



# VP TERMINAL EMULATION OF TTY

XEROX

*VP Series Training Guide*  
*Version 1.0*

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*This publication could contain technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of this publication.*

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# 1. Introduction

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In today's office, professionals frequently use information stored in databases on mainframe computers. Such information may range from payroll data to the totals on last month's sales orders. Since these databases may be rather large, the information cannot be stored on your workstation. Instead, the information is stored in a mainframe computer and accessed through terminals that communicate directly with that computer.

You can access data stored on a mainframe computer without leaving your workstation. This process is called **terminal emulation**. Your workstation can emulate International Business Machines (IBM) 3270, Digital Equipment Corporation (DEC) VT100, and Teletype Model 35 terminals.

You may want to use your workstation's terminal emulation capabilities if:

- You have easier access to a workstation than to a TTY terminal
- You want to have more than one session on the same host computer at the same time
- You want to have several sessions with several computers at one time
- You want to transfer information from the mainframe to your workstation, or vice versa

This study guide shows how your workstation can be used to imitate a Teletype Model 35 (KSR) teletypewriter (TTY) terminal. It is designed to provide you with the general concepts and practice necessary to exchange information in your workstation documents with information on the mainframe computer.

When you complete this self study guide, you should be able to:

- Retrieve a TTY icon from the directory
- Set properties for the TTY icon
- Start an emulation session
- Enter data in the TTY emulation window
- Use the TTY keyboard
- Use the terminal property sheet
- Transfer information to and from a host computer
- Stop an emulation session

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## Getting started

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In order to use TTY emulation, the External Communication Service must be running on a Xerox network server, and the TTY emulation software must be running and product factored for your workstation. These are special options that are not purchased with every workstation and network. Check with your System Administrator to verify that these options have been purchased. Figure 1-1 shows the network configuration necessary to run TTY emulation.

You need a logon account to communicate with the mainframe computer. This logon account should consist of your name and a password. If you do not have a logon account, ask your System Administrator about getting one.

You also need a terminal emulator icon. Ask your System Administrator for the name of the terminal emulator icon for the mainframe that you wish to use. Additionally, you need to know the organization and domain of the icon, as well as port, modem, or terminal settings for the icon.

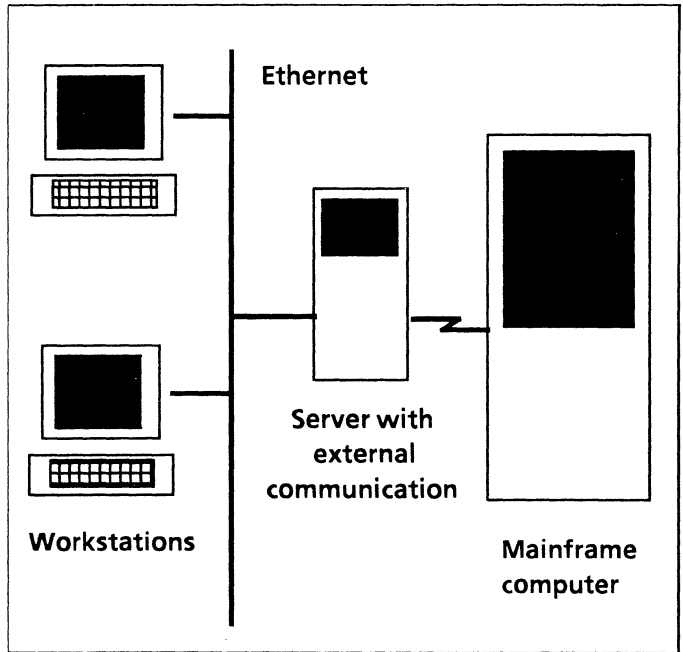


Figure 1-1. Network configuration

If you wish to transfer information from a host computer to a workstation document, the VP Document Editor software must be running on your workstation.

**NOTE:** This study guide does not teach you how to use the software available on the host computer. It focuses on how to make your workstation imitate a TTY terminal. For information on using host software, check with your System Administrator.

To verify that TTY emulation software is installed and running on your workstation, open the application loader, which is located in the workstation divider of the directory. If "VP Terminal Emulation of TTY" is not displayed when you open the application loader, or if its status is set to idle, refer to the "Application Loader" chapter of the "Xerox ViewPoint" self study guide. The "Remote System Administration" software must also be loaded and running.

This self study guide is divided into chapters. Each chapter introduces a number of related concepts. When these concepts involve on-line practice, practice exercises are included. At the end of your training, you review all the skills taught with a final progress check.

