



Blues Mobile

06

User Manual

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Introduction

Blues Mobile 06 is a fully featured .NET application designed to run on mobile devices that support the Microsoft .NET compact framework. We took our Blues 2004 .net product and redesigned it to run under as a mobile application.

Blues Mobile 06 provides an eloquent graphical user interface for IBM 3270 and IBM 5250 terminal emulation.

Connection to the foreign host is done over the TCP/IP protocol with TN3270 and TN5250 support. A variety of terminal device types are supported.

Macro functionality lets you record sequences of screen activities and then assign them to keystrokes, toolbar buttons, or mouse clicks.

Installation

Blues Mobile 06 is installed from a PC running one of the Microsoft Windows operating systems with a mobile device cradled. The installation program automatically installs the product onto the mobile device through the use of the Microsoft ActiveSync application. Manual mobile device installation can alternately be done by copying the installed Cab file to the mobile device and then starting the cab file from the mobile device.

Once the installation has been completed, a new program icon will appear under the Start/Run command on the mobile device.

Installation Requirements

To be able to install and run Blues Mobile 06, the following software components must be previously installed:

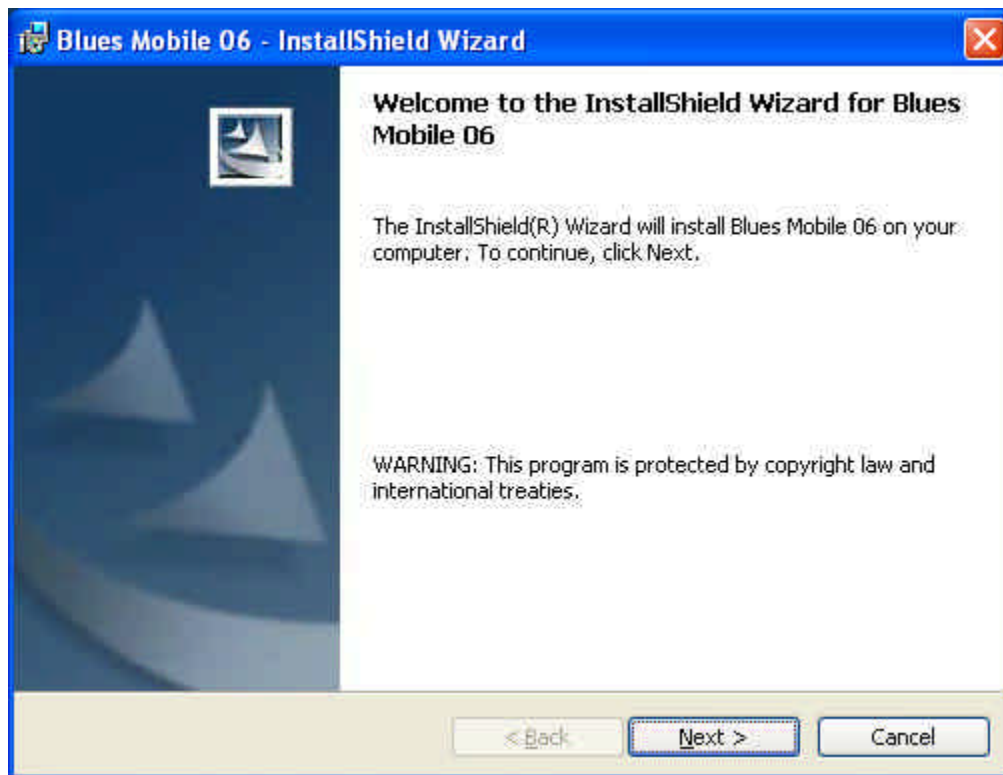
- ◆ Microsoft Windows 98 or newer operating system.
- ◆ Microsoft ActiveSync 3.0 or newer.
- ◆ Microsoft .NET Compact Framework 2.0 or newer.

Running The Installation

If your mobile device is equipped with a cradle, then cradle it before running the installation.

Start the installation by locating the file setup.exe with the Windows File Manager and double clicking the mouse on it.

Once the installation has been started, the following window will be displayed:



License Agreement

The next window displays the license agreement for Blues Mobile 06. Please read the license agreement before continuing. After you have accepted the license agreement, press the next button.



Selecting User Information

Blues Mobile 06 - InstallShield Wizard

Customer Information
Please enter your information.

User Name:
John

Organization:
Community General Hospital

Install this application for:

Anyone who uses this computer (all users)

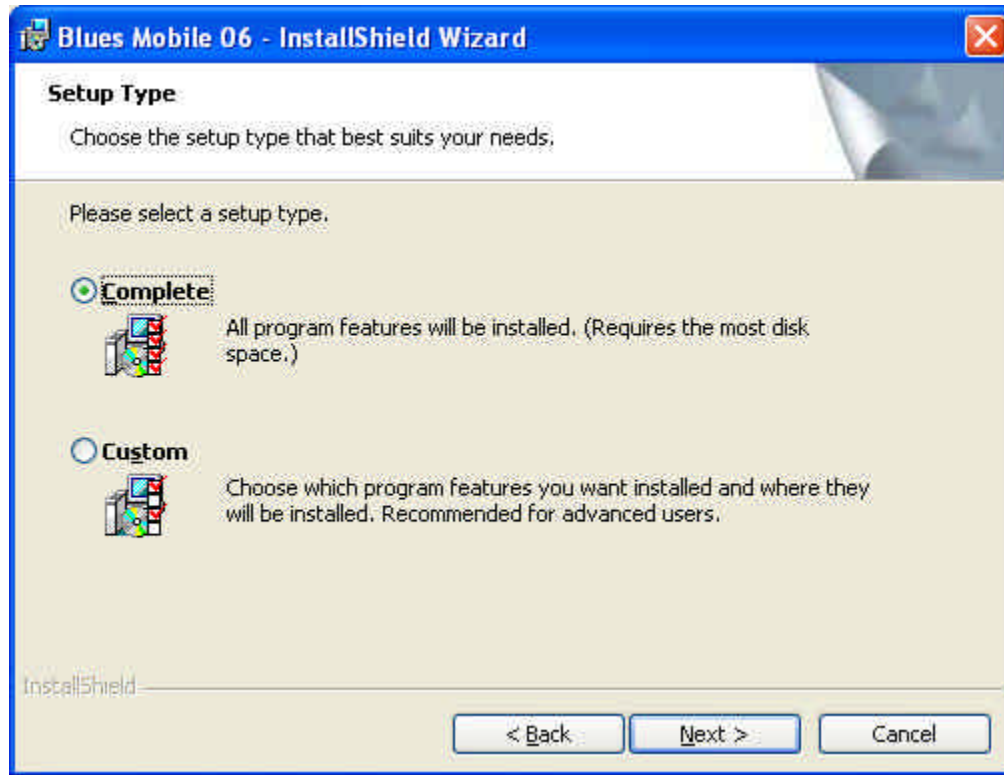
Only for me (jeff)

InstallShield

< Back Next > Cancel

The Blues software may be installed for all users of the PC, or only for your self. You may install the software for all users of the PC, and then configure Blues uniquely. Each Windows user will be prompted for their unique settings when they try to use any of the Blues applications for the first time.

Installation Type



There are two types of installation; Complete, and Custom. Complete will install all possible components. The Custom installation will allow you to select the folder where the Blues software will be installed.

The software suite will now be copied from the installation media to your computer. After the software has been copied, the Microsoft ActiveSync application will display a message asking for permission to install Blues Mobile on the mobile device, select the proper installation options and continue. The next step is to use the Blues software on the mobile device.

The first time Blues is launched after installation, the operator is prompted to enter the connection parameters. The connection parameters determine what type of emulation is to be used and the IP address of the host. For information on these parameters, see the section “Edit Destination” in this manual.

Uninstalling

The Blues software may be removed from the Control Panel “Add/Remove Programs” icon. To properly remove the software you should have administrative privileges and have all other windows closed. The uninstall wizard will guide you through removing Blues from a PC. To uninstall Blues Mobile from the mobile device, select “Remove Programs” from the system menu of the device.

