

IBM RT PC 3278/79 Emulation

3278/79 Emulation

Communications Family



Personal
Computer
Software

84X0681

About This Section

This section contains a new Usability Services command that appears after you install the IBM RT PC 3278/79 Emulation Licensed Program. This command is:

EM78

You should read these pages before using your IBM RT PC 3278/79 Emulation Licensed Program with the Usability Services command interpreter. Insert this section in the Chapter 4 of your Usability Services Reference called "Licensed Program Commands."

EM78—Running the 3278/79 Emulation

EM78 enables you to run the 3278/79 Emulation from Usability Services.

Steps for Running the 3278/79 Emulation

1. Display a **TOOLS** window.
2. Select **COMMUNICATIONS**. Then select **OPEN**.
3. Select **EM78**. Then select **RUN**.
4. Make the choices and press **Do** in each pop-up to run the command.
5. Follow the prompts on the display screen.

More Detailed Information

1. To display a **TOOLS** window:
 - If the window is already open, press the **Next Window** key until the window appears.

OR

 - Open a window:
 - a. Select **TOOLS** from the Window Types pane of the **WINDOWS** window. The command bar changes to show you the commands that you can use with the selected window.
 - b. Select **OPEN** from the command bar. A **TOOLS** window appears on the screen.
2. From the **TOOLS** window:

-
- a. Select **COMMUNICATIONS**. The command bar changes.
 - b. Select **OPEN** from the command bar. The Communications Tools Group appears.
3. From the Communications Tools Group:
 - a. Select **EM78**. The command bar changes.
 - b. Select **RUN** from the command bar. A pop-up appears that contains the choices for **EM78**.
 4. Make the choices and press **Do** in each pop-up. Depending on your choices, one or more pop-ups may appear. Pressing **Do** in the last remaining pop-up on the screen runs the command with your choices. Pressing **Quit** cancels a pop-up without saving your choices.

The choices are:

- Use **Default Profile** allows you to choose which keyboard profile you want to use. If you select **Yes**, your profile `$HOME/emkeys.o` or the default profile is used. If you select **No** or the pop-up icon, a pop-up appears that allows you to type in the name of the profile you want to use.
 - Use **Default Subshell** allows you to choose which shell is used for the emulation subshell. If you select **Yes**, `$SHELL` or `/bin/sh` is used. If you select **No** or the pop-up icon, a pop-up appears that allows you to type in the name of the shell you want to use.
 - Use **Default Save-Screen Files** allows you to choose which save-screen files you want to use. If you select **Yes**, `emsavxxx` and `emrepxxx` in the **\$HOME** directory are used. If you select **No** or the pop-up icon, a pop-up appears that allows you to type in the screen-save file and screen-replace file that you want to use.
5. Follow the prompts on the display screen. See “Running a Command in a **FILES**, **TOOLS**, or **APPLICATIONS** Window” in *Usability Services Reference* for details of the prompts.

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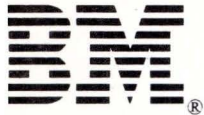
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IBM RT Personal Computer 3278/79 Emulation Licensed Program, Version 1.1 (75X1066)

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The IBM RT Personal Computer¹ 3278/79 Emulation Licensed Program, Version 1.1 is warranted to conform to this Program Specification when properly used in its designated operating environments.

Any other documentation with respect to this licensed program is provided for information purposes only and does not extend or modify this IBM RT PC 3278/79 Emulation Licensed Program, Version 1.1 Program Specification.

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Statement of Function Warranted

The IBM RT Personal Computer 3278/79 Emulation Licensed Program, Version 1.1 (75X1066) is intended to increase the flexibility of the IBM RT PC System as a work station for interactive use.

The IBM RT PC 3278/79 Emulation now includes maintenance for International Character Support, keyboard mapping, Usability Services support, 3278/79 Emulation Subshell interface, and consistent display support, including the IBM RT PC Megapel Display.

The highlights of this licensed program are:

- Emulation of a subset² of IBM 3278 Display Station Model 2 functions
- Emulation of a subset of IBM 3279 Color Display Station Model 2A or Model S2A functions
- A subset of base 3270 data-stream support
- File transfer capability between the IBM RT PC and IBM host systems with appropriate software installed

¹ RT, RT PC, and RT Personal Computer are trademarks of International Business Machines Corporation

² For details concerning support of subsets, see your IBM marketing representative or authorized IBM dealer.

³ AIX and Advanced Interactive Executive are trademarks of International Business Machines Corporation

Concurrent operation of a host 3278 or 3279 session and the IBM RT PC AIX³ Operating System

Operator control over which of the two sessions (the 3278/79 session or the AIX session) is displayed and receives keystrokes

Supports an IBM RT PC host session via one of the following:

- IBM 3174 or 3274 Control Unit
- IBM 4361 Display/Printer Adapter or Work Station Adapter.

The IBM 3174 or 3274 Control Unit can operate in SNA and non-SNA modes when channel attached, and in SNA and BSC mode when remotely attached.

3278/79 Emulation Program Update

- International Character Support
- Allow remap of non-escaping keys
- Preserve user's choice of shell during sub-shell operations
- Usability Dialog support

Specified Operating Environment

Machine Requirements

minimum machine requirements are:

An IBM RT PC with a display (for example, the IBM RT PC Extended Monochrome Graphics Display, the IBM RT PC Advanced Color Graphics Display, IBM RT PC Advanced Monochrome Graphics Display, the IBM Personal Computer Display, or an equivalent display).

An IBM Personal Computer 3278/79 Emulation Adapter Card (6487844 or 8665789).

A customer-supplied cable for connection to an IBM 3174 or 3274 (type "A") port or to an IBM 4361 Display/Printer Adapter or Work Station Adapter.

Note: The number of users on the IBM RT PC AIX Operating System Licensed Program, Version 1.1 (74X9995) or IBM RT PC AIX Operating System Licensed Program, Version 2.1 (79X3850), the number and type of tasks, and the application requirements may expand the requirements beyond these minimums.

Programming Requirements

The IBM RT PC AIX Operating System Licensed Program, Version 1.1 (74X9995) or Version 2.1 (79X3850) are prerequisite for program execution.

To perform file transfer functions, the host system must have one of the following programs installed:

- IBM Host-Supported File Transfer Program (IND\$FILE) for Virtual Machine/Conversational Monitor System (VM/CMS) (5664-281)
- IBM Host-Supported File Transfer Program (IND\$FILE) for Multiple Virtual Systems/Time Sharing Options (MVS/TSO) (5665-311)

Statement of Service

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IBM RT PC 3278/79 Emulation

3278/79 Emulation

Communications Family



**Personal
Computer
Software**

Third Edition (January 1987)

This is a major revision of, and obsoletes, the second edition of IBM RT PC 3278/79 Emulation, SV21-8032-1.

This edition applies to Version 1.1.1 of the IBM RT PC 3278/79 Emulation Licensed Program, and to all subsequent releases until otherwise indicated in new editions or technical newsletters. Changes are periodically made to the information herein; these changes will be reported in technical newsletters or in new editions of this publication.

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About This Book

This book provides information about the IBM RT PC 3278/79 Emulation Licensed Program. With this product, you can communicate with a host computer, using the IBM RT Personal Computer¹ keyboard and display. The emulation enables you to use the functions and programming of the host computer and to transfer files between an IBM RT¹ PC and the host.

Who Should Read This Book

This book is primarily for the user of 3278/79 Emulation in U. S. English or one of the other supported languages. The major tasks for this user are installing and using the licensed program to emulate an IBM 3278 or 3279 display station on an IBM RT PC¹, and transferring files between an IBM RT PC and a host computer. In addition, this user may want to modify the keyboard layout and screen modes, and change screen colors on a color monitor.

Readers need a basic understanding of the functions of the IBM RT PC and the IBM 3278 Display Station or the IBM 3279 Color Display Station. In addition, programmers will find it helpful to know about C Language, the Advanced Interactive Executive Operating System (AIX²), and the Virtual Resource Manager (VRM).

¹ RT Personal Computer, RT PC, and RT are trademarks of International Business Machines Corporation.

² AIX is a trademark of International Business Machines Corporation.

How to Use This Book

To install the IBM RT PC 3278/79 Emulation Licensed Program, read the procedures in Appendix A.

To use 3278/79 Emulation, become familiar with Chapter 1, “About IBM RT PC 3278/79 Emulation,” Chapter 2, “Using 3278/79 Emulation,” and Chapter 3, “Transferring Files.” If an error message appears on the display, consult Appendix B, “Problem Determination.”

To modify the keyboard layout or screen modes or to change screen colors on a color monitor, use Chapter 4, “Changing Keyboard and Color Defaults.”

The appendixes are organized in three sections: (1) Appendixes A and B are for reference when you install or get a message from 3278/79 Emulation, (2) Appendix C is for users of languages other than English (US), and (3) Appendixes D, E, F, and G are for programmers working with 3278/79 Emulation.

Programmers can learn about the interface to the AIX Operating System and the Virtual Resource Manager device drivers in Appendix D, and learn about communication with File Transfer through an application program in Appendix E. To see the translation between ASCII and EBCDIC during file transfer, consult the tables in Appendixes F and G.

How This Book is Organized

Individual chapters and appendixes are organized as follows:

- Chapter 1 provides an overview of the IBM RT PC 3278/79 Emulation Licensed Program. Included in this chapter are an overview of 3278/79 Emulation functions, the hardware and software requirements, and limitations of the licensed program.
- Chapter 2 describes how to invoke and use 3278/79 Emulation. Also given is information on commands and the default keyboard.

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- Chapter 3 provides information on the file transfer function.
 - Chapter 4 tells how to change the default values for the keyboard and color display.
 - Appendix A describes IBM RT PC 3278/79 Emulation Licensed Program installation procedures.
 - Appendix B provides information on problem determination, including error messages, their cause, and recommended action.
 - Appendix C lists the unsupported, valid, and duplicate RT PC keys for 3278/79 Emulation in the supported languages.
 - Appendix D describes the interface to the AIX Operating System and Virtual Resource Manager (VRM) drivers, including the system calls and interrupts. Also included is information on the RAS log.
 - Appendix E describes the File Transfer Application Program Interface.
 - Appendix F contains tables that show the translation between ASCII and EBCDIC during file transfer for Version 1.1 of the AIX Operating System.
 - Appendix G contains tables that show the translation between ASCII and EBCDIC during file transfer for Version 2.1 of the AIX Operating System.
 - The Glossary and Index are tools for you to use as you need them.

A Reader's Comment Form and Book Evaluation Form are provided at the back of this book. Use the Reader's Comment Form at any time to give IBM information that may improve the book. After you become familiar with the book, use the Book Evaluation Form to give IBM specific feedback about the book.

Related Publications

The following documents in the IBM RT PC series contain additional information that may prove helpful in understanding and using the IBM RT PC 3278/79 Emulation Licensed Program.

- *IBM RT PC AIX Operating System Commands Reference* lists and describes the AIX Operating System commands.
- *IBM RT PC AIX Operating System Programming Tools and Interfaces* describes the programming environment of the AIX Operating System and includes information about using the operating system tools to develop, compile, and debug programs. In addition, this book describes the operating system services and how to take advantage of them in a program. This book also includes a diskette that includes programming examples, written in C language, to illustrate using system calls and subroutines in short, working programs. (Available optionally)
- *IBM RT PC AIX Operating System Technical Reference* describes the system calls and subroutines that a C programmer uses to write programs. This book also provides information about the AIX file system, special files, miscellaneous files, and writing device drivers. (Available optionally)
- *IBM RT PC Installing and Customizing the AIX Operating System* provides step-by-step instructions for installing and customizing the AIX Operating System, including how to add or delete devices from the system and how to define device characteristics. This book also explains how to create, delete, or change AIX and non-AIX minidisks.
- *IBM RT PC Keyboard Description and Character Reference* describes the national character and keyboard support for the 101-key, 102-key, and 106-key keyboards, including keyboard position codes, keyboard states, control code points, code sequence processing, and nonspacing character sequences.
- *IBM RT PC Messages Reference* lists messages displayed by the IBM RT PC and explains how to respond to the messages.

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- *IBM RT PC Problem Determination Guide* provides instructions for running diagnostic routines to locate and identify hardware problems. A problem determination guide for software and diskettes containing the IBM RT PC diagnostic routines are included.
 - *IBM RT PC Using and Managing the AIX Operating System* describes using AIX Operating System commands, working with the file system, and developing shell procedures. This book also provides instructions for performing such system management tasks as adding and deleting user IDs, creating and mounting file systems, backing up the system, and repairing file system damage.
 - *IBM RT PC Virtual Resource Manager Technical Reference* describes the Virtual Resource Manager (VRM) routines, how to use the VRM debugger, how to develop and install code into the VRM, and defines the interface to the VRM-supplied device drivers. This book also describes the Virtual Machine Interface (VMI) between the Virtual Resource Manager and the AIX Operating System and provides information about process control, memory management, the I/O subsystem, the minidisk manager, and device drivers. (Available optionally)

See *IBM RT PC Bibliography and Master Index* for order numbers of IBM RT PC publications and diskettes.

For more information on IBM 3278 and IBM 3279 Display Stations, the following publications are recommended:

- *IBM Personal Computer 3278/79 Emulation Adapter Technical Reference*, Part Number 1502336
- *IBM Virtual Machine Facility/370: CMS Command and Macro Reference*, GC20-1818
- *IBM VM/370 CMS User's Guide*, GC20-1819
- *IBM OS/VS2 TSO Command Language Reference*, GC28-0646
- *IBM OS/VS2 TSO Terminal User's Guide*, GC28-0645.

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Chapter 1. About IBM RT PC 3278/79 Emulation

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About This Chapter

This chapter describes the IBM RT PC 3278/79 Emulation Licensed Program and its functions, and tells what you need to use this product on your RT PC.

Overview of 3278/79 Emulation

The IBM RT PC 3278/79 Emulation Licensed Program enables the RT PC to emulate either an IBM 3278 Display Model 2 or an IBM 3279 Color Display Model 2A or S2A by controlling the display screen and keyboard. IBM RT PC 3278/79 Emulation also provides a means of transferring files between a host computer and the RT PC.

The IBM Personal Computer 3278/79 Emulation Adapter and a customer-supplied cable attach the RT PC system to a control unit. The control unit provides communication between the RT PC system and the host computer. The host may be at a remote location. The 3278/79 Emulation program must be used on the console of the RT PC system. Attached terminals cannot be used for 3278/79 Emulation.

Hardware Requirements

The following items must be connected to the RT PC system to use IBM RT PC 3278/79 Emulation:

- IBM Personal Computer 3278/79 Emulation Adapter (part number 6487844).
- Customer-supplied cable connection to a control unit.

The RT PC (using the IBM Personal Computer 3278/79 Emulation Adapter) can be attached as a CUT type terminal to any of the following:

- IBM 3174 or IBM 3274 Control Unit, configured for a 3278 Model 2 Display Station or 3279 Model 2A or S2A Color Display Station with a 3278 Keyboard for one of the supported languages.
- IBM 4361 Processor (via the Display/Printer Adapter).
- IBM 4361 Processor (via the Work Station Adapter).

Software Requirements

The following software must be installed to use the IBM RT PC 3278/79 Emulation Licensed Program:

- The IBM RT PC AIX Operating System Licensed Program, Version 1.1 or higher.

Note: For information on installing and configuring the AIX Operating System, refer to *Installing and Customizing the AIX Operating System*.

- For transferring files, IBM Host-Supported File Transfer Program (IND\$FILE), installed on the host.
 - For a Virtual Machine/Conversational Monitor System (VM/CMS), use program 5664_281*.
 - For Multiple Virtual Systems/Time Sharing Options (MVS/TSO), use program 5665_311*.

Note: See your IBM marketing representative for more detailed prerequisite information on the software items marked with an * (asterisk).

Limitations

The 3278/79 Emulation program should be used with the RT PC default keyboard and keyboard mapping, as shipped.

The following IBM 3270 base features and functions are not supported by the IBM RT PC 3278/79 Emulation Licensed Program.

- Alternate cursor*
- Cursor blink*
- Keyboard click*
- Numeric lock feature
- Security keylock
- Magnetic reader control and accessories
- Displayed screens with more than 1920 characters
- Monocase switch
- Selector light pen
- Video output
- Katakana
- APL/TEXT character set
- Keyboards other than the 87-key (or 88-key Japanese English) 3278/79 keyboard
- RPQs
- Extended data-stream and associated keys:
 - Programmed symbols
 - Extended highlighting
 - Seven-color
- Structured field and attribute processing
- IBM 3270 diagnostic reset dump
- Explicit partitions
- Graphics escape
- IBM 3274 response time monitor.

Note: The features marked with an * (asterisk) have defined keys, but are not implemented.

Chapter 2. Using 3278/79 Emulation

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About This Chapter

The 3278/79 Emulation program enables an RT PC to emulate an IBM 3278 Display Station or a IBM 3279 Color Display Station.

This chapter describes how to:

- Invoke and leave 3278/79 Emulation.
- Issue emulator commands.
- Use the default keyboard.
- Print a screen.
- Write a screen to a file.
- Use ASCII substitution.
- Interpret status information about your terminal or system.

Chapter 3 describes file transfer between a host and an RT PC.

The 3278/79 Emulation Command

The **em78** command format and optional parameters are described on the following pages.

The following information will help you read the syntax diagrams in this book. If you want more information on reading syntax diagrams, see *AIX Operating System Commands Reference*. When examples are given, refer to the **em78** command on page 2-5.

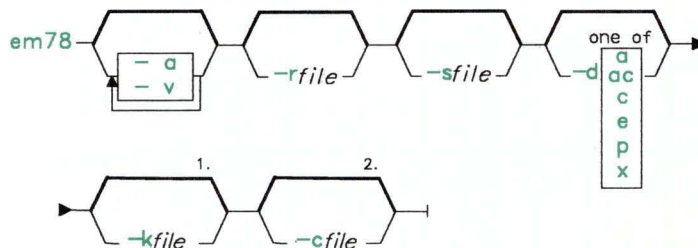
- Information in **green** must be typed exactly as it appears. For example, when you enter a command, type it exactly as it appears at the left of the diagram.
- Information in *italics* indicates the type of information that you must enter. For example, the word *file* must be replaced with a valid file name. The letter *n* must be replaced with a numeric value.
- Required and optional parameters appear after the command name. Read from left to right on each line to establish your path. Use the following hints:
 - Each time you arrive at a parameter with more than one branch, take the branch that contains the value you want to use.
 - The defaults appear on the top line of each branch. Each default path is in **bold**. You may find default paths any place in the diagram where a branch appears. If you do not type a value for a parameter, the system uses the default value.
 - If a box with more than one choice is encased in an arrow, you can select as many of the choices as you want. For an example of this, see the box containing flags **-a** and **-v** on page 2-5.
 - If a box with more than one choice is headed **one of**, you can select only one item. For an example of this, see the box containing display choices **a**, **ac**, **c**, **e**, **p**, and **x** on page 2-5.

em78

Purpose:

Invokes the 3278/79 emulator.

Syntax:



1. The emulator searches for a profile until it finds one.
The search order is:
 - *file* specified with the `-k` flag
 - `$HOME/emkeys.o`
 - default profile shipped with product
2. The emulator searches for a shell file until it finds one.
The search order is:
 - *file* specified with the `-c` flag
 - `$SHELL`
 - `/bin/sh`

Description:

Flags for `em78` are:

`-?`

This special flag displays the **help** screen for the `em78` command. Do not use `-?` with any other flag. To see the **help** screen, type:

```
em78 -?
```


-a (display ASCII characters)

Translates certain ASCII characters for the host so these characters can appear on the display.

Note: After the emulator is invoked, ASCII substitution can be obtained with the **asciitoggle** emulator command if you are using U. S. English. For more information, see “Using ASCII Substitution Mode” on page 2-20.

-v (issue verbose comments)

The product name appears on the screen.

-r (write screen image to file)

Writes the screen image to the designated file when the **screenrepl** key is pressed. Any previous contents of the file are replaced with the current screen image.

The file name must follow the **-r**. For example:

```
-rmyfile
```

Any valid file name to which you have **write** permission can be used. If you do not use this option, the emulator will write your screen image to a file called **\$HOME/emrepxxxx**. (The **xxxx** is a variable field randomly determined by the emulator in each session.) The first time you press the **screenrepl** key, a message containing the name of the temporary file appears on the display.

A key must be defined for the **screenrepl** emulator command. When you first install 3278/79 Emulation, this key is defined as **Ctrl** plus **Scroll Lock** in the **emdefs.p** file. If you want to change the definition of this key, see “Changing the Keyboard Layout” on page 4-10.

-s (append screen image to file)

Appends the screen image to the designated file when the **screensave** key is pressed.

The file name, such as **myfile**, must follow the **-s**. For example:

```
-smyfile
```

Any valid file name to which you have **write** permission can be used. If you do not use this option, the emulator will append your screen image to a file called **\$HOME/emsavxxxx**. (The **xxxx** is a variable field randomly determined by the emulator in each session.) The first time you press the **screensave** key, a message containing the name of the temporary file appears on the display.

A key must be defined for the **screensave** emulator command. When you first install 3278/79 Emulation, this key is already defined as **Ctrl plus Print Screen** in the **emdefs.p** file. If you want to change the definition of this key, see “Changing the Keyboard Layout” on page 4-10.

-d (use the indicated display)

The 3278/79 Emulation program no longer uses this flag. If the flag is present, no action will result from it. Use the AIX Operating System **display** command to switch displays. If needed, see the *AIX Operating System Commands Reference*.

-k (use key, mode, and color assignments in the specified file)

Uses the keyboard layout, highlighting mode, and color definitions in the specified profile instead of the default values.

The name of the profile, such as **emkeys.o**, must follow the **-k**. For example:

```
-kemkeys.o
```

If you plan to use this file as your default profile, add it to your login (\$HOME) directory so you do not need to use the **-k** flag each time you issue the **em78** command. (If you do not know what your login directory is, look in your **/etc/passwd** file; see *Using and Managing the AIX Operating System* for details.)

If you do not use this flag, the emulator looks for a profile named **emkeys.o** in the directory specified by the \$HOME environment variable. If no profile is found, the emulator will use the default profile shipped with the 3278/79 Emulation. See the notes on page 2-5.

-c (use the specified file as the shell)

Uses the file you specify with this flag as the shell when the 3278/79 Emulation **shell** command is issued. The *file* must be an executable shell.

If you do not use this flag, the system looks for a shell name specified by the \$SHELL environment variable. If no shell is defined by the \$SHELL environment variable, the system uses **/bin/sh**. See the notes on page 2-5.

Invoking the 3278/79 Emulator

To invoke 3278/79 Emulation:

1. Make sure you are logged in to the AIX Operating System at the RT PC console. The IBM RT PC 3278/79 Emulation only runs on the console, not on attached terminals.
2. Type `em78` on the command line.

You can add one or more of the optional parameters described on the next pages.

3. Press the **Enter** key.

The 3278/79 screen appears on the display and the keyboard is under the control of the emulation. You can now establish a communication session with the host.

A Simplified Way to Invoke the Emulator

To avoid typing the **em78** command and its flags each time you invoke the emulator, you can create a shell script. A shell script is a file that contains all the shell commands you need for emulation. Once this file is created, you can invoke the emulator by typing the name of the file and pressing the **Enter** key.

Note: The example shows how to create a file called **host**. If you want to give your file a different name, use that name instead of **host** in the example.

To use a shell script:

1. Use a text editor to create a new file. This new file contains the shell script itself. The example shows how to create the file using the **ed** editor. Follow the steps exactly, changing the information on the **em78** line to suit your needs. If you use a different text editor, create a file containing only the line that begins with **em78**.

Type these lines after the AIX Operating System prompt.
(Where <Enter> appears in the example, press the **Enter** key.)

```
ed <Enter>
a <Enter>
em78 -ssavefile <Enter>
. <Enter>
w host <Enter>
q <Enter>
```

2. To give the file execute permission, type:

```
chmod +x host
```

Press the **Enter** key.

3. To run the shell script, type `host` and press the **Enter** key.

Each step in the creation of **host** is described below:

- ed** Starts the **ed** line editor.
- a** Causes **ed** to add text to the buffer. (A buffer is a special storage area in the computer, used to temporarily hold data you are working on.)
- em78 -ssavefile** Enters the text (commands) of the procedure itself. This line must begin with the **em78** command, but **em78** can be followed by any valid **em78** flags.
- .(period)** Stops the editor from adding text to the buffer. The period must be entered in the first position on a line by itself.
- w host** Writes (copies) the text from the buffer into the **host** file.
- q** Quits (ends) the editing session.

The procedure created here allows you to specify several flags by entering only a short file name. In this example, whenever you enter `host`, you will automatically invoke the emulator and set the **screensave** file to **savefile**.

Notes:

1. For more information on shell scripts, including more advanced topics such as passing flags to the script using shell variables, see *Using and Managing the AIX Operating System*.
2. You can also invoke the emulator from Usability Services if it has been installed. See *Usability Services Guide* for more information.

Issuing 3278/79 Emulator Commands

Several commands provided by the emulator are not traditional IBM 3278/79 functions. These emulator commands, their functions, and the RT PC default key assignments are described in the chart that follows.

Command	Function	RT PC Default Keys
asciitoggle	Enters/exits ASCII substitution mode. This mode is valid only for users with English (US) keyboards. In this mode, certain characters are translated for the host so these characters can be displayed. ASCII substitution produces the same result as the -a flag in the em78 command. See "Using ASCII Substitution Mode" on page 2-20 for more information.	Hold Ctrl and press T .
poreset	Issues a power-on reset for the 3278/79 Emulation adapter. This is equivalent to turning on the power to the IBM 3278/79 display or switching the normal/test toggle switch to normal.	Hold Ctrl and press P .
quit	Signals that you want to terminate the emulator. As a result of termination, the connection to the control unit is reset. When the connection is reset, the host session may be terminated.	Hold Ctrl and press D .

Figure 2-1 (Part 1 of 2). Emulator Commands and Their Default Keys

Command	Function	RT PC Default Keys
screenrepl	Replaces the contents of a file with the current screen image (used in conjunction with the -r emulator flag). See “Storing and Printing Screen Data” on page 2-17 and “em78” on page 2-5 for more information.	Hold Ctrl and press Scroll Lock .
screensave	Appends the screen contents to a file (used in conjunction with the -s emulator flag). See “Storing and Printing Screen Data” on page 2-17 and “em78” on page 2-5 for more information.	Hold Ctrl and press Print Screen .
shell	Suspends the emulator and invokes a sub-shell for executing shell commands. AIX Operating System commands may be executed from the emulator sub-shell. If, for example, you want to check a file created with the screensave command, you must suspend the emulator to see the file. To return to the emulator from the shell, hold Ctrl and press D .	Hold Ctrl and press C .

Figure 2-1 (Part 2 of 2). Emulator Commands and Their Default Keys

Leaving the 3278/79 Emulator

There are two ways to leave the 3278/79 Emulator:

- If you want to leave the 3278/79 Emulator temporarily to use AIX commands, press the key or keys designated for **shell** in your keyboard profile. (If you are using the default profile, hold the **Ctrl** key and press the **C** key.)

This suspends the emulator and invokes the shell specified by the **-c** flag, the shell name specified as the **\$SHELL** environment variable, or **/bin/sh**. See note 2 on page 2-5.

The emulator is not active, but it is still running, and the line to the host is still active. Use your normal procedure to exit the shell. This puts you back in 3278/79 Emulation.

OR

- If you want to stop 3278/79 Emulator altogether (perhaps to use AIX commands for a longer time), press the key or keys designated for **quit** in your keyboard profile. (If you are using the default profile, hold the **Ctrl** key and press the **D** key.)

This terminates the emulator and shuts off the line to the host. To use 3278/79 Emulation again, enter **em78** with the desired flags.

3278/79 Emulation Default Keyboard

A file with the mapping for the default emulation keyboard is in the profile shipped with the IBM RT PC 3278/79 Emulation Licensed Program.

We recommend that you use the template for the default keyboard, provided in the back of this manual, or refer to the picture on the next page as you become familiar with the keyboard layout.

The back of the template provides a blank keyboard for you to use if you decide to define your own keyboard layout.

A key can be pressed alone or in combination with another key. A key pressed alone produces the unshifted function. Other functions are possible if the Shift (hollow up arrow), the Control (Ctrl), the Alternate (Alt), or the Alternate Graphics (AltGr) key is pressed and held while another key is pressed.

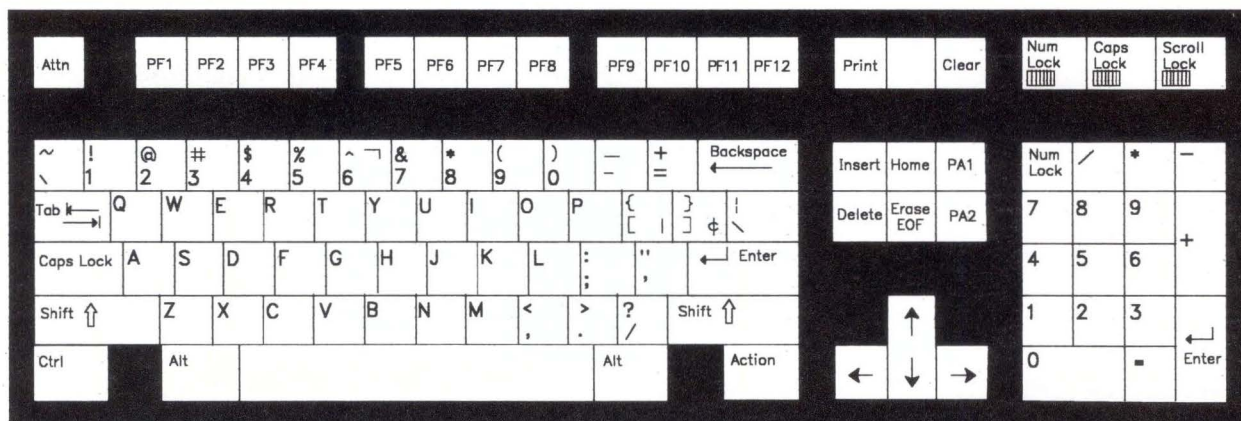
The default keyboard on the next page shows unshifted functions of the keys. Shifted, control, and alternate functions are listed below the keyboard. Note that all the emulator commands are control functions.

The [(left bracket),] (right bracket), and ^ (caret) keys can be displayed as different characters, depending on whether you are in ASCII or EBCDIC mode. For more information, see “Using ASCII Substitution Mode” on page 2-20.

An alternate keyboard profile also is provided. If you want to use the alternate keyboard or modify the default keyboard, refer to the information in Chapter 4, “Changing Keyboard and Color Defaults.”

Note: The ¬, |, and ¢ symbols are only displayed when you are not in ASCII substitution mode. See “Using ASCII Substitution Mode” on page 2-20 for more information.

DEFAULT EMULATOR KEYBOARD for U.S. English



Press	For Function	Press	For Function
Ctrl + Print Screen	Screensave	Shift + F1	PF13
Ctrl + Scroll Lock	Screenrepl	Shift + F2	PF14
Ctrl + C	Shell	Shift + F3	PF15
Ctrl + D	Quit	Shift + F4	PF16
Ctrl + P	Power-on reset	Shift + F5	PF17
Ctrl + T	ASCIItoggle	Shift + F6	PF18
		Shift + F7	PF19
		Shift + F8	PF20
Alt + F9	Cursor Select	Shift + F9	PF21
Alt + ←	Fast Left	Shift + F10	PF22
Alt + →	Fast Right	Shift + F11	PF23
Alt + End	Erase Input	Shift + F12	PF24
Alt + Page Down	Dup	Shift + Print Screen	Ident
Alt + Scroll Lock	Test	Shift + Scroll Lock	Dev Cncl
Alt + Print Screen	Sys Req	Shift + Home	Field Mark
Alt + Esc	Reset	Shift + Page Up	PA3

Storing and Printing Screen Data

This section describes several ways to store and print screen data.

You can store the contents of a screen by appending the data to an existing file or by replacing the current contents of a file with the screen data.

To print a screen, you can save the screen data to a printer device. To print a previously stored file, you can use a shell command.

Replacing Data in a File

To replace the contents of a file with the data on the screen:

1. Invoke the emulator with the **em78** command. If you want to specify a particular file, use the **-r** flag followed by the file name.
2. When you view a screen you want to save, press the **screenrepl** key. If you did not specify a file with the **-r** flag, the emulator creates a temporary file called **\$HOME/emrepxxxx**. (The system chooses random characters for the *xxxx*.) The first time you press the **screenrepl** key, a message containing the name of the temporary file appears on the screen.

Appending Data to a File

To append the contents of a screen to a file:

1. Invoke the emulator with the **em78** command. If you want to specify a particular file, use the **-s** flag followed by the file name.
2. When you view a screen you want to save, press the **screensave** key. If you did not specify a file with the **-s** flag, the emulator creates a temporary file called **\$HOME/emsavxxxx**. (The system chooses random characters for the *xxxx*.) The first time you press the **screensave** key, a message containing the name of the file appears on the screen.

Replacing and Appending Data in the Same File

If you want the flexibility of using the same file to append and replace data:

1. Invoke the emulator with the **em78** command and use both the **-r** and **-s** flags. The same file name must follow both flags.

```
em78 -rfilename -sfilename
```

2. When you view a screen you want to save:
 - Press the **screenrepl** key to replace the current content of the file with the screen data.

OR

 - Press the **screensave** key to append the screen data to the file.

Printing a Screen

To print a screen immediately, save the screen data to a printer device. This suspends emulation until the screen is printed.

1. Invoke the emulator with the **em78** command and either the **-r** or the **-s** flag followed by the file name of the printer. For example:

```
em78 -r/dev/lpn
```

In this example, you would type a number instead of the *n* (for example, **-r/dev/lp0**).

2. When you view a screen you want to print, press the **screenrepl** key if you used **-r** or the **screensave** key if you used **-s**. Pressing the **screensave** or **screenrepl** key starts the printing process.

Printing a Stored File from the Shell

Use the following steps to print a file that you previously stored with the **screensave** or **screenrepl** command. For more information on writing screens to a file, see “Invoking the 3278/79 Emulator” on page 2-9.

1. Press the **shell** key to enter the emulation sub-shell.
2. When the **emshell>** prompt appears on the display, type:

```
print filename
```

3. Press the **Enter** key. When the file is on the print queue, the **emshell>** prompt appears on the display again so you can issue another command.
4. To return to the emulator at this point, hold the **Ctrl** key and press the **D** key.

Using ASCII Substitution Mode

ASCII substitution mode, which is described in the following sections, is only valid if you are using English (US) 3278/79 Emulation. If you specify **-a** flag or press **Asciitoggle** using any other language keyboard, nothing will happen.

You must use an ASCII substitution command if you want to display the following four typed characters:

[(left bracket)
] (right bracket)
^ (caret)
! (exclamation point)

To use ASCII substitution, request one of the following:

- The **asciitoggle** emulator command (see “Issuing 3278/79 Emulator Commands” on page 2-12 for more information)

OR

- The **-a** flag with the **em78** command (see “em78” on page 2-5 for more information).

Note: If you type some characters onto the display and then repeatedly stop and start ASCII substitution mode, the characters on the display may not be the ones you expected. For example, if you type a [with ASCII substitution, stop ASCII substitution and then start ASCII substitution again, another character will be displayed instead of the [you typed.

ASCII and EBCDIC are two common ways for computers to represent characters with numbers. For example, the computer might represent a letter B with the numeric value 66. The RT PC uses ASCII, but many host computers use EBCDIC. EBCDIC uses different numeric values than ASCII.

Technically speaking, ASCII substitution mode translates the characters [,] , ^ , and ! so a host that is receptive to ASCII mode can interpret the characters correctly. Without ASCII substitution mode, the host interprets each of these four characters as an EBCDIC character, and returns a different numeric value to the RT PC. This new value produces a different character at your display than the character you expected to see.

The following chart shows the characters that display when the **em78** command is used with ASCII substitution and without ASCII substitution:

If you type this:	This is displayed with ASCII substitution:	This is displayed without ASCII substitution:
[(left bracket)	[	|
] (right bracket)]	¢
^ (caret)	^	⌘
! (exclamation point)	!	!

The ! is displayed the same for both ASCII mode (with ASCII substitution) and EBCDIC mode (without ASCII substitution). However, the ASCII value for ! is still different from the EBCDIC value.

Operator Information Area

The following status information may appear on line 25 of the RT PC display. This information, generated by the control unit, only appears when you are connected to an active control unit.

The information is grouped into five categories:

- Readiness and System Connection
- Do Not Enter (Input Inhibited)
- Reminders
- Shifts and Modes
- Printer Status.

The following illustration shows where the different categories appear on the status line:

Readiness and System Connection	Do Not Enter (Input Inhibited)	Reminders	Shifts and Modes	Printer Status
---------------------------------	--------------------------------	-----------	------------------	----------------

The tables on the next few pages explain each of these categories.

Readiness and System Connection

The following table explains the values that can be displayed in the Readiness and System Connection area.

Displayed Symbol	Name	What This Means
4	Ready	The IBM 3274 Control Unit is ready.
I	Ready	The Display/Printer Adapter is ready.
i	Ready	The Work Station Adapter is ready.
S	Ready	The IBM 3174 Control Unit is ready.
A	Online	The control unit is connected to the host under rule A.
B	Online	The control unit is connected to the host under rule B.
"	My Job	Your display station is working with your job (application).
*	System Operator	Your display station is connected to the system operator (control program).
?	Unowned	Your display station is connected to the host system but is not connected to your application program or the control program.
TEST	Test	Your display station is in test mode.

Do Not Enter (Input Inhibited)

The following table explains the values that can be displayed in the Do Not Enter (Input Inhibited) area.

Note: Letters in italics, such as *nnn*, represent a variable field. The system will display numbers instead of the *nnn*.

Displayed Symbol	Name	What This Means
X ()	Terminal Wait	Time is required for the host system to perform a function. Wait.
X ?+	What?	The last operation was not accepted. Check to make sure the operation you want is correct, then press Reset and try again.
X SYSTEM	System lock	The host system locked your keyboard. Look for a message. Wait or press Reset .
X <O >	Go Elsewhere	You tried to enter, insert, erase, or delete a character when the cursor was in a protected area. Press Reset and correct the entry.
X O >	Too Much Entered	You tried to insert more data than this field can hold. Press Reset and correct the entry.
X O#?	What Number?	You entered an incorrect printer ID number. Press Reset .
X -f	Minus Function	The requested function is not available. Press Reset .
X / <i>nnn</i>	Machine Check	Your System Unit is not working properly. The error number <i>nnn</i> defines the type of Machine Check. Press Reset to restore your keyboard and continue. If the problem persists, follow local procedures for reporting problems.

Displayed Symbol	Name	What This Means
X- +z_nnn	Communication Check	There is a problem with the communication line between the control unit and the host system. The error number <i>nnn</i> defines the type of Communication Check. Press Reset to restore your keyboard and continue. If the problem persists, follow local procedures for reporting problems.
X PROGnnn	Program Check	The control unit detected a programming error in the data it received from the host system. The error number <i>nnn</i> defines the type of Program Check. Press Reset to restore your keyboard and continue. If the problem persists, follow local procedures for reporting problems.
X= - =()	Printer Busy	The printer connected to your display is busy. If =-#nn is displayed in the printer status area at the far right of the status line, the printer is busy with your work. Wait for the print operation to finish or press Dev Cncl to cancel a pending print operation.
X= - =()()	Printer Very Busy	This message is the same as Printer Busy except more time is anticipated before your operation is accepted.
X= - /	Printer Not Working	Your printer is not operating properly. Press Dev Cncl and select another printer.
X O X	Operator Unauthorized	You are not authorized to do that function. Press Reset .

Displayed Symbol	Name	What This Means
X = < *	Operator Message Not Accepted	A message from the control operator was rejected. Press Reset .

Reminders

The following table explains the values that can be displayed in the Reminders area.

Note: Letters in italics, such as *nnn*, represent a variable field. The system will display numbers instead of the *nnn*.

Displayed Symbol	Name	What This Means
- +z_ <i>nnn</i>	Communication Error Reminder	The communication link between your control unit and the host system produces errors.

Shifts and Modes

The following table explains the values that can be displayed in the Shifts and Modes area.

Displayed Symbol	Name	What This Means
|	Shift Mode	Your display station is in Shift Mode.
^	Insert Mode	Your display station is in Insert Mode. To turn off Insert Mode, press Reset .

Printer Status

The following table explains the values that can be displayed in the Printer Status area.

Note: Letters in italics (such as *nn*) represent variable fields. The system will display some numbers instead of the *nn*.

Displayed Symbol	Name	What This Means
= - = _ _	Assign Printer	You should replace the _ _ (underscores) with the ID of the printer you want to use. The two numbers you type are displayed in place of the underscores.
= - = <i>nn</i>	Printer Assignment	You are authorized to use the printer with ID <i>nn</i> .
= - # <i>nn</i>	Printer Printing	The printer with ID <i>nn</i> is printing your work.
= - ~ <i>nn</i>	Printer Failure	The printer with ID <i>nn</i> stopped while printing your work.
= - = ??	Assignment Pending	Press the Ident key.
Blank		Printing cannot take place.

Chapter 3. Transferring Files

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About This Chapter

This chapter tells you how to transfer files between an RT PC with an IBM Personal Computer 3278/79 Emulation Adapter and the host computer.

Overview of File Transfer

To transfer files between the host and an RT PC, an emulation session must be established that is free of other host applications. Programs such as editors or file management programs cannot be running on the host when you start file transfer.

Use the following steps to transfer files:

1. Make sure the AIX Operating System prompt displays.¹
2. Invoke 3278/79 Emulation with the **em78** command, and specify the flags you want.
3. Establish a host session. Be certain that you are logged on with the ID to which you want to transfer files.
4. Activate the emulation sub-shell with the shell key. (Hold the **Ctrl** key and press the **C** key, unless you changed the default combination). All 3278/79 Emulation file transfer commands must be issued from the 3278/79 Emulation sub-shell, regardless of whether the file is sent or received.
5. Send or receive files as follows:
 - To send a file from RT PC to the host, enter the **emsend** command with the flags you want.
 - To receive a file from the host, enter the **emrcv** command with the flags you want.
6. When file transfer is complete, use your normal procedures to return from the 3278/79 Emulation sub-shell.

¹ You can get the AIX Operating System prompt from the AIX shell or from Usability Services, but not from Coprocessor Services.

File Transfer Commands

Formats for the **emsend** and **emrcv** commands for VM/CMS and MVS/TSO are on the following pages. For an explanation of syntax diagrams, see “The 3278/79 Emulation Command” on page 2-4, or see *AIX Operating System Commands Reference*.

As you read the descriptions of the host options, remember that:

- You should replace information in *italics* with some actual values. For example, you should replace the letters *n* and *i* with actual numbers.
- You should replace an ellipse (...) with a character string. For example, host information parameters for VM/CMS must replace the ellipse in **-V"..."**. To append an RT PC file in host-readable form to the **mayrpt** host file of type **script** and default mode, you would type the following:

```
-V"mayrpt script (APPEND TEXT"
```

- Type all punctuation except for the following:

```
[ and ] (left and right brackets)  
... (ellipse)  
| (vertical bar)
```

- Anything inside [] is optional. For example, if you want to include a value of 2 in an option expressed as [*i*], type:

```
,2
```

- A | between items indicates that only one of the separated items can be used. For example, the following means that you can type **TRACKS** or **CYLINDERS**, but not both:

```
TRACKS | CYLINDERS
```

-
- In this book and on the Help screens, the following options are shown in capital letters. However, you can use lowercase letters if you want.

ASCII	BLKSIZE	RECFM
APPEND	CRLF	SPACE
AVBLOCK	CYLINDERS	TEXT
	LRECL	

If any other options besides those above include capital letters, you must type them as capital letters.

- In this book and on the Help screens, the **-V** and **-T** options are followed by a pair of " (double quote marks). However, you can use a pair of ' (single quote marks) instead. For example,

```
-V"mayrpt script (APPEND TEXT"
```

and

```
-V'mayrpt script (APPEND TEXT'
```

are both valid. However, you cannot mix double quotes and single quotes. For example,

```
-V'mayrpt script (APPEND TEXT"
```

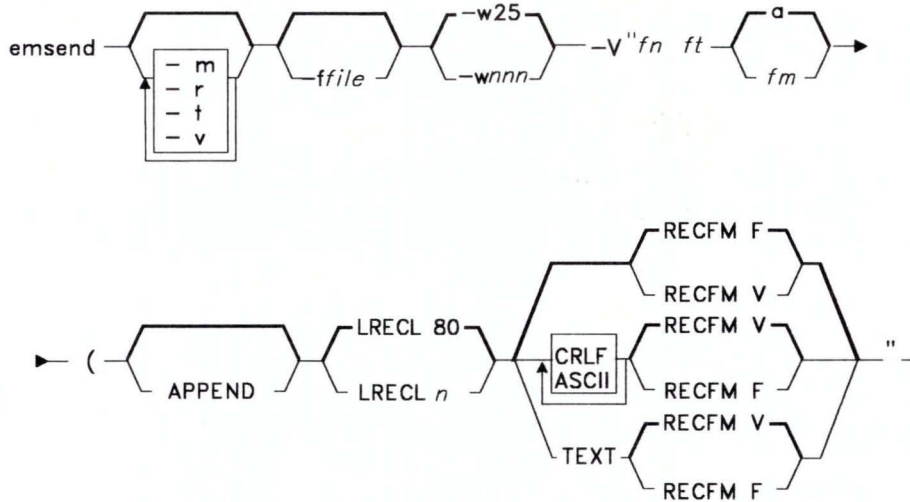
is not valid.

emsend (VM/CMS)

Purpose:

Sends files from an RT PC session to a VM/CMS host session.

Syntax:



Description:

Flags for **emsend** are:

-?

This special flag displays the **help** screen for the **emsend** command. Do not use **-?** with any other flag. To see the **help** screen, type:

```
emsend -?
```

-m (monitor the process)

Monitors the file transfer process and displays the current sequence number, duration, and number of bytes transferred.

emsend (VM/CMS)

-r (regulates TEXT option)

Allows the TEXT host option, described below, to translate each AIX Operating System newline to a line separator at the host, but suppresses ASCII to EBCDIC translation.

-t (time the process)

Times the file transfer process and displays the duration in seconds.

-v (issue verbose comments)

Displays the product name, provides information about other flags, and periodically displays information about the file being transferred.

-f (use file)

Specifies the RT PC *file* (path and file name) to be sent. The file may be any valid AIX Operating System file. If this parameter is not specified, the system uses **stdin**. (By default, **stdin** corresponds to a keyboard.)

-w (wait *nnn* seconds for host)

Specifies the maximum amount of time to wait for a host response if the transmission stops before it is complete. You may specify the value *nnn* in seconds up to 200. The default is 25 seconds. Also, if you specify a value that is not valid, the system uses a value of 25 seconds.

-V"..." (use *host information*)

A required parameter that specifies the host information string for VM/CMS. Put the information string inside the " " (quotation marks) to replace the ... (ellipse). The required parameters that follow must be included. Optional parameters may be included in the string.

fn

The VM/CMS file name. This is a required positional parameter. The file name must be one to eight characters long.

ft

The VM/CMS file type. This is a required positional parameter.

fm

The VM/CMS file mode. This is an optional positional parameter; the default is **a**.

(You must type an opening parenthesis if you specify any host options. These options follow:

APPEND

Attaches an RT PC file to the end of a host file. APPEND must be specified when *fn* is the same as an existing host filename, or the file being transferred will replace the existing host file. The APPEND parameter overrides any values for LRECL and RECFM.

LRECL *n*

Specifies the logical record length of the host file, where *n* is the number of characters. If LRECL is omitted for new files, a default of 80 is used. If you append or replace a file, LRECL is ignored. For variable length records, *n* is the maximum size the host accepts. If you do not send a record of maximum size, LRECL is the length of the longest record sent.

CRLF

Specifies that carriage return/line feed characters are line separators and that they be deleted during file transfer.

ASCII

Specifies that an RT PC file be converted from ASCII to EBCDIC form during file transfer. The conversion occurs at the host, and the host uses the English (US) (ASCII) translation table shown in Appendix F or G.

TEXT

Converts ASCII characters to EBCDIC, and AIX Operating System newline characters to host line-separator characters. This is the recommended way to make an ASCII file readable at the host. The conversion occurs at the RT PC, and the RT PC uses the English (US) (TEXT) translation table shown in Appendix F or G. If you use the TEXT option, you do not need to use the ASCII or CRLF options.

RECFM F|V

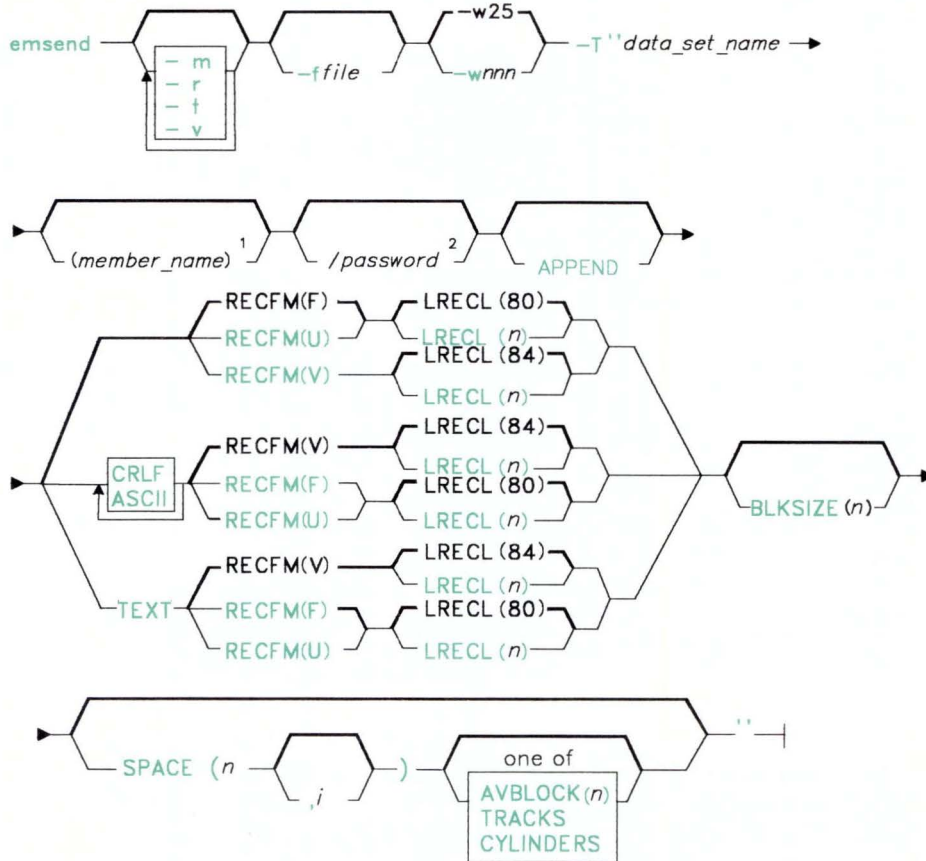
Specifies the record format and characteristics of the host file. For the last character, use an F (fixed-length record), or a V (variable-length record). If RECFM is omitted for new files, the default is F, unless the CRLF or TEXT option is specified (V is then the default). When you append or replace a file, RECFM is ignored.

emsend (MVS/TSO)

Purpose:

Sends files from an RT PC session to a MVS/TSO host session.

