TeemTalk® 5.0 for Unix

User's Guide

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Introduction

This chapter introduces the TeemTalk for Unix terminal emulation software and describes the scope of this User's Guide.

TeemTalk & The X Window System

TeemTalk for Unix is the essential connectivity tool for enabling non-X based applications to be run in the X environment. TeemTalk provides precise emulation of a wide range of industry standard terminals with impressive additional features formulated to increase productivity and reduce network loading. These include dynamic window sizing, hotspots, soft buttons, keyboard mapping, mouse button definition and customising capabilities. TeemTalk for Unix integrates seamlessly into the X Window system with the same look and feel as other applications.

The X Window System is a network-based windowing system that provides a common graphical interface for application programs. It defines how applications create windows and the graphics displayed in them.

X is based on a *client-server* model in which the *client* is the application program and the *server* controls the display and keeps track of user input. Communication between client and server can be achieved via networks, serial interfaces or internal operating system streams using standard X protocols. Since X is both window based and network oriented there can be multiple applications on the network creating individual windows on an individual display. The display is therefore providing a service to each application and hence is known as the X *display server*.

The basic function of TeemTalk for Unix is to accept IBM command sequences from a host application (client) and convert them into equivalent X functions which can then be passed on to the X display server. This means that current investment in host application software can be retained in the X Windows environment.

Each window displayed by TeemTalk is, in effect, a separate 'terminal'. Several terminal emulation windows may be displayed simultaneously on the same display server, all running different programs, but only one window may be active at any one time.

User's Guide Overview

Chapter 1: **Introduction**
Introduces TeemTalk and describes various conventions used.

Chapter 2: **Getting Started**
Describes how to use TeemTalk and configure it for compatibility
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Chapter 3: **Keyboard Configuration**
Describes how to configure the keyboard, remap key functions
and compose special characters.

Chapter 4: **Mouse Functions**
Describes the special functions assigned to the mouse buttons by
TeemTalk and how to redefine the buttons.

Chapter 5: **Hotspots**
Describes the hotspot facility which enables functions to be
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Chapter 6: **Setup Menus**
Describes all the commands and setup dialog boxes that can
be accessed via pop-up menus in the menu bar.

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Describes features of the IBM 3270 emulation.

Chapter 8: **Resources & Command Line Options**
Describes how to use resources and command line options to
specify the loading configuration of TeemTalk.

Appendix A: **Virtual Key Names**
Lists all the virtual key names that enable you to include a
specific key function in a user definition for key macros, soft
buttons, hotspots, etc.

Appendix B: **Keysyms**
Describes the use of virtual keysyms and lists all the valid
keysyms that may be used to define the function of keys.

Appendix C: **Key Reference Numbers**
Lists the reference numbers assigned to keys on the British
keyboard.

Appendix D: **Character Sets**
Shows the supported character set code tables.

Appendix E: **Product Specification**
Describes the level of support provided by each terminal emulation.

Terms & Conventions

This *User's Guide* uses the following terms and conventions.

1. When referring to mouse buttons, it will be assumed that the **Left** button is configured as button 1, the **Middle** button is configured as button 2, and the **Right** button is configured as button 3.

2. 'Click' means quickly press then release the specified mouse button.

3. 'Double click' means quickly press then release the specified mouse button twice in quick succession.

4. 'Drag the pointer' means hold down the left mouse button (or button assigned with the select function) and slide the mouse so that a selection box is displayed.

5. When references to keys are shown linked by a + (plus sign), this means that two or more keys have to be pressed at the same time. For example, 'press **Ctrl** + **M**' means press and hold down the **Ctrl** key, press the **M** key then release both keys.

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Getting Started

This chapter describes how to configure TeemTalk for compatibility with your hardware and the application.

Initiating A Telnet Session

TeemTalk has its own inbuilt telnet driver so that precise control can be exercised over the information that TeemTalk receives and transmits.

A telnet session can be initiated from a dialog box while TeemTalk is running or by using resources or command line options. Note that TeemTalk must be configured so that it is running the required terminal emulation before initiating a telnet session.

The TeemTalk window will be in Network Virtual Terminal mode, as indicated by the ⸮ symbol in the status line along the bottom of the window, until a successful host connection is made.

1. Display the **IBM 3270 Settings** dialog box from the **Settings** menu and select the particular terminal **Model**, then click **OK**.
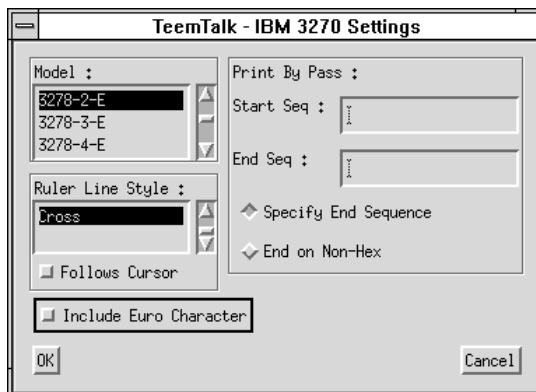
The **Model** option specifies what is reported back to the host in response to a terminal identification request. (Note that not all features of the specified terminal may be supported.) It also determines the size of the display and whether or not extended attributes are supported. One of four display sizes can be selected:

Model 2	24 rows by 80 columns
Model 3	32 rows by 80 columns
Model 4	43 rows by 80 columns
Model 5	27 rows by 132 columns

Settings with the **-E** extension provide support for the following extended attributes: 3270 field attributes, extended highlighting (blink, flash and underscore, but not in combination), foreground colour, and query reply inbound structured fields. These attributes are also supported by the 3279. Click **OK** to close the dialog box.

2. Select **Save Settings** in the **File** menu.

3. Select **Open Connection** in the **File** menu to display the **Telnet Hosts** dialog box. A list of hosts currently available for connection will be displayed in the **Telnet Hosts** list box.

Clicking the **Options** button will display another dialog box with additional telnet options. These are described in the *Setup Menus* chapter.

To make a connection, either click on the name in the list box or type it in the **Hostname** text box, then click **OK**. To save the settings so that they will be automatically reasserted when TeemTalk is subsequently reset or loaded, display the **File** menu and select the **Save Settings** option.

4. If necessary, enter the appropriate information to establish an IBM host session in the Network Virtual Terminal mode screen.

5. When an IBM host session has been established, the screen will switch out of Network Virtual Terminal mode and display the IBM 5250 emulation screen.

    > *Note: You will be returned to the Network Virtual Terminal screen when the connection to the IBM host has been closed.*

Selecting & Using Window Elements

The TeemTalk window consists of various elements which are described in the following sections.

The Title Bar

The title bar displays the name of your version of TeemTalk software by default. You may change the title displayed by using the **title** resource or **-title** command line option followed by a space then the title to be assigned. This is useful for identifying each window when more than one instance of TeemTalk is being run. Refer to the *Resources & Command Line Options* chapter for more details.

The Menu Bar

The menu bar provides access to a series of commands and dialog boxes which enable you to perform various functions and configure TeemTalk for compatibility with your hardware and the application. Three menus may be displayed from the menu bar. To display a menu, click on its title.

File	Settings	Help
Factory Default	Language ▸	About TeemTalk
Reset Terminal	Emulation...	
Save Settings	IBM 3270...	
Startup Options...	Keyboard Macros...	
Open Connection...	Attributes...	
Close Connection	Mouse Button Action...	
Printer Setup...		
Print Screen		
Quit		

To select an option in the menu, just click the pointer over it. To close the menu without selecting an option, move the pointer outside the menu and click the left mouse button. All the options listed in the menus are described in the *Setup Menus* chapter.

Window Resize Commands

The menu bar includes two commands labelled < and > which enable the window size to be decreased or increased, respectively.

When the < command is clicked, TeemTalk will scan a list of known fonts and select the next smallest font to that currently being used. The window size is then decreased so that it contains exactly the same number of rows and columns as before.

When the > command is clicked, TeemTalk will scan a list of known fonts and select the next largest font to that currently being used. The window size is then increased so that it contains exactly the same number of rows and columns as before.

You can achieve the same effect using the keyboard by pressing the **Meta** and < keys together to decrease the window size, or **Meta** and > to increase the window size.

> *Note: The action names for these functions are **decrease-font()** and **increase-font()**. They can be reassigned using the Translation tables as described in the Keyboard Operation chapter.*

The window resize commands may be disabled using resources as described in the *Resources & Command Line Options* chapter.

The Soft Buttons

A series of buttons is displayed at the bottom of the window by default when TeemTalk is loaded. These can be programmed so that they perform various functions when clicked.

Level 1	Attn	ErInp	SysRq	Field −	Help	Reset
	Clear	ErEOF	NewLine	Field +	Fld Exit	Enter

There are four levels of soft buttons. Each level consists of two rows with six program-mable buttons on each row. This provides a combined total of 48 programmable buttons. All levels are accessible even if not all are displayed. Levels stored off-screen can be 'scrolled' into view by clicking the **Level** button. You can specify how many levels of soft buttons are actually displayed by using a resource or command line option.

The soft buttons are programmed using the **Keyboard Macros** dialog box, which is displayed by selecting **Settings** in the menu bar then **Keyboard Macros...** Refer to the *Setup Menus* chapter for information.

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Keyboard Configuration

This chapter describes how to configure TeemTalk for your particular keyboard, remap key functions and compose special characters.

Introduction

TeemTalk maps the keyboard to be as near as possible to the terminal being emulated. Illustrations showing the mapping of functions are shown in each terminal emulation chapter. You can remap the keyboard as required and functions that may not be represented on the keyboard can be assigned to specific keys.

Remapping The Keyboard

As the legends on the keycaps may not correspond to the actual functions of the keys, and the legends themselves may change from keyboard to keyboard, the X Window System uses '**keysyms**' to identify the function of keys. Each key has its own unique keysym label which generally matches the function indicated by the legend on the keycap. For example, the keysym for the **Return** key is **Return**.

When more than one key share the same function, the keysym includes an indication of the location of each key on the keyboard. For example, the leftmost **Shift** key has the keysym **Shift_L**, and the rightmost **Shift** key has the keysym **Shift_R**.

A list of valid keysyms defined by the X Window System can be found in the *Keysyms* appendix. The keysym of a key is used to identify it for reconfiguration. To find out the keysym for a particular key you should consult the documentation supplied with the workstation. On some workstations a program called **xev** is provided which enables interactive interrogation of a key's keysym.

You can find the keysym value of a key by placing TeemTalk in debug mode using the **-debug** command line option or **debugMode** resource, then pressing a key or key combination. The following information will be displayed when the **F2** key on a Sun 4 keyboard is pressed:

Keycode = 13, State = 0, Keysym = 65471

The **Keysym** value can be directly used in Translation tables as shown in the following example:

> ***xteemx320*vt220.Translations: #override \n**
> **<Key>65471: string("This is the F2 key")**

Changing The Function Of A Key

Once the keysym of a particular key is known, you can change the function of that key by using the **Translations** resource. This modifies a specified translation table within the TeemTalk program which is used to assign events to actions. This table should be placed in the **.Xdefaults** or application defaults file as described in the *Resources & Command Line Options* chapter.

TeemTalk supports two action functions related to keyboard mapping: **string** and **value**.

string("string")

This command will cause the specified string to be sent when the key specified in the translation table is activated. For example:

string("This is a string action")

value(decimal value of ASCII character)

This command will map the specified key to send the character corresponding to the ASCII decimal equivalent (ADE) of the value specified. For example:

value(27) will send the 'Escape' character (**ESC** is ASCII decimal 27).

Some of the values that can be specified do not directly cause characters to be transmitted but invoke functions within TeemTalk instead. For example:

value(128) will cause TeemTalk to treat the activated key as **F1** (function key 1), and

value(-166) will cause TeemTalk to treat the activated key as the **Compose Character** key.

These values are either undefined ADE (ASCII decimal equivalent) codes or values outside the range of ADE values. The values that TeemTalk expects for various keys and functions can be ascertained from the *Key Reference Numbers* appendix.

Translation Resource Examples

The following example shows how to use the **Translations** resource to modify the translation table so that the **Compose Character** function is assigned to the key that has the keysym **Meta_R**.

> **xteemx320*vt220.Translations: #override \n**
>   **<Key>Meta_R: value(-166)**

This will cause the line **<Key>Meta_R: value(-166)** to be added to the beginning of the standard translation table. The effect is to define the keyboard's rightmost **Meta** key as the **Compose Character** key.

> *Note: The **#override** directive following the **Translations** resource*
>   *name ensures that if the translation table already assigns a*
>   *function to a keysym specified by the resource, the new*
>   *function will replace the old.*

More than one key definition can be included in the **Translations** resource, as shown in the following example:

> **xteemx320*vt220.Translations: #override \n**
>   **<Key>F1:   string("This is the F1 key") \n**
>   **<Key>KP_4:   string("This is the keypad 4 key") \n**
>   **<Key>Backspace: value(127)**

> *Note: By convention each translation is specified on a separate*
>   *line. The \n\ at the end of each line except the last causes*
>   *the program to interpret the next line as a continuation of*
>   *the same string.*

Redefining the shifted function of a key can be achieved by inserting the word **Shift** at the beginning of the key translation line, as shown in the following example:
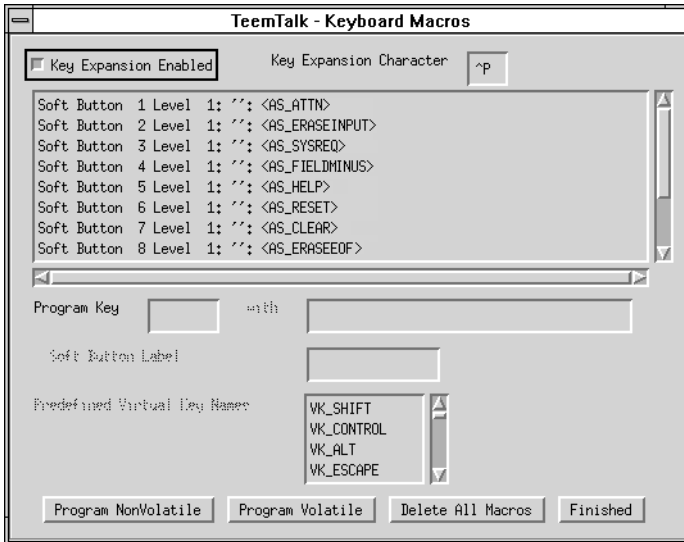
> **xteemx320*vt220.Translations: #override \n**
>   **Shift <Key>***keysym***:   value(***reference number***)**

Actions can also be mixed. The following example will cause **ESC H** to be sent when the **F7** key is pressed:

> **xteemx320*vt220.Translations: #override \n**
>   **<Key>F7: value(27) string("H")**

Programming Keys

The **Macros Settings** dialog box is displayed by selecting **Macros** in the **Settings** menu. This enables you to program most keys with up to four definitions (macros) each. Keys that cannot be redefined include **Shift**, **Caps Lock** and **Print Screen**. The programmed contents of a key or key combination can be transmitted to the host when pressed by selecting the **Key Expansion Enabled** option in this dialog box.

```
┌─────────────────────────────────────────────────────────────────┐
│ ▬           TeemTalk - Keyboard Macros                            │
├─────────────────────────────────────────────────────────────────┤
│ ☐ Key Expansion Enabled      Key Expansion Character  │  ^p │     │
│ ┌───────────────────────────────────────────────────────────┐▲   │
│ │Soft Button  1 Level  1: '': <AS_ATTN>                      ││   │
│ │Soft Button  2 Level  1: '': <AS_ERASEINPUT>                ││   │
│ │Soft Button  3 Level  1: '': <AS_SYSREQ>                    ││   │
│ │Soft Button  4 Level  1: '': <AS_FIELDMINUS>                ││   │
│ │Soft Button  5 Level  1: '': <AS_HELP>                      ││   │
│ │Soft Button  6 Level  1: '': <AS_RESET>                     ││   │
│ │Soft Button  7 Level  1: '': <AS_CLEAR>                     ││   │
│ │Soft Button  8 Level  1: '': <AS_ERASEEOF>                  │▼   │
│ └───────────────────────────────────────────────────────────┘    │
│ ◄                                                              ►   │
│ Program Key  ┌──────┐    with   ┌──────────────────────────┐      │
│              └──────┘           └──────────────────────────┘      │
│   Soft Button Label             ┌──────────────────────┐          │
│                                 └──────────────────────┘          │
│ Predefined Virtual Key Names    ┌──────────────┐▲                 │
│                                 │VK_SHIFT      ││                 │
│                                 │VK_CONTROL    ││                 │
│                                 │VK_ALT        ││                 │
│                                 │VK_ESCAPE     │▼                 │
│                                 └──────────────┘                  │
│  ┌───────────────────┐ ┌─────────────────┐ ┌────────────────┐ ┌──────────┐│
│  │ Program NonVolatile│ │ Program Volatile│ │Delete All Macros│ │ Finished ││
│  └───────────────────┘ └─────────────────┘ └────────────────┘ └──────────┘│
└─────────────────────────────────────────────────────────────────┘
```

To program a key, click the pointer in the **Program Key** text box then press the key or key combination that is to be programmed. The key combination can be any of the following:

Key	**Alt** + **Key**
Ctrl + **Key**	**Alt** + **Ctrl** + **Key**
Shift + **Key**	**Alt** + **Shift** + **Key**
Ctrl + **Shift** + **Key**	**Alt** + **Ctrl** + **Shift** + **Key**

Pressing a key will cause the key legend or a reference number that uniquely identifies the key to be displayed.

Press **Tab** or click the pointer in the **with** text box and enter the new definition. This can include specific functions associated with a particular terminal emulation as listed in the **Predefined Virtual Key Names** list box. The *Virtual Key Names* appendix provides a complete list of virtual key names and their associated functions. Clicking a key name in this list box will cause it to appear on the key definition line. The function associated with the key name will be attributed to the key being defined.

> *Note: An escape sequence will be sent across a network as a single packet.*

The **Key Expansion Character** is a special toggle character that can be inserted into key macro strings to cause subsequent characters to be redirected from the host to the terminal and vice versa. By default all characters in the macro are directed to the host. When a key expansion character is detected for the first time, characters will be redirected to the terminal until the character is detected a second time in the current or another string. The key execute character is specified as the control key character equivalent. For example, the default value **^P** represents the keys **Ctrl** + **P**, which would generate the ASCII control character **DLE** when pressed.

When the definition is complete, decide if you wish the key contents to be saved so that it will be asserted each time TeemTalk is reset or loaded, then click the **Program Volatile** or **Program NonVolatile** button.

Clicking the **Program Volatile** button will cause TeemTalk to only remember the definition until it is reset or exited. Clicking the **Program NonVolatile** button will enable the definition to be saved *when you select the Save Settings option in the File menu.*

The large text box will display the reference numbers of all the currently programmed keys and their definitions, and soft button labels and definitions.

All volatile and non-volatile key and soft button definitions can be deleted by clicking the **Delete All Macros** button. Each key will then revert back to sending its default value as shown by the legend on the keycap. Note that non-volatile macro definitions will be reasserted the next time TeemTalk is started unless you issue a **Save Settings** command after deleting the definitions.