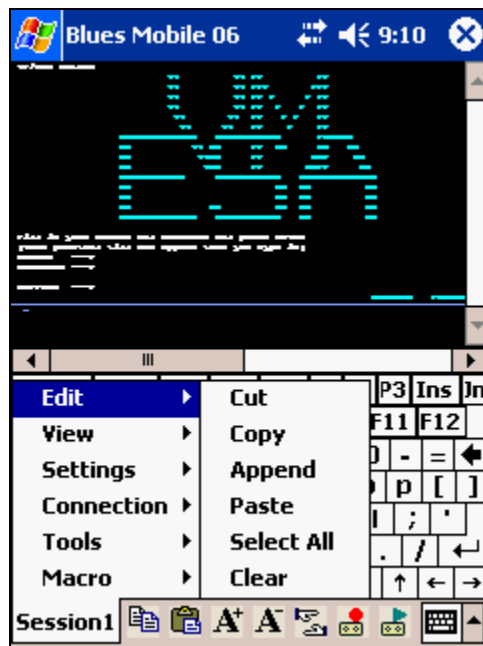
Launching Emulation

Emulation is ultimately launched by the ppTerminal.exe application. A new icon is created as part of the installation under the “Programs” window and may be used to start the emulation. The first time the emulator is launched, you will be prompted for the IP address of the host computer and the type of device to emulate.

Terminal Emulation

The terminal emulation window emulates a native IBM display device such as an IBM 3279 terminal. This section is presented in a hierarchy that matches the menus of the terminal window. If you need information on a specific option, find the menu name and then find the option under the main menu name.

Edit



Cut

This Edit menu command copies the currently selected area of the emulation window to the clipboard, and erases it from the emulation window, if the data is unprotected. See **Mouse Controls** for how to select a portion of the screen.

Copy

This Edit menu command copies the currently selected area of the emulation window to the clipboard. See **Mouse Controls** for how to select a portion of the screen.

Append

This Edit menu command appends the currently selected area of the emulation window to the clipboard. See **Mouse Controls** for how to select a portion of the screen.

Paste

This Edit menu command takes ANSI data only from the clipboard and enters it at the current cursor location. If insert mode is active, then the data will be inserted just as if it were being keyed in insert mode.

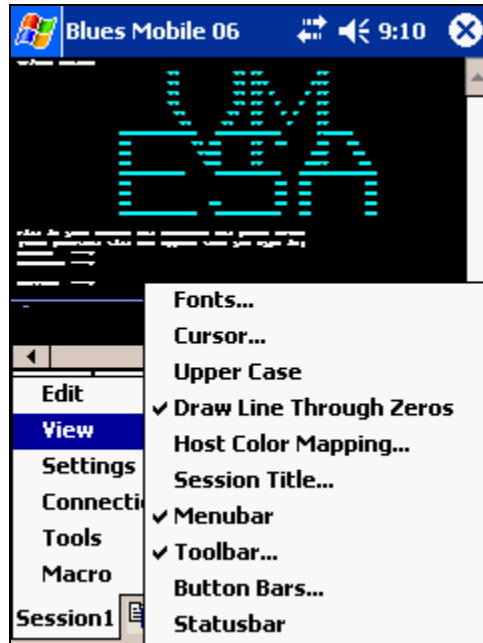
Select All

This Edit menu command selects the entire emulation window (not counting the status line) for any subsequent **Cut**, **Copy**, or **Clear** functions.

Clear

This Edit menu command erases the selected portion of the emulation window without copying it to the clipboard. Only unprotected data is cleared. See **Mouse Controls** for how to select a portion of the screen.

View



Fonts...

The Fonts function lets the operator select the font family to use for displaying the host screen. Only fixed width fonts are allowed to be selected. Variable width fonts are not allowed because the host screen is made up of a fixed number of rows and columns, which must line to be readable.

Configure Cursor

This menu function activates a dialog box that lets you select the type of cursor you want.

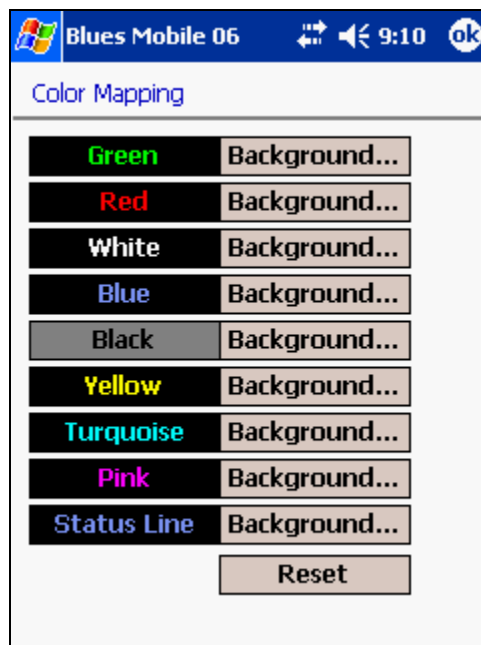
Upper Case

This option will cause the display characters to display in all upper case. The actual data is still in upper and lower case as far as the host is concerned. This

feature may be useful with smaller window sizes since the uppercase characters can be read easier.

Host Color Mapping

This menu command activates a dialog box that allows you to customize your host color mappings. Each of the 8 host colors may be modified. Both the foreground and background colors may be changed. In addition, the operator information area's colors may be modified.



Colors are changed by clicking the mouse over the color to change. The Help button may be used to get help on the use of this dialog. The RESET button will reset the colors back to the default IBM colors. The Apply button may be pressed to preview the color change.

Session Title...

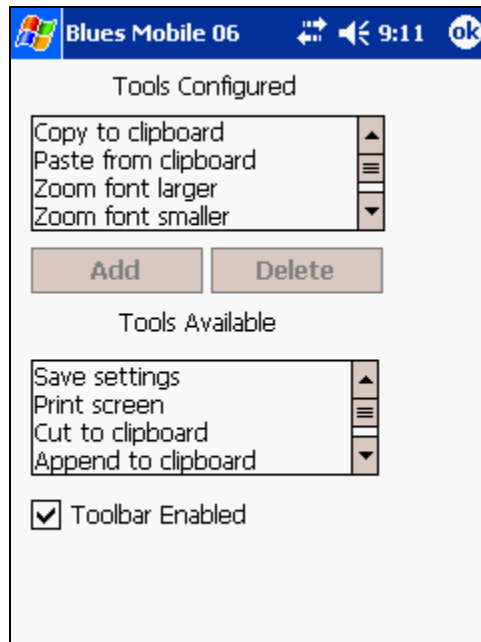
This command may be used to change the title associated with the session. If the text field is left blank, then the session number will be displayed. I.e. Session1

Menubar

This command will either remove or display the menu bar. The menu bar is located under the title bar and contains menu commands. If the menu bar is removed, it is necessary to right click in the session window to perform menu functions or turn it back on.

Toolbar

This function may be used to modify the contents of the toolbar and hide the toolbar.

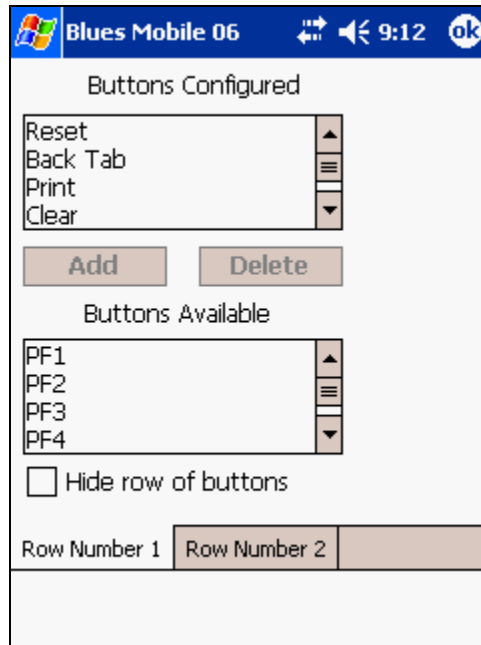


Individual toolbar buttons may be added or removed as desired. By turning off the "Toolbar Enabled" option, the complete toolbar will be removed from the session window.