Syntax:



1. Required part of data-set name for partitioned data sets.
2. Required part of data-set name for password protected data sets.

Description:

Flags for **emsend** are:

-?

This special flag displays the **help** screen for the **emsend** command. Do not use **-?** with any other flag. To see the **help** screen, type:

```
emsend -?
```

-m (monitor the process)

Monitors the file transfer process and displays the current sequence number, duration, and number of bytes transferred.

-r (regulates TEXT option)

Allows the TEXT host option, described below, to translate each AIX Operating System newline to a line separator at the host, but suppresses ASCII to EBCDIC translation.

-t (time the process)

Times the file transfer process and displays the duration in seconds.

-v (issue verbose comments)

Displays the product name, provides information about other flags, and periodically displays information about the file being transferred.

-f (use file)

Specifies the RT PC *file* (path and file name) to be sent. The file may be any valid AIX Operating System file. If this parameter is not specified, the system uses **stdin**. (By default, **stdin** corresponds to a keyboard.)

-w (wait *nnn* seconds for host)

Specifies the maximum amount of time to wait for a host response if the transmission stops before it is complete. You may specify the value *nnn* in seconds up to 200. The default is 25 seconds. Also, if you specify a value that is not valid, the system uses a value of 25 seconds.

emsend (MVS/TSO)

-T"..." (use *host information*)

A required parameter that specifies the host information string for MVS/TSO. Put the information string inside the " " (quotation marks) to replace the . . . (ellipsis). The required parameters that follow must be included. Optional parameters may be included in the string.

data_set_name

A required positional parameter (the MVS/TSO file name). Quotation marks may surround the combined data set name and member name to show that the user ID is not prefixed.

member_name

The name of one of the members in the directory of a partitioned data set. The data set must exist.

/password

Required if password protection was specified for the MVS/TSO data set.

APPEND

Attaches an RT PC file to the end of a host file. You must specify APPEND when *data_set_name* is the same as an existing host file name, or the file being transferred will replace the existing host file. The APPEND parameter overrides any values for LRECL and RECFM.

CRLF

Specifies that carriage return/line feed characters are line separators and that they be deleted during file transfer.

ASCII

Specifies that an RT PC file be converted from ASCII to EBCDIC form during file transfer. The conversion occurs at the host, and the host uses the English (US) (ASCII) translation table shown in Appendix F or G.

TEXT

Converts ASCII characters to EBCDIC, and AIX Operating System newline characters to host line-separator characters. This is the recommended way to make an ASCII file readable at the host. The conversion occurs at the RT PC, and the RT PC uses the English (US) (TEXT) translation table shown in Appendix F or G. If you use the TEXT option, you do not need to use the ASCII or CRLF options.

Note: If you specify any of the parameters listed below, you must include the open and close parentheses.

RECFM(F|V|U)

Specifies the record format and characteristics of the host data set. For the last character, use an F (fixed-length record), a V (variable-length record), or a U (undefined length record). If RECFM is omitted for new files, the default is F, unless the CRLF or TEXT option is specified (V is then the default). When you append or replace a file, RECFM is ignored.

LRECL(*n*)

Specifies the logical record length of the host file, where *n* is the number of characters. If LRECL is omitted, a default of 80 is used for new RECFM(F|U) and 84 for new RECFM(V) files. If you append or replace a file, LRECL is ignored. For variable length records, *n* is the maximum size the host accepts. If you do not send a record of maximum size, LRECL is the length of the longest record sent.

BLKSIZE(*n*)

Specifies the block size of the host data set, where *n* is the length in bytes of a data block. If BLKSIZE is omitted for new files, the default is LRECL. If you are appending or replacing records, BLKSIZE is ignored.

SPACE(*n*[,*i*]) [AVBLOCK(*n*) |TRACKS|CYLINDERS]

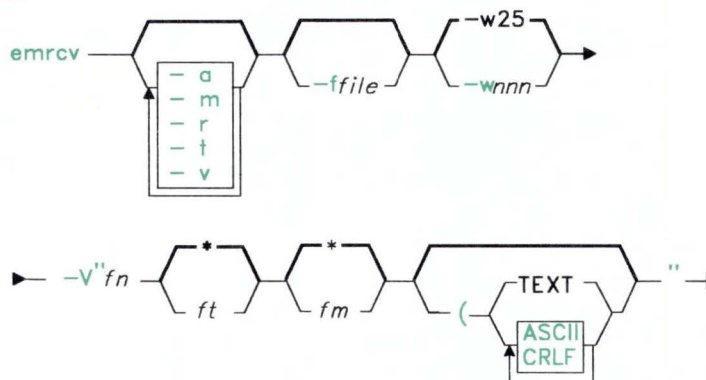
Specifies the amount of space to be allocated for a new data set. If SPACE is used, you may use one of three unit options: AVBLOCK(*n*), TRACKS, or CYLINDERS to specify the *n* (quantity) and the ,*i* (increment). If none of these is specified, the default is the value of BLKSIZE.

emrcv (VM/CMS)

Purpose:

Receives files from a VM/CMS host session.

Syntax:



Description:

Flags for **emrcv** are:

-?

This special flag displays the **help** screen for the **emrcv** command. Do not use **-?** with any other flag. To see the **help** screen, type:

```
emrcv -?
```

-a (append a file)

Attaches a host file to the end of an RT PC file. You must specify APPEND when **-file** is the same as an existing RT PC file name, or the file being transferred will replace the RT PC file.

-m (monitor the process)

Monitors the file transfer process and displays the current sequence number, duration, and number of bytes transferred.

-r (regulates TEXT option)

Allows the TEXT host option, described below, to translate each host line-separator to an AIX Operating System newline, but suppresses EBCDIC to ASCII translation.

-t (time the process)

Times the file transfer process and displays the duration in seconds.

-v (issue verbose comments)

Displays the product name, provides information about other flags, and periodically displays information about the file being transferred.

-f (use file)

Specifies the RT PC *file* (path and file name) to be received. The file name may be any valid AIX Operating System file. If you do not specify this parameter, the system uses **stdout**. (By default, **stdout** corresponds to a display screen.)

-w (wait *nnn* seconds for host)

Specifies the maximum amount of time to wait for a host response if the transmission stops before it is complete. You may specify the value *nnn* in seconds up to 200. The default is 25 seconds. Also, if you specify a value that is not valid, the system uses a value of 25 seconds.

emrcv (VM/CMS)

-V"..." (use *host information*)

A required parameter that specifies the host information string for VM/CMS. Put the information string inside the " " (quotation marks) to replace the ... (ellipsis). The required parameters that follow must be included. Optional parameters may be included in the string.

fn

The VM/CMS file name. This is a required positional parameter. The file name can be from one to eight characters long.

ft

The VM/CMS file type. This is an optional positional parameter. The default is *.

fm

The VM/CMS file mode. This is an optional positional parameter. The default is *.

(

You must type an opening parenthesis if you specify any host options. These options follow.

TEXT

Converts EBCDIC characters to ASCII, and host line-separator characters to AIX Operating System newline characters. This is the recommended way to make an EBCDIC file readable at the RT PC. The conversion occurs at the RT PC, and the RT PC uses the English (US) (TEXT) translation tables shown in Appendix F or G. If you use the TEXT option, you do not need to use the ASCII or CRLF options.

ASCII

Specifies that a host file be converted from EBCDIC to ASCII form during file transfer. The conversion occurs at the host, and the host uses the English (US) (ASCII) translation table shown in Appendix F or G.

CRLF

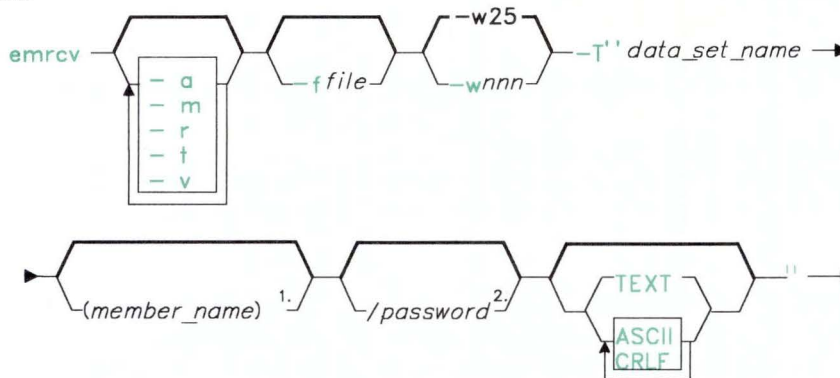
Specifies that carriage return/line feed characters are line separators and that they be inserted during file transfer.

emrcv (MVS/TSO)

Purpose:

Receives files from a MVS/TSO host session.

Syntax:



1. Required part of data-set name for partitioned data sets.
2. Required part of data-set name for password protected data sets.

Description:

Flags for **emrcv** are:

-?

This special flag displays the **help** screen for the **emrcv** command. Do not use **-?** with any other flag. To see the **help** screen, type:

```
emrcv -?
```

-a (append a file)

Attaches a host file to the end of an RT PC file. You must specify APPEND when **-f file** is the same as an existing RT PC file name, or the file being transferred will replace the RT PC file.

emrcv (MVS/TSO)

-m (monitor the process)

Monitors the file transfer process and displays the current sequence number, duration, and number of bytes transferred.

-r (regulate TEXT option)

Allows the TEXT host option, described below, to translate each host line-separator to an AIX Operating System newline, but suppresses EBCDIC to ASCII translation.

-t (time the process)

Times the file transfer process and displays the duration in seconds.

-v (issue verbose comments)

Displays the product name, provides information about other flags, and periodically displays information about the file being transferred.

-f (use *file*)

Specifies the RT PC *file* (path and file name) to be received. The file may be any valid AIX Operating System file. If you do not specify this parameter, the system uses **stdout**. (By default, **stdout** corresponds to a display screen.)

-w (wait *nnn* seconds for host)

Specifies the maximum amount of time to wait for a host response if the transmission stops before it is complete. You may specify the value *nnn* in seconds up to 200. The default is 25 seconds. Also, if you specify a value that is not valid, the system uses a value of 25 seconds.

-T"..." (use *host information*)

A required parameter that specifies the host information string for MVS/TSO. Put the information string inside the " " (quotation marks) to replace the ... (ellipsis). The required parameters that follow must be included. Optional parameters may be included in the string.

data_set_name

A required positional parameter (the MVS/TSO file name). Quotation marks may surround the combined data set name and member name to show that the user ID is not prefixed.

member_name

The name of one of the members in the directory of a partitioned data set. The data set must exist.

/password

Required if password protection was specified for the MVS/TSO data set.

TEXT

Converts EBCDIC characters to ASCII, and host line-separator characters to AIX Operating System newline characters. This is the recommended way to make an EBCDIC file readable at the RT PC. The conversion occurs at the RT PC, and the RT PC uses the English (US) (TEXT) translation table shown in Appendix F or G. If you use the TEXT option, you do not need to use the ASCII or CRLF options.

ASCII

Specifies that a host file be converted from EBCDIC to ASCII form during file transfer. The conversion occurs at the host, and the host uses the English (US) (ASCII) translation table shown in Appendix F or G.

CRLF

Specifies that carriage return/line feed characters are line separators and that they be inserted during file transfer.

Chapter 4. Changing Keyboard and Color Defaults

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About This Chapter

This chapter tells you how to change the keyboard layout, select different field attribute modes, and use different colors on a color display.

You can do this two ways:

- Use the alternate keyboard profile provided with IBM RT PC 3278/79 Emulation.
- Modify the default or alternate profile to include the keyboard layout, attribute modes, and display colors you want.

This chapter tells you how to do both, using the **emkey** command.

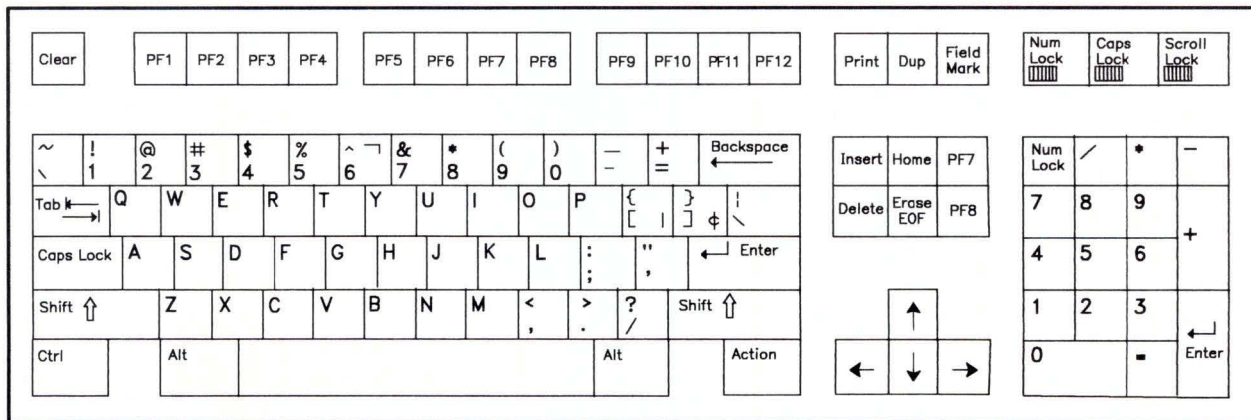
Using the Alternate Keyboard

The default profile shipped with IBM RT PC 3278/79 Emulation is called **emdefs.p**. This profile covers both the keyboard and display. An alternate profile called **emaltdefs.p** also is provided.

Study both keyboard layouts to determine which one better serves your needs. The default keyboard is pictured in Chapter 2 (see “3278/79 Emulation Default Keyboard” on page 2-15), and the alternate keyboard layout is shown below. In addition, both keyboard layouts are on templates in the back of this manual.

Note: The \neg , |, and ϕ symbols only display when you are not in ASCII substitution mode.

Alternate Emulator Keyboard Layout for U. S. English



Alternate Emulator Keyboard List for U. S. English

Press	For Function	Press	For Function
Ctrl + Print Screen	Screensave	Shift + F1	PF13
Ctrl + Scroll Lock	Screenrepl	Shift + F2	PF14
Ctrl + C	Shell	Shift + F3	PF15
Ctrl + D	Quit	Shift + F4	PF16
Ctrl + P	Power-on reset	Shift + F5	PF17
Ctrl + T	ASCIItoggle	Shift + F6	PF18
		Shift + F7	PF19
Alt + F9	Cursor Select	Shift + F8	PF20
Alt + ←	Fast Left	Shift + F9	PF21
Alt + →	Fast Right	Shift + F10	PF22
Alt + End	Erase Input	Shift + F11	PF23
Alt + Pause	Attn	Shift + F12	PF24
Alt + Scroll Lock	Test	Shift + Print Screen	Ident
Alt + Print Screen	Sys Req	Shift + Scroll Lock	Dev Cncl
Alt + Esc	Reset		
Alt + Insert	PA1		
Alt + Home	PA2		
Alt + Page Up	PA3		

If you decide to use the alternate keyboard, do the following:

1. Make sure you have **write** permission in your current directory.
2. Type:

```
emkey -i/usr/lib/em78/emaltdefs.p
```

The default name for your new keyboard profile is **emkeys.o** in your current directory. To use a different name, see the description of the **emkey** command “emkey” on page 4-9.

3. Press the **Enter** key. When the command is completed, the following message appears:

```
The new keyboard profile, "emkeys.o", is now complete.
```

4. To use the new profile, invoke the 3278/79 emulator with the **em78** command, adding the **-k** flag and the file name **emkeys.o**:

```
em78 -kemkeys.o
```

If you want to avoid using the **-k** flag each time you use the emulator, put **emkeys.o** in your login (\$HOME) directory.

Both the original default and the alternate keyboard definition files remain in the **/usr/lib/em78** directory for future use. You can use either file to create new profiles, as described in the following pages.

General Steps to Change Default Definitions

There are four general steps to change default definitions. These steps apply to the following types of definitions:

- Keyboard keys
- Mnemonic keys
- Screen colors
- Field attribute modes such as blinking and highlighting.

All these things are defined in a file: the default definitions file, the alternate definitions file, or a version of one of these files you have previously edited. To change the definitions, you simply edit the appropriate file.

You can change any or all of these three types of definitions in a single editing session, then use **emkey** once to include all of the changes in a new keyboard profile.

The four general steps are:

1. Copy the default definitions file (**/usr/lib/em78/emdefs.p**) or the alternate definitions file (**/usr/lib/em78/emaltdefs.p**) to a directory in which you have **write** permission so that you can edit it.

Or, if you have a previously edited version of the definitions file and want to retain those changes, make sure you use the edited file for the rest of these steps.

2. Edit the definitions file and insert the new keyboard, mnemonic, mode, and color values you want. The next sections in this chapter tell you how to do this.

-
3. Create a new keyboard profile using the **emkey** command (described in detail in the next section). To use the default file names for both the definitions file and the keyboard profile (input and output files), type:

```
emkey
```

Press the **Enter** key.

When the command is completed, the following message appears:

```
The new keyboard profile, "emkeys.o", is now complete.
```

In this example, a definitions file called **emdefs.p** must exist in your current directory when you issue the **emkey** command. The new keyboard profile, **emkeys.o**, will be located in your current directory when the command completes.

4. Using the new profile, invoke the 3278/79 emulator with the **em78** command. Use the **-k** flag and the file name you gave with the **-o** flag, or **-kemkeys.o** if you did not use the **-o** flag. For this example, type:

```
em78 -kemkeys.o
```

If you want to avoid using the **-k** flag each time you use the emulator, put the new profile in your login (**\$HOME**) directory.

emkey

Purpose:

Creates a new keyboard profile from a user definitions file.

Syntax:

```
emkey -i emdefs.p -o oemkeys.o
```

Description:

Flags for **emkey** are:

-?

This special flag displays the **help** screen for the **emkey** command. Do not use **-?** with any other flag. To see the **help** screen, type `emkey -?`.

-i (use input definitions file *file*)

Specifies the location of the user definitions file to be used. This file may be any valid AIX file identifier and should contain **em78** profile information (like the `/usr/lib/em78/emdefs.p` file does). The file may be in any directory as long as you have read access to it.

The default value for this flag is **emdefs.p** in your current directory.

-o (write output to *file*)

Specifies where to write the new keyboard profile. The *file* may be any valid AIX file identifier, provided you have **write** permission in the directory. You may be working in a directory where you do not have **write** permission if you use the **-o** flag to specify a directory where you do have permission.

The default value for this flag is **emkeys.o** in your current directory.

Changing the Keyboard Layout

The default keyboard was introduced under “3278/79 Emulation Default Keyboard” on page 2-15. Functions of the keys also are on the template provided with the IBM RT PC 3278/79 Emulation Licensed Program.

To create an alternate keyboard, we must refer to the keys in a different way. The following pictures of the RT PC keyboard uses a number for each key to indicate its position on the keyboard.

Figure 4-1 shows a schematic representation of the U. S. English keyboard. Figure 4-2 on page 4-11 shows a schematic representation of the RT PC 106-key Japanese keyboard, and Figure 4-3 on page 4-11 shows a schematic representation of the RT PC 102-key keyboard for other languages supported by the RT PC.

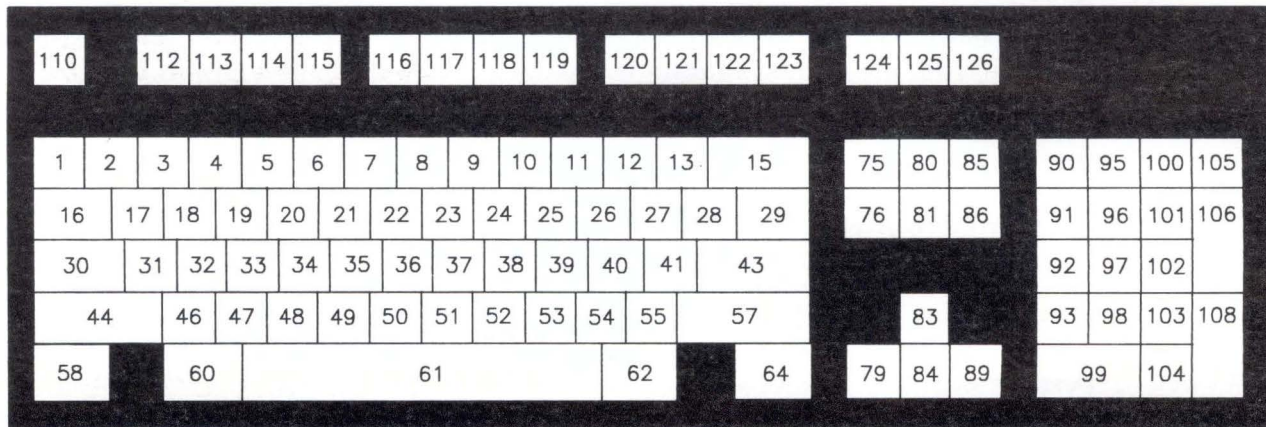


Figure 4-1. Schematic Representation of the RT PC U. S. English Keyboard

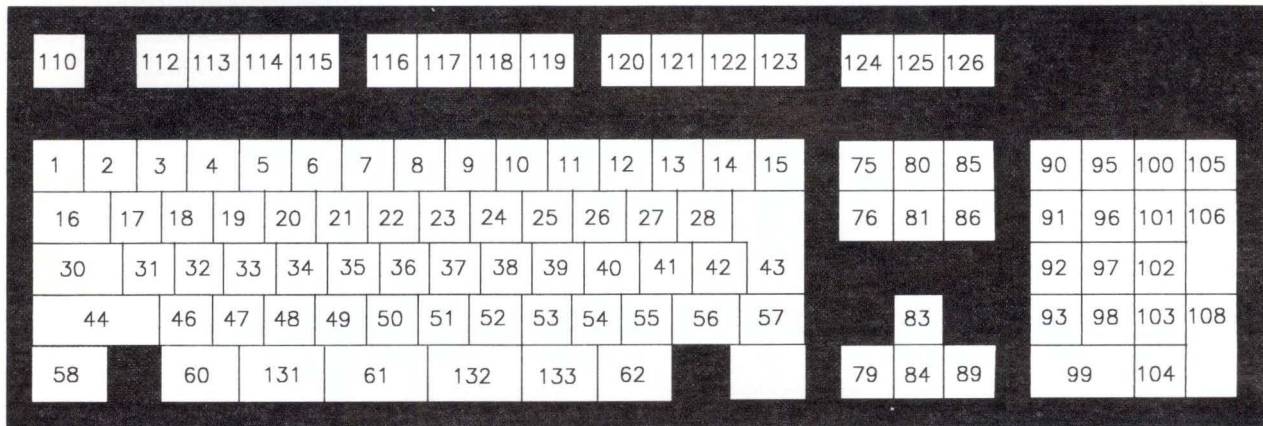


Figure 4-2. Schematic Representation of the RT PC 106-Key Japanese Keyboard

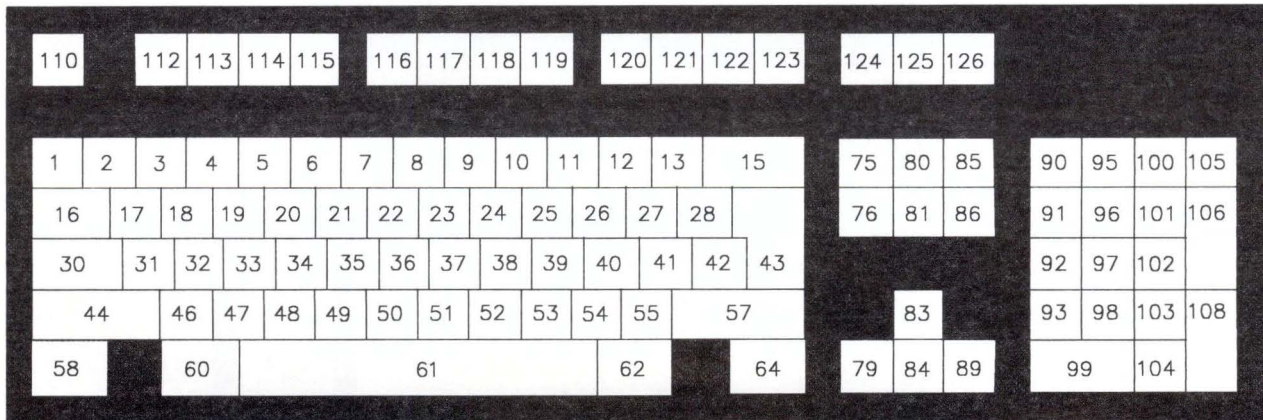


Figure 4-3. Schematic Representation of the RT PC 102-Key Keyboard. This applies to keyboards for all supported languages except U. S. English and Japanese.

Since we need to know how the 3278/79 Emulation keys relate to the RT PC keys before the key functions can be changed, we also must refer to the IBM 3278 and IBM 3279 display keys with numbers that represent positions on the keyboard.

Figure 4-4 shows the IBM 3278/79 keyboard for English (US) and all other languages that 3278/79 Emulation supports, except Japanese English. Figure 4-5 shows the IBM 3278/79 keyboard for Japanese English.

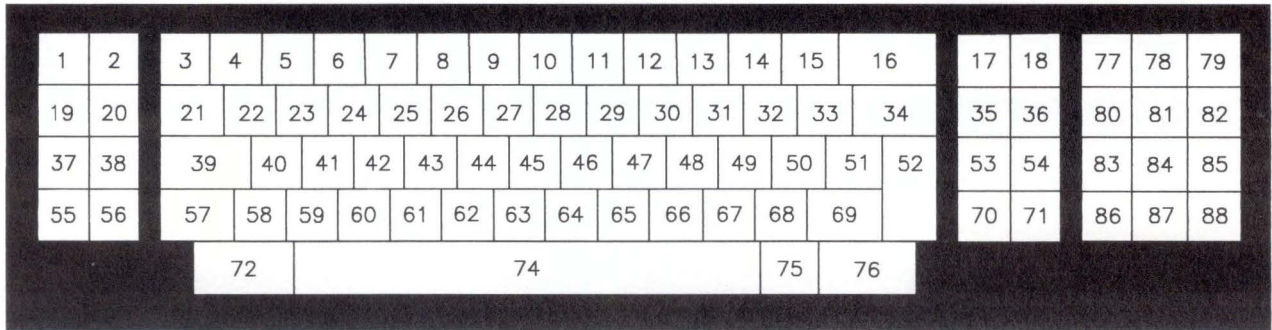


Figure 4-4. Schematic Representation of the 87-Key IBM 3278/79 Keyboard

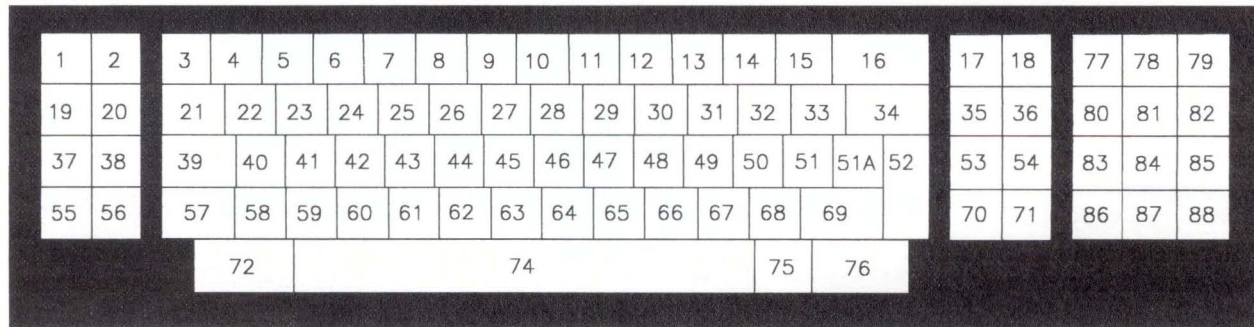


Figure 4-5. Schematic Representation of the 88-Key Japanese English IBM 3278/79 Keyboard

An example of the default 3278/79 Emulation U.S. English keyboard layout is shown in chart form in Figure 4-6 on page 4-14 (from this example you can create a similar chart for other languages). Numbers are used to represent key positions. The following notations are used for prefixes to the key position numbers:

k Means that the number is an RT PC key.
k32_ Means that the number is an IBM 3278/79 key.

Suffixes show a second key that, when pressed at the same time as the named key, produces a different function. Figure 4-6 on page 4-14 uses the following notations for suffixes to the key position number:

_s Means the **shift** key.
_c Means the **control (Ctrl)** key. The **_c** suffix is not valid for the IBM 3278/79 keyboard.
_a Means the **alternate (Alt)** key.
_g Means the **alternate graphics (AltGr)** key. This key is not on the U.S. English and Japanese keyboards. The **_g** suffix is not valid for the IBM 3278/79 keyboard.
No suffix Means only one key is pressed.

Some characters cannot be represented by a key number (for example, non-spacing character sequences) because more than one RT PC key must be pressed to generate the character. See *IBM RT PC Keyboard Description and Character Reference* for more information about non-spacing character sequences. These key sequences have mnemonic representations. See “Using Mnemonic Key Names” on page 4-24.

Study the IBM RT PC 3278/79 Emulation default keyboard (see “3278/79 Emulation Default Keyboard” on page 2-15) and your RT PC keyboard to select the best key assignments for your purpose.

Notes:

1. If you are using a U.S. English keyboard, you can press either **Alt** key.
2. The following figure represents the contents of the **emdefs.p** file as it comes on the IBM RT PC 3278/79 Emulation Licensed Program diskette. This is what the **emdefs.p** file looks like if no one has used an editor to change that file.
3. Keys defined but not implemented by 3278/79 Emulation are marked with an * (asterisk).

RT PC Key	3278/79 Key	Function
k64	k32_76	enter
k43	k32_52	newline/return
k124_a	k32_1_a	sysreq
k120_a	k32_2	crsrsl
k122_a	k32_37_a	altcrsr*
k124_s	k32_55_a	ident
k125_a	k32_56_a	test
k125_s	k32_72_a	devcncl
k112	k32_4_a	pf1
k113	k32_5_a	pf2
k114	k32_6_a	pf3
k115	k32_7_a	pf4
k116	k32_8_a	pf5
k117	k32_9_a	pf6
k118	k32_10_a	pf7
k119	k32_11_a	pf8
k120	k32_12_a	pf9
k121	k32_13_a	pf10
k122	k32_14_a	pf11

Figure 4-6 (Part 1 of 3). Example of English (US) Keyboard Map

RT PC Key	3278/79 Key	Function
k123	k32_15_a	pf12
k112_s	k32_77	pf13
k113_s	k32_78	pf14
k114_s	k32_79	pf15
k115_s	k32_80	pf16
k116_s	k32_81	pf17
k117_s	k32_82	pf18
k118_s	k32_83	pf19
k119_s	k32_84	pf20
k120_s	k32_85	pf21
k121_s	k32_86	pf22
k122_s	k32_87	pf23
k123_s	k32_88	pf24
k110	k32_1	attn
k126	k32_2_a	clear
k81_a	k32_20_a	erase_input
k121_a	k32_37	blink*
k81	k32_38	erase_eof
k124_c	screensave	save screen image, append
k125_c	screenrepl	save screen image, replace
k123_a	k32_56	click*
k110_a	k32_72	reset
k79_a	k32_70_a	fast_left
k89_a	k32_71_a	fast_right
k86_a	k32_17	dup
k80_s	k32_18	fldmk

Figure 4-6 (Part 2 of 3). Example of English (US) Keyboard Map

RT PC Key	3278/79 Key	Function
k85	k32_17_a	pa1
k86	k32_18_a	pa2
k85_s	k32_35_a	pa3
k21_c	asciitoggle	ascii mode
k26_c	poreset	power-on reset
k33_c	quit	exit emulator
k48_c	shell	enter sub-shell
k76	k32_36	delete
k124	k32_55	print
k75	k32_35	insert
k84	k32_54	down
k79	k32_70	left
k89	k32_71	right
k80	k32_34_a	home
k83	k32_53	up

Figure 4-6 (Part 3 of 3). Example of English (US) Keyboard Map

Defining an Alternate Keyboard

As you define the new keyboard:

1. Prepare a chart like Figure 4-6 on page 4-14 to guide you in creating your own definitions file.

Warning: You must assign the **quit** function to another key combination if you reassign the **Ctrl** plus **D** key combination. Otherwise, you will not be able to terminate the emulator.

2. Copy the `/usr/lib/em78/emdefs.p` file or the `/usr/lib/em78/emaltdefs.p` file to a directory in which you have write permission so you can edit it. If you have a previously edited version of the definitions file and want to retain those changes, use the edited file for the remaining steps.
3. Edit the definitions file, following the chart you prepared.
4. Create the new profile, using the **emkey** command with the appropriate flags. See “emkey” on page 4-9 for more information on the use of this command.

Once you have created a new keyboard layout, you can use the blank keyboard template (on the back of the keyboard templates supplied with this book) to show your personalized layout.

IBM 3278/79 Key Names

The following pages contain the names of all the recognized IBM 3278/79 keys. Use only these names to assign 3278/79 Emulation functions to RT PC keys.

k32_1	k32_1_s	k32_1_a
k32_2	k32_2_s	k32_2_a
k32_3	k32_3_s	k32_3_a
k32_4	k32_4_s	k32_4_a
k32_5	k32_5_s	k32_5_a
k32_6	k32_6_s	k32_6_a
k32_7	k32_7_s	k32_7_a
k32_8	k32_8_s	k32_8_a
k32_9	k32_9_s	k32_9_a
k32_10	k32_10_s	k32_10_a
k32_11	k32_11_s	k32_11_a
k32_12	k32_12_s	k32_12_a
k32_13	k32_13_s	k32_13_a
k32_14	k32_14_s	k32_14_a
k32_15	k32_15_s	k32_15_a
k32_16	k32_16_s	k32_16_a
k32_17	k32_17_s	k32_17_a
k32_18	k32_18_s	k32_18_a
k32_19	k32_19_s	k32_19_a
k32_20	k32_20_s	k32_20_a
k32_21	k32_21_s	k32_21_a
k32_22	k32_22_s	k32_22_a
k32_23	k32_23_s	k32_23_a
k32_24	k32_24_s	k32_24_a
k32_25	k32_25_s	k32_25_a
k32_26	k32_26_s	k32_26_a
k32_27	k32_27_s	k32_27_a
k32_28	k32_28_s	k32_28_a
k32_29	k32_29_s	k32_29_a

Figure 4-7 (Part 1 of 3). Names of the IBM 3278/79 Keys

k32_30	k32_30_s	k32_30_a
k32_31	k32_31_s	k32_31_a
k32_32	k32_32_s	k32_32_a
k32_33	k32_33_s	k32_33_a
k32_34	k32_34_s	k32_34_a
k32_35	k32_35_s	k32_35_a
k32_36	k32_36_s	k32_36_a
k32_37	k32_37_s	k32_37_a
k32_38	k32_38_s	k32_38_a
k32_39	k32_39_s	k32_39_a
k32_40	k32_40_s	k32_40_a
k32_41	k32_41_s	k32_41_a
k32_42	k32_42_s	k32_42_a
k32_43	k32_43_s	k32_43_a
k32_44	k32_44_s	k32_44_a
k32_45	k32_45_s	k32_45_a
k32_46	k32_46_s	k32_46_a
k32_47	k32_47_s	k32_47_a
k32_48	k32_48_s	k32_48_a
k32_49	k32_49_s	k32_49_a
k32_50	k32_50_s	k32_50_a
k32_51	k32_51_s	k32_51_a
k32_51A	k32_51A_s	k32_51A_a (see note)
k32_52	k32_52_s	k32_52_a
k32_53	k32_53_s	k32_53_a
k32_54	k32_54_s	k32_54_a
k32_55	k32_55_s	k32_55_a
k32_56	k32_56_s	k32_56_a
k32_57	k32_57_s	k32_57_a
k32_58	k32_58_s	k32_58_a
k32_59	k32_59_s	k32_59_a
k32_60	k32_60_s	k32_60_a
k32_61	k32_61_s	k32_61_a
k32_62	k32_62_s	k32_62_a
k32_63	k32_63_s	k32_63_a

Figure 4-7 (Part 2 of 3). Names of the IBM 3278/79 Keys

k32_64	k32_64_s	k32_64_a
k32_65	k32_65_s	k32_65_a
k32_66	k32_66_s	k32_66_a
k32_67	k32_67_s	k32_67_a
k32_68	k32_68_s	k32_68_a
k32_69	k32_69_s	k32_69_a
k32_70	k32_70_s	k32_70_a
k32_71	k32_71_s	k32_71_a
k32_72	k32_72_s	k32_72_a
k32_74	k32_74_s	k32_74_a
k32_75	k32_75_s	k32_75_a
k32_76	k32_76_s	k32_76_a
k32_77	k32_77_s	k32_77_a
k32_78	k32_78_s	k32_78_a
k32_79	k32_79_s	k32_79_a
k32_80	k32_80_s	k32_80_a
k32_81	k32_81_s	k32_81_a
k32_82	k32_82_s	k32_82_a
k32_83	k32_83_s	k32_83_a
k32_84	k32_84_s	k32_84_a
k32_85	k32_85_s	k32_85_a
k32_86	k32_86_s	k32_86_a
k32_87	k32_87_s	k32_87_a
k32_88	k32_88_s	k32_88_a

Figure 4-7 (Part 3 of 3). Names of the IBM 3278/79 Keys

Note: Only on the Japanese English keyboard. See Figure 4-5 on page 4-12.

RT PC Key Names for U.S. English

The following pages contain the names of all the recognized RT PC keys for U.S. English. Valid key names for other countries are in Appendix C. Use only the names listed to assign 3278/79 Emulation functions to RT PC keys.

k1	k1_s	k1_c	k1_a
k2	k2_s	k2_c	k2_a
k3	k3_s	k3_c	k3_a
k4	k4_s	k4_c	k4_a
k5	k5_s	k5_c	k5_a
k6	k6_s	k6_c	k6_a
k7	k7_s	k7_c	k7_a
k8	k8_s	k8_c	k8_a
k9	k9_s	k9_c	k9_a
k10	k10_s	k10_c	k10_a
k11	k11_s	k11_c	k11_a
k12	k12_s	k12_c	k12_a
k13	k13_s	k13_c	k13_a
k15	k15_s	k15_c	k15_a
k16	k16_s	k16_c	k16_a
k17	k17_s	k17_c	k17_a
k18	k18_s	k18_c	k18_a
k19	k19_s	k19_c	k19_a
k20	k20_s	k20_c	k20_a
k21	k21_s	k21_c	k21_a
k22	k22_s	k22_c	k22_a
k23	k23_s	k23_c	k23_a
k24	k24_s	k24_c	k24_a
k25	k25_s	k25_c	k25_a
k26	k26_s	k26_c	k26_a
k27	k27_s	k27_c	k27_a
k28	k28_s	k28_c	k28_a
k29	k29_s	k29_c	k29_a
k31	k31_s	k31_c	k31_a

Figure 4-8 (Part 1 of 3). Names of the RT PC Keys

k32	k32_s	k32_c	k32_a
k33	k33_s	k33_c	k33_a
k34	k34_s	k34_c	k34_a
k35	k35_s	k35_c	k35_a
k36	k36_s	k36_c	k36_a
k37	k37_s	k37_c	k37_a
k38	k38_s	k38_c	k38_a
k39	k39_s	k39_c	k39_a
k40	k40_s	k40_c	k40_a
k41	k41_s	k41_c	k41_a
k43	k43_s	k43_c	k43_a
k46	k46_s	k46_c	k46_a
k47	k47_s	k47_c	k47_a
k48	k48_s	k48_c	k48_a
k49	k49_s	k49_c	k49_a
k50	k50_s	k50_c	k50_a
k51	k51_s	k51_c	k51_a
k52	k52_s	k52_c	k52_a
k53	k53_s	k53_c	k53_a
k54	k54_s	k54_c	k54_a
k55	k55_s	k55_c	k55_a
k61	k61_s	k61_c	k61_a
k64	—	—	—
k75	k75_s	k75_c	k75_a
k76	k76_s	k76_c	k76_a
k79	k79_s	k79_c	k79_a
k80	k80_s	k80_c	k80_a
k81	k81_s	k81_c	k81_a
k83	k83_s	k83_c	k83_a
k84	k84_s	k84_c	k84_a
k85	k85_s	k85_c	k85_a
k86	k86_s	k86_c	k86_a
k89	k89_s	k89_c	k89_a
—	—	k90_c	k90_a
k91	k91_s	k91_c	—
k92	k92_s	k92_c	—

Figure 4-8 (Part 2 of 3). Names of the RT PC Keys

k93	k93_s	k93_c	—
k95	k95_s	k95_c	k95_a
k96	k96_s	k96_c	—
k97	k97_s	k97_c	—
k98	k98_s	k98_c	—
k99	k99_s	k99_c	—
k100	k100_s	k100_c	k100_a
k101	k101_s	k101_c	—
k102	k102_s	k102_c	—
k103	k103_s	k103_c	—
k104	k104_s	k104_c	k104_a
k105	k105_s	k105_c	k105_a
k106	k106_s	k106_c	k106_a
k108	k108_s	k108_c	k108_a
k110	k110_s	k110_c	k110_a
k112	k112_s	k112_c	k112_a
k113	k113_s	k113_c	k113_a
k114	k114_s	k114_c	k114_a
k115	k115_s	k115_c	k115_a
k116	k116_s	k116_c	k116_a
k117	k117_s	k117_c	k117_a
k118	k118_s	k118_c	k118_a
k119	k119_s	k119_c	k119_a
k120	k120_s	k120_c	k120_a
k121	k121_s	k121_c	k121_a
k122	k122_s	k122_c	k122_a
k123	k123_s	k123_c	k123_a
k124	k124_s	k124_c	k124_a
k125	k125_s	k125_c	k125_a
k126	k126_s	k126_c	k126_a

Figure 4-8 (Part 3 of 3). Names of the RT PC Keys

Note: The combination **control + alternate + another key** is not valid.

Using Mnemonic Key Names

When you define RT PC keys using mnemonic key names, prepare a chart like the one shown on page 4-25.

You must relate the mnemonic key name to IBM 3278/79 keys. In most cases, you will specify two IBM 3278/79 keys to create the character represented by the mnemonic. To specify two IBM 3278/79 keys, list the first IBM 3278/79 key followed by a blank, a plus sign, another blank, and the second IBM 3278/79 key (for example, k32_50 + k32_61_s).

The list below contains all of the mnemonic key names recognized by the 3278/79 Emulation program. Use only the names listed to assign mnemonic keys. See *IBM RT PC Keyboard Description and Character Reference* for more information on non-spacing keys.

Mnemonic Key Names

acute	grave	circumflex	umlaut
a_acute	a_grave	a_circumflex	a_umlaut
A_acute	A_grave	A_circumflex	A_umlaut
e_acute	e_grave	e_circumflex	e_umlaut
E_acute	E_grave	E_circumflex	E_umlaut
i_acute	i_grave	i_circumflex	i_umlaut
I_acute	I_grave	I_circumflex	I_umlaut
o_acute	o_grave	o_circumflex	o_umlaut
O_acute	O_grave	O_circumflex	O_umlaut
u_acute	u_grave	u_circumflex	u_umlaut
U_acute	U_grave	U_circumflex	U_umlaut
			y_umlaut
			Y_umlaut
tilde	overcircle	cedilla	
a_tilde	a_overcircle	c_cedilla	
A_tilde	A_overcircle	C_cedilla	
o_tilde			
O_tilde			
n_tilde			
N_tilde			

Assigning Mnemonic Key Names

The following example uses the Canadian-French key names and numbers. You can create a chart using the key names and numbers for your language.

RT PC Key	IBM 3278/79 Keys
e_umlaut	k32_9_s + k32_24
C_cedilla	k32_50 + k32_61_s
u_grave	k32_32_s
cedilla	k32_50 + k32_74

Removing Key Assignments

You can remove the assignment for a key or key combination in your definitions file with the **none** definition. For example, if you want to assign the **shell** function to RT PC key k32_c instead of k48_c, use the following in the profile:

```
k32_c  shell /* The control state of key 32 is shell.*/  
k48_c  none /*Remove the previous definition shell.*/
```

Duplicate Keys for U. S. English

Following is an example (using U.S. English) of the keys and key combinations that function as duplicate keys and produce identical results. If you are not using the U. S. English keyboard, see “Duplicate Keys” on page C-55 for the duplicate key listings for other supported languages.

If you assign different IBM 3278/79 functions to duplicate keys, the first function assigned applies to each duplicate key. Any other assignment is ignored. For example, **k2** and **k93_s** always have the same function. If you assign **k2** to terminate the emulator, the duplicate key **k93_s** also terminates the emulator.

Keys shown on the same line below perform the same function:

k2	and	k93_s
k3	and	k98_s
k4	and	k103_s
k5	and	k92_s
k6	and	k97_s
k7	and	k102_s
k8	and	k91_s
k9	and	k96_s
k9_s	and	k100, k100_s
k10	and	k101_s
k11	and	k99_s
k12	and	k105, k105_s
k13_s	and	k106, k106_s
k15	and	k15_s, k36_c
k15_c	and	k126_c, k126_a
k16	and	k24_c
k32_c	and	k90_c
k43_a	and	k108_a
k43	and	k43_s, k43_c, k52_c, k108, k108_s, k108_c
k54	and	k104_s
k55	and	k95, k95_s
k61	and	k61_s, k61_c, k61_a
k76	and	k76_s
k110	and	k27_c

Changing Colors for Emulation on a Color Display

The definitions file (**emdefs.p**, **emaltdefs.p**, or a file you have previously changed) holds information about the colors used for emulation on your display.

You can change colors two ways:

- Change the foreground and background colors for the four color definitions: COLOR1, COLOR2, COLOR3, and COLOR4.

OR

- Assign new color definitions to IBM 3278/79 field attributes.

Note: While you are editing the definitions file to change colors, you can change other information, such as the keyboard layout at the same time. If you do this, you only need to use the **emkey** command once.

Changing Foreground and Background Colors

To change the colors used during emulation:

1. Edit a keyboard definitions file. This can be the default file (**emdefs.p**), the alternate file (**emaltdefs.p**), or a file you have previously changed. See “General Steps to Change Default Definitions” on page 4-7 for more information on these files.

Inside the file, following the key assignments, there is a section with the heading DEFINED COLORS. Using the editor, you can change this section to include the color definitions you want.

If you do not change the definitions file (**emdefs.p** or **emaltdefs.p**), the section that defines colors looks like the following example.

```

*****
*  DEFINED          IBM RT PC FOREGROUND          *
*  COLORS           AND BACKGROUND COLORS         *
*****
COLOR1             f_cyan    + b_black
COLOR2             f_ltgreen + b_black
COLOR3             f_red     + b_black
COLOR4             f_white   + b_black
default            COLOR1
status             default

```

This means that if you do not change the default file (**emdefs.p**) or the alternate file (**emaltdefs.p**), the system uses colors as follows:

Definition	Foreground	Background
COLOR1	cyan	black
COLOR2	ltgreen	black
COLOR3	red	black
COLOR4	white	black
Default	Uses foreground from COLOR1 definition.	Uses background from COLOR1 definition.
Status	Uses foreground from Default definition.	Uses background from Default definition.

Note that the system uses the default colors when no other color definition is provided. Also, the status line is sometimes called the operator information area.

You must define the default and status line colors in terms of COLOR1, COLOR2, COLOR3, or COLOR4. For example, if you wanted to change the default color to a red foreground on a black background, you would change the default entry to COLOR3. However, if you wanted to change the default color to magenta foreground with yellow background, you would have to redefine one of the existing colors — for example, COLOR4 — then change the default entry to COLOR4.

-
2. Choose the colors you want to use from the following list of names:

FOREGROUND

f_black	f_gray	f_yellow
f_red	f_ltrd	f_brown
f_green	f_ltrgreen	f_white
f_blue	f_ltblue	f_hiwhite
f_magenta	f_ltmagenta	
f_cyan	f_ltcyan	

BACKGROUND

b_black	b_blue
b_red	b_magenta
b_green	b_cyan
b_yellow	b_white

Change the definitions file to include the colors you want. Be sure to separate each foreground and background color in a definition with a + (plus sign). Include a blank space both before and after the +. For example:

```
COLOR1 f_cyan + b_black
```

3. To create the new keyboard profile, use **emkey** with the appropriate flags. See “emkey” on page 4-9 for complete information on this command.

Redefining the Color of Field Attributes

The emulator definitions file (**emdefs.p**, **emaltdefs.p**, or a file you have previously changed) holds information about field attributes.

The field attributes are combinations of the following:

- Unprotected (u) or protected (p)
- Alphameric (a) or numeric (n)
- Normal intensity (l), intensified (h), or non-display (i)
- Non-detect (x) or detect (d) with a light pen. If you do not have a light pen on your system or the host, the system ignores this attribute.

If you change the color definitions in the definitions file, the default values for field attributes change as well. All field attributes that use COLOR1, for example, will have the new colors.

If you want to change the color definition for field attributes, follow the procedure shown on the next page.

1. Prepare a chart like Figure 4-9 on page 4-31. Put the 3278/79 Emulation attributes in the first column, but leave the second column blank for now. The following default chart contains all of the valid combinations of attributes:

Attribute	Color
ualx	COLOR2
uald	COLOR2
uahd	COLOR3 + bold ¹
uaix	default
unlx	COLOR2
unld	COLOR2
unhd	COLOR3 + bold
unix	default
palx	COLOR1
pald	COLOR1
pahd	COLOR4 + bold
paix	default
pnlx	COLOR1
pnld	COLOR1
pnhd	COLOR4 + bold
pnix	default

Figure 4-9. Default Colors for Field Attributes

2. Write the new color definitions you want into the second column.
3. Use your new chart to help you edit the definitions file.
4. Use **emkey** with the appropriate flags to create the new profile.

¹ The “bold” is a field attribute mode.

Redefining the Mode of Field Attributes

You can edit the definitions file to change the mode of an attribute as well as the color. If you select a mode that your display does not support, no change will take place. See the **display** command in the *AIX Operating System Commands Reference* manual for additional information about selection of fonts.

Four modes may be selected:

```
blink
bold
revideo (reverse video)
underline
```

To change the mode of an attribute, follow the general procedure shown under “Redefining the Color of Field Attributes” on page 4-30, but do the following:

1. As you edit the definitions file, locate the attribute for which you want to change the mode.
2. Place a + (plus sign) after the color definition for this attribute and add the name of the mode. A blank space must be used before and after the plus sign. For example:

```
uald  COLOR1 + bold
```

You can change the mode of an attribute without changing the color definition.

After you have finished editing the definitions file, create the new profile by using the **emkey** command and the appropriate flags.