When you have finished, click the **Finished** button and the dialog box will close. If you have specified that definitions are to be programmed as non-volatile, display the **File** menu and select the **Save Settings** option.

Entering Control Characters

You can enter a control character in a definition either as the control key character equivalent or the decimal value of the ASCII or 8-bit character. For example, the control character for the **Return** key function, **CR** (carriage return), can be entered by typing the characters **^** and **M** (without a space in-between) representing the keys **Ctrl** + **M** which, when pressed together would generate the **CR** code.

Decimal values are entered as three-digit numbers immediately preceded by an underscore character. Values with only two digits must be preceded by a zero. For example, the decimal value of **CR** is 13, so this would be entered as **_013**.

Notes

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Mouse Functions

This chapter describes the special functions assigned to the mouse buttons by TeemTalk and how to redefine the buttons.

Introduction

TeemTalk assigns a variety of special functions to the mouse buttons. Each button can be used to action up to five functions when pressed in conjunction with modifier keys. The following table lists the functions assigned to each button and key combination by default.

	Button 1	**Button 2**	**Button 3**
Normal	Select Text	Edit Paste	Extend Selection
Shift	Rect Select Text	Edit Paste	Extend Selection
Control	Move Cursor	Action Hotspots	Show Hotspots
Control + Shift	Graphic Select	Graphic Paste	Send Keyword
Alt	Unassigned	Unassigned	Unassigned

Note that usually **Button 1** is the leftmost button, **Button 2** is the middle button, and **Button 3** is the rightmost button. References to mouse buttons throughout this User's Guide will assume that they are configured in this way.

Selecting & Copying Text

You can use the mouse buttons to copy and paste text. The region of the display that will be selected for copying depends on whether you use the **Select** or **Select Rect angle** function. The **Select** function will select all text from the start position to the finish position, working left to right across the entire width of the display, whereas the **Select Rectangle** function will only select text contained within the rectangular area defined by the start position (top left corner) and the finish position (bottom right corner).

The default method for selecting text is as follows. Place the cursor at the start of the text to be copied, hold down the **Left** mouse button (with **Shift** if a rectangular area is to be selected) then drag the cursor across to the end of the required text. Releasing the mouse button will cause the selected text to be saved in the global cut buffer.

Another method of selecting text is to quickly click the **Left** mouse button twice to select the word at the current cursor position, or three times to select the entire line. Clicking four times will revert back to single character selection. To extend the selection, click the **Right** mouse button.

Text that has been saved in the global cut buffer may be pasted at the current cursor position by clicking the **Middle** mouse button.

Graphic Copy & Paste

TeemTalk provides a graphic copy facility which enables you to copy text and graphics and paste the information in any TeemTalk window. The area to be copied is selected by positioning the mouse cursor at the top left corner of the required area, holding down the keys **Control** + **Shift** and the **Left** mouse button, then dragging the mouse cursor down to the bottom right corner of the required area. Releasing the keys will cause the currently selected area to be copied. To paste the data, position the mouse cursor where you wish the top left corner of the copied data to be positioned, then hold down the keys **Control** + **Shift** and click the **Middle** mouse button.

Refer to the description of the **Graphics Copy Mode** option in the *Setup Menus* chapter for ways in which you can modify the display of copied data.

Moving The Cursor In Block Mode

When TeemTalk is in any of the local block modes, you can use the mouse instead of the cursor keys to position the text cursor. Move the mouse cursor to the required position then hold down the **Control** key and click the **Left** mouse button. The text cursor will then jump to that position.

Show & Action Hotspots

TeemTalk incorporates a user-definable hotspot facility which enables you to invoke a function by clicking the mouse cursor over a keyword displayed on the screen. For example, an application may display information relating to keys you can press to perform a particular function. Instead of pressing the key on the keyboard, you could invoke the function by moving the mouse cursor over the displayed key name, holding down the **Control** key and clicking the **Middle** mouse button.

Hotspots are supported in ALL terminal emulation modes. TeemTalk provides a set of default hotspot keywords for each mode. These relate to key functions specific to the emulation.

You can identify hotspots that are currently present in display memory by holding down the **Control** key and the **Right** mouse button. All colour attributes will be temporarily removed from the display and the hotspots will be highlighted with a red background. Releasing the keys will return the display to its original state.

For information on defining hotspots, refer to the *Hotspots* chapter.

Send Keyword

The **Send Keyword** function enables you to click on any delimited word displayed on the screen and it will be sent to the host, as long as the word is not already defined as a hotspot. Keyword delimiters are the same as for hotspots, that is: **space**, **NULL**, **/ , : = ( ) [** and **]**.

Redefining The Mouse Buttons

TeemTalk enables you to redefine the functions assigned to the mouse buttons via the **Mouse Button Actions** dialog box, which is displayed from the **Settings** menu.
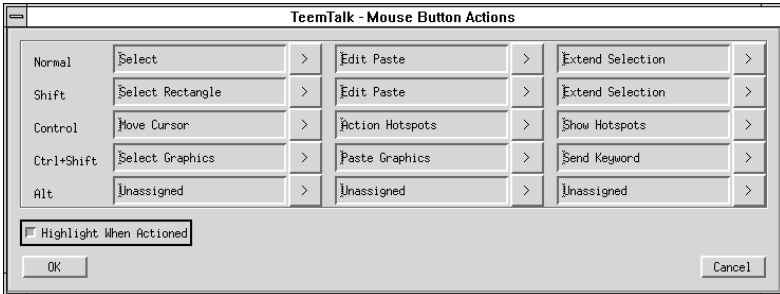
This enables you to specify the function of mouse buttons 1, 2 and 3 when they are pressed on their own or in conjunction with modifier keys. You can assign up to five functions to each button. Clicking one of the arrow buttons will display a drop-down list box which lists all the standard functions that can be assigned:

```
Unassigned
Select
Extend Selection
Edit Paste
Show Hotspots
Action Hotspots
Move Cursor
Send CR
Send Keyword
Select Graphics
Paste Graphics
Select Rectangle
Cursor Select
```

You can also enter a definition of your own in the text box associated with each button and key combination. Definitions are entered in the same way as for keyboard macros and soft buttons, as described in the *Setup Menus* chapter.

The setting of the **Highlight When Actioned** option determines whether or not a visual indication is given that a function has been actioned when a hotspot is clicked.

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Hotspots

This chapter describes the hotspot facility which enables functions to be performed by clicking on keywords displayed on the screen.

Using Hotspots

TeemTalk incorporates a user-definable hotspot facility which enables you to invoke a function by clicking the mouse pointer over a keyword displayed on the screen. For example, an application may display information relating to keys you can press to perform a particular function. Instead of pressing the key on the keyboard, you could invoke the function by moving the mouse pointer over the displayed key name, holding down the **Control** key and clicking the **Middle** mouse button.

Hotspots are supported in ALL terminal emulation modes. TeemTalk provides a set of default keywords for each mode. These keywords relate to key functions specific to the emulation.

You can identify hotspots that are currently present in display memory by holding down the **Control** key and the **Right** mouse button (assuming default mouse configuration). All colour attributes will be temporarily removed from the display and the hotspots will be highlighted with a red background. Releasing the keys will return the display to its original state.

In summary, the following key and mouse button combinations are used to identify and action hotspot functions by default:

    Identify hotspots: **Control** + **Right Mouse Button**

    Action hotspot function: **Control** + **Middle Mouse Button**

   Note: These functions may be assigned to different mouse button and key combinations. Refer to the Mouse Functions chapter for details.

Defining Hotspots

Hotspot keywords and associated functions are specified in a text file which has the same name (and is in the same directory) as the current save settings file but with the extension **.hot** instead of **.nv**. For example, the default hotspot definitions supplied with TeemTalk are stored in the file **teemx320.hot**.

The format of entries in the hotspot definition file is as follows. Each hotspot definition is entered on a separate line and definition lines are grouped under headings which specify the terminal emulation mode in which they will take effect.

[Separators]
Separators= /,:=()[]

[Definitions]
F1=<VK_F1>
F2=<VK_F2>

[Definitions,IBM5250]

The first command group, headed **[Separators]**, specifies the displayed characters which delimit the hotspot keyword. Delimiters include **SPACE** and **NULL** as well as the characters shown in the example by default. The end delimiter does not need to be the same as the first. Delimiters are necessary to prevent hotspots occuring within words that happen to contain the same formation of characters as the keywords.

The following command groups specify the keywords used in each terminal emulation mode. Keyword definitions that can apply to all modes are specified under the heading **[Definitions]**. Keyword definitions that apply to a specific mode are specified under the heading **[Definitions,<emulation>]**, where **<emulation>** must be the name of the terminal emulation mode as already specified in the default hotspot definitions file. Note that a keyword definition under a **[Definitions,<emulation>]** heading will override the definition given to the same keyword in any other definitions group when that particular emulation is running.

Each keyword definition line consists of the keyword immediately followed by an equals (=) sign, then the function that it will perform. The keyword can consist of any characters except those specified as delimiters in the **Separators=** line. TeemTalk will search for the keyword on a case insensitive basis.

The function that will be performed when the keyword is selected is specified in the same way as for key macros, soft buttons and script language programming.

Entering Control Characters

You can enter a control character in a keyword definition either as the control key character equivalent or the decimal value of the ASCII character.

For example, the control character for the **Return** key function, **CR** (carriage return), can be entered by typing the characters **^** and **M**, representing the keys **Ctrl** + **M** which, when pressed together would generate the **CR** code. This could be used to define the keyword **Login** to enable you to log on to a host:

Login=hostname^M

Decimal values are entered as three-digit numbers immediately preceded by an underscore character. Values with only two digits must be preceded by a zero. For example, the decimal value of **CR** is 13, so this would be entered as **_013**.

Key Combinations & Sequences

You can define a keyword to perform the function of a particular key, a combination of keys, or a sequence of keys. For example, you can define a keyword to perform the same function as pressing the key **F4**, or pressing the keys **Alt** + **F4** together, or pressing the keys **F2** then **F3** then **F4**. Keys are identified by their virtual key names as listed in the *Virtual Key Names* appendix. You may omit the **VK_**, **IB_** (etc.) parts of the name.

To define a keyword so that it will perform the function of a particular key, type the **<** character followed by the virtual key name then the **>** character. For example, to define the keyword **Insert** so that it will perform the same function as the **Insert** key found on the IBM keyboard, enter the following line in the relevant Definitions command group:

Insert=<IB_INSERT>

To define a keyword so that it will perform the same function as pressing two or more other keys together, type the **<** character followed by the virtual key names linked together with + characters and ending with the **>** character.

For example, to define the keyword **Help** so that when it is clicked it performs the same function as pressing the keys **Alt** + **F4** together, enter the following line in the relevant Definitions command group:

Help=<ALT+F4>

To define a keyword so that it will perform the same function as pressing a sequence of keys one after the other, enter each virtual key name in the order required, enclosing each name with the **<** and **>** characters. Each enclosed virtual key name must immediately follow the previous enclosed virtual key name with no spaces.

For example, to define the keyword **Command** so that when it is clicked it performs the same function as pressing the keys **F2** then **F3** then **F4**, enter the following line in the relevant Definitions command group:

Command=<F2><F3><F4>

Notes

6

Setup Menus

This chapter describes the options available in the setup menus and dialog boxes.

Selecting & Closing Menus

Three menus labelled **File**, **Settings** and **Help** can be displayed from the menu bar by clicking on the relevant buttons. A menu is closed by moving the pointer away from the menu then clicking the left mouse button.

File
Factory Default
Reset Terminal
Save Settings
Startup Options...
Open Connection...
Close Connection
Printer Setup...
Print Screen
Quit

Settings	
Language	▶
Emulation...	
IBM 3270...	
Keyboard Macros...	
Attributes...	
Mouse Button Action...	

Help
About TeemTalk

Using The Menus

Option Selection

There are several ways of selecting or actioning the various options displayed in the menus.

The quickest way is to click the option required. Another way is to place the pointer over the button on the first option, hold down the left mouse button then move the

pointer up or down the menu until the button rests over the option required then release the left mouse button.

Options that are displayed dimmed are not applicable to the current mode of operation and cannot be selected. An example of this is the **Close Connection** option in the **File** menu. This can only be selected after a host connectionhas been made.

Options that are *not* followed by an ellipsis (...) perform a particular function when selected. For example, selecting **Factory Default** in the **File** menu will cause TeemTalk to assert the factory default settings.

Options that *are* followed by an ellipsis indicate that a dialog box will be displayed with all the selections applicable to that option. For example, selecting **IBM 3270...** in the **Settings** menu will display a dialog box in which you can specify settings for the IBM 3270 emulation.

Dialog Boxes

Selecting an option which is followed by an ellipsis (**...**) will cause a dialog box to be displayed. The dialog box will remain on the display until the **OK** or **Cancel** button at the bottom of the dialog box is clicked.

Option Selection

There are several methods for making selections within the dialog boxes. Most options have a small square or diamond button next to them. An option is selected or true when the button is pressed in, and false or unselected when the button is popped out. Buttons are toggled in and out by clicking the pointer on them.

Some options have all their applicable settings listed in a box with diamond buttons next to them. In this case the buttons behave just like radio buttons in that clicking one will cause the previously depressed button to pop out.

Some options require you to enter information in a text box. To do this, click the pointer in the text box, delete the previous value then enter the new value from the keyboard.

When there are more options that can be comfortably displayed in the dialog box, these will be shown in a list box with a scroll bar. The scroll bar functions in the same way as the scroll bar in the main window. To make a selection, display the required option in the list box then click the pointer on it so that it is highlighted.

Closing A Dialog Box

To close a dialog box without actioning any changes that have been made to the settings, click the **Cancel** button. This will cause all the settings in that dialog box to revert back to the state they were in when it was first displayed.

To close a dialog box and cause TeemTalk to assert the new settings, click the **OK** button.

Default Settings

TeemTalk is supplied with the setup options set to factory default. If these have been altered since and you wish to reassert the original settings of all the options, display the **File** menu and select the **Factory Default** option.

If you have modified any setup settings since you last saved the setup, you can cause TeemTalk to reassert the last saved settings by selecting the **Reset Terminal** option in the **File** menu.

Saving The Setup

The current setup configuration can be saved so that TeemTalk will automatically reassert the settings when it is subsequently reset or loaded.

To save the current setup configuration, display the **File** menu and select the **Save Settings** option.

Settings are saved in the file **teemx320.nv** by default. You can specify a different file for saving and loading settings by using the following resource or command line option:

> *Resource:* **xteemx320*settingsFile:** *filename*
> *Command Line:* **-sf** *filename*

Refer to the *Resources & Command Line Options* chapter for more details.

Menu Descriptions

The following pages describe the options available in all the menus and associated dialog boxes. The descriptions begin by showing the menu or dialog box as it is displayed on the screen. The factory default setting is shown below each option title where applicable.

File Menu

```
  File
Factory Default
Reset Terminal
Save Settings
Startup Options...
Open Connection...
Close Connection
Printer Setup...
Print Screen
Quit
```

Factory Default

This will cause TeemTalk to reassert all the original settings that it had when you first installed it.

Reset Terminal

This will reset the current terminal emulation mode.

Save Settings

This will save the current setup configuration so that it is reasserted when TeemTalk is subsequently reset or loaded, overriding any changes which have been made but not saved.

Startup Options...

This displays a dialog box which enables you to specify how the TeemTalk window is displayed on startup.

```
         Startup Options
  Startup Options
     ◢ Maximised Window
     ▯ Menubar
     ▯ Scrollbar
     ◢ Softbuttons Visible
      OK        Cancel
```

Selecting **Maximised Window** will cause the TeemTalk window to fill the screen when it is started. The other options toggle visibility of the menu bar, scroll bar and soft buttons on or off.

Open Connection...

This will display a dialog box which enables you to make a connection to a remote host.

```
┌─────────────────────────────────┐
│ ─     TeemTalk - Telnet Hosts    │
├─────────────────────────────────┤
│ Telnet Hosts                     │
│ ┌─────────────────────────────┐  │
│ │ localhost                   │  │
│ │ locis.loc.gov               │  │
│ │ tnserver.di3270.com         │  │
│ │                             │  │
│ │                             │  │
│ │                             │  │
│ └─────────────────────────────┘  │
│ Hostname                         │
│ ┌─────────────────────────────┐  │
│ │                             │  │
│ └─────────────────────────────┘  │
│                                  │
│  ┌────┐  ┌──────┐  ┌───────┐     │
│  │ OK │  │Cancel│  │Options│     │
│  └────┘  └──────┘  └───────┘     │
└─────────────────────────────────┘
```

Most emulations work quite well in the standard TeemTalk environment when the telnet process provided with the workstation is used to make the connection to the remote host. However, in some block mode emulations the telnet process does not pass all the necessary information to TeemTalk. To overcome this, TeemTalk has its own inbuilt telnet driver so that precise control can be exercised over the information that TeemTalk receives and transmits. You must use the telnet facility provided by TeemTalk when using block mode emulations. Note that TeemTalk must be configured so that it is running the required terminal emulation before initiating a telnet session.

A list of hosts currently available for connection will be displayed in the **Telnet Hosts Available** list box. To make a connection, either click on the name in the list box or type it in the **Hostname** text box, then click **OK**.

Clicking the **Options** button will display another dialog box with additional telnet options. These are described in the next section.

Note that you can use resources or command line options to initiate a telnet session, specify the telnet port number, and force TeemTalk to exit when the connection closes. Refer to the *Resources & Command Line Options* chapter for details.
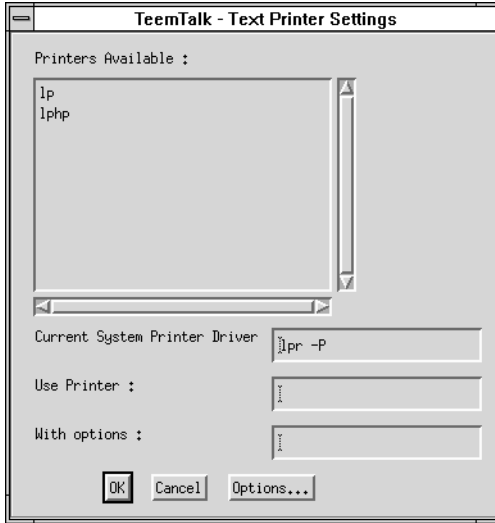
Close Connection

This will close the current telnet connection.

Printer Setup...

This option will display the **Text Printer Settings** dialog box which enables you to specify the destination of print data.

