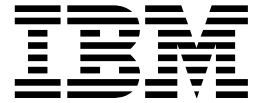Nways MAS/MRS/MSS Library

IBM

Configuration Program User's Guide for Nways Multiprotocol Access, Routing and Switched Services

Third Edition

Nways MAS/MRS/MSS Library

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> **Note**
>
> Before using this information and the product it supports, be sure to read the general information under "Notices" on page v.

| **Third Edition (January 1997)**

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About This Manual

This manual explains how to install and use the Configuration Program on various platforms to configure an Nways device for your network.

This manual assumes a knowledge of networking concepts.

Who Should Read This Manual

The intended user of this book is the person who will configure an Nways device using the configuration program.

How This Manual Is Organized

This manual is divided into the following chapters:

- Chapter 1, "Installing the Configuration Program" on page 1, which describes the installation requirements for the IBM Nways Multiprotocol Access Services and Multiprotocol Routing Services Configuration Program and how to install the configuration program.

- Chapter 2, "Starting the Configuration Program" on page 5, which describes how to start the configuration program and some operational considerations.

- Chapter 3, "Using the Configuration Program" on page 9, which describes how to use the configuration program, some of the navigational features of the program, and an overview of the configuration process.

Contents

Benefits of the Configuration Program

The Configuration Program allows you to create configurations for the various models of devices using a point and click interface. Some of the features of the configuration program that make configuring a device easier than using the command line interface are:

- The ability to save a configuration for later completion

- The ability to retrieve an existing configuration from a device to either update or use as a template for another device

- The ability to use any configuration in the database as a template for a different device

- The ability to configure the protocols in any order unless there are inter-protocol dependencies

- The ability to group configurations together in configuration databases that reflect your network topology

- The ability to upgrade configurations created with previous versions of the configuration program to the current format

- The ability to add comments to the configuration for additional documentation

- The ability to verify the completeness of a configuration before loading that configuration to a device

- Guided configuration that describes procedures to configure protocols

- Context-sensitive helps for panels and parameters

- The ability to save configurations as backups or have multiple versions for the same router

- The point-and-click graphical interface

- A command line facility that can automate many tasks including reading, writing, sending, and retrieving configurations

- The ability to retrieve configurations on the OS/2 and Windows platforms

Library Ordering Information

Obtaining Softcopy Information

Softcopy BookManager READ library information is available for many of the IBM 2210, IBM 2216 and IBM 8210 publications in the *IBM Networking Systems Softcopy Collection Kit*. To place a single order for the CD-ROM, use form number SK2T-6012. To place a single order for the 3480 cartridge, use form number SK2T-6013.

Yearly subscriptions to the *IBM Networking Systems Softcopy Collection Kit*, product number 5636-PUB, are available through your branch office representative. Order feature code 2003 and media code 5003 for CD-ROM format. Order feature code 2004 and media code 5004 for 3480 cartridge format.

To order the CD-ROM that contains the 2210-related publications, use form number SK2T-0404.

To order the CD-ROM that contains the 2216-related publications, use form number SK2T-0405.

To order the CD-ROM that contains the 8210-related publications, use form number SK2T-0378.

System Library Subscription Service

The IBM 2210 publications are available via the System Library Subscription Service (SLSS). Use machine type 2210 and program number 5765-B86 to receive 2210 publications.

The IBM 2216 publications are available via the System Library Subscription Service (SLSS). Use machine type 2216 and program number 5765-B87 to receive 2216 publications.

The IBM 8210 publications are available via the System Library Subscription Service (SLSS). Use machine type 8210 and program number 5765-368 to receive 8210 publications.

Summary of Changes to Third Edition

Changes to This Manual

- A command line facility has been added to the configuration program. A description of the command line facility has been added in "Using the Command Line Facility" on page 17.

- Added the URL for accessing the Multiprotocol Switching Services version of the configuration program.

Technical changes and additions are indicated by a vertical line (|) to the left of the change.

Changes to the Configuration Program Since the Second Edition

The following changes were made to the configuration program since the last edition of this manual:

Enabling or Disabling Spanning Tree Participation Previously you enabled or disabled *spanning tree participation* on the **Bridging - Interfaces Configure** panel. The buttons that enabled spanning tree participation are no longer in this panel. To enable spanning tree participation, select the STP button on the **Bridging - Spanning Tree Protocol - Interfaces** panel.

Moved Parameter and Panel The following parameter and panel has moved in this version of the configuration program:

Parameter	Old Panel/Folder	New Panel/Folder
SDLC PU Type	Devices - SDLC Configuration	Protocols - DLSw - Interfaces
X.25 Per Protocol Configuration	Devices - General	Protocols - X.25

ASCII File Support You can create ASCII files from a device's configuration. This feature is useful for documenting the configuration of the devices in your network.

The configuration program can now also read ASCII files created from the ASCII write function. This enables you to use those files as the basis of a new configuration or an updated configuration.

Chapter 1. Installing the Configuration Program

This chapter describes the minimum requirements and the procedure for installing and starting the IBM Nways Multiprotocol Access Services and Multiprotocol Routing Services Configuration Program.

Hardware and Software Requirements for the Configuration Program

Figure 1. lists the minimum requirements for the operating systems supported by the configuration program.

Figure 1. Configuration Program Requirements for Supported Operating Systems

Requirement	IBM AIX	IBM Operating System/2	IBM PC DOS or MS-DOS** with Microsoft** Windows**
Workstation	RISC System/6000*	IBM PC-compatible with Intel 80386 or higher processor (see Note 2)	IBM PC-compatible with Intel 80386 or higher processor (see Note 2)
RAM (minimum)	32 MB	16 MB	16 MB
RAM (recommended)	64 MB	32 MB	32 MB
Diskette Drive	3.5 inch	3.5 inch	3.5 inch
Free Disk Space	14 MB	14 MB	14 MB
Swapper Size	N/A	10 MB	N/A
Display (minimum)	Graphics (640 x 480 x 16 colors)	VGA (640 x 480 x 16 colors)	VGA (640 x 480 x 16 colors)
Display (recommended)	Graphics (1024 x 768 x 256 colors)	SVGA (1024 x 768 x 256 colors)	SVGA (1024 x 768 x 256 colors)
Mouse	3-button	2-button (see Note 3)	2-button (see Note 3)
Software	AIX for RISC System/6000 (AIX/6000 3.2.5 or higher)	OS/2 2.1 or higher	IBM or MS DOS 5.0 or higher
	AIXWindows Environment/6000	IBM TCP/IP 1.2.1 for OS/2 or higher	Latest TCP/IP and WinSock from Microsoft MS Windows 3.0 or higher (see Note 4)

Notes:

1. Make sure to read the README file for the latest requirements.

2. More memory and better processors will improve the program's performance.

3. Functionally equivalent to a 3-button mouse.

4. You must make sure that TCP/IP is *installed* and *running* before using the "Single Send or Retrieve" or "Multiple Send or Retrieve" functions. The Configuration Program will be hung if TCP/IP is not installed and running on MS Windows platforms.

Obtaining the Configuration Program Electronically

You can obtain the configuration program electronically, using FTP, from FTP site ftp.nways.raleigh.ibm.com (IP address: 204.146.167.70) in directories:

- For the Multiprotocol Routing Network Services versions:

   /pub/config/2210/*aaaaaaaa/bbbbbbbb*/diskettes – Zipped diskette images
   /pub/config/2210/*aaaaaaaa/bbbbbbbb*/runtime – RISC System/6000 files

   Where *aaaaaaaa/bbbbbbbb* is the following version of the configuration program:

aaaaaaaa	bbbbbbbb	version/release
1.2.0.0	GA	MRNS V1R2
1.3.0.0	GA	MRNS V1R3
1.3.0.0	np00671	MRNS V1R3 with Enhancements
1.3.0.0	enhanced	MRNS V1R3 with Enhancements and ISDN BRI Adapter Support

- For the Multiprotocol Routing Services versions:

   /pub/config/2210/MRS/*aaaaaaaa/bbbbbbbb*/diskettes – Zipped diskette images
   /pub/config/2210/MRS/*aaaaaaaa/bbbbbbbb*/runtime – RISC System/6000 files

   Where *aaaaaaaa/bbbbbbbb* is the following version of the configuration program:

aaaaaaaa	bbbbbbbb	version/release
1.1.0.0	GA	MRS V1R1

- For the Multiprotocol Access Services versions:

   /pub/config/2216/*aaaaaaaa/bbbbbbbb*/diskettes – Zipped diskette images
   /pub/config/2216/*aaaaaaaa/bbbbbbbb*/runtime – RISC System/6000 files

   Where *aaaaaaaa/bbbbbbbb* is the following version of the configuration program:

aaaaaaaa	bbbbbbbb	version/release
1.1.0.0	GA	MAS V1R1

For the Multiprotocol Switched Services, you can access the code at http://www.raleigh.ibm.com/nes/nesswitc.htm.