When a term that is new or unique is introduced, it is italicized and placed in boldface type. You can find a more detailed explanation of each term in the "Glossary" tab of the VP Series reference library.

Beginning with this introduction, continue through each chapter sequentially, at your own pace, until you have mastered the skills taught. When it becomes necessary to put your training aside, stop the emulation session (refer to Chapter 8). Log on again when you are ready to resume your training.

Your training should take approximately two hours.

While you are completing this self study guide, it is advisable that you have the tab titled "VP TTY Emulation" in the VP Series reference library available for easy referral.



## 2. Retrieving a TTY icon

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### Overview

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Before you can communicate with a mainframe computer, you need to place a TTY emulator icon on your desktop.

Each TTY emulator icon represents an access path from your network to one or more host computers. If an icon is associated with a phone, any host can be dialed up. However, if the icon is associated with a specific host computer, only that computer can be accessed.

When you complete this chapter, you should have a TTY emulator icon on your desktop that you can use in subsequent chapters of this self study guide.

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### Retrieving the TTY icon

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In the following exercise, you retrieve the TTY icon from the directory.

1. **Open** the directory icon.
2. **Open** the network divider.

You need the organization, domain, and name of a TTY icon. You should get this information from your System Administrator, if you do not already have it.

3. **Open** the organization divider.

#### 4. Open the domain divider.

A list of dividers appears (refer to Figure 2-1).

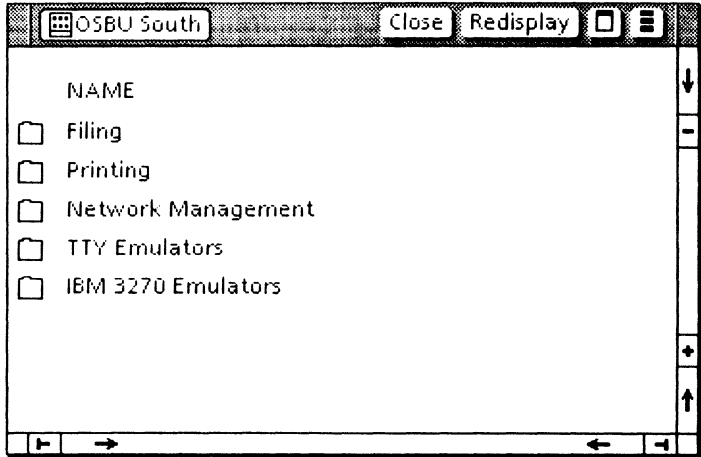


Figure 2-1 TTY emulator divider

If you do not see a TTY emulator divider, the TTY emulator software is not installed and running. Refer to the sub-tab titled "Application Loader" in the VP Series reference library for more information.

•

5. **Open** the TTY emulator divider.

A list of TTY emulator icons appears (refer to Figure 2-2 for an example).

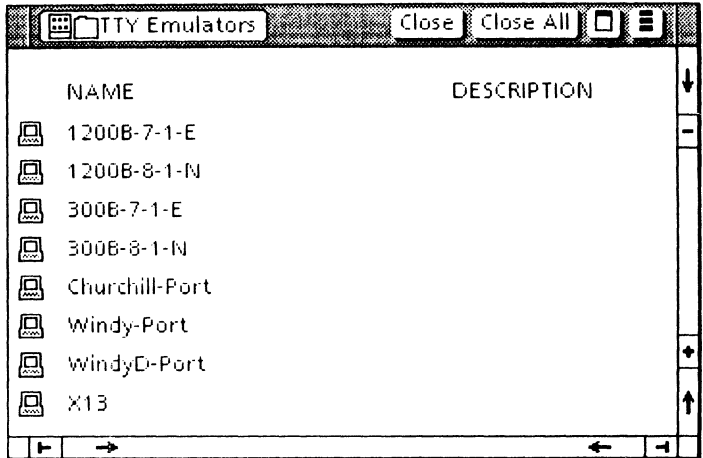


Figure 2-2 TTY emulator icons

6. **Select** the TTY emulator icon that you wish to use.
7. **Copy** the icon to your desktop.

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## Summary

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In this chapter, you studied how to retrieve a TTY emulator icon from the directory.

Do not delete the icon from your desktop. It will be used in the following chapters.

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## 3. **Setting TTY properties**

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### **Overview**

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The TTY property sheet is used to display and modify the properties of the TTY emulator icon. This chapter describes the properties of the TTY emulator icon, including port, modem, and terminal items. Your System Administrator can tell you how to set these properties.

