

TBREDCOMM™

Reference Manual

Version 8.9.1

Thoroughbred Software International, Inc.

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INTRODUCTION

TbredComm is Thoroughbred's terminal emulation product designed specifically to support and enhance Thoroughbred applications for both a character interface as well as the VIP graphical interface (GUI). TbredComm provides TCP/IP and serial communications for local, remote, and Internet connections. It supports any Thoroughbred-based UNIX, Linux, and Windows Telnet Server-based application.

TbredComm is designed specifically for Thoroughbred development environments, providing not only the standard features of an emulator but also functionality specific to Thoroughbred products.

- Support for 24 function keys
- Copy and Paste across applications
- Scrolling
- Slave Printing
- Print Screen
- Font Selections
- AutoLogon configurations and an AutoLogon scripting language.
- Various TCP/IP protocols including raw, telnet and SSH.
- Dictionary-IV color settings
- Mouse aware capabilities for your 3GL applications
- Mouse aware capabilities for your character-based Dictionary-IV and OPENworkshop applications.
- The ability to open and execute files located on a windows workstation from your application code. If a file can be opened or launched from the Windows Run dialog, it can be opened by your application code using TbredComm.
- Provides 132-column support using the Basic wide-screen mnemonic. Requires Basic 8.5.0 for the correct terminal table. For more information on Basic mnemonics, please refer the the Thoroughbred Basic Developer Guide.
- Record and playback keyboard and mouse input.
- Screen scraping to read from a screen and sockets to write to the screen.

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Emulation uses the standard Thoroughbred terminal table definition: TBREDCON. The TBREDCON terminal table has been designed specifically for TbredComm, please use this table to ensure proper emulation.

Many of the TbredComm options are managed in the WorkStation Manager. For more information see the WorkStation Manager manual (TbredComm, TbredComm AutoLogon , and Mouse Controls tabs). Below are some of these options:

- Windows Close
- Windows Maximize
- Slave Printing Dialog
- Queue Size
- Highlight Color
- Overflow Color
- Terminal Font
- AutoLogon Configurations
- Mouse Control Settings

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PATH DEFINITIONS AND CONVENTIONS

The paths noted in this manual vary depending upon the operating system.

Tbredcom-data-path is used to indicate the path where files requiring read and write access are located.

- On Windows 10/Windows 11/Windows Server 2016/Windows Server 2019/Windows Server 2022/Windows Server 2025 the required path is C:\ProgramData\Thoroughbred Software\TSI.

Tbredcom-user-path is used to indicate the path where user specific files requiring read and write access are located.

- On Windows 10/Windows 11/Windows Server 2016/Windows Server 2019/Windows Server 2022/Windows Server 2025 the required path is C:\Users\tbred2\AppData\Roaming\Thoroughbred Software.

- On Window

Tbredcom-program-path is used to indicate the path where executable and some dll files are located.

- On all Window platforms the default path is C:\Program Files\TSI\Bin.

Tbredcom-system-path is used to indicate the path where Thoroughbred ini files and other system files that require write access are located.

- On Windows 10/Windows 11/Windows Server 2016/Windows Server 2019/Windows Server 2022/Windows Server 2025 the required path is C:\ProgramData\Thoroughbred Software.

- On other Window platforms this path may vary, typically it is C:\Documents and Settings\All Users\Application Data\Thoroughbred Software

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INSTALLATION AND SETUP

For installation instructions please refer to the TbredComm Installation And Activation Guide.

Terminal Table Setting

Before starting TbredComm make sure your host is configured to use the TBREDCON terminal table (For more information see the TbredComm Installation Manual and the Dictionary-IV Administrator Guide). This terminal table provides the best emulation for the TbredComm product.

NOTE: If you plan to use VIP, you must use the TBREDCON terminal table.

AutoLogons

A key feature of TbredComm is the ability to create AutoLogons that can be used to automate all or part of the login process. Using AutoLogon configurations in combination with AutoLogon scripts, you can create a wide range of desktop shortcuts. You can:

- Establish a TCP/IP raw, telnet, or SSH connection to a pre-configured host.
- Supply a pre-configured user name or prompt the user to enter their user name.
- Supply a pre-configured password or prompt the user to enter their password.
- Emulate keystrokes on the host. For example keystroke emulation can be used to set the terminal type to TBREDCON, change the directory to usr/lib/basic, start Basic with the appropriate IPLINPUT file, and then make a selection from an application menu.

For information on creating and maintaining AutoLogon configurations please see the WorkStation Manager manual (TbredComm AutoLogons tab).

For more information on the AutoLogon scripting language please see the AutoLogon Scripts section in this manual.

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Creating Shortcuts

Right mouse click on your Desktop. Select New, select Shortcut. The Windows Shortcut Wizard will display. Click **Browse** and select *Tbredcom-program-path*\TSI\Bin\Tbredcom.exe. Typically this is C:\Program Files\TSI\Bin\Tbredcom.exe. Select **Next** and enter a name for this shortcut. Select **Finish**.

To add an Autologon to your shortcut, right mouse click on the shortcut created by the Shortcut Wizard and select **Properties**. The Shortcut tab should be selected. Modify the Target value by appending -A and the three character Autologon key.

Example: "C:\Program Files\TSI\Bin\Tbredcom.exe" –A TSI

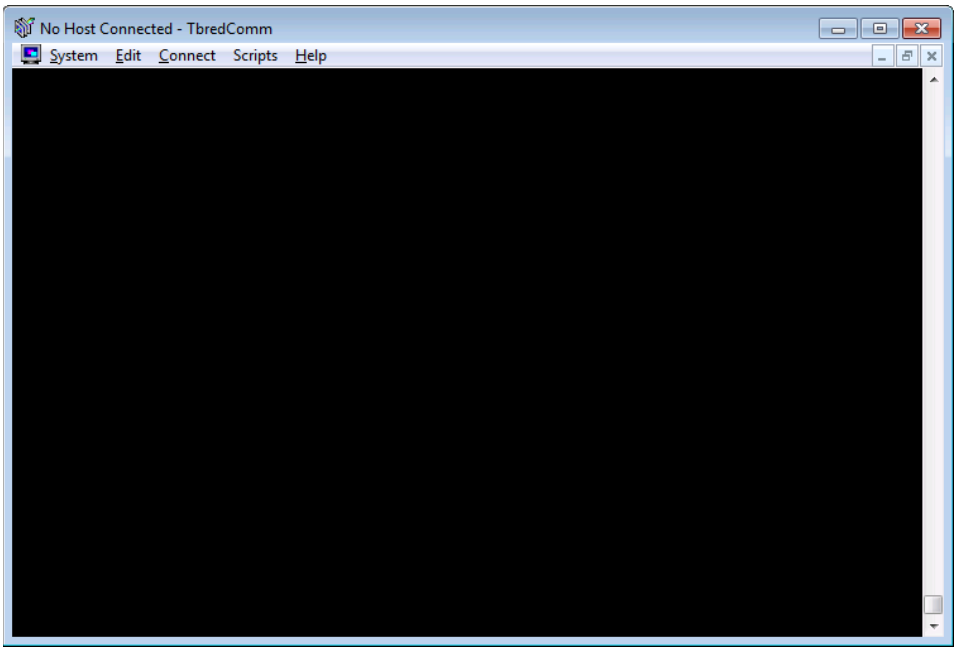
NOTE: On Windows 10/Windows 11/Windows Server 2016/Windows Server 2019/Windows Server 2022/Windows Server 2025 the default shortcut created by the installation follows the Microsoft recommendation of creating Advertised shortcuts. The Target property for these shortcut types is read only, they cannot be modified or copied and then modified. A new shortcut must be created using the Windows Shortcut Wizard for the Autologon parameters.

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TBREDCOMM COMMUNICATION SERVER WINDOW

Start TbredComm

Select the Windows **Start** button, select **All Programs-->Thoroughbred Software-->TbredComm**. Or select the appropriate TbredComm shortcut. The TbredComm Communication Server Window will display.



The TbredComm Communication Server window is parent window for the TbredComm emulation window. It can be minimized, displayed as normal or maximized to fit the TbredComm Communication Server window. The TbredComm window automatically resizes proportionally to the selected point size. For more information, please see the Menu Options, System, Select Font section of this manual.

When connected to a host the TbredComm Communication Server window title bar will display either the name of the current host or the Autologon description.

The scrollbar allows you to scroll back through the last 100 lines of history in the TbredComm emulation window.

Starting TbredComm automatically starts the WorkStation Manager displaying the icon in the system tray. Use the WorkStation Manager to manage the various TbredComm options. For more information see the WorkStation Manager manual (TbredComm and TbredComm AutoLogon tabs).

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Menu Options

From the **TbredComm Communication Server** window you have the following menu options.

System

Thoroughbred Applications
Provides access to the Thoroughbred HotKey (**CTL-P**) menu. For more information see the Dictionary-IV Administrator Guide. Also see WorkStation Manager (Applications).

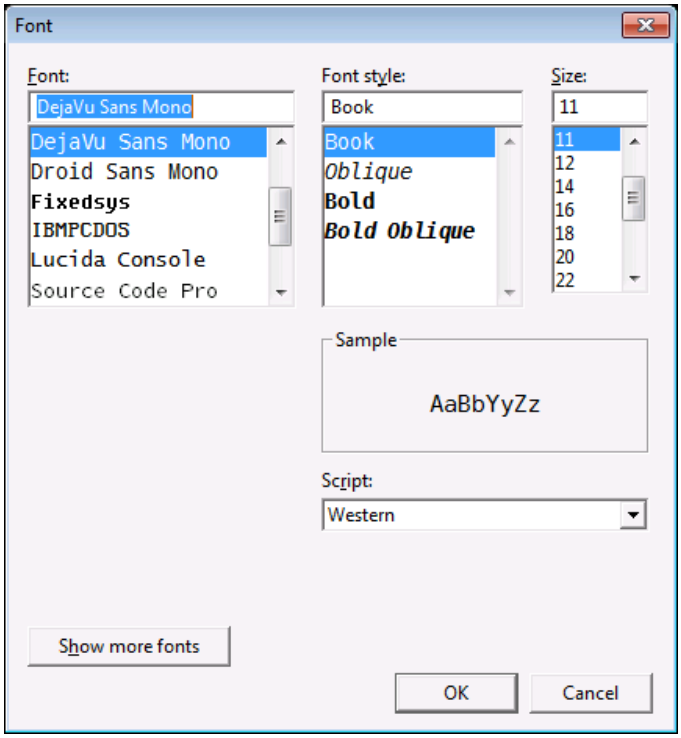
Settings
Allows you to change the backspace character and print manager mode for the TbredComm session.