To select a printer, just click on the name in the **Printers Available** list box then click the **OK** button. Further print requests (e.g. Autoprint or Print Screen) will be directed towards that printer.

```
┌──────────────────────────────────────────────────┐
│ ▬  TeemTalk - Text Printer Settings               │
├──────────────────────────────────────────────────┤
│                                                    │
│   Printers Available :                             │
│   ┌──────────────────────────────────────┐  ┌─┐   │
│   │ lp                                     │  │▲│   │
│   │ lphp                                   │  │ │   │
│   │                                        │  │ │   │
│   │                                        │  │ │   │
│   │                                        │  │ │   │
│   │                                        │  │ │   │
│   │                                        │  │▼│   │
│   └──────────────────────────────────────┘  └─┘   │
│   ◄───────────────────────────────────────►       │
│                                                    │
│   Current System Printer Driver  ┌─────────────┐   │
│                                  │ lpr -P       │   │
│                                  └─────────────┘   │
│   Use Printer :                  ┌─────────────┐   │
│                                  │              │   │
│                                  └─────────────┘   │
│   With options :                 ┌─────────────┐   │
│                                  │              │   │
│                                  └─────────────┘   │
│                                                    │
│        ┌──┐  ┌──────┐  ┌────────┐                  │
│        │OK│  │Cancel│  │Options...│                │
│        └──┘  └──────┘  └────────┘                  │
└──────────────────────────────────────────────────┘
```

Clicking the **Options** button will display another dialog box with additional print options.

The **Printed Data Type** options enable you to restrict the character sets used for printing so that they match those supported by your printer.

You can select from one of three different **Printer Mode**s. Selecting **Normal** (default) will enable you to print a page of text or text in the scrolling region, depending on the **Printer Extent** selection. Selecting **Auto** will cause the current display line to be sent to the printer when the cursor moves to the next line. Auto print mode lets you print each line as it is received from the host. Selecting **Controller** will enable the host to to send text directly to the printer, without displaying it on the screen.
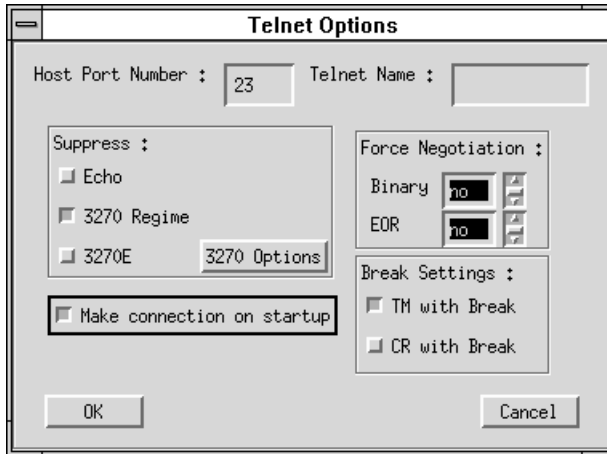
Print Screen

Clicking this option cause a fast print of text displayed in the TeemTalk window using ASCII text codes.

Quit

This will cause TeemTalk to shut down.

Telnet Options

```
┌─────────────────────────────────────────────────────────┐
│ ▬              Telnet Options                             │
├─────────────────────────────────────────────────────────┤
│  Host Port Number :   ┌──────┐   Telnet Name : ┌────────┐ │
│                       │  23  │                 │        │ │
│                       └──────┘                 └────────┘ │
│  ┌──────────────────────────────┐  ┌──────────────────┐  │
│  │ Suppress :                    │  │ Force Negotiation : │
│  │  ▢ Echo                       │  │  Binary  ▣no  ▲▼  │  │
│  │                               │  │                   │  │
│  │  ▢ 3270 Regime                │  │  EOR     ▣no  ▲▼  │  │
│  │                               │  └──────────────────┘  │
│  │  ▢ 3270E      ┌─────────────┐ │  ┌──────────────────┐  │
│  │               │ 3270 Options│ │  │ Break Settings :  │  │
│  │               └─────────────┘ │  │  ▢ TM with Break  │  │
│  │ ┌───────────────────────────┐ │  │                   │  │
│  │ │ ▢ Make connection on startup│ │  ▢ CR with Break  │  │
│  │ └───────────────────────────┘ │  └──────────────────┘  │
│  └──────────────────────────────┘                        │
│  ┌──────┐                              ┌──────────┐       │
│  │  OK  │                              │  Cancel  │       │
│  └──────┘                              └──────────┘       │
└─────────────────────────────────────────────────────────┘
```

This dialog box is displayed when you click the **Options** button in the **Open Connection** dialog box.

Host Port Number

This enables you to specify the Telnet port number. The default Telnet port number, **23**, can be substituted with any valid 16 bit port number. Specifying a number outside the valid range will cause the setting to default to 1.

Telnet Name

This enables you to override the name that will be reported for the terminal type over Telnet.

Suppress Echo

When selected, this will will prevent the emulator from generating the Telnet echo option on connection.

Suppress 3270 Regime

The setting of this option determines whether or not support for the Telnet "3270 regime" option is suppressed.

Suppress TN3270E

The setting of this option determines whether or not support of TN3270E is suppressed. When this option is not selected (i.e. TN3270E is not suppressed), additional options are available by clicking the **3270 Options** button. These are described in the *3270 Options* section.

Force Negotiation

These settings determine whether or not the Telnet Binary or EOR options are supported. Both are set to **no** by default.

No   Will not force any negotiations. It will leave it up to the
            host to decide what to do.

DO   Will force negotiation. The host will be informed that the
            option is supported.

DONT   Will force negotiation. A negotiation packet will be sent
   to the host telling it that the option is not supported.

Break Settings

The setting of these options determine whether or not a timing mark (**TM**) and/or carriage return (**CR**) is sent with a Telnet break packet. A timing mark is sent by default.

Make connection on startup

If you select **Save Settings** in the **File** menu when this option is selected, the next time you open the session it will automatically make the host connection.

3270 Options
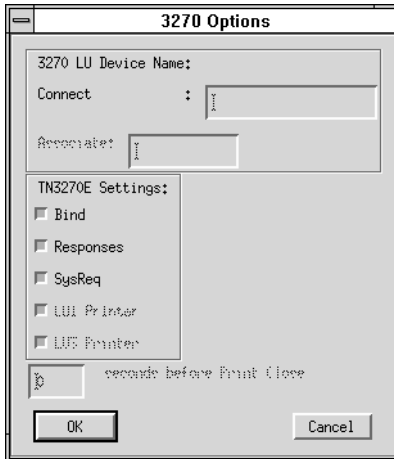
This dialog box is displayed by clicking the **3270 Options** button in the **Telnet Options** dialog box when TN3270 is not suppressed.

Connect

This specifies the name of the device which the server will be requested to assign to the Telnet session; it may be used when requesting either a terminal or a printer session.

You can return the local host name by entering **%s** after the device name. To return the user name, enter **%u** after the device name. You can specify how many characters of the name is returned in each case. For example, **%.3s** will return the first three characters of the local host name, and **%-.3s** will return the last three characters.

To automatically assign a new device name for each successive connection enter **%dN%** after the name, where **N** is a decimal value. Each time the host requests the device name a counter will be substituted into the device name. If the host rejects the device name as in use the counter will be incremented modulus **N** and the name retried until all possibilities have been tried, at which point the emulation will report a device name rejected error.

For example, **TEST%d4%** will give **TEST1** on all connections until the host rejects the name as in use, in which case **TEST2** will be used. If this is already in use then **TEST3** is used, or if already in use then **TEST0**. These values are preserved over power off, so the first connection of any given power on may not be **TEST1**. Assume that the start point is random.

> *Note: There are separate counters for the IBM 3270 and IBM 5250 emulations.*

When you achieve a TN3270E connection, the LU device name that you are connected as will be displayed on the status line. If the specified device is rejected by the server or host, then an error message box will be displayed indicating the reason.

Associate

This is available when the **Model** option in the **IBM 3270 Settings** dialog box is set to **3287-1** (a printer). It is used to request that the device name of the printer associated with a particular terminal is assigned to this Telnet session. The name of the terminal is specified here. (This is implemented as described in RFC 1647.)

TN3270E Options

TN3270E in implemented as described in RFC 1647. These options should not be changed unless required by your System Administrator.

The **Bind** setting determines whether or not the server is allowed to send the SNA Bind image and Unbind notification to the emulator.

When **Responses** is selected, positive and negative response handling is supported. It allows the server to reflect to the emulator any and all definite, exception, and no response requests sent by the host application.

When **SysReq** is selected, some (or all, depending on the server) of the functions of the **SysReq** key will be emulated and the server in an SNA environment.
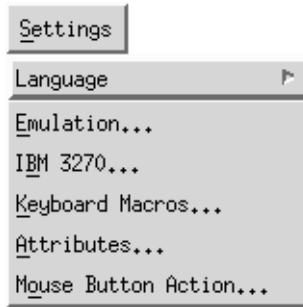
The **LU1** and **LU3 Printer** options are available when the **Model** option in the **IBM 3270 Settings** dialog box is set to **3287-1** (a printer). They enable you to specify which printer type(s) to support.

Seconds Before Print Close

Factory default: 0

The setting of this option determines when TeemTalk completes a print job. When set to **0**, TeemTalk will not start printing until it receives a 'print end of job' command from the host. Entering any other number will cause TeemTalk to print after the specified number of seconds have elapsed, regardless of whether or not the 'print end of job' command has been received from the host.

Settings Menu

```
 Settings

Language              ▶
Emulation...
IBM 3270...
Keyboard Macros...
Attributes...
Mouse Button Action...
```

The **Language** option enables you to select the language that will be used in all menus and dialog boxes.

The following dialog boxes can be displayed from this menu. Note that the dialog boxes used to configure specific emulations can only be displayed when the relevant emulation is running.

Emulation Settings	-	for specifying the terminal emulation, keyboard nationality and displayable characters.
IBM 3270 Settings	-	for configuring the IBM 3270 emulation.
Keyboard Macros	-	for defining the function of keys and soft buttons.
Attribute Settings	-	for assigning colours and specifying how characters with attributes are displayed.
Mouse Button Action	-	for specifying mouse button functions.

Emulation Settings
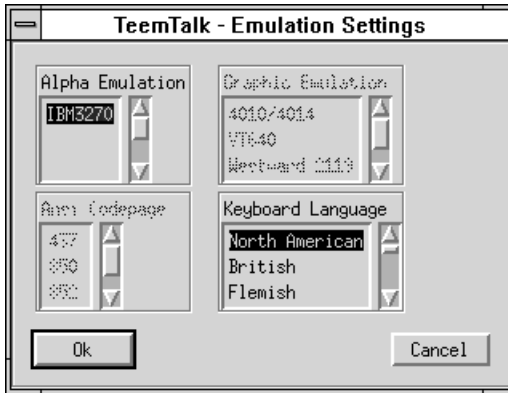
This dialog box is displayed by selecting **Emulation** in the **Settings** menu.

Alpha Emulation

Factory default: IBM 3270

The **IBM 3270** emulation provides compatibility with software designed to drive the IBM 3270 terminal. Note that the initial display will be an ASCII text screen known as the Network Virtual Terminal Mode. You are required to make a host connection using the Telnet facility supplied with TeemTalk in order to display the IBM 3270 screen and enable the emulation to function correctly. The setting of the **Model** option in the **IBM 3270 Settings** dialog box determines the size of the display and whether or not extended attributes are supported (this must only be changed while running the IBM 3270 emulation and the new setting will not take effect until you save it and restart TeemTalk). Refer to the *IBM 3270 Emulation* chapter for more information.

Keyboard Language

Factory default: North American

This option enables you to specify the nationality of the keyboard being used. It is important that this is correct otherwise the characters displayed may not match the key legends. Unlike the original terminals, the keyboard nationality does not directly affect the keyboard, which is defined instead by the X server configuration.

IBM 3270 Settings
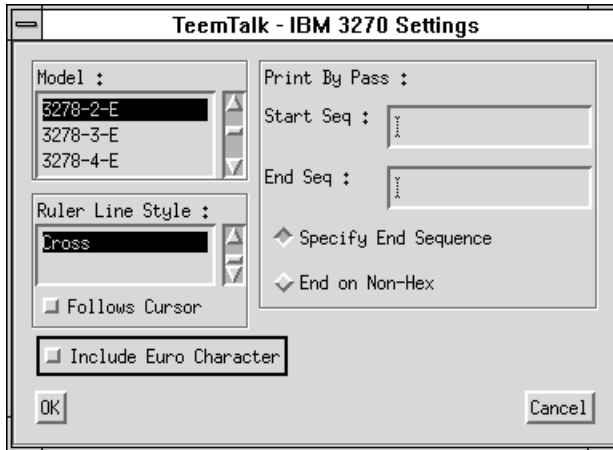
This dialog box is displayed by selecting **IBM 3270** in the **Settings** menu.

Model

Factory default: 3278-2-E

This specifies what is reported back to the host in response to a terminal identification request. (Note that not all features of the specified terminal may be supported.) It also determines the size of the display and whether or not extended attributes are supported when the current alpha emulation is set to **IBM 3270**. TN3287 printing is supported by selecting **3287-1**.

Before changing and saving the setting of this option, ensure TeemTalk is running the IBM 3270 emulation. You must save the setting (using the **File** menu **Save Settings** option) and restart TeemTalk before it will take effect.

One of four display sizes can be selected:

3278/9-2	24 rows by 80 columns
3278/9-3	32 rows by 80 columns
3278/9-4	43 rows by 80 columns
3278/9-5	27 rows by 132 columns

Settings with the **-E** extension provide support for the following extended attributes: 3270 field attributes, extended highlighting, foreground colour, query reply inbound structured fields.

Print By Pass

This option is available when the **Model** option is set to a printer. The **Start Seq** box enables you to enter the character or sequence of characters that initiate a print bypass.

The end sequence that terminates the print bypass can be specified either by entering the actual characters in the **End Seq** box when **Specify End Sequence** is selected, or by specifying the number of characters that make up the end sequence in the **End Length** box when **End On Non-Hex** is selected.

If no **End Seq** is entered, the bypass is assumed to be for a single pair of characters only. If an **End Seq** is specified, characters in the data stream between the start and end are interpreted as encoded ASCII. For example, "1B0A" becomes ASCII 27 10 (ESC LF).

Selecting **End on Non-Hex** enables you to specify the number of characters that make up the end sequence in the **End Length** box. The bypass will then terminate as soon as a non-hexadecimal character is received (any character except in the range 0 through 9 and A through F) followed by the end sequence.

Characters can be entered in several ways. For example, to specify the ASCII escape character, you can enter either **_027**, **\u001B**, **\e**, **\033**, or even **^[**.

Ruler Type

Factory default: Cross

A rule can be displayed across the emulation workspace at the cursor position by holding down the modifier key **Alt**, **Meta** or **Extend Char** and pressing **Page Down**, which toggles it on and off. The setting of this option determines whether it is displayed as a horizontal rule, vertical rule or both (cross).

Follows Cursor
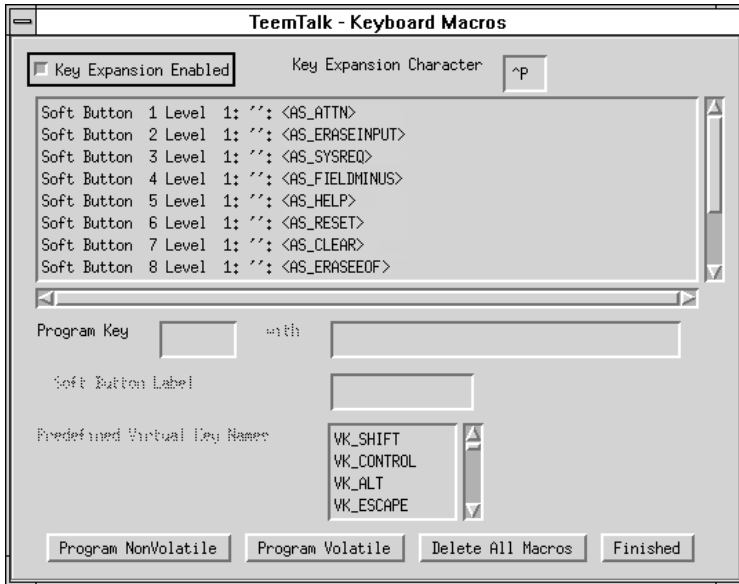
Factory default: Unselected

When the rule is displayed in the emulation workspace, the setting of this option determines whether or not the rule follows the cursor when it moves.

Include Euro Character

Factory default: Unselected

When this option is selected, the International Currency symbol will be replaced by the Euro symbol.

Keyboard Macros

```
┌─────────────────────────────────────────────────────────────────┐
│ ─            TeemTalk - Keyboard Macros                           │
├─────────────────────────────────────────────────────────────────┤
│  ☐ Key Expansion Enabled      Key Expansion Character   ^P        │
│                                                                   │
│  Soft Button  1 Level  1: '': <AS_ATTN>                       ▲   │
│  Soft Button  2 Level  1: '': <AS_ERASEINPUT>                     │
│  Soft Button  3 Level  1: '': <AS_SYSREQ>                         │
│  Soft Button  4 Level  1: '': <AS_FIELDMINUS>                     │
│  Soft Button  5 Level  1: '': <AS_HELP>                           │
│  Soft Button  6 Level  1: '': <AS_RESET>                          │
│  Soft Button  7 Level  1: '': <AS_CLEAR>                          │
│  Soft Button  8 Level  1: '': <AS_ERASEEOF>                   ▼   │
│  ◄                                                          ►     │
│                                                                   │
│  Program Key    [     ]    with  [                            ]   │
│                                                                   │
│    Soft Button Label              [                  ]            │
│                                                                   │
│  Predefined Virtual Key Names    VK_SHIFT      ▲                  │
│                                  VK_CONTROL                       │
│                                  VK_ALT                           │
│                                  VK_ESCAPE     ▼                  │
│                                                                   │
│  [ Program NonVolatile ] [ Program Volatile ] [ Delete All Macros ] [ Finished ] │
└─────────────────────────────────────────────────────────────────┘
```

This dialog box is displayed by selecting **Keyboard Macros** in the **Settings** menu.

Key Expansion Enabled

Factory default: Selected

This option specifies whether programmed keys on the keyboard can be expanded (i.e. transmit their programmed contents to the host) when pressed. When selected, a programmed key will send its programmed string instead of its normal character.

Key Expansion Character

Factory default: ^P (i.e. DLE)

The key execute character is a special toggle character that can be inserted into key macro strings to cause subsequent characters to be redirected from the host to the terminal and vice versa. By default all characters in the macro are directed to the host.

When a key expansion character is detected for the first time, characters will be redirected to the terminal until the character is detected a second time in the current or another string.

The key execute character is specified as the control key character equivalent. For example, the default value **^P** represents the keys **Ctrl** + **P**, which would generate the ASCII control character **DLE** when pressed.

Program Key With

These options enable you to program most keys with up to four definitions (macros) each, and the soft buttons with one definition each. Keys that cannot be redefined include **Shift**, **Caps Lock** and **Print Screen**. The programmed contents of a key or key combination can be transmitted to the host when pressed by selecting the **Key Expansion Enabled** option in this dialog box.

To program a key or soft button, click the pointer in the **Program Key** text box then press the key or key combination or click the soft button that is to be programmed. The key combination can be any of the following:

> **Key**
> **Ctrl** + **Key**
> **Shift** + **Key**
> **Ctrl** + **Shift** + **Key**
> **Alt** + **Key**
> **Alt** + **Ctrl** + **Key**
> **Alt** + **Shift** + **Key**
> **Alt** + **Ctrl** + **Shift** + **Key**

Pressing a key or soft button will cause the key legend or a reference number that uniquely identifies the key or soft button used to be displayed.