Appendix A. Installing the IBM RT PC 3278/79 Emulation Licensed Program

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About This Appendix

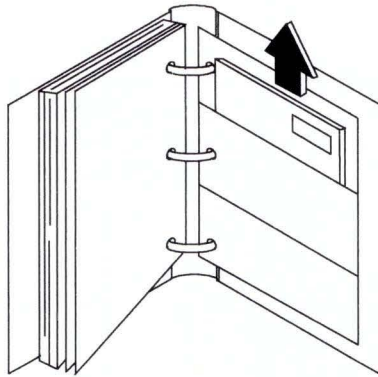
This appendix explains how to install the IBM RT PC 3278/79 Emulation Licensed Program either from the AIX Operating System shell or from Usability Services. The AIX Operating System must be installed before you install 3278/79 Emulation on your system.

Since the installation of 3278/79 Emulation modifies system files, builds a new AIX Operating System kernel, and restarts the system, the system needs to be as inactive as possible. No applications or daemons that have open files should be running during the installation. This facilitates a good IPL without unreferenced inodes when the system restarts.

Warning: Since the installation of 3278/79 Emulation restarts the system, you should not have processes running that cannot be interrupted.

Locating Your 3278/79 Emulation Diskette

Remove your 3278/79 Emulation diskette from the plastic envelope in the back of this book, as shown in the following diagram.



Installing 3278/79 Emulation

You must be in the AIX shell or Usability Services to install 3278/79 Emulation.

To install 3278/79 Emulation, use the following steps. If an error message occurs during the procedure, see the *Messages Reference* for details.

To Install 3278/79 Emulation from Usability Services

From within Usability Services, do one of the following:

- Refer to the **install** command, described in *Usability Services Reference*. Enter the **install** command and follow the prompts.

OR

- Go to the WINDOWS window and select AIX Operating System SHELL from the Window Types pane. Select OPEN from the command bar. Then enter the `installp` command and follow the prompts.

For more information on the prompts, see the section on “More Detailed Information” on page A-6, beginning with the prompt displayed after Step 4 on page A-7.

To Install 3278/79 Emulation from the AIX Shell

1. Make sure the system is quiet. Your processes should be the only processes running on the system.
2. Get into the AIX shell.
3. Log in as a user in the system group.
4. After the prompt, type `installp` and press the **Enter** key.
5. Follow the prompts to insert the IBM RT PC 3278/79 Emulation Licensed Program diskette and install the program.
6. When installation is complete, the system restarts. Remove the diskette from the drive and return it to the plastic envelope in the binder or put the diskette in another safe place.

More Detailed Information

1. The system must be as inactive as possible before you start installation. This means that
 - No other users should be logged in.
 - No background processes should be running.
 - No terminals should be enabled except for the console.

If you are not sure whether the system is inactive, use one or more of the following commands (you may need superuser authority):

-
- penable** Lists the terminals that are enabled. (Do not enter any flags with this command.)
- pdisable** Forces users off the system by disabling their terminals. (If you disable terminals now, you will need to enable them later.)
- phold** Prevents users from logging in.
- ps** Shows the currently active processes. These include the names of users who are logged in to the system.
- kill** Stops active processes.

Note: The system should remain inactive during the entire installation process (until the system restarts).

2. Get into the AIX shell. For more information, see *Using and Managing the AIX Operating System*.
3. Log in to the system as a user in the system group. If you log in with your own ID, you must obtain superuser authority. See *Using and Managing the AIX Operating System* for details.
4. Type:

```
installp
```

Press the **Enter** key. The following prompt appears:

```
000-123 Before you continue, you must make sure there
is no other activity on the system. You should
have just restarted the system, and no other
users should be logged on. Refer to your
messages reference book for more information.
```

```
Do you want to continue with this command? (y or n):
```

5. If you want to continue, type the letter **y** and press the **Enter** key. If you want to stop installation and display the system prompt, type the letter **n** and press the **Enter** key.

-
6. When Please mount volume 1 on /dev/rfd0 displays, insert the IBM RT PC 3278/79 Emulation Licensed Program diskette into the diskette drive and follow the prompts on your display until the installation is complete and the following message appears:

The installation process has completed.
Your operating system will now restart.

7. Remove the IBM RT PC 3278/79 Emulation Licensed Program diskette from the diskette drive. Return the diskette to the plastic envelope in the binder or put it in another safe place.
8. To return to work in the AIX Operating System, log in with your user ID and password, then issue AIX commands or re-enter the Usability Services shell.

You may now begin using 3278/79 Emulation.

Error Codes in the History File

If the installation fails, one or more error messages appear on the display and an error code is listed in the history file (**/usr/lpp/em78/lpp.hist**). Installation error messages that begin with numbers are documented in the *Messages Reference*.

Record the error code, locate the message in *Messages Reference*, and perform any indicated recovery action. If the problem persists when you try the installation again, follow your local procedures for reporting problems.

Before you try the installation again, move the **lpp.hist.bak** file to **lpp.hist** with the following command:

```
mv /usr/lpp/em78/lpp.hist.bak /usr/lpp/em78/lpp.hist
```

Appendix B. Problem Determination

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About This Appendix

This appendix includes the error log and system messages, both of which aid problem determination. Information in the error log and in the message descriptions includes the probable cause of each error and recommended action for the user to take.

Error Log

If the control unit does not respond within 30 seconds after a keystroke has been sent to the adapter, two things happen:

- The Virtual Resource Manager (VRM) driver sends information to the RAS Error Log file. This error log is named **/usr/adm/ras/errfile**. (For more information about the error log, see *AIX Operating System Problem Determination Guide*.)
- The system displays message 112-009.

This condition can be caused by control unit inactivity, adapter failure, or cable failure. You are not able to invoke 3278/79 Emulation because a connection has not been made between your RT PC terminal and the control unit.

To correct this problem, make sure the cable is connected to the adapter. If this does not help, follow your local procedures for reporting hardware problems.

Messages

This section contains 3278/79 Emulation messages that appear on the display. Emulator messages begin with 112 and File Transfer messages begin with 113. Host messages all are displayed with number 113-012 and are located after that number in the File Transfer section.

The messages describe error conditions or provide a response to certain commands. Each error message description includes the probable cause and recommended action that you can take. Technical information, when included, is intended for people who are knowledgeable about how the RT PC works. The technical information gives details about the problem and technical suggestions for a solution. Using a solution found under “Technical Information” may require superuser authority.

Notes:

1. Some messages refer you to a second message for further information. The second message is not described in this section; look for these messages in *Messages Reference*.
2. Text pertaining to the error appears on the display instead of *message, xxx, yyy, and zzz*.
3. If you want to keep all messages that relate to RT PC in one place, insert the messages pages in tab section 110-119 in *Messages Reference*.

Emulator Messages

- 112-001** The emulator cannot reset the default keyboard because the "ioctl" system call failed. Please follow your local procedures for reporting problems.

The following message gives more information about the error: *message*.

Cause: The emulator stopped as you were trying to leave it.

Action: Try to locate the *message* in *Messages Reference*. You may be able to correct the error with the action indicated. If you cannot locate the message or the recommended action fails to help, follow your local procedures for reporting problems.

Technical Information: An **ioctl** call tried to return the keyboard to the default setting and failed. Try using the **stty** command to reset the default keyboard. See *AIX Operating System Commands Reference*.

- 112-002** The emulator cannot run on the terminal you are currently using. Please use a supported terminal.

Cause: You tried to run the emulator on a terminal the emulator does not support.

Action: Try again, using a different terminal.

Technical Information: The terminal used is not a high-function terminal (**hft**). See "Special Files" in *AIX Operating System Technical Reference*.

112-004 The emulator cannot continue because the "fork" system call failed. Please follow your local procedures for reporting problems.

The following message gives more information about the error: *message*.

Cause: You cannot use the emulator at this time since it is unable to take control of the screen and the keyboard.

Action: Wait and try again. If you still cannot invoke the emulator, try to locate the *message* in *Messages Reference*. You may be able to correct the error with the action indicated. If you cannot locate the message or the recommended action fails to help, follow your local procedures for reporting problems.

Technical Information: The emulator cannot fork into its screen handler and keyboard handler. If this occurred because there were too many active processes, a brief wait may resolve the problem. See "System Calls" in *AIX Operating System Technical Reference* for information about the **fork** call.

112-006 Press **Ctrl-D** to exit the emulator, or press **Enter** to remain in the emulator.

Cause: You pressed the key or key combination defined for **quit** and are asked to confirm or to cancel the request. If you exit from the emulator, the connection to the control unit is reset.

Action: If you want to exit from the emulator, hold the **Ctrl** key and press the **D** key. If you want to remain in the emulator, press the **Enter** key.

112-008 The emulator cannot continue because the "lseek" system call cannot locate the beginning of the communications buffer. Please follow your local procedures for reporting problems.

The following message gives more information about the error: *message*.

Cause: Emulation cannot continue, possibly because the adapter is not connected.

Action: Check to see if the adapter is connected. If it is, run the system diagnostics tests described in *Problem Determination Guide*.

If the card is not defective, try to invoke the emulator again. If you still cannot invoke the emulator, try to locate the *message* in *Messages Reference*. You may be able to correct the error with the action indicated.

If the card is defective, if you cannot locate the message, or if the recommended action fails to help, follow your local procedures for reporting problems.

112-009 The emulator cannot continue because the "read" system call cannot read the communications buffer. Make sure your 3278/79 emulation adapter is working properly.

The following message gives more information about the error: *message*.

Cause: Emulation cannot continue, probably because of a hardware problem. For example, you could get this message when the control unit doesn't respond within 30 seconds after a keystroke was sent to the adapter. This could mean that the adapter is not installed or is defective.

Action: Try to locate the *message* in *Messages Reference*. You may be able to correct the error using the error log or the action from the *Messages Reference*.

Make sure the cable is connected to the adapter and to the host port. If you still cannot invoke the emulator, look in the `/usr/adm/ras/errfile` error log for information (see "Error Log" on page B-4 of the *3278/79 Emulation* manual). If the error log does not help, run the system diagnostics tests described in *Problem Determination Guide*. If the card is not defective, try to invoke the emulator again. If the card is not found by the diagnostics, check to see that the adapter card is installed and seated properly. Try the emulator again.

If the card is defective, if you cannot locate the message, or if the recommended action fails to help, follow your local procedures for reporting problems.

112-010 The emulator cannot perform your requested power-on reset because the "ioctl" system call failed. Please follow your local procedures for reporting problems.

The following message gives more information about the error: *message*.

Cause: You pressed the key or key combination defined for **power-on reset** but the emulator adapter was not reset.

Action: Try again. If you still cannot reset the emulator adapter, try to locate the *message* in *Messages Reference*. You may be able to correct the error with the action indicated. If you cannot locate the message or the recommended action fails to help, follow your local procedures for reporting problems.

112-011 The emulator cannot continue because the system does not have enough available memory.

Cause: The emulator needed to use system memory, but memory was not available.

Action: Try the emulator again when the system is less busy. If you get this message again, do one or more of the following:

- Check the memory hardware. (See *Problem Determination Guide* for details.)
- Try the **users** command with the **change** subcommand to change the file size allowed for a user. See *Using and Managing the AIX Operating System* for information about **users**.
- Follow your local procedures for reporting software problems.

Technical Information: The **malloc** subroutine failed, and the system did not have enough virtual memory for the emulator to run.

112-012 The emulator cannot continue because the "ioctl" system call cannot specify "no wait". Please follow your local procedures for reporting problems.

The following message gives more information about the error: *message*.

Cause: One of the instructions for processing keystrokes was not accepted.

Action: Try again. If you still cannot invoke the emulator, try to locate the *message* in *Messages Reference*. You may be able to correct the error with the action indicated. If you cannot locate the message or the recommended action fails to help, follow your local procedures for reporting problems.

Technical Information: The emulator tried to specify that a **read** of the communications buffer would occur without waiting for the buffer to change. The **EMNWAIT ioctl** failed.

112-013 The emulator cannot continue because the "ioctl" system call cannot specify a "wait". Please follow your local procedures for reporting problems.

The following message gives more information about the error: *message*.

Cause: One of the instructions for processing keystrokes was not accepted.

Action: Try again. If you still cannot invoke the emulator, try to locate the *message* in *Messages Reference*. You may be able to correct the error with the action indicated. If you cannot locate the message or the recommended action fails to help, follow your local procedures for reporting problems.

Technical Information: The emulator tried to specify that a **read** of the communications buffer would not occur until the buffer changed. The **EMWAIT ioctl** failed.

112-014 The emulator cannot continue because the "ioctl" system call cannot send a keystroke. Please follow your local procedures for reporting problems.

The following message gives more information about the error: *message*.

Cause: One of the instructions for processing keystrokes was not accepted.

Action: Try again. If the problem persists, try to locate the *message* in *Messages Reference*. You may be able to correct the error with the action indicated. If you cannot locate the message or the recommended action fails to help, follow your local procedures for reporting problems.

Technical Information: The emulator tried to send a scan code to the adapter. The **EMKEY ioctl** failed.

112-015 The emulator cannot continue because the "xxx" file cannot be opened. Make sure you used "emkey" to create the file, and that you specified the correct file name.

Cause: The file you specified when you invoked the emulator with the **-k** flag cannot be opened.

Action: Check to see if the file exists and if you used the correct file name. Also check the path name if *xxx* is not in your current directory. If you used **emkey** to create the file, a message that your new keyboard profile was complete should have appeared at that time.

Try to invoke the emulator again, using the correct file name. If the problem continues, check to see if you have "read" permission to the file.

112-016 File "xxx" is not a valid profile. The emulator will stop if you requested "xxx" with the "-k" flag. Make sure that you used "emkey" to create the file, and that you specified the correct file name.

Cause: You invoked the emulator either with the **-k** flag and file *xxx*, or with an **emkeys.o** file in your home directory. In either case, that file does not have a valid format.

Action: If you used the **-k** flag, check to see if the file exists and if you used the correct file name and path.

If **emkey** was used to create the file, *xxx* should have appeared in the specified directory at that time. Check the profile to see if it is correct.

If you did not use the **-k** flag, the **emkeys.o** file in your home directory must be replaced with a valid file.

Try to invoke the emulator again.

112-017 The emulator will use the default keyboard layout. If you wish to change the keyboard, exit the emulator and try again, specifying "-k" and a valid profile name.

Cause: You invoked the emulator with an **emkeys.o** file in your home directory, but the file is not valid.

Action: If you are satisfied with the default keyboard, no action is needed. If you want to change the keyboard, exit the emulator with the **quit** key. Then do one of the following:

- Invoke the emulator again, and use the **-k** flag with a valid file name, or
- Move the originally requested profile into your home directory, then invoke the emulator without the **-k** flag.

112-018 **The emulator cannot continue because it cannot read the "xxx" file. Make sure that "xxx" is not damaged, and that it was created by "emkey".**

The following message gives more information about the error: *message*.

Cause: The file you specified when you invoked the emulator with the **-k** flag cannot be read.

Action: Make sure you specified a file that was created with the **emkey** command. If **emkey** was used to create the file, *xxx* should have appeared in the directory you specified at that time. If the file is correct, try again.

If you still cannot invoke the emulator, try to locate the *message* in *Messages Reference*. You may be able to correct the error with the action indicated.

If you cannot locate the message or the recommended action fails to help, the *xxx* file may be damaged. Use **emkey** to create a new copy of *xxx* from **emdefs.p** or your own definitions profile. Try the emulator again, using the new file with the **-k** flag.

If these actions do not help, follow your local procedures for reporting problems.

112-019 The emulator cannot continue because it cannot open the "/dev/tty" special device.

The following message gives more information about the error: *message*.

Cause: You invoked the emulator on a display that could not be opened.

Action: Try to locate the *message* in *Messages Reference*. You may be able to correct the error with the action indicated.

If you cannot locate the message or the recommended action fails to help, try another display, if one is attached to your RT PC console.

If you do not have another display attached or if you still cannot start the emulator, shut down the AIX Operating System and restart the RT PC, then try the emulator again.

If the preceding procedures do not help, follow your local procedures for reporting problems.

Technical Information: This message could occur because the display is not configured in the **/etc/master** or **/etc/system** file. Another possible cause is that unexpected configuration information was sent to the display via **stty** or some other method.

112-020 The emulator cannot continue because the "ioctl" system call cannot get information about defaults for your display.

The following message gives more information about the error: *message*.

Cause: The emulator was not able to use this display.

Action: Try to locate the *message* in *Messages Reference*. You may be able to correct the error with the action indicated.

If you cannot locate the message or the recommended action fails to help, try to start the emulator using another display attached to your RT PC console. If you do not have another display attached to your RT PC or if you still cannot start the emulator, follow your local procedures for reporting problems.

112-021 The emulator cannot continue because the "ioctl" system call cannot get information about the default page for your display.

The following message gives more information about the error: *message*.

Cause: The emulator was not able to use this display.

Action: Try to locate the *message* in *Messages Reference*. You may be able to correct the error with the action indicated.

If you cannot locate the message or the recommended action fails to help, try to start the emulator using another display attached to your RT PC console. If you do not have another display attached to your RT PC or if you still cannot start the emulator, follow your local procedures for reporting problems.

112-022 The emulator cannot continue because the "ioctl" system call cannot set page information for your display.

The following message gives more information about the error: *message*.

Cause: The emulator was not able to use this display.

Action: Try to locate the *message* in *Messages Reference*. You may be able to correct the error with the action indicated.

If you cannot locate the message or the recommended action fails to help, try to start the emulator using another display attached to your RT PC console. If you do not have another display attached to your RT PC or if you still cannot start the emulator, follow your local procedures for reporting problems.

112-023 The emulator cannot continue because the "ioctl" system call cannot set raw mode on your display.

The following message gives more information about the error: *message*.

Cause: The emulator was not able to use this display.

Action: Try to locate the *message* in *Messages Reference*. You may be able to correct the error with the action indicated.

If you cannot locate the message or the recommended action fails to help, try to start the emulator using another display attached to your RT PC console. If you do not have another display attached to your RT PC or if you still cannot start the emulator, follow your local procedures for reporting problems.

112-024 The emulator cannot continue because it cannot open the `"/dev/em78"` special device.

The following message gives more information about the error: *message*.

Cause: IBM RT PC 3278/79 Emulation may not have been installed properly, or the adapter may have been installed incorrectly or never installed.

Action: Try to locate the *message* in *Messages Reference*. You may be able to correct the error with the action indicated.

If you cannot locate the message or the recommended action fails to help, install IBM RT PC 3278/79 Emulation again, following the procedures in Appendix A of *3278/79 Emulation*. If necessary, install or reinstall the adapter.

If this does not help, run the system diagnostics tests described in *Problem Determination Guide* and follow your local procedures for reporting problems.

112-025 The emulator cannot continue because the `"ioctl"` system call cannot get device data about the 3278/79 emulation adapter. Make sure the emulation adapter is working properly.

The following message gives more information about the error: *message*.

Cause: You may have a defective or improperly installed 3278/79 Emulation adapter.

Action: Try to locate the *message* in *Messages Reference*. You may be able to correct the error with the action indicated.

If you cannot locate the message or the recommended action fails to help, run the system diagnostics tests described in *Problem Determination Guide*. If necessary install the adapter again.

If the problem continues, follow your local procedures for reporting problems.

112-026 The emulator cannot continue because the device type "xxx" of the 3278/79 emulation adapter is not valid. Please follow your local procedures for reporting problems.

Cause: IBM RT PC 3278/79 Emulation may not have been installed properly.

Action: Install IBM RT PC 3278/79 Emulation, following the procedures in Appendix A of *3278/79 Emulation*.

If this does not help, follow your local procedures for reporting problems.

112-027 The emulator cannot continue because the "ioctl" system call cannot query ASCII codes and attributes for your display. Please follow your local procedures for reporting problems.

The following message gives more information about the error: *message*.

Cause: The emulator cannot get information about your display. You may have a defective display.

Action: Try again to invoke the emulator. If this fails, try to locate the *message* in *Messages Reference*. You may be able to correct the error with the action indicated.

If you cannot locate the message or the recommended action fails to help, follow your local procedures for reporting problems.

112-028 The emulator cannot continue because the "semop" system call cannot lock the 3278/79 emulation semaphore. Please follow your local procedures for reporting problems.

The following message gives more information about the error: *message*.

Cause: The emulator could not continue because of a problem with the processes that run the operating system. The problem may be temporary.

Action: Try again to invoke the emulator. If this fails, try to locate the *message* in *Messages Reference*. You may be able to correct the error with the action indicated.

If you cannot locate the message or the recommended action fails to help, install IBM RT PC 3278/79 Emulation again, following the procedures in Appendix A of *3278/79 Emulation*.

If this does not help, follow your local procedures for reporting problems.

112-029 You can now run shell commands. When you want to return to the emulator, press Ctrl-D.

Cause: You pressed the defined key or key combination to execute shell commands.

Action: When you finish executing the shell commands, press the **Ctrl** key and the **D** key at the same time to return to the emulator.

112-030 The emulator cannot continue because it needs more storage. Please follow your local procedures for reporting problems.

Cause: The emulator needs more bytes of storage space to operate. Installing more physical memory will not help.

Action: Please follow your local procedures for reporting problems.

Technical Information: This message occurs because of an internal programming problem involving buffer overflow.

112-031 The emulator cannot continue because the "ioctl" system call cannot get the correct cursor position data. Please follow your local procedures for reporting problems.

The following message gives more information about the error: *message*.

Cause: The 3278/79 Emulation Adapter may have been installed incorrectly or never installed.

Action: Try to locate the *message* in *Messages Reference*. You may be able to correct the error with the action indicated.

If you cannot locate the message or the recommended action fails to help, run the system diagnostics tests described in *Problem Determination Guide*. If the card is not defective, try to invoke the emulator again. If the card is not found by the diagnostics, check to see that the adapter card is installed and seated properly. Try the emulator again.

If the card is defective, if you cannot locate the message, or if the recommended action fails to help, follow your local procedures for reporting problems.

112-033 The "emkey" command cannot complete because the "emmakph" file cannot be found. Make sure that "emmakph" is installed, and that you have execute permission to it.

Cause: You tried to create a profile with the **emkey** command, but a program file needed to complete the process may be missing.

Action: Make sure **emmakph** is installed in the **/usr/lib/em78** directory. Also make sure you have permission to execute **emmakph**. Repeat the **emkey** command.

If you cannot find **emmakph**, install IBM RT PC 3278/79 Emulation again, following the procedures in Appendix A of *3278/79 Emulation*. Get execute permission, if necessary. Try the **emkey** command again.

Technical Information: The **emkey** command cannot convert your profile definitions file to a keyboard profile.

112-034 **The "emkey" command cannot complete because the "xxx" file cannot be found. Make sure "xxx" exists, and that you have read permission to it.**

Cause: You tried to create a profile with the **emkey** command, but the profile definitions file needed to complete the process is not readable or is a directory. The *xxx* file may be missing or not in the proper directory. Or, you may have given the name of a directory instead of a file.

Action: Check to see if *xxx* exists as a file in the specified directory, and you have **read** permission. If so, repeat the **emkey** command.

If the file you specified does not exist, use the default profile or a profile you have changed when you reissue the **emkey** command.

To use the default profile, make sure the **emdefs.p** file is in the library or install IBM RT PC 3278/79 Emulation again, following the procedures in Appendix A of *3278/79 Emulation*. Get read permission, if necessary. Try the **emkey** command again.

To use a profile you have changed, copy *xxx* from your backup diskette or recreate your definitions from the **emdefs.p** file. Try the **emkey** command again.

Technical Information: The **emkey** command cannot convert your profile definitions file to a keyboard profile.

112-035 **The "emkey" command cannot complete because one or more required files cannot be found. Make sure 3278/79 Emulation is properly installed.**

Cause: You tried to create a new profile with the **emkey** command, but files needed to complete the process are missing.

Action: Check to see if the IBM RT PC 3278/79 Emulation is installed. To do this, look in the **/usr/lpp** directory for a directory called **em78**.

If the **em78** directory is there, repeat the **emkey** command. If not, install IBM RT PC 3278/79 Emulation again, following the procedures in Appendix A of *3278/79 Emulation*.

112-037 **The "emkey" command cannot complete because the "emdefs.c" file is damaged. Please install 3278/79 Emulation again.**

Cause: You tried to create a new profile with the **emkey** command but the **emdefs.c** file is not in a useable form.

Action: Install IBM RT PC 3278/79 Emulation again, following the procedures in Appendix A of *3278/79 Emulation*.

112-038 **The "emkey" command cannot complete because the "emdefs.c" file cannot be found. Make sure "emdefs.c" is installed, and that you have read permission to it.**

Cause: You tried to create a new profile with the **emkey** command, but a file needed to complete the process was not found.

Action: Make sure the **emdefs.c** file is installed in the **/usr/lib/em78** directory and you have permission to read it. Repeat the **emkey** command.

If **emdefs.c** is missing or the problem persists, install IBM RT PC 3278/79 Emulation again, following the procedures in Appendix A of *3278/79 Emulation*. Try the **emkey** command again.

Technical Information: The **emkey** command cannot find the **emdefs.c** file, so it cannot compile it.

112-039 The "emkey" command cannot complete because it needs the "xxx" file, but "xxx" cannot be opened. Make sure the file exists, and that you have read permission to it.

The following message gives more information about the error: *message*.

Cause: You tried to create a new profile with the **emkey** command, but the profile needed to complete the process was not found.

Action: Make sure the *xxx* profile exists. If the profile is not in your current directory, make sure you specified the path correctly. Check to see if you have permission to read *xxx*. Repeat the **emkey** command.

If the command still fails, try installing IBM RT PC 3278/79 Emulation again, following the procedures in Appendix A of *3278/79 Emulation*.

Technical Information: The **emmakph** utility cannot open the *xxx* profile definitions file.

112-040 The "emkey" command cannot complete because the "emdefs.h" file cannot be created. Make sure that you have write permission in the "/tmp" directory.

The following message gives more information about the error: *message*.

Cause: You tried to create a new profile with the **emkey** command, but a file needed to complete the process cannot be created.

Action: Make sure you have write permission in the **/tmp** directory. Repeat the **emkey** command.

If the problem continues, try to locate the *message* in *Messages Reference*. You may be able to correct the error with the action indicated. If you cannot locate the message or the recommended action fails to help, follow your local procedures for reporting problems.

112-041 In the "xxx" file, the entry

yyy

is not correct. The "emkey" command will continue without including this entry in the new keyboard profile.

To include this entry, correct the "xxx" file and try "emkey" again.

Cause: You tried to create a new profile with the **emkey** command, but a line in the profile file is not correct.

Action: If the omitted definition is not essential, no action is needed. If the definition is essential, correct the information in the xxx file, and repeat the **emkey** command.

112-042 The "emkey" command cannot complete because the "xxx" cannot write to the new keyboard profile. If you used the "-o" flag to specify an output file, make sure you have write permission in the last directory in the output path. If you did not use the "-o" flag, make sure you have write permission in your current directory.

The following message gives more information about the error: *message*.

Cause: xxx is either the **write** system call or the **mv** command. You tried to create a new profile with the **emkey** command, but you may not have had the required permission, or the file you specified with the **-o** flag may be a directory.

Action: Check to see if you have **write** permission in your current directory or the directory you specified with the **-o** flag. Make sure you specified a definitions profile, not a directory. Repeat the **emkey** command.

If the problem continues, try to locate the *message* in *Messages Reference*. You may be able to correct the error with the action indicated. If you cannot locate the message or the recommended action fails to help, follow your local procedures for reporting problems.

112-043 In the "xxx" file, the "yyy" definition is already assigned. The "emkey" command will continue without including this entry in the new keyboard profile.

To include this entry, correct the "xxx" file and try "emkey" again.

Cause: Your profile file has more than one definition for the key, color, or attribute noted.

Action: Edit the xxx file so that yyy is defined only once, and try **emkey** again.

112-044 The "emkey" command cannot complete because the "strcat" subroutine failed. Please follow your local procedures for reporting problems.

The following message gives more information about the error: *message*.

Cause: You tried to create a new profile with the **emkey** command, but a needed subroutine cannot be completed.

Action: Repeat the **emkey** command.

If the problem continues, try to locate the *message* in *Messages Reference*. You may be able to correct the error with the action indicated. If you cannot locate the message or the recommended action fails to help, follow your local procedures for reporting problems.

Technical Information: A **strcat** command in the utility called by **emkey** failed. For more information, refer to the **string** subroutines in *AIX Operating System Technical Reference*.

112-045 **The definition in the line**

xxx

needs a corresponding 3278/79 key or local function. The "emkey" command will continue without including this entry in the new keyboard profile.

To include this entry, correct the "xxx" file and try "emkey" again.

Cause: Your profile contains an RT PC key with no 3278/79 key or local function.

Action: If the key redefinition is not essential, no action is needed. If the key redefinition is essential, add a 3278/79 key or local function to the entry in the *xxx* file. Try again.

112-046 **In the "xxx" file, "yyy" is not a valid RT PC key name. The "emkey" command will continue without including this entry in the new keyboard profile.**

To include this entry, correct the "xxx" file and try "emkey" again.

Cause: Your profile contains an invalid RT PC key name.

Action: If the key redefinition is not essential, no action is needed. If the key redefinition is essential, use a valid RT PC key name in the entry in the *xxx* file. Try again.

112-047 In the "*xxx*" file, "*yyy*" is not a valid 3278/79 key name or local function. The "emkey" command will continue without including this entry in the new keyboard profile.

To include this entry, correct the "*xxx*" file and try "emkey" again.

Cause: Your profile contains a valid RT PC key name, but a 3278/79 key name or local function is not valid.

Action: If the key redefinition is not essential, no action is needed. If the key redefinition is essential, use a valid key name or function in the *yyy* entry in the *xxx* file. Try again.

112-048 The background color, foreground color, or both are missing from *xxx* in the "*yyy*" file. The "emkey" command will continue without including this entry in the new keyboard profile.

To include this entry, correct the "*yyy*" file and try "emkey" again.

Cause: A color definition in the profile does not have both a foreground and a background color.

Action: If the redefinition of the color is not essential, no action is needed. If the redefinition is essential, include a foreground and background color in the color definition. Try again.

112-049 In the "xxx" file, the first color in the line
yyy
must be followed by a "+" sign. The "emkey" command will continue
without including this entry in the new keyboard profile.

To include this entry, correct the "xxx" file and try "emkey" again.

Cause: A color definition in the profile does not have a + (plus sign) between the foreground and background color.

Action: If the redefinition of the color is not essential, no action is needed. If the redefinition is essential, include a blank space, a + (plus sign), and another blank space between the foreground and background color. Try again.

112-050 The emulator cannot continue because the "/etc/locks/em78" file cannot be created.

Cause: You tried to invoke the emulator when it was in use, or the file still exists from a previous emulation session.

Action: Wait and try again. If you still cannot invoke the emulator, run **ps -e** to see whether the emulator is being used. (If the emulator is active, em78 will appear in the list of active processes.) If the emulator is not being used, obtain permission, if necessary, and delete **/etc/locks/em78**. Try again.

112-051 In the "xxx" file, the "+" sign in the line
yyy
must be followed by a foreground or background color. The "emkey"
command will continue without including this entry in the new keyboard
profile.

To include this entry, correct the "yyy" file and try "emkey" again.

Cause: A color definition in the profile contains one color and a + (plus sign) but does not have a second color.

Action: If the redefinition of the color is not essential, no action is needed. If the redefinition is essential, include a foreground or a background color after the + (plus sign). Include one blank space before and one blank space after the sign. Try again.

112-052 In the "xxx" file, "yyy" in the line

zzz

is not a valid foreground or background color. The "emkey" command will continue without including this entry in the new keyboard profile.

To include this entry, correct the "xxx" file and try "emkey" again.

Cause: A color definition in the profile contains a color that is not a valid foreground or background color.

Action: If the redefinition of the color is not essential, no action is needed. If the redefinition is essential, include a valid foreground or background color. Try again.

112-053 In the "xxx" file, the value "yyy" is not in a correct position, or is not a valid color or mode. The "emkey" command will continue without including this entry in the new keyboard profile.

To include this entry, correct the "xxx" file and try "emkey" again.

Cause: A definition in the profile uses the word yyy incorrectly.

Action: If the redefinition is not essential, no action is needed. If the redefinition is essential, consult *3278/79 Emulation* for valid colors and modes and the positions in the profile where they can be used. Correct the xxx file. Try again.

112-054 In the "xxx" file, the foreground color "yyy" is not valid. The "emkey" command will continue without including this entry in the new keyboard profile.

To include this entry, correct the "xxx" file and try "emkey" again.

Cause: The yyy color definition in the profile uses a foreground color that is not valid.

Action: If the redefinition of the color is not essential, no action is needed. If the redefinition is essential, consult *3278/79 Emulation* for a valid foreground color, and correct the xxx file. Try again.

112-055 In the "xxx" file, a line with a second color of "yyy" has two foreground colors. The "emkey" command will continue without including this incorrect entry in the new keyboard profile.

To include this entry, replace one of the foreground colors with a background color, and try "emkey" again.

Cause: A color definition in the profile uses two foreground colors.

Action: If the redefinition of the color is not essential, no action is needed. If the redefinition is essential, replace one of the foreground colors with a background color. Try again.

112-056 In the "xxx" file, the background color "yyy" is not valid. The "emkey" command will continue without including this entry in the new keyboard profile.

To include this entry, correct the "xxx" file and try "emkey" again.

Cause: The yyy color definition in the profile uses a background color that is not valid.

Action: If the redefinition of the color is not essential, no action is needed. If the redefinition is essential, consult *3278/79 Emulation* for a valid background color. Correct the xxx file. Try again.

112-057 In the "xxx" file, a line with a second color of "yyy" has two background colors. The "emkey" command will continue without including this incorrect entry in the new keyboard profile.

To include this entry, replace one of the background colors with a foreground color, and try "emkey" again.

Cause: A color definition in the profile uses two background colors.

Action: If the redefinition of the color is not essential, no action is needed. If the redefinition is essential, replace one of the background colors with a foreground color. Try again.

112-058 In the "xxx" file, the value "yyy" cannot be used with a foreground or background color. The "emkey" command will continue without including this entry in the new keyboard profile.

To include this entry, correct the "xxx" file and try "emkey" again.

Cause: The yyy color definition in the profile uses a word that is not valid with a foreground or background color.

Action: If the redefinition of the color is not essential, no action is needed. If the redefinition is essential, replace the incorrect word with one that is valid in a color definition. Try again.

112-059 In the "xxx" file, "yyy" in the line
zzz
is not a valid attribute. The "emkey" command will continue without including this entry in the new keyboard profile.

To include this entry, correct the "xxx" file and try "emkey" again.

Cause: The profile contains an entry with a field attribute that is not valid.

Action: If the redefinition of the color or mode of the attribute is not essential, no action is needed. If the redefinition is essential, replace the invalid word with a valid attribute. Try again.

112-060 In the "xxx" file, the attribute in the line
yyy
does not have a color assignment. The "emkey" command will continue without including this entry in the new keyboard profile.

To include this entry, correct the "xxx" file and try "emkey" again.

Cause: The profile contains an entry with a field attribute, yyy, that has no color definition.

Action: If the redefinition of the color of the attribute is not essential, no action is needed. If the redefinition is essential, include a defined color after the attribute. Try again.

112-061 In the "xxx" file, "yyy" in the line

zzz

is not a valid color for an attribute. The "emkey" command will continue without including this entry in the new keyboard profile.

To include this entry, correct the "xxx" file and try "emkey" again.

Cause: The profile contains an entry with a color definition that is not valid for a field attribute.

Action: If the redefinition of the color is not essential, no action is needed. If the redefinition is essential, use a valid color. Try again.

112-062 In the "xxx" file, the line

yyy

does not have a mode word following the "+" sign. The "emkey" command will continue without including this entry in the new keyboard profile.

To include this entry, correct the "xxx" file and try "emkey" again.

Cause: The profile contains an entry with a valid color definition for a field attribute, followed by a + (plus sign), but does not follow the sign with a valid mode word.

Action: If the redefinition of the attribute is not essential, no action is needed. If the redefinition is essential, follow the + (plus sign) with a valid mode word. Try again.

112-063 In the "xxx" file, "yyy" in the line

zzz

is not a valid mode word for an attribute. The "emkey" command will continue without including this entry in the new keyboard profile.

To include this entry, correct the "xxx" file and try "emkey" again.

Cause: The profile includes a color and a mode definition for a field attribute, but does not have a valid mode word. The invalid word is yyy.

Action: If the redefinition of the attribute is not essential, no action is needed. If the redefinition is essential, use a valid mode word. Try again.

112-064 The emulator cannot continue because the "ioctl" system call cannot issue a "query device ID". Please follow your local procedures for reporting problems.

The following message gives more information about the error: *message*.

Cause: You cannot use the display you want for emulation at this time.

Action: Try to locate the *message* in *Messages Reference*. You may be able to correct the error with the action indicated. If you cannot locate the message or the recommended action fails to help, follow your local procedures for reporting problems.

Technical Information: The `ioctl` call failed to query the device ID for the display you requested.

112-065 You specified a display that the emulator does not recognize. The emulator will continue using the current display.

Cause: You cannot change to the display you requested since the display was not one of those allowed with the **em78** command.

Action: Make sure you used one of the displays indicated for the **-d** flag in the **em78** command. See “em78” on page 2-5 in *3278/79 Emulation*. Try again.

112-066 You specified a display that is not attached. The emulator will continue using the current display.

Cause: You requested a display that is not part of your RT PC system. The display may not be attached.

Action: Make sure the display you requested is connected to your RT PC. Follow your local procedures for reporting problems.

112-067 The emulator cannot change to the display you requested because the “write” system call failed. The emulator will continue using the current display.

The following message gives more information about the error: *message*.

Cause: You cannot change displays. Perhaps you do not have **write** permission to the display.

Action: Try to locate the *message* in *Messages Reference*. You may be able to correct the error with the action indicated. If you cannot locate the message or the recommended action fails to help, follow your local procedures for reporting problems.

Technical Information: If possible, check the permissions for the loadable POST for your display. See *IBM RT PC Virtual Resource Manager Technical Reference* for more information.

112-068 The emulator cannot restore the original foreground and background colors because the "write" system call failed. Please follow your local procedures for reporting problems.

The following message gives more information about the error: *message*.

Cause: You cannot return to the default display colors. Perhaps you do not have **write** permission to the display.

Action: Try to locate the *message* in *Messages Reference*. You may be able to correct the error with the action indicated. If you cannot locate the message or the recommended action fails to help, follow your local procedures for reporting problems.

Technical Information: If possible, check the permissions for the loadable POST for your display. See *IBM RT PC Virtual Resource Manager Technical Reference* for more information.

112-069 The emulator cannot continue because the "ioctl" system call cannot issue a "query real device" for the display. Please follow your local procedures for reporting problems.

The following message gives more information about the error: *message*.

Cause: You cannot use the display you want for emulation.

Action: Try to locate the *message* in *Messages Reference*. You may be able to correct the error with the action indicated. If you cannot locate the message or the recommended action fails to help, follow your local procedures for reporting problems.

Technical Information: The **ioctl** call failed to query the real device for the display you are using.

112-070 The emulator cannot restore the original display because the "write" system call failed. Please follow your local procedures for reporting problems.

The following message gives more information about the error: *message*.

Cause: You cannot return to the default display. Perhaps you do not have write permission to the display.

Action: Make sure you have **write** permission. If the problem continues, try to locate the *message* in *Messages Reference*. You may be able to correct the error with the action indicated. If you cannot locate the message or the recommended action fails to help, follow your local procedures for reporting problems.

112-071 The emulator cannot continue because the "semop" system call cannot unlock the 3278/79 emulation semaphore. Please follow your local procedures for reporting problems.

The following message gives more information about the error: *message*.

Cause: The emulator cannot continue because of a problem with the processes that make the operating system run.

Action: Try to locate the *message* in *Messages Reference*. You may be able to correct the error with the action indicated. If you cannot locate the message or the recommended action fails to help, follow your local procedures for reporting problems.

Technical Information: You cannot invoke the emulator since a previous emulator command may have locked the semaphore.

112-072 **The emulator cannot continue because the "semctl" system call cannot remove the 3278/79 emulation semaphore. Please follow your local procedures for reporting problems.**

The following message gives more information about the error: *message.*

Cause: The emulator cannot continue because of a problem with the processes that make the operating system run.

Action: Try to locate the *message* in *Messages Reference*. You may be able to correct the error with the action indicated. If you cannot locate the message or the recommended action fails to help, have someone with superuser authority follow the instructions in Technical Information.

Technical Information: The emulator cannot remove a semaphore it created. The semaphore may still be in use due to an earlier failure of the emulation process. Get superuser authority and enter the **em78** command. Then exit the emulator.

112-073 **The emulator cannot continue because the "semget" system call cannot get the 3278/79 emulation semaphore. Please follow your local procedures for reporting problems.**

The following message gives more information about the error: *message.*

Cause: The emulator cannot continue because of a problem with the processes that make the operating system run.

Action: Try to locate the *message* in *Messages Reference*. You may be able to correct the error with the action indicated. If you cannot locate the message or the recommended action fails to help, have someone with superuser authority follow the instructions in Technical Information.

Technical Information: You cannot invoke the emulator because a previous emulator command may have locked the 3278/79 Emulation semaphore. The semaphore may have been created earlier by a process that did not end normally. Get superuser authority and enter the **em78** command. Then exit the emulator. If this fails to help, follow your local procedures for reporting problems.

112-074 The emulator cannot continue because the "semctl" system call cannot initialize the 3278/79 emulation semaphore. Please follow your local procedures for reporting problems.

The following message gives more information about the error: *message*.

Cause: The emulator cannot continue because of a problem with the processes that make the operating system run.

Action: Try to locate the *message* in *Messages Reference*. You may be able to correct the error with the action indicated. If you cannot locate the message or the recommended action fails to help, follow your local procedures for reporting problems.

Technical Information: The semaphore was created, but the emulator cannot give it values.

112-075 The emulator cannot continue because the "semget" system call cannot create the 3278/79 emulation semaphore. Try "em78" again. If you still get this message, make sure that no one else is using 3278/79 emulation.

The following message gives more information about the error: *message*.

Cause: You cannot use the emulator because of a problem with the processes that make the operating system run.

Action: Have someone follow the instructions in Technical Information.

If the problem continues, try to locate the *message* in *Messages Reference*. You may be able to correct the error with the action indicated. If you cannot locate the message or the recommended action fails to help, follow your local procedures for reporting problems.

Technical Information: Get superuser authority and enter the **em78** command. Then exit the emulator.

112-076 The emulator cannot continue because the "ioctl" system call cannot query the visual-sound register. Please follow your local procedures for reporting problems.

The following message gives more information about the error: *message*.

Cause: The emulator cannot continue because of a problem with the processes that make the operating system run.

Action: Try to locate the *message* in *Messages Reference*. You may be able to correct the error with the action indicated. If you cannot locate the message or the recommended action fails to help, follow your local procedures for reporting problems.

Technical Information: The `ioctl` call failed to query the visual-sound register on the adapter. The purpose of the query was to issue a 3278/79 beep.

112-077 You did not specify a "xxx" file. The emulator will use the "yyy" file.

Cause: You pressed `screensave` or `screenrepl` but did not indicate a `-sfile` or `-rfile` when you invoked the emulator. The emulator will use a file whose name begins with *home/emsav* or *home/emrep*, where *home* is the name of your home directory.

Action: No response is needed.

112-078 The emulator cannot continue because the "/etc/locks/em78" file cannot be opened or cannot be created.

The following message gives more information about the error: *message*.

Cause: You tried to invoke the emulator when it was not in use, but a problem prevented opening or creating the file.

Action: Try to locate the *message* in *Messages Reference*. You may be able to correct the error with the action indicated. If you cannot locate the message or the recommended action fails to help, follow your local procedures for reporting problems.

112-079 **The emulator cannot continue because the `"/etc/locks/xfer"` file exists.**

Cause: The `/etc/locks/xfer` file may exist because a previous file transfer is in progress, the emulator is active, or the file wasn't removed because of an error.

Action: Check to see if a previous file transfer is in progress or if the emulator is active. To do this, enter `ps -e`. If the emulator is active, you will see two copies of the **em78** file; if file transfer is in progress, you will see more than two copies of the **em78** file.

If a previous file transfer is in progress or if the emulator is active, you can wait and try again, or you can cancel the task that is in progress. If you believe that `/etc/locks/xfer` exists because of an error, obtain permission, if necessary, and delete it. Try again.

112-080 **The emulator cannot continue because the `"/etc/locks/xfer"` file cannot be opened or cannot be created.**

The following message gives more information about the error: *message*.

Cause: You tried to invoke the emulator when it was not in use, but a problem prevented opening or creating the `/etc/locks/xfer` file. The emulator must have this file to continue. There may be a problem with the processes that make the operating system run.

Action: Try to locate the *message* in *Messages Reference*. You may be able to correct the error with the action indicated. If you cannot locate the message or the recommended action fails to help, follow your local procedures for reporting problems.

112-081 The emulator cannot continue because the "ioctl" system call cannot reset the virtual interrupt mask. Please follow your local procedures for reporting problems.

The following message gives more information about the error: *message*.

Cause: The emulator could not continue because of a problem with the processes that make the operating system run.

Action: Try to locate the *message* in *Messages Reference*. You may be able to correct the error with the action indicated. If you cannot locate the message or the recommended action fails to help, follow your local procedures for reporting problems.

112-082 The "xxx" command cannot complete because an error occurred while processing your country selection.

Cause: An error occurred while the system was processing the country you selected. For example, the system might not be able to find or copy a file it needs.

Action: If any other messages appeared on the screen, try to take the appropriate action for them. Make sure your /usr directory is not full. Try the xxx command again. If you still get this message, follow your local procedures for reporting problems.

File Transfer Messages

113-012 The host system sent the following message: *message*.

Cause: The host displayed one of the following TRANS messages in response to some condition that it detected.

Action: Your response is determined by the content of the message.

TRANS03 File transfer complete.

Cause: The file transfer operation has completed successfully. There is now a file either at the host or RT PC with the name and characteristics you specified in the **emsend** or the **emrcv** command.

Action: No response is needed.

TRANS04 File transfer complete, with records segmented.

Cause: The file transfer operation has completed successfully. Any record greater than the set logical record length (LRECL) is divided into multiple records.

Action: No response is needed.

TRANS13 Error writing file to host: file transfer canceled.

Cause: There may be a system error at the host.

Action: Check the status of the host to see if there is any information about the problem. Take any action indicated and try file transfer again.

TRANS14 Error reading file from host: file transfer canceled.

Cause: There may be a system error at the host.

Action: Check the status of the host to see if there is any information about the problem. Take any action indicated and try file transfer again.

TRANS15 Required host storage unavailable: file transfer canceled.

Cause: You need more storage available on the host.

Action: Obtain more virtual storage for the host session. Try file transfer again. If the problem persists, either have your storage limit increased at the host, or follow local procedures for reporting problems.

TRANS16 Incorrect request code: file transfer canceled.

Cause: A file transfer program error occurred.

Action: Follow local procedures for reporting problems.

TRANS17 Missing or incorrect xxx : file transfer canceled.

Cause: The xxx in the message can be either TSO data set name or CMS file identifier.

If you are using TSO, one of the following has happened:

- The TSO data set name is missing.
- The TSO data set is not sequential.
- The TSO data set is not partitioned.

If you are using CMS, the CMS file name is missing or is not specified correctly.

Action: If you are using TSO, correct the TSO data set name in the command, then try file transfer again.

If you are using CMS, correct the CMS file name in the command, then try file transfer again.

TRANS18 Incorrect option specified: file transfer canceled.

Cause: You specified an invalid option.

Action: Correct the command to specify an acceptable option and retry file transfer.

TRANS19 Error reading or writing to host disk: file transfer canceled.

Cause: There may be a system error at the host.

Action: Check the status of the host to see if there is any information about the problem. Take any action indicated and try file transfer again.

TRANS28 Invalid option *XXX*: file transfer canceled.

Cause: *XXX* is an option that is not recognized, is specified as a positional keyword, or has an associated value which is incorrect.

Action: Correct the option in the command. Try file transfer again.

TRANS29 Invalid option *XXX* with **RECEIVE: file transfer canceled.**

Cause: *XXX* is an option valid with **emsend** but not with **emrcv**.

Action: Remove the option from the command. Try file transfer again.

TRANS30 Invalid option *XXX* with **APPEND: file transfer canceled.**

Cause: *XXX* is an option that cannot be used with **APPEND**.

Action: Remove the option from the command. Try file transfer again.

TRANS31 Invalid option *XXX* without **SPACE: file transfer canceled.**

Cause: *XXX* is an option that cannot be used unless **SPACE** is specified.

Action: Remove the option from the command. Try file transfer again.

TRANS32 Invalid option *XXX* with PDS: file transfer canceled.

Cause: *XXX* is an option that cannot be used with a host partitioned data set.

Action: Remove the option from the command. Try file transfer again.

TRANS33 Only one of TRACKS, CYLINDERS, AVBLOCK allowed: file transfer canceled.

Cause: SPACE can be specified in units of TRACKS, or CYLINDERS, or AVBLOCK. Only one of these options can be used.

Action: Remove the unwanted option from the command. Try file transfer again.

TRANS34 CMS file not found: file transfer canceled.

Cause: An existing CMS file must be specified for **emrcv**.

Action: Correct the CMS file specification in the command. Try file transfer again.

TRANS35 CMS disk is Read-Only: file transfer canceled.

Cause: The CMS file mode specified with **emsend** must allow **write** access.

Action: Correct the CMS file specification in the command. Try file transfer again.

TRANS36 CMS disk is not accessed: file transfer canceled.

Cause: The CMS file mode is not in the CMS disk search order.

Action: Access the required disk in CMS or correct the CMS file specification in the command. Try file transfer again.

TRANS37 CMS disk is full: file transfer canceled.

Cause: Either the CMS disk is full, or the maximum number of files (3400) on the minidisk or the maximum number of data blocks (16060) per file has been reached.

Action: Use another disk with enough space, or remove unwanted files from the specified disk. If the RT PC file is very large (more than 1 megabyte), consider dividing it into several pieces. Try file transfer again.

TRANS99 Host program error code XXXXXXXX: file transfer canceled.

Cause: This message indicates a program error at the host.

Action: Follow local procedures for reporting problems.

113-013 File transfer cannot continue because the "write" system call cannot put data into the "xxx" file. Make sure you have write permission in your current directory.

Cause: You tried to add data to a file, but you may not have write permission.

Action: Make sure you have write permission in your current directory. Try again.

113-014 File transfer cannot continue because the RT PC file "xxx" cannot be accessed.

Cause: You invoked File Transfer with the **-f** flag and requested a file that cannot be found or created.

Action: Make sure that the file exists and that you have read permission, write permission, or both. You need read permission to send a file, and write permission to receive a file.

113-015 File transfer cannot continue because the "/dev/em78" special device cannot be opened.

The following message gives more information about the error: *message.*

Cause: If you receive a *device busy* message, you invoked File Transfer using a different ID than the ID you used when you invoked the emulator.

Action: Use the same ID you used when you invoked the emulator. Try again to transfer the file. If the problem continues, install IBM RT PC 3278/79 Emulation again, following the procedures in Appendix A of *3278/79 Emulation*.

