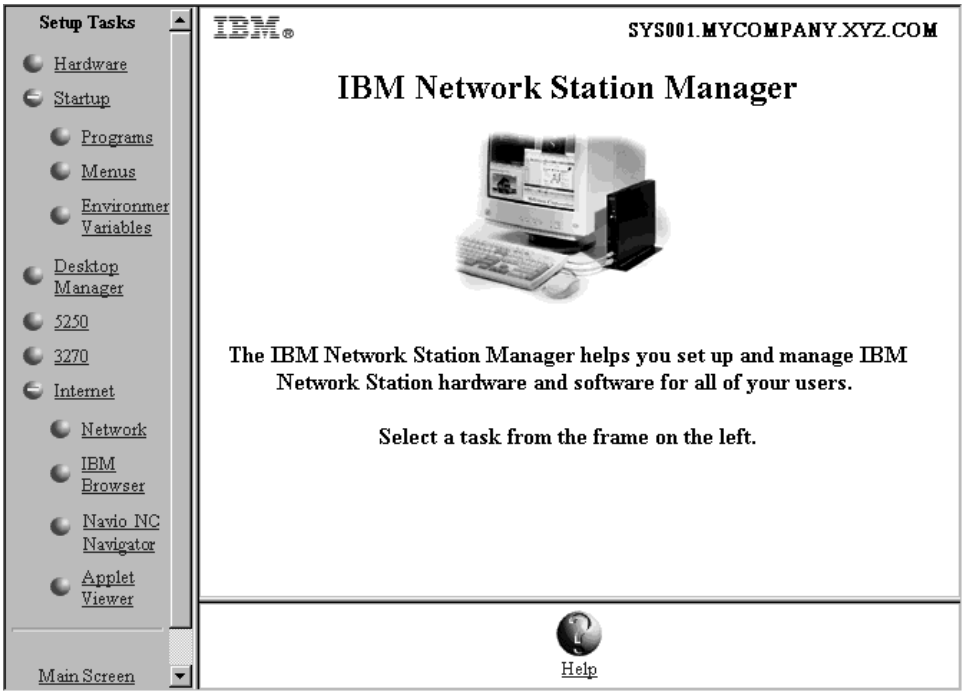


Figure 6-10. System Administrator Level - NETS003

Working with the IBM Network Station Manager Program Setup Tasks - Examples

Note: You must be a system administrator to work with these examples.

As shown in Figure 6-10, setup tasks are represented by icons in the left-most frame of the screen.

Clicking on any icon presents a panel where you select which set of Defaults you want to work with.

When working with these examples, select User defaults and use your own user profile. Then, when you are done going through the examples, you will be able to see the results on your workstation.

In order to see the changes you make using the IBM Network Station Manager program, you will have to log off and then log on to your workstation. Do not do this until we have gone through all of the examples that are presented here.

Notes:

1. When going through the examples, the Main panel and the Default selection panel will not be presented every time.
2. See “Additional IBM Network Station Manager Program Examples” on page 6-24 for information on working with remote programs such as AIX sessions and WinCenter Pro for PC applications.

Hardware Settings Example

From the Setup Tasks frame, click Hardware.

Select User defaults, and type in your user profile (USER001 in this example) as shown in Figure 6-11.

Figure 6-11. Hardware Defaults Panel with User Defaults Specified - NSM010A

In the bottom frame click Next to continue.

The Hardware Settings frame appears as shown (scrolled-down) in Figure 6-12 on page 6-15.

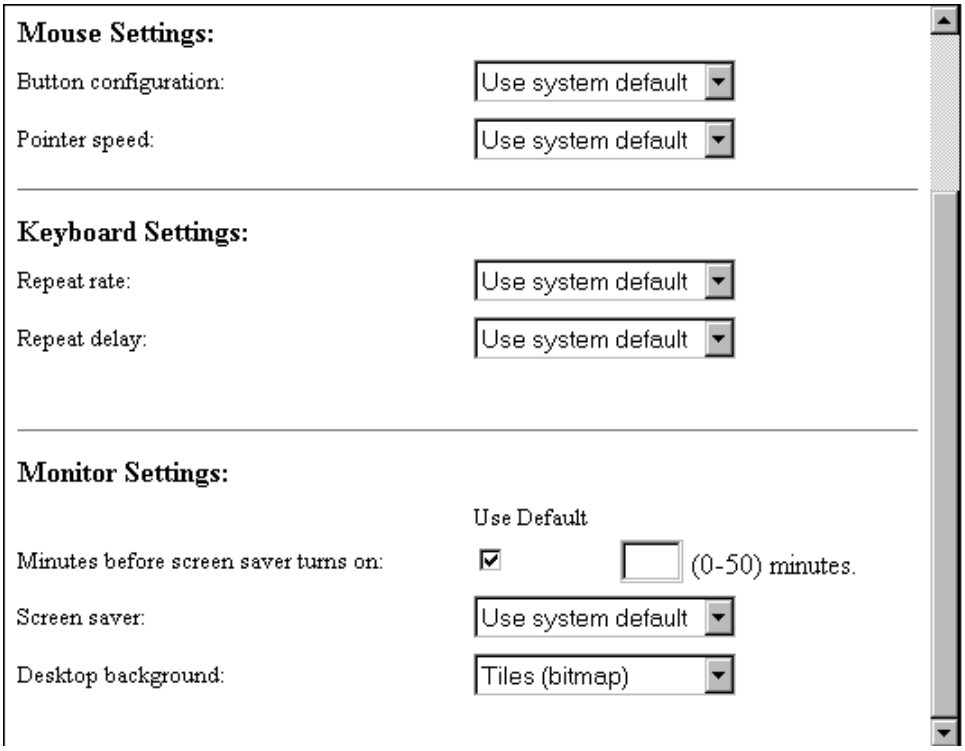


Figure 6-12. Hardware Settings Example - NETS004

Scroll to Desktop background and select the Tiles bitmap.

Click Finish to apply the change. Go to the next example.

Startup Settings Example - Working with Menu Bar Options

From the Setup Tasks frame, click Startup, click Menus, and select System defaults. In the bottom frame click Next to continue.

The Menu Bar Options frame appears as shown in Figure 6-13 on page 6-16.

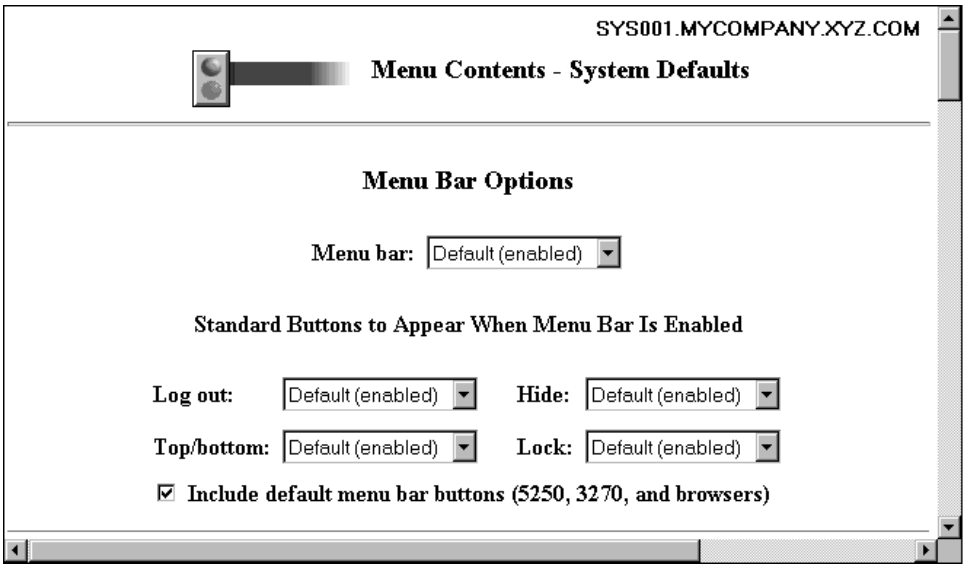


Figure 6-13. Startup Settings Example Working With Menu Bar Options - BUTTON2

The Menu Bar Options, as shipped from IBM, are shown in Figure 6-13.

If you make no changes to the Menu Bar Options fields, all of your IBM Network Station users will have a fully populated Menu bar displayed on their workstation. Fully populated means the Menu bar on each workstation will have the following buttons:

- Log out
- Hide
- Move to Top or Move to Bottom
- Lock
- 5250
- 3270
- IBM Browser
- Navio Browser

Hiding the Menu Bar

Using the IBM Network Station Manager program, you can hide the presence of the Menu bar from your IBM Network Station users.

You may have situations where you don't want the Menu bar available. For example, you may not want anyone to be able to log out or end any applications that may be running on the IBM Network Station. The Lock Screen button is another example where you might not want to provide an opportunity for someone to lock-up the screen. You may have an IBM Network Station workstation publicly available and, if the Lock Screen

button was available, anyone could lock the screen with a password known only to them.

You can hide the Menu bar from all IBM Network Station users by making the Menu bar field value Hidden. This is shown in Figure 6-14:

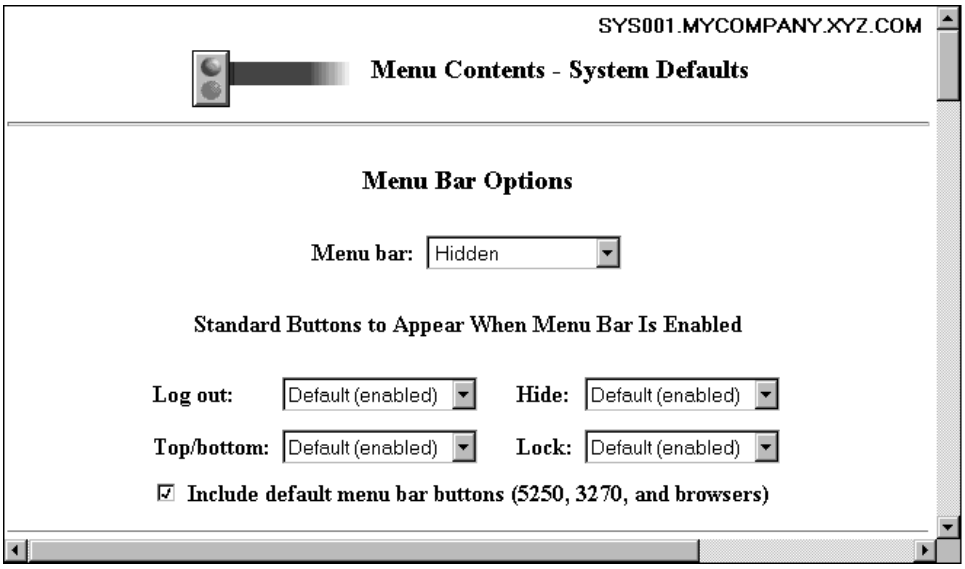


Figure 6-14. Hidding the Menu Bar - BUTTON3

Customizing the Menu Bar Buttons

The Menu bar can be customized by selectively specifying values for the Menu Bar options.

For example, Figure 6-15 on page 6-18 shows the fields and their values that would exclude the following Menu bar buttons:

- Log Out - value changed to Hidden
- Lock - value changed to Hidden
- Buttons for 5250, 3270, and browsers (These buttons are shipped with the IBM Network Station Manager) - Check box deselected

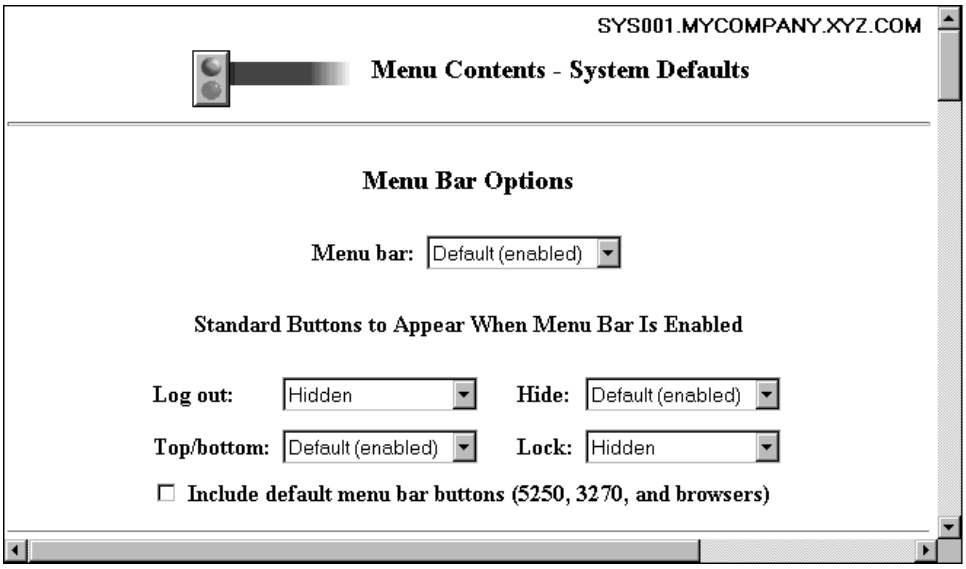


Figure 6-15. Customizing the Menu Bar Buttons - BUTTON4

Menu Bar Options Summary

If you hide the Menu bar (using either System defaults or User defaults), only applications that are specified to automatically start will appear on the worksation of users. Automatically starting applications is managed within Setup Tasks under the Programs function.

The User level (individual users' preferences) does not provide support for enabling or disabling the shipped menu bar buttons for 5250, 3270, or browser buttons.

If you have created customized Menu settings using the Menus function of Startup, but have hidden the Menu bar, no buttons from the customization will be available.

Startup Settings Example - Automatically Starting a 5250 Session on an IBM Network Station

From the Setup Tasks frame, click Startup, click Programs, and select User defaults. In the bottom frame click Next to continue.

The Programs Settings frame appears as shown in Figure 6-16 on page 6-19.

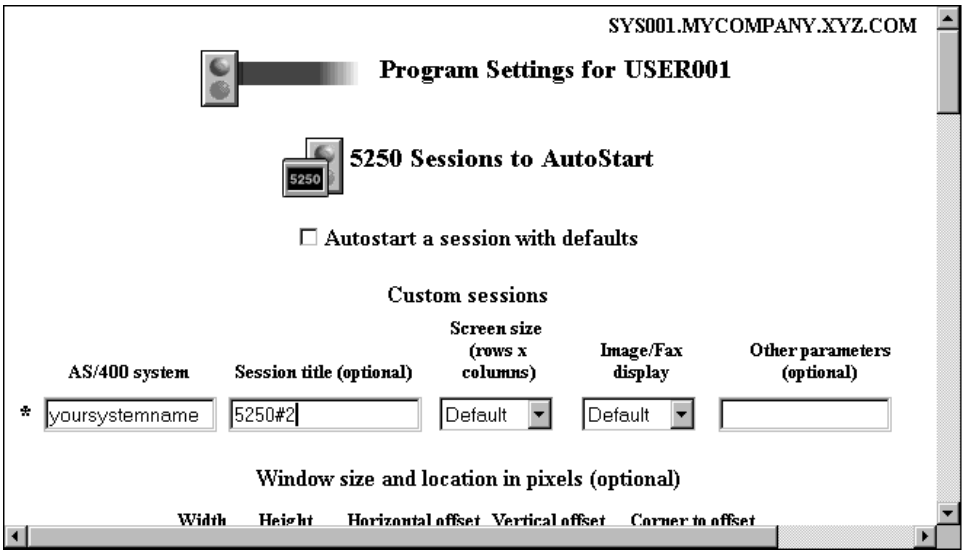


Figure 6-16. Startup Settings Example Working With 5250 Sessions - NETS005

Scroll to 5250 Sessions to Autostart. This setting, when completed, will automatically start a 5250 session for you when you sign on to your workstation. Complete the following fields:

- AS/400 system - Type the name or TCP/IP address of the AS/400 your workstation boots from.
- Session title - Type in a text string that represents your 5250 session. For example, 5250#2. This text string will appear in the Title bar of your 5250 session. This field is optional and you do not need a value. However, in this example you might want to try a name (5250#2) so you can see it when we verify the examples.
- For the other settings fields, use the defaults.