Before Installing the Configuration Program

If you received the configuration program zipped diskette images electronically, you must first create the program diskettes as follows:

1. Download the program files to your workstation.

2. At the appropriate command prompt, enter **PKUNZIP** *filename d:* where *filename* is the name of the file you are expanding and *d* is the diskette drive that contains a blank diskette.

3. Repeat step 2 until you have expanded all of the files.

4. Continue with "Procedures for Installing the Configuration Program."

Procedures for Installing the Configuration Program

The procedure you use for installing the configuration program depends on the operating system under which the program will run. Figure 2. describes the steps you take to install the configuration program, based on your operating system.

Before installing the configuration program, make sure that you have write access to the directory in which you are installing the configuration program. The installation process writes program files to the directory during installation and the configuration program writes information to the directory while it is running.

From Figure 2., select the installation procedure that fits your operating system.

Figure 2 (Page 1 of 2). Installation Procedures	
Operating System	**Procedure**
AIX	1. Log in to AIX as a non-root user. 2. Insert the diskette labeled *IBM Nways Multiprotocol Access Services or Multiprotocol Routing Services or Multiprotocol Switched Services Configuration Program Disk 1* into your diskette drive. 3. Enter **dosread -a INSTALL.AIX INSTALL.AIX** 4. Enter **chmod 550 INSTALL.AIX** 5. Enter **INSTALL.AIX** (see note) 6. Follow the installation program instructions. **Note:** Be sure to enter the commands exactly as shown.
OS/2	1. Open an OS/2 Command Window. 2. Insert the diskette labeled *IBM Nways Multiprotocol Access Services or Multiprotocol Routing Services or Multiprotocol Switched Services Configuration Program Disk 1* into your diskette drive. 3. Make the diskette drive your current directory. 4. Enter **os2inst** 5. Follow the installation program instructions. The program creates a folder that contains the IBM Nways Multiprotocol Access Services and Multiprotocol Routing Services Configuration Program icon. (For example, if you are installing the 2210 version of the configuration program, the folder is titled "IBM 2210."

Figure 2 (Page 2 of 2). Installation Procedures	
Operating System	**Procedure**
Windows **Note:** Windows must be running in enhanced mode before you install the configuration program	1. If Win32s** support is not currently installed on your workstation, install the Win32s diskettes. See "Installing Win32s Support" on page 4 for the installation procedure for Win32s. **Note:** Win32s support is not required for Windows 95 or Windows NT. 2. Insert the diskette labeled *IBM Nways Multiprotocol Access Services or Multiprotocol Routing Services or Multiprotocol Switched Services Configuration Program Disk 1* into your diskette drive. 3. Select **File** from the Program Manager menu. 4. Select **Run** from the File drop-down menu. 5. Enter *d*:**\install** in the dialog, where *d* is the drive letter of your diskette drive. 6. Follow the installation program instructions. The installation program adds a program group to the Program Manager. If you are installing the 2210 version of the configuration program, the program group is called IBM 2210. You can use a different group name by specifying the desired name during installation. That group contains the configuration program.

The README file on the first diskette of the configuration program lists the names of the files installed for each environment and other information about this release that became available after publication of this book.

Installing Win32s Support

To install Win32s support:

1. Stop all Windows applications.

2. Insert the Configuration Program Win32S Support diskette 1 into your diskette drive.

3. Select **File** from the Program Manager menu.

4. Select **Run** from the File drop-down menu.

5. Enter *d:*\setup in the dialog, where *d* is the drive letter of your diskette drive.

6. Select **OK** in the dialog.

7. When prompted, insert IBM Nways Multiprotocol Access Services and Multiprotocol Routing Services Configuration Program Win32S Support diskette into your diskette drive. During the installation, you will see a message about installing SHARE.EXE in your AUTOEXEC.BAT file. If SHARE.EXE is not already installed, follow the directions and add the statement.

8. Select **OK** in the dialog that asks if you want to restart Windows.

Chapter 2. Starting the Configuration Program

This chapter describes:

- The prerequisites for the configuration program
- The procedures for starting the program
- Using configuration files created by earlier versions of the program
- Using the configuration program with AIX NetView/6000

Prerequisites

Before starting the configuration program, make sure you have write access to the directory in which the configuration program is installed. The configuration program writes information to this directory while running, and will fail without the write access.

Font Requirements for AIX

The configuration program requires specific X11 fonts. When the configuration program starts, it looks for the Helvetica, Times Roman, and New Century Schoolbook fonts in the /usr/lib/X11/fonts/75dpi directory. The font files have the following names:

```
helv*.Z
tim*.Z
ncen*.Z
```

After the configuration program starts, you can access any font supported by your system. If you select an unusual font style, or very large font size, you may lose the ability to read the panels or make selections from them. See "Correcting Configuration Program Problems" on page 37 for procedures to recover from font problems.

Setting Up an IBM X-station for the Configuration Program

To run the configuration program from an IBM Xstation connected to an IBM RISC System/6000 host, you need:

- A monitor with at least 640 x 480 resolution and 16 colors or grey scales.

- Directory /usr/lib/X11/fonts/75dpi/ in the font path of your Xstation.

You can check if this directory is already in your path by entering:

```
xset -q
```

Under Font Path, look for /usr/lib/X11/fonts/75dpi/ in the list of directories. If you do not have this directory in your Xstation Font Path, you can add the directory by entering:

```
xset fp+ /usr/lib/X11/fonts/75dpi/
```

Make sure you add the above statement to your .profile for future configuration program sessions on your Xstation.

Note: If your font path is not set correctly, you may get an "out of memory" error message.

Starting the Configuration Program

To start the configuration program on AIX, see "Starting the Configuration Program on AIX."

To start the configuration program on OS/2 or DOS/Windows see "Starting the Configuration Program on OS/2 or DOS/Windows" on page 7.

Starting the Configuration Program on AIX

Before starting the configuration program:

- X-Windows** must be running on the workstation.

- The fonts required by the configuration program must be available. See "Font Requirements for AIX" on page 5 for the font requirements.

- /X11fnt.coreX.fnt must be installed to have access to the MIT X11.5 (75-dp1 and 100-dou) fonts.

To start the configuration program:

1. Enter **xinit** to start X-Windows, if not already started.

2. Change the current directory to the directory containing the Configuration Program files, for example **cd mrsc110**.

3. Enter **cfg**. to display the title window for the configuration program.

See "Using the Command Line Facility" on page 17 for details about using the command line facility.

Starting the Configuration Program with AIX NetView/6000

If you have NetView/6000 you can start the configuration program directly from the menu bar. If the network contains routers of different types (for example, 2210 and 6611) or configuration programs of different versions and releases, you can start any configuration program installed on the machine directly from the menu bar.

To use multiple configuration programs, make sure that each configuration program is in a separate subdirectory from the other configuration programs and NetView/6000.

For each configuration program that you want to start from the menu bar:

1. Create a file in the /usr/OV/registration/C subdirectory that contains the code for the menu bar selection item.

2. Change the command statement in the file to point to the path of the desired configuration program.

3. Save the file with a name that indicates the type, version, and release of the configuration program you are starting.

Figure 3 on page 7 is an example of the code contained in a file named MRSV1R1.0 that points to the configuration program in directory `/mrs/config/rel110/`. The _**C** in the line under MenuBar "Tools" is the accelerator character (hotkey) for the menu item. This character must be in the character string directly to the left of the action, and cannot be duplicated in another menu item.

For more information, such as how to create a sub-menu that contains all of the configuration program menu items, refer to the *AIX SystemView NetView/6000 V2R1 Programmer's Guide,* SC31-7022.

```
/*
**  Global Tools
*/
Application "2210 MRS Configuration V1R1"
{
    Description {
        "2210 MRS Configuration V1R1"
    }
    /*
    **  Tools
    */
    MenuBar "Tools"
    {
        "2210 MRS Config Tool V1R1" _C f.action "cfgtool";
    }
    Action "cfgtool"
    {
        Command "/mrs/config/rel110/cfg";
    }
}
```

Figure 3. Netview/6000 Menu File MRSV1R1

Starting the Configuration Program on OS/2 or DOS/Windows

To start the configuration program under OS/2 or DOS/Windows:

1. Locate and open the configuration program folder.

2. Double-click on the Configuration Program icon to start the program. The title window for the configuration program will be displayed.