113-016 File transfer cannot continue because the "lseek" system call failed. Please follow your local procedures for reporting problems.

Cause: You cannot transfer a file, and the adapter may not be working properly.

Action: Make sure the adapter is installed. Run the system diagnostics tests described in *Problem Determination Guide*.

If the adapter is not defective, try to transfer the file again. If you still cannot transfer the file, follow your local procedures for reporting problems.

Technical Information: The **lseek** command failed to locate the adapter. The emulator could not find the beginning of the communications buffer.

**113-017 File transfer cannot continue because the "read" system call failed.
Make sure the 3278/79 emulation adapter is working properly.**

Cause: You cannot transfer a file, and the adapter may not be working properly.

Action: Make sure the adapter is installed. Run the system diagnostics tests described in *Problem Determination Guide*.

If the adapter is not defective, try to transfer the file again. If you still cannot transfer the file, follow your local procedures for reporting problems.

Technical Information: The emulator could not read the communications buffer.

**113-018 File transfer cannot continue because the "write" system call failed.
Make sure the the 3278/79 emulation adapter is working properly.**

Cause: You cannot transfer a file, and the adapter may not be working properly.

Action: Make sure the adapter is installed. Run the system diagnostics tests described in *Problem Determination Guide*.

If the adapter is not defective, try to transfer the file again. If you still cannot transfer the file, follow your local procedures for reporting problems.

Technical Information: The emulator could not write to the communications buffer.

113-019 The host has not responded for the last "xxx" seconds, but your transmission is not complete. Press Ctrl-D to return to the emulator, then make sure the host is still active.

Cause: The host has not responded for the last xxx seconds. Your transmission is not complete, but file transfer cannot continue.

Action: Hold the **Ctrl** key and press the **D** key to return to the emulator. Make sure that the host is active. Further response depends on the situation.

Technical Information: The xxx seconds in the message refers to the wait time per frame of file transfer (not to the wait time for the entire file transfer session).

113-020 File transfer cannot continue because of an error in communication with the host. Please follow your local procedures for reporting problems.

Cause: There may be a problem with the host or with the line.

Action: Follow your local procedures for reporting problems.

113-021 File transfer cannot continue because the system does not have enough available memory.

Cause: Not enough memory space was available.

Action: Try file transfer again when the system is less busy. If you get this message again, do one or more of the following:

- Check the memory hardware. (See *Problem Determination Guide* for details).
- Try the **users** command with the **change** subcommand to change the file size allowed for a user. See *Using and Managing the AIX Operating System* for information about **users**.
- Follow your local procedures for reporting software problems.

Technical Information: The **malloc** subroutine failed, and the system did not have enough virtual memory for file transfer to continue.

113-022 File transfer cannot continue because the "ioctl" system call failed. Make sure the 3278/79 emulation adapter is working properly.

Cause: You cannot transfer a file, and the adapter may not be working properly.

Action: Make sure the adapter is installed. If it is, run the system diagnostics tests described in *Problem Determination Guide*.

If the adapter is not defective, try to transfer the file again. If you still cannot transfer the file, follow your local procedures for reporting problems.

Technical Information: The emulator could not read the control program.

113-024 File transfer cannot continue because the "signal" system call failed. Please follow your local procedures for reporting problems.

Cause: Signal linkage could not be established.

Action: Follow your local procedures for reporting problems.

113-025 File transfer cannot continue because the "/etc/locks/xfer" file exists.

Cause: The `/etc/locks/xfer` file may exist because a previous file transfer is in progress, the emulator is active, or the file wasn't removed because of an error.

Action: Check to see if a previous file transfer is in progress or if the emulator is active. To do this, enter `ps -e`. If the emulator is active, `em78` will appear twice in the list of active processes; if file transfer is in progress, `em78` will appear more than twice in the list of active processes.

If a previous file transfer is in progress or if the emulator is active, you can wait and try again, or you can cancel the task that is in progress. If you believe that `/etc/locks/xfer` exists because of an error, obtain permission, if necessary, and delete it. Try again.

113-026 **The File Transfer program cannot translate one or more characters in the "*filename*" file. Please check the contents of "*filename*".**

Cause: The *filename* file holds one or more characters that the File Transfer program cannot translate. The program removed the untranslatable characters from *filename*.

Action: Look at the contents of *filename* to be sure that the file is still readable.

Technical Information: The untranslatable characters could be unexpected control characters in the data stream. File Transfer could not replace these characters with substitute characters.

113-027 **The "*emsend* or *emrcv*" command cannot continue because the "y" character used with the "-V" or "-T" host information flag is not valid.**

Cause: You requested the **emsend** or **emrcv** command, and you specified some host information with the **-V** or **-T** flag. However, the *y* character you used with that flag is not a valid character at the host. File Transfer cannot send the host information.

Action: Try **emsend** or **emrcv** again, but do not use character *y* in the host information for the **-V** or **-T** flag.

Appendix C. Keyboard Information for Non-English Keyboards

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About This Appendix

This appendix contains information useful to non-U.S. English customers.

First, this appendix lists keys found on the RT PC keyboard that are not recognized by non-English host computers. For some languages, additional keys are available; these extra keys are listed here as well.

Second, this appendix lists the valid keys for non-U.S. English customers.

Finally, this appendix lists the keys for each language that perform the same function as other keys or key combinations.

Unsupported RT PC Keys

Following are the lists of unsupported keys found on the RT PC keyboard for all languages except English (US).

The keys themselves are valid, but the host computer in each of these languages does not recognize the characters displayed on that key. So, if you press one of these keys in 3278/79 Emulation, you will hear a beep, and the character will not appear on your display.

Note: If you have previously requested the AIX command **sound -o**, the sound will be turned off, and you will not be able to hear the beep.

Unsupported Keys for Austrian/German

°	Degree Symbol	{	Left Brace
[	Left Bracket	}	Right Brace
]	Right Bracket	\	Reverse Slash
'	Acute Accent	@	At Sign
~	Tilde Accent	|	Pipe Symbol
μ	Mu Small	²	Superscript 2
³	Superscript 3	×	Multiplication Sign
÷	Division Sign		

Unsupported Keys for Belgian

|	Pipe Symbol	@	At Sign
²	Superscript 2	³	Superscript 3
§	Section Symbol	{	Left Brace
}	Right Brace	°	Degree Symbol
'	Acute Accent	μ	Greek Mu Small
£	Pounds Sterling	\	Reverse Slash
~	Tilde Accent		

Unsupported Keys for Canadian-French

|	OR Sign	\	Reverse Slash
±	Plus or Minus Sign	£	Pounds Sterling
¢	Cent Sign	Ⱶ	International Currency Symbol (ICS)
¬	NOT Symbol	|	Pipe Symbol
²	Superscript 2	³	Superscript 3
¹ / ₄	One Fourth	¹ / ₂	One Half
³ / ₄	Three Fourths	§	Section Symbol
¶	Paragraph Symbol	[	Left Bracket
]	Right Bracket	~	Tilde Accent
{	Left Brace	}	Right Brace
«	Left Angle Quotes	»	Right Angle Quotes
°	Degree Symbol	μ	Micro Symbol
—	Overline, Overbar	=	Double Underscore

Please see the next page for more information about the Canadian-French keyboard.

Additional Keys Available on the Canadian-French Keyboard

These characters are not engraved on a key. Instead, they are composed of a non-spacing (dead key) character plus another character.

‘ à Â è Ê ù Û	Characters with a grave accent
’ é É	Characters with an acute accent
^ â Ã ê Ê î Î ô Ô û Û	Characters with a circumflex accent
¨ ë Ë ï Ï ü Ü	Characters with a diaeresis accent
¸ ç Ç	Characters with a cedilla accent

Unsupported Keys for Danish

½	One Half Fraction	§	Section Symbol
@	At Sign	£	Pounds Sterling
\$	Dollar Sign	{	Left Brace
[	Left Bracket	]	Right Bracket
}	Right Brace	'	Acute Accent
|	Pipe Symbol	¨	Diaeresis Accent
~	Tilde Accent		

Additional Key Available on the Danish Keyboard

This character is not engraved on a key. Instead, it is composed of a non-spacing (dead key) character plus another character.

ü Lowercase u with diaeresis accent

Unsupported Keys for English (UK)

^	Circumflex Accent	[	Left Bracket
]	Right Bracket	~	Tilde Accent

Additional Key Available on the English (UK) Keyboard

— Overbar (key42_s)

Unsupported Keys for Finnish and Swedish

£	Pounds Sterling	\$	Dollar Sign
`	Grave Accent	'	Acute Accent
×	Multiplication Sign	½	One Half Fraction
|	Pipe Symbol	@	At Sign
#	Number Sign	[	Left Bracket
]	Right Bracket	{	Left Brace
}	Right Brace	~	Tilde Accent
¨	Diaeresis Accent	\	Reverse Slash
÷	Division Sign		

Unsupported Keys for French (AZERTY)

#	Number Sign	{	Left Brace
[	Left Bracket	|	Pipe Symbol
\	Reverse Slash	@	At Sign
]	Right Bracket	}	Right Brace
μ	Greek Mu Small	Ⱶ	International Currency Symbol (ICS)
~	Tilde Accent	²	Superscript 2

Unsupported Keys for Italian

\	Reverse Slash	|	Pipe Symbol
{	Left Brace	}	Right Brace
~	Tilde Accent	`	Grave Accent
[	Left Bracket	]	Right Bracket
@	At Sign	#	Number Sign

Unsupported Keys for Japanese English

^	Circumflex Accent	~	Tilde Accent
[	Left Bracket	]	Right Bracket
\	Reverse Slash		

Additional Keys Available on the Japanese English Keyboard

|	Vertical Bar (key k1_a)
¥	Yen (key k5_a)
£	Pounds Sterling (key k6_a)
¬	NOT Symbol (key k11_a)

Unsupported Keys for Norwegian

|	Pipe Symbol	§	Section Symbol
@	At Sign	£	Pounds Sterling
\$	Dollar Sign	{	Left Brace
[	Left Bracket	}	Right Brace
]	Right Bracket	'	Acute Accent
¨	Diaeresis Accent	~	Tilde Accent

Additional Key Available on the Norwegian Keyboard

This character is not engraved on a key. Instead, it is composed of a non-spacing (dead key) character plus another character.

ü Lowercase u with diaeresis accent

Unsupported Keys for Portuguese

\	Reverse Slash	|	Pipe Symbol
@	At Sign	#	Number Sign
£	Pounds Sterling	§	Section Symbol
{	Left Brace	}	Right Brace
«	Left Angle Quotes	»	Right Angle Quotes
¨	Diaeresis Accent	º	Ordinal Ind., Masculine
ª	Ordinal Ind., Feminine	~	Tilde Accent

Additional Keys Available on the Portuguese Keyboard

These characters are not engraved on a key. Instead, they are composed of a non-spacing (dead key) character plus another character.

ã Ä õ Ö Characters with a tilde accent

Unsupported Keys for Spanish

'	Acute Accent	ç	c Cedilla, Small
Ç	c Cedilla, Capital	◌̄	Masculine Sign
◌̂	Feminine Sign	!	Exclamation Point
•	Product Dot	#	Number Sign
\$	Dollar Sign	~	Tilde Accent
¡	Inverted !	¿	Inverted ?
^	Circumflex Accent		

Additional Key Available on the Spanish Keyboard

Pts peseta (key k5_s)

Unsupported Keys for Swiss-French and Swiss-German

'	Acute Accent	§	Section Symbol
°	Degree Symbol	|	OR Symbol
@	At Sign	#	Number Sign
¬	NOT Sign	|	Pipe Symbol
¢	Cent Sign	~	Tilde Accent
[	Left Bracket	]	Right Bracket
{	Left Brace	}	Right Brace
\	Reverse Slash		

Additional Keys Available on the Swiss-French and Swiss-German Keyboard

These characters are not engraved on a key. Instead, they are composed of a non-spacing (dead key) character plus another character.

`	à è ì ò ù	Characters with a grave accent
^	â ê î ô û	Characters with a circumflex accent
¨	ä Ä ë ì ö Ö ü Û	Characters with a diaeresis accent

Valid RT PC Key Names

Valid RT PC Key Names for Austrian/German

The following pages contain the names of all the recognized RT PC keys for Austrian/German. Use only the names listed to assign IBM RT PC 3278/79 Emulation functions to RT PC keys.

—	k1_s	k1_c	k1_a	—
k2	k2_s	k2_c	k2_a	—
k3	k3_s	k3_c	k3_a	k3_g
k4	k4_s	k4_c	k4_a	k4_g
k5	k5_s	k5_c	k5_a	—
k6	k6_s	k6_c	k6_a	—
k7	k7_s	k7_c	k7_a	—
k8	k8_s	k8_c	k8_a	k8_g
k9	k9_s	k9_c	k9_a	k9_g
k10	k10_s	k10_c	k10_a	k10_g
k11	k11_s	k11_c	k11_a	k11_g
k12	k12_s	k12_c	k12_a	k12_g
—	—	k13_c	k13_a	—
k15	k15_s	k15_c	k15_a	—
k16	k16_s	k16_c	k16_a	—
k17	k17_s	k17_c	k17_a	k17_g
k18	k18_s	k18_c	k18_a	—
k19	k19_s	k19_c	k19_a	—
k20	k20_s	k20_c	k20_a	—
k21	k21_s	k21_c	k21_a	—
k22	k22_s	k22_c	k22_a	—
k23	k23_s	k23_c	k23_a	—
k24	k24_s	k24_c	k24_a	—
k25	k25_s	k25_c	k25_a	—
k26	k26_s	k26_c	k26_a	—
k27	k27_s	k27_c	k27_a	—
k28	k28_s	k28_c	k28_a	—

Figure C-1 (Part 1 of 3). Names of the RT PC Keys for Austrian/German

k31	k31_s	k31_c	k31_a	—
k32	k32_s	k32_c	k32_a	—
k33	k33_s	k33_c	k33_a	—
k34	k34_s	k34_c	k34_a	—
k35	k35_s	k35_c	k35_a	—
k36	k36_s	k36_c	k36_a	—
k37	k37_s	k37_c	k37_a	—
k38	k38_s	k38_c	k38_a	—
k39	k39_s	k39_c	k39_a	—
k40	k40_s	k40_c	k40_a	—
k41	k41_s	k41_c	k41_a	—
k42	k42_s	k42_c	k42_a	—
k43	k43_s	k43_c	k43_a	—
k45	k45_s	—	—	k45_g
k46	k46_s	k46_c	k46_a	—
k47	k47_s	k47_c	k47_a	—
k48	k48_s	k48_c	k48_a	—
k49	k49_s	k49_c	k49_a	—
k50	k50_s	k50_c	k50_a	—
k51	k51_s	k51_c	k51_a	—
k52	k52_s	k52_c	k52_a	k52_g
k53	k53_s	k53_c	k53_a	—
k54	k54_s	k54_c	k54_a	—
k55	k55_s	k55_c	k55_a	—
k61	k61_s	k61_c	k61_a	—
k64	—	—	—	—
k75	k75_s	k75_c	k75_a	—
k76	k76_s	k76_c	k76_a	—
k79	k79_s	k79_c	k79_a	—
k80	k80_s	k80_c	k80_a	—
k81	k81_s	k81_c	k81_a	—
k83	k83_s	k83_c	k83_a	—
k84	k84_s	k84_c	k84_a	—
k85	k85_s	k85_c	k85_a	—
k86	k86_s	k86_c	k86_a	—
k89	k89_s	k89_c	k89_a	—

Figure C-1 (Part 2 of 3). Names of the RT PC Keys for Austrian/German

—	—	k90_c	k90_a	—
k91	k91_s	k91_c	—	—
k92	k92_s	k92_c	—	—
k93	k93_s	k93_c	—	—
k95	k95_s	k95_c	k95_a	—
k96	k96_s	k96_c	—	—
k97	k97_s	k97_c	—	—
k98	k98_s	k98_c	—	—
k99	k99_s	k99_c	—	—
k100	k100_s	k100_c	k100_a	—
k101	k101_s	k101_c	—	—
k102	k102_s	k102_c	—	—
k103	k103_s	k103_c	—	—
k104	k104_s	k104_c	k104_a	—
k105	k105_s	k105_c	k105_a	—
k106	k106_s	k106_c	k106_a	—
k108	k108_s	k108_c	k108_a	—
k110	k110_s	k110_c	k110_a	—
k112	k112_s	k112_c	k112_a	—
k113	k113_s	k113_c	k113_a	—
k114	k114_s	k114_c	k114_a	—
k115	k115_s	k115_c	k115_a	—
k116	k116_s	k116_c	k116_a	—
k117	k117_s	k117_c	k117_a	—
k118	k118_s	k118_c	k118_a	—
k119	k119_s	k119_c	k119_a	—
k120	k120_s	k120_c	k120_a	—
k121	k121_s	k121_c	k121_a	—
k122	k122_s	k122_c	k122_a	—
k123	k123_s	k123_c	k123_a	—
k124	k124_s	k124_c	k124_a	—
k125	k125_s	k125_c	k125_a	—
k126	k126_s	k126_c	k126_a	—

Figure C-1 (Part 3 of 3). Names of the RT PC Keys for Austrian/German. The suffix `_s` refers to the **Shift** key, `_c` refers to the **Ctrl** key, `_a` refers to the **Alt** key, and `_g` refers to the **AltGr** key.

Note: The combination **control + alternate + another key** is not valid.

Valid RT PC Key Names for Belgian

The following pages contain the names of all the recognized RT PC keys for Belgian. Use only the names listed to assign IBM RT PC 3278/79 Emulation functions to RT PC keys.

k1	k1_s	k1_c	k1_a	—
k2	k2_s	k2_c	k2_a	k2_g
k3	k3_s	k3_c	k3_a	k3_g
k4	k4_s	k4_c	k4_a	k4_g
k5	k5_s	k5_c	k5_a	—
k6	k6_s	k6_c	k6_a	—
k7	k7_s	k7_c	k7_a	k7_g
k8	k8_s	k8_c	k8_a	—
k9	k9_s	k9_c	k9_a	—
k10	k10_s	k10_c	k10_a	k10_g
k11	k11_s	k11_c	k11_a	k11_g
k12	k12_s	k12_c	k12_a	—
k13	k13_s	k13_c	k13_a	—
k15	k15_s	k15_c	k15_a	—
k16	k16_s	k16_c	k16_a	—
k17	k17_s	k17_c	k17_a	—
k18	k18_s	k18_c	k18_a	—
k19	k19_s	k19_c	k19_a	—
k20	k20_s	k20_c	k20_a	—
k21	k21_s	k21_c	k21_a	—
k22	k22_s	k22_c	k22_a	—
k23	k23_s	k23_c	k23_a	—
k24	k24_s	k24_c	k24_a	—
k25	k25_s	k25_c	k25_a	—
k26	k26_s	k26_c	k26_a	—
—	—	k27_c	k27_a	k27_g
k28	k28_s	k28_c	k28_a	k28_g
k31	k31_s	k31_c	k31_a	—
k32	k32_s	k32_c	k32_a	—

Figure C-2 (Part 1 of 3). Names of the RT PC Keys for Belgian

k33	k33_s	k33_c	k33_a	—
k34	k34_s	k34_c	k34_a	—
k35	k35_s	k35_c	k35_a	—
k36	k36_s	k36_c	k36_a	—
k37	k37_s	k37_c	k37_a	—
k38	k38_s	k38_c	k38_a	—
k39	k39_s	k39_c	k39_a	—
k40	k40_s	k40_c	k40_a	—
k41	k41_s	k41_c	k41_a	—
k42	k42_s	—	—	—
k43	k43_s	k43_c	k43_a	—
k45	k45_s	k45_c	k45_a	k45_g
k46	k46_s	k46_c	k46_a	—
k47	k47_s	k47_c	k47_a	—
k48	k48_s	k48_c	k48_a	—
k49	k49_s	k49_c	k49_a	—
k50	k50_s	k50_c	k50_a	—
k51	k51_s	k51_c	k51_a	—
k52	k52_s	k52_c	k52_a	—
k53	k53_s	k53_c	k53_a	—
k54	k54_s	k54_c	k54_a	—
k55	k55_s	k55_c	k55_a	—
k61	k61_s	k61_c	k61_a	—
k64	—	—	—	—
k75	k75_s	k75_c	k75_a	—
k76	k76_s	k76_c	k76_a	—
k79	k79_s	k79_c	k79_a	—
k80	k80_s	k80_c	k80_a	—
k81	k81_s	k81_c	k81_a	—
k83	k83_s	k83_c	k83_a	—
k84	k84_s	k84_c	k84_a	—
k85	k85_s	k85_c	k85_a	—
k86	k86_s	k86_c	k86_a	—
k89	k89_s	k89_c	k89_a	—

Figure C-2 (Part 2 of 3). Names of the RT PC Keys for Belgian

—	—	k90_c	k90_a	—
k91	k91_s	k91_c	—	—
k92	k92_s	k92_c	—	—
k93	k93_s	k93_c	—	—
k95	k95_s	k95_c	k95_a	—
k96	k96_s	k96_c	—	—
k97	k97_s	k97_c	—	—
k98	k98_s	k98_c	—	—
k99	k99_s	k99_c	—	—
k100	k100_s	k100_c	k100_a	—
k101	k101_s	k101_c	—	—
k102	k102_s	k102_c	—	—
k103	k103_s	k103_c	—	—
k104	k104_s	k104_c	k104_a	—
k105	k105_s	k105_c	k105_a	—
k106	k106_s	k106_c	k106_a	—
k108	k108_s	k108_c	k108_a	—
k110	k110_s	k110_c	k110_a	—
k112	k112_s	k112_c	k112_a	—
k113	k113_s	k113_c	k113_a	—
k114	k114_s	k114_c	k114_a	—
k115	k115_s	k115_c	k115_a	—
k116	k116_s	k116_c	k116_a	—
k117	k117_s	k117_c	k117_a	—
k118	k118_s	k118_c	k118_a	—
k119	k119_s	k119_c	k119_a	—
k120	k120_s	k120_c	k120_a	—
k121	k121_s	k121_c	k121_a	—
k122	k122_s	k122_c	k122_a	—
k123	k123_s	k123_c	k123_a	—
k124	k124_s	k124_c	k124_a	—
k125	k125_s	k125_c	k125_a	—
k126	k126_s	k126_c	k126_a	—

Figure C-2 (Part 3 of 3). Names of the RT PC Keys for Belgian. The suffix `_s` refers to the **Shift** key, `_c` refers to the **Ctrl** key, `_a` refers to the **Alt**, and `_g` refers to the **AltGr** key.

Note: The combination **control + alternate + another key** is not valid.

Valid RT PC Key Names for Canadian-French

The following pages contain the names of all the recognized RT PC keys for Canadian-French. Use only the names listed to assign IBM RT PC 3278/79 Emulation functions to RT PC keys.

k1	k1_s	k1_c	k1_a	k1_g
k2	k2_s	k2_c	k2_a	k2_g
k3	k3_s	k3_c	k3_a	k3_g
k4	k4_s	k4_c	k4_a	k4_g
k5	k5_s	k5_c	k5_a	k5_g
k6	k6_s	k6_c	k6_a	k6_g
k7	k7_s	k7_c	k7_a	k7_g
k8	k8_s	k8_c	k8_a	k8_g
k9	k9_s	k9_c	k9_a	k9_g
k10	k10_s	k10_c	k10_a	k10_g
k11	k11_s	k11_c	k11_a	k11_g
k12	k12_s	k12_c	k12_a	k12_g
k13	k13_s	k13_c	k13_a	k13_g
k15	k15_s	k15_c	k15_a	—
k16	k16_s	k16_c	k16_a	—
k17	k17_s	k17_c	k17_a	—
k18	k18_s	k18_c	k18_a	—
k19	k19_s	k19_c	k19_a	—
k20	k20_s	k20_c	k20_a	—
k21	k21_s	k21_c	k21_a	—
k22	k22_s	k22_c	k22_a	—
k23	k23_s	k23_c	k23_a	—
k24	k24_s	k24_c	k24_a	—
k25	k25_s	k25_c	k25_a	k25_g
k26	k26_s	k26_c	k26_a	k26_g
—	—	k27_c	k27_a	k27_g
—	—	k28_c	k28_a	k28_g
k31	k31_s	k31_c	k31_a	—

Figure C-3 (Part 1 of 3). Names of the RT PC Keys for Canadian-French

k32	k32_s	k32_c	k32_a	—
k33	k33_s	k33_c	k33_a	—
k34	k34_s	k34_c	k34_a	—
k35	k35_s	k35_c	k35_a	—
k36	k36_s	k36_c	k36_a	—
k37	k37_s	k37_c	k37_a	—
k38	k38_s	k38_c	k38_a	—
k39	k39_s	k39_c	k39_a	—
k40	k40_s	k40_c	k40_a	—
—	—	k41_c	k41_a	k41_g
k42	k42_s	k42_c	k42_a	k42_g
k43	k43_s	k43_c	k43_a	—
k45	k45_s	—	—	k45_g
k46	k46_s	k46_c	k46_a	—
k47	k47_s	k47_c	k47_a	—
k48	k48_s	k48_c	k48_a	—
k49	k49_s	k49_c	k49_a	—
k50	k50_s	k50_c	k50_a	—
k51	k51_s	k51_c	k51_a	—
k52	k52_s	k52_c	k52_a	k52_g
k53	k53_s	k53_c	k53_a	k53_g
k54	k54_s	k54_c	k54_a	k54_g
k55	k55_s	k55_c	k55_a	—
k61	k61_s	k61_c	k61_a	—
k64	—	—	—	—
k75	k75_s	k75_c	k75_a	—
k76	k76_s	k76_c	k76_a	—
k79	k79_s	k79_c	k79_a	—
k80	k80_s	k80_c	k80_a	—
k81	k81_s	k81_c	k81_a	—
k83	k83_s	k83_c	k83_a	—
k84	k84_s	k84_c	k84_a	—
k85	k85_s	k85_c	k85_a	—
k86	k86_s	k86_c	k86_a	—
k89	k89_s	k89_c	k89_a	—

Figure C-3 (Part 2 of 3). Names of the RT PC Keys for Canadian-French

—	—	k90_c	k90_a	—
k91	k91_s	k91_c	—	—
k92	k92_s	k92_c	—	—
k93	k93_s	k93_c	—	—
k95	k95_s	k95_c	k95_a	—
k96	k96_s	k96_c	—	—
k97	k97_s	k97_c	—	—
k98	k98_s	k98_c	—	—
k99	k99_s	k99_c	—	—
k100	k100_s	k100_c	k100_a	—
k101	k101_s	k101_c	—	—
k102	k102_s	k102_c	—	—
k103	k103_s	k103_c	—	—
k104	k104_s	k104_c	k104_a	—
k105	k105_s	k105_c	k105_a	—
k106	k106_s	k106_c	k106_a	—
k108	k108_s	k108_c	k108_a	—
k110	k110_s	k110_c	k110_a	—
k112	k112_s	k112_c	k112_a	—
k113	k113_s	k113_c	k113_a	—
k114	k114_s	k114_c	k114_a	—
k115	k115_s	k115_c	k115_a	—
k116	k116_s	k116_c	k116_a	—
k117	k117_s	k117_c	k117_a	—
k118	k118_s	k118_c	k118_a	—
k119	k119_s	k119_c	k119_a	—
k120	k120_s	k120_c	k120_a	—
k121	k121_s	k121_c	k121_a	—
k122	k122_s	k122_c	k122_a	—
k123	k123_s	k123_c	k123_a	—
k124	k124_s	k124_c	k124_a	—
k125	k125_s	k125_c	k125_a	—
k126	k126_s	k126_c	k126_a	—

Figure C-3 (Part 3 of 3). Names of the RT PC Keys for Canadian-French. The suffix `_s` refers to the **Shift** key, `_c` refers to the **Ctrl** key, `_a` refers to the **Alt** key, and `_g` refers to the **AltGr** key.

Note: The combination **control + alternate + another key** is not valid.

Valid RT PC Key Names for Danish

The following pages contain the names of all the recognized RT PC keys for Danish. Use only the names listed to assign IBM RT PC 3278/79 Emulation functions to RT PC keys.

k1	k1_s	—	k1_a	—
k2	k2_s	k2_c	k2_a	—
k3	k3_s	k3_c	k3_a	k3_g
k4	k4_s	k4_c	k4_a	k4_g
k5	k5_s	k5_c	k5_a	k5_g
k6	k6_s	k6_c	k6_a	—
k7	k7_s	k7_c	k7_a	—
k8	k8_s	k8_c	k8_a	k8_g
k9	k9_s	k9_c	k9_a	k9_g
k10	k10_s	k10_c	k10_a	k10_g
k11	k11_s	k11_c	k11_a	k11_g
k12	k12_s	k12_c	k12_a	—
—	—	k13_c	k13_a	k13_g
k15	k15_s	k15_c	k15_a	—
k16	k16_s	k16_c	k16_a	—
k17	k17_s	k17_c	k17_a	—
k18	k18_s	k18_c	k18_a	—
k19	k19_s	k19_c	k19_a	—
k20	k20_s	k20_c	k20_a	—
k21	k21_s	k21_c	k21_a	—
k22	k22_s	k22_c	k22_a	—
k23	k23_s	k23_c	k23_a	—
k24	k24_s	k24_c	k24_a	—
k25	k25_s	k25_c	k25_a	—
k26	k26_s	k26_c	k26_a	—
k27	k27_s	k27_c	k27_a	—
—	—	k28_c	k28_a	—
k31	k31_s	k31_c	k31_a	—
k32	k32_s	k32_c	k32_a	—
k33	k33_s	k33_c	k33_a	—

Figure C-4 (Part 1 of 3). Names of the RT PC Keys for Danish

k34	k34_s	k34_c	k34_a	—
k35	k35_s	k35_c	k35_a	—
k36	k36_s	k36_c	k36_a	—
k37	k37_s	k37_c	k37_a	—
k38	k38_s	k38_c	k38_a	—
k39	k39_s	k39_c	k39_a	—
k40	k40_s	k40_c	k40_a	—
k41	k41_s	k41_c	k41_a	—
k42	k42_s	k42_c	k42_a	—
k43	k43_s	k43_c	k43_a	—
k45	k45_s	k45_c	—	k45_g
k46	k46_s	k46_c	k46_a	—
k47	k47_s	k47_c	k47_a	—
k48	k48_s	k48_c	k48_a	—
k49	k49_s	k49_c	k49_a	—
k50	k50_s	k50_c	k50_a	—
k51	k51_s	k51_c	k51_a	—
k52	k52_s	k52_c	k52_a	—
k53	k53_s	k53_c	k53_a	—
k54	k54_s	k54_c	k54_a	—
k55	k55_s	k55_c	k55_a	—
k61	k61_s	k61_c	k61_a	—
k64	—	—	—	—
k75	k75_s	k75_c	k75_a	—
k76	k76_s	k76_c	k76_a	—
k79	k79_s	k79_c	k79_a	—
k80	k80_s	k80_c	k80_a	—
k81	k81_s	k81_c	k81_a	—
k83	k83_s	k83_c	k83_a	—
k84	k84_s	k84_c	k84_a	—
k85	k85_s	k85_c	k85_a	—
k86	k86_s	k86_c	k86_a	—
k89	k89_s	k89_c	k89_a	—
—	—	k90_c	k90_a	—
k91	k91_s	k91_c	—	—
k92	k92_s	k92_c	—	—

Figure C-4 (Part 2 of 3): Names of the RT-PC Keys for Danish

k93	k93_s	k93_c	—	—
k95	k95_s	k95_c	k95_a	—
k96	k96_s	k96_c	—	—
k97	k97_s	k97_c	—	—
k98	k98_s	k98_c	—	—
k99	k99_s	k99_c	—	—
k100	k100_s	k100_c	k100_a	—
k101	k101_s	k101_c	—	—
k102	k102_s	k102_c	—	—
k103	k103_s	k103_c	—	—
k104	k104_s	k104_c	k104_a	—
k105	k105_s	k105_c	k105_a	—
k106	k106_s	k106_c	k106_a	—
k108	k108_s	k108_c	k108_a	—
k110	k110_s	k110_c	k110_a	—
k112	k112_s	k112_c	k112_a	—
k113	k113_s	k113_c	k113_a	—
k114	k114_s	k114_c	k114_a	—
k115	k115_s	k115_c	k115_a	—
k116	k116_s	k116_c	k116_a	—
k117	k117_s	k117_c	k117_a	—
k118	k118_s	k118_c	k118_a	—
k119	k119_s	k119_c	k119_a	—
k120	k120_s	k120_c	k120_a	—
k121	k121_s	k121_c	k121_a	—
k122	k122_s	k122_c	k122_a	—
k123	k123_s	k123_c	k123_a	—
k124	k124_s	k124_c	k124_a	—
k125	k125_s	k125_c	k125_a	—
k126	k126_s	k126_c	k126_a	—

Figure C-4 (Part 3 of 3). Names of the RT PC Keys for Danish. The suffix **_s** refers to the **Shift** key, **_c** refers to the **Ctrl** key, **_a** refers to the **Alt** key, and **_g** refers to the **AltGr** key.

Note: The combination **control + alternate + another key** is not valid.

Valid RT PC Key Names for English (UK)

The following pages contain the names of all the recognized RT PC keys for English (UK). Use only the names listed to assign IBM RT PC 3278/79 Emulation functions to RT PC keys.

k1	k1_s	k1_c	k1_a	k1_g
k2	k2_s	k2_c	k2_a	—
k3	k3_s	k3_c	k3_a	—
k4	k4_s	k4_c	k4_a	—
k5	k5_s	k5_c	k5_a	—
k6	k6_s	k6_c	k6_a	—
k7	k7_s	k7_c	k7_a	—
k8	k8_s	k8_c	k8_a	—
k9	k9_s	k9_c	k9_a	—
k10	k10_s	k10_c	k10_a	—
k11	k11_s	k11_c	k11_a	—
k12	k12_s	k12_c	k12_a	—
k13	k13_s	k13_c	k13_a	—
k15	k15_s	k15_c	k15_a	—
k16	k16_s	k16_c	k16_a	—
k17	k17_s	k17_c	k17_a	—
k18	k18_s	k18_c	k18_a	—
k19	k19_s	k19_c	k19_a	—
k20	k20_s	k20_c	k20_a	—
k21	k21_s	k21_c	k21_a	—
k22	k22_s	k22_c	k22_a	—
k23	k23_s	k23_c	k23_a	—
k24	k24_s	k24_c	k24_a	—
k25	k25_s	k25_c	k25_a	—
k26	k26_s	k26_c	k26_a	—
k27	k27_s	k27_c	k27_a	—
k28	k28_s	k28_c	k28_a	—
k31	k31_s	k31_c	k31_a	—
k32	k32_s	k32_c	k32_a	—

Figure C-5 (Part 1 of 3). Names of the RT PC Keys for English (UK)

k33	k33_s	k33_c	k33_a	—
k34	k34_s	k34_c	k34_a	—
k35	k35_s	k35_c	k35_a	—
k36	k36_s	k36_c	k36_a	—
k37	k37_s	k37_c	k37_a	—
k38	k38_s	k38_c	k38_a	—
k39	k39_s	k39_c	k39_a	—
k40	k40_s	k40_c	k40_a	—
k41	k41_s	k41_c	k41_a	—
k42	k42_s	—	—	—
k43	k43_s	k43_c	k43_a	—
k45	k45_s	k45_c	k45_a	—
k46	k46_s	k46_c	k46_a	—
k47	k47_s	k47_c	k47_a	—
k48	k48_s	k48_c	k48_a	—
k49	k49_s	k49_c	k49_a	—
k50	k50_s	k50_c	k50_a	—
k51	k51_s	k51_c	k51_a	—
k52	k52_s	k52_c	k52_a	—
k53	k53_s	k53_c	k53_a	—
k54	k54_s	k54_c	k54_a	—
k55	k55_s	k55_c	k55_a	—
k61	k61_s	k61_c	k61_a	—
k64	—	—	—	—
k75	k75_s	k75_c	k75_a	—
k76	k76_s	k76_c	k76_a	—
k79	k79_s	k79_c	k79_a	—
k80	k80_s	k80_c	k80_a	—
k81	k81_s	k81_c	k81_a	—
k83	k83_s	k83_c	k83_a	—
k84	k84_s	k84_c	k84_a	—
k85	k85_s	k85_c	k85_a	—
k86	k86_s	k86_c	k86_a	—
k89	k89_s	k89_c	k89_a	—
—	—	k90_c	k90_a	—

Figure C-5 (Part 2 of 3). Names of the RT PC Keys for English (UK)

k91	k91_s	k91_c	—	—
k92	k92_s	k92_c	—	—
k93	k93_s	k93_c	—	—
k95	k95_s	k95_c	k95_a	—
k96	k96_s	k96_c	—	—
k97	k97_s	k97_c	—	—
k98	k98_s	k98_c	—	—
k99	k99_s	k99_c	—	—
k100	k100_s	k100_c	k100_a	—
k101	k101_s	k101_c	—	—
k102	k102_s	k102_c	—	—
k103	k103_s	k103_c	—	—
k104	k104_s	k104_c	k104_a	—
k105	k105_s	k105_c	k105_a	—
k106	k106_s	k106_c	k106_a	—
k108	k108_s	k108_c	k108_a	—
k110	k110_s	k110_c	k110_a	—
k112	k112_s	k112_c	k112_a	—
k113	k113_s	k113_c	k113_a	—
k114	k114_s	k114_c	k114_a	—
k115	k115_s	k115_c	k115_a	—
k116	k116_s	k116_c	k116_a	—
k117	k117_s	k117_c	k117_a	—
k118	k118_s	k118_c	k118_a	—
k119	k119_s	k119_c	k119_a	—
k120	k120_s	k120_c	k120_a	—
k121	k121_s	k121_c	k121_a	—
k122	k122_s	k122_c	k122_a	—
k123	k123_s	k123_c	k123_a	—
k124	k124_s	k124_c	k124_a	—
k125	k125_s	k125_c	k125_a	—
k126	k126_s	k126_c	k126_a	—

Figure C-5 (Part 3 of 3). Names of the RT PC Keys for English (UK). The suffix **_s** refers to the **Shift** key, **_c** refers to the **Ctrl** key, **_a** refers to the **Alt** key, and **_g** refers to the **AltGr** key.

Note: The combination **control + alternate + another key** is not valid.

Valid RT PC Key Names for Finnish and Swedish

The following pages contain the names of all the recognized RT PC keys for Finnish and Swedish. Use only the names listed to assign IBM RT PC 3278/79 Emulation functions to RT PC keys.

k1	k1_s	k1_c	k1_a	k1_g
k2	k2_s	k2_c	k2_a	—
k3	k3_s	k3_c	k3_a	k3_g
k4	k4_s	k4_c	k4_a	k4_g
k5	k5_s	k5_c	k5_a	k5_g
k6	k6_s	k6_c	k6_a	—
k7	k7_s	k7_c	k7_a	—
k8	k8_s	k8_c	k8_a	—
k9	k9_s	k9_c	k9_a	k9_g
k10	k10_s	k10_c	k10_a	k10_g
k11	k11_s	k11_c	k11_a	k11_g
k12	k12_s	k12_c	k12_a	k12_g
—	—	k13_c	k13_a	—
k15	k15_s	k15_c	k15_a	—
k16	k16_s	k16_c	k16_a	—
k17	k17_s	k17_c	k17_a	—
k18	k18_s	k18_c	k18_a	—
k19	k19_s	k19_c	k19_a	—
k20	k20_s	k20_c	k20_a	—
k21	k21_s	k21_c	k21_a	—
k22	k22_s	k22_c	k22_a	—
k23	k23_s	k23_c	k23_a	—
k24	k24_s	k24_c	k24_a	—
k25	k25_s	k25_c	k25_a	—
k26	k26_s	k26_c	k26_a	—
k27	k27_s	k27_c	k27_a	—
—	—	k28_c	k28_a	k28_g
k31	k31_s	k31_c	k31_a	—
k32	k32_s	k32_c	k32_a	—

Figure C-6 (Part 1 of 3). Names of the RT PC Keys for Finnish and Swedish

k33	k33_s	k33_c	k33_a	—
k34	k34_s	k34_c	k34_a	—
k35	k35_s	k35_c	k35_a	—
k36	k36_s	k36_c	k36_a	—
k37	k37_s	k37_c	k37_a	—
k38	k38_s	k38_c	k38_a	—
k39	k39_s	k39_c	k39_a	—
k40	k40_s	k40_c	k40_a	—
k41	k41_s	k41_c	k41_a	—
k42	k42_s	—	—	—
k43	k43_s	k43_c	k43_a	—
k45	k45_s	k45_c	k45_a	k45_g
k46	k46_s	k46_c	k46_a	—
k47	k47_s	k47_c	k47_a	—
k48	k48_s	k48_c	k48_a	—
k49	k49_s	k49_c	k49_a	—
k50	k50_s	k50_c	k50_a	—
k51	k51_s	k51_c	k51_a	—
k52	k52_s	k52_c	k52_a	—
k53	k53_s	k53_c	k53_a	—
k54	k54_s	k54_c	k54_a	—
k55	k55_s	k55_c	k55_a	—
k61	k61_s	k61_c	k61_a	—
k64	—	—	—	—
k75	k75_s	k75_c	k75_a	—
k76	k76_s	k76_c	k76_a	—
k79	k79_s	k79_c	k79_a	—
k80	k80_s	k80_c	k80_a	—
k81	k81_s	k81_c	k81_a	—
k83	k83_s	k83_c	k83_a	—
k84	k84_s	k84_c	k84_a	—
k85	k85_s	k85_c	k85_a	—
k86	k86_s	k86_c	k86_a	—
k89	k89_s	k89_c	k89_a	—
—	—	k90_c	k90_a	—

Figure C-6 (Part 2 of 3). Names of the RT PC Keys for Finnish and Swedish

k91	k91_s	k91_c	—	—
k92	k92_s	k92_c	—	—
k93	k93_s	k93_c	—	—
k95	k95_s	k95_c	k95_a	—
k96	k96_s	k96_c	—	—
k97	k97_s	k97_c	—	—
k98	k98_s	k98_c	—	—
k99	k99_s	k99_c	—	—
k100	k100_s	k100_c	k100_a	—
k101	k101_s	k101_c	—	—
k102	k102_s	k102_c	—	—
k103	k103_s	k103_c	—	—
k104	k104_s	k104_c	k104_a	—
k105	k105_s	k105_c	k105_a	—
k106	k106_s	k106_c	k106_a	—
k108	k108_s	k108_c	k108_a	—
k110	k110_s	k110_c	k110_a	—
k112	k112_s	k112_c	k112_a	—
k113	k113_s	k113_c	k113_a	—
k114	k114_s	k114_c	k114_a	—
k115	k115_s	k115_c	k115_a	—
k116	k116_s	k116_c	k116_a	—
k117	k117_s	k117_c	k117_a	—
k118	k118_s	k118_c	k118_a	—
k119	k119_s	k119_c	k119_a	—
k120	k120_s	k120_c	k120_a	—
k121	k121_s	k121_c	k121_a	—
k122	k122_s	k122_c	k122_a	—
k123	k123_s	k123_c	k123_a	—
k124	k124_s	k124_c	k124_a	—
k125	k125_s	k125_c	k125_a	—
k126	k126_s	k126_c	k126_a	—

Figure C-6 (Part 3 of 3). Names of the RT PC Keys for Finnish and Swedish. The suffix `_s` refers to the Shift key, `_c` refers to the Ctrl key, `_a` refers to the Alt key, and `_g` refers to the AltGr key.

Note: The combination **control + alternate + another key** is not valid.

Valid RT PC Key Names for French (AZERTY)

The following pages contain the names of all the recognized RT PC keys for French (AZERTY). Use only the names listed to assign IBM RT PC 3278/79 Emulation functions to RT PC keys.

k1	k1_s	k1_c	k1_a	—
k2	k2_s	k2_c	k2_a	—
k3	k3_s	k3_c	k3_a	k3_g
k4	k4_s	k4_c	k4_a	k4_g
k5	k5_s	k5_c	k5_a	k5_g
k6	k6_s	k6_c	k6_a	k6_g
k7	k7_s	k7_c	k7_a	k7_g
k8	k8_s	k8_c	k8_a	k8_g
k9	k9_s	k9_c	k9_a	k9_g
k10	k10_s	k10_c	k10_a	k10_g
k11	k11_s	k11_c	k11_a	k11_g
k12	k12_s	k12_c	k12_a	k12_g
k13	k13_s	k13_c	k13_a	k13_g
k15	k15_s	k15_c	k15_a	—
k16	k16_s	k16_c	k16_a	—
k17	k17_s	k17_c	k17_a	—
k18	k18_s	k18_c	k18_a	—
k19	k19_s	k19_c	k19_a	—
k20	k20_s	k20_c	k20_a	—
k21	k21_s	k21_c	k21_a	—
k22	k22_s	k22_c	k22_a	—
k23	k23_s	k23_c	k23_a	—
k24	k24_s	k24_c	k24_a	—
k25	k25_s	k25_c	k25_a	—
k26	k26_s	k26_c	k26_a	—
—	—	k27_c	k27_a	—
k28	k28_s	k28_c	k28_a	k28_g
k31	k31_s	k31_c	k31_a	—
k32	k32_s	k32_c	k32_a	—

Figure C-7 (Part 1 of 3). Names of the RT PC Keys for French (AZERTY)

k33	k33_s	k33_c	k33_a	—
k34	k34_s	k34_c	k34_a	—
k35	k35_s	k35_c	k35_a	—
k36	k36_s	k36_c	k36_a	—
k37	k37_s	k37_c	k37_a	—
k38	k38_s	k38_c	k38_a	—
k39	k39_s	k39_c	k39_a	—
k40	k40_s	k40_c	k40_a	—
k41	k41_s	k41_c	k41_a	—
k42	k42_s	k42_c	k42_a	—
k43	k43_s	k43_c	k43_a	—
k45	k45_s	—	—	—
k46	k46_s	k46_c	k46_a	—
k47	k47_s	k47_c	k47_a	—
k48	k48_s	k48_c	k48_a	—
k49	k49_s	k49_c	k49_a	—
k50	k50_s	k50_c	k50_a	—
k51	k51_s	k51_c	k51_a	—
k52	k52_s	k52_c	k52_a	—
k53	k53_s	k53_c	k53_a	—
k54	k54_s	k54_c	k54_a	—
k55	k55_s	k55_c	k55_a	—
k61	k61_s	k61_c	k61_a	—
k64	—	—	—	—
k75	k75_s	k75_c	k75_a	—
k76	k76_s	k76_c	k76_a	—
k79	k79_s	k79_c	k79_a	—
k80	k80_s	k80_c	k80_a	—
k81	k81_s	k81_c	k81_a	—
k83	k83_s	k83_c	k83_a	—
k84	k84_s	k84_c	k84_a	—
k85	k85_s	k85_c	k85_a	—
k86	k86_s	k86_c	k86_a	—
k89	k89_s	k89_c	k89_a	—
—	—	k90_c	k90_a	—

Figure C-7 (Part 2 of 3). Names of the RT PC Keys for French (AZERTY)

k91	k91_s	k91_c	—	—
k92	k92_s	k92_c	—	—
k93	k93_s	k93_c	—	—
k95	k95_s	k95_c	k95_a	—
k96	k96_s	k96_c	—	—
k97	k97_s	k97_c	—	—
k98	k98_s	k98_c	—	—
k99	k99_s	k99_c	—	—
k100	k100_s	k100_c	k100_a	—
k101	k101_s	k101_c	—	—
k102	k102_s	k102_c	—	—
k103	k103_s	k103_c	—	—
k104	k104_s	k104_c	k104_a	—
k105	k105_s	k105_c	k105_a	—
k106	k106_s	k106_c	k106_a	—
k108	k108_s	k108_c	k108_a	—
k110	k110_s	k110_c	k110_a	—
k112	k112_s	k112_c	k112_a	—
k113	k113_s	k113_c	k113_a	—
k114	k114_s	k114_c	k114_a	—
k115	k115_s	k115_c	k115_a	—
k116	k116_s	k116_c	k116_a	—
k117	k117_s	k117_c	k117_a	—
k118	k118_s	k118_c	k118_a	—
k119	k119_s	k119_c	k119_a	—
k120	k120_s	k120_c	k120_a	—
k121	k121_s	k121_c	k121_a	—
k122	k122_s	k122_c	k122_a	—
k123	k123_s	k123_c	k123_a	—
k124	k124_s	k124_c	k124_a	—
k125	k125_s	k125_c	k125_a	—
k126	k126_s	k126_c	k126_a	—

Figure C-7 (Part 3 of 3). Names of the RT PC Keys for French (AZERTY). The suffix `_s` refers to the **Shift** key, `_c` refers to the **Ctrl** key, `_a` refers to the **Alt** key, and `_g` refers to the **AltGr** key.

Note: The combination **control + alternate + another key** is not valid.

