

TS Environment™ for Windows Installation and Upgrade Guide



Version 8.7.1

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INTRODUCTION

This guide instructs you how to install the TS Environment for Windows.

The TS Environment for Windows suite of software products allows developers to implement significant technological advances into their existing commercial applications. For more information see the *Features* section in this manual.

Each Microsoft Windows Workstation must install TS Environment for Windows with a unique Serial Number. Thoroughbred supports multiple sessions on each workstation as well as data sharing via files and records.

BEFORE INSTALLING THIS PRODUCT:

Please refer to the latest Release Notes found on the product CD.

Package Contents

Your CD is configured for a packaged bundle and operating system. Review the CD label to insure receipt of the correct packaged bundle and your target operating system.

- TS Environment for Windows
- Thoroughbred OPENworkshop
- VIP Host
- TS ReportServer
- TS ChartServer (not available on Windows Vista, Windows Server 2008, and Windows 7)
- Gateway for Windows

On a Separate CD:

- VIP Client
- TbredComm
- Gateway for Windows
- TS ReportServer
- TS ChartServer (not available on Windows Vista, Windows Server 2008, and Windows 7)

Requirements

The TS Environment for Windows is designed for developers who want to take full advantage of the Microsoft Windows environment. The TS Environment for Windows supports: Windows Server 2000, Windows XP, Windows Server 2003, Windows Vista, Windows 7, and Windows Server 2008.

INSTALLATION

NOTE: All Thoroughbred Windows based products prior to Version 8.7.0 must first be uninstalled and then the 8.7.1 release installed. Only 8.7.0 can be upgraded to 8.7.1 and only 8.7.0 and 8.7.1 can co-exist on the same system. If you are upgrading a pre 8.7.0 release, **BEFORE** continuing with this installation, please see the *Uninstalling TS Environment for Windows* section below for instructions to properly prepare your system for 8.7.1.

Backup Existing Program and Data File Before Installing

- Use site procedures to back up your application and data files.
- Use site procedures to back up the IPL, IPLINPUT, and TERMINAL files from the Thoroughbred Basic directory. From the IDL4 subdirectory, back up the TCONFIGW and TCONFIG8 files.

Uninstalling TS Environment for Windows

These instructions assume you previously installed using the default folder C:\Program Files\Tbsc. The folder names may vary slightly depending upon which products you have installed and where the products were originally installed.

1. **Login** using an **Administrator** account.
2. **Backup** your application data and programs.
3. From the Administrative tools select **Services** and stop the Thoroughbred Manager (tbjmgr.exe).
4. Uninstall the Thoroughbred Manager by running tbjmgr.exe with the **-d** argument.

From the Windows **Start** menu Select **RUN**.

Click on the **Browse** button and point to the folder where you installed the Basic. Typically this is **C:\Program Files\Tbsc**. Highlight the file named **tbjmgr.exe** and press the **Open** button. Edit the Open option in the Run dialog appending the **-d** option. The run option is not quoted. For example: **C:\Program Files\Tbsc\tbjmgr.exe -d**

From the Run dialog press **OK**.

If the service is deleted a message box will display saying: Service 'tbjmgr' successfully deleted! When the Thoroughbred Manager is uninstalled click the **OK** button and continue with the uninstall procedure.

If the service could not be deleted, a message box will display saying: Unable to delete service 'tbjmgr!'. If the delete fails do not continue with the uninstall procedure, contact Thoroughbred Support for assistance.

5. From the Control Panel select the applet to add and remove applications. Remove TS Environment for Windows.

6. Files not installed by the setup or files that have changed since the setup was run are not removed. If you have already uninstalled other Thoroughbred products some the following files may no longer exist. Erase the following folders and files:
C:\Program Files\Tbsc
C:\Windows\Tsi.ini
C:\Windows\tsiconst.ini
C:\Windows\TBRED86.BAS
7. We **recommend running a reliable registry cleaner** at this point.
8. **Reboot** your system.

The system is now ready for the 8.7.1 TS Environment for Windows installation. When that is complete you can recover your application data and programs. If you are installing on Windows Vista/Windows Server 2008/Windows 7 please be sure to review the *Installed Directories and Files* section of this manual before you recover your application files.