See "Using the Command Line Facility" on page 17 for details about using the command line facility.

After the Configuration Program Starts

When the program starts, it uses the options defined in the CFG.INI file. If the file does not exist in the configuration program's directory, the configuration program uses default options and creates a new CFG.INI file. To change the options, use the *Options* item on the configuration program menu bar. See "Changing the Configuration Program Options" on page 11 for the options that you can change.

Migrating Previous Level Configuration Files

To use configuration files created by earlier versions of the configuration program, you must migrate to the new release format. If the only copy of the configuration is either in the router or in binary format, you must use the version of the configuration program that created the configuration to create the configuration database file.

Creating Configuration Database File

To create the configuration database file:

1. Start the previous version of the configuration program.

2. Select **Read Router Configuration** to read the existing configuration into the configuration program. Another way to load an existing configuration into the program is to select **Communication**, **Single**, and then **Retrieve** from the Configuration menu.

3. Select **Save Configuration** from the File menu.

4. Save the configuration into a file with file extension .CDB.

Converting a Configuration Database File

Configurations already in a configuration database may be migrated to the new release format by:

1. Starting the current version of the configuration program.

2. Selecting **Open Configuration** from the File menu. Select the old configuration from within the .cdb file you created in "Creating Configuration Database File." The configuration program will then ask if you wish to convert the configuration to the new format.

3. Selecting **Save configuration as** to save the configuration to a new file with a new name. Using the "Save configuration as" function allows you to keep the existing configuration file for future use.

Chapter 3. Using the Configuration Program

This chapter describes how to use the configuration program by including some of the navigation features of the program.

Before Using the Configuration Program

Before using the configuration program to create configurations for your router please read the README file that is contained in the directory in which the configuration program is installed or on the first program diskette. The README file contains any current restrictions for using the configuration program.

Attention: The configuration program you use to configure an Nways device must match the software that resides on the device you are configuring.

The newer versions of the README file may contain the names of the router software loads that are corequierments of the configuration program.

Understanding the Navigation and Configuration Windows

After you start the configuration program and clear the copyright notice, you will see two windows similar to those in Figure 4 on page 10 and Figure 5 on page 12.

The thinner, left-hand window is the *Navigation Window* and the broader, right-hand window is the *Configuration Window.*

You configure the router by selecting items in the Navigation window and then providing the details for each selected item in the Configuration Window. When you have completed entering the configuration details, select a new item to configure by selecting the item in the Navigation Window.
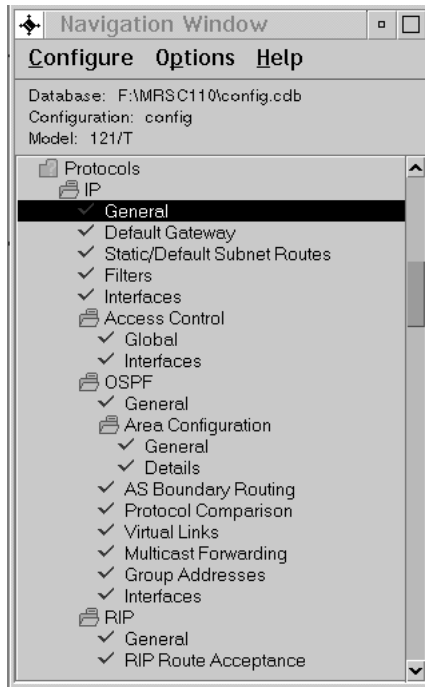
Figure 4. The Navigation Window

The Navigation Window

The Navigation Window contains:

- A title bar
- A menu bar
- A configuration description area
- A scrollable list of features and protocols that you can configure

This manual refers to the scrollable list as a navigation list. As you select items in the navigation list, the program displays a configuration panel in the Configuration Window. If you select a folder item, the configuration program displays help for configuring the feature that is represented by the folder in the Configuration Window. A folder is an item in the Navigation Window that has a folder icon next to the item. You can copy the help text from the Configuration Window by pressing F1 at this time.

If there is an error or if you have not supplied required information in the current configuration, a question mark appears next to that item in the navigation list.

If there are no errors, a check mark () appears next to that item in the navigation list.

The title bar of the Configuration Window displays an identification for an item that is selected in the navigation list.

The Navigation Window's menu bar contains the following options:

Configure
Options

Help

The area below the menu bar is the configuration description area. It displays the following information:

Database path and name that contains the configuration. The default database path is the directory in which you installed the configuration program and the default filename is *config.cdb.*

Filename of the current configuration (the default is *config*)

The router model and, if applicable, adapter type you are configuring (the default is set in the Options menu)

Another feature of the Navigation Window is a pop-up menu that you invoke by pressing the mouse button 2 (middle mouse button or the right mouse button on a 2-button mouse) on any selected folder in the navigation list. The pop-up menu allows you to:

- Fully expand the navigation list.

- Expand a portion of the navigation list out of a folder.

- Contract a portion of the navigation list into a folder.

- Display a history pop-up menu of configuration items you have selected. From the history pop-up you can access any of the previously selected configuration items. Press and hold mouse button 2 (middle mouse button or the right mouse button on a 2-button mouse) until you select the item from the submenu displayed by the history menu item. You can invoke the history pop-up from any item in the navigation list as you would the pop-up menu.

- Validate a selection item in error. The Navigation Window displays erroneous items with a yellow question mark next to the item. The validate function displays messages for any configuration errors or required fields that do not have correct values based on the list item selected. Using the validate function on a folder in the navigation list will display validation messages for all of the navigation list items within that folder.

After you correct an error and leave the panel the contained the error, the program removes the question mark.

Changing the Configuration Program Options
Use the **Option** menu to change:

- Font
- Colors
- Default Model
- Default Adapter
- Message Prompting
- ATM Address Format

The Configuration Window
As you select items in the Navigation Window, the program presents panels in the Configuration Window. The format of the configuration panels depends on the item that you select.
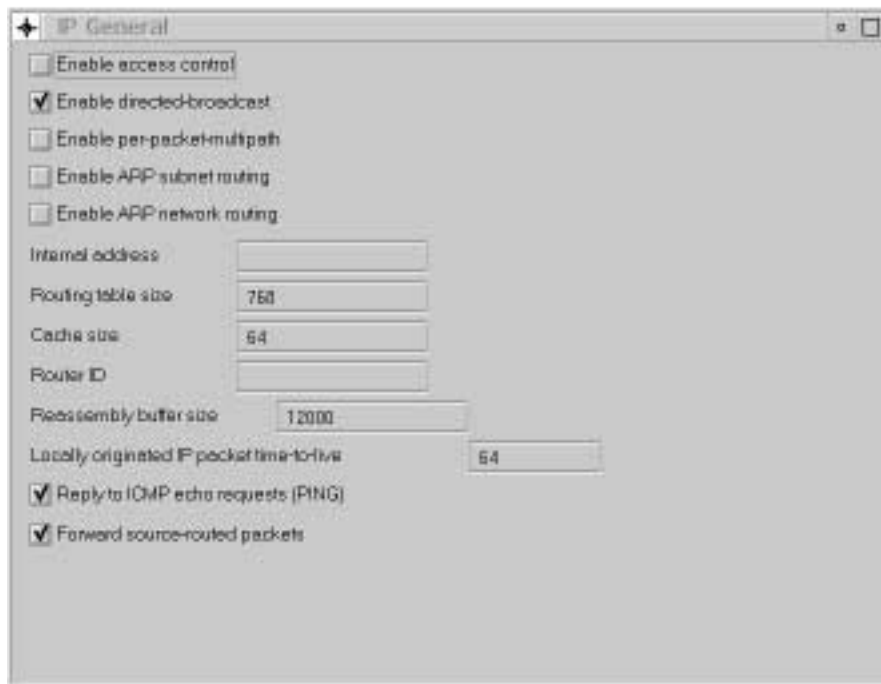
Figure 5. A Sample Configuration Window

Navigating Through the Configuration Program

The configuration program is designed as a point-and-click interface. You select items from lists using a pointer and then fill in items in the various panels in the Configuration Window. Various keys also have specific meanings to the configuration program.

Using the Mouse

The mouse is the main tool you use to move through the various lists and panels in the configuration program.