When you complete this chapter, you should be able to access the TTY property sheet.

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### **Accessing the TTY property sheet**

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In the following exercise, you open the TTY property sheet and set the appropriate properties.

1. **Select the TTY emulator icon.**

2. Press <PROP'S>.

The property sheet appears (refer to Figure 3-1).

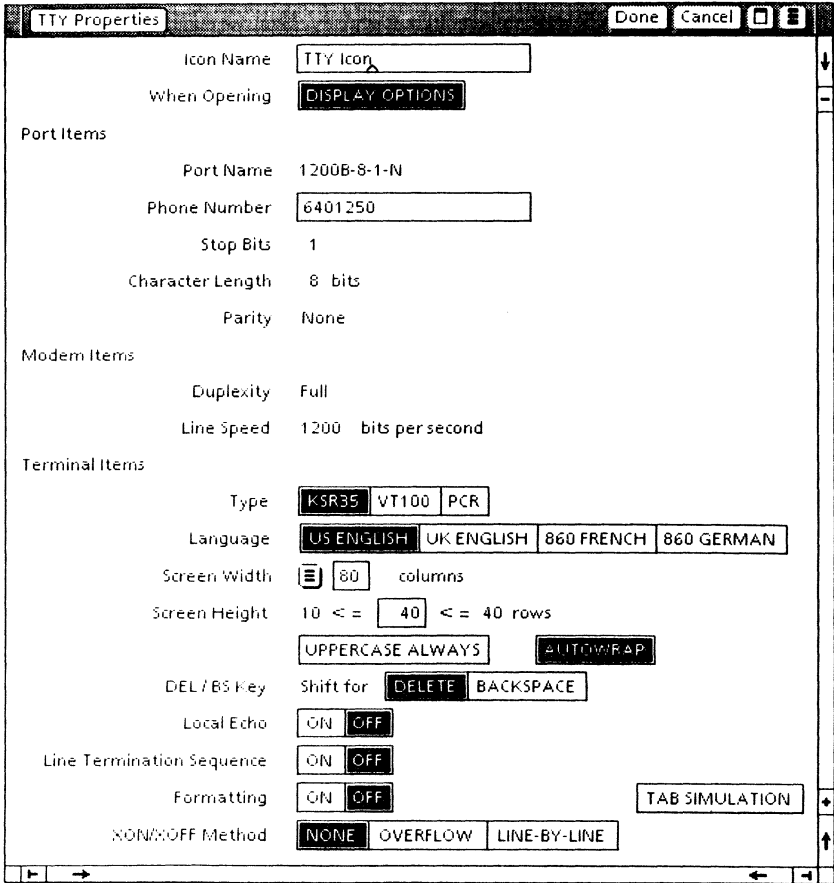


Figure 3-1 TTY property sheet

3. Study the properties. They are discussed following step 7 of this procedure.

4. Select the port items desired.

**NOTE:** Port items can be changed only if the TTY emulator icon is using a local port on the External Communication Service. If a Communication Interface Unit (CIU) port is being used, only the phone number can be changed.

5. Select the modem items desired.

**NOTE:** Modem items can be changed only if the TTY emulator icon is using a local port on the External Communication Service. If a CIU port is being used, no changes can be made.

6. Select the terminal items desired.

7. Select [DONE] on the property sheet when you have finished.

The following is a list of the available properties. Consult your System Administrator for details on setting these properties for your particular icon. For additional information on these properties, refer to the tab titled "VP TTY Emulation" in the VP Series reference library.

**Icon Name**

Used to change the name of the emulator icon on your desktop. This allows each TTY icon to be uniquely named.

**Display Options**

Causes the option sheet to be displayed when the TTY icon is opened, allowing you to change options before starting the emulation session. If the TTY icon is opened with [DISPLAY OPTIONS] not selected, the TTY option sheet does not appear. In this case, the properties set on the TTY property sheet are used in the emulation session.

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## Port items

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### Port Name

Lists the port name as registered in the Clearinghouse Service. The port name cannot be changed.

### Phone Number

Specifies the full phone number to be dialed for a connection to a host computer. This option is used only if the TTY icon is associated with a phone.

Some examples of phone numbers are as follows:

320-2433  
213-320-2433  
9-213-320-2433

### Stop Bits

Specifies how each character is separated from the next character on the telephone line. This option cannot be changed from the workstation for CIU ports. See your System Administrator for the correct setting for your host computer.

### Character Length

Specifies the number of bits that make up a character. This option may be set to 5, 6, 7, or 8 if the host connection is by a local port. This option cannot be changed from the workstation for CIU ports.