Installed Directories and Files

NOTE: Starting with 8.7.0 the location of some TS Environment for Windows directories and files have changed. Unlike previous releases Thoroughbred files should not be moved as this will render various ini file entries and registry keys invalid.

Windows Vista/Windows Server 2008/Windows 7

The installations follow Windows Vista, Windows Server 2008 and Windows 7 best practice rules. Some of the rules enforced by Windows Vista, Windows Server 2008 and Windows 7 are: all executables must be installed in Program Files, files that require read/write access cannot be installed in Program Files or Window System folders. This requires a new directory structure.

- All executables are located in \Program Files\Tbsc.
- Files and folders shared by all users requiring read and write access are located in a common data directory \ProgramData\Thoroughbred Software\Tbsc. This includes IPLINPUT.TXT, TERMINAL, TCONFIG files, and the IDL4, UTILS, and WORK folders. TSI.ini and Tsiconst.ini are now located in \ProgramData\Thoroughbred Software.
- Windows Vista, Windows Server 2008 and Windows 7 will mirror files in \ProgramData\Thoroughbred Software\Tbsc and \Users\All Users\Thoroughbred Software.

Windows Server 2000/Windows XP/Windows Server 2003

- The default folder for all files including executables is C:\Program Files\Tbsc.
- Files previously written to C:\Windows are now written to the common data application folder. This folder varies depending upon the operating system. For Windows XP the folder is \Documents and Settings\All Users\Application Data\Thoroughbred Software.

- Thoroughbred Services previously installed in C:\Windows\System32 are now installed in the same folder as Basic; i.e. C:\Program Files\Tbsc.

Installing the Files to Your Hard Drive

All installations and activations must be run with Administrator privileges. Once fully installed and activated the products can be run using standard user accounts.

If you are installing on Windows Server running Terminal Services in application mode switch to Install Mode prior to running setup.exe.

- To set Install Mode, from a command line enter **chgusr /INSTALL**.
- After completing the install, switch back to Execute Mode. From a command line enter **chgusr /EXECUTE**.
- At any time the current mode can be verified with **chgusr /QUERY**.

The chgusr command is a Terminal Services tool. For more information regarding installing applications with Terminal Services please refer to Microsoft documentation.

1. **Login** using an **Administrator** account.
2. We **recommend closing all unnecessary applications** before running the installation.

Verify the operating system noted on the CD matches the target operating system. If the installation and the target operating system do not match, you will not be able to activate the product. **Insert the 8.7.1 CD**. Browse the CD and **run setup.exe** located in the **Tssetup** folder.

3. The **InstallShield Wizard** will start the installation process. You can exit this installation at anytime by selecting the **Cancel** button.

User Information

Enter your Name and Company.

Thoroughbred Module Code

Enter the Module Code located on the label. You must enter the correct module code for your product. If you make a mistake you will not be able to activate your system.

Choose Destination Location

The default is C:\Program Files\Tbsc. We **strongly recommend** installing into the **default folder**.

NOTE: If you are installing on **Windows Vista, Windows Server 2008, or Windows 7** you **must** install into the **Program Files** folder. Select the **Next** button if this is where you want to install. Type the path or press the **Browse** button to select a different installation folder.

Serial Number

The installation procedure will display a dialog box to collect the serial number.

Enter the Serial Number provided on the media label. If the operating system noted on the media does not match the target operating system, the serial number will not be validated.

A serial number must be entered before TS Environment for Windows can be run. The serial number can be entered at any time by manually executing CollectSSN.exe:

- Locate **CollectSSN.exe** in the <install-path>\directory. For example C:\Program Files\Tbse
- Double click to execute it and type and enter the serial number from your CD label.

If a serial number is not entered, then TS Environment for Windows will not run and an "Unauthorized Installation" message will be displayed.

Setup Complete

Click **Finish** and then **reboot** the system.

The installation will also install the Thoroughbred Manager as a service allowing terminal emulation products such as TbredComm to connect to a Basic using Telnet. The Thoroughbred Manager will start automatically when the system is restarted.