Click Finish to apply the change. Go to the next example.

Desktop Manager Example

From the Setup Tasks frame, click Desktop Manager and select User defaults. In the bottom frame click Next to continue.

The Desktop Manager Settings frame appears as shown in Figure 6-17 on page 6-20.

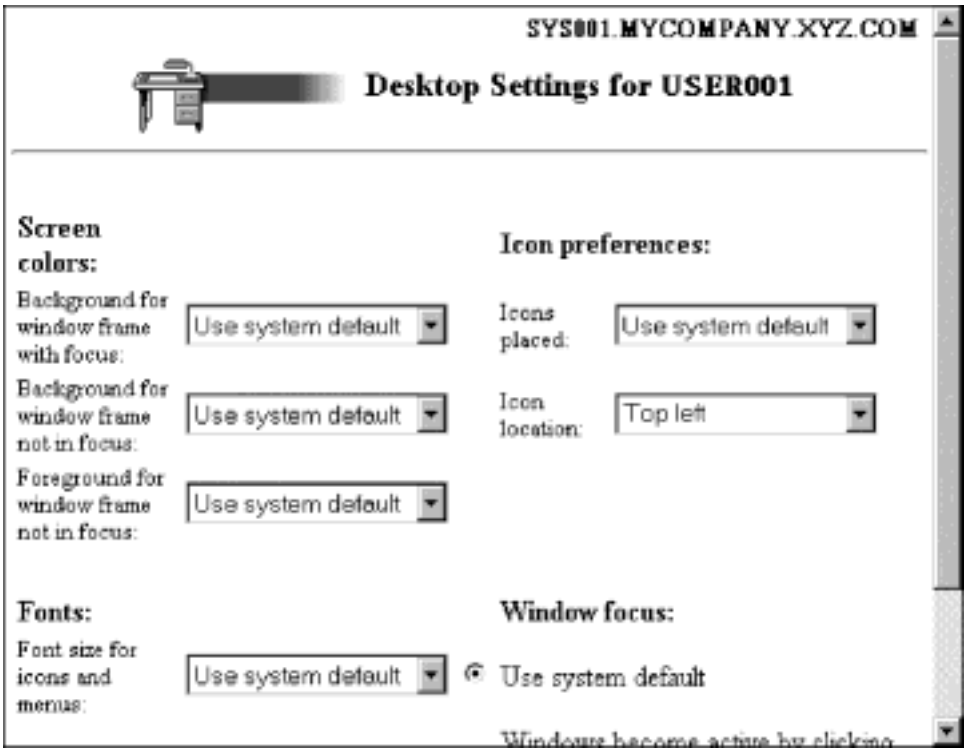


Figure 6-17. Desktop Manager Settings Example - NETS006

Scroll to Icon preferences. In the Icon location field, select Top left.

Click Finish to apply the change. Go to the next example.

5250 Example

From the Setup Tasks frame, click 5250 and select User defaults. In the bottom frame click Next to continue.

The 5250 Settings appear as shown in Figure 6-18 on page 6-21.

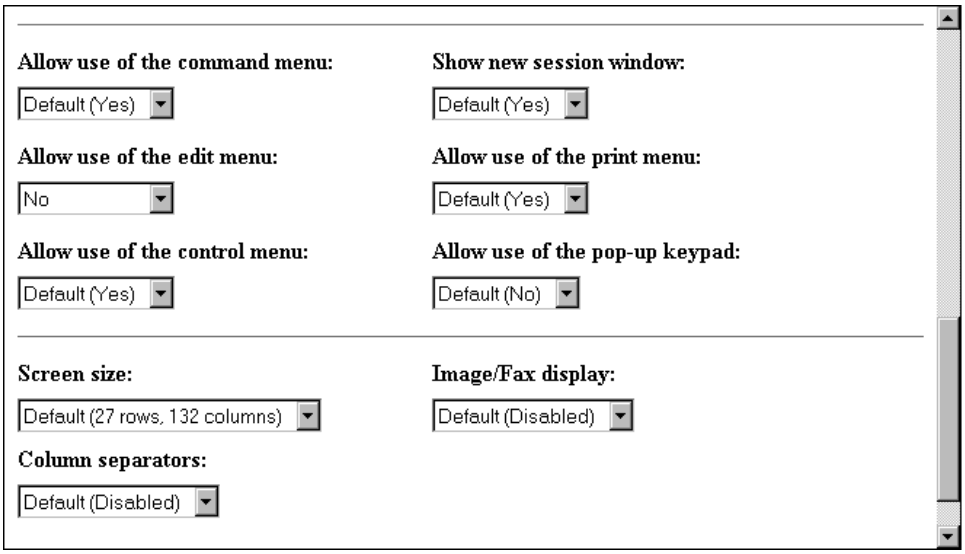


Figure 6-18. 5250 Setting Example -NETS007

Scroll to the Allow use of the edit menu field and select No to disable the edit menu. (The default is Yes, meaning that you can use the edit menu).

By disabling Allow use of the edit menu, your 5250 sessions will not have the Edit pulldown displayed for use.

Click Finish to apply the change. Go to the next example.

3270 Example

From the Setup Tasks frame, click 3270 and select User defaults. In the bottom frame click Next to continue.

The 3270 Settings panel appears as shown in Figure 6-19 on page 6-22.

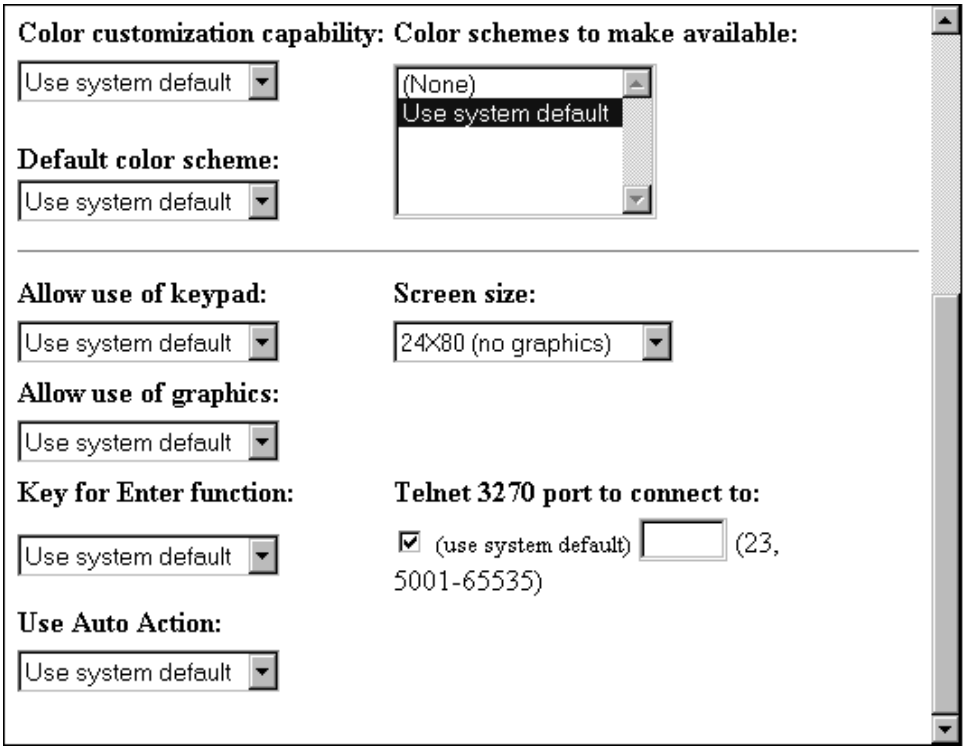


Figure 6-19. 3270 Settings Example - NETS008

Scroll to the Screen size field. Select 24 x 80.

This will change your 3270 session screen size from 32 x 80 (the default) to 24 x 80.

Click Finish to apply the change. Go to the next example.

Internet

From the Setup Tasks frame, click Internet, click IBM Browser, and select User defaults. In the bottom frame click Next to continue.

The IBM Network Station Browser Settings frame appears as shown in Figure 6-20 on page 6-23.

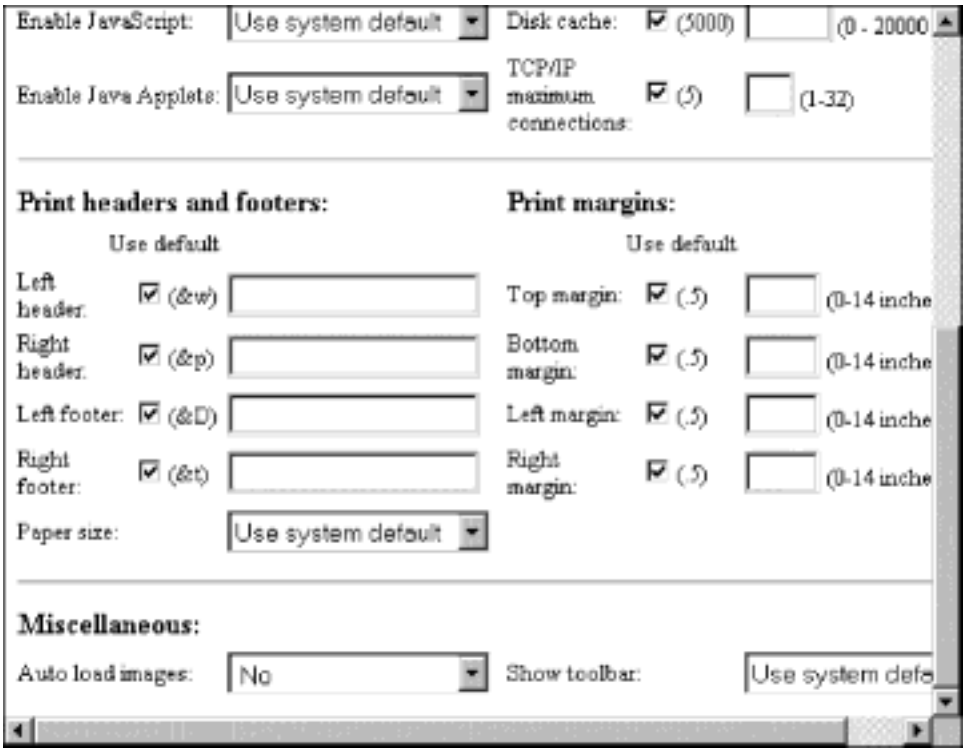


Figure 6-20. IBM Network Station Browser Settings Example - NETS009

In the Preference settings field, select Use preferences below as the value. Selecting this value enables all other preference settings that can be specified from this panel.

Scroll to the Miscellaneous heading and select No in the Auto load images field.

Note: Remember that if you apply this change, no images will display when you are using a browser. After a page loads the text, you can use the browser's Navigate pulldown menu to load the images. Select the Navigate pulldown, and then select Load Missing Images.

Click Finish to apply the change. Click Main Screen in the Setup Tasks frame.

Verifying your Setting Changes

After completing the examples, you can verify the settings you specified.

You will need to log off and then log on for the settings to be applied.

You should notice the following:

- After you log on, your background will be Tiles instead of whatever the system default was.
- You should have a 5250 session automatically appear on your screen.

- Your Icons will now be placed in the top left portion of your window instead of the bottom left.
- When you select your 5250 sessions, the Edit pulldown will not be present.
- If you log onto a 3270 session, your screen size will be 24 x 80.
- If you access the IBM Browser, no graphic images will be displayed in your session.

Do not forget: If you do not want any of the settings specified in the example exercises to remain, you will have to use the IBM Network Station Manager program to return them to the original settings or some other settings of your choice.

IBM Network Station Manager Program Education

It is recommended that you provide some hands-on education, similar to what you just experienced going through the above examples, for your users of the IBM Network Stations.

Practice choosing and applying settings within the various Setup Tasks to build skills among your users.

Additional IBM Network Station Manager Program Examples

Following is a list of additional examples that use the IBM Network Station Manager program:

- Setting up an AIX session on your IBM Network Station by using Remote Program support
- Setting up a Windows NT session on your IBM Network Station by using Remote Program support

Setting up an AIX Session using the IBM Network Station Manager Program

Complete the following steps to set up an AIX session using the IBM Network Station Manager program:

1. Verify that the user profile and password on the AS/400 system match the user profile and password on the AIX server.
2. You must create a .rhosts file on the AIX server. This file must contain the IBM Network Station's name and the name that the user logs into AIX with. This file resides on the AIX server under the user's directory. An example for a userid or user001:

```
                Contents of File

Directory Structure:            /home/user001
File name:                      .rhosts
IBM Network Station name        MYNWS.mycompany.ABC.com
Name user signs on with:        user001
```

This file can contain multiple lines. Each line should have one IBM Network Station name and one user name on it. If a user will be working from more than one IBM Network Station, create an entry for each IBM Network Station.

3. Sign on to the IBM Network Station Manager program.
4. From Setup Tasks, click Startup.
5. Under Startup, click Menu.
6. From Program Defaults, click User defaults.

   If you are setting this up for someone else, type their user profile or click Browse to select their user profile if you do not know it.
7. Click Next to continue.
8. Scroll ahead to Remote Programs. Type in the information as shown in Figure 6-21.

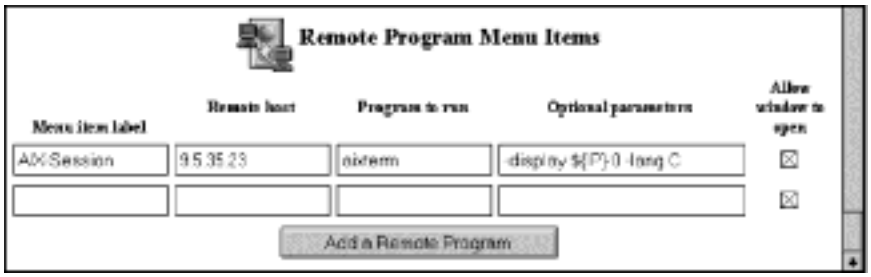


Figure 6-21. Remote Program Example for AIX - AIX

Where:

Menu item label
This text string will appear in the Menu bar on the IBM Network Station.

Remote host
The name or IP address of the AIX server.

Program to run
This identifies the program to run on the AIX server.

Optional parameters
-display is an AIX requirement that causes the program to display on the IBM Network Station rather than on the remote host. ${IP} is an IBM-supplied environment variable that gets replaced with the IP address of the IBM Network Station. -lang C is an AIX requirement that is used by programs such as Netscape on AIX.