The configuration program uses the following buttons on a 3-button mouse:

- Left (button 1) - to select an item in a panel
- Middle (button 2) - to perform the following actions:
  - On the Navigation Window
    - Display a pop-up menu for a selected item in the scrollable list.
    - Move through and select items in a menu.
    - Validate a selection item in error. The Navigation Window displays erroneous items with a yellow question mark next to the item. The validate function displays a message for each required field that does not have a valid values and for any configuration errors.
  - On the Configuration Window
    - Drag-and-drop items in lists. The program indicates that drag-and-drop is active by changing the cursor into a hand icon. Use this function to reorder filters, dump entries, and other configuration lists.
- Right (button 3) is not currently used

The left and middle mouse button descriptions are mapped to the left and right mouse buttons on a 2-button mouse.

Using the Keyboard in the Configuration Program

Various keys have specific functions in the configuration program. Figure 6. explains these.

Figure 6 (Page 1 of 2). The Configuration Program Keyboard Functions

Keys	Function	How to Use
F1 (Help)	Request help (see note).	**To obtain help for configuring a feature or protocol:** The configuration program displays a configuration process for a feature or protocol in the Configuration Window. See "Using Guided Configuration" on page 36. **To obtain help on a panel:** 1. Select an item in the Navigation Window. 2. Press **F1**. **To obtain help on a parameter, a button, or a drop-down list:** 1. Select the parameter field or button by tabbing to the field, button, or list. 2. Press **F1**. **Note:** When you tab to the field or button, a yellow box will highlight the item and you can then request help. Clicking on a button causes the configuration program to perform the configuration task inidcated by that button or drop-down list. In the help text, additional information is hypertext-linked to the information on a particular panel. By default, this link is highlighted in blue. If you press F1 on different panels or parameters without closing a previously opened help window, the new help text overlays the currently displayed text. • To view the previous topics, select the **UP** button. • To view the next topic, select the **DOWN** button. • To close the help window, select the **CLOSE** button.

Note: After you press F1, the configuration program displays a frame that you use to position the window. Position the frame wherever you wish on your desktop and press the left mouse button to display the help text.

Keys	Function	How to Use
Up/Down Arrow Keys	Move vertically.	Use these keys to move through lists on any panel, including the Navigation Window or items in any of the drop-down menus. To select an item, press the **Enter** key.
Left/Right Arrow Keys	Move Horizontally	Use these keys to move through the menu items on the Navigation Window, after you have selected one of the menu items. Also use them to move through a parameter field without affecting the existing values.

Figure 6 (Page 2 of 2). The Configuration Program Keyboard Functions

Keys	Function	How to Use
Tab and Back-tab	Next or previous entry field.	These keys work only in the Configuration Window. The keys move you amongst the various entry items in the Configuration Windows. If there are items in a scrollable list, such as in the Device Interfaces panel you will move to items that are below the scrolling window.
Character Keys	Speed-scroll	Use character keys in the Navigation Window to speed your scrolling through the list. As you type in characters, the selection marker will move to an item in the list. This feature can help you change specific protocols in the configuration without using the scroll bar to locate the protocol. The following limitations exist: • Speed-scroll works only in the Navigation Window. • The selection marker will stop at the first item in the list that matches your keystrokes. You will be unable to speed-scroll to a second item with the same name unless you compact the list at a point above the currently selected item. • Once you speed-scroll to an item, you must select that item before you can use the speed-scroll feature again.
Alt + C	Configure pull-down menu	Drops down the **Configure** menu to allow you to select items from that menu.
Alt + P	Options pull-down menu	Drops down the **Options** menu to allow you to select items from that menu.
Alt + H	Help pull-down menu	Drops down the **Help** menu to allow you to select items from that menu.
Esc	Escape	Clears pull-down menus.

Using the Configure Menu

The Configure pull-down menu enables you to access the configuration program's features. Figure 7. describes the menu choices and their use. The underscored character and the text in parenthesis indicates the keyboard shortcut for the choice.

Figure 7 (Page 1 of 2). Configure Menu Choices

Choice	Use
New configuration	Reset the working configuration to the default configuration for a specific model. The program resets the Navigation Window with a list appropriate for the selected model.
C**h**ange Model	Resets the configuration program to support a different router model.
Chan**g**e Adapter	Resets the configuration program to support a different router adapter.
Open configuration (Alt+O)	Update an existing configuration or use an existing configuration as a basis for a new configuration.
Save configuration (Alt+S)	Save the current configuration into a configuration database. If the current configuration is named **config** and a config.cdb with a configuration named config does not exist, the program invokes the "Save configuration as" dialog to allow you to specify a different name.

Figure 7 (Page 2 of 2). Configure Menu Choices

Choice	Use
S**a**ve configuration as	Save the current configuration with a different configuration name.
Delete configuration	Remove configurations from a configuration database.
Create router configuration	Create a binary configuration file that you load into your router.
Read router configuration	Read a binary configuration file created by the "Create router configuration" option or obtained from the router using TFTP.
Co**m**munications	Use this choice to: • Send or retrieve a configuration to or from a single router, restart a single router, or query a single router's information. • Send or retrieve configurations to or from multiple routers or restart multiple routers. **Note:** Before using the communication features, you must establish communications between the configuration program and the router. See "Establishing Communications Between the Configuration Program and a Router" on page 15 for details.
ASCII **f**ile	Use this option to create an ASCII version of a configuration. You can use this file as documentation of a router's configuration.
E**x**it (Alt+X)	Leave the configuration program.

Establishing Communications Between the Configuration Program and a Router

Before you can use the configuration program to communicate with a router, you must establish communications between the program and the router.

If you already have a configuration loaded into the router, you need perform only the steps described in "Setting Up the Configuration Program" on page 17; otherwise you must perform the steps in both "Setting Up the Router" and "Setting Up the Configuration Program" on page 17.

Setting Up the Router

If your router has no configuration loaded, you must perform the steps in this section before you can send an existing configuration to the router.

This situation would occur if:

- You have a new router with no configuration
- You cleared the router's configuration
- The router encountered a problem that cleared the configuration

To set up the router:

1. Establish access to the router. You can establish access either locally through an ASCII terminal, or remotely using telnet, as described in your device's setup guide.

2. Perform a quick configuration to establish the Internet Protocol (IP) address and IP mask for the primary interface for the router. If the router is in EZSTART mode, enter **stop** to access QCONFIG. See your device's setup guide for more information about quick configuration.

   To establish the IP address and IP mask in quick configuration:

   a. Reply **yes** to the Configure Interfaces question.

   b. Supply the interface information that is required for the LAN interface that will communicate with the configuration program.

   c. Reply **no** to the Configure Bridging question.

   d. Reply **yes** to the Configure Protocols question.

   e. Reply **yes** to the Configure IP question,

   f. Reply **yes** to the Configure IP on this interface question for the LAN interface that will communicate with the configuration program.

   g. Enter the IP address at the `IP Address` prompt.

   h. Enter the IP mask at the `Address Mask` prompt.

   i. Reply **no** to the Configure IP on this interface question for the other router interfaces.

   j. Reply **no** to the Enable Dynamic Routing question.

   k. Reply **yes** to the Save this configuration question.

   l. Reply **no** to the Configure IPX question.

   m. Reply **no** to the Configure DNA question.

   n. Reply **no** to the Configure Booting question.

   o. Reply **no** to the Configure Console Modem-Control question.

   p. Reply **no** to the Restart the router question.

3. Configure SNMP:

   a. Enter **talk 6** at the ∗ prompt.

   b. Enter **protocols snmp** at the `Config>` prompt.

   c. Define a community with read/write access as in the following example:

   ```
   SNMP Config> set community access write_read_trap my_community
   ```

4. Exit SNMP configuration.

5. Exit Config.

6. Enter **restart** to restart the router.

When the router completes the restart sequence, it can communicate with the configuration program.

Setting Up the Configuration Program

Note: This procedure assumes that the IP address and the SNMP community have not already been configured in the router. If the address and community have already been configured, you can use the retrieve function under Communications, Single, to retrieve the information from the router.

To set up the configuration program to communicate with the router:

1. Select the appropriate model from the New Configuration menu.

2. Select **Interfaces** in the IP folder.

3. In the Configuration Window:

   a. Select **IP Addresses** next to the LAN interface with which the configuration program will communicate.

   b. Enter the *IP address* and *Subnet Mask* for this interface.

      Note: These addresses must match the addresses that are configured on the router's interface.

   c. Select **Add**

4. Select **Communities** under the SNMP folder in the Navigation Window.

5. In the Configuration Window:

   a. Enter the name of the community in the Name field on the General page. Using the community in 3c on page 16 you would enter *my_community*

   b. Select **Read-write trap** in the drop-down list under Access type.

   c. Select **Add**

      Note: The name and the access type must match the name and access type that is configured on the router with which the configuration program will communicate.