For more information see Administrating the Thoroughbred Manager and Starting Basic as a Telnet Session sections of this manual.

Merge the Files

From the **Start** menu select **All Programs-->Thoroughbred Software-->TS Environment for Windows**.

You will see a screen that contains your Serial Number and Installation codes. Please write them down. You will need both of these numbers to activate your system. Select the **Bypass** button for now.

The first time you run Basic, the files will merge. See the OPENworkshop/Dictionary-IV Installation Guide.

NOTE: On Windows Vista, Windows Server 2008, and Windows 7, TS Environment for Windows can only be run from a short cut with a target value pointing to the Basic executables and a start in value pointing to the common data directory. For more information please see the *Configuring Your System* section of this manual.

ACTIVATION

The TS Environment for Windows requires an activation key. This process is identical to the activation process for TS Environment for UNIX. You will have 30 days to activate the TS Environment. During the initial startup, you can select the **Bypass** button to skip the activation process. If you do not activate the TS Environment within 30 days, you will operate in a restricted access mode.

To request an activation key please visit our Activation page at <http://apps.tbred.com/activate/>. You will be required to enter the TbredComm Serial Number and Installation Code. An Activation Key will be sent to you immediately by e-mail.

If you are unable to access the Web site, call Thoroughbred Software at 1-800-524-0430 and ask for Activation.

Restricted Access

A workstation in restricted access mode can still continue to execute an application. The Security Window, noting the unauthorized installation, will always be displayed. This window remains on the screen as long as Thoroughbred is active. You can move the location of this window to view your application, but you cannot close the window. To remove the Unauthorized Installation window, you will need to remove the Thoroughbred Basic security file. For example: C:\WINNT\Tbred85.bas and reinstall the TS Environment for Windows.

CONFIGURING YOUR SYSTEM

Creating Desktop Shortcuts

Desktop shortcuts should be created using the Windows Shortcut Wizard.

Right mouse click on your desktop and select **New**, then select **Shortcut**.

The Target value must point to where the Basic executable is installed.

- On all platforms this is typically C:\Program Files\Tbsc.

The Start In value must point to where Dictionary-IV/OPENworkshop is installed.

- On Windows Vista, Windows Server 2008, and Windows 7 this is C:\ProgramData\Thoroughbred Software\Tbsc.
- On Windows Server 2000/Windows XP/Windows Server 2003 this is common data directory. For example on Windows XP this is typically C:\Documents and Settings\All Users\Application Data\Thoroughbred Software.

Configure Memory and OS Parameters

Edit the IPL file used for TS Environment for Windows (normally IPLINPUT) and make the changes described below. The IPLINPUT file is a standard ASCII file that can be modified using any text editor that saves the file in ASCII format, such as EDIT in DOS. For more information on the IPLINPUT file, please refer to the Thoroughbred Basic Customization and Tuning Guide.

Change the PTN statement to set a minimum partition of 300000. The PTN statement should appear as follows:

```
PTN 1,300000
```

Open File Table Entries

The number of file table entries is set in the operating system as well as in the CNF statement of the TS Environment for Windows IPLINPUT file.

In most cases, it is recommended that you change the CNF statement to set a minimum of 40 for the open file table entries. The CNF statement should look like this:

```
CNF 1,6,1,40
```

NOTES: In this statement, 6 specifies the number of DEV lines and 40 specifies the number of open file table entries.

The number specified in the CNF statement of the IPLINPUT file must be 3 less than the setting used by the operating system. TS Environment for Windows will not execute if this is not done.

To modify the number of file table entries in DOS see the FILES= parameter in the CONFIG.SYS file.

Sample IPLINPUT Files

This section describes how to perform system administration functions such as adding directories or printers to TS Environment for Windows. For more information see the Basic Customization and Tuning Guide.

Adding Directories

This section describes how to make DOS directories accessible to TS Environment for Windows.