The required parameters for AIX-Session are: -display and ${IP}:0.

9. Click Finish to apply the AIX remote program setting.
10. Log off and then log on your IBM Network Station. In the Menu bar there will be a button that is labeled AIX-Session, as shown in Figure 6-22 on page 6-26.

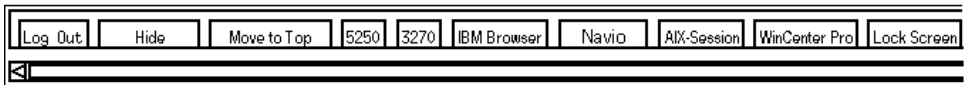


Figure 6-22. Menu Button for Remote Program Example for AIX - EDBAR

11. Click AIX-Session and a window will open with your X-station session.

    From the Aixterm window, you can run additional programs.

Setting up a Windows NT Session using the IBM Network Station Manager Program

Complete the following steps to setup a Windows NT session by using the IBM Network Station Manager program:

1. Verify that you have a Windows NT machine in your network that has the WinCenter Pro** application loaded on it.
2. Verify that the user has a valid user profile and password on the Windows NT server. When the session from the Windows NT server is requested on the IBM Network Station, the user will have to sign on.
3. Sign on to the IBM Network Station Manager program.
4. From Setup Tasks, click Startup.
5. Under Startup, click Menu.
6. From Program Defaults, click User defaults.

   If you are setting this up for someone else, type their user profile or click Browse to select their user profile if you do not know it.
7. Click Next to continue.
8. Scroll ahead to Remote Programs. Type in the information as shown in Figure 6-23.

Figure 6-23. Remote Program Example for Windows NT - WIN

Where:

Menu item label
This text string will appear in the Menu bar on the IBM Network Station.

Remote host
The name or IP address of the Windows NT server.

Program to run
This identifies the program to run on the Windows NT server.

Optional parameters
-display is a WinCenter Pro requirement that causes the program to display on the IBM Network Station rather than on the remote host. ${IP} is an IBM-supplied environment variable that gets replaced with the IP address of the IBM Network Station.

The required parameters for WinCenter Pro are: -display and ${IP}:0.

9. Click Finish to apply the WinCenter Pro remote program setting.
10. Log off and then log on your IBM Network Station. In the Menu bar there will be a button that is labeled WinCenter Pro, as shown in Figure 6-24.

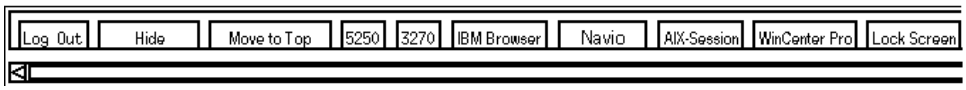


Figure 6-24. Menu Button for Remote Program Example for NT - EDBAR

11. Click WinCenter Pro and a window will open with your WinCenter session.

Chapter 7. Working with User Services

User services are programs that provide users with tools to manage the IBM Network Station's environment. You can work with User Services whenever you want, including when an application is running. Following are a list of User Services (not all User Services are enabled):

- Console
- Login (not enabled)
- Terminals (not enabled)
- WindowMgr
- Utilities
- Setup (not enabled)
- Statistics

Accessing User Services

Access User Services by pressing (on the IBM Network Station keyboard) the Shift, Alt, and Home keys all at the same time.

Figure 7-1 shows the User Services window with all the service programs that are displayed within the menu bar:

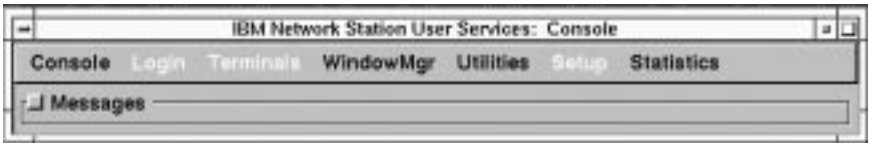


Figure 7-1. User Services Window - console

Console

This function provides a menu bar option (Console) for handling messages. Figure 7-2 on page 7-2 shows the tools available through the Console services option:

Figure 7-2. User Services: Console View - messages

Click the button by Messages to display messages that record IBM Network Station activity.

The list below contains the name of the tool and a description of its function:

Clear Messages
Selecting this option clears all the current messages from the console display.

Rescan Messages
Selecting this option refreshes the console display with any current messages that are not presently being displayed.

Close
Selecting this option closes the console function of User Services.

Login

The Login services option is disabled. The IBM Network Station Manager licensed program provides a login capability.

Terminals

The Terminal services option is disabled. The IBM Network Station Manager Program provides terminal or workstation management.

WindowMgr

Figure 7-3 on page 7-3 shows the tools available through the WindowMgr services option:

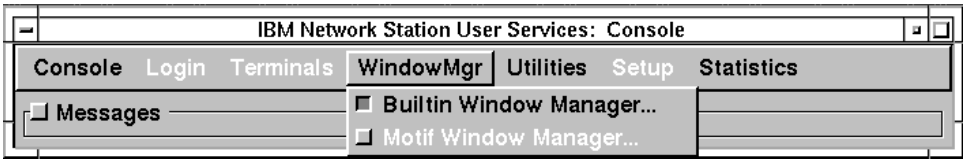


Figure 7-3. User Services: Window Manager View - window

The list below contains the name of the tool and a description of its function:

Builtin Window Manager
Selecting this option starts the Builtin Window Manager (an OSF or Motif-style). Deselecting this option ends the Builtin Window Manager.

The Builtin Window Manager function provides you with the ability to size, move, and make active (clicking) all the windows open on your monitor.

Utilities

Figure 7-4 shows the tools available through the Utilities services option:

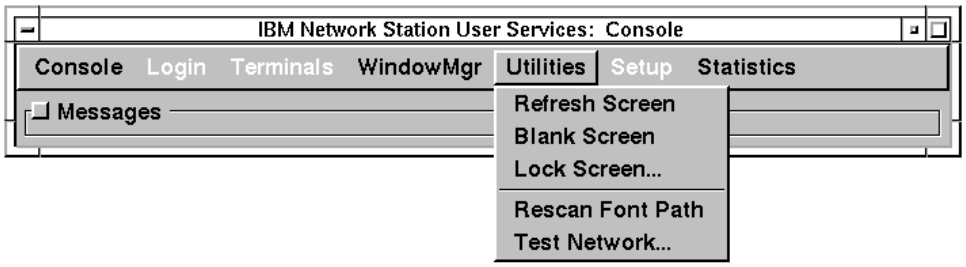


Figure 7-4. User Services: Utilities View - utility

The list below contains the name of the tool and a description of its function:

Refresh Screen
Selecting this option refreshes the active window.

Blank Screen
Selecting this option starts the screen-saver program.

Lock Screen
Selecting this option locks the screen after prompting for a password. The Lock Screen function keeps anyone without the password from using the workstation.

Rescan Font Path
Selecting this option refreshes any font changes that are provided by the system administrator.

For example, if the font currently being used is so large you can't display an entire 5250 session, you might have the administrator make available a

smaller font. When this is done, you can then select the font by clicking on the Option pull-down within the tool bar and selecting fonts.

Another use of fonts would be to make your windows smaller, therefore enabling several full windows to be displayed at the same time.

Note: The 5250 Emulation program provides multiple fonts. From the 5250 Tool bar, select the Option pulldown and click Fonts

Test Network

Selecting this option runs the network test. This would be similar to the TCP/IP command "PING".

Setup

The Setup services option is disabled.

Statistics

Figure 7-5 shows the tools available through the Statistics services option:

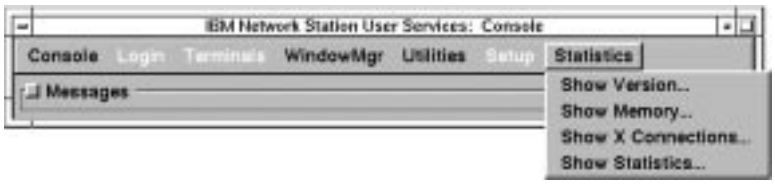


Figure 7-5. User Services: Statistics View - stat

The list below contains the name of the tool and a description of its function within the statistics services function:

Show version

Selecting this option displays version numbers and other information about the current state of the IBM Network Station.

Show Memory

Selecting this option displays information about free and installed memory in the IBM Network Station.

Show Connections

Selecting this option displays information about all the current X clients that are connected to the IBM Network Station.

Show Statistics

Selecting this option displays statistics that pertain to the IBM Network Station.

Chapter 8. Working with the IBM Network Station Setup Utility

The system administrator can access the IBM Network Station Setup Utility while the IBM Network Station is going through the boot-up process.

The primary purpose of the Setup Utility is to allow you to **View** and then **Set** (change) configuration settings on a particular IBM Network Station. Following is a list that contains the names of configuration settings that can be viewed or set (changed):

- View:
  - Network Parameters
  - Boot Parameters
  - Hardware Configuration
- Set (change):
  - Network Parameters
  - Boot Parameters
  - Monitor Parameters
  - Language Parameters
  - Verbose Diagnostic Messages (Enabled or Disabled)

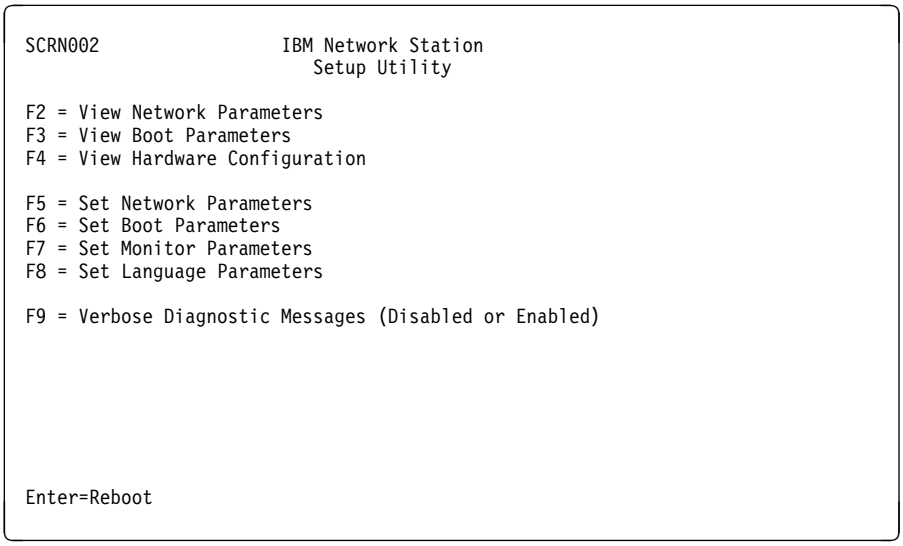
Accessing the IBM Network Station Setup Utility

While the IBM Network Station is booting (downloading the file from the boot Host), press the Escape key.

Then, type in the Administrator password if password control is active. (The password is case-sensitive). The administrator password is specified through the IBM Network Station Manager program in the Hardware setup tasks. Once the password is accepted, the following display appears:

Notes:

1. If the password has not been set using the IBM Network Station Manager program, any user can use the configuration settings in the IBM Setup Utility.
2. If you attempt the password three times without success, only the viewing capability of the IBM Network Station Setup Utility is available to you.
3. If you changed the Administrator password using the IBM Network Station Manager program, you will have to boot the IBM Network Station system unit up to the Login window in order for the new Administrator password to be enabled at the system unit.



F2 = View Network Parameters

This option lets you view the following Network Parameters for an IBM Network Station.

- IP Addressed from
- Whether the IBM Network Station is booted from the Network setting (BOOTP is normal operation for the IBM Network Station), or if the IBM Network Station is booted from specific parameters stored on the IBM Network Station (NVRAM setting)
- Network Station IP Address
- First Boot Host IP Address
- Second Boot Host IP Address
- Third Boot Host IP Address
- Gateway IP Address
- Subnet Mask
- Broadcast IP Address

F3 = View Boot Parameters

This option lets you view the following Boot Parameters for an IBM Network Station:

- Boot File
- TFTP Boot Directory
- NFS Boot Directory
- Configuration File
- Configuration Directory
- TFTP Order
- NFS Order
- MOP Order
- LOCAL Order

F4 = View Hardware Configuration

This option lets you view the following Hardware Configuration parameters for an IBM Network Station:

- Video Memory
- DRAM Memory Total
  - Slot 1
  - Slot 2
- Boot Monitor Version

  Specifies the level of initial program that runs when the IBM Network Station is powered on.
- Keyboard Controller
- Keyboard ID
- Keyboard Language
- Startup Language
- Processor Version
- Boot Resolution

  This indicates the monitor resolution when the IBM Network Station is powered on.
- Server Resolution

  This indicates the monitor resolution when applications are loaded on the IBM Network Station.
- Monitor ID
- Token Ring/Ethernet
  - MAC Address

    This indicates the address of the communication adapter.
  - Manufacturer
  - Product
  - Microcode Version
  - Information

F5 = Set Network Parameters

This option lets you **Set or Change** how this IBM Network Station will determine its network parameters. It also identifies whether this IBM Network Station is booted from the Network (normal) setting, or if it is booting from the following specified parameters which are stored in the NVRAM settings of this IBM Network Station:

- IP Addressed from
- Network Station IP Address
- First Boot Host IP Address
- Second Boot Host IP Address
- Third Boot Host IP Address
- Gateway IP Address
- Subnet Mask

- Broadcast IP Address

If the IBM Network Station is booting from the Network setting, the following Network Parameters are available:

Using a Token Ring Connection	Using an Ethernet Connection
IP Addressed from	IP Addressed from
DHCP IP Address order	DHCP IP Address order
BOOTP IP Address order	BOOTP IP Address order
RARP IP Address order	RARP IP Address order
	Version 2 IEEE 802.3

The main use of the Set Network Parameters function is to allow you to select specific TCP/IP parameters for connection to boot hosts to isolate network connection problems.

Note: Using NVRAM networking settings may affect your IBM Network Station's ability to successfully load all required boot files in a busy network. For more information, refer to Appendix A, “Trouble Shooting and Problem Solving” on page A-1.

F6 = Set Boot Parameters

The main use of this function is to monitor or change the files and location of files that are used for booting this IBM Network Station.

This parameter lets you **Set or Change** the following Boot Parameters for an IBM Network Station:

- Boot File
- TFTP Boot Directory (path on the boot server to the Boot File)

  When using TFTP (see below on this screen), this is the path name the server uses to locate and download the operating system.
- NFS Boot Directory

  When using NFS (see below on this screen), this is the path name the server uses to locate and download the operating system.
- Configuration File

  The configuration file contains the settings that are used by this IBM Network Station. You can configure these settings by using the Hardware function of Setup Tasks through the IBM Network Station Manager. See Chapter 6, “Using the IBM Network Station Manager Program” on page 6-1, for a high-level description of the Hardware Setup Tasks. The online help of the IBM Network Station Manager provides the details about using the Hardware function of Setup Tasks.
- Configuration Directory

  This is the path name the server uses to locate the configuration file.

- Protocol Order

  You can use the following protocols (that are located near the bottom of the screen) to perform the software download to the IBM Network Station. You can assign an order (first, second, and so on) that the system follows when performing the software download.

  – TFTP Order

    Trivial File Transfer Protocol (TFTP).