Press **Tab** or click the pointer in the **with** text box and enter the new definition. This can include specific functions associated with a particular terminal emulation as listed in the **Predefined Virtual Key Names** list box. The *Virtual Key Names* appendix provides a complete list of virtual key names and their associated functions. Clicking a key name in this list box will cause it to appear on the key definition line. The function associated with the key name will be attributed to the key or soft button being defined. You can also enter control characters, or specify that a script file is to be run, as described in the following sections.

> *Note: An escape sequence will be sent across a network as a single*
> *packet.*

If you are defining a soft button, you can give it a label up to ten characters long which is displayed on the soft button in the window by entering it in the **Soft Button Label** text box.

When the definition is complete, decide if you wish the key or soft button contents to be saved so that it will be asserted each time TeemTalk is reset or loaded, then click the **Program Volatile** or **Program NonVolatile** button.

Clicking the **Program Volatile** button will cause TeemTalk to only remember the definition until it is reset or exited. Clicking the **Program NonVolatile** button will enable the definition to be saved *when you select the Save Settings option in the File menu.*

The large text box will display the reference numbers of all the currently programmed keys and their definitions, and soft button labels and definitions.

All volatile and non-volatile key and soft button definitions can be deleted by clicking the **Delete All Macros** button. Each key will then revert back to sending its default value as shown by the legend on the keycap. Note that non-volatile macro definitions will be reasserted the next time TeemTalk is started unless you issue a **Save Settings** command after deleting the definitions.

When you have finished, click the **Finished** button and the dialog box will close. If you have specified that definitions are to be programmed as non-volatile, display the **File** menu and select the **Save Settings** option.

Entering Control Characters

You can enter a control character in a definition either as the control key character equivalent or the decimal value of the ASCII or 8-bit character. For example, the control character for the **Return** key function, **CR** (carriage return), can be entered by typing the characters **^** and **M** (without a space in-between) representing the keys **Ctrl** + **M** which, when pressed together would generate the **CR** code.

Decimal values are entered as three-digit numbers immediately preceded by an underscore character. Values with only two digits must be preceded by a zero. For example, the decimal value of **CR** is 13, so this would be entered as **_013**.

Attribute Settings
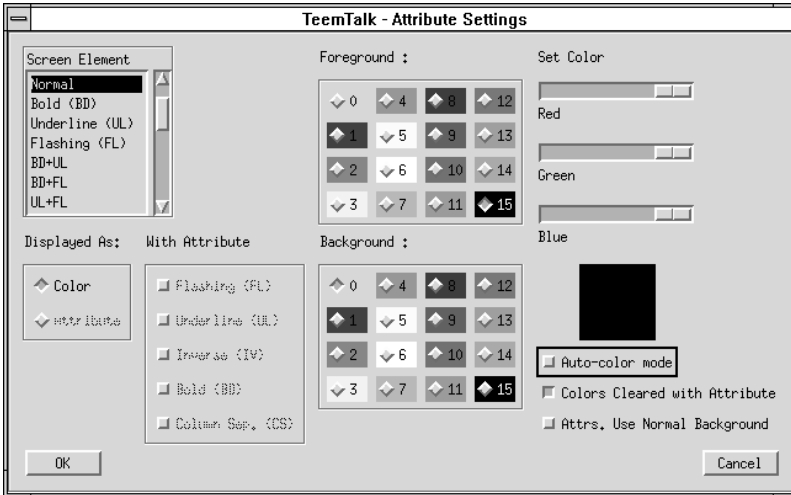
This dialog box is displayed by selecting **Attributes** in the **Settings** menu.

This enables you to specify the colours used in the window and how text with attributes is displayed.

To change the way a screen element is displayed, select the relevant item from the **Screen Element** list box, for example, **Bold** for characters with the bold attribute. The settings of the other options in the dialog box will change to reflect the settings currently assigned to the screen element.

Text with attributes can be displayed in various ways. For example, characters with the underline attribute can be displayed as standard (e.g. underlined only), as a particular colour only (e.g. green without the underline), or with both attribute and a specific colour (e.g. underlined and green). The **With Attribute** options allow you to enable or disable any of the attributes normally associated with the currently selected screen element. The setting of the **Displayed As** option determines whether or not a specific colour is assigned to the text attribute.

The colour of the screen element can be changed by setting the **Displayed As** option to **Colour** and clicking on the required colour block in the palette of **Foreground** and/or **Background** colours. The two palettes enable you to specify a different colour for text (foreground) and text cell (background), and dashed and/or dotted graphics line styles (foreground) and the gaps between the dashes or dots (background).

To display the actual attribute assigned to the text in the default text colour, select **Attribute**. To display text assigned with an attribute in a particular colour only, select

Colour and specify the foreground and background colours on the palettes. To display text assigned with an attribute with both attribute and a particular colour, select **Colour**, specify the foreground and background colours on the palettes and specify the applicable attribute(s) from the **With Attribute** list.

The following sections describe items in the **Attribute Settings** dialog box in more detail.

Attribute Combination

This list box enables you to select a specific attribute, combination of attributes, or Tek line style for defining how they are displayed. The options available depends on the current terminal emulation mode.

The **Ansi Palette** option at the top of the list allows you to specify which set of eight **Foreground** and **Background** colour indices are used when ANSI colour escape sequences are received. Either indices **0** to **7** or **8** to **15** can be selected. The unselected set of colours appear greyed. To change the current selection, just click on one of the unselected colour index buttons.

When running the IBM 3270 emulation, the list box will allow selection of the following items:

> Unprotected Normal
> Unprotected Bold
> Protected Normal
> Protected Bold
> Status BG

Foreground & Background Colour Palettes

The **Foreground** (text) and **Background** (cell) colours for the current **Screen Element** selection are defined by clicking one of the 16 coloured buttons in each palette. You can change the colour assigned to any of the colour selection buttons by clicking the button so that the large box to the right displays the current colour for that button, then use the **Red**, **Green** and **Blue** adjustment slides to modify the colour displayed.

Auto-color Mode

Factory default: Unselected

This option is not supported by this version of TeemTalk.

Colours Cleared With Attribute

Factory default: Selected

The setting of this option determines whether or not the foreground and background colours are cleared to the default colours when an ANSI clear attributes command is received.

Attributes Use Normal Background

Factory default: Unselected

If attribute indicators take up character positions on the screen, you can force those positions to display the normal background colour instead of the attributes by selecting this option.

Mouse Button Actions
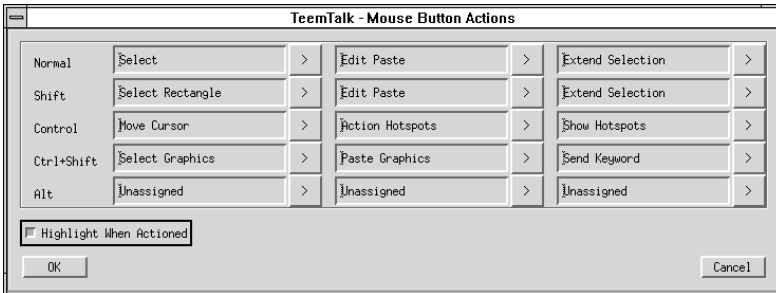
This dialog box is displayed by selecting **Mouse Button Action** in the **Settings** menu.

This enables you to specify the function of mouse buttons 1, 2 and 3 when they are pressed on their own or in conjunction with modifier keys. You can assign up to five functions for each button. Clicking one of the arrow buttons will display a drop-down list box which lists all the standard functions that can be assigned:
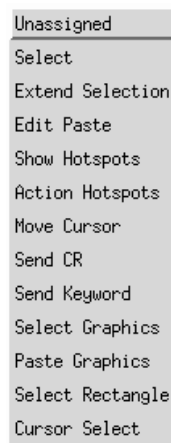
Most of these settings are self explanatory. The **Select** function will select all text from the start position to the finish position, working left to right across the entire width of the display, whereas the **Select Rectangle** function will only select text contained within the rectangular area defined by the start position (top left corner) and the finish position (bottom right corner).

The **Show Hotspots** and **Action Hotspots** functions are described in the *Hotspots* chapter. The **Send Keyword** function is very similar to the hotspot feature. It enables you to send delimited text displayed on the screen to the host just by clicking on it. Delimiters are the same as for hotspots.

The **Move Cursor** function can be used in any of the local block modes as a quick way of positioning the text cursor within a block of text. Move the mouse cursor to the position where the text cursor is required then click the mouse button (and key combination) assigned with the **Move Cursor** function to cause the text cursor to jump to that location.

The **Cursor Select** function does the same as **Move Cursor**, but also performs a cursor select.

For more information on these special functions, refer to the *Mouse Functions* chapter.

You can also enter a definition of your own in the text box associated with each button and key combination. Definitions are entered in the same way as for keyboard macros and soft buttons.

The setting of the **Highlight When Actioned** option determines whether or not a visual indication is given that a function has been actioned when a hotspot is clicked.

Help Menu

Help
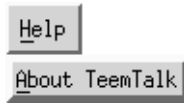
About TeemTalk

Clicking the **About TeemTalk** button in the **Help** menu will display information on this version of TeemTalk.

Notes

7

IBM 3270 Emulation

This chapter describes features of the IBM 3270 terminal emulation.

Introduction

The IBM 3270 emulator provides emulation of all four models of the IBM 3278 alphanumeric terminal and also supports the IBM 3287-1 printer. The terminal emulation supports Extended Attribute mode which allows different representation of highlighted fields and permits host definition of text colours. (Note that you can modify colours using the **Attribute Settings** dialog box but they cannot be saved as colours are mapped differently in this mode.) The emulation also includes typeahead capability so that you can continue to enter data without waiting for a prompt from the host. All communication to the IBM mainframe is achieved over the TCP/IP Telnet interface using the inbuilt telnet interface provided with TeemTalk.

Running The Emulation

The TeemTalk window will be in Network Virtual Terminal mode, as indicated by the ⍰ symbol in the status line along the bottom of the window, until a successful host connection is made.

1. Display the **IBM 3270 Settings** dialog box from the **Settings** menu and select the **Model**. This specifies what is reported back to the host in response to a terminal identification request. (Note that not all features of the specified terminal may be supported.) It also determines the size of the display and whether or not extended attributes are supported. One of four display sizes can be selected:

Model 2	24 rows by 80 columns
Model 3	32 rows by 80 columns
Model 4	43 rows by 80 columns
Model 5	27 rows by 132 columns

Settings with the **-E** extension provide support for the following extended attributes: 3270 field attributes, extended highlighting (blink, flash and under-score, but not in combination), foreground colour, and query reply inbound structured fields. These attributes are also supported by the 3279. Click **OK** to close the dialog box.

3. Select **Save Settings** in the **File** menu.

4. Select **Open Connection** in the **File** menu. Specify the name of the host to which connection is to be made then click **OK**. (Refer to the *Setup Menus* chapter for a description of the **Open Connection** dialog box).

5. If necessary, enter the appropriate information to establish an IBM host session in the Network Virtual Terminal mode screen.

6. When an IBM host session has been established, the screen will switch out of Network Virtual Terminal mode and display the IBM 3270 emulation screen.

> *Note: You will be returned to the Network Virtual Terminal screen when the connection to the IBM host has been closed.*

IBM 3287-1 Printer Support

TN3287 printing is supported by setting the **Model** option in the **IBM 3270 Settings** dialog box to **3287-1**. When a new Telnet connection is made, the TeemTalk window display will change to show a message box which will indicate the current printer status.

When printing commences a Print Abort box will be displayed enabling you to cancel the print job. Note that this will stop print data being sent but will not disconnect you from the host.

Network Virtual Terminal Mode

Network Virtual Terminal (NVT) mode allows the operator to communicate with a network gateway (in ASCII) for routing, logon etc, before the full IBM terminal emulation protocol is established. NVT mode is indicated by the ▯ symbol in the status line along the bottom of the window.

NVT mode displays an unformatted screen for data entry, allowing most of the keyboard functionality for local editing. However, when the **Enter** key is pressed, the line that the cursor is positioned on will be sent over Telnet as an ASCII string with CR/LF terminators. The cursor will then be positioned at the start of the next line. ASCII data received over Telnet will also be displayed at the current cursor position. A **CR** character will be actioned as a 'new line' character, causing the cursor to move to the start of the next line, scrolling the display if necessary. Once the appropriate details have been entered to establish an IBM host session (which may be automatic), the screen is cleared and switched into full IBM 3270 terminal emulation mode, as indicated by the ■ symbol in the status line.

SysReq Key Support

When the **SysReq** option in the **Telnet Options** dialog box is selected, the key mapped with the **SysReq** function enables you to toggle the display and keyboard entries between the host operating system and the application. This enables you to switch to the operating system and issue a LOGOFF command. When communicating with the operating system the status line will display the ▯ symbol.

> *Note: Not all TN3270E servers provide full support of the **SysReq** key.*

The Status Line

The last line in the window is used to display status information in the form of symbols and alphanumeric characters. A coloured line separates status information from the rest of the display. Information is displayed in any of five regions within the status line as listed below.

1: Readiness & System Connection

Symbol	Colour	Column	Meaning
T	Blue	1	Telnet session running
A	Blue	2	Online (non-SNA)
⁇	Blue	3	Network Virtual Terminal mode
■	Blue	3	My job (IBM emulation screen)
圅	Blue	3	Host operating system mode

2: Do Not Enter

Symbol	Colour	Column	Meaning
✘ **PROGnnn**	Yellow	10-18	Program check (nnn = error code)
✘ ⌛	White	10-13	Terminal wait
✘大**NUM**	Red	10-15	Numeric data only
✘←大→	Red	10-14	Go elsewhere
✘ **SYSTEM**	White	10-17	System lock
✘大**>**	Red	10-13	Too much

3: TN3270E Device Name

Symbol	Colour	Column	Meaning
dddddddd	White	22-29	TN3270E actual device name connected as

4: Shift

Symbol	Colour	Column	Meaning
NUM	Blue	43-45	Numeric lock on

5: Mode Symbol

Symbol	Colour	Column	Meaning
^	Blue	53	Insert mode on

6: Cursor Position

Symbol	Colour	Column	Meaning
rr/cc or **rr/ccc**	White	75-80	Row/column cursor position

Readiness & System Connection

T	This indicates that a Telnet session is running.
<u>**A**</u>	This indicates that the protocol for communication between an application program and the IBM 3270 emulation is not system network architecture (SNA).
⁇	This indicates that the current screen is a Network Virtual Terminal screen. This screen is displayed when IBM 3270 mode is entered before a telnet session has been initiated with the remote host. This enables you to enter login text. Note that you will be returned to this screen when you log off.
■	This indicates that the current screen is an IBM 3270 screen. This screen will be displayed when you have initiated a Telnet session with the host.
▨	This indicates that you are currently communicating with the host operating system, not the application.

Do Not Enter

The Do Not Enter (✘) symbol will appear when input from the keyboard or mouse will not be accepted by the host (except **Reset** and **SysRq**). Symbols to the right of this will indicate the reason. Pressing the **Reset** key will remove some of these symbols from the status line. Note that the emulation includes typeahead capability so that in most cases you can continue to enter data without waiting for the Do Not Enter message to clear as the data will be stored until the host is ready.

✘ **PROGnnn**	Indicates that a programming error in the data from the host has been detected, possibly due to incompatible application software. Press the **Reset** or **SysRq** key to remove this indicator and unlock the keyboard.
✘ ⟲	Indicates that you must wait while the requested function is performed.
✘⌁**NUM**	Indicates that you tried to enter an invalid character into a numeric field when the numeric-lock feature was active. The keyboard numeric-lock feature can be overridden by using a **Shift** key. The keyboard can be unlocked and the indicator removed by pressing the **Reset** key.
✘←⌁→	Indicates that you tried to enter data in the wrong location. This will occur when you attempt to do any of the following:

Enter, insert, erase, or delete a character when the cursor is in a protected field or at a field attribute location. |

Perform a cursor-select operation when the cursor is not in a valid cursor-select field.

The keyboard can be unlocked and the indicator removed by pressing the **Reset** key.

✗ SYSTEM   Indicates that you cannot enter any data because the application program has disabled the keyboard following an entry.

✗⊼>   Indicates that you attempted to insert characters into an unprotected field when the cursor was at the end of the field, or you attempted to word wrap to the next line when there were not enough spaces to enable a word wrap.

The keyboard can be unlocked and the indicator removed by pressing the **Reset** key.

Shift

NUM   This indicates that the numeric lock function is enabled and the current cursor is in a numeric field. When the numeric lock function is on, the current cursor is in an unprotected field and the keyboard is in lowercase shift, you can only use the **0** to **9**, decimal sign (**.**), minus (**-**), and **Dup** keys.

Mode Symbol

^   This symbol indicates that the keyboard is in Insert mode. Already existing characters to the right of the cursor will move to make room for new characters that are entered. Insert mode can be disabled by pressing the **Reset** or **SysRq** key, or by performing any action that sends data to the host, such as pressing the **Enter**, **Clear**, **PA**, or **PF** keys.

Keyboard Mapping

The following illustration shows where IBM 3270 keyboard functions are mapped to keys on the Enhanced AT keyboard layout.

RECRD
[MONO]
(F16)
F4

QUIT
(ATTN)
RESET

(F13) F1 | (F14) F2 | (F15) F3

PLAY
(F17)
F5

(F18) F6 | (F19) F7 | (F20) F8

(CRSEL)
(F21)
F9

(F22) F10 | (F23) F11 | (F24) F12

SYSRQ
PRINT

(PAUSE)
CLEAR

CRSEL = Cursor Select
MONO = Mono Case
D WRD = Delete Word
ER INP = Erase Input
ER EOF = Erase EOF

< ➤➤ > Generates **Field Tab** with **Ctrl**.

NO FUNCT = No Function

< ➤➤ >
(⬅ ➡)

NEWLINE

(DUP)
INS

(FIELD MARK)
HOME

(PA3)
PA1

D WRD
DEL

ER INP
ER EOF

RULE
PA2

NUMLK
NO FUNCT

NO FUNCT

NO FUNCT

NO FUNCT

(,)

_

ENTER

P WRD = Previous Word
N WRD = Next Word

P WRD | ⬆ ⬇ ⬅ ➡ | N WRD

Meta key usage: SYSRQ
Normal key usage: PRINT

All unmarked keys function as indicated by the legends on the keycaps.
Functions in brackets are generated when the keys are shifted.
(**Meta** is ◆ on the Sun 5 keyboard and **Alt** on the Enhanced AT keyboard)

Record & Playback Keystrokes Facility

The record/playback keystrokes facility enables you to eliminate repetitive operations by using the **Fn** keys to store, retrieve and display data. The **Fn** keys can store a total of 1500 keystrokes. A sequence of recorded keystrokes may be interrupted so that keystrokes can be entered manually before continuing with the recording or playback. Note that local **Fn** key functions cannot be recorded.

The keys used to initiate recording and playback are shown below:

Record:	**Meta** + **F4** *(see note)*
Pause:	**Shift** + **Pause**
Quit:	**Meta** + **Escape**
Play:	**Meta** + **F5**

> *Note: On the Enhanced AT keyboard, **Meta** is the **Alt** key.*

You can assign the Record, Pause, Quit and Play functions to any key or key combination by using the virtual key names **IB_RECORD**, **IB_PAUSE**, **IB_QUIT** and **IB_PLAY**, respectively.