- If the directory does not exist, create it in DOS using the MKDIR command.
- Modify the IPLINPUT file using a text editor such as EDIT.

```
CNF 1,6,1,40          Increase the number of devices in the CNF line. If you add one DEV
                        line, change the 6 to a 7.

PTN 1, 300000

DEV D0,1,,,,,IDL4    In the following three DEV lines, D0, D1, and D9 specify the number of
                        each available directory.

DEV D1,1,,,,,WORK    Insert a DEV line after this one. The format is DEV Dn,1,,,,,[d:][path].
                        Example: DEV D2,1,,,,,C:\FILES

DEV D9,1,,,,,1,,
DEV LP,4,,,,,LPT1
DEV T0,5,,,,,CON     In this DEV line, 5 specifies Thoroughbred Basic Windows
                        (TCONFIGW) and 7 specifies that Thoroughbred Basic Windows will
                        not be used (TCONFIG8).

DEV T1,7,,,,,TTY1
IPL 1,2,T0,ID
END
```

Save and exit to DOS, then re-execute TS Environment for Windows.

Adding Printers

This section describes how to make DOS system printers accessible to TS Environment for Windows.

- Install and set up printers.
- Modify the IPLINPUT file using a text editor such as EDIT.

```
CNF 1,6,1,40          Increase the number of devices in the CNF line. If you add one DEV
                        line, change the 6 to a 7.

PTN 1, 300000
DEV D0,1,,,,,IDL4
DEV D1,1,,,,,WORK
```

```
DEV D9,1,,,,,1,,
DEV LP,4,,,,,LPT1
```

The two-character printer-ID must be either LP, as it is here, or P1 through Px, where x is any alphanumeric character.

Insert a DEV line after this one.
Example: DEV P1,4,,,,,LPT2

```
DEV T0,5,,,,,CON
DEV T1,7,,,,,TTY1
IPL 1,2,T0,ID
END
```

Save and exit to DOS, then re-execute TS Environment for Windows.

Sample of a Modified IPLINPUT File

Using the previously defined IPLINPUT file, this section shows an example of a modified file.

- Modify the IPLINPUT file using a text editor such as EDIT.

```
CNF 1,9,1,40
PTN 1, 300000
DEV D0,1,,,,,IDL4
DEV D1,1,,,,,WORK
DEV D2,1,,,,,TEST
DEV D3,1,,,,,C:\DATA\FILES
DEV D9,1,,,,,1,,
DEV LP,4,,,,,LPT1
DEV P1,4,,,,,LPT2
DEV T0,5,,,,,CON
DEV T1,7,,,,,TTY1
IPL 1,2,T0,ID
END
```

The total number of DEV lines is 9.

This directory specification has been added.

This directory specification has been added.

This printer specification has been added.

RUN TS ENVIRONMENT FOR WINDOWS

Starting a Local Basic™ Session

From the **Start** menu select **All Programs-->Thoroughbred Software-->TS Environment for Windows**.

From your Desktop, click on a custom shortcut. For more information on creating shortcuts see the **Creating Desktop Shortcuts** section of this manual.

Starting Basic™ as a Telnet Session

By default the Thoroughbred Manager will listen on port 23 for telnet-like connections. If you have multiple Basics loaded, it will execute the first b.exe and its iplinput.txt found in your PATH variable. For more information see PATH Variable.

Using the terminal emulator of your choice connect to your workstation.

TbredComm is Thoroughbred's terminal emulator designed specifically for the TS Environment for Windows. TbredComm may be purchased separately. For more information please contact your sales representative.

The following illustrates starting a Basic session using TbredComm to connect to a TS Environment for Windows.



ADMINISTRATING THE THOROUGHbred MANAGER

The Thoroughbred Manager is administered using the Services dialog box.

- From the **Start** menu select **Administrative Tools-->Services**
- The Services dialog box will appear
- Locate and highlight **Thoroughbred Manager**

Setting the Port

The Thoroughbred Manager by default uses the telnet port. This is typically port 23.

To change the port:

- From the Services dialog box locate and highlight **Thoroughbred Manager**
- The Services dialog box will appear
- Locate and highlight **Thoroughbred Manager**

The Thoroughbred Manager can listen on another port by adding the port number to startup parameters. From the Start menu select **Administrative Tools-->Services** and open the Thoroughbred Manager Properties. In the "Path to executable" box add the port number.