> **Backspace**
> Allows you to select the backspace character, either a **UNIX/Windows** backspace, 0x08, or a **VMS** backspace, 0x7F.
>
> **Printer**
> Allows you to select **Pass-through** or **Standard** print manager mode.
>
> In **Pass-through** mode, all output will be spooled to the Microsoft Windows Print Manager and use existing Dictionary-IV printer tables. If you use the Windows Print Setup facility to change printer type, you must reassign your printer table to the new type.
>
> In **Standard** mode, all output will be spooled to the Microsoft Windows Print Manager and use a standard printer table, which enables you to use the Windows Print Setup facility to change printer type without having to reassign your printer table to the new type.
>
> To use a standard printer table, you must create a printer table that contains a set of escape sequences. For more information on how to create the printer table, please refer to the Thoroughbred Environment for Windows Supplemental Guide.
>
> For more information on Dictionary-IV printer tables, please refer to the Dictionary-IV Administrator Guide.

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Select Font

The font window appears and allows you to select the font face, style, and point size to be used with TbredComm. The TbredComm window automatically resizes proportionally to the selected point size. Resizing the TbredComm window by grabbing and dragging the window frame automatically adjusts the point size based on the window size.



Althought a variety of fonts are available, we highly recommend using a fixed font. The default and recommended font is the DejaVu mono font point size 11. This font will provide good font mapping for an 80x24 character application.

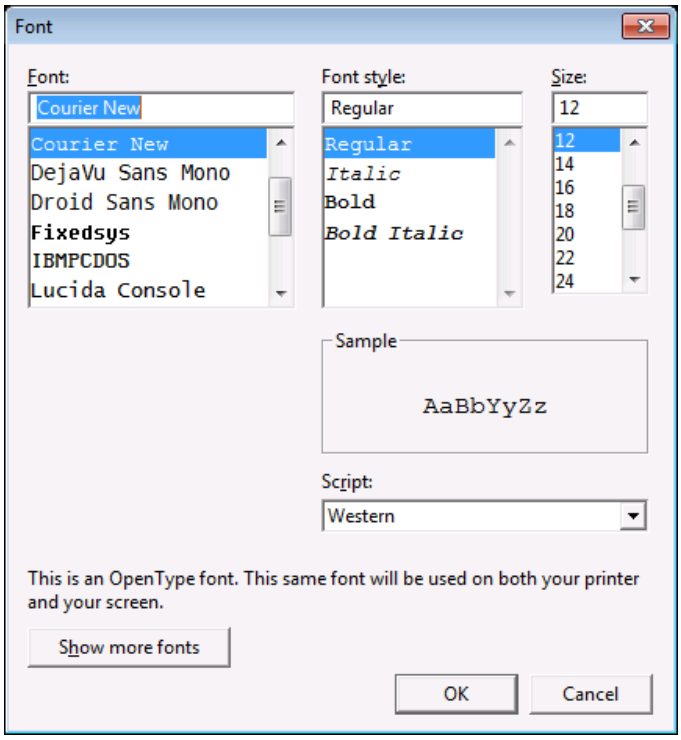
If your application makes use of the Thoroughbred business graphic characters (mnemonics "G0"-"GF") you must select a font that supports those characters. The DejaVu, Tbred, Courier New and IBMPCDOS fonts support these characters.

NOTE: The Tbred font is no longer supported.

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Select Print Font

The font window appears and allows you to select the font face, style and point size to be used when slave printing through TbredComm.



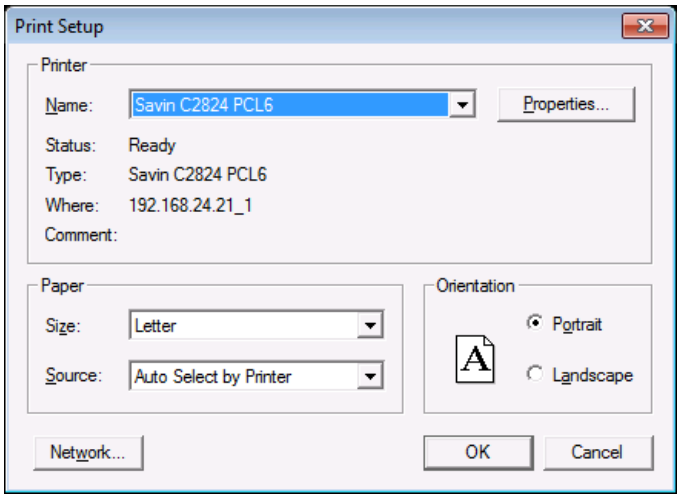
NOTE: Since these are fonts available for the selected printer, they may differ from your "Select Font" window.

Print Setup

NOTE: Printer functions used by TbredComm have a limit of 31 characters for printer names. When defining printers to be used with TbredComm the full UNC printer names cannot exceed 31 characters. Printing to a printer where the name exceeds this limit will result in an error.

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The print window appears and allows you to select the printer and printer properties.



Print Screen
The print window appears (see above) and allows you to print the screen. This will print the current TbredComm screen including the last 100 lines of history.

File Transfer
Allows you to start the FTP application defined on the Servers tab of the WorkStation Manager.

Exit
Exit TbredComm.

Edit

Copy
Select **Copy** to copy the highlighted text to the clipboard.

Paste
Select **Paste** to paste the contents of the clipboard in to the TbredComm window.

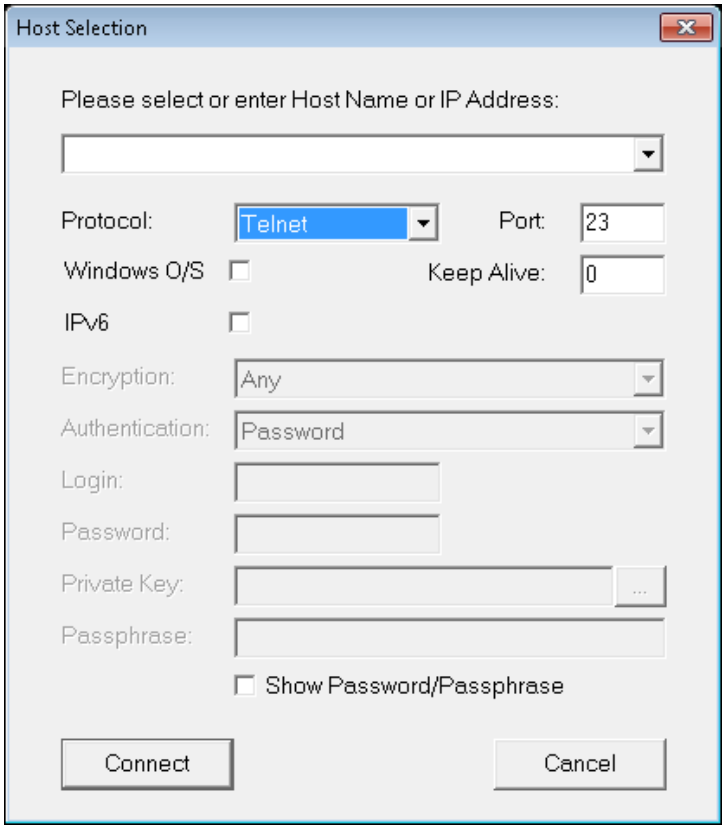
NOTE: From the WorkStation Manager, Mouse Controls tab you can enable one or more of the following:

- **CTL-C** to copy.
- **CTL-V** to paste.
- **Smart Copy** to select a block of text of any width or height rather than a block of 80 character rows. By default Smart Copy is enabled. The default highlight colors are white (WHITE) text on a light blue (LBLUE) background. To change these colors see the WorkStation Manager manual (TbredComm tab).

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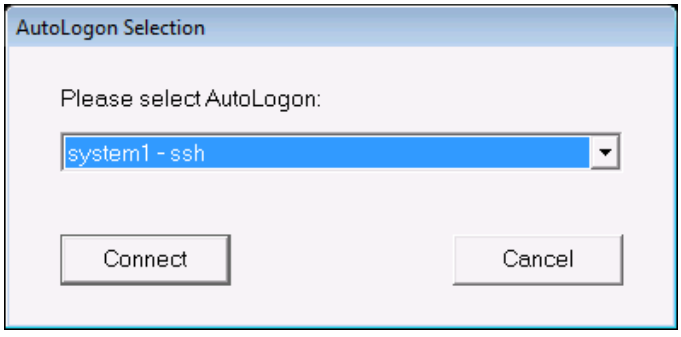
Connect

TCP/IP Host
Select this option to connect to a TCP/IP host. The following screen appears.



For more information see the Connect TCP/IP (Protocol: Raw and Telnet) or the Connect TCP/IP (Protocol: SSH1, SSH2, SSHAuto) section later in this manual.

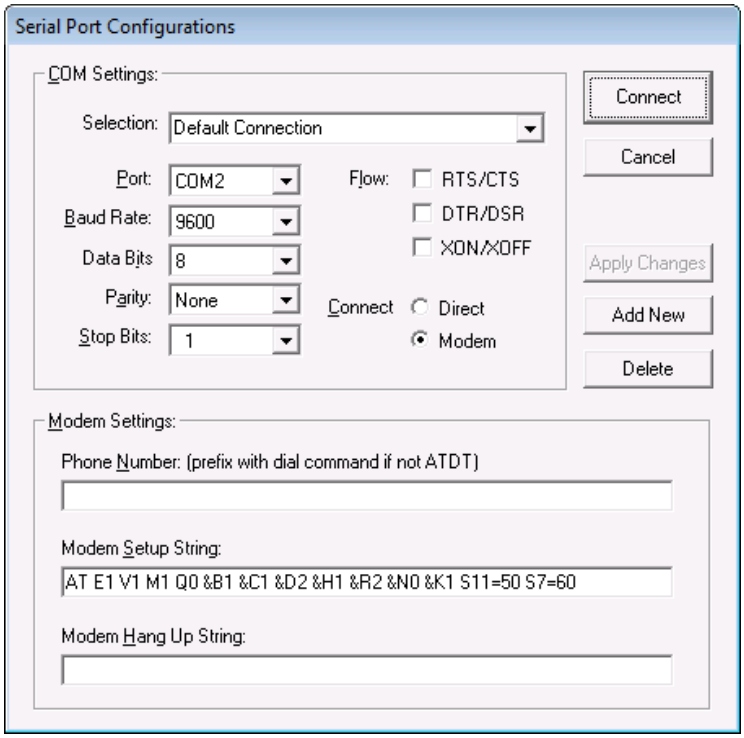
AutoLogon
Make this selection to use the AutoLogons set up in the WorkStation Manager (TbredComm AutoLogons tab). The following window appears.