Valid RT PC Key Names for Italian

The following pages contain the names of all the recognized RT PC keys for Italian. Use only the names listed to assign IBM RT PC 3278/79 Emulation functions to RT PC keys.

k1	k1_s	k1_c	k1_a	—
k2	k2_s	k2_c	k2_a	—
k3	k3_s	k3_c	k3_a	—
k4	k4_s	k4_c	k4_a	—
k5	k5_s	k5_c	k5_a	—
k6	k6_s	k6_c	k6_a	—
k7	k7_s	k7_c	k7_a	—
k8	k8_s	k8_c	k8_a	—
k9	k9_s	k9_c	k9_a	k9_g
k10	k10_s	k10_c	k10_a	k10_g
k11	k11_s	k11_c	k11_a	—
k12	k12_s	k12_c	k12_a	k12_g
k13	—	k13_c	k13_a	k13_g
k15	k15_s	k15_c	k15_a	—
k16	k16_s	k16_c	k16_a	—
k17	k17_s	k17_c	k17_a	—
k18	k18_s	k18_c	k18_a	—
k19	k19_s	k19_c	k19_a	—
k20	k20_s	k20_c	k20_a	—
k21	k21_s	k21_c	k21_a	—
k22	k22_s	k22_c	k22_a	—
k23	k23_s	k23_c	k23_a	—
k24	k24_s	k24_c	k24_a	—
k25	k25_s	k25_c	k25_a	—
k26	k26_s	k26_c	k26_a	—
k27	k27_s	k27_c	k27_a	k27_g
k28	k28_s	k28_c	k28_a	k28_g
k31	k31_s	k31_c	k31_a	—
k32	k32_s	k32_c	k32_a	—
k33	k33_s	k33_c	k33_a	—

Figure C-8 (Part 1 of 3). Names of the RT PC Keys for Italian

k34	k34_s	k34_c	k34_a	—
k35	k35_s	k35_c	k35_a	—
k36	k36_s	k36_c	k36_a	—
k37	k37_s	k37_c	k37_a	—
k38	k38_s	k38_c	k38_a	—
k39	k39_s	k39_c	k39_a	—
k40	k40_s	k40_c	k40_a	k40_g
k41	k41_s	k41_c	k41_a	k41_g
k42	k42_s	k42_c	k42_a	—
k43	k43_s	k43_c	k43_a	—
k45	k45_s	—	—	—
k46	k46_s	k46_c	k46_a	—
k47	k47_s	k47_c	k47_a	—
k48	k48_s	k48_c	k48_a	—
k49	k49_s	k49_c	k49_a	—
k50	k50_s	k50_c	k50_a	—
k51	k51_s	k51_c	k51_a	—
k52	k52_s	k52_c	k52_a	—
k53	k53_s	k53_c	k53_a	—
k54	k54_s	k54_c	k54_a	—
k55	k55_s	k55_c	k55_a	—
k61	k61_s	k61_c	k61_a	—
k64	—	—	—	—
k75	k75_s	k75_c	k75_a	—
k76	k76_s	k76_c	k76_a	—
k79	k79_s	k79_c	k79_a	—
k80	k80_s	k80_c	k80_a	—
k81	k81_s	k81_c	k81_a	—
k83	k83_s	k83_c	k83_a	—
k84	k84_s	k84_c	k84_a	—
k85	k85_s	k85_c	k85_a	—
k86	k86_s	k86_c	k86_a	—
k89	k89_s	k89_c	k89_a	—
—	—	k90_c	k90_a	—
k91	k91_s	k91_c	—	—
k92	k92_s	k92_c	—	—

Figure C-8 (Part 2 of 3). Names of the RT PC Keys for Italian

k93	k93_s	k93_c	—	—
k95	k95_s	k95_c	k95_a	—
k96	k96_s	k96_c	—	—
k97	k97_s	k97_c	—	—
k98	k98_s	k98_c	—	—
k99	k99_s	k99_c	—	—
k100	k100_s	k100_c	k100_a	—
k101	k101_s	k101_c	—	—
k102	k102_s	k102_c	—	—
k103	k103_s	k103_c	—	—
k104	k104_s	k104_c	k104_a	—
k105	k105_s	k105_c	k105_a	—
k106	k106_s	k106_c	k106_a	—
k108	k108_s	k108_c	k108_a	—
k110	k110_s	k110_c	k110_a	—
k112	k112_s	k112_c	k112_a	—
k113	k113_s	k113_c	k113_a	—
k114	k114_s	k114_c	k114_a	—
k115	k115_s	k115_c	k115_a	—
k116	k116_s	k116_c	k116_a	—
k117	k117_s	k117_c	k117_a	—
k118	k118_s	k118_c	k118_a	—
k119	k119_s	k119_c	k119_a	—
k120	k120_s	k120_c	k120_a	—
k121	k121_s	k121_c	k121_a	—
k122	k122_s	k122_c	k122_a	—
k123	k123_s	k123_c	k123_a	—
k124	k124_s	k124_c	k124_a	—
k125	k125_s	k125_c	k125_a	—
k126	k126_s	k126_c	k126_a	—

Figure C-8 (Part 3 of 3). Names of the RT PC Keys for Italian. The suffix **_s** refers to the **Shift** key, **_c** refers to the **Ctrl** key, **_a** refers to the **Alt** key, and **_g** refers to the **AltGr** key.

Note: The combination **control + alternate + another key** is not valid.

Valid RT PC Key Names for Japanese English

The following pages contain the names of all the recognized RT PC keys for Japanese English. Use only the names listed to assign IBM RT PC 3278/79 Emulation functions to RT PC keys.

—	k1_s	k1_c	k1_a	—
k2	k2_s	k2_c	k2_a	—
k3	k3_s	k3_c	k3_a	—
k4	k4_s	k4_c	k4_a	—
k5	k5_s	k5_c	k5_a	—
k6	k6_s	k6_c	k6_a	—
k7	k7_s	k7_c	k7_a	—
k8	k8_s	k8_c	k8_a	—
k9	k9_s	k9_c	k9_a	—
k10	k10_s	k10_c	k10_a	—
k11	k11_s	k11_c	k11_a	—
k12	k12_s	k12_c	k12_a	—
k13	—	k13_c	k13_a	—
k15	k15_s	k15_c	k15_a	—
k16	k16_s	k16_c	k16_a	—
k17	k17_s	k17_c	k17_a	—
k18	k18_s	k18_c	k18_a	—
k19	k19_s	k19_c	k19_a	—
k20	k20_s	k20_c	k20_a	—
k21	k21_s	k21_c	k21_a	—
k22	k22_s	k22_c	k22_a	—
k23	k23_s	k23_c	k23_a	—
k24	k24_s	k24_c	k24_a	—
k25	k25_s	k25_c	k25_a	—
k26	k26_s	k26_c	k26_a	—
k27	k27_s	—	k27_a	—
k28	k28_s	k28_c	k28_a	—
k31	k31_s	k31_c	k31_a	—
k32	k32_s	k32_c	k32_a	—

Figure C-9 (Part 1 of 3). Names of the RT PC Keys for Japanese English

k33	k33_s	k33_c	k33_a	—
k34	k34_s	k34_c	k34_a	—
k35	k35_s	k35_c	k35_a	—
k36	k36_s	k36_c	k36_a	—
k37	k37_s	k37_c	k37_a	—
k38	k38_s	k38_c	k38_a	—
k39	k39_s	k39_c	k39_a	—
k40	k40_s	k40_c	k40_a	—
k41	k41_s	k41_c	k41_a	—
k42	k42_s	k42_c	—	—
k43	k43_s	k43_c	k43_a	—
k46	k46_s	k46_c	k46_a	—
k47	k47_s	k47_c	k47_a	—
k48	k48_s	k48_c	k48_a	—
k49	k49_s	k49_c	k49_a	—
k50	k50_s	k50_c	k50_a	—
k51	k51_s	k51_c	k51_a	—
k52	k52_s	k52_c	k52_a	—
k53	k53_s	k53_c	k53_a	—
k54	k54_s	k54_c	k54_a	—
k55	k55_s	k55_c	k55_a	—
k56	k56_s	k56_c	k56_a	—
k61	k61_s	k61_c	k61_a	—
k64	—	—	—	—
k75	k75_s	k75_c	k75_a	—
k76	k76_s	k76_c	k76_a	—
k79	k79_s	k79_c	k79_a	—
k80	k80_s	k80_c	k80_a	—
k81	k81_s	k81_c	k81_a	—
k83	k83_s	k83_c	k83_a	—
k84	k84_s	k84_c	k84_a	—
k85	k85_s	k85_c	k85_a	—
k86	k86_s	k86_c	k86_a	—
k89	k89_s	k89_c	k89_a	—
—	—	k90_c	k90_a	—
k91	k91_s	k91_c	—	—
k92	k92_s	k92_c	—	—

Figure C-9 (Part 2 of 3). Names of the RT PC Keys for Japanese English

k93	k93_s	k93_c	—	—
k95	k95_s	k95_c	k95_a	—
k96	k96_s	k96_c	—	—
k97	k97_s	k97_c	—	—
k98	k98_s	k98_c	—	—
k99	k99_s	k99_c	—	—
k100	k100_s	k100_c	k100_a	—
k101	k101_s	k101_c	—	—
k102	k102_s	k102_c	—	—
k103	k103_s	k103_c	—	—
k104	k104_s	k104_c	k104_a	—
k105	k105_s	k105_c	k105_a	—
k106	k106_s	k106_c	k106_a	—
k108	k108_s	k108_c	k108_a	—
k110	k110_s	k110_c	k110_a	—
k112	k112_s	k112_c	k112_a	—
k113	k113_s	k113_c	k113_a	—
k114	k114_s	k114_c	k114_a	—
k115	k115_s	k115_c	k115_a	—
k116	k116_s	k116_c	k116_a	—
k117	k117_s	k117_c	k117_a	—
k118	k118_s	k118_c	k118_a	—
k119	k119_s	k119_c	k119_a	—
k120	k120_s	k120_c	k120_a	—
k121	k121_s	k121_c	k121_a	—
k122	k122_s	k122_c	k122_a	—
k123	k123_s	k123_c	k123_a	—
k124	k124_s	k124_c	k124_a	—
k125	k125_s	k125_c	k125_a	—
k126	k126_s	k126_c	k126_a	—

Figure C-9 (Part 3 of 3). Names of the RT PC Keys for Japanese English. The suffix `_s` refers to the **Shift** key, `_c` refers to the **Ctrl** key, `_a` refers to the **Alt** key, and `_g` refers to the **AltGr** key.

Note: The combination **control + alternate + another key** is not valid.

Valid RT PC Key Names for Norwegian

The following pages contain the names of all the recognized RT PC keys for Norwegian. Use only the names listed to assign IBM RT PC 3278/79 Emulation functions to RT PC keys.

k1	k1_s	k1_c	k1_a	—
k2	k2_s	k2_c	k2_a	—
k3	k3_s	k3_c	k3_a	k3_g
k4	k4_s	k4_c	k4_a	k4_g
k5	k5_s	k5_c	k5_a	k5_g
k6	k6_s	k6_c	k6_a	—
k7	k7_s	k7_c	k7_a	—
k8	k8_s	k8_c	k8_a	k8_g
k9	k9_s	k9_c	k9_a	k9_g
k10	k10_s	k10_c	k10_a	k10_g
k11	k11_s	k11_c	k11_a	k11_g
k12	k12_s	k12_c	k12_a	—
k13	—	k13_c	k13_a	—
k15	k15_s	k15_c	k15_a	—
k16	k16_s	k16_c	k16_a	—
k17	k17_s	k17_c	k17_a	—
k18	k18_s	k18_c	k18_a	—
k19	k19_s	k19_c	k19_a	—
k20	k20_s	k20_c	k20_a	—
k21	k21_s	k21_c	k21_a	—
k22	k22_s	k22_c	k22_a	—
k23	k23_s	k23_c	k23_a	—
k24	k24_s	k24_c	k24_a	—
k25	k25_s	k25_c	k25_a	—
k26	k26_s	k26_c	k26_a	—
k27	k27_s	k27_c	k27_a	—
—	—	k28_c	k28_a	—
k31	k31_s	k31_c	k31_a	—

Figure C-10 (Part 1 of 3). Names of the RT PC Keys for Norwegian

k32	k32_s	k32_c	k32_a	—
k33	k33_s	k33_c	k33_a	—
k34	k34_s	k34_c	k34_a	—
k35	k35_s	k35_c	k35_a	—
k36	k36_s	k36_c	k36_a	—
k37	k37_s	k37_c	k37_a	—
k38	k38_s	k38_c	k38_a	—
k39	k39_s	k39_c	k39_a	—
k40	k40_s	k40_c	k40_a	—
k41	k41_s	k41_c	k41_a	—
k42	k42_s	k42_c	k42_a	—
k43	k43_s	k43_c	k43_a	—
k45	k45_s	—	—	—
k46	k46_s	k46_c	k46_a	—
k47	k47_s	k47_c	k47_a	—
k48	k48_s	k48_c	k48_a	—
k49	k49_s	k49_c	k49_a	—
k50	k50_s	k50_c	k50_a	—
k51	k51_s	k51_c	k51_a	—
k52	k52_s	k52_c	k52_a	—
k53	k53_s	k53_c	k53_a	—
k54	k54_s	k54_c	k54_a	—
k55	k55_s	k55_c	k55_a	—
k61	k61_s	k61_c	k61_a	—
k64	—	—	—	—
k75	k75_s	k75_c	k75_a	—
k76	k76_s	k76_c	k76_a	—
k79	k79_s	k79_c	k79_a	—
k80	k80_s	k80_c	k80_a	—
k81	k81_s	k81_c	k81_a	—
k83	k83_s	k83_c	k83_a	—
k84	k84_s	k84_c	k84_a	—
k85	k85_s	k85_c	k85_a	—
k86	k86_s	k86_c	k86_a	—
k89	k89_s	k89_c	k89_a	—
—	—	k90_c	k90_a	—

Figure C-10 (Part 2 of 3). Names of the RT PC Keys for Norwegian

k91	k91_s	k91_c	—	—
k92	k92_s	k92_c	—	—
k93	k93_s	k93_c	—	—
k95	k95_s	k95_c	k95_a	—
k96	k96_s	k96_c	—	—
k97	k97_s	k97_c	—	—
k98	k98_s	k98_c	—	—
k99	k99_s	k99_c	—	—
k100	k100_s	k100_c	k100_a	—
k101	k101_s	k101_c	—	—
k102	k102_s	k102_c	—	—
k103	k103_s	k103_c	—	—
k104	k104_s	k104_c	k104_a	—
k105	k105_s	k105_c	k105_a	—
k106	k106_s	k106_c	k106_a	—
k108	k108_s	k108_c	k108_a	—
k110	k110_s	k110_c	k110_a	—
k112	k112_s	k112_c	k112_a	—
k113	k113_s	k113_c	k113_a	—
k114	k114_s	k114_c	k114_a	—
k115	k115_s	k115_c	k115_a	—
k116	k116_s	k116_c	k116_a	—
k117	k117_s	k117_c	k117_a	—
k118	k118_s	k118_c	k118_a	—
k119	k119_s	k119_c	k119_a	—
k120	k120_s	k120_c	k120_a	—
k121	k121_s	k121_c	k121_a	—
k122	k122_s	k122_c	k122_a	—
k123	k123_s	k123_c	k123_a	—
k124	k124_s	k124_c	k124_a	—
k125	k125_s	k125_c	k125_a	—
k126	k126_s	k126_c	k126_a	—

Figure C-10 (Part 3 of 3). Names of the RT PC Keys for Norwegian. The suffix **_s** refers to the **Shift** key, **_c** refers to the **Ctrl** key, **_a** refers to the **Alt** key, and **_g** refers to the **AltGr** key.

Note: The combination **control + alternate + another key** is not valid.

Valid RT PC Key Names for Portuguese

The following pages contain the names of all the recognized RT PC keys for Portuguese. Use only the names listed to assign IBM RT PC 3278/79 Emulation functions to RT PC keys.

k1	k1_s	k1_c	k1_a	—
k2	k2_s	k2_c	k2_a	—
k3	k3_s	k3_c	k3_a	k3_g
k4	k4_s	k4_c	k4_a	k4_g
k5	k5_s	k5_c	k5_a	k5_g
k6	k6_s	k6_c	k6_a	—
k7	k7_s	k7_c	k7_a	—
k8	k8_s	k8_c	k8_a	k8_g
k9	k9_s	k9_c	k9_a	k9_g
k10	k10_s	k10_c	k10_a	k10_g
k11	k11_s	k11_c	k11_a	k11_g
k12	k12_s	k12_c	k12_a	—
k13	k13_s	k13_c	k13_a	—
k15	k15_s	k15_c	k15_a	—
k16	k16_s	k16_c	k16_a	—
k17	k17_s	k17_c	k17_a	—
k18	k18_s	k18_c	k18_a	—
k19	k19_s	k19_c	k19_a	—
k20	k20_s	k20_c	k20_a	—
k21	k21_s	k21_c	k21_a	—
k22	k22_s	k22_c	k22_a	—
k23	k23_s	k23_c	k23_a	—
k24	k24_s	k24_c	k24_a	—
k25	k25_s	k25_c	k25_a	—
k26	k26_s	k26_c	k26_a	—
k27	k27_s	k27_c	k27_a	—
—	—	k28_c	k28_a	—
k31	k31_s	k31_c	k31_a	—

Figure C-11 (Part 1 of 3). Names of the RT PC Keys for Portuguese

k32	k32_s	k32_c	k32_a	—
k33	k33_s	k33_c	k33_a	—
k34	k34_s	k34_c	k34_a	—
k35	k35_s	k35_c	k35_a	—
k36	k36_s	k36_c	k36_a	—
k37	k37_s	k37_c	k37_a	—
k38	k38_s	k38_c	k38_a	—
k39	k39_s	k39_c	k39_a	—
k40	k40_s	k40_c	k40_a	—
k41	k41_s	k41_c	k41_a	—
—	—	k42_c	k42_a	—
k43	k43_s	k43_c	k43_a	—
k45	k45_s	—	—	—
k46	k46_s	k46_c	k46_a	—
k47	k47_s	k47_c	k47_a	—
k48	k48_s	k48_c	k48_a	—
k49	k49_s	k49_c	k49_a	—
k50	k50_s	k50_c	k50_a	—
k51	k51_s	k51_c	k51_a	—
k52	k52_s	k52_c	k52_a	—
k53	k53_s	k53_c	k53_a	—
k54	k54_s	k54_c	k54_a	—
k55	k55_s	k55_c	k55_a	—
k61	k61_s	k61_c	k61_a	—
k64	—	—	—	—
k75	k75_s	k75_c	k75_a	—
k76	k76_s	k76_c	k76_a	—
k79	k79_s	k79_c	k79_a	—
k80	k80_s	k80_c	k80_a	—
k81	k81_s	k81_c	k81_a	—
k83	k83_s	k83_c	k83_a	—
k84	k84_s	k84_c	k84_a	—
k85	k85_s	k85_c	k85_a	—
k86	k86_s	k86_c	k86_a	—
k89	k89_s	k89_c	k89_a	—
—	—	k90_c	k90_a	—

Figure C-11 (Part 2 of 3). Names of the RT PC Keys for Portuguese

k91	k91_s	k91_c	—	—
k92	k92_s	k92_c	—	—
k93	k93_s	k93_c	—	—
k95	k95_s	k95_c	k95_a	—
k96	k96_s	k96_c	—	—
k97	k97_s	k97_c	—	—
k98	k98_s	k98_c	—	—
k99	k99_s	k99_c	—	—
k100	k100_s	k100_c	k100_a	—
k101	k101_s	k101_c	—	—
k102	k102_s	k102_c	—	—
k103	k103_s	k103_c	—	—
k104	k104_s	k104_c	k104_a	—
k105	k105_s	k105_c	k105_a	—
k106	k106_s	k106_c	k106_a	—
k108	k108_s	k108_c	k108_a	—
k110	k110_s	k110_c	k110_a	—
k112	k112_s	k112_c	k112_a	—
k113	k113_s	k113_c	k113_a	—
k114	k114_s	k114_c	k114_a	—
k115	k115_s	k115_c	k115_a	—
k116	k116_s	k116_c	k116_a	—
k117	k117_s	k117_c	k117_a	—
k118	k118_s	k118_c	k118_a	—
k119	k119_s	k119_c	k119_a	—
k120	k120_s	k120_c	k120_a	—
k121	k121_s	k121_c	k121_a	—
k122	k122_s	k122_c	k122_a	—
k123	k123_s	k123_c	k123_a	—
k124	k124_s	k124_c	k124_a	—
k125	k125_s	k125_c	k125_a	—
k126	k126_s	k126_c	k126_a	—

Figure C-11 (Part 3 of 3). Names of the RT PC Keys for Portuguese. The suffix `_s` refers to the **Shift** key, `_c` refers to the **Ctrl** key, `_a` refers to the **Alt** key, and `_g` refers to the **AltGr** key.

Note: The combination **control + alternate + another key** is not valid.

Valid RT PC Key Names for Spanish

The following pages contain the names of all the recognized RT PC keys for Spanish. Use only the names listed to assign IBM RT PC 3278/79 Emulation functions to RT PC keys.

k1	k1_s	k1_c	k1_a	k1_g
k2	k2_s	k2_c	k2_a	k2_g
k3	k3_s	k3_c	k3_a	k3_g
k4	k4_s	k4_c	k4_a	k4_g
k5	k5_s	k5_c	k5_a	k5_g
k6	k6_s	k6_c	k6_a	—
k7	k7_s	k7_c	k7_a	k7_g
k8	k8_s	k8_c	k8_a	—
k9	k9_s	k9_c	k9_a	—
k10	k10_s	k10_c	k10_a	—
k11	k11_s	k11_c	k11_a	—
k12	k12_s	k12_c	k12_a	—
k13	k13_s	k13_c	k13_a	—
k15	k15_s	k15_c	k15_a	—
k16	k16_s	k16_c	k16_a	—
k17	k17_s	k17_c	k17_a	—
k18	k18_s	k18_c	k18_a	—
k19	k19_s	k19_c	k19_a	—
k20	k20_s	k20_c	k20_a	—
k21	k21_s	k21_c	k21_a	—
k22	k22_s	k22_c	k22_a	—
k23	k23_s	k23_c	k23_a	—
k24	k24_s	k24_c	k24_a	—
k25	k25_s	k25_c	k25_a	—
k26	k26_s	k26_c	k26_a	—
—	—	k27_c	k27_a	k27_g
k28	k28_s	k28_c	k28_a	k28_g
k31	k31_s	k31_c	k31_a	—
k32	k32_s	k32_c	k32_a	—
k33	k33_s	k33_c	k33_a	—

Figure C-12 (Part 1 of 3). Names of the RT PC Keys for Spanish

k34	k34_s	k34_c	k34_a	—
k35	k35_s	k35_c	k35_a	—
k36	k36_s	k36_c	k36_a	—
k37	k37_s	k37_c	k37_a	—
k38	k38_s	k38_c	k38_a	—
k39	k39_s	k39_c	k39_a	—
k40	k40_s	k40_c	k40_a	—
—	—	k41_c	k41_a	k41_g
k42	k42_s	k42_c	k42_a	k42_g
k43	k43_s	k43_c	k43_a	—
k45	k45_s	—	—	—
k46	k46_s	k46_c	k46_a	—
k47	k47_s	k47_c	k47_a	—
k48	k48_s	k48_c	k48_a	—
k49	k49_s	k49_c	k49_a	—
k50	k50_s	k50_c	k50_a	—
k51	k51_s	k51_c	k51_a	—
k52	k52_s	k52_c	k52_a	—
k53	k53_s	k53_c	k53_a	—
k54	k54_s	k54_c	k54_a	—
k55	k55_s	k55_c	k55_a	—
k61	k61_s	k61_c	k61_a	—
k64	—	—	—	—
k75	k75_s	k75_c	k75_a	—
k76	k76_s	k76_c	k76_a	—
k79	k79_s	k79_c	k79_a	—
k80	k80_s	k80_c	k80_a	—
k81	k81_s	k81_c	k81_a	—
k83	k83_s	k83_c	k83_a	—
k84	k84_s	k84_c	k84_a	—
k85	k85_s	k85_c	k85_a	—
k86	k86_s	k86_c	k86_a	—
k89	k89_s	k89_c	k89_a	—
—	—	k90_c	k90_a	—
k91	k91_s	k91_c	—	—

Figure C-12 (Part 2 of 3). Names of the RT PC Keys for Spanish

k92	k92_s	k92_c	—	—
k93	k93_s	k93_c	—	—
k95	k95_s	k95_c	k95_a	—
k96	k96_s	k96_c	—	—
k97	k97_s	k97_c	—	—
k98	k98_s	k98_c	—	—
k99	k99_s	k99_c	—	—
k100	k100_s	k100_c	k100_a	—
k101	k101_s	k101_c	—	—
k102	k102_s	k102_c	—	—
k103	k103_s	k103_c	—	—
k104	k104_s	k104_c	k104_a	—
k105	k105_s	k105_c	k105_a	—
k106	k106_s	k106_c	k106_a	—
k108	k108_s	k108_c	k108_a	—
k110	k110_s	k110_c	k110_a	—
k112	k112_s	k112_c	k112_a	—
k113	k113_s	k113_c	k113_a	—
k114	k114_s	k114_c	k114_a	—
k115	k115_s	k115_c	k115_a	—
k116	k116_s	k116_c	k116_a	—
k117	k117_s	k117_c	k117_a	—
k118	k118_s	k118_c	k118_a	—
k119	k119_s	k119_c	k119_a	—
k120	k120_s	k120_c	k120_a	—
k121	k121_s	k121_c	k121_a	—
k122	k122_s	k122_c	k122_a	—
k123	k123_s	k123_c	k123_a	—
k124	k124_s	k124_c	k124_a	—
k125	k125_s	k125_c	k125_a	—
k126	k126_s	k126_c	k126_a	—

Figure C-12 (Part 3 of 3). Names of the RT PC Keys for Spanish. The suffix **_s** refers to the **Shift** key, **_c** refers to the **Ctrl** key, **_a** refers to the **Alt** key, and **_g** refers to the **AltGr** key.

Note: The combination **control + alternate + another key** is not valid.

Valid RT PC Key Names for Swiss-French and Swiss-German

The following pages contain the names of all the recognized RT PC keys for Swiss-French and Swiss-German. Use only the names listed to assign IBM RT PC 3278/79 Emulation functions to RT PC keys.

k1	k1_s	k1_c	k1_a	—
k2	k2_s	k2_c	k2_a	k2_g
k3	k3_s	k3_c	k3_a	k3_g
k4	k4_s	k4_c	k4_a	k4_g
k5	k5_s	k5_c	k5_a	—
k6	k6_s	k6_c	k6_a	—
k7	k7_s	k7_c	k7_a	k7_g
k8	k8_s	k8_c	k8_a	k8_g
k9	k9_s	k9_c	k9_a	k9_g
k10	k10_s	k10_c	k10_a	—
k11	k11_s	k11_c	k11_a	—
k12	k12_s	k12_c	k12_a	—
—	—	k13_c	k13_a	—
k15	k15_s	k15_c	k15_a	—
k16	k16_s	k16_c	k16_a	—
k17	k17_s	k17_c	k17_a	—
k18	k18_s	k18_c	k18_a	—
k19	k19_s	k19_c	k19_a	—
k20	k20_s	k20_c	k20_a	—
k21	k21_s	k21_c	k21_a	—
k22	k22_s	k22_c	k22_a	—
k23	k23_s	k23_c	k23_a	—
k24	k24_s	k24_c	k24_a	—
k25	k25_s	k25_c	k25_a	—
k26	k26_s	k26_c	k26_a	—
k27	k27_s	k27_c	k27_a	k27_g
—	k28_s	k28_c	k28_a	k28_g
k31	k31_s	k31_c	k31_a	—

Figure C-13 (Part 1 of 3). Names of the RT PC Keys for Swiss-French and Swiss-German

k32	k32_s	k32_c	k32_a	—
k33	k33_s	k33_c	k33_a	—
k34	k34_s	k34_c	k34_a	—
k35	k35_s	k35_c	k35_a	—
k36	k36_s	k36_c	k36_a	—
k37	k37_s	k37_c	k37_a	—
k38	k38_s	k38_c	k38_a	—
k39	k39_s	k39_c	k39_a	—
k40	k40_s	k40_c	k40_a	—
k41	k41_s	k41_c	k41_a	k41_g
k42	k42_s	—	—	k42_g
k43	k43_s	k43_c	k43_a	—
k45	k45_s	k45_c	k45_a	k45_g
k46	k46_s	k46_c	k46_a	—
k47	k47_s	k47_c	k47_a	—
k48	k48_s	k48_c	k48_a	—
k49	k49_s	k49_c	k49_a	—
k50	k50_s	k50_c	k50_a	—
k51	k51_s	k51_c	k51_a	—
k52	k52_s	k52_c	k52_a	—
k53	k53_s	k53_c	k53_a	—
k54	k54_s	k54_c	k54_a	—
k55	k55_s	k55_c	k55_a	—
k61	k61_s	k61_c	k61_a	—
k64	—	—	—	—
k75	k75_s	k75_c	k75_a	—
k76	k76_s	k76_c	k76_a	—
k79	k79_s	k79_c	k79_a	—
k80	k80_s	k80_c	k80_a	—
k81	k81_s	k81_c	k81_a	—
k83	k83_s	k83_c	k83_a	—
k84	k84_s	k84_c	k84_a	—
k85	k85_s	k85_c	k85_a	—
k86	k86_s	k86_c	k86_a	—
k89	k89_s	k89_c	k89_a	—
—	—	k90_c	k90_a	—

Figure C-13 (Part 2 of 3). Names of the RT PC Keys for Swiss-French and Swiss-German

k91	k91_s	k91_c	—	—
k92	k92_s	k92_c	—	—
k93	k93_s	k93_c	—	—
k95	k95_s	k95_c	k95_a	—
k96	k96_s	k96_c	—	—
k97	k97_s	k97_c	—	—
k98	k98_s	k98_c	—	—
k99	k99_s	k99_c	—	—
k100	k100_s	k100_c	k100_a	—
k101	k101_s	k101_c	—	—
k102	k102_s	k102_c	—	—
k103	k103_s	k103_c	—	—
k104	k104_s	k104_c	k104_a	—
k105	k105_s	k105_c	k105_a	—
k106	k106_s	k106_c	k106_a	—
k108	k108_s	k108_c	k108_a	—
k110	k110_s	k110_c	k110_a	—
k112	k112_s	k112_c	k112_a	—
k113	k113_s	k113_c	k113_a	—
k114	k114_s	k114_c	k114_a	—
k115	k115_s	k115_c	k115_a	—
k116	k116_s	k116_c	k116_a	—
k117	k117_s	k117_c	k117_a	—
k118	k118_s	k118_c	k118_a	—
k119	k119_s	k119_c	k119_a	—
k120	k120_s	k120_c	k120_a	—
k121	k121_s	k121_c	k121_a	—
k122	k122_s	k122_c	k122_a	—
k123	k123_s	k123_c	k123_a	—
k124	k124_s	k124_c	k124_a	—
k125	k125_s	k125_c	k125_a	—
k126	k126_s	k126_c	k126_a	—

Figure C-13 (Part 3 of 3). Names of the RT PC Keys for Swiss-French and Swiss-German. The suffix **_s** refers to the **Shift** key, **_c** refers to the **Ctrl** key, **_a** refers to the **Alt** key, and **_g** refers to the **AltGr** key.

Note: The combination **control + alternate + another key** is not valid.

Duplicate Keys

The tables of duplicate keys on the following pages show which keys on the IBM RT PC Keyboard function as duplicates in each language.

If you assign different 3278/79 functions to keys listed as duplicates in the duplicate keys table, the function assigned to the first key listed in the **emdefs.p** or **emaltdefs.p** file applies to all of the keys on the line. In other words, the first key on any line to be assigned a function in the definition file you are using causes all keys on that line to perform that function regardless of any other function they are assigned.

For example, **k32_c** and **k90_c** always have the same function. If in the definition file you assign **k32_c** to terminate the emulator, the duplicate key **k90_c** also terminates the emulator even if it is assigned another function later in the definition file.

Duplicate Keys for Austrian/German

Below are the keys and key combinations that function as duplicate keys and produce identical results for Austrian/German.

Keys shown on the same line below perform the same function:

k2	and	k93_s
k3	and	k98_s
k4	and	k103_s
k5	and	k92_s
k6	and	k97_s
k7	and	k102_s
k8	and	k91_s
k9	and	k96_s
k10	and	k101_s
k11	and	k99_s
k15	and	k15_s, k36_c
k15_c	and	k126_c, k126_a
k16	and	k24_c
k28	and	k106, k106_s
k32_c	and	k90_c
k43_a	and	k108_a
k43	and	k43_s, k43_c, k52_c, k108, k108_s, k108_c
k53	and	k104_s
k55	and	k105, k105_s
k61	and	k61_s, k61_c, k61_a
k75	and	k75_s
k76	and	k76_s
k95	and	k95_s
k100	and	k100_s
k110	and	k9_c

Duplicate Keys for Belgian

Below are the keys and key combinations that function as duplicate keys and produce identical results for Belgian.

Keys shown on the same line below perform the same function:

k2_s	and	k93_s
k3_s	and	k98_s
k4_s	and	k103_s
k5_s	and	k92_s
k6_s	and	k97_s
k7_s	and	k102_s
k8_s	and	k91_s
k9_s	and	k96_s
k10_s	and	k101_s
k11_s	and	k99_s
k13	and	k105, k105_s
k15	and	k15_s, k36_c
k15_c	and	k126_c, k126_a
k16	and	k24_c
k27	and	k7_g
k28_s	and	k100, k100_s
k32_c	and	k90_c
k40_c	and	k43, k43_s, k43_c, k108, k108_s, k108_c
k43_a	and	k108_a
k53_s	and	k104_s
k54_s	and	k95, k95_s
k55_s	and	k106, k106_s
k61	and	k61_s, k61_c, k61_a
k75	and	k75_s
k76	and	k76_s
k110	and	k27_c

Duplicate Keys for Canadian-French

Below are the keys and key combinations that function as duplicate keys and produce identical results for Canadian-French.

Keys shown on the same line below perform the same function:

k2	and	k93_s
k3	and	k98_s
k4	and	k103_s
k4_s	and	k95, k95_s
k5	and	k92_s
k6	and	k97_s
k7	and	k102_s
k8	and	k91_s
k9	and	k96_s
k9_s	and	k100, k100_s
k10	and	k101_s
k11	and	k99_s
k12	and	k105, k105_s
k13_s	and	k106, k106_s
k15	and	k15_s, k36_c
k15_c	and	k126_c, k126_a
k16	and	k24_c
k27	and	k27_s
k32_c	and	k90_c
k41	and	k41_s
k43	and	k43_s, k43_c, k52_c, k108, k108_s, k108_c
k43_a	and	k108_a
k54	and	k54_s, k104_s
k61	and	k61_s, k61_c, k61_a
k75	and	k75_s
k76	and	k76_s
k110	and	k27_c

Duplicate Keys for Danish and Norwegian

Below are the keys and key combinations that function as duplicate keys and produce identical results for Danish and Norwegian.

Keys shown on the same line below perform the same function:

k2	and	k93_s
k3	and	k98_s
k4	and	k103_s
k5	and	k92_s
k6	and	k97_s
k7	and	k102_s
k8	and	k91_s
k8_s	and	k95, k95_s
k9	and	k96_s
k10	and	k101_s
k11	and	k99_s
k12	and	k106, k106_s
k15	and	k15_s, k36_c
k15_c	and	k126_c, k126_a
k16	and	k24_c
k32_c	and	k90_c
k42_s	and	k100, k100_s
k43	and	k43_s, k43_c, k52_c, k108, k108_s, k108_c
k43_a	and	k108_a
k53	and	k104_s
k55	and	k105, k105_s
k61	and	k61_s, k61_c, k61_a
k75	and	k75_s
k76	and	k76_s
k110	and	k9_c

Duplicate Keys for English (UK)

Below are the keys and key combinations that function as duplicate keys and produce identical results for English (UK).

Keys shown on the same line below perform the same function:

k1_g	and	k99
k2	and	k93_s
k3	and	k98_s
k4	and	k103_s
k5	and	k92_s
k6	and	k97_s
k7	and	k102_s
k8	and	k91_s
k9	and	k96_s
k9_s	and	k100, k100_s
k10	and	k101_s
k11	and	k99_s
k12	and	k105, k105_s
k13_s	and	k106, k106_s
k15	and	k15_s, k36_c
k15_c	and	k126_c, k126_a
k16	and	k24_c
k32_c	and	k90_c
k43	and	k43_s, k43_c, k52_c, k108, k108_s, k108_c
k43_a	and	k108_a
k54	and	104_s
k55_s	and	k95, k95_s
k61	and	k61_s, k61_c, k61_a
k75	and	k75_s
k76	and	k76_s
k110	and	k27_c

Duplicate Keys for Finnish and Swedish

Below are the keys and key combinations that function as duplicate keys and produce identical results for Finnish and Swedish.

Keys shown on the same line below perform the same function:

k2	and	k93_s
k3	and	k98_s
k4	and	k103_s
k5	and	k92_s
k6	and	k97_s
k7	and	k102_s
k8	and	k91_s
k9	and	k96_s
k10	and	k101_s
k11	and	k99_s
k12	and	k106, k106_s
k15	and	k15_s, k36_c
k15_c	and	k126_c, k126_a
k16	and	k24_c
k32_c	and	k90_c
k43	and	k43_s, k43_c, k52_c, k108, k108_s, k108_c
k43_a	and	k108_a
k53	and	k104_s
k55	and	k105, k105_s
k61	and	k61_s, k61_c, k61_a
k75	and	k75_s
k76	and	k76_s
k95	and	k95_s
k100	and	k100_s
k110	and	k9_c

Duplicate Keys for French (AZERTY)

Below are the keys and key combinations that function as duplicate keys and produce identical results for French (AZERTY).

Keys shown on the same line below perform the same function:

k2_s	and	k93_s
k3_s	and	k98_s
k4_s	and	k103_s
k5_s	and	k92_s
k6_s	and	k97_s
k7	and	k105, k105_s
k7_s	and	k102_s
k8_s	and	k91_s
k9_s	and	k96_s
k10_s	and	k101_s
k10_g	and	k27
k11_s	and	k99_s
k13_s	and	k106, k106_s
k15	and	k15_s, k36_c
k15_c	and	k126_c, k126_a
k16	and	k24_c
k32_c	and	k90_c
k42	and	k100, k100_s
k43	and	k43_s, k43_c, k52_c, k108, k108_s, k108_c
k43_a	and	k108_a
k53_s	and	k104_s
k54_s	and	k95, k95_s
k61	and	k61_s, k61_c, k61_a
k75	and	k75_s
k76	and	k76_s
k110	and	k6_c

Duplicate Keys for Italian and Spanish

Below are the keys and key combinations that function as duplicate keys and produce identical results for Italian and Spanish.

Keys shown on the same line below perform the same function:

k2	and	k93_s
k3	and	k98_s
k4	and	k103_s
k5	and	k92_s
k6	and	k97_s
k7	and	k102_s
k8	and	k91_s
k8_s	and	k95, k95_s
k9	and	k96_s
k10	and	k101_s
k11	and	k99_s
k15	and	k15_s, k36_c
k15_c	and	k126_c, k126_a
k16	and	k24_c
k28	and	k106, k106_s
k28_s	and	k100, k100_s
k32_c	and	k90_c
k43	and	k43_s, k43_c, k52_c, k108, k108_s, k108_c
k43_a	and	k108_a
k54	and	k104_s
k55	and	k105, k105_s
k61	and	k61_s, k61_c, k61_a
k75	and	k75_s
k76	and	k76_s
k110	and	k27_c

Duplicate Keys for Japanese English

Below are the keys and key combinations that function as duplicate keys and produce identical results for Japanese English.

Keys shown on the same line below perform the same function:

k2	and	k93_s
k3	and	k98_s
k4	and	k103_s
k5	and	k92_s
k6	and	k97_s
k7	and	k102_s
k8	and	k91_s
k9	and	k96_s
k10	and	k101_s
k11_s	and	k99_s
k12	and	k105, k105_s
k15	and	k15_s, k36_c
k15_c	and	k126_c, k126_a
k16	and	k24_c
k32_c	and	k90_c
k40_s	and	k106, k106_s
k41_s	and	k100, k100_s
k43	and	k43_s, k43_c, k52_c, k108, k108_s, k108_c
k43_a	and	k108_a
k54	and	k104_s
k55	and	k95, k95_s
k61	and	k61_s, k61_c, k61_a
k75	and	k75_s
k76	and	k76_s
k110	and	k28_c

Duplicate Keys for Portuguese

Below are the keys and key combinations that function as duplicate keys and produce identical results for Portuguese.

Keys shown on the same line below perform the same function:

k2	and	k93_s
k3	and	k98_s
k4	and	k103_s
k5	and	k92_s
k6	and	k97_s
k7	and	k102_s
k8	and	k91_s
k8_s	and	k95, k95_s
k9	and	k96_s
k10	and	k101_s
k11	and	k99_s
k15	and	k15_s, k36_c
k15_c	and	k126_c, k126_a
k16	and	k24_c
k27	and	k106, k106_s
k27_s	and	k100, k100_s
k32_c	and	k90_c
k43	and	k43_s, k43_c, k52_c, k108, k108_s, k108_c
k43_a	and	k108_a
k54	and	k104_s
k55	and	k105, k105_s
k61	and	k61_s, k61_c, k61_a
k75	and	k75_s
k76	and	k76_s
k110	and	k9_c

Duplicate Keys for Swiss-French and Swiss-German

Below are the keys and key combinations that function as duplicate keys and produce identical results for Swiss-French and Swiss-German.

Keys shown on the same line below perform the same function:

k2	and	k93_s
k2_s	and	k106, k106_s
k3	and	k98_s
k4	and	k103_s
k4_s	and	k100, k100_s
k5	and	k92_s
k6	and	k97_s
k7	and	k102_s
k8	and	k91_s
k8_s	and	k95, k95_s
k9	and	k96_s
k10	and	k101_s
k11	and	k99_s
k15	and	k15_s, k36_c
k15_c	and	k126_c, k126_a
k16	and	k24_c
k32_c	and	k90_c
k43	and	k43_s, k43_c, k52_c, k108, k108_s, k108_c
k43_a	and	k108_a
k54	and	k104_s
k55	and	k105, k105_s
k61	and	k61_s, k61_c, k61_a
k75	and	k75_s
k76	and	k76_s
k110	and	k27_c

Appendix D. Driver Interfaces for 3278/79 Emulation

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About This Appendix

Two device drivers operate between the RT PC and the IBM Personal Computer 3278/79 Emulation Adapter: a 3278/79 Emulation AIX Operating System driver and a 3278/79 Emulation Virtual Resource Manager (VRM) driver.

This appendix describes the interfaces to these drivers.

3278/79 Emulation AIX Operating System Driver Interface

Five standard system calls for the AIX Operating System, supported by IBM RT PC 3278/79 Emulation, manipulate the devices defined to the RT PC:

open
close
read
write
ioctl

This appendix provides information about the system calls that you need to use the AIX Operating System driver. This information includes a description of 10 **ioctl** requests specific to 3278/79 Emulation:

EMKEY	EMWAIT
EMCPOS	EMVISND
EMSTAT	EMIMASK
EMXPOR	IOCTYPE
EMNWAIT	IOCINFO

Ioctl calls are sent to the AIX driver, which then issues a supervisor call (SVC) to the VRM driver.

For a description of the I/O instructions that use this information, see *AIX Operating System Technical Reference*.

Note: In this appendix, `kfd` is used as a sample name for the emulation device. This name is only an example; you can use any valid name instead.

open

Purpose: Opens a file for reading and writing.

Syntax: For syntax and other information on the **open** call, see "System Calls" in *AIX Operating System Technical Reference*.

Example: The example below opens the emulation device for reading and writing:

```
#include <fcntl.h>

int kfd;
kfd = open("/dev/em78",O_RDWR);
```

Description: You must open the emulation device for both reading and writing.

Global **#define** statements for the "O" flags (for example, O_RDWR) are in **/usr/include/fcntl.h**.

The device can be opened by only one user at a time. Multiple **open** calls issued by different processes with the same user ID are allowed, but any **open** issued by a process with a different user ID will fail.

close

Purpose: Closes a file.

Syntax: For syntax and other information on the **close** call, see "System Calls" in *AIX Operating System Technical Reference*.

Example: The example below closes the emulation device:

```
int kfd;  
close (kfd);
```

Assume kfd contains the file descriptor for the emulation device.

Description: There are no special considerations for 3278/79 Emulation.

read

Purpose: Reads from a file.

Syntax: For syntax and other information on **read** and **lseek**, see "System Calls" in *AIX Operating System Technical Reference*.

Example: The example below uses **lseek()** to move the read file-pointer:

```
int kfd;
char *buff;
int len;
int offset;
int numrd;

lseek (kfd, (long) offset, 0);
numrd = read (kfd, buff, len);
```

This example reads `len` bytes from `offset` in the emulation buffer into the user area pointed to by `buff`. The `lseek()` statement sets the offset into the communications buffer from which to read.

Assume `kfd` contains the file descriptor for the emulation device.

Description: Two **ioctl** calls control the way **read** operates:

- **EMNWAIT** indicates that subsequent **read** calls should be satisfied immediately.
- **EMWAIT** indicates that **read** calls should be satisfied only after an indication from the control unit that something has changed on the display. If the indication is a "buffer modification complete" interrupt, **read** returns the number of bytes requested. If the indication is a "load I/O address command decoded" interrupt, **read** returns 0 for the number of bytes read.

write

Purpose: Writes to a file.

Syntax: For syntax and other information on **write** and **lseek**, see "System Calls" in *AIX Operating System Technical Reference*.

Example: The example below uses an **lseek()** to move the write file-pointer:

```
int kfd;
char *buff;
int len;
int offset;
int numwr;

lseek (kfd, (long) offset, 0);
numwr = write (kfd, buff, len);
```

This example writes len bytes from the user area pointed to by buff to offset in the emulation buffer. The lseek statement sets the offset into the communications buffer to begin to write.

Assume kfd contains the file descriptor for the emulation device.

Description: There are no special considerations for 3278/79 Emulation.

ioctl

Purpose: Controls input/output devices.

Syntax: For syntax and other information on **ioctl** calls, see "System Calls" in *AIX Operating System Technical Reference*.

Examples: In the following examples, assume kfd contains the file descriptor for the emulation device.

- To send a scan code to the emulation adapter:

```
#include <sys/em78dd.h>

unsigned int scode;
int kfd;
ioctl (kfd, EMKEY | scode);
```

- To get the position of the display cursor:

```
#include <sys/em78dd.h>

int data;
int kfd;
ioctl (kfd, EMCPOS, &data);
```

The data returned is the position of the cursor relative to the start of the communication buffer.

ioctl

- To get the current value of the interrupt/status register:

```
#include <sys/em78dd.h>

int stat;
int kfd;
ioctl (kfd, EMSTAT, &stat);
```

The status returned is the eight-bit interrupt status from the adapter status register. The definition of these bits is discussed in *IBM Personal Computer 3278/79 Emulation Adapter Technical Reference*.

- To execute a power-on reset of the emulation adapter:

```
#include <sys/em78dd.h>

int kfd;
ioctl (kfd, EMXPOR);
```

- To indicate that **read()** calls should be satisfied immediately:

```
#include <sys/em78dd.h>

int kfd;
ioctl (kfd, EMNWAIT);
```

- To wait for a change to the emulation buffer or cursor position before satisfying a **read()**:

```
#include <sys/em78dd.h>

int kfd;
ioctl (kfd, EMWAIT);
```

- To get the current contents of the emulation visual/sound register:

```
#include <sys/em78dd.h>

int vsdata;
ioctl (kfd, EMVISND, &vsdata);
```

- To mask communication adapter interrupts that appear at the Virtual Machine Interface (VMI):

```
#include <sys/em78dd.h>

int kfd;
int mask;
ioctl (kfd, EMIMASK, &mask);
```

This **ioctl** provides a mask to specify which interrupts appear at the VMI.

The low-order bits of the mask (0 - 7) correspond to bits 0 - 7 of the interrupt status register. Bits 8 - 15 of the mask correspond to bits 0 - 7 of the visual/sound register. When a bit is on, the interrupt that corresponds to that bit position appears at the VMI. Interrupts that correspond to off (0) bit positions in the mask are discarded at the VRM level. The previous mask setting is returned to the caller in **mask**.

The interrupt status bits and the visual/sound bits are documented in *AIX Operating System Technical Reference*.

ioctl

- To return a byte indicating the device type:

```
#include <sys/ioctl.h>
#include <sys/devinfo.h>

unsigned char devtype;
devtype = ioctl (kfd, IOCTYPE);
```

For 3278/79 emulation, the device type is **DD_EM78**, as defined in **devinfo.h**.

- To copy the devinfo structure to the user specified area:

```
#include <sys/devinfo.h>
#include <sys/ioctl.h>

struct devinfo info;
ioctl (kfd, IOCINFO, &info);
```

Returns a structure of device information (devinfo) to the user specified area.

As defined in **devinfo.h**, the devtype field is **DD_EM78**, and the flags field is **0**.

3278/79 Emulation Virtual Resource Manager (VRM) Driver Interface

The Virtual Resource Manager (VRM) driver operates between the Virtual Machine Interface and the IBM Personal Computer 3278/79 Emulation Adapter to process data, status, and interrupts.

The VRM driver provides a queued interface to a hardware device. The driver accepts commands from a higher level, either the device manager or the operating system itself, and generates the required I/O instructions to the adapter.

The VRM driver is also responsible for handling interrupts from a hardware device, usually for I/O completion or exception conditions.

The interface to VRM is through a supervisor call (SVC) from the AIX Operating System driver. Requests enter a queue and are accessed as required for 3278/79 Emulation.

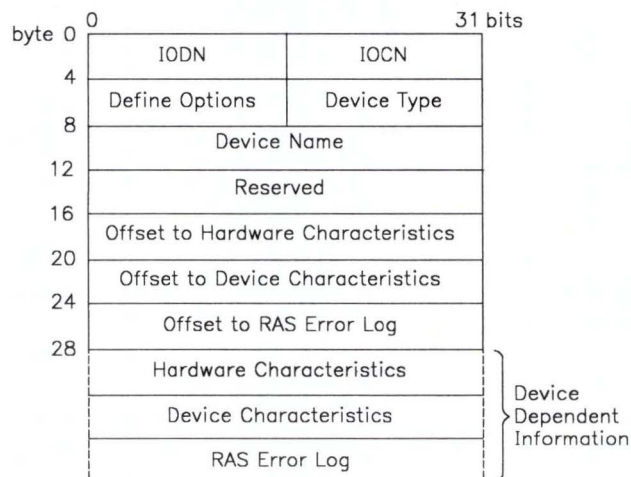
The routines associated with the VRM driver are:

- Define Device
- Initialization
- I/O Initiation
- Second Level Interrupt Handler (SLIH)
- Exception Handler
- Termination.

Information required to use the 3278/79 Emulation VRM driver is shown on the following pages. See the *Virtual Resource Manager Technical Reference* for a description of the I/O instructions that use this information.

Define Device Header

The Define Device Header section of the Define Device Structure (DDS) is common to all VRM drivers. The Define Device Header contains the information shown below:



The parameters specific to 3278/79 Emulation are defined as follows:

IODN

The 16-bit I/O Device Number the I/O subsystem (IOS) uses to reference this device for I/O activity. The IODN for 3278/79 Emulation is assigned by the system.

IOCN

The 16-bit I/O Code Number used to link the emulation adapter to the code that supports it. The IOCN for 3278/79 Emulation is assigned by the system.

Define Options

The 16-bit field that indicates the requested device definition option. Set to 1 if you plan to add a device to the system, or 2 if you plan to delete a device from the system.

Device Type

The 16-bit field that indicates characteristics of the device being defined. For 3278/79 Emulation, this field is set to 0x01.

Device Name

The 32-bit field that stores a name for the device that uses this driver. For 3278/79 Emulation, the value is **em78** (ASCII).

Offset to Hardware Characteristics

A 32-bit field that specifies the byte offset from the start of the DDS to the device Hardware Characteristics. For the 3278/79 Emulation VRM driver, the offset is 28 bytes.

Offset to Device Characteristics

A 32-bit field that specifies the byte offset from the start of the DDS to the Device Characteristics. For the 3278/79 Emulation VRM driver, the value is 0 bytes, to indicate that the driver has no Device Characteristics section.

Offset to RAS Error Log

A 32-bit field that specifies the byte offset from the start of the Define Device Structure to the RAS Error Log. For the 3278/79 Emulation VRM driver, this value is 72 bytes.

Device Dependent Information

These fields are variable in length, and contain the device Hardware Characteristics, Device Characteristics, and RAS Error Log. Each of these 3 fields starts on a word boundary. The first 4 bytes in each of the fields is the section length in words.

The Device Dependent Information contains three variable-length fields. These fields — Hardware Characteristics, Device Characteristics, and RAS Error log — are described next.