For example if you want to listen on port 7000 add **-P7000**. This would then look something like the following:

```
C:\Program Files\TSI\BIN\Tbredcom.exe -P7000
```

Note there is a space preceding the **-P**, but no space between **-P** and the *port-number*.

Starting the Manager as a Specific User

- From the Services dialog box locate and highlight **Thoroughbred Manager**
- Click on **Startup**
- Enable **This Account** and select the desired user account

For more information please refer to Windows Help available on the Services dialog box.

Stopping and Starting the Thoroughbred Manager

The Thoroughbred Manager will start automatically when the computer is started. However at times it may be necessary to manually start or stop the service.

To stop the Thoroughbred Manager:

- From the Services dialog box locate and highlight **Thoroughbred Manager**
- Click **Stop**
- A confirmation prompt will be displayed, click **Yes** to stop the service or **No** to cancel the operation
- When the service has stopped the status column will be blank

To shut down the Thoroughbred Server Manager follow the same instructions described for the Thoroughbred Manager.

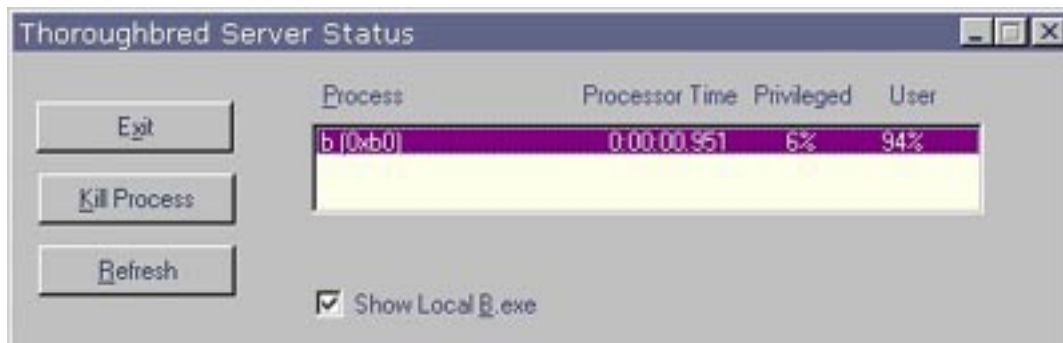
To start the Thoroughbred Manager:

- From the Services dialog box locate and highlight **Thoroughbred Manager**
- Click **Start**
- When the service has started the status column will read **Started**

THOROUGHBRED SERVER STATUS UTILITY

Managing Basic Tasks

The Thoroughbred Server Status utility allows you to view and kill tasks run by the Thoroughbred Manager. This utility is installed into your Basic directory, typically C:\Program Files\Tbsc. To start the Server Status utility, double click on **tbpview.exe**. Be sure **Show Local B.exe** is checked.



If for some reason you need to kill a task using tbpview, you may need to first correct the permissions.

TROUBLESHOOTING

Port Conflicts

There may be an occasion when the default telnet port 23 is not accessible. The Thoroughbred Manager can be started with an option to monitor an alternative port for telnet activity. Please refer to *Setting the Port* for details.

If you're using a port other than telnet, be sure your terminal emulation software supports it. Some terminal emulation products have the ability to use other ports rather than telnet (23). If you are using TbredComm you can start TbredComm with an option to connect on an alternate port. Please refer to *Setting the Port* for details.

Windows Server 2000

Our testing has uncovered some inconsistencies when used with Windows Server 2000, which differentiates between "telnet" and port 23. Because the new Thoroughbred Manager defaults to "telnet," Windows Server 2000 prevents users from connecting. We have successfully connected using other ports; starting the manager using -P7000 with TbredComm (as well as other terminal emulators) on port 7000 and using -P23. This avoids some Windows Server 2000 interception. We recommend anyone using Windows Server 2000 and the new Thoroughbred Manager do the same.

PATH Variable

The Thoroughbred Manager will execute the first b.exe found in the PATH variable. Only one Basic per workstation should be installed.