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The host connect dialog prompts you to select from a list of AutoLogons. For more information on AutoLogons, see the WorkStation Manager Manual AutoLogons tab.

Direct Line or Modem
Select this option to make a dialup or modem connection through the Internet to a remote host. The following screen appears.



For more information see Connect Direct Line or Modem section later in this manual.

Drop Connection
Selcet this to disconnect from the remote host and exit TbredComm.

Scripts

Run Script
Select this option to playback a recorded script. A file selection dialog appears to select the recorded script.

Stop Script
Select this option to cancel the playback of a recorded script.

Start Recording
Select this option to start the recording of keyboard and mouse input.

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Stop Recording
Select this option to stop the recording of keyboard and mouse input and save the recorded input as a script. A file save dialog appears to save the recorded input as a Thoroughbred Recorded Script (i.e. .trs) file.

Edit Script
Select this option to edit a recorded script. A file selection dialog appears to select the recorded script.

Help

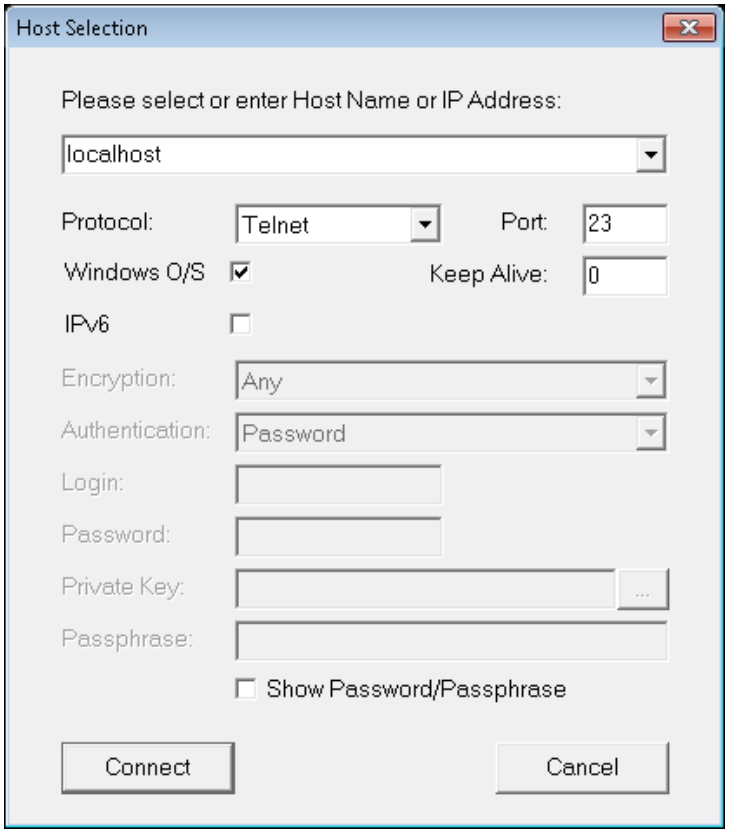
Shows you what version of TbredComm you are running.

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CONNECT - TCP/IP (PROTOCOL: RAW AND TELNET)

Connections can be made using the standard TbredComm connection dialog or by defining TbredComm AutoLogons in the WorkStation Manager. For more information about AutoLogons please see the WorkStation Manager reference manual.

From the TbredComm menu bar select the **Connect** menu and then select **Connect - TCP-IP**. The following screen appears.



Host name/IP address selection
Enter either the host name or the IP address of the Host name. The list box button can also be used to select a host from prior defined TCP/IP connections.

NOTE: When using TbredComm to connect to a Windows Basic installed on your local machine, simply type the IP address, or name of your local workstation. For more information on establishing a telnet connection to the TS Environment for Windows, please see the TS Environment for Windows Installation Guide.

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NOTE: If your network is not running a DNS service, any host names you enter must be configured in your Windows hosts file. See your Windows network connections.

Protocol
Select the desired protocol from the Protocol drop down list box. The default protocol is telnet.

> **Raw**:
> Allows you to establish a connection to the specified host using the raw protocol.
>
> **Telnet**:
> Allows you to establish a connection to the specified host using the telnet protocol.

Port
Enter the desired port for the connection. The default port is 23.

NOTE: The remaining options on the connection dialog do not apply to the raw and telnet protocols.

Window O/S
Check the Window O/S check box if you are connecting to TS Environment for Windows (Telnet Basic). This will populate INF(3,2) and INF(5,2) with the Domain User Name providing a unique account name for each Basic connection.

Keep Alive
Enter the number of seconds of inactivity before a "KeepAlive" packet is sent to keep the connection alive. The default is defined by the Default Keep Alive defined on the TbredComm tab of the WorkStation Manager. A 0 value will disable Keep Alive.

IPv6
Check the IPv6 check box to first try connecting to the specified host using IPv6 connectivity. If that fails, TbredComm will try again using IPv4 connectivity.

Connect
Select the **Connect** button to make the connection. Once the conneciton is established, the host will prompt you for your login and password.

Cancel
Select the **Cancel** button to exit the connection dialog.

To connect using an AutoLogon please see the WorkStation Manager manual.

For Secure Shell protocols, please see the Connect TCP/IP (Protocol: SSH1, SSH2, SSHAuto) section later in this manual.

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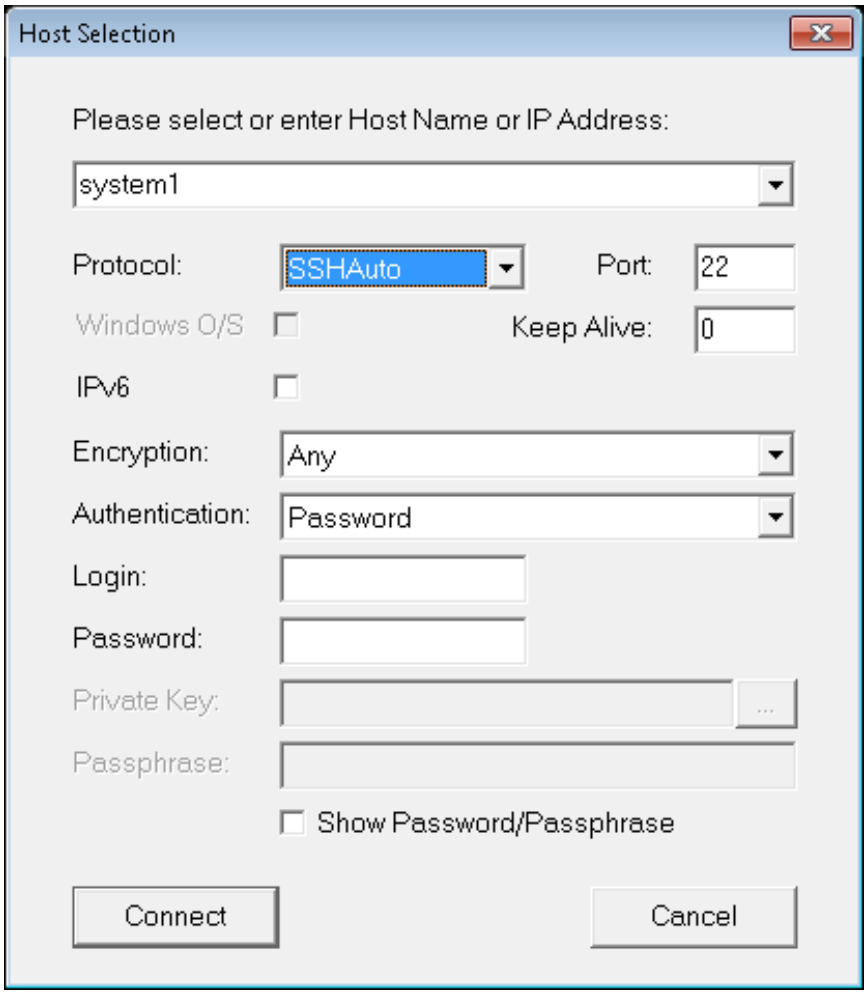
CONNECT - TCP/IP (PROTOCOL: SSH1, SSH2, SSHAUTO)

This section describes establishing a secure connection to a host running an SSH1 or SSH2 server. It assumes a working knowledge of SSH and that an SSH server has been properly installed on the host.

If you intend to connect using Public and Private Keys please refer to the SSH Public and Private Keys section later in this document.

Connections can be made using the standard TbredComm connection dialog or by defining TbredComm AutoLogons in the WorkStation Manager. For more information about AutoLogons please see the WorkStation Manager reference manual.

From the TbredComm menu bar select the **Connect** menu and then select **Connect - TCP-IP**. The following screen appears.



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Host name/IP address selection
Enter either the host name or the IP address of the host. The list box button can be used to select a host from a list of prior TCP/IP connections.

Protocol
You may select SSH1, SSH2 or SSHAuto from the Protocol drop down list box. SSHAuto is the recommended default.

Port
Enter the desired port for the connection. The default port is 22.

Keep Alive
Enter the number of seconds of inactivity before a "KeepAlive" packet is sent to keep the connection alive. The default is defined by the Default Keep Alive defined on the TbredComm tab of the WorkStation Manager. A 0 value will disable Keep Alive.

IPv6
Check this to first try connecting to the specified host using IPv6 connectivity. If that fails, TbredComm will try again using IPv4 connectivity.

Encryption
You may select **Any**, **DES**, **3DES**, or **AES** from the encryption drop down list box. If a a specific encryption type is not required, select **Any**.

Authentication
Select the authentication method.