The configuration program can now communicate with the router and perform functions such as *Send* or *Retrieve configuration* and *Query router information.*

Using the Command Line Facility

The Command Line facility provides the capability to automate configuration operations which are available in the configuration program. You can place commands after the **cfg** command or in an argument file named *cfgargs* which the configuration program uses to direct its operation. If you do not specify an **-exit** in your configuration program commands or *cfgargs* file, the program will operate normally and display the Navigation and Configuration windows allowing you to continue the current configuration.

Syntax of the CFG Command

The correct methods to enter the **cfg** command are:

| **Command** | | **How the Command Works** | |

cfg Searches for a *cfgargs* file in the configuration program direc-tory and, if the file exists, executes the commands in the file. To only run the command line facility, the last command in the file must be **-exit**. When the configuration program fin-ishes processing the *cfgargs* file, the configuration program ends and the *cfgargs* file is deleted.

If the -exit command is not present in the file, the configura-tion program will continue processing normally.

If a cfgargs file does not exist, the program performs normal processing.

cfg -*command* **[***args***] [...]** The configuration program processes all the commands and arguments specified and then starts normally. When speci-fying multiple commands, each command starts with the minus sign (−) and is followed by as many additional argu-ments as necessary.

Note: If a *cfgargs* file exists when you enter commands as part of the command, the configuration program ignores the commands entered and processes the *cfgargs* file only. Make sure that a copy of the *cfgargs* file does not exist in the program directory.

Figure 8. explains the commands, arguments and the value for the arguments.

Note: Commands and arguments must be separated from each other by either spaces, tabs or new lines.

Figure 8 (Page 1 of 6). Configuration Program Commands and Arguments			
Command	**Arguments**	**Argument Description**	**Command Purpose**

-asciiRead	*file name*
	
	withoutLogging
		filename
		  Required argument. Specifies the name of the ASCII configura-tion file to be read
		
		withoutLogging
		  Optional argument. Specifies that vali-dation errors should not be logged.
			Reads the specified ASCII configuration file into the configuration program as the current configuration in memory.

Note: By default, the configuration program writes validation errors to an ASCII file. That file has the same name as the file you read with a *.vlg* extension.			

	Figure 8 (Page 2 of 6). Configuration Program Commands and Arguments		
Command	**Arguments**	**Argument Description**	**Command Purpose**
-asciiWrite	*file name* withComments	*filename* Required argument. Specifies the name of the ASCII configuration file being created. *withComments* Optional argument. Indicates whether the output file should contain extra commentary describing the ASCII configuration file.	Creates an ASCII configuration file from the configuration program's current configuration in memory.
-commandsFrom	*file name*	Required Argument. Specifies the name of the file containing additional elements.	Reads and processes commands from a file.
-createConfiguration	*file name*	Required argument. Specifies the name of the binary configuration file being created.	Creates a file in the binary format recognized by the router from the configuration program's current configuration in memory.
-displayMessages	on | off	**on** Enables displaying messages. **off** Disables displaying messages.	Allows the user to control the displaying of messages. To process configuration commands in a non-interactive mode, the list of commands must be preceeded by turning the displaying of messages off using the **-displayMessages** command. The action associated with the default answer for messages which present a choice will be performed.
-exit			Exits the configuration program. The configuration program's GUI windows are closed. When multiple commands are specified, this command should alwasy be the last command.

Figure 8 (Page 3 of 6). Configuration Program Commands and Arguments

Command	Arguments	Argument Description	Command Purpose
-logMessages	on [*file name*] off	*on* Enables logging messages. *file name* Optional argument. Specifies the name of the file that is to contain the logged messages. The default value is *cfg.log*. *off* Disable logging messages.	Allows the user to control whether messages are logged to a file. If the log file does not exist, the file is created. Messages are appended to the log file.
-noLogo			Suppresses displaying the configuration program's logo window during startup. Since the logo requires the user to seleect the OK button, specify this command for non-interactive mode.
-open	database config	*database* Required argument. Specifies the name of the database containing the desired configuration. *config* Required argument. Specifies the name of the configuration to be opened.	Opens a configuration which is stored in the named configuration database into the configuration program's current configuration in memory.
-queryInfo	*host hame* | *ip address* *community* [timeout]	*host name* | *ip address* Required argument. Specifies either the name of the router which can be rsolved into an IP address or the actual IP address of the router. *community* Required argument. Specifies an SNMP community defined on the router with read access. *timeout* Optional argument. Specifies the length of time before the SNMP request expires.	Retrieves a configuration summary from a router. The summary is displayed and logged based on the setting of the **-displayMessages** and -logMessages commands, respectively.

Figure 8 (Page 4 of 6). Configuration Program Commands and Arguments			
Command	**Arguments**	**Argument Description**	**Command Purpose**
-read	*file name*	Required argument. Specifies the name of the router configuration to be read.	Reads a router configuration file into the configuration program's current configuration. The configuration file must be in the binary format recognized by the router.
-reboot	*host name	ip address* *community* [timeout] [date] [time]	*host name	ip address* Required argument. Specifies the name of the router which can be resolved into an IP address or the actual IP address of the router. *community* Required argument. Specifies an SNMP community defined on the router with read/write access. *timeout* Optional argument. Specifies the length of time before the SNMP request expires. *date* Specifies the day on which the rouer should reboot. The default is the current date. *time* Optional argument. Specifies the time at which the router should rebooot. The default is the current time.	Sends a restart request to a router at a specified date and time. The date and time is based on the date and time of the workstation on which the configuration program is running. The configuration program calculates the number of seconds between the time the program runs the command specified and the specified date and time.

Figure 8 (Page 5 of 6). Configuration Program Commands and Arguments			
Command	**Arguments**	**Argument Description**	**Command Purpose**
-retrieve	*host name | ip address* *community* [timeout]	*host name | ip address* Required argument. Specifies either the name of the router or the actual IP address of the router. *community* Required argument. Specifies an SNMP community defined on the router with read access. *timeout* Optional argument. Specifies the length of time before the SNMP reqeust expires.	Retrieves the configuration from a router into the configuration program&csq;s current configuration in memory.
-save	*database* *config*	*database* Required argument. Specifies the name of the database to contain the desired configuration. An asterisk (*) indicates the most recently named configuration database should be used. *config* Required argument. Specifies the name with which the configuration is saved. The default is the current configuration name.	Writes the current configuration in the configuration program's memory to the specified configuration database.
-send	*host name | ip address* *community* [timeout]	*host name | ip address* Required argument. Specifies either the name of the router which can be resolved into an IP address or the actual IP address of the router. *community* Required argument. Specifies an SNMP community defined on the router with read/write access. *timeout* Optional argument. Specifies the length of time before the SNMP request expires.	Sends the configuration program's current configuration in memory to a router.

Figure 8 (Page 6 of 6). Configuration Program Commands and Arguments			
Command	**Arguments**	**Argument Description**	**Command Purpose**
-sendMultiple	*send list*	Required argument. The send list contains the list of configurations and router address. Generate this list using the configuration program's *Options - Communications - Send Multiple...* window.	Sends multiple router configurations to multiple routers.

CFGARG File Example

When you enter **cfg**, the configuration program looks for a file named *cfgargs.* Figure 9 shows the contents of a **cfgargs** file that will:

- Open a modified ASCII configuration file.

- Sends the open configuration to a router.

- Causes the current configuration to become the active configuration by rebooting the router immediately.

- Retrieves the current configuration from a router.

- Saves the current configuration into a configuration file within a configuration database.

```
-displayMessages off 1
-logMessages on cfgCommands.log 2
-open locationA.cdb routerOne 3
   –send 1.1.1.1 private 4
   –reboot 1.1.1.1 private 5
-retrieve 2.2.2.2 private 6
   –save * routerTwo 7
-exit
```

Figure 9. Example of CFGARGS File Contents

Note: The command line has been broken into separate lines for readability. The entire sequence can be placed on one record, but using multiple lines can make the file easier to maintain.

1. Turn off message display. Take the default choice if any message presents a choice.

2. Logs all messages to the specified log file.

3. Opens the specified configuration file from the configuration database.

4. Sends the configuration to a router.

5. Causes the configuration to bcome the active configuration by rebooting the router immediately.

6. Retrieves teh configuration from the specified router.

7. Stores the configuration into the database that was specified by the previous save command, using the specified configuration name.