  – NFS Order

    Network File System (NFS).

  – MOP Order

    This protocol order is not supported.

  – LOCAL Order

    This indicates that you have installed, in the IBM Network Station system unit, a flash card with the operating system on it.

Note: When working with the Set Boot Parameters, and you make a mistake changing any values and can not remember the default values, blank out any or all values and reboot. The Set Boot Parameters will be refreshed with the default values.

F7 = Set Monitor Parameters

F2 = Set Monitor Resolution The main use of this function is to select a resolution to use with the monitor that is attached to this IBM Network Station.

We recommended that you test the resolution (pressing Enter allows you to test the resolution) before selecting and exiting this screen to ensure the resolution is supported by this monitor. If the grid size fits your display screen, and the font resolution is acceptable, the resolution that is selected will work.

CAUTION:
Setting a resolution that is not supported by your monitor can cause permanent damage to the monitor.

F3 = Monitor Power Management Disabled The main use of this function is to enable or disable the power management function of the monitor that is attached to this IBM Network Station system unit.

CAUTION:
Enabling power management for a monitor that does not support this feature can cause permanent damage to the monitor.

F8 = Set Language Parameters

F2 = Select Keyboard Language The main use of this function is to select a keyboard language to use with this IBM Network Station. Selecting a different language will change the mapping of keys. For example, if the current mapping results in a $ sign being put on the display when the $ sign key is

pressed, changing the keyboard language may result in a different character being put on the display.

Note: If you change your keyboard language by using the IBM Network Station Setup Utility, you could have a different keyboard language than what is specified in the IBM Network Station Manager program. We recommended that you use the IBM Network Station Manager program to change keyboard languages.

F3 = Select Startup Language The main use of this function is to select your language type.

Note: For release 1, English is the only supported language type.

F9 = Verbose Diagnostic Messages (Enabled or Disabled)

The main use of this function is to monitor boot activity from the boot Host. As the files are loaded, messages are written to a message log or displayed on the monitor. The default is Verbose disabled. When the boot process is in progress, a series of periods appears on the monitor.

If Verbose is enabled, all the file loading activity and any error messages are displayed.

Chapter 9. Managing your IBM Network Stations

This chapter contains information on managing your IBM Network Stations. These tasks are:

- Performance management
- Using Simple Network Management Protocol (SNMP) with your Network Station

Performance Considerations and Tuning for IBM Network Stations

Several things can affect performance from your IBM Network Stations:

- How many IBM Network Stations are powered on at the same time
- TCP/IP and TFTP configuration settings on your AS/400 boot host
  - Configuration of the TCP/IP Maximum Transmission Unit (MTU) parameter in the network
  - Configuration of TFTP maximum block size
  - Selection of the number of TFTP server jobs
- Configuration of the line description frame size
- Amount of traffic on your network

Number of IBM Network Stations Powering-on Simultaneously

The more IBM Network Stations that power on at the same (or near same) time increases the amount of time necessary for all of the requests to be serviced. A balance between the number of TFTP jobs, the capacity of the communications lines, and the number of clients that request TFTP services has to be established.

Note: Performance testing indicates that the optimum number of TFTP jobs is 6 per LAN (local area network) IOP (input-output processor).

Tuning TCP/IP on your AS/400 boot host

Within TCP/IP there are several interfaces and applications that operate more efficiently if they have specific values assigned to certain parameters.

- Within TCP/IP interfaces, set the Maximum transmission unit size parameter.

  Note: The type of network determines the Maximum transmission unit size parameter. Generally, a larger size improves performance. However, exceeding the limits of your network can cause the network to stop working. Contact you network administrator to determine the maximum value for your network.

  Use the Configure TCP (CFGTCP) command. Select option 1 (Work with TCP/IP Interfaces). Type option 2, Change TCP/IP Interface (CHGTCPIFC), next to the IP address of the AS/400 the IBM Network Stations are attached to (Boot Host). Change the Maximum transmission unit size parameter value to *LIND as shown in the following display:

```
                    Change TCP/IP Interface (CHGTCPIFC)

Type choices, press Enter.

Internet address . . . . . > '9.5.29.191'  Character value
Line description . . . . . .   TRNLINE       Name, *SAME, *LOOPBACK
Subnet mask  . . . . . . . .   '255.255.255.0'
Type of service  . . . . . .   *NORMAL       *SAME, *MINDELAY...
Maximum transmission unit  . . .   *LIND         576-16388, *SAME, *LIND
Autostart  . . . . . . . . . .   *YES          *SAME, *YES, *NO
PVC logical channel identifier     *SAME         001-FFF, *SAME, *NONE
              + for more values
X.25 idle circuit timeout  . . .   *SAME         1-600, *SAME
X.25 maximum virtual circuits  .   *SAME         0-64, *SAME
X.25 DDN interface . . . . . .   *SAME          *SAME, *YES, *NO
TRLAN bit sequencing . . . . . .   *MSB          *SAME, *MSB, *LSB




                                                                      Bottom
F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display
F24=More keys
```

- Within the TFTP application:

  Set the Maximum block size parameter value to the largest that is allowed by the client you are using.

  Use the Configure TCP (CFGTCP) command. Select option 20 (Configure TCP/IP Applications), then select option 3 (Change Trivial FTP Attributes). Specify the value 8192 as shown in the following display. Also, set the connection response timeout to 600 to allow for longer delay when many IBM Network Stations try to connect at the same time:

```
                    Change TFTP Attributes (CHGTFTPA)

Type choices, press Enter.

Autostart server . . . . . .   *YES          *YES, *NO, *SAME
Number of server jobs:
  Minimum  . . . . . . . . . .   1            1-20, *SAME, *DFT
  Maximum  . . . . . . . . . .   2            1-250, *SAME, *DFT
Server inactivity timer  . . . .   30         1-1440, *SAME, *DFT
ASCII single byte CCSID:
  Coded character set identifier   00850      1-65532, *SAME, *DFT
Maximum block size . . . . . .   8192         512-65464, *SAME, *DFT
Connection response timeout  . .   600        1-600, *SAME, *DFT
Allow file writes  . . . . . .   *CREATE      *DFT, *NONE, *CREATE...
Alternate source directory . . .   '*NONE'

                                                                  More...
F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display
F24=More keys
```

Next, (at the same Change TFTP Attributes (CHGTFTPA) panel) set the Number of server jobs parameter value to 6. Specify the value as shown in the following display:

```
                    Change TFTP Attributes (CHGTFTPA)

Type choices, press Enter.

Autostart server . . . . . .   *YES          *YES, *NO, *SAME
Number of server jobs:
  Minimum  . . . . . . . . . .   1            1-20, *SAME, *DFT
  Maximum  . . . . . . . . . .   6            1-250, *SAME, *DFT
Server inactivity timer  . . . .   30         1-1440, *SAME, *DFT
ASCII single byte CCSID:
  Coded character set identifier   00850      1-65532, *SAME, *DFT
Maximum block size . . . . . .   8192         512-65464, *SAME, *DFT
Connection response timeout  . .   600        1-600, *SAME, *DFT
Allow file writes  . . . . . .   *CREATE      *DFT, *NONE, *CREATE...
Alternate source directory . . .   '*NONE'

                                                                  More...
F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display
F24=More keys
```

Configuring or Changing Your Line Description

The Token Ring or Ethernet line description has a parameter, Maximum frame size, that specifies the size of the frame used to transport data. For best performance, this value should match, or come as close as possible to, the value of the Maximum block size parameter that you used in the Change TFTP Attributes (CHGTFTPA) command above (8192).

Note: To allow for additional transmission data in the TCP/IP headers, add 32 bytes to the block size when you set this parameter (8192 plus 32).

```
                  Create Line Desc (Token-Ring) (CRTLINTRN)

Type choices, press Enter.

Line description . . . . . > Netstation    Name
Resource name  . . . . . > *NWSD          Name, *NWID, *NWSD
Vary on wait . . . . . .   *NOWAIT        *NOWAIT, 15-180 (1 second)
Maximum controllers  . . . .   40          1-256
Network server description:
                               *NONE        Name, *NONE
  Port number  . . . . . .                  1-3, *INTERNAL
Line speed . . . . . .     4M              4M, 16M, *NWI
Duplex . . . . . .         *HALF           Character value, *HALF, *FULL
Maximum frame size . . . . .   8192        265-16393, 265, 521, 1033...
Local adapter address  . . . .   *ADPT     400000000000-7FFFFFFFFFFF...
Exchange identifier  . . . . .   *SYSGEN   05600000-056FFFFF, *SYSGEN




                                                                  More...
F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display
F24=More keys
```

IBM Network Station Initialization

There are four steps in the BOOTP process:

1. Hardware test

   The hardware test ensures that the hardware is operational. For the most part, the length of this test is determined by the amount of memory in the IBM Network Station.

2. Login initialization

   In this step, the IBM Network Station locates the AS/400 server, loads the kernel and configuration data, and then displays the Login window.

   The AS/400 server is located using BOOTP. After communications is established using the TFTP function of TCP/IP, the kernel is loaded onto the IBM Network Station system unit. After the kernel is done loading, the configuration data is loaded using the Remote File System (RFS).

   The time to load the kernel is very dependent on:

- TFTP block size
- TCP/IP maximum transmission unit (MTU) size
- Communications line description parameter named frame size

The IBM Network Station negotiates the TFTP block size with the AS/400 system. It can range from 512 to 8192 bytes, with a default of 8192. The IBM Network Station uses the MTU and frame size that are defined by the AS/400 system.

The AS/400 system default TFTP block size is 1024. Best performance is obtained with a TFTP block size of 8192 and an MTU/line description frame size of at least 8192. If the MTU or frame size are less than 8192, performance can be enhanced by configuring the block size greater than the MTU and frame size. However, some routers or gateways do not support this capability.

The number of TFTP jobs on the AS/400 system is also a performance factor. The optimal number for a system with a single LAN IOP is about 6. The TFTP jobs are a pool of jobs to load the kernel. They are used on a first come, first serve basis. If there are more requests than jobs, the excess requests are ignored (for example, not queued). If a request is not satisfied, the IBM Network Station will repeat its request every 10 seconds. In general, there should be 6 TFTP jobs for each LAN IOP that has attached IBM Network Stations.

AS/400 5250 Applications

The user should see 5250 applications exactly as he does with a nonprogrammable workstation (NWS) or PC terminals. However, the load on the AS/400 system may be different. IBM Network Stations use the AS/400 TCP/IP Telnet path. Telnet uses more CPU time per transaction than an NWS that is running the same 5250 applications. This may also have an impact on the AS/400 system capacity when using IBM Network Stations as compared to an NWS. If you are already using Telnet as your 5250 interface to the AS/400 system, migrating to IBM Network Stations will have no additional impact on CPU capacity.

Java Virtual Machine (JVM) Applets and Applications

Java applets such as clocks, calculators, note pads, and so on will perform well. Other, more computational intensive applets, will have longer response times. Customers that move from NWS terminals will get the added function of Java. Customers that move Java applets and applications from PCs may see reduced response time in larger applications.

Performance Considerations

The IBM Network Station provides an excellent working environment. However, there are some situations to be aware of:

- Initialization
  - Customers should use BOOTP and not NVRAM
  - The time to initialize IBM Network Stations depends on many variables such as:

    - The size of the AS/400 system
    - TFTP block size
    - The number of attached IBM Network Stations
    - LAN utilization, CPU utilization
  - Initialization time varies from one AS/400 model to another. On larger models the performance constraint is the LAN IOP. On smaller models the performance constraint is CPU and LAN IOP. The model 150 is somewhat of an exception as it has a new LAN IOP and is faster than the 2619.
  - During initialization, CPU utilization can be quite high. This is especially true on the smaller AS/400 systems. This large CPU utilization will impact other jobs.
  - The network administrator should configure TCP/IP, LAN frame size, and TFTP block size for best performance.
  - There is no performance gain realized by adding a second IOP with the same network address.
  - For systems that have multiple LANs, it is best to configure 6 TFTP jobs for each LAN. However, since there is no way, at this time, to dedicate a TFTP job to a particular LAN, initialization may not perform as well as desired.
- 5250 application performance on the AS/400 system
  - Customers migrating from local twinaxial attached NPTs to IBM Network Stations will probably use more CPU to run the same 5250 applications.
  - Customers migrating from LAN attached SNA Client/Access PCs will probably use more CPU to run the same 5250 applications.
  - Customers migrating from LAN-attached TCP/IP Client/Access PCs will use about the same CPU to run the same 5250 applications.
- Java Virtual Machine

  If you are using IBM Network Stations type 8362 or newer, Java applets run as well as if they were running on a well-equiped (memory and a high megahertz speed) PC.

Using Simple Network Management Protocol (SNMP) with your IBM Network Station

Simple Network Management Protocol (SNMP) is an industry-standard protocol for network management. SNMP provides the mechanisms to monitor and control a terminal or network device (IBM Network Station in this case) from an SNMP manager at a central location. IBM provides SNMP manager support through the Tivoli Management Environment (TME) 10 NetView product.

The IBM Network Station itself contains an SNMP agent as part of the operating system. It is the ability of the SNMP manager to communicate with the SNMP agent on the IBM Network Station that provides the link through which information can be exchanged and device management decisions made. The SNMP agent represents a Management Information Base (MIB) that contains many different MIB objects or variables which an SNMP manager can read. Figure 9-1 on page 9-9 shows how SNMP may be used to manage certain aspects of all the terminals (including the IBM Network Station) in the enterprise.

Note: An SNMP manager can only read MIB objects from the IBM Network Station. SNMP write is not supported.

TME 10 NetView provides the following functions which can be used to monitor and manage IBM Network Stations:

- MIB browser
- MIB monitor
- MIB application builder
- Event desk

Figure 9-1 on page 9-9 provides a view of an example network with the TME 10 NetView product installed on a PC.

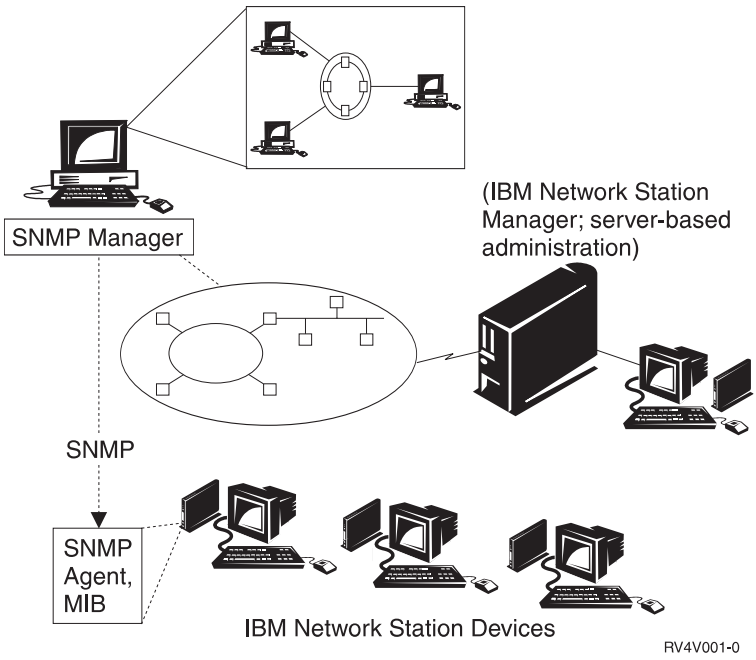


Figure 9-1. IBM Network Station - SNMP Management

Benefits of Using SNMP

Being able to access and view MIB objects provides information valuable to management of your IBM Network Stations.