Hardware Characteristics

The parameters that describe the Hardware Characteristics are:

0	DDS Header
28	Length (in words) of Hardware Characteristics
32	Internal device type
36	I/O port address (base)
40	I/O port addresses (number)
44	Bus memory start address (RAM)
48	Bus memory end address (RAM)
52	DMA type
56 . .	One interrupt definition (16 bytes) for each interrupt level supported by the device
N	
N+4	Bus memory start address (ROM)
N+8	Bus memory end address (ROM)

These 32-bit parameters are defined as follows:

DDS Header

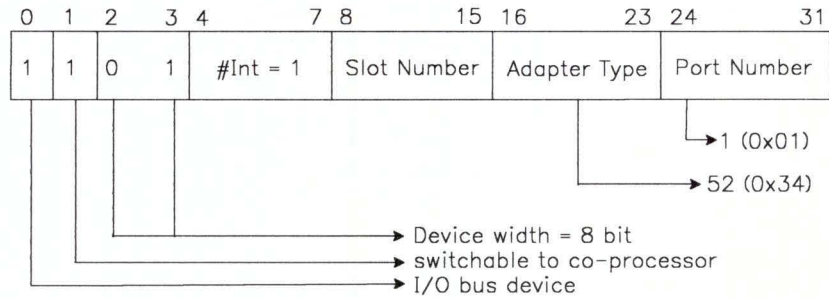
See “Define Device Header” on page D-14.

Length

Specifies the length in words. For the 3278/79 Emulation VRM Driver, this value is 11 words.

Internal Device Type

Specifies the type of device. For the 3278/79 Emulation VRM driver the format of this field is:



I/O Port Address (Base)

Contains the base I/O port address for the 3278/79 Emulation adapter. The value is 0xF00002D0.

I/O Port Address (Number)

Contains the number of I/O ports. For the 3278/79 Emulation adapter this value is 0x0A.

Bus Memory Start Address

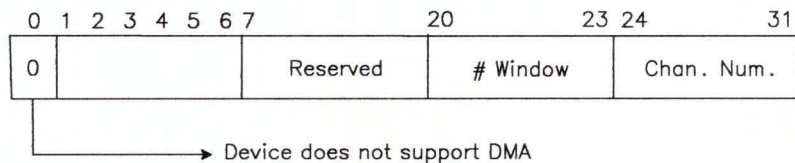
The address is 0xF40CE000.

Bus Memory End Address

The address is 0xF40CEFFF.

DMA Type

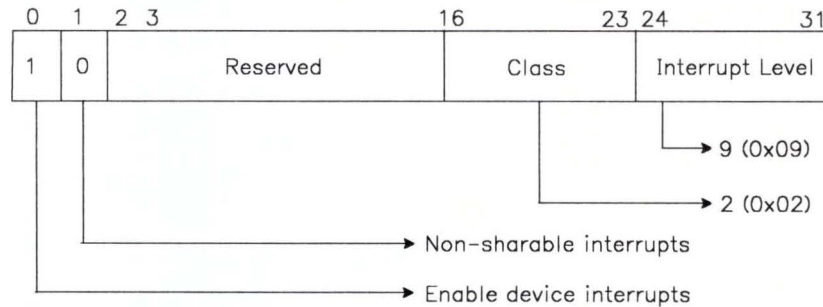
Specifies the device Direct Memory Access support. For the 3278/79 Emulation VRM Driver, the format of this field is:



Interrupt Type

Specifies the device interrupt support. For the 3278/79 Emulation VRM Driver, the format of this field is:

Note: The interrupt level field is always 0x09, and the class field is always 0x02.



Device Characteristics

The device characteristics section in the DDS describes how an adapter is to be configured at initialization time. The 3278/79 Emulation VRM driver has no device characteristics section since the adapter is not configured at initialization.

Error Log

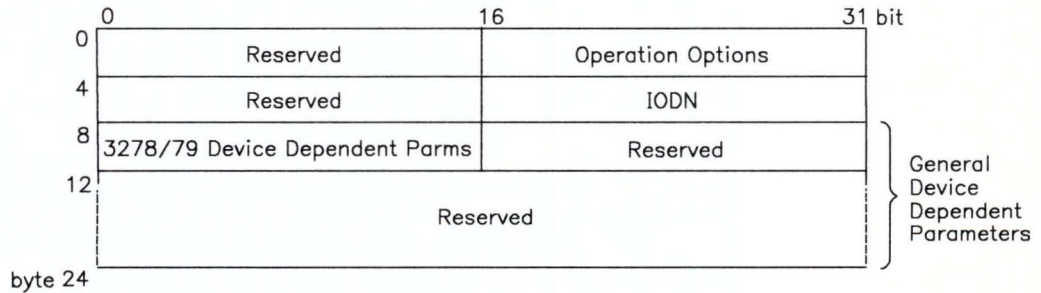
The error log section of the DDS contains error information. The only error logged by the 3278/79 Emulation VRM driver is for a lack of response from the control unit within 30 seconds of a **send keystroke** command from the AIX Operating System driver. This condition can be caused by control unit inactivity, adapter failure, or cable failure. See “Error Log” on page B-4.

Command Control Block

The Command Control Block (CCB) contains the information necessary to start an I/O transfer or command. The CCB is composed of two parts: the Command Header and Command Elements. For data transfer, there must be one Command Element for each data transfer area. The Command Header and Command Elements that define an I/O operation must be contiguous in storage. Chaining capability is provided by the Link Bit shown in the Command Element structure.

Command Header

The Command Header contains 24 bytes of general information about the I/O operation and must be aligned on a full word boundary.



The fields in the Command Header are:

Operation Options: The Operation Options field contains flags describing the current operation.

Bit 31	Interrupt on completion
Bit 30	Interrupt on error
Bit 29	Synchronous operation
Bit 28	Command elements follow
Bit 27	Reserved for VRM

Bit 16 to 26 Device options

The valid device options for the 3278/79 Emulation VRM driver are as follows. These values occupy the lower-order 8 bits of the Device Options field (bits 26 through 19). The AIX device driver puts zeroes into the remaining high-order 3 bits of the Device Options field (bits 18, 17, and 16).

- 0x00 = read data
Transmits data from the 3278/79 Emulation Adapter buffer to the system buffer. Has an associated Device-Dependent Parameter (see page D-21).
- 0x01 = write data
Transmits data from the system buffer to the 3278/79 Emulation Adapter buffer. Has an associated Device-Dependent Parameter (see page D-21).
- 0x02 = position
Not used for this driver.
- 0x03 = format
Not used for this driver.
- 0x04 = control
Not used for this driver.
- 0x05 = open
Creates a physical connection to a control unit.
- 0x06 = close
Terminates the physical connection to a control unit.
- 0x07 = send scan code
Sends a keystroke to the control unit. Has an associated Device-Dependent Parameter (see page D-21).
- 0x08 = return adapter status
Returns adapter status to the operating system. Has an associated Device-Dependent Parameter (see page D-21).

0x09 = return cursor position

Returns cursor position to the operating system. Has an associated Device-Dependent Parameter (see page D-21).

0x0A = set masks

Sets mask values for the adapter interrupt status register and the visual/sound register. Returns previous values of the masks. (See “set masks” on page D-33 for more information.) Has an associated Device-Dependent Parameter (see page D-21).

0x0B = execute power-on reset

Executes the power-on reset (POR) sequence for the emulation adapter.

IODN: The IODN field contains the 16-bit identifier for the specified I/O device.

Device-Dependent Parameters: In general in the AIX Operating System, device-dependent parameters occupy bytes 8 through 23 of the Command Header. For 3278/79 Emulation in particular, device-dependent parameters occupy only part of this area: the highest-order halfword.

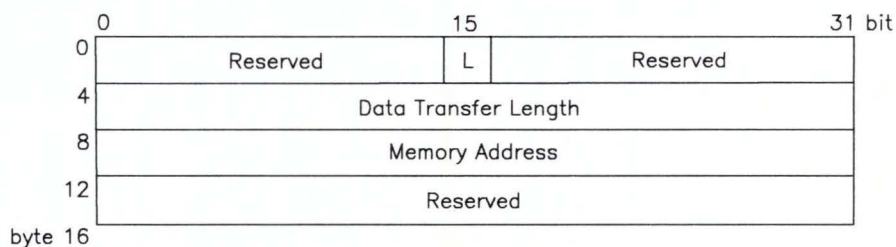
Most of the RT PC 3278/79 Emulation device-dependent parameters are 16 bits long, thus filling up all of their allotted space. However, some of the 3278/79 Emulation device-dependent parameters are 8 bits long. These 8-bit values must be aligned on the high-order word boundary of the Device-Dependent Parameter area; any remaining low-order bits are ignored.

Several of the 3278/79 Emulation device options have device-dependent parameters:

Device Option	Device-Dependent Parameter
Open	None
Close	None
Read data	Offset into communications buffer (16 bits)
Write data	Offset into communications buffer (16 bits)
Send scan code	Keystroke (8 bits)
Return adapter status	Status (8 bits)
Return cursor position	Cursor position (16 bits)
Execute power-on reset	None
Set masks	Mask values (2 x 8 bits)

Command Elements

A command element defines an area of system memory for data transfer. The format of each command element is shown in the following illustration:



The fields in a command element are:

Link (L)

1-bit field (the bit in position 15) that indicates the end of the chain when the bit is set to zero.

Data Transfer Length

32-bit field that contains the length in bytes of the data to be transferred.

Memory Address

32-bit field that contains the address of the area used for the I/O transfer.

The Link field is set to zero for all 3278/79 Emulation commands.

Both the **read data** and **write data** commands require a Data Transfer Length and a Memory Address.

Command Device Options

The next few pages explain the commands to the I/O Initiate VRM routine. These correspond to the 3278/79 Emulation device options (part of the Operation Options field in the Command Header). For more information about these commands, see the chapter about system control instructions in *Virtual Resource Manager Technical Reference*.

open

Purpose: Tests for the presence of the adapter, initializes the adapter, initializes the interrupt status register mask and visual/sound register mask to 0xFF, enables interrupts, and enables the physical connection to the control unit.

Parameters: Operation Option: 0xC005

The command header looks like this:

0	Reserved	0xC005
4	Reserved	IODN
8	Reserved	
12	Reserved	
16	Reserved	
20	Reserved	
24		

Description: The **open** command does not take a command element. **open** ignores any command element passed to it.

Return Codes:

0x0000 Completed successfully
0x8027 Device handler already open.
0x8028 Device handler not open. The adapter may not be properly installed.

close

Purpose: Terminates the physical connection with the control unit.

Parameters: Operation Option: 0xC006

The command header looks like this:

0	Reserved	0xC006
4	Reserved	IODN
8	Reserved	
12	Reserved	
16	Reserved	
20	Reserved	
24		

Description: The **close** command generally is not executed until all previous commands are dequeued/acknowledged or canceled.

The virtual machine should issue a **cancelI/O** supervisor call before issuing a **close** command. This ensures that there are no pending I/O queue elements.

The **close** command does not take a command element. **close** ignores any command element passed to it.

Return Codes:

0x0000 Completed successfully
0x8028 Device handler not open.

read data

Purpose: Reads data from the communications buffer into system memory.

Parameters: Operation Option: 0xD000

The command header (bytes 0 through 23) and command element (bytes 24 through 39) look like this:

0	Reserved	0xD000
4	Reserved	IODN
8	Offset to Com. Buffer	Reserved
12	Reserved	
16	Reserved	
20	Reserved	
24	Reserved	L Reserved
28	Data Transfer Length	
32	System Buffer Address	
36	Reserved	
40		

Description: The command element contains the address of the system buffer.

Bytes 8 and 9 of the command header should contain the offset into the communications buffer.

The sum of the transfer length and the offset to the adapter buffer must not exceed 4096 bytes.

Return Codes:

0x0000 Completed successfully.
0x8025 Adapter offset and/or transfer length out of range.
0x8028 Device handler not open.

write data

Purpose: Writes data from system memory to the communications buffer.

Parameters: Operation Option: 0xD001

The command header (bytes 0 through 23) and command element (bytes 24 through 39) look like this:

0	Reserved	0xD001	
4	Reserved	IODN	
8	Offset to Com. Buffer	Reserved	
12	Reserved		
16	Reserved		
20	Reserved		
24	Reserved	L	Reserved
28	Data Transfer Length		
32	System Buffer Address		
36	Reserved		
40			

Description: The command element contains the address of the system buffer.

Bytes 8 and 9 of the command header should contain the offset into the communications buffer.

The sum of the transfer length and the offset to the adapter buffer must not exceed 4096 bytes.

Return Codes:

0x0000 Completed successfully.
0x8025 Adapter offset and/or transfer length out of range.
0x8028 Device handler not open.

send scan code

Purpose: Sends a keystroke from the system to the control unit.

Parameters: Operation Option: 0xC007

The command header looks like this:

0	Reserved		0xC007
4	Reserved		IODN
8	Scan Code	Reserved	Reserved
12	Reserved		
16	Reserved		
20	Reserved		
24			

Description: The **send scan code** command does not require a command element. **send scan code** ignores any command element passed to it.

Byte 8 of the command header should contain the 3270 scan code to be sent to the control unit.

Return Codes:

0x0000 Completed successfully.
0x8028 Device handler not open.

return cursor position

Purpose: Tells the device handler to read the adapter cursor-address register and transfer the address to the system.

Parameters: Operation Option: 0x2009

The command header looks like this:

0	Reserved	0x2009
4	Reserved	IODN
8	Cursor Position	Reserved
12	Reserved	
16	Reserved	
20	Reserved	
24		

Description: The **return cursor position** command does not require a command element. **return cursor position** ignores any command element passed to it.

Upon completion of this command, byte 8 of the command header contains the high-order byte, and byte 9 contains the low-order byte of the adapter cursor-address register.

Return Codes:

0x0000 Completed successfully.
0x8028 Device handler not open.

return status

Purpose: Tells the device handler to read the adapter status register and transfer the status to the system.

Parameters: Operation Option: 0x2008

The command header looks like this:

0	Reserved		0x2008
4	Reserved		IODN
8	Status	Reserved	Reserved
12	Reserved		
16	Reserved		
20	Reserved		
24			

Description: The **return status** command does not require a command element. **return status** ignores any command element passed to it.

Upon completion of this command, byte 8 of the command header contains the contents of the adapter interrupt-status register.

Return Codes:

0x0000 Completed successfully.
0x8028 Device handler not open.

execute power-on reset

Purpose: Tells the device handler to disable the cable, reinitialize the adapter registers, and then enable the cable.

Parameters: Operation Option: 0xC00B

The command header looks like this:

0	Reserved	0xC00B
4	Reserved	IODN
8	Reserved	Reserved
12	Reserved	
16	Reserved	
20	Reserved	
40		

Description: The **execute power-on reset** command does not require a command element. **execute power-on reset** ignores any command element passed to it.

Return Codes:

0x0000 Completed successfully.
0x8028 Device handler not open.

set masks

Purpose: Tells the device handler to accept new mask values for the interrupt status register and visual/sound register.

Parameters: Operation Option: 0x200A

The command header looks like this:

0	Reserved		0x200A
4	Reserved		IODN
8	V/S Mask	Intr. Mask	Reserved
12	Reserved		
16	Reserved		
20	Reserved		
24			

Description: The mask values determine which real adapter interrupts are returned to the operating system as virtual interrupts. Byte 8 of the command header contains the mask value for the visual/sound register, and byte 9 contains the mask value for the interrupt status register. Bit values of zero in the masks indicate that those adapter interrupts are not to be passed to the virtual machine as virtual interrupts.

The **set masks** command does not require a command element. **set masks** ignores any command element passed to it.

Both masks are set to 0xFF when an **open** is performed. Upon completion of **set masks**, the previous values of the masks are returned in bytes 8 and 9 of the command header.

Return Codes:

0x0000 Completed successfully.
0x8028 Device handler not open.

Second Level Interrupt Handler (SLIH)

Upon entry, the Second Level Interrupt Handler (SLIH) disables the adapter interrupts. The adapter continues to update status-register bits, and the SLIH processes all the interrupt bits that are set. The SLIH then re-enables the adapter interrupts and returns to the VRM.

Because the adapter interrupts are disabled, bit 7, the interrupt-generated bit, is not set with the other bits and the status field of the virtual machine's program-status block does not show bit 7 on when a virtual interrupt occurs. The 3278/79 Emulation AIX Operating System device driver ignores bit 7 in evaluating the cause of the virtual interrupt.

For more information about virtual interrupts, refer to "set masks" on page D-33. For information about adapter interrupts, refer to *IBM Personal Computer 3278/79 Emulation Adapter Technical Reference*.

Appendix E. File Transfer Application Program Interface (API)

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About This Appendix

This appendix provides information to help programmers integrate File Transfer utilities into application programs.

Introduction

You can write an application program that integrates the File Transfer utilities into its structure. Then, File Transfer can be invoked and terminated directly from the application. This application can include a new user interface.

The following AIX Operating System facilities can be used to build and modify the application:

- AIX Operating System Driver
- Virtual Resource Manager (VRM) Driver
- Interprocess Communications (IPC)
- General Queueing Mechanism
- File Transfer Error Handling.

The AIX Operating System and VRM driver interfaces are discussed in Appendix C. The other facilities are discussed in this appendix.

Interprocess Communication (IPC)

The AIX Operating System provides several Interprocess Communication (IPC) facilities for communication between processes in an application. These facilities include signals, semaphores, and message queues.

The following example shows one way to use signals in File Transfer. During 3278/79 Emulation, processes communicate with signals. A user or an application can use the signal handlers in the File Transfer utilities to interrupt the process. The procedure is as follows:

1. File Transfer utilities receive SIGTERM, the terminate signal.
2. File Transfer stops.
3. IND\$FILE, the host file transfer program, is reset.
4. The process exits.

The **kill()** system call generates the interrupt signal just described, using the process_id (PID) of the File Transfer program.

```
#include <sys/signal.h>

int pid,SIGTERM;

kill(pid,SIGTERM);
```

Other signals and system calls can be used to invoke file transfer.

Process Queueing

The AIX Operating System supports a general-purpose process-queueing facility in the **print** command. When the **print** command places a File Transfer command on a queue, the following advantages are realized:

- Process queueing permits time-consuming processes to run in the background, thus sharing limited computer resources and eliminating the time a user must wait for one process to execute before another can begin.
- The sequential queueing of processes on the same queue resolves contention for any resources that cannot be shared. Since the IBM Personal Computer 3278/79 Emulation Adapter is not a shareable device, the queue ensures that only one process tries to use the adapter at a time.

To use the **print** command for process queueing, you must:

1. Identify a new queue to the qdaemon.
2. Place requests on the queue by issuing the **print** command.

Identifying a New Queue

To identify a new queue, edit the `/etc/qconfig` file as described in *AIX Operating System Technical Reference*. The example given below shows how to:

- Add new stanzas to the file to identify **-xfr**, a new queue.
- Describe **backend**, the background program that executes when a request is placed in the **-xfr** queue.

In this example, the background program is the shell and two **backends** are described, one for **emsend** (`/usr/bin/sendshell`) and one for **emrcv** (`/usr/bin/rcvshell`). An example of a shell program is given later in this topic.

The adapter cannot be used by more than one process at a time. Because the **emsend** and **emrcv** commands are placed on the same queue, contention for the adapter is resolved.

```
xfr:
    argname = -xfr
    device = send,rcv
    friend = FALSE

send:
    backend = /usr/bin/sendshell
    file = /tmp/emsend.log

rcv:
    backend = /usr/bin/rcvshell
    file = /tmp/emrcv.log
```

An example of a shell procedure that issues the **emsend** command is:

```
emsend -f$1 -V"$1 data a (TEXT" 2>&1
```

This example follows the general syntax described in “emsend (VM/CMS)” on page 3-7. The **\$1** file is sent to the host and stored as an EBCDIC file named **\$1** of type **data** and mode **a**.

Usually multiple programs from different queues can execute at the same time, since the qdaemon redirects standard output and standard error to the **/dev/null** file. When this happens, status information, such as error messages and return codes, is lost.

The shell procedure in the above example catches the status information. A shell procedure can perform various administrative functions, including logging the status of requests, retrying file transfer if recovery from a failure is possible, and communicating with an application using Interprocess Communication (IPC).

For information on queue management and writing shell procedures, refer to *AIX Operating System Technical Reference* and *AIX Operating System Programming Tools and Interfaces*.

Placing Requests on the Queue

Once the queue is created, requests can be placed on the queue by issuing the **print** command. The command may be issued two ways:

- The user can type the command on the command line.
- The application program can issue an **exec()** system call.

An example of a user-typed command is:

```
print -xfr:0 myfile
```

1. The **print** command places a request on the **-xfr** queue to execute the first **backend** described in the file.
2. The argument **myfile** is passed to the **backend**.
3. The user-supplied shell procedure, **/usr/bin/sendshell**, formats an **emsend** command with the required parameters.
4. The **emsend** command executes.
5. Standard output (**stdout**) and standard error (**stderr**) are redirected to the **/tmp/emsend.log** file.

Usually the qdaemon discards **stdout** and **stderr**. Because a file parameter is specified in the stanza for this backend, **stdout** and **stderr** are logged.

Note: The file specified in the **xfr:** stanza of **/etc/qconfig** must already exist for this redirection to take place.

6. The return code from **emsend** is returned to the shell procedure to be processed as required.

Error Handling

The File Transfer utilities can implement several procedures if a problem occurs when an **emsend** or **emrcv** command is issued. These procedures include:

- Checksum validation of data sent and received from the host
- Command line parsing
- Retries when invalid data is received
- Host file transfer protocol.

If the File Transfer utility recovers from the error, the application receives a return code of zero, indicating successful completion of the command. If the utility cannot recover, the application receives a return code other than zero.

You may need to modify your application program to resolve some problems. The following table contains information that can help you do this, including the return codes, bit positions (numbering from right to left), and a description of each problem.

Return Code	Bit Position	Description
0		Successful completion of emsend or emrcv .
1	01	Time out. Host did not respond in the required time.
2	02	Host Message: The host has sent an error message which has caused emsend or emrcv to terminate. This error message will appear in stderr .
4	03	An em78 error. An error occurred with the hardware or the device driver.
8	04	Frame Sequence Error. Data found in the host data frame could not be interpreted.
16	05	Host Request for Termination. The host application (IND\$FILE) encountered an error and requested the work station to terminate the session.
32	06	Signal Condition. A signal received from the keyboard or another process in the work station requested that emsend or emrcv terminate.
64	07	Signal Error. Hardware error prevented establishing a session with the host. May be caused by a bad adapter card or a disconnected cable.
128	08	Lock Already Set. Another process is using the device, and the file transfer process cannot use it.
256	09	Command Line Syntax Error. An error occurred in parsing the file transfer command line in the work station.
512	10	Local File Access Error. File system permissions do not allow access to the file you want to send or receive.
1024	11	Local File Read/Write Error. An error encountered at the work station prevented reading or writing the file you want to send or receive.
2048	12	Invalid translation warning. A character or characters could not be translated during emrcv .

Appendix F. Translation During File Transfer for AIX Version 1.1

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About This Appendix

This appendix is used with Version 1.1 of the AIX Operating System only. Version 2.1 of the AIX Operating System uses different translation code pages than the Version 1.1. Be sure to use Appendix F or Appendix G according to the version you have.

The pages in this appendix show the translations between ASCII and EBCDIC during file transfer for each supported language. These tables are specific to the file transfer function of 3278/79 Emulation.

The tables in this appendix are listed by language. The “Language-to-Code-Page Number Chart” on page F-6 shows the Country Extended Code Page (CECP) or the Code Page (CP) for each language.

About Translation During File Transfer

Files stored on an RT PC are in ASCII form, while files stored on the host are in EBCDIC. Therefore, we recommend using TEXT (or ASCII) mode during file transfer.

If you send an unsupported ASCII character such as a form feed to the host, a substitute character will replace the form feed in your file. When you copy the file back from EBCDIC to ASCII, the ASCII equivalent of the substitute character will appear, not the form feed you originally typed.

Otherwise, when a supported character is translated from EBCDIC to ASCII (during **emrcv**) and then back to EBCDIC (during **emsend**), there is no overall change.

In the charts and tables of this appendix the following notations are used:

- Numbers that appear in green in the EBCDIC to ASCII tables are two-byte values. The first byte of each of these numbers is 1F.
- A substitute value of 1A for EBCDIC and 3F for ASCII is used when the character being sent is not supported. Some applications may display a substitute character, but other applications may not display anything.
- On each of the ASCII to EBCDIC tables, the * in 1C, 1D, and 1E positions represents a two-byte character. However, the substitute value is always used, because none of these characters are supported.
- Also on the ASCII to EBCDIC tables, a * in the 1F position represents a two-byte number. Possible values for that number are listed in the chart following the ASCII table for each country. For any 1F values not listed in the chart, the substitute character is used.

Language-to-Code-Page Number Chart

National Language	CECP or CP	See Charts Starting on Page
Austrian/German	CECP 273	F-7
Belgian	CP 500	F-10
Canadian-French	CECP 037	F-13
Danish	CECP 277	F-16
English (UK)	CECP 285	F-19
English (US) (ASCII)		F-22
English (US) (TEXT)	CECP 037 (modified)	F-24
Finnish	CECP 278	F-27
French (AZERTY)	CECP 297	F-30
Italian	CECP 280	F-33
Japanese English	CECP 281	F-36
Norwegian	CECP 277	F-16
Portuguese	CECP 282	F-39
Spanish	CECP 284	F-42
Swedish	CECP 278	F-27
Swiss-French	CP 500	F-10
Swiss-German	CP 500	F-10

Austrian/German

ASCII to EBCDIC Translation for Austrian/German

		Second ASCII Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First ASCII Digit	0	00	01	02	03	37	2D	2E	2F	16	05	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	3C	3D	32	26	18	19	3F	27	*	*	*	*
	2	40	4F	7F	7B	5B	6C	50	7D	4D	5D	5C	4E	6B	60	4B	61
	3	F0	F1	F2	F3	F4	F5	F6	F7	F8	F9	7A	5E	4C	7E	6E	6F
	4	B5	C1	C2	C3	C4	C5	C6	C7	C8	C9	D1	D2	D3	D4	D5	D6
	5	D7	D8	D9	E2	E3	E4	E5	E6	E7	E8	E9	63	EC	FC	5F	6D
	6	79	81	82	83	84	85	86	87	88	89	91	92	93	94	95	96
	7	97	98	99	A2	A3	A4	A5	A6	A7	A8	A9	43	BB	DC	59	07
	8	68	D0	51	42	C0	44	47	48	52	53	54	57	56	58	4A	67
	9	71	9C	9E	CB	6A	CD	DB	DD	DF	E0	5A	B0	B1	B2	3F	B4
	A	45	55	CE	DE	49	69	9A	9B	AB	3F	BA	B8	B7	AA	8A	8B
	B	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F
	C	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F
	D	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F
	E	3F	3F	3F	3F	3F	3F	A0	3F	3F	3F	3F	3F	3F	3F	3F	3F
	F	3F	8F	3F	3F	3F	3F	3F	3F	90	3F	3F	3F	3F	EA	3F	FF

Figure F-1. Austrian/German Conversion from ASCII to EBCDIC. All digits are hexadecimal. See the notes on page F-5.

Austrian/German Two-Byte Values for ASCII to EBCDIC Translation

ASCII	EBCDIC	ASCII	EBCDIC
1FA0	B3	1FD2	9D
1FB4	B6	1FD3	9F
1FB5	7C	1FD4	AC
1FC0	46	1FD5	AD
1FC1	A1	1FD6	AE
1FC2	62	1FD7	AF
1FC3	64	1FD8	B9
1FC4	65	1FD9	BC
1FC5	66	1FDA	BD
1FC6	70	1FDB	BE
1FC7	72	1FDC	BF
1FC8	73	1FDD	CF
1FC9	74	1FDE	DA
1FCA	75	1FDF	EB
1FCB	76	1FE0	ED
1FCC	77	1FE1	EE
1FCD	78	1FE2	EF
1FCE	80	1FE3	FA
1FCF	8C	1FE4	FB
1FD0	8D	1FE5	FD
1FD1	8E	1FE6	FE

Figure F-2. Austrian/German Two-Byte Values for ASCII to EBCDIC Translation

EBCDIC to ASCII Translation for Austrian/German

		Second EBCDIC Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First EBCDIC Digit	0	00	01	02	03	1A	09	0A	7F	1A	1A	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	1A	0A	0B	1A	18	19	1A	1A	1A	1A	1A	1A
	2	1A	1A	1A	1A	1A	0A	17	1B	1A	1A	1A	1A	1A	05	06	07
	3	1A	1A	16	1A	1A	1A	1A	04	1A	1A	1A	1A	14	15	1A	1A
	4	20	1A	83	7B	85	A0	C0	86	87	A4	8E	2E	3C	28	2B	21
	5	26	82	88	89	8A	A1	8C	8B	8D	7E	9A	24	2A	29	3B	5E
	6	2D	2F	C2	5B	C3	C4	C5	8F	80	A5	94	2C	25	5F	3E	3F
	7	C6	90	C7	C8	C9	CA	CB	CC	CD	60	3A	23	B5	27	3D	22
	8	CE	61	62	63	64	65	66	67	68	69	AE	AF	CF	D0	D1	F1
	9	F8	6A	6B	6C	6D	6E	6F	70	71	72	A6	A7	91	D2	92	D3
	A	E6	C1	73	74	75	76	77	78	79	7A	AD	A8	D4	D5	D6	D7
	B	9B	9C	9D	A0	9F	40	B4	AC	AB	D8	AA	7C	D9	DA	DB	DC
	C	84	41	42	43	44	45	46	47	48	49	1A	93	1A	95	A2	DD
	D	81	4A	4B	4C	4D	4E	4F	50	51	52	DE	96	7D	97	A3	98
	E	99	1A	53	54	55	56	57	58	59	5A	FD	DF	5C	E0	E1	E2
	F	30	31	32	33	34	35	36	37	38	39	E3	E4	5D	E5	E6	FF

Figure F-3. Austrian/German Conversion from EBCDIC to ASCII. All digits are hexadecimal. See the notes on page F-5.

Belgian, Swiss-French, Swiss-German

This code page is used for Swiss-French and Swiss-German, and is the default for Belgian.

ASCII to EBCDIC Translation for Belgian, Swiss-French, Swiss-German

		Second ASCII Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First ASCII Digit	0	00	01	02	03	37	2D	2E	2F	16	05	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	3C	3D	32	26	18	19	3F	27	*	*	*	*
	2	40	4F	7F	7B	5B	6C	50	7D	4D	5D	5C	4E	6B	60	4B	61
	3	F0	F1	F2	F3	F4	F5	F6	F7	F8	F9	7A	5E	4C	7E	6E	6F
	4	7C	C1	C2	C3	C4	C5	C6	C7	C8	C9	D1	D2	D3	D4	D5	D6
	5	D7	DB	D9	E2	E3	E4	E5	E6	E7	E8	E9	4A	E0	5A	5F	6D
	6	79	81	82	83	84	85	86	87	88	89	91	92	93	94	95	96
	7	97	98	99	A2	A3	A4	A5	A6	A7	A8	A9	C0	BB	D0	A1	07
	8	68	DC	51	42	43	44	47	48	52	53	54	57	56	58	63	67
	9	71	9C	9E	CB	CC	CD	DB	DD	DF	EC	FC	B0	B1	B2	3F	B4
	A	45	55	CE	DE	49	69	9A	9B	AB	3F	BA	B8	B7	AA	8A	8B
	B	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F
	C	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F
	D	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F
	E	3F	3F	3F	3F	3F	3F	A0	3F	3F	3F	3F	3F	3F	3F	3F	3F
	F	3F	8F	3F	3F	3F	3F	3F	3F	90	3F	3F	3F	3F	EA	3F	FF

Figure F-4. Belgian, Swiss-French, Swiss-German Conversion from ASCII to EBCDIC. All digits are hexadecimal. See the notes on page F-5.

Belgian, Swiss-French, Swiss-German Two-Byte Values for ASCII to EBCDIC Translation.

ASCII	EBCDIC	ASCII	EBCDIC
1FA0	B3	1FD2	9D
1FB4	B6	1FD3	9F
1FB5	B5	1FD4	AC
1FC0	46	1FD5	AD
1FC1	59	1FD6	AE
1FC2	62	1FD7	AF
1FC3	64	1FD8	B9
1FC4	65	1FD9	BC
1FC5	66	1FDA	BD
1FC6	70	1FDB	BE
1FC7	72	1FDC	BF
1FC8	73	1FDD	CF
1FC9	74	1FDE	DA
1FCA	75	1FDF	EB
1FCB	76	1FE0	ED
1FCC	77	1FE1	EE
1FCD	78	1FE2	EF
1FCE	80	1FE3	FA
1FCF	8C	1FE4	FB
1FD0	8D	1FE5	FD
1FD1	8E	1FE6	FE

Figure F-5. Belgian, Swiss-French, Swiss-German Two-Byte Values for ASCII to EBCDIC Translation

EBCDIC to ASCII Translation for Belgian, Swiss-French, Swiss-German

		Second EBCDIC Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First EBCDIC Digit	0	00	01	02	03	1A	09	0A	7F	1A	1A	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	1A	0A	08	1A	18	19	1A	1A	1A	1A	1A	1A
	2	1A	1A	1A	1A	1A	0A	17	1B	1A	1A	1A	1A	1A	05	06	07
	3	1A	1A	16	1A	1A	1A	1A	04	1A	1A	1A	1A	14	15	1A	1A
	4	20	1A	83	84	85	A0	C0	86	87	A4	5B	2E	3C	28	2B	21
	5	26	82	88	89	8A	A1	8C	8B	8D	C1	5D	24	2A	29	3B	5E
	6	2D	2F	C2	8E	C3	C4	C5	8F	80	A5	1A	2C	25	5F	3E	3F
	7	C6	90	C7	C8	C9	CA	CB	CC	CD	60	3A	23	40	27	3D	22
	8	CE	61	62	63	64	65	66	67	68	69	AE	AF	CF	D0	D1	F1
	9	F8	6A	6B	6C	6D	6E	6F	70	71	72	A6	A7	91	D2	92	D3
	A	E6	7E	73	74	75	76	77	78	79	7A	AD	A8	D4	D5	D6	D7
	B	9B	9C	9D	A0	9F	B5	B4	AC	AB	D8	AA	7C	D9	DA	DB	DC
	C	7B	41	42	43	44	45	46	47	48	49	1A	93	94	95	A2	DD
	D	7D	4A	4B	4C	4D	4E	4F	50	51	52	DE	96	81	97	A3	98
	E	5C	1A	53	54	55	56	57	58	59	5A	FD	DF	99	E0	E1	E2
	F	30	31	32	33	34	35	36	37	38	39	E3	E4	9A	E5	E6	FF

Figure F-6. Belgian, Swiss-French, Swiss-German Conversion from EBCDIC to ASCII. All digits are hexadecimal. See the notes on page F-5.

Canadian-French

ASCII to EBCDIC Translation for Canadian-French

		Second ASCII Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First ASCII Digit	0	00	01	02	03	37	2D	2E	2F	16	05	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	3C	3D	32	26	18	19	3F	27	*	*	*	*
	2	40	5A	7F	7B	5B	6C	50	7D	4D	5D	5C	4E	6B	60	4B	61
	3	F0	F1	F2	F3	F4	F5	F6	F7	F8	F9	7A	5E	4C	7E	6E	6F
	4	7C	C1	C2	C3	C4	C5	C6	C7	C8	C9	D1	D2	D3	D4	D5	D6
	5	D7	D8	D9	E2	E3	E4	E5	E6	E7	E8	E9	BA	E0	BB	B0	6D
	6	79	81	82	83	84	85	86	87	88	89	91	92	93	94	95	96
	7	97	98	99	A2	A3	A4	A5	A6	A7	A8	A9	C0	4F	D0	A1	07
	8	68	DC	51	42	43	44	47	48	52	53	54	57	56	58	63	67
	9	71	9C	9E	CB	CC	CD	DB	DD	DF	EC	FC	4A	B1	B2	3F	B4
	A	45	55	CE	DE	49	69	9A	9B	AB	3F	5F	B8	B7	AA	8A	8B
	B	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F
	C	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F
	D	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F
	E	3F	3F	3F	3F	3F	3F	A0	3F	3F	3F	3F	3F	3F	3F	3F	3F
	F	3F	8F	3F	3F	3F	3F	3F	3F	90	3F	3F	3F	3F	EA	3F	FF

Figure F-7. Canadian-French Conversion from ASCII to EBCDIC. All digits are hexadecimal. See the notes on page F-5.

Canadian-French Two-Byte Values for ASCII to EBCDIC Translation

ASCII	EBCDIC	ASCII	EBCDIC
1FA0	B3	1FD2	9D
1FB4	B6	1FD3	9F
1FB5	B5	1FD4	AC
1FC0	46	1FD5	AD
1FC1	59	1FD6	AE
1FC2	62	1FD7	AF
1FC3	64	1FD8	B9
1FC4	65	1FD9	BC
1FC5	66	1FDA	BD
1FC6	70	1FDB	BE
1FC7	72	1FDC	BF
1FC8	73	1FDD	CF
1FC9	74	1FDE	DA
1FCA	75	1FDF	EB
1FCB	76	1FE0	ED
1FCC	77	1FE1	EE
1FCD	78	1FE2	EF
1FCE	80	1FE3	FA
1FCF	8C	1FE4	FB
1FD0	8D	1FE5	FD
1FD1	8E	1FE6	FE

Figure F-8. Canadian-French Two-Byte Values for ASCII to EBCDIC Translation

EBCDIC to ASCII Translation for Canadian-French

		Second EBCDIC Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First EBCDIC Digit	0	00	01	02	03	1A	09	0A	7F	1A	1A	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	1A	0A	08	1A	18	19	1A	1A	1A	1A	1A	1A
	2	1A	1A	1A	1A	1A	0A	17	1B	1A	1A	1A	1A	1A	05	06	07
	3	1A	1A	16	1A	1A	1A	1A	04	1A	1A	1A	1A	14	15	1A	1A
	4	20	1A	83	84	85	A0	C0	86	87	A4	9B	2E	3C	28	2B	7C
	5	26	82	88	89	8A	A1	8C	8B	8D	C1	21	24	2A	29	3B	AA
	6	2D	2F	C2	8E	C3	C4	C5	8F	80	A5	1A	2C	25	5F	3E	3F
	7	C6	90	C7	C8	C9	CA	CB	CC	CD	60	3A	23	40	27	3D	22
	8	CE	61	62	63	64	65	66	67	68	69	AE	AF	CF	D0	D1	F1
	9	F8	6A	6B	6C	6D	6E	6F	70	71	72	A6	A7	91	D2	92	D3
	A	E6	7E	73	74	75	76	77	78	79	7A	AD	A8	D4	D5	D6	D7
	B	5E	9C	9D	A0	9F	B5	B4	AC	AB	D8	5B	5D	D9	DA	DB	DC
	C	7B	41	42	43	44	45	46	47	48	49	1A	93	94	95	A2	DD
	D	7D	4A	4B	4C	4D	4E	4F	50	51	52	DE	96	81	97	A3	98
	E	5C	1A	53	54	55	56	57	58	59	5A	FD	DF	99	E0	E1	E2
	F	30	31	32	33	34	35	36	37	38	39	E3	E4	9A	E5	E6	FF

Figure F-9. Canadian-French Conversion from EBCDIC to ASCII. All digits are hexadecimal. See the notes on page F-5.

Danish and Norwegian

ASCII to EBCDIC Translation for Danish and Norwegian

		Second ASCII Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First ASCII Digit	0	00	01	02	03	37	2D	2E	2F	16	05	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	3C	3D	32	26	18	19	3F	27	*	*	*	*
	2	40	4F	7F	4A	67	6C	50	7D	4D	5D	5C	4E	6B	60	4B	61
	3	F0	F1	F2	F3	F4	F5	F6	F7	F8	F9	7A	5E	4C	7E	6E	6F
	4	80	C1	C2	C3	C4	C5	C6	C7	C8	C9	D1	D2	D3	D4	D5	D6
	5	D7	D8	D9	E2	E3	E4	E5	E6	E7	E8	E9	9E	E0	9F	5F	6D
	6	79	81	82	83	84	85	86	87	88	89	91	92	93	94	95	96
	7	97	98	99	A2	A3	A4	A5	A6	A7	A8	A9	9C	BB	47	DC	07
	8	68	A1	51	42	43	44	D0	48	52	53	54	57	56	58	63	5B
	9	71	C0	7B	CB	CC	CD	DB	DD	DF	EC	FC	B0	B1	B2	3F	B4
	A	45	55	CE	DE	49	69	9A	9B	AB	3F	BA	B8	B7	AA	8A	8B
	B	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F
	C	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F
	D	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F
	E	3F	3F	3F	3F	3F	3F	A0	3F	3F	3F	3F	3F	3F	3F	3F	3F
	F	3F	8F	3F	3F	3F	3F	3F	3F	90	3F	3F	3F	3F	EA	3F	FF

Figure F-10. Danish and Norwegian Conversion from ASCII to EBCDIC. All digits are hexadecimal. See the notes on page F-5.

Danish and Norwegian Two-Byte Values for ASCII to EBCDIC Translation

ASCII	EBCDIC	ASCII	EBCDIC
1FA0	B3	1FD2	9D
1FB4	B6	1FD3	5A
1FB5	B5	1FD4	AC
1FC0	46	1FD5	AD
1FC1	59	1FD6	AE
1FC2	62	1FD7	AF
1FC3	64	1FD8	B9
1FC4	65	1FD9	BC
1FC5	66	1FDA	BD
1FC6	6A	1FDB	BE
1FC7	72	1FDC	BF
1FC8	73	1FDD	CF
1FC9	74	1FDE	DA
1FCA	75	1FDF	EB
1FCB	76	1FE0	ED
1FCC	77	1FE1	EE
1FCD	78	1FE2	EF
1FCE	7C	1FE3	FA
1FCF	8C	1FE4	FB
1FD0	8D	1FE5	FD
1FD1	8E	1FE6	FE

Figure F-11. Danish and Norwegian Two-Byte Values for ASCII to EBCDIC Translation

EBCDIC to ASCII Translation for Danish and Norwegian

		Second EBCDIC Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First EBCDIC Digit	0	00	01	02	03	1A	09	0A	7F	1A	1A	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	1A	0A	08	1A	18	19	1A	1A	1A	1A	1A	1A
	2	1A	1A	1A	1A	1A	0A	17	1B	1A	1A	1A	1A	1A	05	06	07
	3	1A	1A	16	1A	1A	1A	1A	04	1A	1A	1A	1A	14	15	1A	1A
	4	20	1A	83	84	85	A0	C0	7D	87	A4	23	2E	3C	28	2B	21
	5	26	82	88	89	8A	A1	8C	8B	8D	C1	D3	8F	2A	29	3B	5E
	6	2D	2F	C2	8E	C3	C4	C5	24	80	A5	C6	2C	25	5F	3E	3F
	7	1A	90	C7	C8	C9	CA	CB	CC	CD	60	3A	92	CE	27	3D	22
	8	40	61	62	63	64	65	66	67	68	69	AE	AF	CF	D0	D1	F1
	9	F8	6A	6B	6C	6D	6E	6F	70	71	72	A6	A7	7B	D2	5B	5D
	A	E6	81	73	74	75	76	77	78	79	7A	AD	A8	D4	D5	D6	D7
	B	9B	9C	9D	A0	9F	B5	B4	AC	AB	DB	AA	7C	D9	DA	DB	DC
	C	91	41	42	43	44	45	46	47	48	49	1A	93	94	95	A2	DD
	D	86	4A	4B	4C	4D	4E	4F	50	51	52	DE	96	7E	97	A3	98
	E	5C	1A	53	54	55	56	57	58	59	5A	FD	DF	99	E0	E1	E2
	F	30	31	32	33	34	35	36	37	38	39	E3	E4	9A	E5	E6	FF

Figure F-12. Danish and Norwegian Conversion from EBCDIC to ASCII. All digits are hexadecimal. See the notes on page F-5.

English (UK)

ASCII to EBCDIC Translation for English (UK)

		Second ASCII Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First ASCII Digit	0	00	01	02	03	37	2D	2E	2F	16	05	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	3C	3D	32	26	18	19	3F	27	*	*	*	*
	2	40	5A	7F	7B	4A	6C	50	7D	4D	5D	5C	4E	6B	60	4B	61
	3	F0	F1	F2	F3	F4	F5	F6	F7	F8	F9	7A	5E	4C	7E	6E	6F
	4	7C	C1	C2	C3	C4	C5	C6	C7	C8	C9	D1	D2	D3	D4	D5	D6
	5	D7	D8	D9	E2	E3	E4	E5	E6	E7	E8	E9	B1	E0	BB	BA	6D
	6	79	81	82	83	84	85	86	87	88	89	91	92	93	94	95	96
	7	97	98	99	A2	A3	A4	A5	A6	A7	A8	A9	C0	4F	D0	BC	07
	8	68	DC	51	42	43	44	47	48	52	53	54	57	56	58	63	67
	9	71	9C	9E	CB	CC	CD	DB	DD	DF	EC	FC	B0	5B	B2	3F	B4
	A	45	55	CE	DE	49	69	9A	9B	AB	3F	5F	BB	B7	AA	8A	8B
	B	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F
	C	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F
	D	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F
	E	3F	3F	3F	3F	3F	3F	A0	3F	3F	3F	3F	3F	3F	3F	3F	3F
	F	3F	8F	3F	3F	3F	3F	3F	3F	90	3F	3F	3F	3F	EA	3F	FF

Figure F-13. English (UK) Conversion from ASCII to EBCDIC. All digits are hexadecimal. See the notes on page F-5.

English (UK) Two-Byte Values for ASCII to EBCDIC Translation

ASCII	EBCDIC	ASCII	EBCDIC
1FA0	B3	1FD2	9D
1FB4	B6	1FD3	9F
1FB5	B5	1FD4	AC
1FC0	46	1FD5	AD
1FC1	59	1FD6	AE
1FC2	62	1FD7	AF
1FC3	64	1FD8	B9
1FC4	65	1FD9	A1
1FC5	66	1FDA	BD
1FC6	70	1FDB	BE
1FC7	72	1FDC	BF
1FC8	73	1FDD	CF
1FC9	74	1FDE	DA
1FCA	75	1FDF	EB
1FCB	76	1FE0	ED
1FCC	77	1FE1	EE
1FCD	78	1FE2	EF
1FCE	80	1FE3	FA
1FCF	8C	1FE4	FB
1FD0	8D	1FE5	FD
1FD1	8E	1FE6	FE

Figure F-14. English (UK) Two-Byte Values for ASCII to EBCDIC Translation

EBCDIC to ASCII Translation for English (UK)

		Second EBCDIC Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First EBCDIC Digit	0	00	01	02	03	1A	09	0A	7F	1A	1A	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	1A	0A	08	1A	18	19	1A	1A	1A	1A	1A	1A
	2	1A	1A	1A	1A	1A	0A	17	1B	1A	1A	1A	1A	1A	05	06	07
	3	1A	1A	16	1A	1A	1A	1A	04	1A	1A	1A	1A	14	15	1A	1A
	4	20	1A	83	84	85	A0	C0	86	87	A4	24	2E	3C	28	2B	7C
	5	26	82	88	89	8A	A1	8C	8B	8D	C1	21	9C	2A	29	3B	AA
	6	2D	2F	C2	8E	C3	C4	C5	8F	80	A5	1A	2C	25	5F	3E	3F
	7	C6	90	C7	C8	C9	CA	CB	CC	CD	60	3A	23	40	27	3D	22
	8	CE	61	62	63	64	65	66	67	68	69	AE	AF	CF	D0	D1	F1
	9	F8	6A	6B	6C	6D	6E	6F	70	71	72	A6	A7	91	D2	92	D3
	A	E6	D9	73	74	75	76	77	78	79	7A	AD	A8	D4	D5	D6	D7
	B	9B	5B	9D	A0	9F	B5	B4	AC	AB	D8	5E	5D	7E	DA	DB	DC
	C	7B	41	42	43	44	45	46	47	48	49	1A	93	94	95	A2	DD
	D	7D	4A	4B	4C	4D	4E	4F	50	51	52	DE	96	81	97	A3	98
	E	5C	1A	53	54	55	56	57	58	59	5A	FD	DF	99	E0	E1	E2
	F	30	31	32	33	34	35	36	37	38	39	E3	E4	9A	E5	E6	FF

Figure F-15. English (UK) Conversion from EBCDIC to ASCII. All digits are hexadecimal. See the notes on page F-5.

English (US) (ASCII)

ASCII to EBCDIC Translation for English (US) (ASCII)

If you requested the ASCII option with the **emsend** command, the host uses this table to translate from ASCII values to EBCDIC values. This table corresponds to information in the host's **IND\$FILE** program.

		Second ASCII Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First ASCII Digit	0	00	01	02	03	37	2D	2E	2F	16	05	25	0B	0C	0D	0E	0F
	1	10	11	12	13	3C	3D	32	26	18	19	3F	27	1C	1D	1E	1F
	2	40	5A	7F	7B	5B	6C	50	7D	4D	5D	5C	4E	6B	60	4B	61
	3	F0	F1	F2	F3	F4	F5	F6	F7	F8	F9	7A	5E	4C	7E	6E	6F
	4	7C	C1	C2	C3	C4	C5	C6	C7	C8	C9	D1	D2	D3	D4	D5	D6
	5	D7	D8	D9	E2	E3	E4	E5	E6	E7	E8	E9	4A	E0	4F	5F	6D
	6	79	81	82	83	84	85	86	87	88	89	91	92	93	94	95	96
	7	97	98	99	A2	A3	A4	A5	A6	A7	A8	A9	C0	6A	D0	A1	07
	8	20	21	22	23	24	15	06	17	28	29	2A	2B	2C	09	0A	1B
	9	30	31	1A	33	34	35	36	08	38	39	3A	3B	04	14	3E	E1
	A	41	42	43	44	45	46	47	48	49	51	52	53	54	55	56	57
	B	58	59	62	63	64	65	66	67	68	69	70	71	72	73	74	75
	C	76	77	78	80	8A	8B	8C	8D	8E	8F	90	9A	9B	9C	9D	9E
	D	9F	A0	AA	AB	AC	AD	AE	AF	B0	B1	B2	B3	B4	B5	B6	B7
	E	B8	B9	BA	BB	BC	BD	BE	BF	CA	CB	CC	CD	CE	CF	DA	DB
	F	DC	DD	DE	DF	EA	EB	EC	ED	EE	EF	FA	FB	FC	FD	FE	FF

Figure F-16. English (US) (ASCII) Conversion from ASCII to EBCDIC. All digits are hexadecimal. See the notes on page F-5.

EBCDIC to ASCII Translation for English (US) (ASCII)

If you requested the ASCII option with the **emrcv** command, the host uses this table to translate from EBCDIC values to ASCII values. This table corresponds to information in the host's **IND\$FILE** program.