Creating and Using ASCII files

By default, the configuration program saves configuration files in binary format. You can use the configuration program to create and read configuration files in ASCII format. You can also convert configuration files from one format to the other.

An ASCII configuration file may be useful if you need to alter many configurations at one time without having to load configurations into the graphical user interface.

Note: The ASCII configuration facility is not intended to be used to create new configurations or to make major modifications to existing configurations.

For example, if you need to update many IP addresses throughout a network, it may be quicker for you to save the affected configuration files in ASCII format and then manually (or automatically with a program) update the addresses. A configuration file saved in ASCII format is also useful when you want to scan the configuration online or print the configuration for review.

After updating an ASCII configuration, you can read it into the configuration program and save the configuration in binary. You can load a configuration into a multiprotocol device only in the binary format.

Understanding the ASCII Functions

The ASCII functions are contained in the Configure menu pull-down under the *ASCII file* item. When you select **ASCII file** you see the following drop-down menu:

- **Create single file...** creates a single ASCII configuration file.
- **Read single file...** reads a single ASCII configuration file into the configuration program' memory.

If you select **Create single file...**, the program displays a dialog in which you specify the path and file name to which the program writes an ASCII file. You can also print comments in the ASCII File from this dialog, if desired.

If you select **Read single file...**, the program displays a dialog in which you specify the path and file name from which the program reads an ASCII file. You can also prevent the configuration program from writing validation errors to a validation file in this dialog. By default, the validation file has a file extension of *.vlg*.

Note: For the *Read single file...*function to read an ASCII file successfully, you must either:

- Create the file with the *Create single file...* function, or
- Create an ASCII file with the same parameter structure that the *Create single file...* creates.

"Processing ASCII Files Using the Command Line Facility" on page 33 describes using the configuration command line facility to process ASCII files.

Creating an ASCII File

The configuration program uses the current configuration to create an ASCII file. Therefore, if you want to create an ASCII file for a particular device:

1. Configure the device. If you require an ASCII file for a device that is already configured, use the *Retrieve configuration* function to obtain the configuration and load it into the program's memory.

2. Select **Configure** from the Navigation Window menu.

3. Select **ASCII file** from the drop-down menu but do not release the mouse button at this time.

4. Move to the right and select **Create single file...,** the program displays a file dialog.

5. Enter the path and file name to which the program should write the ASCII file. If you want to replace an ASCII file, you can select an existing file from the file dialog.

6. Select **OK**.

The configuration program uses the current configuration in memory to CREATE the ASCII file. This file will contain the configuration parameters and their current values.

Creating an ASCII file is effectively the same as converting a configuration from its binary form to ASCII. "Interpreting an ASCII File" on page 28 explains the contents of a sample of an ASCII file.

Adding Comments to an ASCII File

You can add comments to an ASCII file. These comments will help you to use the ASCII file as a template for other configurations. The comments include:

- A brief description of the parameter
- The type of value, if applicable
- The valid values or value ranges

The comments are a guide to help you update the ASCII configuration file. "Using an ASCII File as a Configuration Template" on page 35 explains using ASCII files as configuration templates.

Reading an ASCII File

> **Important**
>
> Because configuration parameters change between releases, the configuration program will only read ASCII files created by the same version configuration program. Altering the version number of an older ASCII file or changing the version number in a valid configuration file will cause the read function to fail. See "Understanding How the Configuration Program Validates ASCII Files" on page 35 for an explanation of how the configuration program validates an ASCII configuration.
>
> You cannot upgrade an ASCII file from one version of the configuration program to another version. You can only migrate binary configuration files between releases. For the procedure to migrate older configuration files, see "Migrating Previous Level Configuration Files" on page 7.

When you read an ASCII file, the configuration program reads the file into memory and replaces the current configuration. If you need the configuration currently in memory, use the *Save configuration* or *Save configuration as* functions before reading in the ASCII file. See "Understanding the ASCII Functions" on page 24 for read function restrictions.

See "Interpreting an ASCII File" on page 28 for a description of the ASCII file that can help you create your own ASCII file.

To read an ASCII file:

1. Select **Configure** from the Navigation Window menu.

2. Select **ASCII file** from the drop-down menu but do not release the mouse button at this time.

3. Move to the right and select **Read single file...,** the program displays a file dialog.

4. Enter the path and file name or select a file in the dialog from which the program should read the ASCII file.

5. If you want the configuration program to create an ASCII record of errors in the configuration, select **Log validation errors**, which is the default. Because the configuration program always validates configurations and shows errors, you do not need to log validation error, but the feature is useful:

   - To check the configuration and correct any problems before transmitting the binary file to the device.

   - When reading ASCII files from multiple routers so you can determine any validation errors when the read process completes.

   Note: If you make changes in the configuration program, you can use *Create single file...* to replace the erroneous ASCII file.

6. Select **OK**.

By default, the validation file has a file extension of *.vlg*.

After reading in the configuration, you can:

- Send the configuration file to a device using *Send configuration to router*.
- Save the configuration using *Save configuration* or *Save configuration as*.

Reading Partial Configuration Files

You can use *Read single file...* to help you build a configuration file that changes only a few parameters. This ability is particularly useful when the default values are adequate for a particular device.

To create a partial file:

1. Create an ASCII file as described in "Creating an ASCII File" on page 25.

2. Using a text editor, remove all groups that you are not changing. Make sure you do not change the version number at the top of the file.

3. Make the changes to the appropriate parameters.

4. Save the file.

5. Read the file into the configuration program using the *Read single file...* function.

6. Save the new configuration.

7. Send the configuration to the device, if required.

Figure 10 is a sample of a partial configuration file that defines an Ethernet filter.

```
2210 Configuration
November 18, 1996 at 2:52:23 pm
!  'Configuration:' = 'config'
!  'Model:' = 'model 24M'
!  'Adapter:' = 'atm'
!  'Version:' = '13011'
#'bridging' = {
    #'briFiltering' = {
        #'briEtherFiltering' = {
            #'briEtherProtType' = 'CHAOS'
            #'briEtherInputPorts = {
                #'briPort' = 'ET(0)'
                  }
            }
        }
    }
}
```

Figure 10. Partial ASCII File Sample

Note: The figure shows a sample 2210 configuration. For other multiprotocol devices, the differences are in:

- The configuration line
- The model line
- The adapter line
- The version line

The only required part of the configuration is the version line, but the rest of the header information allows the configuration program to set the correct defaults for the various interfaces, protocols, and features.

Notes:

1. If you omit the model or adapter line, the configuration program uses defaults for these values. If the defaults do not match the structure of the ASCII file that the program is reading, the program will discontinue reading the file and report an error.

2. If the version number of the ASCII file does not match the version of the configuration program, the program will not read in the file. However, changing the version number to match the configuration program's version will not correct the situation as the structure of the ASCII file is different from the structure expected by the configuration program and the read will fail.

Converting from ASCII to Binary

Multiprotocol devices require that the configurations be in binary. Using the configuration program, you can convert an ASCII file to binary by:

1. Reading in the ASCII file as described in "Reading an ASCII File" on page 25.

2. Saving the configuration using the *Save configuration* or *Save configuration as* functions.

Converting from Binary to ASCII

If you have a binary configuration file, you can covert it by:

1. Reading the file, which by default has a .cdb extension, into the configuration file using *Open configuration*.

2. Create the ASCII file using *Create single file...*.

Interpreting an ASCII File

Figure 11 on page 29 contains a sample of a portion of an ASCII file with comments. When interpreting the ASCII file, note that:

- Header information begins with a !.

- Comments begin with an * in column 1. The comments contain descriptions of the parameters and the valid values and ranges. When necessary, the comments indicate the type of the parameters. The types are:

  Multiple Segments
  Used for data composed of well-defined parts. For example, a four-segment numeric address that is used to define IP addresses and IP address masks.

  Numeric Typically used for data that may have mathematical calculations performed on it. Data value ranges are enforced on all numeric data types.

  String Each string must be within a certain length and can be composed only of a specific set of characters.

  Enumerated
  Used for multiple-choice values. When an ASCII file is saved with comments, the comments explain the possible values. For example:

  Enable/Disable
  1 = enable, 2 = disable. Used mainly for enabling/disabling adapter ports and protocols.

- Configuration groups and parameters begin with #.

- A group of items is contained within { and }.

- Elements in a list of items are contained within { and }.

- The word "nil" signifies that the parameter currently has no value.

- All parameters appear in the file even if you did not configure the parameter. When you did not explicitly specify the value, the program uses the default value. If a default value for the parameter does not exist, the program uses "nil".