The following PATH variable will allow the Thoroughbred Manager to locate and start the correct Basic.

```
%SystemRoot%\system32;%SystemRoot%;C:\Program  
Files\TSI\BIN;C:\Program Files\Tbrc
```


SYSTEM ARCHITECTURE

Menu Bar

The TS Environment for Windows includes a menu bar with five selections. While executing any Thoroughbred based application, you will have access to these five selections: Function Keys, File, Edit, Terminal, and Window.

Function Keys

This menu option allows the user to select function keys using a mouse. The Function Key Menu option is active for keyboard operation and, when selected, will be added to the input buffer.

File

The File menu option has three selections: Print Setup, Exit, and About Thoroughbred.

Print Setup – If active (see Print Manager section in this guide), provides access to Windows Print Setup

Exit – if active (see Windows API section in this guide), allows the user to exit (**Ctrl-B** or **RELEASE**) back to the Windows Program Manager.

About Thoroughbred – provides workstation information including Version, User, and Serial Number.

Edit

This option enables the user to **C**opy marked text to the clipboard. Because some products require a break carrier other than "CR," you may have to switch to OEM Display format used by DOS applications when viewing the copied text with other products.

Terminal

This submenu is used to access options that support multiple font selection. The three items are Select Font, Autosize, and 132 Column.

Select Font – the user may select a font, style, and size using a Font Common Dialog. This font will be used for all subsequent screen displays.

Autosize – this option automatically calculates and resizes the Basic window after a new font has been selected. In addition, if the user resizes the Basic window by dragging one of the window's edges or corners, a new font size will be calculated to fit the screen. A check mark will be displayed next to the item when it is active.

132 Column – this option will allow the Basic window to contain 132 columns. A check mark will be displayed next to the item when it is active. When 132 Columns mode is not active, the Basic window will contain 80 columns.

See **Font and Character Set** for additional details.

Window

This option is reserved for future use.

Multiple Sessions

The TS Environment icon can be executed more than once, creating multiple sessions or tasks. The terminal id [FID(0)] for each session will be generated automatically using the TERMINAL file. This allows sequential id (T0, T1, T2, etc.) to be used. The number of Thoroughbred sessions or tasks on a single workstation is limited only by the Thoroughbred Basic Serial Number. The default is 3 sessions.

When executing multiple sessions of the TS Environment, the Window Menu title for the first task will be **Thoroughbred [S/C]**. All additional sessions will have a Window Menu title of **Thoroughbred [C]**.

When using the TS Environment for Windows with VIP/Gateway for Windows or any DDE conversation, please note the following.

- All TS Environment sessions can act as a client in a DDE conversation. For example one session may be poking data to a Microsoft Excel spreadsheet and a second session updating a Microsoft Word document.
- The session designated as Thoroughbred [S/C] can also act as a server in a DDE conversation. If your DDE application requires two-way communication, it can only interface with the Thoroughbred [S/C] session.
- See the VIP/Gateway for Windows Reference Manual for details on DDE Client/Server operations.

Window Task Control

The TS Environment provides two min/max buttons in the top right corner. TS Environment for Windows is Windows MDI compliant. To resize the entire Thoroughbred task window, select the top, minimize or maximize buttons.

Thoroughbred uses the TSICONST.INI file to store Basic's state prior to exiting. Subsequent Thoroughbred sessions will use these values for the Window size position, and font selection.

Font and Character Set

The Tbred font is not supported on Windows Vista/Windows Server 2008/Windows 7. TS Environment for Windows now use the DejaVu mono font as a default. This installation will also install the DejaVu font family along with a copy of its license agreement. The font is an open source project and has become the standard for many versions of Linux including recent releases of Red Hat Fedora, Ubuntu and SuSE. For more information see: http://dejavu.sourceforge.net/wiki/index.php/Main_Page.

Color

Two terminal tables are included in TCONFIGW with the TS Environment for Windows:

WINNTMON and WINNTCON

The default terminal table is WINNTCON. The WINNTCON terminal table uses the DOS color scheme. The WINTMON table uses the Microsoft Windows Color Settings for various video attributes. To maintain colors for this table, select Color Settings from the Windows Control Panel.