> **Both**
> Select **Both** to authenticate with a login and password and also one of the other authentication methods.
>
> **Password**
> Select **Password** to authenticate using a login and a password.
>
> **Public Key**
> Select **Public Key** to authenticate using private and public key pairs.
>
> **SecurID Token**
> Select **SecurID Token** to authenticate using a a token device.
>
> **Keyboard Interactive**
> Select **Keyboard Interactive** if your host requires some other form of authentication using the keyboard.

Login
Enter your login. If you leave this field blank you will be prompted to enter your login after selecting the **Connect** button.

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Password
Enter your password. If you leave this field blank you will be prompted to enter your password after selecting the Connect button.

NOTE: The password field is disabled when the Authentication type is set to Public Key.

Private Key
Enter the name of the private key file on the client or select the file lookup button to browse for the private key file. Private key files are .tpk files and are saved in the Keys directory on the client. If you leave this field blank you will be promted to enter your private key file name after selecting the Connect button.

- On Windows 10/Windows 11/Windows Server 2016/Windows Server 2019/Windows Server 2022/Windows Server 2025 the Keys directories are unique for each user. These are located in *Tbredcom-user-path*\Tsi\Keys.

This field is only enabled when the Authenticaiton type is set to Public Key.

For more information on Public and Private Keys please refer to the SSH Public and Private Keys section later in this document.

Passpharse
This field is only enabled when the Authenticaiton type is set to Public Key.

If you have elected to use a Passpharse with your Private key, enter your Passphrase. If you leave this field blank and you have defined a Passphrase you will be prompted to enter your it after selecting the Connect button.

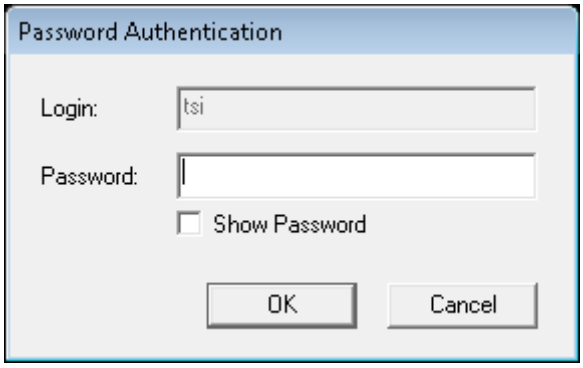
For more information on Passphrase please refer to the SSH Public and Private Keys section later in this document.

Show Password/Passphrase
Check the Show Password/Passphrase check box to display enter password and/or passphrase.

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Connect
Select the **Connect** button to make the connection.

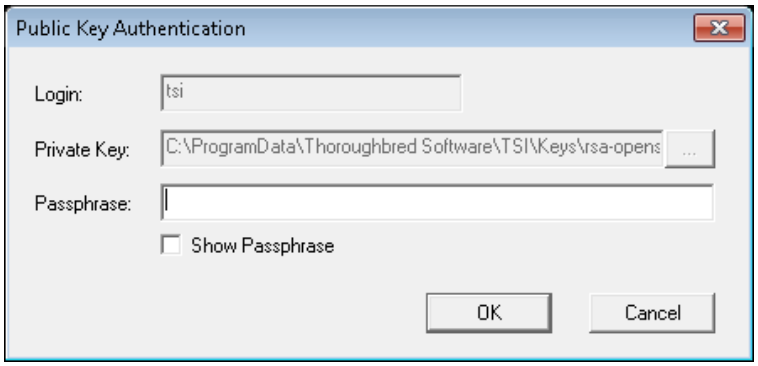
If you have selected an authentication that requires a login and a password and you have not entered them, the following screen will be displayed:



Enter your **Login** and **Password** then select the **OK** button to connect to the host or select the **Cancel** button to exit.

Check the Show Password check box to display the entered password before connecting.

If you have selected an authentication that requires a Private Key or a Passphrase and you have not entered them, the following screen will be displayed:



Enter the **Login**, **Private Key**, or optional **Passphrase** as described above and select the **OK** button to connect to the host or select the **Cancel** button to exit.

Check the Show Passphrase check box to display the entered passphrase before connecting.

Cancel
Select the Cancel button to exit the connection dialog.

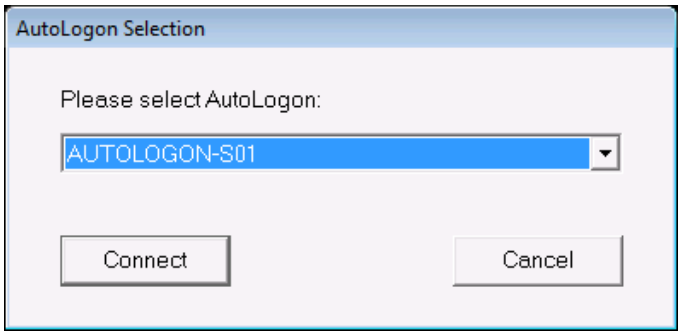
NOTE: For more information about Public and Private Keys please see the SSH Public and Private Keys section later in this manual.

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CONNECT AUTOLOGON

Autologons are created using the WorkStation Manager, AutoLogons tab. For more information on creating an autologon, please refer to the WorkStation Manager manual.

From the TbredComm menu bar select the **Connect** menu and then select **Connect - Autologon**. The following screen appears.



From the AutoLogon Selection dialog select an autologon.

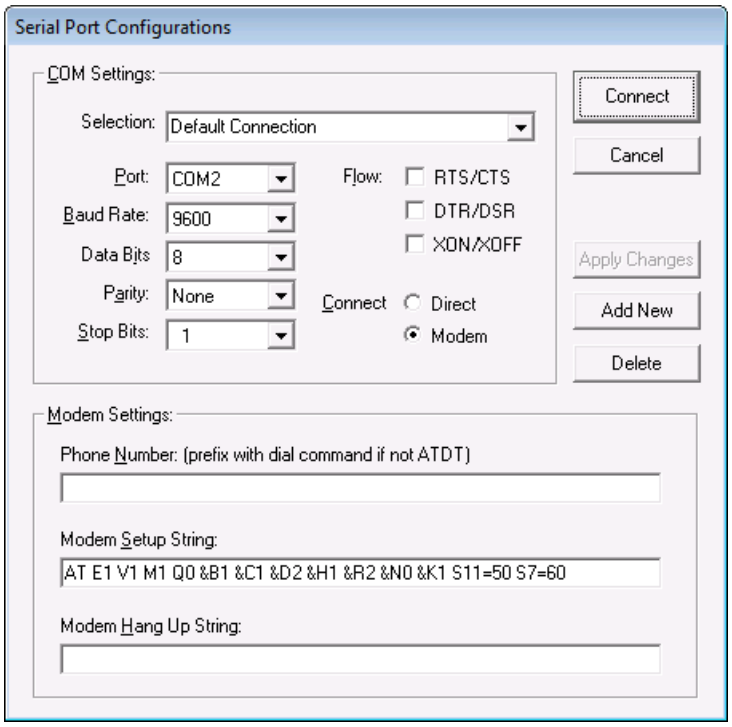
Connect
Select the **Connect** button to make a connection.

Cancel
Select the **Cancel** button to exit the autologon.

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CONNECT DIRECT LINE OR MODEM

When you make this selection from the Connect menu the following screen appears.



The Serial Port Configurations dialog displays. From this dialog you can define multiple configurations controlling both the **COM Settings** and the **Modem Settings**.

This can also be setup before hand from the WorkStation Manager manual (TbredComm AutoLogons tab).

Adding a New Configuration

Select the **Add New** button. A default configuration called **New Connection** displays. Type over the **Selection** name to enter an appropriate configuration name and make all other appropriate changes. Select the **Apply Changes** button to save the configuration. If you enable **Modem** connection, the **Modem Settings** are enabled and any necessary changes can be made in that section of the dialog.

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To Make a Connection

The **Serial Port Configuration** dialog contains the following:

- **COM Settings -** Selection, (configuration name), Port, Baud Rate, Data Bits, Parity, Stop Bits, Flow (RTS/CTS, DTR/DSR, XON/XOFF), Connect (Direct or Modem).

- **Modem Setting -** Phone number, Modem Setup String, Modem Hang Up String.

Highlight the desired **Selection** and select the **Connect** button.

Once you are connected, you can access the Dictionary-IV/OPENworkshop files on the host. For more information about working with GUI files, see the VIP for Dictionary-IV manual. For more information about working with Character files, see the Dictionary-IV/OPENworkshop manuals.

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SSH PUBLIC AND PRIVATE KEYS

This section describes how to configure the host and the client to use Public and Private Key pairs and an optional Passphrase. It assumes an SSH server has been installed on the host and is functioning properly.

Prepare the Host

The following describes configuring SSH key pairs for openSSH on a Linux host. Depending upon your operating system, there may be some differences.

On the host in your home directory ($HOME) create the directory .ssh with permissions using chmod 755.

```
mkdir .ssh
chmode 755
```

At the prompt type **ls -la** and press Enter. You should see something like the following.

```
drwxr-xr-x    2 dmd      users        1024 Jan 27 10:41 .ssh
drwx------    5 dmd      users        1024 Jun 16 09:49 ..
```

In $HOME/.ssh directory create the public key file. Depending upon which version of SSH is installed, the file name must be either authorized_keys or authorized_keys2.

NOTE: SSH1 supports "authorized_keys", older versions of SSH2 support "authorized_keys2", most current versions of SSH2 support "authorized_keys". If you are not sure, check with your system administrator.

The content of this file is not highly sensitive however the default permissions required by sshd are strict. The permissions should be read/write for the user and not accessible by others; chmod 600, chmod 640, and chmod 644 typically work.

```
mkdir authorized_keys
chmode 600
```

At the prompt type ls -la and press Enter. You should see something like the following.