The following list contains some of the MIB objects with a description of their function:

- Amount of memory that is installed (ncdSysMemTotal)

  This MIB object reports the installed memory in an IBM Network Station.

- Amount of free memory (ncdSysMemAvail)

  This MIB object reports the amount of free memory in an IBM Network Station.

- CPU idle time (ncdSysIdleTime)

  This MIB object reports the amount of time when the CPU is idle (not working).

- Elapsed time since the device was booted (SysUpTime)

  This MIB object reports the date and time the IBM Network Station was last IPLed.

Figure 9-2 on page 9-10 shows MIB objects. This view shows such things as sysUpTime and Memory allocation.

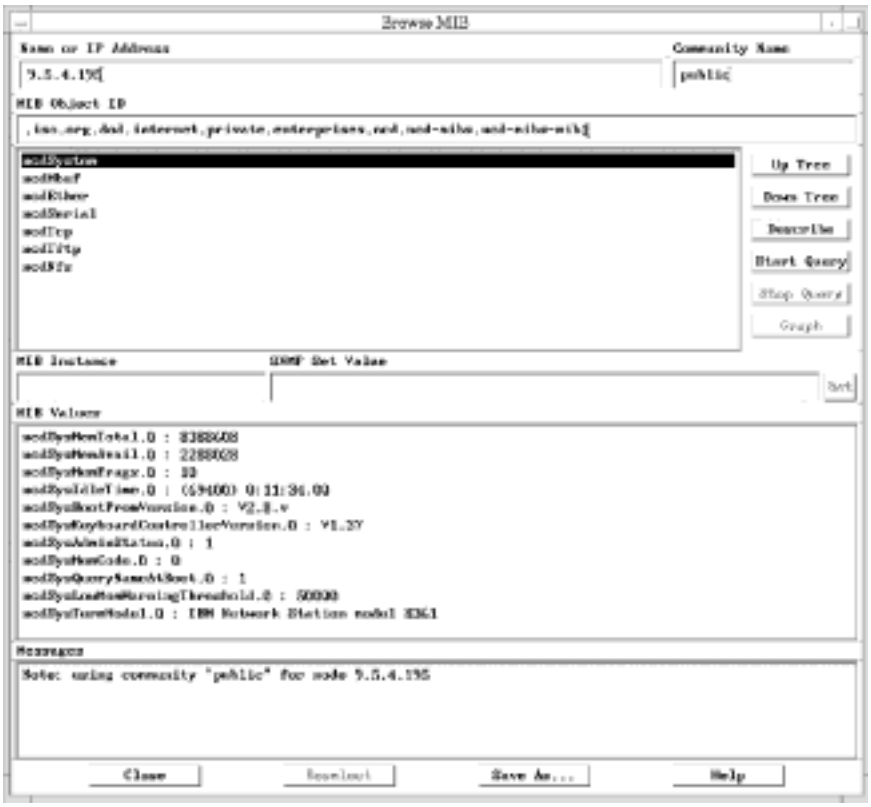


Figure 9-2. MIB Browser Example

For a complete list of MIB objects you can use, see “Retrieving the SNMP MIB File.”

Retrieving the SNMP MIB File

The SNMP MIB file ships with every IBM Network Station Manager for AS/400 licensed program. This file has to be retrieved and installed on a workstation in your network. This workstation can be either a PC or AIX workstation.

1. Retrieve the SNMP MIB file from your AS/400 by using FTP (File Transfer Protocol) or other file transfer methods. The SNMP MIB file is: /QIBM/ProdData/NetworkStation/snmpmib.txt.
2. Use the MIB loader tool, located in NetView on your workstation, to load the SNMP MIB file on your workstation.

For additional information on SNMP, see the documentation that comes with the TME 10 NetView product.

Chapter 10. Configuring the HTTP Server

You will need to work with the HTTP server to configure your IBM Network Stations if you choose not to use the Setup Assistant as described in Chapter 4, “Working With the Setup Assistant” on page 4-1.

The HTTP server configuration changes are required to enable the serving of HTML pages to the Network Station Manager program.

From any AS/400 command line, type CFGTCP and press Enter. The following display appears:

```
CFGTCP                          Configure TCP/IP
                                                          System:   RCHAS536
Select one of the following:

     1. Work with TCP/IP interfaces
     2. Work with TCP/IP routes
     3. Change TCP/IP attributes
     4. Work with TCP/IP port restrictions
     5. Work with TCP/IP remote system information

    10. Work with TCP/IP host table entries
    11. Merge TCP/IP host table
    12. Change local domain and host names
    13. Change remote name server

    20. Configure TCP/IP applications
    21. Configure related tables
    22. Configure point-to-point TCP/IP

Selection or command
===> 20

F3=Exit   F4=Prompt   F9=Retrieve   F12=Cancel
```

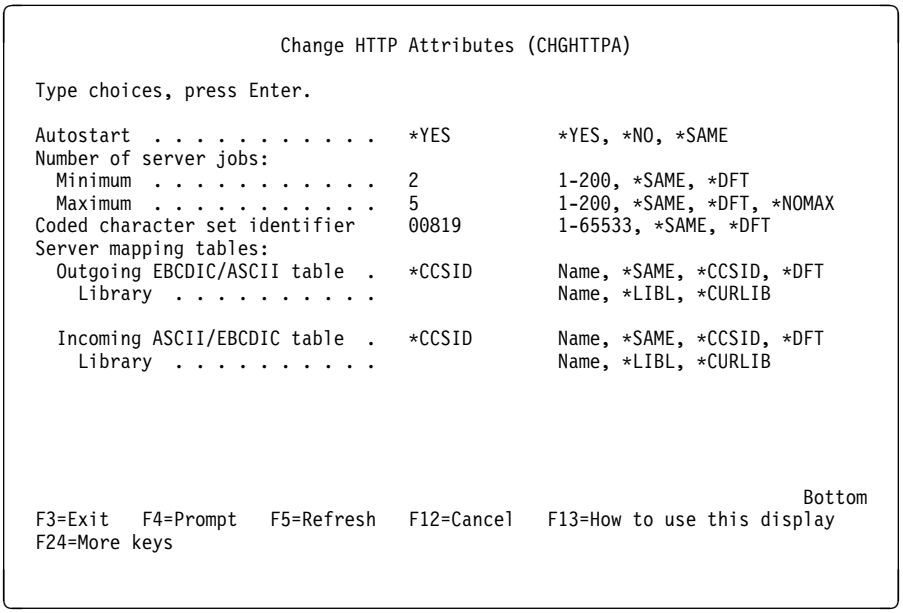
Select option 20 *Configure TCP/IP applications*. The Configure TCP/IP Applications display appears.

```
                        Configure TCP/IP Applications
                                                                System:   SYS001
Select one of the following:

     1. Configure SNMP agent

    10. Change FTP attributes
    11. Configure TELNET
    12. Configure SMTP
    13. Change LPD attributes
    14. Configure HTTP
    15. Configure workstation gateway
    16. Change POP attributes




Selection or command
===>

F3=Exit   F4=Prompt   F9=Retrieve   F12=Cancel
```

Select option 14 *Configure HTTP*. The Configure TCP/IP HTTP display appears.

```
                           Configure TCP/IP HTTP
                                                                System:   SYS001
Select one of the following:

     1. Change HTTP attributes
     2. Work with HTTP configuration

  Related options:
    10. Configure workstation gateway









Selection or command
===> 1

F3=Exit   F4=Prompt   F9=Retrieve   F12=Cancel
```

Select option 1 *Change HTTP Attributes*. The Change HTTP Attributes display appears.



Make sure the Autostart parameter value is *YES.

Make sure the Number of server jobs parameter values for Minimum is 2 and Maximum is at least 5. The Maximum value is related to the number of HTTP server jobs running. The Maximum value can be larger if the number of IBM Network Stations requiring HTTP service is large. The concept is to make sure the number of available HTTP server jobs supports the number of users working with the HTTP server.

Press PF12 to return to the Configure TCP/IP HTTP display.

```
                          Configure TCP/IP HTTP
                                                              System:   SYS001
Select one of the following:

     1. Change HTTP attributes
     2. Work with HTTP configuration

  Related options:
    10. Configure workstation gateway









Selection or command
===> 2

F3=Exit   F4=Prompt   F9=Retrieve   F12=Cancel
```

Select option 2 *Work with HTTP configuration*. The Work with HTTP Configuration display appears.

The next two displays provide an example of the changes that need to be made to the HTTP configuration. The changes are highlighted in bold to identify them. Also, below the next two displays is a list that contains the text of each change.

Note: The two displays used to represent the required HTTP server changes may not be exactly like displays you would see on your own AS/400 system.

The changes can be made by placing the cursor in the Opt column across from the Sequence Number you want to insert information after. Type option 13 (Insert) and press Enter. Type in the desired changes and press Enter to apply the updates (changes).

```
                        Work with HTTP Configuration
                                                              System:   SYS001
Type options, press Enter.
  1=Add   2=Change   3=Copy   4=Remove   5=Display   13=Insert

      Sequence
Opt    Number    Entry

       00010     # * * * * * * * * * * * * * * * * * * * * * * * * * * * *   >
       00020     # HTTP DEFAULT CONFIGURATION                                 >
       00030     # * * * * * * * * * * * * * * * * * * * * * * * * * * * *   >
       00040     HostName  AS40001.CHICAGO.COA.COM
       00045     Port                  80
       00050     Enable                GET
       00060     Enable                     HEAD
       00070     Enable                  POST
       00080     Map /cgi-bin/db2www/* /QSYS.LIB/QTCP.LIB/DB2WWW.LIB/QSY   >
       00090     Exec /QSYS.LIB/QTCP.LIB/DB2WWW.PGM/*
       00100     Pass /QSYS.LIB/burgess.LIB/db2macro.FILE/*
       00110     Pass /ALW/* /QSYS.LIB/XZY1495.LIB/HTTPTEST.FILE/*
       00120      Pass /BILL/* /QSYS.LIB/WFOSLER.LIB/P9344X379.FILE/*      >
                                                                    More...
F3=Exit   F5=Refresh   F6=Print List   F12=Cancel   F17=Top   F18=Bottom
F19=Edit Sequence
```

```
                        Work with HTTP Configuration
                                                              System:   SYS001
Type options, press Enter.
  1=Add   2=Change   3=Copy   4=Remove   5=Display   13=Insert

      Sequence
Opt    Number    Entry

       00250     # Pass /QSYS.LIB/htmllib.LIB/*
       00260     # Pass /QSYS.LIB/htmllib.LIB*
       00270     Pass /burgess/*
       00280     Map /QIBM/NetworkStation/Admin /QYTC/QYTCMAIN.PGM
       00290     Pass /QIBM/NetworkStation/* /QIBM/ProdData/HTTP/Protect   >
       00310     Exec /QYTC/* /QSYS.LIB/QYTC.LIB/*
       00320     Map /odbc /burgess/odbc.html
       00330     Map /netdrv /burgess/netdrv.html
       00340     Pass /burgess/odbc.html
       00350     Pass /burgess/netdrv.html
       00360     Redirect /wsg http://testlv2:5061/WSG
                                                                    More...
F3=Exit   F5=Refresh   F6=Print List   F12=Cancel   F17=Top   F18=Bottom
F19=Edit Sequence
```

The following list represents the data that must be entered into the HTTP configuration:

HostName The name of your AS/400 in terms of its TCP/IP identity.

Enable POST

Map /QIBM/NetworkStation/Admin /QYTC/QYTCMAIN.PGM

Pass /QIBM/NetworkStation/* /QIBM/ProdData/HTTP/Protect/NetworkStation/*

Exec /QYTC/* /QSYS.LIB/QYTC.LIB/*

When the changes have been made press Enter. Press F12 twice to return to the Configure TCP/IP Applications display.

```
                        Configure TCP/IP Applications
                                                              System:   SYS001
Select one of the following:

     1. Configure SNMP agent

    10. Change FTP attributes
    11. Configure TELNET
    12. Configure SMTP
    13. Change LPD attributes
    14. Configure HTTP
    15. Configure workstation gateway
    16. Change POP attributes







Selection or command
===>

F3=Exit   F4=Prompt   F9=Retrieve   F12=Cancel
```

Press F3 to exit.

Start the HTTP server by using the following command:

```
STRTCPSVR *HTTP
```

Chapter 11. Configuring the BOOTP Server

Note: If your network uses routers or gateways, you need to ensure that they can be enabled as BOOTP relay agents. Enabling the routers or gateways for BOOTP allows the BOOTP packets to be sent across the network to other LAN segments.

If you do not have routers that you can configure to be used as BOOTP relay agents, you could:

- Use a UNIX system or RS/6000 system that has the necessary code to be configured to receive limited BOOTP broadcasts. Then, forward those broadcast requests to the appropriate AS/400 host server.
- Use an AS/400 server that is located on the same LAN segment as the IBM Network Stations. This would eliminate any need for routers or intermediate UNIX systems to pass on the broadcast requests of the IBM Network Stations.

You will need to work with the BOOTP server to:

- Configure your IBM Network Stations if you choose not to use the Setup Assistant as described in Chapter 4, “Working With the Setup Assistant” on page 4-1.
- Add or remove BOOTP entries for each IBM Network Station physically present in your network.
- Start the BOOTP server

Bootstrap Protocol (BOOTP) provides a dynamic method for associating workstations with servers and assigning workstation IP addresses and initial program load (IPL) sources. BOOTP and TFTP together provide support for the IBM Network Station for AS/400.

BOOTP is a TCP/IP protocol used to allow a *media-less* workstation (client) to request a file that contains initial code from a server on the network. The BOOTP server listens on the well-known BOOTP server port 67. When a client request is received, the server looks up the IP address defined for the client and returns a reply to the client with the client's IP address and the name of the load file. The client then initiates a TFTP request to the server for the load file. The mapping between the client hardware address and IP address is kept in the BOOTP table. The AS/400 system administrator maintains the BOOTP table.

Note: You must have *IOSYSCFG special authority to make changes to the BOOTP server.

Configuring the BOOTP Server

Use the Configure TCP/IP BOOTP (CFGTCPBP) command to configure the BOOTP server. There are two ways to get to this command prompt:

- Enter the Configure TCP/IP BOOTP (CFGTCPBP) command
- Enter the TCP/IP Applications (CFGTCPAPP) command from the command line and select option 04 (Change BOOTP attributes)

After you enter the command, you will see the following display:

```
                          Configure TCP/IP BOOTP
                                                    System:    SYSNAM01

Select one of the following:

     1. Change BOOTP attributes
     2. Work with BOOTP table









Selection or command
===>

F3=Exit   F4=Prompt   F9=Retrieve   F12=Cancel
```

Figure 11-1. Configure TCP/IP BOOTP

Two AS/400 commands control the BOOTP server:

- The Change BOOTP Attributes (CHGBPA) command allows an administrator to set the attributes that are configurable for the BOOTP server.
- The Work with BOOTP Table (WRKBPTBL) command allows an administrator to work with the BOOTP table.