### Parity

Designates the method used to check that data is not garbled in transmission. This option may be set to [EVEN], [ODD], or [NONE] if the host connection is by a local port. This option cannot be changed from the workstation for CIU ports.



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## Modem items

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### Duplexity

Specifies whether communication can occur in both directions simultaneously (full duplex) or operate in only one direction at a time (half duplex). The duplexity is registered in the Clearinghouse Service and cannot be changed.

### Line Speed

Specifies the rate at which data passes to and from the host computer - usually in bits sent per second. This option cannot be changed from the workstation for CIU ports. The communication hardware used in the TTY connection determines what values are legal, and whether or not they are electronically changeable. This option can be set to any baud rate if the host connection is by a local port.

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## Terminal items

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### Type

Specifies which terminal this icon will actually emulate. You should select [KSR35] for standard TTY. The other choices are supported only if you have purchased the appropriate emulation packages.

### Language

Specifies which of the TTY International Standard Organization (ISO) 646 standard character translation tables should be used.

### **Screen Width**

Specifies the number of characters that will be placed on one line in the window. You may select any of the available choices. If [OTHER] is selected, the screen may be set to any width from 10 to 132 characters.

### **Screen Height**

Specifies the number of lines that will appear in the window. For the Teletype Model 35 (KSR) terminal, 10 to 40 lines can appear.

### **Uppercase Always**

Causes all lowercase characters to be translated to uppercase before they are sent to the host.

### **Autowrap**

Specifies that when a line in the window becomes full, the text will wrap around to the next line if this item is selected. If this option is not selected, the "extra" characters will overwrite the last position on the line.

### **DEL/BS Key**

Specifies the placement of the delete and backspace functions on the DEL/BS key (the upper righthand key). The selection determines which function is performed in this key's shifted position.

### **Local Echo**

Specifies whether the terminal should echo (display) the characters typed in, or if the host will send these characters back to the terminal to be displayed.

### **Line Termination Sequence (LTS)**

Selecting [ON] causes an additional option to appear. This option specifies what character, or characters, will replace a carriage return (<CR>) just before it is sent to the host.

## Formatting and Line Length

Specifies whether document formatting is to be simulated when text is moved or copied into the TTY window. Selecting [ON] causes the line length option to appear on the option sheet. This option specifies the number of characters in a line.

## Tab Simulation

Specifies whether or not tabs are to be automatically converted to spaces when text is moved or copied into the TTY window. This option applies only if Formatting is on. Otherwise, this option is ignored.

## XON/XOFF Method

Specifies the type of flow control the terminal should use. This option can be set to [NONE], [OVERFLOW], or [LINE-BY-LINE] if the host connection is by a local port. This option cannot be changed from the workstation for CIU ports.

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## Summary

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In this chapter, you studied how to access the TTY property sheet and set the appropriate properties.

If you need more practice, complete the exercise again. Do not delete the TTY emulator icon from your desktop.

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## 4. Starting an emulation session

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### Overview

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Now that you have retrieved a TTY emulation icon and viewed its property sheet, you are ready to start an emulation session.

When you complete this chapter, you should be able to access the TTY option sheet and open the emulation window.

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### Accessing the TTY option sheet

---

In the following exercise, you access the TTY option sheet.

1. Select the TTY emulator icon.

## 2. Press <OPEN>.

The TTY option sheet (refer to Figure 4-1) has the same properties as the TTY property sheet, except for the icon name and [DISPLAY OPTIONS] properties.

The screenshot shows a window titled "TTY Options" with a standard Windows-style title bar (Start, Cancel, and window control icons). The window is divided into three sections: "Port Items", "Modem Items", and "Terminal Items".

- Port Items:**
  - Port Name: 1200B-8-1-N
  - Phone Number: 6401250
  - Stop Bits: 1
  - Character Length: 8 bits
  - Parity: None
- Modem Items:**
  - Duplexity: Full
  - Line Speed: 1200 bits per second
- Terminal Items:**
  - Type: SR35 (selected), VT100, PCR
  - Language: US ENGLISH (selected), UK ENGLISH, 860 FRENCH, 860 GERMAN
  - Screen Width: 80 columns
  - Screen Height: 10 <= 40 <= 40 rows
  - UPPERCASE ALWAYS (selected), AUTOWRAP (selected)
  - DEL/BS Key: Shift for DELETE, BACKSPACE
  - Local Echo: ON, OFF (selected)
  - Line Termination Sequence: ON, OFF (selected)
  - Formatting: ON, OFF (selected), TAB SIMULATION
  - XON/XOFF Method: NONE (selected), OVERFLOW, LINE-BY-LINE

Figure 4-1 TTY option sheet

Settings defined on the option sheet are used only for the current emulation session. Closing the emulation window resets the properties to the settings previously defined on the TTY property sheet.