Recording Keystrokes

1. Press **Record** to enter Record mode.

    The status line will display **RECRD** and a number from **0**-**1500** indicating the number of new keystrokes that may be stored. A series of boxes displayed to the right represent the **Fn** keys. A solid box indicates that the **Fn** key in that position is currently storing recorded keystrokes.

2. Press the **Fn** key which will store the keystrokes.

    The status line will display **R****   F*** where **R** indicates you are in Record mode, **** is the number of keystrokes that may be stored, and **F*** is the number of the **Fn** key pressed.

    > *Note: If you press a pre-recorded **Fn** key, its contents will be replaced with the following keystrokes. You can also remove the contents of the **Fn** key before recording by pressing the **Delete** key.*

3. Enter the keystrokes to be recorded. You may pause recording at any time to allow keystrokes to be entered manually when played back by pressing **Pause**. To continue recording, press **Pause** again.

> *Note:* *You can cancel the newly recorded keystrokes by pressing the*
> ***Quit** key. This cancellation does not affect the previously*
> *recorded keystrokes.*

4.   To finish and save the recording, press the **Record** key.

Playback Keystrokes

1.   Position the text cursor where the playback is to start.

2.   Press the **Play** key to enter Play mode.

The status line will display **PLAY** and a series of boxes representing the **Fn** keys. A solid box indicates that the **Fn** key in that position is currently storing recorded keystrokes.

3.   Press the **Fn** key storing the recorded data to play back.

Playback will begin immediately, as indicated by a **P** on the status line. All the recorded keystrokes will be played back automatically. When playback is completed the **P** will disappear.

If the recorded keystrokes included **Pause**, then playback will halt at that point to allow you to enter keystrokes manually. Press **Play** to resume playback from where you stopped typing.

If you want to cancel during the playback operation, press the **Quit** key.

Error Codes

The following error codes may appear on the status line if an error occurs during recording or playback.

9001   *Exceeded the maximum number of allowed keystrokes.*

Remedy: Press the **Record** key to exit Record mode. To record a new keystroke sequence, either:

a) Press the **Record** key and the target **Fn** key that has erasable data, then enter the new data.

b) Press the **Record** key and the target **Fn** key that has erasable data, then press the **Delete** key to erase the recorded data for that key.

9003   *You pressed an invalid **Fn** key while performing the Record or Play function.*

Remedy: Press the **Reset** key.

9007   *You pressed an invalid sequence key (e.g. **Play**) while performing the Record function.*

Remedy: Press the **Reset** key.

9010   *While performing the Play function, you pressed an **Fn** key that does not have a keystroke assigned to it.*

Remedy: Press the **Reset** key.

9015   *In communication mode, you pressed either the **Quit** or **Pause** key.*

Remedy: Press the **Reset** key.

9019   *In Record or Play mode. While the Record/play pause indicator was displayed on the status line you pressed an invalid key (e.g. **Play** key in Record mode, or **Record** key in Play mode).*

Remedy: Press the **Reset** key.

8

Resources & Command Line Options

This chapter describes how to use resources and command line options to specify how TeemTalk is run and displayed by the X Window System.

Introduction

Resources are used to specify how TeemTalk is run and displayed by the X Window System. The resource configurations are stored in user preference files which are asserted when TeemTalk is loaded. This means, for example, that you do not have to specify how the TeemTalk window is to be displayed each time it is loaded. There are so many options which you could specify that including them on the command line for loading TeemTalk would be impractical.

Once the normal resource specification for TeemTalk has been defined in a user preference file, the resource specifications for a particular instance of TeemTalk may be overridden using command line options.

> *Note: The default settings of functions relating to terminal emulation are specified via pop-up menus in the TeemTalk window. These are described in the Setup Menus chapter.*

The following sections provide a brief introduction to using resources and command line options. For a more detailed discussion and information on resource debugging, refer to the section at the end of this chapter entitled *Understanding X Resources*.

Resource Format

There are a number of files in which resources are specified. Generally they are specified in the user's **.Xdefaults** file or the system wide application defaults file.

The **.Xdefaults** file resides in the user's home directory and resources specified in it only affect invocations of TeemTalk made by the owning user.

> *Note: Changes made to the .Xdefaults file will not take effect until the* X *server has been restarted or the database 'freshened' by the program* **xrdb***.*

The applications resource file contains resources specified in exactly the same way as those in the **.Xdefaults** file except that they affect all users. The environment variable **XAPPLRESDIR** will normally be set to point to the **app-defaults** directory. The name of the file to create in the **app-defaults** directory is **xteemx320**, which should be placed in the directory specified by **XAPPLRESDIR**.

Each line in the resource file consists of the name of the client (e.g. **xteemx320**) followed by an asterisk then the name of the resource (e.g. **maXimized**. The resource name is separated from its definition or value by a colon and whitespace.

Example: **xteemx320*maXimized: on**
             xteemx320*buttonLevels: 3

Resources are case sensitive on UNIX based systems, so pay particular attention to the upper or lowercase form of characters in the resources described in this chapter.

A backslash (\) at the end of a line enables the current resource definition to continue on the next line. Comment lines can be inserted by starting each line with an exclamation mark (**!**).

Command Line Option Format

The command line for loading TeemTalk can be extended by options that control its display and operation, overriding resource file default settings.

Options and associated values must be separated from the TeemTalk loading name and each other by a space. The following command line example will load TeemTalk-*320*, set the window border colour to red and border width to 60 pixels:

xteemx320 -bd red -bw 60

Arguments that include white space (space, tab, etc.) must be quoted.

Command Summary

General Operation & Setup

Command Function	Resource	Command Line
X server for display & input	**display:** *host:server.screen*	**-display** *h:sv.sn*
Sync signal to X server freq.	**pollTime:** *seconds*	**-poll** *seconds*
Resource information file	*none*	**-name** *filename*
Resource in command line	*none*	**-xrm** *"resource"*
Setup settings file	**settingsFile:** *filename*	**-sf** *filename*
Terminal setting keywords etc.	**ttyModes:** *"keyword key"*	**-ttyModes** *"kw k"*
Debug mode	**debugMode:** *on/off*	**-debug** (on)
Input queue size	**inputQueue:** *0-4096*	**-q** or **-Q** *0-4096*
Prevent message display	**quiet:** *on/off*	**-qt** (on) **+qt** (off)
Cut & paste EOL character	**lineDelimiter:** *"char"*	**-ld** *"character"*
Mouse button multi-click time	**multiClickTime:** *ms*	**-mct** *milliseconds*
3 clicks selects line from cursor	**cutToBeginningOfLine: off**	**-cb**
3 clicks selects all cursor line	**cutToBeginningOfLine: on**	**+cb**
Bell volume (not all servers)	**bellVolume:** *0-100*	**-bv** *0-100*
IBM reply field mode only	**ibmReplymode:** *on/off*	**-ibmreply** (on)
String sent to host on exit	**exitString:** *"string"*	**-es** *"string"*

Telnet Session

Command Function	Resource	Command Line
No telnet dialog on startup	**tnStartup: off**	+**tnstartup**
Initiate telnet session with host	**tnHost:** *hostname*	**-tnhost** *name*
Host telnet port number	**tnPort:** *number*	**-tnport** *number*
Telnet keepalive messages	**tnKeepalive:** *on/off*	**-tnkeepalive** (on)
Closed telnet exits TeemTalk	**tnExit:** *on/off*	**-tnexit** (on)
Telnet close option	**tnClose:** *0-3*	**-tnclose** *0-3*

Display Format

Command Function	Resource	Command Line
Window maximized on loading	**maXimized: on**	-**ma**
Title for window & icon	**title:** *title*	-**title** *title*
Window border width in pixels	**internalBorder:** #	**-bw** #
Text window size & location	**geometry:** *wxh±x±y*	**-g** =*wxh±x±y*
Text window size in lines	**defaultLines:** #	**-dl** #

Window Elements

Command Function	*Resource*	*Command Line*
Menu bar enabled/disabled	**topmenuBar:** *on/off*	**-mb** (on) **+mb** (off)
Menus enabled/disabled	**settingsItem:** *on/off*	**-si** (on) **+si** (off)
Soft button levels displayed	**buttonLevels:** *0-4*	**-bl** *0-4*
Mouse cursor style	**mouseCursor:** *integer/value*	**-mc** *integer/value*

Colour Selection

Command Function	*Resource*	*Command Line*
Text window foreground	**foreground:** *colour*	**-fg** *colour*
Text window background	**background:** *colour*	**-bg** *colour*
Text cursor colour	**cursorIndex:** *index*	**-ci** *index*

Font Selection

Command Function	*Resource*	*Command Line*
Default font index on startup	**defaultFontindex:** #	**-df** #
Load all fonts on startup	**preloadFont: on**	**-fnpreload**
Load fonts only as required	**preloadFont: off**	**+fnpreload**

General Operation & Setup

Server For TeemTalk Display & Input

Resource: **xteemx320*display:** *host:server.screen*
Command Line: **-display** *host:server.screen*

Default Setting: Determined by the DISPLAY environment variable.

These commands specify which X server is to be used to display data and take input when TeemTalk is being run on a remote system.

The *host* argument specifies the machine which will display the TeemTalk window. This is immediately followed by a colon then the *server* number, then the *screen* number preceded by a period. The *host* and *.screen* arguments may be omitted, in which case *host* will be the local machine and *.screen* will be **.0** by default. The *server* option must always be preceded by a colon.

Command line example:

xteemx320 -d your_node:0.1

This will select **your_node**, server **0** and screen **1** for TeemTalk display and input.

Synchronization Signal Frequency

Resource: **xteemx320*pollTime:** *seconds*
Command Line: **-poll** *seconds*

Default Setting: **5**

These commands determine how often TeemTalk sends a synchronization signal to the X server to check that it is still alive.

Resource File Selection

Resource: None
Command Line: **-name** *filename*

Default Setting: **xteemx320**

This command line option specifies the file name that is used when searching the default files for resource information.

Command line examples:

xteemx320 -name TeemTalk1
xteemx320 -name TeemTalk2

These will select the following files from the **.Xdefaults** file:

TeemTalk1*title: johns TeemTalk
TeemTalk2*title: stuarts TeemTalk

Specify Resource On Command Line

Resource: None
Command Line: **-xrm** *resource string*
Default Setting: Not applicable

This allows a resource specification to be included on the command line as an argument. This is especially useful for setting resources that do not have equivalent command line options. The *resource string* can be any valid resource specification. Command line example:

xteemx320 -xrm "*title: New Project"

This uses the **title** resource to specify the text that is to be displayed in the TeemTalk window title bar, in this case **New Project**.

Setup File Selection

Resource: **xteemx320*settingsFile:** *filename*
Command Line: **-sf** *filename*

Default Setting: **teemx320.nv**

These commands specify the path and name of the file to be used to load and store saved setup settings.

Debug Mode

Resource: **xteemx320*debugMode**
Command Line: **-debug**

Default Setting: Not applicable

In debug mode, TeemTalk will print characters received from the host on **stderr** as well as actioning them, and you can display information on particular keys or key combinations when you press them.

The format of the information displayed when a key or key combination is pressed is as follows:

Keycode = 13, State = 0, Keysym = 65471

where the **Keycode** is the hardware code assigned to the physical key, **State** indicates whether the key was pressed in conjunction with a modifier key (e.g. caps lock, shift), and **Keysym** is the unique keysym value assigned to the key or key combination.

This is useful for finding keysym values which can be directly used in Translation tables, as shown in the following example where **65471** is the keysym value for **F2** on the Sun 4 keyboard:

> ***xteemx320*vt220.Translations: #override \n**
> **<Key>65471:   string ("This is the F2 key")**

Input Queue Size

Resource: **xteemx320*inputQueue:** *0-4096*
Command Line: **-q** or **-Q** *0-4096*

Default Setting: **255**

These commands enable you to set the input queue size for network data. The size of the input queue will determine how quickly an interrupt command takes effect.

Prevent Message Display

Resource: **xteemx320*quiet:** *on/off*
Command Line: **-qt**   no messages displayed
                          +qt   messages displayed

Default Setting: **off**   (messages displayed)

These commands enable you to stop messages being sent to the console.

Mouse Button Multi-Click Time

Resource: **xteemx320*multiClickTime:** *milliseconds*
Command Line: **-mct** *milliseconds*

Default Setting: 250 milliseconds.

Some functions require a mouse button to be clicked two or more times in quick succession in order for them to be actioned. These commands determine the time delay following a button click during which the next button must be clicked in order for the multi-click function to be actioned, otherwise it is treated as a single button click function.

End Of Line Character For Cut & Paste

Resource: **xteemx320*lineDelimiter:** *"character"*
Command Line: **-ld** *"character"*

Default Setting: **CR** (carriage return)

These commands enable you to specify the character which is used to indicate the end of each line in a block of text during a cut and paste operation.

Cursor Line Selection Extent

Resource: **xteemx320*cutToBeginningOfLine:** *on/off*
Command Line: **-cb**   cursor to end of line
                  +cb   entire cursor line

Default Setting: Cursor to end of line.

These commands enable you to specify how much of the cursor line is selected when the mouse button is clicked three times in quick succession. You can specify that the entire cursor line is selected or only characters from the current cursor position to the end of the line (default).

Bell Volume

Resource: **xteemx320*bellVolume:** *0-100*
Command Line: **-bv** *0-100*

Default Setting: Depends on the server

These commands enable you to specify the loudness of the bell (if the X server supports this). The loudness is indicated by a numeric value in the range **0** (off) to **100** (full volume).

IBM Reply Mode

Resource: **xteemx320*ibmReplymode:** *on/off*
Command Line: **-ibmreply** (on)
                  +ibmreply (off)

Default Setting: Off

When you switch from one application to another the current contents of the screen is saved before the new application is displayed. Enabling IBM reply mode will prevent the colour information from being sent in a reply to the IBM host, forcing the reply mode to be always set to Field mode, not Extended Field or Character mode.

Send String To Host On Exit

Resource: **xteemx320*exitString:** *"string"*

Command Line: **-es** *"string"*

Default Setting: Not applicable

These commands enable you to specify a string which will automatically be sent to the host when the TeemTalk window is closed.

Telnet Session

Telnet Dialog Not Displayed On Startup

Resource: **xteemx320*tnStartup: off**
Command Line: **+tnstartup** prevents dialog display
       -tnstartup enables dialog display

Default Setting: Telnet dialog displayed

These commands will prevent the **Open Telnet** dialog box being displayed on startup.

Initiate Telnet Session With Host

Resource: **xteemx320*tnHost:** *hostname*
Command Line: **-tnhost** *hostname*

Default Setting: Not applicable

These commands enable you to cause TeemTalk to initiate a telnet session with the specified host.

Most emulations work quite well in the standard TeemTalk environment when the telnet process provided with the workstation is used to make the connection to the remote host. However, in some block mode emulations the telnet process does not pass all the necessary information to TeemTalk.

To overcome this, TeemTalk has its own inbuilt telnet driver so that precise control can be exercised over the information that TeemTalk receives and transmits. You must use the telnet facility provided by TeemTalk when using block mode emulations such IBM 3270.

Host Telnet Port Number

Resource: **xteemx320*tnPort:** *number*
Command Line: **-tnport** *number*

Default Setting: **23**

These commands enable you to specify the number of your host's telnet port if it is different from the default port number 23.

Telnet Keepalive Messages

Resource: **xteemx320*tnKeepalive:** *on/off*
Command Line: **-tnkeepalive**   enabled
+tnkeepalive   disabled

Default Setting: Enabled

These commands allow you to enable or disable telnet keepalive messages when using the TeemTalk telnet driver.

Closed Telnet Session Exits TeemTalk

Resource: **xteemx320*tnExit: on**
Command Line: **-tnexit**

Default Setting: **off**   (message box displayed)

When a telnet session is closed, TeemTalk normally displays a message box giving you the option to reconnect, cancel or exit. These commands enable you to cause TeemTalk to be exited immediately when the telnet session is closed. See the *Telnet Close Option* section also.

Telnet Close Option

Resource: **xteemx320*tnClose:** *0-3*
Command Line: **-tnclose** *0-3*

Default Setting: **0**

This command specifies the action to be taken when a telnet session is closed (if **-tnexit** is not specified). The possible settings are as follows:

        0   Display message box for option required.
        1   Exit TeemTalk.
        2   Reconnect automatically to the same host.
        3   Cancel telnet connection only.

This will also be effective for telnet connection failure.

Display Format

Window Maximized When Loaded

Resource: **xteemx320*maXimized: on**
Command Line: **-ma**

These commands will cause the window to be displayed at the maximum size possible when TeemTalk is loaded, while retaining the default number of lines and columns and including all window elements if enabled (title bar, soft buttons etc.).

Window & Icon Titles

Resource: **xteemx320*title:** *title*
Command Line: **-title** *title*

Default Setting: **xteemx320**

These commands enable you to specify the title to be displayed by the window manager in the TeemTalk window title bar or icon. This is useful for distinguishing each instance of TeemTalk when it is being run multiple times.

Window Border Width

Resource: **xteemx320*internalBorder:** *width*
Command Line: **-bw** *width*

Default Setting: **1** (pixel)

These commands enable you to specify the pixel width of the border surrounding the TeemTalk window.

Command line example:

xteemx320 -bw 50

This will cause the TeemTalk window border to be 50 pixels wide.

Window Size & Location (Pixels)

Resource: **xteemx320*geometry:** *widthxheight±x±y*
Command Line: **-geometry** *=widthxheight±x±y*

Default Setting: **640x400**

This enables the size and location of the TeemTalk window to be specified.

The **-geometry** = option may be abbreviated to **-g** =.

> *Note:* *The effect of these commands is determined by the window manager which may have its own rules for window size and position on the display.*

The command is followed by the size and location arguments, which take the following form:

widthxheight±xoffset±yoffset

The values for each of the four variables are specified as numbers of pixels. A positive offset will position the left or top edge of the window a specified pixel distance from the left or top edge of the display, while a negative offset will position the right or bottom edge of the window a specified pixel distance from the right or bottom edge of the display.

If any of the values are omitted, TeemTalk will use the resource manager defaults for the missing values. If no location defaults are specified by the resource manager, the user will have to position the window manually.

The default size of the initial window is 640 x 400 pixels, in which 80 columns by 25 lines (24 text lines and 1 status line) is displayed.

Command line example:

xteemx320 -g =320x240-50+75

This will cause a window 320 pixels wide and 240 pixels high to be offset 50 pixels from the left of the display and 75 pixels from the bottom of the display.

It is recommended that the window size is specified using the Window Size (Columns/Lines) commands described in the next section rather than **geometry**.

Text Lines Displayed When TeemTalk Loaded

Resource: **xteemx320*defaultLines:** *number of lines*
Command Line: **-dl** *number of lines*
Default Setting: **24**   (with status line on 25th line)

These commands specify the number of text lines displayed in the window when TeemTalk is loaded.

Window Elements

In addition to the following commands, the section entitled *Object Names Available In* TeemTalk towards the end of this chapter lists the names given to various elements of the window which can be used to specify whether or not they are enabled and how they are displayed using standard X resource commands.