Work with BOOTP Table

Select option 2 (Work with BOOTP table) to display the Work with BOOTP Table display.

The administrator uses the Work with BOOTP Table display to add, change, remove, and display an entry in the BOOTP table.

Note: The MAC address of the IBM Network Station system unit is the important piece of information when working with the BOOTP table. When the client (the IBM

Network Station) communicates with the server, all communications are determined by the MAC addresses in the BOOTP table.

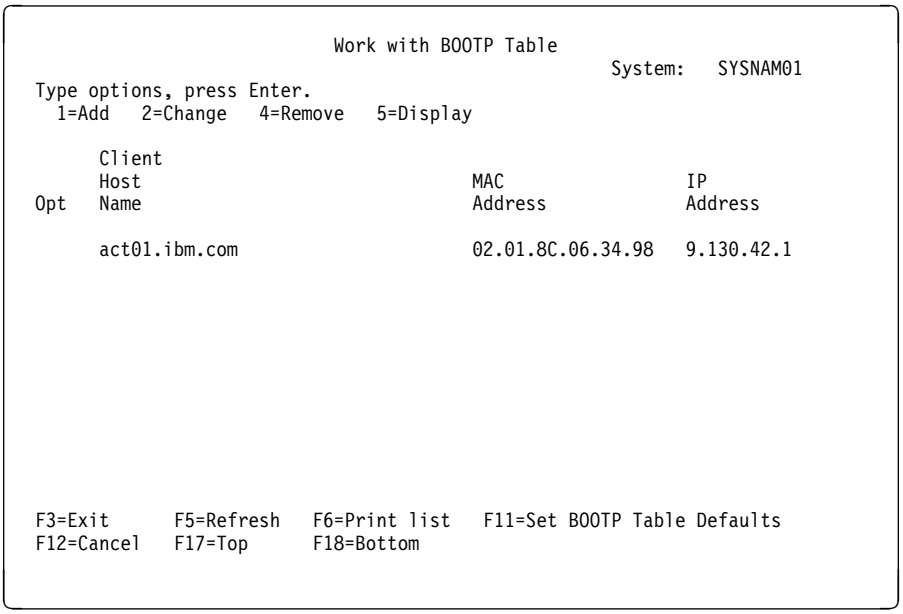


Figure 11-2. Work with BOOTP Table (WRKBPTBL)

Display BOOTP Table Entry

All BOOTP table entries are displayed for the entry that you entered option 5 (Display) next to on the Work with BOOTP Table display. Figure 11-3 on page 11-4 provides an example of a displayed BOOTP entry for an IBM Network Station that is named NS01.xyz.com.

```
                        Display BOOTP Table Entry
                                                        System:   SYSNAM01
Network device:
  Client host name  . . :   NS01.xyz.com



  MAC address . . . . . :   02.01.8C.06.34.98
  IP address  . . . . . :   9.130.42.1
  Hardware type . . . . :   1
Network routing:
  Gateway IP address  . :
  Subnet mask . . . . . :
Boot:
  Type  . . . . . :   IBMNSM
  File name . . . . . :   kernel

  File path . . . . . :   /QIBM/ProdData/NetworkStation


Press Enter to continue.

F3=Exit   F12=Cancel
```

Figure 11-3. Display BOOTP Table Entry

Change BOOTP Table Entry

The current settings are displayed for the entry that you entered option 2 (Change) next to on the Work with BOOTP Table display. You can change any of the BOOTP Table Entry fields on this display. Press F11 to set to the BOOTP Table Default values.

Note: Although the BOOTP table allows host names of up to 256 characters, the IBM Network Station Manager has a restriction that host names be 240 characters or less.

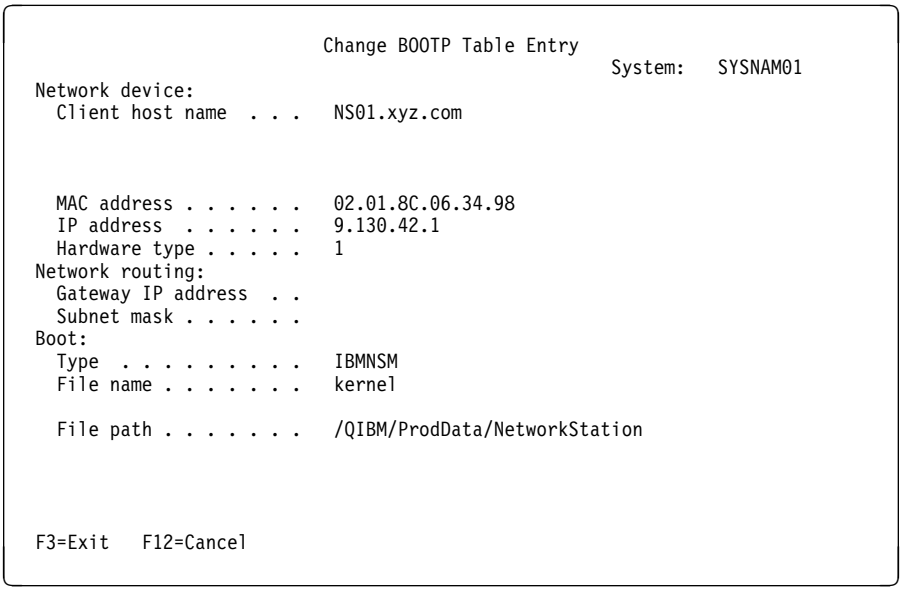


Figure 11-4. Change BOOTP Table Entry

Add BOOTP Table Entry

The Add BOOTP Table Entry appears when you enter option 1 (add) next to a blank line on the Work with BOOTP Table display.

The administrator uses this display to add an entry to the BOOTP table. Common fields will contain default values. Press F11 to change the default values.

Note: Although the BOOTP table allows host names of up to 256 characters, the IBM Network Station Manager has a restriction that host names be 240 characters or less.

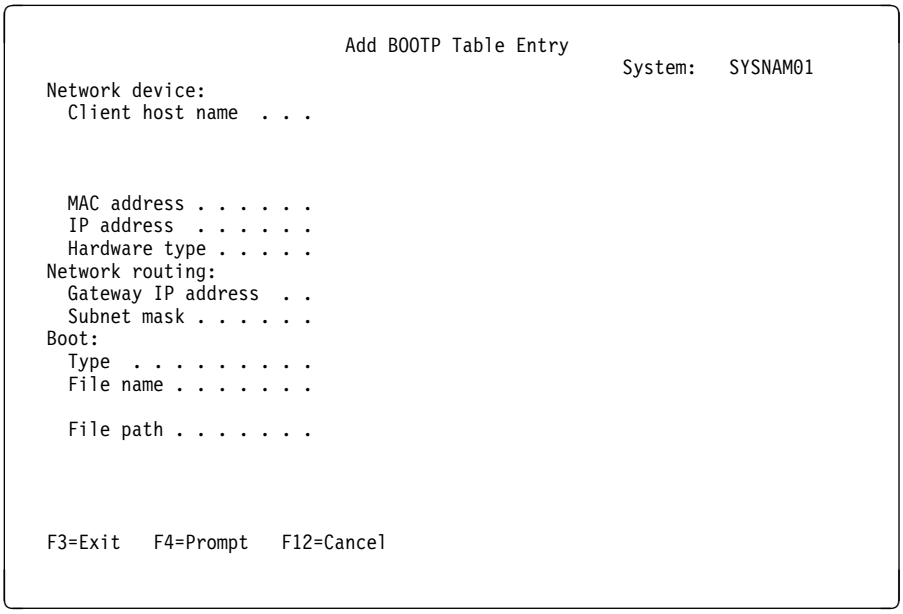


Figure 11-5. Add BOOTP Table Entry

Set BOOTP Table Defaults

The Set BOOTP Table Defaults display appears when you press F11 on the Add BOOTP Table Entry display.

You can change BOOTP table default values for common fields by using this display.

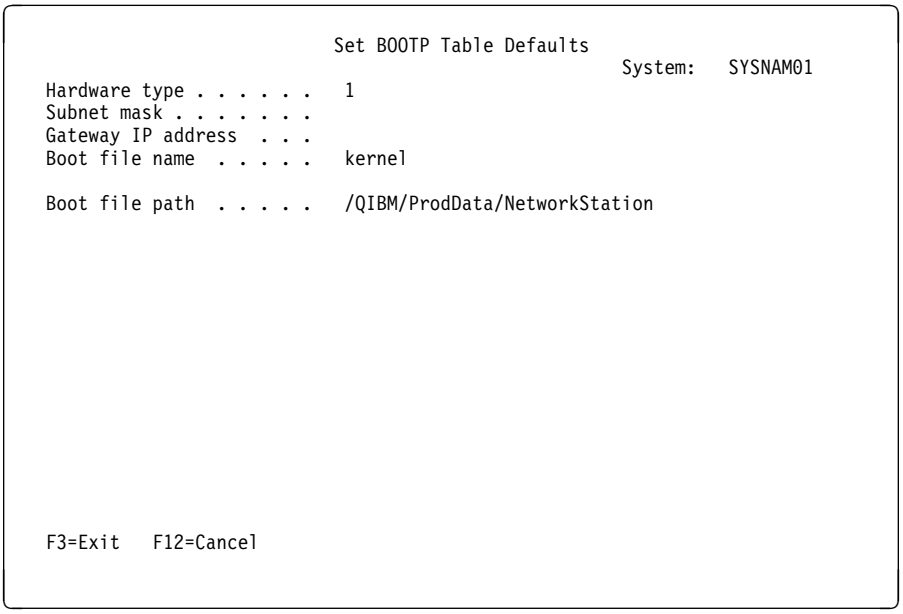


Figure 11-6. Set BOOTP Table Defaults

Confirm Remove of BOOTP Table Entry

The Confirm Remove BOOTP Table Entry display is shown when you enter option 4 (Remove) next to the BOOTP table entry on the Work with BOOTP Table display.

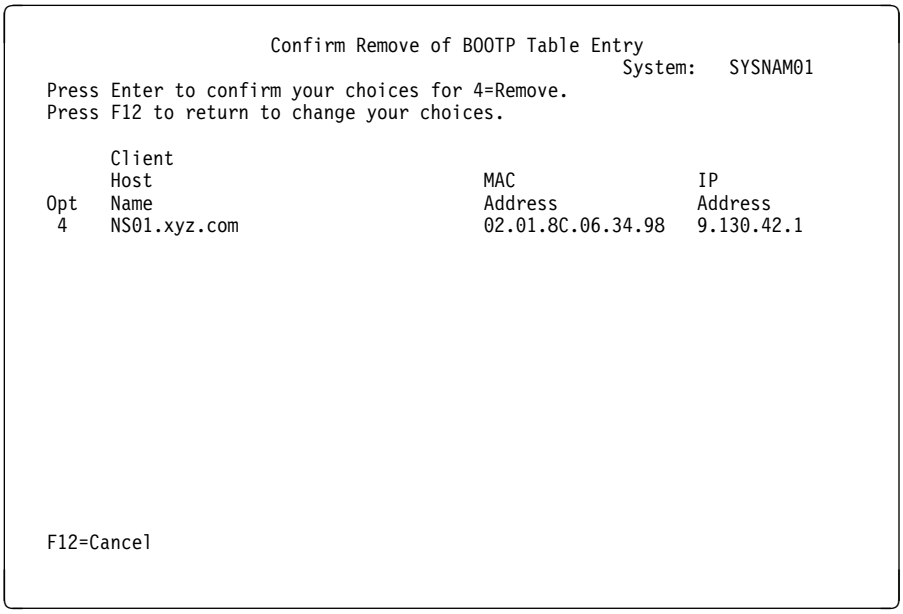


Figure 11-7. Confirm Remove of BOOTP Table Entry

Starting the BOOTP Server

The BOOTP server needs to be running to support ordinary operations of the IBM Network Station Manager for AS/400 licensed program.

You can start (and restart) the BOOTP server several ways:

- Enter the Start TCP/IP Server (STRTCPSVR) command with the SERVER parameter set to *BOOTP:

  ```
  STRTCPSVR SERVER(*BOOTP)
  ```

- Set AUTOSTART parameter to *YES on the Change BOOTP Attributes (CHGBPA) command to restart the BOOTP server whenever the Start TCP/IP (STRTCP) command runs.

  ```
  CHGBPA AUTOSTART(*YES)
  ```

Automatically Starting the BOOTP Server

The AUTOSTART parameter of the CHGBPA command affects the operation of the STRTCP command; it has no effect on the STRTCPSVR command. The STRTCPSVR command ignores the AUTOSTART parameter value. If you run the STRTCPSVR SERVER (*BOOTP) command when the RouteD server is running, you will get a diagnostic message.

If you use the STRTCPSVR command to restart the BOOTP server when the BOOTP server is not running, the restart instruction is ignored, and the server is simply started.

Changing BOOTP Attributes

Select option 1 (Change BOOTP attributes) of the Configure TCP/IP BOOTP display (or simply type CHGBPA) to display the Change BOOTP Attributes display. The Autostart parameter controls if the BOOTP server is to automatically start when the STRTCP command starts TCP/IP.

```
                      Change BOOTP Attributes (CHGBPA)

Type choices, press Enter.

Autostart server . . . . . .   *YES          *YES, *NO, *SAME









F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display
F24=More keys
```

Figure 11-8. Change BOOTP Attributes (CHGBPA)

Ending the BOOTP Server

To end the BOOTP server, enter the End TCP/IP Server (ENDTCPSVR) command with the server attribute set to *BOOTP:

```
ENDTCPSVR SERVER(*BOOTP)
```

Chapter 12. Configuring Printers for use With IBM Network Stations

You must create a printer device description (or change an existing printer device description) if you did not use Chapter 4, “Working With the Setup Assistant” on page 4-1 to configure printers.

Each system unit of the IBM Network Stations can have a printer attached to it.

Any AS/400 user in the network can print jobs to the printer once it is attached to the IBM Network Station system unit, then configured and started.

Printer Configuration Scenarios

Note: Only ASCII printers can be attached to the Network Station system unit. Printers that are manufactured by many companies can be used. To view a current list of supported printers you can use the Create Device Printer (CRTDEVPRT) command. Type the CRTDEVPRT command and prompt (F4). Scroll to the Manufacturer type and model parameter (MFRTYPMDL) and prompt (F4). The list is displayed.

There are two scenarios:

- Configuring a new printer
- Changing the printer device description of an existing printer

In either case, there are certain parameters that must have specific values to enable the printer that is attached to the Network Station's system unit.

From an AS/400 command line, type CRTDEVPRT (for a new printer) or CHGDEVPRT (for an existing printer) and press PF4 (prompt key). These are the CL commands that allow you to create new or change existing printer device descriptions.

The following parameters must have the values shown. Other parameters can use the supplied default.

Device type
Choose 3812.

Device class
Choose *LAN.

Device model
Choose 1.

LAN attachment
Choose *IP. This indicates that the printer is using the TCP/IP communications support.

Port number
For attachment to the Network Station system unit you must choose 6464.

Activation timer
Choose any value. However, keep in mind that the value specifies the amount of time (in seconds) to wait for the device to respond to the activation request (a read or write operation) from the host AS/400 system. If the device does not respond within this time, it is considered not available, and a message is returned. The message asks the user if the request should be retried or should the writer be canceled.