For example, the Dictionary-IV installation will display characters in normal video, reverse video foreground, and reverse video background. Those attributes will display using Color Settings from the Windows Control Panel.

TS Environment		Control Panel – Color Settings
SF foreground	uses	Window Text
SB background	uses	Disabled Text
BF reverse video foreground	uses reversed	Window Text
BR reverse video background	uses reversed	Disabled Text

FEATURES

Sharing Data between Environments

If TS Environment for Windows is installed on Windows Server 2000/Windows XP/Windows Server 2003 there are special installation instructions that can be viewed in our 8.7.1 Release Notes in the Helpdocs folder on the installation CD.

The TS Environment for Windows is capable of sharing data files between multiple Thoroughbred sessions on the same workstation as well as environments on other workstations. For file sharing to work properly, the TS Environment uses the `TERMINAL` file to assign unique identifications for each session. Executing multiple sessions will generate terminal identifications T0, T1, T2, etc. If environments from different workstations running TS Environment for Windows want to share files, each environment will require a unique Terminal ID.

All shared files, including `TERMINAL` and `IPLINPUT.TXT`, should be moved to the shared working directory. Your application files should also be installed into the shared working directory. Object libraries and the system dictionary may be copied to a shared directory or may be distributed to each workstation. An installation will have to weigh the benefits of performance versus the disk space overhead. Each workstation must modify the Properties of the Thoroughbred Icon in the Thoroughbred Program Group. The command line should specify the local directory that contains `B.EXE`. The working directory should specify the home directory, i.e. `d:\tbsc`, found on the server.

Each Workstation will have a unique Serial Number. Any application program or file that is serialized needs to reside locally on each workstation. For example, the VIP/GWW Host programs are locked with a serial number. These programs or object libraries must remain local to each workstation.

BTRIEVE Access

PRM BTRIEVE is supported in the Windows environment. This IPL file parameter enables Thoroughbred to create files in BTRIEVE format. This statement does not affect files that have already been saved in another format.

Data access can be improved dramatically by using BTRIEVE. The BTRIEVE Server must be configured properly. Thoroughbred requires that a Brequester is running on the workstation. The `IPLINPUT.TXT` file must have the parameter **PRM BTRIEVE**. This allows Thoroughbred to use the Brequester to send data to the BTRIEVE Server. The `BTRIEVE.N>LM` must be loaded on the BTRIEVE server as well as an appropriate communication driver (i.e. `BSPXCOM.NLM`).

To confirm that a data file is BTRIEVE, **OPEN** the file and test the first byte in the FID. BTRIEVE files will return a **B** in this byte.

READONLY Parameter

This IPL file parameter allows programs to READ data records that are currently EXTRACTed (locked) by another task (or the same task). This capability has been available for operating systems that support advisory locking. This capability requires a new locking scheme for DIRECT files. The new scheme is not compatible with previous releases. When sharing data files between multiple workstations, all workstations should be using TS Environment versions 8.40A and up regardless of the **PRM READONLY** feature being active. There is no change to the actual file format.

DDE

The TS Environment for Windows supports DDE. This is accomplished by either using Gateway for Windows (GWW) or new Thoroughbred Basic syntax.

DDE conversations are established using the file I/O subsystem. For detailed syntax and information, refer to the **OPEN** directive found in the Thoroughbred Basic Language Reference Volume II.

GWW

When using GWW, your interfaces built for UNIX host environments will execute with no program modifications.

Operating System Interface

Operating system interfacing is accomplished through Microsoft Windows, not DOS. Therefore SYSTEM instructions to the Windows environment may not have the same results as Thoroughbred Basic for DOS. Thoroughbred syntax designed to interface with the UNIX operating system such as XCALL and OPEN (ch, OPT="SHELL"...) is not supported. Access to the Windows system is accomplished using Windows API calls.