3. Change any of the properties as necessary.
4. Select [START] on the option sheet.

After [START] is selected, an attempt is made to connect with the host computer. If a connection is made, the emulation window opens. If any problems occur with the External Communication Service, port, modem, or host computer, an error message appears, and the connection to the host computer is not made. If you fail to make a connection, report the problem to your System Administrator and try again later.

## The emulation window

The emulation window (refer to Figure 4-2) is divided into two areas, the status area and the text area.

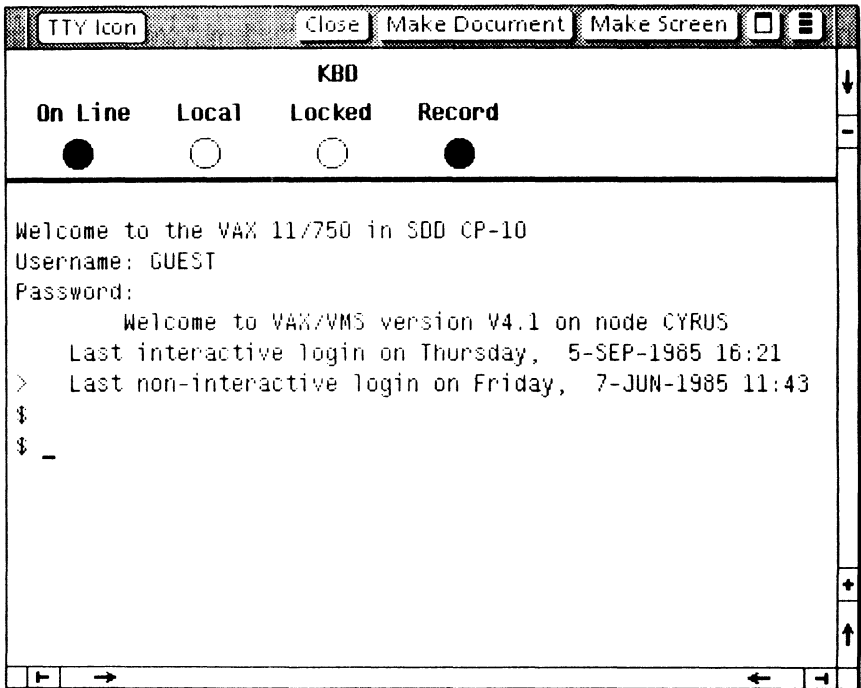


Figure 4-2 TTY emulation window

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## Status area

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LED indicator lights appear in the status area as shown in Figure 4-3. Solid circles are used to indicate which lights are on. These lights are read-only and cannot be set with the mouse.

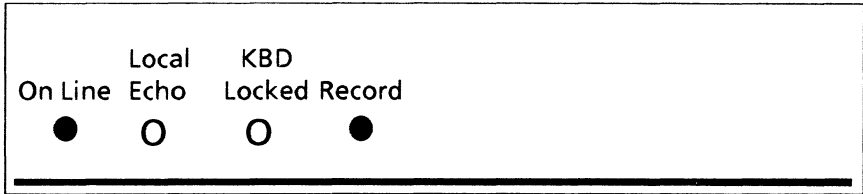


Figure 4-3 Status area

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## Text area

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The text area is used to send information to, and receive responses from, the remote host. Text is entered directly by typing at the keyboard, or by copying it or moving it from a workstation document.

For the Teletype Model 35 (KSR) terminal, the text area can contain from 10 to 40 lines of information. This is controlled by the Screen Height option set on the TTY option sheet. The number of characters to appear on a line is determined by the Screen Width option set on the TTY option sheet.



Each new line of text appears at the bottom line of the text area. When the window is full, the contents of the window are automatically scrolled up a line at a time. Although the text area can contain up to 40 lines of information, not all lines may be visible if the window is smaller than its standard size of 40 lines. In this case, the scroll bars may be used to bring any of the last 40 lines into view. Those lines that appeared before the last 40 lines cannot be scrolled back into view. However, any text scrolled out of the window can be recaptured in a workstation document by selecting [MAKE DOCUMENT]. (This command is covered in chapter 7.)

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## Summary

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In this chapter, you studied how to access the TTY option sheet, which opens the emulation window.