Button Bars...

This menu function allows you to customize two rows of buttons that are located under the tool bar and menu bar. The two rows of buttons may be removed or

displayed. In addition, any function key or MACRO may be placed on a specific row. The following dialog allows you to customize the button bars:

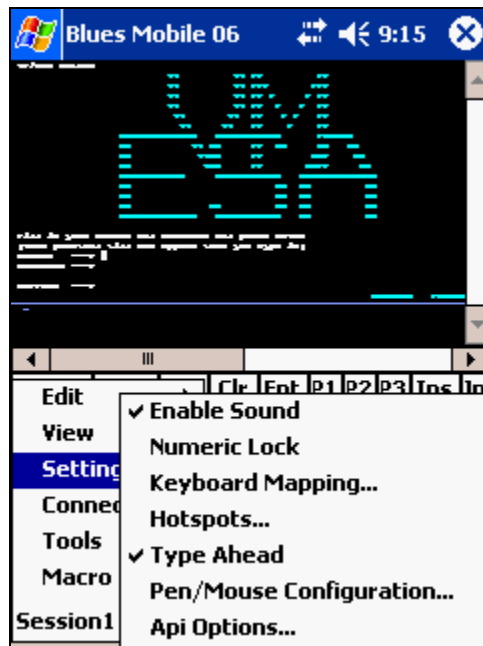


You may add or remove buttons from each row by first selecting one or more buttons from the appropriate list box and pressing the ADD or REMOVE button. To completely remove a row of buttons you may select the "Hide row of buttons" check box. After you have made your selections, press the OK or Apply button and the button bars will be displayed according to your selections.

Statusbar

This command will either remove or add the status bar from the bottom of the display window.

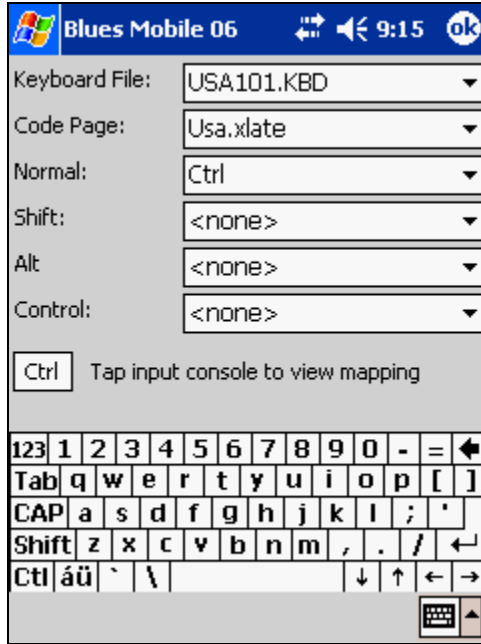
Settings



Enable Sound

This option lets you enable and disable the terminal alarm. The alarm is a short beep sound that is heard whenever an error occurs or whenever the host indicates that the alarm should be sounded.

Keyboard Mapping...



A keyboard file contains information about a particular keyboard type, and the mapping of the keys.

The keyboard window contains a graphic representation of the computer keyboard. If a key is clicked, then its mapping is displayed in the lower right of the window. To change a key mapping, highlight the key, then select the new function from the list at the bottom right of the window.

The Host Code Page option is used to select the code page that the host computer is running in. IBM has defined a different code page for each country. Each code page contains the necessary characters for the language. To have the keyboard function properly, the correct host code page must be selected. Contact your mainframe administrator to determine what code page the host computer is using.

Hot Spots...

This menu function enables you to configure how 'hot spots' function. A "hot spot" is a word located on the host screen that is recognized by the BLUES Display session as having a special meaning.

When hot spots are active, they can cause commands to be sent to the host by positioning the mouse over a portion of the host screen and pressing the left mouse button. For example, if the word CLEAR appears on the screen, you can perform a CLEAR key by simply pointing the mouse cursor at the word CLEAR, and clicking the left mouse button.

The characters in the command word on the screen can be in either upper or lower case. The following hot spot command words are supported:

PF1 through PF24, PA1, PA2, and PA3, CLEAR, ENTER, PRINT, SYSREQ, F1 through F24

In addition, any macro that has been recorded will automatically become a hot spot.

The following dialog box will be displayed when the Configure Hot Spots menu item is selected:



“**Enable Hot Spots**” allows you to select if hot spot detection is to be performed. When this feature is not selected all other selections in this dialog box are meaningless. “**Draw Hot Spot Buttons On Presentation Space**” allows you to select if hot spots located in protected locations of the host screen will be displayed as push buttons. The “**Hot Spots Must Be Delimited By Spaces**”

option is used to select if hot spots can be recognized inside other words or if the hot spot must be surrounded by spaces on the left and right. The **“Macro Names Act As Hot Spots”** feature allows you to select if the names of any previously recorded macros will also become hot spots. The **“The Numbers 1 To 24 Ack As PF1 To PF24”** feature allows numbers located on the host presentation space screen to become hot spots for the program function keys PF1 through PF24.

Type Ahead

When this function is selected, you can continue to enter keystrokes while the display session is busy sending and receiving information to the host. When the keyboard becomes enabled, the display session will begin processing the keystrokes you entered. If you press the RESET key, all keys in the queue will be purged.

Pen/Mouse Configuration

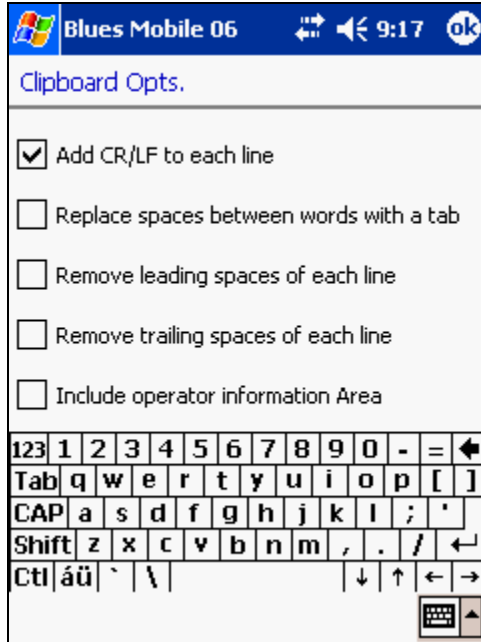
This option lets you configure how the pen will act when taped. You may assign any function key, any of the clipboard functions, or any MACRO to both the left and right mouse buttons. If you are going to remove the title bar (see system menu), then the use of the left mouse double click is limited to displaying the title bar after it has been hidden. The following dialog box is displayed to configure the mouse buttons:



Use the left mouse button to select your assignments.

Api Options

This menu function lets you customize how the display session will copy and paste information to and from the clipboard.



The **CR/LF AT END OF LINE** option indicates that the session should add a carriage return and line feed characters to the end of each line that is copied to the clipboard and to each line that is given to a DDE client.

The **Replace Spaces Between Words With A Tab** option indicates that the session should remove spaces between words and add a TAB character for the removed spaces when copying to the clipboard or to a DDE client.

The **Remove Leading Spaces On Each Line** option indicates that the session should remove all leading spaces from each line that is copied to the clipboard and to a DDE client.

The **Remove Trailing Spaces On Each Line** option indicates that the session should remove all ending spaces from each line that is copied to the clipboard and to a DDE client.