Menu Bar

Resource:	**xteemx320*topmenuBar:** *on/off*
Command Line:	**-mb** enables the menu bar
	+mb disables the menu bar
Default Setting:	**on**

These commands determine whether or not a menu bar is displayed.

You can enable/disable individual items in the menu bar by using the following resources:

> **xteemx320*file.sensitive:** *true/false*
> **xteemx320*settings.sensitive:** *true/false*
> **xteemx320*<.sensitive:** *true/false*
> **xteemx320*>sensitive:** *true/false*

Menu Items

Resource:	**xteemx320*settingsItem:** *on/off*
Command Line:	**-si** enables the **File** and **Settings** menu items
	+si disables the **File** and **Settings** menu items
Default Setting:	**on**

These commands determine whether or not the **File** and **Settings** menu items are enabled. When disabled, only the window resize buttons will be displayed in the menu bar. You can enable/disable individual menu items by using the following resources:

File Menu:

> **xteemx320*File*Factory*Sensitive:** *true/false*
> **xteemx320*File*Reset*Sensitive:** *true/false*
> **xteemx320*File*Save*Sensitive:** *true/false*
> **xteemx320*File*Open*Sensitive:** *true/false* (Telnet)
> **xteemx320*File*Close*Sensitive:** *true/false* (Telnet)
> **xteemx320*File*PrinterSettings*Sensitive:** *true/false*

> **xteemx320*File*Print*Sensitive:** *true/false*
> **xteemx320*File*Quit*Sensitive:** *true/false*

Settings Menu:

> **xteemx320*Settings*Emulation*Sensitive:** *true/false*
> **xteemx320*Settings*IBM3270*Sensitive:** *true/false*
> **xteemx320*Settings*Macros*Sensitive:** *true/false*
> **xteemx320*Settings*Attributes*Sensitive:** *true/false*
> **xteemx320*Settings*Mouse*Sensitive:** *true/false*

Soft Buttons

Resource: **xteemx320*buttonLevels:** *0-4*
Command Line: **-bl** *0-4*

Default Setting: **1**

These commands specify how many levels of soft buttons are displayed at the bottom of the TeemTalk window. A level consists of two rows of soft buttons with six programmable buttons on each row. All levels are accessible even if not all are displayed. Levels stored off-screen can be 'scrolled' into view by clicking the **Level** button. A maximum of 8 rows (48 programmable buttons) can be displayed by specifying **4**. Specifying **0** will cause no soft buttons to be displayed.

Mouse Cursor Style

Resource: **xteemx320*mouseCursor:** *integer/value*
Command Line: **-mc** *integer/value*

Default Setting: Depends on the UNIX system

These commands enable you to specify the style of the mouse cursor displayed by default in the TeemTalk window. The integer/value depends on the UNIX system.

Colour Selection

Foreground (Text) Colour

Resource: **xteemx320*foreground:** *colour* (all areas)
xteemx320*vt220*foreground: *colour* (emulation)

Command Line: **-fg** *colour*

Default Setting: **black**

These commands select the colour of the foreground, which includes all menus, window borders as well as the emulation workspace. In the emulation workspace the foreground is considered to be any colour which is white.

The *colour* value must be a valid colour name, a list of which can be found in the **rgb.txt** file which is supplied with the X server. When the ***foreground** resource is preceded by ***vt220**, only the foreground colour of the emulation workspace is affected.

Background Colour

Resource: **xteemx320*background:** *colour* (all areas)
xteemx320*vt220*background: *colour* (emulation)

Command Line: **-bg** *colour*

Default Setting: **white**

These commands select the colour of the background, which includes all menus, window borders as well as the emulation workspace. In the emulation workspace the background is considered to be any colour which is black.

The *colour* value must be a valid colour name, a list of which can be found in the **rgb.txt** file which is supplied with the X server. When the ***background** resource is preceded by ***vt220**, only the background colour of the emulation workspace is affected.

Text Cursor Colour

Resource: **xteemx320*cursorIndex:** *index*
Command Line: **-ci** *index*

Default Setting: **15** (black)

These commands specify the colour of the text cursor. The *index* value is a number in the range **0** through **15** which relates to the colour indices specified in the **Attribute Settings** dialog box.

Font Selection

Default Fonts When TeemTalk Started

Resource: **xteemx320*defaultFontindex:** *index*

Command Line: **-df** *index*

Default Setting: **6** (7th entry in font lists)

This specifies the font index number which is to be used by default when TeemTalk is started to select fonts for display from the font lists. The index number for the first font in each list is **0**, and the tenth font is index **9**.

Load All Fonts Or Only As Required

Resource: **xteemx320*preloadFont:** *on/off*

Command Line: **-fnpreload**   all fonts loaded

                     +fnpreload   fonts loaded only when required

Default Setting: **on**

These commands determine how TeemTalk loads fonts. When preload font is enabled, TeemTalk will load all fonts (standard, bold, double width etc.) when it is started or when the window is resized. When preload font is disabled, TeemTalk will only load fonts when they are required.

Understanding X Resources

Most X clients now implement a simple mechanism of specifying application preferences using preference strings. These preference strings comprise the name of the X client followed by the name of the resource to be set. A colon and then the value to be assigned to the resource follow.

The following example specifies that the TeemTalk background colour should be set to blue:

xteemx320*background: blue

Note that if the X client name (**xteemx320**) is omitted, then the resource entry will match all applications that recognise the background resource name. Consequently the resource entry:

*background: blue

will set the background colour of all X clients to blue.

Since most applications are now object-orientated, they comprise of many sub-objects and hence many windows. TeemTalk for example comprises a main application window, a scroll bar, a menu bar and many pull down menus. When the background resource for TeemTalk is used, it changes the background colour of all objects. That is, in our example, the main window, scroll bar background, and menu bar background all become blue. In order to have more precise control over specific elements of an application, the resource preference string should be considered to be a heirarchy of objects and sub-objects of the form:

object..subobject..attribute: value

where each object and sub-object corresponds to various major components of an application. There is no limit on the number of object name or sub-objects that may be specified. For example the following allows different components of the TeemTalk window to have different colours,:

> **xteemx320*vt220*background: black**
> **xteemx320*scrollbar*background: red**

> *Note: The ***vt220*background** can be specified as the single*
> *resource ***vtBackground***

The object names are hard-coded into the application and therefore fixed. With the level of application configurability offered by this technique, careless use of resources can seriously affect the operation of the application. For this reason only a subset of all the object names and attributes are made available by the manufacturer to the end-user.

Object Names Available In TeemTalk

The following object names are available in TeemTalk:

vt220	the main emulation window.
scrollbar	the scrollbar on the right hand side of the window.
menubar	the menubar at the top of the window.
File	the File pulldown menu.
Settings	the Settings pulldown menu.
<	the decrease menu button.
>	the increase menu button.
TelnetControl	the Telnet dialog box.
TelnetOptionsControl	the Telnet Options dialog box.
TelnetOpt3270Control	the Telnet 3270 Options dialog box.
TextPrinterControl	the Text Printer dialog box.
PrintScreenControl	the Print Screen function.
ModeControl	the Mode Settings dialog box.
IBM3270Control	the IBM 3270 Settings dialog box.
MacrosControl	the Macros Settings dialog box.
AttributeControl	the Attributes Settings dialog box.
MouseControl	the Mouse Button Actions dialog box.

The following object names correspond to the various buttons in the pulldown menus.

> **File*Factory**
> **File*Reset**
> **File*Save**
> **File*Open**   (Telnet)
> **File*Close**   (Telnet)
> **File*PrinterSettings**
> **File*Print**
> **File*Quit**
>
> **Settings*Emulation**
> **Settings*IBM3270**
> **Settings*Macros**
> **Settings*Attributes**
> **Settings*Mouse**

As the menus can be uniquely identified, total control can be exerted over various attributes within the setup entries. For example, you can specify the colour, font, and whether the menus are enabled or disabled. Regretably you will need to be armed with an X Window programmer's manual to fully identify the scores of resource names that are available within menu systems.

Where To Specify Resource Entries

When an X application is started, resource preference strings from a variety of places are merged together to create one large resource database for that application which is then processed when it is started. Clearly, since preferences can be specified in more than one place, the priority which exists between duplicate entries is also important. The following sections describe the most common sources of resource entries; the sections are ordered according to priority - e.g. command line options override duplicate entries in the **.Xdefaults** file.

Command Line

Entries on the command line override any other settings specified in other resource files. Whilst most general attributes have equivalent command line arguments, heirarichal ones seldom do have direct equivalents. For example:

*foreground: red   has the command line equivalent: **-fg red**
*Settings: red   does not have a direct equivalent.

Although the latter does not have a direct command line option equivalent, it can still be specified on the command line by using its resource string directly. For example:

-xrm "*Settings: red"

Application Defaults

The application defaults file usually exists in either of **/usr/lib/X11/app-defaults** for Motif based systems or **$OPENWINHOME/lib/app-defaults** on OpenWindows based systems. The file in which the resource entries are put is the name of the application with the first two letters capitalised; the application name is hard coded by the X client vendor and is unchangeable.

The application defaults file name is **xteemx320**. The Application defaults file sets resources globally for applications and therefore sets preferences for all users of the application.

.XDefaults

The **.Xdefaults** file is located in a specific user's 'home' directory and is processed for all applications and is not therefore specific to a particular application. Since it is located in the user's 'home' directory it only affects instances of the applications started by users whose home directory it is.

Unlike the Application Defaults and Command Line options which are merged into the resource database when an application is started, the entries in the **.Xdefaults** file are only read once when the X server is started. Therefore changes made to the

.Xdefaults file will not affect applications until the next time the X Server is started and the **.Xdefaults** file re-read.

Controlling The Resource Database

The X utility **xrdb** is a useful tool for maintaining and debugging the resource database. Whilst full details can be found in all good X guides, a few uses are presented below.

xrdb < .Xdefaults   Loads the contents of **.Xdefaults** into the database. In practice **.Xdefaults** can be replaced with any file that contains resource information.

xrdb -q   Displays the current contents of the database and is therefore useful for checking what resource preference strings are defined. The contents of the Application defaults and command line options are not included.

Debugging Resources

Problems with resource management are seldom attributable to TeemTalk and are more commonly attributable to incorrect syntax or the resource file not being read by the resource manager. Resource files require 100% accuracy in specification; everything is case sensitive, the position of white space characters are critical, and non-printable characters inserted in the file causes absolute havoc. Here are a few hints:

1. Command line options will only work on plain files.
    For example:

    xteemx320.sun -fg red

    will not work because of the file type suffix (**.sun**), and all command line options will be ignored.

2. If the application name is specified as part of the resource preference string then this must be the same name by which the program is called.

3. One of the simplest tests for checking correct positioning/reading of a resource file is:

    xteemx320*title: Test-It

    which should set the window title to '**Test-It**'. If this doesn't work, nothing else will.

4. If some of the resource file works and some doesn't, then there are probably non-printable characters in the resource file.

5. Check that general resources specified for other applications are not also affecting TeemTalk. If they don't contain a specific name in the resource string then they will affect all applications.

6. There are many quirks to the X Window system. Many basic resources (e.g. foreground/background) are common to all X Applications. If it doesn't work on TeemTalk try the same resource on, for example, **xterm**.

A

Virtual Key Names

This appendix lists all the virtual key names supported by TeemTalk.

Introduction

Virtual key names enable you to include a specific key function in a user definition for key macros, soft buttons, hotspots, etc. The following sections list the virtual key names applicable to each terminal emulation mode.

Standard Virtual Key Names

Key Function	Virtual Key Name	Key Function	Virtual Key Name
Alt	VK_ALT	Keypad Add (+)	VK_ADD
Backspace	VK_BACK	Keypad Divide (/)	VK_DIVIDE
Break	VK_BREAK	Keypad Decimal (.)	VK_DECIMAL
Control	VK_CONTROL	Keypad Multiply (*)	VK_MULTIPLY
Cursor Down	VK_DOWN	Keypad Subtract (-)	VK_SUBTRACT
Cursor Left	VK_LEFT	Line Feed	VK_LINEFEED
Cursor Right	VK_RIGHT	Num Lock	VK_NUMLOCK
Cursor Up	VK_UP	Page Down	VK_NEXT
Del Key	VK_DELKEY	Page Up	VK_PRIOR
Delete	VK_DELETE	Pause	VK_PAUSE
End	VK_END	Print Screen	VK_SNAPSHOT
Escape	VK_ESCAPE	Remove	VK_REMOVE
F1 - F12	VK_F1 - VK_F12	Return	VK_RETURN
Find	VK_FIND	Scroll Lock	VK_OEM_SCROLL
Home	VK_HOME	Separator	VK_SEPARATOR
Insert	VK_INSERT	Shift	VK_SHIFT
Keypad 0 - 9	VK_NUMPAD0 - 9	Tab	VK_TAB

IBM 3270 Virtual Key Names

Key Function	Virtual Key Name	Key Function	Virtual Key Name
Attention	IB_ATTN	Home	IB_HOME
Back Tab	IB_BACKTAB	M. Slot Reader Start	IB_MSRATTRIB
Backspace	IB_BACKSPACE	M. Slot Reader Send	IB_OPIDRDR
Clear	IB_CLEAR	Mono Case	IB_MONO
Cursor Down	IB_DOWN	Next Word	IB_NEXTWORD
Cursor Left	IB_LEFT	Num Lock	IB_NUMLOCK
Cursor Right	IB_RIGHT	PA1 - PA3	IB_PA1 - IB_PA3
Cursor Select	IB_CURSORSEL	Pause	IB_PAUSE
Cursor Up	IB_UP	Play Keystrokes	IB_PLAY
Delete Character	IB_DELCHAR	Previous Word	IB_PREVWORD
Delete Word	IB_DELWORD	Print Screen	IB_PRINT
Duplicate	IB_DUP	Quit	IB_QUIT
Enter	IB_ENTER	Record Keystrokes	IB_RECORD
Erase End Of Field	IB_ERASEEOF	Reset	IB_RESET
Erase Input	IB_ERASEINPUT	Return	IB_RETURN
F1 - F24	IB_F1 - IB_F24	Rule Display	IB_RULE
Field Mark	IB_FIELDMARK	System Request	IB_SYSREQ
Selectable Field Tab	IB_FIELDTAB	Tab	IB_TAB
Insert Mode	IB_INSERT		

TeemTalk Virtual Key Name Functions

TeemTalk provides additional virtual key name functions for special tasks such as sending text to a file or the serial port, and reading text from a file to place in the keyboard buffer as if typed.

Key Function	Virtual Key Name
Start Send Text sequence	VK_FILE_O
Start Read Text sequence	VK_FILE_I
End Send/Read Text sequence	VK_FEND
Delay (*nnn* = tenths of a second)	VK_SLEEP*nnn*

Note that these virtual key names are not displayed in the dialog box lists of macro keys, they must be typed manually.

The following sections describe how to use these virtual key names.

Sending Text To A File

```
<VK_FILE_O><filename>data string<VK_FEND>
```

will write the `data string` to `filename`. If the file already exists it is replaced.

For example,

```
<VK_FILE_O><c:\file.txt>text to enter to file_013_010next
line of file<VK_FEND>
```

will create a file called **file.txt** containing the following two lines of text:

```
text to enter to file
next line of file
```

Sending Text To The Serial Port

The following command will send text to the serial port:

```
<VK_FILE_O></dev/ttyS1>text to send to serial
port_013_010next line<VK_FEND>
```

which will result in the following being sent:

```
text to send to serial port<CR><LF>
next line
```

Reading Text From A File

The following command format is used to read a string from a file and push it into the keyboard buffer as if typed:

```
<VK_FILE_I><filename>max length,retries,termination char-
acter <VK_FEND>
```

The string is terminated when the maximum length is read, or the maximum number of retries is reached, or the termination character is read. Each can be defaulted by entering 0, so entering 0,0,0 will result in a maximum length of 1024, a single retry, and a termination character of 26 (EOF). If the file does not exist an error will be displayed.

For example, the following command will read up to 20 characters, retry 5 times and end at the first <CR>:

```
<VK_FILE_I><c:\file.txt>20,5,13<VK_FEND>
```

There is normally a 100 millisecond delay between retries, however many Unix systems will round this up to one second.

Insert Delay

The following command can be used to insert a delay of *nnn* tenths of a second:

```
<VK_SLEEPnnn>
```

For example, to insert a delay of 10 seconds you would enter:

```
<VK_SLEEP100>
```

The delay can be interrupted by pressing any key.

Note that if you want characters to be processed before the delay, insert any other VK virtual key name immediately before <VK_SLEEP*nnn*>. For example:

```
123<VK_TAB><VK_SLEEP100>456
```

If you do not include the additional virtual key name, the <VK_SLEEP*nnn*> delay will be executed before any preceding characters are processed.

B

Keysyms

This appendix describes the use of virtual keysyms and lists all the valid keysyms that may be used to define the function of keys

Virtual Keysyms

The standard X translation tables may be used to redefine the function of most keys on the keyboard. However, certain keys such as **Insert** and **F4** for example cannot be redefined in this way.

To overcome this problem, OSF Motif enables you to use virtual keysyms to change the name of the keysym to be used in the translation table. Programs like **xev** are not subject to the virtual keysym translation because they are not based on OSF Motif and therefore report the keysym as normal.

The following list provides a cross-reference from actual keysym to the virtual keysym which should be used in the translation table.

Actual Keysym	Virtual Keysym	Actual Keysym	Virtual Keysym
Escape	osfCancel	Insert	osfInsert
Left	osfLeft	ShiftF8	osfAddMode
Up	osfUp	F1	osfHelp
Right	osfRight	F4	osfMenu
Down	osfDown	F7	osfEndLine
End	osfEndLine	F10	osfMenuBar
Home	osfBeginLine	Select	osfSelect
Prior	osfPageUp	KP_Enter	osfActivate
Next	osfPageDown	Clear	osfClear
BackSpace	osfBackSpace	Undo	osfUndo
Delete	osfDelete		

Keysyms & Functions

This section lists all the actual keysyms and their functions. The first column in the following tables provides an example of a legend which may be printed on the cap of a key which relates to the function performed or character displayed as described in the second column.

> *Note:* *The legend on a keycap may not necessarily indicate the actual function of that key, hence the need to be able to remap the keyboard as required.*

The second column describes a function which may be attributed to a key and the third column shows the keysym for that function.