If you need more practice, complete the exercise again. Keep the emulation window open. You will use it in the next chapter.

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## 5. Using the TTY keyboard

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### Overview

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Whenever the selection is in the TTY emulation window, your workstation keyboard is redefined as a TTY keyboard. This gives you full access to all ASCII control codes, plus the ESCAPE and BREAK keys. The function keys across the top of your keyboard are also redefined.

When you complete this chapter, you should be able to access the redefined function keys as well as the TTY keyboard.

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### Accessing the function keys

---

In the following exercise, you access the function keys.

1. **Point** the mouse inside the text area of the emulation window.
2. **Click** the left mouse button.

When you select inside the emulation window, your keyboard is redefined to a TTY keyboard, and the function keys are redefined. Pressing the function key corresponding to `<SHOW>` displays the virtual keyboard window.

3. **Log on** to the host computer, using your assigned name and password.

The function key window appears (refer to Figure 5-1). <ESCAPE> provides the escape character, and <BREAK> issues the break signal.

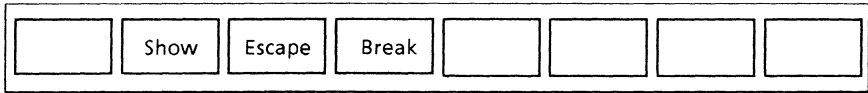


Figure 5-1 TTY function keys

## Accessing the TTY keyboard

There is only one keyboard associated with TTY emulation.

In the following exercise, you view the keyboard.

1. Press <SHOW>. The keyboard window appears, displaying the TTY keyboard (refer to Figure 5-2).
2. Select [CLOSE] in the keyboard window.

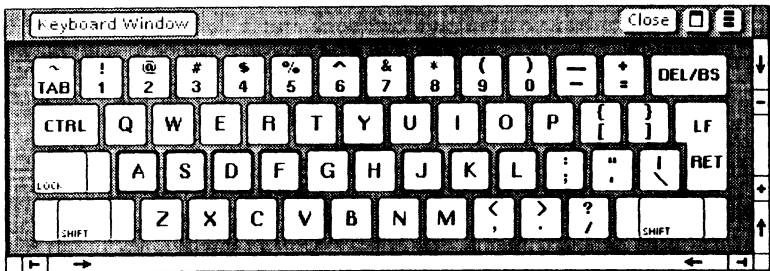


Figure 5-2 TTY keyboard

**NOTE:** The CONTROL key on the 6085 corresponds to the <KEYBOARD> key. For the 8010, the CONTROL key corresponds to the paragraph tab key.

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## Using the cursor

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The cursor in the emulation window appears as an underscore. Text entered into the window appears at the cursor position. The current selection must be in the emulator window for text to be entered.

When the current selection is in the window, the cursor is solid. Otherwise, the cursor is gray.

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## Summary

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In this chapter, you studied how to:

- Access the redefined function keys for TTY emulation
- Access the TTY keyboard

If you need more practice, complete the exercise again. Keep the emulation window open. It will be used in the next chapter.

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## 6. Using the auxiliary menu & terminal property sheet

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### Overview

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The TTY emulation window's auxiliary menu contains several items.

When you complete this chapter, you should be able to access the auxiliary menu and use the terminal property sheet.

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### Accessing the auxiliary menu

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In the following exercise, you access the auxiliary menu .

1. **Place** the pointer over the emulation window's auxiliary menu symbol.
2. **Hold down** the left mouse button.
3. **Study** the menu items. They are discussed below.
4. **Release** the mouse button.

The following menu items are available:

#### [ENABLE/DISABLE LOCAL ECHO]

Controls whether or not the emulator echoes each character sent to the host . Its setting is reflected in the Local Echo indicator in the status area.

**[ENABLE/DISABLE ONLINE]**

Controls whether the emulator runs off-line locally or runs connected to a remote host. Its setting is reflected in the On-Line indicator in the status area.

**[USE/DON'T USE Auto-newline]**

If [USE Auto-newline] is selected, then the cursor will advance to a new line when a carriage return is received from the host computer. If [DON'T USE Auto-newline] is selected, then the cursor will move to column one of the current line when a carriage return is received.

**[ENABLE/DISABLE AUTOWRAP]**

Causes the text to wrap around to the next line when a line in the window becomes full if [ENABLE AUTOWRAP] is selected.

**[ENABLE/DISABLE LTS] ( Line Termination Sequence)**

When this option is enabled, pressing the return key sends the sequence of octal codes specified by the LTS field in the TTY option sheet. When the option is disabled, only a carriage return is sent.