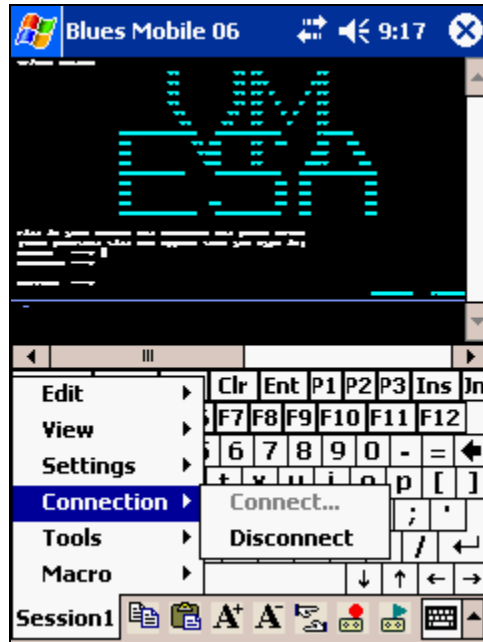
The **Copy Operator Information Too** option lets you copy the operator information area line into the clipboard and also to pass the operator information area to a DDE client. The whole operator information area is passed.

If this option is selected when a paste function is done, then each new line of text pasted into the terminal session will be pasted in the column where the cursor was located when the paste was performed.

For example: If the cursor is in column 70 and a paste is done that contains 2 rows of text, then both rows of text will start in row 70.

The “**Paste clipboard line in columns**” option causes lines to be pasted starting at the same column. For example: If 2 lines of information were copied into the clipboard and a paste function was done with the cursor located in column 60 of the terminal session window, then the first line would be pasted starting at column 60 and the second line would be pasted on a subsequent line starting in column 60.

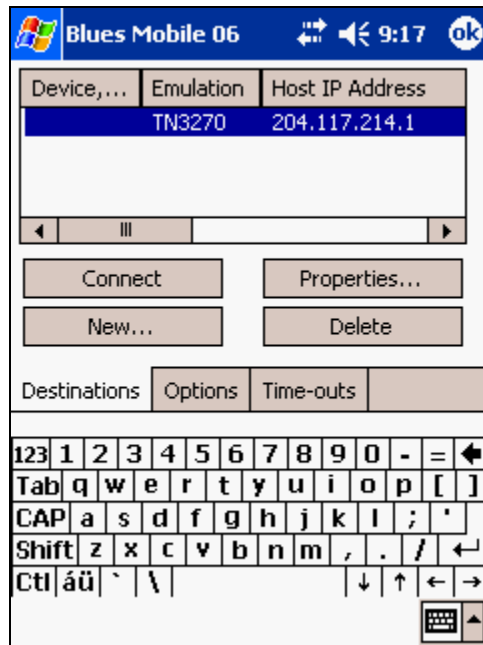
Connection



Connect...

This menu item is used to connect the session to the host. Connection options are displayed and may be added, changed, or deleted if they are not locked by the Manager application.

Each session can have one or more destinations configured. A destination is set of connection options that determine how and where to connect to a host computer. The first destination in the list is known as the primary destination. The primary destination is the destination that will be used first after you start a session. Alternate destinations can be configured to be automatically switched to if the primary destination can't be made or is lost. To add new destinations you must press the New button. To remove a destination, you will have to select the destination you want to delete and press the Delete Button.



The connection window contains a set of options that apply to all destinations and a set of options for each destination. To edit a specific destination, select the destination with the mouse and click on the Properties button.

Automatically connect when session is started

This option determines if the session automatically attempts to connect to the primary destination when it is first started. If this option is not selected, then the operator must manually connect to the host computer.

Automatically reconnect without prompting

This option takes affect when a session gets abnormally disconnected from a host. When selected, the session will attempt to reconnect. If more than one destination is configured, connection to the next destination will be attempted. If only one destination is configured, then an attempt to connect to it will be done. The amount of time between connection attempts and the number of times to attempt to connect can be controlled with the “Pause between connect attempts” and “Pause between connect attempts” options.

Enable TCP/IP Trace

This option can be used to diagnose emulation problems. If this option is enabled, then a text file named sessionx.trc will be generated, where x is the session number. The file contains the necessary information for our support staff to properly diagnose problems.

Disconnect from host after x minutes of inactivity

This option defines if the session should automatically disconnect from the host after not being used for a period of time. This option is useful to cause the session to disconnect for security reasons, and for customers who lease mainframe logical units and want to free up logical units when they are not in use.

Pause between connect attempts

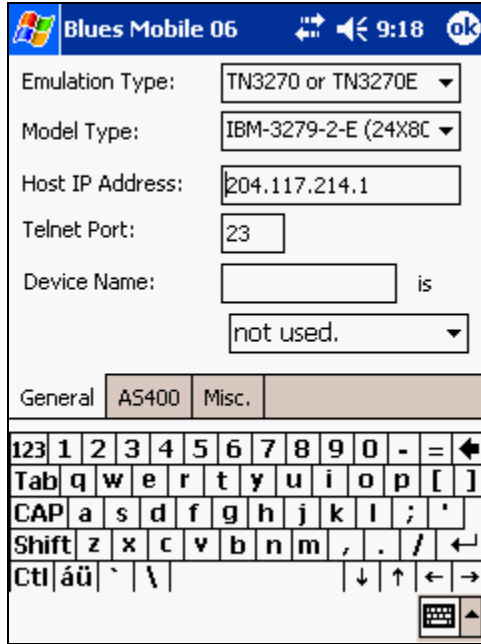
This option determines the number of seconds to wait between connection attempts. Each configured destination is subsequently attempted to connect until a connection is established, or the retry limit is exceeded. This option controls the time interval that occurs after a connection attempt fails and the next connection attempt is performed. To avoid unnecessary network traffic, it is suggested to have this value set to at least 180.

Cycle through destination list x times before giving up

This is the total number of times to try each destination before giving up a connection attempt. A value of 0 indicated there is no maximum and to try forever.

Edit Destination

The configure destination window is used to configure how the session connects to the host. The terminal type, emulation model, TCP/IP address ,CP/IP port, and device name are configured from this window.



Emulation Type

This option is used to select the type or mode of emulation; currently telnet 3270 and telnet 5250 may be selected. The emulation supports the latest ISO specification regarding telnet 3270 and telnet 5250. TN5250 is usually selected when connecting to AS/400 midrange computers and TN3270 for mainframe computers. Depending on the emulation type, different device types are selectable for the “Model Type” field.

Model Type

The model type determines the number of rows and columns of the host screen as well as the capabilities provided by the host DataStream. Model type also can affect the connection process. The Blues software sends the model type in the TCP/IP connection negation message. The host telnet server must be configured to accept the device type, or else, the connect will fail with an error.

Host IP Address

The IP Address or Host Name field lets you enter either a well-formed TCPIP address or enter a symbolic name. This field must contain the TCPIP address or name of a TN3270 Server, TN5250 Server, TCPIP host, or AS400. Well-formed

IP Addresses are in the form a.b.c.d, where the letters a,b,c, and d are decimal numbers between 0 and 255.

Telnet Port

The **Telnet Port** may be changed from the default of 23 to some other value. The telnet port must match the port you have configured at the TN3270 Server, TN5250 Server, TCPIP host, or AS400.

Device Name

The device name may be used to select a specific logical unit on the host to connect to, or a specific printer logical unit name that should be paired with the logical unit that is used to connect with.

Two "Wild Card" characters may be used in the Device Name. The asterisk character (*) will get replaced with the Windows user name who is signed on at the time. The question mark (?) character will be replaced with the machine name.

Certain situations require each computer user to always connect to a specific logical unit on the host. When this becomes an issue, then the device name option must be used to select the specific host logical unit name to connect to.

Some telnet servers use the device name as a pool name. A pool is a group of specific logical units or device names that are shared among terminal and printer session. If device pooling is being used, then enter the pool name to be used during connection.

Prompt for AS/400 User name and password

This option determines if BLUES should present a sign on window and encrypt the AS/400 user name and password. When this option is selected, BLUES will encrypt the AS/400 user name and password before sending it to the AS/400. If the AS/400 accepts the encrypted user name and password, the initial sign on screen is bypassed and the main start up screen is displayed.

You may choose to not send the encrypted user name, in which case the AS/400 will be the first screen displayed by the AS/400.