The SYSTEM command does include the following characteristics:

- SYSTEM by itself will execute the DOSPRMPT.PIF.
- SYSTEM followed by a string will attempt to RUN the string value. If it gets an error, it will then try **DOSPRMPT,PIF /C *string-value***. Upon the conclusion of the process, control will be returned to your application.
- SYSTEM followed by a string that terminates with the character '&' will return control immediately to your application.
- Currently, the SYSTEM commands that fail do not return error codes.
- It is recommended that Window .PIF files be used to execute DOS programs. Within the .PIF file you can control display within a window, termination automatically closing the window, etc. Review the .PIF file settings in the Windows Program Manager for more details.

Window API

The TS Environment for Windows supports access to the Windows API. There are many books available that cover and explain the technological capabilities of the Windows API. It is recommended that you visit your local computer bookstore to acquire books on this topic.

For detailed syntax and information, refer to the API directive found in the Thoroughbred Basic Developer Guide.

Print Manager

Access to printer devices can be accomplished in either a raw or a spooled Print Manager mode.

Raw mode bypasses the Windows Print Manager and allows direct access to the device. This is the typical method used in your existing UNIX applications. It requires printer tables to be defined in Dictionary-IV that recognize unique escape sequences for unique printers.

The spooled Print Manager mode is the preferred Windows print access method. The Print Manager mode can run in either standard or pass-through mode. Both modes will spool all output to the Windows Print Manager. Standard mode uses a standard set of limited mnemonics that need to be defined in your system dictionary, while pass-through mode will use your existing Dictionary-IV printer tables.

To activate the Windows Print Manager, you need to set the spooler flag in IPLINPUT.TXT.

<code>DEV LP,4,,,1,,LPT1</code>	Type 1 uses the existing Dictionary-IV Printer Tables. If you change printer types using the Printer Setup facility, you will have to reassign your printer table to the new type.
<code>DEV LP,4,,,3,,LPT1</code>	Type 3 requires the creation of a standard Printer Table (see below). This table allows printing to any printer in the Windows Printer Setup facility without change.

Using Type 1 or 3 will send all LP output to the Windows Print Manager. Programs using escape sequences and mnemonics not recognized by the Print Manager will generate errors. When the print Manager is active, you will be able to access Printer Setup by clicking the File option from the Menu Bar.

Spooled printers will use the default font Courier New for text and Microsoft Line Draw for graphics. Thoroughbred Basic does not query the Windows Printer Drivers to determine supported fonts. If the font is not recognized, most printers will switch into graphics mode and print individual pixels.

To use a spooled printed (type 3); you will have to use the STNDRD Dictionary-IV printer table.

Mouse Controls

You can set your system to scroll and to enable mouse clicks by editing the Tsi.ini file located in your Windows folder.

To enable/disable scrolling edit the [BASIC] section of the Tsi.ini file.

window_hscroll=Y

Allows you to turn on or off horizontal scrolling of a window.

window_vscroll=Y

Allows you to turn on or off horizontal scrolling of a window.

For example:

```
[BASIC]
window_hscroll=Y
window_vscroll=Y
```

To enable mouse clicks to select Y/N and Control Keys edit the [MOUSE] section of the Tsi.ini file.

Yes/No Pattern

The Yes and No characters are identified by a starting, ending and separator character, for example (Y/N).

```
( is the start character
) is the end character
/ is the separator character
```

When the user clicks in an area encompassed by the starting and separator character or the separator and ending character, the text will be interpreted. If the text matches the yes/no pattern, the clicked character will be posted to the Basic INPUT statement. Only a single character is sent to INPUT, this is equivalent to an INPUT SIZ=1.

For example if you type "(Y/N)" in the Yes/No Pattern text box, clicking on the "Y" in (Y/N)? returns a Y. Clicking on the "N" (Y/N)? returns an N.

Control Keys

Control keys are identified by a starting and ending character, for example type "<>" in the Control Key text box. 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.

Multiple Control Key values can be defined. Use a comma to separate entries. For example, type "<>", "()", "{}" in the Control Key text box.

For example if you type "<>" in the Control Key(s) text box, clicking on the "F" or the "4" in <F4> returns a CTL value of 4.

For example:

```
[MOUSE]
yesno=(/*/*)?
controlkey=<>
```