		Second EBCDIC Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First EBCDIC Digit	0	00	01	02	03	9C	09	86	7F	97	8D	8E	0B	0C	0D	0E	0F
	1	10	11	12	13	9D	85	08	87	18	19	92	8F	1C	1D	1E	1F
	2	80	81	82	83	84	0A	17	1B	88	89	8A	8B	8C	05	06	07
	3	90	91	16	93	94	95	96	04	98	99	9A	9B	14	15	9E	1A
	4	20	A0	A1	A2	A3	A4	A5	A6	A7	A8	5B	2E	3C	28	2B	5D
	5	26	A9	AA	AB	AC	AD	AE	AF	B0	B1	21	24	2A	29	3B	5E
	6	2D	2F	B2	B3	B4	B5	B6	B7	B8	B9	7C	2C	25	5F	3E	3F
	7	BA	BB	BC	BD	BE	BF	C0	C1	C2	60	3A	23	40	27	3D	22
	8	C3	61	62	63	64	65	66	67	68	69	C4	C5	C6	C7	C8	C9
	9	CA	6A	6B	6C	6D	6E	6F	70	71	72	CB	CC	CD	CE	CF	D0
	A	D1	7E	73	74	75	76	77	78	79	7A	D2	D3	D4	D5	D6	D7
	B	D8	D9	DA	DB	DC	DD	DE	DF	E0	E1	E2	E3	E4	E5	E6	E7
	C	7B	41	42	43	44	45	46	47	48	49	E8	E9	EA	EB	EC	ED
	D	7D	4A	4B	4C	4D	4E	4F	50	51	52	EE	EF	F0	F1	F2	F3
	E	5C	9F	53	54	55	56	57	58	59	5A	F4	F5	F6	F7	F8	F9
	F	30	31	32	33	34	35	36	37	38	39	FA	FB	FC	FD	FE	FF

Figure F-17. English (US) (ASCII) Conversion from EBCDIC to ASCII. All digits are hexadecimal. See the notes on page F-5.

English (US) (TEXT)

ASCII to EBCDIC Translation for English (US) (TEXT)

If you requested the TEXT option with the **emsend** command, the RT PC 3278/79 Emulation file transfer program uses this table to translate from ASCII values to EBCDIC values.

		Second ASCII Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First ASCII Digit	0	00	01	02	03	37	2D	2E	2F	16	05	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	3C	3D	32	26	18	19	3F	27	*	*	*	*
	2	40	5A	7F	7B	5B	6C	50	7D	4D	5D	5C	4E	6B	60	4B	61
	3	F0	F1	F2	F3	F4	F5	F6	F7	F8	F9	7A	5E	4C	7E	6E	6F
	4	7C	C1	C2	C3	C4	C5	C6	C7	C8	C9	D1	D2	D3	D4	D5	D6
	5	D7	D8	D9	E2	E3	E4	E5	E6	E7	E8	E9	AD	E0	BD	5F	6D
	6	79	81	82	83	84	85	86	87	88	89	91	92	93	94	95	96
	7	97	98	99	A2	A3	A4	A5	A6	A7	A8	A9	C0	4F	D0	A1	07
	8	FD	73	69	8A	75	57	EB	56	8B	76	58	77	8C	59	B7	FC
	9	CC	FA	9C	8D	78	62	8E	63	66	BA	BB	4A	43	44	45	3F
	A	8F	9A	9B	3F	9D	DC	41	3F	3F	3F	52	3F	3F	3F	3F	3F
	B	3F	3F	3F	29	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F
	C	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F
	D	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F
	E	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F
	F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	FF

Figure F-18. English (US) (TEXT) Conversion from ASCII to EBCDIC. All digits are hexadecimal. See the notes on page F-5.

English (US) (TEXT) Two-Byte Values for ASCII to EBCDIC Translation

ASCII	EBCDIC
1FAF	46
1FB5	48
1FDB	55

Figure F-19. English (US) (TEXT) Two-Byte Values for ASCII to EBCDIC Translation

EBCDIC to ASCII Translation for English (US) (TEXT)

If you requested the TEXT option with the **emrcv** command, the RT PC 3278/79 Emulation file transfer program uses this table to translate from EBCDIC values to ASCII values.

		Second EBCDIC Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First EBCDIC Digit	0	00	01	02	03	1A	09	0A	7F	1A	1A	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	1A	0A	08	1A	18	19	1A	1A	1A	1A	1A	1A
	2	1A	1A	1A	1A	1A	0A	17	1B	1A	1A	1A	1A	1A	05	06	07
	3	1A	1A	16	1A	1A	1A	1A	04	1A	1A	1A	1A	14	15	1A	1A
	4	20	A6	E1	9C	9D	9E	AF	1A	B5	1A	9B	2E	3C	28	2B	7C
	5	26	1A	AA	1A	22	DB	87	85	8A	8D	21	24	2A	29	3B	5E
	6	2D	2F	95	97	61	6F	98	85	8A	82	BA	2C	25	5F	3E	3F
	7	8D	95	97	81	87	84	89	8B	94	60	3A	23	40	27	3D	22
	8	81	61	62	63	64	65	66	67	68	69	83	88	8C	93	96	A0
	9	82	6A	6B	6C	6D	6E	6F	70	71	72	A1	A2	92	A4	41	45
	A	49	7E	73	74	75	76	77	78	79	7A	4F	55	41	5B	59	4A
	B	45	45	49	4F	55	59	53	8E	45	49	99	9A	41	5D	49	4F
	C	7B	41	42	43	44	45	46	47	48	49	55	41	90	49	1A	1A
	D	7D	4A	4B	4C	4D	4E	4F	50	51	52	4F	55	A5	1A	1A	1A
	E	5C	1A	53	54	55	56	57	58	59	5A	1A	86	87	1A	1A	1A
	F	30	31	32	33	34	35	36	37	38	39	91	1A	8F	80	1A	FF

Figure F-20. English (US) (TEXT) Conversion from EBCDIC to ASCII. All digits are hexadecimal. See the notes on page F-5.

Finnish and Swedish

ASCII to EBCDIC Translation for Finnish and Swedish

		Second ASCII Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First ASCII Digit	0	00	01	02	03	37	2D	2E	2F	16	05	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	3C	3D	32	26	18	19	3F	27	*	*	*	*
	2	40	4F	7F	63	67	6C	50	7D	4D	5D	5C	4E	6B	60	4B	61
	3	F0	F1	F2	F3	F4	F5	F6	F7	F8	F9	7A	5E	4C	7E	6E	6F
	4	EC	C1	C2	C3	C4	C5	C6	C7	C8	C9	D1	D2	D3	D4	D5	D6
	5	D7	D8	D9	E2	E3	E4	E5	E6	E7	E8	E9	B5	71	9F	5F	6D
	6	51	81	82	83	84	85	86	87	88	89	91	92	93	94	95	96
	7	97	98	99	A2	A3	A4	A5	A6	A7	A8	A9	43	BB	47	DC	07
	8	68	A1	79	42	C0	44	D0	48	52	53	54	57	56	58	7B	5B
	9	E0	9C	9E	CB	6A	CD	DB	DD	DF	7C	FC	B0	B1	B2	3F	B4
	A	45	55	CE	DE	49	69	9A	9B	AB	3F	BA	B8	B7	AA	8A	8B
	B	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F
	C	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F
	D	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F
	E	3F	3F	3F	3F	3F	3F	A0	3F	3F	3F	3F	3F	3F	3F	3F	3F
	F	3F	8F	3F	3F	3F	3F	3F	3F	90	3F	3F	3F	3F	EA	3F	FF

Figure F-21. Finnish and Swedish Conversion from ASCII to EBCDIC. All digits are hexadecimal. See the notes on page F-5.

Finnish and Swedish Two-Byte Values for ASCII to EBCDIC Translation

ASCII	EBCDIC	ASCII	EBCDIC
1FA0	B3	1FD2	9D
1FB4	B6	1FD3	5A
1FB5	4A	1FD4	AC
1FC0	46	1FD5	AD
1FC1	59	1FD6	AE
1FC2	62	1FD7	AF
1FC3	64	1FD8	B9
1FC4	65	1FD9	BC
1FC5	66	1FDA	BD
1FC6	70	1FDB	BE
1FC7	72	1FDC	BF
1FC8	73	1FDD	CF
1FC9	74	1FDE	DA
1FCA	75	1FDF	EB
1FCB	76	1FE0	ED
1FCC	77	1FE1	EE
1FCD	78	1FE2	EF
1FCE	80	1FE3	FA
1FCF	8C	1FE4	FB
1FD0	8D	1FE5	FD
1FD1	8E	1FE6	FE

Figure F-22. Finnish and Swedish Two-Byte Values for ASCII to EBCDIC Translation

EBCDIC to ASCII Translation for Finnish and Swedish

		Second EBCDIC Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First EBCDIC Digit	0	00	01	02	03	1A	09	0A	7F	1A	1A	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	1A	0A	08	1A	18	19	1A	1A	1A	1A	1A	1A
	2	1A	1A	1A	1A	1A	0A	17	1B	1A	1A	1A	1A	1A	05	06	07
	3	1A	1A	16	1A	1A	1A	1A	04	1A	1A	1A	1A	14	15	1A	1A
	4	20	1A	83	7B	85	A0	C0	7D	87	A4	B5	2E	3C	28	2B	21
	5	26	60	88	89	8A	A1	8C	8B	8D	C1	D3	8F	2A	29	3B	5E
	6	2D	2F	C2	23	C3	C4	C5	24	80	A5	94	2C	25	5F	3E	3F
	7	C6	5C	C7	C8	C9	CA	CB	CC	CD	82	3A	8E	99	27	3D	22
	8	CE	61	62	63	64	65	66	67	68	69	AE	AF	CF	D0	D1	F1
	9	F8	6A	6B	6C	6D	6E	6F	70	71	72	A6	A7	91	D2	92	5D
	A	E6	81	73	74	75	76	77	78	79	7A	AD	A8	D4	D5	D6	D7
	B	9B	9C	9D	A0	9F	5B	B4	AC	AB	DB	AA	7C	D9	DA	DB	DC
	C	84	41	42	43	44	45	46	47	48	49	1A	93	1A	95	A2	DD
	D	86	4A	4B	4C	4D	4E	4F	50	51	52	DE	96	7E	97	A3	98
	E	90	1A	53	54	55	56	57	58	59	5A	FD	DF	40	E0	E1	E2
	F	30	31	32	33	34	35	36	37	38	39	E3	E4	9A	E5	E6	FF

Figure F-23. Finnish and Swedish Conversion from EBCDIC to ASCII. All digits are hexadecimal. See the notes on page F-5.

French (AZERTY)

ASCII to EBCDIC Translation for French (AZERTY)

		Second ASCII Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First ASCII Digit	0	00	01	02	03	37	2D	2E	2F	16	05	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	3C	3D	32	26	18	19	3F	27	*	*	*	*
	2	40	4F	7F	B1	5B	6C	50	7D	4D	5D	5C	4E	6B	60	4B	61
	3	F0	F1	F2	F3	F4	F5	F6	F7	F8	F9	7A	5E	4C	7E	6E	6F
	4	44	C1	C2	C3	C4	C5	C6	C7	C8	C9	D1	D2	D3	D4	D5	D6
	5	D7	D8	D9	E2	E3	E4	E5	E6	E7	E8	E9	90	48	B5	5F	6D
	6	A0	81	82	83	84	85	86	87	88	89	91	92	93	94	95	96
	7	97	98	99	A2	A3	A4	A5	A6	A7	A8	A9	51	BB	54	BD	07
	8	68	DC	C0	42	43	7C	47	E0	52	53	D0	57	56	58	63	67
	9	71	9C	9E	CB	CC	CD	DB	6A	DF	EC	FC	B0	7B	B2	3F	B4
	A	45	55	CE	DE	49	69	9A	9B	AB	3F	BA	B8	B7	AA	8A	8B
	B	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F
	C	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F
	D	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F
	E	3F	3F	3F	3F	3F	3F	79	3F	3F	3F	3F	3F	3F	3F	3F	3F
	F	3F	8F	3F	3F	3F	3F	3F	3F	4A	3F	3F	3F	3F	EA	3F	FF

Figure F-24. French (AZERTY) Conversion from ASCII to EBCDIC. All digits are hexadecimal. See the notes on page F-5.

French (AZERTY) Two-Byte Values for ASCII to EBCDIC Translation

ASCII	EBCDIC	ASCII	EBCDIC
1FA0	B3	1FD2	9D
1FB4	B6	1FD3	9F
1FB5	5A	1FD4	AC
1FC0	46	1FD5	AD
1FC1	59	1FD6	AE
1FC2	62	1FD7	AF
1FC3	64	1FD8	B9
1FC4	65	1FD9	BC
1FC5	66	1FDA	A1
1FC6	70	1FDB	BE
1FC7	72	1FDC	BF
1FC8	73	1FDD	CF
1FC9	74	1FDE	DA
1FCA	75	1FDF	EB
1FCB	76	1FE0	ED
1FCC	77	1FE1	EE
1FCD	78	1FE2	EF
1FCE	80	1FE3	FA
1FCF	8C	1FE4	FB
1FD0	8D	1FE5	FD
1FD1	8E	1FE6	FE

Figure F-25. French (AZERTY) Two-Byte Values for ASCII to EBCDIC Translation

EBCDIC to ASCII Translation for French (AZERTY)

		Second EBCDIC Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First EBCDIC Digit	0	00	01	02	03	1A	09	0A	7F	1A	1A	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	1A	0A	08	1A	18	19	1A	1A	1A	1A	1A	1A
	2	1A	1A	1A	1A	1A	0A	17	1B	1A	1A	1A	1A	1A	05	06	07
	3	1A	1A	16	1A	1A	1A	1A	04	1A	1A	1A	1A	14	15	1A	1A
	4	20	1A	83	84	40	A0	C0	86	5C	A4	F8	2E	3C	28	2B	21
	5	26	7B	88	89	7D	A1	8C	8B	8D	C1	B5	24	2A	29	3B	5E
	6	2D	2F	C2	8E	C3	C4	C5	8F	80	A5	97	2C	25	5F	3E	3F
	7	C6	90	C7	C8	C9	CA	CB	CC	CD	E6	3A	9C	85	27	3D	22
	8	CE	61	62	63	64	65	66	67	68	69	AE	AF	CF	D0	D1	F1
	9	5B	6A	6B	6C	6D	6E	6F	70	71	72	A6	A7	91	D2	92	D3
	A	60	DA	73	74	75	76	77	78	79	7A	AD	A8	D4	D5	D6	D7
	B	9B	23	9D	A0	9F	5D	B4	AC	AB	D8	AA	7C	D9	7E	DB	DC
	C	82	41	42	43	44	45	46	47	48	49	1A	93	94	95	A2	DD
	D	8A	4A	4B	4C	4D	4E	4F	50	51	52	DE	96	81	1A	A3	98
	E	87	1A	53	54	55	56	57	58	59	5A	FD	DF	99	E0	E1	E2
	F	30	31	32	33	34	35	36	37	38	39	E3	E4	9A	E5	E6	FF

Figure F-26. French (AZERTY) Conversion from EBCDIC to ASCII. All digits are hexadecimal. See the notes on page F-5.

Italian

ASCII to EBCDIC Translation for Italian

		Second ASCII Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First ASCII Digit	0	00	01	02	03	37	2D	2E	2F	16	05	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	3C	3D	32	26	18	19	3F	27	*	*	*	*
	2	40	4F	7F	B1	5B	6C	50	7D	4D	5D	5C	4E	6B	60	4B	61
	3	F0	F1	F2	F3	F4	F5	F6	F7	F8	F9	7A	5E	4C	7E	6E	6F
	4	B5	C1	C2	C3	C4	C5	C6	C7	C8	C9	D1	D2	D3	D4	D5	D6
	5	D7	D8	D9	E2	E3	E4	E5	E6	E7	E8	E9	90	48	51	5F	6D
	6	DD	81	82	83	84	85	86	87	88	89	91	92	93	94	95	96
	7	97	98	99	A2	A3	A4	A5	A6	A7	A8	A9	44	BB	54	58	07
	8	68	DC	5A	42	43	C0	47	E0	52	53	D0	57	56	A1	63	67
	9	71	9C	9E	CB	CC	6A	DB	79	DF	EC	FC	B0	7B	B2	3F	B4
	A	45	55	CE	DE	49	69	9A	9B	AB	3F	BA	B8	B7	AA	8A	8B
	B	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F
	C	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F
	D	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F
	E	3F	3F	3F	3F	3F	3F	A0	3F	3F	3F	3F	3F	3F	3F	3F	3F
	F	3F	8F	3F	3F	3F	3F	3F	3F	4A	3F	3F	3F	3F	EA	3F	FF

Figure F-27. Italian Conversion from ASCII to EBCDIC. All digits are hexadecimal. See the notes on page F-5.

Italian Two-Byte Values for ASCII to EBCDIC Translation

ASCII	EBCDIC	ASCII	EBCDIC
1FA0	B3	1FD2	9D
1FB4	B6	1FD3	9F
1FB5	7C	1FD4	AC
1FC0	46	1FD5	AD
1FC1	59	1FD6	AE
1FC2	62	1FD7	AF
1FC3	64	1FD8	B9
1FC4	65	1FD9	BC
1FC5	66	1FDA	BD
1FC6	70	1FDB	BE
1FC7	72	1FDC	BF
1FC8	73	1FDD	CF
1FC9	74	1FDE	DA
1FCA	75	1FDF	EB
1FCB	76	1FE0	ED
1FCC	77	1FE1	EE
1FCD	78	1FE2	EF
1FCE	80	1FE3	FA
1FCF	8C	1FE4	FB
1FD0	8D	1FE5	FD
1FD1	8E	1FE6	FE

Figure F-28. Italian Two-Byte Values for ASCII to EBCDIC Translation

EBCDIC to ASCII Translation for Italian

		Second EBCDIC Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First EBCDIC Digit	0	00	01	02	03	1A	09	0A	7F	1A	1A	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	1A	0A	08	1A	18	19	1A	1A	1A	1A	1A	1A
	2	1A	1A	1A	1A	1A	0A	17	1B	1A	1A	1A	1A	1A	05	06	07
	3	1A	1A	16	1A	1A	1A	1A	04	1A	1A	1A	1A	14	15	1A	1A
	4	20	1A	83	84	7B	A0	C0	86	5C	A4	F8	2E	3C	28	2B	21
	5	26	5D	88	89	7D	A1	8C	8B	7E	C1	82	24	2A	29	3B	5E
	6	2D	2F	C2	8E	C3	C4	C5	8F	80	A5	95	2C	25	5F	3E	3F
	7	C6	90	C7	C8	C9	CA	CB	CC	CD	97	3A	9C	B5	27	3D	22
	8	CE	61	62	63	64	65	66	67	68	69	AE	AF	CF	D0	D1	F1
	9	5B	6A	6B	6C	6D	6E	6F	70	71	72	A6	A7	91	D2	92	D3
	A	E6	8D	73	74	75	76	77	78	79	7A	AD	A8	D4	D5	D6	D7
	B	9B	23	9D	A0	9F	40	B4	AC	AB	D8	AA	7C	D9	DA	DB	DC
	C	85	41	42	43	44	45	46	47	48	49	1A	93	94	1A	A2	DD
	D	8A	4A	4B	4C	4D	4E	4F	50	51	52	DE	96	81	60	A3	98
	E	87	1A	53	54	55	56	57	58	59	5A	FD	DF	99	E0	E1	E2
	F	30	31	32	33	34	35	36	37	38	39	E3	E4	9A	E5	E6	FF

Figure F-29. Italian Conversion from EBCDIC to ASCII. All digits are hexadecimal. See the notes on page F-5.

Japanese English

ASCII to EBCDIC Translation for Japanese English

		Second ASCII Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First ASCII Digit	0	00	01	02	03	37	2D	2E	2F	16	05	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	3C	3D	32	26	18	19	3F	27	*	*	*	*
	2	40	5A	7F	7B	E0	6C	50	7D	4D	5D	5C	4E	6B	60	4B	61
	3	F0	F1	F2	F3	F4	F5	F6	F7	F8	F9	7A	5E	4C	7E	6E	6F
	4	7C	C1	C2	C3	C4	C5	C6	C7	C8	C9	D1	D2	D3	D4	D5	D6
	5	D7	D8	D9	E2	E3	E4	E5	E6	E7	E8	E9	B1	B2	BB	BA	6D
	6	79	81	82	83	84	85	86	87	88	89	91	92	93	94	95	96
	7	97	98	99	A2	A3	A4	A5	A6	A7	A8	A9	C0	4F	D0	BC	07
	8	68	DC	51	42	43	44	47	48	52	53	54	57	56	58	63	67
	9	71	9C	9E	CB	CC	CD	DB	DD	DF	EC	FC	B0	4A	5B	3F	B4
	A	45	55	CE	DE	49	69	9A	9B	AB	3F	5F	B8	B7	AA	8A	8B
	B	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F
	C	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F
	D	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F
	E	3F	3F	3F	3F	3F	3F	A0	3F	3F	3F	3F	3F	3F	3F	3F	3F
	F	3F	8F	3F	3F	3F	3F	3F	3F	90	3F	3F	3F	3F	EA	3F	FF

Figure F-30. Japanese English Conversion from ASCII to EBCDIC. All digits are hexadecimal. See the notes on page F-5.

Japanese English Two-Byte Values for ASCII to EBCDIC Translation

ASCII	EBCDIC	ASCII	EBCDIC
1FA0	B3	1FD2	9D
1FB4	B6	1FD3	9F
1FB5	B5	1FD4	AC
1FC0	46	1FD5	AD
1FC1	59	1FD6	AE
1FC2	62	1FD7	AF
1FC3	64	1FD8	B9
1FC4	65	1FD9	A1
1FC5	66	1FDA	BD
1FC6	70	1FDB	BE
1FC7	72	1FDC	BF
1FC8	73	1FDD	CF
1FC9	74	1FDE	DA
1FCA	75	1FDF	EB
1FCB	76	1FE0	ED
1FCC	77	1FE1	EE
1FCD	78	1FE2	EF
1FCE	80	1FE3	FA
1FCF	8C	1FE4	FB
1FD0	8D	1FE5	FD
1FD1	8E	1FE6	FE

Figure F-31. Japanese English Two-Byte Values for ASCII to EBCDIC Translation

EBCDIC to ASCII Translation for Japanese English

		Second EBCDIC Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First EBCDIC Digit	0	00	01	02	03	1A	09	0A	7F	1A	1A	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	1A	0A	08	1A	18	19	1A	1A	1A	1A	1A	1A
	2	1A	1A	1A	1A	1A	0A	17	1B	1A	1A	1A	1A	1A	05	06	07
	3	1A	1A	16	1A	1A	1A	1A	04	1A	1A	1A	1A	14	15	1A	1A
	4	20	1A	83	84	85	A0	C0	86	87	A4	9C	2E	3C	28	2B	7C
	5	26	82	88	89	8A	A1	8C	8B	8D	C1	21	9D	2A	29	3B	AA
	6	2D	2F	C2	8E	C3	C4	C5	8F	80	A5	1A	2C	25	5F	3E	3F
	7	C6	90	C7	C8	C9	CA	CB	CC	CD	60	3A	23	40	27	3D	22
	8	CE	61	62	63	64	65	66	67	68	69	AE	AF	CF	D0	D1	F1
	9	F8	6A	6B	6C	6D	6E	6F	70	71	72	A6	A7	91	D2	92	D3
	A	E6	D9	73	74	75	76	77	78	79	7A	AD	A8	D4	D5	D6	D7
	B	9B	5B	5C	A0	9F	B5	B4	AC	AB	D8	5E	5D	7E	DA	DB	DC
	C	7B	41	42	43	44	45	46	47	48	49	1A	93	94	95	A2	DD
	D	7D	4A	4B	4C	4D	4E	4F	50	51	52	DE	96	81	97	A3	98
	E	24	1A	53	54	55	56	57	58	59	5A	FD	DF	99	E0	E1	E2
	F	30	31	32	33	34	35	36	37	38	39	E3	E4	9A	E5	E6	FF

Figure F-32. Japanese English Conversion from EBCDIC to ASCII. All digits are hexadecimal. See the notes on page F-5.

Portuguese

ASCII to EBCDIC Translation for Portuguese

		Second ASCII Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First ASCII Digit	0	00	01	02	03	37	2D	2E	2F	16	05	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	3C	3D	32	26	18	19	3F	27	*	*	*	*
	2	40	4F	7F	66	5B	6C	50	7D	4D	5D	5C	4E	6B	60	4B	61
	3	F0	F1	F2	F3	F4	F5	F6	F7	F8	F9	7A	5E	4C	7E	6E	6F
	4	EF	C1	C2	C3	C4	C5	C6	C7	C8	C9	D1	D2	D3	D4	D5	D6
	5	D7	D8	D9	E2	E3	E4	E5	E6	E7	E8	E9	4A	68	5A	5F	6D
	6	79	81	82	83	84	85	86	87	88	89	91	92	93	94	95	96
	7	97	98	99	A2	A3	A4	A5	A6	A7	A8	A9	46	BB	BE	48	07
	8	E0	DC	51	42	43	44	47	A1	52	53	54	57	56	58	63	67
	9	71	9C	9E	CB	CC	CD	DB	DD	DF	EC	FC	B0	B1	B2	3F	B4
	A	45	55	CE	DE	49	69	9A	9B	AB	3F	BA	BB	B7	AA	8A	8B
	B	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F
	C	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F
	D	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F
	E	3F	3F	3F	3F	3F	3F	3F	A0	3F	3F	3F	3F	3F	3F	3F	3F
	F	3F	8F	3F	3F	3F	3F	3F	3F	3F	90	3F	3F	3F	3F	EA	3F	FF

Figure F-33. Portuguese Conversion from ASCII to EBCDIC. All digits are hexadecimal. See the notes on page F-5.

Portuguese Two-Byte Values for ASCII to EBCDIC Translation

ASCII	EBCDIC	ASCII	EBCDIC
1FA0	B3	1FD2	9D
1FB4	B6	1FD3	9F
1FB5	B5	1FD4	AC
1FC0	C0	1FD5	AD
1FC1	59	1FD6	AE
1FC2	62	1FD7	AF
1FC3	64	1FD8	B9
1FC4	65	1FD9	BC
1FC5	7B	1FDA	BD
1FC6	70	1FDB	D0
1FC7	72	1FDC	BF
1FC8	73	1FDD	6A
1FC9	74	1FDE	DA
1FCA	75	1FDF	EB
1FCB	76	1FE0	ED
1FCC	77	1FE1	EE
1FCD	78	1FE2	7C
1FCE	80	1FE3	FA
1FCF	8C	1FE4	FB
1FD0	8D	1FE5	FD
1FD1	8E	1FE6	FE

Figure F-34. Portuguese Two-Byte Values for ASCII to EBCDIC Translation

EBCDIC to ASCII Translation for Portuguese

		Second EBCDIC Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First EBCDIC Digit	0	00	01	02	03	1A	09	0A	7F	1A	1A	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	1A	0A	08	1A	18	19	1A	1A	1A	1A	1A	1A
	2	1A	1A	1A	1A	1A	0A	17	1B	1A	1A	1A	1A	1A	05	06	07
	3	1A	1A	16	1A	1A	1A	1A	04	1A	1A	1A	1A	14	15	1A	1A
	4	20	1A	83	84	85	A0	7B	86	7E	A4	5B	2E	3C	28	2B	21
	5	26	82	88	89	8A	A1	8C	8B	8D	C1	5D	24	2A	29	3B	5E
	6	2D	2F	C2	8E	C3	C4	23	8F	5C	A5	DD	2C	25	5F	3E	3F
	7	C6	90	C7	C8	C9	CA	CB	CC	CD	60	3A	C5	E2	27	3D	22
	8	CE	61	62	63	64	65	66	67	68	69	AE	AF	CF	D0	D1	F1
	9	F8	6A	6B	6C	6D	6E	6F	70	71	72	A6	A7	91	D2	92	D3
	A	E6	87	73	74	75	76	77	78	79	7A	AD	A8	D4	D5	D6	D7
	B	9B	9C	9D	A0	9F	B5	B4	AC	AB	D8	AA	7C	D9	DA	7D	DC
	C	C0	41	42	43	44	45	46	47	48	49	1A	93	94	95	A2	1A
	D	DB	4A	4B	4C	4D	4E	4F	50	51	52	DE	96	81	97	A3	98
	E	80	1A	53	54	55	56	57	58	59	5A	FD	DF	99	E0	E1	40
	F	30	31	32	33	34	35	36	37	38	39	E3	E4	9A	E5	E6	FF

Figure F-35. Portuguese Conversion from EBCDIC to ASCII. All digits are hexadecimal. See the notes on page F-5.

Spanish

ASCII to EBCDIC Translation for Spanish

		Second ASCII Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First ASCII Digit	0	00	01	02	03	37	2D	2E	2F	16	05	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	3C	3D	32	26	18	19	3F	27	*	*	*	*
	2	40	BB	7F	69	5B	6C	50	7D	4D	5D	5C	4E	6B	60	4B	61
	3	F0	F1	F2	F3	F4	F5	F6	F7	F8	F9	7A	5E	4C	7E	6E	6F
	4	7C	C1	C2	C3	C4	C5	C6	C7	C8	C9	D1	D2	D3	D4	D5	D6
	5	D7	D8	D9	E2	E3	E4	E5	E6	E7	E8	E9	4A	E0	5A	BA	6D
	6	79	81	82	83	84	85	86	87	88	89	91	92	93	94	95	96
	7	97	98	99	A2	A3	A4	A5	A6	A7	A8	A9	C0	4F	D0	BD	07
	8	68	DC	51	42	43	44	47	48	52	53	54	57	56	58	63	67
	9	71	9C	9E	CB	CC	CD	DB	DD	DF	EC	FC	B0	B1	B2	3F	B4
	A	45	55	CE	DE	6A	7B	9A	9B	AB	3F	5F	B8	B7	AA	8A	8B
	B	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F
	C	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F
	D	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F
	E	3F	3F	3F	3F	3F	3F	A0	3F	3F	3F	3F	3F	3F	3F	3F	3F
	F	3F	8F	3F	3F	3F	3F	3F	3F	90	3F	3F	3F	3F	EA	3F	FF

Figure F-36. Spanish Conversion from ASCII to EBCDIC. All digits are hexadecimal. See the notes on page F-5.

Spanish Two-Byte Values for ASCII to EBCDIC Translation

ASCII	EBCDIC	ASCII	EBCDIC
1FA0	B3	1FD2	9D
1FB4	B6	1FD3	9F
1FB5	B5	1FD4	AC
1FC0	46	1FD5	AD
1FC1	59	1FD6	AE
1FC2	62	1FD7	AF
1FC3	64	1FD8	B9
1FC4	65	1FD9	BC
1FC5	66	1FDA	A1
1FC6	70	1FDB	BE
1FC7	72	1FDC	BF
1FC8	73	1FDD	CF
1FC9	74	1FDE	DA
1FCA	75	1FDF	EB
1FCB	76	1FE0	ED
1FCC	77	1FE1	EE
1FCD	78	1FE2	EF
1FCE	80	1FE3	FA
1FCF	8C	1FE4	FB
1FD0	8D	1FE5	FD
1FD1	8E	1FE6	FE

Figure F-37. Spanish Two-Byte Values for ASCII to EBCDIC Translation

EBCDIC to ASCII Translation for Spanish

		Second EBCDIC Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First EBCDIC Digit	0	00	01	02	03	1A	09	0A	7F	1A	1A	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	1A	0A	08	1A	18	19	1A	1A	1A	1A	1A	1A
	2	1A	1A	1A	1A	1A	0A	17	1B	1A	1A	1A	1A	1A	05	06	07
	3	1A	1A	16	1A	1A	1A	1A	04	1A	1A	1A	1A	14	15	1A	1A
	4	20	1A	83	84	85	A0	C0	86	87	1A	5B	2E	3C	28	2B	7C
	5	26	82	88	89	8A	A1	8C	8B	8D	C1	5D	24	2A	29	3B	AA
	6	2D	2F	C2	8E	C3	C4	C5	8F	80	23	A4	2C	25	5F	3E	3F
	7	C6	90	C7	C8	C9	CA	CB	CC	CD	60	3A	A5	40	27	3D	22
	8	CE	61	62	63	64	65	66	67	68	69	AE	AF	CF	D0	D1	F1
	9	F8	6A	6B	6C	6D	6E	6F	70	71	72	A6	A7	91	D2	92	D3
	A	E6	DA	73	74	75	76	77	78	79	7A	AD	A8	D4	D5	D6	D7
	B	9B	9C	9D	A0	9F	B5	B4	AC	AB	D8	5E	21	D9	7E	DB	DC
	C	7B	41	42	43	44	45	46	47	48	49	1A	93	94	95	A2	DD
	D	7D	4A	4B	4C	4D	4E	4F	50	51	52	DE	96	81	97	A3	98
	E	5C	1A	53	54	55	56	57	58	59	5A	FD	DF	99	E0	E1	E2
	F	30	31	32	33	34	35	36	37	38	39	E3	E4	9A	E5	E6	FF

Figure F-38. Spanish Conversion from EBCDIC to ASCII. All digits are hexadecimal. See the notes on page F-5.

Appendix G. Translation During File Transfer for AIX Version 2.1

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About This Appendix

This appendix is used with Version 2.1 of the AIX Operating System only. Version 1.1 of the AIX Operating System uses different translation code pages than the Version 2.1. Be sure to use Appendix F or Appendix G according to the version you have.

The pages in this appendix show the translations between ASCII and EBCDIC during file transfer for each supported language. These tables are specific to the file transfer function of 3278/79 Emulation.

The tables in this appendix are listed by language. The “Language-to-Code-Page Number Chart” on page G-6 shows the Country Extended Code Page (CECP) or the Code Page (CP) for each language.

About Translation During File Transfer

Files stored on an RT PC are in ASCII form, while files stored on the host are in EBCDIC. Therefore, we recommend using TEXT (or ASCII) mode during file transfer.

If you send an unsupported ASCII character such as a form feed to the host, a substitute character will replace the form feed in your file. When you copy the file back from EBCDIC to ASCII, the ASCII equivalent of the substitute character will appear, not the form feed you originally typed.

Otherwise, when a supported character is translated from EBCDIC to ASCII (during **emrcv**) and then back to EBCDIC (during **emsend**), there is no overall change.

In the charts and tables of this appendix the following notations are used:

- A substitute value of 1A for EBCDIC and 3F for ASCII is used when the character being sent is not supported. Some applications may display a substitute character, but other applications may not display anything.
- On each of the ASCII to EBCDIC tables, the * in 1C, 1D, and 1E positions represents a two-byte character. However, the substitute value is always used, because none of these characters are supported.
- Also on the ASCII to EBCDIC tables, a * in the 1F position represents a two-byte number. Possible values for that number are listed in the chart following the ASCII table for each country. For any 1F values not listed in the chart, the substitute character is used.

Language-to-Code-Page Number Chart

National Language	CECP or CP	See Charts Starting on Page
Austrian/German	CECP 273	G-7
Belgian	CP 500	G-10
Canadian-French	CECP 037	G-13
Danish	CECP 277	G-16
English (UK)	CECP 285	G-19
English (US) (ASCII)		G-22
English (US) (TEXT)	CECP 037 (modified)	G-24
Finnish	CECP 278	G-27
French (AZERTY)	CECP 297	G-30
Italian	CECP 280	G-33
Japanese English	CECP 281	G-36
Norwegian	CECP 277	G-16
Portuguese	CECP 282	G-39
Spanish	CECP 284	G-42
Swedish	CECP 278	G-27
Swiss-French	CP 500	G-10
Swiss-German	CP 500	G-10

Austrian/German

ASCII to EBCDIC Translation for Austrian/German

		Second ASCII Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First ASCII Digit	0	00	01	02	03	37	2D	2E	2F	16	05	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	3C	3D	32	26	18	19	3F	27	*	*	*	*
	2	40	4F	7F	7B	5B	6C	50	7D	4D	5D	5C	4E	6B	60	4B	61
	3	F0	F1	F2	F3	F4	F5	F6	F7	F8	F9	7A	5E	4C	7E	6E	6F
	4	B5	C1	C2	C3	C4	C5	C6	C7	C8	C9	D1	D2	D3	D4	D5	D6
	5	D7	D8	D9	E2	E3	E4	E5	E6	E7	E8	E9	63	EC	FC	5F	6D
	6	79	81	82	83	84	85	86	87	88	89	91	92	93	94	95	96
	7	97	98	99	A2	A3	A4	A5	A6	A7	A8	A9	43	BB	DC	59	07
	8	68	D0	51	42	C0	44	47	48	52	53	54	57	56	58	4A	67
	9	71	9C	9E	CB	6A	CD	DB	DD	DF	E0	5A	70	B1	80	3F	B4
	A	45	55	CE	DE	49	69	9A	9B	AB	AF	BA	B8	B7	AA	8A	8B
	B	3F	3F	3F	3F	3F	65	62	64	3F	3F	3F	3F	3F	B0	B2	3F
	C	3F	3F	3F	3F	3F	3F	46	66	3F	3F	3F	3F	3F	3F	3F	9F
	D	8C	AC	72	73	74	DA	75	76	77	3F	3F	3F	3F	CC	78	3F
	E	EE	A1	EB	ED	CF	EF	A0	8E	AE	FE	FB	FD	8D	AD	BC	BE
	F	CA	8F	BF	B9	B6	7C	3F	9D	90	BD	B3	3F	FA	EA	3F	FF

Figure G-1. Austrian/German Conversion from ASCII to EBCDIC. All digits are hexadecimal. See the notes on page G-5.

Austrian/German Two-Byte Values for ASCII to EBCDIC Translation

ASCII	EBCDIC	ASCII	EBCDIC
1FA0	B3	1FD2	9D
1FB4	B6	1FD3	9F
1FB5	7C	1FD4	AC
1FC0	46	1FD5	AD
1FC1	A1	1FD6	AE
1FC2	62	1FD7	AF
1FC3	64	1FD8	B9
1FC4	65	1FD9	BC
1FC5	66	1FDA	BD
1FC6	70	1FDB	BE
1FC7	72	1FDC	BF
1FC8	73	1FDD	CF
1FC9	74	1FDE	DA
1FCA	75	1FDF	EB
1FCB	76	1FE0	ED
1FCC	77	1FE1	EE
1FCD	78	1FE2	EF
1FCE	80	1FE3	FA
1FCF	8C	1FE4	FB
1FD0	8D	1FE5	FD
1FD1	8E	1FE6	FE

Figure G-2. Austrian/German Two-Byte Values for ASCII to EBCDIC Translation

EBCDIC to ASCII Translation for Austrian/German

		Second EBCDIC Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First EBCDIC Digit	0	00	01	02	03	1A	09	0A	7F	1A	1A	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	1A	0A	08	1A	18	19	1A	1A	1A	1A	1A	1A
	2	1A	1A	1A	1A	1A	0A	17	1B	1A	1A	1A	1A	1A	05	06	07
	3	1A	1A	16	1A	1A	1A	1A	04	1A	1A	1A	1A	14	15	1A	1A
	4	20	1A	83	7B	85	A0	C6	86	87	A4	8E	2E	3C	28	2B	21
	5	26	82	88	89	8A	A1	8C	8B	8D	7E	9A	24	2A	29	3B	5E
	6	2D	2F	B6	5B	B7	B5	C7	8F	80	A5	94	2C	25	5F	3E	3F
	7	9B	90	D2	D3	D4	D6	D7	D8	DE	60	3A	23	F5	27	3D	22
	8	9D	61	62	63	64	65	66	67	68	69	AE	AF	D0	EC	E7	F1
	9	F8	6A	6B	6C	6D	6E	6F	70	71	72	A6	A7	91	F7	92	CF
	A	E6	E1	73	74	75	76	77	78	79	7A	AD	A8	D1	ED	E8	A9
	B	BD	9C	BE	FA	9F	40	F4	AC	AB	F3	AA	7C	EE	F9	EF	F2
	C	84	41	42	43	44	45	46	47	48	49	F0	93	DD	95	A2	E4
	D	81	4A	4B	4C	4D	4E	4F	50	51	52	D5	96	7D	97	A3	98
	E	99	1A	53	54	55	56	57	58	59	5A	FD	E2	5C	E3	E0	E5
	F	30	31	32	33	34	35	36	37	38	39	FC	EA	5D	EB	E9	FF

Figure G-3. Austrian/German Conversion from EBCDIC to ASCII. All digits are hexadecimal. See the notes on page G-5.

Belgian, Swiss-French, Swiss-German

This code page is used for Swiss-French and Swiss-German, and is the default for Belgian.

ASCII to EBCDIC Translation for Belgian, Swiss-French, Swiss-German

		Second ASCII Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First ASCII Digit	0	00	01	02	03	37	2D	2E	2F	16	05	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	3C	3D	32	26	18	19	3F	27	*	*	*	*
	2	40	4F	7F	7B	5B	6C	50	7D	4D	5D	5C	4E	6B	60	4B	61
	3	F0	F1	F2	F3	F4	F5	F6	F7	F8	F9	7A	5E	4C	7E	6E	6F
	4	7C	C1	C2	C3	C4	C5	C6	C7	C8	C9	D1	D2	D3	D4	D5	D6
	5	D7	D8	D9	E2	E3	E4	E5	E6	E7	E8	E9	4A	E0	5A	5F	6D
	6	79	81	82	83	84	85	86	87	88	89	91	92	93	94	95	96
	7	97	98	99	A2	A3	A4	A5	A6	A7	A8	A9	C0	BB	D0	A1	07
	8	68	DC	51	42	43	44	47	48	52	53	54	57	56	58	63	67
	9	71	9C	9E	CB	CC	CD	DB	DD	DF	EC	FC	70	B1	80	3F	B4
	A	45	55	CE	DE	49	69	9A	9B	AB	AF	BA	B8	B7	AA	8A	8B
	B	3F	3F	3F	3F	3F	65	62	64	3F	3F	3F	3F	3F	B0	B2	3F
	C	3F	3F	3F	3F	3F	3F	46	66	3F	3F	3F	3F	3F	3F	3F	9F
	D	8C	AC	72	73	74	DA	75	76	77	3F	3F	3F	3F	6A	78	3F
	E	EE	59	EB	ED	CF	EF	A0	8E	AE	FE	FB	FD	8D	AD	BC	BE
	F	CA	8F	BF	B9	B6	B5	3F	9D	90	BD	B3	3F	FA	EA	3F	FF

Figure G-4. Belgian, Swiss-French, Swiss-German Conversion from ASCII to EBCDIC. All digits are hexadecimal. See the notes on page G-5.

Belgian, Swiss-French, Swiss-German Two-Byte Values for ASCII to EBCDIC Translation.

ASCII	EBCDIC	ASCII	EBCDIC
1FA0	B3	1FD2	9D
1FB4	B6	1FD3	9F
1FB5	B5	1FD4	AC
1FC0	46	1FD5	AD
1FC1	59	1FD6	AE
1FC2	62	1FD7	AF
1FC3	64	1FD8	B9
1FC4	65	1FD9	BC
1FC5	66	1FDA	BD
1FC6	70	1FDB	BE
1FC7	72	1FDC	BF
1FC8	73	1FDD	CF
1FC9	74	1FDE	DA
1FCA	75	1FDF	EB
1FCB	76	1FE0	ED
1FCC	77	1FE1	EE
1FCD	78	1FE2	EF
1FCE	80	1FE3	FA
1FCF	8C	1FE4	FB
1FD0	8D	1FE5	FD
1FD1	8E	1FE6	FE

Figure G-5. Belgian, Swiss-French, Swiss-German Two-Byte Values for ASCII to EBCDIC Translation

EBCDIC to ASCII Translation for Belgian, Swiss-French, Swiss-German

		Second EBCDIC Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First EBCDIC Digit	0	00	01	02	03	1A	09	0A	7F	1A	1A	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	1A	0A	08	1A	18	19	1A	1A	1A	1A	1A	1A
	2	1A	1A	1A	1A	1A	0A	17	1B	1A	1A	1A	1A	1A	05	06	07
	3	1A	1A	16	1A	1A	1A	1A	04	1A	1A	1A	1A	14	15	1A	1A
	4	20	1A	83	84	85	A0	C6	86	87	A4	5B	2E	3C	28	2B	21
	5	26	82	88	89	8A	A1	8C	8B	8D	E1	5D	24	2A	29	3B	5E
	6	2D	2F	B6	8E	B7	B5	C7	8F	80	A5	DD	2C	25	5F	3E	3F
	7	9B	90	D2	D3	D4	D6	D7	D8	DE	60	3A	23	40	27	3D	22
	8	9D	61	62	63	64	65	66	67	68	69	AE	AF	D0	EC	E7	F1
	9	F8	6A	6B	6C	6D	6E	6F	70	71	72	A6	A7	91	F7	92	CF
	A	E6	7E	73	74	75	76	77	78	79	7A	AD	AB	D1	ED	E8	A9
	B	BD	9C	BE	FA	9F	F5	F4	AC	AB	F3	AA	7C	EE	F9	EF	F2
	C	7B	41	42	43	44	45	46	47	48	49	F0	93	94	95	A2	E4
	D	7D	4A	4B	4C	4D	4E	4F	50	51	52	D5	96	81	97	A3	98
	E	5C	1A	53	54	55	56	57	58	59	5A	FD	E2	99	E3	E0	E5
	F	30	31	32	33	34	35	36	37	38	39	FC	EA	9A	EB	E9	FF

Figure G-6. Belgian, Swiss-French, Swiss-German Conversion from EBCDIC to ASCII. All digits are hexadecimal. See the notes on page G-5.

Canadian-French

ASCII to EBCDIC Translation for Canadian-French

		Second ASCII Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First ASCII Digit	0	00	01	02	03	37	2D	2E	2F	16	05	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	3C	3D	32	26	18	19	3F	27	*	*	*	*
	2	40	5A	7F	7B	5B	6C	50	7D	4D	5D	5C	4E	6B	60	4B	61
	3	F0	F1	F2	F3	F4	F5	F6	F7	F8	F9	7A	5E	4C	7E	6E	6F
	4	7C	C1	C2	C3	C4	C5	C6	C7	C8	C9	D1	D2	D3	D4	D5	D6
	5	D7	D8	D9	E2	E3	E4	E5	E6	E7	E8	E9	BA	E0	BB	B0	6D
	6	79	81	82	83	84	85	86	87	88	89	91	92	93	94	95	96
	7	97	98	99	A2	A3	A4	A5	A6	A7	A8	A9	C0	4F	D0	A1	07
	8	68	DC	51	42	43	44	47	48	52	53	54	57	56	58	63	67
	9	71	9C	9E	CB	CC	CD	DB	DD	DF	EC	FC	70	B1	80	3F	B4
	A	45	55	CE	DE	49	69	9A	9B	AB	AF	5F	BB	B7	AA	8A	8B
	B	3F	3F	3F	3F	3F	65	62	64	3F	3F	3F	3F	3F	4A	B2	3F
	C	3F	3F	3F	3F	3F	3F	46	66	3F	3F	3F	3F	3F	3F	3F	9F
	D	8C	AC	72	73	74	DA	75	76	77	3F	3F	3F	3F	6A	78	3F
	E	EE	59	EB	ED	CF	EF	A0	8E	AE	FE	FB	FD	8D	AD	BC	BE
	F	CA	8F	BF	B9	B6	B5	3F	9D	90	BD	B3	3F	FA	EA	3F	FF

Figure G-7. Canadian-French Conversion from ASCII to EBCDIC. All digits are hexadecimal. See the notes on page G-5.

Canadian-French Two-Byte Values for ASCII to EBCDIC Translation

ASCII	EBCDIC	ASCII	EBCDIC
1FA0	B3	1FD2	9D
1FB4	B6	1FD3	9F
1FB5	B5	1FD4	AC
1FC0	46	1FD5	AD
1FC1	59	1FD6	AE
1FC2	62	1FD7	AF
1FC3	64	1FD8	B9
1FC4	65	1FD9	BC
1FC5	66	1FDA	BD
1FC6	70	1FDB	BE
1FC7	72	1FDC	BF
1FC8	73	1FDD	CF
1FC9	74	1FDE	DA
1FCA	75	1FDF	EB
1FCB	76	1FE0	ED
1FCC	77	1FE1	EE
1FCD	78	1FE2	EF
1FCE	80	1FE3	FA
1FCF	8C	1FE4	FB
1FD0	8D	1FE5	FD
1FD1	8E	1FE6	FE

Figure G-8. Canadian-French Two-Byte Values for ASCII to EBCDIC Translation

EBCDIC to ASCII Translation for Canadian-French

		Second EBCDIC Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First EBCDIC Digit	0	00	01	02	03	1A	09	0A	7F	1A	1A	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	1A	0A	08	1A	18	19	1A	1A	1A	1A	1A	1A
	2	1A	1A	1A	1A	1A	0A	17	1B	1A	1A	1A	1A	1A	05	06	07
	3	1A	1A	16	1A	1A	1A	1A	04	1A	1A	1A	1A	14	15	1A	1A
	4	20	1A	83	84	85	A0	C6	86	87	A4	BD	2E	3C	28	2B	7C
	5	26	82	88	89	8A	A1	8C	8B	8D	E1	21	24	2A	29	3B	AA
	6	2D	2F	B6	8E	B7	B5	C7	8F	80	A5	DD	2C	25	5F	3E	3F
	7	9B	90	D2	D3	D4	D6	D7	D8	DE	60	3A	23	40	27	3D	22
	8	9D	61	62	63	64	65	66	67	68	69	AE	AF	D0	EC	E7	F1
	9	F8	6A	6B	6C	6D	6E	6F	70	71	72	A6	A7	91	F7	92	CF
	A	E6	7E	73	74	75	76	77	78	79	7A	AD	A8	D1	ED	E8	A9
	B	5E	9C	BE	FA	9F	F5	F4	AC	AB	F3	5B	5D	EE	F9	EF	F2
	C	7B	41	42	43	44	45	46	47	48	49	F0	93	94	95	A2	E4
	D	7D	4A	4B	4C	4D	4E	4F	50	51	52	D5	96	81	97	A3	98
	E	5C	1A	53	54	55	56	57	58	59	5A	FD	E2	99	E3	E0	E5
	F	30	31	32	33	34	35	36	37	38	39	FC	EA	9A	EB	E9	FF

Figure G-9. Canadian-French Conversion from EBCDIC to ASCII. All digits are hexadecimal. See the notes on page G-5.

Danish and Norwegian

ASCII to EBCDIC Translation for Danish and Norwegian

		Second ASCII Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First ASCII Digit	0	00	01	02	03	37	2D	2E	2F	16	05	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	3C	3D	32	26	18	19	3F	27	*	*	*	*
	2	40	4F	7F	4A	67	6C	50	7D	4D	5D	5C	4E	6B	60	4B	61
	3	F0	F1	F2	F3	F4	F5	F6	F7	F8	F9	7A	5E	4C	7E	6E	6F
	4	80	C1	C2	C3	C4	C5	C6	C7	C8	C9	D1	D2	D3	D4	D5	D6
	5	D7	D8	D9	E2	E3	E4	E5	E6	E7	E8	E9	9E	E0	9F	5F	6D
	6	79	81	82	83	84	85	86	87	88	89	91	92	93	94	95	96
	7	97	98	99	A2	A3	A4	A5	A6	A7	A8	A9	9C	BB	47	DC	07
	8	68	A1	51	42	43	44	D0	48	52	53	54	57	56	58	63	5B
	9	71	C0	7B	CB	CC	CD	DB	DD	DF	EC	FC	6A	B1	7C	3F	B4
	A	45	55	CE	DE	49	69	9A	9B	AB	AF	BA	BB	B7	AA	8A	8B
	B	3F	3F	3F	3F	3F	65	62	64	3F	3F	3F	3F	3F	B0	B2	3F
	C	3F	3F	3F	3F	3F	3F	46	66	3F	3F	3F	3F	3F	3F	3F	5A
	D	8C	AC	72	73	74	DA	75	76	77	3F	3F	3F	3F	70	78	3F
	E	EE	59	EB	ED	CF	EF	A0	8E	AE	FE	FB	FD	8D	AD	BC	BE
	F	CA	8F	BF	B9	B6	B5	3F	9D	90	BD	B3	3F	FA	EA	3F	FF

Figure G-10. Danish and Norwegian Conversion from ASCII to EBCDIC. All digits are hexadecimal. See the notes on page G-5.