Current Library
Initial Menu
Starting Program

The “Current Library”, “Initial Menu”, and “Starting Program” options may be used to cause the AS/400 to configure the device name with these options. See the appropriate AS/400 documentation for details on the meanings of these fields.

Enable Keep-alives

This option causes a special “Hello” No Operation (NOP) message to be sent to the host every few minutes. The only importance of the message is keeping the TCP/IP connection from being closed by underlying network settings. Some networks are configured to automatically disconnect a TCP/IP connection when no traffic is detected for a specified amount of time; this feature disables such a feature.

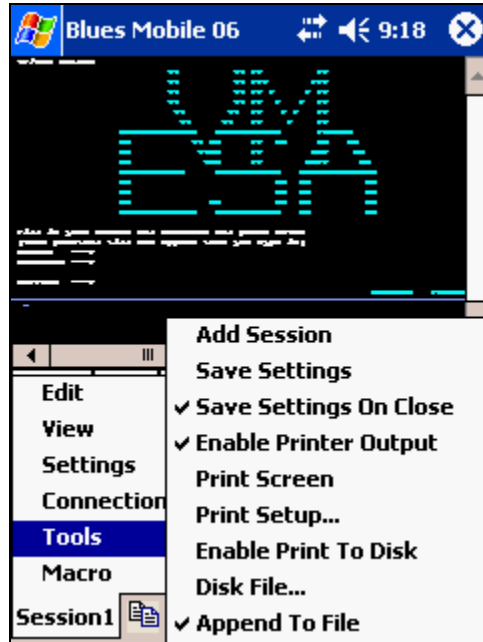
If Device is in use, increment it and try again

This option is only meaningful when a specific device name has been configured. If a specific device name is configured and this option is turned on, then if a “device busy” error response is returned from the host, then Blues will increment the device name and try to connect to that name. This continues until a “not busy” condition is detected. This option can be used if many logical units are configured on the host with names that are contiguous, like LU002, LU003, LU004, etc. Many sessions can be configured with the device name of LU002 and when they connect each one will get the first available logical unit.

Disconnect

This menu item will disconnect the session from the host.

Tools



The Tools menu may be used to add new sessions, delete existing sessions, switch between sessions, print the screen contents over HP Mobile Printing interface, print screen to disk file, etc.

Add Session

This menu item will add a new session. Once the new session has been added to the configuration it is launched and the Connect windows will be shown to allow for the entry of the connection options.

Delete Session

This menu item will delete the currently active session. Only session numbers 2 and over are allowed to be deleted.

Save Settings

This File menu command is used to store the current session profile. All the operational and connection options currently in effect will automatically be re-activated next time the session is started.

Save Settings On Close

This option may be enabled or disabled by selecting it. If it is enabled, then the terminal session will automatically save its settings when it is closed.

Enable Printer Output

This feature lets you turn on and off printer output whenever a print function is done. If this option is enabled, then this menu item will be checked. This option pertains to a local print function caused by pressing the print screen key or print screen menu item.

Print Screen

This option does an IBM local print screen key function to the currently selected printer device, as defined in **Print Setup**.

Print Setup ...

This option allows you to select any printer currently installed under Windows as the output device, or you may select a disk file as the output device.

Enable Print To Disk

This feature lets you turn on and off output to a disk file whenever a print functions is done. If the print to disk feature is enabled, then this item will be checked.

Disk File...

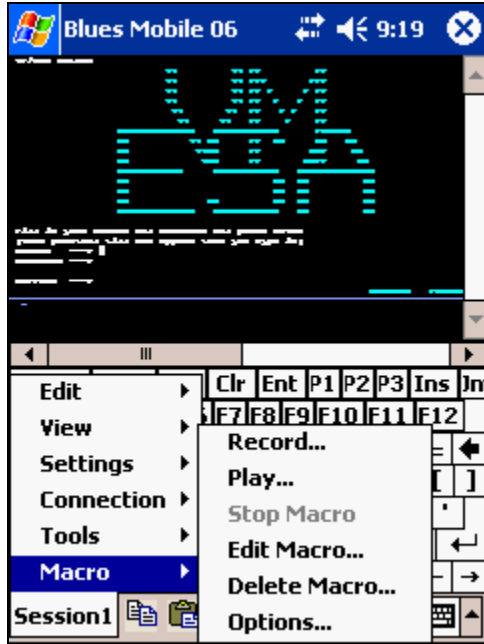
This menu item lets you select the name of the next print to disk file. If the “Append To File” option has not been selected, then each time a print to disk is done the name of the file is incremented by 1. I.e. print0001.dat will be incremented to print0002.dat. Each local print function will cause a new disk file to be created.

Append To File

This menu item selects if a new file will be created each time a local print is done to a disk file. When this feature is selected, the local print data is appended to the currently selected print file name. If this feature is not selected, then a new file is created each time a local print is done.

Macro

The Macros menu lets you record, play, edit, and delete macro files. Macro files are typically saved in your private directory. The Macro menu displays as follows:



Record

This menu function allows you to either enter a new macro file name or re-record an existing macro. Once you have selected the macro name, the macro will start recording. You may stop the recording by pressing the Stop button. All keys entered are recorded. The macro records when you send something to the host computer and when you receive a screen from the host, this allows it to play the macro back in a timely fashion. Once you have recorded a macro, the macro name will automatically be placed in your keyboard mapping. You can then map the macro to any key position that you want.

Play

To Play a macro you must first display the host screen that was present when you first selected to record a macro. Once you select the macro name, the macro will start playing back.

Stop

This menu item will stop a macro when a macro is in the process of being recorded or played.

Edit

Macros may be edited and changed by selecting Edit Macro from the MACROS menu item. Each line of the macro file contains a keyword followed by optional parameters and values. Any keyword that ends with a colon (':') is considered a placeholder label. Labels may be jumped to by a GOTO keyword. The following list summarizes all macro keywords:

"DATA_KEYS Hello World"	- Normal ANSI text to be entered.
"PF1"	-PF1 or F1 function key.
"PF2"	-PF2 or F2 function key.
"PF3"	-PF3 or F3 function key.
"PF4"	-PF4 or F4 function key.
"PF5"	-PF5 or F5 function key.
"PF6"	-PF6 or F6 function key.
"PF7"	-PF7 or F7 function key.
"PF8"	-PF8 or F8 function key.
"PF9"	-PF9 or F9 function key.
"PF10"	-PF10 or F10 function key.
"PF11"	-PF11 or F11 function key.
"PF12"	-PF12 or F12 function key.
"PF13"	-PF13 or F13 function key.
"PF14"	-PF14 or F14 function key.
"PF15"	-PF15 or F15 function key.
"PF16"	-PF16 or F16 function key.
"PF17"	-PF17 or F17 function key.
"PF18"	-PF18 or F18 function key.

"PF19"	-PF19 or F19 function key.
"PF20"	-PF20 or F20 function key.
"PF21"	-PF21 or F21 function key.
"PF22"	-PF22 or F22 function key.
"PF23"	-PF23 or F23 function key.
"PF24"	-PF24 or F24 function key.
"PA1"	-PA1 key.
"PA2"	-PA2 key.
"PA3"	-PA3 key.
"ENTER"	-enter function key.
"SYS_REQ"	-sys request function key.
"TAB"	-tab key.
"BACKTAB"	-back tab key.
"NEWLINE"	-new line key.
"CLEAR"	-clear function key.
"ALT_CURSOR"	-alt cursor key.
"ATTN"	-attention key.
"CUR_SEL"	-cursor select key.
"DUP"	-dup key.
"ERASE_EOF"	-erase eof key.
"ERASE_INP"	-erase input key.
"FLD_MARK"	-field mark key.
"HOME"	-home key.
"CUR_LEFT"	-cursor left 1 key.
"CUR_LEFT2"	-cursor left 2 key.
"CUR_RIGHT"	-cursor right 1 key.
"CUR_RIGHT2"	-cursor right 2 key.
"RESET"	-reset key.
"KEYUP"	-cursor up key.
"KEYDOWN"	-cursor down key.
"BACKSPACE"	-backspace key.