Keysyms

KEY	FUNCTION	KEYSYM
Back Space	Back space, back character	**BackSpace**
Tab	Tab	**Tab**
Line Feed	Line Feed, LF	**Linefeed**
Clear	Clear	**Clear**
Return	Return, enter	**Return**
Pause	Pause, hold	**Pause**
Scroll Lock	Scroll lock	**Scroll_Lock**
Escape	Escape	**Escape**
Delete	Delete, rubout	**Delete**
Compose	Multi-key character compose	**Multi_key**
Home	Home cursor	**Home**
←	Move cursor left, left arrow	**Left**
↑	Move cursor up, up arrow	**Up**
→	Move cursor right, right arrow	**Right**
↓	Move cursor down, down arrow	**Down**
Previous	Prior, previous	**Prior**
Next	Next	**Next**
End	Move cursor to end of line, EOL	**End**

Keysyms

KEY	FUNCTION	KEYSYM
Begin	Move cursor to beginning of line, BOL	**Begin**
Select	Select, mark	**Select**
Print	Print	**Print**
Execute	Execute, run, do	**Execute**
Insert	Insert, insert here	**Insert**
Undo	Undo, oops	**Undo**
Redo	Redo, again	**Redo**
Menu	Menu	**Menu**
Find	Find, search	**Find**
Cancel	Cancel, abort, exit, stop	**Cancel**
Help	Help, ?	**Help**
Break	Break	**Break**
	Character set switch, mode switch	**Mode_switch**
	Alias for Mode_switch	**Script_switch**
Num Lock	Lock keypad in numeric mode	**Num_Lock**
	Keypad space	**KP_Space**
Tab	Keypad Tab	**KP_Tab**
Enter	Keypad Enter	**KP_Enter**
F1	Keypad F1, PF1, a	**KP_F1**
F2	Keypad F2, PF2, b	**KP_F2**
F3	Keypad F3, PF3, c	**KP_F3**
F4	Keypad F4, PF4, d	**KP_F4**
=	Keypad equals sign	**KP_Equal**
*	Keypad multiplication sign, asterisk	**KP_Multiply**
+	Keypad plus sign	**KP_Add**
,	Keypad separator, comma	**KP_Separator**
-	Keypad minus sign, hyphen	**KP_Subtract**
.	Keypad decimal point, period	**KP_Decimal**
/	Keypad division sign, solidus	**KP_Divide**

Keysyms

KEY	FUNCTION	KEYSYM
0	Keypad 0	**KP_0**
1	Keypad 1	**KP_1**
2	Keypad 2	**KP_2**
3	Keypad 3	**KP_3**
4	Keypad 4	**KP_4**
5	Keypad 5	**KP_5**
6	Keypad 6	**KP_6**
7	Keypad 7	**KP_7**
8	Keypad 8	**KP_8**
9	Keypad 9	**KP_9**
F1	Function key 1	**F1**
F2	Function key 2	**F2**
F3	Function key 3	**F3**
F4	Function key 4	**F4**
F5	Function key 5	**F5**
F6	Function key 6	**F6**
F7	Function key 7	**F7**
F8	Function key 8	**F8**
F9	Function key 9	**F9**
F10	Function key 10	**F10**
F11	Function key 11	**F11**
F12	Function key 12	**F12**
F13	Function key 13	**F13**
F14	Function key 14	**F14**
F15	Function key 15	**F15**
F16	Function key 16	**F16**
F17	Function key 17	**F17**
F18	Function key 18	**F18**
F19	Function key 19	**F19**

Keysyms

KEY	FUNCTION	KEYSYM
F20	Function key 20	**F20**
F21	Function key 21	**F21**
F22	Function key 22	**F22**
F23	Function key 23	**F23**
F24	Function key 24	**F24**
F25	Function key 25	**F25**
F26	Function key 26	**F26**
F27	Function key 27	**F27**
F28	Function key 28	**F28**
F29	Function key 29	**F29**
F30	Function key 30	**F30**
F31	Function key 31	**F31**
F32	Function key 32	**F32**
F33	Function key 33	**F33**
F34	Function key 34	**F34**
F35	Function key 35	**F35**
	Left function key 1 (F11 equivalent)	**L1**
	Left function key 2 (F12 equivalent)	**L2**
	Left function key 3 (F13 equivalent)	**L3**
	Left function key 4 (F14 equivalent)	**L4**
	Left function key 5 (F15 equivalent)	**L5**
	Left function key 6 (F16 equivalent)	**L6**
	Left function key 7 (F17 equivalent)	**L7**
	Left function key 8 (F18 equivalent)	**L8**
	Left function key 9 (F19 equivalent)	**L9**
	Left function key 10 (F20 equivalent)	**L10**
	Right function key 1 (F21 equivalent)	**R1**
	Right function key 2 (F22 equivalent)	**R2**
	Right function key 3 (F23 equivalent)	**R3**

Keysyms

KEY	FUNCTION	KEYSYM
	Right function key 4 (F24 equivalent)	**R4**
	Right function key 5 (F25 equivalent)	**R5**
	Right function key 6 (F26 equivalent)	**R6**
	Right function key 7 (F27 equivalent)	**R7**
	Right function key 8 (F28 equivalent)	**R8**
	Right function key 9 (F29 equivalent)	**R9**
	Right function key 10 (F30 equivalent)	**R10**
	Right function key 11 (F31 equivalent)	**R11**
	Right function key 12 (F32 equivalent)	**R12**
	Right function key 13 (F33 equivalent)	**R13**
	Right function key 14 (F34 equivalent)	**R14**
	Right function key 15 (F35 equivalent)	**R15**
Shift	Left Shift	**Shift_L**
Shift	Right Shift	**Shift_R**
Ctrl	Left Control	**Control_L**
Ctrl	Right Control	**Control_R**
Caps Lock	Caps Lock	**Caps_Lock**
Shift Lock	Shift Lock	**Shift_Lock**
Meta	Left Meta	**Meta_L**
Meta	Right Meta	**Meta_R**
Alt	Left Alt	**Alt_L**
Alt	Right Alt	**Alt_R**
	Left Super	**Super_L**
	Right Super	**Super_R**
	Left Hyper	**Hyper_L**
	Right Hyper	**Hyper_R**
	Space	**space**
!	Exclamation mark	**exclam**
"	Double quotation mark	**quotedbl**

Keysyms

KEY	FUNCTION	KEYSYM
#	Number sign	**numbersign**
$	Dollar sign	**dollar**
%	Percent sign	**percent**
&	Ampersand	**ampersand**
'	Apostrophe	**qouteright**
(	Left parenthesis	**parenleft**
)	Right parenthesis	**parenright**
*	Asterisk	**asterisk**
+	Plus sign	**plus**
,	Comma	**comma**
-	Hyphen, minus sign	**minus**
.	Full stop	**period**
/	Solidus	**slash**
0	Zero	**0**
1	One	**1**
2	Two	**2**
3	Three	**3**
4	Four	**4**
5	Five	**5**
6	Six	**6**
7	Seven	**7**
8	Eight	**8**
9	Nine	**9**
:	Colon	**colon**
;	Semicolon	**semicolon**
<	Less than sign	**less**
=	Equals sign	**equal**
>	Greater than sign	**greater**
?	Question mark	**question**

Keysyms

KEY	FUNCTION	KEYSYM
@	Commercial at	**at**
A	Uppercase A	**A**
B	Uppercase B	**B**
C	Uppercase C	**C**
D	Uppercase D	**D**
E	Uppercase E	**E**
F	Uppercase F	**F**
G	Uppercase G	**G**
H	Uppercase H	**H**
I	Uppercase I	**I**
J	Uppercase J	**J**
K	Uppercase K	**K**
L	Uppercase L	**L**
M	Uppercase M	**M**
N	Uppercase N	**N**
O	Uppercase O	**O**
P	Uppercase P	**P**
Q	Uppercase Q	**Q**
R	Uppercase R	**R**
S	Uppercase S	**S**
T	Uppercase T	**T**
U	Uppercase U	**U**
V	Uppercase V	**V**
W	Uppercase W	**W**
X	Uppercase X	**X**
Y	Uppercase Y	**Y**
Z	Uppercase Z	**Z**
[	Left square bracket	**bracketleft**
\	Back slash	**backslash**

Keysyms

KEY	FUNCTION	KEYSYM
]	Right square bracket	**bracketright**
^	Circumflex accent	**asciicircum**
_	Low line	**underscore**
`	Grave accent	**quoteleft**
a	Lowercase a	**a**
b	Lowercase b	**b**
c	Lowercase c	**c**
d	Lowercase d	**d**
e	Lowercase e	**e**
f	Lowercase f	**f**
g	Lowercase g	**g**
h	Lowercase h	**h**
i	Lowercase i	**i**
j	Lowercase j	**j**
k	Lowercase k	**k**
l	Lowercase l	**l**
m	Lowercase m	**m**
n	Lowercase n	**n**
o	Lowercase o	**o**
p	Lowercase p	**p**
q	Lowercase q	**q**
r	Lowercase r	**r**
s	Lowercase s	**s**
t	Lowercase t	**t**
u	Lowercase u	**u**
v	Lowercase v	**v**
w	Lowercase w	**w**
x	Lowercase x	**x**
y	Lowercase y	**y**

Keysyms

KEY	FUNCTION	KEYSYM
z	Lowercase z	**z**
{	Left brace	**braceleft**
|	Vertical line	**bar**
}	Right brace	**braceright**
~	Tilde	**asciitilde**
	No-break space	**nobreakspace**
¡	Inverted exclamation mark	**exclamdown**
¢	Cent sign	**cent**
£	Pound sign	**sterling**
¤	Currency sign	**currency**
¥	Yen sign	**yen**
¦	Broken vertical bar	**brokenbar**
§	Paragraph sign, section sign	**section**
¨	Diaeresis	**diaeresis**
©	Copyright sign	**copyright**
ª	Feminine ordinal indicator	**ordfeminine**
«	Left angle quotation mark	**guillemotleft**
¬	Not sign	**notsign**
-	Short horizontal hyphen	**hyphen**
®	Registered trademark sign	**registered**
¯	Macron	**macron**
°	Degree sign, ring above	**degree**
±	Plus/minus sign	**plusminus**
²	Superscript 2	**twosuperior**
³	Superscript 3	**threesuperior**
´	Acute accent	**acute**
µ	Micro sign	**mu**
¶	Pilcrow sign	**paragraph**
·	Middle dot	**periodcentered**

Keysyms

KEY	FUNCTION	KEYSYM
¸	Cedilla	**cedilla**
¹	Superscript 1	**onesuperior**
º	Masculine ordinal indicator	**masculine**
»	Right angle quotation mark	**guillemotright**
¼	Vulgar fraction one quarter	**onequarter**
½	Vulgar fraction one half	**onehalf**
¾	Vulgar fraction three quarters	**threequarters**
¿	Inverted question mark	**questiondown**
À	Uppercase A with grave accent	**Agrave**
Á	Uppercase A with acute accent	**Aacute**
Â	Uppercase A with circumflex accent	**Acircumflex**
Ã	Uppercase A with tilde	**Atilde**
Ä	Uppercase A with diaeresis	**Adiaeresis**
Å	Uppercase A with ring above	**Aring**
Æ	Uppercase diphthong AE	**AE**
Ç	Uppercase C with cedilla	**Ccedilla**
È	Uppercase E with grave accent	**Egrave**
É	Uppercase E with acute accent	**Eacute**
Ê	Uppercase E with circumflex accent	**Ecircumflex**
Ë	Uppercase E with diaeresis	**Ediaeresis**
Ì	Uppercase I with grave accent	**Igrave**
Í	Uppercase I with acute accent	**Iacute**
Î	Uppercase I with circumflex accent	**Icircumflex**
Ï	Uppercase I with diaeresis	**Idiaeresis**
Ð	Uppercase Icelandic eth	**Eth**
Ñ	Uppercase N with tilde	**Ntilde**
Ò	Uppercase O with grave accent	**Ograve**
Ó	Uppercase O with acute accent	**Oacute**
Ô	Uppercase O with circumflex accent	**Ocircumflex**

Keysyms

KEY	FUNCTION	KEYSYM
Õ	Uppercase O with tilde	**Otilde**
Ö	Uppercase O with diaeresis	**Odiaeresis**
×	Multiplication sign	**multiply**
Ø	Uppercase O with oblique stroke	**Ooblique**
Ù	Uppercase U with grave accent	**Ugrave**
Ú	Uppercase U with acute accent	**Uacute**
Û	Uppercase U with circumflex accent	**Ucircumflex**
Ü	Uppercase U with diaeresis	**Udiaeresis**
Ý	Uppercase Y with acute accent	**Yacute**
Þ	Uppercase Icelandic thorn	**Thorn**
ß	German small sharp s	**ssharp**
à	Lowercase a with grave accent	**agrave**
á	Lowercase a with acute accent	**aacute**
â	Lowercase a with circumflex accent	**acircumflex**
ã	Lowercase a with tilde	**atilde**
ä	Lowercase a with diaeresis	**adiaeresis**
å	Lowercase a with ring above	**aring**
æ	Lowercase diphthong ae	**ae**
ç	Lowercase c with cedilla	**ccedilla**
è	Lowercase e with grave accent	**egrave**
é	Lowercase e with acute accent	**eacute**
ê	Lowercase e with circumflex accent	**ecircumflex**
ë	Lowercase e with diaeresis	**ediaeresis**
ì	Lowercase i with grave accent	**igrave**
í	Lowercase i with acute accent	**iacute**
î	Lowercase i with circumflex accent	**icircumflex**
ï	Lowercase i with diaeresis	**idiaeresis**
ð	Lowercase Icelandic eth	**eth**
ñ	Lowercase n with tilde	**ntilde**

Keysyms

KEY	FUNCTION	KEYSYM
ò	Lowercase o with grave accent	**ograve**
ó	Lowercase o with acute accent	**oacute**
ô	Lowercase o with circumflex accent	**ocircumflex**
õ	Lowercase o with tilde	**otilde**
ö	Lowercase o with diaeresis	**odiaeresis**
÷	Division sign	**division**
ø	Lowercase o with oblique stroke	**oslash**
ù	Lowercase u with grave accent	**ugrave**
ú	Lowercase u with acute accent	**uacute**
û	Lowercase u with circumflex accent	**ucircumflex**
ü	Lowercase u with diaeresis	**udiaeresis**
ý	Lowercase y with acute accent	**yacute**
þ	Lowercase Icelandic thorn	**thorn**
ÿ	Lowercase y with diaeresis	**ydiaeresis**

Notes

C

Key Reference Numbers

This appendix lists the reference numbers assigned to keys on the British keyboard.

National 8-bit Key Reference Numbers

KEY	NORMAL	SHIFT
£	163	n/a
ß	223	n/a
À	224	192
Á	225	193
Â	226	194
Ã	227	195
Ä	228	196
Å	229	197
Æ	230	198
Ç	231	199
È	232	200
É	233	201
Ê	234	202
Ë	235	203
Ì	236	204
Í	237	205

KEY	NORMAL	SHIFT
Î	244	212
Ï	245	213
Ñ	238	206
Ò	239	207
Ó	241	209
Ô	242	210
Õ	243	211
Ö	246	214
Œ	247	215
Ø	248	216
Ù	249	217
Ú	250	218
Û	251	219
Ü	252	220
Ÿ	253	221

British Keyboard Key Reference Numbers

KEY	NORMAL	SHIFT	CTRL	CT+SH
COMPOSE	-166	-166	-166	-166
DELETE	127	-34	-35	-36
DO	-232	-234	-236	-238
ENTER	-68	-82	-96	-110
ESCAPE	27	-37	-38	-39
FIND	-255	-261	-267	-273
HELP	-231	-233	-235	-237
INSERT HERE	-256	-262	-268	-274
NEXT	-260	-266	-272	-278
PREVIOUS	-259	-265	-271	-277
REMOVE	-257	-263	-269	-275
RETURN	13	-49	-50	-51
SELECT	-258	-264	-270	-276
SPACE	32	-52	-53	-54
TAB	9	-46	-47	-48
PF1	-239	-243	-247	-251
PF2	-240	-244	-248	-252
PF3	-241	-245	-249	-253
PF4	-242	-246	-250	-254
Keypad 0	-55	-69	-83	-97
Keypad 1	-56	-70	-84	-98
Keypad 2	-57	-71	-85	-99
Keypad 3	-58	-72	-86	-100
Keypad 4	-59	-73	-87	-101
Keypad 5	-60	-74	-88	-102
Keypad 6	-61	-75	-89	-103
Keypad 7	-62	-76	-90	-104
Keypad 8	-63	-77	-91	-105
Keypad 9	-64	-78	-92	-106
Keypad .	-65	-79	-93	-107
Keypad +	43	43	43	43
Keypad ,	-66	-80	-94	-108
Keypad -	-67	-81	-95	-109

British Keyboard Key Reference Numbers

KEY	NORMAL	SHIFT	CTRL	CT+SH
→	-135	-139	-143	-147
↑	-136	-140	-144	-148
←	-137	-141	-145	-149
↓	-138	-142	-146	-150
F6	128	136	-2	-10
F7	129	137	-3	-11
F8	130	138	-4	-12
F9	131	139	-5	-13
F10	132	140	-6	-14
F11	133	141	-7	-15
F12	134	142	-8	-16
F13	135	143	-9	-17
F14	144	151	-18	-25
F17	145	152	-19	-26
F18	146	153	-20	-27
F19	147	154	-21	-28
F20	148	155	-22	-29
0	48	41	n/a	n/a
1	49	33	n/a	n/a
2	50	34	0	0
3	51	35	27	27
4	52	36	28	28
5	53	37	29	29
6	54	94	30	30
7	55	38	31	31
8	56	42	127	127
9	57	40	n/a	n/a
\	35	126	28	28
' "	39	64	39	64
, <	44	60	44	60
-	45	95	n/a	n/a
. >	46	62	46	62

British Keyboard Key Reference Numbers

KEY	NORMAL	SHIFT	CTRL	CT+SH
/	47	63	31	31
; :	59	58	59	58
=	61	43	n/a	n/a
[	91	123	27	27
]	93	125	29	29
` ~	96	126	30	30
A	97	65	1	1
B	98	66	2	2
C	99	67	3	3
D	100	68	4	4
E	101	69	5	5
F	102	70	6	6
G	103	71	7	7
H	104	72	8	8
I	105	73	9	9
J	106	74	10	10
K	107	75	11	11
L	108	76	12	12
M	109	77	13	13
N	110	78	14	14
O	111	79	15	15
P	112	80	16	16
Q	113	81	17	17
R	114	82	18	18
S	115	83	19	19
T	116	84	20	20
U	117	85	21	21
V	118	86	22	22
W	119	87	23	23
X	120	88	24	24
Y	121	89	25	25
Z	122	90	26	26

D

Character Sets

This appendix shows the tables of characters that are supported by TeemTalk.

Introduction

Each character set consists of a series of control characters and displayable characters. Displayable characters are alphanumeric, symbolic or graphic characters that can be displayed on the screen or printed by a hardcopy device. Control characters enable the terminal emulation or the printer to perform specific tasks, such as a line feed or carriage return. These will be actioned when received from the host or when TeemTalk is in local mode and they are entered using the keyboard.

To enter a control character from the keyboard, first find the displayable character equivalent by adding 64 to the decimal value of the control character in the relevant character set table. For example, the control character **CR** (carriage return) has a decimal value of 13. Adding 64 makes 77 which is the decimal value of the displayable character **M**. When the **Ctrl** (control) key is held down and **Shift** + **M** is pressed (or **M** alone if Caps Lock is on), this will generate a **CR** code when in local mode.

Some setup options require you to specify one or more control characters. A control character is specified by typing **^** to represent the **Ctrl** key, immediately followed by the displayable character equivalent of the control character as described in the previous paragraph. So **^M**, represents **Ctrl** + **M**, which generates the control character **CR**.