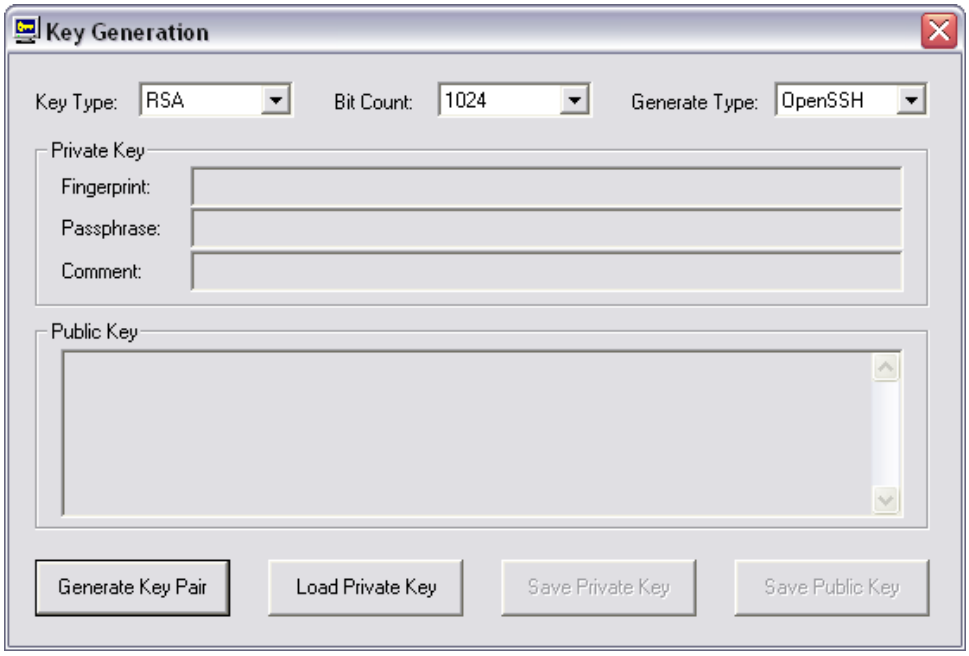
```
-rw-r--r--  1 dmd   users     222 Jan 27 12:44 authorized_keys
```

The authorized_keys file will contain the public key generated by the TbredComm Key Generator (TBKeyGen.exe).

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Generate Public and Private Keys – TBKeyGen

On the client run *Tbredcom-program-path***TSI\Bin\TBKeyGen.exe**. This will bring up the TbredComm Key Generator program.



Key Type (RSA or DSA)
Select the correct one for your host or contact your system administrator for the information.

Bit Count
Select the correct bit count for encryption on your host or contact your system administrator for the information. The default is 1024.

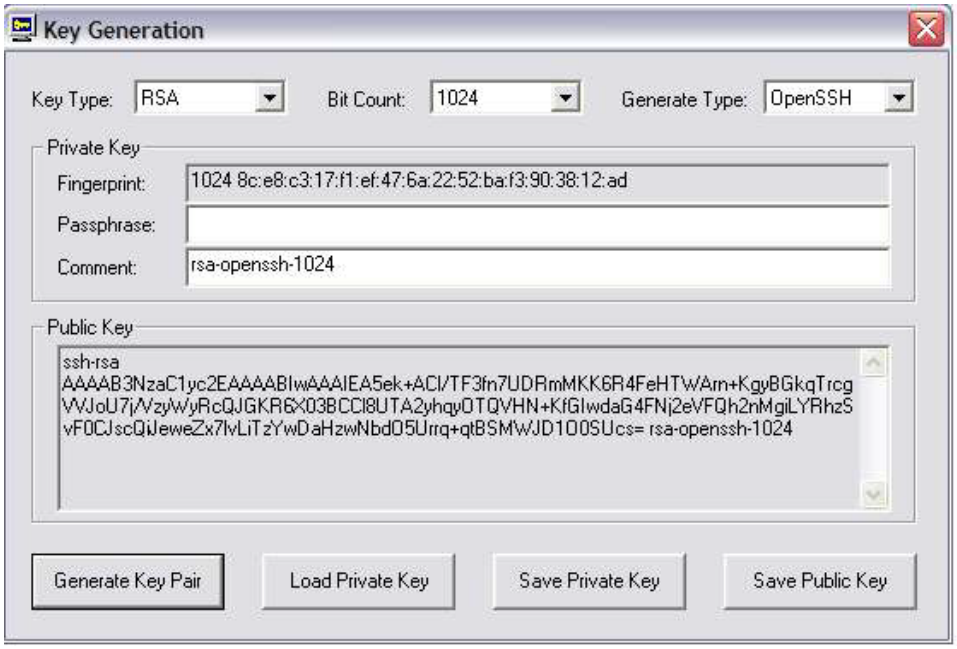
Generate Type (OpenSSH, RSA1, SSH)
Select the correct one for your host or contact your system administrator for the information.

NOTE: These must match the configuration of the host you will be connecting to.

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Generate Key Pair
Select the **Generate Key Pair** button to generate both the public and the private key.

This will display the public key, the fingerprint and a default comment. The default comment is included in the Public Key. Entering your own comment is recommended, something that will help you identify this public key. For example, a nickname for the remote host and a passphrase hint.

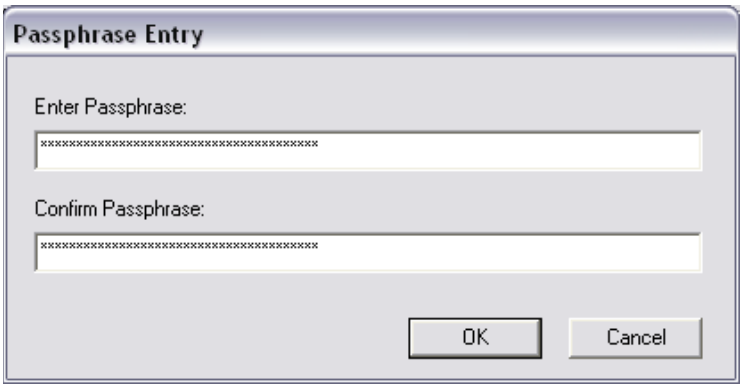


Copy the public key to your windows clipboard or write down your public key. The public key must be added to your key_authorization file on the host. If you elect not to copy the public key at this point you can use the Load Private Key described below to retrieve your public key at any time.

Passphrase
The passphrase allows only those users who know it to access the Private Key

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To generate a Passphrase place the cursor on the Passphrase field the following window appears.



This should be a minimum of 20 characters including numbers, spaces and punctuation characters. It is recommended that you select a phrase that can be easily remembered. Confirm the passphrase and select the **OK** button.

NOTE: The passphrase cannot be retrieved if forgotten. New keys must be generated to create a new passphrase.

If you do not want to use a Passphrase leave the Passphrase field empty.

Save Private Key
From the Key Generation window select the **Save Private Key** and the following window appears.



Enter the name for your private key file or use the default file name. The default private key file name is made up of the key type, generate type, and the bit count. All private key files must have the .tpk file extension and must be saved in the Keys directory. If the Keys directory does not exist, it will be created for you.

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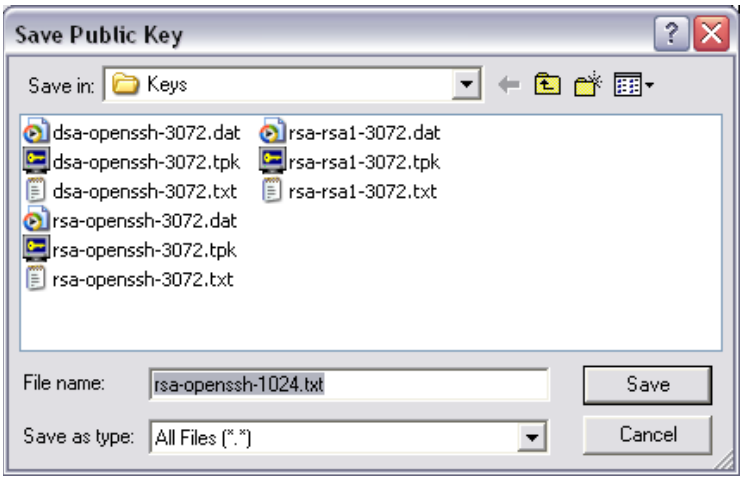
- On Windows 10/Windows 11/Windows Server 2016/Windows Server 2019/Windows Server 2022/Windows Server 2025 the Keys directories are unique for each user. These are located in *Tbredcom-user-path*\Tsi\Keys.

When the .tpk file is saved, a .dat file of the same name is also created. A private key requires both these files.

NOTE: the tpk and dat files should never be shared, since they contain your private key pair data.

Select the **Save** button to save the private key files and you will return to the Key Generation window.

Save Public Key
From the Key Generation window select the **Save Public Key** and the following window appears.



Enter the name for your public key file or use the default file name. The default public key file name is made up of the Key Type, Bit Count and Generate Type. Public key files must have a .txt extension and must be saved in the Keys directory. If the Keys directory does not exist, it will be created for you.

- On Windows 10/Windows 11/Windows Server 2016/Windows Server 2019/Windows Server 2022/Windows Server 2025 the Keys directories are unique for each user. These are located in *Tbredcom-user-path*\Tsi\Keys.

Select the **Save** button to save the public key file and you will return to the Key Generation window.

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Load Private Key
This allows you to retrive the corresponding public key for a key pair that has been previously defined.

Select the **Load Private Key** button and you will be prompted to locate the private key file (.tpk) on the client. If you had defined a Passhprase you will be required to enter the Passphrase in order to open the private key file (.tpk).

The public key will be displayed in the Key Generation dialog box.

Close Key Generator
Closes the Key Generator program. This must be closed before attempting to make a SSH connection.

Add the Public Key to Host

From your clipboard paste the public key in your $HOME/.ssh/authorized_keys file on the remote host. Care must be taken not to insert any leading or trailing characters, including spaces. The public key must be entered exactly as it appears in the Thoroughbred Key Generation dialog box.

To create a SSH connection using the Public Key authentication, please refer to the Connect - TCP/IP (Protocol: SSH1, SSH2, SSHAuto) section in this manual.

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MOUSE CONTROLS

Dictionary-IV based applications are fully mouse aware. For a mouse aware character based interface, simply enable the mouse.

NOTE: 3GL applications do require some programming to capture and process mouse events.

Mouse control options can be set in the WorkStation Manager (TbredComm tab).

Mouse on/off
If this is off all mouse aware items are ignored. These include Click, Double-click, Right-click; as well as Smart Copy, Control Key and Yes No Pattern. For more information see the WorkStation Manager (Mouse Controls tab).

The following mnemonics are available in Basic:

- **'MB'** - Mouse Begin will turn on the mouse.
- **'MD'** – Mouse Scroll Down visual.
- **'ME'** - Mouse End will turn off the mouse.
- **'MH'** – Mouse Home visual.
- **'ML'** – Mouse Tab Left visual.
- **'MR'** – Mouse Tab Right visual.
- **'MU'** – Mouse Scroll Up visual.
- **'MX'** – Mouse Exit visual.