"INSERT"	-insert key.
"DELETE"	-delete key.
"PRINT"	-print screen key.
"WAIT"	-receive 1 screen from the host
"DARK_KEYS ?????"	-non-display keys.
"GOTO label"	-go to label.
"RUN command line"	-Start another program
"CUT_CLIP sr,sc,er,ec,tabs,crlf"	-Cut to the clipboard. the parameters are starting row, starting column, ending row, ending column, a 1 if put tabs between words, and a 1 if add carriage returns and line feeds at line end.
"COPY_CLIP sr,sc,er,ec,tabs,crlf"	-Copy to the clipboard. the parameters are starting row, starting column, ending row, ending column, a 1 if put tabs between words, and a 1 if add carriage returns and line feeds at line end.
"PASTE_CLIP"	-Paste from the clipboard.
"SEND pfile host file"	-Upload a file to the host.
"RECEIVE pfile host file."	-Download a file from the host.
"FIELD_EXIT"	-5250 Field Exit key.
"FIELD_PLUS"	-5250 Field Plus key.
"FIELD_MINUS"	-5250 Field minus key.
"ROLL_UP"	-5250 Roll up key.
"ROLL_DOWN"	-5250 Roll down key.
"HELP"	-5250 Help key.
"HOST_PRINT"	-5250 Host Print Screen key.
"EXIT",	-close session window

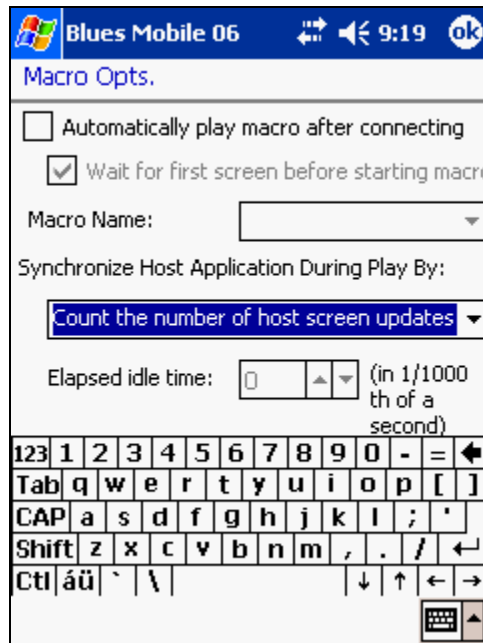
"TIMEDWAIT x",	-wait x seconds
"ESCAPE_KEY",	-telnet escape key
"HOLD_KEY",	-telnet hold key
"BREAK_KEY",	-telnet break key
"COMPOSE_KEY",	-telnet compose key
"DO_KEY",	-telnet do key
"NULL_KEY",	-telnet null key
"PAGEUP_KEY",	-telnet page up key
"PAGEDOWN_KEY",	-telnet page down key
"REMOVE_KEY",	-telnet remove key
"END_KEY",	-telnet end key
"RETURN_KEY",	-telnet return key
"SOH_KEY",	-telnet SOH key
"STX_KEY",	-telnet STX key
"ETX_KEY",	-telnet ETX key
"EOT_KEY",	-telnet EOT key
"ENQ_KEY",	-telnet ENQ key
"ACK_KEY",	-telnet ACK key
"BEL_KEY",	-telnet BEL key
"HT_KEY",	-telnet HT key
"VT_KEY",	-telnet VT key
"FF_KEY",	-telnet FF key
"CR_KEY",	-telnet CR key
"SO_KEY",	-telnet SO key
"SI_KEY",	-telnet SI key
"DLE_KEY",	-telnet DLE key
"DC1_KEY",	-telnet DC1 key
"DC2_KEY",	-telnet DC2 key
"DC3_KEY",	-telnet DC3 key
"DC4_KEY",	-telnet DC4 key
"NAK_KEY",	-telnet NAK key

"SYN_KEY",	-telnet SYN key
"ETB_KEY",	-telnet ETB key
"CAN_KEY",	-telnet CAN key
"EM_KEY",	-telnet BM key
"SUB_KEY",	-telnet SUB key
"FS_KEY",	-telnet FS key
"GS_KEY",	-telnet GS key
"RS_KEY",	-telnet RS key
"US_KEY",	-telnet US key

Delete

The Delete Macro function lets you delete macro files from your disk. Select the macro that you want to delete by using the mouse and pressing OK.

Options



The synchronize host application option determines how the terminal session determines when the host has completely written the screen so that the next macro line may be played. Some host applications may write data to the screen a variable number of times after keyboard input. Two options exist for determining when the host has completed writing the screen: (1) Count the number of host screen updates or (2) wait for an elapsed amount of idle time. During the record phase, the number of times that the host writes to the display is counted and recorded into the macro. If you choose option 1 above, then as the macro is played back it is assumed that the host will write to the screen the same number of times before the macro continues to play after an enter action is performed. In the second case above, a timer is started after the host updates the screen and if this timer reaches the configurable time value and the keyboard is enabled, then the macro will continue. When configuring the idle timer, it is necessary to take into account the host response time and the speed of the physical connection to the host.

The “Automatically play macro after connecting” option lets you select a macro that will be played whenever a connection is made to the host.

Software Development Kit

Blues Mobile 06 may be used to create custom .NET CF applications that can have one or more embedded Blues terminal sessions. Blues Mobile 06 ships with a Windows Forms control that can be dropped into any .NET CF application. The control provides a complete terminal emulation window that may be used to automate operator activity as well as extend the functionality of the emulator. To use the control, you must be experienced in creating .NET application and programming in .NET. This chapter assumes that the reader be versed in both.

The Software Development Kit (SDK) includes two Microsoft Visual Studio .NET 2004 projects that contain the source code to the sample programs; one written in C# and the other in VB .NET.

The sample projects are installed under the SDK folder (defaults to Program Files\Blues2004\sdk\VB and Program Files\Blues2004\sdk\c#). There are two approaches to using the control; start with the sample project and add your new functionality, or add the control to your existing application.

The file pphostcontrol.dll contains the .NET CF Windows forms control used for terminal emulation. This control contains a variety of properties, methods and delegates that may be used to control the operation of a terminal session. Some of the functions include automated keyboard entry, screen scraping, connecting, and disconnecting.

The control appears as a rectangular window with a toolbar, host presentation space, button bars, and status bar. Its appearance may be configured to match specific requirements.

Licensing Issues

Any third party application that uses the Blues software must be properly licensed. Each PC running any part of the Blues software must be licensed. For information on the software license, please read the license agreement that must be agreed to during the initial software installation process.

Packaging Blues with a Third Party Application

Licensing issues still apply if the Blues software is going to be packaged with any third party application. Each computer running the third party application that is using the Blues software must be properly licensed.

To package Blues with a third party application, first, install Blues on the development PC, configure the session(s) from the Blues Manager window the way you want them, develop the application and test it, and then include all the files in the Blues folder with your application.

Sample Project Usage

To use the sample projects installed with Blues, Visual Studio .NET 2004 or the .NET SDK must already be installed on the PC used for development. It is suggested that a copy of all files in the appropriate sample folder be copied to a new folder to preserve the sample for reference purposes. To build a project, first start Visual Studio .NET 2004 and use the Open Project function and browse to the project folder, and select the project to open. Once the project is opened, you may have to adjust the location of the references to match the folder where Blues is installed and adjust the location where the compiled program is written to match the Blues folder.

Once you are able to build and run the project with no errors, then your ready to add new functionality by using the methods, properties, and delegates of the hostcontrol class.

HostControl Class

The HostControl.BluesTerminal class provides the interface to the terminal emulation window. The class must be properly initialized before any host interaction can take place. Each instance of the BluesTerminal class represents an instance of a terminal emulator.