IBM 3270 ENGLISH (U.S.), CANADIAN BILINGUAL & NETHERLANDS CHARACTER SET

HEX	4-	5-	6-	7-	8-	9-	A-	B-	C-	D-	E-	F-
-0	SP	&	-	ø	Ø	°	µ	^	{	}	\	0
-1	RSP	é	/	É	a	j	~	£	A	J	÷	1
-2	â	ê	Â	Ê	b	k	s	¥	B	K	S	2
-3	ä	ë	Ä	Ë	c	l	t	·	C	L	T	3
-4	à	è	À	È	d	m	u	©	D	M	U	4
-5	á	í	Á	Í	e	n	v	§	E	N	V	5
-6	ã	î	Ã	Î	f	o	w	¶	F	O	W	6
-7	å	ï	Å	Ï	g	p	x	¼	G	P	X	7
-8	ç	ì	Ç	Ì	h	q	y	½	H	Q	Y	8
-9	ñ	ß	Ñ	`	i	r	z	¾	I	R	Z	9
-A	¢	!	¦	:	«	ª	¡	[	S̄HY	¹	²	³
-B	.	$	,	#	»	º	¿	]	ô	û	Ô	Û
-C	<	*	%	@	ð	æ	Đ	‾	ö	ü	Ö	Ü
-D	(	)	_	´	ý	¸	Ý	¨	ò	ù	Ò	Ù
-E	+	;	>	=	þ	Æ	þ	´	ó	ú	Ó	Ú
-F			¬	?	"	±	¤	®	×	õ	ÿ	Õ	■

Legend: **RSP** required space, **SHY** syllable hyphen, **SP** space.

**IBM 3270
ENGLISH (U.K.) CHARACTER SET**

HEX	4-	5-	6-	7-	8-	9-	A-	B-	C-	D-	E-	F-
-0	SP	&	-	ø	Ø	°	µ	¢	{	}	\	0
-1	RSP	é	/	É	a	j	-	[	A	J	÷	1
-2	â	ê	Â	Ê	b	k	s	¥	B	K	S	2
-3	ä	ë	Ä	Ë	c	l	t	·	C	L	T	3
-4	à	è	À	È	d	m	u	©	D	M	U	4
-5	á	í	Á	Í	e	n	v	§	E	N	V	5
-6	ã	î	Ã	Î	f	o	w	¶	F	O	W	6
-7	å	ï	Å	Ï	g	p	x	¼	G	P	X	7
-8	ç	ì	Ç	Ì	h	q	y	½	H	Q	Y	8
-9	ñ	ß	Ñ	`	i	r	z	¾	I	R	Z	9
-A	$	!	¦	:	«	ª	¡	^	S̄HY	¹	²	³
-B	.	£	,	#	»	º	¿	]	ô	û	Ô	Û
-C	<	*	%	@	ð	æ	Đ	~	ö	ü	Ö	Ü
-D	(	)	_	´	ý	¸	Ý	¨	ò	ù	Ò	Ù
-E	+	;	>	=	þ	Æ	Þ	´	ó	ú	Ó	Ú
-F			¬	?	"	±	¤	®	×	õ	ÿ	Õ	■

Legend: **RSP** required space, **SHY** syllable hyphen, **SP** space.

IBM 3270
DANISH & NORWEGIAN CHARACTER SET

HEX	4-	5-	6-	7-	8-	9-	A-	B-	C-	D-	E-	F-
-0	SP	&	-	¦	@	°	µ	¢	æ	å	\	0
-1	RSP	é	/	É	a	j	ü	£	A	J	÷	1
-2	â	ê	Â	Ê	b	k	s	¥	B	K	S	2
-3	ä	ë	Ä	Ë	c	l	t	·	C	L	T	3
-4	à	è	À	È	d	m	u	©	D	M	U	4
-5	á	í	Á	Í	e	n	v	§	E	N	V	5
-6	ã	î	Ã	Î	f	o	w	¶	F	O	W	6
-7	}	ï	$	Ï	g	p	x	¼	G	P	X	7
-8	ç	ì	Ç	Ì	h	q	y	½	H	Q	Y	8
-9	ñ	ß	Ñ	`	i	r	z	¾	I	R	Z	9
-A	#	¤	ø	:	«	^{a}	¡	¬	S̄HY	^{1}	^{2}	^{3}
-B	.	Å	,	Æ	»	^{o}	¿	¦	ô	û	Ô	Û
-C	<	*	%	Ø	ð	{	Đ	¯	ö	ü	Ö	Ü
-D	(	)	_	´	ý	¸	Ý	¨	ò	ù	Ò	Ù
-E	+	;	>	=	þ	[	Þ	´	ó	ú	Ó	Ú
-F	!	^	?	"	±	]	®	×	õ	ÿ	Õ	

Legend: **RSP** required space, **SHY** syllable hyphen, **SP** space.

IBM 3270
FRENCH CHARACTER SET

HEX	4-	5-	6-	7-	8-	9-	A-	B-	C-	D-	E-	F-
-0	SP	&	-	ø	Ø	[	`	¢	é	è	ç	0
-1	RSP	{	/	É	a	j	¨	#	A	J	÷	1
-2	â	ê	Â	Ê	b	k	s	¥	B	K	S	2
-3	ä	ë	Ä	Ë	c	l	t	·	C	L	T	3
-4	@	}	À	È	d	m	u	©	D	M	U	4
-5	á	í	Á	Í	e	n	v	]	E	N	V	5
-6	ã	î	Ã	Î	f	o	w	¶	F	O	W	6
-7	å	ï	Å	Ï	g	p	x	¼	G	P	X	7
-8	\	ì	Ç	Ì	h	q	y	½	H	Q	Y	8
-9	ñ	ß	Ñ	µ	i	r	z	¾	I	R	Z	9
-A	°	§	ù	:	«	ª	¡	¬	SHY	¹	²	³
-B	.	$	,	£	»	º	¿	|	ô	û	Ô	Û
-C	<	*	%	à	ð	æ	Ð	¯	ö	ü	Ö	Ü
-D	(	)	_	´	ý	¸	Ý	~	ò	¦	Ò	Ù
-E	+	;	>	=	þ	Æ	þ	´	ó	ú	Ó	Ú
-F	!	^	?	"	±	¤	®	×	õ	ÿ	Õ	■

Legend: **RSP** required space, **SHY** syllable hyphen, **SP** space.

IBM 3270
GERMAN & AUSTRIAN CHARACTER SET

HEX	4-	5-	6-	7-	8-	9-	A-	B-	C-	D-	E-	F-
-0	SP	&	-	ø	Ø	°	µ	¢	ä	ü	Ö	0
-1	RSP	é	/	É	a	j	ß	£	A	J	÷	1
-2	â	ê	Â	Ê	b	k	s	¥	B	K	S	2
-3	{	ë	[	Ë	c	l	t	·	C	L	T	3
-4	à	è	À	È	d	m	u	©	D	M	U	4
-5	á	í	Á	Í	e	n	v	@	E	N	V	5
-6	ã	î	Ã	Î	f	o	w	¶	F	O	W	6
-7	å	ï	Å	Ï	g	p	x	¼	G	P	X	7
-8	ç	ì	Ç	Ì	h	q	y	½	H	Q	Y	8
-9	ñ	~	Ñ	`	i	r	z	¾	I	R	Z	9
-A	Ä	Ü	ö	:	«	ª	¡	¬	SHY	^{1}	^{2}	^{3}
-B	.	$	,	#	»	º	¿	¦	ô	û	Ô	Û
-C	<	*	%	§	ð	æ	Ð	—	¦	}	\	]
-D	(	)	_	´	ý	¸	Ý	¨	ò	ù	Ò	Ù
-E	+	;	>	=	þ	Æ	þ	´	ó	ú	Ó	Ú
-F	!	^	?	"	±	¤	®	×	õ	ÿ	Õ	

Legend: **RSP** required space, **SHY** syllable hyphen, **SP** space.

IBM 3270
ITALIAN CHARACTER SET

HEX	4-	5-	6-	7-	8-	9-	A-	B-	C-	D-	E-	F-
-0	SP	&	-	ø	Ø	[	µ	¢	à	è	ç	0
-1	RSP	]	/	É	a	j	ì	#	A	J	÷	1
-2	â	ê	Â	Ê	b	k	s	¥	B	K	S	2
-3	ä	ë	Ä	Ë	c	l	t	·	C	L	T	3
-4	{	}	À	È	d	m	u	©	D	M	U	4
-5	á	í	Á	Í	e	n	v	@	E	N	V	5
-6	ã	î	Ã	Î	f	o	w	¶	F	O	W	6
-7	å	ï	Å	Ï	g	p	x	¼	G	P	X	7
-8	\	~	Ç	Ì	h	q	y	½	H	Q	Y	8
-9	ñ	ß	Ñ	ù	i	r	z	¾	I	R	Z	9
-A	°	é	ò	:	«	ª	¡	¬	SHY	¹	²	³
-B	.	$	,	£	»	º	¿	¦	ô	û	Ô	Û
-C	<	*	%	§	ð	æ	Ð	—	ö	ü	Ö	Ü
-D	(	)	_	´	ý	¸	Ý	¨	¦	`	Ò	Ù
-E	+	;	>	=	þ	Æ	Þ	´	ó	ú	Ó	Ú
-F	!	^	?	"	±	¤	®	×	õ	ÿ	Õ	█

Legend: **RSP** required space, **SHY** syllable hyphen, **SP** space.

IBM 3270
SPANISH CHARACTER SET

HEX	4-	5-	6-	7-	8-	9-	A-	B-	C-	D-	E-	F-
-0	SP	&	-	ø	Ø	°	µ	¢	{	}	\	0
-1	RSP	é	/	É	a	j	¨	£	A	J	÷	1
-2	â	ê	Â	Ê	b	k	s	¥	B	K	S	2
-3	ä	ë	Ä	Ë	c	l	t	·	C	L	T	3
-4	à	è	À	È	d	m	u	©	D	M	U	4
-5	á	í	Á	Í	e	n	v	§	E	N	V	5
-6	ã	î	Ã	Î	f	o	w	¶	F	O	W	6
-7	å	ï	Å	Ï	g	p	x	$^1/_4$	G	P	X	7
-8	ç	ì	Ç	Ì	h	q	y	$^1/_2$	H	Q	Y	8
-9	¦	ß	#	`	i	r	z	$^3/_4$	I	R	Z	9
-A	[	]	ñ	:	«	^{a}	¡	^	S̄HY	^{1}	^{2}	^{3}
-B	.	$	,	Ñ	»	^{o}	¿	!	ô	û	Ô	Û
-C	<	*	%	@	ð	æ	Đ	¬	ö	ü	Ö	Ü
-D	(	)	_	´	ý	¸	Ý	~	ò	ù	Ò	Ù
-E	+	;	>	=	þ	Æ	þ	´	ó	ú	Ó	Ú
-F			¬	?	"	±	¤	®	×	õ	ÿ	Õ	■

Legend: **RSP** required space, **SHY** syllable hyphen, **SP** space.

IBM 3270
SWEDISH & FINNISH CHARACTER SET

HEX	4-	5-	6-	7-	8-	9-	A-	B-	C-	D-	E-	F-
-0	SP	&	-	ø	Ø	°	µ	¢	ä	å	É	0
-1	RSP	`	/	\	a	j	ü	£	A	J	÷	1
-2	â	ê	Â	Ê	b	k	s	¥	B	K	S	2
-3	{	ë	#	Ë	c	l	t	·	C	L	T	3
-4	à	è	À	È	d	m	u	©	D	M	U	4
-5	á	í	Á	Í	e	n	v	[	E	N	V	5
-6	ã	î	Ã	Î	f	o	w	¶	F	O	W	6
-7	}	ï	$	Ï	g	p	x	¼	G	P	X	7
-8	ç	ì	Ç	Ì	h	q	y	½	H	Q	Y	8
-9	ñ	ß	Ñ	é	i	r	z	¾	I	R	Z	9
-A	§	¤	ö	:	«	ª	¡	¬	SHY	¹	²	³
-B	.	Å	,	Ä	»	º	¿	¦	ô	û	Ô	Û
-C	<	*	%	Ö	ð	æ	Ð	—	¦	~	@	Ü
-D	(	)	_	´	ý	¸	Ý	¨	ò	ù	Ò	Ù
-E	+	;	>	=	þ	Æ	þ	´	ó	ú	Ó	Ú
-F	!	^	?	"	±	]	®	×	õ	ÿ	Õ	

Legend: **RSP** required space, **SHY** syllable hyphen, **SP** space.

IBM 3270 BELGIAN &
SWISS-FRENCH/GERMAN CHARACTER SET

HEX	4-	5-	6-	7-	8-	9-	A-	B-	C-	D-	E-	F-
-0	SP	&	-	ø	Ø	°	µ	¢	{	}	\	0
-1	RSP	é	/	É	a	j	~	£	A	J	÷	1
-2	â	ê	Â	Ê	b	k	s	¥	B	K	S	2
-3	ä	ë	Ä	Ë	c	l	t	·	C	L	T	3
-4	à	è	À	È	d	m	u	©	D	M	U	4
-5	á	í	Á	Í	e	n	v	§	E	N	V	5
-6	ã	î	Ã	Î	f	o	w	¶	F	O	W	6
-7	å	ï	Å	Ï	g	p	x	¼	G	P	X	7
-8	ç	ì	Ç	Ì	h	q	y	½	H	Q	Y	8
-9	ñ	ß	Ñ	`	i	r	z	¾	I	R	Z	9
-A	[	]	¦	:	«	ª	¡	¬	SHY	¹	²	³
-B	.	$	,	#	»	º	¿	|	ô	û	Ô	Û
-C	<	*	%	@	ð	æ	Đ	¯	ö	ü	Ö	Ü
-D	(	)	_	´	ý	¸	Ý	¨	ò	ù	Ò	Ù
-E	+	;	>	=	þ	Æ	þ	´	ó	ú	Ó	Ú
-F	!	^	?	"	±	¤	®	×	õ	ÿ	Õ	■

Legend: **RSP** required space, **SHY** syllable hyphen, **SP** space.

E

Product Specification

This appendix describes the level of support provided by each terminal emulation.

Introduction

The following sections describe the level of support provided by each terminal emulation throughout the product range. Note that your product version may not support all the terminal emulations listed here.

General

Limitations:

Key click not supported.

Badge and Magnetic Card reader support are supported via 'Wedged' data devices connected to the unit's keyboard.

No downloadable program module.

The keyboard layouts may differ but substantially provide the same capabilities as the native terminal.

No screensavers.

File Transfer protocols not supported on embedded products / thin clients.

API's not supported on embedded products / thin clients.

Smooth Scroll and Variable Scroll rates not supported.

No graphics or APA graphics.

Telnet

Specification:

Implements RFC 854, 855, 856, 857, 858, 860, 1091, 1408, 1571, 1572.

Implements RFC 1205, 2877 for IBM 5250.

Implements RFC 2355, 1576, 1646, 1647 for IBM 3270.

AixTerm

Limitations:

No Vertical tab stops.

No Select Alternate presentation variant.

No Select reversed string.

No Select font in graphic rendition.

No Virtual terminal commands.

No Set curses fix.

No Page scroll.

No Alternate screen buffer.

No Xwindows capabilities.

Bull BQ3107/7107

Specification:

Reference manual Bull Questar 310, Terminal BQ 3107
(82 A2 78ST REV0. February 1990).

Limitations:

Remote and Line printing are not supported.

Data General D200/D410

Specification:

Dasher D410 Display Terminals User's Manual
(014-000761-02 December 1983).

Digital VT Emulation

Specification:

Digital VT 420 Programmer's Manual
(EK-VT420-RM-001).

Limitations:

The DEC Multisession and SSU protocols are not implemented.

HP 700/92 Emulation

Specification:

HP 2392A Reference Guide (02394-90001. April 1984).

IBM 3270 Emulation

Specification:

3270 Information Display System Data Stream Programmer's Reference
(GA23-0059-07).

Limitations:

No Right to Left writing mode.

No double-byte support.

IBM 5250 Emulation

Specification:

5494 Remote Control Unit Functions Reference. Release 2.0. (SC30-3533-02).

Limitations:

No Right to Left writing mode.

No double-byte support.

The 3812-1 Non Host Print Transform (Non-HPT) print protocol is not supported.

No Calculator / Hex key.

No Password encryption.

No Auxillary port support.

No Control Unit customisation.

The specification is also defined by the 5250 Device Capabilities report Bytes 0 thru 5 which are 0x7f,0x11,0x4e,0x00,0x03,0x80 for Display Sessions.

IBM 3151 Native Emulation Model 11 & 31

Specification:

IBM 3151 Ascii Display Station Reference Manual (GA18-2634-01. 1989).

ICL 7561

Specification:

ICL DRS300 manual (R15722/001 Appendix 1 September 1986).

Limitations:

Some field validation checks are not supported.

Load templates are not supported.

Host print protocol is not supported.

Stratus V102

Specification:

V102 Display Terminal Operator's Manual (TVI 131974-00 June 1985).

Limitations:

Page print flip mode not supported.

Serial configuration commands not supported.

Select character set commands not supported.

Tandem 6526/6530 Emulation

Specification:

Tandem 653x Multi-Page Terminal Programmer's Guide
(82310-B00 December 1983).

Limitations:

Telnet Line-Mode is not supported.

Ansi media copy commands are not supported.

No support for auxiliary port.

No support for extended buffer and cursor commands.

String configuration, machine and directory commands not supported.

Data table re-definition commands not supported.

Remote termination not supported.

I/O device and file commands not supported.

Set colour configuration commands not supported.

Televideo 955

Specification:

Televideo 955 Display Terminal Operator's Manual (131969-00-B Sept 1985).

Limitations:

Page print flip mode not supported.

Serial configuration commands not supported.

Select character set commands not supported.

Unisys T27

Specification:

Burroughs T27 Programmer's Reference Manual (1196904 Aug 1986).

Limitations:

Print protocol, printer sessions and auxiliary i/o are not supported.

Some local-only keyboard ctrl and esc commands are not supported.

Data sharing and scratchpad functions are not supported.

Wyse 60 Native Emulation

Specification:

WY-60 Programmer's Guide (880261-01 Rev A).

Limitations:

Only 16 colours supported, not 64.

Some colour commands are not supported.

No page edit mode.

Modem and aux port commands not supported.

No Keyboard scan code mode.

Character cell size commands not supported.

Function key label save commands not supported.

Automatic font loading not supported.

Remote caps lock commands not supported.

Ignore nulls commands not supported.

Attribute overwrite mode not supported.

Disable intensity commands not supported.

Some select personality commands not supported.

Wyseword mode not supported.

Wyse 50, 50+, TVI 910, 925, 950, ADDS-A2, HZ 1500, Wyse PC-Term

Specification:

WY355/ES Reference Manual (883227-01 Rev. A).

Limitations:

All modes:

As Wyse 60 above where applicable.

TVI modes:

Select Print / Line termination characters.

Wyse PC-Term:

Default unit command not supported.

Program key with direction not supported.

Set print terminators not supported.

Define delimiters not supported.

Notes

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