NOTE: Please refer to the Thoroughbred Basic Developer Guide for more information on mnemonics.

The TBREDCON terminal table entries for these mnemonics are:

```
MB 00 0 0 0 KE[?37h

MD 00 0 0 0 $2A

ME 00 0 0 0 KE[?37l

MH 00 0 0 0 $2A

ML 00 0 0 0 $2A

MR 00 0 0 0 $2A

MU 00 0 0 0 $2A

MX 00 0 0 0 $78
```


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MOUSE EVENTS

The following section describes how Dictionary-IV will process mouse events and suggests how to modify 3GL applications to make them mouse aware.

Mouse events are trigged by posting a CTL value to a Basic INPUT statement. In some cases, a mouse event requires two INPUTs. The first receives the leading CTL value identifying the type of mouse event. The second input receives the data specific to the mouse event followed by a <CR>. The following is a summary of mouse events.

Left Single Click	**<-20> + *ccc* + *rrr* + <CR>**
Left Double Click	**<-21> + *ccc* + *rrr* + <CR>**
Right Single Click	**HOTKEY *value***
Control Keys	***Function-key-CTL-values***
Yes/No Prompts	***Yes/No-character***

Click Event
When the user clicks in the TbredComm window the host will receive:

<-20> + *ccc* + *rrr* + <CR>

<-20> is a CTL=-20 identifying a mouse click event.
ccc is the three-byte column position where the mouse was clicked.
rrr is the three-byte row position where the mouse was clicked.
<CR> is a carriage return.

Basic INPUT statements must be modified to anticipate and collect the click event. Collect the first byte from the input buffer to determine if a mouse click event has occurred (CTL=-20). If true, collect the column and row position from the input buffer. At this point the 3GL application can execute the appropriate click logic. If false, collect the remaining operator input (keystrokes) from the input buffer.

For example:

```
INPUT EDT (0,SIZ=1) OPERI$;          ! Collect 1 byte of operator input
IF CTL=-20                           ! If mouse click event
   INPUT 'EE',CLICK$,'BE',           !   Turn echo off, collect click data, turn echo on
   C=NUM(CLICK$(1,3)),               !   Get the click column position
   R=NUM(CLICK$(4,3));               !   Get the click row position
   GOSUB CLICK                       !   Go process the click logic
ELSE                                 ! else
   INPUT OPERI$;                     !   Collect remaining operator input (keystrokes)
FI;                                  ! endif
```


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Double Click Event
When the user double clicks in the TbredComm window the host will receive:

```
<-21> + ccc + rrr + <CR>
```

<-21> is a CTL=-21 identifying a mouse double click event.
ccc is the three-byte column position where the mouse was clicked.
rrr is the three-byte row position where the mouse was clicked.
<CR> is a carriage return.

Basic INPUT statements must be modified to anticipate and collect the double click event. This is similar to the click event. Please see "Click Event" above for details.

Right Mouse Click Event – HotKey Event
The right mouse click event is tied to the Basic HOTKEY directive invoking the current HOTKEY process in Basic. For example, a right mouse click from within OPENworkshop will display the HOTKEY menu OOMU10; this is equivalent to a typing a Ctrl-P. Please refer to the Basic Language Reference manual for more information on SET HOTKEY. Please refer to the Dictionary-IV manuals for more information on the Desk Services/HotKey menu (Ctrl-P) processing.

Unlike Basic, TbredComm has no knowledge of the current SET HOTKEY value. For this reason, a right mouse click always returns a CTL-P (typically CTL=-15).

3GL applications that already take advantage of the HOTKEY directive do not require any modifictions for support of the right mouse click event. The right mouse click event simply posts the HotKey CTL value, and no additional information is posted to the input buffer.

In the following example after executing the SET HOTKEY directive, a mouse click sends a CTL=-15 to Basic. This executes the program “MYPGN”.

```
SET HOTKEY $10$, "MYPGN"
```

Control Key Events
Control key events are designed to work with Basic,Dictionary-IV and OPENworkshop function key prompts. For example:

```
Press <F1> to continue
```

Control keys are identified by a start and ending character, for example "<>". When the user clicks in an area encompassed by the start and end characters, the text will be interpreted. If the text contains a known control key code then that control key will be posted to the Basic INPUT statement.

In the following example clicking on the "F" or the "2" in <F2> returns CTL=2. Clicking on the "F" or the "6" in <F6> returns CTL=6. Clicking on the "F" or the "4" in <F4> returns CTL=4.

```
Enter: <F2> LookUp <F6> Help <F4> End
```


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In the following example clicking on the "F" or the "2" in (F2) returns CTL=2. Clicking on the "F" or the "6" in (F6) returns CTL=6. Clicking on the "F" or the "4" in (F4) returns CTL=4.

```
Enter: (F2) LookUp (F6) Help (F4) End
```

Multiple control key values can be defined with entries separated by commas "<>,[],{},(), F-,F=" for example.

For more information on defining control key events please see the WorkStation Manager manual (Mouse Controls tab).

Yes/No Events

The Yes/No events are designed to work Yes/No prompts. For example:

```
Do you want to continue (Y/N)?
```

The Yes No characters are identified by a start, ending character and a separator character. When the user clicks in an area encompassed by the start and end characters, the text will be interpreted. If the text matches the yes/no pattern, the clicked character will be posted to the Basic INPUT statement.

3GL applications may need to be modified. The Yes/No event will post a single character to the input buffer. For Yes/No events an INPUT SIZ=1 must be used.

In the following example clicking on the "Y" in (Y/N)? returns Y. Clicking on the "N" (Y/N)? returns N.

```
Do you want to continue (Y/N)?
```

In the following example clicking on the “J” in [J-N]? returns J. Clicking on the "N" in [J-N]? returns N.

```
Do you want to continue [J-N]?
```

For more information on defining Yes/No events please see the WorkStation Manager manual (Mouse Controls tab).

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OTHER OPTIONS

The following can be set in the WorkStation Manager (TbredComm tab).

Windows Close
Disable the use of the close button in the TbredComm window to prevent a customer from accidentally closing the TbredComm while using an application.

Windows Maximize
Enable or **Disable** the use of the maximize button in the TbredComm window.

Slave Printing Dialog
Enable displays the Print Dialog (printer selection) during slave printing. **Disable** turns this option off.

Queue Message Size (in k)
This parameter defines the size (in k) of the inbound message queue used by TbredComm. The default size is 16k.

NOTE: Communication between the VIP host and client is channeled through this same queue. The larger queue size should resolve some problems when printing very large jobs to a slave printer and when editing very large VIP GUI screen definitions. The maximum size is determined by the maximum Basic string size of 64k.

Upload Message Size (in k)
This parameter defines the size (in k) of the messages sent from the client to the host. The default value is 16k. Most host bound messages are very small; however, communication from the client to the host when saving a GUI screen definition back to the host, does communicate large blocks of data.

NOTE: The larger Upload Message Size improves performance when uploading GUI screen definitions. Slow network connections may experience problems with large message blocks. The maximum size is determined by the maximum Basic string size of 64k.

Highlight Colors
Allows you to define the foreground and background colors when highlighting text in the TbredComm window with the mouse.

Overflow Color
When resizing the TbredComm window, the Basic window 'region' is resized based on the current font and point size. It is possible to expand the TbredComm window beyond the region defined by Basic. The Overflow Color defines the color to be used for that area of the TbredComm window.

Default Keep Alive
This parameter defines the default keep alive value for new TbredComm connections and Autologons. To enable, enter the number of seconds of inactivity before a "KeepAlive" packet is sent to keep the connection alive. To disable, enter 0 for the number of seconds.

Backspace
Allows you to select the backspace character, either a **UNIX/Windows** backspace, 0x08, or a **VMS** backspace, 0x7F.

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Printer
Allows you to select **Pass-through** or **Standard** print manager mode.

> In **Pass-through** mode, all output will be spooled to the Microsoft Windows Print Manager and use existing Dictionary-IV printer tables. If you use the Windows Print Setup facility to change printer type, you must reassign your printer table to the new type.
>
> In **Standard** mode, all output will be spooled to the Microsoft Windows Print Manager and use a standard printer table, which enables you to use the Windows Print Setup facility to change printer type without having to reassign your printer table to the new type.
>
> To use a standard printer table, you must create a printer table that contains a set of escape sequences. For more information on how to create the printer table, please refer to the Thoroughbred Environment for Windows Supplemental Guide.

For more information on Dictionary-IV printer tables, please refer to the Dictionary-IV Administrator Guide.

Font Smoothing
Allows you to enable or disable the use of Microsoft's Clear Type technology.

Terminal Font
Allows you to set the default terminal font for TbredComm.

Printer Font
Allows you to set the default printer font for TbredComm.

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OPEN EXTERNAL WINDOWS FILES

TbredComm supports opening and executing external Window files such as image files, Word documents, Excel spread sheets, etc. Any file that can be opened or launched from the Windows Run dialog (Start button, Run) can be executed from within TbredComm.

If a program name is not supplied, the file will be opened with the default application defined by the file extension. For example if .jpg files are associated with a browser, that browser will be used to open .jpg files.

This is accomplished using two new mnemonics.

```
OB Open Begin

OE Open End
```

The TBREDCON terminal table entries for these mnemonics are:

```
39 OB 00 0 0 0 KE[5j

39 OE 00 0 0 0 KE[4j
```

The Basic syntax to open a file is:

```
PRINT 'OB',"file name_and_arguments",'OE'
```

If the path to the file is not defined in the system path variable you must supply the full path name.

TbredComm will recognize the PRINT command, the OB mnemonic, the OE mnemonic, the file name, and any arguments encapsulated between these mnemonics. For TbredComm to capture the file name, the PRINT must print to the visible screen. The recommended technique is to:

First create a window,

Execute the PRINT statement,

Then pop the window.

NOTE: The PRINT statement will be captured by TbredComm prior to being displayed in the window, it will not be echoed on the screen.