- Encrypted values are proceeded by an "E." To specify a new value to be encrypted by the configuration program, change the "E" to a "U"" and overwrite the old value with the new value. When the configuration program reads in the ASCII file, it will encrypt the new value.

```
2210 Configuration
November 18, 1996 at 3:08:56 pm
!  'Configuration:' = 'config'
!  'Model:' = 'model 121/T'
!  'Adapter:' = 'emptySlot'
!  'Version:' = '13011'

#'appletalk' = {

*   at2General = {
*       at2Enable : Enable Appletalk 2
*         value : enable or disable
*       at2Checksum : Checksum
*         value : enable or disable
*       at2Translation : Translate
*         value : enable or disable
*       at2FastPath : Fast path cash size
*         value : range from 100 to 10000   }
     #'at2General' = {
     #'at2Enable' = 'disable'
     #'at2Checksum' = 'disable'
     #'at2Translation' = 'disable'
     #'at2FastPath' = '500'
   }

```

Figure 11 (Part 1 of 4). Sample ASCII Configuration with Comments

```
| | *    at2Interfaces = { list of at2Interface }
| | *    at2Interface = {
| | *      at2InterfaceGeneral = {
| | *        at2FirstNetworkRange : Lowest number of network range
| | *          value : range from 1 to 65279
| | *        at2LastNetworkRange : Highest number of network range
| | *          value : range from 1 to 65279
| | *        at2NodeNumber : Node number
| | *          value : range from 0 to 254
| | *        at2DefaultZoneName : Default zone name
| | *          value : a string no more than 34 character(s) in length
| | *                   with any ASCII character
| | *        at2InNFilter : Input NFilter
| | *          value : 1 of the following strings: None Inclusive Exclusive
| | *        at2OutNFilter : Output NFilter
| | *          value : 1 of the following strings: None Inclusive Exclusive
| | *        at2InZFilter : Input ZFilter
| | *          value : 1 of the following strings: None Inclusive Exclusive
| | *        at2OutZFilter : Output ZFilter
| | *          value : 1 of the following strings: None Inclusive Exclusive
| | *        at2EnableInterface : Enable interface
| | *          value : enable or disable
| | *        at2InputNetworkFilter : Input NFilter
| | *          value : 1 of the following strings: None Inclusive Exclusive
| | *        at2OutputNetworkFilter : Output NFilter
| | *          value : 1 of the following strings: None Inclusive Exclusive
| | *        at2InputZoneFilter : Input ZFilter
| | *          value : 1 of the following strings: None Inclusive Exclusive
| | *        at2OutputZoneFilter : Output ZFilter
| | *          value : 1 of the following strings: None Inclusive Exclusive
| | *        at2SplitHorizon : Split horizon
| | *          value : enable or disable    }
| | *      at2ZoneNames = { list of at2ZoneName }
```

| *Figure 11 (Part 2 of 4). Sample ASCII Configuration with Comments*

```
|  |    *       at2ZoneName = {
|  |    *          at2ZName : Zone name
|  |    *            value : a string
|  |    *                       no less than 1 character(s) in length
|  |    *                       and no more than 32 character(s) in length
|  |    *                       with any ASCII character  }
|  |    *       at2NFilters = { list of at2NFilter }
|  |    *       at2NFilter = {
|  |    *          at2FirstFilterNetworkRange : First network range number
|  |    *            value : range from 1 to 65279
|  |    *          at2LastFilterNetworkRange : Last network range number
|  |    *            value : range from 1 to 65279
|  |    *          at2NetworkFilterType : Filter type
|  |    *            value : 1 of the following strings: In Out  }
|  |    *       at2ZFilters = { list of at2ZFilter }
|  |    *       at2ZFilter = {
|  |    *          at2FilterZoneName : Zone name
|  |    *            value : a string
|  |    *                       no less than 1 character(s) in length
|  |    *                       and no more than 30 character(s) in length
|  |    *                       with any ASCII character
|  |    *          at2ZoneFilterType : Filter type
|  |    *            value : 1 of the following strings: In Out  }    }
|  |       #'at2Interfaces' = {
|  |         #'at2Interface' = {
|  |           #'at2InterfaceGeneral' = {
|  |             #'at2FirstNetworkRange' = nil
|  |             #'at2LastNetworkRange' = nil
|  |             #'at2NodeNumber' = '0'
|  |             #'at2DefaultZoneName' = nil
|  |             #'at2InNFilter' = 'None'
|  |             #'at2OutNFilter' = 'None'
|  |             #'at2InZFilter' = 'None'
|  |             #'at2OutZFilter' = 'None'
|  |             #'at2EnableInterface' = 'disable'
|  |             #'at2InputNetworkFilter' = 'None'
|  |             #'at2OutputNetworkFilter' = 'None'
|  |             #'at2InputZoneFilter' = 'None'
|  |             #'at2OutputZoneFilter' = 'None'
|  |             #'at2SplitHorizon' = 'enable'
|  |           }
```

| *Figure 11 (Part 3 of 4). Sample ASCII Configuration with Comments*

```
|            #'at2ZoneNames' = {   }
|            #'at2NFilters' = {   }
|            #'at2ZFilters' = {   }
|          }
|        #'at2Interface' = {
|          #'at2InterfaceGeneral' = {
|            #'at2FirstNetworkRange' = nil
|            #'at2LastNetworkRange' = nil
|            #'at2NodeNumber' = '0'
|            #'at2DefaultZoneName' = nil
|            #'at2InNFilter' = 'None'
|            #'at2OutNFilter' = 'None'
|            #'at2InZFilter' = 'None'
|            #'at2OutZFilter' = 'None'
|            #'at2EnableInterface' = 'disable'
|            #'at2InputNetworkFilter' = 'None'
|            #'at2OutputNetworkFilter' = 'None'
|            #'at2InputZoneFilter' = 'None'
|            #'at2OutputZoneFilter' = 'None'
|            #'at2SplitHorizon' = 'enable'
|          }
|          #'at2ZoneNames' = {   }
|          #'at2NFilters' = {   }
|          #'at2ZFilters' = {   }
|        #'at2Interface' = {
|          #'at2InterfaceGeneral' = {
|            #'at2FirstNetworkRange' = nil
|            #'at2LastNetworkRange' = nil
|            #'at2NodeNumber' = '0'
|            #'at2DefaultZoneName' = nil
|            #'at2InNFilter' = 'None'
|            #'at2OutNFilter' = 'None'
|            #'at2InZFilter' = 'None'
|            #'at2OutZFilter' = 'None'
|            #'at2EnableInterface' = 'disable'
|            #'at2InputNetworkFilter' = 'None'
|            #'at2OutputNetworkFilter' = 'None'
|            #'at2InputZoneFilter' = 'None'
|            #'at2OutputZoneFilter' = 'None'
|            #'at2SplitHorizon' = 'enable'
|          }
|          #'at2ZoneNames' = {   }
|          #'at2NFilters' = {   }
|          #'at2ZFilters' = {   }
|        }
|      }
|    }
|
|  ⋮
```

| *Figure 11 (Part 4 of 4). Sample ASCII Configuration with Comments*

Processing ASCII Files Using the Command Line Facility

Besides the functions described in "Understanding the ASCII Functions" on page 24, the configuration program command line facility also supports the following functions:

Convert Binary to ASCII Enables you to select one or more binary formatted configuration files from a configuration database, create ASCII formatted files, and save them to the hard drive.

Convert ASCII to Binary Enables you to select one or more ASCII formatted configuration files from the hard drive, create binary formatted configuration files, and save them to a configuration database.

The following sections describe using the configuration program command line facility to process ASCII files. Examples are included to help you build *cfgargs* files so you can run certain processes in batch mode.

Creating an ASCII File

Use the *asciiWrite* command to create an ASCII file. If you want to create an ASCII file for a specific device, retrieve the configuration from the device before the write command in the *cfgargs* file. The following example creates an ASCII file of the configuration for device CON656A with comments and then exits the configuration program:

```
-displayMessages off
-logMessages on cfgCommands.log
  -retrieve CON656A myread
  -asciiWrite d:\asccfgs\con656a.acf withComments
-exit
```

Reading an ASCII File

Use the *asciiRead* command to read an ASCII file into the configuration program's memory. The following example reads the ASCII file named rtr656b.acf in directory asccfgs:

```
-displayMessages off
-logMessages on cfgCommands.log
  -asciiRead d:\asccfgs\rtr656b.acf
-exit
```

Note: Validation errors are logged to file rtr656b.vlg.