Danish and Norwegian Two-Byte Values for ASCII to EBCDIC Translation

ASCII	EBCDIC	ASCII	EBCDIC
1FA0	B3	1FD2	9D
1FB4	B6	1FD3	5A
1FB5	B5	1FD4	AC
1FC0	46	1FD5	AD
1FC1	59	1FD6	AE
1FC2	62	1FD7	AF
1FC3	64	1FD8	B9
1FC4	65	1FD9	BC
1FC5	66	1FDA	BD
1FC6	6A	1FDB	BE
1FC7	72	1FDC	BF
1FC8	73	1FDD	CF
1FC9	74	1FDE	DA
1FCA	75	1FDF	EB
1FCB	76	1FE0	ED
1FCC	77	1FE1	EE
1FCD	78	1FE2	EF
1FCE	7C	1FE3	FA
1FCF	8C	1FE4	FB
1FD0	8D	1FE5	FD
1FD1	8E	1FE6	FE

Figure G-11. Danish and Norwegian Two-Byte Values for ASCII to EBCDIC Translation

EBCDIC to ASCII Translation for Danish and Norwegian

		Second EBCDIC Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First EBCDIC Digit	0	00	01	02	03	1A	09	0A	7F	1A	1A	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	1A	0A	08	1A	18	19	1A	1A	1A	1A	1A	1A
	2	1A	1A	1A	1A	1A	0A	17	1B	1A	1A	1A	1A	1A	05	06	07
	3	1A	1A	16	1A	1A	1A	1A	04	1A	1A	1A	1A	14	15	1A	1A
	4	20	1A	83	84	85	A0	C6	7D	87	A4	23	2E	3C	28	2B	21
	5	26	82	88	89	8A	A1	8C	8B	8D	E1	CF	8F	2A	29	3B	5E
	6	2D	2F	B6	8E	B7	B5	C7	24	80	A5	9B	2C	25	5F	3E	3F
	7	DD	90	D2	D3	D4	D6	D7	D8	DE	60	3A	92	9D	27	3D	22
	8	40	61	62	63	64	65	66	67	68	69	AE	AF	D0	EC	E7	F1
	9	F8	6A	6B	6C	6D	6E	6F	70	71	72	A6	A7	7B	F7	5B	5D
	A	E6	81	73	74	75	76	77	78	79	7A	AD	A8	D1	ED	E8	A9
	B	BD	9C	BE	FA	9F	F5	F4	AC	AB	F3	AA	7C	EE	F9	EF	F2
	C	91	41	42	43	44	45	46	47	48	49	F0	93	94	95	A2	E4
	D	86	4A	4B	4C	4D	4E	4F	50	51	52	D5	96	7E	97	A3	98
	E	5C	1A	53	54	55	56	57	58	59	5A	FD	E2	99	E3	E0	E5
	F	30	31	32	33	34	35	36	37	38	39	FC	EA	9A	EB	E9	FF

Figure G-12. Danish and Norwegian Conversion from EBCDIC to ASCII. All digits are hexadecimal. See the notes on page G-5.

English (UK)

ASCII to EBCDIC Translation for English (UK)

		Second ASCII Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First ASCII Digit	0	00	01	02	03	37	2D	2E	2F	16	05	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	3C	3D	32	26	18	19	3F	27	*	*	*	*
	2	40	5A	7F	7B	4A	6C	50	7D	4D	5D	5C	4E	6B	60	4B	61
	3	F0	F1	F2	F3	F4	F5	F6	F7	F8	F9	7A	5E	4C	7E	6E	6F
	4	7C	C1	C2	C3	C4	C5	C6	C7	C8	C9	D1	D2	D3	D4	D5	D6
	5	D7	D8	D9	E2	E3	E4	E5	E6	E7	E8	E9	B1	E0	BB	BA	6D
	6	79	81	82	83	84	85	86	87	88	89	91	92	93	94	95	96
	7	97	98	99	A2	A3	A4	A5	A6	A7	A8	A9	C0	4F	D0	BC	07
	8	68	DC	51	42	43	44	47	48	52	53	54	57	56	58	63	67
	9	71	9C	9E	CB	CC	CD	DB	DD	DF	EC	FC	70	5B	80	3F	B4
	A	45	55	CE	DE	49	69	9A	9B	AB	AF	5F	B8	B7	AA	8A	8B
	B	3F	3F	3F	3F	3F	65	62	64	3F	3F	3F	3F	3F	B0	B2	3F
	C	3F	3F	3F	3F	3F	3F	46	66	3F	3F	3F	3F	3F	3F	3F	9F
	D	8C	AC	72	73	74	DA	75	76	3F	3F	3F	3F	3F	6A	78	3F
	E	EE	59	EB	ED	CF	EF	A0	8E	AE	FE	FB	FD	8D	AD	A1	BE
	F	CA	8F	BF	B9	B6	B5	3F	9D	90	BD	B3	3F	FA	EA	3F	FF

Figure G-13. English (UK) Conversion from ASCII to EBCDIC. All digits are hexadecimal. See the notes on page G-5.

English (UK) Two-Byte Values for ASCII to EBCDIC Translation

ASCII	EBCDIC	ASCII	EBCDIC
1FA0	B3	1FD2	9D
1FB4	B6	1FD3	9F
1FB5	B5	1FD4	AC
1FC0	46	1FD5	AD
1FC1	59	1FD6	AE
1FC2	62	1FD7	AF
1FC3	64	1FD8	B9
1FC4	65	1FD9	A1
1FC5	66	1FDA	BD
1FC6	70	1FDB	BE
1FC7	72	1FDC	BF
1FC8	73	1FDD	CF
1FC9	74	1FDE	DA
1FCA	75	1FDF	EB
1FCB	76	1FE0	ED
1FCC	77	1FE1	EE
1FCD	78	1FE2	EF
1FCE	80	1FE3	FA
1FCF	8C	1FE4	FB
1FD0	8D	1FE5	FD
1FD1	8E	1FE6	FE

Figure G-14. English (UK) Two-Byte Values for ASCII to EBCDIC Translation

EBCDIC to ASCII Translation for English (UK)

		Second EBCDIC Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First EBCDIC Digit	0	00	01	02	03	1A	09	0A	7F	1A	1A	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	1A	0A	08	1A	18	19	1A	1A	1A	1A	1A	1A
	2	1A	1A	1A	1A	1A	0A	17	1B	1A	1A	1A	1A	1A	05	06	07
	3	1A	1A	16	1A	1A	1A	1A	04	1A	1A	1A	1A	14	15	1A	1A
	4	20	1A	83	84	85	A0	C6	86	87	A4	24	2E	3C	28	2B	7C
	5	26	82	88	89	8A	A1	8C	8B	8D	E1	21	9C	2A	29	3B	AA
	6	2D	2F	B6	8E	B7	B5	C7	8F	80	A5	DD	2C	25	5F	3E	3F
	7	9B	90	D2	D3	D4	D6	D7	D8	DE	60	3A	23	40	27	3D	22
	8	9D	61	62	63	64	65	66	67	68	69	AE	AF	D0	EC	E7	F1
	9	F8	6A	6B	6C	6D	6E	6F	70	71	72	A6	A7	91	F7	92	CF
	A	E6	EE	73	74	75	76	77	78	79	7A	AD	A8	D1	ED	E8	A9
	B	BD	5B	BE	FA	9F	F5	F4	AC	AB	F3	5E	5D	7E	F9	EF	F2
	C	7B	41	42	43	44	45	46	47	48	49	F0	93	94	95	A2	E4
	D	7D	4A	4B	4C	4D	4E	4F	50	51	52	D5	96	81	97	A3	98
	E	5C	1A	53	54	55	56	57	58	59	5A	FD	E2	99	E3	E0	E5
	F	30	31	32	33	34	35	36	37	38	39	FC	EA	9A	EB	E9	FF

Figure G-15. English (UK) Conversion from EBCDIC to ASCII. All digits are hexadecimal. See the notes on page G-5.

English (US) (ASCII)

ASCII to EBCDIC Translation for English (US) (ASCII)

If you requested the ASCII option with the **emsend** command, the host uses this table to translate from ASCII values to EBCDIC values. This table corresponds to information in the host's **IND\$FILE** program.

		Second ASCII Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First ASCII Digit	0	00	01	02	03	37	2D	2E	2F	16	05	25	0B	0C	0D	0E	0F
	1	10	11	12	13	3C	3D	32	26	18	19	3F	27	1C	1D	1E	1F
	2	40	5A	7F	7B	5B	6C	50	7D	4D	5D	5C	4E	6B	60	4B	61
	3	F0	F1	F2	F3	F4	F5	F6	F7	F8	F9	7A	5E	4C	7E	6E	6F
	4	7C	C1	C2	C3	C4	C5	C6	C7	C8	C9	D1	D2	D3	D4	D5	D6
	5	D7	D8	D9	E2	E3	E4	E5	E6	E7	E8	E9	4A	E0	4F	5F	6D
	6	79	81	82	83	84	85	86	87	88	89	91	92	93	94	95	96
	7	97	98	99	A2	A3	A4	A5	A6	A7	A8	A9	C0	6A	D0	A1	07
	8	20	21	22	23	24	15	06	17	28	29	2A	2B	2C	09	0A	1B
	9	30	31	1A	33	34	35	36	08	38	39	3A	3B	04	14	3E	E1
	A	41	42	43	44	45	46	47	48	49	51	52	53	54	55	56	57
	B	58	59	62	63	64	65	66	67	68	69	70	71	72	73	74	75
	C	76	77	78	80	8A	8B	8C	8D	8E	8F	90	9A	9B	9C	9D	9E
	D	9F	A0	AA	AB	AC	AD	AE	AF	B0	B1	B2	B3	B4	B5	B6	B7
	E	B8	B9	BA	BB	BC	BD	BE	BF	CA	CB	CC	CD	CE	CF	DA	DB
	F	DC	DD	DE	DF	EA	EB	EC	ED	EE	EF	FA	FB	FC	FD	FE	FF

Figure G-16. English (US) (ASCII) Conversion from ASCII to EBCDIC. All digits are hexadecimal. See the notes on page G-5.

EBCDIC to ASCII Translation for English (US) (ASCII)

If you requested the ASCII option with the **emrcv** command, the host uses this table to translate from EBCDIC values to ASCII values. This table corresponds to information in the host's **IND\$FILE** program.

		Second EBCDIC Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First EBCDIC Digit	0	00	01	02	03	9C	09	86	7F	97	8D	8E	0B	0C	0D	0E	0F
	1	10	11	12	13	9D	85	08	87	18	19	92	8F	1C	1D	1E	1F
	2	80	81	82	83	84	0A	17	1B	88	89	8A	8B	8C	05	06	07
	3	90	91	16	93	94	95	96	04	98	99	9A	9B	14	15	9E	1A
	4	20	A0	A1	A2	A3	A4	A5	A6	A7	A8	5B	2E	3C	28	2B	5D
	5	26	A9	AA	AB	AC	AD	AE	AF	B0	B1	21	24	2A	29	3B	5E
	6	2D	2F	B2	B3	B4	B5	B6	B7	B8	B9	7C	2C	25	5F	3E	3F
	7	BA	BB	BC	BD	BE	BF	C0	C1	C2	60	3A	23	40	27	3D	22
	8	C3	61	62	63	64	65	66	67	68	69	C4	C5	C6	C7	C8	C9
	9	CA	6A	6B	6C	6D	6E	6F	70	71	72	CB	CC	CD	CE	CF	D0
	A	D1	7E	73	74	75	76	77	78	79	7A	D2	D3	D4	D5	D6	D7
	B	D8	D9	DA	DB	DC	DD	DE	DF	E0	E1	E2	E3	E4	E5	E6	E7
	C	7B	41	42	43	44	45	46	47	48	49	E8	E9	EA	EB	EC	ED
	D	7D	4A	4B	4C	4D	4E	4F	50	51	52	EE	EF	F0	F1	F2	F3
	E	5C	9F	53	54	55	56	57	58	59	5A	F4	F5	F6	F7	F8	F9
	F	30	31	32	33	34	35	36	37	38	39	FA	FB	FC	FD	FE	FF

Figure G-17. English (US) (ASCII) Conversion from EBCDIC to ASCII. All digits are hexadecimal. See the notes on page G-5.

English (US) (TEXT)

ASCII to EBCDIC Translation for English (US) (TEXT)

If you requested the TEXT option with the **emsend** command, the RT PC 3278/79 Emulation file transfer program uses this table to translate from ASCII values to EBCDIC values.

		Second ASCII Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First ASCII Digit	0	00	01	02	03	37	2D	2E	2F	16	05	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	3C	3D	32	26	18	19	3F	27	*	*	*	*
	2	40	5A	7F	7B	5B	6C	50	7D	4D	5D	5C	4E	6B	60	4B	61
	3	F0	F1	F2	F3	F4	F5	F6	F7	F8	F9	7A	5E	4C	7E	6E	6F
	4	7C	C1	C2	C3	C4	C5	C6	C7	C8	C9	D1	D2	D3	D4	D5	D6
	5	D7	D8	D9	E2	E3	E4	E5	E6	E7	E8	E9	AD	EO	BD	5F	6D
	6	79	81	82	83	84	85	86	87	88	89	91	92	93	94	95	96
	7	97	98	99	A2	A3	A4	A5	A6	A7	A8	A9	C0	4F	DO	A1	07
	8	FD	73	69	8A	75	57	EB	56	8B	76	58	77	8C	59	B7	FC
	9	CC	FA	9C	8D	78	62	8E	63	66	BA	BB	3F	43	3F	3F	3F
	A	8F	9A	9B	3F	9D	DC	41	3F	3F	3F	52	3F	3F	3F	3F	3F
	B	3F	3F	3F	29	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	4A	44
	C	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F
	D	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F
	E	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F	3F
	F	3F	3F	3F	3F	3F	48	3F	3F	3F	3F	3F	3F	3F	3F	3F	FF

Figure G-18. English (US) (TEXT) Conversion from ASCII to EBCDIC. All digits are hexadecimal. See the notes on page G-5.

English (US) (TEXT) Two-Byte Values for ASCII to EBCDIC Translation

ASCII	EBCDIC
1FB5	48
1FDB	55

Figure G-19. English (US) (TEXT) Two-Byte Values for ASCII to EBCDIC Translation

EBCDIC to ASCII Translation for English (US) (TEXT)

If you requested the TEXT option with the **emrcv** command, the RT PC 3278/79 Emulation file transfer program uses this table to translate from EBCDIC values to ASCII values.

		Second EBCDIC Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First EBCDIC Digit	0	00	01	02	03	1A	09	0A	7F	1A	1A	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	1A	0A	08	1A	18	19	1A	1A	1A	1A	1A	1A
	2	1A	1A	1A	1A	1A	0A	17	1B	1A	1A	1A	1A	1A	05	06	07
	3	1A	1A	16	1A	1A	1A	1A	04	1A	1A	1A	1A	14	15	1A	1A
	4	20	A6	E1	9C	BE	1A	1A	1A	F5	1A	BD	2E	3C	28	2B	7C
	5	26	1A	AA	1A	22	EF	87	85	8A	8D	21	24	2A	29	3B	5E
	6	2D	2F	95	97	61	6F	98	85	8A	82	BA	2C	25	5F	3E	3F
	7	8D	95	97	81	87	84	89	8B	94	60	3A	23	40	27	3D	22
	8	81	61	62	63	64	65	66	67	68	69	83	88	8C	93	96	A0
	9	82	6A	6B	6C	6D	6E	6F	70	71	72	A1	A2	92	A4	41	45
	A	49	7E	73	74	75	76	77	78	79	7A	4F	55	41	5B	59	4A
	B	45	45	49	4F	55	59	53	8E	45	49	99	9A	41	5D	49	4F
	C	7B	41	42	43	44	45	46	47	48	49	55	41	90	49	1A	1A
	D	7D	4A	4B	4C	4D	4E	4F	50	51	52	4F	55	A5	1A	1A	1A
	E	5C	1A	53	54	55	56	57	58	59	5A	1A	86	87	1A	1A	1A
	F	30	31	32	33	34	35	36	37	38	39	91	1A	8F	80	1A	FF

Figure G-20. English (US) (TEXT) Conversion from EBCDIC to ASCII. All digits are hexadecimal. See the notes on page G-5.

Finnish and Swedish

ASCII to EBCDIC Translation for Finnish and Swedish

		Second ASCII Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First ASCII Digit	0	00	01	02	03	37	2D	2E	2F	16	05	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	3C	3D	32	26	18	19	3F	27	*	*	*	*
	2	40	4F	7F	63	67	6C	50	7D	4D	5D	5C	4E	6B	60	4B	61
	3	F0	F1	F2	F3	F4	F5	F6	F7	F8	F9	7A	5E	4C	7E	6E	6F
	4	EC	C1	C2	C3	C4	C5	C6	C7	C8	C9	D1	D2	D3	D4	D5	D6
	5	D7	D8	D9	E2	E3	E4	E5	E6	E7	E8	E9	B5	71	9F	5F	6D
	6	51	81	82	83	84	85	86	87	88	89	91	92	93	94	95	96
	7	97	98	99	A2	A3	A4	A5	A6	A7	A8	A9	43	BB	47	DC	07
	8	68	A1	79	42	C0	44	D0	48	52	53	54	57	56	58	7B	5B
	9	E0	9C	9E	CB	6A	CD	DB	DD	DF	7C	FC	70	B1	80	3F	B4
	A	45	55	CE	DE	49	69	9A	9B	AB	AF	BA	B8	B7	AA	8A	8B
	B	3F	3F	3F	3F	3F	65	62	64	3F	3F	3F	3F	3F	3F	3F	3F
	C	3F	3F	3F	3F	3F	3F	46	66	3F	3F	3F	3F	3F	3F	3F	5A
	D	8C	AC	72	73	74	DA	75	76	77	3F	3F	3F	3F	CC	78	3F
	E	EE	59	EB	ED	CF	EF	A0	8E	AE	FE	FB	FD	8D	AD	BC	BE
	F	CA	8F	BF	B9	B6	4A	3F	9D	90	BD	B3	3F	FA	EA	3F	FF

Figure G-21. Finnish and Swedish Conversion from ASCII to EBCDIC. All digits are hexadecimal. See the notes on page G-5.

Finnish and Swedish Two-Byte Values for ASCII to EBCDIC Translation

ASCII	EBCDIC	ASCII	EBCDIC
1FA0	B3	1FD2	9D
1FB4	B6	1FD3	5A
1FB5	4A	1FD4	AC
1FC0	46	1FD5	AD
1FC1	59	1FD6	AE
1FC2	62	1FD7	AF
1FC3	64	1FD8	B9
1FC4	65	1FD9	BC
1FC5	66	1FDA	BD
1FC6	70	1FDB	BE
1FC7	72	1FDC	BF
1FC8	73	1FDD	CF
1FC9	74	1FDE	DA
1FCA	75	1FDF	EB
1FCB	76	1FE0	ED
1FCC	77	1FE1	EE
1FCD	78	1FE2	EF
1FCE	80	1FE3	FA
1FCF	8C	1FE4	FB
1FD0	8D	1FE5	FD
1FD1	8E	1FE6	FE

Figure G-22. Finnish and Swedish Two-Byte Values for ASCII to EBCDIC Translation

EBCDIC to ASCII Translation for Finnish and Swedish

		Second EBCDIC Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First EBCDIC Digit	0	00	01	02	03	1A	09	0A	7F	1A	1A	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	1A	0A	08	1A	18	19	1A	1A	1A	1A	1A	1A
	2	1A	1A	1A	1A	1A	0A	17	1B	1A	1A	1A	1A	1A	05	06	07
	3	1A	1A	16	1A	1A	1A	1A	04	1A	1A	1A	1A	14	15	1A	1A
	4	20	1A	83	7B	85	A0	C6	7D	87	A4	F5	2E	3C	28	2B	21
	5	26	60	88	89	8A	A1	8C	8B	8D	E1	CF	8F	2A	29	3B	5E
	6	2D	2F	B6	23	B7	B5	C7	24	80	A5	94	2C	25	5F	3E	3F
	7	9B	5C	D2	D3	D4	D6	D7	D8	DE	82	3A	8E	99	27	3D	22
	8	9D	61	62	63	64	65	66	67	68	69	AE	AF	D0	EC	E7	F1
	9	F8	6A	6B	6C	6D	6E	6F	70	71	72	A6	A7	91	F7	92	5D
	A	E6	81	73	74	75	76	77	78	79	7A	AD	A8	D1	ED	E8	A9
	B	BD	9C	BE	FA	9F	5B	F4	AC	AB	F3	AA	7C	EE	F9	EF	F2
	C	84	41	42	43	44	45	46	47	48	49	F0	93	DD	95	A2	E4
	D	86	4A	4B	4C	4D	4E	4F	50	51	52	D5	96	7E	97	A3	98
	E	90	1A	53	54	55	56	57	58	59	5A	FD	E2	40	E3	E0	E5
	F	30	31	32	33	34	35	36	37	38	39	FC	EA	9A	EB	E9	FF

Figure G-23. Finnish and Swedish Conversion from EBCDIC to ASCII. All digits are hexadecimal. See the notes on page G-5.

French (AZERTY)

ASCII to EBCDIC Translation for French (AZERTY)

		Second ASCII Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First ASCII Digit	0	00	01	02	03	37	2D	2E	2F	16	05	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	3C	3D	32	26	18	19	3F	27	*	*	*	*
	2	40	4F	7F	B1	5B	6C	50	7D	4D	5D	5C	4E	6B	60	4B	61
	3	F0	F1	F2	F3	F4	F5	F6	F7	F8	F9	7A	5E	4C	7E	6E	6F
	4	44	C1	C2	C3	C4	C5	C6	C7	C8	C9	D1	D2	D3	D4	D5	D6
	5	D7	D8	D9	E2	E3	E4	E5	E6	E7	E8	E9	90	48	B5	5F	6D
	6	A0	81	82	83	84	85	86	87	88	89	91	92	93	94	95	96
	7	97	98	99	A2	A3	A4	A5	A6	A7	A8	A9	51	BB	54	BD	07
	8	68	DC	C0	42	43	7C	47	E0	52	53	D0	57	56	58	63	67
	9	71	9C	9E	CB	CC	CD	DB	6A	DF	EC	FC	70	7B	80	3F	B4
	A	45	55	CE	DE	49	69	9A	9B	AB	AF	BA	B8	B7	AA	8A	8B
	B	3F	3F	3F	3F	3F	65	62	64	3F	3F	3F	3F	3F	B0	B2	3F
	C	3F	3F	3F	3F	3F	3F	46	66	3F	3F	3F	3F	3F	3F	3F	9F
	D	8C	AC	72	73	74	DA	75	76	77	3F	3F	3F	3F	DD	78	3F
	E	EE	59	EB	ED	CF	EF	79	8E	AE	FE	FB	FD	8D	AD	BC	BE
	F	CA	8F	BF	B9	B6	5A	3F	9D	4A	A1	B3	3F	FA	EA	3F	FF

Figure G-24. French (AZERTY) Conversion from ASCII to EBCDIC. All digits are hexadecimal. See the notes on page G-5.

French (AZERTY) Two-Byte Values for ASCII to EBCDIC Translation

ASCII	EBCDIC	ASCII	EBCDIC
1FA0	B3	1FD2	9D
1FB4	B6	1FD3	9F
1FB5	5A	1FD4	AC
1FC0	46	1FD5	AD
1FC1	59	1FD6	AE
1FC2	62	1FD7	AF
1FC3	64	1FD8	B9
1FC4	65	1FD9	BC
1FC5	66	1FDA	A1
1FC6	70	1FDB	BE
1FC7	72	1FDC	BF
1FC8	73	1FDD	CF
1FC9	74	1FDE	DA
1FCA	75	1FDF	EB
1FCB	76	1FE0	ED
1FCC	77	1FE1	EE
1FCD	78	1FE2	EF
1FCE	80	1FE3	FA
1FCF	8C	1FE4	FB
1FD0	8D	1FE5	FD
1FD1	8E	1FE6	FE

Figure G-25. French (AZERTY) Two-Byte Values for ASCII to EBCDIC Translation

EBCDIC to ASCII Translation for French (AZERTY)

		Second EBCDIC Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First EBCDIC Digit	0	00	01	02	03	1A	09	0A	7F	1A	1A	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	1A	0A	08	1A	18	19	1A	1A	1A	1A	1A	1A
	2	1A	1A	1A	1A	1A	0A	17	1B	1A	1A	1A	1A	1A	05	06	07
	3	1A	1A	16	1A	1A	1A	1A	04	1A	1A	1A	1A	14	15	1A	1A
	4	20	1A	83	84	40	A0	C6	86	5C	A4	F8	2E	3C	28	2B	21
	5	26	7B	88	89	7D	A1	8C	8B	8D	E1	F5	24	2A	29	3B	5E
	6	2D	2F	B6	8E	B7	B5	C7	8F	80	A5	97	2C	25	5F	3E	3F
	7	9B	90	D2	D3	D4	D6	D7	D8	DE	E6	3A	9C	85	27	3D	22
	8	9D	61	62	63	64	65	66	67	68	69	AE	AF	D0	EC	E7	F1
	9	5B	6A	6B	6C	6D	6E	6F	70	71	72	A6	A7	91	F7	92	CF
	A	60	F9	73	74	75	76	77	78	79	7A	AD	A8	D1	ED	E8	A9
	B	BD	23	BE	FA	9F	5D	F4	AC	AB	F3	AA	7C	EE	7E	EF	F2
	C	82	41	42	43	44	45	46	47	48	49	F0	93	94	95	A2	E4
	D	8A	4A	4B	4C	4D	4E	4F	50	51	52	D5	96	81	DD	A3	98
	E	87	1A	53	54	55	56	57	58	59	5A	FD	E2	99	E3	E0	E5
	F	30	31	32	33	34	35	36	37	38	39	FC	EA	9A	EB	E9	FF

Figure G-26. French (AZERTY) Conversion from EBCDIC to ASCII. All digits are hexadecimal. See the notes on page G-5.

Italian

ASCII to EBCDIC Translation for Italian

		Second ASCII Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First ASCII Digit	0	00	01	02	03	37	2D	2E	2F	16	05	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	3C	3D	32	26	18	19	3F	27	*	*	*	*
	2	40	4F	7F	B1	5B	6C	50	7D	4D	5D	5C	4E	6B	60	4B	61
	3	F0	F1	F2	F3	F4	F5	F6	F7	F8	F9	7A	5E	4C	7E	6E	6F
	4	B5	C1	C2	C3	C4	C5	C6	C7	C8	C9	D1	D2	D3	D4	D5	D6
	5	D7	D8	D9	E2	E3	E4	E5	E6	E7	E8	E9	90	48	51	5F	6D
	6	DD	81	82	83	84	85	86	87	88	89	91	92	93	94	95	96
	7	97	98	99	A2	A3	A4	A5	A6	A7	A8	A9	44	BB	54	58	07
	8	68	DC	5A	42	43	C0	47	E0	52	53	D0	57	56	A1	63	67
	9	71	9C	9E	CB	CC	6A	DB	79	DF	EC	FC	70	7B	80	3F	B4
	A	45	55	CE	DE	49	69	9A	9B	AB	AF	BA	B8	B7	AA	8A	8B
	B	3F	3F	3F	3F	3F	65	62	64	3F	3F	3F	3F	3F	B0	B2	3F
	C	3F	3F	3F	3F	3F	3F	46	66	3F	3F	3F	3F	3F	3F	3F	9F
	D	8C	AC	72	73	74	DA	75	76	77	3F	3F	3F	3F	CD	78	3F
	E	EE	59	EB	ED	CF	EF	A0	8E	AE	FE	FB	FD	8D	AD	BC	BE
	F	CA	8F	BF	B9	B6	7C	3F	9D	4A	BD	B3	3F	FA	EA	3F	FF

Figure G-27. Italian Conversion from ASCII to EBCDIC. All digits are hexadecimal. See the notes on page G-5.

Italian Two-Byte Values for ASCII to EBCDIC Translation

ASCII	EBCDIC	ASCII	EBCDIC
1FA0	B3	1FD2	9D
1FB4	B6	1FD3	9F
1FB5	7C	1FD4	AC
1FC0	46	1FD5	AD
1FC1	59	1FD6	AE
1FC2	62	1FD7	AF
1FC3	64	1FD8	B9
1FC4	65	1FD9	BC
1FC5	66	1FDA	BD
1FC6	70	1FDB	BE
1FC7	72	1FDC	BF
1FC8	73	1FDD	CF
1FC9	74	1FDE	DA
1FCA	75	1FDF	EB
1FCB	76	1FE0	ED
1FCC	77	1FE1	EE
1FCD	78	1FE2	EF
1FCE	80	1FE3	FA
1FCF	8C	1FE4	FB
1FD0	8D	1FE5	FD
1FD1	8E	1FE6	FE

Figure G-28. Italian Two-Byte Values for ASCII to EBCDIC Translation

EBCDIC to ASCII Translation for Italian

		Second EBCDIC Digit															
First EBCDIC Digit		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
	0	00	01	02	03	1A	09	0A	7F	1A	1A	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	1A	0A	08	1A	18	19	1A	1A	1A	1A	1A	1A
	2	1A	1A	1A	1A	1A	0A	17	1B	1A	1A	1A	1A	1A	05	06	07
	3	1A	1A	16	1A	1A	1A	1A	04	1A	1A	1A	1A	14	15	1A	1A
	4	20	1A	83	84	7B	A0	C6	86	5C	A4	F8	2E	3C	28	2B	21
	5	26	5D	88	89	7D	A1	8C	8B	7E	E1	82	24	2A	29	3B	5E
	6	2D	2F	B6	8E	B7	B5	C7	8F	80	A5	95	2C	25	5F	3E	3F
	7	9B	90	D2	D3	D4	D6	D7	D8	DE	97	3A	9C	F5	27	3D	22
	8	9D	61	62	63	64	65	66	67	68	69	AE	AF	D0	EC	E7	F1
	9	5B	6A	6B	6C	6D	6E	6F	70	71	72	A6	A7	91	F7	92	CF
	A	E6	8D	73	74	75	76	77	78	79	7A	AD	A8	D1	ED	E8	A9
	B	BD	23	BE	FA	9F	40	F4	AC	AB	F3	AA	7C	EE	F9	EF	F2
	C	85	41	42	43	44	45	46	47	48	49	F0	93	94	DD	A2	E4
	D	8A	4A	4B	4C	4D	4E	4F	50	51	52	D5	96	81	60	A3	98
	E	87	1A	53	54	55	56	57	58	59	5A	FD	E2	99	E3	E0	E5
	F	30	31	32	33	34	35	36	37	38	39	FC	EA	9A	EB	E9	FF

Figure G-29. Italian Conversion from EBCDIC to ASCII. All digits are hexadecimal. See the notes on page G-5.

Japanese English

ASCII to EBCDIC Translation for Japanese English

		Second ASCII Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First ASCII Digit	0	00	01	02	03	37	2D	2E	2F	16	05	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	3C	3D	32	26	18	19	3F	27	*	*	*	*
	2	40	5A	7F	7B	E0	6C	50	7D	4D	5D	5C	4E	6B	60	4B	61
	3	F0	F1	F2	F3	F4	F5	F6	F7	F8	F9	7A	5E	4C	7E	6E	6F
	4	7C	C1	C2	C3	C4	C5	C6	C7	C8	C9	D1	D2	D3	D4	D5	D6
	5	D7	D8	D9	E2	E3	E4	E5	E6	E7	E8	E9	B1	B2	BB	BA	6D
	6	79	81	82	83	84	85	86	87	88	89	91	92	93	94	95	96
	7	97	98	99	A2	A3	A4	A5	A6	A7	A8	A9	C0	4F	D0	BC	07
	8	68	DC	51	42	43	44	47	48	52	53	54	57	56	58	63	67
	9	71	9C	9E	CB	CC	CD	DB	DD	DF	EC	FC	70	4A	80	3F	B4
	A	45	55	CE	DE	49	69	9A	9B	AB	AF	5F	B8	B7	AA	8A	8B
	B	3F	3F	3F	3F	3F	65	62	64	3F	3F	3F	3F	3F	B0	5B	3F
	C	3F	3F	3F	3F	3F	3F	46	66	3F	3F	3F	3F	3F	3F	3F	9F
	D	8C	AC	72	73	74	DA	75	76	77	3F	3F	3F	3F	6A	78	3F
	E	EE	59	EB	ED	CF	EF	A0	8E	AE	FE	FB	FD	8D	AD	A1	BE
	F	CA	8F	BF	B9	B6	B5	3F	9D	90	BD	B3	3F	FA	EA	3F	FF

Figure G-30. Japanese English Conversion from ASCII to EBCDIC. All digits are hexadecimal. See the notes on page G-5.

Japanese English Two-Byte Values for ASCII to EBCDIC Translation

ASCII	EBCDIC	ASCII	EBCDIC
1FA0	B3	1FD2	9D
1FB4	B6	1FD3	9F
1FB5	B5	1FD4	AC
1FC0	46	1FD5	AD
1FC1	59	1FD6	AE
1FC2	62	1FD7	AF
1FC3	64	1FD8	B9
1FC4	65	1FD9	A1
1FC5	66	1FDA	BD
1FC6	70	1FDB	BE
1FC7	72	1FDC	BF
1FC8	73	1FDD	CF
1FC9	74	1FDE	DA
1FCA	75	1FDF	EB
1FCB	76	1FE0	ED
1FCC	77	1FE1	EE
1FCD	78	1FE2	EF
1FCE	80	1FE3	FA
1FCF	8C	1FE4	FB
1FD0	8D	1FE5	FD
1FD1	8E	1FE6	FE

Figure G-31. Japanese English Two-Byte Values for ASCII to EBCDIC Translation

EBCDIC to ASCII Translation for Japanese English

		Second EBCDIC Digit															
First EBCDIC Digit		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
		0	00	01	02	03	1A	09	0A	7F	1A	1A	0A	0B	0C	0D	0E	0F
1	10	11	12	13	1A	0A	08	1A	18	19	1A	1A	1A	1A	1A	1A	
2	1A	1A	1A	1A	1A	0A	17	1B	1A	1A	1A	1A	1A	1A	05	06	07
3	1A	1A	16	1A	1A	1A	1A	04	1A	1A	1A	1A	1A	14	15	1A	1A
4	20	1A	83	84	85	A0	C6	86	87	A4	9C	2E	3C	28	2B	7C	
5	26	82	88	89	8A	A1	8C	8B	8D	E1	21	BE	2A	29	3B	AA	
6	2D	2F	B6	8E	B7	B5	C7	8F	80	A5	DD	2C	25	5F	3E	3F	
7	9B	90	D2	D3	D4	D6	D7	D8	DE	60	3A	23	40	27	3D	22	
8	9D	61	62	63	64	65	66	67	68	69	AE	AF	D0	EC	E7	F1	
9	F8	6A	6B	6C	6D	6E	6F	70	71	72	A6	A7	91	F7	92	CF	
A	E6	EE	73	74	75	76	77	78	79	7A	AD	A8	D1	ED	E8	A9	
B	BD	5B	5C	FA	9F	F5	F4	AC	AB	F3	5E	5D	7E	F9	EF	F2	
C	7B	41	42	43	44	45	46	47	48	49	F0	93	94	95	A2	E4	
D	7D	4A	4B	4C	4D	4E	4F	50	51	52	D5	96	81	97	A3	98	
E	24	1A	53	54	55	56	57	58	59	5A	FD	E2	99	E3	E0	E5	
F	30	31	32	33	34	35	36	37	38	39	FC	EA	9A	EB	E9	FF	

Figure G-32. Japanese English Conversion from EBCDIC to ASCII. All digits are hexadecimal. See the notes on page G-5.

Portuguese

ASCII to EBCDIC Translation for Portuguese

		Second ASCII Digit																
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
First ASCII Digit	0	00	01	02	03	37	2D	2E	2F	16	05	0A	0B	0C	0D	0E	0F	
	1	10	11	12	13	3C	3D	32	26	18	19	3F	27	*	*	*	*	
	2	40	4F	7F	66	5B	6C	50	7D	4D	5D	5C	4E	6B	60	4B	61	
	3	F0	F1	F2	F3	F4	F5	F6	F7	F8	F9	7A	5E	4C	7E	6E	6F	
	4	EF	C1	C2	C3	C4	C5	C6	C7	C8	C9	D1	D2	D3	D4	D5	D6	
	5	D7	D8	D9	E2	E3	E4	E5	E6	E7	E8	E9	4A	68	5A	5F	6D	
	6	79	81	82	83	84	85	86	87	88	89	91	92	93	94	95	96	
	7	97	98	99	A2	A3	A4	A5	A6	A7	A8	A9	46	BB	BE	48	07	
	8	E0	DC	51	42	43	44	47	A1	52	53	54	57	56	58	63	67	
	9	71	9C	9E	CB	CC	CD	DB	DD	DF	EC	FC	70	B1	80	3F	B4	
	A	45	55	CE	DE	49	69	9A	9B	AB	AF	BA	B8	B7	AA	8A	8B	
	B	3F	3F	3F	3F	3F	65	62	64	3F	3F	3F	3F	3F	3F	B0	B2	3F
	C	3F	3F	3F	3F	3F	3F	C0	7B	3F	3F	3F	3F	3F	3F	3F	9F	
	D	8C	AC	72	73	74	DA	75	76	77	3F	3F	3F	3F	CF	78	3F	
	E	EE	59	EB	ED	6A	7C	A0	8E	AE	FE	FB	FD	8D	AD	BC	D0	
	F	CA	8F	BF	B9	B6	B5	3F	9D	90	BD	B3	3F	FA	EA	3F	FF	

Figure G-33. Portuguese Conversion from ASCII to EBCDIC. All digits are hexadecimal. See the notes on page G-5.

Portuguese Two-Byte Values for ASCII to EBCDIC Translation

ASCII	EBCDIC	ASCII	EBCDIC
1FA0	B3	1FD2	9D
1FB4	B6	1FD3	9F
1FB5	B5	1FD4	AC
1FC0	C0	1FD5	AD
1FC1	59	1FD6	AE
1FC2	62	1FD7	AF
1FC3	64	1FD8	B9
1FC4	65	1FD9	BC
1FC5	7B	1FDA	BD
1FC6	70	1FDB	D0
1FC7	72	1FDC	BF
1FC8	73	1FDD	6A
1FC9	74	1FDE	DA
1FCA	75	1FDF	EB
1FCB	76	1FE0	ED
1FCC	77	1FE1	EE
1FCD	78	1FE2	7C
1FCE	80	1FE3	FA
1FCF	8C	1FE4	FB
1FD0	8D	1FE5	FD
1FD1	8E	1FE6	FE

Figure G-34. Portuguese Two-Byte Values for ASCII to EBCDIC Translation

EBCDIC to ASCII Translation for Portuguese

		Second EBCDIC Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First EBCDIC Digit	0	00	01	02	03	1A	09	0A	7F	1A	1A	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	1A	0A	08	1A	18	19	1A	1A	1A	1A	1A	1A
	2	1A	1A	1A	1A	1A	0A	17	1B	1A	1A	1A	1A	1A	05	06	07
	3	1A	1A	16	1A	1A	1A	1A	04	1A	1A	1A	1A	14	15	1A	1A
	4	20	1A	83	84	85	A0	7B	86	7E	A4	5B	2E	3C	28	2B	21
	5	26	82	88	89	8A	A1	8C	8B	8D	E1	5D	24	2A	29	3B	5E
	6	2D	2F	B6	8E	B7	B5	23	8F	5C	A5	E4	2C	25	5F	3E	3F
	7	9B	90	D2	D3	D4	D6	D7	D8	DE	60	3A	C7	E5	27	3D	22
	8	9D	61	62	63	64	65	66	67	68	69	AE	AF	D0	EC	E7	F1
	9	F8	6A	6B	6C	6D	6E	6F	70	71	72	A6	A7	91	F7	92	CF
	A	E6	87	73	74	75	76	77	78	79	7A	AD	A8	D1	ED	E8	A9
	B	BD	9C	BE	FA	9F	F5	F4	AC	AB	F3	AA	7C	EE	F9	7D	F2
	C	C6	41	42	43	44	45	46	47	48	49	F0	93	94	95	A2	DD
	D	EF	4A	4B	4C	4D	4E	4F	50	51	52	D5	96	81	97	A3	98
	E	80	1A	53	54	55	56	57	58	59	5A	FD	E2	99	E3	E0	40
	F	30	31	32	33	34	35	36	37	38	39	FC	EA	9A	EB	E9	FF

Figure G-35. Portuguese Conversion from EBCDIC to ASCII. All digits are hexadecimal. See the notes on page G-5.

Spanish

ASCII to EBCDIC Translation for Spanish

		Second ASCII Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First ASCII Digit	0	00	01	02	03	37	2D	2E	2F	16	05	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	3C	3D	32	26	18	19	3F	27	*	*	*	*
	2	40	BB	7F	69	5B	6C	50	7D	4D	5D	5C	4E	6B	60	4B	61
	3	F0	F1	F2	F3	F4	F5	F6	F7	F8	F9	7A	5E	4C	7E	6E	6F
	4	7C	C1	C2	C3	C4	C5	C6	C7	C8	C9	D1	D2	D3	D4	D5	D6
	5	D7	D8	D9	E2	E3	E4	E5	E6	E7	E8	E9	4A	E0	5A	BA	6D
	6	79	81	82	83	84	85	86	87	88	89	91	92	93	94	95	96
	7	97	98	99	A2	A3	A4	A5	A6	A7	A8	A9	C0	4F	D0	BD	07
	8	68	DC	51	42	43	44	47	48	52	53	54	57	56	58	63	67
	9	71	9C	9E	CB	CC	CD	DB	DD	DF	EC	FC	70	B1	80	3F	B4
	A	45	55	CE	DE	6A	7B	9A	9B	AB	AF	5F	B8	B7	AA	8A	8B
	B	3F	3F	3F	3F	3F	65	62	64	3F	3F	3F	3F	3F	B0	B2	3F
	C	3F	3F	3F	3F	3F	3F	46	66	3F	3F	3F	3F	3F	3F	3F	9F
	D	8C	AC	72	73	74	DA	75	76	77	3F	3F	3F	3F	49	78	3F
	E	EE	59	EB	ED	CF	EF	A0	8E	AE	FE	FB	FD	8D	AD	BC	BE
	F	CA	8F	BF	B9	B6	B5	3F	9D	90	A1	B3	3F	FA	EA	3F	FF

Figure G-36. Spanish Conversion from ASCII to EBCDIC. All digits are hexadecimal. See the notes on page G-5.

Spanish Two-Byte Values for ASCII to EBCDIC Translation

ASCII	EBCDIC	ASCII	EBCDIC
1FA0	B3	1FD2	9D
1FB4	B6	1FD3	9F
1FB5	B5	1FD4	AC
1FC0	46	1FD5	AD
1FC1	59	1FD6	AE
1FC2	62	1FD7	AF
1FC3	64	1FD8	B9
1FC4	65	1FD9	BC
1FC5	66	1FDA	A1
1FC6	70	1FDB	BE
1FC7	72	1FDC	BF
1FC8	73	1FDD	CF
1FC9	74	1FDE	DA
1FCA	75	1FDF	EB
1FCB	76	1FE0	ED
1FCC	77	1FE1	EE
1FCD	78	1FE2	EF
1FCE	80	1FE3	FA
1FCF	8C	1FE4	FB
1FD0	8D	1FE5	FD
1FD1	8E	1FE6	FE

Figure G-37. Spanish Two-Byte Values for ASCII to EBCDIC Translation

EBCDIC to ASCII Translation for Spanish

		Second EBCDIC Digit															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
First EBCDIC Digit	0	00	01	02	03	1A	09	0A	7F	1A	1A	0A	0B	0C	0D	0E	0F
	1	10	11	12	13	1A	0A	08	1A	18	19	1A	1A	1A	1A	1A	1A
	2	1A	1A	1A	1A	1A	0A	17	1B	1A	1A	1A	1A	1A	05	06	07
	3	1A	1A	16	1A	1A	1A	1A	04	1A	1A	1A	1A	14	15	1A	1A
	4	20	1A	83	84	85	A0	C6	86	87	DD	5B	2E	3C	28	2B	7C
	5	26	82	88	89	8A	A1	8C	8B	8D	E1	5D	24	2A	29	3B	AA
	6	2D	2F	B6	8E	B7	B5	C7	8F	80	23	A4	2C	25	5F	3E	3F
	7	9B	90	D2	D3	D4	D6	D7	D8	DE	60	3A	A5	40	27	3D	22
	8	9D	61	62	63	64	65	66	67	68	69	AE	AF	D0	EC	E7	F1
	9	F8	6A	6B	6C	6D	6E	6F	70	71	72	A6	A7	91	F7	92	CF
	A	E6	F9	73	74	75	76	77	78	79	7A	AD	A8	D1	ED	E8	A9
	B	BD	9C	BE	FA	9F	F5	F4	AC	AB	F3	5E	21	EE	7E	EF	F2
	C	7B	41	42	43	44	45	46	47	48	49	F0	93	94	95	A2	E4
	D	7D	4A	4B	4C	4D	4E	4F	50	51	52	D5	96	81	97	A3	98
	E	5C	1A	53	54	55	56	57	58	59	5A	FD	E2	99	E3	E0	E5
	F	30	31	32	33	34	35	36	37	38	39	FC	EA	9A	EB	E9	FF

Figure G-38. Spanish Conversion from EBCDIC to ASCII. All digits are hexadecimal. See the notes on page G-5.

Glossary

The following definitions are applicable to IBM RT PC 3278/79 Emulation.

adapter. An attachment that modifies a mechanism to operate in a particular way. Often referred to as an adapter card.

append. The action that adds data to the end of existing data.

ASCII. American Standard Code for Information Interchange. A standard code used for exchanging information among data processing systems and associated equipment.

Attn. A function key that operates only when a **B** is displayed in the Readiness and System Connection section of the Operator Information Area. This key lets you get the attention of the program.

byte. A character of information. Eight bits.

CECP. Country-extended code page. A chart of characters and their numeric equivalents, used in file transfer for specific national languages.

Clear. Function key that erases the display and signals the host that a clear action has occurred.

Click. Function key that turns the keyboard clicker on and off. Defined for IBM RT PC 3278/79 Emulation but not implemented.

control unit. A device that controls the input/output operations at one or more devices.

CP. Code page. A chart of characters and their numeric equivalents, used in file transfer.

Cursor Select. Function key that selects a selectable field for processing.

default. A value or option that is assumed when none has been specified.

device driver. A program that operates a specific device, such as a printer, disk drive, or display.

Dev Cncl. Function key that cancels a pending print request.

display. An output device used for the visual display of data.

Dup. Function key that sends a request for a duplication operation to the program. This operation is defined by the program and lets you fill in information that is the same for every document. For

example, the date could be duplicated on a series of documents.

EBCDIC. Extended Binary Coded Decimal Interchange Code. A coded character set consisting of 8-bit coded characters. The standard code used by IBM 370 computers.

Erase Input. Function key that erases all input fields and moves the cursor to the first input character position on the screen.

Erase EOF. Function key that erases the input field from the cursor to the end of the field. The cursor does not move.

field. A specified area used for a particular category of data.

field attribute. A property or characteristic of a data field as displayed on the screen, such as color or highlighting.

file transfer. The function that lets you send and receive files between an IBM RT PC and a host.

Field Mark. Function key that indicates the end of a field in an unformatted display.

hardware. The physical equipment used in data processing, as opposed to programs, procedures, and associated documentation (software).

host computer. A large, central computer which provides services such as

computation, data base access, special programs, or programming languages.

Ident. Function key that identifies the next two numbers as the printer ID code. The ID is displayed in the Operator Information Area. If your printer assignment is changed, use the IDENT key to display the new ID.

interrupt. (1) To take an action at a receiving station that causes the sending station to end a transmission. (2) A signal sent by an I/O device to the processor when an error has occurred or when assistance is needed to complete I/O. An interrupt usually suspends execution of the currently executing program.

logging on. The procedure by which you are linked to a multiple-user host computer. The procedure requires a user identification and a password.

mnemonic. Characters used to represent a more difficult character or phrase. A memory aid.

none. Key definition that removes the assignment for a key or key combination in the profile.

operator information area. In the 3270 Information Display System, the area near the bottom of the display where you receive information about the status of your terminal or system.

PA1, PA2, PA3. Program access function keys that communicate with a program.

PF1...PF24. Program function keys assigned application functions.

parameter. An argument passed to a procedure.

power-on reset. Function equivalent to turning on the power to the IBM 3278/79 display or switching the normal/test toggle switch to normal.

Print. Function key that sends data from the display station to the selected host printer.

problem determination. The process of identifying why the system is not working. Often this process identifies programs, equipment, data communications facilities, or user errors as the source of the problem.

protected field. An area containing data that you cannot change.

shell script. A program that accepts and interprets commands for the operating system.

software. Programs that pertain to the operation of a computer system.

stdin. The primary source of data going into a command. Standard input comes from the keyboard unless redirection or piping is used, in which case standard

input can be from a file or the output from another command.

stdout. The primary destination of data coming from a command. Standard output goes to the display unless redirection or piping occurs, in which case standard output can be to a file or another command.

superuser authority. The unrestricted ability to access and modify any part of the operating system associated with the user who manages the system.

Sys Req. If an **A** appears in the Readiness and System Connection section of the Operator Information Area when a display failure is pending, this function key signals a test request message.

If a **B** appears in the Readiness and System Connection section of the Operator Information Area, the key can clear the display or switch the display between an application and the control program.

Test. Function key that runs special problem determination functions. Refer to your display station's *Problem Determination Guide*.

virtual resource manager (VRM). A set of programs that manage the hardware resources (main storage, disk storage, display stations, and printers) of the system so that these resources can be used independently of each other.

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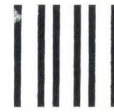
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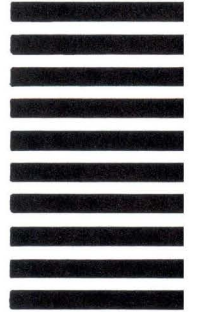


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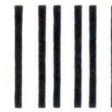
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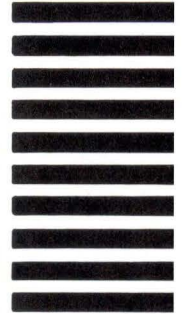
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