The following example first creates an 1x1 window at column 0 row 24 then executes the PRINT statement that will open a .doc file using the default application associated with the .doc file extension:

```
WINDOW CREATE (1,1,0,24);
PRINT 'OB',"C:\MyFiles\TbredOBOE.doc",'OE';
WINDOW POP
```


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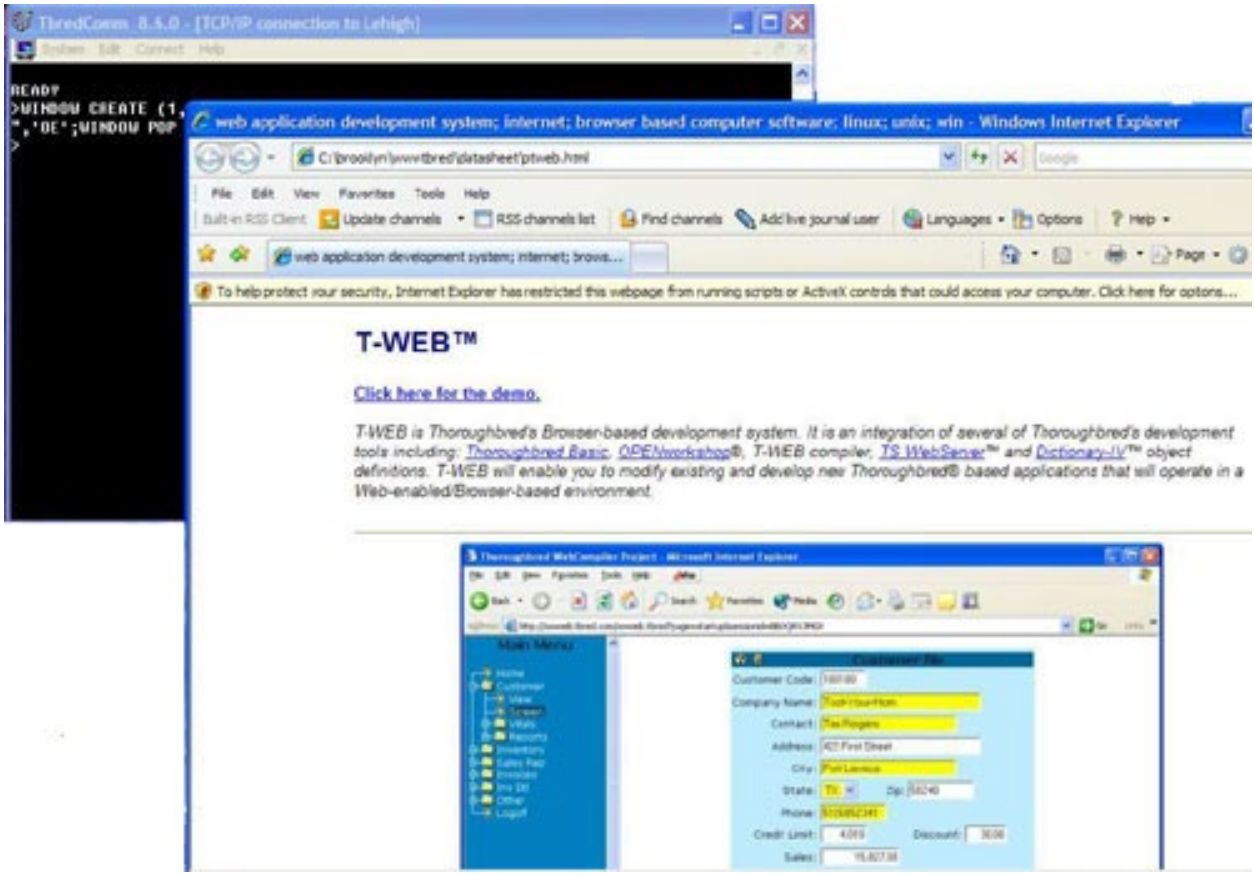
The following example will launch file explorer using an argument list to open an expanded folder view of the D drive:

```
WINDOW CREATE (1,1,0,24);
PRINT 'OB',"explorer.exe /E,/N,C:\",'OE';
WINDOW POP
```

The Basic engine will intercept and will not process a PRINT statement that attempts to print off the visible screen. The following example will NOT work:

```
WINDOW CREATE (80,1,200,24);
PRINT 'OB',"C:\MyFiles\TbredOBOE.doc",'OE';
WINDOW POP
```

The following example illustrates an .HTML file opened using the PRINT 'OB',C:*path\file-name*,'OE' syntax. In this case the .HTML file is associated with the IE browser.



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COMMAND ARGUMENTS

There are two TbredComm command line arguments available. These can be added to TbredComm shortcuts.

- **-A** Key to AutoLogon definition. May be used with the –P option to specify the port number.
- **-P** TbredComm™ now supports the ability to connect on a specified port. The port number can be an optional argument to the shortcut startup. For example:
  C:\Program Files\TSI\BIN\Tbredcom.exe -P 7000

  In this example, the port is specified using an upper case P with a space preceding the port number.

TbredComm now supports the ability to pass command line arguments to a Windows Basic through the WorkStation Manager. In order to supply command line arguments a complete autologin must be defined.

To do this from the WorkStation Manager select **Options**, select the **TbredComm** tab and add a new Auto Logon Section. For more information, see the Tbred Comm section in the WorkStation Manager manual.

After entering the Host Name, click on the **Cmd Ln** button to display the Command Line dialog box. This supports the command arguments that would normally follow **./b**.

For example, to start Basic with an alternate IPLINPUT file enter the IPLINPUT file name (IPLWIN.TXT) in the Command Line window. By entering that file name in the command line window, Basic will start using IPLWIN.TXT.

NOTE: It supports all Basic command line arguments.

Click **OK** to save the command line argument and exit the command line dialog. Complete the auto logon dialog as the reference manual describes, **with one exception**. You must specify a script file **even if it is an empty file**. We distribute a default script file TBDefaultWinBasic.tcl with VIP.

NOTE: The TbredComm script file editor will not properly save an empty script file. Use Notepad or any other text editor to create one should you accidentally remove the default that we distribute.

You can create a shortcut on your desktop to execute Windows Basic using the auto logon.

For example, if you create an auto logon named WIN the shortcut will resemble the following:

C:\Program Files\Tsi\BIN\Tbredcom.exe-A WIN.

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For more information on creating shortcuts see the Creating Shortcuts section of this manual and the WorkStation Manager. Manual.

AUTOLOGON SCRIPTS

An AutoLogon script is associated with an AutoLogon configuration. When TbredComm is started using an AutoLogon configuration, it will execute the appropriate script. Scripts are selected using the WorkStation Manager (TbredComm AutoLogons tab).

Each AutoLogon configuration must be associated with a script file. The WorkStation Manager tab allows users to pick a script file for an AutoLogon configuration. Script files are simple ASCII text files that may be maintained with Notepad or any text file editor. Script files are located in the *Tbredcom-data-path*\Tsi\Scripts directory.

Script File Commands

The script commands are listed below. Each command is shown using in the following syntax notation:

`[ ]` Square brackets indicate an option item.
`[ok-label]`

`{ }` Braces indicate that one of the enclosed items is required.
A vertical line (piping) separates the items.
`{varname|string}`

A string is defined as a sequence of text characters that may contain embedded spaces. Stings are not enclosed in quotes except in the input command when a string must be enclosed in double quotes (**"**) or single quotes (**'**).

varname is a variable name that can be from 2 to 8 characters and must begin with a '**$**'

The commands currently supported include:

`:label`

Serves as a label for a script branch. May be followed by one or more commands to execute conditionally. See the **input** and **goto** commands.

`waitfor{varname|string}`
When the script engine sees this command it waits for the string specified or the string contained in the variable name to arrive from the host. The command will wait until either the overall AutoLogon timeout occurs or the host issues a timeout and disconnects. For more information see the WorkStation Manager manual (TbredComm AutoLogons tab).

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send{varname|string}
The script engine sends the string or contents of the variable name to the host. The script engine always knows the following variable names:

$cr	carriage return.
$username	Contents of the **User Name** edit box in the AutoLogon configuration. See WorkStation Manager manual (TbredComm AutoLogons tab).
$wusername	Contents of the Windows **User Name**. See WorkStation Manager manual (TbredComm AutoLogons tab).
$password	Contents of the **Password** edit box in the AutoLogon configuration. See WorkStation Manager manual (TbredComm AutoLogons tab).

> **Note:** If a script command references **$username** or **$password**, and the variable contains an empty string, the script engine will automatically issue an **inputpw** command to allow the user to supply a value.

input varname "string"[cancel-label[ok-label]]
The script engine displays a dialog box. Enter a string. This string is placed in the variable name supplied. The string supplied is used as a prompt and must be enclosed in double quotes or single quotes.

Press **OK** to continue the script at the label specified by **ok-label**. If the **ok-label** is not supplied, the script continues with the next command in sequence.

Press **CANCEL** to continue the **script at the script command after the cancel-label. In order to specify an ok-label, the cancel**-label must also be supplied.

inputpw varname "string"[cancel-label[ok-label]]
This command is identical to the input commands above, except the string keyed by the user is echoed as asterisks (*).

set varname string
Sets a variable name to contain the string.

goto :label
The next command to execute is the command following the line with the **:label** command.

pause seconds
Pause execution for specified number of seconds.

quit
Stops execution of the script.

abort
Stops execution of TbredComm immediately .

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When Script Commands are Executed

Script commands are not executed immediately until a **send** or **waitfor** command is encountered. TbredComm waits for a successful connection to the remote host before executing a **send** or **waitfor** command. For example, this sequence:

```
input $user "Enter user name"
send $cr
waitfor login
send $user
```

This example prompts for the **$user** variable immediately when starting TbredComm. The **send $cr** command does not execute until the remote host is connected.

Where as the sequence:

```
send $cr
input $user "Enter user name"
waitfor login
send $user
```

This example waits until the remote host is connected before the script executes, because the first script command is **send $cr**.

Sample Scripts

Example 1
The default script, **TBDefaultLoginPassword.tcl**, uses the user name and password defined in the associated AutoLogon configuration. If either the username or password is not configured, TbredComm prompts the user for inputs. This script cannot be used for Desktop Application Menu selections.

```
waitfor login:
send $username$cr
waitfor Password:
send $password$cr
```

Example 2
The default script**, TBDefaultAppPromtCmd.tcl**, uses the user name and password defined in the associated AutoLogon configuration. If either the username or password is not configured, TbredComm prompts the user for inputs. Use this script for Desktop Application Menu selections.

```
waitfor login:
send $username$cr
waitfor Password:
send $password$cr
waitfor Web/SM
send .$cr
```


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Example 3
The default script**, TBDefaultWinBasic.tcl**, is an empty script used when making a connection to a TS Environment for Windows using TbredComm. Since no login is required, the script is empty but must exist in the *Tbredcom-data-path*\TSI\Scripts folder.