Inactivity timer
Choose *ATTACH. This value varies by the value on the physical attachment (ATTACH parameter), and certain values on the device class (DEVCLS) and application type (APPTYPE) parameters. For DEVCLS(*SNPT) or APPTYPE(*DEVINIT) support, *ATTACH maps to *NOMAX. For DEVCLS(*LAN), *ATTACH maps to *SEC15. For =APPTYPE(*NRF) and APPTYPE(*APPINIT) support, *ATTACH maps to 1 minute.

The IBM Network Station handles only one activation request at a time from the host. The Inactivity Timer parameter allows sharing of the printer device after the time that was specified has elapsed if there are no spooled files to print. If the value *NOMAX is specified for the Inactivity Timer parameter, the host keeps the connection to printer active until the printer writer ends. *NOMAX effectively prevents sharing of the printer.

Host print transform
Choose *YES. This is required to transform AS/400 5250 EBCIDIC data to ASCII data.

Manufacturer type and model
Type in the value that reflects the printer to be configured. To determine that value you can press the Help key to view the list of supported printers.

Remote location name
Specifies either the name or TCP/IP address of the IBM Network Station system unit that the printer is attached to.

System driver program
Specifies the print driver type to be used for this configuration. For TCP/IP-attached printers, this value must be *NETSTNDRV.

While working with a new or existing printer device description, the following screens will appear. To get the most accurate printer device description for printers attached to IBM Network Stations, you need to supply specific values on certain parameters. Those specific parameters and their values are:

Note: The following display shows all the parameters when a Create Device Description (Printer) (CRTDEVPRT) command has been issued:

```
                  Create Device Desc (Printer) (CRTDEVPRT)

Type choices, press Enter.

Device description . . . . . > NETSTATION    Name
Device class . . . . . > *LAN          *LCL, *RMT, *VRT, *SNPT, *LAN
Device type  . . . . . > 3812          3287, 3812, 4019, 4201...
Device model . . . . . > 1             0, 1, 2, 3, 4, 10, 13, 301...
LAN attachment . . . . . > *IP         *LEXLINK, *IP, *USRDFN
Port number  . . . . . .   6464        0-65535
Online at IPL  . . . . . .   *YES      *YES, *NO
Font:
  Identifier . . . . . .   11          3, 5, 11, 12, 13, 18, 19...
  Point size . . . . . .   *NONE       000.1-999.9, *NONE
Form feed  . . . . . .   *TYPE         *TYPE, *CONT, *CUT, *AUTOCUT
Separator drawer . . . . . .   *FILE    1-255, *FILE
Separator program  . . . . . .   *NONE  Name, *NONE
  Library  . . . . . .                 Name, *LIBL, *CURLIB


                                                                   Bottom
F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display
F24=More keys
Function key not allowed.
```

```
                  Create Device Desc (Printer) (CRTDEVPRT)

Type choices, press Enter.

Message queue  . . . . . .   QSYSOPR     Name, QSYSOPR
  Library  . . . . . .     *LIBL        Name, *LIBL, *CURLIB
Activation timer . . . . . .   170       1-2550, *NOMAX
Inactivity timer . . . . . .   *ATTACH   1-30, *ATTACH, *NOMAX...
Host print transform . . . . . .   *YES   *NO, *YES
Manufacturer type and model  . .   *IBM4039HP
Paper source 1 . . . . . .   *MFRTYPMDL  *MFRTYPMDL, *LETTER...
Paper source 2 . . . . . .   *MFRTYPMDL  *MFRTYPMDL, *LETTER...
Envelope source  . . . . . .   *MFRTYPMDL  *MFRTYPMDL, *MONARCH...
ASCII code page 899 support  . .   *NO   *NO, *YES
Character identifier:
  Graphic character set  . . . .   *SYSVAL  1-32767, *SYSVAL
  Code page  . . . . . .           1-32767



                                                                   More...
F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display
F24=More keys
```

```
                  Create Device Desc (Printer) (CRTDEVPRT)

Type choices, press Enter.

Remote location:
  Name or address  . . . . . .   9.5.11.334



Remote network identifier  . . .   *NETATR       Name, *NETATR, *NONE
Workstation customizing object     *NONE         Name, *NONE
  Library  . . . . . . . . . . .                 Name, *LIBL, *CURLIB
Authority  . . . . . . . . . . .   *LIBCRTAUT    Name, *LIBCRTAUT, *CHANGE...
User-defined options . . . . . .   *NONE         Name, *NONE
              + for more values
User-defined object:
  Object . . . . . . . . . . . .   *NONE         Name, *NONE
    Library  . . . . . . . . . .                 Name, *LIBL, *CURLIB
  Object type  . . . . . . . . .                 *DTAARA, *DTAQ, *FILE...

                                                                      More...
F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display
F24=More keys
```

```
                  Create Device Desc (Printer) (CRTDEVPRT)

Type choices, press Enter.

Data transform program . . . . .   *NONE         Name, *NONE
  Library  . . . . . . . . . . .                 Name, *LIBL, *CURLIB
System driver program  . . . . .   *NETSTNDRV
Text 'description' . . . . . . .   Device des - ASCII IBM Network Station printer
```

```
                                                                      Bottom
F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display
F24=More keys
```

Appendix A. Trouble Shooting and Problem Solving

This appendix contains information to help you recover from error situations such as:

- PANIC mode at an IBM Network Station
- Problems with monitors
- Cursor problems
- Java problems
- Printer problems

Note: If you are unable to solve your problem using the information in this appendix, you can request software service for your IBM Network Station. In the United States telephone 1-800-237-5511

Trouble Shooting

Table A-1 contains potential problem situations, a symptom description, and possible recovery actions you should try.

Table A-1 (Page 1 of 6). Problem Determination Chart

Problem Description Table	
Symptom	**What you should do**
Monitor Problems	
Display image too large to fit on monitor	IBM Network Station may be set to automatically detect which monitor you are using. For autodetect to work correctly, you must have the monitor turned on before you boot the IBM Network Station System unit.
BOOTP Problems	
IBM Network Station does not boot to login screen	Ensure that you are booting from the "Network" setting in the Setup Utility. Use of NVRAM may result in a timeout condition when downloading boot files to the IBM Network Station.
BOOTP table can not be read	The BOOTP table will have to be restored from a backup copy.
PTF Problems	
PTFs not working	If the PTFs being installed are for the IBM Network Station Manager for AS/400 product, you may have to reboot the IBM Network Station Manager system unit. This causes a new software download to the system unit to take place. The new downloaded software contains the program fixes for the IBM Network Station system unit.
No Login Window	

Table A-1 (Page 2 of 6). Problem Determination Chart	
Problem Description Table	
No Login window on monitor - User Services window appears instead	The most likely cause is an incorrect entry for this IBM Network Station in the BOOTP table. See Chapter 11, “Configuring the BOOTP Server” on page 11-1 to display the information about this IBM Network Station. Another possible cause is that the default configuration file on the server has been corrupted or deleted. The default configuration file, standard.nsm, is located in the /configs subdirectory of the directory indicated in the hd tag of the BOOTP table entry. A reinstallation of the IBM Network Station Manager for AS/400 licensed program may be required.
Java Problems	
Java error messages: Can not find class, out of memory, IO exception.	See “Problem Analysis when Running Java” on page A-9 for more information about recovery when these messages occur.
Text does not appear or is a different style.	Check the font sizes and styles. They may need to be changed to a different setting. Not all fonts are available on all JVMs.
Data written to a file does not appear in the file.	Make sure the Java applet or application closes the file to force all data to be written to the file.
Applet cannot read Properties or get a Security Exception while trying to read the System Properties	Applets may only read properties which are explicitly allowed by the system configuration. A property can be configured to be accessible by defining a new property of the form .applet and assigning it a value of true. This may be done through the Network Station Manager in the AppletViewer configuration section. The default properties which may be read by an applet are: • java.vendor • java.version • java.vendor.url • java.class • os.name • os.version • os.arch • file.separator • path.separator • line.separator If the class sun.applet.AppletViewer is used to view applets, the accessible property list will differ from above and depend on the property file defined within the users' home directory.
Cursor does not appear in text field or Window layout (for example, button positions) appears different from the way it appears when the applet is run on another platform	The Java Abstract Window Toolkit (AWT) is designed to create a development environment independent of the underlying windowing mechanisms. These classes utilize the native window calls to do the work, but provide a uniform interface to programmers. However, Java Abstract Window Toolkit cannot hide all the differences. Thus appearances may change from one Java Virtual Machine on one platform to another Java Virtual Machine on a different platform.

Table A-1 (Page 3 of 6). Problem Determination Chart	
Problem Description Table	
Can not close Java error message box	Scroll to the end of the error message box and click OK.
Environment Variables - Java Applet Viewer	
Environment variable not replaced	Environment variables cannot be used when working with properties in the Java Applet Viewer section of the IBM Network Station Manager. The property value does not get replaced with the Environment Variable value. For example, if you declared name=${IP} in the properties box, you might expect to get the IP address of workstation user. Instead, you get ${IP}.
Panic Appears on your workstation	
P A N I C appears on your workstation	See “PANIC Mode at an IBM Network Station” on page A-6 for more information on recovering from a PANIC situation.
Cursor Problems	
3270 cursor will not reposition using mouse	To reposition the cursor using the mouse, you must first use the mouse to position the mouse pointer. Then, press the Shift key and click the left mouse button. The cursor will move to that position.
Busy cursor (cursor seems busy trying to perform a task)	The first time you open an application from the workstation menu bar the cursor stays busy until the application finished loading. Additional requests for another session of the same application will show the cursor only being busy for 3 seconds. Depending on network traffic, the application may take longer than 3 seconds to appear. The application is loading; however, the cursor will not show busy for over 3 seconds.
Cursor in wrong position within an application	When you leave one application to go to another application using the mouse, the cursor may not be at the same position when you return. The cursor probably repositioned itself to the place where you clicked the mouse to re-enter the application. You can reposition the cursor using the directional arrow keys.
Printer Problems	
Printer not available to other applications	The AS/400 system will have a lock on the printer if someone started a printer writer to that printer. To release the printer and make it available, run the End Printer Writer (ENDPRTWTR) command for that printer on the AS/400 system.
Color Problems	
Colors appear incorrectly in applications	Color capabilities are fixed at 256 available colors. Some applications will use as many colors as possible, thus leaving no colors for additional applications. Try to start other applications before starting an application that uses a large number of colors. Applications that do not use 256 colors may have to be changed to use 256 color support.
Keystrokes	
Unwanted keystrokes appearing in applications	If the screen saver comes on while you are in an application and you press a key to end the screen saver, that keystroke will appear in your application. Remove the unwanted keystroke.
Host Unknown or Unknown Host Message	

Table A-1 (Page 4 of 6). Problem Determination Chart	
Problem Description Table	
Host Unknown message appears on workstation	This message could appear if: • a wrong system name or IP address was specified while using the program or menu functions of Startup Tasks in the IBM Network Station Manager program • a wrong system name or IP address was specified when opening a 3270 or 5250 session • TCP/IP name resolution is not occurring while using the program or menu functions of Startup Tasks in the IBM Network Station Manager program You should validate the system name or IP address. Also, you should access the Hardware Setup Task and specify to use the Update host table and DNS configuration from server field. Updating this field refreshes your TCP/IP name resolution information for the IBM Network Station. Therefore, if new systems were integrated into your network, their IP address or system names would be known. You must log off and log on for the name information to become available.
Screen Flashes	
Screen flashing or crackling sound	Screen flashes, along with some crackling sounds, can occur when you are logging out of the workstation. The flashing will not harm any hardware or applications.
IBM Network Station Manager Program	
Changed Hardware workstation settings not being applied	Some changes require the IBM Network Station to be rebooted before they take effect. If you have rebooted the IBM Network Station and the changes are still not applied, use the IBM Setup Utility, Select F5 (Set Network Parameters) and make sure the IP Addressed from parameter value is Network. If the IP Addressed from parameter value is NVRAM, the IBM Network Station will not be able to use BOOTP to determine the name of its workstation-specific settings file. It is recommended that the IP Addressed from parameter be set to Network to use BOOTP. See Chapter 8, “Working with the IBM Network Station Setup Utility” on page 8-1 for more information.
Inactive Navigational buttons in Help	In Help text, the navigational buttons (Back and Next) will not become active until you have linked to other topics. Once you have moved, by linking other topics, you establish a history of that movement. The buttons use this history to determine if the Back and Next buttons can be used.
Pulldown box will not stay open to accept Hardware setting changes.	If you are running a browser in a Windows environment, change the screen size to something other than 640 X 480. You can also try resizing your current window and then try to open the pulldown again. Try scrolling the window to change the position of the pulldown. This may give pulldowns that contain many items space to display the pulldown items.

Table A-1 (Page 5 of 6). Problem Determination Chart	
Problem Description Table	
Resizing the Netscape window causes problems	If you resize the Netscape window while the IBM Network Station Manager program is being loaded into it, Netscape may stop the load and you will not get a sign-on screen. You will have to close the IBM Network Station Manager browser window and restart the program; wait until after the logon screen is displayed before you resize the window. After signing on, resizing the Netscape window may cause the server name or name of the user whose defaults you are displaying to disappear. If cache is set to 0, resizing the window may cause unpredictable results.
Resizing the Netscape window when using AIX causes loss of data input on IBM Network Station Manager program panels	Do not resize the window after you have entered data. Resizing the window resets the values.
Microsoft Internet Explorer windows are displayed behind the main window	In the IBM Network Station Manager program, if you request help or a list of users or terminals, a popup window is opened to contain the requested information. Internet Explorer may open the popup window behind the larger main window from which you made the request. To find the popup, you may need to move or minimize the larger window.
Changed keyboard setting has not been applied	Reboot your IBM Network Station in order for the changed keyboard setting to take effect.
Update of boot monitor has not been installed.	Reboot your IBM Network Station in order for the updated boot monitor to take effect.
Changes made to Hardware settings (other than keyboard and boot monitor), Startup Programs, Menus or Environment Variables, Desktop Manager, or Internet Network settings have not been applied.	If you changed the Applet Viewer defaults for an individual user they must log off and log back on for the changes to take effect. If you changed the system defaults for Applet Viewer, a reboot is required for the changes to take effect.
Changes made to 5250, 3270, or IBM Browser have not been applied.	End your application session and restart a new application session in order for the changes to take effect.
Changes made to the Applet Viewer have not been applied.	If you changed the Applet Viewer defaults for an individual user they must log off and log back on for the changes to take effect. If you changed the system defaults for Applet Viewer, a reboot is required for the changes to take effect.
IBM Network Station Manager program will not start.	This could be because the Retain Server Security Data (QRETSVRSEC) system value was not set to 1. To verify, from any AS/400 system command line type: DSPSYSVAL QRETSVRSEC. The vlaue will be displayed. If the value is not 1, you can change it using the following command from any AS/400 command line: CHGSYSVAL SYSVAL(QRETSVRSEC) VALUE('1').
Browser Problems	

Table A-1 (Page 6 of 6). Problem Determination Chart	
Problem Description Table	
The IBM Network Station Browser will not start.	This could be because you deleted the IBM Network Station Manager for AS/400 licensed program and then reinstalled it. In deleting the licensed program, some of the files that support the IBM Network Station Browser were also deleted. Reinstall the IBM Network Station Browser licensed program.
Error message 404 - file not found	Verify the spelling and case sensitivity of the URL you used to access the IBM Network Station Manager program. If the spelling and case of the URL are correct, you can check the directives specified in the HTTP server configuration. Directives are statements in the HTTP server configuration that allow access to the HTTP server. See Chapter 10, “Configuring the HTTP Server” on page 10-1 for more information.
IBM Setup Assistant Problems	
Task 5000 of the IBM Setup Assistant does not complete successfully	In task 5000, if you selected to end TCP/IP, it is possible that all of the server jobs might not have ended before task 5000 starts TCP/IP. If this is the case you will receive the message that task 5000 did not complete successfully. You can select task 5000 again, choose not to end TCP/IP, and press Enter to start the required servers. At this time all of the servers jobs should have had time to end so that the start is successful.