Converting Between ASCII and Binary

Use the *createConfiguration* command to convert an ASCII file to a binary file that you can use as backup for a device's configuration. The following example reads in an ASCII file, transmits it to a device, and then creates a binary configuration file for backup.

```
-displayMessages off
-logMessages on cfgCommands.log
  -asciiRead d:\asccfgs\mss656c.acf
  -send mss656c mywrite
  -createConfiguration d:\bincfgs\mss656c.bin
-exit
```

Converting a Retrieved File to ASCII

There may be times when you need to review the current configuration, for example, debugging or planning for an upgrade. The next example retrieves the configuration from device RTR656D and converts the configuration to ASCII for later use.

```
-displayMessages off
-logMessages on cfgCommands.log
  -retreive rtr656d readit
  -asciiWrite d:\asccfgs\rtr656d.acf
-exit
```

Using the ASCII File Functions with Multiple Devices

There may be times when you need to either create ASCII versions of configurations from multiple routers or convert multiple ASCII files to binary to transmit to various devices. The following sections outline a method to achieve those goals using the command line facility.

Creating Multiple ASCII Files: This following example assumes that you have just received five devices that were preconfigured. It illustrates a way to create documentation of the configuration for those devices.

```
-displayMessages off
-logMessages on cfgCommands.log
  -retreive rtr656a reada
  -asciiWrite d:\asccfgs\rtr656a.acf
  -retreive rtr656b readb
  -asciiWrite d:\asccfgs\rtr656b.acf
  -retreive rtr656c readc
  -asciiWrite d:\asccfgs\rtr656c.acf
  -retreive rtr656d readit
  -asciiWrite d:\asccfgs\rtr656d.acf
  -retreive rtr656e readit
  -asciiWrite d:\asccfgs\rtr656e.acf
-exit
```

Reading Multiple ASCII Files: The following example assumes that you need to reload five devices with configurations and you have valid ASCII files. You have already set up the devices to communicate with the configuration program on each of the devices. Each device has a unique configuration and you do not need the binary configuration saved.

```
-displayMessages off
-logMessages on cfgCommands.log
  -asciiRead d:\asccfgs\rtr656f.acf
  -send mss656f mywritef
  -asciiRead d:\asccfgs\rtr656g.acf
  -send mss656g mywriteg
  -asciiRead d:\asccfgs\rtr656h.acf
  -send mss656h mywriteh
  -asciiRead d:\asccfgs\rtr656i.acf
  -send mss656i mywritei
  -asciiRead d:\asccfgs\rtr656j.acf
  -send mss656j mywritej
-exit
```

Using an ASCII File as a Configuration Template

The ability to create and read ASCII files can assist you in automating the process of creating or updating a large number of device configurations. The following procedure outlines a method that you can use to perform a mass update.

1. Create a file that contains the new information for the devices you are configuring. You can use a full or partial template. Make sure that any interfaces or adapters specified match the models and adapters specified in the header.

2. Create a program to read the device file and a configuration template file, create a copy of the template file, update the new copy with the device information, and save the file with a name that would help you identify the device for later transmittal.

3. Locate a device in your network that contains a configuration that closely matches the target devices. Ideally, the only things you should need to change are items like IP addresses, MAC addresses, dial circuit numbers, or other such items. The devices should support use the same filters, use the same protocols, and have the same interfaces.

4. From the device you located in step 3, retrieve the device configuration using *Retrieve configuration.* You can retrieve the configuration with the command line facility of the configuration program.

5. Create an ASCII file of the configuration.

6. Create the new configurations using the ASCII file you created in step 5, the file you created in step 1, and the program you created in step 2.

After you create the new configurations, you can use the configuration program to read the resulting ASCII files, save them as binary files, if needed, and then send the files to the appropriate devices. "Reading Multiple ASCII Files" on page 34 contains more information about how you can use the command line facility to help you automate this task.

Understanding How the Configuration Program Validates ASCII Files

The configuration program performs the following while reading the ASCII files:

- If there is an adapter specified in the header, the program compares that value to the adapter type in the Devices group of the configuration file.

- If there is a model specified in the header, the program:

  1. Checks to see that the defined interfaces match the model capablities. For example, a 2210 Model 121/T cannot have an Ethernet interface. In this case, the program discontinues reading the configuration and logs an error.

  2. Verifies that the number of interfaces is correct for the device configuration identified in the header.

     If there are too many interfaces defined, the program discontinues reading the configuration because it cannot determine which definitions are correct and logs an error.

     If there are too few interfaces, the program fills in defaults for the undefined interfaces. For example, if the device has two WAN ports and you supply values for one, the program uses defaults for the other.

     Note: Undefined interfaces must be the last interfaces in the interface list. For example, if you define interfaces 0, 2, and 3, the configuration

| program will not use defaults for the missing interface. In this case,
| you must define the consecutive interfaces 0, 1, 2, and 3 for the
| program to provide defaults for the missing interface. For interface
| 1, a default interface **must** be provided.

| • Compares the number of device interfaces to the number of elements in the
| interface protocol list.

| If there are fewer elements in the interface protocol list than the number of
| device interfaces, the program fills the list with default protocols for the
| remaining interfaces.

| If there are more elements in the interface protocol list, than the number of
| device interfaces, the program discontinues reading the configuration and logs
| an error.

Configuring a Router Using the Configuration Program

When you start the configuration program, it displays three windows:

The Copyright Notice window
The Navigation window
The Configuration window

Select **OK** on the copyright notice window to begin using the configuration program.

To configure a router using the configuration program:

1. Select **Configure** from the Navigation Window.

2. Select the model you wish to configure from the *New configuration* submenu.

3. Select **Interfaces** from the Devices folder and configure the interfaces for the
   router.

4. Expand the General folder under the Devices folder, if not already expanded.

5. Select the items in the General folder and configure the parameters in each of
   those items.

6. Select the items in the System folder and configure the parameters in each of
   those items.

7. Select and configure the remaining folders as necessary.

Using Guided Configuration

The configuration program contains guided configuration to help you configure the
device's features and protocols. The guided configuration consists of elementary
procedures that step you through the configuration process. To access guided
configuration:

1. Select a folder in the Navigation Window. The configuration program displays
   the procedure for configuring the feature or protocol in the Configuration
   Window.

2. Press F1 to copy the text of the procedure into a help window. If a help window
   does not exist, the configuration program opens a new help window.

You can now follow the process to configure the feature or protocol.

Notes:

1. There may be multiple ways to configure a feature or protocol. The guided configuration is a recommended procedure.

2. The guided configuration does not remember where you were in the procedure. If you follow a link to other help information from the procedure, the help window displays the beginning of the procedure when you return to the procedure.

Correcting Configuration Program Problems

If you experience problems with the configuration program, locate the symptom in Figure 12 FORM='NORMAL'. that most closely resembles the problem and perform the actions described in the Recommended Actions column.

Figure 12. Common Symptoms of Configuration Program Problems

Symptom	Recommended Actions

Cannot read or make selections from a panel
 	
The configuration program is hung
	Take **one** of the following actions:
	
	• Change the fonts in the CFG.INI file to default fonts
	
	   1. Change the `FONTSIZE=` statement to read `FONTSIZE=`**14**
	
	   2. Change the `FONTFAMILY=` statement to read as follows:
	
	     For AIX `FONTFAMILY=`**helvetica**
	
	     For Windows `FONTFAMILY=`**system**
	
	• Revert to the original initialization files.
	
	  Locate the file named in the following list on the program diskette and copy it over the existing CFG.INI file in the configuration program's directory.
	
	  Operating System **Initialization File**
	
	  AIX AIX.INI
	
	  DOS and Windows WIN31.INI
	
	• Press CTRL-C and then close the the resulting message window.

Internal Execution Error	Take the following actions: 1. Copy the file CFG.ERR in the configuration program's directory to a safe place. 2. Contact customer service. 3. Supply the file to customer service as problem documentation.

Removing the Configuration Program

Before removing the configuration program, you must save all of the files ending in CDB in the configuration program's directory, if the configurations are still required for your network. These files contain configurations stored or saved with the "Save" or "Save As" functions.

To remove the configuration program:

1. Copy the configurations to another directory, if necessary.

2. Delete all the files in the configuration program's directory using:

- The **rm** command on AIX
- The **del** or erase command on DOS or OS/2

3. Delete the program group in Windows or the folder in OS/2.

Index

A

C

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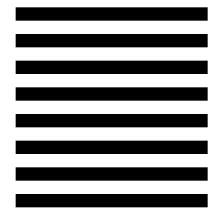**Please do not staple**

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