Example 4
The default script, TBDefaultSSHLogin.tcl is an empty script file and is required when making SSH connections.

Example 5
The following script uses the User Name and Password from the AutoLogon configuration or will prompt the user for one if not defined. It will perform a login and automatically select the Sample System' from the OPENworkshop menu.

NOTE: Once a login has completed the script will wait for the system prompt. In this example the full prompt is not checked, only the last 5 characters. This script then sets the terminal type, changes directories, and starts Basic. When Basic is started, the IPLINPUT file runs OO displaying the main OPENworkshop menu. The script pauses briefly allowing the main OO menu to display. The script sends an S + <CR> to select the Sample System, pause briefly then send an <CR> to select 'The System'.

```
waitfor login:
send $username$cr
waitfor Password:
send $password$cr
waitfor tsi]$
send TERM=TBREDCON$cr
waitfor tsi]$
send export TERM$cr
waitfor tsi]$
send cd /usr/basic$cr
waitfor tsi]$
send ./basic IPLINPUT
pause 1
send S$cr
pause 1
send $cr
```


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Example 6
The following script prompts for a **User Name** and **Password**, regardless if the User Name and Password are defined in the AutoLogon configuration. If the user presses **Cancel** at either prompt, the script terminates. A manual login is allowed.

```
waitfor login:
input 'Enter user name' $u sendnull
send $u$cr
waitfor Password:
input 'Enter password' $p sendnull
send $p$cr
goto exit
:sendnull
send $cr
:exit
quit
```

Example 7
The following script prompts for a **User Name** and **Password**, regardless if the User Name and Password are defined in the AutoLogon configuration. If the user presses **Cancel** at either prompt, TbredComm terminates.

```
waitfor login:
input 'Enter user name' $u abortnow
send $u$cr
waitfor Password:
input 'Enter password' $p abortnow
send $p$cr
goto exit
:abortnow
abort
:exit
quit
```

Example 8
The following script uses the Windows **User Name** and prompts for a **Password**. If the user presses **Cancel** at the password prompt, TbredComm terminates.

```
waitfor login:
send $wusername$cr
waitfor Password:
input 'Enter password' $p abortnow
send $p$cr
goto exit
:abortnow
abort
:exit
quit
```


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SOCKET SERVER

A socket connection can be established to TbredComm by starting TbredComm in 'socker server' mode allowing a client application to send and retrieve data to/from the TbredComm emulation window.

Establishing a Connection to TbredComm

The following steps describe how to make a socket connection to TbredComm:

- Start TbredComm with the Socket Server option:

  C:\Program Files (x86)\TSI\Bin\Tbredcom.exe –SS <port-number>

- Connect to a system. Once a telnet/SSH connection has been established, TbredComm will start listening on the specified port number.

- From a client application, create and connect to TbredComm using the IP address and port number.

TbredComm/Client Application Communication

After a connection to the TbredComm socket server port has been established, all messages to TbredComm must be in the following format:

<Message-Header><Message><Message-Trailer>

where:

Message-Header	string value 0x01 + "GUI"
Message	see the Host/TbredComm Messages
Message-Trailer	string value 0x01 + "IUG"

Responses sent to the host by TbredComm are not enclosed by the message header or trailer.

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Host/TbredComm Messages

The following list summarizes the actions a client application can make to TbredComm via the socket server connection:

Host/TBC	TBC/Host	Message Description
SC**	CS**	Screen Scraping establishment (host/workstation)
SC01	CS01	Screen Scraping request – Box
SC02	CS02	Screen Scrapping request – Character
SC03	CS03	Screen Scrapping request – Field
SC04	CS04	Screen Scrapping request - Row
SC05	CS05	Screen Scraping request – Cursor Position
SI**	IS**	Socket Input establishment (host/workstation)
SI01	IS01	Socket Input request
SI05	IS05	Socket Input – Set Cursor Position request

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Screen Scraping Messages

The following messages are used to retrieve information from the TbredComm emulation window:

Pos.	Len.	Description
1	4	SC** Screen Scraping establishment

Pos.	Len.	Response Description
1	4	CS** Screen Scraping established
1	4	CS00 Screen Scraping not established

1	4	SC01 Screen Scraping request - Box
5	3	Top row number
8	3	Left column number
11	3	Bottom row number
14	3	Right column number

Pos.	Len.	Response Description
1	4	CS01 Screen Scraping response - Box
5	5	Length of string starting at position 10
10	n	Screen data
		Note: Multiple rows of screen data will be separated by 0xFF's.

1	4	SC02 Screen Scraping request - Character
5	3	Column number
8	3	Row number

Pos.	Len.	Response Description
1	4	CS02 Screen Scraping response - Character
5	1	Character data

1	4	SC03 Screen Scraping request - Field
5	3	Starting column number
8	3	Ending column number
11	3	Row number

Pos.	Len.	Response Description
1	4	CS03 Screen Scraping response - Field
5	5	Length of string starting at position 10
10	n	Field data

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1	4	SC04	Screen Scraping request - Row
5	3	Row number	

Pos.	Len.	Response Description
1	4	CS04 Screen Scraping response - Row
5	5	Length of string starting at position 10
10	n	Row data

1	4	SC05	Screen Scraping request – Cursor Position

Pos.	Len.	Response Description
1	4	CS05 Screen Scraping response - Cursor Position
5	3	Column number
8	3	Row number

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Socket Input Messages

The following messages are used insert data into the TbredComm emulation window.

Pos.	Len.	Description
1	4	SI** Socket Input establishment

Pos.	Len.	Response Description
1	4	IS** Socket Input established
1	4	IS00 Socket Input not established

1	4	SI01 Socket Input request
5	1	Response flag (Y/N)
6	5	Length of string starting at position 11
11	n	Input data

Pos.	Len.	Response Description
1	4	IS01 Socket Input response
5	1	Input status: 1 = Successful 0 = Not successful Note: An input data string of length 0 will return a 'not successful' status.

1	4	SI05 Socket Input – Set Cursor Position request
5	1	Response flag (Y/N)
6	3	Column number
9	3	Row number

Pos.	Len.	Response Description
1	4	IS05 Socket Input – Set Cursor Position response
5	1	Set Cursor Position status: 1 = Successful 0 = Not successful Note: An invalid cursor position will return a 'not successful' status.

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Connection Example

The following example uses Thoroughbred Basic to connect to a TbredComm socket server running on 192.168.1.100 listening on port 6006. Then, using the screen scraping and socket input messages makes the Basic running in TbredComm go to console mode from the OPENworkshop menu then gets and displays the version of Basic.

```
00010 REM "TEST TBREDCOMM SOCKET SERVER"
00100 SETERR 08000;
      SETESC 09000
00500 GUIH$=$01$+"GUI",
      GUIT$=$01$+"IUG",
      MSK$="000";
      IPA$="192.168.1.100",
      SSP=6006
01000 OSS$=IPA$+":"+STR(SSP);
      SSC=UNT;
      OPEN (SSC,OPT="SOCKET") OSS$;
      GOSUB SEND_SCXX;
      GOSUB SEND_SIXX;
      DATA$="C"+$0A$;
      GOSUB SEND_SI01Y;
      GOSUB SEND_SC05;
      SROW=ROW;
      DATA$="DUMP VERSION"+$0A$;
      GOSUB SEND_SI01Y;
      GOSUB SEND_SC05;
      EROW=ROW;
      TOP=SROW+1,
      LEFT=0,
      BOTTOM=EROW-2,
      RIGHT=78;
      GOSUB SEND_SC01;
      FOR I=0 TO NEA("SCDATA$",1);
         PRINT SCDATA$[I];
      NEXT I;
      CLOSE (SSC)
06900 GOTO 09000
07000 SEND_SCXX: GMSG$=GUIH$+"SC**"+GUIT$;
      WRITE (SSC) GMSG$;
      READ (SSC,TIM=30) R$;
      RETURN
07010 SEND_SC01: GMSG$=GUIH$+"SC01"+STR(TOP:MSK$)+STR(LEFT:MSK$)+STR(
      BOTTOM:MSK$)+STR(RIGHT:MSK$)+GUIT$;
      WRITE (SSC) GMSG$;
      READ (SSC,TIM=30) R$;
      DIM SCDATA$[BOTTOM-TOP];
      SCDATA$=R$(10),
      I=0;
      WHILE LEN(SCDATA$);
         P=POS($FF$=SCDATA$);
         IF P>0
            SCDATA$[I]=SCDATA$(1,P-1),
            SCDATA$=SCDATA$(P+1)
```


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```
         ELSE
            SCDATA$[I]=SCDATA$,
            SCDATA$=""
         FI;
         I=I+1;
      WEND;
      RETURN
07020 SEND_SC05: GMSG$=GUIH$+"SC05"+GUIT$;
      WRITE (SSC) GMSG$;
      READ (SSC,TIM=30) R$;
      COL=NUM(R$(5,3)),
      ROW=NUM(R$(8,3));
      RETURN
07050 SEND_SIXX: GMSG$=GUIH$+"SI**"+GUIT$;
      WRITE (SSC) GMSG$;
      READ (SSC,TIM=30) R$;
      RETURN
07060 SEND_SI01Y: GMSG$=GUIH$+"SI01Y"+STR(LEN(DATA$):"00000")+DATA$+GUIT$;
      WRITE (SSC) GMSG$;
      READ (SSC,TIM=30) R$;
      RETURN
07070 SEND_SI01N: GMSG$=GUIH$+"SI01N"+STR(LEN(DATA$):"00000")+DATA$+GUIT$;
      WRITE (SSC) GMSG$;
      RETURN
08000 PRINT "**ERROR: ",STR(ERR)," (",ERM(ERR),")";
      INPUT *
09000 CLOSE (0);
      END
```


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MULTI-LANGUAGE

For more information about Multi-Language, see the Dialog, Message, and MenuBar Text Translations section and the Character and Font Translation Table Files section in the Multi-Language for VIP.

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