PANIC Mode at an IBM Network Station

A panic is an irrecoverable error condition that causes the IBM Network Station operating system to stop running.

To recover the IBM Network Station from this condition, power off the IBM Network Station system unit and then power it back on.

To receive assistance on the cause of the error condition, you must upload the DUMP file to the AS/400 system. If the file does not exist, TFTP (Trivial File Transfer Protocol) can create a file. If the file exists, TFTP can replace (write over) the existing file.

To determine the name of the DMP file, add the last 8 digits of the MAC address to the letters DMP. For example 80964234.DMP.

To send the xxxxxxxx.DMP file to the AS/400 use the following steps:

__ **1.** Type CHGTFTPA and press F4. Change the Allow file writes parameter value to *CREATE. This allows TFTP to write to or replace files on the AS/400.

```
                    Change TFTP Attributes (CHGTFTPA)

Type choices, press Enter.

Autostart server . . . . . .   *NO           *YES, *NO, *SAME
Number of server jobs:
  Minimum  . . . . . . . . . .   2            1-20, *SAME, *DFT
  Maximum  . . . . . . . . . .   6            1-250, *SAME, *DFT
Server inactivity timer  . . . .  30          1-1440, *SAME, *DFT
ASCII single byte CCSID:
  Coded character set identifier   00819      1-65532, *SAME, *DFT
Maximum block size . . . . . .   1024         512-65464, *SAME, *DFT
Connection response timeout  . .  60          1-600, *SAME, *DFT
Allow file writes  . . . . . .   *CREATE      *DFT, *NONE, *CREATE...
Alternate source directory . . .  '*NONE'

                                                                    More...
F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display
F24=More keys
```

___ **2.** To enable the TFTP attributes changes, end the TFTP server and then restart it.

To end the TFTP server, type ENDTCPSVR and prompt (F4). The following display appears where you enter TFTP for the Server application value. Press Enter to complete the command.

```
                        End TCP/IP Server (ENDTCPSVR)

Type choices, press Enter.

Server application . . . . . .   TFTP         *ALL, *SNMP, *ROUTED...
               + for more values

                                                                    Bottom
F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display
F24=More keys
```

To start the TFTP server, type STRTCPSVR and prompt (F4).

The following display appears where you enter TFTP for the Server application value. Press Enter to complete the command.

```
                        Start TCP/IP Server (STRTCPSVR)

Type choices, press Enter.

Server application . . . . . .   TFTP          *ALL, *SNMP, *ROUTED...
               + for more values

                                                                      Bottom
F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display
F24=More keys
```

___ **3.** Have the user of the IBM Network Station (or yourself if you are at the monitor) type the UP command next to the >.

This starts the transfer process of the xxxxxxxx.DMP file to the target directory on the AS/400 system.

Note: If you experience an error with the transfer process, see "File Transmission and Maximum Transmission Units."

___ **4.** Run the CHGTFTPA command again to change the Allow file writes parameter value back to *NONE.

Note: It is important that you reset the value to *NONE to prevent unauthorized file transfers to the AS/400 system when using TFTP.

___ **5.** Repeat step 2 on page A-7 to end and then start the TFTP server again.

___ **6.** After the upload is complete, have the user of the monitor type ST next to the >. This displays the current registers. Have the user communicate these results to you for use in determining the cause of the PANIC.

File Transmission and Maximum Transmission Units

The Token Ring Network Station ships with a Token Ring Maximum Transmission Unit (MTU) of 1492 bytes. This value is used to determine the size of an MTU, or frame of data, when the IBM Network Station is sending data to a host. This value should work well for most network configurations. You should make sure that this value does not exceed the value of the MAXFRAME parameter on your AS/400 Token Ring line description.

Note: Even if the MAXFRAME parameter is set to an acceptable value, other components in your network such as routers and bridges may support (or be configured to support) a smaller MTU value.

The MTU value set in the IBM Network Station should not exceed the MTU (MAXFRAME) value of the AS/400 system or any network component which is part of the communications path between the IBM Network Station and the AS/400 system.

The current maximum values for the MAXFRAME parameter on the Token Ring line description are 4060 for 4 Mbit Token Ring and 16393 for 16 Mbit Token-Ring. In future releases, these maximum values may change. Consult your AS/400 system documentation for details. You can set the value of the Token Ring MTU on the IBM Network Station. At the Boot Monitor command entry prompt (">"):

1. Reboot your IBM Network Station.
2. When you see the message *NS0500 Search for host system*, or while the status bar is displayed showing the progress of loading the IBM Network Station kernel, press the Escape key.
3. Press the Ctrl-Alt-Shift-F1 key combination.
4. Enter "TM xxxxx", where xxxxx is the new MTU value (in bytes).
5. Reboot your IBM Network Station.

Problem Analysis when Running Java

If the Java applet or application does not start, examine the messages that are displayed in the User Services' console. These should give an indication of any problems that are found by the JVM in running the program. In addition, you can determine whether the JVM is loaded by noting a change in the amount of memory currently being used as found in User Services' Statistics. See Chapter 7, “Working with User Services” on page 7-1 for more information.

Examples of some Java error messages follow:

Can not find class or class not found

The JVM cannot find the class file requested by the Java applet or application. If the error is returned while running a Java application, inspect the class path that is specified in the IBM Network Station Manager Startup programs or menus. Confirm that the directories which include class files that are associated with the program are contained within the class path and that they have the correct format. Also, ensure that the name in the Application (Class) Name field does not contain the .class file name extension.

If the classes are provided in a zip file, the fully qualified zip file name must explicitly appear within the class path. In addition, due to differences in file systems, the classes may not be found since they are referred to in a case-sensitive manner. It may be possible to rename the class to the name that is indicated in the console messages.

For an applet, the codebase portion of the applet tag within the HTML file lists the locations where classes are found.

Also, check the file access permissions on the directories and files to make sure that users are allowed to read the files.

Out of memory

The IBM Network Station system unit may not have enough memory to run the application or applet. Possible causes include:

- Other applications are using memory, and not enough memory is left for the Java application or applet to run.
- The stack size and heap size parameters need to be adjusted. The stack and heap sizes can be set using the IBM Network Station Manager. For applications, the parameters are set in the Startup Tasks (programs or menus) section. For an applet, the parameters are set in the Network Tasks (Applet Viewer section).

IO exception while reading: (a remote server name)

An HTTP address rather than an AS/400 file system location was passed to the applet viewer. AppletViewer is essentially a browser that needs to have a defined proxy server and port before it can load HTTP files. To do this, you need to set the HTTP proxy or Socks Host parameter by using the IBM Network Station Manager program. Select the Internet Setup Task and then the Network section.

If you are loading the applet from your host AS/400, you do not need to use an HTTP address. Instead, you can simply fill in the local path and HTML file name.

IO exception while reading: (a file name)

Ensure that you specified a valid HTML file name as the startup programs or menus URL name in the IBM Network Station Manager program. Also, ensure that the file is readable by the user.

Launcher Shutdown Monitor

If your applet does not start and the next message in the console is Launcher Shutdown Monitor, ensure that you specified a valid HTML file name as the startup programs or menus URL name in the IBM Network Station Manager program. Also ensure that the file is readable by the user.

Unusable class name: (name)

Check the name in the field Application (Class) Name field in the startup programs or menus section in the IBM Network Station Manager program. Do not include a path or the .class file name extension in this field.

Other

If you do not see any messages in the User Services Console window that explain your problem, set Verbose messages on using the IBM Network Station Manager program. For applications, Verbose messages can be set in the Startup Tasks (programs or menus) section. For an applet, Verbose messages can be set in the Network Tasks (Applet Viewer section). Additional messages will now be displayed when your application or applet is run.

Appendix B. National Language Support

Only selected AS/400 national languages are supported at this time. The following list contains the software feature number and the language.

```
2922   Portuguese
2923   Dutch
2924   U.S. English
2925   Finnish
2926   Danish
2928   French
2929   German
2931   Spanish
2932   Italian
2933   Norwegian
2937   Swedish
2939   German MNCS (multinational character set)
2940   French MNCS
2942   Italian MNCS
2958   Icelandic
2963   Belgian Dutch
2966   Belgian French
2980   Brazilian Portuguese
2981   Canadian French
2996   Portuguese MNCS
```

Notes:

1. IBM Network Station NLV support is ASCII code page 819 (ISO equivalent of code page 850).
2. Code Page 819 supports all languages supported by the 5250 emulator of the IBM Network Station by using the configured language that is supplied by IBM Network Station Manager (or its equivalent function).
3. Software will be NLV-enabled, not translated (U.S. English MRI only)

Appendix C. IBM Network Station Manager Program Shipped Default Settings

The following table contains all the IBM Network Station Manager Program shipped default settings. The settings are presented in the same order that is found in the Setup Tasks frame when you open the IBM Network Station Manager program.

Table C-1. IBM Network Station Hardware Default Settings

Hardware Default Settings	
Item:	**Default Value:**
Mouse settings:	
• Mouse button configuration	• Right-handed
• Mouse pointer speed	• Medium
Keyboard settings:	
• Keyboard Repeat rate	• Medium
• Keyboard Repeat delay	• Medium delay
• Keyboard mapping language	• Default from terminal
Monitor settings:	
• Minutes before screen saver turns on	• 10
• Screen saver	• IBM bitmap
• Minutes before monitor standby	• 20
• Minutes before monitor suspend	• 40
• Minutes before monitor power down	• 60
• Desktop background	• IBM bitmap
Miscellaneous settings:	
• Parallel printer port	• On
• Allocate memory to speed window refresh	• No
• Update boot monitor from the hardware settings file	• No update

Table C-2. IBM Network Station Desktop Manager Default Settings

Desktop Manager Default Settings	
Item:	**Default Value:**
Screen colors: • Background color for window frame in focus • Background color for window frame not in focus • Foreground color for window frame not in focus	 • Mint green • Gray • Black
Icon preferences: • Icons placed • Icon location	 • on desktop • bottom left
Fonts: • Font size for icons and menus	 • 12
Window focus	Windows become active by clicking on the window

Table C-3. 5250 Default Settings

5250 Default Settings	
Item:	**Default Value:**
Key remapping capability	Disabled
Default keyboard file for:	
• PC Keyboard (101 keys)	• None
• PC Keyboard (102 keys)	• None
• 5250 Keyboard (122 keys)	• None
Color Settings:	
• Color customization capability	• Basic
• Default color scheme	• None
• Additional color schemes to make available	• None
Record/Playback Settings:	
• Record/Playback capability	• Enabled
• Playback sequences to make available	• None
Miscellaneous Settings:	
• Allow use of the command menu	• Yes
• Show new session window	• Yes
• Allow use of the print menu	• Yes
• Screen size	• 27 rows, 132 columns
• Image/Fax display	• Disabled
• Column separators	• Disabled
• Allow use of the pop-up keypad	• No
• Allow use of the control menu	• Yes
• Allow use of the edit menu	• Yes

Table C-4. 3270 Default Settings

3270 Default Settings	
Item:	**Default Value:**
Key remapping capability	Disabled
Default keyboard file for: • PC Keyboard (101 keys) • PC Keyboard (102 keys)	 • None • None
Color Settings: • Color customization capability • Default color scheme • Additional color schemes to make available	 • Basic • None • None
Miscellaneous Settings: • Screen size • Allow use of keypad • Allow use of graphics • Key for Enter function • Use Auto Action • Telnet 3270 port to connect to	 • 32 rows, 80 columns • No • No • Control key • No • 23

Table C-5. Internet Network Default Settings

Internet Network Default Settings	
Item:	**Default Value:**
Web server port on the boot host	80
Applet launcher port	5555
IBM Network Station browser version	Non-encrypted

Table C-6. IBM Network Station Browser Defaults

IBM Network Station Browser Defaults	
Item:	**Default Value:**
Allow user to override settings	No
Security Settings: • Enable JavaScript • Enable Java Applets	 • Yes • Yes
Network Settings: • Disk cache • TCP/IP maximum connections	 • 0 KB • 5
Print headers and footers: • Left header • Right header • Left footer • Right footer	 • &w • &p • &D • &t
Print margins: • Top margin • Bottom margin • Left margin • Right margin • Paper size	 • .5 inches • .5 inches • .5 inches • .5 inches • Letter
Miscellaneous: • Auto load images • Show toolbar	 • Yes • Yes

Table C-7. Navio NC Navigator Browser Defaults

Navio NC Navigator Browser Defaults	
Item:	**Default Value:**
Security Settings: • Enable JavaScript • Enable Java Applets • Enable SSL 2 • Enable SSL 3	 • Yes • No • Yes • Yes
Network Settings: • Maximum memory cache • Maximum TCP/IP connections • Network buffer size	 • 1024 KB • 4 • 32 KB

Table C-8. Java Applet Viewer Settings

Java Applet Viewer Settings	
Item:	**Default Value:**
Verbose mode	off
Verify classes	remote only
Maximum heap size	3 MB
JAVA stack size	256 KB
Native code stack size	32 KB
Garbage collection: • Verbose • Only when needed	 • off • off (garbage collection runs as an asynchronous thread in parallel with other threads)
NOTE: The Java Applet Viewer setting defaults are also the defaults for the Java Applications found on the Startup Programs and Menus screens.	

Appendix D. IBM Network Station Manager Program Shipped Environment Variables

The following are environment variables whose values cannot be altered. These values are set when a user logs onto the IBM Network Station.

PATH
/QIBM/ProdData/NetworkStation/mods

HOME
/QIBM/UserData/NetworkStation/(user profile)

Note: (User profile) is the identity of the person that is signed onto the IBM Network Station.

DISPLAY
:0.0

HOSTNAME
Name of the IBM Network Station terminal

BOOTHOST
The AS/400 from which the IBM Network Station was booted

BOOTPATH
/QIBM/ProdData/NetworkStation/mods

USER
User ID of the person logged onto the IBM Network Station

PASSWORD
Password of the person logged onto the IBM Network Station

NSM_ADMIN_SYSDEFAULTS
/QIBM/UserData/NetworkStation/SysDefaults

NSM_PROD_SYSDEFAULTS
/QIBM/ProdData/NetworkStation/SysDefaults

NSM_USER_PREFS
/QIBM/UserData/NetworkStation/(user profile)

Note: (User profile) is the identity of the person that is signed onto the IBM Network Station.

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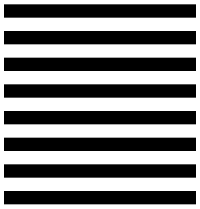

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