The class definition is as follows:

C#

```
private HostControl.BluesTerminal bluesTerminal1;
```

VB

```
Friend WithEvents BluesTerminal1 As HostControl.BluesTerminal
```

Initialization

Initialization consists of constructing an instance of the class, setting a few properties, calling the ReadConfiguration method to configure the class, and calling the Launch method to start the emulation. The Blues Manager window must be used to first configure a session for the class to use. This allows for the customization of the session, keyboard mappings, etc. Each instance of the class is represented by a specific session configured with the Manager window. Multiple instances of a class session are allowed. After initialization, any of the methods, properties, or delegates may be used to control the terminal session, consult the reference in this manual for details on each.

Initialization of the class looks as follows; consult the reference in this manual for definitions of each method, property, and delegate.

C#

```
bluesTerminal1 = new HostControl.BluesTerminal();  
bluesTerminal1.DATABASE = AppDomain.CurrentDomain.BaseDirectory;  
bluesTerminal1.PRIVATE= AppDomain.CurrentDomain.BaseDirectory;  
bluesTerminal1.LANGUAGE = "US";  
bluesTerminal1.USERNAME = "Default";  
bluesTerminal1.SESSIONNUMBER = 1;  
  
if(!this.bluesTerminal1.ReadConfiguration())  
{
```

```
// Configuration failed, view bluesTerminal1. Message  
return;  
}  
if(!this.bluesTerminal1.Launch())  
{  
    //Launch failed, view bluesTerminal1. Message  
    return;  
}
```

VB

```
BluesTerminal1 = New HostControl.BluesTerminal  
BluesTerminal1.DATABASE = Application.StartupPath  
BluesTerminal1.PRIVATEDIR = Application.StartupPath  
BluesTerminal1.LANGUAGE = "US"  
BluesTerminal1.SESSIONNUMBER = 1  
BluesTerminal1.USERNAME = "Default"
```

```
If Not BluesTerminal1.ReadConfiguration() Then  
    ' Error view BluesTerminal1.Message  
End If
```

```
If Not BluesTerminal1.Launch() Then  
    ' Error view BluesTerminal1.Message  
End If
```

Methods

Methods are functions that the application calls to have some type of function performed. Any method that can take time to complete is asynchronous and return immediately, when the method has been performed, the associated delegate is called to notify the application of the outcome.

BeginConnect

This method starts the connection process. Before calling this method, set the delegate `evtConnected` to be notified of the result. The connection process is asynchronous. See the delegate `evtConnected` for details on determining the outcome of the call.

Close

This method closes the control and frees up any resources it may be using.

ClosingWindow

This method should be called when the application is about to close. This method allows the terminal session to clean up any resources it may be using, save its settings (if configured to `Save Settings On Close`), and disconnect from the host.

ConnectToDestination

This method causes the terminal session to start the connection process. Each session may be configured for more than one host destination. This method may be used to connect to a specific previously configured host destination. The argument is a one based value indicating which host destination to attempt to connect to.

DisconnectFromHost

This method will cause the terminal session disconnect the tcp/ip connect to the host and enter "local" mode.

findDisplayText

This method is used to search for a string on the host screen. The arguments include the string, the starting row and the starting column. The starting row and column are one based numbers. The search is exhausted at the end of the screen. If the string is found, `true` is returned, other `false` is returned. If the string is found, the found `TextOnRow` and `foundTextOnColumn` properties will contain the location of the string.

getDisplayText

This method obtains a copy of the host screen (scrapes the screen). Any portion of the screen contents may be read. Arguments include the starting row, column, and length. All argument values are one based.

keyText

This method is used to type a string of characters into the host screen. The characters are entered starting at the current cursor address.

The return code is true for success and false for failure. A False return code indicates that the either the host screen was busy receiving data from the host, or that the cursor was located in a protected location of the screen.

keyTerminalKey

This method is used to send a function key to the terminal session. Function keys are special keys that cause a specific function to be performed by the terminal session. **Some function keys cause the terminal session to send information to the host. When this happens, the application must wait for a delegate such as the evtKeyboardUnlocked before any other keyboard input is allowed.**

Two prototypes of this function exist, one that takes a key code, and the other that takes a text representation of the key. The dll Enums.dll contains an Enum called KeyDefines that contains the integer values for the key codes. The following table lists the possible values for the arguments:

Argument	Function
KeyDefines.KEY_DUPLICATE or "DUP" or "DUPLICATE"	3270 or 5250 Duplicate key
KeyDefines.PF1 or "PF1" or "F1"	3270 or 5250 Function key 1
KeyDefines.PF2 or "PF2" or "F2"	3270 or 5250 Function key 2
KeyDefines.PF3 or "PF3" or "F3"	3270 or 5250 Function key 3
KeyDefines.PF4 or "PF4" or "F4"	3270 or 5250 Function key 4
KeyDefines.PF5 or "PF5" or "F5"	3270 or 5250 Function key 5

KeyDefines.PF6 or "PF6" or "F6"	3270 or 5250 Function key 6
KeyDefines.PF7 or "PF7" or "F7"	3270 or 5250 Function key 7
KeyDefines.PF8 or "PF8" or "F8"	3270 or 5250 Function key 8
KeyDefines.PF9 or "PF9" or "F9"	3270 or 5250 Function key 9
KeyDefines.PF10 or "PF10" or "F10"	3270 or 5250 Function key 10
KeyDefines.PF11 or "PF11" or "F11"	3270 or 5250 Function key 11
KeyDefines.PF12 or "PF12" or "F12"	3270 or 5250 Function key 12
KeyDefines.PF13 or "PF13" or "F13"	3270 or 5250 Function key 13
KeyDefines.PF14 or "PF14" or "F14"	3270 or 5250 Function key 14
KeyDefines.PF15 or "PF15" or "F15"	3270 or 5250 Function key 15
KeyDefines.PF16 or "PF16" or "F16"	3270 or 5250 Function key 16
KeyDefines.PF17 or "PF17" or "F17"	3270 or 5250 Function key 17
KeyDefines.PF18 or "PF18" or "F18"	3270 or 5250 Function key 18
KeyDefines.PF19 or "PF19" or "F19"	3270 or 5250 Function key 19
KeyDefines.PF20 or "PF20" or "F20"	3270 or 5250 Function key 20
KeyDefines.PF21 or "PF21" or "F21"	3270 or 5250 Function key 21
KeyDefines.PF22 or "PF22" or "F22"	3270 or 5250 Function key 22
KeyDefines.PF23 or "PF23" or "F23"	3270 or 5250 Function key 24
KeyDefines.PF24 or "PF24" or "F24"	3270 or 5250 Function key 24
KeyDefines.PA1 or "PA1"	3270 or 5250 PA 1 Function key
KeyDefines.PA2 or "PA2"	3270 or 5250 PA 2 Function key
KeyDefines.PA3 or	3270 or 5250 PA 3 Function key

“PA3”	
KeyDefines.ENTER or “ENTER”	3270 or 5250 ENTER Function key
KeyDefines.SYSREQ or “SYS_REQ” or “SYSTEM REQUEST”	3270 or 5250 System Request Function key
KeyDefines.TABFWD or “TAB”	3270 or 5250 Tab forward Function key
KeyDefines.BACKTAB or “BACKTAB”	3270 or 5250 Back TabFunction key
KeyDefines.NEWLINE or “NEWLINE” or “NEW LINE”	3270 or 5250 New LineFunction key
KeyDefines.CLEAR or “CLEAR”	3270 or 5250 Clear Screen Function key
KeyDefines.ALTCURSOR or “ALT_CURSOR” or “ALTERNATE CURSOR”	3270 or 5250 Alternate Cursor Function key
KeyDefines.ATTENTION or “ATTENTION”	3270 or 5250 Attendtion Function key
KeyDefines.CURSEL or “CUR_SEL” or “CURSOR SELECT”	3270 or 5250 Cursor Select Function key
KeyDefines.ERASFLD or “ERASE_EOF” or “ERASE EOF”	3270 or 5250 Erase to end of field Function key
KeyDefines.ERASINP or “ERASE_INP” or “ERASE INPUT”	3270 or 5250 Erase Input Function key
KeyDefines.FIELD_MARKER or “FLD_MARK” or “FIELD MARK”	3270 or 5250 Field Mark Function key
KeyDefines.CURHOME or “HOME”	3270 or 5250 Home Function key
KeyDefines.CURLEFT or “CUR_LEFT” or “CURSOR_LEFT”	3270 or 5250 Cursor Left Function key
KeyDefines.CURRIGHT or “CUR_RIGHT” or “CURSOR RIGHT”	3270 or 5250 Cursor Right Function key
KeyDefines.RESETor “RESET”	3270 or 5250 Reset Function key
KeyDefines.CURUP or “KEYUP” or “CURSOR UP”	3270 or 5250 Cursor Up Function key
KeyDefines.CURDOWN or “KEYDOWN” or “CURSOR DOWN”	3270 or 5250 Cursor Down Function key
KeyDefines.BACKSPACE or “BACKSPACE”	3270 or 5250 Backspace Function key
KeyDefines.INSERT or “INSERT”	3270 or 5250 Insert Function key
KeyDefines.DELCHAR or	3270 or 5250 Delete Function key