**[RECORD/DON'T RECORD DATA]**

Allows you to control when incoming data is recorded to the backing file. Since it can be turned on or off at any time, it provides you with the option of not recording data that you do not wish to save. Performance is increased slightly when [DON'T RECORD DATA] is selected, since the data is not copied to the backing file. When [RECORD DATA] is selected, data is placed in the backing file as it is scrolled out of the TTY window. The data in this file can be transferred to a workstation document as described in the next chapter.



**[SHOW TERMINAL PROPS]**

Displays the terminal property sheet. This property sheet allows tab stops to be set .

## Using the terminal property sheet

In the following exercise, you view the terminal property sheet (refer to Figure 6-1).

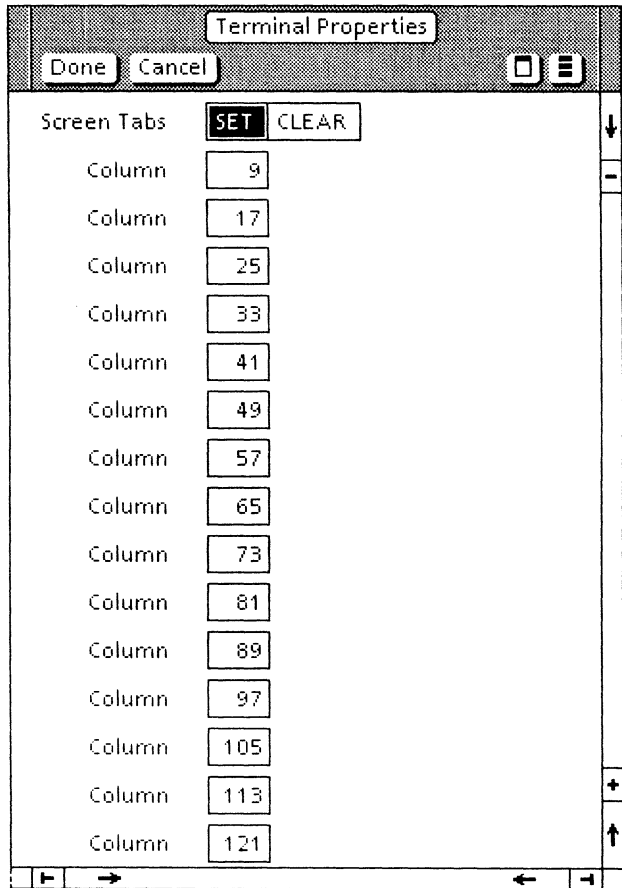


Figure 6-1 Terminal property sheet

1. Select **[SHOW TERMINAL PROPS]** in the emulator window's auxiliary menu .

The terminal property sheet is displayed. Each box in the property sheet represents a tab. The first box represents the first tab stop, the second box represents the second tab stop, and so forth. The tabs are set by typing numbers into the boxes. The tabs may be changed individually, or they can be cleared and reset.

2. Select [SET] for the Screen Tabs option in the property sheet.
3. Change any of the tabs desired.
4. Select [DONE] to close the property sheet.

Tabs can be cleared by selecting [CLEAR] for the Screen Tab option.

**NOTE:** The tabs set in the terminal property sheet are independent of the tabs in workstation documents. The tab settings do not affect the formatting of text copied or moved into the emulator window from a workstation document.

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## Summary

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In this chapter, you studied how to:

- Access the auxiliary menu
- Use the terminal property sheet

If you need more practice, complete the exercise again. Keep the emulation window open. It will be used in the next chapter.

# 7. Exchanging data with a host computer

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## Overview

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Your workstation provides an easy means of transferring information between a document and a host computer. For example, you can transfer a list of commands from a document to the host for execution. Or, you can transfer information from a document to be stored in a database on the host computer. Commands and information can also be transferred from the host to any document on your workstation.

When you complete this chapter, you should be able to transfer information to and from a host computer.

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## Transferring data to a host computer

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Existing text from a document can be copied or moved into a TTY emulation window. To transfer text into the window, select the text in the document, press <COPY> or <MOVE>, and then select inside the TTY emulation window. The copied or moved text appears at the terminal's cursor position.

The characters appear exactly as if they had been typed into the TTY emulation window. Most text properties (such as font or size) are ignored. There are certain formatting properties, however, that are controlled by the Formatting option on the TTY property sheet.

Characters that are unknown (foreign) to the host are converted to question marks.

If you are copying or moving text into the emulation window and wish to cancel the transmission, press <STOP>.

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## Transferring data to a document

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You cannot copy or move information directly out of a TTY emulation window into a document using <COPY> or <MOVE>. Instead, you must select [MAKE DOCUMENT] or [MAKE SCREEN] in the emulation window.

When you select [MAKE DOCUMENT], all of the information that has appeared on the screen since [MAKE DOCUMENT] was last selected is captured and placed in a document. This allows you to get a record of your entire session.

**NOTE:** [RECORD DATA] must be initially selected from the window auxiliary menu for the data to be recorded.

When you select [MAKE SCREEN], the text in the emulation window is captured and placed in a document.

Once [MAKE DOCUMENT] or [MAKE SCREEN] has been selected, a document icon (with the emulator icon name and a time stamp) containing the captured information appears on your desktop. That document icon is the same as any other workstation document. It can be renamed, opened, reformatted, and copied or moved into a folder. The document is named with the TTY icon's name, followed by a time stamp. For example, a document created from a TTY icon labeled LAX XC might be named as follows:

LAX XC of 4-Feb-86 11:46:52PST

**NOTE:** Selecting [MAKE DOCUMENT] automatically paginates the document.

In the following exercises, you transfer information to a document. If you are familiar with how to use the programs on your host computer, complete this exercise. Otherwise, proceed to the next chapter.

1. Select [RECORD DATA] in the window auxiliary menu.
2. Prepare a document containing text that can be used by the program on your host computer. For example, you might write the commands that initiate a session.
3. Select the text you want to copy into the emulation window from the document.
4. Press <COPY>. Copying information into the window ensures that the correct information is entered and eliminates rekeying existing information.
5. Select a destination inside the emulation window. The text then appears inside the emulation window. If your copied text includes commands for the host computer to execute, notice that the commands are executed in order.
6. Select [MAKE DOCUMENT] in the emulation window menu. An icon should appear on your desktop in a short time.

**NOTE:** The icon may appear behind the emulation window, so you may have to move the window to see the icon.

7. Open the icon. The icon contains all of the textual information from the current session, regardless of whether or not it currently appears on the screen.
8. Select [MAKE SCREEN] in the emulation window menu. An icon should appear on your desktop in a short time.
9. Open the icon. The icon contains only the text that appeared in the emulation window.

- 10. Delete** all practice documents (the document you created and the ones resulting from [MAKE DOCUMENT] and [MAKE SCREEN]).

**NOTE:** It is not possible to copy or move information from one place in the emulation window to another, just as it is not possible to copy or move information on the actual TTY terminal.

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## Summary

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In this chapter, you studied how to transfer information to and from a host computer.

If you need more practice, complete the exercise again. Keep the emulation window open. It will be used in the next chapter.

## 8. Stopping an emulation session

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### Overview

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To stop an emulation session, you log off from the host computer and then close the emulation window. Merely closing the emulation window does not automatically log you off from the host computer. This is very important because some host computers will continue to charge you for logon time if you fail to log off.

When you complete this chapter, you should be able to stop an emulation session.

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### Stopping the emulation session

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In the following exercise, you stop the emulation session.

1. **Log off** from the host computer.
2. **Select [CLOSE]** in the emulation window.

## Summary

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In this chapter, you studied how to stop the emulation session.

If you need more practice, complete the exercise again. Do not delete the TTY emulator icon from your desktop. It will be used in the final progress check.



## 9. Progress check

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In this self study guide, you used your workstation to emulate a TTY terminal. Now you are going to test your knowledge by completing each of the following tasks. Refer to the following pages for detailed information on how to perform this exercise. When you are finished, close and delete all practice documents.

1. Open a connection with a host computer through a TTY emulation window.
2. Display the TTY keyboard through the keyboard window.
3. Run one of the programs available on your host computer through the emulation window.
4. Move all of the information in the emulation window into a document.
5. End the emulation session.

## Answers to progress check

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The numbers in parentheses indicate the sections in which you will find details on each procedure.

**1. To open a connection: (4)**

Select the TTY icon.

Press <OPEN>.

Select [START] in the emulation window option sheet.

Log on to the host computer.

**2. To display the TTY keyboard: (5)**

Select inside the emulation window.

Press the function key corresponding to <SHOW>.

**3. To run a program on the host computer: (7)**

The steps here depend on the particular program you are running.

**4. To move information from a window to a document: (7)**

Select [MAKE DOCUMENT] in the emulation window.

**5. To end the emulation session: (8)**

Log off the host computer.

Select [CLOSE] in the emulation window.