"DELETE"	
KeyDefines.PRINT or "PRINT"	3270 or 5250 Print screen Function key
KeyDefines.FIELD_EXIT or "FIELD_EXIT" or "FIELD EXIT"	5250 Field Exit Function key
KeyDefines.FIELD_PLUS or "FIELD_PLUS" or "FIELD PLUS"	5250 Field Plus Function key
KeyDefines.FIELD_MINUS or "FIELD_MINUS" or "FIELD MINUS"	5250 Field Minus Function key
KeyDefines.ROLL_UP or "ROLL_UP" or "ROLL UP"	5250 Roll Up Function key
KeyDefines.ROLL_DOWN or "ROLL_DOWN" or "ROLL DOWN"	5250 Roll Down Function key
KeyDefines.HELP or "HELP"	5250 Help Function key
KeyDefines.PRINT_5250 or "HOST PRINT"	5250 Host Print Function key

Launch

The Launch method preps the session for use. If the initially connected property is true, then the connection process is automatically started. Before calling this method set the Delegate evtConnected, if connection results need to be acted on.

The return code is true for success and false for failure. Inspect the Message property to determine the cause of any failure.

mnuMacroPlay

This method will cause the play macro selection window to be displayed. The operator will then be forced to select the name of the macro to play. When the recording is complete, the evtMacroComplete delegate will be called.

mnuMacroRecord

This method is used to record a macro. The operator will be prompted for the name of the macro to record. When the recording is complete, the evtMacroComplete delegate will be called.

mnuMacroStop

This method is used to stop either playing a macro or recording a macro. Calling this method is only valid when a macro function is in progress.

PlayMacro

This method is used to play a specific macro file. The argument is the name of a previously recorded macro. When the macro completes, the evtMacroComplete delegate will be called to notify the application the macro has completed.

ReadConfiguration

The ReadConfiguration method forces the control to read the Blues database and establish its configuration settings. Before calling this method, the DATABASE, USERNAME, SESSIONNUMBER, LANGUAGE, and PRIVATEDIR properties must be set.

The return code is true for success and false for failure. Inspect the Message property to determine the cause of any failure.

RecordMacro

This method is used to record a macro. The input argument is the name of a macro to record. If a previously recorded macro by the same name already exists, then it will be overwritten. When the recording is complete, the evtMacroComplete delegate will be called.

setIPAddress

This method is used to set the IP address for the session to connect to. The argument is a well-formed TCP/IP address in either the form a.b.c.d, or a string that is defined in a domain name server (like "localhost"). The terminal session should not be connected at the time this method is called. An application can dynamically connect to a host if the session is not configured for the "Automatically Connect To Host" option and have the application set the ip address, ip port, and call the BeginConnect method.

setIPPort

This method may be used to set the tcp/ip port number used to connect to that host. The default value is for the telnet port is 23. The terminal session should not be connected at the time this method is called. An application can dynamically connect to a host if the session is not configured for the “Automatically Connect To Host” option and have the application set the ip address, ip port, and call the BeginConnect or ConnectToDestination method.

setCursor

This method may be used to set the input cursor to a specific row and column for subsequent operator input or keyText method calls. The arguments are one based values.

Properties

AppMenu

This property contains the MainMenu for the session. The MainMenu is the window menu that contains the session menu functions such as File, Edit, Macro, etc. The MainMenu is build during the initial configuration of the session and maintained by the HostControl class. If new macros are recorded or deleted, then the MainMenu is adjusted accordingly.

bHideTitle

This property is true if the control is to hide the main title bar for the Windows application. A value of false is the default and indicates that the title bar should be visible.

bHideMenu

This property is true if the control is to hide the main menu bar for the Windows application. A value of false is the default and indicates that the menu bar should be visible.

bTraceActive

This property turns the trace option on and off. When this option is enabled, a trace file named sessionx.trc is written, where x is the SESSIONNUMBER property. The trace file is a text file that contains information for problem diagnosis.

DATABASE

The DATABASE property is the folder where the Blues database of user is located. The default value for this property is the same folder that the emulation was launched from. This property may be either a standard Windows path or a url if the Blues database resides on a web server.

foundTextOnRow

This property contains the row that a string was found on. This property is only valid after a successful findDisplayText or waitForDisplayString method has been done. The property is 1 based and may range from 1 to the number of rows in the host session screen.

foundTextOnColumn

This property contains the column that a string was found on. This property is only valid after a successful findDisplayText or waitForDisplayString method has been done. The property is 1 based and may range from 1 to the number of columns in the host session screen.

isMdiContainer

This property informs the control if the controlling application is a multi document MDI application or a single document SDI application. Depending on the value, the menu system for the control is slightly different.

LANGUAGE

This property defines the native language that the control will present to the operator. The possible values are "US" and "GERMAN", for English and German languages.

Message

This property contains an error message when an error occurs.

PlayingMacroNow

This property is true when a macro is being played.

RecordingMacroNow

This property is true when a macro is being recorded.

SaveSettingsOnClose

This property determines if the control should save its current settings before closing.

ScreenCols

This property contains the number of columns on the host screen area.

ScreenRows

This property contains the number of rows on the host screen area.

SESSIONNUMBER

This property is the number of the session as configured by the Manager window.

Tag

This is an application defines standard control tag that may be used by the application to store information.

TitleBarText

This property contains the string that is displayed to represent the session. If no string is configured, then the value of this property will be Sessionx (where x is the SESSIONNUMBER).

USERNAME

This property defines the name of the Blues user as defines by the Blues Manager window. The DATABASE, USERNAME, and SESSIONNUMBER properties together define which session settings that the control uses.

Delegates

Delegates are called by the control to inform the application of some type of event. Most delegates return the control class as the first argument to identify the control that it came from. This may be used to identify the control in the case that the application has more than one control in the application.

evtTitleBarChangeEvent

This delegate is fired when the operator selects to either display or hide the application title bar.

evtMenuChangeEvent

This delegate is fired when the operator selects to either display or hide the application menu bar.

evtConnected

This delegate is fired when the terminal control connect attempt is complete. The ConnectedOk argument indicates the outcome of the connect attempt. If the connection attempt fails, the Message property contains the error string.

evtLostConnection

This delegate is fired when the terminal session connection is lost or the operator selected to disconnect from the host.

evtKeyboardUnlocked

This delegate is fired when the host application unlocks the keyboard. When a screen is sent to the host, the keyboard becomes locked until the host application unlocks it.

evtScreenChange

This delegate is fired when the host application has written to the session screen area. It informs the application that the screen has changed.

evtTerminalKeyPress

This delegate is fired when the operator or the application has pressed one of the terminal control keys such as ENTER, PF1, etc. The keycode argument will contain one of the KeyDefines enumeration values. KeyDefines is an enumeration in the enums.dll file.

evtCloseWindowEvent

This delegate is fired when the operator selects the close window menu item. It informs the application to close the session window.

evtMacroFunctionCompleteEvent

This delegate is fired when a macro record or play has completed.